ULTRIX

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Guide to Server Setup

ULTRIX

Guide to Server Setup

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About This Manual

This guide tells how to set up a server processor to provide specific services to registered clients. These instructions assume that the server processor already has an ULTRIX/UWS Version 4.0 operating system installed. The software subset containing support for the maintenance operations protocol (MOP) must also be installed for you to use your system as a server.

Audience

The audience for this manual is anyone installing and maintaining the server. The manual assumes the following:

- You, or a Digital Field Service representative, have checked the hardware to ensure that it is working properly.

- You have read the Owner's Manuals supplied with your hardware.

- You know the location and function of the controls and indicators on your hardware.

- You understand how to load and unload the installation media and any disks needed during the installation.

- You know how to use ULTRIX software.

Organization

Chapter 1	Overview	
	Explains the purpose and contents of the server.	
Chapter 2	Setting Up for Diskless Management Services	
	Describes how to install the server for diskless management services.	
Chapter 3	Setting Up for Remote Installation Services	
	Describes how to install the server for remote installation services.	
Appendix A	RISC Supported Software Subsets	
	Contains a table listing the RISC software subsets with a brief description of each.	
Appendix B	VAX Supported Software Subsets	
	Contains a table listing the VAX software subsets with a brief description of each.	

Related Documentation

The following list suggests the order in which you should read the related documentation:

1. Hardware documentation

   You should have on hand the hardware documentation associated with your processor, particularly the Owner's Manual. These manuals show you how to set up the processor and its additional devices. These manuals also supply valuable troubleshooting guidelines.

2. *Release Notes*

   Before beginning the installation, you should read the current version of the *Release Notes*.

3. System and network management guides

   Read the appropriate system and network management guides to help you prepare to install the server.

4. *Guide to Diskless Management Services*

   Read the *Guide to Diskless Management Services* to help you set up the server for diskless management services.

5. *Guide to Remote Installation Services*

   Read the *Guide to Remote Installation Services* to help you set up the server for remote installation services.

Conventions

The following conventions are used in this manual:

#	A number sign is the default superuser prompt.
>>> CPU*nn*>>	The console subsystem prompt is two right angle brackets on RISC systems, or three right angle brackets on VAX systems. On a system with more than one central processing unit (CPU), the prompt displays two numbers: the number of the CPU, and the number of the processor slot containing the board for that CPU.
user input	This bold typeface is used in interactive examples to indicate typed user input.
system output	This typeface is used in interactive examples to indicate system output and also in code examples and other screen displays. In text, this typeface is used to indicate the exact name of a command, option, partition, pathname, directory, or file.
. . .	A vertical ellipsis indicates that a portion of an example that would normally be present is not shown.

cat(1)	Cross-references to the *ULTRIX Reference Pages* include the appropriate section number in parentheses. For example, a reference to cat(1) indicates that you can find the material on the cat command in Section 1 of the reference pages.
RETURN	This symbol is used in examples to indicate that you must press the named key on the keyboard.
Mbyte	Throughout the text, the abbreviation Mbyte is used for megabyte. One megabyte equals 1,048,576 bytes.

Overview 1

You can set up a server for both VAX and RISC clients with ULTRIX/UWS Version 4.0, independent of the architecture of the system that will act as the server. Therefore, a VAX or a RISC system can serve both VAX and RISC clients. This guide describes how to set up a server.

1.1 Server Purposes

The server provides two distinct functions:

- Setup for serving diskless clients

  You can install software into a diskless server area using the diskless management services utility, dms. Then, diskless clients can be registered and can access the software in the diskless server area as if that software were located on their local systems.

- Setup for remote installation services

  You can install ULTRIX software using the remote installation services utility, ris. Then, licensed users can be registered and can install ULTRIX software on their systems using the network as the distribution device.

1.2 Distribution Media

The distribution media to use for your server depends on the type of equipment you have.

