Compaq SANworks

Enterprise Volume Manager
Version 1.1A for Sun Solaris

Installation Guide

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About This Guide

This guide provides information on how to plan, install, and upgrade an EVM Network.

Text Conventions

This guide uses the following conventions to distinguish elements of text:

Keys	Keys appear in bold. A plus sign (+) between two keys indicates that they should be pressed simultaneously.
User input	User input appears in a different typeface.
directories, drives, file names	These names appear in italics.
Menu Options, Command Names, Dialog Box Names	These elements appear in bold.
Enter	When you are instructed to enter information, type the information and then press the **Enter** key.

Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.

WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

IMPORTANT: Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Getting Help

If you have a problem and have exhausted the information in this guide, you can get further information and other help in the following locations.

Compaq Technical Support

In North America, call the Compaq Technical Phone Support Center at 1-800-OK-COMPAQ. This service is available 24 hours a day, 7 days a week.

> **NOTE:** For continuous quality improvement, calls may be recorded or monitored.

Outside North America, call the nearest Compaq Technical Support Phone Center. Telephone numbers for world wide Technical Support Centers are listed on the Compaq website. Access the Compaq website by logging on to the Internet at http://www.compaq.com.

Be sure to have the following information available before you call Compaq:

- Technical support registration number (if applicable)

- Product model names and numbers

- Applicable error messages

- Third-party software

- Operating system type and revision level

- Detailed, specific questions

Compaq Website

The Compaq website has latest information on this product as well as the latest drivers. You can access the Compaq website by logging on to the Internet at http://www.compaq.com/storage.

Compaq Authorized Reseller

For the name of your nearest Compaq Authorized Reseller:

■ In the United States, call 1-800-345-1518.

■ In Canada, call 1-800-263-5868.

■ Elsewhere, see the Compaq website for locations and telephone numbers.

Chapter **1**

Introduction

This guide describes how to plan, install, upgrade, and uninstall an EVM network.

If you are new to EVM, please read this chapter and Chapter 2, "Planning an EVM Network," before reading other chapters or installing EVM on any computers.

After Chapters 1 and 2, this guide is organized by tasks.

■ Installing an EVM 1.1A Network - Chapter 3

■ Upgrading an EVM Network to Version 1.1A - Chapter 4

■ Adding Computers to an EVM Network - Chapter 5

■ Starting EVM and Controlling Access - Chapter 6

■ Removing EVM - Chapter 7

Installation Types

This guide addresses two types of installation procedures:

■ Full - To perform a full installation, you must use a full EVM 1.1A kit. The kit contains all of the software needed to install EVM 1.1A.

■ Upgrade - To perform an upgrade installation, you must use EVM 1.1 to 1.1A upgrade software. A previously installed instance of EVM 1.1 must be present on the computer to be upgraded.

Identifying/Ordering Kits

You can find EVM kit identification numbers on the bar coded label on the kit box.

Order Number	Kit Description	Kit Code
160095-B21	EVM 1.1A kit (full)	QB-6EKAF-SA

To obtain information on ordering earlier version EVM kits, please refer to Getting Help in the front of this Installation Guide.

Upgrading from the Compaq Web Site

EVM upgrade software is available from the Compaq website. The upgrade software requires a previously installed instance of EVM 1.1 to be present on the computer to be upgraded. The Compaq website for upgrading EVM is at: http://www.compaq.com/storage.

New Features and Bug Fixes in EVM 1.1A

Although EVM 1.1A is a maintenance release, some new functionality has been added. Please refer to the Release Notes for descriptions of these new features. For a list of bug fixes, please refer to the Release Notes.

Chapter **2**

Planning an EVM Network

This chapter provides information on planning and configuring an EVM Network. Compaq strongly recommends that you read this entire chapter before installing EVM on any computers.

For additional information on planning an EVM Network and EVM jobs, you can use the browser-based online Help/Users Guide. After the EVM Server is installed, the online Help/User Guide is available from the EVM graphic user interface. See Chapter 6 for instructions on browsing to an EVM Network.

What Is EVM?

EVM is a Web-enabled application program that allows you to establish an EVM Network of up to ten computers that can participate in automated storage unit replication jobs on Compaq StorageWorks subsystems equipped with HSG80/60 controllers.

Each EVM Network and its associated StorageWorks subsystem can be remotely managed from a central location using a Web browser.

What Is an EVM Network

An EVM Network is a network that consists of EVM-enabled computers that are connected to a common LAN and to an EVM-compatible StorageWorks subsystem.

One computer, called the EVM Server, manages the EVM Network and EVM jobs and provides the Web browser interface to users. The actual production computers that are involved in EVM jobs are called EVM Clients. The StorageWorks subsystem is the other major component of an EVM Network. It provides the storage units that are used in EVM jobs.

The illustration below shows a typical EVM Network. The EVM Server and EVM Clients are noted with black and gray dots, respectively.
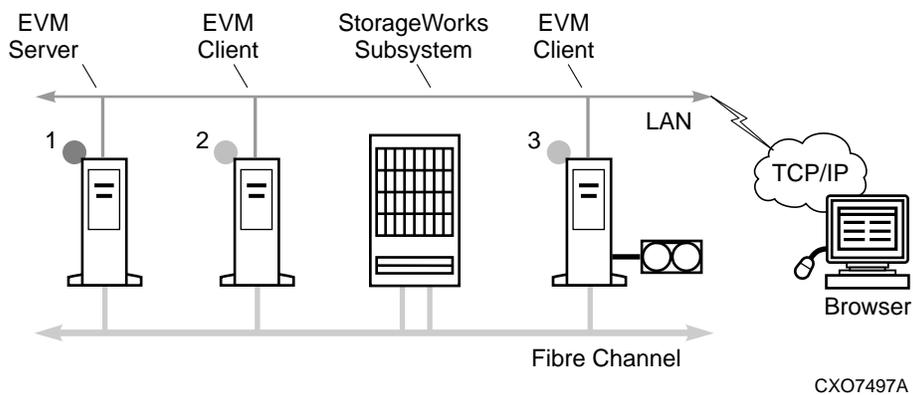
Figure 2–1. EVM Network concept diagram

An EVM Network is often a subset of an existing Fibre Channel Storage Area Network (SAN). It consists of host computers, a storage subsystem, switches, and hubs that are connected via fiber optic cabling.

In addition, the computers in an EVM Network are also connected by a LAN and communicate with each other by TCP/IP. This communications infrastructure is critical to monitoring and controlling the EVM Network.

You can create an EVM Network with a minimum of one computer and a maximum of ten computers.
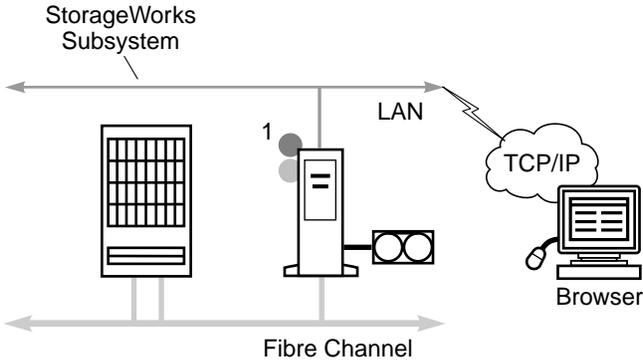
Figure 2–2. Minimum EVM Network configuration of one computer
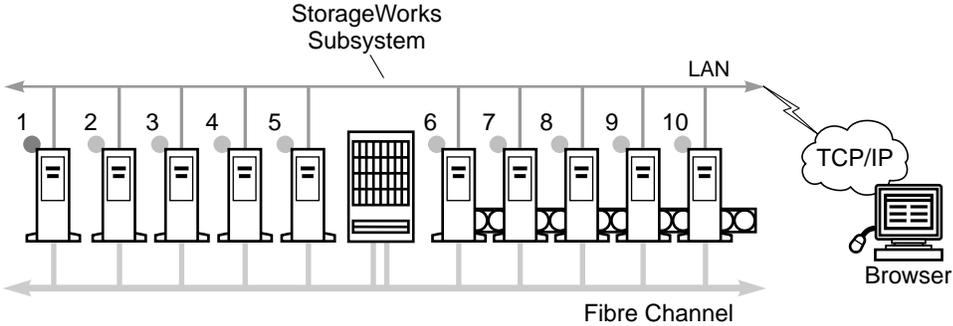
Figure 2–3. Maximum EVM Network configuration of ten computers

Installation Planning Overview

To take full advantage of the power that EVM provides, you should assess your present resources, develop an EVM implementation plan and then use the plan to guide your installations. Setting up each EVM Network can involve installing EVM software on up to ten computers.

Compaq recommends that you first read all of this chapter, then complete the EVM Network Planning Worksheet (see Figure 2–4) before beginning the actual installation. If you are planning multiple EVM Networks, you should fill out a worksheet for each network.

The basic steps in planning an EVM Network are:

■ Identify the purpose of the EVM Network.

■ Plan the EVM Server and HS-Series Agent computer.

■ Plan the EVM Clients computers.

■ Complete the EVM Network Planning Worksheet.

