
OpenVMS Alpha Version 7.3–1 Release Notes

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This manual describes changes to the software; installation, upgrade, and compatibility information; new and existing software problems and restrictions; and software and documentation corrections.

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The Compaq *OpenVMS* documentation set is available on CD-ROM.

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Preface

Intended Audience

This manual is intended for all OpenVMS Alpha operating system users. Read this manual before you install, upgrade, or use Version 7.3-1 of the operating system.

Document Structure

This manual contains the following chapters and appendixes:

- Chapter 1 contains release notes that pertain to installing the OpenVMS Alpha operating system.
- Chapter 2 contains installation and support information for OpenVMS Alpha associated products.
- Chapter 3 contains release notes about the general use of the OpenVMS Alpha operating system.
- Chapter 4 contains release notes specific to OpenVMS system management.
- Chapter 5 contains release notes that relate to programming on an OpenVMS Alpha system, including notes for compilers, linkers, and run-time library routines.
- Chapter 6 contains release notes pertaining to OpenVMS device support on Alpha systems.
- Chapter 7 describes the proper use of interlocked memory instructions, which is crucial for the Alpha 21264 (EV6) processor.
- Appendix A contains information about OpenVMS Alpha products that are no longer supported as of this release, or that are slated for retirement.
- Appendix B contains information pertaining to hardware that runs on the OpenVMS Alpha operating system.

Notes are organized by facility or product name when applicable.

This manual contains release notes introduced in the current release and notes from previous OpenVMS Alpha versions that still apply to the new release. A subheading for each release note indicates the version of origin (for example, V7.3).

Notes from previous releases are published when:

- The information in the release note has not been documented in hard copy in any other manual in the OpenVMS documentation set, and the note is still pertinent.

- The release note may be pertinent in multiple-version OpenVMS Cluster systems.

Related Documents

For a list of additional documents that are available in support of this version of the OpenVMS operating system, refer to the *OpenVMS Alpha Version 7.3-1 New Features and Documentation Overview* manual.

For additional information about Compaq *OpenVMS* products and services, access the Compaq website at the following location:

<http://www.openvms.compaq.com/>

Reader's Comments

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Conventions

The following conventions are used in this manual:

Ctrl/ <i>x</i>	A sequence such as Ctrl/ <i>x</i> indicates that you must hold down the key labeled Ctrl while you press another key or a pointing device button.
PF1 <i>x</i>	A sequence such as PF1 <i>x</i> indicates that you must first press and release the key labeled PF1 and then press and release another key or a pointing device button.
Return	In examples, a key name enclosed in a box indicates that you press a key on the keyboard. (In text, a key name is not enclosed in a box.) In the HTML version of this document, this convention appears as brackets, rather than a box.

...	A horizontal ellipsis in examples indicates one of the following possibilities: <ul style="list-style-type: none"> • Additional optional arguments in a statement have been omitted. • The preceding item or items can be repeated one or more times. • Additional parameters, values, or other information can be entered.
.	A vertical ellipsis indicates the omission of items from a code example or command format; the items are omitted because they are not important to the topic being discussed.
()	In command format descriptions, parentheses indicate that you must enclose the choices in parentheses if you specify more than one.
[]	In command format descriptions, brackets indicate optional choices. You can choose one or more items or no items. Do not type the brackets on the command line. However, you must include the brackets in the syntax for OpenVMS directory specifications and for a substring specification in an assignment statement.
	In command format descriptions, vertical bars separate choices within brackets or braces. Within brackets, the choices are optional; within braces, at least one choice is required. Do not type the vertical bars on the command line.
{ }	In command format descriptions, braces indicate required choices; you must choose at least one of the items listed. Do not type the braces on the command line.
bold text	This typeface represents the introduction of a new term. It also represents the name of an argument, an attribute, or a reason.
<i>italic text</i>	Italic text indicates important information, complete titles of manuals, or variables. Variables include information that varies in system output (Internal error <i>number</i>), in command lines (<i>/PRODUCER=name</i>), and in command parameters in text (where <i>dd</i> represents the predefined code for the device type).
UPPERCASE TEXT	Uppercase text indicates a command, the name of a routine, the name of a file, or the abbreviation for a system privilege.
Monospace text	Monospace type indicates code examples and interactive screen displays. <p>In the C programming language, monospace type in text identifies the following elements: keywords, the names of independently compiled external functions and files, syntax summaries, and references to variables or identifiers introduced in an example.</p>
-	A hyphen at the end of a command format description, command line, or code line indicates that the command or statement continues on the following line.
numbers	All numbers in text are assumed to be decimal unless otherwise noted. Nondecimal radices—binary, octal, or hexadecimal—are explicitly indicated.

OpenVMS Alpha Software Installation Release Notes

This chapter contains information that you need to know before installing the OpenVMS Alpha Version 7.3-1 operating system.

Compaq recommends that you read all of the following manuals before installing OpenVMS Alpha Version 7.3-1:

- *OpenVMS Alpha Version 7.3-1 Release Notes* (this manual)
- *OpenVMS Alpha Version 7.3-1 New Features and Documentation Overview*
- *OpenVMS Alpha Version 7.3-1 Upgrade and Installation Manual*

1.1 Upgrade Paths

Direct Upgrade Paths to Version 7.3-1

You can upgrade *directly* to OpenVMS Alpha Version 7.3-1 from only the following versions of OpenVMS Alpha:

- Version 7.3
- Version 7.2-2
- Version 7.2-1
- Version 7.2-1H1
- Version 7.2
- Version 7.1-2

If you are currently on OpenVMS Alpha Version 6.2*x* or 7.1, you can do a two-step upgrade: first to Version 7.2-*x* or 7.3, and then to Version 7.3-1.

Cluster Concurrent Upgrades

During a concurrent upgrade, you must shut down the entire cluster and upgrade each system disk. No one can use the cluster until you upgrade and reboot each computer. Once you reboot, each computer will be running the upgraded version of the operating system. Upgrade paths are the same as for a direct upgrade.

Cluster Rolling Upgrades

During a cluster rolling upgrade, you upgrade each system disk individually, allowing old and new versions of the operating system to run together in the same cluster. There must be more than one system disk. The systems that are not being upgraded remain available.

Only the following OpenVMS Alpha and VAX versions are supported for mixed-version clusters:

- Version 7.3-1 (Alpha)
- Version 7.3 (Alpha and VAX)
- Version 7.2-2 (Alpha)
- Version 7.2-1 (Alpha)

OpenVMS Alpha Software Installation Release Notes

1.1 Upgrade Paths

Version 7.2-1H1 (Alpha)

Version 7.2 (VAX)

Mixed-version support for some of these versions is restricted for cluster members running either the Registry server or applications that use the Registry services. See Section 4.26.1.

Mixed-version support for all of these versions requires the installation of one or more remedial kits. See Section 4.22.8.

Only two versions are supported in a cluster at one time.

For a discussion of warranted pairs and migration pairs of OpenVMS operating systems, as well as complete instructions on installing or upgrading to OpenVMS Alpha Version 7.3-1, refer to the *OpenVMS Alpha Version 7.3-1 Upgrade and Installation Manual*.

1.2 Compaq Operating System Support Policy

V7.3-1

Effective immediately, Compaq Computer Corporation provides Standard Support, also known as current version level support, for its operating system software, OpenVMS and Tru64 UNIX, for the *greater of*:

- 24 months from the date the version releases, or
- As long as it is the currently shipping version, or
- 12 months after the release of a subsequent version

This policy applies to major releases, new feature releases, and enhancement releases. It does not apply to hardware releases. The four types of releases are as follows:

- **Major releases** for OpenVMS contain substantial new functionality. The version number increases to the next integer (for example, 6.2-1H1 to 7.0). Purchase of License Subscription service or an update license for the OpenVMS operating system is required. Major releases are shipped to service customers who have a valid service update contract. The application impact is that OpenVMS internal interfaces have changed. Although binary compatibility will be maintained for the majority of applications, ISVs should test on the new version, and might need to release a new application kit. Some application partners might want to release a new application kit that takes advantage of new features in the operating system.
- **New feature releases** for OpenVMS contain new features, enhancements and maintenance updates. The version number increases to the next decimal fraction (for example, 7.2 to 7.3). Purchase of License Subscription service or an update license for the OpenVMS operating system is required. New feature releases are shipped to service customers who have a valid service update contract. The release has not retired any published APIs. However, OpenVMS internal interfaces might have been modified as significant new functionality was added or performance improvements made. It is unlikely that a new application kit will be required for virtually all (95%) of the applications that use documented APIs. Device driver and kernel-level applications, (that is, those that use nonstandard or undocumented APIs) might need qualification testing.

OpenVMS Alpha Software Installation Release Notes

1.2 Compaq Operating System Support Policy

- **Enhancement releases** for OpenVMS contain enhancements to existing features and maintenance updates. The version number increases to show a revision by using a dash (for example, 7.3-1). Enhancement releases are shipped to service customers who have a valid service update contract; however, License Subscription service or an update license is not required. The release may contain new hardware support, software enhancements and maintenance, but the changes are isolated and have no impact on applications. Compaq is confident that the new release has 100% binary compatibility with the previous release. If an application compatibility problem is discovered, Compaq will assign the problem a high priority and commit to providing a fix. There is no need for ISVs to test on the new release or produce a new application kit.
- **Hardware releases** are an exception to the operating system support policy described above. They are supported at current version level support until 12 months after a subsequent release containing that particular hardware support. Hardware releases are shipped with new hardware sales only and are not distributed to existing service customers.

The following OpenVMS core products are supported at the same level (Standard Support or Prior Version Support) and duration as the operating system version on which they shipped:

- TCP/IP Services for OpenVMS
- X.25 for OpenVMS
- DECnet (Phase IV)
- DECnet-Plus for OpenVMS
- PATHWORKS
- Advanced Server for OpenVMS
- VMScluster Software for OpenVMS
- OpenVMS Cluster Client Software
- RMS Journaling for OpenVMS
- Volume Shadowing for OpenVMS

All other products have current version level support until 12 months after a subsequent release.

For detailed information on OpenVMS operating system support, including definitions of the types of OpenVMS releases, visit the following web site:

http://www.compaq.com/services/software/ss_openvms.html

1.3 General Application Compatibility Statement

OpenVMS has consistently held the policy that published APIs are supported on all subsequent releases. It is unlikely applications that use published APIs will require changes to support a new release of OpenVMS. APIs may be "retired," and thus removed from the documentation; the API will, however, continue to be available on OpenVMS as an undocumented interface.

OpenVMS Alpha Software Installation Release Notes

1.4 Firmware for OpenVMS Alpha Version 7.3-1

1.4 Firmware for OpenVMS Alpha Version 7.3-1

V7.3-1

The OpenVMS Version 7.3-1 CD-ROM package includes the Alpha Systems Firmware Update CD-ROM and Release Notes. We recommend you use the updated firmware with OpenVMS Version 7.3-1. Read the Release Notes before installing the firmware. Access the following web site for the most current firmware and the most up-to-date information on firmware (be sure to type the URL exactly as shown):

<http://ftp.digital.com/pub/DEC/Alpha/firmware/>

Note

The Alpha Systems Firmware Update Version 6.2 restricts the hot-swap capabilities supported in AlphaServer GS160/320 systems. Hot-swap operations should be avoided on these systems with Version 6.2 firmware. Access the firmware website for the latest firmware and information that will correct this restriction.

The minimum version of Alpha Systems Firmware tested with OpenVMS Alpha Version 7.3-1 is Version 6.1.

1.5 Networking Options

V7.3-1

OpenVMS provides customers with the flexibility to choose the network protocol of their choice. Whether you require DECnet or TCP/IP, OpenVMS allows you to choose the protocol or combination of protocols that works best for your network. OpenVMS supports both Compaq and third-party networking products.

During the main installation procedure for OpenVMS Version 7.3-1, you have the option of installing the following Compaq networking software:

- **Compaq TCP/IP Services for OpenVMS**

TCP/IP Services and DECnet can run concurrently on your system. Once you have installed Compaq DECnet-Plus for OpenVMS and TCP/IP Services on your system, you can run DECnet applications and OSI applications, or both, over your TCP/IP network. Refer to the *DECnet-Plus for OpenVMS Management Guide* for more information about running DECnet over TCP/IP (RFC 1859) and OSI over TCP/IP (RFC 1006).
- **Either DECnet-Plus for OpenVMS or Compaq DECnet for OpenVMS Phase IV for OpenVMS.** (Note that both DECnet products cannot run concurrently on your system.)

DECnet-Plus contains all the functionality of the DECnet Phase IV product, plus the ability to run DECnet over TCP/IP or OSI protocols.

Support for DECnet Phase IV is provided to customers with a Prior Version Support Contract.

Or, after you install OpenVMS, you can install a supported third-party networking product of your choice.

For information about how to configure and manage your Compaq networking software after installation, refer to the TCP/IP, DECnet-Plus, or DECnet documentation. The manuals in online format are available on the OpenVMS Documentation CD-ROM and can be ordered in printed format through Compaq (800-282-6672).

1.6 DECEvent Version 3.1 or Higher Required for Certain Systems

V7.3-1

Analyzing Earlier Hardware Platforms

DECEvent Version 3.1 or higher is required to analyze hardware error log files on certain supported, earlier-version hardware platforms (for example, the 1200, 8400, GS60, and GS140 platforms).

When you install OpenVMS Version 7.3-1 or 7.3, the DECEvent DCL command DIAGNOSE is disabled. If you are installing OpenVMS on a hardware platform that needs DECEvent and its DIAGNOSE command, perform the following in this order:

1. Install OpenVMS Version 7.3-1 or 7.3
2. Install the DECEvent software (included in the DECEvent kit on the Compaq System Tools CD-ROM)

Otherwise, when you attempt to use the DIAGNOSE command, you will receive the following system message:

```
$ DIAGNOSE [parameters]
%DIA-E-NOINSTALL, DIAGNOSE has not been installed on this system
```

Analyzing Later Platforms

Compaq Analyze is now the supported error log analysis tool for OpenVMS and for later hardware platforms (for example, the DSnn, ESnn, GS80, GS160, and GS320 platforms).

Analyzing Both Platforms

If you have both a DECEvent-supported platform and Analyze-supported storage devices, you will need both DECEvent and Compaq Analyze. To install Compaq Analyze, you must install the WEBES Version 4.0 kit and then the latest Service Pak.

The current version of the DECEvent kit is Version 3.4.

For detailed information about operating system requirements and supported hardware for DECEvent, refer to the DECEvent Release Notes, which are at the following web site:

<http://www.support.compaq.com/svctools/decevent/>

Follow the "Download the documentation" link.

For detailed information about operating system requirements and supported hardware for Compaq Analyze, refer to the WEBES Installation Guide, which is with the other WEBES documentation at the following web site:

<http://www.support.compaq.com/svctools/webes/>

Follow the "View WEBES documentation" link.

For more information about DECEvent, refer to the *OpenVMS System Manager's Manual, Volume 2: Tuning, Monitoring, and Complex Systems*.

OpenVMS Alpha Software Installation Release Notes

1.7 PCSI-I-RETAIN Messages During DECnet-Plus Installation

1.7 PCSI-I-RETAIN Messages During DECnet-Plus Installation

V7.2

If you upgrade to OpenVMS Version 7.3-1 or 7.3 *and* your system has either DCE for OpenVMS or DECnet-Plus for OpenVMS installed on it, when you install DECnet-Plus you may get PCSI-I-RETAIN informational messages for the following files:

```
[SYSEXEC]DTSS$SET_TIMEZONE.EXE
[SYSLIB]DTSS$RUNDOWN.EXE
[SYSUPD]DTSS$TIMEZONE_RULES.DAT
[SYSLIB]DTSS$SHR.EXE
```

For example:

```
%PCSI-I-RETAIN, file [SYSEXEC]DTSS$SET_TIMEZONE.EXE was not replaced
because file from kit has a lower generation number
```

You can ignore these messages. The DECnet-Plus kit has been properly installed.

1.8 Daylight Savings Time Error Message In Minimum Startup Boot

V7.3

When you boot with minimum startup (STARTUP_P1 "MIN"), the job controller indicates that Daylight Savings Time adjustments are not possible with the following message:

```
%JBC-W-SYSERROR, SYSS$MANAGER:JBC$DST_COMMAND.COM daylight savings time process
failed system service error at PC 00000000
```

This is correct and normal information to ensure awareness of a possible effect on the system time during the minimum startup procedure. It can safely be ignored if it does not affect your own requirements for the startup of the system (such as, during an upgrade or installation).

1.9 Registry Upgrade from OpenVMS Version 7.2-1 or 7.2-1H1

V7.3-1

The Registry shipped with OpenVMS Alpha Version 7.2-1 and Version 7.2-1H1 is different and incompatible with the Registry shipped with Versions 7.2-2, 7.3, and 7.3-1. If you are upgrading from an earlier version with the old Registry, you must take the following special steps:

If you choose to upgrade all Alpha nodes in the cluster at once, shut down only the Registry and all applications using the Registry before upgrading, and then reverse the process for startup after upgrading.

If you choose to upgrade only some nodes in the cluster at a time, then be aware that you can run Registry servers and applications on only the Version 7.2-1 and 7.2-1H1 nodes in the cluster, or on only the Version 7.2-2, 7.3, and Version 7.3-1 nodes in the cluster, but not both. Thus, before you upgrade each node in the cluster, you need to inhibit the startup of the following on the upgraded node:

- The Registry
- Advanced Server
- COM for OpenVMS

OpenVMS Alpha Software Installation Release Notes 1.9 Registry Upgrade from OpenVMS Version 7.2-1 or 7.2-1H1

- Any other applications using Registry

At some point, you will have to shut down all remaining Registry-based activity in the cluster just before you start up Registry and applications using Registry services on the Version 7.2-2, 7.3 or 7.3-1 nodes.

Note

If you are running Compaq Advanced Server for OpenVMS on OpenVMS Version 7.2-1 or 7.2-1H1, you must upgrade all nodes to Advanced Server V7.3 for OpenVMS before you upgrade any OpenVMS Version 7.2-1 or 7.2-1H1 node to OpenVMS Version 7.3 or Version 7.3-1.

The following steps describe the procedure you can use when upgrading from Version 7.2-1 OR 7.2-1H1 to Version 7.2-2, 7.3, or 7.3-1 on systems running the OpenVMS NT Registry:

1. Though not required, it is best to shut down the Registry in a graceful manner. Before shutting down the Registry, shut down all layered products that use the Registry. First, shut down applications specific to your environment, if any, which are known to use Registry services. Next, shut down layered products which use Registry services: for example, first shut down COM for OpenVMS, then Advanced Server. COM can be shut down using the command:

```
$ @SYS$STARTUP:DCOM$SHUTDOWN.COM
```

Advanced Server can be shut down using the command:

```
$ @SYS$STARTUP:PWRK$SHUTDOWN.COM
```
2. Create a snapshot of the Registry database by using the command:

```
$ MCR REG$CP CREATE SNAPSHOT
```
3. Export the Registry database by using the command:

```
$ MCR REG$CP EXPORT DATABASE [/LOG/OUTPUT=filename]
```
4. If you are upgrading all nodes in the cluster at the same time, make a note as to which node was acting as the master Registry server. You can determine which node was the master by issuing the command:

```
$ SHOW SERVER REGISTRY/MASTER
```
5. Shut down the Registry server or servers. If you are upgrading all nodes in the cluster at the same time, this can be performed using the command:

```
$ SET SERVER REGISTRY/CLUSTER/EXIT
```

If you are upgrading just one node in the cluster, issue the following command on the node:

```
$ SET SERVER REGISTRY/EXIT
```

If that node was the master, wait until it exits before you take any other action. Another node in the cluster will become the master.
6. Ensure that the Registry server does not restart on the node or nodes you are upgrading until the upgrade is complete, or, if you are selectively upgrading nodes, until you determine that you wish to switch over to the new server.

OpenVMS Alpha Software Installation Release Notes

1.9 Registry Upgrade from OpenVMS Version 7.2-1 or 7.2-1H1

To prevent Registry startup on reboot, you need to check two things on each node:

- a. In the file SYS\$MANAGER:SYLOGICALS.COM, comment out any logical name definitions that contain the string:

```
"TO_BE_STARTED"
```

- b. Make a note of the original settings for restoring later.
- c. If your SYS\$MANAGER:SYSTARTUP_VMS.COM automatically starts up Advanced Server, for example, by issuing the command:

```
$ @SYS$STARTUP:PWRK$STARTUP.COM
```

Comment out that line so that Advanced Server does not start on that node.

7. Proceed with the upgrade on each node.
8. Once all nodes have been upgraded, restart the master server by using the following command on the node that was originally running the master server:

```
$ SET SERVER REGISTRY/START
```

If you are selectively upgrading nodes, and you are ready to switch to using Registry services on the upgraded nodes, shut down the Registry server, and applications using Registry services, on all remaining OpenVMS Version 7.2-1 and 7.2-1H1 nodes in the cluster using steps 1-6 outlined above. Then you can start the Registry server on one of the upgraded nodes.

9. Verify that the Registry is operational by using the command:

```
$ MCR REG$CP LIST KEY HKEY_LOCAL_MACHINE
```

This command should display at least four subkeys of the HKEY_LOCAL_MACHINE root key. The same command should be repeated with the HKEY_USERS root key, which should display at least one subkey.

Note

In the unlikely event that the Registry is not operational, follow the steps in the *COM, Registry, and Events for OpenVMS Developer's Guide* describing how to restore your database from the snapshot files. If this fails, delete all the files in the SYS\$REGISTRY directory, or rename the directory, and invoke SYS\$STARTUP:REG\$CONFIG to reconfigure the Registry server (refer to the *COM, Registry, and Events for OpenVMS Developer's Guide* for details), then import the database file that was saved in step 3.

10. Start the backup Registry servers on the other upgraded nodes using the command:

```
$ SET SERVER REGISTRY/START
```

11. Restore the values of "TO_BE_STARTED" logical name definitions in SYS\$MANAGER:SYLOGICALS.COM and the invocation of Advanced Server startup in the SYS\$MANAGER:SYSTARTUP_VMS.COM file.

OpenVMS Alpha Software Installation Release Notes 1.9 Registry Upgrade from OpenVMS Version 7.2-1 or 7.2-1H1

If you are selectively upgrading nodes, you should comment out the "TO_BE_STARTED" logical name definitions in the SYS\$MANAGER:SYLOGICALS.COM file and the invocation of Advanced Server startup in the SYS\$MANAGER:SYSTARTUP_VMS.COM file on any remaining OpenVMS Version 7.2-1 nodes in the cluster, as described in step 6.

12. Restart the Advanced Server, COM for OpenVMS, and any other applications that use Registry on the upgraded nodes.

1.10 QIO\$CONFIGURE Process Replaced by CONFIGURE Process

V7.3-1

The CONFIGURE process is one phase of the system startup procedure controlled by SYS\$SYSTEM:STARTUP.COM. For OpenVMS Version 7.3, the QIO\$CONFIGURE process replaced the CONFIGURE process. However, as of OpenVMS Version 7.3-1, QIO\$CONFIGURE (along with the other software specific to QIOserver) is no longer supported. The CONFIGURE process (from versions prior to Version 7.3) is once again in effect. If you have included the QIO\$CONFIGURE process in a command procedure, you must change its name to CONFIGURE.

There is a Version 7.3 remedial kit that has the CONFIGURE process (replacing QIO\$CONFIGURE). This kit is VMS73_CLUSTER-V0200.

For more information about SYS\$SYSTEM:STARTUP.COM and the role of the CONFIGURE process in system startup, refer to the *OpenVMS System Manager's Manual*.

1.11 Removing Kerberos V1.0 Before Upgrading

V7.3-1

If you have Kerberos Version 1.0 for OpenVMS Alpha installed, you must use the PCSI utility to remove it before you upgrade the operating system.

To remove Kerberos, select "Remove installed products" at the main menu. During the removal, you are asked if you want to remove the data and directories. (Data refers to the configuration data files along with the principal database, if one was created.) If you want to save this information for use later, respond "No" to the question. Return to the main menu and perform the upgrade of OpenVMS.

After the upgrade, the new Kerberos directories are located under SYSEXE in KERBEROS.DIR. New Kerberos data is either created during configuration or copied from the old Kerberos directories. If you removed a previously installed Kerberos PCSI kit and saved the data and directories, you can copy that data into the new directories. To do this, enter the following commands from the SYSTEM account:

```
$ @sys$manager:krb$logicals.com
$ rename/log sys$common:[sysexe.etc]*.* krb$root:[etc]*.*;
$ rename/log sys$common:[sysexe.bin]*.dat krb$root:[bin]*.*;
$ rename/log sys$common:[sysexe.krb5kdc]*.* krb$root:[krb5kdc]*.*;
```

To optionally save the log files, enter the following:

```
$ rename/log sys$common:[sysexe.log]*.* krb$root:[log]*.*;
```

OpenVMS Alpha Software Installation Release Notes

1.11 Removing Kerberos V1.0 Before Upgrading

Start the Kerberos servers by entering the following command:

```
$ @sys$startup:krb$startup.com
```

1.12 Tuning BAP System Parameters

V7.3-1

OpenVMS Alpha Version 7.1 and higher contains system parameters that control the operation of bus-addressable pool (BAP). If one or more of your system adapters uses BAP, the BAP system parameters must be adjusted after installing or upgrading the operating system. No user action is required because AUTOGEN automatically sets these parameters correctly as part of the installation or upgrade.

If you change logical partition parameters (Alpha console environment variables beginning with lp) or boot in one logical partition from a system disk that was configured in a different logical partition, you must take explicit action to adjust BAP system parameters. Refer to the *OpenVMS System Manager's Manual* for details on setting the BAP parameters.

Note

On OpenVMS Alpha systems prior to Version 7.2, the values of parameters NPAG_BAP_MIN_PA and NPAG_BAP_MAX_PA are specified in bytes. On OpenVMS Alpha Version 7.2 and higher, the values of these same parameters are specified in megabytes.

The upgrade procedure normally changes these parameters to the correct units. However, if you set parameters NPAG_BAP_MIN_PA and NPAG_BAP_MAX_PA manually, be sure to specify the value for each parameter in the correct units. If you do not do this, the system may hang during boot or may fail shortly after booting.

1.13 Associated Products Affecting OpenVMS Installation

The remainder of this chapter concerns associated (layered) products that might affect the installation of the OpenVMS operating system.

1.14 Installing DECwindows and Insufficient Global Sections

V7.3

Compaq DECwindows does not calculate sufficient global sections to start up if you install it together with certain associated (layered) products. Therefore, DECwindows may fail to start up during the first system startup after reboot. You will see a message similar to the following on the console:

```
%DECW-W-BADVALUE, Free GBLSECTIONS is 251, should be at least 280
```

At this point, DECwindows offers to run AUTOGEN for you:

```
Do you want the system to run AUTOGEN for you [YES]?
```

Type NO, because a manual adjustment is needed. (Some system parameters must be reset for DECwindows to start. If you type YES, AUTOGEN changes these parameters and reboots your system, but DECwindows does not start. If you type NO, AUTOGEN does not run or cause a reboot, allowing you to log in and adjust the system parameters manually to enable DECwindows to start.)

OpenVMS Alpha Software Installation Release Notes

1.14 Installing DECwindows and Insufficient Global Sections

Perform the following steps so that DECwindows starts:

1. Type NO to the question:

```
Do you want the system to run AUTOGEN for you [YES]?
```

2. When the system completes startup, log in to the console.
3. Manually update SYS\$SYSTEM:MODPARAMS.DAT to increase the size of the global sections. For example, you may add the following line to SYS\$SYSTEM:MODPARAMS.DAT:

```
MIN_GBLSECTIONS = 700
```

4. Run AUTOGEN to correct the system parameters.

```
$ @SYS$UPDATE:AUTOGEN GETDATA TESTFILES NOFEEDBACK
```

5. Check whether current values are sufficient to run DECwindows by running:

```
$ @SYS$MANAGER:DECW$GETPARAMS.COM
```

6. Run AUTOGEN again.

```
$ @SYS$UPDATE:AUTOGEN GENPARAMS REBOOT NOFEEDBACK
```

1.15 PATHWORKS and Advanced Server for OpenVMS Products

V7.3-1

These notes pertain to PATHWORKS and Advanced Server for OpenVMS products, and include information about installing or upgrading OpenVMS systems running these products.

1.15.1 Compaq Advanced Server for OpenVMS

Version 7.3 of Compaq Advanced Server for OpenVMS is supported on OpenVMS Alpha Version 7.3-1 systems. Advanced Server Versions 7.2 and 7.2A for OpenVMS servers must be upgraded. For more information about upgrading Advanced Server for OpenVMS servers, see Section 1.15.6.

1.15.2 Compaq PATHWORKS for OpenVMS (Advanced Server)

Version 6.1 of Compaq PATHWORKS for OpenVMS (Advanced Server) is supported on OpenVMS Alpha Version 7.3-1 systems. Earlier versions of PATHWORKS for OpenVMS servers must be upgraded. For more information about upgrading earlier versions of PATHWORKS, see Section 1.15.5.

1.15.3 PATHWORKS V5 for OpenVMS (LAN Manager) Not Supported

PATHWORKS V5 for OpenVMS (LAN Manager) is not supported on OpenVMS Version 7.3-1.

If you are running PATHWORKS V5 for OpenVMS (LAN Manager) and you want to offer file and print services after you install OpenVMS Version 7.3-1, you must upgrade the file and print server to PATHWORKS V6.1 for OpenVMS (Advanced Server) before you install OpenVMS Version 7.3-1.

You cannot upgrade directly from PATHWORKS V5 for OpenVMS (LAN Manager) to Advanced Server V7.3 for OpenVMS. For information about upgrading from PATHWORKS V5 for OpenVMS (LAN Manager) to PATHWORKS V6.x for OpenVMS (Advanced Server), refer to the *PATHWORKS for OpenVMS (Advanced Server) Server Installation and Configuration Guide* provided with the kit documentation. For information about upgrading earlier versions of

OpenVMS Alpha Software Installation Release Notes

1.15 PATHWORKS and Advanced Server for OpenVMS Products

PATHWORKS for OpenVMS (Advanced Server) to PATHWORKS V6.1 for OpenVMS (Advanced Server), see Section 1.15.5.

1.15.4 Upgrading Systems Running PATHWORKS Version 6.x or Advanced Server Version 7.2x for OpenVMS

Version 6.1 of PATHWORKS for OpenVMS (Advanced Server) and Version 7.3 of Advanced Server for OpenVMS ship with OpenVMS Version 7.3-1 and provide file and print services for the OpenVMS system.

PATHWORKS servers earlier than Version 6.1 and Advanced Server for OpenVMS servers earlier than Version 7.3 are not supported on OpenVMS Version 7.3-1. If you want to run OpenVMS Version 7.3-1, you must first upgrade PATHWORKS and Advanced Server for OpenVMS servers to the appropriate versions.

For more details about upgrading PATHWORKS Version 6.x and Advanced Server Version 7.2x servers, see Section 1.15.5 and Section 1.15.6, respectively.

1.15.5 Upgrading Systems with Pre-V6.1 PATHWORKS Advanced Server

V7.3

If you are upgrading an OpenVMS system that is currently running a version of PATHWORKS for OpenVMS (Advanced Server) that is earlier than Version 6.1, follow these steps:

1. Upgrade your PATHWORKS for OpenVMS (Advanced Server) to Version 6.1.
2. Upgrade your OpenVMS system to OpenVMS Version 7.3-1.
3. At this point, you also have the option of upgrading PATHWORKS for OpenVMS (Advanced Server) to Advanced Server V7.3 for OpenVMS.

1.15.6 Upgrading Advanced Server Version 7.2x for OpenVMS

If you want to upgrade your Advanced Server for OpenVMS server, follow these steps:

1. Upgrade your Advanced Server V7.2/7.2A for OpenVMS server to Advanced Server V7.3 for OpenVMS.
2. Upgrade your OpenVMS Alpha system to OpenVMS Version 7.3-1.

Note

Because of changes to the OpenVMS Registry protocol, you cannot run Advanced Server for OpenVMS software on OpenVMS Alpha Version 7.3-1 systems and OpenVMS Alpha systems prior to Version 7.2-2 in the same cluster.

For more information about upgrading systems in mixed-version clusters, see Section 1.9.

