DIGITAL TCP/IP Services for OpenVMS

Installation and Configuration

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This manual explains how to install and configure the DIGITAL TCP/IP for OpenVMS (UCX) layered application product.

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Operating Systems:	OpenVMS Alpha Versions 6.2, 7.0, 7.1 OpenVMS VAX Versions 6.2, 7.0, 7.1
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Contents

Preface v

1 Preparing to Install and Configure UCX

1.1 Understanding the Major Tasks Involved 1–1
1.2 Preinstallation Tasks 1–1
1.2.1 Inspecting the Distribution Kit 1–2
1.2.2 Registering the UCX License Product Authorization Key 1–2
1.2.3 Upgrading OpenVMS and Backing Up the System Disk 1–2
1.2.4 Checking the Disk Space 1–3
1.2.5 Checking the Memory 1–3
1.2.6 Changing the System Parameters 1–3
1.2.6.1 Global Pagelets and Global Sections 1–3
1.2.6.2 Nonpaged Dynamic Pool 1–4
1.2.6.3 Interrupt Stack Pages (OpenVMS VAX Only) 1–4
1.2.7 Assigning User Identification Codes 1–5
1.3 Configuration Planning Worksheet 1–5

2 Installing UCX

2.1 Installing UCX on an OpenVMS Alpha System 2–1
2.1.1 UCX Installation Procedure (OpenVMS Alpha) 2–1
2.2 Installing UCX on an OpenVMS VAX System 2–4
2.2.1 UCX Installation Procedure (OpenVMS VAX) 2–4

3 Configuring UCX

3.1 Recommended Order for Configuring UCX 3–1
3.2 Using UCX$CONFIG Menus 3–1
3.2.1 Configuring the Core Environment and the Client and Server Components 3–3
3.2.2 Configuring the Optional Components 3–11
3.3 Using UCX$CONFIG Option Commands 3–12
3.4 Starting UCX 3–13
3.5 Verifying the Configuration 3–14
3.6 Additional Configuration Tasks 3–15
3.7 Automatically Starting and Stopping UCX 3–15
3.8 Automatically Starting UCX Services 3–15
3.9 Specifying UCX as the Transport for DECwindows Applications 3–15

A Installed Files

A.1 Installed UCX Files A–1
A.2 Installed UCX Files for PATHWORKS Systems A–8

Index

Examples

2–1 UCX Installation: POLYCENTER Software Installation Utility Procedure 2–2
2–2 UCX Installation: Beginning Portion of VMSINSTAL Procedure 2–5
2–3 UCX Installation: Final Portion of VMSINSTAL Procedure 2–6

Tables

1–1 Major Tasks: Installing and Configuring UCX 1–1
1–2 Configuration Planning Worksheet 1–6
3–1 Tasks: Configuring UCX 3–1
3–2 Troubleshooting IVP Errors 3–14
A–1 UCX Files A–1
A–2 PATHWORKS Files A–8

Preface

This manual explains how to install and configure the DIGITAL TCP/IP Services for OpenVMS (UCX) networking software on an OpenVMS system.

Intended Audience

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

Document Structure

This manual contains three chapters and one appendix:

- Chapter 1 outlines the tasks involved in getting the UCX software running successfully on your system and explains how to prepare for installing and configuring Version 4.2 of UCX.
- Chapter 2 describes how to install Version 4.2 of the UCX software using the POLYCENTER Software Installation utility (OpenVMS Alpha) and the VMSINSTAL procedure (OpenVMS VAX).
- Chapter 3 provides guidelines on how to configure the UCX components and services after you have installed the software successfully.
- Appendix A lists the locations of files installed on your OpenVMS system during the UCX installation procedure.

Terminology

This manual uses the following terminology:

- The abbreviation for the product's name is UCX.
- DIGITAL TCP/IP Services for OpenVMS is used to mean both:
  - DIGITAL TCP/IP Services for OpenVMS Alpha
  - DIGITAL TCP/IP Services for OpenVMS VAX
- Software components
  - The auxiliary server is the DIGITAL TCP/IP Services for OpenVMS implementation of the UNIX internet daemon (`inetd`).
  - NFS is the DIGITAL TCP/IP Services for OpenVMS implementation of the Network File System (NFS) protocols, including the NFS server, the NFS client, and PC-NFS.
  - TN3270 is 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 UNIX 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 and provide universal connectivity, reaching the Defense Advanced Projects Research Agency (DARPA) Internet, MILNET, NSFnet, CERN, 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.

Acronyms

For a complete list of acronyms used throughout this and other manuals in the DIGITAL TCP/IP Services for OpenVMS documentation set, see the *DIGITAL TCP/IP Services for OpenVMS Concepts and Planning* guide.

Conventions

The following conventions apply to this book.

Convention	Meaning
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 type	Indicates a variable.
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.

All node names and addresses in this book are fictitious and are included as examples only.

Related Documents

The following manuals provide additional information about planning your network and configuring and managing UCX:

- *DIGITAL TCP/IP Services for OpenVMS Concepts and Planning*
- *DIGITAL TCP/IP Services for OpenVMS Management*

For a complete list of all manuals in the DIGITAL TCP/IP Services for OpenVMS documentation set, see the *DIGITAL TCP/IP Services for OpenVMS Concepts and Planning* guide.

For additional information about DIGITAL TCP/IP Services for OpenVMS products and services, access the DIGITAL OpenVMS World Wide Web site. Use the following URL:

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1

Preparing to Install and Configure UCX

This chapter explains how to prepare for installing and configuring DIGITAL TCP/IP Services for OpenVMS Version 4.2 software (hereafter called UCX).

1.1 Understanding the Major Tasks Involved

Once you familiarize yourself with the UCX product and decide the components and functionality you want to enable, installing and configuring the software is a simple process that generally takes less than one hour to complete.

Table 1–1 lists the major tasks involved in installing and configuring the UCX software.

Table 1–1 Major Tasks: Installing and Configuring UCX

Task	Action	Go to...
1	Prepare for installation and configuration.	Sections 1.2.1 — 1.3
2	Install UCX, then reboot the system.	Chapter 2
3	Configure UCX according to your network needs.	Chapter 3
4	Verify the configuration.	Chapter 3
5	Complete additional configuration and setup tasks, as appropriate.	Chapter 3

The UCX installation and configuration take about 40 minutes to complete: 20 minutes for the installation and 20 minutes for the basic configuration procedure where you enable the UCX components you plan to use.

You should allow additional time for running tests to verify the configuration and for follow-on configuration and setup tasks. The time required to complete these tasks will vary.

If you are upgrading from a previous version, you need to run the SYS$UPDATE:UCX$CLEANUP_HELPLIB.COM procedure to delete obsolete commands from the top-level online help. Running this procedure generally takes an additional few minutes; the instructions are displayed in the installation script.

1.2 Preinstallation Tasks

The following sections summarize important tasks you need to complete before you install the UCX software on your system.

1.2.1 Inspecting the Distribution Kit

Make sure you have a complete software distribution kit. If you have the OpenVMS consolidated distribution CD-ROM distribution kit, check the CD master index for the kit location. If you have a magnetic tape or TK50 kit, supply the device name when requested by the software installation procedure.

Check that the kit contains everything listed on the bill of materials (BOM). If anything is missing or damaged, contact your DIGITAL representative.

1.2.2 Registering the UCX License Product Authorization Key

Before you install the UCX software on a newly licensed node or cluster, you must register a License Product Authorization Key (PAK) using the OpenVMS License Management Facility (LMF). Without a PAK, you can use only DECwindows TCP/IP Transport software.

If you are installing the UCX software as an update on a node or cluster already licensed for this software, you have already completed the License PAK registration requirements.

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

If you are installing prerequisite or optional software along with the UCX software, review the PAK status and install the PAKs for any prerequisite or optional software before you install UCX.