EVM 1.1A Network Planning Worksheet

Storage	Storage Name	Remarks
StorageWorks Storage Array		

EVM Network		Computer Name (used on network)	HBA driver verified	HS-Series Agent verified	Remarks
1	**EVM Server**				
2	EVM Client				
3	EVM Client				
4	EVM Client				
5	EVM Client				
6	EVM Client				
7	EVM Client				
8	EVM Client				
9	EVM Client				
10	EVM Client				

Figure 2–4. EVM network planning worksheet

Identify the Purpose of the EVM Network

The first step in planning an EVM Network is to identify its purpose. For example, do you want to create a network for centralized backup, data warehousing, or application testing.

After you have identified the purpose of the EVM Network, you should consider the EVM-SAN configuration that would best support your operational requirements.

Sample EVM-SAN Configurations

The planning recommendations in this guide are intended to be used as guidelines only. Refer to documentation that comes with the StorageWorks subsystem for detailed information on supported SAN configurations.

A valid EVM-SAN configuration is one in which one or more homogeneous host computers are connected via Fibre Channel to a StorageWorks subsystem. EVM is compatible with transparent and multiple bus failover SAN configurations and supports both Arbitrated Loop and Switched Fabric Fibre Channel environments.

> **NOTE:** A summary of EVM Network configuration rules is located at the end of this chapter.

Example: EVM on One Computer

The configuration shown in Figure 2–5 is good for providing nearline storage and tape backups of volumes on the storage subsystem. Only one installation of EVM (EVM Server) is required to create this configuration.
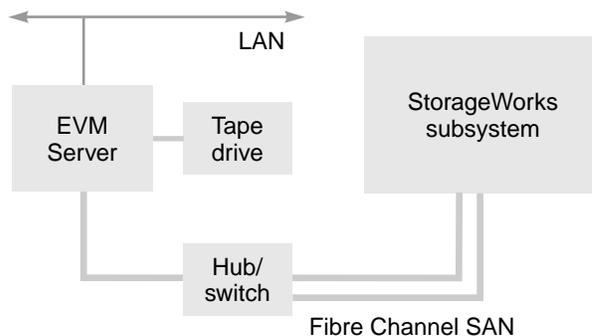
CXO7500A

Figure 2–5. EVM-SAN configuration with one computer

Example: EVM on Multiple Computers

The configuration shown in Figure 2–6 provides for nearline storage and tape backups of volumes on the storage subsystem. In addition, EVM can mount replicated volumes on any of the three computers. There are many possible uses for this configuration.

For example, computer 2 might be used to perform tests on copies of transaction records produced by the application on computer 1. Computer 3 could be a dedicated tape backup server that backs up daily transactions from the application running on computer 1 and also backs up testing results from computer 2.
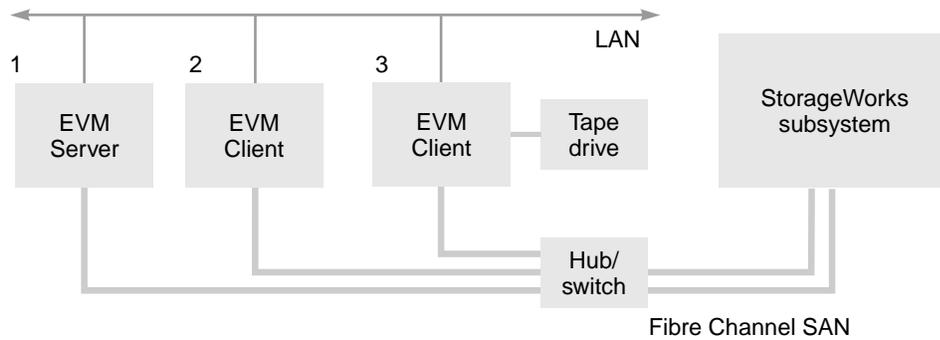
CXO7501A

Figure 2–6. EVM-SAN configuration with three computers

Example: EVM on Multiple Computers, High Availability

The configuration shown in Figure 2–7 adds clustering to the application server. The configuration for computers 1 and 2 includes dual bus fault tolerance using SANworks Secure Path.
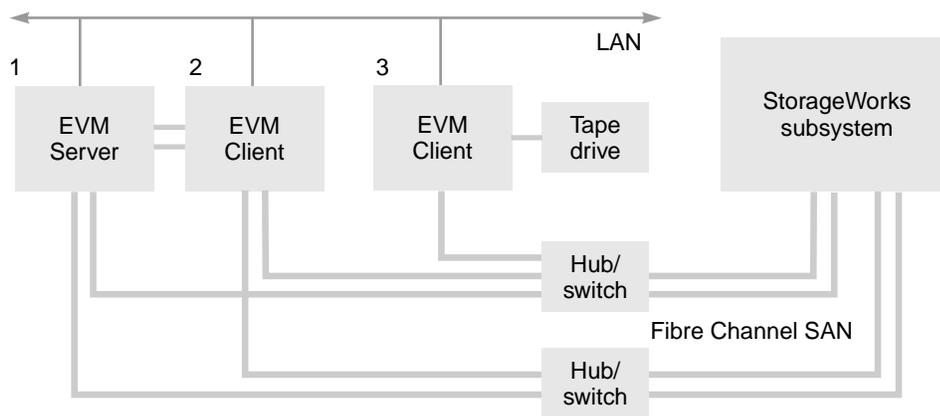
CXO7502A

Figure 2–7. EVM-SAN configuration with three computers, high availability

Planning the HS-Series Agent Computer

An EVM Network must include one EVM-enabled computer that is connected to the SAN and that has a StorageWorks HS-Series Agent installed. With EVM for Sun Solaris, the HS-Series Agent must be installed on the computer that will be the EVM Server.

If you are adding EVM to an existing SAN, you should first identify the computer that has the HS-Series Agent installed. If you plan to install the EVM Server on the existing agent's computer, you only need to verify that the agent is the correct version.

> **NOTE:** The preinstallation instructions in Chapter 3 and Chapter 4 provide detailed information on verifying the agent's version.

If you do not want the existing agent's computer to be the EVM Server, then you need to uninstall the agent and reinstall it on the intended EVM Server.

Before starting an installation, you should note the storage subsystem name (for example, *subsys1*) on the planning worksheet. You will be asked to enter it during installation of the EVM Server. You should also note the EVM Server's computer name, as you will be asked for it during installation of the EVM Clients.

Planning HBA Connections to the SAN

Each EVM-enabled computer that is connected to the SAN must have a supported host bus adapter (HBA) and the correct HBA driver version. Before starting an installation, you should verify that the correct HBA in installed.

> **NOTE:** The pre-installation instructions in Chapter 3 and Chapter 4 provide detailed information on verifying the HBA driver version.

Planning the EVM Server

What Does the EVM Server Do?

The EVM Server provides:

■ EVM job creation and job management functions. These features allow you to create, validate and manage jobs. All EVM jobs are stored on the EVM Server.

■ EVM Network and EVM Storage Views. These graphical displays provide useful information that help you create jobs and identify available resources.

■ HTTP servers for EVM. The HTTP server allows you to use a Web browser to access all of the features of EVM.

■ WBEM Device Home. The WBEM features allow you to manage devices and control access to the EVM Network.

What Does the EVM Server Installation Include?

When you perform the EVM Server installation from the CD-ROM, the functionality for both the EVM Server and the EVM Client are automatically installed on the computer. This process includes the loading of executable files, setting up initialization files, and creating program and job directories.

Does It Matter Which Computer Is the EVM Server?

Yes and No. The EVM Server should be subject to a minimum of down time because it provides the browser access to the EVM Network. See "EVM Server Example."

EVM Server Example

Scenario. Assume that your site has four computers:

■ Computer 1 is a database application server.

■ Computer 2 is a tape backup server.

■ Computer 3 is a tape backup server.

■ Computer 4 is an "extra" that is not dedicated.

Setting Goals. You want to be able to include the database server in EVM jobs so that you can use EVM's Application I/O Handler to replicate databases without taking them offline. You also want to include the tape backup servers so that you can use EVM's Backup Handler to automatically run tape backups.

Analyzing Solutions. From the goals, it is certain that computers 1, 2, and 3 must be EVM enabled because they will be included in EVM jobs. The EVM Server could be installed on any of these, or computer 4.

EVM Server Solution A. You perform the EVM Server installation on computer 4. This solution provides some degree of load balancing by placing most of the EVM application on a server that will not be performing other significant tasks. This solution is possible because you do not intend to select computer 4 for any role in an EVM job.

EVM Server Solution B. You perform the EVM Server installation on either computer 1, 2, or 3. Because the EVM Server installation includes the EVM Client, the selected computer can function as both EVM Server and Client and can be included in EVM jobs.

Planning EVM Clients

What Does the EVM Client do?

The EVM Client provides:

■ EVM Command Line and job engine. The EVM Command Line and job engine provide the means for running EVM jobs.

■ Communication between the host computer and the EVM Server.

■ Communication between the host computer and the EVM Server.

What Does the EVM Client Installation Include?

When you perform the EVM Client installation from the CD-ROM, only the functionality for the EVM Client is installed on the computer. This process includes the loading of executable files, setting up initialization files, and creating directories.

Does It Matter Which Computers Are EVM Clients?

Yes. For a computer to be selected and included in an EVM job, it must have EVM Client functionality. For every computer on the EVM Network, other than the EVM Server, this requires that you perform the EVM Client installation. See *EVM Clients Example*.

Must an EVM Client Be Connected to the StorageWorks Subsystem?

