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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/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, enabling full disk encryption of the drive 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. **Note** Enabling full disk encryption secures the drive.

	Command or Action	**Purpose**
Step 4	Server /chassis/storageadapter # **show virtual-drive**	Displays the existing virtual drives.

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

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/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')
Enable SED security on virtual drive (and underlying drive group)?
Enter y or n--> y
Virtual drive and drive group will be secured

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
  - Encryption: FDE

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/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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	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 4	Server /chassis/storageadapter # **show virtual-drive**	Displays the existing virtual drives.

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 storageadapter SLOT-3
Server /chassis/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/storageadapter #
```

Setting a Virtual Drive as Transport Ready

Before You Begin

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

- The virtual drive must be in optimal state to enable transport ready.

Procedure

	Command or Action	**Purpose**
Step 1	Server # **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot ID*	Enters the command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope virtual-drive** *drive-number*	Enters the command mode for the specified virtual drive.
Step 4	Server /chassis/storageadapter/virtual-drive # **set-transport-ready** *{include-all | exclude-all | include-dhsp}*	Sets the virtual drive to transport ready and assigns the chosen properties. Enter the initialization type using which you can set the selected virtual drive as transport ready. This can be one of the following: • **exlude-all—** Excludes all the dedicated hot spare drives. • **include-all—** Includes any exclusively available or shared dedicated hot spare drives. • **include-dhsp—** Includes exclusive dedicated hot spare drives. When you are prompted to confirm the action. Enter y to confirm. **Note** When you set a virtual drive to transport ready all the physical drives associated with it are displayed as Ready to remove.
Step 5	Server /chassis/storageadapter/virtual-drive # **show detail**	(Optional) Display the virtual drive properties with the change.

This example shows how to set virtual drive 5 to transport ready:

```
Server # scope chassis
Server /chassis # scope storageadapter SLOT-HBA
Server /chassis/storageadapter # scope virtual-drive 5
Server /chassis/storageadapter/virtual-drive # set-transport-ready exclude-all
Since they belong to same drive group, all these virtual drives will be set to Transport
Ready - 0
Are you sure you want to proceed?[y|N]y
Server /chassis/storageadapter/virtual-drive # show detail
Virtual Drive 0:
    Health: Good
    Status: Optimal
    Visibility : Visible
    Name: RAID0_124_RHEL
    Size: 2858160 MB
    Physical Drives: 1, 2, 4
    RAID Level: RAID 0
    Boot Drive: false
    FDE Capable: 0
    FDE Enabled: 0
```

```
            Target ID: 0
            Strip Size: 64 KB
            Drives Per Span: 3
            Span Depth: 1
            Access Policy: Transport Ready
            Cache Policy: Direct
            Read Ahead Policy: None
            Requested Write Cache Policy: Write Through
            Current Write Cache Policy: Write Through
            Disk Cache Policy: Unchanged
            Auto Snapshot: false
            Auto Delete Oldest: true
            Allow Background Init: true
Server /chassis/storageadapter/virtual-drive #
```

Clearing a Virtual Drive as Transport Ready

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 ID*	Enters the command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope virtual-drive** *drive-number*	Enters the command mode for the specified virtual drive.
Step 4	Server /chassis/storageadapter/virtual-drive # **clear-transport-ready**	This reverts the selected transport ready virtual drive to its original status. When you are prompted to confirm the action. Enter y to confirm.
Step 5	Server /chassis/storageadapter/virtual-drive # **show detail**	(Optional) Display the virtual drive properties with the change.

This example shows how to revert the selected transport ready virtual drive to its original state:

```
Server # scope chassis
Server /chassis # scope server 1
Server /chassis # scope storageadapter SLOT-HBA
Server /chassis/storageadapter # scope virtual-drive 5
Server /chassis/storageadapter/virtual-drive # clear-transport-ready
Since they belong to same drive group, all these virtual drives will be moved out of Transport
 Ready - 0
Are you sure you want to proceed?[y|N]y
Server /chassis/storageadapter/virtual-drive # show detail
Virtual Drive 0:
    Health: Good
    Status: Optimal
    Visibility : Visible
```