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

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

You must register a license for each node in an OpenVMS Cluster.

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

1.2.3 Upgrading OpenVMS and Backing Up the System Disk

Before you install the UCX software, DIGITAL recommends that you upgrade the OpenVMS operating system, if applicable, then back up the system disk using the backup procedures established at your site.

For information about how to install OpenVMS, refer to the appropriate OpenVMS upgrade and installation manual.

For information about backing up a system disk, see the *OpenVMS System Manager's Manual: Essentials*.

1.2.4 Checking the Disk Space

Make sure the system meets the following disk space requirements (block cluster size = 1):

Requirement	Minimum Block Size
Disk space for installation	40,000 blocks (Alpha) 19,000 (VAX)
Disk space for product use	32,000 blocks (Alpha) 18,000 (VAX)

The actual disk space needed will vary depending on the system environment, configuration, and software options.

To find out how many free blocks exist on the system disk, enter the following command:

```
$ SHOW DEVICE SYS$SYSDEVICE
```

1.2.5 Checking the Memory

Make sure the system meets the following memory requirements:

System	Minimum Memory
OpenVMS VAX	24 MB
OpenVMS Alpha	32 MB

To check the memory, enter the following command:

```
$ SHOW MEMORY/FULL
```

1.2.6 Changing the System Parameters

Most systems have adequate system resources readily available to include the UCX software. However, you should check the system parameters outlined in the following sections and make any necessary changes to the MODPARAMS.DAT file, then use AUTOGEN to reboot your system.

1.2.6.1 Global Pagelets and Global Sections

The UCX software requires 65 global sections and 8100 global pagelets.

To check the number of available global pagelets and global sections, issue WRITE commands with the F$GETSYI lexical functions. For example:

```
$ 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 MODPARAMS.DAT file that increase the values of the system parameters GBLPAGES and GBLSECTIONS.

1.2.6.2 Nonpaged Dynamic Pool

Add at least 350,000 bytes of nonpaged dynamic pool (the default maximum size for the UCX software), as follows:

1. Log into the SYSTEM account.
2. Identify the amount of additional nonpaged pool your system requires. Use the 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	Definition
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.

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

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

For more information about nonpaged dynamic pool, see the *OpenVMS System Manager's Manual: Essentials*.

1.2.6.3 Interrupt Stack Pages (OpenVMS VAX Only)

If you are using PATHWORKS Internet Protocol (PWIP) on an OpenVMS VAX system, you should increase the number of interrupt stack pages (INTSTKPAGES) to 10 or more to help eliminate 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 A–2.

To increase the number of INTSTKPAGES, add statements to the MODPARAMS.DAT file that increase the value of the SYSGEN and INTSTKPAGES parameters.

1.2.7 Assigning User Identification Codes

An OpenVMS user or group of users are identified by a unique, assigned user identification code (UIC) in the format [*group,member*], where *group* and *member* are numeric or alphanumeric characters. 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 UCX configuration procedure uses the existing group UIC, if the UIC exists. If not, the octal number 375 (the default UIC group number for service accounts) is used. If this is an initial UCX configuration, but the procedure detects that 375 is in use, you will be prompted for a new UIC group number.

Before you assign a new group number, check that the number you chose is not already in use by issuing the following commands (making sure to type the brackets):

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

To specify a new 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.

1.3 Configuration Planning Worksheet

Complete the worksheet in Table 1–2 so that you are prepared to enter specific information during the configuration procedure.

For additional planning information, see the *DIGITAL TCP/IP Services for OpenVMS Concepts and Planning* guide.

Preparing to Install and Configure UCX
1.3 Configuration Planning Worksheet

Table 1–2 Configuration Planning Worksheet

Question	Answer
What is the system's host name (for example, MYNODE)?	
What is the system's Internet domain name (for example, widgets.com)?	
What are the system's addresses?	
• IP address (for example, 19.112.139.14)	
• Subnet (network mask) address (for example, 255.255.255.0)	
• Broadcast address (for example, 19.112.139.255)	
• Default gateway address (for example, 19.112.139.18)	
What is the system's Ethernet device (for example, ESA0)?	
What is the system's group user identification code (UIC); for example, [GROUP1,JONES]?	
What is your geographical area and time zone (for example, U.S.A./Eastern)?	
Which type of routing is appropriate for the network?	
• Static — for simple networks where routes do not change	
• Dynamic — for complex networks where flexibility is required	
What is the name of the system's remote BIND server (for example, MAINSV)?	

2
Installing UCX

This chapter explains how to install the UCX software using the POLYCENTER Software Installation utility (OpenVMS Alpha) or the VMSINSTAL procedure (OpenVMS VAX).

2.1 Installing UCX on an OpenVMS Alpha System

This section takes you through a UCX installation on an OpenVMS Alpha system using the POLYCENTER Software Installation utility. The instructions are appropriate for an initial product installation or a version upgrade.

For complete information about the POLYCENTER Software Installation utility, refer to the *OpenVMS System Manager's Manual: Essentials*.

2.1.1 UCX Installation Procedure (OpenVMS Alpha)

Install the UCX software on an OpenVMS Alpha system as follows. Note that the last step requires you to reboot the system to complete the installation.

1. Complete the recommended preinstallation tasks outlined in Chapter 1.
2. Log into the SYSTEM account.
3. If another version of the UCX software exists on your system, shut down that version by issuing the following command:

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

4. Check to ensure that no one is logged onto the system.
5. Copy the UCX distribution kit into the SYS$SPECIFIC:[UCX42] directory.
6. Create a log file to record the installation or upgrade procedure, if you want a copy for your records.
7. To start the POLYCENTER Software Installation utility, enter the PRODUCT INSTALL command with the directory path appropriate for your system. For example:

   ```
   $ PRODUCT INSTALL UCX /SOURCE=SYS$SPECIFIC:[UCX42]
   ```

   where SYS$SPECIFIC:[UCX42] is the directory path for the UCX kit.

   If you do not specify the source qualifier, the POLYCENTER utility searches the location defined by the logical name PCSI$SOURCE. If you do not specify either the source qualifier or PCSI$SOURCE, the POLYCENTER utility searches the current default directory for the UCX kit.
8. The interactive installation procedure begins, and you are prompted for information.

2.1 Installing UCX on an OpenVMS Alpha System

A sample installation script is shown in Example 2–1. Numbered callouts identify those areas that require your response. The callouts are explained at the end of the script.

Note

To stop the installation at any time, press Ctrl/Y. The installation procedure will delete any files that were created, then exit.

For the complete list of the UCX files that are installed on your system, see Appendix A.

Example 2–1 UCX Installation: POLYCENTER Software Installation Utility Procedure

```
The following product has been selected:
    DEC AXPVMS UCX V4.2                    Layered Product [Installed]

❶ Do you want to continue? [YES] Return

Configuration phase starting ...

You will be asked to choose options, if any, for each selected product and for
any products that may be installed to satisfy software dependency requirements.

DEC AXPVMS UCX V4.2: DIGITAL TCP/IP Services for OpenVMS. [Installed]

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    Digital Equipment Corporation

    DIGITAL TCP/IP Services for OpenVMS offers several license options.

❷ Do you want the defaults for all options? [YES] Return

❸ Do you want to review the options? [NO] YES Return

DEC AXPVMS UCX V4.2: DIGITAL TCP/IP Services for OpenVMS. [Installed]
    DEC AXPVMS VMS V7.1 [Installed]
    Applications: YES

❹ Are you satisfied with these options? [YES] Return

Execution phase starting ...

