

Introduction

- This module describes the process of configuring the storage system using Command View EVA
- Configuration of hosts is covered later
- Information applies to Command View EVA 9.0
- Compatible with several versions of XCS code
- XCS 6.200 and 09500000 is intended for full functionality
- Module contents
- Command View EVA user interface and how to access online help
- Performing a code load and initializing the storage system
- Creating disk groups, virtual disks, snapshots, snapclones, and mirrorclones
- Overview of best practices for configuring the EVA
- Knowledge of the configuration process will allow you to understand the customer's application of these processes to their

Objectives

- List the components of the Command View EVA interface
- Describe how to access system, page, and field help
- List the steps in the storage system configuration process
- Describe how to create disk groups, virtual disks, snapshots, snapclones, and mirrorclones
- List the primary factors that influence configuration best practices on the EVA

Setup and configuration overview

Step	Responsibility
Gather information and identify all related storage documentation	Customer
Contact an authorized service representative for hardware configuration information	Customer
Set up the hardware	Service Engineer
Enter the World Wide Name (WWN) into the OCP	Service Engineer
Configure HP Command View EVA	Service Engineer
Prepare the hosts	Customer
Configure the system through HP Command View EVA	Service Engineer
Make virtual disks available to their hosts	Service Engineer

Covered in
this module



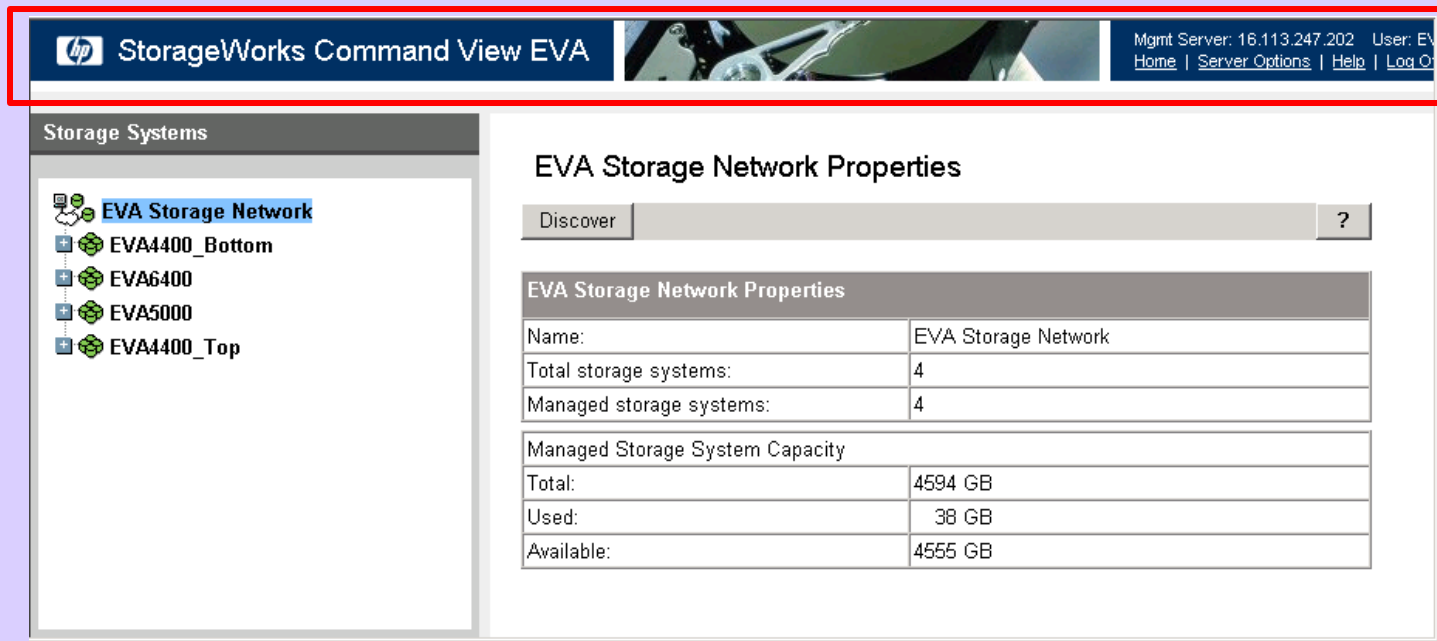
Configuring the system with Command View EVA

- Command View EVA
 - GUI that controls and monitors the storage system
 - Software that supports the GUI
 - Allows configuration of storage system
- Each installation of Command View EVA on the management server is a storage management agent
- The client for the agent is a standard Internet browser

