Managing Storage Adapters

This chapter includes the following sections:

Creating Virtual Drives from Unused Physical Drives

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **create virtual-drive**	At this point, you are prompted to enter information corresponding to the RAID level, the physical drives to be used, the size and the write policy for the new virtual drive. Enter the appropriate information at each prompt. When you have finished specifying the virtual drive information, you are prompted to confirm that the information is correct. Enter **y** (yes) to confirm, or **n** (no) to cancel the operation.
Step 5	Server /chassis/storageadapter # **show virtual-drive**	Displays the existing virtual drives.

Example

This example shows how to create a new virtual drive that spans two unused physical drives.

```
Server # scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-3
Server /chassis/server/storageadapter # create-virtual-drive
Please enter RAID level
0, 1, 5, 10, 50 --> 1

Please choose from the following 10 unused physical drives:
    ID  Size(MB)       Model        Interface  Type
     1  571776         SEAGATE      SAS        HDD
     2  571776         SEAGATE      SAS        HDD
     4  571776         SEAGATE      SAS        HDD
     5  428672         SEAGATE      SAS        HDD
     6  571776         SEAGATE      SAS        HDD
     7  571776         SEAGATE      SAS        HDD
     8  571776         SEAGATE      SAS        HDD
     9  428672         SEAGATE      SAS        HDD
    10  571776         SEAGATE      SAS        HDD
    11  953344         SEAGATE      SAS        HDD

Specify physical disks for span 0:
  Enter comma-separated PDs from above list--> 1,2
  Please enter Virtual Drive name (15 characters maximum)--> test_v_drive
  Please enter Virtual Drive size in MB, GB, or TB
   Example format: '400 GB' --> 10 GB

Optional attribute:

  stripsize: defaults to 64K Bytes
```

```
     0: 8K Bytes
    1: 16K Bytes
    2: 32K Bytes
    3: 64K Bytes
    4: 128K Bytes
    5: 256K Bytes
    6: 512K Bytes
    7: 1024K Bytes
  Choose number from above options or hit return to pick default--> 2
stripsize will be set to 32K Bytes (6 and 'strip-size\:32k')

  Disk Cache Policy: defaults to Unchanged

     0: Unchanged
    1: Enabled
    2: Disabled
  Choose number from above options or hit return to pick default--> 0
Disk Cache Policy will be set to Unchanged (0 and 'disk-cache-policy\:unchanged'

         )

  Read Policy: defaults to No Read Ahead

     0: No Read Ahead
    1: Always
  Choose number from above options or hit return to pick default--> 0
Read Policy will be set to No Read Ahead (0 and 'read-policy\:no-read-ahead')

  Write Policy: defaults to Write Through

     0: Write Through
    1: Write Back Good BBU
    2: Always Write Back
  Choose number from above options or hit return to pick default--> 0
Write Policy will be set to Write Through (0 and 'write-policy\:write-through')

  IO Policy: defaults to Direct I/O

     0: Direct I/O
    1: Cached I/O
  Choose number from above options or hit return to pick default--> 0
IO Policy will be set to Direct I/O (0 and 'io-policy\:direct-io')

  Access Policy: defaults to Read Write

     0: Read Write
    1: Read Only
    2: Blocked
  Choose number from above options or hit return to pick default--> 0
Access Policy will be set to Read Write (0 and 'access-policy\:read-write')

New virtual drive will have the following characteristics:
  - Spans: '[1.2]'
  - RAID level: '1'
  - Name: 'test_v_drive'
  - Size: 10 GB
  - stripsize: 32K Bytes
  - Disk Cache Policy: Unchanged
  - Read Policy: No Read Ahead
  - Write Policy: Write Through
  - IO Policy: Direct I/O
  - Access Policy: Read Write

OK? (y or n)--> y
```

```
Server /chassis/server/storageadapter # show virtual-drive
Virtual Drive Health         Status               Name             Size       RAID Level
Boot Drive
------------- -------------- -------------------- ---------------- ---------- ----------
----------
0             Good           Optimal                               150528 MB  RAID 0
false
1             Good           Optimal                               20480 MB   RAID 0
true
2             Good           Optimal                               114140 MB  RAID 0
false
3             Good           Optimal              test_v_drive     10000 MB   RAID 1
false
4             Good           Optimal              new_from_test    500 MB     RAID 1
false

Server /chassis/storageadapter #
```

Creating Virtual Drive from an Existing Drive Group

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/storageadapter # **carve-virtual-drive**	At this point, you are prompted to enter information corresponding to the virtual drives to be used, and the size and the write policy for the new virtual drive. Enter the appropriate information at each prompt. When you have finished specifying the virtual drive information, you are prompted to confirm that the information is correct. Enter **y** (yes) to confirm, or **n** (no) to cancel the operation.
Step 5	Server /chassis/server/storageadapter # **show virtual-drive**	Displays the existing virtual drives.