The following product will be installed:
    DEC AXPVMS UCX V4.2                     Layered Product
```

(continued on next page)

Example 2–1 (Cont.) UCX Installation: POLYCENTER Software Installation Utility Procedure

```
Portion done: 0%
...10%
...20%
...30%
...40%
...50%
...60%
...70%
...80%
...90%
%PCSI-I-PRCOUTPUT, output from subprocess follows ...
% UCX-W-PCSI_INSTALL
% - BG device exists.
%   To use the version of DIGITAL TCP/IP Services that was just installed,
%   system must be rebooted.
%

Portion done: 100%

The following product has been installed:
    DEC AXPVMS UCX V4.2                     Layered Product
```

❶ Press Return to continue with the installation procedure.

❷ Answer YES to choose the POLYCENTER Software Installation utility defaults for the options or NO to choose other options.

❸ Answer YES to review the POLYCENTER Software Installation utility options.

❹ Press Return to accept the options as listed or answer NO to change the options.

9. Read the release notes online or print them after the installation completes from SYS$HELP:UCX042.RELEASE_NOTES.

10. If you had a previous version of UCX on your system:

    - Manually purge the files from the previous version, which are located in the following directories:

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

- Issue the following command to delete obsolete information in the system Help file:

  ```
  $ @SYS$UPDATE:UCX$CLEANUP_HELPLIB
  ```

  The SYS$UPDATE:UCX$CLEANUP_HELPLIB procedure takes a few minutes to complete.

11. Reboot your system, then proceed to Chapter 3 for configuration information.

2.2 Installing UCX on an OpenVMS VAX System

This section takes you through a UCX installation on an OpenVMS VAX system using the VMSINSTAL procedure. The instructions are appropriate for an initial product installation or a version upgrade.

For complete information about the VMSINSTAL procedure, refer to the *OpenVMS System Manager's Manual: Essentials*.

2.2.1 UCX Installation Procedure (OpenVMS VAX)

Install the UCX software on an OpenVMS VAX system as follows. Note that the last step requires you to reboot the system to complete the installation.

1. Complete the recommended preinstallation tasks outlined in Chapter 1.
2. Log into the SYSTEM account.
3. If another version of the UCX software exists on your system, shut down that version by issuing the following command:

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

4. Check to ensure that no one is logged onto the system.
5. Create a log file to record the installation procedure, if you want a copy for your records.
6. Set the default directory to SYS$UPDATE.
7. If you are installing the UCX software from the OpenVMS Consolidated Software Distribution CD-ROM to the OpenVMS VAX system, enter the following command:

   ```
   $ @VMSINSTAL UCX042 disc-drive:[UCX042.KITS] OPTIONS N
   ```

   where:

   - *disc-drive* is the drive where the CD-ROM that contains the save sets is mounted.
   - `OPTIONS N` instructs the procedure to display information about how to obtain online or printed release notes.

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

   ```
   $ @VMSINSTAL UCX042 ddcu: OPTIONS N
   ```

   where:

   - *ddcu:* is the device where you mounted the distribution media. The fields are:

dd — device name
c — controller name
u — unit number

- OPTIONS N instructs the procedure to display information about how to obtain online or printed release notes.

8. The interactive installation procedure begins, and you are prompted for information.

   A sample installation script is shown in Example 2–2 and Example 2–3. Numbered callouts identify those areas that require your response. The callouts are explained at the end of the examples.

Note

To stop the installation at any time, press Ctrl/Y. The installation procedure will delete any files that were created, then exit.

Example 2–2 UCX Installation: Beginning Portion of VMSINSTAL Procedure

```
    OpenVMS VAX Software Product Installation Procedure V7.1

It is 6-JUN-1997 at 11:24.

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

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

❷ * Where will the distribution volumes be mounted: SYS$MANAGER: Return

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

❸ * Products: UCX042 Return

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

The following products will be processed:

    UCX V4.2

    Beginning installation of UCX V4.2 at 11:30

%VMSINSTAL-I-RESTORE, Restoring product save set A ...
%VMSINSTAL-I-RELMOVED, Product's release notes have been moved to SYS$HELP.

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

        Product:      UCX
        Producer:     DIGITAL
        Version:      4.2
        Release Date: 1997

❻ * Does this product have an authorization key registered and loaded? YES Return
```

❶ Press Return to confirm that you have backed up your system disk.

❷ Press Return to choose SYS$MANAGER as the directory location where the distribution volumes are to be mounted.

❸ Enter UCX042, designating Version 4.2 of UCX.

❹ Enter any additional VMSINSTAL installation options you want to use, or press Return to continue.

❺ If this is an initial installation of the UCX software, press Return. If UCX is active on your system, either stand-alone or in a cluster, answer NO to purging at this point. (You will purge the files in step 11.)

❻ Answer YES to confirm that the Product Authorization Key (PAK) is installed. If the PAK is not installed, you can install it after the installation procedure.

Note that if you plan to use the UCX software for displaying DECwindows applications that use UCX on remote hosts, you do not need to install a PAK.

Example 2–3 includes a subset list of UCX files that are added to your directory during installation. For the complete list of installed files, see Appendix A.

Example 2–3 UCX Installation: Final Portion of VMSINSTAL Procedure

```
%UCX-I-DONEASK, No further questions will be asked during this installation.
%VMSINSTAL-I-RESTORE, Restoring product save set B ...

Renaming file UCX$LPD_STARTUP.COM to UCX$LPD_STARTUP.OLD;0
Please add any user printer queue information to the new file

Renaming file UCX$LPD_SHUTDOWN.COM to UCX$LPD_SHUTDOWN.OLD;0
Please add any user printer queue information to the new file

%VMSINSTAL-I-RESTORE, Restoring product save set C ...
%VMSINSTAL-I-RESTORE, Restoring product save set D ...

******************************************************************************
    This installation will add the following files . . .
******************************************************************************

    SYS$COMMON:[SYSHLP.EXAMPLES.UCX]TRACEROUTE.EXE
    SYS$COMMON:[SYSLIB]UCX$ACCESS_SHR.EXE
    SYS$COMMON:[SYS$LDR]UCX$BGDRIVER.EXE
    SYS$COMMON:[SYSEXE]UCX$BIND_VALIDATE_SETUP.EXE
    SYS$COMMON:[SYSHLP.EXAMPLES.UCX]UCX$CHESS_SUBAGENT.EXE
    SYS$COMMON:[SYSEXE]UCX$ESNMP_SERVER.EXE
    SYS$COMMON:[SYSLIB]UCX$ESNMP_SHR.EXE
    .
    .
    .
    SYS$COMMON:[SYSEXE]UCX$ENCODE.COM
    SYS$COMMON:[SYSEXE]UCX$DECODE.COM
    SYS$COMMON:[SYSEXE]UCX$TNDRIVER.STB

%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target directories...

******************************************************************************
 Instructions for Completing DIGITAL TCP/IP Services for OpenVMS Installation
******************************************************************************

        The TCP/IP Services product is already active on your system.

        You must reboot your system before continuing
        with the postinstallation.
```

(continued on next page)

Example 2–3 (Cont.) UCX Installation: Final Portion of VMSINSTAL Procedure

```
        For information on the postinstallation steps, see the
        DIGITAL TCP/IP Services for OpenVMS Installation Guide.

        If an earlier version of TCP/IP was previously installed
        on this system, then there may be some obsolete online
        help information which is present in the system help
        file, SYS$HELP:HELPLIB.HLB.

        The commands necessary to remove the obsolete help text
        items from the help library can be found in the command
        procedure:

        SYS$UPDATE:UCX$CLEANUP_HELPLIB.COM

        Due to the amount of time it takes to clean the help
        library, the procedure will not automatically be invoked.
        You should invoke it after you have successfully
        completed this installation.

Registering DIGITAL TCP/IP Services for OpenVMS privileged images ...

