DEC OSF/1

Release Notes

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FIELD TEST DRAFT (X1.2-11)

digital equipment corporation
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About This Document

This document contains release notes for DEC OSF/1 X1.2-11.

Audience

The release notes are for the person who installs the product and for anyone using the product following installation.

Organization

This document contains the following chapters:

Chapter 1	Discusses installation and startup
Chapter 2	Contains processor–specific information
Chapter 3	Contains information about base operating system software
Chapter 4	Contains information about worksystem software
Chapter 5	Discusses errors and omissions in DEC OSF/1 manuals and reference pages

Related Documents

You should have the following documentation available:

- The hardware documentation for your system
- The online reference pages
- The manuals that ship with this release

Conventions

The following conventions are used in this guide:

%	A percent sign represents the C shell system prompt. A dollar
$	sign represents the system prompt for the Bourne and Korn shells.

`#`	A number sign represents the superuser prompt.
`% cat`	Boldface type in interactive examples indicates typed user input.
file	Italic (slanted) type indicates variable values, placeholders, and function argument names.
[|] **{ | }**	In syntax definitions, brackets indicate items that are optional and braces indicate items that are required. Vertical bars separating items inside brackets or braces indicate that you choose one item from among those listed.
. . .	In syntax definitions, a horizontal ellipsis indicates that the preceding item can be repeated one or more times.
`cat`(1)	A cross-reference to a reference page includes the appropriate section number in parentheses. For example, `cat`(1) indicates that you can find information on the `cat` command in Section 1 of the reference pages.
Ctrl/*x*	This symbol indicates that you hold down the first named key while pressing the key or mouse button that follows the slash. In examples, this key combination is enclosed in a box (for example, Ctrl/C).

Installation Notes 1

The following notes apply to the installation of DEC OSF/1 X1.2-11. For installation notes specific to individual processors, see Chapter 2, *Processor-Specific Notes;* for information specific to setting up a workstation, see Chapter 4.

Note

Do not attempt to install DEC OSF/1 X1.2-11 without first reading the notes appropriate to your processor in Chapter 2, *Processor-Specific Notes.* Failure to read these notes may result in serious installation problems.

1.1 Disk Space Required for Installation

Table 1-1 describes disk space in terms of the kilobytes (KB) that are required to install each DEC OSF/1 subset. Use the `df -k` command to determine free disk space in kilobytes (1024-byte units). By default, the `df` command displays free space in blocks (512-byte units).

Table 1-1: DEC OSF/1 X1.2-11 Subset Names and Sizes

Subset	root Size (Kbytes)	/usr Size (Kbytes)	/var Size (Kbytes)	Total (Kbytes)
OSFACCT120	1.879	423.712	0.361	425.952
OSFAFM120	—	902.731	—	902.731
OSFBASE120	7158.760	19866.700	66.776	27092.200
OSFBASE121	278.528	1583.660	—	1862.190
OSFBIN120	—	28805.200	—	28805.200
OSFBIN121	—	705.248	—	705.248
OSFBINCOM120	0.033	6128.440	—	6128.470
OSFBINCOM121	—	63.422	—	63.422
OSFCDAPGMR120	—	2413.490	—	2413.490
OSFCLINET120	842.246	3325.260	0.512	4168.020

Table 1-1: (continued)

Subset	root Size (Kbytes)	/usr Size (Kbytes)	/var Size (Kbytes)	Total (Kbytes)
OSFCLINET121	—	73.728	—	73.728
OSFCMPLRS120	—	12683.900	—	12683.900
OSFDCMT120	—	473.530	—	473.530
OSFDCMTEXT120	—	1317.590	—	1317.590
OSFDECW120	—	6739.630	—	6739.630
OSFDFARTL330120	—	1592.170	—	1592.170
OSFDPSFONT120	—	2214.170	—	2214.170
OSFEMACS120	—	14212.900	—	14212.900
OSFEMACS121	—	2032.620	—	2032.620
OSFEMACSRC120	—	7873.830	—	7873.830
OSFEXER120	—	1236.990	—	1236.990
OSFFONT120	—	1861.020	—	1861.020
OSFFONT15120	—	2328.270	—	2328.270
OSFHWBASE120	1074.830	819.020	15.574	1909.420
OSFHWBIN120	—	23648.600	—	23648.600
OSFHWBIN121	—	2127.050	—	2127.050
OSFINET120	294.223	868.256	175.479	1337.960
OSFKTOOLS120	77.120	168.171	2170.170	2415.460
OSFLAT120	3.538	412.985	—	416.523
OSFLEARN120	—	654.273	—	654.273
OSFLVM120	—	3053.780	—	3053.780
OSFMANOP120	—	2504.140	—	2504.140
OSFMANOP121	—	35.091	—	35.091
OSFMANOS120	—	4913.060	—	4913.060
OSFMANOS121	—	72.058	—	72.058
OSFMANRT120	—	114.431	—	114.431
OSFMANWOP120	—	3335.310	—	3335.310
OSFMANWOS120	—	972.261	—	972.261
OSFMANWOS121	—	7.329	—	7.329
OSFMH120	—	6820.940	—	6820.940
OSFMITFONT120	—	7054.480	—	7054.480
OSFNFS120	10.148	450.552	—	460.700

Table 1-1: (continued)

Subset	root Size (Kbytes)	/usr Size (Kbytes)	/var Size (Kbytes)	Total (Kbytes)
OSFNFS121	6.093	114.688	—	120.781
OSFOTMBASE100120	—	161.368	—	161.368
OSFPGMR120	—	12678.900	—	12678.900
OSFPGMR121	—	1745.930	—	1745.930
OSFPRINT120	15.961	1097.990	0.512	1114.460
OSFRCS120	—	947.399	—	947.399
OSFRCSSRC120	—	883.029	—	883.029
OSFRIS120	—	30.564	33.792	64.356
OSFRIS121	—	27.312	—	27.312
OSFRTBIN120	—	31790.500	—	31790.500
OSFRTBIN121	—	734.328	—	734.328
OSFRTDEV120	—	114.236	—	114.236
OSFRTHWBIN120	—	24247.700	—	24247.700
OSFRTHWBIN121	—	2199.790	—	2199.790
OSFSCCS120	—	710.088	—	710.088
OSFSER120	—	6787.950	—	6787.950
OSFSER121	—	134.712	—	134.712
OSFSVID2120	5.854	308.266	—	314.120
OSFUUCP120	2.469	3238.980	7.680	3249.130
OSFVET120	—	1154.540	—	1154.540
OSFX11120	—	15799.900	—	15799.900
OSFX11121	—	76.315	—	76.315
OSFXCDADEV120	—	796.431	—	796.431
OSFXDEV120	—	21553.000	—	21553.000
OSFXMAIL120	—	706.510	—	706.510
OSFXMIT120	—	4092.150	—	4092.150
OSFXVET120	—	330.183	—	330.183
TOTALS	9771.680	309353.000	2470.860	321595.000

1.2 Installation Will Hang If Installing to ULTRIX-formatted Disk

If you are installing to a system disk that was previously formatted for ULTRIX, the installation will hang. To work around this problem, follow these steps:

1. At the console, enter the `show dev` command to determine the device number of the ULTRIX disk.
2. Boot your system with the DEC OSF/1 X1.2-11 installation media.
3. After the installation media boots, select the `System Management Option` from the following menu:

```
Select one of the following options:


        1) BASIC Installation
        2) ADVANCED Installation

        3) System Management

Enter your choice: 3
```

4. Change your working directory to `/dev` by entering the following command:

```
# cd /dev
```

5. Make the necessary device special files for the ULTRIX-formatted disk by entering a command like the following, replacing the italic *unit_number* with the actual unit number of your disk:

```
# ./MAKEDEV rzunit_number
```

6. Change your working directory to `root` as follows:

```
# cd /
```

7. Relabel your ULTRIX-formatted disk by entering a command like the following, replacing the italic *unit_number* with the actual unit number of your disk:

```
# disklabel -z /dev/rrzunit_numberc
```

   When the `disklabel` utility asks if you want to overwrite the disk, answer **yes.**

8. Type CTRL-D to return to the installation menu, where you can select either a BASIC or an ADVANCED installation and install to any disk.

1.3 Clock Problems to Ignore

During the installation of DEC OSF/1 X1.2-11 when the kernel reboots, the following message appears, which you can ignore:

```
WARNING: clock lost 344 days
```

In addition, the date during the installation jumps back to `Sun Oct 18 12:01:17 GMT 1992`, but corrects itself later.

1.4 Must Edit Configuration File If Running PXG

If you have a system with a PXG option, you must edit the configuration file during the installation in order for the system to build a target kernel. To edit the configuration file, follow these steps:

1. When the installation script presents you with the following prompt, answer **yes**:

   ```
   Do you want to edit the configuration file? (y/n) [n]:
   y
   ```

   The `doconfig` program will place you in the `ed` editor.

2. Search for the word "controller," as follows:

   ```
   /controller
   controller      scc0       at tc0       slot  7 vector    sccintr
   ```

3. Include the necessary PXG line by entering the following commands:

```
a
controller      fb0        at tc0       slot  8 vector    fbint
.
w
q
2441
```

The system will now be able to configure a target kernel for the PXG option.

1.5 Tailored Configuration File Has Incorrect NVRAM Entry

If you have a NVRAM TurboChannel option on your system, after the installation of DEC OSF/1 X1.2-11 completes, the tailored configuration file will not contain the correct entry for the `nvtc0` controller. To work around this problem, follow these steps:

1. Log in as `root` or become superuser.
2. Change your working directory to `/sys/conf`.
3. Using the text editor of your choice, edit the tailored configuration file for your system (or the Realtime configuration file if you are running

Realtime). The tailored configuration file will have the same name as your system in all capital letters.

4. Search for the following line:

```
#UNSUPPORTED    nvtc0      at tc0       slot  5
```

5. Replace that line with the following line:

```
controller    nvtc0      at tc0       slot  5
```

   When you have ensured that the edit is correct, write and quit the file.