The distribution kit contains TK50 tape cartridges, MT9 tapes, CDROM optical discs or an RA60 disk pack. Table 1-1 contains a list of media labels and contents for each type of media. The device special file name for a tape kit is /dev/rmt$n$h. The special file name for a CDROM kit is /dev/rz$n$c. The special file name for an RA60 kit is /dev/??nc. The letter n represents the unit number of the distribution device.

Table 1-1: Distribution Media Labels and Contents

Media Type	Distribution Media Label	Contents
RISC-Specific:		
TK50	ULTRIX/UWS V4.0 (RISC) SUPPORTED SUBSETS VOLUME 1	Supported software subsets
	ULTRIX/UWS V4.0 (RISC) SUPPORTED SUBSETS VOLUME 2	
	ULTRIX/UWS V4.0 (RISC) UNSUPPORTED SUBSETS	Unsupported software subsets
MT9	ULTRIX/UWS V4.0 (RISC) SUPPORTED SUBSETS VOLUME 1	Supported software subsets
	ULTRIX/UWS V4.0 (RISC) SUPPORTED SUBSETS VOLUME 2	
	ULTRIX/UWS V4.0 (RISC) SUPPORTED SUBSETS VOLUME 3	
	ULTRIX/UWS V4.0 (RISC) UNSUPPORTED SUBSETS	Unsupported software subsets
CDROM	ULTRIX/UWS V4.0 (RISC) SUPPORTED/UNSUPPORTED SUBSETS	Supported and unsupported subsets for RISC systems
VAX-Specific:		
TK50/MT9	ULTRIX/UWS V4.0 (VAX) SUPPORTED SUBSETS	Supported software subsets
	ULTRIX V4.0 (VAX) UNSUPPORTED SUBSETS	Unsupported software subsets
CDROM RA60	ULTRIX/UWS V4.0 (VAX) SUPPORTED/UNSUPPORTED SUBSETS	Supported and unsupported subsets for VAX systems

1.3 Server/Client Version Compatibility

The tables that follow list the software versions that are supported for the server and for the clients.

The following ULTRIX versions are compatible for DMS servers and their clients:

Table 1-2: DMS ULTRIX Version Compatibility Table

Server's Running System Version	Versions Available for Clients
ULTRIX V4.0	ULTRIX WS 4.0
	ULTRIX-32 V3.1/ULTRIX WS V2.1
	ULTRIX-32 V3.1/ULTRIX WS V2.2
	ULTRIX-32 V3.1D/ULTRIX WS V2.2D

The following ULTRIX versions are compatible for RIS servers and their clients:

Table 1-3: RIS ULTRIX Version Compatibility Table

Server's Running System Version	Versions Available for Clients
ULTRIX V4.0	ULTRIX WS 4.0

1.4 Knowledge Required

Depending on the type of server setup you plan, you must know how to perform the applicable procedures from the list that follows:

- Log in to the superuser account.

- Set up a diskless server area using the dms utility, which is described in the *Guide to Diskless Management Services*.

- Set up a remote installation services area using the ris utility, which is described in the *Guide to Remote Installation Services*.

Setting Up for Diskless Management Services 2

File systems and administrative files for diskless clients are located on the server. Each diskless server area contains two types of file systems:

- One or more dlenv file systems that contain the diskless environment. The components of a diskless environment are one or more common root directories. The dlenv file system also holds a shared software area within each common root area that contains the usr area, where read-only data files and executable files are located.

- One or more dlclient file systems where a copy of each registered diskless client's portion of the common root directory and client-specific files are located. When the client boots, this shared usr area is automatically mounted via the Network File System (NFS) by each client.

Throughout this guide, the server file systems are designated dlenv*n* and dlclient*n*. The root directories can be either root*n*.mips or root*n*.vax. Throughout this guide the common root directories are designated root*n*.mips. The letter *n* represents the number assigned to the specific file system or common root directory when it is installed. The portion of the common root directory that is copied to each registered client is designated client_name.root.

A server processor may have several diskless server areas. Each common root*n*.mips directory of each dlenv*n* file system may contain a different set of software products to provide a distinct software environment for a group of licensed diskless clients to share. The files in the usr area of a particular root*n*.mips directory are shared by all the clients registered for that environment.