%REGISTER-I-DUP UCX$INETACP, (UCX$INETACP, UCX V4.2-13) already in registry
%REGISTER-I-SUMMARY  images examined: 1, dependent images: 1
%REGISTER-I-DUP UCX$METRIC, (UCX$METRIC, UCX V4.2-13) already in registry
%REGISTER-I-SUMMARY  images examined: 1, dependent images: 1
%REGISTER-I-SUMMARY  images examined: 1, dependent images: 0
%REGISTER-I-SUMMARY  images examined: 1, dependent images: 0
%REGISTER-I-DUP UCX$TRACE, (UCX$TRACE, UCX V4.2-13) already in registry
%REGISTER-I-SUMMARY  images examined: 1, dependent images: 1
%REGISTER-I-SUMMARY  images examined: 1, dependent images: 0
%REGISTER-I-DUP UCX$INETDRIVER, (UCX$INETDRIVER, UCX V4.2-13) already in registry
%REGISTER-I-SUMMARY  images examined: 1, dependent images: 1
%REGISTER-I-DUP UCX$PWIPDRIVER, (UCX$PWIPDRIVER, UCX V4.2-13) already in registry
%REGISTER-I-SUMMARY  images examined: 1, dependent images: 1
    Installation of UCX V4.2 completed at 11:50

Enter the products to be processed from the next distribution volume set.

(1) * Products: Return

    VMSINSTAL procedure done at 15:48
```

(1) Press Return to complete the installation.

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

10. Read the release notes online or print them after the installation completes from SYS$HELP:UCX042.RELEASE_NOTES.

11. If you had a previous version of the UCX software on your system:

    - Manually purge the files from the previous version, which are located in the following directories:

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

SYS$TEST

- Issue the following command to delete obsolete information in the system Help file:

  ```
  $ @SYS$UPDATE:UCX$CLEANUP_HELPLIB
  ```

  The SYS$UPDATE:UCX$CLEANUP_HELPLIB command procedure takes a few minutes to complete.

- 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.

12. Reboot your system, then proceed to Chapter 3 for configuration information.

3
Configuring UCX

After you install the UCX software successfully, you need to specify (configure) the components and characteristics you require for your particular system. This will maximize interoperability and resource sharing between your system and another OpenVMS system, UNIX system, or a system that supports the TCP/IP protocol suite and Sun Microsystems' Network File System (NFS).

The UCX product provides an easy-to-use, menu-driven configuration procedure for you to configure components and functionality.

This chapter explains the command procedure, provides sample scripts, and summarizes additional configuration and setup tasks.

3.1 Recommended Order for Configuring UCX

Table 3–1 lists the tasks involved in configuring the UCX components and functionality.

Table 3–1 Tasks: Configuring UCX

Task	Action	Go to...
1	Complete the configuration planning worksheet.	Section 1.3
2	Configure the major components and functionality using UCX$CONFIG.	Section 3.2.1
3	Configure the optional components, as applicable.	Section 3.2.2
4	Start UCX.	Section 3.4
5	Verify the configuration.	Section 3.5
6	Reboot the system, then complete additional configuration tasks, as appropriate.	Section 3.6

3.2 Using UCX$CONFIG Menus

The configuration procedure displays menus from which you do the following:

- Make selections that enable components for your system.
- Start or stop UCX.
- Verify the configuration.

Invoke the configuration procedure as follows:

```
$ @UCX$CONFIG
```

The main Configuration menu displays:

```
DIGITAL TCP/IP Services for OpenVMS Configuration Menu

Configuration options:

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

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

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

Enter configuration option:
```

The menus and associated options are as follows:

- **Core Environment**

  Software associated with the Network, Internet, and Transport layers of the TCP/IP architecture:

  BIND resolver
  Domain (mandatory)
  Routing (mandatory)
  Interfaces (mandatory)
  Time zone

- **Client Components**

  Application software and related components:

  FTP
  LPR/LPD
  NFS Client
  REXEC and RSH
  RLOGIN
  SMTP
  TELNET

- **Server Components**

  Server software and related components:

  BIND
  BOOTP
  TFTP
  FTP
  LPR/LPD
  NFS
  PC-NFS
  PORTMAPPER
  TELNET/RLOGIN
  SNMP
  NTP
  METRIC
  POP
  FINGER
  RMT

- **Optional Components**

  Additional functionality:

  PWIP Driver
  SRI QIO Interface
  Anonymous FTP account and directories

- **Shutdown**

  Stop UCX

- **Startup**

  Start UCX

- **Run Tests**

  Verify the configuration by running installation verification procedures (IVPs):

  Internet IVP
  SNMP IVP

If you do not have experience with the UCX product, you should use the configuration menus. However, if you have experience configuring UCX and want to bypass the menus, you can add one or more command parameters when you invoke UCX$CONFIG. For information about the command parameters, see Section 3.3.

3.2.1 Configuring the Core Environment and the Client and Server Components

From the main Configuration menu, enter option A to configure options 1 through 3: core environment, client components, and server components.

Note

The script example in this section shows the progression of the procedure when you choose to configure groups of components. Alternatively, you can configure one option at a time.

The Core Environment menu displays first. Enter option A to configure options 1 through 5: BIND resolver, Internet domain, routing, interfaces, and time zone. You are required to configure the domain name, routing, and interfaces options; the BIND server and time zone are optional.

```
DIGITAL 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: A Return
```

The following example configuration script reflects a system that has a previous UCX configuration in place. The script will vary somewhat for initial UCX configurations. Adjust your responses using the information on your configuration planning worksheet (Section 1.3).

```
DOMAIN Configuration

Enter Internet domain [widgets.com]: Return

INTERFACE Configuration

        The Ethernet device(s) on your system are: ESA0:

        Start of configuration questions for Internet interface SE0.
        SE0 is the Ethernet device ESA0:

 Interface: SE0
   IP_Addr: 19.112.139.14    NETWRK: 255.255.0.0     BRDCST: 19.112.139.255
    C_Addr:                C_NETWRK:                 C_BRDCST:

   Flags:
   Receive buffer:            0

* Do you want to reconfigure SE0 [YES] ? NO Return

DYNAMIC ROUTING Configuration

Dynamic Routing Configuration

Supply:     Disabled
Log:        Disabled

        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 reconfigure dynamic routing [YES] ? NO Return

The current configuration for the default route is:

                            PERMANENT database

Type           Destination                            Gateway

PN    0.0.0.0                                 19.112.139.18

* Do you want to reconfigure a default route [YES] ? NO Return

BIND RESOLVER Configuration

A BIND resolver has already been configured.

BIND Resolver Configuration

  Transport:  UDP
  Domain:     widgets.com
  Retry:         4
  Timeout:       4
  Servers:    mainsv

* Do you want to reconfigure BIND [NO] ? Return

TIME ZONE Configuration

        Please answer the following questions to configure your time zone.

        Select your geographic area using the options in the table below.
```

```
        Selection       Geographic Area
        --------------------------------
        u               USA
        ea              Eastern Australia
        ca              Central Australia
        wa              Western Australia
        ee              Eastern Europe
        ce              Central Europe
        we              Western Europe
        g               Greenwich
        n               None of the above (enter hours)

       [E]              Exit menu
        --------------------------------

Enter your choice: u Return

Does your area alternate between Daylight Savings and Standard time [Y]: Return

        Select the time zone for your area, using the options
        listed in the table below.