6. Reconfigure your kernel.

   To reconfigure your kernel, enter the following command, replacing the italic *MACHINE_NAME* with the name of your machine in capital letters or if you are running Realtime, with the name of your Realtime configuration file:

```
# doconfig -c MACHINE_NAME
```

   The `doconfig` command allows you to edit the configuration file. The following prompt appears immediately after you invoke the `doconfig` command with the `-c` option:

```
Do you want to edit the configuration file (y/n) [n]?
```

   Answer `no` to this prompt.

   The `doconfig` program then displays the following message as it begins to rebuild your kernel:

```
*** PERFORMING SYSTEM CONFIGURATION ***
   .
   .
   .
```

7. Make a backup copy of your kernel and then move the new kernel to `root` by entering the following commands, replacing the italic *MACHINE_NAME* with the name of your machine in capital letters, or if you are running Realtime, with the name of your Realtime configuration file:

```
# mv /vmunix /vmunix.orig
# mv /sys/MACHINE_NAME/vmunix /
```

8. To bring in the new kernel, reboot your system by entering the following

command:

```
# shutdown -r now
```

Processor-Specific Notes 2

This chapter discusses processor–specific notes related to DEC OSF/1 X1.2-11 software. The following processors are discussed:

- DEC 3000
- DEC 4000
- DEC 7000

2.1 DEC 3000 Processors

The following notes apply to the DEC 3000 series processors.

2.1.1 Required Console Firmware Revision

The required console firmware revision for DEC 3000 systems in DEC OSF/1 X1.2-11 is V2.0. To determine if your system's console is at the required revision level, enter the `show config` command at the console prompt as follows:

```
>>> show config
```

If the revision is not V2.0, do not install DEC OSF/1 X1.2-11 and contact your Digital representative immediately.

2.1.2 Connecting I/O Devices Incorrectly May Damage the I/O Board

Do not connect any devices, including a mouse device, to a DEC 3000 series processor when the system is powered up. If you do so, the I/O board will be damaged.

2.1.3 RIS Warning Message to Ignore

When doing a RIS installation of DEC OSF/1 X1.2-11 from an ULTRIX server to an DEC 3000 client, you may see the following warning message,

which you can ignore:

```
Unexpected MOP response code of %d, continuing...
```

2.1.4 DEFZA FDDI TURBOchannel Support Added

In DEC OSF/1 X1.2-11, support has been added for the DEFZA FDDI TURBOchannel option.

2.1.5 Setting the BOOT_RESET Console Variable to On

If you have a DEFTA FDDI option, you must set the console variable BOOT_RESET to on before you install DEC OSF/1 X1.2-11, or you will get an infinite series of "stray interrupt" messages when you try to boot.

To set the BOOT_RESET variable to on, enter the following command at the console prompt:

```
>>> set boot_reset on
```

Note

You must reset the BOOT_RESET variable to on if you have new firmware installed or if you need to reboot the generic kernel (genvmunix) at any time to reconfigure your system for additional peripherals.

2.2 DEC 4000 Processor

The following notes apply to the DEC 4000 processor.

2.2.1 Required Console Firmware Revision

In order to install DEC OSF/1 X1.2-11, you must be running V2.5-5744 firmware. To determine the revision of the console that your machine is running, enter the following command at the console prompt:

```
>>> show version
```

If the revision is not V2.5-5744, do not install DEC OSF/1 X1.2-11 and contact your Digital representative immediately.

Note

You must set the console terminal scroll rate to `fast scroll` before installing v2.5-5744 of the DEC 4000 console. Failure to do so will cause the machine to hang when booting the console.

2.2.2 Corrupted Dates in Watch Chip Cause DEC 4000 System Console Crashes

Set the `screen_mode` environment variable to `off` before installing the updated console firmware and before installing DEC OSF/1 X1.2-11. During the month of December, reset the watch chip using the following console command before attempting to display the date using the `date` command or before executing the `show config` command:

```
>>> date 197006010000
```

Version V2.5 (and earlier) of the DEC 4000 Console Firmware will crash if a corrupted date is present in the watch chip and certain console commands are executed. DEC OSF/1 X1.2-11 writes corrupted dates to the watch chip during December.

If the watch chip is accessed from the console, by the `date` or `show config` commands, the console will report an Access Violation and crash/reinitialize.

If the `screen_mode` environment variable is set to `on`, the console attempts to read the date from the watch chip so that it can be displayed on the powerup screen. If the date is corrupted, the console will enter an infinite reset loop.

Should the reset loop be inadvertently triggered, contact your Field Service representative.

2.2.3 Do Not Set the Date Using the DEC 4000 Console date Command

DEC OSF/1 X1.2-11 and the DEC 4000 console firmware store different date representations in the system watch chip. As a result, dates set with the DEC OSF/1 X1.2-11 `date` command will always be displayed as a date in the year 1970 by the DEC 4000 console, and dates set using the DEC 4000 console `date` command will cause DEC OSF/1 X1.2-11 to report that the clock gained approximately 22 years.

Therefore, do not set the date using the DEC 4000 console `date` command and ignore the date presented by the DEC 4000 console in the full-screen system powerup display.

When rebooting DEC OSF/1 X1.2-11 after running another version of the operating system, check and reset the date.

When rebooting using a different DEC OSF/1 X1.2-11 root partition, check and reset the date.

2.2.4 Supported Devices

The following table lists the devices currently supported by the DEC 4000 SCSI subsystem and their firmware revision number:

Table 2-1: DEC 4000 Supported Devices

Device Name	Firmware Revision
RZ26	T384
RZ56	0400
RZ57	5000
RZ73	T384
RRD42	4.5D
TLZ04	1615
TLZ06	0374
TSZ07	0305
TZ30	TBD
TZ85	2403

2.2.5 Cannot Install With a TLZ06 Tape Drive Connected

You cannot install DEC OSF/1 X1.2-11 with a TLZ06 tape drive connected to your system. To work around this problem, follow these steps:

1. Disconnect the TLZ06 tape drive from your system.
2. Install DEC OSF/1 X1.2-11.
3. After the installation is complete, reattach the TLZ06 tape drive to your system and reconfigure your kernel.

   To reconfigure your kernel, enter the following command, replacing the italic *MACHINE_NAME* with the name of your machine in capital letters or if you are running Realtime, with the name of your Realtime

configuration file:

```
# doconfig -c MACHINE_NAME
```

The `doconfig` command allows you to edit the configuration file. The following prompt appears immediately after you invoke the `doconfig` command with the `-c` option:

```
Do you want to edit the configuration file (y/n) [n]?
```

Answer `no` to this prompt.

The `doconfig` program then displays the following message as it begins to rebuild your kernel:

```
*** PERFORMING SYSTEM CONFIGURATION ***
   .
   .
   .
```

4. Make a backup copy of your kernel and then move the new kernel to `root` by entering the following commands, replacing the italic *MACHINE_NAME* with the name of your machine in capital letters, or if you are running Realtime, with the name of your Realtime configuration file:

```
# mv /vmunix /vmunix.orig
# mv /sys/MACHINE_NAME/vmunix /
```

5. To bring in the new kernel, reboot your system by entering the following command:

```
# shutdown -r now
```

2.2.6 Supported SCSI Cables

The following table lists the only SCSI cables supported by the DEC 4000 processor.

Table 2-2: DEC 4000 Supported SCSI Cables

SCSI Cable	Description
BC06P-*nn*	100 ohm impedance standard SCSI connector, both ends

Table 2-2: (continued)

SCSI Cable	Description
BC09D-*nn*	100 ohm impedance standard SCSI connector: one end, high density connector, the other end (STORME CONNECTOR)

2.2.7 The Revision 0 NCR 53C710 SCSI Controller is Not Supported

Due to known problems in revision 0 of the NCR 53C710 SCSI controller, the DEC OSF/1 X1.2-11 SCSI driver for the DEC 4000 will not support these controllers. These problems can cause the system to take a fatal machine check when a SCSI parity error occurs, or cause a SCSI bus to hang under moderate loads. While the kernel will still boot and run with the revision 0 controllers, systems running with these controllers will not be supported. When booting, the OSF/1 kernel will print the following message for each revision 0 controller it finds:

```
siop_init:      **** NCR53C710 REV 0 NOT SUPPORTED ****
cam_logger: CAM_ERROR packet
cam_logger: bus 1
siop_init
siop_hardintr: rev 0 chip not supported
```

If these messages are printed when DEC OSF/1 X1.2-11 boots then contact your Digital representative for a hardware upgrade of the I/O module.

2.2.8 Modem Control Unsupported on Serial Lines

The DEC 4000 does not support modem control on either of the serial lines (console and alternate console port).

2.3 DEC 7000 Processor

The following notes apply to the DEC 7000 processor.

2.3.1 Required Console Firmware Revision

The minimum revision for the DEC 7000 console depends on the CPU hardware revision in your system.

For CPU module revisions prior to M06, the minimum console version is V1.6-2258[A35]. For CPU module revisions M06 and later, the minimum console version is V1.7-2258[A35]. The firmware upgrade utility can determine if your CPU module is M06 or latter and will install the correct version of console for that module.

To determine the console revision of your processor, enter the following command:

```
>>> sh version
```

If the system has the minimum console revision, it will display output like the following for a CPU module revision prior to M06:

```
version                 V1.6-2258[A35]
```

Note

Once this new console is installed, it will not be possible to boot Field Test 1 kernels, you will only be able to boot Field Test Update kernels (DEC OSF/1 X1.2-11). The boot will fail very early on with the following error:

```
Halt Code =  5
HALT instruction executed
PC = 3dffc4
boot failure
```

2.3.2 DEC 7000 Boot Problems With KZMSA Modules

DEC OSF/1 X1.2-11 will not boot on DEC 7000 systems with KZMSA modules with firmware revision levels 4.2 or lower, and more than 512 MB of memory. These problems will be fixed by the next release of the KZMSA adapter firmware. To work around this problem, remove memory modules from the system to reduce the memory to 512 MB or less.

2.3.3 Warning Messages to Be Ignored

The following warning messages appear during system boot and may be

ignored:

```
WARNING: BB_WATCH invalid time. lost battery backup on clock. csrd.vrt
is clear.
WARNING: lost battery backup clock -- CHECK AND RESET THE DATE!
```

2.3.4 DEC 7000 Supported Adapters

The following adapters are supported by the DEC 7000 in DEC OSF/1 X1.2-11:

Note

Only one KDM70 controller is supported for DEC OSF/1 X1.2-11 and it must be on `xmi0`. Systems are configured with their `xmi` on `hose 0` by default.

