

# VSI OpenVMS

## VSI Archive Backup System for OpenVMS Installation Guide

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**Operating System and Version:** VSI OpenVMS IA-64 Version 8.4-1H1 or higher  
VSI OpenVMS Alpha Version 8.4-2L1 or higher

**Software Version:** ABS/MDMS V4.x

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# VSI Archive Backup System for OpenVMS Installation Guide



VMS Software

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# Preface

## 1. About VSI

VMS Software, Inc. (VSI) is an independent software company licensed by Hewlett Packard Enterprise to develop and support the OpenVMS operating system.

## 2. Intended Audience

This document is intended for storage administrators who are experienced OpenVMS system managers. This document should be used in conjunction with the Introduction to *VSI OpenVMS System Manager's Manual*.

## 3. VSI Encourages Your Comments

You may send comments or suggestions regarding this manual or any VSI document by sending electronic mail to the following Internet address: <docinfo@vmssoftware.com>. Users who have VSI OpenVMS support contracts through VSI can contact <support@vmssoftware.com> for help with this product.

## 4. OpenVMS Documentation

The full VSI OpenVMS documentation set can be found on the VMS Software Documentation webpage at <https://docs.vmssoftware.com>.

## 5. Conventions

VMScluster systems are now referred to as OpenVMS Cluster systems. Unless otherwise specified, references to OpenVMS Cluster systems or clusters in this document are synonymous with VMScluster systems.

The contents of the display examples for some utility commands described in this manual may differ slightly from the actual output provided by these commands on your system. However, when the behavior of a command differs significantly between OpenVMS Alpha and Integrity servers, that behavior is described in text and rendered, as appropriate, in separate examples.

In this manual, every use of DECwindows and DECwindows Motif refers to DECwindows Motif for OpenVMS software.

The following conventions are also used in this manual:

Convention	Meaning
<b>Ctrl/</b> <i>x</i>	A sequence such as <b>Ctrl/</b> <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.
<b>Return</b>	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.)

Convention	Meaning
...	A horizontal ellipsis in examples indicates one of the following possibilities: <ul style="list-style-type: none"> <li>• Additional optional arguments in a statement have been omitted.</li> <li>• The preceding item or items can be repeated one or more times.</li> <li>• Additional parameters, values, or other information can be entered.</li> </ul>
. . .	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 options in parentheses if you choose 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 options; 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.
<b>bold text</b>	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 (/PRODUCER= <i>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 type	Monospace type indicates code examples and interactive screen displays.  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.
-	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 radixes—binary, octal, or hexadecimal—are explicitly indicated.

# Chapter 1. Welcome To ABS

## 1.1. Installing ABS/MDMS

If you are installing Archive Backup System (ABS)/Media Device and Management System (MDMS) for the first time, read through this installation guide before installing the products. Also, refer to the *VSI Archive Backup System for OpenVMS Guide to Operations* for information on configuring ABS/MDMS.

## 1.2. Updating ABS/MDMS

If you are updating ABS/MDMS, you should review the release notes provided in the installation kit. You can extract the release notes by using the following command:

```
@SYS$UPDATE:VMSINSTAL kit_name kit_location OPTIONS N
```

The upgrade from ABS/MDMS V3.x to V4.0 requires a conversion of the ABS policy database. You can directly upgrade from ABS/MDMS V3.x to any ABS/MDMS V4.x version.





# Chapter 2. Preinstallation

To ready your OpenVMS system for either the ABS/MDMS server or ABS/MDMS client software installation procedure, you must perform certain tasks and requirements:

- Decide where to install the ABS/MDMS software
- Verify requirements
- Configure hardware
- Perform a system backup prior to the installation
- Install licenses

## 2.1. Decide Where to Install ABS/MDMS Software

### 2.1.1. ABS/MDMS Server Software

Install ABS/MDMS server software on a disk with adequate space. This disk may be the system disk or another disk dedicated to ABS/MDMS. Disk space required for the installation are listed in Section 2.2.3.1. You should also take into account the space required for log files, catalogs and databases. Additional catalog disks may be added at a later time.

The ABS/MDMS server software should reside on a system which will be managing the policy and media databases for itself and any client nodes connected to it. The MDMS server provides access to the policy and media databases.

You must install ABS/MDMS server software on at least one OpenVMS node or OpenVMS cluster system.

There is one kit for both ABS/MDMS servers and clients. The installation will provide the appropriate configuration based on what server names are entered during the installation. The configuration may be modified at a later time by updating the node and server information in the MDMS database.

### 2.1.2. ABS/MDMS Client Software

#### 2.1.2.1. OpenVMS Clients

ABS/MDMS client software should be installed on any OpenVMS node that can communicate with the ABS/MDMS server and for which you want to create ABS save/restore requests. This communication may be done using DECnet or TCP/IP.

#### 2.1.2.2. WINDOWS Clients

For WINDOWS clients, you must install the ABS Windows software provided in the ABS/MDMS installation kit. You must also authorize access for WINDOWS clients on the ABS server node. These tasks are described in Chapter 3 and Chapter 4.

### 2.1.2.3. Tru64 UNIX Clients

Tru64 UNIX clients do not require a separate client installation. However, you must transfer the GNU tar files provided by the ABS/MDMS installation kit to the client system, and then you must build the executable images on the Tru64 system. You must also authorize the clients on the ABS server node. These tasks are described in Section 3.1.5.

Both WINDOWS and Tru64 UNIX clients have their backup operations occur on the ABS server node. The ABS server communicates with the WINDOWS and Tru64 UNIX clients for data transfer and control.

---

#### Note

Given that you have the appropriate amount of licenses and adequate resources available, any number of ABS client nodes may be connected to a single ABS server node.

---

## 2.2. Verify Requirements

### 2.2.1. Required Privileges

To install ABS, log on to the SYSTEM account or to an account that has SETPRV or, at a minimum, has the following privileges enabled:

- CMKRNL
- WORLD
- SYSPRV
- TMPMBX
- NETMBX

Note that VMSINSTAL turns off the BYPASS privilege at the start of the installation procedure.

### 2.2.2. Required OpenVMS Operating System Subclasses

OpenVMS operating system comes with a variety of support options, or subclasses. Subclasses include such features as networking and RMS journaling. To use ABS, your system should have the following subclasses resident:

- Programming support
- Utilities
- System programming environment
- Secure user's environment
- Network support

How to verify:

For information about verifying these components, refer to OpenVMS VAX Installation Procedures, OpenVMS Alpha Installation Procedures, or OpenVMS I64 Installation Procedures.

## 2.2.3. Hardware, Software, and System Requirements

To make sure that your system is ready for the installation, verify that your system meets the following requirements:

- Hardware
- Software
- System parameters
- Process account quotas
- Processes

### 2.2.3.1. Required Hardware

To install software, you must meet the following minimum hardware requirements:

- A VAX system, an Alpha system or an I64 system.
- Please refer to the OpenVMS documentation for minimum requirements of RAM memory for running OpenVMS. We recommend that you have at least 32 MB of memory on VAX systems and 128 MB of memory on Alpha systems.
- One or more tape drives if you plan to back up your data to removable media.
- One disk.
- Adequate disk space. Verify that there are enough free blocks on the disk where you are installing the software.

---

### Note

If you are providing remote drive support, you must answer “Yes” to the remote drive question during MDMS installation procedure. This requires additional free disk space. RDF is supported on OpenVMS Alpha V8.3 but not supported on OpenVMS I64 V8.2-1 and later versions.

---

Enter the following command to show the amount of used disk space on your disk:

```
$ SHOW DEVICE disk-name
```

Disk space required during an full installation on an Alpha system is 214,500 blocks with 167,400 required after the installation. Disk space required on a VAX is 204,000 blocks with 120,000 required after the installation. Disk space required on an I64 system is 345,000 blocks with 170,000 required after the installation.

### 2.2.3.2. Required Software

Table 2.1 lists the software you must have installed on your system before you can install ABS.

**Table 2.1. Required Software**

Software	Purpose	System
DECnet Phase IV	Provides network support	ABS OpenVMS Server

Software	Purpose	System
or  DECnet Plus for Open-VMS  or  TCP/IP Service for OpenVMS	<b>Note</b>  This software must be up and running before you start the installation procedure if you will be using a network with ABS/MDMS.	ABS OpenVMS Client
OpenVMS Operating System <sup>1</sup>	Provides OpenVMS and DCL capabilities.	ABS OpenVMS Server  ABS OpenVMS Client

<sup>1</sup>See ABS Software Product Description (SPD) for supported versions.

### 2.2.3.3. Optional Software

Table 2.2 describes the optional software you can use with ABS software.

**Table 2.2. Optional Software**

Software	Purpose	System
ABS WINDOWS Client Software	Provides the ability to save data from Windows systems to ABS OpenVMS server system using ABS software (provided with ABS, not purchased separately).	WINDOWS Client
C Compiler	Provides the ability to build the executable files on Tru64 UNIX clients	Tru64 UNIX Client
DCSC <sup>1</sup> (Digital Cartridge Server Component)	If you have a StorageTek Automated Cartridge Server (ACS), you must install the DCSC software.	The system where the StorageTek silo resides.
TCP/IP Services for OpenVMS <sup>1</sup>	Provides network support for WINDOWS and Tru64 UNIX clients.	ABS/MDMS OpenVMS Server, ABS/MDMS OpenVMS Clients, system where GUI will be run.
Media Robot Utility (MRU)	Provides library and loader testing, diagnostics, and control.	The OpenVMS system where the robotic device is physically connected
Java Run-Time Environment (JRE) V1.2, 1.3.1 or 1.4.2.	Provides run-time environment for MDMSView GUI.	The OpenVMS or Microsoft Windows system where the GUI will be run.