        Selection       Time Zone
        -------------------------
        e               Eastern
        c               Central
        m               Mountain
        p               Pacific
        g               Greenwich
        -------------------------

Enter your choice: e Return
```

After you configure options 1 through 5, the procedure returns to the Core Environment menu. Enter option E to exit. The Client Components menu displays next.

Note that the menu in the following example script shows each component disabled (default). In fact, the procedure may show some of the components to be enabled based on your past configuration or the selections you made from the Core Environment menu.

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

Configuration options:

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

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

Enter configuration option: A Return
```

Enable the client applications you plan to use, or enter option A to configure options 1 through 7: FTP client, LPD client, NFS client, RSH server, REXEC server, RLOGIN server, SMTP server, and TELNET server (shown in the following sample script).

```
******************************************************************************

FTP CLIENT Configuration

Service is not enabled on specific node.

 FTP CLIENT configuration options:

  1 - Enable service on this node

  E - Exit FTP_CLIENT configuration

Enter configuration option: 1 Return

The FTP SERVER is enabled.

* Do you want to configure FTP SERVER [NO] ? Return

******************************************************************************

LPD CLIENT Configuration

Service is not 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.

Service is disabled on specific node.

 LPD CLIENT configuration options:

  1 - Enable service on this node
  2 - Nonprivileged users can delete LPD queue entries

  E - Exit LPD_CLIENT configuration

Enter configuration option: 1 Return

The LPD SERVER is enabled.

* Do you want to configure LPD SERVER [NO] ? Return

******************************************************************************

NFS CLIENT Configuration

Service is not enabled on specific node.

 NFS CLIENT configuration options:

  1 - Enable service on this node

  E - Exit NFS_CLIENT configuration

Enter configuration option: 1 Return

******************************************************************************

RSH SERVER Configuration

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

 RSH SERVER configuration options:

  1 - Enable service on this node

  E - Exit RSH configuration

Enter configuration option: 1 Return

******************************************************************************

REXEC SERVER Configuration

Service is not defined in the SYSUAF.
Service is not defined in the UCX$SERVICE database.
Service is not enabled on specific node.
```

```
 REXEC SERVER configuration options:

  1 - Enable service on this node

  E - Exit REXEC configuration

Enter configuration option: 1 Return

*******************************************************************************

RLOGIN SERVER Configuration

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

 RLOGIN SERVER configuration options:

  1 - Enable service on this node

  E - Exit RLOGIN configuration

Enter configuration option: 1 Return

*******************************************************************************

SMTP SERVER Configuration

Service is not defined in the SYSUAF.
Service is not defined in the UCX$SERVICE database.
Configuration is not defined in the UCX$CONFIGURATION database.
Service is not enabled on specific node.

 SMTP SERVER configuration options:

  1 - Enable service on this node

  E - Exit SMTP configuration

Enter configuration option: 1 Return

*******************************************************************************

TELNET SERVER Configuration

Service is not defined in the UCX$SERVICE database.
Service is not enabled on specific node.

 TELNET SERVER configuration options:

  1 - Enable service on this node

  E - Exit TELNET configuration

Enter configuration option: 1 Return
```

After you configure the client components (and their server components, if applicable), as in the preceding example script, the Server Components menu displays.

Note that the menu in the following script shows each component disabled (default). In fact, the procedure may show some of the components to be enabled based on your past configuration or the selections you made from the Core Environment menu.

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

Configuration options:
```

```
 1  -  BIND             Disabled
 2  -  BOOTP            Disabled
 3  -  TFTP             Disabled
 4  -  FTP              Disabled
 5  -  LPR/LPD          Disabled
 6  -  NFS              Disabled
 7  -  PC-NFS           Disabled
 8  -  PORTMAPPER       Disabled
 9  -  TELNET/RLOGIN    Disabled
10  -  SNMP             Disabled
11  -  NTP              Disabled
12  -  METRIC           Disabled
13  -  POP              Disabled
14  -  FINGER           Disabled
15  -  RMT              Disabled

 A  -  Configure options 1 - 15
[E] -  Exit menu

Enter configuration option: A Return
```

Enable the server components you plan to use, or enter option A to configure all servers — options 1 through 15 (shown in the following example script).

```
*****************************************************************************

BIND SERVER Configuration

Service is not defined in the SYSUAF.
Service is not 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 Return

The UCX$AUX identifier already exists with value 375

Creating BIND Service Entry
Creating SYS$SPECIFIC:[UCX$BIND]NAMED.LOCAL
Creating SYS$SPECIFIC:[UCX$BIND]NAMED.CA

*****************************************************************************

BOOTP SERVER Configuration

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

 BOOTP SERVER configuration options:

  1 - Enable service on this node

  E - Exit BOOTP configuration

Enter configuration option: 1 Return

 The TFTP service is not configured to be enabled

 WARNING: BOOTP will not function if the TFTP
          service is disabled

 You will be asked to configure TFTP later

*****************************************************************************

TFTP SERVER Configuration
```

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

 TFTP SERVER configuration options:

  1 - Enable service on this node

  E - Exit TFTP configuration

Enter configuration option: 1 Return

*******************************************************************************

FTP SERVER Configuration

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

 FTP SERVER configuration options:

  1 - Enable service on this node

  E - Exit FTP configuration

Enter configuration option: 1 Return

The FTP CLIENT is enabled.

* Do you want to configure FTP CLIENT [NO] ? Return

*******************************************************************************

LPD SERVER Configuration

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

 LPD SERVER configuration options:

  1 - Enable service on this node

  E - Exit LPD configuration

Enter configuration option: 1 Return

Creating LPD Service Entry

DIGITAL TCP/IP Services for OpenVMS supports Line Printer Daemon
Protocol (see 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

The LPD CLIENT is enabled.

* Do you want to configure LPD CLIENT [NO] ? Return

*******************************************************************************

NFS SERVER Configuration

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

 NFS SERVER configuration options:

  1 - Enable service on this node
```

```
  E - Exit NFS configuration

Enter configuration option: 1 Return

*******************************************************************************

PC-NFS SERVER Configuration

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

 PC-NFS SERVER configuration options:

  1 - Enable service on this node

  E - Exit PC-NFS configuration

Enter configuration option: 1 Return

*******************************************************************************

PORTMAPPER SERVER Configuration

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

 PORTMAPPER SERVER configuration options:

  1 - Enable service on this node

  E - Exit PORTMAPPER configuration

Enter configuration option: 1 Return

Telnet and Rlogin are enabled from the client menu. If you wish to
disable the Telnet or Rlogin server then you must disable the service.

Press Return to continue ... Return

*******************************************************************************

SNMP SERVER Configuration

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

 SNMP SERVER configuration options:

  1 - Enable service on this node

  E - Exit SNMP configuration

Enter configuration option: 1 Return

*******************************************************************************

NTPD SERVER Configuration

Service is not defined in the SYSUAF.
Service is not enabled on specific node.

 NTPD SERVER configuration options:

  1 - Enable service on this node

  E - Exit NTPD configuration

Enter configuration option: 1 Return

*******************************************************************************

METRIC SERVER Configuration

Service is not defined in the SYSUAF.
Service is not enabled.
```

```
 METRIC SERVER configuration options:

  1 - Enable service on this node

  E - Exit METRIC configuration

Enter configuration option: 1 Return

*******************************************************************************

POP SERVER Configuration

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

 POP SERVER configuration options:

  1 - Enable service on this node

  E - Exit POP configuration

Enter configuration option: 1 Return

Creating POP Service Entry

*******************************************************************************

FINGER SERVER Configuration

Service is not enabled.

 FINGER SERVER configuration options:

  1 - Enable service on this node

  E - Exit FINGER configuration

Enter configuration option: 1 Return

*******************************************************************************

RMT SERVER Configuration

Service is not enabled.

 RMT SERVER configuration options:

  1 - Enable service on this node

  E - Exit RMT configuration

Enter configuration option: 1 Return
```

After you configure the server components, as in the preceding example script, press Return to go to the main Configuration menu. Enter option 4, Optional Components.

3.2.2 Configuring the Optional Components

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

- Run PATHWORKS or DECnet over TCP/IP.
- Run or develop applications that use the Stanford Research Institute's (SRI) QIO application programming interface (API).
- Allow guest users to log into the system at various locations.