GUI layout — Session pane

- IP address and management server and user name
- Menu options
 - Home — Displays the HSV Storage Network Properties page
 - Server Options — Selects interface and management agent options
 - Help — Displays online help in a new window
 - Log Off — Logs you off the system and closes GUI

Session pane



The screenshot shows the StorageWorks Command View EVA GUI. The top navigation bar is highlighted with a red box and contains the HP logo, the text "StorageWorks Command View EVA", a small image of a storage system, and the management server IP "16.113.247.202" and user "User: EV". Below the navigation bar, the left pane shows a tree view of storage systems under "Storage Systems", with "EVA Storage Network" selected. The right pane displays "EVA Storage Network Properties" with a "Discover" button and a table of properties.

EVA Storage Network Properties	
Name:	EVA Storage Network
Total storage systems:	4
Managed storage systems:	4
Managed Storage System Capacity	
Total:	4594 GB
Used:	38 GB
Available:	4555 GB

GUI layout — Navigation pane

Directory tree structure with folders

- Default folders — Virtual disks, hosts, disk groups, data replication, hardware
- You can create folders for virtual disks and hosts

The screenshot displays the HP StorageWorks Command View EVA interface. The top navigation bar includes the HP logo, the title "StorageWorks Command View EVA", and management server information: "Mgmt Server: 16.113.247.202 User: EV" with links for "Home", "Server Options", "Help", and "Log O".

The left pane, titled "Storage Systems", contains a directory tree structure. The tree is rooted at "EVA Storage Network" and includes the following nodes:

- EVA4400_Bottom
- EVA6400
 - Virtual Disks (highlighted)
 - Hosts
 - Disk Groups
 - Data Replication
 - Hardware
- EVA5000
- EVA4400_Top

The right pane displays the "Virtual Disks Folder Properties" page. At the top, there are three buttons: "Create folder", "Create Vdisk", and "Create container", followed by a question mark icon. Below these buttons are two tabs: "General" and "Status Summary". The "Status Summary" tab is active and contains a table with the following data:

Virtual Disks Folder Properties	
Name:	Virtual Disks
Total Vdisk families and containers: (including subfolders)	0
Total Vdisk folders: (including subfolders)	0

Navigation pane

GUI layout — Content pane

- Where most activity takes place
- Information displayed depends upon Navigation pane selection

The screenshot displays the StorageWorks Command View EVA interface. The top navigation bar includes the HP logo, the text "StorageWorks Command View EVA", and system information: "Mgmt Server: 16.113.247.202 User: EV" with links for "Home", "Server Options", "Help", and "Log O".

The left pane, titled "Storage Systems", shows a tree view of the storage architecture. The selected path is: EVA Storage Network > EVA4400_Bottom > EVA6400 > Virtual Disks.

The main Content pane displays the "Virtual Disks Folder Properties" for the selected folder. It features a toolbar with "Create folder", "Create Vdisk", "Create container", and a help icon (?). Below the toolbar are two tabs: "General" and "Status Summary", with "Status Summary" currently selected.

The "Virtual Disks Folder Properties" table is as follows:

Virtual Disks Folder Properties	
Name:	Virtual Disks
Total Vdisk families and containers: (including subfolders)	0
Total Vdisk folders: (including subfolders)	0

Content
pane

Learning check

1

What information displays in the Command View EVA Session pane?

Data entry

- Text boxes — Enter text in a standard format
- Drop-down lists — Select from a list of choices
- Radio buttons — Click the button next to the choice
- Comment boxes
 - Enter text (boxes) up to 128 characters
 - For comments in a central place, for example, hardware locations

Create a Vdisk Container

Create Container Cancel ?

Basic Settings

Name: ? Size: GB

Disk group:

Name	Vraid0	Vraid1	Vraid5	Vraid6 (GB)
Default Disk Group	815	407	652	543

Redundancy:

Vraid0 ? 815 GB avail

Vraid1 ? 407 GB avail

Vraid5 ? 652 GB avail

Vraid6 ? 543 GB avail

Advanced Settings

Comments:

Text box

Radio button

Dropdown list

Comment box

Command View EVA online help (1 of 3)

Application help

Disk groups.', a 'Considerations' section with two bullet points, and a 'Procedure' section with two numbered steps."/>

Command View EVA Online Help - Microsoft Internet Explorer

Managing EVA6400 with XCS 9.5 (HSV400) Close Command View EVA V9.00.00 Build 090205

Contents Search

Contents

- HP Command View EVA overview
- Disk groups
 - Working with disk groups
 - Adding a disk to a disk group
 - Creating a disk group**
 - Deleting a disk group
 - Disk groups actions
 - Modifying a disk group

Creating a disk group

This page allows you to create a disk group. See [Disk groups](#).