Table 2-3: DEC 7000 Supported Adapters

Name	Number Tested	Latent Support	Supported Interface
KDM70	1	6	DSA interface for RA disks and TA tapes
DEMFA	8	–	FDDI interface
DEMNA	8	–	Ethernet interface
KZMSA	5	8	SCSI adapter
CIXCD-AC	1	–	CI adapter

2.3.5 Minimum Revision for DEMFA, KDM70, and DEMNA Adapters

The minimum revision for the DEMFA, KDM70, and DEMNA adapters has not changed since External Field Test. To determine the revision of your DEMFA adapter, enter the following command at the console:

```
>>> show config
```

If the system has the correct revision, it will display output like the following

for each adapter:

```
1+     DEMNA    (0C03)  0802  demna0
4+     DEMFA    (0823)  0514  demfa0
C+     KDM70    (0C22)  28F0  kdm700
```

2.3.6 DEC 7000 Systems With CIXCD-AC Adapters

The following notes apply to DEC 7000 systems with CIXCD-AC adapters.

2.3.6.1 CIXCD-AC Only Supported for Data Disks

In DEC OSF/1 X1.2-11, the CIXCD-AC adapter is supported on data disks only. The system disk is not supported at this time.

2.3.6.2 Minimum Firmware Revisions for CIXCD-AC and HSC

The minimum revision for the CIXCD-AC is F211; the minimum revision for the HSC controller is V400 (v4.0). Note that only the HSC40/50/70/90 controllers are supported in DEC OSF/1 X1.2-11.

2.3.6.3 Hardware Configuration Restriction

During the installation of DEC OSF/1 X1.2-11, the CIXCD-AC adapter must be configured on the XMI before any KDM70 controllers are configured, that is, the CIXCD-AC's XMI node number must be less than the XMI node number of any KDM70. For example, a supported configuration during installation would have the CIXCD-AC at node 2 on the XMI and a KDM70 at node 12. This restriction only applies to the installation phase of operation.

2.3.7 DEC 7000 Systems With KZMSA Adapters

The following notes apply to DEC 7000 systems with KZMSA adapters.

2.3.7.1 Minimum Firmware Revision for KZMSA Adapters

To operate SCSI buses with no configuration restrictions, the minimum firmware revision is for the KZMSA is Rev 42. To determine the firmware revision of your KZMSA adapter, enter the `show config` command at the console prompt, as follows:

```
>>> show config
```

If you have Rev 42 firmware, the `show config` command will return the

following line:

```
B+    KZMSA    (0C36)  5142  kzmsa1
```

Note that the system will run with Rev 3F firmware, but this is not recommended.

2.3.7.2 KZMSA Configuration Restrictions

It is necessary to remove SCSI tape devices from the DEC 7000 systems in order to reliably install DEC OSF/1 X1.2-11.

After DEC OSF/1 X1.2-11 installation, SCSI tape devices may be re-connected but must not be connected to KZMSA adapter that has the system disk or has any disks with swap partitions (or files) on them. Please note that a single KZMSA adapter has two SCSI busses, so care must be exercised when re-connecting SCSI tape devices.

On KZMSA adapters that do not have the system disk or any disks with swap partions (or files) on them, there are no configuration restrictions, that is any combination of disks and/or tapes can be connected to a SCSI bus, up to the SCSI limit of 7.

If you know the special file name for your tape drive(s) (for example, `/dev/rmt0h`) it is not necessary to reconfigure the kernel to include a newly re-connected tape drive. You may simply use `MAKEDEV` to make the special file and access the drive normally.

If you do not know the special file name for your tape drive(s), the easiest way to re-configure is to boot `genvmunix` and use `sizer` and `doconfig` to build a new tailored kernel as you normally would if you added a new device.

2.3.8 DEC 7000 Supported Memory

Up to 512MB of memory is supported for DEC 7000 processors in DEC OSF/1 X1.2-11.

Base System Software Notes 3

This chapter discusses issues and known problems with the base operating system and, when possible, provides solutions or workarounds to the problems.

The following topics are discussed in this chapter:

- Commands and Utilities
- Functions and System Calls
- System Administration
- Network and Communications
- Programming Environment

3.1 Commands and Utilities

The following sections discuss issues and known problems with commands and utilities.

3.1.1 csh and Incorrect Return Values

Due to problems with the `getrusage` system call, `csh` incorrectly returns a value of 0 for each of the following fields when the builtin `time` function or the `time` shell variable is used:

`%D`	Kilobytes of data space.
`%F`	Number of page faults.
`%K`	Kilobytes of stack space.
`%M`	Total kilobytes of memory.
`%W`	Number of times the process was swapped.
`%X`	Kilobytes of text space.

What follows is an example to illustrate the problem:

```
csh set time = ( 0 "%X text %D data %K stack %M memory %F faults %W swaps"  )
csh ls /usr/bin/ > /dev/null
0 text 0 data 0 stack 0 memory 0 faults 0 swaps
```

There is no workaround to this problem.

3.1.2 /bin/dump and /usr/sbin/dump Are Not the Same

Because of a build problem, `/bin/dump` and `/usr/sbin/dump` are not the same. We recommend that you use `/usr/sbin/dump` and that before filing any QARs that you can ensure that the problem occurs with `/usr/sbin/dump`.

3.1.3 Loaders/Stackers Support for dd, cpio, tar, dump

If you are using stackers or loader storage devices, you must manually change the cartridge. When the utility has finished filling the cartridge, it will prompt you for the next cartridge. It will not automatically select the next cartridge for you.

3.1.4 The egrep Command Does Not Match Patterns That Contain Equivalence Classes or Collating Symbols

The `egrep` command does not correctly match patterns that contain equivalence classes or collating symbols. In the following example, `[[=a=]]` is an equivalence class and `[[.ch.]]` is a collating symbol in the Spanish locale. The `egrep` command should find matches for both patterns in the string ''chapa,'' but does not find any matches:

```
$ setenv LANG es_ES.88591
$ echo chapa | egrep '[[.ch.]]'
$ echo chapa | egrep '[[=a=]]'
$
```

3.1.5 Several Utilities Do Not Accept Collating Symbols in Regular Expressions

The utilities `csplit`, `ed`, `red`, `expr`, `grep`, `nl`, `pg`, and `sed` do not accept regular expressions that contain collating symbols. For example, `[[.ch.]]` is a collating symbol in the Spanish locale. Although you should be able to search for it with the `grep` command, `grep` considers it an invalid regular expression and returns an error, for example:

```
$ setenv LANG es_ES.88591
$ grep '[[.ch.]]' example.c
RE error
$
```

3.1.6 Do Not Correct Connect-Time Records with the fwtmp Command

Do not try to correct connect-time accounting records with the `fwtmp` command, because the `utmp` structure format members are not in the correct

order.

3.1.7 The inlib/rmlib Commands Have Been Removed

Due to a change in the System V shared libraries and loader, the `inlib` and `rmlib` commands have been removed from the shells. Prior to using a shared library that is not installed in the default library directories, you need to set the LD_LIBRARY_PATH environment variable with the values of each directory where the shared libraries are located, separating each directory path with a colon (:), as follows:

`LD_LIBRARY_PATH=`*/directory/path/1*`:`*/directory/path/2*`:`*/directory/path/3*

After this environment variable is set, programs invoked from the shell will use this directory list to locate shared libraries, prior to looking in the default system locations.

Note that the main difference between the new and old way of using shared libraries, is that the `LD_LIBRARY_PATH` variable expects a directory path and the original OSF `inlib/rmlib` commands expected a library path. Note also that if you compile with the `-call_shared` option you can specify the shared libraries at runtime by just setting `LD_LIBRARY_PATH` to the correct paths. However, it is not necessary for `LD_LIBRARY_PATH` to be set in order to run programs compiled with `-call_shared`. For more information on using shared libraries, see the `loader`(5) manpage.

3.1.8 The lpc clean Command Does Not Work.

The `lpc` command is used by the system administrator to control the operation of the line printer system. The `clean` subcommand normally allows you to remove all jobs or those for a specific printer. Currently this subcommand does not remove the jobs in the spooling queues.

To work around this problem, use the `lprm` command on a printer by printer basis.

3.1.9 The make Command

The current DEC OSF/1 X1.2-11 `make` command does not examine the SHELL environment variable; it always uses the default shell `/bin/sh`. Furthermore, `/bin/sh` is only invoked if a meta character is located on the command line. If one of the meta characters (`=|^();&<>*?[]:$‘’"`) is not on the command line, then the program is `execvp’ed` directly, and the program must be located in your PATH variable to be executed.

In addition, the .SUFFIXES rule in DEC OSF/1 X1.2-11 version of `make` is different from the ULTRIX version of `make`. In DEC OSF/1 X1.2-11, the

make command uses the following .SUFFIXES rules:

```
.SUFFIXES : .out .o .s .c .F .f .e .r .y .yr .ye .l .p .sh .csh .h
```

In ULTRIX, the make command uses the following .SUFFIXES rules:

```
.SUFFIXES: .out .o .c .c~ .F .F~ .f .f~ .e .e~ .r .r~ .y .y~ .l .l~ .s .s~ .sh .sh~ .h .h~ .p .p~
```

Users who want the ULTRIX .SUFFIXES rules, must add the following lines to their Makefiles:

```
.SUFFIXES:

.SUFFIXES: .out .o .c .c~ .F .F~ .f .f~ .e .e~ .r .r~ .y .y~ .l .l~ .s .s~ .sh .sh~ .h .h~ .p .p~
```

Note that if you do not include the first null the suffixes will be appended to the DEC OSF/1 X1.2-11 list of suffixes and will not replace them.

3.1.10 Commands That Examine Kernel Crash Dumps Fail

Any command, such as ps, vmstat, netstat, iostat, nfsstat, and ipcs, which examines kernel crash dumps to report statistics, does not work on DEC OSF/1 X1.2-11.

To work around this problem you can use kdbx, the front-end kernel dbx script, which can dump these statistics.