Configure the optional components as follows:

1. Invoke the command procedure:

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

The main Configuration menu displays:

```
DIGITAL 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. Enter option 4. The Optional Components menu displays:

```
DIGITAL 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. Enter the options that are appropriate for your system: the PWIP driver, the SRI QIO interface, or Anonymous FTP accounts or directories:
   - If you want to run PATHWORKS or DECnet over TCP/IP, configure the PWIP driver by entering option 1.
   - If you run or develop applications that use the SRI QIO API, enter option 2. Alternatively, you can load the interface by issuing the following command:

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

   - If you want to allow guest users to log into the system, set up an Anonymous FTP Account and Directories by entering option 3. Make sure you obtain the necessary user information code (UIC; see Section 1.2.7) and determine guest user privileges.

3.3 Using UCX$CONFIG Option Commands

If you are an experienced user of the UCX product, you may want to bypass the configuration menus to enable or disable functionality, as follows:

1. Log into the SYSTEM account.
2. Invoke the command procedure and include the appropriate options in the command line:

or

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

For example, the following command enables the client components for the entire cluster:

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

The available options are as follows:

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, Internet interfaces, time zone, remote login, remote shell, remote executive, FTP client, FTP server, TELNET client, TELNET server, and SMTP.
MINIMUM	Configures the domain, Internet interfaces, remote login, FTP client, FTP server, TELNET client, and TELNET server.
ENABLE	Enables all the configured components.
DISABLE	Disables all the configured components.
CLUSTER	Configures all selected components clusterwide (except for the BIND server and SMTP, which you cannot configure clusterwide). If you configure at least one cluster interface, the procedure automatically enables IP forwarding.

Note

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

3.4 Starting UCX

You must start UCX after you configure the standard software and optional components, but before you run tests or customize the UCX environment.

Start UCX on your system as follows:

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

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

2. Enter option 6 to start UCX.

3.5 Verifying the Configuration

You can verify the UCX configuration by running the installation verification procedure (IVP).

You should run the IVP if the following apply:

- If you loaded the Product Authorization Key (PAK), and you want to verify that the lower-layer software and the Portmapper service are installed correctly.
- If you did not load the PAK, but you want to verify that UCX is installed correctly 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. The IVP reports the time it took to run the test to SYS$OUTPUT.

Before you run the IVP, make sure the UCX software is started and you have SYSPRV, OPER, NETMBX, and TMPMBX privileges. (You use the SETPRV command to set the privileges.)

Run the IVP as follows:

1. Invoke the command procedure:

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

2. Enter option 7. If the IVP does not complete successfully, the procedure displays error messages. All IVP errors are fatal and use the same format as system messages. For example:

   %UCX-E-IDENT, *explanation of error*.

   Table 3–2 lists some common problems that cause IVP error messages. If the recommended action does not correct the problem, contact your DIGITAL support representative.

Table 3–2 Troubleshooting 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 in the MODPARAMS.DAT file and increase them if necessary. Shut down and restart UCX.
The installation kit is defective.	Request a replacement kit.
The IVP fails because the PAK is missing.	Register a DIGITAL TCP/IP Services for OpenVMS PAK.

3. To run the IVP any time after exiting the configuration procedure, invoke the IVP command procedure as follows:

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

4. To activate the new configuration, reboot your system.

3.6 Additional Configuration Tasks

After you run the configuration procedure and enable the functionality and components appropriate for your network, you need to complete additional configuration tasks to enable access to UCX applications. UCX provides a management command interface and logical names you can use to modify or customize the software for your environment.

The additional configuration tasks include:

- Populating databases
- Setting up user accounts
- Setting up communication and NFS proxies
- Defining print queues
- Setting up, exporting, and maintaining file systems
- Tuning the system for optimum performance

For information about these and other configuration tasks, see the *DIGITAL TCP/IP Services for OpenVMS Management* guide.

3.7 Automatically Starting and Stopping UCX

To start the UCX software automatically when the system starts up, edit the SYS$MANAGER:SYSTARTUP_VMS.COM file and include the following command line after the command line that starts the procedure:

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

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

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

3.8 Automatically Starting UCX Services

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

To display the current privileges, issue:

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

If the protections are not world read and edit (*W:RE*), issue:

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

3.9 Specifying UCX as the Transport for DECwindows Applications

To enable the UCX software as the transport interface for DECwindows applications, add the following line to the SYS$MANAGER:DECW$PRIVATE_SERVER_SETUP.COM command procedure:

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

Then restart DECwindows by entering the following command:

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

If DECnet or DECnet-Plus runs on the same system, start it.

3.9 Specifying UCX as the Transport for DECwindows Applications

To display DECwindows applications from a DECwindows client (remote host) to a DECwindows server (your workstation), proceed as follows:

1. Set up security on the remote host.
2. Add the remote client to the local UCX hosts database.
3. Edit the SYS$MANAGER:DECW$PRIVATE_SERVER_SETUP.COM command procedure by adding the following line:

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

4. Set the display for the applications to the remote host:

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

A
Installed Files

The installation procedure installs all the UCX distribution files appropriate for your operating system.

If you are upgrading from a previous version of UCX, the procedure renames the configuration database in SYS$COMMON:[SYSEXE] from UCX$CONFIGURATION.DAT to UCX$CONFIGURATION.OLD.

A.1 Installed UCX Files

Table A–1 outlines the UCX files installed on your system.

Table A–1 UCX Files

File Name / Logical Name	Description
SYS$COMMON:[SYS$LDR] / SYS$LOADABLE_IMAGES:	
UCX$BGDRIVER.EXE	Internet device driver
UCX$DNFSDRIVER_V5.EXE†	OpenVMS Version 5 NFS client driver
UCX$DNFSDRIVER_V6.EXE†	OpenVMS Version 6 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
UCX$TNDRIVER.EXE	TELNET and remote login drivers
SYS$COMMON:[SYSEXE] / SYS$SYSTEM:	
UCX$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$EXE.ADF	Attributes file for NFS client
UCX$DECODE.COM	Procedure to execute UUdecode program
UCX$DNFSMOUNT_V5.EXE	VAX image

†Specific to OpenVMS VAX

(continued on next page)

Table A–1 (Cont.) UCX Files

File Name / Logical Name	Description
SYS$COMMON:[SYSEXE] / SYS$SYSTEM:	
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$DNFSACP_V6.EXE	VAX image
UCX$ESNMP_SERVER.EXE	eSNMP server
UCX$FINGER.EXE	Finger client
UCX$FINGER_SERVER.EXE	Finger server
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$HLB.ADF	Attributes file for NFS client
UCX$HR_MIB.EXE	SNMP Host Resources MIB
UCX$INETACP.EXE	Network ancillary control process (NETACP) for the Internet device driver
UCX$INETACP.STB	Global symbol definitions for UCX$INETACP.EXE
UCX$INETDRIVER.STB	Global symbol definitions for the Internet device driver
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
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$INET_ROUTING.EXE
UCX$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$METRIC.EXE	Metric server
UCX$METRIC_VIEW.EXE	Metricview utility
UCX$MIBCOMP.EXE	SNMP MIB compiler
UCX$MLB.ADF	Attributes file for NFS client
UCX$MOSY.EXE	MIB compiler images

†Specific to OpenVMS VAX

(continued on next page)