```
            Name: RAID0_124_RHEL
            Size: 2858160 MB
            Physical Drives: 1, 2, 4
            RAID Level: RAID 0
            Boot Drive: false
            FDE Capable: 0
            FDE Enabled: 0
            Target ID: 0
            Strip Size: 64 KB
            Drives Per Span: 3
            Span Depth: 1
            Access Policy: Read-Write
            Cache Policy: Direct
            Read Ahead Policy: None
            Requested Write Cache Policy: Write Through
            Current Write Cache Policy: Write Through
            Disk Cache Policy: Unchanged
            Auto Snapshot: false
            Auto Delete Oldest: true
            Allow Background Init: true
Server /chassis/storageadapter/virtual-drive #
```

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.

> **Important**
>
> You cannot import a foreign configuration in the following two scenarios:
>
> 1 When the secure virtual drive was created on server 1 (from which you want to import the configuration) using the remote key, and on server 2 (to which you want to import) using the local key.
>
> 2 When server 2 is configured with another KMIP server, which is not a part of the server 1 KMIP server cluster.
>
> In order to import the foreign configuration in these scenarios, change the controller security on server 2 from local key management to remote key management, and use the same KMIP server from the same cluster where the server 1 KMIP is configured.

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 command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **import-foreign-config**	You are prompted to confirm the action. Enter **yes** to confirm.

	Command or Action	Purpose
		Note If you do not enter **yes**, the action is aborted.

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

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

Unlocking Foreign Configuration Drives

When a set of physical drives hosting a secured drive group are inserted into a different server or controller (or the same controller but whose security-key has been changed while they were not present), they become foreign configurations. Since they are secured, these foreign configurations must be unlocked before they can be imported. The following procedure explains how to unlock a foreign configuration 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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **unlock-foreign-configuration**	At the prompt, enter the security key and enter **yes** at the confirmation prompt.
Step 4	Server /chassis/storageadapter # **scope physical-drive 2**	(Optional) Enters the physical drive command mode.
Step 5	Server /chassis/storageadapter/physicsl-drive # **show detail**	(Optional) Displays the status of the unlocked foreign drive.

This example shows how to unlock a foreign configuration drive:

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # unlock-foreign-configuration
Please enter the security key to unlock the foreign configuration -> testSecurityKey
Server /chassis/storageadapter # import-foreign-config
Are you sure you want to import all foreign configurations on this controller?
Enter 'yes' to confirm -> yes
```

```
Server /chassis/storageadapter # scope physical-drive 2
Server /chassis/storageadapter/physical-drive # show detail
Physical Drive Number 2:
    Controller: SLOT-HBA
    Health: Good
    Status: Online
    .
    .
    FDE Capable: 1
    FDE Enabled: 1
    FDE Secured: 1
    FDE Locked: 0
    FDE locked foreign config: 0

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

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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/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.

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

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/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/storageadapter #
```

Enabling JBOD

> **Note** You can enable Just a Bunch of Disks (JBOD) only on some UCS C-Series servers.

Procedure

	Command or Action	Purpose
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis /storageadapter # **enable-jbod-mode**	Enables the JBOD Mode for the selected controller

This example enables the JBOD mode for the selected controller:

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # enable-jbod-mode
Are you sure you want to enable JBOD mode?
Enter 'yes' to confirm -> yes
Server/chassis/storageadapter # show settings
PCI Slot SLOT-3:
    Info Valid: Yes
    Enable JBOD Mode: true
```

Disabling JBOD

> **Note** This option is available only on some UCS C-Series servers.

Before You Begin

JBOD mode must be enabled for the selected controller.

Procedure

	Command or Action	Purpose
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.

	Command or Action	Purpose
Step 3	Server /chassis /storageadapter # **disable-jbod-mode**	Disables the JBOD Mode for the selected controller

This example disables the JBOD mode for the selected controller:

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # disable-jbod-mode
Are you sure you want to disable JBOD mode?
Enter 'yes' to confirm -> yes
Server/chassis/storageadapter # show settings
PCI Slot SLOT-3:
    Info Valid: Yes
    Enable JBOD Mode: false
```

Clearing a Boot Drive

☞

Important This task clears the boot drive configuration on the controller. 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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **clear-boot-drive**	You are prompted to confirm the action. Enter **yes** to confirm. **Note** If you do not enter **yes**, the action is aborted.