3.1.11 The ps Command May Display Child Processes in <defunct> State

When you enter a ps command while running an application that forks child processes, you may see some child processes in the <defunct> state after they have exited. Processes in this state cannot be killed until the process that forked them is killed.

The system puts exiting child processes in the <defunct> state if their parent process is still running and has not caught the SIGCHLD signal or executed a wait( ) system call. To avoid this problem when users run your application, make sure that your program logic either catches the SIGCHLD signal or executes a wait( ) system call when spawning child processes.

3.1.12 h Subcommand of sed Command Does Not Work Properly

When you use the h subcommand of sed to place text into the hold area, only the last line of the specified text is saved.

To work around this problem, use the H subcommand to append text to the hold area. Note that other subcommands that deal with the hold area work correctly.

3.1.13 uucp Files Reside in the /usr/lib Directory

Files for `uucp` components that normally reside on an OSF/1 system in the `/usr/adm`, `/usr/lbin` and `/etc/uucp` directories all reside in the `/usr/lib` directory on a DEC OSF/1 system.

3.1.14 The whatis Database Must Be Created if You Have Reference Pages

If you are installing reference pages, in order for the `apropos`, `whatis`, `man -k`, and the `man -f` commands to work, you must create the `whatis` database by hand by entering the following command as `root:`

```
# /usr/sbin/catman -w
```

3.2 Functions and System Calls

The following sections discuss issues and know problems with functions and system calls.

3.2.1 The %D Parameter of printf Routine is Obsolete

The `%D` parameter of printf is not supported in this release. If applications include the `%D` parameter to display a long number in decimal format, `printf` prints out the characters `%D` rather than the expected number.

Digital recommends that you use the `%ld` or `%d` parameter in place of `%D` in the `printf` routines that you include in applications.

3.2.2 Changes to catopen

The `catopen` function no longer tries to open the message catalog. It now defers the opening to the first call to `catgets`. As a result, `catopen` always returns a valid catalog descriptor and does not set errno, even when the catalog does not exist.

This change was made to improve performance. Previously, a program's message catalog was always opened, whether the program needed messages from the catalog or not. Now, the catalog is only opened if the program actually tries to get messages from the catalog.

If your program needs to know whether or not its message catalog was actually opened, do this: After calling `catopen`, use `catgets` to try to get a message from the catalog. If `catgets` returns the message, the catalog was indeed opened. If `catgets` returns the default string, the catalog was

not opened. Here is an example:

```
catd = catopen("example.cat", 0);
if (catgets(catd, 1, 1, NULL) != NULL)
    /* message catalog was successfully opened */
else
    /* message catalog wasn't */
```

3.2.3 getenv May Not Work With Shared Libraries

Normally init functions for shared libraries are run after some basic initialization has been done for the program. This allows init functions to be able to call functions like `getenv`, since this function requires that `crt0` has run far enough to set the `environ` global variable. This ordering also allows the debugger to set breakpoints in init functions as well.

However, when the main executable has no init functions, but some shared libraries that it is linked against do have init functions, this order of initialization is violated. Thus shared library init functions that call `getenv` may not work. To work around this problem, link the main routine with a dummy init routine. That is, use the options `-Wl,-init,dummy_init` where `dummy_init` is the name an empty routine in the main executable.

3.2.4 mlockall and Realtime

The `mlockall` function does not lock memory other than text, data, and stack (for example `mmaped` memory), which may cause problems for Realtime applications. To workaround this problem, use `mlockall(MCL_FUTURE)` before `mmap` is called.

3.3 System Administration

The following sections discuss issues and known problems with system administration tasks.

3.3.1 System Performance in DEC OSF/1 X1.2-11

In DEC OSF/1 X1.2-11 an experimental kernel option, `delay_wbuffers`, was inadvertently turned on and cannot easily be turned off. Its effect will be to improve file data performance in some cases, while potentially degrading it in others. This kernel option will not be turned on in the final product by default, but you will be able to turn it on if your applications will benefit from having it enabled.

When set, the `delay_wbuffers` kernel option causes the filesystem to hold onto dirty (written) file data in the hope that it will be either written to again or deleted before it needs to be committed to disk. In applications where the same regions of the file are written many times, this can be of

great benefit. An unfortunate side effect of this is that the cache will be dirtier than it would be if data was written as each block is finished (the normal behavior). The result is that `sync` may find more file data to write, so a larger I/O spike will occur than if the `delay_wbuffers` kernel option were not set. Also, if your system crashes or goes down as a result of a power failure, more file data can be lost than if the option were not set. However, no more than 30 seconds of data will be lost, since `sync` will send the data to disk every 30 seconds.

3.3.2 Cannot Log in to a Workstation Without Home Directory

In a distributed environment, if you attempt to log in to a workstation that does not have your home directory mounted, you will not be able to log in.

3.3.3 Hard and Soft Error Counters for SCSI devices

The number of soft and hard errors reported for SCSI disk and tape devices is limited. The maximum number of soft errors reported for each device is 25. The maximum number of hard errors reported for each device is 100. In order to increase these limits you must do the following:

1. Log in as `root` or become superuser.
2. Using the text editor of your choice, edit the file `/sys/data/cam_data.c` and modify the values of `cam_harderr_limt` and `cam_softerr_limit`.
3. Reconfigure your kernel.

   To reconfigure your kernel, enter the following command, replacing the italic *MACHINE_NAME* with the name of your machine in capital letters or if you are running Realtime, with the name of your Realtime configuration file:

   ```
   # doconfig -c MACHINE_NAME
   ```

   The `doconfig` command allows you to edit the configuration file. The following prompt appears immediately after you invoke the `doconfig` command with the `-c` option:

   ```
   Do you want to edit the configuration file (y/n) [n]?
   ```

   Answer `no` to this prompt.

   The `doconfig` program then displays the following message as it

begins to rebuild your kernel:

```
*** PERFORMING SYSTEM CONFIGURATION ***
   .
   .
   .
```

4. Make a backup copy of your kernel and then move the new kernel to `root` by entering the following commands, replacing the italic *MACHINE_NAME* with the name of your machine in capital letters, or if you are running Realtime, with the name of your Realtime configuration file:

```
# mv /vmunix /vmunix.orig
# mv /sys/MACHINE_NAME/vmunix /
```

5. Reboot your system by entering the following command:

```
# shutdown -r +5 "Quick Reboot"
```

Note

Every time you reboot your system, these counters are reset to zero.

3.3.4 I/O Performance Enhancements in DEC OSF/1 X1.2-11

The I/O enhancements introduced in DEC OSF/1 X1.2-11 improve UFS (local) and NFS (network) file system performance.

UFS sequential I/O performance is improved as follows:

- Reads by 20 to 300 percent faster than ULTRIX.
- Writes by 100 to 300 percent faster than ULTRIX.

The UFS I/O enhancements are based on the following:

- UFS block clustering causes the file system buffer cache to combine small I/O operations into larger disk operations. For example, file system blocks are combined into larger write requests, and multiple blocks are read in advance of single read requests.
- Performance is based on hardware speed, which depends on the disk and controller. For sequential access of large files, the read/write speed is up to 95 percent or more of the raw disk subsystem performance. Read/write requests are reduced by an average of 50 percent.

NFS server performance is improved as follows:

- Write throughput up to 100 percent faster than ULTRIX.

- With Prestoserve running, up to 100 percent faster than ULTRIX.
- Reduces CPU overhead due to write I/O

The NFS I/O enhancements are based on the following:

- NFS write gathering is available with no violation of NFS protocol.

  Multiple write requests to a file that already exists on the server are combined into fewer disk operations. Replies are not sent until all data and associated metadata are safely stored on the disk.
- Depending on your server load, you may be able to run fewer `nfsd` daemons without decreasing the server performance.
- Clients can run more than 4 `biod` daemons to obtain better write performance, but depending on your network or server conditions, running more than 4 `biod` daemons can result in a net performance loss.

3.3.5 Possible Data Corruption When Using ULTRIX disks on DEC OSF/1 X1.2-11

If a partition is created on a ULTRIX disk that–for whatever reason–does not contain an `a` or `c` partition the disk will not have a partition table on the drive. When that drive is subsequently mounted on an ULTRIX system and the disk driver finds no valid partition information, it uses the default partition information for that drive that matches the partition on the drive.

However, when that same drive is mounted on a DEC OSF/1 X1.2-11 system, because the default partition sizes and layouts are different in DEC OSF/1 X1.2-11 than ULTRIX, when the disk driver for DEC OSF/1 X1.2-11 finds no valid partition on the drive it overwrites the ULTRIX partitions with default DEC OSF/1 X1.2-11 partitions, which results in data corruption.

To avoid this problem, ensure that disks that will be shared on ULTRIX and DEC OSF/1 X1.2-11 systems have either an `a` or `c` partition. On an ULTRIX system, use the `chpt` command. On a DEC OSF/1 X1.2-11 system, use the `disklabel` command.

3.3.6 Logical Volume Manager

This section provides additional information on how to use the Logical Volume Manager (LVM).

In addition to this section, read the *Guide to System Administration* and the LVM manpages that the *Guide to System Administration* refers to.

3.3.6.1 Creating the Volume Group Directory and Volume Group Device File

DEC OSF/1 X1.2-11 supports a maximum of three volume groups, but the default configuration of the customized system only contains two. These reside by default at major numbers 16 and 19. One of these numbers must be used when creating the `/dev` entry for the volume group, as explained in the *Guide to System Administration*. For example, to make a `/dev` entry for a volume group `vg1` on major device 16, you would enter the following commands:

```
# mkdir /dev/vg1
# mknod /dev/vg1/group c 16 0
```

The third volume group may be added by changing the `pseudo_device lv 2` entry in your system's configuration file to `pseudo_device lv 3` and then rebuilding your kernel and rebooting your system with the new kernel. For information on how to rebuild your kernel, see the *Guide to System Administration*.

3.3.6.2 Formatting a Logical Volume

To use a logical volume as a UFS file system, you must run `newfs` on the volume. Use the `newfs` command as if you are working with a conventional disk partition, so you need to remember to specify a device type.

To formats the logical volume `accounts`, you would enter the following command:

```
# newfs /dev/vg1/raccounts rz25
```

The selection of the device type is at your discretion; however, make sure that you select a device that is of a type in the volume group.