OpenVMS Alpha Software Installation Release Notes
1.16 Compaq SDK v 1.2.2-1 Incompatible with OpenVMS Version 7.3 or Higher

1.16 Compaq SDK v 1.2.2-1 Incompatible with OpenVMS Version 7.3 or Higher

V7.3-1

The Compaq Software Development Kit (SDK) for the OpenVMS Operating System, *for the Java™ Platform*, v 1.3.1-3, is the current version, and is included on the Compaq OpenVMS e-Business Infrastructure Package Version 1.3 CD-ROM.

Because of contractual agreements with Adobe Systems Incorporated, Compaq has removed the Display PostScript files and libraries from the Compaq DECwindows Motif for OpenVMS V1.2-6 software. Consequently, OpenVMS Alpha Version 7.3 or higher does not include the files necessary to run a Java™ application with a GUI using the SDK v 1.2.2-1.

The restriction applies only to the SDK v 1.2.2-1 release. The Java Development Kit (JDK) version 1.1 as well as all SDK releases subsequent to v 1.2.2-1 are not dependent on the Adobe Display PostScript software or its libraries.

OpenVMS Associated Products Release Notes

This chapter contains information on OpenVMS associated products.

For notes about using compilers, linkers, and run-time library routines, see Chapter 5.

2.1 Layered Product Support

The Software Public Rollout Reports for OpenVMS list the availability of Compaq's software products shipping on the Software Products Library kits (CD-ROM consolidations) for OpenVMS Alpha and OpenVMS VAX.

The reports contain the product name and version, the operating system version required to support the product, and the volume ship date for the product. The information in these tables is continually evolving and is subject to change. The reports are intended for public distribution and are updated monthly. The information is not provided in these release notes because of the changing nature of the information.

These reports are available from the OpenVMS home page on the World Wide Web in the OpenVMS Products section. Visit the following web site to access the OpenVMS Software Public Rollout Reports for OpenVMS:

<http://www.openvms.compaq.com/openvms/os/swroll/index.html>

If you do not have Internet access, you can find the operating system support information on any of the quarterly Software Products Libraries in the following directory:

[README]SW_COMPAT_MATRIX.PS (.TXT)

The Software Public Rollout Reports are also available from your Compaq support representative.

2.2 Expectations in Using File-Name Case Sensitivity

V7.3-1

OpenVMS Alpha now supports the option of case-sensitive file name lookup. Case-blind file name lookup is the default behavior, and is the behavior in previous versions of OpenVMS.

This feature is a very significant change in behavior, and cannot be expected to work seamlessly with existing applications. Enabling case-sensitive file name lookup can break existing applications; disabling case-sensitive file name lookup restores the previous behavior. At the same time, case-sensitive operations can be critical in porting some applications (usually from UNIX) that either expect or depend on case sensitivity.

OpenVMS Associated Products Release Notes

2.2 Expectations in Using File-Name Case Sensitivity

Case-sensitive operations do not work well when case is not preserved. OpenVMS ODS-2 volumes do not support preservation of case in file names. DCL will convert all command line parameters to uppercase, unless the process attribute `PARSE_STYLE` is set to `EXTENDED`. The DECC run-time library will modify case for file names unless the `DECC$EFS_CASE_PRESERVE` parameter is set.

Case sensitivity should be used where case sensitivity is important to the application, in environments that support case preservation. Avoid using case sensitivity with applications not known to support case sensitivity. For example, file names or file types coded into applications developed for a case-blind environment might not match the actual case of files they reference.

Case sensitivity applies to file operations. It is normally enabled as a process attribute (in DCL, `SET PROCESS /CASE`, or in an application with the `SYS$SET_PROCESS_PROPERTIESW` service). This attribute affects file system operations made through RMS services, such as `$CREATE`, `$OPEN`, and `$SEARCH`. File operations that use the ACP `$QIO` interface must code case sensitivity explicitly.

Case preservation affects how file names are stored in the file system. `SET PROCESS/PARSE_STYLE` determines whether DCL forces file names to uppercase or stores them as they are; similarly, the DECC run-time library and applications can choose to uppercase or preserve file names. With case preservation enabled, file names are put into the file system exactly as entered. However, mixed-case names used in case-blind operations behave very much like traditional uppercase-only file names.

See Section 5.6 for information on compiling C programs with the `case=sensitive` setting.

2.3 ACMS—Applications Not Starting

V7.3-1

ACMS V4.4A applications might fail to start and report "server died unexpectedly." The `EXBYTLM` error may be reported and increasing `BYTLM` does not help.

This problem is corrected in an ECO for ACMS V4.4A:

`ACMS_U1_044.A`

You can install the ECO patch on OpenVMS Alpha Version 7.3 and higher either prior to or after installing OpenVMS Alpha V7.3-1.

The problem will also be corrected in ACMS V4.4B, which is scheduled for consolidated distribution in the Software Products Library for Q3 CY2002.

2.4 ACMS—IVP Failure Due to Server Aborting

V7.3-1

If you install ACMS V4.4A on OpenVMS Alpha V7.3-1, the Installation Verification Procedure (IVP) can fail, reporting that the "server died unexpectedly." This situation also involves `EXBYTLM` on the process, and increasing the `BYTLM` does not help.

This problem is corrected in an ECO for ACMS V4.4A called:

`ACMS_U1_044.A`

OpenVMS Associated Products Release Notes 2.4 ACMS—IVP Failure Due to Server Aborting

You can install the ECO patch on OpenVMS Alpha Version 7.3 and higher either prior to or after installing OpenVMS Alpha V7.3-1.

The problem will also be corrected in ACMS V4.4B, which is scheduled for consolidated distribution in the Software Products Library for Q3 CY2002.

2.5 FMS—ECO Needed to Correct Installation Problem

V7.3-1

When you install FMS on OpenVMS Alpha, a problem occurs during the Sample Application Programs Installation. To correct it, install the following ECO patch after the installation of FMS:

DECFMSECO5024

2.6 Changes to Time Zone Rules

V7.3

In OpenVMS Version 7.3, the time zone database has been updated as follows:

- In the Europe timezone file, the rules for the following time zones have been updated:

Time Zone Name	Territory or State
Reykjavik	Iceland
Turkey	Turkey

- In the Asia timezone file, the rules for the following time zones have been updated:

Time Zone Name	Territory or State
Jerusalem	Israel
ROK	Republic of Korea

- In the Australia timezone file, the rules for the following time zones have been updated:

Time Zone Name	Territory or State
ACT	Australia Capital Territory
NSW	New South Wales
NT	Northern Territory
QLD	Queensland
SA	South Australia
TAS	Tasmania
VIC	Victoria
WA	Western Australia

2.7 COBOL—RMS Special Registers and RMS\$_FNM Compared to RMS\$CRE

V7.3

Because of the addition of Extended File Support in OpenVMS Alpha Version 7.2 you may notice changes in the handling of I/O runtime diagnostics and RMS special registers on OpenVMS Alpha Version 7.2 and higher. In particular, a long file name that produced RMS\$_FNM under versions of OpenVMS Alpha prior to Version 7.2 now produces RMS\$CRE on OpenVMS Alpha Version 7.2 and higher. This difference is reflected in I/O runtime diagnostics and RMS special registers. You do not need to use the new ODS-5 support to see these RMS differences.

2.8 DECdfs

This section contains release notes pertaining to DECdfs for OpenVMS.

2.8.1 DECdfs Version 2.3-2 Required for OpenVMS Alpha Version 7.3-1

V7.3-1

To run DECdfs for OpenVMS on OpenVMS Alpha Version 7.3-1, you must install Version 2.3-2. If you install earlier versions of DECdfs on OpenVMS Alpha Version 7.3-1, your system will fail. DECdfs for OpenVMS Version 2.3-2 ships with OpenVMS Version 7.3-1.

DECdfs Version 2.3-1 or higher is required for OpenVMS Version 7.3. It is recommended that earlier versions of OpenVMS also run at least DECdfs Version 2.3-1 (see Section 2.8.2).

2.8.2 DECdfs Version 2.3-1 or Higher Recommended on Other Versions of Systems Running DECnet-Plus for OpenVMS

V7.3

DECdfs Version 2.3-1 or higher contains corrections for a number of connection-related issues when running on a system with DECnet-Plus — particularly on systems with multiple network circuits. Therefore, DECdfs Version 2.3-1 or higher is highly recommended for any supported system running DECnet/OSI or DECnet-Plus.

In addition, DECdfs Version 2.3-1 added support for DECnet-over-IP connections. For more information, please refer to the release notes in SYS\$HELP after the product installation.

2.9 New Versions of Availability Manager and DECcmds Software

V7.3-1

To monitor OpenVMS Alpha Version 7.3-1 nodes, use one of the following:

- Availability Manager Version V2.2
- DECcmds Version V7.3-1

These software versions are part of the OpenVMS Alpha Version 7.3-1 software kit.

The following software versions will *not* monitor OpenVMS Alpha Version 7.3-1 nodes:

- Availability Manager Version 2.0-1 and earlier

OpenVMS Associated Products Release Notes 2.9 New Versions of Availability Manager and DECams Software

- DECams Versions 7.3B and earlier

2.10 Compaq DECforms Web Connector Version 3.0

V7.3-1

Perform the following tasks to enable Compaq DECforms Web Connector V3.0 to run on OpenVMS Version 7.3-1:

1. Remove or comment out the following line:

```
$ @sys$common:[JAVA$122.COM]JAVA$122_SETUP.COM
```

from these command procedures in the FORMS\$INSTALL_AREA directory:

- FORMS_SMGR_STARTUP.COM
 - FORMS_WEB\$STARTUP.COM
 - FORMS_WEB\$STARTUP.COM
2. Ensure that Java environment is set up system wide for ALL processes. Compaq recommends adding the Java environment setup in the system's SYLOGIN.COM.
 3. Ensure that the browser clients use Sun Java Plugin Version 1.2.2, as stated in the SPD and the Administrative guide.

2.11 DECram

V7.3-1

This section contains release notes about DECram.

2.11.1 DECram Commands and Errors

V7.3-1

It is important to check for disk errors after issuing any DECram command, because not all errors are returned to the user interface. Errors specific to a device are sent to the system error log. Type SHOW DEVICE MD at the DCL prompt to see if any device errors were generated as a result of a DECram command. You will need to use an error log analyzer tool to recover the error. Errors are logged in ASCII file format; you can search for errors with an MD-E-FAILURE prefix in the SYS\$SYSROOT:[SYSERR]ERRLOG.SYS file.

2.11.2 DECram and Volume Shadowing

V7.3-1

DECram Version 3.1, using Volume Shadowing for OpenVMS, can shadow a DECram disk to a physical disk. However, be aware that in the current implementation of Volume Shadowing for OpenVMS, if the physical disk goes away, you will be writing to a volatile disk. A mechanism that will “freeze writes” if the physical disk goes away is planned for a future release of Volume Shadowing for OpenVMS.

OpenVMS Associated Products Release Notes

2.11 DECram

2.11.3 Earlier Versions of DECram

V7.3-1

DECram Version 3.1 runs on OpenVMS Alpha systems, including Galaxy configurations, running OpenVMS Alpha Version 7.2-1H1 or higher. DECram Version 3.1 and supporting documentation are included on the Software Products Library and the Online Documentation Library CD-ROMs.

DECram Version 2.5 runs on all versions of OpenVMS for both VAX and Alpha systems, including Version 7.3-1. Version 2.5, like Version 3.1, uses IOPOST_LOCAL postprocessing and allocates memory across Resource Affinity Domains (RADs).

Version 2.3 does not have the most recent corrections in device drivers.

The following table summarizes OpenVMS support for versions of DECram:

DECram Version	Supported on OpenVMS Alpha Versions	Supported on OpenVMS VAX Versions
V3.1	V7.2-1H1 and higher	No
V2.5	All	All
V2.4	V7.2-1	V6.2-V7.3
V2.3	V6.2-1H3	V5.5-2

2.12 Lightweight Directory Access Protocol (LDAP) API

The following sections contain release notes pertaining to the LDAP API.

2.12.1 The Routine `ldap_get_option` Returns Error -1 When `ld` Is NULL

V7.3

Using a value of NULL for the `ld` parameter in a call to `ldap_get_options()` results in an error of -1 being returned, rather than the routine returning a set of global default data.

2.12.2 The Routine `ber_flatten()` Fails to Detect Mismatched Braces

V7.3

The routine `ber_flatten()` does not correctly detect the situation where `'{'` and `'}'` format modifiers in a `BerElement` are incorrectly matched.

2.13 DECwindows Motif

This section contains release notes pertaining to the Compaq DECwindows Motif for OpenVMS layered product.

2.13.1 System Parameter Values Required for Installation

V7.3-1

The installation procedure for DECwindows Motif for OpenVMS Version 1.2-6 can fail if the values for the `GBLPAGES`, `FREE_GBLPAGES`, and `CLISYMTBL` system parameters are set too low.

The installation fails with the following error:

```
%SYSTEM-W-NOSUCHFILE, no such file  
\sys$library:decw$xlibshr.exe\
```

If the installation fails, set these parameters to the minimum values shown in the following table, then reinstall the product.

	GBLPAGES	FREE_GBLPAGES	CLISYMTBL
Alpha	150000	92000	512
VAX	62000	47000	265

2.13.2 User-Written Transports Unsupported in a Future Release of Compaq DECwindows Motif for OpenVMS Alpha

V7.3-1

Support for user-written network transports will be discontinued with the next release of DECwindows Motif for OpenVMS Alpha. Compaq DECwindows Motif for OpenVMS Alpha Version 1.3 will include significant changes in the transport interface to support multithreading and the communication needs of the Inter-Client Exchange (ICE) protocol, Font server, and Input Method server.

All existing transports (DECNET, TCPIP, and LOCAL) will remain available and function as expected. However, Compaq will no longer provide support for designing and implementing user-written transports based on the updated transport interface. As a result, the *VMS DECwindows Transport Manual* will be archived and the new libraries will not be documented or made available publicly.

If you have implemented a custom transport and want to migrate that transport to the Compaq DECwindows Motif for OpenVMS Alpha Version 1.3 environment, contact your Compaq customer representative to develop a migration strategy.

2.13.3 DECwindows Language Variants Not Available in Some Versions

V7.3

Language variants are not available for Compaq DECwindows Motif for OpenVMS Version 1.2-6. The Japanese and German variants are available for DECwindows Motif Version 1.2-5, and the Hebrew variant is available for DECwindows Motif Version 1.2-4. Consult your Compaq support representative for more information.

2.14 MultiNet Version 4.3

V7.3

Users of Process Software MultiNet Version 4.3 (or earlier) who are also using DCE should install the UCXDRIVER-041_a043 (or higher) ECO from Process Software. MultiNet Version 4.4 includes the fix.

Refer to the following web site to obtain the most recent patch and any dependencies for your version and/or contact Process Software Technical Support:

<http://www.multinet.process.com/eco.html>

OpenVMS Associated Products Release Notes

2.15 Installing Compaq Open3D on OpenVMS Alpha Version 7.3

2.15 Installing Compaq Open3D on OpenVMS Alpha Version 7.3

V7.3

During installation of Open3D on OpenVMS Alpha Version 7.3 or higher, an older version of the SYS\$LOADABLE_IMAGES:SYS\$GYCDRIVER.EXE image is installed. Before you install Open3D on OpenVMS Alpha Version 7.3 or higher, perform one of the following tasks:

- Create a backup copy of the SYS\$LOADABLE_IMAGES:SYS\$GYCDRIVER.EXE image. Once Open3D is installed, restore the backup copy of SYS\$LOADABLE_IMAGES:SYS\$GYCDRIVER.EXE.
- Do not purge files during the Open3D installation. Enter the following command after installation:

```
$ RENAMe SYS$LOADABLE_IMAGES:SYS$GYCDRIVER.EXE;-1 ;0
```

2.16 Pascal—Installing Compaq Pascal Version 5.5 After an Upgrade

V7.3

After upgrading OpenVMS, you should reinstall Compaq Pascal to produce new versions of STARLET.PAS and other definition files to match the upgraded system.

If you do not reinstall Compaq Pascal after upgrading OpenVMS, the compiler on your system will still work correctly. However, STARLET.PAS and the other definition files will not contain any new or corrected definitions supplied by the OpenVMS upgrade.

2.17 DEC PL/I—RTL Support for OpenVMS

V7.3

There is a known incompatibility between the PL/I RTL distributed with the OpenVMS operating system and the more recent PL/I RTL owned and distributed by Kednos Corporation. The older version shipped with the OpenVMS operating system may overwrite a newer version. The image in question is SYS\$LIBRARY:DPLI\$RTL\$SHR.EXE.

OpenVMS distributes the following version of the file, which can be identified by using the ANALYZE/IMAGE command:

Image Identification Information

```
image name: "DPLI$RTL$SHR"  
image file identification: "V4.0-6"
```

If you perform an ANALYZE/IMAGE command before upgrading to OpenVMS Version 7.3 or higher and find a newer version of DPLI\$RTL\$SHR.EXE, you can either copy it and restore it after the upgrade or reinstall the PL/I kit afterward.

Any questions about DEC PL/I and VAX PL/I should be directed to Kednos Corporation at the following address:

Kednos Corporation
1051 Rodeo Road
Pebble Beach, CA. 93953
Phone: (831) 373-7003

OpenVMS Associated Products Release Notes 2.17 DEC PL/I—RTL Support for OpenVMS

Email: tom@kednos.com

2.18 Multithreaded Applications Using Sockets and Java 2 Fast VM

V7.3-1

On all versions of OpenVMS 7.2-1 and above, Web-Based Enterprise Services (WEBES) 4.0 processes can fail with a stack overflow or bugcheck during installation, and during operation before the latest Service Pak is applied. This problem has not been observed on OpenVMS Alpha Version 7.3-1. Similar problems are possible with other multithreaded applications that use sockets and Java 2 Fast VM.

The following stack overflow and bugcheck messages resulted from attempts to run WEBES, Version 4.0 with Service Pack 1, 2, or 3 in this environment. The problem has been corrected in Service Pack 4 for WEBES Version 4.0.

```
%SYSTEM-F-STKOVF, stack overflow, PC=FFFFFFFF804830F8, PS=0000001B
%TRACE-F-TRACEBACK, symbolic stack dump follows
  image      module      routine      line      rel PC      abs PC
          PTHREAD$RTL          0 0000000000000000 FFFFFFFF804830F8
          PTHREAD$RTL          0 00000000000470D0 000000007BC130D0
          PTHREAD$RTL          0 FFFFFFFF800EE4B4 FFFFFFFF800EE4B4
          PTHREAD$RTL          0 0000000000000000 FFFFFFFF80081898
          PTHREAD$RTL          0 00000000000470D0 000000007BC130D0
```

Further lines referencing PTHREAD\$RTL follow:

```
%DECThreads bugcheck (version V3.15-267), terminating execution.
% Reason: selected a non-ready thread -2 (0x0000000000261B40) state blocked
% Running on OpenVMS V7.2-1 on AlphaServer 1200 5/533 4MB, 256Mb; 2 CPUs
% The bugcheck occurred at 01-AUG-2001 13:39:20.48, running image
% PEAKSI$CBL200:[SYS0.SYSCOMMON.COMPAQ.SVCTOOLS.][JRE.122.BIN]JAVA$JAVA.EXE;1
% in process 0000301A (named "_FTA14:"), under username "ISLANDS". AST
% delivery is enabled for all modes; no ASTs active. Upcalls are enabled.
% Multiple kernel threads are enabled.
% The current thread sequence number is -2, at 0x00261B40
% Current thread traceback:
% 0: PC 0x7BBEBB38, FP 0x0025F9A0, DESC 0x7BBCDBE8
% 1: PC 0x7BBE9F24, FP 0x0025FA70, DESC 0x7BBCD6A8
% 2: PC 0x7BBE7CDC, FP 0x0025FAE0, DESC 0x7BBCD788
% 3: PC 0x7BC12688, FP 0x0025FB80, DESC 0x7BBD2C10
% 4: PC 0x800EE48C, FP 0x0025FC10, DESC 0x80CC68C0
% 5: PC 0x800DABBC, FP 0x0025FC90, DESC 0x80CC4140
% 6: PC 0x7BC17578, FP 0x0025FCB0, DESC 0x7BBD30E0
% 7: PC 0x7BC0B5A8, FP 0x0025FCD0, DESC 0x7BBD1BB0
% 8: PC 0x7BC0A720, FP 0x0025FD00, DESC 0x7BBD1BE8
% 9: PC 0x7BBFD2FC, FP 0x0025FDA0, DESC 0x7BBD00A8
% 10: PC 0x7BBED504, FP 0x0025FFE0, DESC 0x7BBCE480
% 11: PC 0x00000000, FP 0x7AF73A60, DESC 0x7BBCC4B0
% 12: PC 0x848E3414, FP 0x7AF77B30, DESC 0x848E5CF0
% 13: PC 0x7B04552C, FP 0x7AF77BB0, DESC 0x7B01C330
% Bugcheck output saved to pthread_dump.log.
%SYSTEM-F-IMGDMP, dynamic image dump signal at PC=000000007BBEBC98, PS=0000001B
```

These messages are recorded in the following file:

```
SVCTOOLS_HOME:[LOGS]DESTA_DIR.LOG
```

Workaround

OpenVMS Associated Products Release Notes

2.18 Multithreaded Applications Using Sockets and Java 2 Fast VM

The following procedure prevents this problem from occurring:

1. If WEBES is *not* currently installed, go to step 2. If WEBES is currently installed, it may not have installed correctly because of this problem. Issue the following commands to safely remove WEBES:

```
$ THREADCP/DISABLE=MULTI SVCTOOLS_HOME:[JRE.122.BIN]JAVA$JAVA.EXE
$ PRODUCT REMOVE WEBES
```

2. Begin the WEBES installation using the PRODUCT INSTALL command as documented in the *WEBES Installation Guide*.
3. When the installation reaches the following prompt after passing the "...90%" point of the installation:

```
Do you want to add DESTA$STARTUP and DESTA$SHUTDOWN to system startup
and shutdown procedures? [YES]
```

Do not answer the question yet.

4. Start a new login session on the same node on which you are installing WEBES.
5. In the new session, enter the following command:

```
$ THREADCP /DISABLE=MULTI SVCTOOLS_HOME:[JRE.122.BIN]JAVA$JAVA.EXE
```

This command forces any WEBES process to run on a single CPU, which prevents the failures.

6. In the original session, continue with the WEBES installation. It should complete successfully with no errors.
7. Log out of the session, and log in to the the same machine.
8. Install the latest Service Pak for WEBES V4.0.

General User Release Notes

This chapter provides information for all users of the OpenVMS operating system. It includes information about commonly used commands and utilities.

For information about new features included in this version of the software, refer to the *OpenVMS Alpha Version 7.3-1 New Features and Documentation Overview*.

3.1 SYS\$PARSE Error Reporting—Change

V7.3-1

The SYS\$PARSE service (unless NAM[L]\$V_SYNCHK is set) accesses directories. Prior to Version 7.3-1, errors were not returned if the lowest level directory could not be accessed. As of Version 7.3-1, if a directory at any level cannot be accessed, an error such as RMS\$_PRV may be returned.

3.2 Increased Memory Required for Compaq Secure Web Browser (Based on Mozilla)

V7.3-1

If you have an OpenVMS workstation and are using Compaq Secure Web Browser (CSWB), 128 Mb is the minimum memory requirement and 256 Mb is highly recommended for more robust performance.

3.3 OpenVMS Connectivity Developer Guide Title Change

V7.3-1

The OpenVMS Version 7.3-1 full documentation kit contains a new hardcopy manual named *COM, Registry, and Events for OpenVMS Developer's Guide*.

This manual was previously titled *OpenVMS Connectivity Developer Guide*. This book is included in the COM for OpenVMS kit and on the COM for OpenVMS web site at:

<http://www.openvms.compaq.com/openvms/products/dcom/index.html>

3.4 AlphaServer GS Series Systems

This section contains release notes of general interest to most users of the AlphaServer GS Series systems.

General User Release Notes

3.4 AlphaServer GS Series Systems

3.4.1 AlphaServer GS Series Systems Supported

V7.3-1

OpenVMS Version 7.2-2 or higher includes support for Compaq AlphaServer GS80, GS160, and GS320 systems. This support includes:

- OpenVMS support for hard and soft (Galaxy) partitions on AlphaServer GS80, GS160, and GS320 systems
- OpenVMS Resource Affinity Domain (RAD) support for applications
- OpenVMS support for CPU online replace

For complete information about using hard partitions, OpenVMS Galaxy, or the OpenVMS RAD features to manage OpenVMS workloads on the new AlphaServer GS Series systems, refer to the *OpenVMS Alpha Partitioning and Galaxy Guide*.

3.4.2 License with Hard and Soft Partitions—Problem Corrected

V7.3-1

Some OpenVMS Alpha Version 7.2-1H1/Version 7.3 GS80/160/320 AlphaServer systems with hard or soft partitions and a common license database (LDB) have difficulty booting up all partitions if you had modified nonsharable license PAKs to share license units among OpenVMS instances.

OpenVMS Version 7.3-1 and OpenVMS Version 7.2-2 contain the correction to the problem; if you are running one of these versions, you can go directly to Section 3.4.4.

The following patch kits contain the fix to the problem:

- The patch kit for OpenVMS Version 7.2-1H1 can be found at:

http://ftp.support.compaq.com/patches/public/Readmes/vms/dec-axpvms-vms721h1_lmf-v0100--4.README

- The patch kit for OpenVMS Version 7.3 can be found at:

http://ftp.support.compaq.com/patches/public/Readmes/vms/dec-axpvms-vms73_lmf-v0100--4.README

Before you install any of these kits, you must perform the following steps:

1. If you installed workarounds, remove them (See Section 3.4.3).
2. Install licenses correctly (See Section 3.4.4).

3.4.3 Removing Workarounds

V7.3-1

OpenVMS systems that have a problem using a common license database on hard and soft partitions display the following symptoms:

- Booting OpenVMS produces OPCOM messages that state that licenses cannot be loaded.
- Logging in to OpenVMS produces an error message that states that the OPENVMS-ALPHA license cannot be loaded.

To work around the restriction on using nonshareable license PAKs in a common license database to share license units among OpenVMS instances on hard and soft partitions, Compaq recommended that you use one of the following two workarounds:

- Use a separate license database for each operating system instance running OpenVMS on AlphaServer GS80/160/320 systems.

General User Release Notes

3.4 AlphaServer GS Series Systems

- Use a temporary (120-day) license PAKs provided by Compaq Services.

If you used either of these workarounds, you must remove it before installing the upgrade kit.

If You Set Up Separate License Databases:

If you had set up separate license databases, you should create a common license database before installing this kit. Refer to the *OpenVMS License Management Utility Manual* for guidelines on setting up a common license database.

If You Installed Temporary PAKs:

If you installed temporary PAKs in the common license database, you must disable the temporary PAKs for the following licenses:

```
OPENVMS-ALPHA
OPENVMS-ALPHA-USER
OPENVMS-ALPHA-ADL
```

To see a list of temporary PAKs installed on your system, enter the following command:

```
$ LICENSE LIST /FULL /BEFORE /TERMINATION_DATE="-120-" -
_$ OPENVMS-ALPHA, OPENVMS-ALPHA-USER, OPENVMS-ALPHA-ADL
```

This command displays (for the three licenses specified) the licenses that satisfy one of the following conditions:

- Have already terminated
- Will terminate within the next 120 days

Disable each of the temporary PAKs listed above with the LICENSE DISABLE command. For example:

```
$ LICENSE DISABLE OPENVMS-ALPHA /AUTHORIZATION=authorization-value
```

where *authorization-value* helps to identify the license, and is displayed by the LICENSE LIST command you used to find the temporary PAKs.

3.4.4 Installing Licenses

V7.3-1

Before you upgrade to Version 7.3-1, you should perform the following steps to ensure that the common license database can share license units among hard and soft partitions:

1. Calculate required units.
 - Load the base OpenVMS license.
 - Load the SMP licenses.
 - Use the following command to verify that you have the correct number of license units:

```
$ SHOW LICENSE /UNIT_REQUIREMENTS /CLUSTER
```

Note

The base OpenVMS license allows you to have only one interactive user login per physical system (not per partition). (However, you can always log in from OPA0: in each partition.) For additional interactive users, you

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3.4 AlphaServer GS Series Systems

will require additional license units. See your Compaq representative to determine your needs.

2. Add your licenses to the common license database. For example:

```
$ LICENSE REGISTER license-name /ISSUER=DEC -
_ $ /AUTHORIZATION=USA123456 -
_ $ /PRODUCER=DEC -
_ $ /UNITS=1050 -
_ $ /AVAILABILITY=H -
_ $ /OPTIONS=(NO_SHARE) -
_ $ /CHECKSUM=2-BGON-IAMA-GNOL-AIKO
```

Note that you cannot use the /INCLUDE qualifier with the LICENSE REGISTER command to override the NO_SHARE attribute of the license.

3. Modify the license to override the NO_SHARE attribute of the PAKs with the command LICENSE REGISTER /INCLUDE=(node-name-list). For example:

```
$ LICENSE MODIFY OPENVMS-ALPHA /INCLUDE=(NODEA, NODEB, NODEC)
```

4. To make OpenVMS Alpha license units available to the instance of OpenVMS running in each partition, you must ensure that SRM environment variable SYS_SERIAL_NUM is the same in each partition. To do so, perform the following steps:

- a. From the master console of each partition (usually on console line 0), use the SHOW SYS_SERIAL_NUM command to display the system serial number. For example:

```
$ ^P
halted CPU 0
halt code=1
operator initiated halt
PC = ffffffff9c0a0aa8
P00>>>SHOW SYS_SERIAL_NUM
sys_serial_num G2A105
```

If the value of SYS_SERIAL_NUM is blank, use the SHOW SYS_SERIAL_NUM command from the master console in each of the other partitions to check for a nonblank system serial number.

Note

If all partition consoles show a blank value for SYS_SERIAL_NUM, you must create a nonzero value of up to 16 characters. Ensure that the system serial number that you create is not used on any other AlphaServer GS80/160/320 on this OpenVMS Cluster.

- b. Once you have determined the system serial number, use the SET SYS_SERIAL_NUM command from the master console of each partition to change SYS_SERIAL_NUM to the correct value. For example:

```
$ ^P
halted CPU 0
halt code=1
operator initiated halt
PC = ffffffff9c0a0aa8
P00>>>SET SYS_SERIAL_NUM G2A105
```

General User Release Notes

3.4 AlphaServer GS Series Systems

You must do this in every hard partition and in every soft partition.

5. In order for the OpenVMS Cluster license database to be updated correctly, Compaq recommends that you completely shut down and reboot all OpenVMS Cluster common nodes. A rolling upgrade type of boot does not correctly update the common license database.

Note

If your system is part of an OpenVMS Cluster that shares a common license database, anytime you reconfigure the number of hard or soft partitions on your AlphaServer GS80/160/320, you must make sure that all partitions have the same SYS_SERIAL_NUM.

For partitionable machines that are sharing NO_SHARE licenses across partitions, it is possible to see the following error text on system bootup.

```
%LICENSE-E-NOAUTH, DEC OPENVMS-ALPHA use is not authorized on this node
-LICENSE-F-EXCEEDED, attempted usage exceeds active license limits
-LICENSE-I-SYSMGR, please see your system manager
Startup processing continuing...
```

This error text can be safely ignored. The text is displayed when someone has logged into a system that is sharing the OPENVMS-ALPHA PAK and they are then in use. This will be fixed in a future release.

3.4.5 OpenVMS Galaxy License Enforcement

V7.3

In an OpenVMS Galaxy computing environment, the OPENVMS-GALAXY license units are checked during system startup and whenever a CPU reassignment between instances occurs.

If you attempt to start a CPU and there are insufficient OPENVMS-GALAXY license units to support it, the CPU will remain in the instance's configured set but it will be stopped. You can subsequently load the appropriate license units and start the stopped CPU while the system is running. This is true of one or more CPUs.

3.4.6 Device Restriction on AlphaServer GS80/160/320 Systems

V7.3

Only one set of the following devices found on the legacy bus adapter is configured and supported per partition in OpenVMS Alpha Version 7.3 or higher. These devices include:

- Serial ports COM1 and COM2
- Parallel port
- Keyboard
- Mouse

If multiple legacy bus adapters exist, only the adapter that includes the console port is configured and supported.