Example

This example shows how to carve a new virtual drive out of unused space in an existing RAID 1 drive group:

```
Server# scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-3
Server /chassis/server/storageadapter # carve-virtual-drive
  < Fetching virtual drives...>

ID  Name              RL  VDSize        MaxPossibleSize PD(s)
-------------------------------------------------------------
0  RAID0_12          0   100 MB        Unknown         1,2

Please choose from the above list the virtual drive number
whose space the new virtual drive will share--> 0
New virtual drive will share space with VD 0

Please enter Virtual Drive name (15 characters maximum)--> test_v_drive
Please enter Virtual Drive size in MB, GB, or TB (maximum: Unknown)
  Example format: '400 GB' --> 10 GB

Optional attributes:

  stripsize: defaults to 64K Bytes
     0: 8K Bytes
    1: 16K Bytes
    2: 32K Bytes
    3: 64K Bytes
    4: 128K Bytes
    5: 256K Bytes
    6: 512K Bytes
    7: 1024K Bytes
  Choose number from above options or hit return to pick default--> 0
stripsize will be set to 8K Bytes (4 and 'strip-size\:8k')

  Disk Cache Policy: defaults to Unchanged
     0: Unchanged
    1: Enabled
    2: Disabled
  Choose number from above options or hit return to pick default--> 0
Disk Cache Policy will be set to Unchanged (0 and 'disk-cache-policy\:unchanged')

  Read Policy: defaults to No Read Ahead
     0: No Read Ahead
    1: Always
  Choose number from above options or hit return to pick default--> 0
Read Policy will be set to No Read Ahead (0 and 'read-policy\:no-read-ahead')

  Write Policy: defaults to Write Through
     0: Write Through
    1: Write Back Good BBU
    2: Always Write Back
  Choose number from above options or hit return to pick default--> 0
Write Policy will be set to Write Through (0 and 'write-policy\:write-through')

  IO Policy: defaults to Direct I/O
     0: Direct I/O
    1: Cached I/O
  Choose number from above options or hit return to pick default--> 0
IO Policy will be set to Direct I/O (0 and 'io-policy\:direct-io')

  Access Policy: defaults to Read Write
     0: Read Write
    1: Read Only
    2: Blocked
  Choose number from above options or hit return to pick default--> 0
Access Policy will be set to Read Write (0 and 'access-policy\:read-write')
```

```
New virtual drive will have the following characteristics:
  - It will share space with virtual drive 0
  - Name: 'amit'
  - Size: 10 GB
  - stripsize: 8K Bytes
  - Disk Cache Policy: Unchanged
  - Read Policy: No Read Ahead
  - Write Policy: Write Through
  - IO Policy: Direct I/O
  - Access Policy: Read Write

OK? (y or n)--> y
Server /chassis/storageadapter # show virtual-drive
Virtual Drive Health         Status               Name             Size       RAID Level
Boot Drive
------------- -------------- -------------------- ---------------- ---------- ----------
----------
0             Good           Optimal                               150528 MB  RAID 0
false
1             Good           Optimal                               20480 MB   RAID 0
true
2             Good           Optimal                               114140 MB  RAID 0
false
3             Good           Optimal              test_v_drive     10000 MB   RAID 1
false
4             Good           Optimal              new_from_test    500 MB     RAID 1
false

Server /chassis/server/storageadapter #
```

Importing Foreign Configuration

When one or more physical drives that have previously been configured with a different controller are inserted into a server, they are identified as foreign configurations. You can import these foreign configurations to a controller.

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **import-foreign-config**	You are prompted to confirm the action. Enter **yes** to confirm. **Note** If you do not enter **yes**, the action is aborted.

Example

This example shows how to import all foreign configurations on the MegaRAID controller in slot 3:

```
Server# scope chassis
Server /chassis/server # scope storageadapter SLOT-3
Server /chassis/server/storageadapter # import-foreign-config
Are you sure you want to import all foreign configurations on this controller?
Enter 'yes' to confirm -> yes
Server /chassis/server/storageadapter #
```

Clearing Foreign Configuration

Important This task clears all foreign configuration on the controller. Also, all configuration information from all physical drives hosting foreign configuration is deleted. This action cannot be reverted.