Considerations

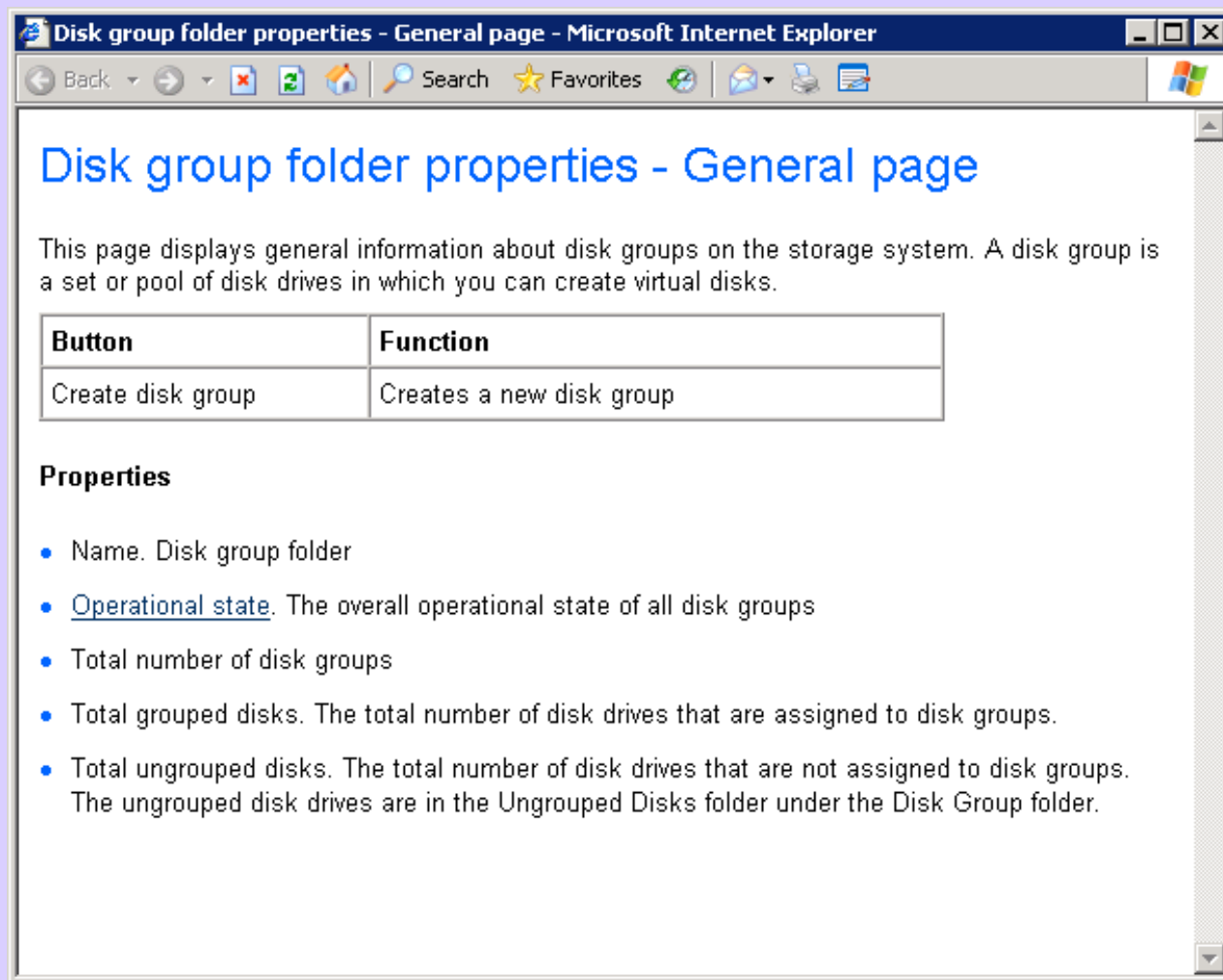
- When you create a disk group, you can specify only the number of physical disks to include. You cannot select specific physical disks.
- Rules apply. See [Number of physical disks in a disk group](#).

Procedure

- Select the **Disk Group** folder in the navigation pane.
The [Disk Group Folder Properties](#) window opens.
- Click **Create disk group**.
The [Create a Disk Group](#) window opens.

Command View EVA online help (2 of 3)

Page help



Disk group folder properties - General page

This page displays general information about disk groups on the storage system. A disk group is a set or pool of disk drives in which you can create virtual disks.