Yes. To have an EVM job mount a new unit on a computer, the computer must be connected to the StorageWorks subsystem. Also, any computer that you would include in an EVM job, in order to use EVM's Application I/O Handler, would already be connected to the subsystem.

EVM Clients Example

Scenario. Assume that you are establishing a single EVM Network at a site that has 12 computers on the SAN:

- Computers 1, 2, and 3 are active database application servers.

- Computers 4, 5, and 6 are tape backup servers.

- Computers 7 and 8 are set up for data mining.

- Computers 9 and 10 are set up to test migration to a new release of the database application.

- Computers 11 and 12 are "extras" that are not dedicated.

Setting Goals. You want to be able to include the database servers in EVM jobs so that you can use EVM's Application I/O Handler to replicate databases without taking them offline. You also want to include the tape backup servers so that you can use EVM's Backup Handler to automatically run tape backups. In addition, you would like to perform quarterly data mining on a copy of the databases. You also plan to migrate to a new version of the database application and want to test it with real data.

Analyzing Solutions. There are more than 10 computers, so not all of them can be included in one EVM Network. You are requested to set up one EVM Network now, rather than two. Later, the site will add computers and create a second EVM Network.

For now, you decide to pick computer 12 to be the EVM Server. From the other 11 computers, you must pick 9 computers to be the EVM Clients and perform the EVM Client installation on them.

If effect, the decision becomes one of determining which two computers not to include in EVM jobs. You would not perform the EVM Client installation on those two computers.

EVM Network Configuration Rules

Each EVM Network Must Have

■ 1 (and only 1) EVM Server

■ The EVM Server computer must have an HS Series Agent installed and be connected to an EVM-compatible StorageWorks subsystem

■ 1 EVM-compatible StorageWorks subsystem

■ Access to a qualified Web browser

Each EVM Network May Have

■ Up to 10 EVM nodes (1 EVM Server and 9 EVM Clients)

Required HS-Series Agent

■ A StorageWorks HS-Series Agent, Version 2.3.1 (build 79) for Sun Solaris, or higher, must be installed on the EVM Server.

Supported Web Browsers

The EVM graphical user interface is accessed by a Web browser. Supported browsers are:

■ Netscape Navigator 4.76 for Solaris, or later

■ Microsoft Internet Explorer 5.0 for UNIX, or later

EVM Server Requirements

The EVM Server Must Have

■ Sun Solaris 2.6 - or
 Sun Solaris 7 (32-bit or 64-bit), or Sun Solaris 8 (32-bit or 64-bit)

■ Connection to a LAN (common with EVM Clients)

■ Connection to the StorageWorks subsystem via Jaycor (JNI) Fibre Channel adapter FC-1063, FCI-1063 or FC64-1063, driver version 2.5.9

The EVM Server May Have

SANworks Secure Path Version 2.1A for Sun Solaris or higher.

IMPORTANT: See EVM Release Notes for information on EVM/Secure Path compatibility.

EVM Client Requirements

An EVM Client Must Have

■ Sun Solaris 2.6 - or
 Sun Solaris 7 (32-bit or 64-bit), or Sun Solaris 8 (32-bit or 64-bit)

■ Connection to a LAN (common with EVM Server and other EVM Clients)

■ Connection to the StorageWorks subsystem via Jaycor (JNI) Fibre Channel adapter FC-1063, FCI-1063 or FC64-1063, driver version 2.5.9

The EVM Client May Have

SANworks Secure Path Version 2.1A for Sun Solaris or higher.

IMPORTANT: See EVM Release Notes for information on EVM/Secure Path compatibility.

Chapter **3**

Installing an EVM 1.1A Network

Follow the procedures in this chapter if you are installing an EVM 1.1A Network.

If you are upgrading an existing EVM Network, go to Chapter 4.

If you are adding a computer to an existing EVM 11.A Network, go to Chapter 5.

Before proceeding, Compaq recommends that you read Chapter 2, "Planning an EVM Network," and complete the EVM installation planning worksheet.

Preinstallation Steps

Before proceeding, ensure that you have full EVM 1.1A kits, not upgrade software. You cannot create a new EVM 1.1A Network using upgrade software. Refer to "Identifying/Ordering Kits" in Chapter 1.

Verify HS-Series Agent Version

Prior to installing EVM 1.1A, the required HS-Series Agent must be installed on the computer that will be the EVM Server. The required agent version is:

HS-Series Agent version 2.3.1 (build 79) for Sun Solaris, or higher

To verify the agent version:

1. Locate the computer that has the HS-Series Agent installed.

2. Issue the following command:

   pkginfo -l CPQfcraid — Checks for the required agent. If *pkginfo* does not return the package information, either the agent is not installed or it is an older version.

If Necessary, Install HS-Series Agent

Correct Agent on Intended EVM Server. If you have the correct agent, and it is installed on the intended EVM Server, continue to the next step.

Correct Agent on Another Computer. If you have the correct agent, but it is installed on a computer that is not the intended EVM Server, you must uninstall the agent and reinstall it on the intended EVM Server.

Incorrect Agent on Intended EVM Server. If you have an HS-Series Agent on the intended EVM Server, but it is not the correct version, you must obtain the correct version and upgrade the agent.

Incorrect Agent on Another Computer. If you have an agent on another computer, and it is not the correct version, you must obtain the correct agent, uninstall the old one, and install the new one on the intended EVM Server.

Obtain and Install the Correct Agent. If the correct agent is not present, you must install it prior to installing EVM 1.1A. The correct agent is available in the StorageWorks Software Solution Kit version 8.5C for Sun Solaris. A full kit is order number 380554-001 (kit code: QB-65RAG-SA). An upgrade kit is 165985-B21 (kit code: QB-65RAG-MA).

Note the EVM Server Name

After you have verified that the correct agent is installed on the intended EVM Server, you should note the computer's network *host name*. This name is required during installation of EVM Clients.

Note the StorageWorks Subsystem Name

Identify the StorageWorks subsystem name (for example, subsys1) that was entered when the HS-Series Agent was configured. This name is required during installation of the EVM Server.

Verify JNI HBA Driver

1. Each EVM-enabled computer that is connected to the SAN with a Fibre Channel host bus adapter must have the correct HBA driver version. The required driver for Jaycor (JNI) FC-1063, FCI-1063 and FC64-1063 adapters is:

   HBA driver version 2.5.9

2. Identify the computers with Fibre Channel HBAs.

3. Verify the driver version using the following commands:

   ■ *pkginfo |grep CPQ*

   Produces a list showing Fibre Channel drivers, for example, CPQfca, CPQfcaw, or CPQfcaPCI.

   ■ *pkginfo -l CPQfca*

   Output shows driver version

If Necessary, Install JNI Driver

If the correct HBA driver is not present, you must install it. The correct driver is available in the StorageWorks Software Solution Kit version 8.5C for Sun Solaris. A full kit is order number 380554-001 (kit code: QB-65RAG-SA). An upgrade kit is 165985-B21 (kit code: QB-65RAG-MA).

Installation Overview

If you have filled out the EVM Network planning worksheet and performed the preinstallation steps, you are ready to start the installation. This overview presents the recommended sequence of installation steps for a typical EVM Network.

Install the EVM Server First

1. Install the EVM Server on one computer.

2. Browse to the **Device Home Page** and establish password security (See Chapter 6).

3. Browse to **EVM**. Review the Web-based online Help/User Guide and verify operation of the EVM interface.

Install the EVM Clients Second

1. Install the EVM Client on up to nine other computers.

2. Browse to **EVM** to confirm that each EVM Client computer is recognized by the EVM Network.

Sample EVM 1.1A Network Planning Worksheet and Diagram

The figure below, Figure 3–1, shows a sample planning worksheet and corresponding EVM Network diagram.

Storage	Storage Name	Remarks
StorageWorks Storage Array	`subsys1`	`We're running StorageWorks ACS 8.5S - has clone and snapshot capabilities`

EVM Network		Computer Name (used on network)	HBA driver verified	HS-Series Agent verified	Remarks
1	**EVM Server**	`Colorado`	`yes`	`yes`	
2	EVM Client	`Delaware`	`Yes`		`Database application`
3	EVM Client	`Georgia`	`Yes`		`Tape backup application`
4	EVM Client				
5	EVM Client				
6	EVM Client				
7	EVM Client				
8	EVM Client				
9	EVM Client				
10	EVM Client				

Figure 3–1. Sample EVM 1.1A network planning worksheet and diagram

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Starting an Installation

Starting the Installation Script

1. Open a terminal window and log on as a superuser.

2. Insert the EVM 1.1A CD-ROM in the drive.

3. Go to the root directory on the mounted EVM CD-ROM.

4. Enter *./install.sh*. The script will start the installation of EVM.

Script Conventions

Default Choice. In the following script dialogs, when a choice is shown as a capital letter, it is the default and may be selected by only pressing **Enter**. For example, <Y/n> indicates that yes is the default choice.

Review the License Agreement

1. Review the License Agreement. To install EVM you must accept the terms of the agreement.

2. If you do not agree to the terms, enter **d** and exit the installation script.

3. Enter **A** to agree to the terms and continue.

```
IMPORTANT - Carefully read the License Terms before
proceeding...
...
...
If you agree to the terms, press "A" then <enter>.


If you do not agree to the terms, press "D" then <enter>,
which will also terminate your installation procedure. If
you do not agree to these terms, COMPAQ does not grant you
a license to use the Software. In this case you may not use
the Software and you should contact the supplier from
which you obtained the Software for instructions on
returning the Software for a refund.

Do you agree to the terms? <A,d>: A
```

Review Operational Considerations

It is important to review operational considerations before upgrading an EVM Network.