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **clear-foreign-config**	You are prompted to confirm the action. Enter **yes** to confirm. **Note** If you do not enter **yes**, the action is aborted.

Example

This example shows how to clear all foreign configurations on the MegaRAID controller in slot 3:

```
Server# scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-3
Server /chassis/server/storageadapter # clear-foreign-config
Are you sure you want to clear all foreign configurations on this controller?
All data on the drive(s) will be lost.
Enter 'yes' to confirm -> yes
Server /chassis/server/storageadapter #
```

Retrieving Storage Firmware Logs for a Controller

This task retrieves the firmware logs for the controller and places it in the `/var/log` location. This ensures that this log data is available when Technical Support Data is requested.

Before you begin

You must log in with admin privileges to perform this task

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters the command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **get-storage-fw-log**	Retrieves the storage firmware log file to the specified controller.
Step 4	At the prompt, enter **yes**.	Begins download of the storage firmware log files.

Example

This example shows how to view the download status of the retrieved storage firmware log files:

```
Server # scope chassis
Server /chassis # scope storageadapter SLOT-HBA
Server /chassis/storageadapter # get-storage-fw-log

You are initiating the retrieval of the storage firmware log to Cisco IMC.
This task will take a few minutes to complete. You may monitor the status
  of the retrieval by running the 'get-storage-fw-log-download-progress' command.
When the download is finished, the 'Storage Firmware Log Status' value will be
  'Complete', along with the size of the logfile.
You may then download the log file using the Technical Support facility,
  accessible from /cimc/tech-support scope, or the WebUI's Utilities page.

Do you want to proceed?
Enter 'yes' to confirm -> yes
Server /chassis/storageadapter # get-storage-fw-log-download-progress
Storage Firmware Log Status: Complete (total size 61906 bytes)
```

Self Encrypting Drives (Full Disk Encryption)

Cisco IMC supports self encrypting drives (SED). A special hardware in the drives encrypts incoming data and decrypts outgoing data in real-time. This feature is also called Full Disk Encryption (FDE).

The data on the drive is encrypted on its way into the drive and decrypted on its way out. However, if you lock the drive, no security key is required to retrieve the data.

When a drive is locked, an encryption key is created and stored internally. All data stored on this drive is encrypted using that key, and stored in encrypted form. Once you store the data in this manner, a security key is required in order to un-encrypt and fetch the data from the drive. Unlocking a drive deletes that encryption key and renders the stored data unusable. This is called a Secure Erase. The FDE comprises a key ID and a security key.

The FDE feature supports the following operations:

- Enable and disable security on a controller
- Create a secure virtual drive
- Secure a non-secure drive group
- Unlock foreign configuration drives
- Enable security on a physical drive (JBOD)
- Clear secure SED drives
- Clear secure foreign configuration

Scenarios to consider While Configuring Controller Security in a Dual or Multiple Controllers Environment

Note Dual or Multiple controllers connectivity is available only on some servers.

Controller security can be enabled, disabled, or modified independently. However, local and remote key management applies to all the controllers on the server. Therefore security action involving switching the key management modes must be performed with caution. In a scenario where both controllers are secure, and you decide to move one of the controllers to a different mode, you need to perform the same operation on the other controller as well.

Consider the following two scenarios:

- Scenario 1—Key management is set to remote; both controllers are secure and use remote key management. If you now wish to switch to local key management, switch the key management for each controller and disable remote key management.
- Scenario 2—Key management is set to local; both controllers are secure and use local key management. If you now wish to switch to remote key management, enable remote key management and switch the key management for each controller.

If you do not modify the controller security method on any one of the controllers, it renders the secure key management in an unsupported configuration state.

Enabling Security on a Controller

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **enable-controller-security**	At this point, you are prompted to enter the key-id and then the security key, you can either enter a key-id or a security key of your choice in the respective prompts or you can use the suggested keys. Depending on whether you want to use the suggested key-id and security key, or key-id and security key of your choice, enter **y** (yes) to use the suggested keys, or **n** (no) to enter the keys of your choice at the appropriate prompts.
Step 5	Server /chassis/server/storageadapter # **show detail**	Displays the storage drive details.