Button	Function
Create disk group	Creates a new disk group

Properties

- Name. Disk group folder
- [Operational state](#). The overall operational state of all disk groups
- Total number of disk groups
- Total grouped disks. The total number of disk drives that are assigned to disk groups.
- Total ungrouped disks. The total number of disk drives that are not assigned to disk groups. The ungrouped disk drives are in the Ungrouped Disks folder under the Disk Group folder.


Command View EVA online help (3 of 3)

Field help

Create a Vdisk Container

Create Container Cancel ?

Basic Settings

Name: Container001  Size: 8 GB

Disk group:

Name	Vraid0	Vraid1	Vraid5	Vraid6 (GB)
Default Disk Group	815	407	652	543

Redundancy:

Vraid0 ? 815 GB avail

Vraid1 ? 407 GB avail

Vraid5 ? 652 GB avail

Vraid6 ? 543 GB avail

Advanced Settings

Comments:

Resulting field-level

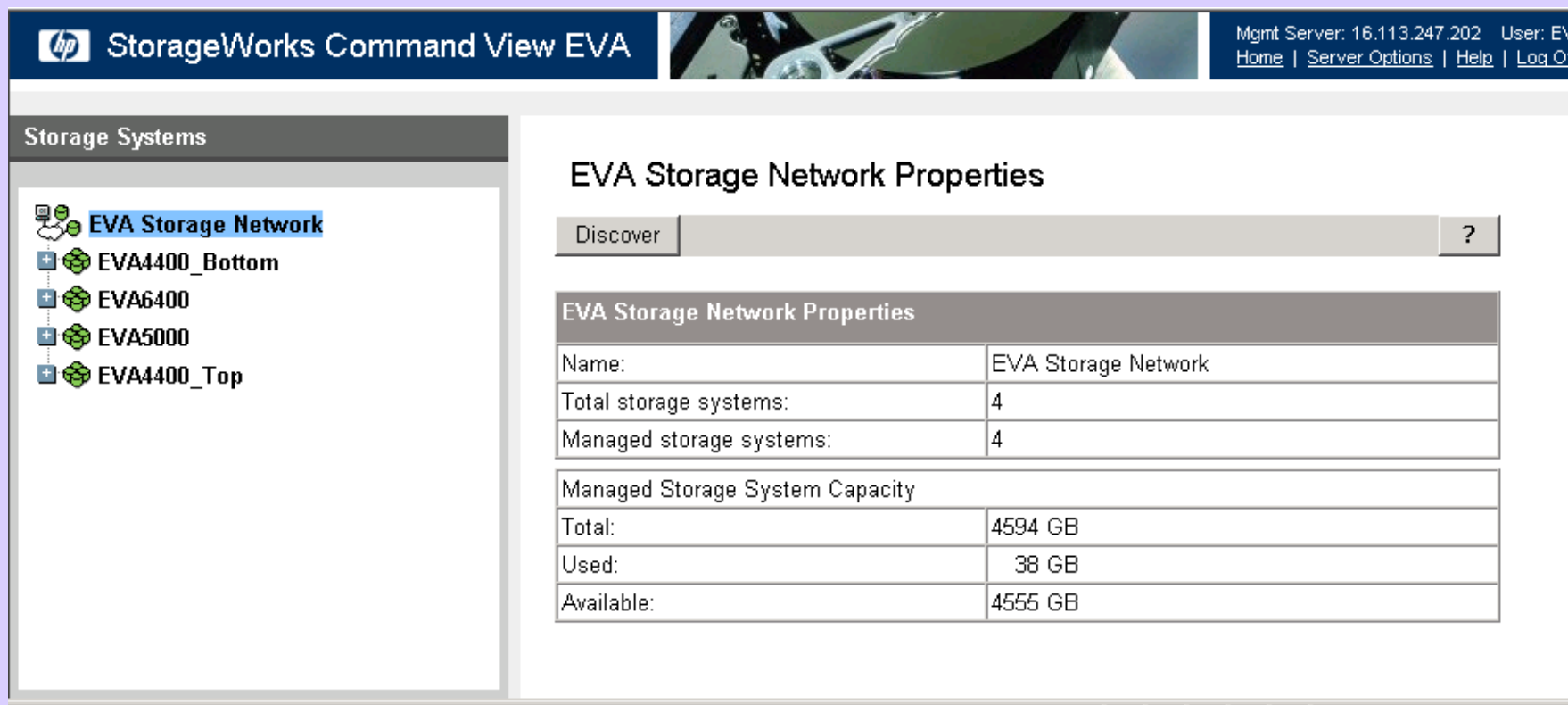
Vdisk name - Microsoft Internet Explorer

Back Search

Vdisk name

A unique user-assigned name. The maximum length is 32 characters. See also [illegal characters](#).