General User Release Notes

3.4 AlphaServer GS Series Systems

3.4.7 Booting an AlphaServer GS140

V7.3-1

If you are booting an AlphaServer GS140 system with a Fibre Channel HSG80 system disk using Alpha Firmware Version 5.7, the system fails to reboot when the system is set to boot automatically. Enter the following command to show whether the system has been set to boot automatically:

```
SHOW AUTO_ACTION
```

Compaq recommends the following workaround:

After a failed power-cycle or INIT boot startup, enter a BOOT command at the console and press Return.

OpenVMS shutdown and reboot commands will perform as expected.

Compaq recommends using Alpha Firmware Version 6.2 with OpenVMS Alpha Version 7.3-1 (see Section 1.4). This problem, however, might still occur with Version 6.2.

3.4.8 Galaxy Single Instance Not Supported on ES45 AlphaServer

V7.3-1

The *OpenVMS Alpha Partitioning and Galaxy Guide* states that any Alpha system can be used as a single instance Galaxy. This feature is not supported on the ES45 AlphaServer.

If you attempt to create a single instance Galaxy on an ES45 AlphaServer, you get a normal display from the GCU showing all the CPUs, along with an indication that this is not a Galaxy instance. You will not be queried as to whether you want to create a Galaxy instance because ES45 is a special case. The GCU does not try to create a configuration tree on the ES45 since it already has one.

This problem may be fixed in a future release.

3.5 OpenVMS Alpha On-Board Gigabit Ethernet Boot Support for the AlphaServer DS25

V7.3-1

OpenVMS Alpha Gigabit Ethernet boot support (maintenance operation protocol booting) using the on-board 10/100/1000 Ethernet port is not supported at the initial release of the AlphaServer DS25. Support will be supplied in a remedial kit. If Gigabit boot support is required for booting into a cluster, use the on-board 10/100 Ethernet port.

3.6 Distributed Interrupts

V7.3-1

The distributed interrupt functionality does not work on AlphaServer 4100-series processors. It works only on the AlphaServer GS Series systems and DS20, ES40, and ES45 systems (because these are the systems with the requisite hardware for the feature).

3.7 Booting OpenVMS V7.3-1 on a Personal Workstation with IDE Controllers

3.7 Booting OpenVMS V7.3-1 on a Personal Workstation with IDE Controllers

V7.3-1

If you are using the Compaq Personal Workstation 433au, 500au, and 600au series systems, you can boot OpenVMS Version 7.3-1 from an IDE CD-ROM if the controller chip is a Cypress PCI Peripheral Controller. You cannot boot OpenVMS on a Compaq Personal Workstation au series system from an IDE CD-ROM with an Intel Saturn I/O (SIO) 82378 chip in your configuration. You must use a SCSI CD-ROM, if the Intel SIO chip is present.

To determine which IDE chip you have in your configuration, enter the following SRM console command:

```
SHOW CONFIGURATION
```

If you see *Cypress PCI Peripheral Controller*, you can boot OpenVMS.

If you see *Intel SIO 82378*, you will need to use and boot from a SCSI CD-ROM.

3.8 OpenVMS Freeware CD-ROMs

V7.3-1

Included in the OpenVMS Version 7.3-1 CD-ROM kit are the OpenVMS Freeware Version 5.0 CD-ROMs. The Freeware CD-ROMs contain free software tools and utilities for creating applications and managing OpenVMS systems.

To mount the Freeware CD-ROMs, insert a CD-ROM into the CD-ROM drive and enter the following commands appropriate to the freeware volume being mounted. For additional information on the freeware, refer to the `FREWARE_README.TXT` files.

Freeware CD-ROM 1

```
$ MOUNT ddcu:FREEWARE50_1
$ TYPE DISK$FREEWARE50_1:[000000]$FREEWARE_README.TXT
```

Freeware CD-ROM 2

```
$ MOUNT ddcu:FREEWARE50_2
$ TYPE DISK$FREEWARE50_2:[000000]$FREEWARE_README.TXT
```

In the previous commands, the *u* in *ddcu* is the unit number of the CD-ROM device on your system. If you do not know the name of the CD-ROM drive on your system, use the following command:

```
$ PIPE SHOW DEV DK/FULL | SEARCH SYS$INPUT RRD
```

Once the appropriate CD-ROM disk is mounted, use the following command to display the menu:

```
$ @DISK$FREEWARE:[FREEWARE]FREEWARE_MENU
```

System Management Release Notes

This chapter contains information that applies to system maintenance and management, performance management, and networking.

For information about new features included in this version of the software, refer to the *OpenVMS Alpha Version 7.3-1 New Features and Documentation Overview*.

4.1 Extended File Cache (XFC)

V7.3-1

The problems that led to the requirement to disable XFC in Version 7.3 have been addressed for Version 7.3-1. Issues have been corrected that could lead to data corruption and system hangs, and XFC performance has also been improved. Compaq recommends reenabling XFC.

The minimum amount of memory that XFC allocates has been increased from about .25MB to about 3.2MB; the latter is the same as the default for VIOC.

An XFC kit for OpenVMS Version 7.3 will shortly be released. This kit will contain all the XFC corrections that are included in OpenVMS Version 7.3-1.

If you have an OpenVMS Cluster system that contains earlier versions of OpenVMS Alpha or OpenVMS VAX and you want to use XFC with OpenVMS Version 7.3 or higher, you must install remedial kits on the systems that are running the earlier versions of OpenVMS. See Section 4.22.8 for information on the required kits.

Caution

These remedial kits correct errors in the cache locking protocol of VIOC, the predecessor to XFC, and allow older versions of the caches to operate safely with the new XFC. Without the remedial kit functionality, the system or processes could hang.

4.2 Compaq X.25 Version 1.6 Required Upgrade

V7.3-1

Customers utilizing the Compaq X.25 for OpenVMS Alpha systems software must upgrade to X.25 version 1.6 prior to upgrading to OpenVMS 7.3-1. Failure to upgrade will result in 7.3-1 system crashes during boot, with an SPLINVIPL bugcheck.

System Management Release Notes

4.3 BACKUP Utility—/[NO]ALIAS Qualifier Restriction

4.3 BACKUP Utility—/[NO]ALIAS Qualifier Restriction

V7.3-1

Compaq recommends that you do *not* use the /ALIAS or /NOALIAS qualifier with the BACKUP/IMAGE command. The current default behavior is correct in nearly every situation. Only when restoring very old savesets from OpenVMS Version 6.2 or earlier, could the /ALIAS qualifier possibly be of use.

The warnings in the description of BACKUP/IMAGE with /ALIAS in the Version 7.3-1 *OpenVMS System Management Utilities Reference Manual: A–L* are incorrect and will be corrected in the next update of the documentation.

If you are in doubt about using the /[NO]ALIAS qualifier with the BACKUP/IMAGE command, contact your Compaq support representative.

4.4 CDRECORD.COM Restrictions

V7.3-1

Several restrictions exist when using the new CDRECORD.COM program to write to a CD-R disk. The following sections explain each restriction and, if possible, provide a workaround. On the Open Source Tools for OpenVMS CD-ROM, a revised version of CDRECORD.COM is shipped that resolves the restrictions in Section 4.4.3 and Section 4.4.4.

Note that the *OpenVMS System Manager's Manual* states that the CDRECORD sources and the applicable GNU Public License could be found at the Compaq OpenVMS Freeware Web page. This is incorrect. The OpenVMS CDRECORD sources are currently available only on the Open Source Tools CD, which is shipped with the OpenVMS Version 7.3-1 kit.

4.4.1 No Way to Initialize a Target CD-R Disk

You cannot initialize a CD-R disk other than to write to it with CDRECORD.COM. You see the following error message when you mount an uninitialized CD-R disk:

```
$ MOUNT/OVERRIDE=ID DQA0
%MOUNT-I-OPRQST, volume is not software enabled
```

4.4.2 CDRECORD.COM Supported on Local Drives Only

Writing to a CD-R disk is supported only on a local drive. However, if you attempt to write to a nonlocal CD-R or CD-RW drive, no error is reported. The write operation might or might not work.

4.4.3 Problem Specifying a Device Name in a Cluster System

CDRECORD.COM does not accept an allocation class (or a node name) in a device name. In an OpenVMS Cluster system, a device name that includes an allocation class causes the program to select a local drive that matches the specified device name. However, if you specify a device name without an allocation class, all matching devices in the cluster are allocated during the program's execution. To work around this problem, define a logical name for the target device, as follows.

To specify a device name that includes a node name, use the DEFINE command in the following format:

```
$ DEFINE DQcu NODE$DQcu
```

To specify a device name that includes an allocation class, use the DEFINE command in the following format:

```
$ DEFINE DQcu $2$DQcu
```

In both cases, *c* is the controller ID and *u* is the unit number. For example:

```
$ DEFINE DQA0 $2$DQA0
```

CDRECORD.COM expects a DQ device type for the target CD-R drive and an LD device type for a logical drive.

4.4.4 Problem Specifying the Record Speed and the Process Priority

A problem exists when specifying the record speed or the process priority on the CDRECORD command line. There are two workarounds. You can let CDRECORD prompt you for these parameters, or you can define symbols, as follows.

The syntax for the CDRECORD WRITE command is:

```
$ @SYS$MANAGER:CDRECORD WRITE filename LDAn: DQnn: laser speed priority
```

If *priority* is not zero, you are asked whether you want to reset the priority after the write operation.

To override the default values for *speed* or *priority* you must first define them as symbols. You must also specify the original priority value, if you want to reestablish the original priority after the write operation. For example:

```
$ SPEED = 66  
$ PRIORITY = 5  
$ CUR_PRIORITY = F$GETJPI("", "PRI")  
$ @SYS$MANAGER:CDRECORD WRITE SMALL.DSK LDA6 DQA0 0 66 5
```

4.5 Compaq Graphical Configuration Manager (GCM)

V7.3-1

This section contains release notes that apply to the Compaq OpenVMS Graphical Configuration Manager (GCM).

Note

The GCM is frequently updated. Check regularly for new versions at the following location:

<http://www.openvms.compaq.com/openvms/>

4.5.1 Java JRE and OpenVMS Patch Kits

V7.3-1

The Compaq OpenVMS Graphical Configuration Manager client installation kit installs its own copy of the Java JRE Version 1.2.2-3 and Fast VM Version 1.2.2-1 to ensure that you have the correct version of Java installed. Before you perform the installation, you must make sure that all prerequisite OpenVMS patch kits have been installed. You can find the list of prerequisite patch kits at the following location:

http://www.compaq.com/java/download/jdk_ovms/vmspatches.html

System Management Release Notes

4.5 Compaq Graphical Configuration Manager (GCM)

4.5.2 DNS Name Server Required to Resolve TCP/IP Addresses

V7.3-1

To resolve TCP/IP addresses, GCM servers require that a DNS name server be on the network. If there is no DNS name server on the network, the GCM server appears to hang for an extended period of time before returning an error.

To avoid this error, define the addresses in the system's local host database.

4.5.3 Shutdown Sequence

V7.3-1

If you select multiple instances as targets for a system shutdown command, GCM may shut down the instance hosting the client that issues the command before the shutdown command has been sent to all other instances. To avoid this problem, shut down the instance hosting the client with a separate, subsequent command.

This problem will be corrected in a future release.

4.5.4 Resequencing of Admin System Records

V7.3-1

If a user with admin privilege modifies an existing system record in an active association by adding or removing a system record, the resulting list of associated servers may differ from the active association, preventing you from maintaining the active association. To work around this problem, after you add, remove, or modify a system record, you should restart all servers in the association.

This problem will be corrected in a future release.

4.5.5 Saved Models Do Not Include the Full Association

V7.3-1

The Save Model and Load Model functions apply only to the CPU assignments of the system hosting the client session, and do not include all systems in the association.

This problem will be corrected in a future release.

4.5.6 Inaccessible Attributes in Nonclustered Soft Partitions

V7.3-1

When soft partitions are not clustered, a small number of instance parameters are unavailable, such as Operating System Version, Galaxy Membership State, and Galaxy Member Join Time.

This problem will be corrected in a future release.

4.5.7 Apparent Hang in the OpenVMS GCM Client

V7.3-1

It is possible to induce an apparent hang on the OpenVMS Graphical Configuration Manager (GCM) Client if you attempt to discover a nonexistent server and then click anywhere on the GCM Window or Discovery dialog box. The GCM client appears to be hung and beeps when you click any of the buttons in the Discovery dialog box.

System Management Release Notes

4.5 Compaq Graphical Configuration Manager (GCM)

This occurs because the error message that indicates that no connection was made is buried beneath the GCM client window.

You can expose the error message by pressing Alt+F3 to lower the GCM client window. You can then dismiss the error message by clicking OK.

This problem occurs on the OpenVMS client only.

4.5.8 Windows Client Java Restriction

V7.3-1

The Microsoft Windows GCM client will install only on systems that have Java Version 1.2.2 to Version 1.3.

4.5.9 No Multimonitor Support

V7.3-1

Version 1.0 of the Graphical Configuration Manager does not support Microsoft Windows 2000 multimonitor configurations. This is because the Graphical Configuration Manager uses Java Version 1.2.2, while multimonitor support requires Java Version 1.3 or higher. Compaq expects to remove this restriction in later versions of the Graphical Configuration Manager.

4.5.10 Start OpenVMS Client in Installation Directory

V7.3-1

You should start the OpenVMS Graphical Configuration Manager client from the same directory from which you installed the client. You should do this every time you start the client. This ensures that any preferences that you set within the client are carried over between sessions.

4.5.11 Set-Up Needed for Location of Browser on OpenVMS

V7.3-1

The File menu's Open Library feature requires that a browser be installed on the client system in order to display documents from active instances. On OpenVMS, the file GCM_BROWSER.COM in the installed Client directory, SYS\$COMMON:[GCM_CLIENT], must be edited so that the browser's logical name is assigned the fully qualified path and executable image name used to invoke the browser. For example,

```
BROWSER := SYS$COMMON:[NETSCAPE.ALPHA]NETSCAPE-JAVA.EXE
```

4.5.12 Incorrect OpenVMS File Display on Windows Client

V7.3-1

Certain OpenVMS file types may not display correctly on Microsoft Windows Clients because of the Windows default application used to process that file type. When adding .COM, .LOG and .TXT files on the Library tab of Edit Admin Database, set the Process As property to TEXT and not to DEFAULT. Additionally, change the default application for displaying .TXT files from Notepad to WordPad. Using WordPad ensures proper new line handling for .TXT and .LOG files, and treats .COM files as displayable files, not executable files.

System Management Release Notes

4.6 Reduced Cluster Performance with CI-LAN Switching

4.6 Reduced Cluster Performance with CI-LAN Switching

V7.3-1

In rare cases, in an OpenVMS Cluster configuration with both CI and multiple FDDI, 100mb/s or Gb/s Ethernet-based CIRCUITS, it can be observed that SCS connections are moving between CI and LAN circuits at intervals of a few seconds. This frequent circuit switching can result in reduced cluster performance.

PEdriver can detect and respond to LAN congestion that persists for a few seconds. When it detects a significant delay increase or packet losses on a LAN path, it will remove it from use. When it detects that the path has improved, it will begin using it again.

Under marginal conditions, it can happen that the additional load on a LAN path due to its use for cluster traffic is enough to cause its delay or packet losses to increase beyond acceptable limits. When this is detected and the cluster load is removed, the path might appear to have been sufficiently improved so that it will again come into use.

If a marginal LAN path's contribution to the LAN circuit's load class is enough to increase the circuit's load class above the CI's load class value of 140 when the marginal path is included, and conversely decrease the LAN circuit's load class below 140 when the path is excluded, SCS connections will move between CI and LAN circuits.

You can observe connections moving between LAN and CI circuits by using SHOW CLUSTER with the CONNECTION and CIRCUITS classes added.

Workarounds

If excessively frequent connection moves are observed, you can use one of the following workarounds:

- You can use SCACP or AM to assign a higher priority to the circuit, or the port you wish to be used, thus overriding automatic connection assignment and moving.

Examples of SCACP commands are:

```
$ MC SCACP
SCACP> SET PORT PNA0 /PRIORITY=2      ! This will cause circuits from local
                                       ! CI port PNA0 to be chosen over
                                       ! lower priority circuits.

SCACP> SET PORT PEA0 /PRIORITY=2      ! This will cause LAN circuits to be
                                       ! chosen over lower priority circuits.
```

- Alternatively, you can use the SCACP SHOW CHANNEL commands to determine which channels are being switched into/out of use. Then you can use SCACP to explicitly exclude a specific channel by assigning it a lower priority value than the desired channels. For example:

```
SCACP> SET CHANNEL LARRY /LOCAL=EWB/REMOTE=EWB /PRIORITY=-2
```

Note that CHANNEL and LAN device priority values in the range of *max*, *max-1* are considered equivalent; that is, they are treated as if they both had the maximum priority value. A difference of ≥ 2 in priority values is necessary to exclude a channel or LAN device from use.

4.7 SCACP Reports PBA Device Offline Errors

V7.3-1

When you use the new SCACP SET or SHOW PORT or CIRCUIT commands on GALAXY systems, the command executes properly, but it might also report a device offline error for a PBA (SMCI) device. The reason for the report is that the PBA device is a “template” from which the actual PBA devices are “cloned”. Unfortunately, the PBA device in the template does not report itself as a PBA device to the I/O subsystem. Therefore, SCACP finds it and issues management requests to it. These requests fail with device offline status.

A sample of this behavior follows:

```
SCACP> SHOW CIRCUIT LARRY/PORT=PBA0
%SCACP-E-DEV_OFFLINE, Port PBA0 is offline
SCACP> SHOW CIRCUIT MOE
Circuit data for CURLY at 03-MAY 11:30:26.39
```

Remote Node	LPort Name	Circuit State	Priority Cur	Mgt	Load Class	RPort Number	RPort Type
MOE	PEA0	Open	0	0	30000	DD	NI
MOE	PNA0	Open	0	0	140	19	CIPCA
MOE	PBA1	Open	0	0	32767		SMCI

```
%SCACP-E-DEV_OFFLINE, Port PBA0 is offline
```

This device offline error will be fixed in the next release of OpenVMS.

4.8 Single Architecture per System Disk

V7.3-1

Only one architecture is supported per system disk and per system disk boot block. Although it is currently possible to have certain combinations of bootstrap pointers coresident in a disk boot block, having the OpenVMS operating system binaries for multiple architectures both coresident and bootable on a single system disk is not supported.

4.9 Firmware Revision and Booting Alpha Station XP1000

V7.3-1

During boot of the Alpha Station XP1000, SYSBOOT displays the following warning:

```
%SYSBOOT-W-FIRMREV, Firmware rev. 5.9 is below the recommended minimum of 6.2.
Please update your firmware to the recommended revision, which can be found
on the firmware CD labeled: Alpha AXP Systems Firmware Update 6.2.
```

Please ignore this warning message. Firmware rev. 5.9 is the last released firmware for this system. There is no rev. 6.2 firmware contained on the Version 6.2 Firmware Update CD.

4.10 DECdtm Services

This section describes known problems and restrictions associated with using DECdtm services.

System Management Release Notes

4.10 DECdtm Services

4.10.1 DECdtm/XA with Oracle 8i and 9i (Alpha Only)

V7.3-1

With the new DECdtm/XA capability to write applications conforming to the XOpen/XA Specification, resource managers (RMs) must be bound to the XA interface. Oracle dynamic registration (XA switch xaoswd) does not work with Oracle shared libraries (Oracle 8i and 9i). Static registration (XA switch xaosw) should be used. The XA Gateway available with DECdtm V2.0 and included in OpenVMS release is single-node only.

4.10.2 IPC-E-BCKTRNSFAIL Error Message

V7.3

This note pertains to ACMS users, possibly Rdb users, and anyone else running a user-written application that calls DECdtm to participate in a distributed transaction with a remote system having these characteristics:

- The network connection is Compaq DECnet-Plus for OpenVMS over TCP/IP
- The nodes are connected using only an IP router

Users may see the following error returned by DECnet:

```
IPC-E-BCKTRNSFAIL, failure on the back translate address request
```

This error is displayed upon a logical connection failure when the remote node name cannot be translated by DECnet-Plus. The error can be triggered when the DECnet-Plus node name for the remote system is not defined in the local DECnet-Plus database and is defined only as ALIAS in the TCP/IP name server for the remote node. For example, node XXYZZY may be defined as follows:

```
20.43.136.54    XXYZZY.ABC.DEF.COM, XXYZZY
```

To avoid this situation, either define the node name in the local DECnet-Plus database or define the logical SYS\$DECDTM_NODE_NAME to be equivalent to one of the following:

- The value of the system parameter SCSNODE
- The DECnet-Plus simple name
- The TCP/IP alias (that is, a six-character node name string such as XXYZZY, as shown in the preceding example)

For other requirements and restrictions, refer to the section about managing DECdtm Services in the *OpenVMS System Manager's Manual*.

4.11 ECP Data Collector and Performance Analyzer V5.4B

V7.3-1

Version 5.4B is the minimum version of Enterprise Capacity and Performance (ECP) for OpenVMS Alpha Version 7.3-1. Both the ECP Data Collector and the ECP Performance Analyzer are backward compatible with OpenVMS Version 6.2 and higher.

4.12 VMS\$COMMON.DIR File: Restore Problems

V7.3-1

On an OpenVMS system disk, the file [SYSx]SYSCOMMON.DIR is an alias directory of the file [000000]VMS\$COMMON.DIR. This means that both files point to the same file header. Prior to OpenVMS VAX Version 5.5-2 and OpenVMS Alpha Version 1.5, because it operated on files in alphabetic order, BACKUP did not properly restore the relationship between the VMS\$COMMON.DIR file and the [SYSx]SYSCOMMON.DIR alias. Although this does not affect the system disk, it can produce errors with DIGITAL Command Language (DCL) lexical functions.

OpenVMS VAX Version 5.5-2 and OpenVMS Alpha Version 1.5 corrected this problem. However, if you restore image backups that were created with an older version of OpenVMS, the problem can recur.

You can check both the save set and the system disk to determine whether either has an incorrect relationship between the VMS\$COMMON.DIR file and the [SYSx]SYSCOMMON.DIR alias.

Caution

If you delete any files listed under [SYSx]SYSCOMMON.DIR, you must restore the system disk from the save set, and verify that the relationship between the VMS\$COMMON.DIR file and the [SYSx]SYSCOMMON.DIR alias is correct as described in Checking the System Disk.

Checking the Save Set

To determine if a save set has an incorrect relationship between the VMS\$COMMON.DIR file and the [SYSx]SYSCOMMON.DIR alias, enter a BACKUP/LIST command to display information about the files contained in the VMS\$COMMON directory in the save set. For example, here is the relevant portion of the output of the BACKUP/LIST command:

```
.  
.  
.  
[000000]VOLSET.SYS;1          0  24-SEP-1994 19:31  
[ ]000000.DIR;1              1  24-SEP-1994 19:31  
[ ]SYSCOMMON.DIR;1          2  24-SEP-1994 19:31  
[ ]SYSLIB.DIR;1            18  24-SEP-1994 19:31  
[ ]SYSTEST.DIR;1           1  24-SEP-1994 19:31  
[ ]SYSMANT.DIR;1           1  24-SEP-1994 19:31  
[ ]SYSMGR.DIR;1            6  24-SEP-1994 19:31  
[ ]SYSHLP.DIR;1            6  24-SEP-1994 19:31  
[ ]EXAMPLES.DIR;1          1  24-SEP-1994 19:31  
[ ]SYSUPD.DIR;1            4  24-SEP-1994 19:31  
[ ]SYSMSG.DIR;1            3  24-SEP-1994 19:31  
.  
.  
.  
[ ]SECURITY_AUDIT.AUDIT      2   3-FEB-1995 15:23  
[ ]SECURITY_AUDIT.AUDIT     11   3-FEB-1995 15:23  
[ ]BACKUP.EXE;33            273  4-FEB-1995 09:37  
[ ]STABACKUP.EXE;9          486  4-FEB-1995 09:38
```

System Management Release Notes

4.12 VMS\$COMMON.DIR File: Restore Problems

If the display lists lost files in the VMS\$COMMON directory, as indicated by an empty directory specification ([]), the system disk information in this save set is affected by this problem. Whenever you perform a system restore using this save set you must subsequently perform the procedure described in Correcting the Problem to correct it.

If you have access to the system from which the save set was created, perform the procedure described in Checking the System Disk to determine whether that system still has the problem. If so, perform the procedure described in Correcting the Problem.

Checking the System Disk

To check the relationship between the VMS\$COMMON.DIR file and the [SYSx]SYSCOMMON.DIR alias on the system disk, enter a DIRECTORY/HEADER command. For example:

```
$ DUMP/HEAD/BLOCK=COUNT:0 DR301:[000000]VMS$COMMON.DIR;1
Dump of file $4$DKA301:[000000]VMS$COMMON.DIR;1 on 14-FEB-2002
09:59:14.94
File ID (15,1,0)   End of file block 3 / Allocated 9

                               File Header
Header area
  Identification area offset:      40
  .
  .
  .
Identification area
  File name:                       VMS$COMMON.DIR;1
  .
  .
  .
```

If the name displayed in the File name: field is VMS\$COMMON.DIR;1 as above, the relationship is correct, and you need take no further action.

However, if the name displayed in the File name: field is SYSCOMMON.DIR;1 the relationship is not correct, and you must perform the procedure described in Correcting the Problem to correct it.

Correcting the Problem

To restore VMS\$COMMON to its proper state, enter the following commands:

```
$ SET DEFAULT DISK:[000000]
$ SET FILE/ENTER=SYSCOMMON.DIR VMS$COMMON.DIR
$ SET FILE/REMOVE VMS$COMMON.DIR;
$ RENAME SYSCOMMON.DIR VMS$COMMON.DIR
```

4.13 Kerberos

This section describes known problems and restrictions associated with using Kerberos.

4.13.1 Kerberos and Lowercase Usernames

V7.3-1

When Kerberos obtains a user name from the system's user authorization file (UAF), by default it does not modify the case of the user name. OpenVMS user names are in uppercase.

To accommodate the use of lowercase user names (UNIX user names are usually lowercase), you can define the logical `KRB$LOWERCASE_UAF_USERNAME`. This logical causes a user name retrieved from the UAF file to be lowercased. If you do not define this logical, the case of the user name remains unchanged.

4.13.2 Kerberos Not Cluster Aware

V7.3-1

Kerberos Version 1.0 for OpenVMS is not cluster aware. Kerberos tickets are encoded with the originating node name as a security feature. A ticket-granting ticket (TGT), obtained from one node in a cluster, is valid only on the node from which the request was made. Further requests for tickets must originate from the same node where the ticket-granting-ticket request originated. Although the ticket cache is visible from other nodes in the cluster, the Kerberos KDC does not allow nodes other than the node encoded in the ticket to use the TGT.

4.13.3 Kerberos Online Help

V7.3-1

OpenVMS Kerberos is an authentication security product that allows authentication for a wide range of security products, such as RLOGIN, TELNET, and FTP.

Kerberos formerly shipped as a layered product but is now integrated into the Version 7.3-1 operating system. If you had Kerberos installed on your system prior to upgrading to Version 7.3-1, you will have online help for Kerberos. However, the help file erroneously documents a `/USER` qualifier. No such qualifier is supported or required; you will automatically activate the Kerberos user utility when you enter the `KERBEROS` command, unless you specify the `/ADMIN` qualifier.

First-time users of Kerberos will not find online help on the operating system for this release. Please refer to the following command and qualifier descriptions. The command format is:

```
KERBEROS [qualifiers]
```

By default, when you enter the `KERBEROS` command, you will activate the Kerberos user utility at the `Kerberos>` prompt. To activate the Kerberos administration utility, you must specify the `/ADMIN` qualifier.

Descriptions of the two optional qualifiers are as follows:

- `/ADMIN`

Activates the Kerberos administration utility. You will get a `KerberosAdmin>` prompt, but you must log in to the Kerberos utility before you can execute any commands.

System Management Release Notes

4.13 Kerberos

- `/INTERFACE`

Activates the requested display interface, if available. The two possible values are:

`/INTERFACE=CHARACTER_CELL` (default)

`/INTERFACE=DECWINDOWS`

Unless you specify `/INTERFACE=DECWINDOWS`, the default display is a character-cell terminal.

For detailed help about using the Kerberos utility, enter `HELP` at the `Kerberos>` or `KerberosAdmin>` prompt. You can also find the *Kerberos for OpenVMS Release Notes* on the Documentation CD-ROM. The documentation includes links to several other Kerberos manuals.

4.14 External Authentication

V7.2

This section contains release notes pertaining to external authentication. External authentication is an optional feature introduced in OpenVMS Version 7.1 that enables OpenVMS systems to authenticate designated users with their external user IDs and passwords.

Starting with OpenVMS Version 7.2, if you are running DECwindows and you want a DECwindows user to be externally authenticated, you must be running DECwindows Version 1.2-4 or higher and Advanced Server for OpenVMS or PATHWORKS for OpenVMS (Advanced Server), and meet any requirements outlined in the Installation and Configuration Guide for the appropriate server. See this manual and the *OpenVMS Guide to System Security* for detailed information about using external authentication.

4.14.1 Failed Connection Attempts on POP Server

V7.2

The Post Office Protocol (POP) server does not use external authentication to authenticate connection attempts on the OpenVMS system. This causes connection attempts to fail if either of the following conditions exist:

- The external user ID is different from the OpenVMS user name.
- The OpenVMS password is not synchronized with the external user password.

4.14.2 SET PASSWORD Behavior Within a DECterm Terminal Session

V7.2

A DECterm terminal session does not have access to the external user name used for login and must prompt for one during `SET PASSWORD` operations. The external user name defaults to the process's OpenVMS user name. If the default is not appropriate (that is, if the external user name and mapped OpenVMS user name are different), you must enter the correct external user name.

The following example shows a `SET PASSWORD` operation initiated by a user with the external user name `JOHN_DOE`. The mapped OpenVMS user name is `JOHNDOE` and is the default used by the `SET PASSWORD` operation. In this case, the default is incorrect and the actual external user name was specified by the user.

```
$ set password
External user name not known; Specify one (Y/N) [Y]? Y
External user name [JOHNDOE]: JOHN_DOE
Old password:
New password:
Verification:
%SET-I-SNDEXTAUTH, Sending password request to external authenticator
%SET-I-TRYPWDSYNCH, Attempting password synchronization
$
```

4.14.3 Compaq DECnet-Plus Requirement

V7.2-1

Users with the EXTAUTH bit set in their SYSUAF account record cannot use explicit access control strings with systems running Compaq DECnet-Plus unless their externally authenticated password is all uppercase characters.

For example, if you enter the following command:

```
$ DIRECTORY nodename"username password"::
```

where *nodename* is a system running DECnet-Plus and *username* is an EXTAUTH account, DECnet-Plus converts the string supplied in the *password* to uppercase characters before it is passed to the external authentication agent (a PATHWORKS or NT domain controller).

There are two workarounds:

- If you are using DECnet-Plus and you want to use explicit access control strings, define an uppercase NT password.
- Set up a proxy account on your DECnet-Plus nodes so that you do not have to use explicit access control strings to perform functions.

4.14.4 DECwindows Pause Screen Using SYSUAF Password

V7.1

The DECwindows pause screen unlock mechanism does not use the external authentication service for password validation. It continues to use the password in the SYSUAF file, even if you have external authentication enabled on your system.

Password synchronization is enabled by default. If you have disabled password synchronization, be sure to keep the LAN Manager and SYSUAF passwords synchronized manually.

4.14.5 DECnet-Plus and NET_CALLOUTS Parameter

V7.3

To run DECnet-Plus for OpenVMS with external authentication enabled, set the system parameter NET_CALLOUTS to 255. This causes user verification and proxy lookups to be done in LOGINOUT rather than DECnet.

System Management Release Notes

4.14 External Authentication

4.14.6 Impact on Layered Products and Applications

V7.1

Certain layered products and applications that use an authentication mechanism based on the traditional SYSUAF-based user name and password (for example, software that calls `$HASH_PASSWORD` or `$GETUAI/$SETUAI` to alter, fetch, or verify OpenVMS passwords) will encounter problems in either of the following cases:

- When external authentication is used in an environment where a given user's external user ID and OpenVMS user name are different
- Where the user's SYSUAF password is different from the external user password

In such cases, the problem symptom is a user authentication failure from the layered product or application.