This example shows how to clear the boot drive configuration on the MegaRAID controller in slot 3:

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # clear-boot-drive
Are you sure you want to clear the controller's boot drive?
Enter 'yes' to confirm -> yes
Server /chassis/storageadapter #
```

Enabling Security on a JBOD

you can enable security on a physical drive only if it is a JBOD. The following procedure explains how to enable security on a JBOD:

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 command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope physical-drive 2**	Enters the physical drive command mode.
Step 4	Server /chassis/storageadapter # **enable-security-on-jbod**	At the confirmation prompt, enter **yes**. Enables security on the JBOD.
Step 5	Server /chassis/storageadapter/physicsl-drive # **show detail**	(Optional) Displays details of the physical drive.

This example shows how to enable security on a JBOD:

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
savbu-stordev-dn1-2-cimc /chassis/storageadapter # scope physical-drive 2
server /chassis/storageadapter/physical-drive # enable-security-on-jbod
Are you sure you want to enable security on this JBOD?
NOTE: this is not reversible!
Enter 'yes' to confirm -> yes
server /chassis/storageadapter/physical-drive # show detail
Physical Drive Number 2:
    .
    .
    Status: JBOD
    .
    .
    FDE Capable: 1
    FDE Enabled: 1
    FDE Secured: 1
server /chassis/storageadapter/physical-drive #
```

Clearing a Secure Physical Drive

Clearing a secure drive converts an FDE drive from secured to unsecured. The Physical drive status must be Unconfigured good to perform this action. This erases the data on the physical drive. The following procedure explains how to clear a secure SED physical 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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope physical-drive 2**	Enters the physical drive command mode.
Step 4	Server /chassis/storageadapter/physicsl-drive # **clear-secure-drive**	At the confirmation prompt, enter **yes**. This clears the secure SED physical drive and all the data will be lost.
Step 5	Server /chassis/storageadapter/physicsl-drive # **show detail**	(Optional) Displays the physical drive details.

This example shows how to clear an SED foreign configuration physical drive:

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # scope physical-drive 2
Server /chassis/storageadapter/physical-drive #  clear-secure-drive
Are you sure you want to erase all data from this physical drive?
NOTE: this is not reversible!  ALL DATA WILL BE LOST!!
Enter 'yes' to confirm -> yes
Server /chassis/storageadapter/physical-drive # show detail
Physical Drive Number 2:
    Controller: SLOT-HBA
    Health: Good
    Status: Unconfigured Good
    .
    .
    FDE Capable: 1
    FDE Enabled: 0
    FDE Secured: 0

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

Clearing a Secure SED Foreign Configuration Physical Drive

Coverts a locked foreign configuration Full Disk Encryption drive to a unsecured and unlocked drive. This erases the data on the physical drive. The following procedure explains how to clear a secure SED foreign configuration physical 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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope physical-drive 2**	Enters the physical drive command mode.
Step 4	Server /chassis/storageadapter/physicsl-drive # **clear-secure-foreign-config-drive**	At the confirmation prompt, enter **yes**. This clears the secure SED foreign configuration physical drive and all the data will be lost.
Step 5	Server /chassis/storageadapter/physicsl-drive # **show detail**	(Optional) Displays the physical drive details.

This example shows how to clear an SED foreign configuration physical drive:

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # scope physical-drive 2
Server /chassis/storageadapter/physical-drive # clear-secure-foreign-config-drive
Are you sure you want to erase all data from this foreign-configuration physical drive?
NOTE: this is not reversible!  ALL DATA WILL BE LOST!!
Enter 'yes' to confirm -> yes
Server /chassis/storageadapter/physical-drive # show detail
Physical Drive Number 2:
    Controller: SLOT-HBA
    Health: Good
    Status: Unconfigured Good
    .
    .
    FDE Capable: 1
    FDE Enabled: 0
    FDE Secured: 0
    FDE Locked: 0
    FDE Locked Foreign Config: 0

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

Retrieving Storage Firmware Logs for a Controller

This task retrieves the Storage 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 command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **get-storage-fw-log**	
Step 4	Server /chassis/storageadapter # **show detail**	Displays the status of the retrieval process.
		Important Retrieving Storage Firmware Logs for a controller could take up to 2-4 minutes. Until this process is complete, do not initiate exporting technical support data.