Command View EVA home page



Storage Systems

- EVA Storage Network
 - EVA4400_Bottom
 - EVA6400
 - EVA5000
 - EVA4400_Top

EVA Storage Network Properties

Discover ?

EVA Storage Network Properties	
Name:	EVA Storage Network
Total storage systems:	4
Managed storage systems:	4
Managed Storage System Capacity	
Total:	4594 GB
Used:	38 GB
Available:	4555 GB

Learning check

2

How do you access system help, page help, and field help?

Configuration process steps

1. Gather preliminary information
 - a. Develop a requirements list per server
 - b. Create a list of all FCAs
 - c. Determine the host WWN
2. Synchronize controller time with SAN management time
3. Perform a software code load (if necessary)
4. Initialize the storage system
5. Perform online disk drive code loads (if necessary)
6. Create additional disk groups as desired
7. Install and configure hosts
8. Create the hosts
9. Create the virtual disks
10. Create snapshots, snapclones, and mirrorclones

Gathering preliminary information (1 of 3)

- Develop a requirements list per server
 - Virtual disk characteristics
 - Size (GB)
 - Virtual RAID level (VRAID0, VRAID5, VRAID6, and VRAID1)
 - Operating system LUN identifier (used for OpenVMS and Tru64 UNIX)
 - Which virtual disks can share a disk group
- Create a list of all FCAs
 - WWID of FCAs in the servers
 - Fibre Channel switch port
 - Operating system or server

Gathering preliminary information (2 of 3)

- Determine the host WWN
 - OpenVMS
 - \$ Analyze/system
 - SDA> FC SHOW DEVICE FGA0 (FGB0, and so on)
 - Alpha SRM console
 - SHOW DEVICE**
 - Windows
 - HBAnywhere
 - QLogic SANsurfer
 - SUN Solaris
 - /var/adm/messages (only if adapter driver is loaded)

Gathering preliminary information (3 of 3)

- Determine the host WWN (continued)
 - IBM AIX
 - lsconfig
 - HP-UX
 - fcmsutil or tdutil

Learning check

3

What are the steps used for storage system configuration?

Starting with the uninitialized storage system

The screenshot displays the HP StorageWorks Command View EVA interface. The top navigation bar includes the HP logo, the text "StorageWorks Command View EVA", and management server information: "Mgmt Server: 16.113.247.202 User: EV" with links for "Home", "Server Options", "Help", and "Log O".

The left sidebar, titled "Storage Systems", shows a tree view under "EVA Storage Network":

- EVA4400_Bottom
 - 5005-08B4-00B4-F8D0** (selected)
 - Hardware
- EVA5000
- EVA4400_Top

The main content area is titled "Uninitialized Storage System Properties" and features a toolbar with buttons: Initialize, Set time, View events, Refresh, Code load, Shut down, and a help icon (?). Below the toolbar are three tabs: General, Status Summary (active), and Licensing.

The "Status Summary" tab contains several sections:

- Identification**

Name:	5005-08B4-00B4-F8D0
Node World Wide Name:	5005-08B4-00B4-F8D0
UUID:	5005-08b4-000b-482c-0000-0000-0000-0000
- Condition/State**

Operational state:	✓ Good (Uninitialized)
License state:	✓ Valid
- System Memory**

Control cache:	4096 MB
Data Cache:	3577 MB
Total cache:	7673 MB
- System**

Type:	HSV400
Version:	09500000
Time:	18 Feb 2009 15:25:39

At the bottom, a "Comments" section contains a red warning message: "***** THIS SYSTEM IS UNINITIALIZED *****" followed by "Click the Initialize button to prepare the system for data storage."

Synchronizing time

- You should always synchronize controller time with SAN management time
- On the Uninitialized HSV Storage System Properties page, click the Set time button to display the Set System Time page
- Select Use management server date/time and Re-sync controller time with the SAN management time, and then click Save changes

Set System Time

Save changes | Cancel | ?

Select a date/time setting and click the **Save changes** button to initialize your storage system's internal clock.