Disk space is required on the server for each diskless server area file system. The sections that follow provide guidelines for estimating the disk space you need.

2.1 Disk Space Required for the dlenv File System

Each common root*n*.mips area contains at least the mandatory ULTRIX and ULTRIX Worksystem Software subsets, plus other supported subsets and additional software desired for clients who are registered to access that area.

In addition, reserve the following:

- About 20% of the disk space for file system administration, like adding files, and for file system information

- Enough space for any layered products, such as DECnet, that you plan to install

Table 2-1 shows the approximate sizes of the software subsets for some ULTRIX products that you might want to install.

Table 2-1: Approximate Disk Space Required

Software Subsets	Approximate Size in Mbytes (RISC)	Approximate Size in Mbytes (VAX)
All ULTRIX	150	93
All ULTRIX unsupported	36	42

Allow 20% of the disk partition size for file system administration and information. In addition, be sure to allow space for any other software products you plan to install.

For example, you might calculate the space requirement for a `dlenv` file system to be accessed by RISC clients as follows:

```
All ULTRIX                   150 Mbytes
All ULTRIX unsupported        36 Mbytes
One layered product           50 Mbytes

Subtotal                     236 Mbytes

20% file system allowance     47 Mbytes

Total                        283 Mbytes
```

2.2 Disk Space Required for the dlclient File System

You must allow disk space in each `dlclient` file system on the server for clients' `root` directories and, in some cases, for clients' swap files and for clients to crash dump over the network to the server.

Use the following guidelines for your estimates:

- Allow a minimum of 10 Mbytes for each client's `root` area.

- If network crash dump to the server will be enabled, add an amount equal to the client's memory size plus its kernel size.

- If any of the client's swap files will be located on the server, you may want to allow two to three times the client's physical memory size depending on need.

- The clients' volatile files, like those in the `tmp` directory, and volatile directories like `var/spool` and `var/adm/crash` are located in `dlclient?` and require space.

- Clients that add files to their `client_name.root` areas use space.

You can estimate the space that different clients in a group require and spread that amount of space over the whole group when determining your `dlclient?` disk space requirements.

Use the formulas that follow to help you estimate the space you need in the `dlclient` file system.

The formula to determine the minimum amount of space required for the clients' `root` areas, with an example, follows:

```
Number of    10 Mbytes      Minimum
Clients   *  Root Area  =   dlclient Space
5         *  10         =   50 Mbytes
```

The formula to determine the amount of additional space you need if clients can dump across the network, with an example, follows:

```
Number of      (Client Memory      Kernel      Additional dlclient
Clients    *    Size (Mbytes)   +   Size)    =   Space for Dump

3          *    (8              +   2.5)     =   31.5 Mbytes

2          *  · (16             +   2.5)     =   37 Mbytes
```

If clients' swap files are located on the server, two to three times the client's physical memory size depending on need is required. The formula to determine the amount of additional space required, with an example using three times each client's physical memory size, follows:

```
Number of      (Client Memory                   Additional dlclient
Clients    *    Size (Mbytes)    *   2-3)   =  · Space for Swap

3          *    ( 8              *   3)     =   72 Mbytes

2          *    (16             *   3)     =   96 Mbytes
```

Using the examples given with the formulas, plus an allowance of 15 Mbytes per client for user files, the dlclient would require about 365 Mbytes of disk space on the server for five clients.

```
Root Space              50 Mbytes
Swap Space             168 Mbytes
Crash Dump Space        69 Mbytes
User Space              75 Mbytes

Total Space Required   362 Mbytes
```

2.3 Installing the Software

You must allocate disk partitions for the diskless server area file systems using the idms utility option Create Diskless Area on Disk and install software using the dms utility option Install Software to install subsets to a diskless server area. See the *Guide to Diskless Management Services* for information.

Note

Be sure that software subsets you install to either /dlenv?/root?.mips or /dlenv?/root?.vax are specific to the system architecture served by that directory.