This example shows how to retrieve Storage Firmware Logs for a MegaRAID controller in slot 3:

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # get-storage-fw-log
Server /chassis/storageadapter # show detail
PCI Slot SLOT-3:
TTY Log Status: In progress (8192 bytes fetched)
Server /chassis/storageadapter # show detail
PCI Slot SLOT-3:
TTY Log Status: In progress (90112 bytes fetched)
Server /chassis/storageadapter # show detail
PCI Slot SLOT-3:
TTY Log Status: Complete (172032 bytes fetched)
```

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 SIOC Environment

> **Note** Dual SIOC 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 Drive 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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **enable-controller-security**	At this point, you are prompted to enter a security key, you can either enter a security key of your choice or you can use the suggested security key. If you choose to assign a security key of your choice, enter the security key at the prompt.

	Command or Action	Purpose
		Depending on whether you want to use the suggested security key or a security key of your choice, enter **y** (yes) to confirm, or **n** (no) to cancel the operation at the appropriate prompt.
Step 4	Server /chassis/storageadapter # **show detail**	Displays the storage drive details.

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

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/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/storageadapter show detail
PCI Slot SLOT-HBA:
    <stuff deleted>
    Controller is Secured: 1

Server /chassis/storageadapter #
```

Disabling Drive 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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **disable-controller-security**	A confirmation prompt appears. At the confirmation prompt, enter **yes** to confirm, or **n** (no) to cancel the operation. Another prompt to enter the security key appears. Enter the security key. This disables the controller security.
Step 4	Server /chassis/storageadapter # **show detail**	Displays the storage drive details.

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

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter #  disable-controller-security
Note: this operation will fail if any secured drives are present.
Are you sure you want to disable security on this controller?
Enter 'yes' to confirm -> yes
Please enter the controller's security-key -> testSecurityKey
savbu-stordev-dn1-2-cimc /chassis/storageadapter # show detail
PCI Slot SLOT-HBA:
    <stuff deleted>
    Controller is Secured: 0

Server /chassis/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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/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.
		At the confirmation prompt, enter **y** (yes) to confirm, or **n** (no) to cancel the operation.

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

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/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/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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/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.

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

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter #  verify-controller-security-key
Please enter the security key to verify -> WrongSecurityKey
verify-controller-security-key failed.
Error: "r-type: RAID controller: SLOT-HBA command-status: Lock key from backup failed
verification"
savbu-stordev-dn1-2-cimc /chassis/storageadapter #
savbu-stordev-dn1-2-cimc /chassis/storageadapter # verify-controller-security-key
Please enter the security key to verify -> testSecurityKey

Server /chassis/storageadapter #
```

Switching Controller Security From Remote to Local Key Management

This task allows you to switch controller security from local management to remote management, and from remote to local 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 storageadapter** *Slot-ID*	Enters storage adapter command mode.

	Command or Action	**Purpose**
Step 3	Server /chassis/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 4	Server /chassis/server/storageadapter # *key id*	Enter the new key ID at the prompt. Switches to local key management.

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

```
Server # scope chassis
Server /chassis # scope storageadapter SLOT-HBA 1
Server /chassis/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 SLOT-HBA.
***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

This task allows you to switch controller security from local management to remote management, and from remote to local 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 storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 3	Server /chassis/storageadapter # **switch-to-remote-key-mgmt**	Enter y at the confirmation prompt.
Step 4	Server /chassis/storageadapter # *security id*	Enter the security key at the prompt. Switches to remote key management.

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

```
Server # scope chassis
Server /chassis # scope storageadapter SLOT-HBA 1
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 SLOT-HBA.
Server /chassis/server/storageadapter #
```

Deleting a Virtual Drive

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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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope virtual-drive** *drive-number*	Enters command mode for the specified virtual drive.
Step 4	Server /chassis/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.

This example shows how to delete virtual drive 3.

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # scope virtual-drive 3
Server /chassis/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/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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope virtual-drive** *drive-number*	Enters command mode for the specified virtual drive.
Step 4	Server /chassis/storageadapter/virtual-drive # **start-initialization**	Initializes the specified virtual drive.
Step 5	Server /chassis/storageadapter/virtual-drive # **cancel-initialization**	(Optional) Cancels the initialization of the specified virtual drive.
Step 6	Server /chassis/storageadapter/physical-drive # **get-operation-status**	Displays the status of the task that is in progress on the drive.