For externally authenticated users, the normal system authorization database (SYSUAF.DAT) is used to construct the OpenVMS process profile (UIC, privileges, quotas, and so on) and to apply specific login restrictions. However, there are two key differences between externally authenticated users and normal OpenVMS users. The following is true for externally authenticated users:

- The password stored in the SYSUAF is not the password used to verify the user.
- The user name stored in the SYSUAF and used to identify the OpenVMS process is not necessarily the same as the external user ID used to authenticate the user during login.

OpenVMS attempts to keep a user's SYSUAF and external user password synchronized to minimize these problems. An up-to-date copy of the user's external password is kept in the SYSUAF, but this is not the case if, for example, the external password contains characters that are invalid in OpenVMS, or if SYSUAF password synchronization is disabled by the system manager. (Password synchronization is enabled by default.)

If you enable external authentication, Compaq recommends you do the following to minimize incompatibility with layered products or applications that use traditional SYSUAF-based authentication:

- Do not disable password synchronization.
- Limit external user passwords to those characters from the OpenVMS valid password character set (A–Z, 0–9, underscore (`_`), and dollar sign (`$`)).
- Assign users the same user name in both the external authentication service and OpenVMS.
- Do not assign the same user name or user ID to more than one user.

The `$GETUAI` and `$SETUAI` system services do not support external passwords. These services operate only on passwords stored in the SYSUAF, and updates are not sent to the external authentication service. Sites using software that makes calls to these services to check passwords or updates should not enable external authentication. Compaq expects to provide a new programming interface to support external passwords in a future release.

4.14.7 Mixed-Version OpenVMS Cluster Systems

V7.1

Compaq recommends using external authentication on OpenVMS Cluster systems only if all systems are running OpenVMS Version 7.1 or higher.

LOGINOUT on earlier version systems continues to enforce normal OpenVMS password policy (password expiration, password history, and so on) on all users, including externally authenticated users.

4.14.8 No Password Expiration Notification on Workstations

V7.1

In the LAN Manager domain, a user cannot log in once a password expires.

Users on personal computers (PCs) receive notification of impending external user password expiration and can change passwords before they expire. However, when a user logs in from an OpenVMS workstation using external authentication, the login process cannot determine if the external password is about to expire. Therefore, sites that enforce password expiration, and whose user population does not primarily use PCs, may elect not to use external authentication for workstation users.

4.15 Fixing EDIT/FDL Recommended Bucket Size

V7.3

Prior to OpenVMS Version 7.3, when running EDIT/FDL, the calculated bucket sizes were always rounded up to the closest disk-cluster boundary, with a maximum bucket size of 63. This could cause problems when the disk-cluster size was large, but the "natural" bucket size for the file was small, because the bucket size was rounded up to a much larger value than required. Larger bucket sizes increase record and bucket lock contention, and can seriously impact performance.

OpenVMS Version 7.3 or higher modifies the algorithms for calculating the recommended bucket size to suggest a more reasonable size when the disk cluster is large.

4.16 OpenVMS Galaxy Version 7.3-1

This section contains OpenVMS Galaxy release notes for OpenVMS Version 7.3-1 and notes from OpenVMS Versions 7.3, 7.2-1H1, 7.2-1, and 7.2 that apply to this release.

4.16.1 Galaxy on ES40: Turning Off Fast Path (Temporary Restriction)

V7.3-1

When you implement Galaxy on an ES40 system, it is necessary to turn off Fast Path on instance 1. Do this by setting the SYSGEN parameter FAST_PATH to 0 on that instance.

If you do not turn off Fast Path on instance 1, I/O on instance 1 will hang when instance 0 is rebooted. This hang will continue until the PCI bus is reset and instance 1 rebooted. If there is shared SCSI or Fibre Channel, I/O will hang on the sharing nodes and all paths to those devices will be disabled.

This restriction should be removed in the future.

System Management Release Notes

4.16 OpenVMS Galaxy Version 7.3-1

4.16.2 Using Fibre Channel in OpenVMS Galaxy Configurations

V7.3-1

Fibre Channel support for OpenVMS Galaxy configurations is included in OpenVMS Alpha Version 7.3 or higher, Version 7.2-2, and Version 7.2-1H1. For OpenVMS Alpha Version 7.2-1, Fibre Channel support for OpenVMS Galaxy configurations is available in Fibre Channel remedial kits, starting with V721_FIBRECHAN-V0200. For the most current information about OpenVMS Fibre Channel configurations, go to:

<http://www.openvms.compaq.com/openvms/fibre/index.html>

4.16.3 Compatibility of Galaxy Computing Environment and Non-Galaxy Cluster Members

V7.2

OpenVMS Version 7.2 introduced new security classes that are used in an OpenVMS Galaxy computing environment. The new security classes are not valid on non-Galaxy systems. If your OpenVMS Galaxy is configured in an existing OpenVMS Cluster, you must ensure that all the nodes in the cluster recognize the new security classes as described in this release note.

This situation applies if all of the following conditions are met:

- Your OpenVMS Galaxy is configured in a cluster with non-Galaxy systems.
- The non-Galaxy cluster nodes share the VMS\$OBJECTS.DAT security database file.
- You use Galaxywide global sections in your OpenVMS Galaxy.
- Versions of OpenVMS prior to OpenVMS Version 7.1-2 are in use.

OpenVMS VAX and Alpha systems running OpenVMS Version 6.2 or Version 7.1 will fail if they encounter an unknown security class in the VMS\$OBJECTS.DAT file.

Before you create any Galaxywide global sections, you must reboot all cluster members sharing one of the updated system disks.

4.16.4 AlphaServer GS60/GS60E/GS140 Multiple I/O Port Module Configuration Restriction

V7.2-1

AlphaServer GS60/GS60E/GS140 configurations with more than a single I/O Port Module, KFTHA-AA or KFTIA-AA, might experience system failures.

When upgrading OpenVMS Galaxy and non-Galaxy AlphaServer 8200/8400 configurations with multiple I/O Port Modules to GS60/GS60E/GS140 systems, customers must install one minimum revision B02 KN7CG-AB EV6 CPU (E2063-DA/DB rev D01) module as described in Compaq Action Blitz # TD 2632.

For complete details about this restriction and its solution, refer to Compaq Action Blitz # TD 2632.

4.16.5 MOP Booting Restrictions

V7.2

In an OpenVMS Galaxy computing environment, MOP (Maintenance Operations Protocol) Booting is only supported on Instance 0. This restriction will be removed in a future release.

4.16.6 Restriction on KFMSB and CIXCD Adapters in Galaxy Configurations

Permanent Restriction

Because of firmware addressing limitations on driver-adapter control data structures, KFMSB and CIXCD adapters can only be used on hardware partitions based at physical address (PA) = 0. In OpenVMS Galaxy configurations, this restricts their use to Instance 0.

4.17 AlphaServer GS Series: NPAGERAD System Parameter Default Behavior

V7.3-1

On AlphaServer GS series processors on OpenVMS systems prior to Version 7.3-1, system managers frequently saw pool expansion that increasing NPAGEDYN did not reduce. This problem was caused by leaving NPAGERAD at its default value of 0.

Starting in OpenVMS Version 7.3-1, when NPAGERAD is 0 (the default), the system calculates a value to use for NPAGERAD with the following formula:

$$\text{NPAGEDYN} * \left(1 - \frac{\text{Base RAD memory}}{\text{Total memory}} \right)$$

This calculation gives more pool to the nonbase RADs than before and so reduces the expansion of nonbase RAD pool.

4.18 LAN ATM—Restrictions on DAPBA/DAPCA Adapters for LAN Emulation

V7.3

The DAPBA (155 Mb/s) and the DAPCA (622 Mb/s) are ATM adapters for PCI-bus systems that are supported by SYS\$HWDRIVER4.EXE.

Both adapters require a great deal of nonpaged pool, and therefore, care should be taken when configuring them. For each DAPBA, Compaq recommends increasing the system parameter NPAGEVIR by 3000000. For each DAPCA, Compaq recommends increasing NPAGEVIR by 6000000. To do this, add the ADD_NPAGEVIR parameter to MODPARAMS.DAT and then run AUTOGEN. For example, add the following command to MODPARAMS.DAT on a system with two DAPBAs and one DAPCA:

```
ADD_NPAGEVIR = 12000000
```

The following restrictions apply to the DAPBA and DAPCA adapters:

- The adapter cannot be located on a PCI bus that is located behind a PCI-to-PCI bridge.
- Classical IP is not supported.

System Management Release Notes

4.19 ACMS Kits and File Deletions—Problem

4.19 ACMS Kits and File Deletions—Problem

V7.3-1

If you have installed any of the following kits:

VMS73_ACMS-V0100
VMS722_ACMS-V0100
VMS721H1_ACMS-V0100
VMS721_ACMS-V0100

and then you upgrade to V7.3-1, the following ACMS files could be deleted:

ACMSSTART.COM
ACMSBOOT.EXE

This will cause ACMS to fail after the upgrade. To remedy this, install the ACMS_U2_043.A remedial kit. This kit replaces the kits in the preceding list.

You can get the kit from the following web site (follow the version links to the ACMS_U2_043.A kit):

<http://ftpl.support.compaq.com/public/vms/axp/>

4.20 Lock Manager

This section contains notes pertaining to the lock manager.

4.20.1 Fast Lock Remastering and PE1

V7.3

The OpenVMS Distributed Lock Manager has a feature called lock remastering. A lock remaster is the process of moving the lock mastership of a resource tree to another node in the cluster. The node that masters a lock tree can process local locking requests much faster because communication is not required with another node in the cluster. Having a lock tree reside on the node doing the most locking operations can improve overall system performance.

Prior to OpenVMS Version 7.3, lock remastering resulted in all nodes sending one message per local lock to the new master. For a very large lock tree, it could require a substantial amount of time to perform the lock remastering operation. During the operation, all application locking to the lock tree is stalled.

Starting with OpenVMS Version 7.3, sending lock data to the new master is done with very large transfers. This is a much more efficient process and results in moving a lock tree from 3 to 20 times faster.

Only nodes running Version 7.3 or higher can use large transfers for lock remastering. Remastering between OpenVMS Version 7.3 or higher nodes and prior version nodes still requires sending a single message per lock.

If you currently use the PE1 system parameter to limit the size of lock trees that can be remastered, Compaq recommends that you either try increasing the value to allow large lock trees to move or try setting the value to zero (0) to allow any size lock tree to move.

4.20.2 Lock Manager and Nonpaged Pool

V7.2

To improve application scalability on OpenVMS Alpha systems, most of the lock manager data structures have been moved from nonpaged pool to S2 space. On many systems, the lock manager data structures accounted for a large percentage of nonpaged pool usage.

Because of this change to nonpaged pool, Compaq recommends the following steps:

- Use AUTOGEN with feedback information to tune the size of nonpaged pool.
- Inspect MODPARAMS.DAT to check for any NPAGEDYN or NPAGEVIR settings previously made to increase the size of nonpaged pool due to the lock manager's usage.

You may find that these parameters can be either trimmed back or removed due to changes to the lock manager.

The SHOW MEMORY documentation in the *OpenVMS DCL Dictionary: N-Z* describes the memory associated with the lock manager.

4.21 OPCOM

This section contains release notes pertaining to the Operator Communication Manager (OPCOM).

4.21.1 Handling of Invalid Operator Classes—Problem Corrected

V7.3

Previously, if the OPC\$OPA0_CLASSES or OPC\$LOGFILE_CLASSES logicals contained an invalid class, OPCOM would signal the error and run down the process.

This problem has been corrected in OpenVMS Version 7.3 or higher.

The following two messages have been added to OPCOM:

```
%%%%%%%%%% OPCOM 18-MAY-2000 13:28:33.12 %%%%%%%%%%%  
"BADCLASS" is not a valid class name in OPC$LOGFILE_CLASSES  
%%%%%%%%%% OPCOM 18-MAY-2000 13:28:33.12 %%%%%%%%%%%  
"BADCLASS" is not a valid class name in OPC$OPA0_CLASSES
```

If an invalid class name is specified in either of the logicals, the appropriate error message is displayed. These messages are displayed on the console at system startup and logged to the OPERATOR.LOG.

The list of all operator classes is:

```
CARDS  
CENTRAL  
CLUSTER  
DEVICES  
DISKS  
LICENSE  
NETWORK  
OPER1 through OPER12  
PRINTER  
SECURITY
```

System Management Release Notes

4.21 OPCOM

TAPES

When you specify an invalid class, all classes are enabled. This change causes the error messages listed to reach as many operators as possible.

4.21.2 OPC\$ALLOW_INBOUND and OPC\$ALLOW_OUTBOUND Changes

V7.3

The algorithm formerly used by OPCOM when OPC\$ALLOW_INBOUND and OPC\$ALLOW_OUTBOUND were set to FALSE was found to be too restrictive. These logical names do not allow messages to flow into or out of the OPCOM process.

When these logicals were used together in an OpenVMS Cluster, it was possible for OPCOM processes on different systems in the cluster to stop communicating. As a result, OPERATOR.LOG files would fill up with messages similar to the following:

```
%%%%%%%%%% OPCOM 29-APR-2000 11:33:31.73 %%%%%%%%%%%  
OPCOM on AAAAA is trying again to talk to BBBB, csid 00010001, system 00001
```

To correct this problem, the algorithm has been relaxed to allow OPCOM processes in an OpenVMS Cluster to pass communication messages back and forth between one another.

Compaq still recommends caution in the use of these logical names, which should be used only by individuals who truly understand the impact to the entire system if OPCOM messages are disabled in one or both directions.

4.21.3 Workstations in OpenVMS Clusters

V7.3

The default behavior of OPCOM is to not enable OPA0: on workstations in clusters. OPCOM also does not enable the logfile, OPERATOR.LOG, on these systems. The only exception is if the workstation is the first system into the cluster.

OPCOM determines whether a system is a workstation by testing for a graphics device. This test is specifically:

```
F$DEVICE ("*", "WORKSTATION", "DECW_OUTPUT")
```

OPCOM is treating systems shipped with graphic devices as workstations. As a result, OPA0: and OPERATOR.LOG are not enabled by default.

To override the default behavior, define the following logical names in SYS\$MANAGER:SYLOGICALS.COM to be TRUE:

- OPC\$OPA0_ENABLE
- OPC\$LOGFILE_ENABLE

4.22 OpenVMS Cluster Systems

The release notes in this section pertain to OpenVMS Cluster systems.

4.22.1 SET PREFERRED_PATH for Disk with MSCP Access Only—Problem Corrected

V7.3-1

The following problem (reported in the V7.2-2 Release Notes) has been corrected:

Previously, if you specified a preferred path (using the command SET PREFERRED_PATH/HOST) for a disk with only MSCP server access (that is, not a local disk) and the host that you specified shut down or failed, failover to an alternate path would not happen.

4.22.2 Booting Satellites Over FDDI in a Mixed-Version Cluster

V7.3

Changes to OpenVMS Version 7.3 (or higher) may affect satellite booting over FDDI for previous versions of OpenVMS. The problem can occur when the system parameter NISCS_LAN_OVRHD is set to a value less than 6 (the default is 18), and the system parameter NISCS_MAX_PKTSZ is set for maximum size FDDI packets (4468). NISCS_LAN_OVRHD decreases the maximum packet size used for LAN communications to accommodate devices such as the DESNC (an Ethernet encryption device). For OpenVMS Version 7.3 or higher, NISCS_LAN_OVRHD is not used, so the maximum packet size is not reduced.

The problem is that the buffer size used by the FDDI boot driver is 12 bytes too short. The FDDI boot driver portion of the satellite boot typically causes 12 bytes of incorrect data (often zeros) to be interspersed throughout the images loaded during SYSBOOT. This generally results in an obscure failure or halt very early in the life of the system (measured in seconds).

The solution is to obtain a Boot Driver patch kit that corrects the problem and to install the patch on the satellite system root. Alternatively, on the systems serving the system disk to the satellite, ensure that the value of the system parameter NISCS_MAX_PKTSZ is at least 12 bytes less than the maximum FDDI packet size.

The following systems are affected:

- Alpha satellite using an FDDI adapter that is booting from an OpenVMS Version 7.3 or higher Alpha or VAX system whose NISCS_MAX_PKTSZ value is greater than 4456.
- Alpha satellite using an FDDI adapter that is booting from a pre-OpenVMS Version 7.3 system, which is serving a system disk via FDDI, and the value of NISCS_MAX_PKTSZ minus NISCS_LAN_OVRHD is greater than 4456. The served system disk may be running OpenVMS Version 7.3 or higher, or an earlier version. The problem is more likely to occur if the system disk is Version 7.3 or higher, because NISCS_LAN_OVRHD is most likely set to 18 for prior versions.

4.22.3 Multipath Tape Failover Restriction

V7.3-1

While the INITIALIZE command is in progress on a device in a Fibre Channel multipath tape set, multipath failover to another member of the set is not supported. If the current path fails while another multipath tape device is being initialized, retry the INITIALIZE command after the tape device fails over to a functioning path.

System Management Release Notes

4.22 OpenVMS Cluster Systems

This restriction will be removed in a future release.

4.22.4 Obtaining the Correct Status of Tape Compaction/Density on Fibre Channel

V7.3-1

In a shared initiator environment such as Fibre Channel provides, you can be sure that the SHOW DEVICE/FULL display reflects the correct compaction/density status on a given node only if you issue an INITIALIZE or MOUNT command or QIO function IO\$_PACKACK from the node to the drive. These operations have the effect of refreshing the values in the SHOW DEVICE display.

In a shared initiator environment, users on different cluster nodes can, one at a time, use a SCSI tape drive in different compaction or density modes. For example, a user on Node A can allocate a drive and use it in compaction mode. After the Node A user deallocates the tape drive, a user on Node B can allocate that drive and request no compaction.

At that point, the SHOW DEVICE/FULL display on Node A will be stale, because it still shows that compaction is enabled even though the drive is now working in noncompacted mode. The displayed density value can become stale in the same way.

Therefore, to be sure that the compaction/density values in the SHOW/DEVICE display are accurate, refresh the values by issuing an INITIALIZE or MOUNT command or QIO function IO\$_PACKACK from the node to the drive.

4.22.5 Tape /DENSITY Keywords Can No Longer Be Abbreviated

V7.3-1

Beginning in OpenVMS Alpha Version 7.3-1, tape density keywords for the /DENSITY qualifier can no longer be abbreviated. The /DENSITY qualifier is present on several commands used for managing tapes, including INITIALIZE, BACKUP, MOUNT, and SET MAGTAPE.

An example of a tape /DENSITY keyword is DLT8000, which must be specified as follows:

```
$ INITIALIZE/DENSITY=DLT8000 $2$MGA1: MYTAPE
```

The density qualifier itself can still be abbreviated to /DENS.

4.22.6 New Error Message About Packet Loss

V7.3

Prior to OpenVMS Version 7.3, an SCS virtual circuit closure was the first indication that a LAN path had become unusable. In OpenVMS Version 7.3 or higher, whenever the last usable LAN path is losing packets at an excessive rate, PEDRIVER displays the following console message:

```
%PEA0, Excessive packet losses on LAN Path from local-device-name -  
_ to device-name on REMOTE NODE node-name
```

This message is displayed when PEDRIVER had to recently perform an excessively high rate of packet retransmissions on the LAN path consisting of the local device, the intervening network, and the device on the remote node. The message indicates that the LAN path has degraded and is approaching, or has reached, the point where reliable communications with the remote node are no longer possible. It is likely that the virtual circuit to the remote node

will close, if the losses continue. Furthermore, continued operation with high LAN packet losses can result in significant loss in performance because of the communication delays resulting from the packet loss detection timeouts and packet retransmission.

Take the following corrective steps:

1. Check the local and remote LAN device error counts to see if a problem exists on the devices. Issue the following commands on each node:

```
$ SHOW DEVICE local-device-name
$ MC SCACP
SCACP> SHOW LAN device-name
$ MC LANCP
LANCP> SHOW DEVICE device-name/COUNT
```

2. If device error counts on the local devices are within normal bounds, contact your network administrators to request that they diagnose the LAN path between the devices.

If necessary, contact your Compaq Support representative for assistance in diagnosing your LAN path problems.

For additional PEDRIVER troubleshooting information, refer to Appendix F of the *OpenVMS Cluster Systems* manual.

4.22.7 Class Scheduler in a Mixed-Version Cluster

V7.3

When using the new permanent Class Scheduler in a mixed-version cluster environment with nodes running OpenVMS Alpha Version 7.2x, the SMISERVER process on these nodes aborts when you issue any SYSMAN CLASS_SCHEDULE subcommand that involves those nodes.

If this happens, you can quickly restart the SMISERVER process on those nodes with the following command:

```
@SYS$SYSTEM:STARTUP SMISERVER
```

The following remedial kits correct this problem:

```
VMS721_MANAGE V2.0 (or higher)
VMS721H1_MANAGE V2.0 (or higher)
```

These remedial kits are available from the following web site:

<http://www.support.compaq.com/patches/>

This problem exists only on Alpha platforms running OpenVMS Alpha Version 7.2x.

4.22.8 Remedial Kits Needed for Cluster Compatibility

V7.3-1

Before you introduce an OpenVMS Version 7.3-1 system into an existing OpenVMS Cluster system, you must apply certain remedial kits to your systems running earlier versions of OpenVMS. If you are using Fibre Channel, XFC, Volume Shadowing, or Volume Shadowing with minicopy, additional remedial kits are required. Note that these kits are version-specific.

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Note

The Volume Shadowing remedial kits for OpenVMS Alpha Version 7.2-1 and Version 7.2-1H1 offer two installation options: **Remedial Support**, which includes support for disaster tolerant configurations, and **New Features support**, which includes all remedial support.

Table 4–1 lists the facilities that require remedial kits and the remedial kit names. Each remedial kit has a corresponding ReadMe file with the same name (file extension is .README).

You can either download the remedial kits from the following web site, or contact your Compaq support representative to receive the remedial kits on media appropriate for your system:

<http://www.support.compaq.com/>

Note

Remedial kits are periodically updated on an as-needed basis. Always use the most recent remedial kit for the facility, as indicated by the version number in the kit's ReadMe file. The most recent version of each kit is the version posted to the web site.

Table 4–1 Remedial Kits Required for Cluster Compatibility

Facility	File Name
OpenVMS Alpha Version 7.3	
Update kit with all remedial kits except those below	DEC-AXPVMS-VMS73_UPDATE-V0100-4.PCSI
Cluster	DEC-AXPVMS-VMS73_CLUSTER-V0200-4.PCSI
DCL	DEC-AXPVMS-VMS73_DCL-V0200-4.PCSI
Shadowing	DEC-AXPVMS-VMS73_SHADOWING-V0200-4.PCSI
SYSINI	DEC-AXPVMS-VMS73_SYSINI-V0100-4.PCSI
XFC	VMS73_XFC-V0200
OpenVMS VAX Version 7.3	
Audit Server	VAXAUDS01_073
DECwindows Motif	VAXDWMOTMUP01_073
MAIL	VAXMAIL01_073
Shadowing	VAXSHAD01_073

(continued on next page)

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Table 4–1 (Cont.) Remedial Kits Required for Cluster Compatibility

Facility	File Name
OpenVMS Alpha Version 7.2-2	
Audit Server	DEC-AXPVMS-VMS722_AUDSRV-V0100–4.PCSI
CLI Utility	DEC-AXPVMS-VMS722_CLIUTL-V0100–4.PCSI
DECwindows Motif	DEC-AXPVMS-VMS722_DW_MOT-V0100–4.PCSI
Driver	DEC-AXPVMS-VMS722_DRIVER-V0100–4.PCSI
Fibre Channel/SCSI	DEC-AXPVMS-VMS722_FIBRE_SCSI-V0200–4.PCSI
IPC	DEC-AXPVMS-VMS722_IPC-V0100–4.PCSI
LAN	DEC-AXPVMS-VMS722_LAN-V0200–4.PCSI
RMS	DEC-AXPVMS-VMS722_RMS-V0200–4.PCSI
SYSLOA	DEC-AXPVMS-VMS722_SYSLOA-V0100–4.PCSI
Shadowing	DEC-AXPVMS-VMS722_SHADOWING-V0100–4.PCSI
OpenVMS Alpha Version 7.2-1H1	
Update kit with all remedial kits except those below	DEC-AXPVMS-VMS721H1_UPDATE-V0500–4.PCSI
Backup utility	DEC-AXPVMS-VMS721H1_BACKUP-V0100–4.PCSI
Driver	DEC-AXPVMS-VMS721_DRIVER-V0300–4.PCSI
Fibre Channel/SCSI	DEC-AXPVMS-VMS721H1_FIBRE_SCSI-V0500–4.PCSI
Files 11	DEC-AXPVMS-VMS721H1_F11X-V0200–4.PCSI
RMS	DEC-AXPVMS-VMS721H1_RMS-V0700–4.PCSI
System with XFC/VCC compatibility support	DEC-AXPVMS-VMS721H1_SYS-V0500–4.PCSI
OpenVMS Alpha Version 7.2-1	
Update kit of all remedial kits (available mid-July)	DEC-AXPVMS-VMS721_UPDATE-V400-4.PCSI

(continued on next page)

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Table 4–1 (Cont.) Remedial Kits Required for Cluster Compatibility

Facility	File Name
OpenVMS VAX Version 7.2	
Update kit with all remedial kits except those below	VAXUPDATE01_072
Audit Server	VAXAUDS01_072
Backup utility	VAXBACK02_072
CLI Utility	VAXCLIU03_072
C RTL	VAXACRT02_072
DCE	DEC-VAXVMS-VAX_DCEECO_015_1-v0100–4.PCSI
DECnet OSI	DEC-VAXVMS-DNVOSIECO02-V0702–4.PCSI
DECwindows Motif	VAXDWMOTMUP01_072
Files 11	VAXF11x03_072
Fibre Channel	VAXDRIV02_072
LAT	VAXLAT01_072
LIBRTL	VAXLIBR01_072
MIME	VAXMIME02_072
ODS1	VAXODS1_01_072
PCSI	DEC-VAXVMS-VMS72_PCSI-V0101–4.PCSI
PThreads	VAXPTH01_072
RMS	VAXRMS01_072
MANAGE	VAXMANA01_072
System with XFC/VCC compatibility support	VAXSYS02_072
Volume Shadowing	VAXSHAD03_072

4.22.9 Devices Not Configured if HSG Host Connection Table Is Full

V7.3

When a Fibre Channel host bus adapter is connected (through a Fibre Channel switch) to an HSG controller, the HSG creates an entry in the HSG connection table. There is a separate connection for each host bus adapter, and for each HSG port to which the adapter is connected. (Refer to the HSG CLI command `SHOW CONNECTIONS`.)

Once a connection exists, you can modify its parameters by using commands that are described in the *HSG Array Controller ACS Configuration and CLI Reference Guide*. Since a connection can be modified, the HSG does not delete connection information from the table when a host bus adapter is disconnected. Instead, when the user is done with a connection, the user must explicitly delete the connection using a CLI command.

The HSG supports a limited number of connections: ACS Version 8.7 allows a maximum of 96 connections; ACS Version 8.5 allows a maximum of 64 connections; and ACS Version 8.4 allows a maximum of 32 connections. The connection limit is the same for both single and dual redundant controllers. Once the maximum number of connections is reached, new connections will not be

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made. When this happens, OpenVMS will not configure disk devices, or certain paths to disk devices, on the HSG.

The solution to this problem is to delete old connections that are no longer needed. However, if your Fibre Channel fabric is large and the number of active connections exceeds the HSG limit, then you must reconfigure the fabric or use FC switch zoning to “hide” some adapters from some HSG ports to reduce the number of connections.

4.22.10 KGPSA NVRAM Errors with Console V5.6 and V5.7 Corrected in V5.8

V7.3-1

The problems described in this release note have been corrected in the console firmware Version 5.8.

When you use Version 5.6 or Version 5.7 of the console, you will see the error message `kgpsaa0.0.0.2.4 - Nvram read failed`, when the console KGPSA driver starts or when OpenVMS shuts down. This error indicates that NVRAM on the KGPSA is unformatted or not working properly. The more likely reason is that the NVRAM is unformatted. The NVRAM was always unformatted prior to Version 5.6. As of Version 5.6, a portion of the NVRAM on the KGPSA adapter is used to indicate whether the adapter should be initialized for a fabric (switch) topology or a loop topology. By default, the console initializes the KGPSA to a fabric topology.