Example

The following example shows how to enable security on a controller:

```
Server# scope chassis
Server/chassis # scope server 1
Server /chassis/server # scope storageadapter SBMezz1
Server /chassis/server/storageadapter # enable-controller-security
Use generated key-id 'UCSC-MRAID12G_FHH18250010_1d85dcd3'?  (y or n)--> y
Use suggested security-key '6ICsmuX@oVB7e9wXt79qsTgp6ICsmuX@'?  (y or n)--> n
Enter security-key --> testSecurityKey
Will use security-key 'testSecurityKey'
Server /chassis/server/storageadapter show detail
PCI Slot SBMezz1:
    <stuff deleted>
    Controller is Secured: 1
Server /chassis/server/storageadapter #
```

Disabling Security on a Controller

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **disable-controller-security**	A confirmation prompt appears. At the confirmation prompt, enter **yes** to confirm, or **n** (no) to cancel the operation. This disables the controller security.
Step 5	Server /chassis/server/storageadapter # **show detail**	Displays the storage drive details.

Example

The following example shows how to disable security on a controller:

```
Server# scope chassis
Server/chassis # scope server 2
Server /chassis/server # scope storageadapter SBMezz1
Server /chassis/server/storageadapter #  disable-controller-security
Note: this operation will fail if any secured virtual drives or secure JBODs are present.
Are you sure you want to disable security on this controller?
Enter 'yes' to confirm -> yes
Server /chassis/server/storageadapter # show detail
PCI Slot SBMezz1:
    <content deleted>
    Controller is Secured: 0
Server /chassis/server/storageadapter #
```

Modifying Controller Security Settings

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.

	Command or Action	Purpose
Step 4	Server /chassis/server/storageadapter # **modify-controller-security**	At this point, you are prompted to enter the current security key, option to choose whether you want to reset the key-id and the new security key. Enter the appropriate information. **Note** The modify command allows you to modify the key ID and/or the security key. You are prompted to enter the current security key only if you choose to modify the security key. Modifying the key ID alone does not require specifying the current security key. At the confirmation prompt, enter **y** (yes) to confirm, or **n** (no) to cancel the operation.

Example

The following example shows how to modify the security settings of a controller:

```
Server# scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SBMezz1
Server /chassis/server/storageadapter # modify-controller-security
Please enter current security-key --> testSecurityKey
Keep current key-id 'UCSC-MRAID12G_FHH18250010_1d85dcd3'? (y or n)--> n
Enter new key-id: NewKeyId
Will change key-id to 'NewKeyId'
Keep current security-key? (y or n)--> y

Server /chassis/server/storageadapter #
```

Verifying the Security Key Authenticity

If you are not sure about the security key, you can use this procedure to verify whether the security key that you provide matches the controller security key.

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.

	Command or Action	Purpose
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **verify-controller-security-key**	At the prompt, enter the security key and press Enter. If you enter a security key that does not match the controller security key, a verification failure message appears.

Example

The following example shows how to verify the security key of a controller:

```
Server # scope chassis
Server/chassis # scope server 2
Server /chassis/server # scope storageadapter SBMezz1
Server /chassis/server/storageadapter #  verify-controller-security-key
Please enter the security key to verify -> WrongSecurityKey
verify-controller-security-key failed.
Error: "r-type: RAID controller: SBMezz1 command-status: Lock key from backup failed
verification"
Server /chassis/server/storageadapter #
Server /chassis/server/storageadapter # verify-controller-security-key
Please enter the security key to verify -> testSecurityKey
Server /chassis/server/storageadapter #
```

Switching Controller Security From Remote to Local Key Management

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **switch-to-local-key-mgmt**	Enter **y** at the confirmation prompt. **Note** If you have multiple controller you must switch the security on those as well.
Step 5	Server /chassis/server/storageadapter # *key id*	Enter the new key ID at the prompt. Switches to local key management.

	Command or Action	Purpose
		Note Entering the security key is mandatory to perform this operation.

Example

The following example shows how to switch controller security from remote to local key management:

```
Server # scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SBMezz1
Server /chassis/server/storageadapter # switch-to-local-key-mgmt
Executing this command will require you to disable remote key management once switch is
complete.
Do you want to continue(y or n)?y
Proceeding to switch to local key management.
Enter new security-key: test
Will change security-key to 'test'
Switch to local key management complete on controller in SBMezz1.
***Remote key management needs to be disabled***
Please disable remote key management.
Server /chassis/server/storageadapter #
```

What to do next

After you switch from Remote to Local Key Management, ensure that you disable KMIP secure key management.