2.3.1 Installing from Tape Media

Follow this procedure to install the server for diskless management services from tape media:

1. Log in and become the superuser.

2. Invoke the dms utility by typing:

   # **/etc/dms**

3. Allocate disk partitions for the diskless server area file systems. Follow the instructions in the *Guide to Diskless Management Services* to set up the necessary file systems for a diskless server area.

4. Load the first tape volume containing the supported software for your clients' architecture type, either RISC or VAX. You will be prompted when to unload each tape volume and to load the next.

5. Select the `Install Software` option from the `dms` menu. If you need step-by-step instructions for the software installation procedure, see the *Guide to Diskless Management Services.*

6. When the ULTRIX software subsets you selected have been installed, remove the tape volume.

7. Register clients using the `Add Client Processor` option.

2.3.2 Installing from CDROM Media

Follow this procedure to install the server for diskless management services from CDROM media:

1. Log in and become the superuser.

2. Mount the CDROM labeled ULTRIX/UWS V4.0 (RISC) SUPPORTED/UNSUPPORTED SUBSETS. For example, if your CDROM drive unit is 4 on a DECstation 3100, you would enter the following command:

   ```
   # mount -r /dev/rz4c /mnt
   ```

3. Invoke the `dms` utility by typing:

   ```
   # /etc/dms
   ```

4. Allocate disk partitions for the diskless server area file systems. Follow the instructions in the *Guide to Diskless Management Services* to set up the necessary file systems for a diskless server area.

5. Select the `Install Software` option from the `dms` menu. If you need step-by-step instructions for the software installation procedure, see the *Guide to Diskless Management Services.*

6. When you are prompted for the device special file name or mount point, your entry depends on the architecture type of the clients to be served.

   If you are setting up an environment to serve RISC clients, enter the following response:

   ```
   /mnt/RISC/BASE
   ```

   If you are setting up an environment to serve VAX clients, enter the following response:

   ```
   /mnt/VAX/BASE
   ```

7. A menu appears listing the ULTRIX software subsets with a prompt for your selections. The ULTRIX software subsets you select are installed.

8. Register clients using the `Add Client Processor` option.

9. Unmount the CDROM labeled ULTRIX/UWS V4.0 (RISC) SUPPORTED/UNSUPPORTED SUBSETS using the following command:

```
# umount /mnt
```

Store the media and this guide in a safe place.

Setting Up for Remote Installation Services   3

You need approximately 150 Mbytes on the server's disk to set up a remote installation services area containing all the ULTRIX software for remote installation services for RISC clients. You need approximately 93 Mbytes on the server's disk to set up a remote installation services area containing all the ULTRIX software for remote installation services for VAX clients. This space is necessary for the file system containing the /usr/adm/ris directory.

See Appendix A for information about subsets for RISC clients and Appendix B for information about subsets for VAX clients.

3.1 Installing the Server

The instructions that follow describe how to install the server for remote installation services from tape media and from CDROM media.

3.1.1 Installing from Tape Media

Follow these steps to install the server from tape media:

1. Log in and become the superuser.

2. Load the first tape volume containing the supported software for your clients' architecture type, either RISC or VAX. You will be prompted when to unload each tape volume and to load the next.

3. Invoke the ris utility by typing:

    # /etc/ris

4. Select the Install Software option from the ris menu. If you need step-by-step instructions for the software installation procedure, see the *Guide to Remote Installation Services*.

    The prompt for the device special file name appears.

5. Type the full pathname of the device special file.

6. The ris utility loads the software subsets into the remote installation services area.

7. Unload the last tape volume containing the supported software.

8. Register clients using the Add Client Processor option.

3.1.2 Installing from CDROM Media

Follow these steps to install the server from CDROM media:

1. Log in and become the superuser.

2. Mount the CDROM labeled ULTRIX/UWS V4.0 (RISC) SUPPORTED/UNSUPPORTED SUBSETS. For example, if your CDROM drive unit is 4 on a DECstation 3100, you would enter the following command:

    ```
    # mount -r /dev/rz4c /mnt
    ```

3. Invoke the `ris` utility by typing:

    ```
    # /etc/ris
    ```

4. Select the `Install Software` option from the `ris` menu. If you need step-by-step instructions for the software installation procedure, see the *Guide to Remote Installation Services*.