<input checked="" type="radio"/>	Use management server date/time	18 Feb 2009 15:29:29	?
<input checked="" type="checkbox"/>	Re-sync controller time with the SAN management time	Warning: Select re-sync option from only one management server for this storage system. If you select this option on multiple servers, unpredictable time behavior will result.	
<input type="radio"/>	Use local (browser) date/time	18 Feb 2009 15:29:33	
<input type="radio"/>	Use existing controller date/time setting:	18 Feb 2009 15:29:31	
<input type="radio"/>	Use a custom date/time setting		
	<input type="text" value="01"/> — <input type="text" value="Jan"/> — <input type="text" value="2001"/>	<input type="text" value="00"/> : <input type="text" value="00"/> : <input type="text" value="00"/>	

Performing a controller code load

- Loads a superfile (.sss) that updates
 - XCS
 - EMU firmware (not for EVA 4400/6400/8400)
 - Parse file on the management server for event translation
- Loaded from a browser on a client
- Controller fast boots after XCS is updated
- File must be properly formatted
- Download to single storage system only
- Error aborts processing

Code load start

Uninitialized Storage System Properties

Initialize Set time View events Refresh **Code load** Shut down ?

General Status Summary Licensing

Identification	
Name:	5005-08B4-00B4-F8D0
Node World Wide Name:	5005-08B4-00B4-F8D0
UUID:	5005-08b4-000b-482c-0000-0000-0000-0000

Condition/State	
Operational state:	✓ Good (Uninitialized)
License state:	✓ Valid

System Memory	
Control cache:	4096 MB
Data Cache:	3577 MB
Total cache:	7673 MB

System	
Type:	HSV400
Version:	09500000
Time:	18 Feb 2009 15:36:50

Comments
***** THIS SYSTEM IS UNINITIALIZED ***** Click the Initialize button to prepare the system for data storage.

Performing a code load (1 of 4)

Code Load Storage System

Page 1 Page 2

Next step

Cancel

?

Complete the following steps to update the operating code in your storage system.

STEP 1: Select a firmware image

Specify the complete path to your storage-system firmware image file.

\\5000000\CR1307\delp.sss

Browse...

?

STEP 2: Upload your firmware image file

Click the **Next Step** button to upload the firmware image file to your management server.

Performing a code load (2 of 4)

Code Load Storage System

Page 1 Page 2

Previous step Finish Cancel ?

STEP 3: Read the application notes
Read the below application notes associated with your firmware image. The notes offer important cautions about the code load process. If you wish to cancel the code load operation after reading the notes, click the **Cancel** button.

STEP 4: Validate your firmware image file
Your firmware image file consists of a number of individual segments of information and operating code. Your management server processes each segment sequentially, and it sends the ones containing controller, enclosure, and (optionally) disk-drive operating code to your storage system. Click the **Finish** button to continue with this process.


Important Application Notes

This installation procedure will upgrade all components in the HP StorageWorks 6400 Enterprise Virtual Array to version 09.50.00.00.

This version of firmware should only be used on the EVA 6400 (Series), HSV400.

Performing a code load (3 of 4)

Confirm System Code Load



IF YOU CONTINUE, YOUR STORAGE SYSTEM'S OPERATING SOFTWARE WILL BE UPDATED. YOUR CONTROLLERS WILL BOTH RESTART AND YOUR STORAGE SYSTEM WILL BE UNAVAILABLE FOR MANAGEMENT UNTIL THE RESTART IS COMPLETE.

If you are sure you wish to continue, enter "YES" and click the **Code Load System** button:

Performing a code load (4 of 4)

(Caution: Do not use the browser Back button to access this page. Doing so will duplicate the current action.)

Processing 10 firmware image segments. Please wait...

Please wait while your management server processes your firmware image file and sends the individual code segments in the file to your controllers for validation. This process may take several minutes.

8 of 10 segments processed and transferred



Current segment			
#	Name	Size	Status
9	Functional image	2,662,412 bytes	Processing . . ■

Initializing the storage system

- Creates a usable storage system
- Binds controllers as operational pair
- Establishes preliminary data structures on the disk array
- Creates the default disk group
- Only must be done first time you configure the storage system or if the storage system is uninitialized

Levels of metadata (1 of 2)

Three levels of EVA metadata

1. Storage system-level quorum disks

- Holds controller information
 - WWN
 - Storage system name
 - Character map of disk groups and virtual disk members, but not virtual disk chunk mappings
- Quorum disk requirements
 - Minimum of two quorum disks to boot HSV controllers
 - Minimum of five quorum disks
 - Maximum of 16 quorum disks (One per disk group)
 - Storage requirements are pre-allocated at 0.03% on each disk

Levels of metadata (2 of 2)

2. Disk group metadata

- Disk group characteristics
 - Number of spindles
 - Spare space allocation
- Virtual disk chunk mapping

3. Command View EVA metadata

- The management logical disk (MLD) provides metadata for Command View EVA
- Devoted to the management server
- Spread across metadata area on all disks in disk groups
- Holds backup copy of current controller configuration
- Holds controller events and controller data such as trap host lists and license lists

Initialize an EVA Storage System page (1 of 2)

Initialize an EVA Storage System

Initialize Cancel ?