1. Ensure that all operational issues have been addressed before continuing.

```
EVM 1.1A is not backward compatible with EVM 1.1. You must
upgrade all of the EVM-enabled computers on the EVM
Network. You cannot mix EVM versions.

You should consider operational issues before starting to
upgrade an EVM Network:

 - EVM users have been notified of the planned upgrade.

 - No EVM jobs are scheduled to run until after the
upgrade.

 - No EVM undo jobs exist when the upgrade is started.

 - No EVM jobs are running during the upgrade.

 - The EVM Server or Client program is not running during
its upgrade.

CAUTION: Failure to properly address operational issues
prior to and during upgrade of an EVM Network can lead to
reduced operational capability and loss of data.

See the Installation Guide for more information.

Would you like to proceed with the upgrade <Y/n>: Y
```

Checking for Previous Installations

The installation script checks for a previous installation of EVM.

1. If a previous installation is not detected, installation continues.

2. If a previous installation (*CPQelm* or *CPQevm*) is detected, it can be uninstalled.

```
Checking for previous installations.....
```

Verification of HBA Driver Version

The install script checks to see that the required Fibre Channel host bus adapter driver is installed on the computer.

1. Monitor the driver verification.

2. If the required driver is verified, continue to the next step.

3. If the required driver is not verified, you must exit the install script and install the correct driver. See "Preinstallation Steps" for information on verifying and installing the required driver.

```
Continuing with installation....

Checking for the required drivers.......

Found SBUS 64bit adapter JNI driver version 2.5.9

Required driver found, continuing with the installation....
```

Selecting an EVM Server or EVM Client Installation

The remaining steps depend upon whether you are installing an EVM Server or EVM Client.

> **NOTE:** To read instructions on installing the EVM Server, see page 3–10.
>
> To read instructions on installing an EVM Client, go to page 3–16.

```
You can install EVM as a Client or as a Server

Client:

        EVM is the only package installed.

        The EVM Servers nodename is required.

Server:

        Elm and the EVM packages are installed.

        A configured HS Series Agent is required.

Specify the installation type Client or Server <C/s>:
```

EVM Server Installation

Select EVM Server

1. If you want the computer to be the EVM Server, enter **s**.

   NOTE: To install an EVM Client, go to page 3–16.

   IMPORTANT: Only install one EVM Server per EVM Network.

   If you plan to use EVM on a single computer, only install the EVM Server. The EVM Server installation includes EVM Client functionality.

   ```
   Specify the installation type Client or Server/Client
   <C/s>:s
   ```

Verification of the HS-Series Agent

Verification of the HS-Series agent is only performed when you choose to install the EVM Server.

1. Monitor the HS-Series Agent verification.

2. If the required agent is verified, continue to the next step.

3. If the required agent is not verified, you must exit the installation script and install the correct agent. See "Preinstallation Steps" for information on verifying and installing the required agent.

   Gathering information on the HS Series Agent....

   Colorado|0|2

   Found the correct version of the HS Series Agent.

Specify Storage Subsystem

Selection of the storage subsystem is only performed when you choose to install the EVM Server.

1. Review the list of names of available StorageWorks subsystems. This is the name (e.g. *subsys1*) that was entered when the HS-Series agent was configured. The name is required to establish communication between the EVM Network and the StorageWorks subsystem.

2. Enter the name of the subsystem that you want to include in the EVM Network.

3. Verify the entry.

Here's a list of storage subsystems that have been configured by the SWCC Agent.

subsys11 subsys02 subsys08

Choose a storage subsystem to use with EVM: subsys08

You entered: subsys08

Is this correct? <Y/n>:Y

Install the EVM HTTP Server Package (Elm)

Installation of the EVM HTTP server package is only performed when you choose to install the EVM Server.

The EVM HTTP server allows you to use a Web browser to access the EVM Network. It also includes Web-based Enterprise Management (WBEM) features that allow you to manage devices and control access to the EVM Network.

1. Choose to install the *CPQelm* package in the default directory, or in another directory. If you choose to install the *CPQelm* package in another directory, enter the directory name.

Starting to install ELM....

Installing CPQelm-1.6

Processing package instance <CPQelm> from </cdrom/cdrom0
PQelm-1.6>

ELM
(sun4u) 1.6

**Would you like to install CPQelm in the default directory /opt/CPQelm
Answer y or n, then press RETURN => y**

CPQelm will be installed in the /opt/CPQelm directory.

The selected base directory </opt/CPQelm> must exist before
installation is attempted.

Do you want this directory created now [y,n,?,q] y
Using </opt/CPQelm> as the package base directory.
Processing package information.
Processing system information.
Verifying disk space requirements.
Checking for conflicts with packages already installed.
Checking for setuid/setgid programs.

Installing ELM as <CPQelm>

Installing part 1 of 1.
...
...
Installation of <CPQelm> was successful.

Installing the EVM Package (Server)

Installation of the EVM package is the final step in the installation of the EVM Server.

1. Choose to install the *CPQevm* package in the default directory, or in another directory. If you choose to install the *CPQevm* package in another directory, enter the directory name.

Starting to install EVM....

Installing CPQevm-1.1A

Processing package instance <CPQevm> from </cdrom/cdrom0

<CPQevm-1.1A>

EVM (sun4u) 1.1A

Would you like to install CPQevm in the default directory /opt/CPQevm
Answer y or n, then press RETURN => y
CPQevm will be installed in the /opt/CPQevm directory.

The selected base directory </opt/CPQevm> must exist before installation is attempted.

Do you want this directory created now [y,n,?,q] y
Using </opt/CPQevm> as the package base directory.

Processing package information.
Processing system information.
Verifying disk space requirements
Checking for conflicts with packages already installed.
Checking for setuid/setgid programs.

```
Installing EVM as <CPQevm>
## Installing part 1 of 1.
...
...
Installation of <CPQevm> was successful.
Creating the evm.ini file
Updating services file.
Installation Complete

EVM 1.1A requires the environment variable "EVM_HOME" to point to
the installed directory(/opt/CPQevm). The "LD_LIBRARY_PATH" environment
variable should also be checked for the inclusion of "/opt/CPQevm/lib".
Please set both of these before starting EVM,
or modify roots .profile(ksh) or .cshrc(csh) to set them at login.

Read the README file before running EVM.
```

Start EVM

After the Elm and EVM packages have been installed from the CD-ROM, you must set the necessary environment variables before starting the EVM Server. For instructions on setting environment variables and starting EVM, go to Chapter 6.

Establish Password Control

When the EVM Server is first started after installation, its HTTP server functionality is started and the Device Home Page is enabled.

This means that anyone who can browse to the EVM Network (to the degree permitted by your overall security measures) will not be asked to enter an additional password to use EVM. Compaq recommends that you immediately establish password control for the EVM Network. Instructions on how to do this are included in Chapter 6 and in the online Help/User Guide.

Browse to EVM

After the EVM Server is started and password control has been established, it is a good idea to browse to the EVM Network. It is suggested that you:

■ Review the browser-based online Help/User Guide.

■ Verify operation of the EVM interface.

> **NOTE:** The EVM Network View (SAN) page and the EVM Storage View page will not display storage information until the HS-Series Agent is running.

Instructions on how to perform these tasks are included in Chapter 6 and in the online Help/User Guide.

EVM Client Installation

Select EVM Client

1. If you want the computer to be an EVM Client, enter **C**.

   NOTE: To install the EVM Server, go to page 3–10.

   IMPORTANT: Do not install the EVM Client on the computer that has the EVM Server installed.

   ```
   Specify the installation type Client or Server/Client
   <C/S>:C
   ```

Specify the Client's EVM Server

Specifying the EVM Server is only performed when you have chosen to install an EVM Client.

1. Enter the network host name (node name) of the EVM Server that supports the EVM Clients. The host name is required to establish network communication between EVM Clients and the EVM Server.

Gathering information for the EVM Client installation.

Specify the EVM Server's nodename=>: serverNodeName

You entered: Colorado

Is this correct? <Y/n>:Y

Install EVM Package (Client)

Installation of the EVM package is the final step in the installation of the EVM Client.

1. Choose to install the *CPQevm* package in the default directory, or in another directory. If you choose to install the *CPQevm* package in another directory, enter the directory name.

Starting to install EVM....

Installing CPQevm-1.1a

Processing package instance <CPQevm> from </cdrom/cdrom0

EVM (sun4u) 1.1a

Would you like to install CPQevm in the default directory /opt/CPQevm

Answer y or n, then press RETURN => y

CPQevm will be installed in the /opt/CPQevm directory.

The selected base directory </opt/CPQevm> must exist before installation is attempted.

Do you want this directory created now [y,n,?,q] y

Using </opt/CPQevm> as the package base directory.
Processing package information.
Processing system information.
Verifying disk space requirements.
Checking for conflicts with packages already installed.
Checking for setuid/setgid programs.

Installing EVM as <CPQevm>

Installing part 1 of 1.
...
...
Installation of <CPQevm> was successful

Creating the evm.ini file
Updating services file...
Installation Complete

EVM 1.1A requires the environment variable "EVM_HOME" to point to
the installed directory(/opt/CPQevm). The "LD_LIBRARY_PATH" environment
variable should also be checked for the inclusion of "/opt/CPQevm/lib"
Please set both of these before starting EVM
or modify roots .profile(ksh) or .cshrc(csh) to set them at login.

