COMPAQ

Software Product Description

PRODUCT NAME: Hierarchical Storage Management for OpenVMS Version 4.1 **SPD 46.38.20**

PRODUCT DESCRIPTION

HP Hierarchical Storage Management (HSM) for OpenVMS is a layered software product that extends the OpenVMS file system to allow efficient management of infrequently accessed (dormant) data. HSM migrates dormant data from online storage to less expensive nearline or offline (shelf) storage. The movement of dormant data to shelf storage is called shelving. The shelved data can be automatically and transparently returned to online storage when needed. HSM will also save valuable backup time, since the shelved data is already located on secure, removable media.

HSM for OpenVMS Operation

HSM operates in Basic or Plus Mode. Basic mode uses its own media manager and qualifies a limited number of device types. Plus mode allows the use of advanced storage devices. If used for remote tape devices, Plus Mode requires the Remote Device Facility™ (RDF) software. See the OPTIONAL SOFTWARE section for details.

New and frequently accessed files remain online while older and less active files are automatically, or manually, shelved in accordance with user-defined policies. The directory information and file headers for shelved files are maintained on online storage devices while the data itself is on the shelf device. When access is needed to the shelved data, HSM automatically returns it to online storage. The file attributes may be viewed and modified without bringing the data back online.

Control over the execution of the shelving process is either explicit or implicit. Explicit shelving is a process that has been started in response to a DCL command. The command can be issued directly to the OpenVMS Operating System or executed in an OpenVMS command procedure. Implicit shelving is a process that has been started by HSM in response to a trigger event or policy.

The transparent management of HSM is set through HSM policies which:

- Specify which files are or are not to be shelved
- Set a high water mark on the online storage to automatically trigger shelving of dormant data
- Set a low water mark as a space recovered goal when your files are shelved
- Specify which processes should cause automatic unshelving

HSM policies use predefined selection algorithms or scripts containing HSM-specific commands to shelve or unshelve files in response to trigger events. Trigger events are situations that, when set by an HSM policy, cause HSM to move files to shelf storage. Examples of specific trigger events are listed below:

- Volume occupancy full
- Disk quota exceeded
- High water mark reached
- Scheduled policy execution

Trigger events, used in conjunction with appropriately designed selection criteria, free up enough online disk space to satisfy the policy goal.

The selection criteria include definitions that determine the appropriate files to be shelved in response to the need for shelving. Examples of selection criteria include:

- Least recently used and size combination
- Least recently used
- According to a user-defined script

HSM for OpenVMS qualifies file access to shelved files on client systems where access is through DFS, NFS, or PATHWORKS.

HARDWARE REQUIREMENTS

Qualified Devices:

- Specified in the qualfied device table, tape devices, including Digital Linear Tape (DLT) loaders, and large tape libraries, such as the TL893 and TL894.
- Remote Tapes

Remote tapes can be accessed through the use of the RDF utility. See the OPTIONAL SOFTWARE section for details

Device Restrictions:

HSM does not provide shelving capability for the following:

- Read-only devices such as CD–ROMs, or any disk that is software locked or write-protected
- Any device that is not flagged as a disk device in OpenVMS system calls

A minimum system configuration to run HSM for OpenVMS includes:

- 16 MB memory
- One or more CD–ROM drives in the VMScluster
- One or more disk drives qualified by OpenVMS

Table 1
Disk Space Requirements (Block Cluster Size = 1)

Item	Blocks Needed	Description
Install Kit	100,000*	Temporary blocks for installation
HSM Software	45000**	Permanent blocks for software
Catalog	100000	Catalog grows at the average rate of 1.25 blocks for each file copy shelved. HP recommends that 100000 blocks be set aside initially for each catalog

Note:

* This includes Documentation in .PS and .PDF format.

** 10k blocks reside on the system disk;remaining optionally on another device.

These counts refer to the disk space required on the system disk. The sizes are approximate; actual sizes may vary depending on the user's system environment, configuration, and software options.

SOFTWARE REQUIREMENTS

- HSM V4.1 runs on the OpenVMS Alpha V6.2, V7.1-2, V7.2-2, V7.3 and V7.3-1 and OpenVMS VAX Operating System V6.2, V7.1, V7.2 and V7.3. HSM V4.1 does not utilize the ODS5 disk structure.