5. When you are prompted for the device special file name or mount point, your entry depends on the architecture type of the clients to be served.

    If you are setting up an environment to serve RISC clients, enter the following responses to install both the supported and unsupported subsets:

    ```
    /mnt/RISC/BASE
    /mnt/RISC/UNSUPPORTED
    ```

    If you are setting up an environment to serve VAX clients, enter the following responses to install both the supported and unsupported subsets:

    ```
    /mnt/VAX/BASE
    /mnt/VAX/UNSUPPORTED
    ```

6. A menu appears listing the ULTRIX software subsets with a prompt for your selections. The ULTRIX software subsets you select are installed.

7. Register clients using the `Add Client Processor` option.

RISC Software Subsets **A**

This appendix contains software subset information for RISC client processors.

Table A-1 lists the supported software subsets and gives the size in `root`, `/usr`, and the total size for each subset.

Table A-1: RISC Supported Software Subset Sizes

Subset Name	Kilobytes Used root	usr	var	Total
UDTACCT400	0	266	0	266
UDTAFM400	0	872	0	872
UDTBASE400	4512	23400	34	27946
UDTBIN400	12	26440	0	26452
UDTCOMM400	13	1024	0	1037
UDTDCMT400	0	1434	0	1434
UDTDL400	144	4008	0	4152
UDTEXER400	0	1421	0	1421
UDTINET400	355	5069	153	5577
UDTINTL400	0	501	0	501
UDTKERB400	0	2695	760	3455
UDTMAN400	0	4229	0	4229
UDTMH400	1	7591	1	7593
UDTMOP400	26	582	136	744
UDTNFS400	210	1427	478	2115
UDTPGMR400	0	7323	0	7323
UDTPRINT400	36	2939	1	2976
UDTRPCDEV400	0	608	90	698
UDTRPCRT400	0	282	1191	1473
UDTSCCS400	0	1256	0	1256
UDTSEC400	81	894	0	975
UDTUMAIL400	28	669	0	697
UDTUUCP400	0	582	1031	1613
UDWDECW400	0	12218	0	12218
UDWFONT15400	0	3002	0	3002
UDWFONT400	0	2661	0	2661
UDWMAN400	0	1559	0	1559
UDWSER400	5	5061	0	5066
UDWX11400	0	6873	0	6873
UDWXDEV400	0	13275	0	13275

Table A-2 lists each supported software subset for RISC clients and gives a brief description of its contents. The table also lists subset dependencies.

Table A-2: RISC Supported Software Subset Descriptions

Subset Name	Contents	Dependencies
UDTACCT400	Accounting Software Programs and data files needed to perform system accounting. This subset contains log files that grow automatically. It is intended for users familiar with ULTRIX system administration. This subset is optional.	
UDTAFM400	Adobe Font Metric Files Font metrics (character bounding box, width, name, ligature, kerning, and font properties) for PostScript outline fonts used by text formatting applications in PostScript output devices. This subset is optional.	
UDTBASE400	Base System Fundamental utilities and data files for the ULTRIX operating system. Base System includes the C compiler and linker, the editors, and all of the general-purpose programs. This subset is required and cannot be removed.	Required
UDTBIN400	Kernel Configuration Files Utility programs and binary files required to configure ULTRIX kernels. This subset must be installed during installation but can be deleted afterwards.	Required at installation Required to install some layered products, like DECnet
UDTCOMM400	Communications Utilities Utilities for several types of serial communications with other systems, including tip, ftp, and telnet.	Requires: UDTINET400 Required for: UDTUUCP400 UDTMH400
UDTDCMT400	Document Preparation Software The nroff text formatter with related files, as well as utilities useful for producing documents. This subset is optional.	
UDTDL400	Diskless Support Environment Software for a diskless environment. This subset is required only for diskless management services.	Requires: UDTMOP400
UDTEXER400	System Exerciser Package Programs that help in diagnosing problems with your VAX hardware and peripheral devices. This subset is optional.	