<sup>1</sup>See ABS Software Product Description (SPD) for supported versions.

### 2.2.3.4. Required System Parameters

To install ABS, the system parameters must be set to the minimum value or higher. Table 2.3 lists the minimum system parameter values required for the installation procedure to run successfully. Depending on the kinds of programs and applications running at your site, you may need higher values.

**Table 2.3. System Parameters – Minimum Values**

System Parameter	Minimum Value	Dynamic
PQL_DENQLM	300	Y
GBLPAGES <sup>1</sup>	2000	N
GBLSECTIONS <sup>1</sup>	4	N
LOCKIDTBL	45000	N
PQL_MENQLM	300	Y
PQL_MPGFLQUOTA	10000	Y
PROCSECTCNT	100	N
PQL_MTQELM	200	Y

<sup>1</sup>The values listed for these system parameters represent the number of free global pages and global sections required to install and run ABS, not the total number you need to operate your system and other software.

To see the current system parameter values on your system, enter the following command:

```
$ MCR SYSGEN
SYSGEN> SHOW/GEN
```

### Result:

Shows the current values of all the system parameters. If you need to modify one or more of the system parameters, see the following example:

```
$ MCR SYSGEN
SYSGEN> SET GLBPAGES 2000
SYSGEN> WRITE CURRENT
SYSGEN> EXIT
```

The changed parameters should be added to SYSS\$SYSTEM:MODPARAMS.DAT for future changes made with AUTOGEN. You must then reboot the system so the non dynamic parameter values are recognized.

### More information:

Refer to .0 for detailed information about required system parameters.

## 2.2.3.5. Required Process Account Quotas

The account you use to install ABS (typically the SYSTEM account) must have sufficient quotas to enable you to perform the installation. If your SYSTEM account quotas are the same as or higher than the default values provided with the OpenVMS operating system, then these values should be sufficient to install the software.

Table 2.4 summarizes the process quotas and the quotas that VMSINSTAL requires to perform the installation.

**Table 2.4. Required Installing Account Process Quotas**

Account Quota	Minimum Value
ASTLM	200
BIOLM	10000
BYTLM	18000

Account Quota	Minimum Value
DIOLM	200
ENQLM	2048
FILLM	300
PGFLQUO	10000
TQELM	200

To view your current process quotas, see the following example:

```
$ MCR AUTHORIZE
UAF> SHOW SMITH
```

### Result:

This command shows all your process quotas. If you need to increase your process account quotas, see the following example:

```
$ MCR SYS$SYSTEM:AUTHORIZE
UAF> MODIFY SMITH/ENQLM=2048
UAF> EXIT
```

---

### Note

If you are supporting WINDOWS or UNIX clients, to ensure successful save and restore operations, set the quotas to the following values from ABS OpenVMS server node:

```
UCX> SET PROTOCOL TCP/QUOTA=(SEND:50000,RECEIVE:50000)
```

If you have to reboot the machine, make sure that you reset these values after rebooting.

---

### More information:

For detailed instructions about modifying account quotas, see the description of Authorize Utility in OpenVMS System Management Subkit.

## 2.2.3.6. Required Processes

Before beginning the installation procedure, check to see that DECnet Phase IV, DECnet Plus or TCP/IP and the OpenVMS Queue Manager are running. Network software is not required if you are on a standalone system and you will not be using the GUI. To see if these processes are active on your system, enter the following command:

```
$ SHOW SYSTEM
```

The following information is displayed for DECnet Phase IV:

```
OpenVMS V7.1 on node NODE1 8-AUG-1997 13:39:28.23Uptime 0 23:36:26
Pid      Process Name      State   Pri   I/O   CPU           Page flts
Page
.
.
.
20A0022C  QUEUE_MANAGER  HIB     8     72    0 00:00:00.83   751
1210
.
```

```
.
.
20A00212  NETACP          HIB      10      285      0 00:00:02.84      338
666
```

The following information is displayed for DECnet Plus:

```
37C00215  NET$ACP          HIB      4      629      0 00:27:23.22      1894      2465
.
.
.
37C0024A  QUEUE_MANAGER      HIB      8      3333      0 00:07:45.24      1246      1766
```

The following information is displayed for UCX (earlier version of TCP/IP).

```
20A00444 UCX$INET_ACP HIB...
```

The following information is displayed for TCP/IP:

```
20A00555 TP_SERVER HIB...
```

If these processes are not active, follow the steps in Table 2.5.

**Table 2.5. How to Start DECnet and the OpenVMS Queue Manager**

Step	Action
1.	<p>Start DECnet software.</p> <p>For DECnet Phase IV, enter the following command at DCL prompt:</p> <pre>\$ @SYS\$MANAGER:STARTNET.COM</pre> <p>For DECnet Plus, enter the following command at DCL prompt:</p> <pre>\$ @SYS\$STARTUP:NET\$STARTUP.COM</pre>
2.	<p>Start OpenVMS Queue Manager. Enter the following command at DCL prompt:</p> <pre>\$ START/QUEUE/MANAGER</pre>
3.	<p>Start the TCP/IP software.</p> <p>For TCP/IP Version 4-n, enter the following command at the DCL prompt:</p> <pre>\$ @SYS\$SYSTEM:UCX\$STARTUP.COM</pre> <p>For TCP/IP Version 5.n, enter the following command at the DCL prompt:</p> <pre>\$ @SYS\$MANAGER:TCPIP\$STARTUP.COM</pre>

### 2.2.3.7. Required Virtual Memory Space

The default virtual memory space that the SET COMMAND/OBJECT command allocates is 384KB. The following error is displayed during installation if the CLD files have exhausted this available space limit:

```
%CDU-F-INTNODESPACE, Internal error: node space exhausted
```

Adding any new qualifier to the MDMS command is possible only if the table space is increased, the recommended table space is 2048 KB.

```
$ DEFINE CDU$TABLE_SPACE 2048
```

### 2.2.3.8. Verify the Node is in the MDMS Database

If this installation is not the initial installation of MDMS, you need to verify that the node you are installing MDMS on is in the MDMS database. Enter the following command on a node that has MDMS already installed on it and verify that the node you are installing MDMS on is in the database:

```
$ MDMS SHOW NODE node_name_you_are_installing_on
%MDMS-E-NOSUCHOBJECT, specified object does not exist
```

If the node is not in the database, you receive the %MDMS-E-NOSUCHOBJECT error message and you should create the node using the following command:

```
$ MDMS CREATE NODE node_name_you_are_installing_on
```

Refer to *VSI OpenVMS Archive Backup System for OpenVMS MDMS Reference Guide* for information on using the qualifiers.

If the node you are adding is an MDMS server node, the installation procedure will create the node using the /DATABASE qualifier. In addition, you need to edit all SYS\$STARTUP:MDMS\$SYSTARTUP.COM files in your domain and add this node to the definition of MDMS \$DATABASE\_SERVERS.

## 2.3. Configure Hardware

For your storage application to work, the hardware it depends on must be installed, connected, and configured to function with the operating system. To configure your hardware, see the hardware manuals provided with the hardware device. Also, refer to *VSI Archive Backup System for OpenVMS Guide to Operations* for troubleshooting suggestions.

If you are installing tape jukeboxes for use with ABS/MDMS, you should verify that the hardware is working correctly before installing ABS/MDMS. To verify the hardware installed, you can use the MRU kit that is provided along with the ABS kit.

## Consider RDF Configuration

MDMS provides RDF software to facilitate operations that require access to remote, network connected tape drives. This allows you to copy data from a local site to a remote site, or copy data from a remote site to a local site. RDF requires that DECnet is installed and running.

During the installation you will be asked questions on whether you want to install on this node, the software that will allow it to act as a server and/or client for the RDF software. You need to decide if you want the server and/or client installed on the node.

- Install the **RDF Server software** on all nodes that are connected to the tape drives used for remote operations.
- Install the **RDF Client software** on all nodes that initiate remote operations to tape drives on the RDF Server node.

---

### Note

RDF is not available if you are installing MDMS with the ABS-OMT license. RDF is supported on OpenVMS Alpha V8.3 but not supported on OpenVMS I64 V8.2-1 and later versions.

---



## 2.4. Perform a System Backup

VSI recommends that you perform a backup operation on the system disk before installing any software. For details about performing a backup operation on a system disk, refer to the *VSI OpenVMS System Manager's Manual*.

## 2.5. Registering ABS Licenses

To use ABS software, you must register and load the licenses before you begin the installation procedure. This information is supplied in the License PAK document, which is packaged along with the Archive Backup System for OpenVMS Cover Letter.

To register a license under OpenVMS, use the following procedure:

1. Log in to the system where you will be installing the software. Log in under SYSTEM account, or enable your account with the privileges described in “Required Privileges”. Select one of the following methods to register the licenses:
  - At DCL prompt, enter the LICENSE REGISTER command with appropriate qualifiers that correspond to License PAK information. See Table 2.6.
  - Invoke SYS\$UPDATE:VMSLICENSE.COM procedure. When it prompts you for information, respond with data from your License PAK. See Table 2.7.