Basic Settings

Name: ?

Number of disks: (Available Online disks: 10 Available Near-Online disks: 8 Available Solid-State-Disk drives: 0) ?

Advanced Settings

Disk type: ?

Disk failure protection: ? Console LUN ID: ? Disk group type: ?

System time: ?

Management server date/time: 18 Feb 2009 16:08:52

Local (browser) date/time: 18 Feb 2009 16:08:59

Existing controller date/time: 18 Feb 2009 16:08:43

Custom date/time: : :

Comments:

?

Initialize an EVA Storage System page (2 of 2)

Initialize an EVA Storage System


Initialize Cancel ?

Basic Settings

Name: ?

Number of disks: (Available Online disks: 10 Available Near-Online disks: 8 Available Solid-State-Disk drives: 0) ?

Microsoft Internet Explorer [X]

 Your system will be initialized with a single disk group containing 8 Online disk drives. Any existing data in those disks will be lost. Enough space will be reserved to cover single disk failure(s) in the disk group.

Are you sure you wish to continue?

OK Cancel

Management server date/time: 18 Feb 2009 16:11:00

Local (browser) date/time: 18 Feb 2009 16:11:07

Existing controller date/time: 18 Feb 2009 16:10:51

Custom date/time: : :

Comments:
 ?

Initialized Storage System Properties page

Initialized Storage System Properties				
Save changes	System options	View events	Refresh	?
Code load	Shut down	Check Redundancy		
General	Status Summary	Licensing		
Identification		Condition/State		
Name:	EVA6400	Operational state:	⚠ Attention (Initialized)	
Node World Wide Name:		License state:	✔ Valid	
5005-08B4-00B4-F8D0		System Memory		
UUID:		Control cache:	2048 MB	
6005-08b4-000b-482c-0000-3000-0103-0000		Data Cache:	1788 MB	
System		Total cache:	3836 MB	
Type:	HSV400	Policies		
Version:	09500000	Device addition:	Manual	
Software:	CR1307delp-09500000	Disk replacement delay:	1 mins	
Console LUN ID:	0	Storage Capacity		
Time:	18 Feb 2009 16:17:03	Total:	818 GB	
		Used:	0 GB	
		Available:	818 GB	
Comments				
EVA6400 for training development.				

Status summaries

Use the Status Summary button to get a system summary, virtual disk summary, disk group summary, and data replication summary

Initialized Storage System Properties

Refresh ?

General **Status Summary** Licensing

Storage	Good	Attention	Failed	Total
Virtual Disks	—	—	—	—
Disk groups	1	—	—	1
DR groups	—	—	—	—

Hosts	Good	Attention	Failed	Total
Hosts	n/a	n/a	n/a	—

Hardware	Good	Attention	Failed	Total
Controllers	1	—	—	1
Disk drives	18	—	—	18
iSCSI devices	—	—	—	—

Code load disk drives globally (1 of 4)

General process for using bundled firmware

- Locate the zip file that contains the bundled hard drive firmware, something like the following
 - HDDBundled_Image_2008_12_15.zip
- Double-click the zip file
- Double-click the self-extracting zip file (.exe) and unzip the file to the c:\Program Files\Hewlett-Packard\sanworks\cload folder
- Create a zip file (for example, my_codeload.zip) from the contents of the folder
- Select your initialized storage system
- Click Code Load, then OK

Code load disk drives globally (2 of 4)

Select Code Load Disk Drives Online and click Select

Code Load Selection

Select

Cancel

?

Choose a code load method and click **Select** to continue.

<input type="radio"/>	<p>Code Load Storage System This method enables you to upgrade the firmware in your controllers and enclosure components while they remain online. It also enables you to upgrade disk drive firmware off line. It requires a storage system image file with a .SSS extension.</p>
<input checked="" type="radio"/>	<p>Code Load Disk Drives Online This method allows you to upgrade the firmware in eligible disk drives while they remain online. It requires a self-extracting, bundled image (BI) archive file with a .EXE extension.</p>

Code load disk drives globally (3 of 4)

Enter the path of the zip file you created

Code Load Disk Drives Online

Page 1 Page 2 Page 3

Next step Cancel ?

Complete the following steps to update the operating code in eligible disk drives in your storage system without taking them off line.

STEP 1: Select the bundled image zip file
Enter the complete path to the bundled image zip file.