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

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # scope virtual-drive 3
Server /chassis/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/storageadapter/virtual-drive # get-operation-status

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

Server /chassis/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 the chassis command mode.

	Command or Action	Purpose
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope virtual-drive** *drive-number*	Enters command mode for the specified virtual drive.
Step 4	Server /chassis/storageadapter # **set-boot-drive**	Specifies the controller to boot from this virtual drive.

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

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # scope virtual-drive 3
Server /chassis/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/storageadapter/virtual-drive #
```

Editing 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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server chassis /storageadapter # **scope virtual-drive** *drive number*	Enters command mode for the specified virtual drive.
Step 4	Server chassis /storageadapter /virtual-drive # **modify-attributes**	Prompts you to select a different current policy.
Step 5	Server chassis /storageadapter /virtual-drive# **set raid-level** *value*	Specifies the RAID level for the specified virtual drive.
Step 6	Server chassis /storageadapter /virtual-drive# **set physical-drive** *value*	Specifies the physical drive for the specified virtual drive.

This example shows to edit a virtual drive:

```
Server# scope chassis
Server /chassis # scope storageadapter slot-3
```

```
Server /chassis/storageadapter # scope virtual-drive 3
Server /chassis/storageadapter/virtual-drive #set raid-level 1
Server /chassis/storageadapter/virtual-drive *# physical-drive 1
Server /chassis/storageadapter/virtual-drive* #commit
Server /chassis/storageadapter /virtual-drive # modify-attribute
Current write policy: Write Back Good BBU

   0: Write Through
   1: Write Back Good BBU
   2: Always Write Back
  Choose number from above options--> 0
The following attribute will be modified:
  - Write Policy: Write Through

OK? (y or n)--> y
Server /chassis/storageadapter/virtual-drive #
```

Securing a Virtual Drive

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Important   This task secures all the VDs in an existing drive group, where virtual-drive is the target ID of a virtual
drive in the 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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope virtual-drive** *drive-number*	Enters command mode for the specified virtual drive.
Step 4	Server /chassis/storageadapter/virtual-drive # **secure-drive-group**	You are prompted to confirm the action. Enter **yes** to confirm.
		Note If you do not enter **yes**, the action is aborted.

This example shows how to secure the virtual drive group.

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # scope virtual-drive 3
Server /chassis/storageadapter/virtual-drive # secure-drive-group
This will enable security for virtual drive 16, and all virtual drives sharing this drive
group.
It is not reversible.  Are you quite certain you want to do this?
Enter 'yes' to confirm -> yes
server /chassis/storageadapter/virtual-drive # show detail
```

```
Virtual Drive 16:
    .
    .
    FDE Capable: 1
    FDE Enabled: 1
    .
    .
  server /chassis/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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope virtual-drive** *3*	Enters the command mode for the virtual drive.
Step 4	Server /chassis/storageadapter/virtual-drive # **modify-attributes**	Prompts you to select a different current policy.

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 storageadapter SLOT-3
Server /chassis/storageadapter # scope virtual-drive
Server /chassis/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/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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope physical-drive** *drive-number*	Enters command mode for the specified physical drive.
Step 4	Server /chassis/storageadapter/physical-drive # **make-dedicated-hot-spare**	You are prompted to choose a virtual drive for which the dedicated hot spare is being created.

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

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # scope physical-drive 3
Server /chassis/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/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 the chassis command mode.

	Command or Action	Purpose
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope physical-drive** *drive-number*	Enters command mode for the specified physical drive.
Step 4	Server /chassis/storageadapter/physical-drive # **make-global-hot-spare**	
Step 5	Server /chassis/storageadapter/physical-drive # **get-operation-status**	Displays the status of the task that is in progress on the drive.

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

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # scope physical-drive 3
Server /chassis/storageadapter/physical-drive # make-global-hot-spare
Server /chassis/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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope physical-drive** *drive-number*	Enters command mode for the specified physical drive.
Step 4	Server /chassis/storageadapter/physical-drive # **prepare-for-removal**	

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

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

Toggling Physical Drive Status

Before You Begin

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

- The controller must support the JBOD mode and the JBOD mode must be enabled.

Procedure

	Command or Action	Purpose
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope physical-drive 4**	Enters command mode for the physical drive.
Step 4	Server /chassis/storageadapter/physical-drive # **make-unconfigured-good**	Modifies the status of the drive to Unconfigured good.
Step 5	Server /chassis/storageadapter/physical-drive # **make-jbod**	Enables the JBOD mode on the physical drive.

This example shows how to toggle between the status of the physical drive:

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # scope physical-drive 4
Server /chassis/storageadapter/physical-drive # show detail
Physical Drive Number 4:
    Controller: SLOT-4
    Health: Good
    Status: JBOD
    Boot Drive: true
    Manufacturer: ATA
    Model: ST500NM0011
    Predictive Failure Count: 0
    Drive Firmware: CC02
    Coerced Size: 476416 MB
    Type: HDD
Server /chassis/storageadapter/physical-drive # make-unconfigured-good
Server /chassis/storageadapter/physical-drive # show detail
Physical Drive Number 4:
    Controller: SLOT-4
    Health: Good
    Status: Unconfigured Good
    Boot Drive: true
    Manufacturer: ATA
    Model: ST500NM0011
    Predictive Failure Count: 0
    Drive Firmware: CC02
    Coerced Size: 476416 MB
    Type: HDD
Server /chassis/storageadapter/physical-drive # make-jbod
Server /chassis/storageadapter/physical-drive # show detail
Physical Drive Number 4:
```

```
Controller: SLOT-4
Health: Good
Status: JBOD
Boot Drive: true
Manufacturer: ATA
Model: ST500NM0011
Predictive Failure Count: 0
Drive Firmware: CC02
Coerced Size: 476416 MB
Type: HDD
```