Read the README file before running EVM.

Start EVM

After the EVM package has been installed from the CD-ROM, you must set the necessary
environment variables before starting an EVM Client. For instructions on setting
environment variables and starting EVM, go to Chapter 6.

Browse to EVM

After each EVM Client is installed and started, the computer should be recognized by the
EVM Server. It is a good idea to browse to the EVM Network to verify that the computer
has been added to the EVM Network. Instructions on how to do this are included in
Chapter 6 and in the online Help/User Guide.

> **NOTE:** The EVM Network View (SAN) page and the EVM Storage View page will not display
> storage information until the HS-Series Agent and the EVM Server are running.

Chapter **4**

Upgrading an EVM Network to Version 1.1A

Follow the procedures in this chapter if you are upgrading an EVM 1.1 Network to Version 1.1A.

If you are installing a new EVM 1.1A Network, go to Chapter 3.

If you are adding a computer to an existing EVM Network, go to Chapter 5.

EVM Network Upgrade Considerations

Before proceeding, ensure that you have EVM 1.1A upgrade software, not full kits. You cannot upgrade an EVM 1.1 Network using full kits. Refer to "Identifying/Ordering Kits" in Chapter 1.

You should review the following considerations and plan the upgrade accordingly.

Not Mixing EVM Versions

An EVM Network can only include computers that have the same version of EVM installed. You cannot mix versions. Once you begin the upgrade to version 1.1A, you must upgrade all of the computers in the EVM Network. To verify the version of the EVM Network:

1. Browse to EVM.

2. In the left navigation pane, open the **ToolBox** folder to view the EVM version number.

Impacts of Stopping EVM Activities

Stopping EVM on a given computer can impact the EVM Network and EVM jobs. You should consider the following when planning the upgrade.

■ Stopping the EVM Server stops any EVM job that is running on the EVM Network.

■ Stopping the EVM Server stops all browser access to the EVM Network.

■ Stopping an EVM Client stops any EVM job that involves the client's computer.

Running EVM Undo-jobs

All pending EVM undo-jobs should be run prior to starting the upgrade.

> **CAUTION:** Running an undo-job will unmount the job's BCV units and delete the BCVs' data. Be sure to coordinate this activity with other operations and users that may be impacted.

Not Running EVM Jobs During the Upgrade

No EVM jobs should be started or running during the upgrade. Compaq recommends that you notify users of the planned upgrade and instruct them not to start any jobs until notified. Ensure that EVM jobs that might be started from a scheduler are "un-scheduled."

Coordinating EVM Upgrade Reboots with Other Operations

In the final step of upgrading EVM on a computer, you can choose to start EVM as a service by rebooting the computer, or you can choose to end the upgrade without a reboot and start EVM manually. If you choose to reboot, ensure that you do not adversely impact other applications or operations.

Preupgrade Steps

Before proceeding, Compaq recommends that you read Chapter 2, "Planning an EVM Network," and complete the EVM Network planning worksheet.

Ensure No EVM Jobs are Running or Scheduled

You should confirm that:

■ You have coordinated upgrade activities with other operations EVM users.

■ No EVM jobs are running.

■ No EVM jobs are scheduled to run during the upgrade.

Run Pending EVM Undo-jobs

1. Browse to the **EVM Jobs View** page and check for any pending undo jobs. These must be run prior to upgrading the EVM Network.

2. Confirm with other operations and users that the undo-jobs can be run.

> ⚠ **CAUTION:** Running an undo-job will unmount the job's BCV units and delete the BCVs' data. Be sure to coordinate this activity with other operations and users that may be impacted.

3. In cases where you want to retain the data on a jobs BCV for use during or after the upgrade, you should copy the data to other non-BCV storage resources before running the undo-job.

4. Run and successfully complete each undo job.

> ⚠ **CAUTION:** This is a critical step. Failure to run an undo-job prior to the upgrade can result in unpredictable results after the upgrade, including loss of data.

Verify HS-Series Agent Version

Prior to upgrading to version 1.1A, the required HS-Series Agent must be installed on the EVM Server. The required agent version is:

HS-Series Agent version 2.3.1 (build 79) for Sun Solaris, or higher

To verify the agent version:

1. Locate the EVM Server to be upgraded.

2. Issue the following command:

   ■ *pkginfo -1 CPQfcraid* — Checks for the required agent. If *pkginfo* does not return the package information, either the agent is not installed or it is an older version.

If Necessary, Install HS-Series Agent

Correct Agent on the EVM Server. If you have the correct agent on the EVM Server, continue to the next step.

Incorrect Agent on the EVM Server. If you have an HS-Series Agent on the EVM Server, but it is not the correct version, you must obtain the correct version and upgrade the agent.

Obtain and Install the Correct Agent. If the correct agent is not present, you must install it prior to upgrading to version 1.1A. The correct agent is available in the StorageWorks Software Solution Kit version 8.5C for Sun Solaris.

Verify JNI HBA Driver

Each EVM-enabled computer that is connected to the SAN with a Fibre Channel host bus adapter must have the correct HBA driver version. The required driver for Jaycor (JNI) FC-1063, FCI-1063 and FC64-1063 adapters is:

HBA driver version 2.5.9

1. Identify the computers with Fibre Channel HBAs.

2. Verify the driver version using the following commands:

   ■ *pkginfo |grep CPQ — Produces a list showing Fibre Channel drivers, for example, CPQfca, CPQfcaw, or CPQfcaPCI.*

   ■ *pkginfo -l CPQfca — Output shows driver version*

If Necessary, Install JNI Driver

If the correct HBA driver is not present, you must install it.

The correct driver is available in the StorageWorks Software Solution Kit version 8.5C for Sun Solaris. A full kit is order number 380551-001 / kit code QB-65RAG-SA. An upgrade kit is 165985-B21 / kit code QB-65RAG-MA.

Upgrade Overview

If you have filled out the EVM Network planning worksheet, reviewed and responded to the EVM Network upgrade considerations, and performed the pre-upgrade steps, you are ready to start the upgrade. This overview presents the recommended sequence of upgrade steps for a multi-computer EVM Network.

> **NOTE:** If you are upgrading a single computer that is operating as a complete EVM Network, read only the sections regarding the EVM Server.

Upgrade the EVM Server First

1. Stop the EVM Server program.

2. Upgrade the EVM Server.

3. Browse to the Device Home Page and verify/establish password security (see Chapter 6).

4. Browse to EVM. Review the Web-based online Help/User Guide and verify operation of the EVM interface.

Upgrade the EVM Clients Second

There may be up to nine EVM Clients on the EVM Network. Each one must be upgraded.

1. Stop the EVM Client program.

2. Upgrade the EVM Client. Start the EVM program.

3. Browse to **EVM** to confirm that each EVM Client computer is recognized by the EVM Network.

Sample EVM 1.1A Network Planning Worksheet and Diagram

Figure 4–1 below shows a sample planning worksheet and corresponding EVM Network diagram.

Storage	Storage Name	Remarks		
StorageWorks Storage Array	subsys1	ACS 8.5s - Upgrade EVM Network from 1.1 to 1.1A		

	EVM Network	Computer Name (used on network)	HBA driver verified	HS-Series Agent verified	Remarks
1	**EVM Server**	Colorado	yes	yes	
2	EVM Client	Delaware	Yes		
3	EVM Client	Georgia	Yes		
4	EVM Client				
5	EVM Client				
6	EVM Client				
7	EVM Client				
8	EVM Client				
9	EVM Client				
10	EVM Client				

Figure 4–1. Sample EVM 1.1A Network planning worksheet and diagram

Starting an Upgrade

Start the Upgrade Script

1. Open a terminal window and log on as a superuser.

2. Insert the EVM 1.1A CD-ROM in the drive.

3. Go to the root directory on the mounted EVM CD-ROM.

4. Enter *./upgrade.sh*. The script will start the upgrade of EVM.

Script Conventions

Default Choice. In the following script dialogs, when a choice is shown as a capital letter, it is the default and may be selected by only pressing **Enter**. For example, <Y/n> indicates that yes is the default choice.

Review the License Agreement

1. Review the **License Agreement** . To upgrade EVM you must accept the terms of the agreement.

2. If you disagree with the terms, enter **d** and exit the upgrade script.

3. Enter **A** to agree to the terms and continue.

```
IMPORTANT - Carefully read the License Terms before
proceeding...
...
...
If you agree to the terms, press "A" then <enter>.


If you do not agree to the terms, press "D" then <enter>,
which will also terminate your installation procedure. If
you do not agree to these terms, COMPAQ does not grant you
a license to use the Software. In this case you may not use
the Software and you should contact the supplier from
which you obtained the Software for instructions on
returning the Software for a refund.

Do you agree to the terms? <A,d>: A
```

Review Operational Considerations

It is important to review operational considerations before upgrading an EVM Network.