3.3.6.3 LVM and Installations

The LVM partition information does not survive a full installation, since `/etc/lvmtab` is destroyed. Aside from saving and restoring your `/etc/lvmtab` file, you can work around this problem by rerunning all the original formatting commands except for `newfs`. If you run `newfs`, all the information in the logical volume will be destroyed. It is imperative that records be kept about logical volume sizes and the disks contained in volume groups so that they may be restored after an installation of the operating system.

After an installation, any disk which was part of a volume group must be relabeled using the `disklabel` utility before it can be reincorporated into the rebuilt volume group and then `pvcreate` must be run against the volume. For example, to relabel a `dev/rrz1c` device and then create a

volume group, you would enter the following commands:

```
# disklabel -wr /dev/rrz1c rz25
# pvcreate /dev/rrz1c
```

3.3.7 Possible Data Corruption or System Crash When Writing to Tape

Do not write record sizes to tape that are not a multiple of 512 or that are of size 256; otherwise, you may experience data corruption or your system may panic.

3.3.8 Verifier and Exerciser Tool

The following notes apply to the Verifier and Exerciser Tool (VET).

3.3.8.1 "?Message not available" Error Displayed When Starting VET

When starting up VET, if the VET message catalog cannot be found, VET will not work and instead displays the following error message:

```
?Message not available
```

Since VET uses the NLSPATH and LANG environment variables in determining the location of the message catalog, unsetting LANG will fix the problem. If NLSPATH and LANG are not defined, VET looks in the directory /usr/lib/nls/msg/en_US.88591 for the message catalog. To unset the LANG variable type the following commands, depending upon the type of shell you are using:

- csh

  ```
  % unsetenv LANG
  ```

- ksh and sh

  ```
  % unset LANG
  ```

3.3.8.2 Remote Processes Do Not Terminate Completely Using Motif

When VET is run using the Motif interface with remote processes running and no local processes, selecting StopAll followed by TerminateAll causes the remote processes to be stopped and terminated, but does not return the window to SetUp mode.

To correct this problem, select ContinueAll after the processes have been terminated.

3.4 Writing and Using Network and Communications Software

The following notes describe problems you can encounter when writing and using network and communications software.

3.4.1 ONC RPC Services Can Be Affected if a User Belongs to Too Many Groups

For compatibility with ULTRIX Version 4.2 and higher, the version of ONC RPC in DEC OSF/1 supports up to 32 groups. However, including a user in more than 16 groups can affect services that use ONC RPC. Many OSF and ONC vendors can support user membership in only 16 groups. In fact, versions of ULTRIX earlier than ULTRIX Version 4.2, as well as some OSF vendors, support user membership in only 8 groups.

Users who belong to more than 16 (or 8) groups may be unable to NFS mount file systems from servers that support only 16 (or 8) groups over NFS. In addition, if membership in the root group is increased to more than 16 (or 8) users, the Network Information Service (NIS) may not work in a mixed NIS server environment. Problems occur if any server in that environment supports a lower limit to root group membership than what has been specified on another server.

3.4.2 Local Area Transport

The following notes apply to Local Area Transport (LAT).

3.4.2.1 Low Dynamic Rating Values Displayed by latcp

The dynamic rating values displayed by the `latcp` utility on the host and by the `show services` and `show node` commands on a terminal server appear to be lower than expected, given the load on the host system.

3.4.2.2 The Ability of LAT to Remotely Modify a Server's Port Dose Not Work

LAT's ability to remotely modify a terminal server's port characteristics does not work. Using the `stty` command or an `ioctl` system call will not change the port's characteristics. There is no workaround to this problem.

3.4.2.3 LAT Driver May Not Release the tty Device

If a LATmaster connection attempt from a VMS system is aborted while the user is attempting to login, the DEC OSF/1 X1.2-11 LAT driver does not release the LAT `tty` device for reuse, nor does the LAT driver kill the login

process. Aborting the login sequence repeatedly will cause all LAT `tty` devices to be consumed. There is currently no workaround to this problem.

3.4.2.4 The -Q Option Does Not Disable Queueing

Queueing is not disabled on an application port when the `-Q` option is specified. Connection requests will always be queued at the server when the server port or service is busy.

To work around this problem, wait until the server's port or service is available before attempting a connection.

3.4.2.5 When getty Entry is Stopped the Device Cannot Be Reused

When a `getty` entry for LAT is killed with the `kill -9` command, and the `close()` system call is not issued, the device cannot be reused.

3.4.3 Pseudoterminal Name Space Expansion

Sometime in the future the `pty` name space will be changing to a hierarchical name space to allow further scaling of the number of `ptys`. Therefore, it is strongly encouraged that applications use the `openpty(3m)` interface because `openpty(3m)` hides the details of the `pty` name space. In addition, if all applications that utilize `ptys` use `openpty(3m)`, the `/dev/ptyXX` special files are no longer necessary and can be deleted.

3.5 Programming Environment

The following sections discuss issues and known problems with the programming environment.

3.5.1 Differences Between the ULTRIX and DEC OSF/1 X1.2-11 Preprocessor

The DEC OSF/1 X1.2-11 C Preprocessor handles the #line directive differently from the ULTRIX C Preprocessor. In DEC OSF/1 X1.2-11, if a directory specification appears in the `s-char-sequence` option of the #line directive, the C Preprocessor will use that directory as the local directory to search for files in subsequent #include directives. The ULTRIX Preprocessor did not do this. Since various C generators, for example, `yacc` and `lex`, insert #line directive in the generated C code, user may encounter this difference between the two preprocessors inadvertently.

For example, consider the following C Preprocessor directives in the file

`foo.c` in the directory `/usr/test/targets/`:

```
#line 1445 "../parsers/files.yacc"
#include "files_lex.c"
```

The DEC OSF/1 X1.2-11 C Preprocessor treats the source input precisely as though it were `/usr/test/parsers/files.yacc`. Since `foo.c` is the actual file being compiled, and is in a directory different from `/usr/test/parsers` and since `files_lex.c` was not found in `/usr/test/parsers/`, the DEC OSF/1 X1.2-11 compiler will report an error.

Note that this behavior of the DEC OSF/1 X1.2-11 C Preprocessor is not an error.

To force the compiler to search locally, as it did in ULTRIX, instead of following the #line directive when searching,, use the `-I` option to specify the local directory, as the following example illustrates:

```
% cc -g -O0 -I. -c foo.c
```

Note that you must pace a dot (.) after the `-I`.

3.5.2 Change to the .prologue Directive of as

In the final product, the `.prologue` directive will be enhanced to recognize two arguments (0 and 1), which will indicate whether the procedure uses `$gp` and hence requires `$pv` to be set up by the caller; currently, the assembler ignores any arguments to the `.prologue` directive. We recommend that in anticipation of this change that you modify your existing assembler code to take advantage of this enhancement. The syntax of the enhanced `.prologue` directive looks like this:

.prologue [0|1]

`0` Indicates that the procedure does not use `$gp`; the caller does not need to setup `$pv` or restore `$gp` on return from the procedure.

`1` Indicates that the procedure does use `$gp`; the caller must setup `$pv` and restore `$pg` on return from the procedure

If you do not specify an argument, the the `.prologue` directive behaves as if you had specified `1`.

3.5.3 cc

The following notes apply to the C compiler (`cc`).

3.5.3.1 Known Problems with the Compiler

The following problems with the compiler are known to exist:

- Bitfields greater than 32 bits – The compiler does not correctly handle bitfields declared as either long or unsigned long. There are also problems initializing int and unsigned int bit fields which are mixed with long or unsigned long bit fields when the initializer is specified in the declarations.
- Spurious Warning Messages – The following program, taken directly from footnote 52 in the ANSI C Standard Draft and considered a valid integral constant expression, generates a warning message that can be ignored:

```
% more t.c
static int i = 2 || 1/0;
% cc -std1 t.c
/usr/lib/cmplrs/cc/cfe: Warning: t.c, line 1: Divided by zero (3.3.5)
static int i = 2 || 1/0;
```

  If your programs generate this warning message, ignore it.
- Incomplete Types in sizeof Does Not Generate a Error – The following program compiles without error, but should generate an error message because the operand in `sizeof` is an incomplete type:

```
typedef struct S {
  char a[30];
  char b[sizeof(struct S)];
  char c[sizeof(struct S)];
} T;


static int j = sizeof(T);

        .verstamp       10 0
        .data
        .align  3
        .align  0
$$3:
        .long   120 : 1
```

- Compiler Does Not Allocate Array Storage – For the following program,

the compiler generates a length of zero for the array, rather than 3:

```
extern struct foo zerocommon[3];

struct foo {
  unsigned long bar;
}

struct foo zerocommon[3];
```

3.5.3.2 New Builtin Routines

The routines `abs, fabs,` and `labs` have builtin counterparts in the compiler. Using the builtins is advantageous, since function call/return overhead is avoided and the compiler can often do a very effective job of code generation.

To use the builtin versions of these functions, you must define the routine to be built in or declare the routine an intrinsic using pragma.

To declare the routine builtin without using pragmas, enter a command like the following:

```
% cc -Dabs=__builtin_abs foo.c
```

To declare the routine builtin with pragma, enter a line like the following in your program:

```
#pragma intrinsic( abs )
```

Note

In the first example (`-Dabs=__builtin_abs`), there is a known problem in that the compiler will generate useless references to `abs` in its symbol table, which will cause the linker to complain if the math library is not present at link time. This problem will be resolved in the final product.

3.5.4 ld

The following notes apply to the linker.

3.5.4.1 Very Large Applications May Overflow the .got Section

Some very large applications may overflow the `.got` section when built `-call_shared`. This is caused by an excessive number of external symbols referenced within the executable.

When this happens, the linker will emit this type of message:

```
gp relocation out-of-range for small data or bss by,
  %0x000000000000f439 in the positive direction,
  %0x000000000000fa00 in the negative direction,
```

To work around this problem, try relinking `-non_shared`. Relinking the application without shared libraries (that is, `-non_shared`) should solve this problem if there were no unresolved symbols.

3.5.4.2 Undefined Linker-Defined Symbols

If the linker finds undefined user symbols that are not normally reserved for the linker, it will report the linker reserved symbols as also being undefined.