Switching Controller Security From Local to Remote Key Management

Before you begin

- You must log in with admin privileges to perform this task.
- KMIP must be enabled.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **switch-to-remote-key-mgmt**	Enter **y** at the confirmation prompt.

	Command or Action	Purpose
Step 5	Server /chassis/server/storageadapter # *security id*	Enter the security key at the prompt. Switches to remote key management. **Note** Entering the security key is mandatory to perform this operation.

Example

The following example shows how to switch controller security from local to remote key management:

```
Server # scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SBMezz1
Server /chassis/server/storageadapter # switch-to-remote-key-mgmt
Changing the security key requires existing security key.
Please enter current security-key --> test
Switch to remote key management complete on controller in SBMezz1.
Server /chassis/server/storageadapter #
```

Deleting a Virtual Drive

Important This task deletes a virtual drive, including the drives that run the booted operating system. So back up any data that you want to retain before you delete a virtual drive.

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **scope virtual-drive** *drive-number*	Enters command mode for the specified virtual drive.
Step 5	Server /chassis/server/storageadapter/virtual-drive # **delete-virtual-drive**	You are prompted to confirm the action. Enter **yes** to confirm. **Note** If you do not enter **yes**, the action is aborted.

Example

This example shows how to delete virtual drive 3.

```
Server# scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-3
Server /chassis/server/storageadapter # scope virtual-drive 3
Server /chassis/server/storageadapter/virtual-drive # delete-virtual-drive
Are you sure you want to delete virtual drive 3?
All data on the drive will be lost.  Enter 'yes' to confirm -> yes
Server /chassis/server/storageadapter/virtual-drive #
```

Initializing a Virtual Drive

All data on a virtual drive is lost when you initialize the drive. Before you run an initialization, back up any data on the virtual drive that you want to save.

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **scope virtual-drive** *drive-number*	Enters command mode for the specified virtual drive.
Step 5	Server /chassis/server/storageadapter/virtual-drive # **start-initialization**	Initializes the specified virtual drive.
Step 6	Server /chassis/server/storageadapter/virtual-drive # **cancel-initialization**	(Optional) Cancels the initialization of the specified virtual drive.
Step 7	Server /chassis/server/storageadapter/physical-drive # **get-operation-status**	Displays the status of the task that is in progress on the drive.

Example

This example shows how to initialize virtual drive 3 using fast initialization:

```
Server# scope chassis
Server /chassis/server # scope storageadapter SLOT-3
Server /chassis/storageadapter # scope virtual-drive 3
Server /chassis/server/storageadapter/virtual-drive # start-initialization
Are you sure you want to initialize virtual drive 3?
All data on the drive will be lost.  Enter 'yes' to confirm -> yes
Fast (0) or full (1) initialization?  -> 0
Server /chassis/server/storageadapter/virtual-drive # get-operation-status

progress-percent: 20%
elapsed -seconds: 30
operation-in-progress: initializing virtual drive

Server /chassis/server/storageadapter/virtual-drive #
```

Set as Boot Drive

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **scope virtual-drive** *drive-number*	Enters command mode for the specified virtual drive.
Step 5	Server /chassis/server/storageadapter # **set-boot-drive**	Specifies the controller to boot from this virtual drive.

Example

This example shows how to specify the controller to boot from virtual drive 3:

```
Server# scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-3
Server /chassis/server/storageadapter # scope virtual-drive 3
Server /chassis/server/storageadapter/virtual-drive # set-boot-drive
Are you sure you want to set virtual drive 3 as the boot drive?
Enter 'yes' to confirm -> yes
Server /chassis/server/storageadapter/virtual-drive #
```

Modifying Attributes of a Virtual Drive

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **scope virtual-drive** *3*	Enters the command mode for the virtual drive.
Step 5	Server /chassis/server/storageadapter/virtual-drive # **modify-attributes**	Prompts you to select a different current policy.

Example

This example shows how to carve a new virtual drive out of unused space in an existing RAID 1 drive group:

```
Server# scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-3
Server /chassis/server/storageadapter # scope virtual-drive
Server /chassis/server/storageadapter/virtual-drive # modify-attributes

Current write policy: Write Back

  0: Write Through
  1: Write Back
  2: Write Back even if Bad BBU

Choose number from above options --> 0

The following attribute will be modified:

 - Write policy: Write Through

OK? (y or n) --> y

operation in progress.

Server /chassis/server/storageadapter/virtual-drive #
```

Making a Dedicated Hot Spare

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **scope physical-drive** *drive-number*	Enters command mode for the specified physical drive.
Step 5	Server /chassis/server/storageadapter/physical-drive # **make-dedicated-hot-spare**	You are prompted to choose a virtual drive for which the dedicated hot spare is being created.