If you plan to use ABS on more than one node in an OpenVMS Cluster, you must load the licenses on other nodes after you install ABS. See Table 2.6 for instructions.

Table 2.6 describes how to register your license using the LICENSE REGISTER command.

**Table 2.6. How to Register Your ABS Licenses Using the LICENSE REGISTER Command**

Step	Action
Step 1.	<p>Enter the LICENSE REGISTER command with the product name followed by a dash (-):</p> <pre>\$ LICENSE REGISTER ABS-SERVER-VAX -</pre> <p>! Register this license on the ABS VAX server node</p> <pre>\$ LICENSE REGISTER ABS-SERVER-ALPHA -</pre> <p>! Register this license on the ABS Alpha server node</p> <pre>\$ LICENSE REGISTER ABS-SERVER-I64 -</pre> <p>! Register this license on the ABS I64 server node</p> <pre>\$ LICENSE REGISTER ABS-CLIENT-VAX -</pre> <p>! Register this license on all ABS VAX client nodes</p> <pre>\$ LICENSE REGISTER ABS-CLIENT-ALPHA -</pre> <p>! Register this license on all ABS Alpha client nodes</p>

Step	Action
	<p>\$ LICENSE REGISTER ABS-CLIENT-I64 -</p> <p>! Register this license on the ABS I64 client node</p> <p>\$ LICENSE REGISTER ABS-NT-CLIENT-USER -</p> <p>! Register this license on the ABS server node where you plan to support WINDOWS clients.</p> <p>\$ LICENSE REGISTER PAB-UNIX-CLIENT-USER -</p> <p>! Register this license on the ABS server node where you plan to support UNIX clients.</p> <p>\$ LICENSE REGISTER ABS-OMT -</p> <p>! Register this license on all ABS server nodes where you have to install the ABS software</p> <p>\$ LICENSE REGISTER ABS-OMT-UPG -</p> <p>! Register this license on all ABS server nodes where you want to upgrade the ABS-OMT license to the full ABS product</p> <hr/> <p><b>Important</b></p> <p>Enter a dash (-) at the end of each command from Steps 1 through 8.</p>
Step 2.	<p>Enter the /ISSUER qualifier information, assigning the value DEC between quotation marks.</p> <p>_ \$ /ISSUER="DEC" -</p>
Step 3.	<p>Enter the /AUTHORIZATION qualifier information, assigning it the value from the AUTHORIZATION NUMBER<sup>1</sup> entry of the PAK:</p> <p>_ \$ /AUTHORIZATION=xxxxxx -</p>
Step 4.	<p>Enter the /PRODUCER qualifier information, assigning the value DEC in quotes:</p> <p>_ \$ /PRODUCER="DEC" -</p>
Step 5.	<p>Enter the /UNITS qualifier information, assigning it the value from the UNITS<sup>1</sup> entry of the PAK</p> <p>_ \$ /UNITS=nn -</p>
Step 6.	<p>Enter the /DATE qualifier information, assigning the product's release date value from the PRODUCT RELEASE DATE<sup>1</sup> entry of the PAK:</p> <p>_ \$ /DATE=dd-mmm-yyyy -</p>
Step 7.	<p>Enter the /AVAILABILITY qualifier information, assigning the value from the AVAILABILITY TABLE CODE<sup>a</sup> entry of the PAK:</p> <p>_ \$ /AVAILABILITY=x -</p>

Step	Action
Step 8.	<p>Enter the /OPTIONS qualifier information, assigning the value from the KEY OPTIONS<sup>1</sup></p> <p>entry of the PAK:</p> <pre>_ \$ /OPTIONS=xxxxxx -</pre>
Step 9.	<p>Enter the /CHECKSUM qualifier information, assigning the value from the CH<sup>1</sup> entry of the PAK:</p> <pre>_ \$ /CHECKSUM=1-xxxx-xxxx-xxxx-xxxx</pre> <hr/> <p><b>Important</b></p> <p>Do NOT end the entry with a dash.</p> <hr/>
Step 10.	<p>Invoke the LICENSE LOAD command with the product name:</p> <pre>\$ LICENSE LOAD product_name</pre>

<sup>1</sup>This information is supplied in the LICENSE PAK document (provided with the software kit).

Table 2.7 describes how to register your license using the command procedure.

**Table 2.7. How to Register Your ABS Licenses Using VMSLICENSE.COM**

Step	Action
Step 1.	<p>From the system prompt, enter the following command:</p> <pre>\$ @SYS\$UPDATE:VMSLICENSE.COM</pre>
Step 2.	Select Option 1. "REGISTER a Product Authorization Key".
Step 3.	<p>Answer the questions according to the information supplied in the LICENSE PAK document (provided with the software kit).</p> <p>The following is only an example. Supply the information provided in the PAK to the prompts:</p> <p>Type ? at any prompt for a description of the information requested. Press Ctrl/Z at any prompt to return to the main menu.</p> <pre> Issuer[DEC] Authorization Number[]: Authorization Number[]:ALS-NQ-1996JUN10-181 Product Name[]:ABS-SERVER Producer[DEC]: Number of Units[]:1050 Version[]: Product Release Date[]: Key Termination Date[]: Availability Table Code[]:H Activity Table Code[]: Key Options[]:MOD_UNITS,ALPHA Product Token[]: Hardware-Id[]: Checksum[]:2-PIBA-KIPP=BIGE-DDHC </pre>

Step	Action
Step 4.	Verify the information that you entered is correct. Enter Yes.
Step 5.	To exit the command procedure, select Option 99.

# Chapter 3. Installing ABS Software

This chapter contains instructions for installing Archive Backup System for OpenVMS software.

Before proceeding with the installation procedure, make sure you have completed all of the following preinstallation tasks:

- Did you decide where to install ABS server and client software?
- Did you set your default directory to SYS\$UPDATE?
- Did you log into an account with the proper quotas and privileges?
- Did you perform a system backup operation?
- If you are doing an upgrade installation, did you shutdown ABS and MDMS?
- Did you verify the hardware and disk space requirements?
- Did you verify the software requirements?
- Did you check to see if DECnet (Phase IV), DECnet-Plus or TCP/IP, and the QueueManager are running?
- Did you register the appropriate licenses?

## 3.1. Installing Archive Backup System for OpenVMS Software

See Table 3.1 for the stages of installing and configuring ABS/MDMS software.

---

### Note

Before installing ABS in a real time, storage management environment, VSI recommends that you first install and configure ABS in a test environment. If you are not satisfied with the test installation, delete ABS and reinstall it.

---

**Table 3.1. Stages of Installing ABS Software**

Stage	Action
1.	<div>Install ABS server software as described in Section 3.1.1.</div> <div><b>Note</b>  If you are installing ABS in a mixed architecture environment (VAX and Alpha systems resident in a single OpenVMS Cluster), install the software in a common location. This will place the database and catalog files in a common location for the entire cluster. Images will be placed on the system disks for each system. Install ABS/MDMS on each node.</div>
2.	Install ABS OpenVMS client software as described in Section 3.1.2.

Stage	Action
	<b>Note</b> OpenVMS client support is not available with an ABS-OMT license.
3.	Install ABS WINDOWS client software as described in Section 3.1.3.
4.	Install ABS Tru64 UNIX clients as described in Section 3.1.4.
5.	Authorize WINDOWS and Tru64 UNIX clients as described in Section 3.1.5.
6.	Follow the Post-Installation steps in Chapter 4.

### 3.1.1. Installing ABS/MDMS Server Software

ABS/MDMS installation procedure consists of a series of questions and informational messages. The procedure will give you an option of doing a standard installation or not. The standard installation will install the ABS/MDMS software in the following manner:

ABS will be installed with the following options:

Device for ABS/MDMS - SYS\$COMMON (will use current values if either MDMS or ABS are already installed)

UIC for the ABS account - [311,311]

Nodes for the database servers - Current node or already existing server nodes

What scheduling option do you want - INTERNAL

Are you using backup-via-shelving - YES (If HSM is present)

MDMS will be installed with the following options:

Device for ABS/MDMS - SYS\$COMMON (or current installed location)

UIC for MDMS Account - [312,312] (or will be constructed from ABS UIC)

Node for database servers - Current node or already existing server nodes

Do you want to replace MRD\$RTL.EXE - YES

MDMS GUI will files will be installed with the following options:

Do you want the MDMS GUI installed on Alpha OpenVMS - YES (if on Alpha)

Do you want files extracted for Microsoft Windows on Intel - YES

Remote Device Facility (RDF) will be installed with the following options:

Do you want MDMS support for RDF Server - YES

Do you want MDMS support for RDF Client - YES

---

#### Note

RDF will not be installed for the following conditions:

---

1. With an ABS-OMT installation
2. On OpenVMS I64 V8.2-1 and later versions

Questions always asked:

Do you want to purge files - YES

Do you want to run the IVP - YES (except if ABS-OMT installation)

If for any reason you need to abort the installation procedure, at any time you can press CTRL/Y and the installation procedure deletes all files it has created up to that point and then exits. From this point, you can restart the installation procedure again.

3. Install ABS WINDOWS client software as described in Section 3.1.3.
4. Install ABS Tru64 UNIX clients as described in Section 3.1.4.
5. Authorize WINDOWS and Tru64 UNIX clients as described in Section 3.1.5.
6. Follow the Post-Installation steps in Chapter 4.