Browse... ?

Code load disk drives globally (4 of 4)

Review the code load status

Code Load Disk Drives Online Page 1 Page 2 Page 3

[Finish](#) [Save to File](#) [?](#)

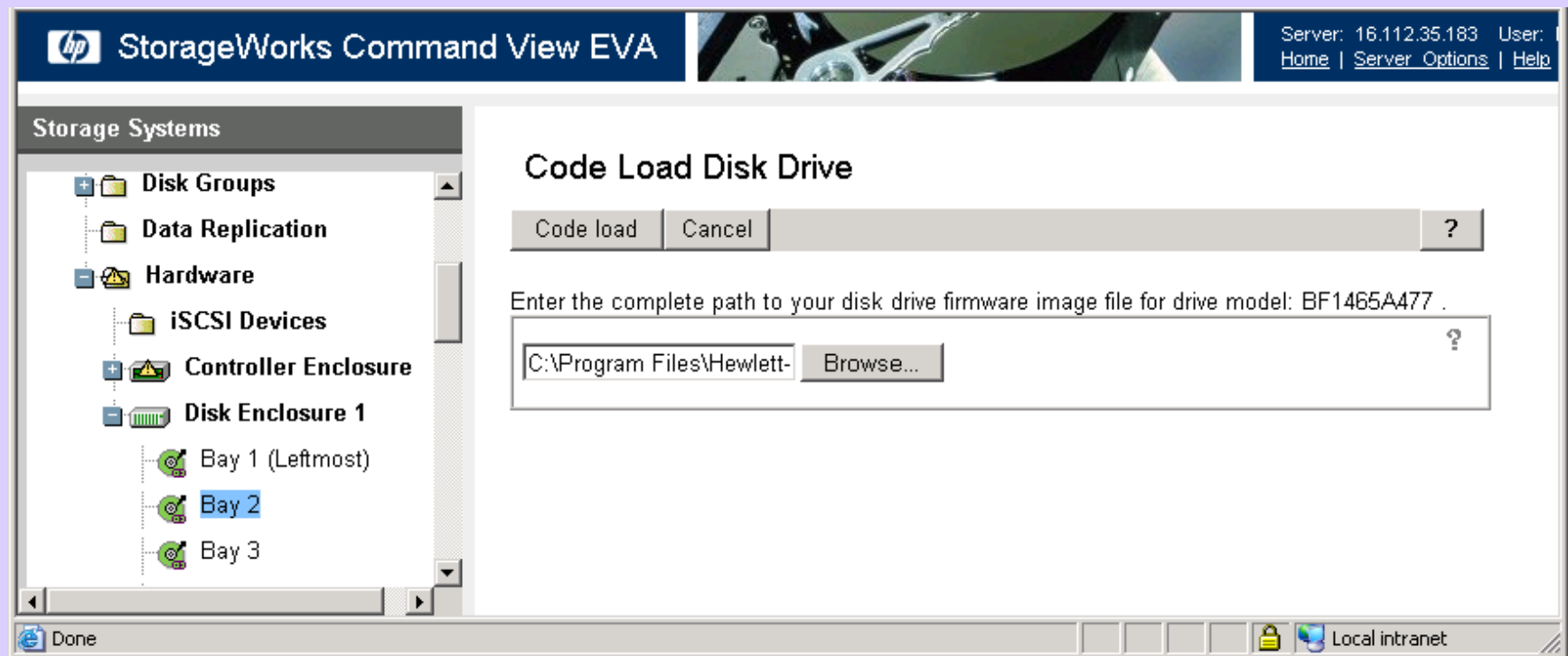
STEP 3: Finish
The results of your online disk drive code load process are shown below. You can use your browser's print features or the **Save to File** button to create a record of this information. Click **Finish** to complete the code load process.

Disk Drive Configuration Information For Storage System:

Disk Group	Disk Drive			Model	FW Version	Code Load Status
	Rack	Enclosure	Bay	Capacity	BI Version	
Default Disk Group	Disk 001			BD03654499	3BE9	✔ Loaded
	1	8	1	33.92 GB	3BE9	
Default Disk Group	Disk 003			BD03654499	3BE9	✔ Loaded
	1	8	3	33.92 GB	3BE9	
Default Disk Group	Disk 006			BD03654499	3BE9	✔ Loaded
	1	7	1	33.92 GB	3BE9	
Default Disk Group	Disk 007			BD03654499	3BE9	✔ Loaded
	1	8	2	33.92 GB	3BE9	

Code load disk drives individually

- Select a drive bay and the Code load button
- Browse to the specific firmware file and select Code load



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