  NOTE: Storage Management makes every effort to be as current or correct as possible in qualifying our layered products on the Operating System (OS) versions. The use of a particular OS by a customer can only be guaranteed by the customer's contract with OpenVMS or by a specific service contract.
- HSM Basic Mode does not require any software other than HSM and the OpenVMS Operating System.
- HSM Plus Mode requires a media manager. If HSM is used with Storage Library System, SLS, then HSM will use the SLS media manager, MDMS V2.9G, which comes with SLS.
- If HSM is used with Archive Backup System, ABS, then HSM will use the media manager installed by ABS as part of the ABS product installation. This is the same media manager MDMS V4.1 that is provided with the HSM V4.1 kit.

- If HSM Plus Mode is not used with either SLS or ABS, then just install the MDMS V4.1 provided in the HSM V4.1. The media manager (MDMS) is still a manual install with HSM V4.1 as users may continue to use SLS/MDMS V2.9G in their environment.
- OpenVMS Version 7.3 provides support for Fibre Channel (FC) connected tape devices. This is accomplished through the use of Modular Data Router (MDR) connected to the FC Switch. MDR converts Fibre Channel protocol to SCSI protocol, which the tape device understands. HSM V4.1 has qualified this new feature in OpenVMS 7.3 as used with MDR. Please refer to OpenVMS V7.3 for a complete listing of supported tape devices.
- Network Storage Router (NSR) M2402 by HP is a key component in a complete data protection solution. It allows multiple host servers to communicate with a SCSI tape device over a Fibre Channel link making backup speeds five times faster. HSM has been tested and qualified with Network Storage Router (NSR) M2402.
- The HSM V4.1 is compatible with the Multipath failover functionality on Tape devices as provided in OS 7.3-1.

OPTIONAL SOFTWARE

- SLS Version 2.9G, or ABS Version V4.1, can be used in conjunction with HSM for an integrated Backup and HSM environment. SLS or ABS contains the Media, Device and Management Services software (MDMS).
- Remote access to tape devices in Plus Mode requires the Remote Device Facility ™ (RDF). RDF requires a licesne. RDF is available as a component of the media manager, MDMS, which is part of your HSM V4.1 kit. RDF V4.3G has been qualified for HSM V4.1. This capability is turned on through licensing of the following:
  - — Purchase of Storage Library System (SLS)
  - — Purchase of Archive Backup System (ABS)
  - — Purchase of an RDF license directly from Computer Associates International Inc.

License Management Facility

This layered product qualifies the OpenVMS License Management Facility.

For more information on the OpenVMS License Management Facility, refer to the OpenVMS Operating System Software Product Description or the *License Management Facility* manual of the OpenVMS Operating System documentation set.

CLUSTER ENVIRONMENT

This layered product is fully qualified when installed on any valid and licensed VMScluster configuration without restrictions. The *HARDWARE REQUIREMENTS* section details any special hardware required by this product.

The VMScluster Software Product Description (SPD 29.78.xx) describes VMScluster configurations and includes CI, Ethernet, and Mixed Interconnect configurations.

OpenVMS Tailoring

For OpenVMS systems, the following classes are required for full functionality of this layered product:

OpenVMS Required Saveset
Programming Support
Utilities
System Programming Support
Secure User's Environment
Network Support

For more information on OpenVMS classes and tailoring, refer to the OpenVMS Alpha and VAX Operating System Software Product Description (SPD 25.01.xx).

Qualified Devices

The following libraries and loaders have been tested and qualified by Storage Management Software Engineering. However, Storage Management Software Engineering does not test each of the devices with every possible combination of controllers and host systems. Because the HSM product and the Media Robot Utility (MRU) run in common environments, these combinations are tested first with MRU. Upon successful completion of the MRU tests, HSM is then tested in representative configurations. Note that MRU is not a prerequisite for HSM.

Therefore, to determine if your specific configuration has been qualified, follow these steps:

1. If you have a tape drive that is not software-defined as a jukebox (is not a library or a loader device), reference the OpenVMS Software Product Description (SPD 25.01.xx) to determine if your tape drive is qualifieded for your platform and controller/adapter combination.
2. If your device is software-defined as a jukebox (it is a library or loader device), first check the following list to determine if it has been qualified by the media manager. If the device is listed, see the following instructions:
   a. Check the OpenVMS Software Product Description (SPD 25.01.xx) to make sure the tape drive(s)

in your library/loader are supported for your platform and controller/adapter combination.

b. Check the MRU Software Product Description (SPD 64.44.xx) to make sure your library/loader is listed by MRU for your specific controller/adapter combination.