This is normal behavior. The linker will only resolve linker defined symbols when all other symbols have been defined.

3.5.4.3 The Linker and Shared Libraries

In DEC OSF/1 X1.2-11, the default behavior of the linker (`ld`) has been changed to `-error_unresolved` when building an executable program so that undefined symbols create errors rather than warnings. However, when you are creating a shared library, the default is still `-warning_unresolved`, and undefined symbols will create just warnings. This means that builds/makes of executables (not shared libraries) that have an unsatisfied external symbol will now fail instead of appearing to succeed with a warning message.

To change this behavior, you can use `ld` with the following switches:

- `-warning_unresolved`

  This causes unresolved symbols to produce a warning message only and is the old behavior.

- `-error_unresolved`

  This causes unresolved symbols to produce an error, and the link fails. The output file is not marked executable.

3.5.5 dbx

The following notes apply to `dbx`.

3.5.5.1 Functions Not Yet Implemented

The following functions are not yet implemented:

- Support for threads

- Support for Pascal

3.5.5.2 The patch Command

If the `patch command` attempts to patch a size other than a long (8 bytes) it will write 8 bytes.

3.5.5.3 The trace Command

If you use the `trace` command to monitor a value that changes infrequently, `dbx` will probably run out of stack space and issue the following message:

```
internal stack overflow, please try a smaller expression
```

To work around this problem, do one of the following:

- Limit the scope of the trace (for example, add the `in` or `at` clause).
- Limit the size of the variable traced (for example, tracing one field in a structure instead of the whole structure).

3.5.5.4 The use Command

If the executable has been moved from the directory it was built in, or the sources have moved, it can be difficult to enter a path that `dbx` can use for finding the actual source files. This was due to the compiler supplying a path relative to the directory where the source was compiled.

In DEC OSF/1 X1.2-11, the `use` command has been modified to allow direct specification of the directory that the source resides in.

In addition to using the relative path, `dbx` will now prepend the supplied path to the filename alone, allowing an absolute path to the file that is more intuitive to understand.

For example, if the sources reside in the `/usr/src/project` directory and the executable was built in the `/usr/obj/project` directory, then the path to find the file is `../../src/projects/`*filename*. As a result, when the executable is put in the the `/project/obj` directory, it will be hard for `dbx` to find the correct sources.

The new `use` command now eliminates this problem. To have `dbx` find the correct sources, type a command with the following syntax:

use *source_directory*

To have `dbx` find the correct sources in the above example, you would type

the following command,

```
(dbx) use /usr/src/project
```

3.5.6 Shared Libraries

The following sections discuss the implementation of shared libraries in DEC OSF/1 X1.2-11.

3.5.6.1 Shared Libraries and MIPS Applications

The DEC OSF/1 X1.2-11 development environment supports System V style shared libraries. Most applications that are designed to use shared libraries in order to save space will still port with little effort on DEC OSF/1 X1.2-11. However, applications that take advantage of the additional functionality available with shared libraries will probably need to be modified when porting from MIPS to Alpha AXP.

The following incompatibilities are known to exist with Mips DEC OSF/1:

- Mips DEC OSF/1 uses packages, Alpha AXP does not. All references to building with packages need to be removed.
- The `inlib` and `outlib` builtin shell commands are not available. Since packages are not used, private Alpha AXP shared libraries do not need to be installed. Similar functionality is available through the `LD_LIBRARY_PATH` environment variable. For more information, see `loader`(5).
- The `lib_admin` command does not exist on Alpha AXP. Shared libraries are installed as long as they are visible by the file system.
- The `load()` and `ldr_` routines (for example, `ldr_remove()`), are not available on Alpha AXP. Similar, but not identical functionality is available with the `dlopen()`, `dlsym()`, and `dlclose()` functions.

3.5.6.2 File Protections with mmap and Shared Libraries

Because of the sharing mechanism used for shared libraries, normal file system protections do not protect against unauthorized reading. For example, when a shared library is used in a program, the text part of that library, even if its permissions are set to 600, can be read by other running processes even though those processes do not own the library or are not running with their `uid` set to the owner of that library. Note that only the text part of the library, and not the data segment is shared in this way.

To prevent unwanted sharing, link any libraries that need to be protected with the `-T` and `-D` options to put the data section in the same 8MB segment as the text section. You would, for example, enter a command like the

following:

```
% ld -shared -o libfoo.so -T 30000000000 -D 30000400000 object_files
```

Additionally, segment sharing can occur with any file that is `mmap-ed` without the PROT_WRITE option as long as the mapped address falls in the same memory segment as other `mmap-ed` files. Any program that uses `mmap` to examine files that may be highly protected can ensure that no segment sharing takes place by introducing a writable page into the segment before or during the `mmap`. The easiest way to accomplish this is to `mmap` the file with PROT_WRITE enabled in the protection, and then use `mprotect` to make the mapped memory read only.

3.5.7 pthreads

The following notes apply to `pthreads`.

3.5.7.1 Shared Libraries and pthreads

Multithreaded applications can now use either static or shared libraries. The libraries supported for multi-threaded programming are as follows:

Note

If you want to access routines in any other library, follow the directions in the *Guide to DECthreads* on how to use non–reentrant routines in a multithreaded application.

- `libmach.a`

  Static version of the base system threads interface. Not recommended that the application reference routines in this library directly; however, because the `pthread` library references these routines, the library will have to be specified when building the application.

- `libmach.so`

  Shared version of the base system threads interface. Not recommended that the application reference routines in this library directly; however, because the `pthread` library references these routines, the library will have to be specified when building the application.

- `libpthreads.a`

  Static version of the base pthreads package which requires `libmach.a`.

- `libpthreads.so`

  Applications linking with `libpthreads` library are required to include the include file `pthread.h`.

- `libc_r.a`

  Static version of re-entrant `libc` routines. It also contains the re-entrant versions of the `libc` routines specified in `P1003.4a/D4`. For a complete description of the libc_r routines, see the *Guide to DECthreads*.

- `libc_r.so`

  Shared version of re-entrant `libc` routines. It also contains the re-entrant versions of the `libc` routines specified in `P1003.4a/D4`.

Compiling a multi-threaded application using static versions of `libmach`, `libpthreads`, and `libc_r` can be done as follows:

```
% cc -non_shared -o out_file my_program -lpthreads -lc_r -lpthreads -lmach -lc_r
```

Compiling a multi-threaded application using shared versions of `libmach`, `libpthreads`, and `libc_r` can be done as follows:

```
% cc -o out_file my_program -lpthreads -lc_r -lmach
```

3.5.7.2 libc_r Must Be Specified Before libc

The libraries `libc_r.a` and `libc_r.so` are currently dependent on `libc.a` and `libc.so`, respectively. Thus, when linking a `pthread` application, you must specify `libc_r` before you specify `libc` on the compilation line; otherwise, your program may link against the non-reentrant version of the `libc` functions.

3.5.7.3 fork and pthreads

Any application that invokes the `fork` function and links against the `pthreads` library must include `pthread.h`.

Worksystem Software Notes 4

This chapter describes important user and system administration features and restrictions associated with DEC OSF/1 X1.2-11 workstation software. It also provides release notes for workstation programming. Note that DEC OSF/1 X1.2-11 supports X11R5, Motif 1.1.3.

4.1 The X Window System

The following notes pertain to X clients, X server, and X programming.

4.1.1 MIT X Clients

The following notes apply to the MIT X clients.

4.1.1.1 Location of MIT X Clients

All MIT X clients are now installed `/usr/bin/X11`.

4.1.1.2 xdm, /var/adm/utmp logging, and root login on the X Display

The X Display Manager (`xdm`) which is the component that handles the user's login to the X display, has been modified in DEC OSF/1 X1.2-11 so that it records the login in the `/var/adm/utmp` file, the same way that a normal, non-X login does. This allows the `finger` and `who` commands to show the user logged in to the X display. When recording this login, instead of a `tty` name, the display name is used (for example, `:0`). In order to allow `root` logins to the X display, the `/etc/ttys` file has had the following new line added to it in DEC OSF/1 X1.2-11:

```
:0      none    none    secure  # X display
```

If you have an old `/etc/ttys` file that you are restoring, make sure that you put in this X display line if you want to enable `root logins` to the X display.

4.1.1.3 xterm and Logging to /var/adm/utmp

The `xterm` now records the user's `login` to the `/var/adm/utmp` file only when the `-ls` option is specified or if the `loginShell` resource has the value `on`. The `-ut` option or `utmpInhibit` resource can override this

to prevent all `utmp` logging.

4.1.1.4 New Keymappings

Under X windows, the mapping of the `Compose`Character and `Alt`Function keys has been changed. Under previous releases (and ULTRIX), the `Compose`Character key served as the `Meta` key. With this release, the `Meta` functionality has been shifted to the `Alt Function` key and the `Compose Character` key is only the compose sequence initiator. The `xmodmap` or `dxkeycaps` programs may be used to customize the keyboard mappings.

Note that in DEC OSF/1 X1.2-11, `Dxkeycaps` does not display the proper default mappings for the keyboards.

4.1.1.5 Problem with editres and Widget IDs

Due to a problem in the design of the `editres` protocol (it is 32-bit only), the `editres` client does not receive correct widget IDs when the IDs are greater than 32 bits (which Alpha AXP IDs always are). Therefore, since the displayed widget IDs are not correct, the Flash Active Widgets function reports the following error:

```
There are no active nodes
```

The Show Resource Box function reports this error:

```
This widget no longer exists in the client
```

Note that widget resources cannot be edited.

4.1.1.6 Problem with Scaled Font Renderings

Scaled font renderings do not work properly.

4.1.1.7 xman Error Message When Manpages are not Installed

The `xman` client will return the following error message if you do not have manpage subsets installed on your system:

```
Xman Error: Could not allocate memory for manual sections
```

4.1.1.8 xset BadMAtch Error

The command `xset +fp` returns a BadMatch error from the server when an attempt is made to add a directory without a `fonts.dir` file.

4.1.1.9 X Display Manager (xdm) and Failsafe Mode

Failsafe mode support in `xdm` has been removed. Error messages from `xdm` are not provided.

4.1.2 The X Server

The following notes apply to the X server.