1. Ensure that all operational issues have been addressed before continuing.

```
EVM 1.1A is not backward compatible with EVM 1.1. You must
upgrade all of the EVM-enabled computers on the EVM
Network. You cannot mix EVM versions.

You should consider operational issues before starting to
upgrade an EVM Network:

 - EVM users have been notified of the planned upgrade.

 - No EVM jobs are scheduled to run until after the
upgrade.

 - No EVM undo jobs exist when the upgrade is started.

 - No EVM jobs are running during the upgrade.

 - The EVM Server or Client program is not running during
its upgrade.

CAUTION: Failure to properly address operational issues
prior to and during upgrade of an EVM Network can lead to
reduced operational capability and loss of data.

See the Installation Guide for more information.

Would you like to proceed with the upgrade <Y/n>: Y
```

Verification of HBA Driver Version

The upgrade script checks to see that the required Fibre Channel host bus adapter driver is installed on the computer.

1. Monitor the driver verification.

2. If the required driver is verified, continue to the next step.

3. If the required driver is not verified, you must exit the upgrade script and install the correct driver. See "If Necessary, Install JNI Driver" on page 4–6.

```
Starting the EVM upgrade

Checking for the required drivers.......

Found SBUS 64bit adapter JNI driver version 2.5.9

Required driver found, continuing with the installation....
```

Verification of Previous Version

The upgrade script checks to see if EVM 1.1 is installed on the computer.

1. Monitor the EVM version verification.

2. When EVM version 1.1 is verified, enter **Y** to continue.

3. If the required version is not verified, you must exit the upgrade script.

```
Checking for previous installations.....

CLI Script Window not included with EVM 1.1A, leaving
existing version.

Detected EVM version 1.1.

If you upgrade EVM, only the EVM binary and supporting
files will be overwritten. All job files, logs etc. will be
preserved.

Would you like to proceed with the upgrade <Y/n>: Y
```

Upgrading the Packages

In its final step, the script completes the upgrade and ends.

If you are upgrading the EVM Server, continue on next page.

```
Proceeding with upgrade...
Copied evm binary.
Copied findHbas.sh script.
Copied tc_mon.frm data file.
Copied README file.
Copied libcpqhmmo.so library.

Updating version information...

EVM 1.1A requires the environment variable "EVM_HOME" to
point to the installed directory(/opt/CPQevm). The
"LD_LIBRARY_PATH" environment variable should also be
checked for the inclusion of "/opt/CPQevm/lib".
Please set both of these before starting EVM, or modify
roots .profile(ksh) or .cshrc(csh) to set them at login.

Upgrade Complete

Read the README file before running EVM.
```

Completing an EVM Server Upgrade

Start EVM (Server)

After the packages have been upgraded, you must set the necessary environment variables before starting the EVM Server. For instructions on setting environment variables and starting EVM, go to Chapter 6.

Establish Password Control

When the EVM Server is first started after exiting installation, its HTTP server functionality is started and the Device Home Page is enabled.

This means that anyone who can browse to the EVM Network (to the degree permitted by your overall security measures) will not be asked to enter an additional password to use EVM. Compaq recommends that you immediately establish password control for the EVM Network. Instructions on how to do this are included in Chapter 6 and in the online Help/ User Guide.

Browse to EVM

After the EVM Server is started and password control has been established, it is a good idea to browse to the EVM Network. It is suggested that you:

■ Review the browser-based online Help/User Guide.

■ Verify operation of the EVM interface.

> **NOTE:** The EVM Network View (SAN) page and the EVM Storage View page will not display storage information until the HS-Series Agent is running.

Continue by Upgrading the EVM Clients

■ Continue to upgrade the EVM Network by upgrading each of the EVM Clients.

■ After you finish upgrading the EVM Server and EVM Clients, you can create and run jobs immediately.

Completing an EVM Client Upgrade

Start EVM (Client)

After the package has been upgraded, you must set the necessary environment variables before starting the EVM Client. For instructions on setting environment variables and starting EVM, go to Chapter 6.

Browse to EVM

After each EVM Client is upgraded and started, the computer should be recognized by the EVM Server. It is a good idea to browse to the EVM Network to verify that the computer is included the EVM Network. Instructions on how to do this are included in Chapter 6 and in the online Help/User Guide.

> **NOTE:** The EVM Network View (SAN) page and the EVM Storage View page will not display storage information until the HS-Series Agent and EVM Server are running.

Chapter **5**

Adding Computers to an EVM Network

Follow the procedures in this chapter if you are adding a computer to an existing EVM Network.

If you are installing a new EVM 1.1A Network, go to Chapter 3.

If you are upgrading an EVM 1.1 Network to version 1.1A, go to Chapter 4.

Preinstallation Planning

Not Mixing EVM Versions

An EVM Network can only include computers that have the same version of EVM installed. You cannot mix versions. To verify the version of an existing EVM Network:

1. Browse to **EVM**.

2. In the left navigation pane, open the **ToolBox** folder to view the EVM version number.

Coordinating EVM Reboots with Other Operations

If you need to reboot the computer at the end of the installation, ensure that you do not adversely impact other applications or operations.

Adding a Computer to an EVM 1.1A Network

By definition, an EVM Network includes one (and only one) EVM Server. Thus, you can only add a computer by installing the EVM Client.

> **IMPORTANT:** The maximum number of EVM Client computers that can be connected to an EVM Network is nine.

During installation of the EVM Client, you will need to provide the network *host name* of the EVM Server. Be sure that you have this information available before starting the installation.

Before proceeding, ensure that you have a full EVM 1.1A kit, not an upgrade kit. You cannot add a new EVM Client computer using an EVM upgrade kit. Refer to "Identifying/Ordering Kits" in Chapter 1.

Verify JNI HBA Driver

Each EVM-enabled computer that is connected to the SAN with a Fibre Channel host bus adapter must have the correct HBA driver version. The required driver for Jaycor (JNI) FC-1063, FCI-1063 and FC64-1063 adapters is:

HBA driver version 2.5.9

1. Identify the computers with Fibre Channel HBAs.

2. Verify the driver version using the following commands:

   ■ *pkginfo |grep CPQ*

   Produces a list showing Fibre Channel drivers, for example, CPQfca, CPQfcaw, or CPQfcaPCI.

   ■ *pkginfo -l CPQfca*

   Output shows driver version

If Necessary, Install JNI Driver

If the correct HBA driver (version 2.5.9) is not present, you must install it.

The correct driver is available in the StorageWorks Solution Kit version 8.5C for Sun Solaris. A full kit is order number 380551-001 / kit code QB-65RAG-SA. An upgrade kit is 165985-B21 / kit code QB-65RAG-MA.

Starting the Installation

Perform the steps shown in Chapter 3 for "Starting the Installation". You will need to verify that the correct JNI HBA driver is present on the computer that is being added.

EVM Client Installation

After verifying the HBA driver, perform the steps shown in Chapter 3 for "EVM Client Installation".

When you have completed the steps, the computer should be recognized by the EVM Server. It is a good idea to browse to the EVM Network to verify that the computer has been added. Instructions on how to do this are included in Chapter 6 and in the online Help/User Guide.

Adding a Computer to an Earlier EVM Network

You cannot add EVM 1.1A enabled computers to an earlier EVM Network. To add computers to earlier EVM Networks, you must use earlier EVM kits, or upgrade the EVM Network.

> **NOTE:** To obtain information on ordering earlier version EVM kits and EVM upgrades, please refer to Getting Help in the front of this Installation Guide.

Adding a Computer to an EVM 1.1 Network

To add computers to an EVM 1.1 Network, there are two methods:

■ **EVM 1.1 Kit Method**. Use EVM 1.1 kits and install the EVM 1.1 Client on the computers to be added. Refer to the EVM 1.1 Installation Guide for procedures.

■ **Upgrade Method**. First, use EVM 1.1A upgrade software to upgrade the EVM 1.1 Network to version 1.1A. Next, use full EVM 1.1A kits and install the EVM 1.1A Client on the computers to be added. Refer to the procedures in this Installation Guide.

Replacing the EVM Server

If you must replace an existing EVM Server, you will have to perform an EVM Server installation on the new computer. This is a special case of adding a computer to an existing EVM Network and special considerations apply.

Retain the EVM Server Name

All EVM Client computers and EVM jobs refer to the network *host name* of the EVM Server. Compaq strongly recommends that you use the same network host name for the new EVM Server.

> **IMPORTANT:** If you use a different network host name for the replacement EVM Server, you will have to reinstall the EVM Clients and recreate the EVM jobs.

Install the EVM Server

Follow the procedures in Chapter 3 for "EVM Server Installation".

Move EVM Job Files

All EVM jobs are stored on the EVM Server. If you do not move or copy these files to the new EVM Server, you will have to recreate the jobs. To copy EVM job files to the new EVM Server:

1. On the old EVM Server, look in the directory *.../opt/CPQevm/bin/jobs*.

2. Copy all files from the jobs directory to the same directory on the new EVM Server.

> **IMPORTANT:** This will only work the old EVM Server and the new EVM Server have the same network host name.

3. Browse to the **EVM Jobs View** page on the new EVM Server. Verify that the jobs appear.

Chapter **6**

Starting EVM and Controlling Access

This chapter includes instructions on starting the EVM Server and EVM Clients, browsing to the EVM Network, and controlling access to the EVM Network.

Starting the EVM Server and EVM Clients

The EVM program and its associated support scripts are installed with root execute permission only. To run EVM, you must have root permissions.

After installing EVM on a computer, the first step is to add EVM related environment variables.