Follow the steps mentioned in Table 3.2 to install ABS software.

**Table 3.2. How to Install ABS Software**

Step	Action
1.	<p><b>Invoke VMSINSTAL:</b></p> <pre>\$ @SYS\$UPDATE:VMSINSTAL saveset-name drive-name OPTIONS N</pre> <p>To start the installation, invoke the VMSINSTAL command procedure from a privileged account, such as the SYSTEM account. VMSINSTAL is in the SYS \$UPDATE directory. The following list defines the elements of the VMSINSTAL command procedure:</p> <p><b>save set name</b></p> <p>The installation name for the component.</p> <p>ABS044 (for example)</p> <p><b>drive-name</b></p> <p>The name of the drive where the media that contains the kit is located. For example, MTA0: is the device name for a tape drive or device:[directory] can be the CD-ROM drive name. It is not necessary to use the console drive for this installation. However, if you do use the console drive, you should replace any media you removed once the installation is complete.</p> <p><b>OPTIONS N</b></p> <p>An optional parameter that indicates you want to see the question on release notes. If you do not include the OPTIONS N parameter, VMSINSTAL does not ask you about the release notes. You should review the release notes before proceeding with the installation in case they contain additional information about the installation.</p> <hr/> <p><b>Note</b></p> <p>If you are restarting the installation and have already reviewed the release notes, you do not need to specify OPTIONS N. If you specify more than one option, separate them with commas (OPTIONS A,N).</p> <hr/> <p>The following examples invoke VMSINSTAL to install ABS from the tape drive MTA0: and shows the responses. This example uses the OPTIONS N release note parameter.</p> <pre>\$ @SYS\$UPDATE:VMSINSTAL saveset_name MTA0: OPTIONS N</pre>

Step	Action
	<p>OpenVMS VAX Software Product Installation Procedure V7.2 It is 21-JUL-1996 at 10:00 Enter a question mark (?) at any time for help.</p> <p>If you do not supply either the product name or the drive name, VMSINSTAL prompts you for this information later in the installation procedure.</p> <hr/> <p><b>Note</b></p> <p>VMSINSTAL does not prompt you for any options, so be sure to include OPTIONS N on the VMSINSTAL command line to access the release notes during the installation procedure. See OpenVMS documentation located in the OpenVMS System Management Subkit for detailed information on these options.</p>

### 3.1.2. Installing ABS OpenVMS Client Software

#### Note

OpenVMS client support is not available with an ABS-OMT license.

When installing ABS software, notice that ABS does not provide two separate software kits. Instead, installation of ABS OpenVMS server or client software is determined by the OpenVMS node name that you enter during the installation procedure.

Table 3.3 describes how to install and configure an ABS OpenVMS client.

#### Note

In Table 3.3 ABS server node is referred to as SVNODE:: and ABS client node is referred to as CLNODE::.

**Table 3.3. Installing ABS OpenVMS Client Software**

Step	Action
1.	<p>Install ABS software on the OpenVMS client node as on the server node, with one exception.</p> <p>When the installation procedure prompts for the node name for the server (ABS OpenVMS server node), do not accept the default node name (client node name). Instead, enter the OpenVMS Cluster alias or OpenVMS node name that you entered when you installed ABS OpenVMS server software:</p> <pre>* Node name list for Database Servers : SVNODE</pre> <p><b>Result:</b></p> <p>ABS installs only the client portion of ABS software on the node named CLNODE::.</p>
2.	<p>Create save and restore requests for OpenVMS clients as described in <i>VSI Archive Backup System for OpenVMS Guide to Operations</i>.</p>



Step	Action
3.	Create (or modify) storage and environment policies. <i>VSI Archive Backup System for OpenVMS Guide to Operations</i> describes how to create those policies.
4.	Create system and user backup operations using the correct storage and environment policies. <i>VSI Archive Backup System for OpenVMS Guide to Operations</i> , provides instructions for these tasks.

### 3.1.3. Installing and Configuring ABS WINDOWS Clients

#### Requirements:

If you use FTP to copy the setup files to the Windows System, be sure to copy the files in binary mode.

Table 3.4 describes the stages of installing and configuring an ABS WINDOWS client node.

**Table 3.4. Stages of Installing an ABS WINDOWS Client**

Stage	Action
1.	Register ABS Windows license on ABS OpenVMS server node. See Section 2.5 for instructions.
2.	Install ABS WINDOWS client software on WINDOWS client system as described in Table 3.5.  <b>Note</b>  You must perform a separate installation on each WINDOWS client node that you want ABS to back up.
3.	Authorize the WINDOWS client systems that you plan to back up using ABS (described in Section 3.1.5 and Appendix B).
4.	Create save and restore requests for the WINDOWS client system by using the GUI on the WINDOWS client system, or by using the GUI or DCL on ABS OpenVMS server node. See <i>VSI Archive Backup System for OpenVMS Guide to Operations</i> and <i>VSI OpenVMS Archive Backup System for OpenVMS MDMS Reference Guide</i> for instructions about creating save and restore requests for WINDOWS clients.

To install and configure the WINDOWS client software, use the procedure in Table 3.5.

**Table 3.5. Installing and Configuring an ABS WINDOWS Client**

Step	Action
1.	Copy all files from one of the following directory located on ABS OpenVMS server node to the WINDOWS client system where you plan to install the WINDOWS client software, or to a location accessible by the WINDOWS client system.  The WINDOWS client software is provided during ABS server installation procedure. ABS creates the appropriate directory and places the WINDOWS client software kit in the following directory:

Step	Action
	ABS\$ROOT: [CLIENTS.NT.INTEL]
2.	<p>Run SETUP.EXE from this location to install ABS WINDOWS client software.</p> <p><b>Result:</b></p> <p>ABS WINDOWS client installation procedure prompts for information about the ABS server and the local host port number.</p> <p>Answer the prompts exactly as you answered them during ABS server installation procedure:</p> <p>ABS server node—Enter the node(s) on which ABS server software has been installed and will be providing ABS services for the WINDOWS client backup operations. If multiple nodes are specified, separate them with semi-colons. This node also verifies connection requests. If a server node is multihomed (has more than one IP address/name), specify all the names which may be used during a backup request.</p> <p>Local host port number—The WINDOWS client system uses a TCP/IP port to communicate with ABS server to initiate save and restore requests. The default port number is 1800. If you decide to change the port number, it is limited to a range between 1024 and 65535. This port number is arbitrary, but it must match the port number you use when you authorize WINDOWS clients, described in Appendix A.</p> <p>To test to see if port number 1800 is already in use, enter the following command from ABS OpenVMS server system prompt:</p> <pre>\$ TELNET node 1800</pre> <p>Where: node is the node name of the OpenVMS server node</p> <hr/> <p><b>Note</b></p> <p>Make sure that the number you provide does not conflict with a previously installed software application.</p>
3.	<p>Authorize the WINDOWS clients you plan to back up using ABS as described in Section 3.1.5 and Appendix A.</p>

### 3.1.4. Configuring ABS Tru64 UNIX Clients

To allow ABS to perform backup and restore operations for Tru64 UNIX clients, you must configure access between the OpenVMS systems that run ABS server software and the Tru64 UNIX client systems that contain the files to be backed up. The stages of installing and configuring a Tru64 UNIX client is described in Table 3.6.

---

#### Note

There is no extra software kit provided for Tru64 UNIX clients.

---

**Table 3.6. Stages of Installing and Configuring an ABS Tru64 UNIX Client**

Stage	Action
1.	Register ABS Tru64 UNIX license on the ABS OpenVMS server node. See Section 2.5 for instructions.
2.	Modify the appropriate files on the Tru64 UNIX client system as described in the Section 3.1.4.1.
3.	Transfer the gtar and gzip sources from ABS OpenVMS server node to each Tru64 UNIX client system that you intend to back up using ABS. See Section 3.1.4.2.
4.	Build the executables on each Tru64 UNIX client system that you plan to back up using ABS as described in Section 3.1.4.3.
5.	Authorize the Tru64 UNIX clients as described in Section 3.1.5 and Appendix A.
6.	Create save and restore requests for the Tru64 UNIX client from the OpenVMS server node. See <i>VSI Archive Backup System for OpenVMS Guide to Operations</i> and <i>VSI OpenVMS Archive Backup System for OpenVMS MDMS Reference Guide</i> for instructions about creating save and restore requests for Tru64 UNIX clients.

### 3.1.4.1. Modifying the Appropriate Tru64 UNIX Files

Table 3.7 lists the files that you need to modify on each Tru64 UNIX client system that ABS is going to back up, and it describes the modifications to make for those specific files.

#### Note

Tru64 UNIX is a case sensitive system. Be sure to enter the commands on the Tru64 UNIX client system exactly as they are shown in Table 3.7 and Example 3.1.