Example

This example shows how to make physical drive 3 a dedicated hot spare for virtual drive 6:

```
Server# scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-3
Server /chassis/server/storageadapter # scope physical-drive 3
Server /chassis/server/storageadapter/physical-drive # make-dedicated-hot-spare
  5: VD_OS_1, RAID 0, 102400 MB, physical disks: 1
  6: VD_OS_2, RAID 0, 12288 MB, physical disks: 1
  7: VD_OS_3, RAID 0, 12288 MB, physical disks: 1
  8: VD_DATA_1, RAID 0, 12512 MB, physical disks: 1
  9: RAID1_2358, RAID 1, 40000 MB, physical disks: 2,3,5,8
  11: JFB_RAID1_67, RAID 1, 20000 MB, physical disks: 6,7
  12: JFB_Crv_R1_40, RAID 1, 40000 MB, physical disks: 6,7
  13: JFB_R1_10GB, RAID 1, 10000 MB, physical disks: 6,7

  Please choose from the above 8 virtual drives-->6

Server /chassis/server/storageadapter/physical-drive #
```

Making a Global Hot Spare

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **scope physical-drive** *drive-number*	Enters command mode for the specified physical drive.
Step 5	Server /chassis/server/storageadapter/physical-drive # **make-global-hot-spare**	
Step 6	Server /chassis/server/storageadapter/physical-drive # **get-operation-status**	Displays the status of the task that is in progress on the drive.

Example

This example shows how to make physical drive 3 a global hot spare:

```
Server# scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-3
Server /chassis/server/storageadapter # scope physical-drive 3
Server /chassis/server/storageadapter/physical-drive # make-global-hot-spare
Server /chassis/server/storageadapter/physical-drive #
```

Preparing a Drive for Removal

You can confirm this task only on physical drives that display the **Unconfigured Good** status.

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **scope physical-drive** *drive-number*	Enters command mode for the specified physical drive.

	Command or Action	Purpose
Step 5	Server /chassis/server/storageadapter/physical-drive # **prepare-for-removal**	

Example

This example shows how to prepare physical drive 3 for removal.

```
Server# scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-3
Server /chassis/server/storageadapter # scope physical-drive 3
Server /chassis/server/storageadapter/physical-drive # prepare-for-removal
Server /chassis/server/storageadapter/physical-drive #
```

Removing a Drive from Hot Spare Pools

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **scope physical-drive** *drive-number*	Enters command mode for the specified physical drive.
Step 5	Server /chassis/server/storageadapter/physical-drive # **remove-hot-spare**	Removes a drive from the host spare pool.

Example

This example shows how to remove physical drive 3 from the hot spare pools:

```
Server# scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-3
Server /chassis/server/storageadapter # scope physical-drive 3
Server /chassis/server/storageadapter/physical-drive # remove-hot-spare
Server /chassis/server/storageadapter/physical-drive #
```

Undo Preparing a Drive for Removal

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **scope physical-drive** *drive-number*	Enters command mode for the specified physical drive.
Step 5	Server /chassis/server/storageadapter/physical-drive # **undo-prepare-for-removal**	

Example

This example shows how to respin physical drive 3 after preparing the drive for removal.

```
Server# scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-3
Server /chassis/server/storageadapter # scope physical-drive 3
Server /chassis/server/storageadapter/physical-drive # undo-prepare-for-removal
Server /chassis/server/storageadapter/physical-drive #
```

Enabling Auto Learn Cycles for the Battery Backup Unit

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.

	Command or Action	Purpose
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **scope bbu**	Enter the battery backup unit command mode.
Step 5	Server /chassis/server/storageadapter # **enable-auto-learn**	Enables the battery auto-learn cycles

Example

This example shows how to enable the battery auto-learn cycles:

```
Server # scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-2
Server /chassis/server/storageadapter # scope bbu
Server /chassis/server/storageadapter/bbu # enable-auto-learn
Automatic BBU learn cycles will occur without notice if enabled.
Are you sure? [y/n] --> y
enable-auto-learn initiated
Server /chassis/server/storageadapter/bbu #
```

Disabling Auto Learn Cycles for the Battery Backup Unit

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **scope bbu**	Enter the battery backup unit command mode.
Step 5	Server /chassis/server/storageadapter # **disable-auto-learn**	Disables the battery auto-learn cycles