4.1.2.1 Supported Graphics Devices

DEC OSF/1 X1.2-11 only supports the HX and TX devices.

There is no tablet, puck, or stylus support in the `Xsfb` server.

The X server is compliant with X11 Release 5 specifications for the DEC 3000 processors, and supports the HX and TX options.

4.1.2.2 Shared Memory Transport

Digital provides a shared memory transport as an alternative to socket communication for the X protocol. Unlike the MIT shared memory transport which only supports image transfers, the Digital SMT supports the full protocol.

For many operations, performance is significantly increased when using the SMT.

SMT has the following problems:

- The X server may not be able to allocate a shared memory segment.

  This is a random problem and results in a warning message on the client side.
- Clients, when exiting, may report an unexpected server disconnect.
- The client servicing scheduling and yielding within the X server is not well balanced when using the shared memory transport. As a result, interactivity is severely impacted.

4.1.2.3 Specifying the tty Option for the X Server

The `-tty` option is not used for the Digital X server.

4.1.2.4 Problems Due to a Lack of Swap Space

If the system's swap space disk partition fills, an attempt by the server to access a previously unused page in the dynamically allocated portion of its data segment crashes the server with a segmentation fault. This problem can occur at various points during server execution, not just at those related to the

allocation of the server resources.

Swap space is allocated when the memory is first accessed, not when the corresponding memory segment is allocated.

To avoid the problem, configure your system with a larger swap space. Swap space requirements of the applications being used dictate the minimum acceptable swap partition size.

4.1.2.5 X Protocol Sets Resources on Screen 0

The current X protocol specifies that the resources are stored only on the root window of screen 0, no matter how many screens the display has. Clients should only set and read from screen 0, no matter what the default screen is set to. Clients that try to access resources from other screens in a multiscreen environment may not have the desired results. This is a feature of X11 R5.

4.1.3 X Programming

The following notes apply to X programming.

4.1.3.1 Xos.h Is for Digital Use Only

The file `/usr/include/X11/Xos.h`, although shipped with this release, is for Digital use only and should not be used or relied on by customers.

4.1.3.2 Some Public Functions Have Been Moved

The public functions `DXmHelpSystemOpen`, `DXmHelpSystemDisplay`, and `DXmHelpSystemClose` used to be available from `libDXm`, but in DEC OSF/1 X1.2-11 they have been moved to `libbkr`.

4.1.3.3 LockDisplay and UnlockDisplay Macros Are Not Usable

The X Window System programming manuals mention the use of the `LockDisplay` and `UnlockDisplay` macros for writing multithreaded X clients that access buffers of the display structure. These macros are often used when writing Xlib extensions to the core X11 protocol.

The `LockDisplay` and `UnlockDisplay` macros are included in DEC OSF/1 software but the macros are not usable as shipped.

4.1.3.4 Svn Widget Interface Change

The datatype of the tag parameter of the Svn widget functions has been changed from unsigned int to XtPointer. This allows the tag item to hold any type of data, and is upwards compatible with current code. The

following functions have been changed:

DXmSvnAddEntries - tags[] parameter datatype changed to XtPointer*
DXmSvnGetComponentNumber - tag parameter datatype changed to XtPointer
DXmSvnGetComponentTag - return value changed to XtPointer
DXmSvnGetDisplayed - tags[] parameter datatype changed to XtPointer*
DXmSvnGetEntryNumber - tag parameter datatype changed to XtPointer
DXmSvnGetEntryTag - return value changed to XtPointer
DXmSvnGetHighlighted - tags[] parameter datatype changed to XtPointer*
DXmSvnGetSelections - tags[] paramater datatype changed to XtPointer*
DXmSvnInsertComponent - tag parameter datatype changed to XtPointer
DXmSvnMapPosition - tag parameter datatype changed to XtPointer*
DXmSvnSetComponentTag - tag parameter datatype changed to XtPointer
DXmSvnSetEntry - tag parameter datatype changed to XtPointer
DXmSvnSetEntryTag - tag parameter datatype changed to XtPointer

4.1.3.5 The ADD_STYLE_NAME Field of an XLFD Font Name

The ADD_STYLE_NAME (ASN) property of an X bitmap screen font, and the corresponding field in an XLFD name, is used to supply additional distinguishing information about a font. It is often used with those typefaces that cannot be differentiated soley on the basis of the FAMILY_NAME, WEIGHT_NAME, SLANT, and SETWIDTH_NAME properties and corresponding fields in the XLFD font name.

For example, in the first grouping of XLFD patterns below, the ASN values of "" (null) and "No. 2" differentiate Trade Gothic[1] Bold from Trade Gothic No. 2 Bold. In the second group, all four members of the Industria[1] family are differentiated from each other by a non-null ASN value.

```
-Adobe-Trade Gothic-Bold-R-Normal--*-*-*-*-P-*-ISO8859-1
-Adobe-Trade Gothic-Bold-R-Normal-No. 2-*-*-*-*-P-*-ISO8859-1

-Adobe-Industria-Medium-R-Normal-Inline-*-*-*-*-P-*-ISO8859-1
-Adobe-Industria-Medium-R-Normal-Inline A-*-*-*-*-P-*-ISO8859-1
-Adobe-Industria-Medium-R-Normal-Solid-*-*-*-*-P-*-ISO8859-1
-Adobe-Industria-Medium-R-Normal-Solid A-*-*-*-*-P-*-ISO8859-1
```

While XLFD font names with null ASN values currently predominate, software developers are cautioned to consider this field when selecting or displaying available fonts.

[1] Trade Gothic and Industria are trademarks of Linotype-Hell AG and/or its subsidiaries.

4.1.3.6 Link Order for Motif Clients

When linking Motif clients, the `Xm` library must precede the `Xt` library as follows:

```
% cc map.c -lXm -lXt -lX11
```

Placing the `Xt` library before the `Xm` library will cause the client application to link without error but not run.

4.1.3.7 DECnet Transport for Client/Server Connections

The X Server, libraries, and various clients are able to utilize a DECnet transport mechanism for client/server connections if an appropriate DECnet product is installed on the system (or on both systems if the client and server are running on different systems). If DECnet is not installed, attempts to establish such connections by a DECnet transport will fail.

Clients and libraries which directly execute calls to DECnet functions such as `getnodename`, `dnet_addr`, and `dnet_conn` are built with `libdnet_stub.so` in their link editor (`ld`) command. So too, the loadable X server includes `libdnet_stub.so` in its list of shared libraries to be loaded.

Clients which are to be built fully-static and include `LibX11.a` or `libXmu.a` must also incorporate `libdnet_stub.a` (if they will not be using DECnet transport) or `libdnet.a` as included in the DECnet product (if they will be using DECnet transport). Inclusion of one of the `libdnet` libraries is required to resolve function calls from within `libX11` or `libXmu` modules. If it is not a requirement that the client be fully static but the client is using `libX11.a` or `libXmu.a` for some other reason, `libdnet_stub.so` can be included in the `ld` command information and the client can then be used whether or not DECnet is installed.

Xservers which are to be built fully-static and include `libos.a` must also incorporate `libdnet_stub.a` (if not to be using DECnet transport) or `libdnet.a` (if to be capable of using DECnet transport). If it is not required that the client be fully static, `libdnet_stub.so` can be included in the `ld` command information. The resultant X server will access this shared library and be useable whether or not DECnet is installed.

Note

Use of the DECnet transport for connections between an X server and a Font Server is not available in DEC OSF/1 X1.2-11.

4.2 The Motif Window Manager (mwm)

The following notes pertain to the Motif Window Manager (`mwm`).

4.2.1 Bitmap Depths for Icons Should Not Be Greater Than 1

Icons with bitmaps of depth greater than 1 are not supported. The Window Manager reports a warning only if the `Mwm*ICCCMCompliant` resource is set to True and it attempts to display the icon. This resource is turned off by default.

4.2.2 Customizing the Icon Box

To customize the position and size of the icon box, move and resize the icon box and select Apply Current Settings from the Workspace Options menu.

4.2.3 Active Icon Titles in Icon Box May Be Clipped

If the icon box is displayed vertically with only one column, then when an icon is selected, the active icon label is clipped on the right side.

4.2.4 Multiline Icon Titles Are Not Centered

The window manager does not center all the lines of a multiline icon title.

4.2.5 Accelerators for Icons in the Icon Box

When using an icon box, the accelerators on an icon's Window menu do not work unless you display that menu. Instead, they always apply to the icon box.

4.2.6 Icon Titles Are Truncated

The text for inactive icons is truncated to the size of icons. There are two methods to view the complete text for an icon:

- Make the icon active.
- Use the Icon Options menu to change the width of the icon.

4.2.7 Icon Box Can Be Moved Off the Screen

If you move the icon box to the edge of the screen, and then resize it using the keyboard, you can move it off the screen. To retrieve the icon box, press Alt+Tab until you reach that window and then press Shift+Escape (F11) to bring up the window menu for that window. Then you can move the window back onto the screen.

4.2.8 Keyboard Accelerator for Icon's Window Menu

If you bring up the Window menu on an icon by highlighting the icon and then pressing F4, the Window menu is not posted and may not work properly.

4.2.9 Initial Placement of Icon in Icon Box

If you customize placement of an icon by specifying the `iconX` and `iconY` resources in an application's resource file, the placement is ignored if you are using an icon box.

4.2.10 Using Next Window on a Multiscreen System

On a multiscreen system, if you continuously cycle the windows using Ctrl+MB1 or by selecting Next Window, eventually the cycling does not work properly.

4.2.11 Customizing Monochrome Monitors

The `mwm` window manager does not support full customization of color-related resources for monochrome monitors in the Options dialog boxes. In order to change the colors, you might need to modify the pixmap resources by directly editing the `Mwm_bw` resource file. For example to change the color of the active window's title background, you must change the `Mwm*activeBackgroundPixmap` resource, choosing such values as 25_foreground, 50_foreground, 75_foreground, and unspecified pixmap.

In addition, by default, the title text is created with white background. To use the same color as the rest of the title, set the `Mwm*cleanText` resource to `FALSE`.

4.2.12 Customizing Icon Placement and the Icon Box

If you customize the icon placement of your applications by specifying the `iconX` and `iconY` resources in the application's resource file, the placement is ignored if you are using an icon box.