Table A-2: (continued)

Subset Name	Contents	Dependencies
UDTINET400	TCP/IP Networking Utilities Programs and data used to implement Internet networking on your ULTRIX system. This subset is optional.	Required for: UDTCOMM400 UDTNFS400 UDTUMAIL400 Kernel configuration: INET option
UDTINTL400	Internationalization Tools Tools used for developing international software.	Requires: UDTPGMR400
UDTKERB400	Kerberos Network Authentication Programs and data used to implement Kerberos network authentication on your ULTRIX system.	
UDTMAN400	Online Manual Pages Online copies of the reference pages included in your *ULTRIX Reference Pages*. These reference pages are stored in a language specific to the nroff text formatter. This subset is optional.	Requires: UDTDCMT400
UDTMH400	The RAND Mail Handler Programs that constitute the RAND Corporation MH mail reader interface. This subset is optional.	Requires: UDTCOMM400
UDTMOP400	Maintenance Operations Protocol Software necessary to use your system as a boot server for Local Area Terminal devices such as DECserver 100. This subset is optional.	Required for: network operations Kernel configuration: DLI option
UDTNFS400	Network File System Utilities Programs and data files you need to share file systems over the network. This subset contains the files used to implement the Yellow Pages facility. This subset is optional.	Requires: UDTINET400 Kernel configuration: NFS option RPC option
UDTPGMR400	Software Development Utilities Libraries and utilities useful for software development. These include the libraries for linking programs to be analyzed with the dbx debugger, the lint program verifier, and the lex and yacc parser packages. This subset is optional.	
UDTPRINT400	Printer Support Environment Printer commands lpr, lpq, and lpd, utilities, configuration files, line printer filters, and PostScript printer support. This subset is optional.	

Table A-2: (continued)

Subset Name	Contents	Dependencies
UDTRPCDEV400	RPC Development Environment Programs and data that implement the Remote Procedure Call (RPC) development environment. This subset is optional.	Requires: UDTPGMR400
UDTRCPRT400	Programs and data that implement the Remote Procedure Call (RPC) runtime environment. This subset is optional.	
UDTSCCS400	Source Code Control System Programs that make up the UNIX Source Code Control System, which provides a regulation mechanism for large software projects. This subset is optional.	
UDTSEC400	Enhanced Security Features Programs and data that provide enhanced security features. This subset is optional.	
UDTUMAIL400	Extended (Berkeley) Mailer Programs and data that implement the BSD sendmail facility.	Requires: UDTINET400
UDTUUCP400	Unix-to-Unix Copy Facility Programs and data files needed to let your system participate in a network of machines using the UNIX UUCP facility to transmit files over serial communications lines. This subset is optional.	Requires: UDTCOMM400
UDWDECW400	Additional DECwindows Applications Additional X11/DECwindows client applications such as DECwindows Mail, Calendar, and PostScript Previewer.	Requires: UDTCOMM400 and UDTMH400 for DECwindows Mail
UDWFONT15400	X11/DECwindows 100dpi Fonts Workstation font files for systems using either the VR160 15-inch monitor or higher resolution graphics.	
UDWFONT400	X11/DECwindows 75dpi Fonts Fonts for X11/DECwindows.	
UDWMAN400	UDW Reference Pages Online reference pages for the programs and files contained in the X11/DECwindows windowing software. This subset is optional.	Requires: UDTDCMT400
UDWSER400	X11/DECwindows Servers X11/DECwindows server support.	
UDWX11400	X11/DECwindows User Environment X Window System client programs.	Requires: UDTINET400
UDWXDEV400	Worksystem Development Software Library and data files needed to produce X Window System client applications. Includes example programs demonstrating how to get started.	Requires: UDTPGMR400

VAX Software Subsets B

This appendix contains supported software subset information for VAX client processors.

Table B-1 lists the supported software subsets and gives the size in `root`, `/usr`, and the total size for each subset.