The NVRAM is formatted automatically when you set the topology, as shown in the following example:

```
P00>>>set mode diag
P00>>>wwidmgr -show adapter
item adapter WWN Cur. Topo Next Topo
kgpsaa0.0.0.8.1 - Nvram read failed.
[ 0] kgpsaa0.0.0.8.1 1000-0000-c920-05ab FABRIC UNAVAIL
kgpsab0.0.0.10.1 - Nvram read failed.
[ 1] kgpsab0.0.0.10.1 1000-0000-c921-0ce0 FABRIC UNAVAIL
[9999] All of the above.
P00>>>wwidmgr -set adapter -item 9999 -topo fabric
kgpsaa0.0.0.8.1 - Nvram read failed.
Reformatting nvram
kgpsab0.0.0.10.1 - Nvram read failed.
Reformatting nvram
P00>>>wwidmgr -show adapter
item adapter WWN Cur. Topo Next Topo
[ 0] kgpsaa0.0.0.8.1 1000-0000-c920-05ab FABRIC FABRIC
[ 1] kgpsab0.0.0.10.1 1000-0000-c921-0ce0 FABRIC FABRIC
[9999] All of the above.
P00>>>init
```

While formatting the NVRAM of the KGPSA you may see a `*** MBX not ready ***` error when you issue the `wwidmgr -set adapter` command. Reissuing this command should succeed, as shown in the following example:

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```
P00>>>wwidmgr -set adapter -item 9999 -topo fab
pga0.0.0.6.1 - Nvram read failed.
Reformatting nvram
*** MBX not ready ***
pgb0.0.0.1.2 - Nvram read failed.
Reformatting nvram
P00>>>wwidmgr -show adapter
item adapter WWN Cur. Topo Next Topo
*** MBX not ready ***
pga0.0.0.6.1 - Nvram format incorrect.
[ 0] pga0.0.0.6.1 1000-0000-c920-a763 FABRIC UNAVAIL
[ 1] pgb0.0.0.1.2 1000-0000-c920-c9fe FABRIC FABRIC
[9999] All of the above.
P00>>>wwidmgr -set adapter -item 9999 -topo fab
P00>>>wwidmgr -show adapter
item adapter WWN Cur. Topo Next Topo
[ 0] pga0.0.0.6.1 1000-0000-c920-a763 FABRIC FABRIC
[ 1] pgb0.0.0.1.2 1000-0000-c920-c9fe FABRIC FABRIC
[9999] All of the above.
```

For more information about the `wwidmgr -set adapter` command, see the *WWIDMGR User's Manual* in the [.DOC] directory of the Alpha Systems Firmware Update CD-ROM.

4.22.11 Multipath SCSI and Fibre Channel Shadow Sets: Adjustments to System Parameters

V7.3-1

The use of default settings for certain system parameters may lead to the occasional removal of shadow set members (systems which are using Compaq Volume Shadowing for OpenVMS) that are configured for multipath support.

Therefore, when configuring multipath shadow sets using Volume Shadowing for OpenVMS, follow the recommendations in Table 4–2 for setting these system parameters.

Table 4–2 System Parameter Settings for Multipath Shadow Sets

System Parameter	Recommended Setting
MSCP_CMD_TMO	60 as a minimum. The value of 60 is appropriate for most configurations. Some configurations may require a higher setting.
SHADOW_MBR_TMO	At least 3 x MSCP_CMD_TMO
SHADOW_SYS_TMO	At least 3 x MSCP_CMD_TMO
MVTIMEOUT	At least 4 x SHADOW_MBR_TMO

The following example shows the use of the recommended settings:

```
MSCP_CMD_TMO      60
SHADOW_MBR_TMO   180
SHADOW_SYS_TMO   180
MVTIMEOUT        1200
```

Note

The recommended setting for MVTIMEOUT has doubled since this note was published for OpenVMS Version 7.3.

4.22.12 Multipath Devices: Volume Rebuilds During Mount Operation—Problem Corrected

V7.3-1

Previously, if you mounted a Fibre Channel or SCSI device, a volume rebuild was sometimes performed even though the volume had been previously dismounted without any apparent error. For example:

```
$ DISMOUNT $1$DGA32762:
$
$ MOUNT/CLUSTER $1$DGA32762: MYVOL
%MOUNT-I-MOUNTED, DGA1016 mounted on _$1$DGA32762: (FIBRE2)
%MOUNT-I-REBUILD, volume was improperly dismounted; rebuild in progress
```

This problem has now been corrected.

4.22.13 Multipath Device Dismount Problem with Volume Shadowing—Problem Corrected

V7.3-1

Previously, under some conditions, if a multipath member of a shadow set switched paths prior to being dismounted, and no I/Os were issued immediately before the DISMOUNT command was issued, the dismount failed and the following error message was displayed:

```
%DISM-W-CANNOTDMT
```

This problem has now been corrected.

4.22.14 Multipath Failover Failure (Infrequent) on HSZ70/HSZ80 Controllers—Corrected on HSZ70

V7.2-1

Under heavy load, a host-initiated manual or automatic path switch from one controller to another may fail on an HSZ70 or HSZ80 controller. Testing has shown this to occur infrequently.

Note

This problem has been corrected for the HSZ70 in the firmware revision HSOF V7.7 (and higher versions) and will be corrected for the HSZ80 in a future release. It does not occur on the HSG80 controller.

4.22.15 No Automatic Failover for SCSI Multipath Medium Changers

V7.3-1

Automatic path switching is not implemented in OpenVMS Alpha Version 7.3-1 for SCSI medium changers (tape robots) attached to Fibre Channel via a Fibre-to-SCSI tape bridge. Multiple paths can be configured for such devices, but the only way to switch from one path to another is to use manual path switching with the SET DEVICE/SWITCH command.

This restriction will be removed in a future release.

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4.22 OpenVMS Cluster Systems

4.22.16 Fibre Channel Multipath Tapes and Third-Party Products

V7.3-1

OpenVMS Alpha Version 7.3 introduced multipath support for SCSI tape devices that are accessed via fibre channel adapters.

Third-party products that rely on altering the Driver Dispatch Table (DDT) of the OpenVMS Alpha SCSI tape class driver (SYS\$MKDRIVER.EXE) may require changes to work correctly with such multipath fibre channel tape devices.

Manufacturers of such software can contact Compaq at vms_drivers@zko.dec.com for more information.

4.22.17 SCSI Multipath Incompatibility with Some Third-Party Products

V7.2

OpenVMS Alpha Version 7.2 introduced the SCSI multipath feature, which provides support for failover between the multiple paths that can exist between a system and a SCSI device.

This SCSI multipath feature may be incompatible with some third-party disk caching, disk shadowing, or similar products. Compaq advises you to avoid the use of such software on SCSI devices that are configured for multipath failover (for example, SCSI devices that are connected to HSZ70 and HSZ80 controllers in multibus mode) until this feature is supported by the manufacturer of the software.

Third-party products that rely on altering the Driver Dispatch Table (DDT) of the OpenVMS Alpha SCSI disk class driver (SYS\$DKDRIVER.EXE) may require changes to work correctly with the SCSI multipath feature. Manufacturers of such software can contact Compaq at vms_drivers@zko.dec.com for more information.

For more information about OpenVMS Alpha SCSI multipath features, refer to the *Guidelines for OpenVMS Cluster Configurations*.

4.22.18 Gigabit Ethernet Switch Restriction in an OpenVMS Cluster System

V7.3

Attempts to add a Gigabit Ethernet node to an OpenVMS Cluster system over a Gigabit Ethernet switch will fail if the switch does not support autonegotiation. The DEGPA enables autonegotiation by default, but not all Gigabit Ethernet switches support autonegotiation. For example, the current Gigabit Ethernet switch made by Cabletron does not.

Furthermore, the messages that are displayed may be misleading. If the node is being added using CLUSTER_CONFIG.COM and the option to install a local page and swap disk is selected, the problem may look like a disk-serving problem. The node running CLUSTER_CONFIG.COM displays the message “waiting for *node-name* to boot,” while the booting node displays “waiting to tune system.” The list of available disks is never displayed because of a missing network path. The network path is missing because of the autonegotiation mismatch between the DEGPA and the switch.

To avoid this problem, disable autonegotiation on the new node’s DEGPA, as follows:

- Perform a conversational boot when first booting the node into the cluster.

- Set the new node's system parameter LAN_FLAGS to a value of 32 to disable autonegotiation on the DEGPA.

4.23 OpenVMS Management Station

V7.3-1

Because of a DECthreads problem, users of the OpenVMS Management Station must upgrade to Version 3.2 if they are on OpenVMS Version 7.3-1 or 7.3. It is recommended that all users of the OpenVMS Management Station upgrade to Version 3.2; it is mandatory on Version 7.3-1 or 7.3.

The OpenVMS Alpha Version 7.3-1 installation includes OpenVMS Management Station Version 3.2, which is also available on the web.

4.24 PPPD Utility—Line Disconnect Problem

V7.3-1

If you use the PPPD utility to disconnect a PPP connection and you upgrade from Version 7.3 to Version 7.3-1, you will see the following message:

```
PPPD> DISCONNECT TTA0:  
%PPPD-E-PPPCONNECTERR, error connecting to PPP device  
%SYSTEM-W-NOSUCHDEV, no such device available  
PPPD-F-ABORT, fatal error encountered; operation terminated
```

This problem will be corrected in a future remedial kit.

4.25 OpenVMS Registry

The release notes in this section pertain to the OpenVMS Registry.

4.25.1 Registry Services in a Mixed-Version Cluster

V7.3

Removing the data transfer size restrictions on the OpenVMS NT Registry required a change in the communication protocol used by the Registry. The change means that components of the Registry (the \$REGISTRY system service and the Registry server) in OpenVMS Version 7.2-2 or higher are incompatible with their counterparts in OpenVMS Version 7.2-1 and Version 7.2-1H1 or earlier.

If you plan to run a cluster with mixed versions of OpenVMS, and you plan to use the \$REGISTRY service or a product that uses the \$REGISTRY service (such as Advanced Server, or COM for OpenVMS) then you are restricted to running these services on the OpenVMS Version 7.2-2 or higher nodes only, or on the Version 7.2-1 nodes only, but not both. If you are upgrading Version 7.2-1 nodes to Version 7.2-2 or higher, then you need to follow the procedure outlined in Section 1.9.

If you need to run Registry services on both Version 7.2-2 or higher and Version 7.2-1 or lower nodes in the same cluster, please contact your Compaq Services representative.

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4.25 OpenVMS Registry

4.25.2 Registry Data Transfer Size Restriction Eased

V7.3

Previous versions of OpenVMS placed restrictions on the size of a data transfer between the \$REGISTRY system service and the OpenVMS Registry server. The data transfer restrictions, in turn, placed restrictions on the maximum size of a single block of data that can be stored or retrieved from the Registry database. They also limited the depth of a REG\$CP Search command, and placed limits on the number of Advanced Server domain groups of which a user can be a member. These restrictions were eased in OpenVMS Version 7.3, but still have not been eliminated entirely.

Previously the restrictions were approximately 8K bytes transmit (service to server) and approximately 4K bytes receive. The current restriction depends on the setting of the system parameter MAXBUF. The range for MAXBUF is 4K to 64K, with a default of 8K.

MAXBUF is the maximum allowable size for any single buffered I/O packet. You should be aware that by changing MAXBUF you also affect other areas of the system that perform buffered I/O.

4.25.3 Registry Master Failover in a Mixed-Version Cluster

V7.3-1

When you run the Registry server on more than one node in a cluster, only one of the servers is the Registry server master. The others are standby servers, in case the node running the current master is shut down.

Normally, you can failover the role of master from one node to another in any one of the following ways:

- Request the current master server to exit
- Shut down the node on which the current master is running
- Modify the relative priority (not the same as process priority) of the Registry servers

Beginning with OpenVMS V7.3-1, the Registry server uses a faster and more efficient method to determine if its relative priority has changed in a cluster.

All the Registry servers running in a cluster must use the same method for determining their relative priorities.

If you are running Registry servers in a mixed-version cluster, therefore, you cannot use the priority method to cause the Registry server master to failover from one node to another.

The Registry server master will still failover from one node to another when you request the current Registry server master to exit, or when you shut down a node on which the master is running.

It is recommended that in a mixed cluster, the servers on the new nodes should all be higher priority than the servers on the old nodes. This will ensure that a server on an old node will never be master as long as there are servers running on a new node.

For further information on Registry server failover in a cluster, refer to the OpenVMS Registry System Management section of the *COM, Registry, and Events for OpenVMS Developer's Guide*.

4.26 Mixed-Version Cluster Restrictions for Registry Server and COM**4.26 Mixed-Version Cluster Restrictions for Registry Server and COM***V7.3-1*

This section contains notes about the Registry and COM in mixed-version clusters.

4.26.1 OpenVMS Registry Server in a Mixed-Version Cluster*V7.2-2*

This note has been updated for Version 7.3-1.

For OpenVMS Version 7.2-2 or higher, the Registry components (the \$REGISTRY services and the Registry server) were modified to use enhanced interprocess communication software. Consequently, certain versions of the Registry are incompatible with other versions. Specifically, the pre-Version 7.2-2 Registry components are incompatible with the enhanced Version 7.2-2, 7.3, and 7.3-1 Registry components. If you have an OpenVMS Cluster system with mixed versions of OpenVMS, ensure that all cluster members running or using the Registry components are running compatible versions of OpenVMS. (Note that mixed-version support in clusters is for migration purposes only.) You can run the Registry components and the products that use it on the following version combinations only:

- OpenVMS Alpha Version 7.3-1/7.3/7.2-2
- OpenVMS Alpha Version 7.2-1/7.2-1H1

The Registry server is used by cluster members if they are running:

- Advanced Server for OpenVMS
- COM for OpenVMS
- User-written applications that call SYS\$REGISTRY

If you are running the Registry components in an OpenVMS Cluster system running OpenVMS Version 7.2-1 or Version 7.2-1H1, and you want to upgrade one or more of these members to OpenVMS Version 7.2-2, 7.3, or 7.3-1, follow the instructions in Section 1.9.

If you need to run Registry services in a cluster with one or more nodes running OpenVMS Alpha Version 7.2-2, 7.3, or 7.3-1 and one or more nodes running OpenVMS Alpha Version 7.2-1 or 7.2-1H1, please contact your Compaq Services representative.

4.26.2 COM for OpenVMS Restrictions in Some Mixed-Version Clusters (Alpha Only)*V7.3-1*

Because of changes to the OpenVMS Registry protocol, you cannot run COM for OpenVMS software on OpenVMS Alpha Version 7.2-2 or higher systems and Version 7.2-1 or lower systems in the same cluster.

In a mixed-version OpenVMS Cluster system, if the Registry Server is on a Version 7.3-1, 7.3, or 7.2-2 node, then COM applications can run only on those nodes in the cluster that are running Version 7.3-1, 7.3, or 7.2-2. If the Registry Server is on a Version 7.2-1 or lower node in the cluster, then COM applications can run only on those nodes in the cluster that are running Version 7.2-1 or lower.

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4.26 Mixed-Version Cluster Restrictions for Registry Server and COM

For more information about the OpenVMS Registry protocol change, see Section 4.25.

For information about installing and configuring COM for OpenVMS, refer to the *COM, Registry, and Events for OpenVMS Developer's Guide*.

4.27 RMS Journaling

The following release notes pertain to RMS Journaling for OpenVMS.

4.27.1 Modified Journal File Creation

V7.2

Prior to Version 7.2, recovery unit (RU) journals were created temporarily in the [SYSJNL] directory on the same volume as the file that was being journaled. The file name for the recovery unit journal had the form RMS\$*process_id* (where *process_id* is the hexadecimal representation of the process ID) and a file type of RMS\$JOURNAL.

The following changes have been introduced to RU journal file creation in OpenVMS Version 7.2:

- The files are created in node-specific subdirectories of the [SYSJNL] directory.
- The file name for the recovery unit journal has been shortened to the form: YYYYYYYY, where YYYYYYYY is the hexadecimal representation of the process ID in reverse order.

These changes reduce the directory overhead associated with journal file creation and deletion.

The following example shows both the previous and current versions of journal file creation:

Previous versions: [SYSJNL]RMS\$214003BC.RMS\$JOURNAL;1
Current version: [SYSJNL.NODE1]CB300412.;1

If RMS does not find either the [SYSJNL] directory or the node-specific directory, RMS creates them automatically.

4.27.2 Recovery Unit Journaling Incompatible with Kernel Threads

V7.3

Because DECdtm Services is not supported in a multiple kernel threads environment and RMS recovery unit journaling relies on DECdtm Services, RMS recovery unit journaling is not supported in a process with multiple kernel threads enabled.

4.27.3 After-Image (AI) Journaling

V6.0

You can use after-image (AI) journaling to recover a data file that becomes unusable or inaccessible. AI recovery uses the AI journal file to roll forward a backup copy of the data file to produce a new copy of the data file at the point of failure.

In the case of either a process deletion or system failure, an update can be written to the AI journal file, but not make it to the data file. If only AI journaling is in use, the data file and journal are not automatically made consistent. If additional

updates are made to the data file and are recorded in the AI journal, a subsequent roll forward operation could produce an inconsistent data file.

If you use Recovery Unit (RU) journaling with AI journaling, the automatic transaction recovery restores consistency between the AI journal and the data file.

Under some circumstances, an application that uses only AI journaling can take proactive measures to guard against data inconsistencies after process deletions or system failures. For example, a manual roll forward of AI-journaled files ensures consistency after a system failure involving either an unshared AI application (single accessor) or a shared AI application executing on a standalone system.

However, in a shared AI application, there may be nothing to prevent further operations from being executed against a data file that is out of synchronization with the AI journal file after a process deletion or system failure in a cluster. Under these circumstances, consistency among the data files and the AI journal file can be provided by using a combination of AI and RU journaling.

4.27.4 Remote Access of Recovery Unit Journaled Files in an OSI Environment

V6.1

OSI nodes that host recovery unit journaled files that are to be accessed remotely from other nodes in the network must define SYS\$NODE to be a Phase IV-style node name. The node name specified by SYS\$NODE must be known to any remote node attempting to access the recovery unit journaled files on the host node. It must also be sufficiently unique for the remote node to use this node name to establish a DECnet connection to the host node. This restriction applies only to recovery unit journaled files accessed across the network in an OSI or mixed OSI and non-OSI environment.

4.27.5 VFC Format Sequential Files

VAX V5.0

Alpha V1.0

You cannot update variable fixed-length control (VFC) sequential files when using before-image or recovery unit journaling. The VFC sequential file format is indicated by the symbolic value FAB\$C_VFC in the FAB\$B_RFM field of the FAB.

4.28 Security—Changes to DIRECTORY Command Output

V7.3-1

In OpenVMS Version 7.1 and higher, if you execute the DCL command DIRECTORY/SECURITY or DIRECTORY/FULL for files that contain PATHWORKS access control entries (ACEs), the hexadecimal representation for each PATHWORKS ACE is no longer displayed. Instead, the total number of PATHWORKS ACEs encountered for each file is summarized in this message: "Suppressed *n* PATHWORKS ACE."

To display the suppressed PATHWORKS ACEs, use the DCL DIRECTORY command with the /NOSUPPRESS qualifier, along with either the /FULL, /SECURITY, or /ACL qualifier.

System Management Release Notes

4.29 System Parameter Changes

4.29 System Parameter Changes

V7.3-1

The following sections list obsolete, modified, and new system parameters.

4.29.1 Obsolete System Parameters

V7.3

Starting with OpenVMS Version 7.3, the following system parameters are obsolete:

- MAXBOBS0S1
- MAXBOBS2
- NISCS_LAN_OVRHD
- PAGFILCNT
- SWPFILCNT

MAXBOBS0S1 and MAXBOBS2

Initially, the MAXBOBS0S1 and MAXBOBS2 parameters were intended to ensure that users could not adversely affect the system by creating huge buffer objects. However, as users began to use buffer objects more widely, managing the combination of these parameters proved to be too complex.

Users who want to create buffer objects must either hold the VMS\$BUFFER_OBJECT_USER identifier or execute in executive or kernel mode. Therefore, these users are considered privileged applications, and the additional safeguard that these parameters provided is unnecessary.

To determine current usage of system memory resources, enter the following command:

```
$ SHOW MEMORY/BUFFER_OBJECT
```

4.29.2 Modified System Parameters

V7.3-1

Definitions of the following system parameters have been modified in OpenVMS Version 7.3-1:

- ACP_WRITEBACK
- FAST_PATH_PORTS
- LCKMGR_MODE
- MPDEV_ENABLE
- MPDEV_LCRETRIES
- MPDEV_POLLER
- MPDEV_REMOTE
- NISCS_MAX_PKTSZ
- NPAGERAD
- POOLCHECK
- RAD_SUPPORT

- SHADOWING
- VCC_MAXSIZE

Refer to online help for changes in the definitions of these parameters.

4.29.3 New System Parameters

V7.3-1

The following list contains new system parameters in OpenVMS Version 7.3-1:

- DCL_CTLFLAGS
- DELPRC_EXIT
- MPDEV_AFB_INTVL
- RMS_SEQFILE_WBH

Refer to online help for the definitions of these new parameters.

4.30 TCP/IP Services Mandatory Update for OpenVMS Version 5.3

V7.3-1

When running TCP/IP Services for OpenVMS Version 5.3 (included with this release), some customers may encounter floating-point errors in application code when the NFS Client is accessing a file system served by the OpenVMS NFS Server.

To prevent this problem, install the TCP/IP Services for OpenVMS Version 5.3 Mandatory Update (MUP) kit, which is available from your Compaq support representative.

Note that customers who are not using the NFS Server should not encounter this problem.

4.31 Terminal Fallback Facility (TFF)

On OpenVMS Alpha systems, the Terminal Fallback Facility (TFF) includes a fallback driver (SYS\$FBDRIVER.EXE), a shareable image (TFFSHR.EXE), a terminal fallback utility (TFU.EXE), and a fallback table library (TFF\$MASTER.DAT).

Note

TFFSHR has been removed from IMAGELIB because it is not a documented, user-callable interface. The image is still available in the SYS\$LIBRARY: directory.

To start TFF, invoke the TFF startup command procedure located in SYS\$MANAGER, as follows:

```
$ @SYS$MANAGER:TFF$SYSTARTUP.COM
```

To enable fallback or to change fallback characteristics, invoke the Terminal Fallback Utility (TFU), as follows:

```
$ RUN SYS$SYSTEM:TFU
TFU>
```

System Management Release Notes

4.31 Terminal Fallback Facility (TFF)

To enable default fallback to the terminal, enter the following DCL command:

```
$ SET TERMINAL/FALLBACK
```

OpenVMS Alpha TFF differs from OpenVMS VAX TFF in the following ways:

- On Alpha systems, the TFF fallback driver is named SYS\$FBDRIVER.EXE. On VAX systems, the TFF fallback driver is named FBDRIVER.EXE.
- On Alpha systems, TFF is capable of handling 16-bit character fallback. The OpenVMS Alpha fallback table library (TFF\$MASTER.DAT) contains four more 16-bit character tables than the VAX library. Table 4–3 describes these additional tables.

Table 4–3 TFF Character Fallback Tables

Table Name	Base	Description
BIG5_HANYU	BIG5	BIG5 for CNS 11643 (SICGCC) terminal/printer
HANYU_BIG5	CNS	CNS 11643 (SICGCC) for BIG5 terminal/printer
HANYU_TELEX	CNS	CNS 11643 for MITAC TELEX-CODE terminal
HANGUL_DS	KS	KS for DOOSAN 200 terminal

These tables are used mainly by the Asian region. Also, the table format was changed due to the support of 16-bit character fallback.

- On Alpha systems, the TFF command SHOW STATISTICS does not display the size of the fallback driver (SYS\$FBDRIVER.EXE).

RT terminals are not supported by TFF.

For more information about the Terminal Fallback Facility, refer to the *OpenVMS Terminal Fallback Utility Manual*. You can access it on line from the OpenVMS Documentation CD-ROM (in the archived manuals directory).

4.32 VCC I/O Cache Size Increased

V7.2-2

The maximum I/O data transfer that VCC caches has been increased from 35 blocks to 64 blocks.

4.33 Volume Shadowing for OpenVMS

The following release notes pertain to Volume Shadowing for OpenVMS.

4.33.1 Minicopy Version Required on All Nodes

V7.3

OpenVMS Alpha Version 7.3 introduced minicopy support in Compaq Volume Shadowing for OpenVMS.

To use this volume shadowing feature in an OpenVMS Cluster system, only the versions that support this feature can exist in the cluster. This restriction also pertains to all storage controllers, such as the HS121, that use OpenVMS to serve disks.

4.33.2 Multipath HSG/HSZ Disk Partitions and Volume Shadowing—Problem Corrected

V7.3-1

Previously, a partition of a multipath disk on an HSG80, HSG60, HSZ80, or HSZ70 controller could be used as a member of a host-based volume shadow set (HBVS) *if and only if* that disk was used exclusively for that partition. Specifically, the remaining space on the partitioned disk could not be used for another logical unit that was accessed concurrently with the partition that was an HBVS member.

Note

This problem does not exist on HSV controllers, regardless of which version of OpenVMS operating system is running on your system.

Previously, failure to adhere to this restriction could result in:

- Problems mounting the shadow set
- Reduced data availability due to the unexpected removal of shadow set members

This restriction has been removed.

4.33.3 INITIALIZE/SHADOW Available on Alpha Systems Only

V7.3-1

The /SHADOW qualifier to the INITIALIZE command was introduced in OpenVMS Version 7.3 and is available on OpenVMS Alpha systems only. Currently, the documentation for INITIALIZE/SHADOW qualifier does not say that it applies only to OpenVMS Alpha systems. This omission will be corrected in a future release.

4.33.4 Dismount of Shadow Set Member Using /MINICOPY

V7.3

In an OpenVMS Cluster configuration, if you issue a DISMOUNT command with the /MINICOPY qualifier from a client system to dismount a shadow set member, the command might fail.

Workaround

If the first DISMOUNT command fails, repeat the command, as shown in the following example:

```
$ SHOW DEVICE DSA5555
Device          Device          Error   Volume          Free  Trans Mnt
  Name          Status          Count   Label           Blocks Count Cnt
DSA5555:        Mounted         0       $80$DKA107:    7994646      1  18
$80$DKA107:    (WILD3)        ShadowSetMember  0 (member of DSA5555:)
$80$DKA302:    (WILD3)        ShadowSetMember  0 (member of DSA5555:)
$80$DKA303:    (WILD3)        ShadowSetMember  0 (member of DSA5555:)
$
$
```

System Management Release Notes

4.33 Volume Shadowing for OpenVMS

```
$ DISMOUNT/POLICY=MINICOPY $80$DKA302:
%DISM-W-CANNOTDMT, $80$DKA302: cannot be dismounted
%DISM-F-SRCMEM, only source member of shadow set cannot be dismounted
$
$
$ DISMOUNT/POLICY=MINICOPY $80$DKA302:
$
```

This problem will be corrected in a future release.

4.33.5 SHADOW_MAX_UNIT Settings

V7.3

OpenVMS Alpha Version 7.3 introduced minicopy support in Volume Shadowing for OpenVMS.

As part of the minicopy functionality, a new volume shadowing system parameter, SHADOW_MAX_UNIT, is provided for specifying the maximum number of shadow sets that can exist on a node. The default value on OpenVMS Alpha systems is 500; on OpenVMS VAX systems, the default is 100. This system parameter is not dynamic; a reboot is required to make the change take effect.

Caution

Review carefully the default settings of SHADOW_MAX_UNIT for your configuration. Dismounted shadow sets, unused shadow sets, and shadow sets with no write bitmaps allocated to them are included in this total. The setting *must be equal to or greater than* the number of shadow sets you plan to have on a system. Any MOUNT command that attempts to create more than the maximum specified by SHADOW_MAX_UNIT fails.

Note that this parameter does not affect the naming of shadow sets. For example, with the default value of 100, a device name such as DSA999 is still valid.

Programming Release Notes

This chapter provides release notes about both application and system programming on OpenVMS systems.

5.1 Common Data Security Architecture (CDSA) Considerations

V7.3-1

Installation and Initialization

Installation of CDSA is done automatically when you install the operating system. However, you must be aware of the following considerations:

- You should increase your FILLM process quota by 100 before you initialize CDSA.
- Although the CDSA installation is part of the OpenVMS Alpha Version 7.3-1 installation, the setup and initialization of CDSA is not part of that installation. Before you can use CDSA, you must perform the following manual procedure. You need the SYSPRV privilege to run this procedure.
Type:

```
$ @SYS$STARTUP:CDSA$INITIALIZE
```

When a new version of CDSA is installed (for example, in an upgrade from field test to a production version, or a new version of OpenVMS), you must rerun the CDSA initialization procedure. Any CDSA application should be shut down before you rerun the initialization procedure.

It is not necessary to rerun the initialization procedure when the system is rebooted, nor is it necessary to add the initialization to the OpenVMS startup procedures.

- Do not attempt to remove CDSA from your system. Use of the PCSI PRODUCT REMOVE command is not supported for CDSA, even though there is an apparent option to remove CDSA. (This option is due to the use of PCSI in the installation.) CDSA is installed together with the operating system and is tightly bound with it. An attempt to remove it from Version 7.3-1 will not work cleanly, and will potentially create other undesirable side effects. An attempt to remove it will result in the following message:

```
%PCSI-E-HRDREF, product CPQ AXPVMS CDSA Vx.x is referenced
  by DEC AXPVMS OPENVMS V7.3-1
-PCSI-E-HRDRF1, the two products are tightly bound by this
  software dependency
```


5.2 Backup API—Journaling Callback Events Restriction

V7.1

If an application registers a callback routine for any of the journaling events, it must register a callback routine for all the journaling callback events. The following is a list of the journaling callback events:

```
BCK_EVENT_K_JOURNAL_OPEN
BCK_EVENT_K_JOURNAL_WRITE
BCK_EVENT_K_JOURNAL_CLOSE
```

This is a permanent restriction.

Refer to the Backup API chapter in the *OpenVMS Utility Routines Manual* for more information on registering callback routines.

5.3 Timer Queue Entries (TQEs)

V7.3-1

Management of Timer Queue Entries has been redesigned for the Version 7.3-1 release of OpenVMS Alpha to provide significantly higher performance for systems using many TQEs. This change is transparent to nonprivileged applications.

Privileged code can no longer manipulate TQEs directly in any form. In particular, directly accessing pointers in the TQE's queue header (TQE\$L_TQFL/TQE\$L_TQBL) causes an access violation in almost all cases. Privileged code may continue to use the internal routines `exe_std$instimq/exe$instimq` and `exe_std$rmvtimq/exe$rmvtimq` to enter or remove Timer Queue Entries.

5.4 Batch and Print Queues Now Can Stop Executing Batch Jobs

V7.3-1

Previously, the DELETE/ENTRY command could fail to stop an executing batch job if:

- The batch job was a DCL command procedure.
- There was an ON ERROR CONTINUE command (or SET NOON command) within the command procedure.

The DELETE/ENTRY command causes the job to terminate in phases. A `delete_process` AST routine is given in user mode, supervisor mode, and then executive mode. Because there is a small delay between each mode, it is possible that, in a batch job, a user-mode image may terminate, and the command procedure may continue to execute until the supervisor-mode `delete_process` AST routine is executed.

The return status of the SYNCHRONIZE command is assumed to contain the termination status of the target batch job. In addition, command procedures would normally execute a command such as `$ON ERROR THEN CONTINUE` or `$SET NOON` before issuing the SYNCHRONIZE command. If a DELETE/ENTRY command is issued to the job executing the SYNCHRONIZE command, the `JBC$_JOBABORT` is interpreted as being the termination status of the target batch job rather than a return status of the SYNCHRONIZE command. The command procedure then continues to execute for a short period with this incorrect assumption and performs an operation such as requeuing the target batch job or incorrectly reporting a failure of the target batch job.

5.4 Batch and Print Queues Now Can Stop Executing Batch Jobs

Now, the SYNCHRONIZE command detects this situation and waits in an exit handler for longer than the delay between the user-mode and supervisor-mode termination.

Any other images that would report the job completion status obtained by the SJC\$_SYNCHRONIZE_JOB function code of the \$SNDJBC system service as the return status of the program should implement logic similar to the following:

1. Declare an exit handler.
2. In the exit handler, implement the following logic:

```
IF (exit status is JBC$_JOBABORT)
THEN
    Wait 10 seconds
ENDIF
```

5.5 Compaq C Run-Time Library

V7.3-1

The following sections contain release notes pertaining to the Compaq C Run-Time Library (RTL).

5.5.1 strftime Function—Problem Corrected

V7.3-1

Previously, the "V" conversion specifier in the strftime function did not return the correct number of weeks in the year for some boundary dates at the end of December or the beginning of January:

- strftime reported either week 52 or 53 for the last week of December. It should report "1" for December dates that are in the same week as January 1st of the next year, when January 1st is in week 1.
- strftime always reported week 53 when early January dates were not in week 1, even if the last week in December was actually week 52.

This problem has been corrected.

5.5.2 Threaded Application Hang—Problem Corrected

V7.3-1

Previously, a threaded C application could hang when doing operations that resulted in file I/O. A deadlock condition could arise when file I/O was started and the standard I/O channels had not been initialized. Two mutexes used to synchronize file I/O operations were locked in different orders in two parts of the C run-time library.

This problem has been corrected.

5.5.3 ecvt Function in Kernel Mode—Performance Improvement

V7.3-1

Previously, the ecvt function (convert-to-string) could operate excessively in kernel mode. This function uses thread-specific data. The LIB\$AST_IN_PROG function was called to protect the thread-specific data against corruption by an interrupting AST, thus introducing high overhead.

Programming Release Notes

5.5 Compaq C Run-Time Library

Although the `ecvt` function was not intended to be AST-safe, handling of thread-specific data was revised in the C RTL for OpenVMS Version 7.1-1, introducing the AST-safe test (`LIB$AST_IN_PROG`) and consequent overhead.

An alternate implementation that is thread-safe but not AST-safe has now been made the default, improving performance.

You can restore the AST-safe mode by enabling the `DECC$THREAD_DATA_AST_SAFE` feature logical:

```
$ DEFINE DECC$THREAD_DATA_AST_SAFE ENABLE
```

5.5.4 `times` Function—Performance Improvement

V7.3-1

Previously, a Compaq C application would become noticeably slower after adding calls to the `times` function to get performance data. The `times` function used an asynchronous system call, `$GETJPI`, adding significant overhead.

This overhead has been substantially reduced by taking advantage of changes in OpenVMS to retrieve values from `$GETJPI` synchronously.

5.5.5 `alarm` Function—Problem Corrected

V7.3-1

The `alarm` function previously did not correctly recognize an unexpired timer and did not always return the correct value for the time remaining.

The `alarm` function supports a single timer. When another request to `alarm` is issued, `alarm` should cancel any pending request, schedule a new alarm, and return the time remaining on the original timer.

The problem with the `alarm` function was fixed by changing the function to do the following:

- Use a static variable for storing the scheduled alarm.
- Return 0 if the unexpired time is less than 0.
- Return a minimum of 1 if the unexpired time is greater than 0.

5.5.6 Files of Size 2 Gigabytes or Larger—Restriction Removed

V7.3-1

In previous releases of C RTL, all file positions were calculated using 32-bit arithmetic. This restricted certain file operations to file sizes less than 2 gigabytes (2GB).

This restriction has now been removed. File operations using C RTL I/O may now be performed on file sizes up to 2 terabytes.

By default, all applications can only use offsets expressed in 32 bits. The function `fgetpos` now returns the correct file offset when the file position is beyond 2GB.

Developers can also program their application to express file sizes and positions in 64 bits. This is described in the *OpenVMS Alpha Version 7.3-1 New Features and Documentation Overview*.

5.5.7 stat Memory-Corruption—Problem Corrected

V7.3-1

Memory corruption occasionally occurred when using stat to access a nonexistent directory.

This problem has been corrected.

5.5.8 decc\$to_vms Case-Matching—Problem Corrected

V7.3-1

Regular expression support in decc\$to_vms did not match names with lowercase letters.

This problem has been corrected.

5.5.9 Printing Error with Locale Enabled—Problem Corrected

V7.3-1

There was an error printing negative numbers with thousands separators when a locale is enabled. The function call `printf("%'d", -999)` when preceded by a call to `set_locale`, would incorrectly output `"-,999"` instead of `"-999"`.

This problem has been corrected.

5.6 Compiling C Programs with case=sensitive Settings

V7.3-1

If you are compiling C programs with the setting `case=sensitive`, any `#include` files in your C program specified with the `.h` file type (lowercase h) will not be seen and executed. In addition, if a system `#include` file specifies another `#include` file with a `.h` file type, the second `#include` file will not be seen and an error will be generated.

To avoid this behavior, compile with `case` set to `blind`. If it is necessary to use `case=sensitive`, specify any `#include` files in your C programs either with no file type (for example, `#include <stdio>`) or with an uppercase H file type (for example, `#include <stdio.H>`).

Note that this does not correct the scenario where system `#include` files, such as `stdlib.h`, in turn specify `#include` files with a `.h` file type and cause an error to be generated.

5.7 Compaq COBOL Run-Time Library (RTL) for OpenVMS Alpha

V7.3-1

The Compaq COBOL RTL (DEC\$COBRTL) has been updated to V2.7-641.

5.7.1 COBOL RTL and RMS RU-Journaling—Problem Corrected

V7.3-1

The RTL now properly handles RMS RU-journaling for files with variable length records.

Programming Release Notes

5.7 Compaq COBOL Run-Time Library (RTL) for OpenVMS Alpha

5.7.2 COBOL RTL and ISAM DELETE—Problem Corrected

V7.3-1

The RTL now properly handles DELETE of the last record in an ISAM file. Previously, the RTL got an internal consistency check failure.

5.7.3 COBOL RTL and Record Locking—Restriction

V7.3-1

In certain circumstances with the START or WRITE statement, COBOL acquires multiple record locks with automatic record locking. If you encounter this situation, you can clear the record locks using either UNLOCK ALL RECORDS or CLOSE followed by OPEN.

5.8 LIBOTS2 Versions

V7.3-1

LIBOTS2 has been updated for OpenVMS Alpha Version 7.3-1. The new version of LIBOTS2 is Version 2.7-48.

The LIBOTS2 library shipped with OpenVMS Version 7.3 (Version 2.6-46 link date 2001) is built incorrectly and can cause wrong results from COBOL programs. Please avoid that version. Instead, use either:

- LIBOTS2 Version 2.7-48 (or higher), shipped with OpenVMS Version 7.3-1
- LIBOTS2 from the Compaq COBOL RTL Version 2.7 kit (Version 2.6-46 link date 1999)

5.9 Compaq Distributed Computing Environment (DCE) for OpenVMS

This section contains important release notes for existing users of Compaq Distributed Computing Environment (DCE) for OpenVMS VAX and OpenVMS Alpha.

Remote procedure call (RPC) functionality was integrated into the operating system beginning with OpenVMS Version 7.2. As of OpenVMS Version 7.2-1, NT Lan Manager (NTLM) security has been available in RPC calls. For more information about RPC functionality, refer to the *Compaq DCE for OpenVMS VAX and OpenVMS Alpha Reference Guide*.

Caution

Do not install Compaq DCE for OpenVMS Version 1.4 on OpenVMS Version 7.2 or higher. Doing so will overwrite the new RPC files with those from Version 1.4. This problem does not occur with Compaq DCE for OpenVMS Version 1.5 or Version 3.0.

For more information about Compaq DCE for OpenVMS, refer to the following documentation:

- *Compaq DCE for OpenVMS VAX and OpenVMS Alpha Installation and Configuration Guide*
- *Compaq DCE for OpenVMS VAX and OpenVMS Alpha Product Guide*

5.9 Compaq Distributed Computing Environment (DCE) for OpenVMS

- *Compaq DCE for OpenVMS VAX and OpenVMS Alpha Reference Guide*

5.9.1 DCE System Management Command Procedure

V7.3

With the update of the DCE RPC files in OpenVMS Version 7.2-1, the following changes have been made to the DCE system management command procedure (SYS\$MANAGER:DCE\$SETUP.COM):

- DCE\$SETUP once again stops the RPC daemon when shutting down DCE, although SYS\$MANAGER:DCE\$RPC_SHUTDOWN.COM may still be called in place of DCE\$SETUP, if DCE is being used in RPC-only mode.
- DCE components can no longer be started, stopped, or configured without shutting down the RPC daemon.

5.9.2 NTLM Authenticated RPC Functionality Now Available

V7.3

The new authenticated RPC functionality in DCE for OpenVMS Version 3.0, including impersonation and authentication with NT Lan Manager (NTLM) protocol, is included as of OpenVMS Version 7.2-1.

The Compaq Distributed Computing Environment for OpenVMS VAX and OpenVMS Alpha documentation that ships with OpenVMS Version 7.2-1 and later provides information about using NTLM.

5.10 DECdtm \$TRANS_EVENT

V7.3-1

The C Prototype for the newly documented DECdtm \$TRANS_EVENT system service has been changed as follows:

- *rm_id is now rm_id.
- The mechanism of rm_id is now by value, not by reference.

Existing applications that call \$TRANS_EVENT or \$TRANS_EVENTW system service calls must be recompiled and relinked, because of a change in OpenVMS Starlet.

Note

DECdtm documentation for \$TRANS_EVENT has been corrected since its previous version.

5.11 Debugger

This section contains release notes pertaining to the OpenVMS Debugger.

5.11.1 Register View and Debugger Errors

V7.3-1

Debugger errors can occur when registers are selected after the register display list has changed.

Programming Release Notes

5.11 Debugger

5.11.2 Previous Versions of Client/Server Interface Not Supported by Debugger

V7.3

The OpenVMS Version 7.3 debugger does not support previous versions of the client/server interface. You must install the client/server interface found in the kit on the distribution media, as identified in the following table:

CPU	Operating System	Client Kit
Intel	Microsoft Windows 95, 98, NT, Me, 2000, XP	[DEBUG_CLIENTS011.KIT]DEBUGX86011.EXE
Alpha	Microsoft Windows NT	[DEBUG_CLIENTS011.KIT]DEBUGALPHA011.EXE

These client kits are self-extracting .EXE files.

Once the appropriate executable file has been transferred to the PC, you can run the file to install the debug client on the PC. The InstallShield installation procedure guides you through the installation.

By default, the debug client is installed in the \Program Files\OpenVMS Debugger folder. You can also click Browse to select an alternate location.

5.12 Debugging Modes—Avoiding CPUSPINWAIT Bugchecks

V7.3-1

The OpenVMS operating system has a number of special modes of operation designed to help you debug complex hardware and software problems. In general terms, these special modes enable an extra level of tracing, data recording, and consistency checking that is useful in identifying a failing hardware or software component. These modes of operation are controlled by several system parameters: MULTIPROCESSING, POOLCHECK, BUGCHECKFATAL, and SYSTEM_CHECK.

If you are using one of these special modes (for example, to debug a device driver or other complex application), under certain conditions, generally related to high I/O loads, it is possible to incur a CPUSPINWAIT bugcheck. Specifically, any privileged code that runs for extended periods of time while holding a spinlock can cause a CPU spinwait bugcheck. Spinlocks are used to delineate the entry and exit points for critical sections, and should not be held continuously, as can occur in this situation.

To prevent a CPUSPINWAIT bugcheck, either use the system default settings for these system parameters, or reduce the loading of the system.

If you have reason to change the default settings, you can reduce the likelihood of encountering a problem by setting the SMP_LNGSPINWAIT system parameter to a value of 9000000.

5.13 Hypersort Utility

V7.3-1

The following notes concern the Hypersort utility. Hypersort has been updated for OpenVMS Alpha Version 7.3-1. The new version of Hypersort is V04-003.

As always, continue to use SORT32 as a workaround for any unresolved problems with Hypersort or any functionality not implemented in Hypersort.

5.13.1 Hypersort and VFC Input Files

V7.3-1

Hypersort now properly handles /KEY for VFC input files. You must specify /FORMAT=(RECORD_SIZE:n) for Hypersort with VFC input files where n = longest record length + vfc fixed control area size.

5.13.2 Hypersort and /FORMAT=RECORD_SIZE—Restriction

V7.3-1

Hypersort supports /FORMAT=RECORD_SIZE:n for use with both SORT and MERGE, with the following two restrictions:

- In all cases, if the command-specified RECORD_SIZE is less than the longest record size (LRL) of any record in the input files, the records that are too long are truncated to the RECORD_SIZE size in the sorted output file and the diagnostic message %SORT-E-BAD_LRL is issued. In this situation, the output file should be discarded and the sort should be rerun. The RECORD_SIZE parameter for the SORT command should be revised to a value appropriate to the size of the largest record as shown in the listing of a DIR/FULL command for the input files.
- SORT and MERGE produce output sequential files from input indexed files. The %SORT-E-BAD_LRL diagnostic message can also be issued for this case.

5.13.3 Hypersort and Input Asterisk (*)—Restriction

V7.3

Hypersort does not support asterisk (*) as an input file specification.

5.13.4 Hypersort and Large File Processing—Problems Corrected

V7.3-1

Hypersort provides support for high performance sorting of large files. Two problems have been corrected that previously resulted in incorrect offset computations, and an eventual hang or access violation (ACCVIO) in Hypersort.

5.13.5 Hypersort and /STATISTICS Overflow

V7.3-1

Hypersort now supports larger values for SORT/STATISTICS for working set extent and work file allocation. (This new support is in both SORT32 and Hypersort.)

5.13.6 Hypersort and the user_compare and user_equal Parameters

V7.3-1

Hypersort, unlike SORT32, does not support the feature of allowing an application caller to specify an address for the user_compare or user_equal parameters. It now correctly returns an NYI diagnostic if there is an attempt to do so.

Programming Release Notes

5.13 Hypersort Utility

5.13.7 Hypersort Internal Work File and User Output File Extensions—Problem Corrected

V7.3-1

Hypersort extends on-demand any work file or output file that it is writing. A problem in the extend logic that previously caused the sort to terminate prematurely has been identified and corrected.

5.13.8 Hypersort Compliance with the SORT32 File-Naming Convention—Problem Corrected

V7.3-1

Hypersort should comply with the SORT32 file-naming convention of cascading input file path attributes to form the output file name. A problem in the cascading logic has been found and corrected, resulting in improved compliance with SORT32.

5.13.9 Hypersort and Output File Attributes—Problem Corrected

V7.3-1

Hypersort should detect and set accurate output file attributes based on the input data being processed. A problem that previously caused an inaccurate MRS attribute has been corrected.

5.13.10 Hypersort and AST Quota—Problem Corrected

V7.3-1

Hypersort uses asynchronous QIO to process basic RMS file types. A problem that previously caused an AST quota depletion, and an eventual hang, has been corrected.

5.13.11 Hypersort and NULL Duplicate Records—Problem Corrected

V7.3-1

Hypersort allows for duplicate record processing. A problem that previously caused an unintentional filtering of NULL duplicate records has been corrected.

5.13.12 Hypersort and RMS-F-SYN—Problem Corrected

V7.3-1

Hypersort now properly issues the secondary diagnostic -RMS-F-SYN, file specification syntax error.

5.13.13 Hypersort with Search Lists and Other Uses of Logical Names—Restriction

V7.3-1

Hypersort does not fully support search lists and logical names used for input files and work files. SORT32 should be used when this is a problem.

5.13.14 Hypersort and Lack of Free Space for Work Files—Restriction

V7.3-1

Hypersort does not properly terminate if free space is exhausted in all available sort work files. To avoid this restriction, allocate sufficient free space for the devices used for sort work files; or use SORT32 to detect that work file space has been exhausted.

5.13.15 Hypersort and SORT32 Performance—Working Set and Page File Quota

V7.3-1

SORT32 and Hypersort use different sorting and work file algorithms. Either sort utility may be faster depending on the input file and the memory/disk/CPU configuration. Make sure that page file quota is at least three times working set extent with either SORT32 or Hypersort.

5.13.16 Hypersort and SORT32 Performance with Variable Length Records

V7.3-1

SORT32 and Hypersort allocate fixed sized slots for sort work files based on the longest record length (LRL) information in the file. To improve sort performance, try to set LRL information in the file as close as possible to the actual longest record length. Poor initial performance may be the result of sorting some files produced by C programs, because the LRL is set higher than needed (to 32767).

5.13.17 Hypersort Work File Directories—Restriction

V7.3

Hypersort work files must be redirected to directories that allow multiple file versions that can handle the number of requested work files. This restriction also exists in SORT32.

5.14 Librarian Utility—PGFLQUOTA Exceeding 23000 Needed

V1.5

The OpenVMS Alpha LIBRARIAN sometimes does not inform you of errors during compression, data reduction, or data expansion operations. This problem occurs if the account or process in which the LIBRARIAN is running has a low PGFLQUOTA process quota. Operation failure is not readily apparent because the \$PUTMSG system service always returns a status of SS\$_NORMAL, even when the system service fails. However, when a failure occurs, the LIBRARIAN returns a status other than Success.

To work around this problem, run the compression, data reduction, or data expansion operation in an account with a PGFLQUOTA process quota greater than 23000. In addition, ensure that your command procedures check the return status from the LIBRARY command.

5.15 Linker Utility

The following sections describes release notes pertaining to the Linker Utility.

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5.15 Linker Utility

5.15.1 Change in Linker Default Behavior with Library Check

V7.3-1

Previously, the linker's check between the library and the shareable image was too sensitive. It compared against the exact date and time, signaling LINK-I-DATMISMCH, if no match was found. Now, however, it makes only the same check that the image activator does: that is, it uses the GSMATCH criteria to verify compatibility.

The old behavior (check for date and time) can be obtained by setting the logical name LINK\$SHR_DATE_CHECK.

5.15.2 Linker Utility—Limit of 25 Elements on Stack

V7.2

Developers who are creating object files should be aware that the linker's internal stack is guaranteed for only 25 elements. Any calculations must be done within this constraint.

5.16 LTDRIVER—CANCEL SELECTIVE Restriction

V6.1

In releases prior to OpenVMS Version 6.1, LTDRIVER did not set the "extended DDT" bit; therefore, the POSIX function CANCEL SELECTIVE did not work with LTDRIVER. This problem has been corrected, but a restriction remains.

Although this fix allows \$QIO reads and writes to be selectively canceled, any \$QIO done to the port driver (that is, with the IO\$_TTY_PORT function modifier—such as a LAT connect \$QIO) *cannot* be canceled with CANCEL SELECTIVE.

5.17 Mail Utility—Threads Restriction for Callable Mail

V7.1

OpenVMS callable mail routines are *not* thread-safe. Refer to the *Guide to the POSIX Threads Library* for more information about calling non-thread-safe routines within a threaded application.

Because callable mail context information is maintained on a per-process (rather than a per-thread) basis, multiple threads performing context-based processing must be synchronized so that only *one* mail context of a given type is active at once. Otherwise, one thread could corrupt another thread's mail operations.

On OpenVMS Alpha systems, there is an additional restriction when kernel threads is enabled in a multithreaded environment. In this environment, callable mail should be used only in the initial thread.

5.18 Mathematics (MTH\$) Run-Time Library—Linking Images

V7.3-1

OpenVMS VAX Version 6.1 updated the Mathematics Run-Time Library (RTL) images MTHRTL.EXE, UVMTHRTL.EXE, and VMTHRTL.EXE to contain new entry points in support of DEC Fortran Version 6.0. (UVMTHRTL.EXE is an alternate form of MTHRTL.EXE; references to MTHRTL.EXE in the following paragraphs also apply to UVMTHRTL.EXE.)

5.18 Mathematics (MTH\$) Run-Time Library—Linking Images

Because of the large number of entry points added to MTHRTL.EXE, that image's transfer vector was extended and its global section match identifier incremented. This means that images linked against this version of MTHRTL.EXE will not run on a system running a version of OpenVMS VAX prior to Version 6.1, unless that system has also installed DEC Fortran Version 6.0. In addition, images linked against the new MTHRTL.EXE cannot be translated to run on OpenVMS Alpha using DECmigrate.

To link an image so that it will run on an earlier version of OpenVMS VAX, create a directory that contains saved copies of the .EXE and .OLB files from the SYS\$LIBRARY directory of the earliest version you want to support, and define the logical name SYS\$LIBRARY to point to that directory before linking. Because OpenVMS VAX also defines a system logical name MTHRTL to refer to either MTHRTL.EXE or UVMTHRTL.EXE, you must also define MTHRTL as a logical name in the process or job table to point to the copy in the directory of older images. For example:

```
$ DEFINE/USER SYS$LIBRARY disk:[OLD_SYSLIB]
$ DEFINE/USER MTHRTL SYS$LIBRARY:MTHRTL.EXE
$ LINK . . .
```

Images to be translated using DECmigrate should be linked against the SYS\$LIBRARY files of OpenVMS VAX Version 5.5-2 or earlier.

5.19 POSIX Threads Library

The following sections contain release notes pertaining to the Compaq POSIX Threads Library (formerly named DECthreads).

5.19.1 Process Dumps

V7.3

If the POSIX Threads Library detects an uncorrectable serious problem at run time (such as data structures that have been damaged by data corruption somewhere in the application), the library may terminate the running image. During termination, the library may trigger creation of a process dump file (which can subsequently be used to diagnose the failure, by way of ANALYZE/PROCESS_DUMP). The size of such a process dump file depends on the size of the process's address space at the time of the failure and can be quite large.

5.19.2 Dynamic CPU Configuration Changes

V7.3

Starting in OpenVMS Version 7.3, the POSIX Threads Library is sensitive to dynamic changes in the number of CPUs that are configured for a running multiprocessor Alpha system. When use of multiple kernel threads is enabled (by way of the LINK/THREADS_ENABLE qualifier or the THREADCP command verb) for an image, the POSIX Threads Library monitors the apparent parallelism of an application and creates multiple kernel threads up to the number of CPUs available. Each kernel thread can be scheduled by the OpenVMS executive to execute on a separate CPU and, therefore, can execute simultaneously.

While an application is running, an operator can stop or start a CPU. Such a dynamic change affects the allowable number of kernel threads that future image activations can create. It also will now affect images that are currently executing.

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5.19 POSIX Threads Library

When a CPU is added or removed, the threads library will query for the new number of active CPUs, and compare this to the number of kernel threads that the process is currently using. If there are now more CPUs than kernel threads, the library will try to spread out the existing POSIX threads over the CPUs (creating new kernel threads as needed, now or in the future). If there are now fewer CPUs than kernel threads, the library will force the extra kernel threads to hibernate, and will reschedule the POSIX threads onto the remaining kernel threads. This will ensure that—so far as the process is concerned—there will not be more kernel threads competing for CPU resources than are available.

5.19.3 Enhanced Debugging of Threaded Programs

V7.3

The POSIX Threads Library provides enhanced data collection capabilities to support monitoring and debugging tools. These capabilities provide support for Visual Threads, a new debugging and analysis tool for threaded programs on OpenVMS Alpha systems. Visual Threads, which is licensed with OpenVMS Version 7.3, provides monitoring, automatic debugging, and performance evaluation of multithreaded applications.

5.19.4 POSIX 1003.4a Draft 4 Interface Retirement

V7.0

The POSIX 1003.4a, Draft 4 (or "d4") interface of the POSIX Threads Library is slated for retirement in a future release. Applications that were written using the POSIX 1003.4a, Draft 4 interface should be migrated to the new POSIX 1003.1c standard (or "pthread") interface provided by the POSIX Threads Library. A compatibility mode for the Draft 4 POSIX 1003.4a interface is provided in this release to help ease migration. This compatibility mode will be removed in a future release.

5.19.5 Multiple RAD Support on NUMA Systems

V7.3-1

Starting in OpenVMS Version 7.3-1, the Compaq POSIX Threads Library can utilize the CPUs in all Resource Affinity Domains (RADs) to execute the threads within a single process. Previously, thread execution was essentially limited to the CPUs within the process's home RAD. Now, when the application work load justifies it, the threads library can create and use kernel threads running on CPUs within additional RADs to execute the application's POSIX threads. One multithreaded process can now utilize all CPUs within a NUMA system.

5.20 Privileged Interfaces and Data Structures

This section contains a release note concerning privileged code and data structures.

5.20.1 Per-Thread Security Impacts Privileged Code and Device Drivers

V7.3-1

The method used for attaching a security profile to an I/O Request Packet (IRP) changed with Version 7.2.

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5.20 Privileged Interfaces and Data Structures

In versions of OpenVMS prior to Version 7.2, the IRP structure contained the address of the processwide Access Rights Block (ARB) security structure of the requestor. Beginning with OpenVMS Alpha Version 7.2, the address of the new security profile structure (Persona Security Block, or PSB) was added to the IRP as a functional replacement of the ARB address.

The I/O subsystem maintains its access to the PSB through a reference counter within the PSB. The I/O subsystem increments this reference counter at the time of IRP creation and decrements the counter at I/O postprocessing of that IRP. When this counter reaches zero, the PSB structure is deallocated.

Device drivers that create or clone copies of IRPs to facilitate multiple I/O operations per request, and subsequently pass the copies to the I/O subsystem for postprocessing, must make code changes to account for the extra references to the PSB in these additional IRPs. This is done by passing the PSB address located in the copied IRP to the `NSA_STD$REFERENCE_PSB` routine. The include file and routine call for `NSA_STD$REFERENCE_PSB` is as follows:

```
#include <security-macros.h>
/* Increment REFCNT of PSB that is now shared by both IRPs */
nsa_std$reference_psb( irp->irp$ar_psb );
```

Device drivers need to make this change under the following conditions:

- If a device driver creates a new IRP by duplicating an existing IRP and submits both the original and the duplicate IRPs for I/O postprocessing by calling `IOC_STD$SIMREQCOM` or `IOC_STD$DIRPOST1`, the device driver must call `NSA_STD$REFERENCE_PSB` sometime after duplicating the IRP, but before submitting it for I/O postprocessing.
- If a device driver creates a new IRP by duplicating an existing IRP and does not put the address of some procedure descriptor into the `IRP$L_PID` cell in either the copy or the original IRP, and the device driver submits both the original and the duplicate IRPs for I/O postprocessing by calling `IOC_STD$REQCOM`, `COM_STD$POST`, `COM_STD$POST_NOCNT`, or `IOC_STD$POST_IRP`, the device driver must call `NSA_STD$REFERENCE_PSB` sometime after duplicating the IRP but before submitting it for I/O postprocessing.

Device drivers that perform these steps are also likely to put the address of some procedure descriptor into `IRP$L_PID`. Therefore, most device drivers that duplicate IRPs should be able to function correctly on OpenVMS Version 7.2 or higher without making source changes, relinking, or recompiling.

Failure to call `NSA_STD$REFERENCE_PSB` in these circumstances will result in corrupt tracking information within the PSB, which can result in system failures.

If you make code changes in a device driver to call `NSA_STD$REFERENCE_PSB`, you must recompile and relink the driver to run on OpenVMS Version 7.2 or higher.

Programming Release Notes

5.20 Privileged Interfaces and Data Structures

5.20.2 IPL Requirement For OpenVMS Fork Thread Creation Now Enforced

V7.3-1

Several routines are used by privileged code to create OpenVMS fork execution threads. These routines run in system context independent of any process. There are four variations of these routines, depending on whether an immediate or queued fork is required and on which language interface is being used:

- EXE\$QUEUE_FORK
- EXE_STD\$QUEUE_FORK
- EXE\$PRIMITIVE_FORK
- EXE_STD\$PRIMITIVE_FORK

These routines must be called at or above IPL\$_RESCHED, to prevent accidental rescheduling to a different CPU during their execution. Such a reschedule could cause the system to hang.

In OpenVMS V7.3-1, if SYSTEM_CHECK is set to 1, these routines check the system IPL at entry. If the IPL is below IPL\$_RESCHED, the system will fail with an SPLINVIPL bugcheck.

For performance reasons, the IPL is not verified if SYSTEM_CHECK is set to zero (the default). Incorrect code may cause the system to hang if a reschedule to another CPU occurs during execution of these routines from process context (for example, below IPL\$_RESCHED).

5.21 Record Management Services (RMS)

This section contains a release note pertaining to RMS.

5.21.1 Potential CONVERT-I-SEQ Error on CONVERT/NOSORT with Collated Key

V7.3

This potential change in behavior is restricted to a CONVERT command that specifies both the /NOSORT qualifier and a collated key type on one of the keys in the output file.

The /NOSORT qualifier on a CONVERT command indicates that the primary key is already in sorted order in the input file and directs the Convert utility not to sort it. Prior to OpenVMS Version 7.3, the Convert utility had a defect that caused it to always sort the input file if some key specified for the output file had a collated key type, regardless of whether /NOSORT was specified. As of OpenVMS Version 7.3, the Convert utility has been fixed to appropriately obey the /NOSORT qualifier on the command line, even if one of the keys in the output file is a collated key.

This means that a convert operation that previously succeeded as a side-effect of the collated key defect may now produce %CONVERT-I-SEQ messages if the input file is not already in sorted order by the primary key and /NOSORT is specified on the command line. The /NOSORT qualifier should not be used if the input file is not already in sorted order by the primary key.

5.22 LIB\$FIND_IMAGE_SYMBOL—Error in the RTL Library (LIB\$) Manual

5.22 LIB\$FIND_IMAGE_SYMBOL—Error in the RTL Library (LIB\$) Manual

V7.3-1

In the *OpenVMS RTL Library (LIB\$) Manual*, there is an error in the description of the flags argument to LIB\$FIND_IMAGE_SYMBOL. Flags is documented as passed by reference. This is incorrect and returns an error message, LIB-F-INVARG, as a return value. If flags is passed by value, LIB\$FIND_IMAGE_SYMBOL works as expected.

This error will be corrected in the next release of the *OpenVMS RTL Library (LIB\$) Manual*.

5.23 RTL LIB\$FIND_IMAGE_SYMBOL Signals Warning

V7.1

LIB\$FIND_IMAGE_SYMBOL may signal a warning (LIB\$_EOMWARN) to indicate that the image being activated contains modules that had compilation warnings. A condition handler used with LIB\$FIND_IMAGE_SYMBOL should probably handle this as a special case.

To allow LIB\$FIND_IMAGE_SYMBOL to continue execution after signaling LIB\$_EOMWARN, the condition handler should exit with SS\$_CONTINUE. For this reason, you may choose not to use LIB\$SIG_TO_RET as a condition handler for LIB\$FIND_IMAGE_SYMBOL.

5.24 Screen Management (SMG\$) Facility Documentation

Note the following information that should be added to topics in the reference section at the end of the *OpenVMS RTL Screen Management (SMG\$) Manual*:

V7.2

- The following statement should be added to the Condition Values Returned section of routine SMG\$DELETE_VIRTUAL_DISPLAY:
"Any condition value returned by the \$DELPRC system service."
- The description of routine SMG\$SET_OUT_OF_BAND_ASTS contains an error in the Arguments section for the **AST-argument** argument. The symbolic names in the Data Structure diagram are incorrect. The symbolic names in the paragraph under this diagram are correct. The correct and incorrect symbolic names are as follows:

Incorrect	Correct
SMG\$L_PASTEBOARD_ID	SMG\$L_PBD_ID
SMG\$L_ARG	SMG\$L_USER_ARG
SMG\$B_CHARACTER	SMG\$B_CHAR

V7.1

- In the documentation for the SMG\$READ_COMPOSED_LINE routine, the following text should be appended to the description of the **flags** argument:
"The terminal characteristic /LINE_EDITING should be set for your terminal for these flags to work as expected. /LINE_EDITING is the default."

Programming Release Notes

5.24 Screen Management (SMG\$) Facility Documentation

- The description of routine SMG\$SET_KEYPAD_MODE should contain this note:

Note

Changing the keypad mode changes the physical terminal setting. This is a global change for all virtual keyboards, not just the virtual keyboard specified by the **keyboard-id** argument.

5.25 SORT32 Utility

The following release notes concern the SORT32 utility. Note that SORT32 is recommended as a workaround for unresolved problems with Hypersort and for functionality not implemented in Hypersort.

SORT32 has been updated for OpenVMS Alpha Version 7.3-1. The new version of SORT32 is V07-005.

5.25.1 SORT32 and /PROCESS=TAG for VFC Output Files

V7.3-1

SORT32 now supports /PROCESS=TAG for VFC output files on Alpha.

5.25.2 SORT32 and NAM\$L_ESA

V7.3-1

SORT32 now properly uses NAM\$L_ESA on Alpha.

5.25.3 SORT32 Diagnostic for Key Too Large (Alpha)

V7.3-1

SORT32 now issues a BAD_KEY diagnostic instead of BADLOGIC for key too large on Alpha, to more closely match Hypersort diagnostic handling on Alpha.

5.25.4 SORT/STATISTICS Overflow

V7.3-1

SORT32 now supports larger values for SORT/STATISTICS for working set extent and work file allocation on Alpha. (This new support is in both SORT32 and Hypersort.)

5.25.5 SORT32 Protection Mask for Sort Work Files

V7.3-1

SORT32 now sets the protection mask for sort work files to <RWED,RWED> on Alpha. Previously, the protection mask for sort work files was set to <D,RWED>. This setting could cause the use of /WORK_FILES=2 (the default) or higher to report a protection violation, if the sort work files were redefined to point to a common directory whose owner UIC did not match the process UIC.

5.25.6 SORT/SPECIFICATION and Compound Conditions—Restriction

V7.3-1

SORT32 does not issue a diagnostic for a compound condition in a key specification file not enclosed in parentheses, such as the following:

```
/Condition=(Name=Test1,  
            TEST=(Field2 EQ "X") AND (Field3 EQ "A"))
```

That condition should instead be specified as:

```
/Condition=(Name=Test1,  
            TEST=((Field2 EQ "X") AND (Field3 EQ "A")))
```

5.25.7 SORT32 and Hypersort Performance—Working Set and Page File Quota

V7.3-1

SORT32 and Hypersort use different sorting and work file algorithms. Either sort utility may be faster depending on the input file and the memory/disk/CPU configuration. Make sure that page file quota is at least three times the working set extent with either SORT32 or Hypersort.

5.25.8 SORT32 and Hypersort Performance with Variable Length Records

V7.3-1

SORT32 and Hypersort allocate fixed-sized slots for sort work files based on the longest record length (LRL) information in the file. To improve sort performance, try to set LRL information in the file as close as possible to the actual longest record length. Poor initial performance may be the result of sorting some files produced by C programs, because the LRL is set higher than needed (to 32767).

5.25.9 SORT32 Work File Directories—Restriction

V7.3

SORT32 work files must be redirected to directories that allow multiple file versions that can handle the number of requested work files. This restriction also exists in Hypersort.

Device Support on OpenVMS Systems

This chapter contains release notes pertaining to OpenVMS device support on Alpha and VAX systems. Where appropriate, section headings indicate whether specific notes contain Alpha-specific or VAX-specific information.

6.1 Recompiling and Relinking OpenVMS Device Drivers

The following sections contain release notes pertaining to recompiling and relinking OpenVMS device drivers.

6.1.1 Possible Per-Threads Security Impact on Alpha Device Drivers

V7.2

See Section 5.20.1 for information about how possible per-thread security impacts OpenVMS Alpha device drivers.

6.1.2 Alpha and VAX SCSI Device Drivers

V7.3-1

All OpenVMS Alpha SCSI device drivers from previous versions of OpenVMS must be recompiled and relinked to run correctly on OpenVMS Version 7.3-1 or higher.

If you have an OpenVMS Alpha SCSI driver that you are upgrading from a version prior to OpenVMS Alpha 7.0, see Section 6.1.3.

Note that for OpenVMS Version 7.1 all OpenVMS VAX SCSI device drivers required recompiling and relinking. OpenVMS VAX device drivers that were recompiled and relinked to run on OpenVMS Version 7.1 will run correctly on OpenVMS Version 7.3 or higher.

6.1.3 OpenVMS Alpha Device Drivers

V7.1

Device drivers that were recompiled and relinked to run on OpenVMS Alpha Version 7.0 do not require source-code changes and do not have to be recompiled and relinked to run on OpenVMS Alpha Version 7.1 and higher. (Note that Alpha SCSI drivers, however, must be recompiled and relinked as described in Section 6.1.2.)

Device drivers from releases prior to OpenVMS Alpha Version 7.0 that were not recompiled and relinked for OpenVMS Alpha Version 7.0 must be recompiled and relinked to run on OpenVMS Alpha Version 7.1 and higher.

OpenVMS Alpha Version 7.0 included significant changes to OpenVMS Alpha privileged interfaces and data structures. As a result of these changes, device drivers from releases prior to OpenVMS Alpha Version 7.0 may also require source-code changes to run correctly on OpenVMS Alpha Version 7.0 and higher. For more details about OpenVMS Alpha Version 7.0 changes that may require

Device Support on OpenVMS Systems

6.1 Recompiling and Relinking OpenVMS Device Drivers

source changes to customer-written drivers, refer to the *OpenVMS Alpha Guide to Upgrading Privileged-Code Applications*.

6.2 Parallel SCSI Support for Logical Unit Numbers—Restriction

V7.2

OpenVMS supports up to eight Logical Unit Numbers (LUNs) per target ID on a parallel SCSI bus.

The SCSI-2 standard is limited to eight LUNs, but the SCSI-3 standard recently increased to 64 LUNs. The HSZ80 is the only supported device that implements more than eight LUNs (it supports 32 LUNs per target ID). This feature cannot be used in the current release of OpenVMS. LUN values on OpenVMS must be in the range 0-7.

This restriction does not apply to Fibre Channel.

6.3 Changes to the IO\$_DIAGNOSE Function

The following sections contain IO\$_DIAGNOSE changes.

6.3.1 Change to S2DGB\$L_32PHSTMO and S2DGB\$L_64PHSTMO

V7.3

The legal values for S2DGB\$L_32PHSTMO and S2DGB\$L_64PHSTMO are now 0 to 65,535 [about 18 hours]. Previously the values were 0 to 300 [5 minutes].

6.4 CRCTX Routines Enhanced

V7.1-2

The system routines that you can use to manage the Counted Resource Context Block (CRCTX) data structure have been improved. The following routines now set and check the status (CRCTX\$V_ITEM_VALID) of the CRCTX data structure:

- IOC\$DEALLOC_CRCTX
- IOC\$ALLOC_CNT_RES
- IOC\$DEALLOC_CNT_RES
- IOC\$LOAD_MAP

These routines have changed as follows:

If you call IOC\$DEALLOC_CRCTX with a valid CRCTX status (CRCTX\$V_ITEM_VALID set to 1), the service returns a bad status. If the SYSBOOT parameter SYSTEM_CHECK is set, the system will fail. This prevents users from deallocating a CRCTX when they have valid resources that have not been deallocated.

You must call IOC\$ALLOC_CNT_RES with an invalid CRCTX status (CRCTX\$V_ITEM_VALID set to 0). If you call this routine with a valid status, OpenVMS assumes that you will lose the resources mapped by this CRCTX. OpenVMS does not allocate new resources and returns a bad status. If SYSTEM_CHECK is set, the system will fail. IOC\$ALLOC_CNT_RES sets the valid bit before it returns.

IOC\$DEALLOC_CNT_RES must be called with a valid CRCTX (CRCTX\$V_ITEM_VALID set to 1). If you call IOC\$DEALLOC_CNT_RES with an invalid CRCTX, OpenVMS assumes that the other parameters are not valid, and returns

a bad status. If SYSTEM_CHECK is set, the system will fail. IOC\$DEALLOC_CNT_RES clears the valid bit before it returns.

IOC\$LOAD_MAP must be called with a valid CRCTX. If it is called with an invalid CRCTX (CRCTX\$V_ITEM_VALID set to 0), it assumes that the other parameters are also invalid, and returns a bad status. If the SYSBOOT parameter SYSTEM_CHECK is set, the system will fail.

These improvements indicate to device support and privileged-code application developers whether they need to deallocate scatter gather registers, which are treated by OpenVMS as generic resources. If the CRCTX\$V_ITEM_VALID bit is set, IOC\$DEALLOC_CNT_RES still needs to be called.

6.5 Device Driver MON Version Handling

V7.3

As of OpenVMS Version 7.3, when SYSTEM_CHECK is enabled, device driver images with names of the form SYS\$nnDRIVER_MON.EXE will be automatically loaded by the system loader. If a corresponding _MON version does not exist, the system will use the default image name: SYS\$nnDRIVER.EXE.

6.6 Required Change in ISA_CONFIG.DAT on AlphaStation 200/400

V7.1

Customers configuring ISA devices on AlphaStation 200/400 Family systems must change their SYS\$MANAGER:ISA_CONFIG.DAT file, so that the node information for each device appears at the end of each device description block.

Warning

For upgrades from OpenVMS Version 6.2 or 7.0 systems, this change must be made before starting the upgrade procedure.

Table 6–1 shows the changes to the device description block.

Table 6–1 Changes to Device Description Block

Before Version 7.1	After Version 7.1
[AUA0]	[AUA0]
NAME=AU	NAME=AU
NODE=3	DRIVE=SYS\$MSBDRIVER
DRIVER=SYS\$MSBDRIVER	IRQ=9
IRQ=9	DMA=(0,1)
DMA=(0,1)	PORT=(388:4,530:8)
PORT=(388:4.530:8)	NODE=3

Customers using SYS\$MANAGER:ISA_CONFIG.DAT files should read Section A.3.

6.7 Memory Holes on AlphaServer 4100 Systems

V7.1

Physical memory holes may exist on AlphaServer 4100 systems. As illustrated in Figure 6–1, there are three different sizes of memory daughter card pairs: 512 MB, 256 MB, and 128 MB. In accordance with AlphaServer 4100 systems configuration rules, memory card pairs must be arranged in descending order of size.

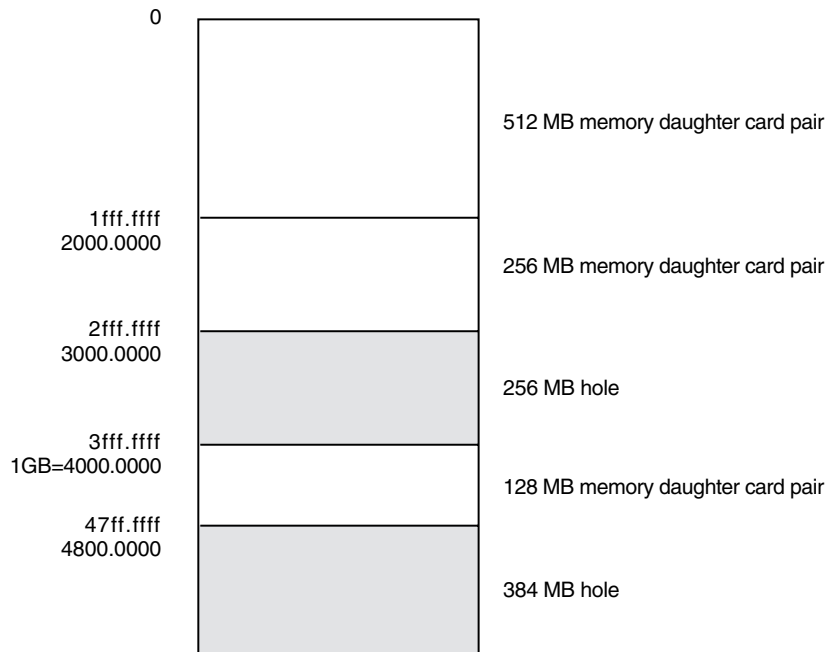
The AlphaServer 4100 hardware reads the first set of memory daughter cards and assumes that any memory card pairs that follow are the same size. Memory holes occur because memory card pairs following the first set of cards read by the hardware may not be the same size. As shown in Figure 6–1, the hole at 3000.0000 must be dealt with by OpenVMS. The hole at 4800.0000 is at the top of the address space and can be ignored by OpenVMS.

Note

Previous versions of OpenVMS Alpha did not efficiently support systems with physical memory holes, which ultimately led to an inefficient use of system memory. The memory management data structures in OpenVMS Alpha Version 7.1 and higher have been slightly modified to recognize the memory holes. As a result, inefficiencies in previous versions of the OpenVMS Alpha operating system have been eliminated.

Device Support on OpenVMS Systems 6.7 Memory Holes on AlphaServer 4100 Systems

Figure 6–1 Example Memory Diagram



mmg\$gl_memsize = 1C000 (regardless of setting of SET MEM)
mmg\$gl_maxpfn = 23fff (regardless of setting of SET MEM)

ZK-8860A-GE

Note that this configuration impacts the algorithm used to determine whether a driver needs to use map registers. In releases prior to OpenVMS Alpha Version 7.1, device drivers do the following:

1. Call IOC\$NODE_DATA with key IOC\$K_DIRECT_DMA_SIZE to obtain the size of the direct DMA window (in megabytes). This is usually 1 GB.
2. Convert the size returned from IOC\$NODE_DATA to pages and compare the size with **mmg\$gl_memsize**, which contains the number of pages in physical memory.
3. If **mmg\$gl_memsize** is greater than the size returned from IOC\$NODE_DATA, use map registers; otherwise, use the direct DMA window.

The **mmg\$gl_memsize** global cell does not contain the memory hole. As a result, the system has only 7/8 GB of memory, but according to the algorithm in releases prior to OpenVMS Alpha Version 7.1, it appears that the device can use the direct DMA window. Yet there is 128 MB of memory beyond the 1 GB border, which requires that the drivers use map registers. To eliminate this problem, drivers using the algorithm in releases prior to OpenVMS Alpha Version 7.1 must substitute it with the following algorithm:

1. Call IOC\$NODE_DATA with key IOC\$K_DIRECT_DMA_SIZE to obtain the size of the direct DMA window (in megabytes). This is usually 1 GB.
2. Convert the size returned from IOC\$NODE_DATA to pages by dividing the number of bytes by the contents of **mmg\$gl_page_size**. For example:

Device Support on OpenVMS Systems

6.7 Memory Holes on AlphaServer 4100 Systems

```
int dma_size;
int pages;

status = IOC$NODE_DATA (crb, IOC$K_DIRECT_DMA_SIZE, &dma_size);
/* dma_size contains the number of megabytes.
 * convert number of megabytes to bytes.
 */
dma_size = dma_size * (1024 * 1024);
/* Convert number of bytes to number of pages by
 * dividing by number of bytes per page.
 */
pages = dma_size / MMG$GL_PAGE_SIZE;
```

3. Compare the resulting number of pages with **mmg\$gl_maxpfn + 1**.
4. If **mmg\$gl_maxpfn + 1** is greater than the size returned from IOC\$NODE_DATA, use map registers; otherwise use the direct DMA window.

6.8 SYS\$MSBDRIVER Removed from OpenVMS Alpha Distribution

V7.0

The driver for the Microsoft Windows Sound System ISA sound card (MSB), SYS\$MSBDRIVER, has been removed from the OpenVMS Alpha distribution as of Version 7.0. The following files have been removed:

- SYS\$LOADABLE_IMAGES:SYS\$MSBDRIVER.EXE
- SYS\$EXAMPLES:SOUND_SERVICES.C
- SYS\$EXAMPLES:SOUND_SAMPLE.C
- SYS\$EXAMPLES:SOUND_SAMPLE.SND
- SYS\$LIBRARY:SYS\$STARLET_C.TLB module MSB.H

An enhanced version of this driver, called MMOV\$MSBDRIVER, is included in Multimedia Services Version 2.0 for OpenVMS Alpha. This layered product also includes support for video capture and playback, an enhanced version of DECsound, and other audio and video applications.

MMOV\$MSBDRIVER provides the same \$QIO programming interface as SYS\$MSBDRIVER. Compaq recommends that the WAVE Applications Programming Interface provided by Multimedia Services for OpenVMS be used instead because it is more flexible and is portable to other platforms. (Multimedia Services Version 2.0 for OpenVMS is described in SPD 64.24.00.)

6.9 Device IPL Setup for OpenVMS Alpha Drivers

V6.2

Alpha hardware platforms that support PCI, EISA, and ISA buses deliver I/O device interrupts at different IPLs, either 20 or 21. The IPL at which device interrupts are delivered can change if you move the device from one platform to another. This is a problem if the driver declares its device IPL to be 20, and then that driver is executed on a machine that delivers I/O device interrupts at IPL 21.

The simplest solution to this problem is for PCI, EISA, and ISA device drivers to use IPL 21. This works correctly on platforms that deliver I/O device interrupts at IPL 20 and on platforms that deliver I/O device interrupts at IPL 21.

A future release of OpenVMS Alpha may provide a platform-independent mechanism for drivers to determine the device IPL dynamically.

6.10 AlphaStation 255: PCI Configuration Restriction

V7.1

The OpenVMS Alpha operating system does not support PCI option cards configured in PCI slot 0 on any AlphaStation 255 series systems.

PCI slot 0 is the lowest physical PCI option slot on AlphaStation 255 series systems. The interrupt signal for this slot is shared with the built-in Ethernet port. Because the OpenVMS Alpha operating system does not currently permit PCI devices to share an interrupt line, a PCI device installed in slot 0 will not function correctly or may cause errors to occur with the built-in Ethernet port. As a result of this restriction, AlphaStation 255 series systems support a maximum of two PCI option cards, configured in slot 1 and slot 2.

6.11 Recommendation for RZ25M and RZ26N Disk Drives (Alpha)

V7.1

During the testing of Compaq supported SCSI disk drives on configurations with DWZZAs and long differential SCSI buses, two drives, RZ25M and RZ26N, were found to have bus phase problems. For this reason, do not use these drives in configurations where the differential bus length connecting DWZZAs equals or exceeds 20 meters.

This recommendation applies only to the RZ25M and RZ26N drives. All other disk drives that are listed as supported in the OpenVMS SPD may be used in configurations to the full bus lengths of the SCSI-2 specification.

6.12 SCSI Controller Restriction on AlphaServer 2100 Systems

V6.2

The Adaptec 1740/1742 SCSI controller (PB2HA-SA) is not supported on AlphaServer 2100 systems having more than 1 gigabyte (GB) of memory. If the controller is connected to such a system, the following message appears on the operator's console:

```
%PKJDRVR-E- PKX0, Port is going OFFLINE.
```

6.13 OpenVMS Alpha SCSI Firmware Support

The following sections relate to SCSI firmware support.

6.13.1 Recommended Firmware Support for RZ26N and RZ28M Disks

V6.2-1H3

The minimum firmware revision level recommended for RZ26N and RZ28M disks is Revision 0568.

If the latest firmware revision level is not used with these disks, multiple problems can occur.

Device Support on OpenVMS Systems

6.13 OpenVMS Alpha SCSI Firmware Support

6.13.2 Required Firmware for Multihost Use of RZ26L and RZ28 Disks

V6.2

If you install RZ26L or RZ28 disks on a multihost SCSI bus in an OpenVMS Cluster, the disk's minimum firmware revision is 442.

The following sections describe a procedure that you can use to update the firmware on some RZ26L and RZ28 drives. This procedure can only be used with drives that are directly connected to a SCSI adapter on a host system. Drives that are attached through an intelligent controller (such as an HSZ40 or KZPSC) cannot be updated using this procedure. Refer to the intelligent controller's documentation to determine whether an alternative firmware update procedure exists.

Important Note

Only certain RZ26L and RZ28 firmware revisions can be safely upgraded to firmware revision level 442. Refer to Section 6.13.3 to determine if your disks are capable of being upgraded to firmware revision level 442. If your disk is capable of supporting firmware revision level 442, use the RZTOOLS utility that is described in Section 6.13.4 to update the disk's firmware.

6.13.3 Firmware Revision Level 442 Requirements

Only the combinations of disk drives and firmware revision levels listed in Table 6-2 are capable of being upgraded safely to firmware revision level 442. Performing the update procedure on any other combination can permanently damage the disk.

Table 6-2 Revision Level 442 Firmware Compatibility

Disk Drive	Firmware Revision	Disk File Name
RZ26L	440C	RZ26L_442D_DEC.FUP
RZ28	441C or D41C 435 or 436	RZ28_442D_DEC2104.FUP RZ28P4_442C_DEC.FUP

6.13.4 Firmware Revision Level 442 Installation Procedure

If you determine that your disk requires revision level 442 firmware and it is capable of being upgraded safely, use the following procedure to update the firmware. (See Table 6-2 for the file name of the disk you are upgrading.)

```
$ MCR SYS$ETC:RZTOOLS_ALPHA DKB500 /LOAD=SYS$ETC:filename.FUP
Read in 262144 bytes.
Current FW version - X440C
Upgrading to      - DEC0
Loading code .....
New code has been sent to the drive.
```

6.14 Add-On SCSI Adapters

V7.3-1

Version 6.2 and higher of OpenVMS Alpha supports various add-on SCSI adapters. Compaq's AlphaGeneration platforms typically support one or more integral SCSI adapters, with the option of installing additional add-on SCSI adapters. Because of differences in device-naming conventions used between the Alpha console and OpenVMS, the OpenVMS device name might not match the name displayed by the console, depending on the platform.

For example, in platforms prior to the EV6 systems (except for the GS AlphaServer 140), the console designation for a SCSI device on the integral SCSI adapter might be DKA100. However, when two additional add-on SCSI adapters are added, the "A" designation becomes "C", and DKA100 appears as DKC100 when OpenVMS is running.

This discrepancy in device naming does not exist on EV6 and higher platforms.

Note that even when the console and OpenVMS device names are different, the unique specification of a device name from the console to the device name under OpenVMS stays consistent, provided add-on SCSI adapters are not added or removed.

6.15 Stricter Requirement for Mode Page 01h on SCSI Tape Drives

V7.3

OpenVMS Alpha Version 7.3 (or higher) has implemented stricter requirements for SCSI Mode Page 01h (the Read Write Error Recovery Page) for SCSI tape drives. These requirements help guard against possible data loss during write operations to SCSI tape, by defining the recovery actions to be taken in the event of deferred recoverable errors. For most Compaq-supported drives, these changes will not affect the drive's behavior. For some drives, however, these new requirements may impact SCSI tape behavior in the following two ways:

1. OpenVMS Alpha Version 7.3 or higher now creates an error log entry whenever the firmware of a SCSI tape drive is found not to support the Read Write Error Recovery Page (SCSI mode page 01h). Such an entry is made in the error log at the time the tape is mounted. The entry is characterized by a SCSI Status of Check Condition, with a Sense Key of Illegal Request, on a Command Opcode of Mode Sense.

This entry is informational only, and not indicative of an error condition on the drive. It may be ignored by the user, and is of use only to service personnel. It may occur on a number of different SCSI tape drives, including the TLZ09, as well as on various third party tape drives.

2. If a deferred recoverable error occurs on a SCSI tape drive, then OpenVMS Alpha Version 7.3 recognizes that data may have been lost, and therefore a fatal drive error is returned to the caller. This behavior is unlikely to occur on Compaq-supported SCSI tape drives, because their default behavior is to suppress deferred recoverable errors.

Interlocked Memory Instructions

The *Alpha Architecture Reference Manual, Third Edition* (AARM) describes strict rules for using interlocked memory instructions. The Alpha 21264 (EV6) processor and all future Alpha processors are more stringent than their predecessors in their requirement that these rules be followed. As a result, code that has worked in the past, despite noncompliance, could fail when executed on systems featuring the 21264 processor and its successors. **Occurrences of these noncompliant code sequences are believed to be rare.** Note that the 21264 processor is not supported on versions prior to OpenVMS Alpha Version 7.1-2.

Noncompliant code can result in a loss of synchronization between processors when interprocessor locks are used, or can result in an infinite loop when an interlocked sequence always fails. Such behavior has occurred in some code sequences in programs compiled on old versions of the BLISS compiler, some versions of the MACRO-32 compiler and the MACRO-64 assembler, and in some Compaq C and C++ programs.

The affected code sequences use LDx_L/STx_C instructions, either directly in assembly language sources or in code generated by a compiler. Applications most likely to use interlocked instructions are complex, multithreaded applications or device drivers using highly optimized, hand-crafted locking and synchronization techniques.

7.1 Required Code Checks

OpenVMS recommends that code that will run on the 21264 processor be checked for these sequences. Particular attention should be paid to any code that does interprocess locking, multithreading, or interprocessor communication.

The SRM_CHECK tool has been developed to analyze Alpha executables for noncompliant code sequences. The tool detects sequences that may fail, reports any errors, and displays the machine code of the failing sequence.

7.2 Using the Code Analysis Tool (SRM_CHECK)

V7.3-1

The SRM_CHECK tool can be found in the following location on the OpenVMS Alpha Version 7.3-1 Operating System CD-ROM:

```
SYS$SYSTEM:SRM_CHECK.EXE
```

To run the SRM_CHECK tool, define it as a foreign command (or use the DCL\$PATH mechanism) and invoke it with the name of the image to check. If a problem is found, the machine code is displayed and some image information is printed. The following example illustrates how to use the tool to analyze an image called myimage.exe:

Interlocked Memory Instructions

7.2 Using the Code Analysis Tool (SRM_CHECK)

```
$ define DCL$PATH []
$ srm_check myimage.exe
```

The tool supports wildcard searches. Use the following command line to initiate a wildcard search:

```
$ srm_check [*...]* -log
```

Use the `-log` qualifier to generate a list of images that have been checked. You can use the `-output` qualifier to write the output to a data file. For example, the following command directs output to a file named `CHECK.DAT`:

```
$ srm_check 'file' -output check.dat
```

You can use the output from the tool to find the module that generated the sequence by looking in the image's MAP file. The addresses shown correspond directly to the addresses that can be found in the MAP file.

The following example illustrates the output from using the analysis tool on an image named `SYSTEM_SYNCHRONIZATION.EXE`:

```
** Potential Alpha Architecture Violation(s) found in file...
** Found an unexpected ldq at 00003618
0000360C AD970130 ldq_l R12, 0x130(R23)
00003610 4596000A and R12, R22, R10
00003614 F5400006 bne R10, 00003630
00003618 A54B0000 ldq R10, (R11)
Image Name: SYSTEM_SYNCHRONIZATION
Image Ident: X-3
Link Time: 5-NOV-1998 22:55:58.10
Build Ident: X6P7-SSB-0000
Header Size: 584
Image Section: 0, vbn: 3, va: 0x0, flags: RESIDENT EXE (0x880)
```

The MAP file for `system_synchronization.exe` contains the following:

```
EXEC$NONPAGED_CODE 00000000 0000B317 0000B318 ( 45848.) 2 ** 5
SMPROUT 00000000 000047BB 000047BC ( 18364.) 2 ** 5
SMPINITIAL 000047C0 000061E7 00001A28 ( 6696.) 2 ** 5
```

The address `360C` is in the `SMPROUT` module, which contains the addresses from `0-47BB`. By looking at the machine code output from the module, you can locate the code and use the listing line number to identify the corresponding source code. If `SMPROUT` had a nonzero base, you would need to subtract the base from the address (`360C` in this case) to find the relative address in the listing file.

Note that the tool reports *potential* violations in its output. Although `SRM_CHECK` can normally identify a code section in an image by the section's attributes, it is possible for OpenVMS images to contain data sections with those same attributes. As a result, `SRM_CHECK` may scan data as if it were code, and occasionally, a block of data may look like a noncompliant code sequence. This circumstance is rare and can be detected by examining the MAP and listing files.

7.3 Characteristics of Noncompliant Code

The areas of noncompliance detected by the `SRM_CHECK` tool can be grouped into the following four categories. Most of these can be fixed by recompiling with new compilers. In rare cases, the source code may need to be modified. See Section 7.5 for information about compiler versions.

- Some versions of OpenVMS compilers introduce noncompliant code sequences during an optimization called "loop rotation." This problem can be triggered

Interlocked Memory Instructions

7.3 Characteristics of Noncompliant Code

only in C or C++ programs that use LDx_L/STx_C instructions in assembly language code that is embedded in the C/C++ source using the ASM function, or in assembly language written in MACRO-32 or MACRO-64. In some cases, a branch was introduced between the LDx_L and STx_C instructions.

This can be addressed by recompiling.

- Some code compiled with very old BLISS, MACRO-32, DEC Pascal, or DEC COBOL compilers may contain noncompliant sequences. Early versions of these compilers contained a code scheduling bug where a load was incorrectly scheduled after a load_locked.

This can be addressed by recompiling.

- In rare cases, the MACRO-32 compiler may generate a noncompliant code sequence for a BBSSI or BBCCI instruction where there are too few free registers.

This can be addressed by recompiling.

- Errors may be generated by incorrectly coded MACRO-64 or MACRO-32 and incorrectly coded assembly language embedded in C or C++ source using the ASM function.

This requires source code changes. The new MACRO-32 compiler flags noncompliant code at compile time.

If the SRM_CHECK tool finds a violation in an image, you should recompile the image with the appropriate compiler (see Section 7.5). After recompiling, you should analyze the image again. If violations remain after recompiling, examine the source code to determine why the code scheduling violation exists. Then make the appropriate changes to the source code.

7.4 Coding Requirements

The *Alpha Architecture Reference Manual* describes how an atomic update of data between processors must be formed. The Third Edition, in particular, has much more information on this topic. This edition details the conventions of the interlocked memory sequence.

Exceptions to the following two requirements are the source of all known noncompliant code:

- There cannot be a memory operation (load or store) between the LDx_L (load locked) and STx_C (store conditional) instructions in an interlocked sequence.
- There cannot be a branch taken between an LDx_L and an STx_C instruction. Rather, execution must "fall through" from the LDx_L to the STx_C without taking a branch.

Any branch whose target is between an LDx_L and matching STx_C creates a noncompliant sequence. For instance, any branch to "label" in the following example would result in noncompliant code, regardless of whether the branch instruction itself was within or outside of the sequence:

```
LDx_L Rx, n(Ry)
...
label: ...
STx_C Rx, n(Ry)
```

Therefore, the SRM_CHECK tool looks for the following:

- Any memory operation (LDx/STx) between an LDx_L and an STx_C

Interlocked Memory Instructions

7.4 Coding Requirements

- Any branch that has a destination between an LDx_L and an STx_C
- STx_C instructions that do not have a preceding LDx_L instruction
This typically indicates that a backward branch is taken from an LDx_L to the STx_C. Note that hardware device drivers that do device mailbox writes are an exception. These drivers use the STx_C to write the mailbox. This condition is found only on early Alpha systems and not on PCI-based systems.
- Excessive instructions between an LDx_L and an STxC
The AARM recommends that no more than 40 instructions appear between an LDx_l and an STx_C. In theory, more than 40 instructions can cause hardware interrupts to keep the sequence from completing. However, there are no known occurrences of this.

To illustrate, the following are examples of code flagged by SRM_CHECK.

```
** Found an unexpected ldq at 0008291C
00082914 AC300000 ldq_l      R1, (R16)
00082918 2284FFEC lda        R20, 0xFFEC(R4)
0008291C A6A20038 ldq        R21, 0x38(R2)
```

In the above example, an LDQ instruction was found after an LDQ_L before the matching STQ_C. The LDQ must be moved out of the sequence, either by recompiling or by source code changes. (See Section 7.3.)

```
** Backward branch from 000405B0 to a STx_C sequence at 0004059C
00040598 C3E00003 br         R31, 000405A8
0004059C 47F20400 bis        R31, R18, R0
000405A0 B8100000 stl_c       R0, (R16)
000405A4 F4000003 bne        R0, 000405B4
000405A8 A8300000 ldl_l      R1, (R16)
000405AC 40310DA0 cmpl     R1, R17, R0
000405B0 F41FFFFA bne        R0, 0004059C
```

In the above example, a branch was discovered between the LDL_L and STQ_C. In this case, there is no "fall through" path between the LDx_L and STx_C, which the architecture requires.

Note

This branch backward from the LDx_L to the STx_C is characteristic of the noncompliant code introduced by the "loop rotation" optimization.

The following MACRO-32 source code demonstrates code where there is a "fall through" path, but this case is still noncompliant because of the potential branch and a memory reference in the lock sequence:

```
getlck: evax_ldq1  r0, lockdata(r8) ; Get the lock data
        movl     index, r2          ; and the current index.
        tstl     r0                 ; If the lock is zero,
        beql    is_clear           ; skip ahead to store.
        movl     r3, r2            ; Else, set special index.
is_clear:
        incl     r0                 ; Increment lock count
        evax_stqc r0, lockdata(r8) ; and store it.
        tstl     r0                 ; Did store succeed?
        beql    getlck             ; Retry if not.
```

Interlocked Memory Instructions

7.4 Coding Requirements

To correct this code, the memory access to read the value of INDEX must first be moved outside the LDQ_L/STQ_C sequence. Next, the branch between the LDQ_L and STQ_C, to the label IS_CLEAR, must be eliminated. In this case, it could be done using a CMOVEQ instruction. The CMOVxx instructions are frequently useful for eliminating branches around simple value moves. The following example shows the corrected code:

```
        movl      index, r2          ; Get the current index
getlck: evax_ldql  r0, lockdata(r8) ; and then the lock data.
        evax_cmoveq r0, r3, r2      ; If zero, use special index.
        incl      r0                ; Increment lock count
        evax_stqc  r0, lockdata(r8) ; and store it.
        tstl      r0                ; Did write succeed?
        beql      getlck            ; Retry if not.
```

7.5 Compiler Versions

Table 7–1 contains information about versions of compilers that might generate noncompliant code sequences and the recommended minimum versions to use when you recompile.

Table 7–1 Versions of OpenVMS Compilers

Old Version	Recommended Minimum Version
BLISS V1.1	BLISS V1.3
DEC Ada V3.5	Compaq Ada V3.5A
DEC C V5.x	DEC C V6.0
DEC C++ V5.x	DEC C++ V6.0
DEC COBOL V2.4, V2.5	Compaq COBOL V2.6
DEC Pascal V5.0-2	DEC Pascal V5.1-11
MACRO–32 V3.0	V3.1 for OpenVMS Version 7.1-2 V4.1 for OpenVMS Version 7.2
MACRO–64 V1.2	See below.

Current versions of the MACRO–64 assembler might still encounter the loop rotation issue. However, MACRO–64 does not perform code optimization by default, and this problem occurs only when optimization is enabled. If SRM_CHECK indicates a noncompliant sequence in the MACRO–64 code, it should first be recompiled without optimization. If the sequence is still flagged when retested, the source code itself contains a noncompliant sequence that must be corrected.

7.6 Recompiling Code with ALONONPAGED_INLINE or LAL_REMOVE_FIRST

Any MACRO–32 code on OpenVMS Alpha that invokes either the ALONONPAGED_INLINE or the LAL_REMOVE_FIRST macro from the SYS\$LIBRARY:LIB.MLB macro library must be recompiled on OpenVMS Version 7.2 or higher to obtain a correct version of these macros. The change to these macros corrects a potential synchronization problem that is more likely to be encountered on newer processors, starting with Alpha 21264 (EV6).

Interlocked Memory Instructions

7.6 Recompiling Code with ALONONPAGED_INLINE or LAL_REMOVE_FIRST

Note

Source modules that call the EXE\$ALONONPAGED routine (or any of its variants) do *not* need to be recompiled. These modules transparently use the correct version of the routine that is included in this release.

Product Retirement Notices

This appendix contains notifications about OpenVMS products that are no longer supported or that are slated for retirement. It also tells you how to find manuals that have been archived.

Freeware

Once a product is retired, Compaq does not accept or act on problem reports posted against the product. However, for those interested in doing their own development and support, the source code for many former products is available as freeware from the following sources:

- On the freeware CD-ROM that ships with the OpenVMS operating system.
The freeware CD-ROM also includes internal tools such as SDL, NMAIL, MAILWATCH, and popular Internet programs.
For instructions on mounting the CD-ROM, see Section 3.8.
- On the World Wide Web at the following address:

<http://www.openvms.compaq.com/openvms/freeware/index.html>

A.1 Netscape FastTrack 3.02 Retired

V7.3-1

Netscape FastTrack 3.02 has been retired as of December 31, 2001. The replacement product is the Compaq Secure Web Server (CSWS, based on Apache), which is currently available for download from the OpenVMS web site at:

<http://www.openvms.compaq.com/openvms/products/ips/apache/csws.html>

CSWS is also included on the OpenVMS e-Business Infrastructure Package CD-ROM, which is included in the OpenVMS Alpha Version 7.3-1 or higher media kit.

A.2 POSIX 1003.4a Draft 4 Interface to Be Retired

V7.0

The POSIX 1003.4a, Draft 4 (or "d4") interface of the Compaq POSIX Threads Library (formerly named DECthreads) is slated for retirement in a future release. Applications that were written using the POSIX 1003.4a, Draft 4 interface should be migrated to the new POSIX 1003.1c standard (or "pthread") interface provided by the POSIX Threads Library. A compatibility mode for the Draft 4 POSIX 1003.4a interface has been provided in this release to help ease migration. This compatibility mode will be removed in a future release.

Product Retirement Notices

A.3 ISA_CONFIG.DAT Unsupported in Future Release

A.3 ISA_CONFIG.DAT Unsupported in Future Release

V7.1

Support for using the SYS\$MANAGER:ISA_CONFIG.DAT file to configure ISA devices will be discontinued in a future release of OpenVMS Alpha. If you use this file, you should convert to using the ISACFG utility from the console, and the new file-based autoconfiguration method for loading device drivers (as described in *Writing OpenVMS Alpha Device Drivers in C*).

A.4 PATHWORKS for OpenVMS (NetWare)

PATHWORKS for OpenVMS (NetWare) was retired in July 1998. This product still ships with PATHWORKS for OpenVMS Version 6.0A, but it is not available on PATHWORKS for OpenVMS Version 6.0B or higher or on OpenVMS Version 7.2 or higher.

A.5 Archived Manuals

V7.3-1

As products are retired and the operating system evolves, certain OpenVMS manuals are archived. Archived manuals are no longer maintained and are not part of the OpenVMS documentation set. However, they are available on the OpenVMS Documentation CD-ROM and the Compaq web site:

<http://www.compaq.com/openvms>

A.5.1 Extended File Specifications: Documentation Reorganization

Information previously contained in the *OpenVMS Guide to Extended File Specifications* has been moved into other manuals and this manual is now obsolete.

The following table contains pointers to the new locations of topics from the archived manual:

Section	New Book	Location
Chapter 1 Overview of Extended File Specifications for OpenVMS		
All	<i>OpenVMS System Manager's Manual, Volume 1: Essentials</i>	Chapter 9
Chapter 2 Managing Extended File Naming on OpenVMS Systems		
All except Section 2.2.1, <i>Using RMS Default EFS Features</i>	<i>OpenVMS System Manager's Manual, Volume 1: Essentials</i>	Chapters 9 and 10
Section 2.2.1, <i>Using RMS Default EFS Features</i>	<i>Guide to OpenVMS File Applications</i>	Chapter 6
Chapter 3 Extended File Naming Characteristics		
All except Section 3.5, <i>DCL Commands and Utilities</i>	<i>OpenVMS User's Manual</i>	Chapter 5
Section 3.5, <i>DCL Commands and Utilities</i>	<i>OpenVMS DCL Dictionary</i>	Alphabetically by command

Product Retirement Notices A.5 Archived Manuals

Section	New Book	Location
Chapter 4 Extended File Naming Considerations for OpenVMS Application Developers		
All	<i>OpenVMS Programming Concepts Manual, Volume II</i>	Chapter 29
Appendix A Setting Users' Expectations of Extended File Specifications		
Section A.1, ACP Interface (ODS-5)	<i>OpenVMS I/O User's Reference Manual</i>	Chapter 1
Section A.4, <i>Restrictions</i>	<i>Guide to OpenVMS File Applications</i>	Chapter 5
All except Sections A.1, A.4	<i>OpenVMS System Manager's Manual, Volume 1: Essentials</i>	Chapter 10
Appendix B Technical Information		
Section B.1, <i>System Services Changes</i>	<i>OpenVMS System Services Reference Manual</i>	Alphabetically by routine
Section B.2, <i>Record Management Services (RMS) Changes</i>	<i>Guide to OpenVMS File Applications</i>	See below
Section B.2.1, <i>Record Management Services (RMS) Changes</i>	<i>Guide to OpenVMS File Applications</i>	Chapter 5
Section B.2.2, <i>Record Management Services (RMS) Changes</i> (except Section B.2.2.7, <i>DID Abbreviation</i> and Section B.2.2.8, <i>FID Abbreviation</i>)	<i>Guide to OpenVMS File Applications</i>	Chapter 5
Section B.2.2.7 (DID Abbreviation)	<i>Guide to OpenVMS File Applications</i>	Chapter 6
Section B.2.2.8 (FID Abbreviation)	<i>Guide to OpenVMS File Applications</i>	Chapter 6
Section B.2.3, <i>RMS Data Structure Changes (NAM Block)</i>	<i>OpenVMS Record Management Services Reference Manual</i>	Chapter 5
Section B.2.3, <i>RMS Data Structure Changes (NAML Block)</i>	<i>OpenVMS Record Management Services Reference Manual</i>	Chapter 6
Section B.3, <i>Files-11 XQP Changes</i>	<i>OpenVMS I/O User's Reference Manual</i>	Chapter 1
Section B.4, <i>Programming Utility Changes</i>	<i>OpenVMS Utility Routines Manual</i>	Chapter 10
Section B.5, <i>Run-Time Library Changes</i>	<i>OpenVMS RTL Library (LIB\$) Manual</i>	Alphabetically by routine
Appendix C Character Sets		
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Hardware Release Notes from Previous Releases

This appendix contains information specific to certain hardware products:

- ALPHAbook 1
- AlphaServer 1000A
- AlphaServer 2100
- AlphaServer 4100
- AlphaServer 8200
- AlphaServer 8400
- AlphaServer GS Series
- AlphaStation 255
- DEC 7000
- DECwindows X11 Display Server
- DIGITAL Modular Computing Components
- RF73 and other RF nn DSSI Disk Devices

B.1 ALPHAbook 1

V7.1

The following sections contain release notes specific to the ALPHAbook 1 notebook computer.

B.1.1 Using the SCSI_MODE Utility

The OpenVMS Alpha operating system includes a generic SCSI_MODE utility that allows privileged users to modify a SCSI device's mode pages. By using this utility to enable automatic disk spindown, users can save approximately 2 watts of power. Because mode pages are saved on the disk drive, the state is saved across power cycles.

The following example shows how to enable automatic SCSI disk spindown after a 1-minute timeout period. (To select a spindown time other than 1 minute, replace the "01" following the " - offset f" with the desired number of minutes expressed as a 2-digit hexadecimal value.) Use this procedure only on the internal drive of the ALPHAbook 1 notebook computer. Note that the parameter values shown in this example apply only to DVAS-2810 devices. To identify the SCSI disk devices on your system, use the SHOW DEVICE/FULL DK command.

Hardware Release Notes from Previous Releases

B.1 ALPHAbook 1

```
$ define dcl$path sys$etc
$ scsi_mode -devnam dka0 -devtyp DVAS-2810 -offset f 01 -page 38 -mount -save
$!
$! Processing Page #38h
$!
$! Cur   00_____ 04_____ 08_____ 0C_____ 10_____ 14_____ 18_____ 1C_____
$! 0000 11000008 001829D0 00000200 B80400B4 0000
$!
$! Chng  00_____ 04_____ 08_____ 0C_____ 10_____ 14_____ 18_____ 1C_____
$! 0000 11000008 001829D0 00000200 B80400FF 0000
$!
$! Sel   00_____ 04_____ 08_____ 0C_____ 10_____ 14_____ 18_____ 1C_____
$! 0000 00000008 001829D0 00000200 38040001 0000
$! Perform MODE SELECT to page 38h [y/n] ? y
```

B.1.2 Naming Serial Line Devices

If an ALPHAbook 1 notebook computer is booted with the console environment variable set to graphics, the name of the serial line (COM1) will be different. On an ALPHAbook 1, the COM1 device is called TTA0.

The COM1 device is controlled by SYS\$YSDRIVER instead of SYS\$OPDRIVER.

If the console is set to serial, the device is called OPA0.

B.1.3 Graphics Display Modes

The ALPHAbook 1 notebook computer contains a Western Digital 90C24A graphics controller displayed on a 10.4-inch active matrix Thin Film Transistor (TFT) display.

Note that if a video monitor (CRT) is connected, the DECwindows display server software (which automatically detects the presence of an attached video monitor) sets the resolution to 1024 x 768 and disables the TFT display. If the server determines that no monitor is connected, it forces the size to match the LCD (800 x 600) and disables the CRT outputs (which saves power when the computer is running on battery).

B.1.4 Customizing the Graphics Display

You can override the size selection by modifying the SYS\$MANAGER:DECW\$PRIVATE_SERVER_SETUP.COM file.

You can also modify other parameters by using the DCL command DEFINE/SYSTEM for the following logical names:

- DECW\$SERVER_DYNAMIC_SIZE

If defined as TRUE, you are prompted for the screen size when the system boots. The prompt times out in 10 seconds and the default is set (unless you have overridden the default in your private server setup).

- DECW\$SERVER_DISPLAY_SELECT

You can specify one of the following values:

Value	Result
1	LCD-only operation
2	CRT-only operation
3	Simultaneous operation

Hardware Release Notes from Previous Releases B.1 ALPHAbook 1

Note the following conventions:

- The default is either 3 (if a monitor is available) or 1 (if *no* monitor is available).
 - If you have not explicitly selected the display or the resolution, then 1024 x 768 CRT-only is the default when a monitor is detected. If no monitor is detected, then 800 x 600 LCD-only is selected.
 - If you explicitly select the display, then that selection takes precedence over any other size requests. For example, if you select LCD, the 800 x 600 size supersedes any previous size specification.
- **DECW\$SERVER_REFRESH_RATE**

This logical name selects an alternate vertical refresh rate in Hertz (for example, 60 Hz). The defaults are as follows:

Mode	Resolution	Vertical Refresh Frequency in Hz
LCD-only	800 x 600	56
CRT-only	640 x 480	72
	800 x 600	72
	1024 x 768	70
Other CRT	640 x 480	60
	640 x 480	70
	800 x 600	56
	800 x 600	60 ¹
	1024 x 768	60
	1024 x 768	75

¹Actual refresh is 62 Hz.

- **DECW\$SERVER_VIRTUAL_MODE**
- If this logical name is set to 1, note the following characteristics:
- The server operates as a virtual frame buffer.
 - The resolution can be *any* of the previously listed sizes (or higher).
 - An 800 x 600 window is displayed for the internal (TFT) monitor and a 1024 x 768 window is displayed for an external monitor. Moving the pointer to the screen edges pans the display within the virtual frame.
 - Drawing can be slower (due to offscreen memory requirements). Changed areas are updated on a batch count or when the server has no more work. You can set the batch count with the logical DECW\$SERVER_BATCH_COUNT (the default is 10).

Hardware Release Notes from Previous Releases

B.1 ALPHAbook 1

B.1.5 PCMCIA Bus Support

The following notes apply to the PCMCIA bus.

Supported PCMCIA Cards

OpenVMS support for the PCMCIA bus on the ALPHAbook 1 system is limited to the following cards:

- 3Com EtherLink III (3C589C)
- Megahertz 28.8 FAX/Modem (XJ2288)
- Apex Data ClipperCom V.34 International Data/FAX Modem (011–20811)

The OpenVMS operating system can configure a maximum of one Ethernet card and one FAX/Modem card.

Hot Swapping PCMCIA Cards Not Supported

Hot swapping (removing and replacing cards while the computer is running) PCMCIA cards is not supported. If a PCMCIA card is inserted or removed while the OpenVMS operating system is running, it could result in a system hang (the system is unresponsive) or a system failure. A future release of the OpenVMS operating system is expected to include support for hot swapping PCMCIA cards.

PCMCIA Modem Setting

The highest recommended baud rate for the Apex Data ClipperCom V.34 International Data/FAX Modem card is 9600. For access to the modem, Compaq recommends that you use the following DCL and modem commands:

```
$ SET TERM/PERM/SPEED=9600/ALT/MODEM TTBO:  
$ SET HOST/DTE TTBO:  
at*ncxx  
at&k6  
at&s1  
at\g1  
at\q1  
at\x1)
```

(Note that *xx* represents the country number; for example, the United States is 22. See the Apex Data ClipperCom V.34 documentation for a list of country numbers.)

The highest recommended baud rate for the Megahertz 28.8 FAX/Modem card is 9600. For access to the modem, Compaq recommends that you use the following DCL and modem commands:

```
$ SET TERM/PERM/SPEED=9600/ALT/MODEM TTBO:  
$ SET HOST/DTE TTBO:  
at&s1  
at&r1
```

Audio Feedback Supported on PCMCIA Modem

Audio feedback is available for the telephone call status.

PCMCIA FAX Support

The Apex Data ClipperCom V.34 International Data/FAX Modem works correctly with the PMDF FAX and Gold-FAX software to transmit data.

The Megahertz 28.8 FAX/Modem works correctly with the PMDF FAX software to send and receive data with line speeds up to 19.2 baud. However, if you are using Gold-FAX software to send a FAX, the maximum baud rate allowed with a Megahertz 28.8 FAX/Modem card is 9600 baud.

B.1.6 Audio Support

The DECsound utility included with DECwindows Motif Version 1.2-3 does not support the sound processor on the ALPHAbook 1 system. Audio support is available on the OpenVMS Multimedia services kit, a separately licensed layered product available from Compaq.

B.1.7 Keyboard Mapping

The ALPHAbook 1 keyboard is an 88-key, PC layout keyboard. The following notes describe how to set up the keyboard and enable particular key functions.

Keyboard Setup

You can set up the keyboard either to follow the engravings or to map the keys in a manner that makes it easier for you as an OpenVMS user. To set up your keyboard either way, do the following:

1. Click on Options in the Session Manager box.
2. Select Keyboard from the list of options.
3. Select one of the following LK443 or LK444 keyboard types:
 - A keyboard type with the suffix `_PC` maps the keyboard to follow the engravings, for example, `US_LK443AA_PC`.
 - A keyboard type with the suffix `_LK` sets the keyboard to follow the LK-style mapping common to OpenVMS systems, for example, `US_LK443AA_LK`.

The procedure for setting up your keyboard is the same as that required for all current AlphaServer and AlphaStation systems. The only difference is that the ALPHAbook 1 keyboard does not have all of the keys directly on it. (The next section describes how to generate those missing keys.)

You can also attach an LK411 (LK401 layout) compatible keyboard or a PCXAL (PS2 layout) keyboard directly to the AlphaBOOK 1 computer using the mini-docking station.

Key Functions

When mapping to an LK-style keyboard, note the following:

- The right ALT key does not transmit any code. Instead, the keyboard controller generates missing LK-style keys when you press it in combination with this key. These alternate keys are engraved in grey on the keyboard. For example, pressing `RIGHT-ALT-U` ([grey 4]) provides the function of `KP4`.

Note

By default, the right ALT key is set for the special functions described in the *ALPHAbook 1 User Guide* (such as increasing or decreasing display brightness). To set the right ALT key to perform different functions so you can emulate a LK-style keyboard, you must change this setting at the console level by entering the following command at the console prompt:

```
>>> SET HOTKEY OFF
```

After you enter this command, either enter the `INIT` command or powercycle the system. You can then use the right ALT key to perform the LK-style keyboard actions described in this section.

Hardware Release Notes from Previous Releases

B.1 ALPHAbook 1

- Two keys are mislabeled. The KP_Subtract and KP_Add are engraved in grey on the minus (-) and plus (+) keys. However, the 0 (zero) and P keys actually provide the function for KP- and KP+, respectively.
- NUMLOCK is generated by SHIFT-NUMLOCK, and KP_ENTER is generated by RIGHT-ALT-ENTER.
- There is no way to generate directly RIGHT-ALT, RIGHT-COMPOSE, or LEFT-COMPOSE. You can provide the function of the compose key by pressing LEFT ALT-SPACE.
- You can generate missing function keys by pressing CAPS LOCK-Fn. Pressing CAPS LOCK adds a value of 10 to the function key (Fn) that you also press. For example, pressing CAPS LOCK-F1 generates the F11 key; pressing CAPS LOCK-F2 generates the F12 key.
- Use the following table to help you determine which keys to press to provide the function of the corresponding LK-style key:

LK-Style Key	ALPHAbook Key Combination
PF1	[SHIFT] [grey Numlock]
PF2	[RIGHT ALT] [grey /]
PF3	[RIGHT ALT] [grey *]
PF4	[RIGHT ALT] [0]
KP,	[RIGHT ALT] [P]
KP-	[LOCK] [RIGHT ALT] [P]
KP_ENTER	[RIGHT ALT] [ENTER]
KP.	[RIGHT ALT] [grey .]
KP0	[RIGHT ALT] [grey 0]
KP1	[RIGHT ALT] [grey 1]
KP2	[RIGHT ALT] [grey 2]
KP3	[RIGHT ALT] [grey 3]
KP4	[RIGHT ALT] [grey 4]
KP5	[RIGHT ALT] [grey 5]
KP6	[RIGHT ALT] [grey 6]
KP7	[RIGHT ALT] [grey 7]
KP8	[RIGHT ALT] [grey 8]
KP9	[RIGHT ALT] [grey 9]
FIND	INS
INS	HOME
REMOVE	PAGE UP
SELECT	DEL
PREV	END
NEXT	PAGE DOWN
HELP	PRINT SCREEN
DO	SCROLL LOCK

B.1.8 OpenVMS Cluster Restrictions

Due to controller limitations of the PCMCIA Ethernet card, Compaq recommends that you use the ALPHAbook 1 computer only as a satellite node in a cluster environment rather than as a cluster boot node.

B.2 AlphaServer 1000A

The following sections contain release notes pertaining to the AlphaServer 1000A computer.

B.2.1 Bus Probe Algorithm Default

V7.1

You cannot set the console variable `BUS_PROBE_ALGORITHM` to *OLD* on AlphaServer 1000A computers. The default setting is *NEW*. If you reset the bus probe algorithm to *OLD*, your OpenVMS system will not boot correctly.

B.2.2 Installation Failure with DEFPA Adapter

V7.1

When you attempt to install the OpenVMS operating system on an AlphaServer 1000A computer that uses a DEFPA adapter, the installation may fail, resulting in a `KERNEL STACK NOT VALID HALT` error message. If this failure occurs, powercycle your system and restart the installation.

B.3 AlphaServer 2100

V7.2

The following sections contain information specific to the AlphaServer 2100 series computer.

B.3.1 Console Display

On AlphaServer 2100 and 2100A systems, a console display similar to the following is normal and does not represent system errors:

```
P00>>>SET CONSOLE SERIAL
P00>>>INIT

VMS PALcode X5.48-112, OSF PALcode X1.35-81

starting console on CPU 0
initialized idle PCB
initializing semaphores
initializing heap
initial heap 1c0c0
memory low limit = 132000
heap = 1c0c0, 13fc0
.
.
.
```

Hardware Release Notes from Previous Releases

B.3 AlphaServer 2100

```
probing hose 0, PCI
probing PCI-to-EISA bridge, bus 1
probing PCI-to-PCI bridge, bus 2
*** unable to assign PCI base address
*** bus 2, slot 7, function 0, size 00001000 (16 bit I/O)
bus 1, slot 1 -- fra -- DEFEA
bus 1, slot 2 -- vga -- Compaq Qvision
bus 1, slot 3 -- pua -- KFESA
bus 2, slot 1 -- pka -- NCR 53C810
bus 2, slot 6 -- pkb -- NCR 53C810
bus 2, slot 7 -- pkc -- DEC KZPSA
bus 0, slot 7 -- ewa -- DECchip 21041-AA
initializing keyboard
Memory Testing and Configuration Status
Module   Size   Base Addr   Intlv Mode   Intlv Unit   Status
-----
0        64MB   00000000    1-Way        0            Passed
Total Bad Pages 0
Testing the System
Testing the Disks (read only)
Testing the Network
econfig:          20041 99
econfig:          20042 04
econfig:          20043 00
AlphaServer 2100A Console V4.3-130, built on Oct 26 1996 at 19:44:57
P00>>>P
```

Note that in the previous display, the KZPSA adapter is successfully installed despite the error message displayed in the following lines:

```
*** unable to assign PCI base address
*** bus 2, slot 7, function 0, size 00001000 (16 bit I/O)
```

B.3.2 SCSI Controller Restriction

The Adaptec 1740/1742 SCSI controller (PB2HA-SA) is not supported on AlphaServer 2100 systems having more than 1 gigabyte (GB) of memory. If the controller is connected to such a system, the following message appears on the operator's console:

```
%PKJDRVR-E- The direct DMA window does not map all of memory. Port is going OFF LINE.
```

B.4 AlphaServer 4100 —EISA Configuration Utility (ECU)

V7.1

AlphaServer 4100 systems do not support automatic startup of the ECU (EISA Configuration Utility). Instead, follow the procedure described in this section.

1. In the SRM console, enter the *arc* command. This starts the AlphaBIOS facility.
2. Press the F2 key after the following display:

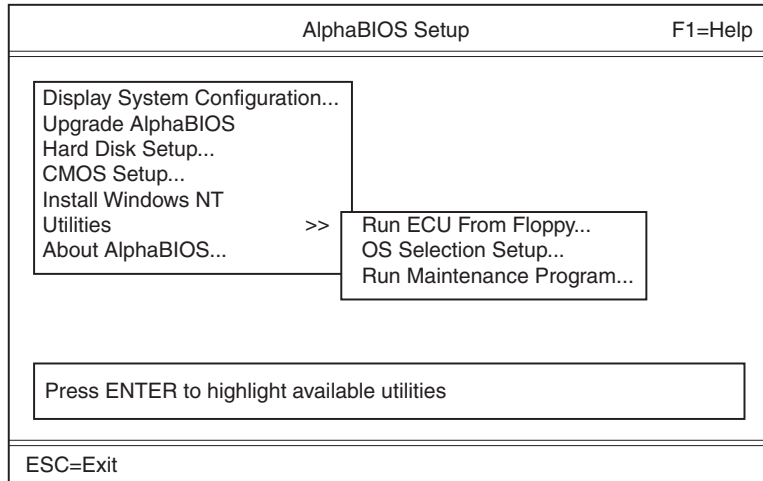
No Operating System Selections Found
Press <F2> to enter Setup and configure the system.
F2=Setup

VM-0009A-AI

3. Use the down arrow key to select *Utilities*. Then use either the right arrow or Enter key to highlight the first submenu entry, "Run ECU From Floppy..." The display is as follows:

Hardware Release Notes from Previous Releases

B.4 AlphaServer 4100 —EISA Configuration Utility (ECU)



VM-0010A-AI

4. Insert the ECU diskette in the floppy drive (if it is not there already).
5. Press the Enter key to run the ECU.
6. After the ECU has run and returns control to AlphaBIOS, press the reset button to restart the system.

If you switch from another operating system to OpenVMS on AlphaServer 4100 systems, you may have to remove EISA boards that have not been qualified on OpenVMS and run the EISA Configuration Utility (ECU).

To run the ECU on other platforms, use the ECU command. To run the ECU on the AlphaServer 4100, use the ALPHABIOS command, and then run the ECU from the ALPHABIOS utility menu.

For more information about using the ECU, refer to the *AlphaServer 4100 System Drawer User's Guide*.

B.5 AlphaServer 8200 and AlphaServer 8400

This section contains release notes pertaining to AlphaServer 8200/8400 systems.

B.5.1 Field Replaceable Units (FRU) Table Error

V7.2

The error log buffer size is controlled by the system parameter ERLBUFFERPAGES, which has a maximum value of 32 pagelets. If the Field Replaceable Unit (FRU) table exceeds this limit during a boot of the OpenVMS Alpha operating system on an AlphaServer 8200/8400 or 4100 system, an entry will not be written to the error log file.

Hardware Release Notes from Previous Releases

B.5 AlphaServer 8200 and AlphaServer 8400

B.5.2 Environmental Data Restrictions

V7.1-1H1

On AlphaServer 8200 systems, the power regulators do not contain sensors for environmental conditions. Therefore, data cannot be reported in the thermal and power supply MIB groups of the DSM System subagent.

On AlphaServer 8400 systems, the power regulators do contain environmental sensors, but some configurations may not report environmental information correctly to the DSM System subagent. This problem affects the thermal and power supply MIB groups and will be resolved in a future release of the software.

B.6 AlphaStation 255

See Section B.11.2 for a release note about using PowerStorm graphics cards on an AlphaStation 255.

B.7 DEC 7000—Ctrl/P Behavior Change During Boot

V7.1

Starting with OpenVMS Alpha Version 7.1, the remote halt command, issued by typing Ctrl/P at the system console, does not work during boot until the copyright banner appears.

In previous versions of OpenVMS, typing Ctrl/P at the system console always returned the system to the console prompt at any time during the boot.

B.8 DECwindows X11 Display Server

This section contains release notes pertaining to the DECwindows X11 display server for OpenVMS Alpha systems.

B.8.1 S3 Multihead Graphics

Alpha computers equipped with S3 Trio32 or Trio64 graphics cards support single-screen display only. Multihead graphics are not supported.

B.8.2 Integrated Graphics Boards Supported

V7.3

As of OpenVMS Version 7.3, support for graphics boards is fully integrated with the OpenVMS operating system. The following new boards are now supported:

- Elsa GLoria (PowerStorm 4D10T)
- OXYGEN VX1
- PowerStorm 300
- PowerStorm 350

B.9 Graphics Boards Support

V7.3

You must install Compaq Open3D (Version 4.9A or higher) for OpenVMS Alpha to support the following types of graphics boards on Version 7.3:

- ZLX-M
- ZLX-L

- ZLXp-L

B.10 DIGITAL Modular Computing Components (DMCC)

This section contains release notes pertaining to DMCC.

B.10.1 Alpha 5/366 and 5/433 PICMG SBC Restriction

V7.2

The KZPDA SCSI Controller and the PBXGA Graphics Card cannot be placed in a slot behind the bridge on the DIGITAL Modular Computing Components (DMCC) Alpha 5/366 and 5/433 PICMG SBCs.

B.10.2 Updating the SRM Console

V7.2

To update the SRM console on the Alpha 4/233 (21064a), 4/266 (21164a), 5/366, and 5/433 DMCC systems, you must choose either the SRM console or the AlphaBIOS setup. You can store only one console.

- If you are running OpenVMS on these systems, update only the SRM console.
- If you are running Windows NT on these systems, update only the AlphaBIOS setup.

If you accidentally update both the SRM and the AlphaBIOS consoles, you will enter the AlphaBIOS Setup menu, and you will *not* have the option to return to the SRM console. The only way to exit the AlphaBIOS Setup menu and return to the SRM console is to use a Firmware Update Utility located at the following Internet site:

<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/index.html>

B.11 PowerStorm 300/350 PCI Graphics Controller

This section contains release notes pertaining to the PowerStorm 300 and Powerstorm 350 graphics cards.

B.11.1 PowerStorm 300/350 OpenVMS Graphics Support Release Notes

V7.3

For release notes on the Powerstorm 300/350 PCI graphics controller support for a Compaq Workstation running OpenVMS Alpha, refer to the *PowerStorm 300/350 OpenVMS Graphics Release Notes Version 1.1*. You can find these release notes on the OpenVMS Documentation CD-ROM in the following directory:

Directory	File Name
[73.DOCUMENTATION.PS_TXT]	P300_350_REL_NOTES.PS, TXT

These documents, release notes, and installation guides are shipped with the Graphics cards.

Starting with OpenVMS Version 7.3, the following parameter settings are not relevant for PowerStorm 300 and 350 graphics cards: MAXBOBMEM, MAXBOBS0S1, and MAXBOBS2.

Hardware Release Notes from Previous Releases

B.11 PowerStorm 300/350 PCI Graphics Controller

B.11.2 AlphaStation 255 PowerStorm Graphics Cards

V7.3

On AlphaStation 255 systems using the PowerStorm 3D30 and 4D20 (TGA2) graphics cards, the system no longer hangs under OpenVMS Version 7.3 when the user selects the InlayColor or InlayPlain backdrop in the Style Manager's Backdrop dialog box.

B.12 RFnn DSSI Disk Devices and Controller Memory Errors

V6.2

A problem exists with the microcode for earlier versions of RF31T, RF31T+, RF35, RF35+, RF73, and RF74 DSSI disk devices. The problem can cause data loss, and occurs when reading data from one of these devices, if the device has had a controller memory error (also known as an error detection and correction (EDC) error). The error could have been induced by a virtual circuit closure or faulty hardware.

Compaq advises customers with any of these devices to check their microcode revision levels. If the microcode revision levels are lower than the numbers shown in Table B-1, Compaq recommends that you update the microcode. The microcode for all models, except RF31T, RF31T+, and RF35+, is provided on the latest OpenVMS binary distribution CD-ROM.

The RF_VERS utility, a utility program that displays the microcode revision level of the DSSI disk devices, is also provided on the CD-ROM. Instructions both for using the utility program and for updating the microcode are provided in this section.

Note

If you have an RF31T, RF31T+, or RF35+ disk drive with a version of microcode that is not supported (see Table B-1), and if you have a support contract, contact your Compaq support representative. Otherwise, contact your authorized reseller.

The earliest supportable revision levels of the DSSI disk microcode are shown in Table B-1.

Table B-1 Supported Microcode Revision Levels

Device Type	Minimum Level with Supported Microcode
RF31T	T387E
RF31T+	T387E
RF35	T392D
RF35+	T392D
RF36	V427P
RF73	T392D
RF74	V427P

To display the microcode revision level of your DSSI disk devices, perform the following steps:

Hardware Release Notes from Previous Releases B.12 RFnn DSSI Disk Devices and Controller Memory Errors

1. Log in to the SYSTEM account or another account that has the CMKRNL, DIAGNOSE, and SYSPRV privileges.
2. Enter the following commands:

```
$ SET PROCESS /PRIVILEGE=(DIAGNOSE,CMKRNL,SYSPRV)
$ SHOW DEVICE FYA0:
```

On VAX systems, if the SHOW DEVICE command produces an error, enter the following commands:

```
$ RUN SYS$SYSTEM:SYSGEN
SYSGEN> CONN FYA0/NOADAP
SYSGEN> ^Z
```

On Alpha systems, if the SHOW DEVICE command produces an error, enter the following commands:

```
$ RUN SYS$SYSTEM:SYSMAN
SYSMAN> IO CONNECT FYA0: /NOADAP
SYSGEN> ^Z
```

The following is an example of the display produced by the RF_VERS utility:

```
Program Name:   RF_VERS
Revision Level: V1.2s

NOTICE: This program does not currently support the RF72 or any
        HSDxx controllers. See next version for support.

DSSI disks currently on this system as seen by RF_VERS

Device          Node          Status      Hardware    Firmware
Name            Name                               Type        Version
_$$2$DIA7:     R4JL2I        mounted     RF73        T387A
_$$2$DIA6:     R4I0BG        mounted     RF73        T387A
_$$2$DIA8:     R4XLWE        mounted     RF73        T387A
_$$2$DIA2:     R4FCZK        mounted     RF73        T387A
_$$2$DIA3:     R4CKCG        mounted     RF73        T387A
_$$2$DIA4:     R4ZKUE        mounted     RF73        T387A
_$$2$DIA9:     R4GYII        mounted     RF73        T387A
_$$2$DIA1:     R4XRYI        mounted     RF73        T387A
```

To update the microcode in your device, use the appropriate command for your device and platform from Table B–2.

Caution

Back up the disk before updating the microcode.

Table B–2 Commands for Updating Microcode in Certain DSSI Disk Devices

Device Type	Platform	Command
RF35	Alpha	\$RUN SYS\$ETC:RF35_T392F_DEC_ALPHA.EXE
RF35	VAX	\$RUN SYS\$ETC:RF35_T392F_DEC.EXE
RF36	Alpha	\$RUN SYS\$ETC:RF36_V427P_DEC_ALPHA.EXE
RF36	VAX	\$RUN SYS\$ETC:RF36_V427P_DEC.EXE

(continued on next page)

Hardware Release Notes from Previous Releases

B.12 RFnn DSSI Disk Devices and Controller Memory Errors

Table B-2 (Cont.) Commands for Updating Microcode in Certain DSSI Disk Devices

Device Type	Platform	Command
RF73	Alpha	\$RUN SYS\$ETC:RF73_T392F_DEC_ALPHA.EXE
RF73	VAX	\$RUN SYS\$ETC:RF73_T392F_DEC.EXE
RF74	Alpha	\$RUN SYS\$ETC:RF74_V427P_DEC_ALPHA.EXE
RF74	VAX	\$RUN SYS\$ETC:RF74_V427P_DEC.EXE

Caution

Do not delete SCSI_INFO.EXE, RF_VERS.EXE, or any of the files listed in Table B-2. If these files are deleted, VMSKITBLD.COM (on VAX) will not be able to find them. Similarly, on Alpha systems, the PRODUCT INSTALL commands in AXPVMS\$PCSI_INSTALL and AXPVMS\$PCSI_INSTALL_MIN will fail.

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