Add Environment Variables

1. Add the following environment variables for EVM home and shared library files:

   EVM_HOME=/opt/CPQevm

   LD_LIBRARY_PATH=/opt/CPQevm/lib

   The variables above are shown in Bourne shell syntax and assume that the default paths were accepted when EVM was installed. Modify as appropriate if another shell is used or if EVM was installed in another directory.

2. Add *$EVM_HOME/bin* to the *PATH* variable.

   If desired, you can modify the *.profile* or *.cshrc* files to make these changes permanent. For more information on setting environment variables, see the *env* and *setenv* man pages and the man page for the appropriate shell.

Manually Starting EVM

After you have configured the environment, perform the following steps to manually start EVM.

> **IMPORTANT:** In some cases EVM uses relative paths and may not work correctly if the EVM program is executed from anywhere other than $EVM_HOME/bin.

1. Open a terminal window and change the present working directory to *$EVM_HOME/bin.*

2. Enter *evm*. After being started, EVM detects and gathers information about the storage configuration and SAN topology and then displays a *Ready* indicator. In most cases, EVM completes its startup tasks in two minutes or less.

```
Starting EVM (V1.1a (Build 57))....

...

...

EVM Ready.
```

Keeping the EVM Server Running

The EVM Server must be running to create, run, monitor, or manage EVM jobs. Do not stop the EVM Server unless you are intentionally shutting down the EVM Network.

> **CAUTION:** When you stop the EVM Server, you also shut down the associated EVM Network. Any running EVM job on the EVM Network will be stopped. You will not be able to run EVM jobs until the EVM Server service is started again.

Keeping EVM Clients Running

The EVM Client must be running to allow the computer to participate in EVM jobs. Do not stop an EVM Client unless you do not need the computer to participate in EVM jobs.

> **CAUTION:** When you stop the EVM Client on a computer, that computer cannot participate in EVM jobs.

Starting EVM Automatically with Run Control Files

You can configure EVM to start automatically at system boot and stop automatically at system shutdown through the use of run control files.

A sample script named *Sample_rc_script* is located in the *$EVM_HOME/bin/samples* directory.

1. Rename the sample script to evm.rc and place it in the directory */etc/init.d*.

2. Create the following symbolic links in */etc/rc3.d*

   ```
   S40evm -> /etc/init.d/evm.rc
   K40evm -> /etc/init.d/evm.rc
   ```

The start sequence of *40* in these file names is arbitrary. You may choose any number you want to achieve a desired startup sequence.

The only exception is on the computer that is running the EVM Server. On the EVM Server, you must ensure that EVM starts after the HS-Series *steamd* agent process, which is given a start sequence of 30 by default.

See the *init.d* man page for more information on using run control files.

EVM Verbose Mode

In limited circumstances, you may want to run an instance of EVM in verbose mode as an aid in troubleshooting. In verbose mode, EVM directs detailed information to the terminal window.

> **IMPORTANT:** Use of EVM verbose mode is not recommended for standard operations.

If the EVM process is running, you must stop it before starting EVM in verbose mode.

> **CAUTION:** Before stopping EVM, ensure that no EVM job is running. Stopping EVM while an EVM job is running can lead to unpredictable results, including loss of data.

1. If running, stop the EVM process.

2. Change to the directory *$EVM_HOME/bin*.

3. Enter *evm verbose.* After being started, EVM detects and gathers information about the storage configuration and SAN topology and then displays a *Ready* indicator. In most cases, EVM completes its startup tasks in two minutes or less.

```
Starting EVM (V1.1a (Build 57))....

...

...

EVM Ready.
in wait_for_shutdown()
outer_thread running
[TCat_main.outer_thread] calling accept()
```

Browsing to EVM

Overview

1. Start your browser.

2. Enter the address for the EVM Network.

3. Add the EVM Network to your favorites or bookmarks.

Starting a Browser

1. From the desktop, start your browser. Both Microsoft Internet Explorer and Netscape Navigator are supported.
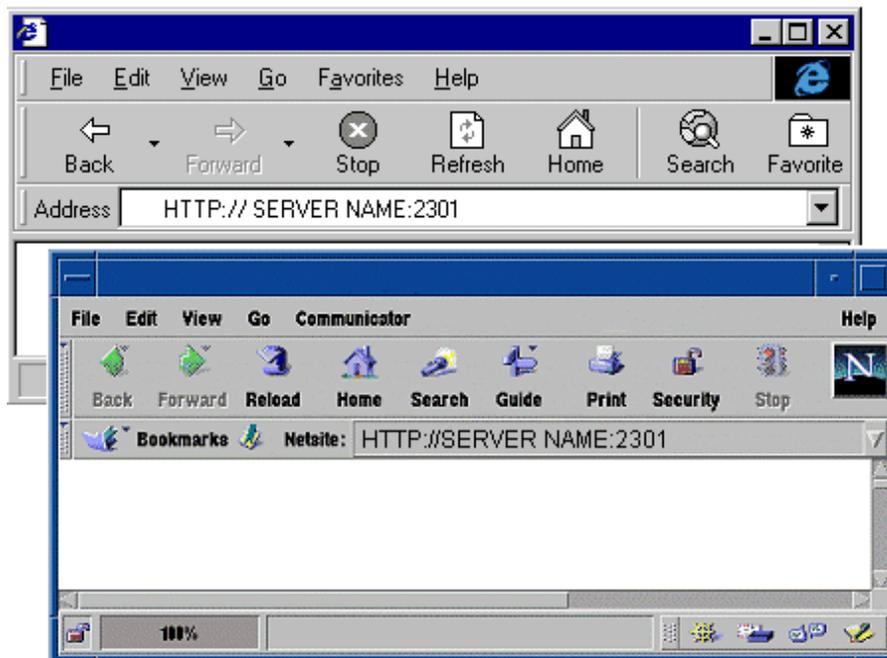
Figure 6–1. Starting a browser

Netscape Browser Settings

The default font settings for the Netscape browser running on Solaris cause some graphical elements to be displayed incorrectly. For better viewing, change the fixed width and variable width font selections to Application or document specified and choose a 12 point or larger font size.

Browsing to the EVM Network

1. In the **Address** or **Go To** box, type the EVM server address and port number 2301, then press **Enter**. The **Device Home Page** will appear. For example, if your EVM Server is named *Rampart.Mountains.Com* you would enter:

   ```
   http://rampart.mountains.com:2301
   ```
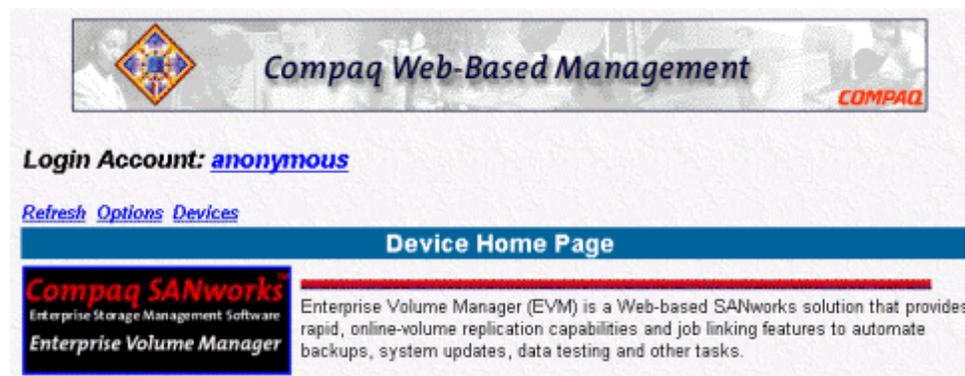

Figure 6–2. Device home page

2. Use your browser's favorites or bookmarks feature to record the EVM Network. The next time you browse to the EVM Network, you can choose it from a list.

Browsing to EVM Home

1. On the **Device Home Page**, click the **Enterprise Volume Manager** banner on the left side of the page. The **EVM Home** page will appear.
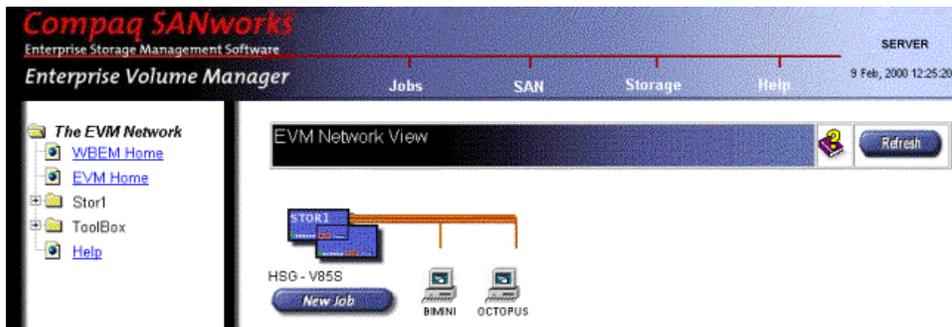

Figure 6–3. EVM home page

Establishing Password Control

When the EVM Server is first started after installation, the Login Account on the Device Home Page is set to Anonymous. This means that anyone who can browse to the EVM Network, will not be asked to enter an additional password to use EVM.