**Table 3.7. Modifying the Appropriate Tru64 UNIX Files**

File	Modification
<code>/.rhosts</code> <sup>1</sup>	<p>Replace the ASCII readable internet address with ABS OpenVMS server nodes. The file format is:</p> <pre>readable ip address      account node01.vms.real.node    ABS          #ABS on node NODE01</pre> <p>In this example, replace <code>node01.vms.real.node</code> with ABS OpenVMS server node names. The account name must stay the same (ABS), and it must be specified in capital letters.</p> <p><b>Example of <code>/.rhosts</code>:</b></p> <pre>node01.vms.real.node    ABS node02.vms.real.node    ABS</pre> <p><b>Requirement:</b></p> <p>You must always modify the <code>/.rhosts</code> file. If the file does not exist, then you must create it. Be sure that the <code>/.rhosts</code> file is located in the root directory and that is owned by the root account because ABS uses this directory during the backup operation.</p>

File	Modification
/etc/hosts <sup>1</sup>	<p>List the numeric internet address and the ASCII readable internet address of ABS OpenVMS server nodes. The file format is:</p> <pre># Internet Address Hostname # Comments nn.nn.nn.nn node01.vms.real.node # example entry for hosts file</pre> <p>Where:</p> <ul style="list-style-type: none"> <li><i>nn.nn.nn.nn</i> is the numeric internet address of ABS node that executes save and restore requests.</li> <li><i>node01.vms.real.node</i> is the ASCII readable internet address of nn.nn.nn.nn. You must enter every node name on which ABS may execute.</li> </ul> <p><b>Example of /etc/hosts:</b></p> <pre>01.02.03.04 node01.vms.real.node # node01 running ABS 01.02.01.04 node02.vms.real.node # node02 running ABS</pre> <hr/> <p><b>Note</b></p> <p>If ABS OpenVMS server nodes are already listed in the file /etc/hosts, you do not need to add them again.</p>

<sup>1</sup>File is not replaced, only modified.

### 3.1.4.2. Transferring the Tru64 UNIX Backup Agent Sources

During the installation of ABS server software, the installation procedure creates a directory named ABS\$ROOT:[CLIENTS.UNIX] on ABS server node. This directory contains the following two uncompressed sources that make up the Tru64 UNIX backup agent:

- ABS\$ROOT:[CLIENTS.UNIX]TAR-1\_13.TAR
- ABS\$ROOT:[CLIENTS.UNIX]GZIP-1\_2\_4.TAR

To configure a Tru64 UNIX client, you must transfer the gtar and gzip sources to each Tru64 UNIX client system that ABS is going to back up, build the executables, and place them in /usr/bin.

Refer to Example 3.1 to transfer the gtar and gzip sources from ABS server node to the Tru64 UNIX client system.

#### Example 3.1. Transferring the Backup Agent Sources

```
u_node> ftp node01 # Connect to the ABS OpenVMS Server Node
Connected to node01.vms.dec.com.
220 node01 FTP Server (Version 3.3) Ready.
Name (node01:user1): user1
331 Username USER1 requires a Password.
Password:
230 User logged in.
Remote system type is VMS.
```

```
ftp> cd abs$root:[clients.unix] # Change to the directory that contains the
```

```
files
250 CWD command successful.
ftp> pwd
257 "ABS$ROOT:[CLIENTS.UNIX]" is current directory.
ftp> ls # List the files in this directory

200 PORT command successful.
150 Opening data connection for (16.82.16.75,1174)
gnu_general_public_license.txt;4
gnu_readme_where_to_get.txt;4
gzip-1_2_4.tar;4
tar-1_13.tar;4
226 NLST Directory transfer complete.

ftp> bin # set the file transfer mode to binary
200 TYPE set to IMAGE.

ftp> get # Get the sources
(remote-file) tar-1_13.tar
(local-file) tar-1_13.tar
200 PORT command successful.
150 Opening data connection for tar-1_13.tar (16.82.16.75,1178)
226 Transfer complete.
2662400 bytes received in 5.7 seconds (4.6e+02 Kbytes/s)

ftp> get # Get the sources
(remote-file) gzip-1_2_4.tar
(local-file) gzip-1_2_4.tar
200 PORT command successful.
150 Opening data connection for gzip-1_2_4.tar (16.82.16.75,1494)
226 Transfer complete.
798720 bytes received in 1.8 seconds (4.3e+02 Kbytes/s)

ftp> quit
221 Goodbye
```

### 3.1.4.3. Building the Tru64 UNIX Executables

After you have transferred the `gtar` and `gzip` sources, you are required to build the executables on the Tru64 UNIX client system. With a Tru64 UNIX OS version upgrade, it is mandatory to rebuild `ABSgtar` and `ABSgzip` executables on the Tru64 UNIX client.

The following sections describe how to build the `tar` and `gzip` executables.

#### 3.1.4.3.1. Building the tar Executable

Use the following procedure to build the `tar` executable:

1. Use native `tar` to expand the `tar` file
2. Change directory to the `tar` directory
3. Enter the command `./configure --disable-nls`
4. Enter the command `make` to build the `tar` image
5. Verify the `tar` image was created

6. Change directory to src
7. Verify that it is an executable image
8. Change to super user
9. Copy the executable from src/tar to usr/bin/ABSgtar
10. Change the protection on the image
11. Display the complete directory
12. Exit super user
13. Perform a cleanup operation

**Example of tar**

```
u_node> tar -xvf tar-1.13.tar 1
tar-1.13/README
tar-1.13/AUTHORS
.
.
.
tar-1.13/po/sv.gmo
u_node> cd tar-1.13 2
u_node> ./configure --disable-nls 3
creating cache ./config.cache
checking host system type... alpha-dec-osf3.2
.
.
.
creating config.h
u_node> make 4
for subdir in doc lib intl src scripts po; do \
echo making all in $subdir; \
(cd $subdir && make CC='gcc' CFLAGS='-g -O' LDFLAGS='' LIBS=''
prefix='/usr/local' exec_prefix='/usr/local'
bindir='/usr/local/bin' libexecdir='/usr/local/libexec'
infodir='/usr/local/info' infodir='/usr/local/info'
libexecdir='/usr/local/libexec' all) || exit 1; \
done
making all in doc
.
.
.
make[1]: Leaving directory '/usr/users/user1/tar-1.13/po'
u_node> ls src 5
Makefile checktar.sh extract.o list.c open3.h rmt.o tar.h
.
.
.
buffer.c diffarch.o gnu.c names.c rmt.c tar 5
u_node> cd src 6
u-node> file tar 7
tar: COFF format alpha dynamically linked, demand paged
executable or object module not stripped
- version 3.13-14
u-node> su 8
```

```
Password:
# cp tar /usr/bin/ABSgtar 9
# chmod ugo+x /usr/bin/ABSgtar 10
# ls -l /usr/bin/ABSgtar 11
-rwxr-xr-x 1 root system 655794 Jan 24 11:07 ABSgtar
# exit 12
u_node> cd .. 13
u_node> rm -rf tar-1_13 13
%rm -f tar-1_12.tar 13
```

### 3.1.4.3.2. Building the gzip Executable

Use the following procedure to build the gzip executable:

1. Use the native tar to expand the gzip-1\_2\_4.tar image
2. Change directory to gzip-1.2.4
3. Enter the command ./configure
4. Enter the command make
5. Verify that the gzip file is there
6. Make sure it is an executable
7. Change to super user
8. Copy gzip file to /usr/bin/ABSgzip
9. Change the protection on the image
10. Exit super user
11. Perform a cleanup operation

#### Example of gzip

```
u_node> tar -xvf gzip-1_2_4.tar 1
gzip-1.2.4/README
.
.
.
gzip-1.2.4/primos/include/sysTypes.h
u_node> cd gzip-1.2.4 2
u_node> ./configure 3
checking for gcc
.
.
.
checking for gzip to derive installation directory prefix
chose installation directory prefix /usr/local
creating config.status
creating Makefile
u_node> make 4
gcc -c -DSTDC_HEADERS=1 -DHAVE_UNISTD_H=1 -DDIRENT=1 -O gzip.c
.
.
.
```

```
gcc -O -o gzip gzip.o zip.o deflate.o trees.o bits.o unzip.o
inflate.o util.o crypt.o lzw.o unlzw.o unpack.o unlzh.o getopt.o
/usr/ucb/ld:
Warning: Linking some objects which contain exception information sections
and some which do not. This may cause fatal runtime exception handling
problems
(last obj encountered without exceptions was crypt.o).
rm -f gunzip zcat
ln gzip gunzip
ln gzip zcat
u_node> ls gzip 5
gzip
u_node> file gzip 6
gzip: COFF format alpha dynamically linked, demand paged executable or
object
module not stripped
- version 3.11-8
u-node> su 7
Password:
# cp gzip /usr/bin/ABSgzip 8
# chmod ugo+x /usr/bin/ABSgzip 9
# ls -l /usr/bin/ABSgzip
-rwxr-xr-x 1 root system 654785 Jan 24 11:08 ABSgzip
# ln -s /usr/bin/ABSgzip /usr/bin/gzip
# exit 10
u-node> cd .. 11
u-node> rm -rf gzip-1.2.4 11
u-node> rm -f gzip-1_2_4.tar 11
```

---

## Note

If you have problems transferring or building the tar or gzip files, see your Tru64 UNIX system manager.

---

## 3.1.5. Authorizing WINDOWS and Tru64 UNIX Clients

After you have registered and loaded the WINDOWS or Tru64 UNIX client license on ABS server node, run the authorization executable file to authorize the WINDOWS or Tru64 UNIX client node names that you intend to back up using ABS. You must authorize access on the ABS OpenVMS server system for each Tru64 UNIX and Windows system that you are going to back up using ABS.