Table A–1 (Cont.) UCX Files

File Name / Logical Name	Description
SYS$COMMON:[SYSEXE] / SYS$SYSTEM:	
UCX$NET_GLOBALS.STB	Global symbol definitions for UCX data structures
UCX$NSLOOKUP.EXE	NSLOOKUP utility
UCX$NTPD.EXE	NTP service
UCX$OBJ.ADF	Attributes file for NFS client
UCX$OLB.ADF	Attributes file for NFS client
UCX$OS_MIBS.EXE	MIB-II subagent image
UCX$PCNFSD.EXE	PC-NFS server (daemon)
UCX$POP_SERVER.EXE	POP server image
UCX$PING.EXE	PING command image
UCX$PORTMAPPER.EXE	Program that maps processes to ports
UCX$RLOGIN.EXE	Remote login client
UCX$RPCGEN.EXE	Portmapper image
UCX$RPCINFO.EXE	SHOW PORTMAPPER command
UCX$RSH.EXE	Remote shell
UCX$SERVER_NFS.EXE	NFS server (daemon)
UCX$SMTP_RECEIVER.EXE	SMTP receiver
UCX$SMTP_SYMBIONT.EXE	SMTP symbiont
UCX$SNMP_AGENT.EXE	SNMP agent
UCX$SNMPI.EXE	MIB compiler images
UCX$SNMP_REQUEST.EXE	MIB browser
UCX$STB.ADF	Attributes file for NFS client
UCX$TELNET.EXE	TELNET client
UCX$TELNETSYM.EXE	TELNET print symbiont
UCX$TFTP.EXE	TFTP server (daemon)
UCX$TLB.ADF	Attributes file for NFS client
UCX$TNDRIVER.STB	Global symbol definitions for UCX$TNDRIVER.EXE
UCX$RCP.EXE	RCP image
UCX$RMT.EXE	RMT/RCD server
UCX$UCP.EXE	UCX Management Control Program (UCP)
UCX$UUENCODE.EXE	UUencode program image
UCX$UUDECODE.EXE	UUdecode program image
UCX$VERSIONS.EXE	Image for the SHOW VERSION command
SYS$COMMON:[SYSLIB] / SYS$LIBRARY:	
UCX$ACCESS_SHR.EXE	Database access routines
UCX$CFS_SHR.EXE	Container file system runtime library
UCX$ESNMP_SHR.EXE	Sharable image version of routines in UCX$SNMP:*.OLB

(continued on next page)

Table A–1 (Cont.) UCX Files

File Name / Logical Name	Description
SYS$COMMON:[SYSLIB] / SYS$LIBRARY:	
UCX$INETDEF.ADA	Internet Ada definitions file
UCX$INETDEF.BAS	Internet BASIC 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$INETDEF.PLI	Internet PL/1 definitions file
UCX$INETDEF.R32	Internet BLISS definitions file
UCX$IPC_SHR.EXE	IPC runtime library
UCX$IPC.OLB	IPC object library
UCX$LPD_SHR.EXE	Shared library for printing processes
UCX$RPCXDR.H	Sun RPC header file
UCX$RPCXDR_SHR.EXE	Sun RPC routines library
UCX$SDA.EXE	SDA extensions
UCX$SMTP_MAILSHR.EXE	SMTP shared library
UCX$SMTP_PARSESHR.EXE	SMTP parsing routines
SYS$COMMON:[UCX$LIB.RPC] / SYS$LIBRARY:	
UCX$RPCXDR.OLB	Library file for Portmapper service
SYS$COMMON:[UCX$LIB.SNMP] / SYS$LIBRARY:	
UCX$ESNMP.OLB	Library file for creating SNMP subagents
SYS$COMMON:[SYSHLP] / SYS$HELP:	
UCX042.RELEASE_NOTES	Release notes
UCX$FTP_HELP.HLB	FTP online help
UCX$TELNET_HELP.HLB	TELNET online help
UCX$NSLOOKUP_HELP.HLB	NSLOOKUP online help
UCX$UCP_HELP.HLB	Online help for the management commands
UCX$VMS_FILES.DOC	Online information about file restrictions for UNIX users of NFS server
SYS$COMMON:[SYSHLP.EXAMPLES.UCX] / UCX$EXAMPLES:	
BUILD_UCX_SECURITY_DRIVER.COM	Sample file to build the security driver

(continued on next page)

Table A–1 (Cont.) UCX Files

File Name / Logical Name	Description
SYS$COMMON:[SYSHLP.EXAMPLES.UCX] / UCX$EXAMPLES:	
TN3270DEF.MAR	For IBM 3270TE; translation table template that you edit to modify the translation tables
TRACEROUTE.EXE	Traceroute facility
UCX$CHESS_SUBAGENT.EXE	Linker image
UCX$INTERNET_SERVICES_V6_SEC.EXE†	Internet software with security for OpenVMS Version 6
UCX$INTERNET_SERVICES_V5_SEC.EXE	Internet software with security for OpenVMS Version 5
UCX$IOCTL_ROUTINE.C	C Programming example
UCX$NFSSETUP.COM	NFS setup procedure
UCX_SECURITY_DRIVER.MAR	MACRO security driver source sample
UCX$TCP_CLIENT_IPC.C	C Programming example
UCX$TCP_CLIENT_QIO.C	C Programming example
UCX$TCP_CLIENT_QIO.MAR	C Programming example
UCX$TCP_SERVER_IPC.C	C Programming example
UCX$TCP_SERVER_IPC_AUXS.C	C programming example
UCX$TCP_SERVER_QIO.C	C Programming example
UCX$TCP_SERVER_QIO.MAR	MACRO Programming example
UCX$TCP_SERVER_QIO_AUXS.C	C programming example
UCX$TCP_SERVER_QIO_AUXS.2ND.C	C programming example
UCX$TCP_SOCKET_QIO.3RD.C	C programming example
UCX$TCP_SOCKET_QIO_3RD.H	Data and structure definitions that make up the exterior interface to UCX$TCP_SOCKET_QIO_3RD.C
UCX$TRACE.EXE	Protocol trace facility
UCX$TRACE_HAS_MOVED.EXE	Trace facility
UCX$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
UCX$UDP_SERVER_QIO.2ND.C	C programming example
UCX$UDP_SERVER_QIO.3RD.C	C programming example
UCX$UDP_SERVER_QIO.MAR	MACRO Programming example
SYS$COMMON:[SYSHLP.EXAMPLES.UCX.SNMP] / UCX$EXAMPLES:	
CHESS_METHOD.C	C programming example
CHESS_MIB.C	C programming example
CHESS_MIB.MY	Sample MIB chess game

†Specific to OpenVMS VAX

(continued on next page)

Table A–1 (Cont.) UCX Files

File Name / Logical Name	Description
SYS$COMMON:[SYSHLP.EXAMPLES.UCX.SNMP] / UCX$EXAMPLES:	
CHESS_SUBAGENT.OPT	Linker options file
CHESS_TBL.C	C programming example
CHESS_TBL.H	C header file
SYS$COMMON:[SYSHLP.EXAMPLES.UCX.RPC] / UCX$EXAMPLES:	
DIR_EXAMPLE.COM	DIR program procedure
DIR.X	Remote OpenVMS directory listing protocol
DIR_SERVER.C	C programming example
MSG.X	Remote message printing protocol
MSG_EXAMPLE.COM	Local version of PRINTMSG program procedure
MSG_SERVER.C	C programming example
PRINTMSG.C	C programming example
RLS.C	C programming example
RPRINTMSG.C	C programming example
SYS$COMMON:[SYSMGR] / SYS$MANAGER:	
SYS$NET_SERVICES_UCX.COM	DCL interface support procedure
UCX$BINDSETUP.COM	BIND setup procedure
UCX$BINDSETUP_HELP.TXT	Information about setting up the BIND server
UCX$BIND_SHUTDOWN.COM	BIND server shutdown procedure
UCX$BIND_STARTUP.COM	BIND server startup procedure
UCX$BOOTP_SHUTDOWN.COM	Remote boot server shutdown procedure
UCX$BOOTP_STARTUP.COM	Remote boot server startup procedure
UCX$CALLBACKS.COM	Configuration procedure
UCX$CONFIG.COM	Configuration procedure
UCX$DNFS_SHUTDOWN.COM	NFS client shutdown procedure
UCX$FINGER_SHUTDOWN.COM	Finger server shutdown procedure
UCX$FINGER_SRVR_STARTUP.COM	Finger server startup procedure
UCX$FTPD_SHUTDOWN.COM	FTP server shutdown procedure
UCX$FTPD_STARTUP.COM	FTP server startup procedure
UCX$INET_STARTUP.COM	Internet startup procedure
UCX$INET_SHUTDOWN.COM	Internet shutdown procedure
UCX$LOAD_INETDRIVER.COM	Command file that loads the SRI QIO programming interface
UCX$LPD_RCV_STARTUP.COM	Print receiver startup procedure
UCX$LPD_STARTUP.COM	Print server startup procedure