4.2.13 Customizing the Icon Box Color on Monochrome Systems

Customizing the icon box background color on monochrome monitors does not work properly. To change the color of the icon box, you must first add

the following line to your Mwm_bw file:

```
Mwm*iconbox*backgroundPixmap: unspecified_pixmap
```

4.2.14 mwm Error Messages

The mwm error messages from f.exec functions or due to warnings or internal errors are not displayed on the console window. As a workaround, you can modify the way mwm is started from the session manager by following these steps:

1. In the session manager Options menu, select Customize Window.
2. Click on Other from the window manager section.
3. Delete the text next to Other and then click on OK.
4. In the session manager Options menu, select Application Definitions. If a menu item Mwm exists, then Select Cancel and skip the next two steps.
5. Create a Menu item Mwm first clicking on the box beneath Menu Item and then typing the following line in the activated box:

   ```
   /usr/bin/mwm -multiscreen
   ```

6. Click on OK to confirm your modifications.
7. In the session manager, select Automatic Startup.
8. Move the scroll bar in the box entitled select item to add until mwm appears.
9. Click on mwm to add it to the list of applications that will be automatically started.
10. Click on OK to confirm your modifications.
11. In the session manager option menu, select Save Current Settings.
12. End the session.

The mwm window manager will then be started like other applications and mwm error messages will be displayed to the console window.

4.2.15 mwm Help on Multiple-screen Systems

If you have a system with several screens, Mwm help may not come up properly on all the screens.

4.2.16 No Notification of Window Resizing/Movement

You will not receive notification as you move or resize windows if the windows are created from one of the `root` window menus.

4.3 Digital X Clients

The following notes apply to the Digital X clients (`dxclients`).

4.3.1 dxcardfiler

New images cannot be included into cards. However, existing images in a saved cardfile can still be viewed.

4.3.2 No Help Menu in dxdiff

When you select `Help` in `dxdiff`, `hyperhelp` is started immediately. There is no menu from which to select topics.

4.3.3 dxpaint

The following notes pertain to the `dxpaint` client.

4.3.3.1 Cut and Copy Do Not Work

The `dxpaint` client will crash when cutting or copying a section.

4.3.3.2 Missing Slash (/) in Print Dialog

The slash (/) between the current directory and the filename is missing in the default value for the Filename field. It must be entered manually.

4.3.3.3 Save As Dialog Box May Move Behind Picture

The `Save As` dialog box sometimes moves under the main window, partially or completely obscuring it. You must move the main window to uncover it.

4.3.3.4 No Help Available in Exit Dialog

The dialog box that appears when you exit `dxpaint` without first saving changes will not provide help when the `Help` button is pressed.

4.3.4 dxprint Crashes Writing to Non-writable Directory

The `dxprint` client crashes when saving a file to a non-writable directory.

4.3.5 dxsession

The following notes apply to `dxsession.`

4.3.5.1 xconsole name changed to dxconsole

Digital's version of `xconsole` is now named `dxconsole`. All resource definitions use `dxconsole` for the resource name.

4.3.5.2 Shift Lock and Caps Lock

Switching between Shift Lock and Caps Lock does not work.

4.3.5.3 dxsession Does Not Work When No Shell is Specified in /etc/passwd

When no shell is specified for a user in the `/etc/passwd` file, which is the case when adduser uses the default shell, `dxsession` does not work properly. To work around this problem, make sure the user has a login shell specified in the `/etc/passwd` file.

4.3.5.4 Auto Repeat Setting Does Not Work

The Auto Repeat setting in the Customize Keyboard dialog is ignored by `dxsession.`

4.3.5.5 Pause Blocks Output to Screen

While `dxsession` is in Pause mode, all output to windows is blocked until pause mode is ended. This includes windows that are closed (iconified). When pause mode is ended, all updates are performed.

4.3.5.6 Position of Main Window Does Not Default to 0,0

When `dxsession` starts, its main window position does not default to the the upper left corner (0,0) as documented.

4.3.5.7 Mouse Double Click Timeout Does Not Work

The `Mouse Double Click Timeout` setting in the `Customize Pointer` dialog is ignored by `dxsession`.

4.3.5.8 dxkeycaps Does Not Display International Characters

When international characters are assigned to keys with `dxkeycaps`, they are not displayed in the keycaps window. They are, however, set correctly.

4.3.5.9 No Help Available in dxkeycaps

The `Help` button on the `dxkeycaps` main window does not work.

4.3.6 dxterm

The following notes apply to `dxterm`.

4.3.6.1 Killing a dxterm with CTRL-C

If a `dxterm` is started from the command line and is killed using CTRL-C, the `dxterm` will not go away until it receives another X event. To supply this X event, move the pointer into the `dxterm` window (if autofocus is being used) or by clicking on the window.

4.3.6.2 XON/XOFF Flow Control

To prevent the Ctrl-S key from stopping the output in a `dxterm`, you must do the following:

- Disable the Ctrl-Q, Ctrl-S = Hold option in the Keyboard Options dialog box.
- Disable XON/XOFF at the terminal driver level by issuing the following command:

```
% stty -ixon -ixoff -ixany
```

4.3.6.3 Problem with Function Keys

In DEC OSF/1 X1.2-11, none of the function keys work inside a `dxterm`.

Documentation Notes 5

This chapter discusses issues pertaining to the DEC OSF/1 X1.2-11 documentation.

Documentation for this release includes manuals and online reference pages. Of particular interest to ULTRIX users is the *ULTRIX to DEC OSF/1 Migration Guide* which explains how DEC OSF/1 X1.2-11 differs from ULTRIX in areas of interest to end users, system and network administrators, and programmers.

5.1 Optional External Field Test Documentation

Because we do not have access to the source files and are therefore unable to format them for placement on a CDROM, the following documents are not shipping to external field test or field test update but can be ordered from either Prentice–Hall, Digital, or your local book store.

Table 5-2: Optional Field Test Documentation Available From Prentice–Hall and Digital

Manual Title	Software	Edition/Date	Prentice–Hall Order Number	Digital Order Number
X Window System Toolkit	X Ver. 11, Release 4	First/1990	97219-0	AA-PHF4A-TE
X Window System	X Ver. 11, Release 5	Third/1992	97120-0	AA-PHF3C-TE
AES Operating System Programming Interfaces Volume	AES/OS, V1.0	First/1990	04352-1	AA-PG5DA-TE
STREAMS Primer	UNIX Sys. V, Release 3.0	First/1987	94052-8	AA-PJULA-TE
STREAMS Programmer's Guide	UNIX Sys. V, Release 3.2	First/1989	94481-9	AA-PJUKA-TE

5.2 Reference Pages

This section includes general information and problems related to DEC OSF/1 reference pages.

5.2.1 MIT Reference Pages, An Overview

MIT reference pages are passed through as they were supplied by MIT, except for formatting changes. MIT reference pages include many of the reference pages in sections 1X, 3X, and 3X11 and can be identified by the string ‘‘MIT X11R5’’ on the second line of the reference page header. In cases where both an MIT and a Digital version of a reference page are provided, the source file for the MIT reference page has the name format *filename.#*XMIT. In such cases, you must include the suffix in the man command to display the MIT version of the reference page, for example:

```
% man 1XMIT X
```

5.2.2 Printing Reference Pages

Reference pages are not provided in hardcopy manuals, but only online for display with the man command. However, you can print a reference page by processing reference page source files in the /usr/share/man/man? directories. (Substitute section numbers 1 to 8 for the ? in the directory pathnames.) Preformatted reference pages in the associated /usr/share/man/cat? directories may not be in a format suitable for printing on a hardcopy printer. To format a reference page for a specific printer, use commands similar to the following ones:

```
% cd /usr/share/man
% tbl man1/ls.1 | neqn | nroff -Tdevice \
-man -h | lpr -Pmy_printer
```

In the preceding commands, replace *device* with the name of a device listed in the term(4) reference page. Replace *my_printer* with the name of a printer specified in the /etc/printcap file on your system.

Note

If the reference page includes tables and if the device that you specify is not capable of reverse line movements, the reference page may not print correctly; for example, column entries in the same table row may not be in alignment with one another.

DEC OSF/1 X1.2-11.

5.3 Errors and Omissions

The following notes discuss known errors and omissions in DEC OSF/1 documentation.

5.3.1 Errors in the *OSF/1 User's Guide*

The *DEC OSF/1 User's Guide* contains the following errors:

- The `apropos` (`man -k` command) is available as documented in the section ''Finding Out About Commands'' in Chapter 1 but only if your system administrator has used the `catman` command to create the `whatis` database. The `apropos` command uses data in the `whatis` database.
- References to the `u` directory in the section ''The Tree-Structure File System and Pathnames'' in Chapter 2 are incorrect. Pointers to the `u` directory actually refer to the user directory.
- The statement in the ''Using Braces {}'' section of Chapter 7 that the use of braces to group commands is valid only in the Korn shell is incorrect. Using braces to group commands is valid in both the Korn and Bourne shells.
- Some sections refer to Japanese language support in OSF/1. Ignore these references; neither OSF/1 nor DEC OSF/1 includes wide-character support that is needed for the Japanese language.

5.3.2 Problems With Bookreader Display

The bookreader files for DEC OSF/1 X1.2-11 have the following display problems:

- *OSF/Motif User's Guide.*

  No figures display

- *Guide to Writing Device Drivers for the SCSI/CAM Architecture Interfaces*

  Figure 1–2 does not display

5.3.3 Loadable Driver References

References to loadable drivers in the *Guide to Programming Support Tools*, the *Guide to System Administration*, and the *Guide to Writing Device Drivers* are purely informational, since loadable drivers are not supported in DEC OSF/1 X1.2-11.

5.3.4 Disregard Motif Resource Editor Information

Because the Motif Resource Editor (`mre`) is unsupported in DEC OSF/1 X1.2-11, disregard the information on the `mre` program in the *OSF/Motif User's Guide*.

5.3.5 References to ULTRIX Can Be Applied to DEC OSF/1

Some books in the DEC OSF/1 documentation set refer to ULTRIX and not to DEC OSF/1. In such books, you can assume that the information supplied for ULTRIX also applies to DEC OSF/1.

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