Table 3.8 describes how to authorize WINDOWS and Tru64 UNIX client nodes.

---

## Note

ABS WINDOWS and Tru64 UNIX client licenses are sold in units according to the number of nodes that you want to support: 1, 5, 10, 25, 50, or 100. ABS calculates the number of nodes authorized versus the number of units the license allows. You cannot authorize more WINDOWS or Tru64 UNIX clients than the number of units allowed by the WINDOWS or Tru64 UNIX client license that you have purchased.

---

**Table 3.8. Authorizing WINDOWS and Tru64 UNIX Client Nodes**

Step	Action
1.	Enter the following command from ABS server:

---



Step	Action
	\$ RUN SYS\$SYSTEM:ABS\$CLIENT_LICENSE.EXE
2.	<p>Add the node names of the Tru64 UNIX or WINDOWS client nodes. When prompted, specify a WINDOWS or UNIX client:</p> <pre>Would you like to Add/Modify/Remove/Show the Client License?: ADD Enter Node Name: CLIENT_NODE_NAME Client Node Type (UNIX or NT) [UNIX]: NT Enter TCPIP Port Number [1800]:</pre> <hr/> <p><b>Note</b></p> <p>The port number is arbitrary, but it must match the port number you use when you install the WINDOWS clients.</p>
3.	If the client node is an WINDOWS client, enter the port number. The default is 1800.
4.	<p>Make sure that the logical named ABS\$CLIENT_DB is defined as /SYSTEM/EXEC and that it translates to ABS\$ROOT:[DATABASE]CLIENT_DB.DAT. This logical name should be defined during the startup procedure. You can verify that the logical name is defined correctly by entering the following command:</p> <pre>\$ SHOW LOGICAL/FULL ABS\$CLIENT_DB</pre>

## More Information:

For an example of adding, modifying, removing and showing WINDOWS or Tru64 UNIX clients, see Appendix B.



# Chapter 4. Performing Postinstallation Tasks

Complete ABS/MDMS postinstallation tasks described in this chapter after you have successfully installed ABS/MDMS OpenVMS server or client software:

- Section 4.1 describes how to initialize the ABS database if this failed during the installation.
- Section 4.2 describes how to create a node object for MDMS.
- Section 4.3 describes how to verify the installation was successful.
- Section 4.4 explains how to edit the startup and shutdown files.
- Section 4.5 explains the batch queues used by ABS and MDMS startup procedures.
- Section 4.6 explains editing the ABS and MDMS command procedures.
- Section 4.7 describes removing the SLS/MDMS V2.x Automatic Startup.
- Section 4.7 describes the requirements for an OpenVMS Cluster installation.
- Section 4.8 describes configuring MDMS.
- Section 4.9 describes converting the ABS Policy Database to the MDMS database.
- Section 4.9 describes configuring remote tape drives.
- Section 4.10 explains how to set up access right identifiers.
- Section 4.11 explains how to set the quotas if you are supporting Tru64 UNIX and WINDOWS clients.
- Section 4.12 describes the need of adding Windows parameter, before issuing multivolume SAVE requests.
- Section 4.13 describes the procedure to allow ABS to access all files on Windows systems.
- Section 4.14 describes the MDMS graphical user interface (GUI) installation.
- Section 4.15 describes how to run the graphical user interface (GUI).
- Section 4.16 describes where to find information on configuring ABS/MDMS for System Backup to Tape for Oracle Databases.

---

## Note

OpenVMS client support is not available with an ABS-OMT license.

---

## 4.1. Installing ABS for the First Time

If you are installing ABS as a new installation, database initialization programs may fail to run. To initialize the database with the default storage policies and execution policies, run the following executable:

```
RUN SYS$SYSTEM:ABS$DB_INIT.EXE
```

## 4.2. Create a Node Object

If this is the initial installation of MDMS, you may need to create the node object in the MDMS node database for this node. Use the MDMS CREATE NODE command to create this initial database node. Refer to the command reference guide for the qualifiers for this command. The following is an example:

```
$ MDMS CREATE NODE NABORS -
! NABORS is the DECnet Phase IV node name or a
! name you make up if you do not use DECnet
! Phase IV in your network
/DATABASE_SERVER -
! a potential database node
! must also be defined in
! in SYS$STARTUP:MDMS$SYSTARTUP.COM
/TCPIP_FULLNAME=NABORS.SITE.INC.COM -
! the TCP/IP full node name if you
! are using TCP/IP you need this if
! you are using the GUI
/DECNET_FULLNAME=INC:.SITE.NABORS -
! this is the full DECnet Phase V node name
! do not define if you do not have DECnet Phase V on this node
! be sure to define if you have DECnet Phase V installed on this node
/TRANSPORT=(DECNET,TCPIP)
! describes the transports that listeners are
! started up on
```

## 4.3. Verifying ABS Installation

If you did not execute the IVP during the installation procedure, you can execute it immediately after installing ABS/MDMS software. Enter the following command at the DCL system prompt:

```
$ @SYS$TEST:ABS$IVP.COM
$ @SYS$TEST:MDMS$IVP.COM
```

---

### Note

Support for installation IVP procedure is not available with an ABS-OMT license.

---

If an error occurs during the IVP, the following message is displayed:

```
ABS Version V4.4 Installation Verification Procedure failed.
%VMSINSTAL-E-IVPFAIL, The IVP for ABS Version V4.4 has failed.
```

Errors can occur during the installation if any of the following conditions exist:

- ABS is currently running
- The operating system version is incorrect
- A prerequisite software version is incorrect
- Quotas necessary for successful installation are insufficient

- System parameter values for successful installation are insufficient
- The OpenVMS help library is currently in use
- The product license has not been registered and loaded

For descriptions of the error messages generated by these conditions, see the OpenVMS documentation on system messages, recovery procedures, and OpenVMS software installation. If you are notified that any of these conditions exist, you should take the appropriate action as described in the message.

## 4.4. Providing Automatic Startup and Shutdown

You must edit the startup and shutdown files to provide automatic startup and shutdown of ABS/MDMS software. To make sure that ABS/MDMS automatically starts up and shuts down, follow these steps:

1. Add the following command line to the system startup file named SYS\$MANAGER:SYSTARTUP\_VMS.COM:

```
$ @SYS$STARTUP:ABS$STARTUP
```

2. Add the following line to the system shutdown file named SYS\$MANAGER:SYSHUTDWN.COM:

```
$ @SYS$STARTUP:ABS$SHUTDOWN  
$ @SYS$STARTUP:MDMS$SHUTDOWN
```

3. When using MDMS with ABS, the MDMS startup is executed automatically. A logical name is defined by the MDMS startup which is needed by ABS.

## 4.5. ABS and MDMS Startup Queues

ABS\$STARTUP uses the ABS\$<node> queue to start the ABS processes. This queue will always exist after an ABS installation.

MDMS\$STARTUP uses one of several queues to startup the MDMS\$SERVER process. There is a logical name, MDMS\$STARTUP\_QUEUE, which may be defined in MDMS\$SYSTARTUP.COM. This logical points to the queue which MDMS\$STARTUP.COM will use. If you do not have this defined, it will attempt to use the ABS\$<node> queue, then SYS\$BATCH. If the logical is not defined and neither ABS\$node or SYS\$BATCH exist, the MDMS startup will fail.

## 4.6. Modifying ABS and MDMS Command Procedures

If you are updating ABS/MDMS and you have made customizations to any of the ABS/MDMS command procedures, you may need to modify those procedures to work with ABS/MDMS V4.4. There are four procedures for which we provide template files. If the template files have changed, you should include your customizations in the new template files and then rename them to the command procedure name. The four procedures and the templates are:

```
SYS$STARTUP:ABS$SYSTARTUP.COM - SYS$STARTUP:ABS$SYSTARTUP.TEMPLATE  
SYS$STARTUP:MDMS$SYSTARTUP.COM - SYS$STARTUP:MDMS$SYSTARTUP.TEMPLATE  
MDMS$SYSTEM:MDMS$EXT_QUEUE_MANAGER.COM - MDMS$SYSTEM:
```

```
MDMS$EXT_QUEUE_MANAGER.TEMPLATE
MDMS$SYSTEM:MDMS$EXT_SCHEDULER.COM - MDMS$SYSTEM:MDMS
$EXT_SCHEDULER.TEMPLATE
```

## 4.7. Meeting OpenVMS Cluster Requirements

If you installed ABS server software on an OpenVMS Cluster system, perform the steps in Table 4.1 on each node in the OpenVMS Cluster (excluding the installing node) where you want to use ABS.

### Note

The command line interface is not available with the ABS-OMT license, you must use the GUI.

**Table 4.1. Updating the DCL Tables**

Step	Action
1.	Run the command procedure ABS\$STARTUP from each node that you want to use ABS. This ensures ABS\$/MDMS\$ logical names are defined the same across all nodes in the OpenVMS Cluster:  \$ @SYS\$STARTUP:ABS\$STARTUP.COM
2.	Update the DCL table on each node in the OpenVMS Cluster (excluding the installing node).  Enter the following command on each node:  \$ INSTALL REPLACE SYSLIBRARY:DCLTABLES.EXE
3.	Have all system users log off and log on again to enable them to use the DCL ABS/MDMS commands (unless performing an upgrade).