To control access to the EVM Network, Compaq recommends that the Login Account be immediately changed from Anonymous to an account that has password protection. This can be done by starting at the Device Home Page. The basic steps are:

1. Login as Administrator.

2. Disable Anonymous Access and save the configuration.

3. Establish accounts and passwords.

Login as Administrator

1. Browse to the EVM Network **Device Home Page**.
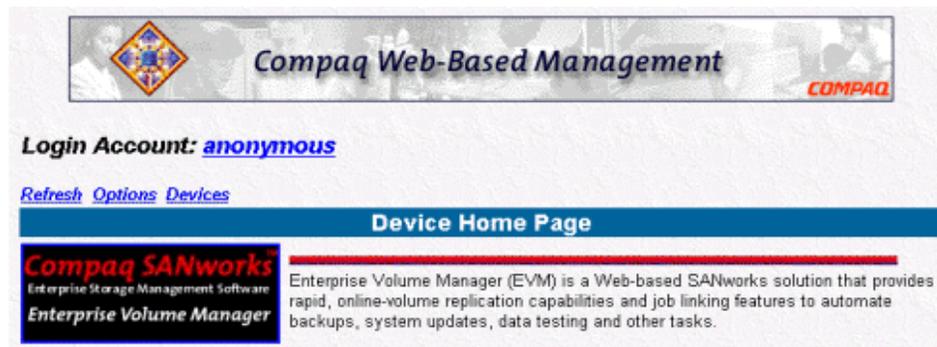
Figure 6–4. Browsing to the device home page

2. On the **Device Home Page**, click **Anonymous**. The **Account Login** page will appear.
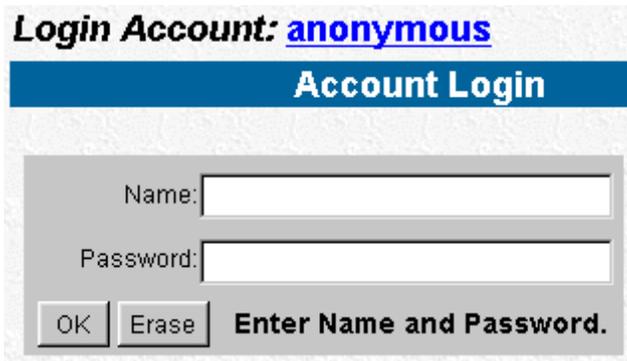
Figure 6–5. Accessing the anonymous account login

3. In the **Name** box, type Administrator. In the Password box, type Administrator. Click **OK**.

4. The **Device Home Page** will reappear.

Disabling Anonymous Access

1. On the **Device Home Page**, Click **Options**. The **Configuration Options** page will appear.
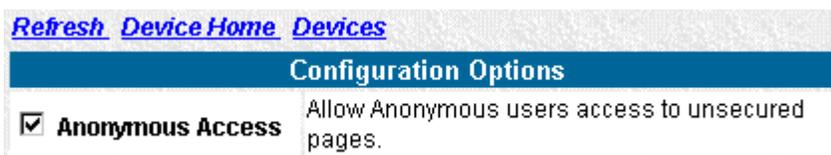
Figure 6–6. Disabling anonymous access

2. In the check box, deselect **Anonymous Access**.

3. Click **Save Configuration**. After saving the configuration, anonymous access will no longer be allowed. Anonymous access can be re-enabled through the same process.

Establish Accounts and Passwords

While logged on as Administrator, you can set up accounts and passwords. The Administrator can change passwords at any time. To change passwords:

1. Navigate to the **Account Login** page and locate the Password statement on the information panel.

The Password for a login account may be changed at any time by an Account Administrator.

Figure 6–7. Locating the password statement

2. Click **changed** on the information panel. The **Change Account** menu will appear.
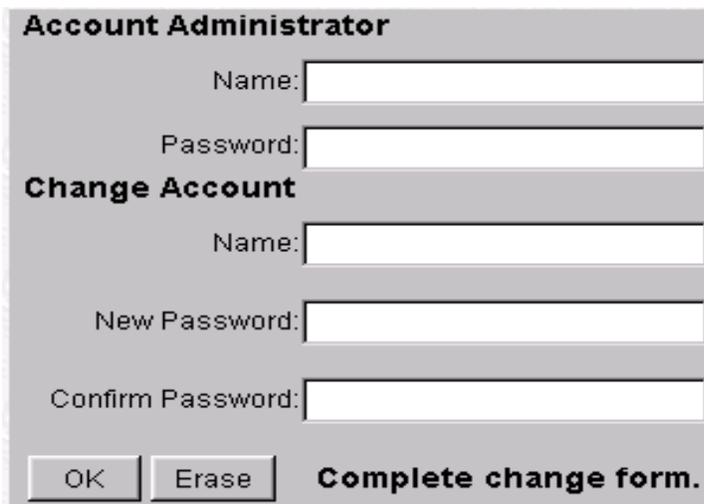
Account Administrator

Name: [   ]

Password: [   ]

Change Account

Name: [   ]

New Password: [   ]

Confirm Password: [   ]

[OK]   [Erase]   **Complete change form.**

Figure 6–8. Changing an account password

3. Change passwords and manage accounts that are appropriate to your EVM operational environment.

Chapter **7**

Removing EVM

This chapter provides instructions on removing an instance of EVM from a computer.

EVM Removal Considerations

Before removing EVM from a computer, you should review the following considerations and plan the removal accordingly.

> ⚠️ **CAUTION:** Removing EVM from a computer also removes the computer from the EVM Network. If not properly planned, removing EVM from a computer can result in reduced operational capabilities and loss of data.

Impacts of Stopping EVM Activities

Stopping EVM on a given computer can impact the EVM Network and EVM jobs. You should consider the following when planning to remove EVM from a computer.

■ Stopping the EVM Server stops any EVM job that is running on the EVM Network.

■ Stopping the EVM Server stops all browser access to the EVM Network.

■ Stopping an EVM Client stops any EVM job that involves the client's computer.

Impacts on Affected EVM Jobs

■ Removing EVM from a computer that is required in an EVM job makes that job unusable.

■ EVM job files are stored on the EVM Server. Removing the EVM Server will delete the EVM job files for the entire EVM Network.

Running Affected EVM Undo-jobs

All pending EVM undo-jobs that require the computer should be run prior to removing EVM.

> ⚠️ **CAUTION:** Running an undo-job will unmount the job's BCV units and delete the BCVs' data. Be sure to coordinate this activity with other operations and users that may be impacted.

EVM Versions

This guide includes procedures for removal of EVM 1.1A. To remove earlier versions, refer to the documentation for the earlier version. To verify the version of the EVM Network:

1. Browse to EVM.

2. In the left navigation pane, open the **ToolBox** folder to view the EVM version number.

Removing an EVM 1.1A Client

Ensure No EVM Jobs are Running or Scheduled

You should confirm that:

■ You have coordinated removal activities with other operations and EVM users.

■ No affected EVM jobs are running.

■ No affected EVM jobs are scheduled to run.

Run Affected EVM Undo-jobs

1. Browse to the **EVM Jobs View** page. Check for any pending undo jobs that involve the computer. These must be run prior to removing EVM.

2. Confirm with other operations and users that the undo-jobs can be run.

> △ **CAUTION:** Running an undo-job will unmount the job's BCV units and delete the BCVs' data. Be sure to coordinate this activity with other operations and users that may be impacted.

3. In cases where you need to retain the data on a job's BCVs for use after removing the instance of EVM, you should copy the data to other non-BCV storage resources before running the undo-job.

4. Run and successfully complete each affected undo job.

Remove the EVM Client

1. To remove an EVM Client, enter *pkgrm CPQevm*.

2. When prompted, confirm the package to be removed.

```
pkgrm CPQevm

The following package is currently installed:

   CPQevm          EVM

                   (sun4u) 1.1

Do you want to remove this package? y

## Removing installed package instance <CPQevm>

This package contains scripts which will be executed with
super-user permission during the process of removing this
package.

Do you want to continue with the removal of this package
[y,n,?,q] y
...
...
Removal of <CPQevm> was successful.
```

NOTE: If necessary, see man page for additional information on use of the pkgrm utility.

Removing an EVM 1.1A Server

Compaq recommends that you remove EVM Clients before removing the EVM Server. This allows you to use the EVM graphical user interface to review EVM job status until all EVM instances but the server have been removed.

Ensure No EVM Jobs are Running or Scheduled

You should confirm that:

- You have coordinated removal activities with other operations EVM users.

- No EVM jobs are running.

- No EVM jobs are scheduled to run.

Run Pending EVM Undo-jobs

1. Browse to the **EVM Jobs View** page. Check for any pending undo jobs. These must be run prior to removing the EVM Server.

2. Confirm with other operations and users that the undo-jobs can be run.

> △ **CAUTION:** Running an undo-job will unmount the job's BCV units and delete the BCVs' data. Be sure to coordinate this activity with other operations and users that may be impacted.

3. In cases where you need to retain the data on a job's BCVs for use during or after the removal, you should copy the data to other non-BCV storage resources before running the undo-job.

4. Run and successfully complete each undo job.

Remove the EVM Server

1. To remove the EVM Server, enter *pkgrm CPQevm CPQelm.*

2. When prompted, confirm the packages to be removed.

```
pkgrm CPQevm CPQelm

The following package is currently installed:

   CPQevm          EVM

                   (sun4u) 1.1

Do you want to remove this package? y
...
...
Removal of <CPQevm> was successful.

The following package is currently installed:

   CPQelm          ELM

                   (sun4u) 1.6

Do you want to remove this package? y
...
...
Removal of <CPQelm> was successful.
```

NOTE: If necessary, see man page for additional information on use of the pkgrm utility.

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