Table B-1: VAX Supported Software Subset Sizes

| Subset Name | Kilobytes Used | | | |
	root	usr	var	Total
ULTACCT400	0	145	0	145
ULTAFM400	0	872	0	872
ULTBASE400	2767	12400	34	15200
ULTBIN400	12	6054	0	6067
ULTBSC400	0	209	0	209
ULTCOMM400	13	628	0	641
ULTDCMT400	0	1038	0	1038
ULTDL400	83	1406	0	1489
ULTEXER400	0	863	0	863
ULTINET400	218	2971	105	3294
ULTINTL400	0	286	0	286
ULTKERB400	0	1304	537	1841
ULTMAN400	0	4299	0	4299
ULTMH400	1	4495	1	4497
ULTMOP400	26	330	84	439
ULTNFS400	115	767	261	1144
ULTPASCAL400	0	722	0	721
ULTPGMR400	0	3873	0	3873
ULTPRINT400	19	2169	1	2189
ULTRPCDEV400	0	418	53	471
ULTRPCRT400	0	282	740	1022
ULTSCCS400	0	732	0	732
ULTSEC400	251	548	0	799
ULTUMAIL400	28	424	0	452
ULTUUCP400	0	340	630	970
ULTVAXC400	0	879	0	879
UWS3DFONT400	0	3923	0	3923
UWSDECW400	0	7770	0	7770
UWSFONT15400	0	2977	0	2977

Table B-1: (continued)

| Subset Name | Kilobytes Used | | | |
	root	usr	var	Total
UWSFONT400	0	2637	0	2637
UWSMAN400	0	1559	0	1559
UWSPSVIEW400	0	3689	0	3689
UWSSER400	5	5079	0	5084
UWSX11400	0	4059	0	4059
UWSXDEV400	0	7213	0	7213

Table B-2 lists each supported software subset for VAX clients and gives a brief description of its contents. The table also lists subset dependencies.

Table B-2: VAX Supported Software Subset Descriptions

Subset Name	Contents	Dependencies
ULTACCT400	Accounting Software Programs and data files needed to perform system accounting. This subset contains log files that grow automatically. It is intended for users familiar with ULTRIX system administration. This subset is optional.	
ULTAFM400	Adobe Font Metric Files Font metrics (character bounding box, width, name, ligature, kerning, and font properties) for PostScript outline fonts used by text formatting applications in PostScript output devices. This subset is optional.	
ULTBASE400	Base System Fundamental utilities and data files for the ULTRIX operating system. Base System includes the C compiler and linker, the editors, and all of the general-purpose programs. This subset is required and cannot be removed.	Required
ULTBIN400	Kernel Configuration Files Utility programs and binary files required to configure ULTRIX kernels. This subset must be installed during installation but can be deleted afterwards.	Required at installation Required to install some layered products, like DECnet
ULTBSC400	Bisynchronous Communications Programs needed to use the 3780 and 2780 emulation features provided with your ULTRIX system. This subset is optional.	Kernel configuration: BSC option
ULTCOMM400	Communications Utilities Utilities for several types of serial communications with other systems, including `tip`, `ftp`, and `telnet`.	Requires: ULTINET400 Required for: ULTUUCP400 ULTMH400

Table B-2: (continued)