Example

This example shows how to disables the battery auto-learn cycles:

```
Server # scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-2
Server /chassis/server/storageadapter # scope bbu
Server /chassis/server/storageadapter/bbu # disable-auto-learn
Automatic BBU learn cycles will no longer occur if disabled.
Are you sure? [y/n] --> y
disable-auto-learn initiated

Server /chassis/server/storageadapter/bbu #
```

Starting a Learn Cycle for a Battery Backup Unit

Before you begin

You must be logged in as an admin to use this command.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **scope bbu**	Enter the battery backup unit command mode.
Step 5	Server /chassis/server/storageadapter # **start-learn-cycle**	Starts the learn cycle for the battery.

Example

This example shows how to initiate the learn cycles for a battery:

```
Server # scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-2
Server /chassis/server/storageadapter # scope bbu
Server /chassis/server/storageadapter/bbu # start-learn-cycle
Server /chassis/server/storageadapter/bbu #
```

Toggling the Locator LED for a Physical Drive

Before you begin

You must be logged in as an admin to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **scope physical-drive 3**	Enters the physical drive command mode.
Step 5	Server /chassis/server/storageadapter/physical-drive # **locator-led** {**on | off**}	Enables or disables the physical drive locator LED.

Example

This example shows how to enable the locator LED for physical drive 3:

```
Server # scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-2
Server /chassis/server/storageadapter # scope physical-drive 3
Server /chassis/server/storageadapter/physical-drive # locator-led on
Server /chassis/server/storageadapter/physical-drive* # commit
Server /chassis/server/storageadapter/physical-drive #
```

Clearing Controller Configuration

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **clear-all-config**	Enter **yes** at the confirmation prompt. Clears the controller configuration.

Example

The following example shows how to clear the controller configuration:

```
Server # scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SBMezz1
Server /chassis/server/storageadapter # clear-all-config
Are you sure you want to clear the controller's config and delete all VDs?
Enter 'yes' to confirm -> yes
Enter administrative password to proceed with operation\n
Password -> Password accepted. Performing requested operation.
Server /chassis/server/storageadapter #
```

Restoring Storage Controller to Factory Defaults

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **set-factory-defaults**	Enter **yes** at the confirmation prompt. Restores the controller configuration parameters to factory defaults.

Example

The following example shows how to restore the controller configuration parameters to factory defaults:

```
Server # scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SBMezz1
Server /chassis/server/storageadapter # set-factory-defaults
This operation will restore controller settings to factory default values. Do you want to
proceed?
Enter 'yes' to confirm -> yes
Server /chassis/server/storageadapter #
```

Viewing Storage Controller Logs

Before you begin

You must log in with admin privileges to perform this task.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.
Step 3	Server /chassis/server # **scope storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 4	Server /chassis/server/storageadapter # **show log**	Displays the storage controller logs.

Example

This example shows how to display storage controller logs:

```
Server # scope chassis
Server /chassis # scope server 1
Server /chassis/server # scope storageadapter SLOT-3
Server /chassis/server/storageadapter # show log

Time                        Severity         Description
----                        --------        -------------
Fri March 1 09:52:19 2015   Warning      Predictive Failure
Fri March 1 07:50:19 2015   Info         Battery charge complete
Fri March 1 07:50:19 2015   Info         Battery charge started
Fri March 1 07:48:19 2015   Info         Battery relearn complete
Fri March 1 07:47:19 2015   Info         Battery is discharging
Fri March 1 07:45:19 2015   Info         Battery relearn started

Server /chassis/server/storageadapter #
```

Viewing Physical Drive Details

Procedure

	Command or Action	Purpose
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope server** {**1** | **2**}	Enters server command mode of server 1 or 2.

	Command or Action	Purpose
Step 3	Server /chassis/server # **scope storageadapter** *slot*	Enters server storage adapter mode.
Step 4	Server /chassis/server/storageadapter # **scope physical-drive 2**	Enters the physical drive command mode.
Step 5	Server /chassis/server/storageadapter/physicsl-drive # **show detail**	Displays the physical drive details.