(continued on next page)

Table A–1 (Cont.) UCX Files

File Name / Logical Name	Description
SYS$COMMON:[SYSMGR] / SYS$MANAGER:	
UCX$LPD_SHUTDOWN.COM	Print server shutdown procedure
UCX$METRIC_STARTUP.COM	Metric startup procedure
UCX$METRIC_SHUTDOWN.COM	Metric shutdown procedure
UCX$NFS_SERVER_STARTUP.COM	NFS server startup procedure
UCX$NFS_SHUTDOWN.COM	NFS server shutdown procedure
UCX$NFS_STARTUP.COM	NFS client startup procedure
UCX$PCNFSD_SHUTDOWN.COM	PC-NFS server shutdown procedure
UCX$PCNFSD_STARTUP.COM	PC-NFS server startup procedure
UCX$PORTM_SHUTDOWN.COM	Portmapper shutdown procedure
UCX$PORTM_STARTUP.COM	Portmapper startup procedure
UCX$PRINTCAP.DAT	Printcap database
UCX$REGISTER.COM	Command file that registers privileged UCX images for OpenVMS Version 6.2
UCX$REMOTE_TTY_STARTUP.COM	TELNET and remote login server startup procedure
UCX$REXECD_STARTUP.COM	Remote executive startup procedure
UCX$RSHD_STARTUP.COM	Remote shell startup procedure
UCX$SERVICE_SETUP.COM	UCX services set up procedure
UCX$SHUTDOWN.COM	UCX shutdown procedure
UCX$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$SNMPD_MIR.DAT	SNMP dictionary of MIB variables
UCX$STARTUP.COM	UCX startup procedure
UCX$SYMBOLS.COM	Configuration logical names
UCX$TELNET_SHUTDOWN.COM	TELNET shutdown procedure
UCX$TFTP_SHUTDOWN.COM	TFTP shutdown procedure
UCX$TFTP_STARTUP.COM	TFTP startup procedure
UCX$TIMEZONE.COM	Time zone procedure
UCX$UCP_STARTUP.COM	Management control program startup
SYS$COMMON:[SYSMSG] / SYS$MESSAGES:	
UCX$MSG.EXE	UCX message file
SYS$COMMON:[SYSTEST.UCX] / SYS$TEST:	

(continued on next page)

Table A–1 (Cont.) UCX Files

File Name / Logical Name	Description
SYS$COMMON:[SYSTEST.UCX] / SYS$TEST:	
UCX$INET_IVP.EXE	Auxiliary server IVP
UCX$RPCIVP_CLIENT.EXE	RPC client routines IVP
UCX$RPCIVP_SERVER.EXE	RPC server routines IVP
UCX$SNMPIVP.EXE	SNMP IVP
SYS$COMMON:[SYSTEST]	
UCX$IVP.COM	UCX IVP procedure
SYS$COMMON:[SYSUPD]	
UCX$CLEANUP.COM	Procedure to remove UCX software from the OpenVMS system
UCX$CLEANUP_HELPLIB.COM	Procedure to update the UCX help library

A.2 Installed UCX Files for PATHWORKS Systems

Table A–2 lists and describes the files for PATHWORKS systems that are installed on your system.

Table A–2 PATHWORKS Files

File	Description
SYS$COMMON:[SYSLIB]PWIP$SDA.EXE	PATHWORKS extensions to SDA
SYS$COMMON:[SYSEXE]UCX$PWIPACP.EXE	PATHWORKS IP ACP
SYS$COMMON:[SYS$LDR]UCX$PWIPDRIVER.EXE	PATHWORKS IP driver
SYS$COMMON:[SYSEXE]UCX$PWIPDRIVER.STB	Global symbol definitions for UCX$PWIPDRIVER.EXE
SYS$COMMON:[SYSMGR]UCX$PWIP_SHUTDOWN.COM	PATHWORKS IP driver shutdown
SYS$COMMON:[SYSMGR]UCX$PWIP_STARTUP.COM	PATHWORKS IP driver startup
SYS$COMMON:[SYSEXE]UCX$PWIPSHUT.EXE	PATHWORKS IP driver shutdown
SYS$COMMON:[SYSEXE]UCX$PWIPSYM.STB	Global symbol definitions for UCX$PWIPSYM.EXE

Index

A

Anonymous FTP
  configuring UCX to use, 3–11

C

CD-ROM distribution kit
  inspecting, 1–2
Configuration worksheet, 1–5
Configuring UCX
  client components, 3–5 to 3–7
  core environment, 3–3 to 3–5
  description of major tasks, 1–1
  optional components: PWIP driver, SRI QIO interface, Anonymous FTP, 3–11
  server components, 3–7 to 3–11
  tasks, recommended order, 3–1
  time required, 1–1
  UCX$CONFIG menus, description of, 3–1 to 3–3
  using UCX$CONFIG menus, 3–3
  using UCX$CONFIG option commands, 3–12

D

DECnet over TCP/IP
  configuring UCX to use, 3–11
DECwindows
  defining TCP transport for UCX, 3–15
  PAK information for UCX, 2–6
  requirements for UCX installation, 1–2
Disk
  space requirements, 1–3
  system, backing up, 1–2
Distribution kit
  inspecting, 1–2

G

Global pagelets and sections
  increasing, 1–3
  requirements, 1–3

H

Help files
  deleting obsolete, 1–1

I

Installation Verification Procedure (IVP)
  description of, 3–14
Installing UCX
  description of major tasks, 1–1
  files installed on the system, A–1 to A–8
  on an OpenVMS Alpha system, 2–1 to 2–4
  on an OpenVMS VAX system, 2–4 to 2–8
  time required, 1–1

L

License
  registering the UCX PAK, 1–2

M

Magnetic tape distribution kit
  inspecting, 1–2
Memory requirements, 1–3

N

Nonpaged dynamic pool
  increasing, 1–4

O

OpenVMS operating system
  upgrading, 1–2

P

PAK, 1–2
PATHWORKS
  configuring UCX to use, 3–11
  PWIP driver
    files installed for, A–8
  PWIP Driver
    requirements for installation, 1–2
  requirement, interrupt stack pages, 1–4

POLYCENTER Software Installation utility
for installing or upgrading UCX (OpenVMS Alpha), 2–1 to 2–4
Postconfiguration tasks, 3–15
Preparing to configure UCX
configuration worksheet, 1–5
Preparing to install UCX
tasks, 1–1 to 1–5

R

Release notes
printing, 2–3, 2–7

S

SRI QIO
configuring UCX to use, 3–11
Starting UCX, 3–13 to 3–15
Stopping UCX, automatically, 3–15
SYS$UPDATE:UCX$CLEANUP_HELPLIB.COM, description of, 1–1
System parameters
checking and changing before installing UCX, 1–3 to 1–4

T

Tasks
major, installing and configuring UCX, 1–1
TK50 distribution kit
inspecting, 1–2
Troubleshooting
configuration procedure problems, 3–14

U

UCX license
for DECwindows applications, 2–6
registering the PAK, 1–2
UCX$CONFIG menus
description of, 3–1 to 3–3
UIC codes
assigning, 1–5
Upgrading UCX
on an OpenVMS Alpha system, 2–1 to 2–4
on an OpenVMS VAX system, 2–4 to 2–8
User access
configuring UCX to allow guest users to log into the system, 3–11

V

Verifying the UCX configuration, 3–14
VMSINSTAL procedure
for installing or upgrading UCX (OpenVMS VAX), 2–4 to 2–8