## 4.8. Configure MDMS

Now that you have installed MDMS you need to configure the MDMS database. MDMS provides a command procedure that you can use to configure the MDMS database in a new installation. The procedure is completely self-documenting with a help facility, and all key object attributes are defined. The procedure guides you through the following configuration objects:

- The domain (defining default values for other objects)
- Locations
- Nodes and groups
- Jukeboxes and associated drives
- Standalone drives and stackers
- Volumes, media types and pools

The procedure is activated using the following command:

```
$ @ MDMS$SYSTEM:MDMS$CONFIGURE.COM
```

Refer to *VSI Archive Backup System for OpenVMS Guide to Operations* for an example of using this procedure. If you are upgrading from SLS or ABS V2.9x, you must use the MDMS \$CONVERT\_V2\_TO\_V4 command procedure.

Once MDMS is installed, and any conversions are performed, you may wish to adjust your configuration prior to performing MDMS operations.

In addition to configuring MDMS, you might also have to configure robots for jukeboxes you are planning to use. For MRD-controlled jukeboxes, the robot name is the OpenVMS device name of the robot device, and they normally fall into one of several formats:

- GKx0 or GKxn01 for direct-connect SCSI
- \$n\$DUAnnn for access via an HSJ-type controller
- \$2\$GGmx for Fibre Channel access

If the jukebox is controlled by direct-connect SCSI (first option), the robot device must first be loaded on the system with one of the following DCL commands:

```
Alpha - $ MCR SYSMAN IO CONNECT GKxxx/NOADAPTER/DRIVER=SYS$GKDRIVER.EXE
VAX - $ MCR SYSGEN CONNECT GKxxx/NOADAPTER/DRIVER=GKDRIVER
I64 - $ MCR SYSMAN IO CONNECT GKxxx/NOADAPTER/DRIVER=SYS$GKDRIVER.EXE
```

and the device name must begin with GK. It is suggested that these commands be included in a system startup file so that they are automatically configured at boot time.

## 4.9. Configure Remote Tape Drives

If you installed the RDF software, you need to configure the remote tape drives. RDF is not available if you are installing MDMS with the ABS-OMT license.

RDF is supported on OpenVMS Alpha V8.3 but not supported on OpenVMS I64 V8.2-1 and later versions.

For each tape drive served with RDF Server software, make sure there is a drive object record in the MDMS database that describes it. Refer to the chapters on MDMS configuration in the *VSI Archive Backup System for OpenVMS Guide to Operations* and the MDMS CREATE DRIVE command in the *VSI OpenVMS ABS/HSM Command Reference Guide*.

For each node connected to the tape drive, edit the file TTI\_RDEV:CONFIG\_node.DAT and make sure that all tape drives are represented in the file. Refer to *VSI Archive Backup System for OpenVMS Guide to Operations* for more information on remote drive setup.

During startup of MDMS, the RDF client and server are also started. The RDF images are linked on your system. If you see the following link errors on Alpha V6.2, this is not an RDF bug. The problem is caused by installed VMS patches ALPCOMPAT\_062 and ALPCLUSIO01\_062.

```
%LINK-I-DATMISMCH, creation date of 11-FEB-1997 15:16 in
shareable image SYS$COMMON:[SYSLIB]DISMNTSHR.EXE;3
differs from date of 4-MAY-1995 22:33 in shareable image library
SYS$COMMON:[SYSLIB]IMAGELIB.OLB;1
.
.
```

This is a known problem and is documented in TIMA. To correct the problem, issue the following DCL commands:

```
$ LIBRARY/REPLACE/SHARE SYS$LIBRARY:IMAGELIB.OLB SYS$SHARE:DISMNTSHR.EXE
$ LIBRARY/REPLACE/SHARE SYS$LIBRARY:IMAGELIB.OLB SYS$SHARE:INIT$SHR.EXE
$ LIBRARY/REPLACE/SHARE SYS$LIBRARY:IMAGELIB.OLB SYS$SHARE:MOUNTSHR.EXE
```

## 4.10. Granting the Appropriate ABS/MDMS Access Right Identifiers

When ABS Server installation procedure is complete, the user account that performed the installation (typically the SYSTEM account) is granted the following ABS access rights identifiers. These identifiers are only needed if you use ABS DCL commands, or if you have the ABS\_RIGHTS option turned on in the MDMS domain. For details on MDMS rights identifiers refer to *VSI Archive Backup System for OpenVMS Guide to Operations*.

- **ABS\_CREATE\_STORAGE\_CLASS**—Users who are granted this access right identifier can create a storage class (applicable only on ABS server system).
- **ABS\_CREATE\_EXECUTION\_ENV**—Users who are granted this access right identifier can create an execution environment (applicable only on ABS server system).
- **ABS\_SHOW\_ALL**—Users who are granted this access right identifier can show all ABS policy objects (applicable only on ABS server system).
- **ABS\_LOOKUP\_ALL**—Users who are granted this access right identifier can look up all ABS saved data from any catalog (applicable on any ABS node).
- **ABS\_CREATE\_REMOTE\_JOBS**—Users who are granted this access right identifier can submit a save or restore request that will be executed on a remote client node (applicable only on ABS server system).

### Requirement:

To create Windows or Tru64 UNIX save requests, the requester (creating process) must have the **ABS\_CREATE\_REMOTE\_JOBS** access rights identifier enabled.

- **ABS\_BACKUP\_JOB**—Users who are granted this access right identifier can submit a save or restore request that runs under their user name (a user backup). The user must also have read and write access control to the storage policy and environment policy intended for user backups.
- **ABS\_BYPASS**—Users who are granted this access right identifier can perform any ABS function (applicable only on ABS server system). This includes creating, deleting, modifying, or showing any ABS policy objects.

---

### Note

Before any user can use MDMS commands or the MDMSView GUI, you must grant MDMS rights to those users. Enabling an Access Rights Identifier. Refer to *VSI Archive Backup System for OpenVMS Guide to Operations* for more information on the use of identifiers.

---



To grant an access rights identifier to a user's account, run the AUTHORIZE utility.

## Example:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
UAF>GRANT/IDENTIFIER ABS_LOOKUP_ALL USER1
%UAF-I-GRANTMSG, identifier ABS_LOOKUP_All granted to USER1
UAF>EXIT
```

---

### Note

Do not enable the access rights identifier by performing a SET RIGHTS\_LIST at the DCL prompt.

---

## 4.10.1. Revoking An Access Rights Identifier

To remove an access right identifier, run AUTHORIZE utility and revoke the identifier from the user's account:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
UAF>REVOKE/IDENTIFIER ABS_BYPASS USER1
%UAF-I-REVOKEMSG, identifier ABS_BYPASS revoked from USER1
```

You can modify the other policy objects provided by ABS in the same manner. Refer to *VSI Archive Backup System for OpenVMS Guide to Operations* for instructions about adding users and enabling access controls.

Before using your storage policy, you may need to modify the MDMS related information in the policy. For example, you may wish to use a different media type than the default media type from your MDMS domain. When ABS is installed, the storage policies are initialized with the defaults from the domain. Issue an MDMS SHOW DOMAIN command to see the defaults. Make sure that your storage policy contains the desired settings before executing a save request.

## 4.11. Verifying WINDOWS and Tru64 UNIX Client Quotas

If you are supporting WINDOWS or Tru64 UNIX clients, to ensure successful save and restore operations, set the quotas to the following values on ABS OpenVMS server node:

```
UCX> SET PROTOCOL TCP /QUOTA=(SEND:50000,RECEIVE:50000)
```

## 4.12. Adding Windows Parameter

Issuing multivolume SAVE requests to WINDOWS client requires you to modify the Registry Path

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters
```

with the following Windows parameter (20 or greater is recommended).

```
TcpMaxDataRetransmissions    REG_DWORD    20
```

This change to the default built in Windows parameter/subkey ensures that the TCP/IP connection is not prematurely terminated with send failure.

---

## Note

After making the changes to the parameter, you need to reboot the system to allow the changes to take effect.

---

## 4.13. Allowing ABS Access to All Files on the Windows Systems

ABS must have access to all the files you wish to backup on your Windows system. There are two ways to do this:

- Set access on the files for the SYSTEM account

To set the file access,

- Select the file from a fileview window.
- Select Properties from the File pulldown.
- Click the Security tab
- Select Permissions.
- Select Add and highlight SYSTEM. Add the type of access (full control is best, so you can restore files).
- Click the Add button.

This gives the SYSTEM account access to the files.

- Set the Account that ABS uses for the Backups

ABS, by default, uses the SYSTEM account to backup the files. If you wish to change the account used by ABS, you may do this by modifying the properties of the service:

- Click on Services in the Control Panel.
- Highlight the ABS service
- Click on Startup.
- In the Log On As section, select This Account.
- Enter the account name to be used and the password for that account.
- Click OK.

The account that you select should be a member of the Administrator group. The administrator group should be able to access all the files on your Windows system, unless you set access denied for Administrator on a file.

---

## 4.14. ABS/MDMS Graphical User Interface (GUI) Installation

This section describes how to install and run the Graphical User Interface (GUI) on various platforms.

As the GUI is based on Java, you must have the Java Runtime Environment (JRE) installed on the system where you are running the GUI. If you do not have the JRE installed on your system see the information below for kit locations.

The ABS/MDMS installation procedure extracts files from the kit and places them in MDMS\$ROOT:[GUI...]. You can then move the Windows files to a Windows system and install them.

---

### Note

For the GUI to communicate with the MDMS server, you must have TCP/IP services on the node where you have the MDMS server running.

---

The GUI requires the following in order to run:

Java Runtime Environment V1.2 or above - Since the ABS/MDMS GUI is a Java application, it requires the platform specific JRE. You can download the correct kit from the given URLs. For the OpenVMS installation, you may alternatively install the Standard Edition kit instead of the JRE kit. This is packaged as a PCSI kit, which is simpler to install. Issues concerning availability and installation can be directed to:

`http://java.sun.com/products` (for Microsoft Windows)  
`http://www.hp.com/java` (for OpenVMS Alpha and OpenVMSi64)

Memory - On Windows systems, the hard drive space requirement is 4 MB for the MDMS GUI. The main memory space requirement for running the GUI is 10 MB.

### 4.14.1. Installing the GUI on OpenVMS Alpha/I64

During the ABS/MDMS installation, the following question will be asked:

Do you want the MDMS GUI installed on OpenVMS Alpha/I64 [YES]?

Reply "Yes" to the question if you want to install the GUI on OpenVMS. Files will be moved to MDMS \$ROOT:[GUI.VMS] and the GUI installation will be complete. If you have not already installed the JRE, you should install it by following the instructions provided at the download site, `http://www.compaq.com/java`. The version specific setup command procedure provided by the Java installation will establish defaults for the logical names and symbols on the system. You should add a command line to the