Example

This example shows how to view the physical drive information:

```
Server# scope chassis
Server/chassis # scope server 1
Server /chassis/server/ # scope storageadapter SBMezz1
Server /chassis/server/storageadapter # scope physical-drive 202
Server /chassis/server/storageadapter/physical-drive # show detail
Physical Drive Number 202:
    Controller: SBMezz1
    Info Valid: Yes
    Info Invalid Cause:
    Enclosure Device ID: 252
    Device ID: 8
    Drive Number: 202
    Health: Good
    Status: Online
    Boot Drive: false
    Manufacturer: ATA
    Model: INTEL SSDSC2BB480G4
    Predictive Failure Count: 0
    Drive Firmware: 0370
    Type: SSD
    Block Size: 512
    Physical Block Size: 4096
    Negotiated Link Speed: 6.0 Gb/s
    Locator LED: false
    FDE Capable: 0
    FDE Enabled: 0
    FDE Secured: 0
    FDE Locked: 0
    FDE Locked Foreign Config: 0
    Enclosure Association: Direct Attached
    Enclosure Logical ID: N/A
    Enclosure SAS Address[0]: N/A
    Enclosure SAS Address[1]: N/A
    Power Cycle Count: 106
    Power On Hours: 10471
    Percentage Life Left: 100
    Wear Status in Days: 1825
    Percentage Reserved Capacity Consumed: 0
    Time of Last Refresh : 2017-03-04 13:47
    Operating Temperature: 34
    Media Error Count: 0
    Other Error Count: 0
    Interface Type: SATA
    Block Count: 937703088
    Raw Size: 457862 MB
```

```
    Non Coerced Size: 457350 MB
    Coerced Size: 456809 MB
    SAS Address 0: 4433221108000000
    SAS Address 1: 0x0
    Power State: active
Server /chassis/server/storageadapter/physical-drive #
```

Viewing SIOC NVMe Drive Details

You must scope to a particular CMC to view the NVMe drives in SIOC associated with that CMC.

Note This feature is available only on some S-Series servers.

Procedure

	Command or Action	Purpose
Step 1	Server # **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope cmc** *[1 | 2]*	Enters the CMC command mode.
Step 3	Server /chassis/CMC # **scope nvmeadapter** *adapter name*	Enters the NVMe adapter command mode.
Step 4	Server /chassis/CMC/nvmeadapter # **show nvme-physical-drive detail**	Displays the SIOC NVMe physical drive details.

Example

This example shows how to view SIOC NVMe drive details:

```
Server # scope chassis
Server /chassis # scope cmc
Server /chassis/cmc # show detail
Firmware Image Information:
    ID: 1
    Name: CMC1
    SIOC PID: UCS-S3260-PCISIOC
    Serial Number: FCH21277K8T
    Update Stage: ERROR
    Update Progress: OS_ERROR
    Current FW Version: 4.0(0.166)
    FW Image 1 Version: 0.0(4.r17601)
    FW Image 1 State: BACKUP INACTIVATED
    FW Image 2 Version: 4.0(0.166)
    FW Image 2 State: RUNNING ACTIVATED
    Reset Reason: ac-cycle
    Secure Boot: ENABLED
Server /chassis # scope cmc 1
Server /chassis/cmc # scope nvmeadapter NVMe-direct-U.2-drives
Server /chassis/cmc/nvmeadapter # show nvme-physical-drive detail
Physical Drive Number SIOCNVMe1:
    Product Name: Cisco 2.5 inch  1TB Intel P4501 NVMe Med. Perf. Value Endurance
```

```
    Manufacturer: Intel
    Serial Number: PHLF7303008G1P0KGN
    Temperature: 39 degrees C
    % Drive Life Used: 1
    Performance Level: 100
    LED Fault status: Healthy
    Drive Status: Optimal
    % Power on Hours: 8
    Firmware Version: QDV1CP03
    PCI Slot: SIOCNVMe1
    Managed Id: 1
    Controller Type: NVME-SFF
    Controller Temperature: 39
    Throttle State: 0
    Throttle Start Temperature: 70
    Shutdown Temperature: 80
Physical Drive Number SIOCNVMe2:
    Product Name: Cisco 2.5 inch 500GB Intel P4501 NVMe Med. Perf. Value Endurance
    Manufacturer: Intel
    Serial Number: PHLF73440068500JGN
    Temperature: 39 degrees C
    % Drive Life Used: 1
    Performance Level: 100
    LED Fault status: Healthy
    Drive Status: Optimal
    % Power on Hours: 7
    Firmware Version: QDV1CP03
    PCI Slot: SIOCNVMe2
    Managed Id: 2
    Controller Type: NVME-SFF
    Controller Temperature: 39
    Throttle State: 0
    Throttle Start Temperature: 70
    Shutdown Temperature: 80
Server /chassis/cmc/nvmeadapter #
```