Subset Name	Contents	Dependencies
ULTDCMT400	Document Preparation Software The `nroff` text formatter with related files, as well as utilities useful for producing documents. This subset is optional.	
ULTDL400	Diskless Support Environment Software for a diskless environment. This subset is required only for diskless management services.	Requires: ULTMOP400
ULTEXER400	System Exerciser Package Programs that help in diagnosing problems with your VAX hardware and peripheral devices. This subset is optional.	
ULTINET400	TCP/IP Networking Utilities Programs and data used to implement Internet networking on your ULTRIX system. This subset is optional.	Required for: ULTCOMM400 ULTNFS400 ULTUMAIL400 Kernel configuration: INET option
ULTINTL400	Internationalization Tools Tools used for developing international software.	Requires: ULTPGMR400
ULTKERB400	Kerberos Network Authentication Programs and data used to implement Kerberos network authentication on your ULTRIX system.	
ULTMAN400	Online Manual Pages Online copies of the reference pages included in your *ULTRIX Reference Pages*. These reference pages are stored in a language specific to the `nroff` text formatter. This subset is optional.	Requires: ULTDCMT400
ULTMH400	The RAND Mail Handler Programs that constitute the RAND Corporation MH mail reader interface. This subset is optional.	Requires: ULTCOMM400
ULTMOP400	Maintenance Operations Protocol Software necessary to use your system as a boot server for Local Area Terminal devices such as DECserver 100. This subset is optional.	Required for: network operations Kernel configuration: DLI option
ULTNFS400	Network File System Utilities Programs and data files you need to share file systems over the network. This subset contains the files used to implement the Yellow Pages facility. This subset is optional.	Requires: ULTINET400 Kernel configuration: NFS option RPC option

Table B-2: (continued)

Subset Name	Contents	Dependencies
ULTPASCAL400	Pascal PASCAL language compiler and associated libraries and tools. This subset is optional.	
ULTPGMR400	Software Development Utilities Libraries and utilities useful for software development. These include the libraries for linking programs to be analyzed with the dbx debugger, the lint program verifier, and the lex and yacc parser packages. This subset is optional.	
ULTPRINT400	Printer Support Environment Printer commands lpr, lpq, and lpd, utilities, configuration files, line printer filters, and PostScript printer support. This subset is optional.	
ULTRPCDEV400	RPC Development Environment Programs and data that implement the Remote Procedure Call (RPC) development environment. This subset is optional.	Requires: ULTPGMR400
ULTRCPRT400	Programs and data that implement the Remote Procedure Call (RPC) runtime environment. This subset is optional.	
ULTSCCS400	Source Code Control System Programs that make up the UNIX Source Code Control System, which provides a regulation mechanism for large software projects. This subset is optional.	
ULTSEC400	Enhanced Security Features Programs and data that provide enhanced security features. This subset is optional.	
ULTUMAIL400	Extended (Berkeley) Mailer Programs and data that implement the BSD sendmail facility.	Requires: ULTINET400
ULTUUCP400	Unix-to-Unix Copy Facility Programs and data files needed to let your system participate in a network of machines using the UNIX UUCP facility to transmit files over serial communications lines. This subset is optional.	Requires: ULTCOMM400
ULTVAXC400	VAX C Development Package VAX C language compiler and associated libraries and tools. This subset is optional.	
UWS3DFONT400	VS35XX X11/DECwindows Fonts X/11 fonts for VAXstation 3520/40.	
UWSDECW400	Additional DECwindows Applications Additional X11/DECwindows client applications such as DECwindows Mail, Calendar, and PostScript Previewer.	Requires: ULTCOMM400 and ULTMH400 for DECwindows Mail

Table B-2: (continued)

Subset Name	Contents	Dependencies
UWSFONT15400	X11/DECwindows 100dpi Fonts Workstation font files for systems using either the VR160 15-inch monitor or higher resolution graphics.	
UWSFONT400	X11/DECwindows 75dpi Fonts Fonts for X11/DECwindows.	
UWSMAN400	UWS Reference Pages Online reference pages for the programs and files contained in the X11/DECwindows windowing software. This subset is optional.	Requires: ULTDCMT400
UWSPSVIEW400	VS35XX PostScript Previewer PostScript Previewer, available only with the VAXstation 3520/40 distribution kit.	
UWSSER400	X11/DECwindows Servers X11/DECwindows server support.	
UWSX11400	X11/DECwindows User Environment X Window System client programs.	Requires: ULTINET400
UWSXDEV400	Worksystem Development Software Library and data files needed to produce X Window System client applications. Includes example programs demonstrating how to get started.	Requires: ULTPGMR400

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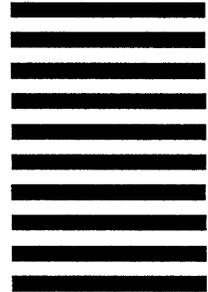
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