```
SYS$COMMON:[SYSMGR]SYLOGIN.COM
```

command procedure to run this Java setup command procedure at login.

The JAVA\$CLASSPATH is defined for the GUI in the

```
MDMS$SYSTEM:MDMS$START_GUI.COM
```

command procedure provided during the installation. The call to Java to invoke the GUI is also included in this command procedure.

## Note

Make sure that the logical JAVA\$USER\_DCL is not defined or the GUI will not work.

---

### 4.14.2. Installing the GUI on Intel Windows 2000/XP

During the ABS/MDMS installation, the following question will be asked:

Do you want files extracted for Microsoft Windows [YES]?

Reply “Yes” if you want to install the GUI on a Microsoft Windows platform. Files will be moved to MDMS\$ROOT:[GUI.WINTEL].

Move the file MDMS\$ROOT:[GUI.WINTEL]SETUP.EXE to the Windows machine and run it to install the GUI.

If you have not installed the JRE, you should install it by following the instructions at the download site: <http://java.sun.com/products>.

## 4.15. Running the GUI

Now that you have installed the GUI, you have to make sure that the server node is configured to accept communications from the GUI. The server node for the GUI must have:

- TCP/IP enabled.
- The MDMS rights enabled on the SYSUAF record for the user.

To enable TCP/IP communications on the server, you have to set the TCP/IP Fullname attribute and enable the TCP/IP transport. See the command reference guide for information about setting these attributes on a node.

MDMS rights for the user must be enabled in the SYSUAF record so that the user may login to the server using the GUI. Refer to the command reference guide for information on MDMS rights.

The OpenVMS Alpha account that will be used to run the GUI should have the PGFLQUO account quota set to 200,000. Correspondingly, the system pagefile should contain enough space to handle the large pgflquo value. The account should also have a WSQUOTA value of at least 10,000. The sysgen parameter WSMAX should be 10,000 or higher. The system should also have a minimum of 128 meg of RAM, with a higher amount recommended.

### 4.15.1. Running the GUI on OpenVMS Alpha/I64

To use the MDMS GUI on OpenVMS Alpha/I64 systems, use the following commands:

```
$ SET DISPLAY/CREATE/NODE=node_name/TRANSPORT=transport
$ MDMS/INTERFACE=GUI
```

For the SET DISPLAY command, the node\_name is the name of the node on which the monitor screen exists. This allows you to use the GUI on systems other than those running OpenVMS. The transport must be a keyword of:

- LOCAL - if you are running the GUI on the same node as the monitor.

- DECNET - if you are running the GUI on a monitor connected to another node and you wish to use DECnet protocol between the monitor node and the GUI Java node.
- TCPIP - if you are running the GUI on a monitor connected to another node and you wish to use TCP/IP protocol between the monitor node and the GUI Java node.

#### **4.15.1.1. Running the GUI on Windows 2000/XP**

To use the ABS/MDMS GUI on Microsoft Windows platforms, double click on the batch file named MDMSView.bat in the MDMSView directory on the drive where you installed the GUI.

To view the ABS/MDMS GUI correctly, you must have the display property settings for the screen area set to 1024 X 768 or higher.

If Java is installed, then typing java in the command line should execute java.exe from the installed location. However, if this does not happen, you will need to first edit the MDMSView.bat file to include the correct path of java.exe.

Example:

```
C:\Program Files\Java\j2re1.4.2_06\bin\java.exe
```

### **4.16. Configuration of ABS/MDMS for System Backup to Tape for Oracle Databases**

If you are configuring ABS/MDMS for System Backup to Tape for Oracle Databases, refer to the System Backup to Tape for Oracle Databases section in *VSI Archive Backup System for OpenVMS Guide to Operations*.



# Appendix A. How to Delete ABS/MDMS from Your System

To delete ABS software from your system, you need to first login using the SYSTEM account or any account that has the SETPRV set. Then, shut down ABS and delete it from the system:

```
$ @SYS$STARTUP:ABS$SHUTDOWN  
$ @ABS$SYSTEM:ABS$DELETE_ABS
```

To delete MDMS software from your system, you need to first login using the SYSTEM account or any account that has the SETPRV set. Then, shut down MDMS and uninstall it from your system:

```
$ @SYS$STARTUP:MDMS$SHUTDOWN  
$ @SYS$STARTUP:MDMS$UNINSTALL.COM
```





# Appendix B. Examples of Authorizing WINDOWS and Tru64 UNIX Clients

This appendix contains examples of how to authorize WINDOWS and Tru64 UNIX clients. This includes adding, modifying, showing, and removing WINDOWS and Tru64 UNIX client licenses.

To use the license command as shown in the example in this appendix, you can define the following symbol at the system prompt:

```
$ LICENSE := $SYS$SYSTEM:ABS$CLIENT_LICENSE.EXE
```

All of the examples in the following sections use this symbol definition.

## B.1. Adding Client Licenses

Example B.1 shows how to add a Tru64 UNIX or WINDOWS client license.

### Example B.1. Adding Client Licenses

```
$ LICENSE
```

```
Would you like to Add/Modify/Remove/Show the Client License?: ADD
Enter Node Name: NTNODE
Client Node Type (UNIX or NT) [UNIX]: NT
Enter TCPIP Port Number [1800]: 1800
Client NTNODE successfully ADDED to License Database
License Count: 1 used of 6 total
```

```
$ LICENSE
```

```
Would you like to Add/Modify/Remove/Show the Client License?: ADD
Enter Node Name: UNIX_1
Client Node Type (UNIX or NT) [UNIX]: UNIX
Client UNIX_1 successfully ADDED to License Database
License Count: 1 used of 25 total
```

## B.2. Modifying Client Licenses

Example B.2 shows how to modify the port number of an WINDOWS or Tru64 UNIX client license.

---

### Note

The port number that you enter here must match the port number you assigned during the WINDOWS client installation.

---

### Example B.2. Modifying a Client License

```
$ LICENSE
```

```
Would you like to Add/Modify/Remove/Show the Client License?: MODIFY
Enter Node Name: NTNODE
Client Node Type (UNIX or NT) [UNIX]: NT
```

```
Current values
Type: WINDOWS NT
Transport: TCP/IP
Port: 1800
```

```
New Port #?: 1800
Client NTNODE successfully MODIFIED in License Database
```

```
License Count: 1 used of 6 total
```

```
$ LICENSE
```

```
Would you like to Add/Modify/Remove/Show the Client License?: MODIFY
Enter Node Name: UNIX_1
Client Node Type (UNIX or NT) [UNIX]: UNIX
Current values
Type: UNIX
Transport: TCP/IP
Port: 514
```

```
New Port #?: 1800
Client UNIX_1 successfully MODIFIED in License Database
```

```
License Count: 1 used of 25 total
```

## B.3. Showing Client Licenses

Example B.3 illustrates how to show an WINDOWS or Tru64 UNIX client license.

### Example B.3. Showing Client Licenses

```
$ LICENSE
```

```
Enter Node Name or [ALL]: ALL
Client Node Type (UNIX or NT) [UNIX]: NT
Node Name      Type          Transport  Port
-----
NTNODE         WINDOWS NT    TCP/IP     1800
License Count: 1 used of 6 total
```

```
$ LICENSE
```

```
Enter Node Name or [ALL]: ALL
Client Node Type (UNIX or NT) [UNIX]: UNIX
Node Name      Type          Transport  Port
-----
UNIX_1         UNIX          TCP/IP     1800
License Count: 1 used of 25 total
```

## B.4. Removing Client Licenses

Example B.4 shows how to remove WINDOWS or Tru64 UNIX client licenses:

### Example B.4. Removing Client Licenses

```
$ LICENSE
```

```
Would you like to Add/Modify/Remove/Show the Client License?: REMOVE
Enter Node Name: NTNODE
Client Node Type (UNIX or NT) [UNIX]: NT
Client NTNODE successfully REMOVED from License Database
License Count: 0 used of 6 total
```