3. Assuming your device is correctly connected and configured, it has been qualified by the common media manager.

If you have devices that are not shown on the list, they may still be qualified. HP continually tests its software on additional devices that may have been released since the last publication of this SPD.

If you have a question about a particular device, contact customer support.

ESL9198DLX	ESL9198SL
ESL9326D	ESL9326DX
ESL9326SL	ESL9595SL
MSL5026SL	MSL5052SL
SSL2020	STK ACS[1]
TKZ6*x*	TL891DLX
TLZ6L	TLZ7L
TLZ9L	TL810
TL812	TL820
TL822	TL826
TL890	TL891
TL892	TL893
TL894	TL895
TL896	TSL10000
TZ857	TZ867
TZ875	TZ875*N*
TZ877	TZ877*N*
TZ885	TZ887

[1] Requires an optional DCSC V3.2 license (SPD 33.59.xx).

GROWTH CONSIDERATIONS

The minimum hardware and software requirements for any future version of this product may be different from the requirements for the current version.

DISTRIBUTION MEDIA

HSM, SLS, and ABS are available as part of the OpenVMS Consolidated Software Distribution on CD–ROM.

SOFTWARE LICENSING

HSM for OpenVMS is licensed according to the amount of online storage customers may free up through shelving files. One base license, which includes 20 GB of storage capacity, is required for each VMScluster or a single system in a non-cluster environment. Base licenses are available for all-VAX clusters, all-Alpha clusters, and mixed architecture clusters. The base licenses are included in the 140GB, 280GB, 500GB, 1000GB, and unlimited capacity packages.

Additional storage capacity is licensed by purchasing one or more capacity licenses. Users who want to have virtually unlimited storage capacity, with respect to current system capabilities, can purchase the unlimited capacity license.

Note: In order to purchase concurrent upgrade licenses, users must show proof that they previously purchased at least the same number of concurrent licenses.

This software is furnished under the licensing provisions of HP's standard terms and conditions. For more information about HP's licensing terms and policies, contact your local HP office.

ORDERING INFORMATION

Base Licenses:	
VAX only Cluster	QL-0NXA9-AA
VAX license update service	QT-0NXA9-L9
Alpha only Cluster	QL-3J1A9-AA
Alpha license update service	QT-3J1A9-L9
Mixed Cluster	QP-03PAA-01
Concurrent Use Capacity Licenses:	
20 GB	QL-2AWAA-3B
140 GB*	QP-03TAA-01
280 GB*	QP-03TAA-02
500GB*	QP-03TAA-04
1000GB*	QP-03TAA-03
Unlimited capacity*	QP-03TAA-05
OpenVMS Software Media:	
VAX Software Products CD–ROM	QA-VWJ8A-A8
VAX On-Line Documentation CD–ROM	QA-VYR8A-G8
VAX Media and Documentation CD–ROM	QA-YL48A-H8
Alpha Software Products CD–ROM	QA-4KL8A-A8
Alpha On-Line Documentation CD–ROM	QA-4KM8A-G8
Alpha Media and Documentation CD–ROM	QA-03XAA-H8

Hard Copy Documentation Kit	
HSM Documentation Kit	QA-0NXAA-GZ
OpenVMS Software One Year Subscription Services	
VAX Software Media CD–ROM	QT-VWJ8A-C8
VAX On-Line Documentation CD–ROM	QT-VYR8A-C8
VAX Media and Documentation CD–ROM	QT-YL48A-C8
Alpha Software Media CD–ROM	QT-4KL8A-C8
Alpha On-Line Documentation CD–ROM	QT-4KM8A-C8
Alpha Media and Documentation CD–ROM	QT-03XAA-C8

* This capacity license includes the HSM base licenses.

Note: The HSM documentation in the Hard Copy Documentation kit (QA-0NXAA-GZ) consists of:

HSM Installation Guide
HSM Guide to Operations
HSM Command Reference Guide
HSM Software Product Description
HSM Cover Letter

The first three HSM documents are also available in the on-line documentation CD–ROM. MDMS information is incorporated with the HSM documentation set.

SOFTWARE PRODUCT SERVICES

In addition to the media services listed above, a software license update service is also available from HP. For more information, contact your local HP office.

SOFTWARE WARRANTY

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