Setting a Physical Drive as a Controller Boot Drive

Before You Begin

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

- The controller must support the JBOD mode and the JBOD mode must be enabled.

Procedure

	Command or Action	Purpose
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope physical-drive 4**	Enters command mode for the physical drive.
Step 4	Server /chassis/storageadapter/physical-drive # **set-boot-drive**	You are prompted to confirm the action. Enter **yes** to confirm. **Note** If you do not enter **yes**, the action is aborted.

This example shows how to set a physical drive as a boot drive for a controller:

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # show detail
PCI Slot SLOT-4:
    Health: Good
    Controller Status: Optimal
    ROC Temperature: Not Supported
    Product Name: MegaRAID 9240-8i (RAID 0,1,10,5)
    Serial Number: SP23807413
    Firmware Package Build: 20.11.1-0159
    Product ID: LSI Logic
    Battery Status: no battery
    Cache Memory Size: 0 MB
    Boot Drive: none
    Boot Drive is PD: false
    TTY Log Status: Not Downloaded
Server /chassis/storageadapter # scope physical-drive 4
Server /chassis/storageadapter/physical-drive # set-boot-drive
Are you sure you want to set physical drive 4 as the boot drive?
Enter 'yes' to confirm -> yes
```

```
Server /chassis/storageadapter/physical-drive # exit
Server /chassis/storageadapter # show detail
PCI Slot SLOT-4:
    Health: Good
    Controller Status: Optimal
    ROC Temperature: Not Supported
    Product Name: MegaRAID 9240-8i (RAID 0,1,10,5)
    Serial Number: SP23807413
    Firmware Package Build: 20.11.1-0159
    Product ID: LSI Logic
    Battery Status: no battery
    Cache Memory Size: 0 MB
    Boot Drive: 4
    Boot Drive is PD: true
    TTY Log Status: Not Downloaded
```

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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope physical-drive** *drive-number*	Enters command mode for the specified physical drive.
Step 4	Server /chassis/storageadapter/physical-drive # **remove-hot-spare**	Removes a drive from the host spare pool.

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

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # scope physical-drive 3
Server /chassis/storageadapter/physical-drive # remove-hot-spare
Server /chassis/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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope physical-drive** *drive-number*	Enters command mode for the specified physical drive.
Step 4	Server /chassis/storageadapter/physical-drive # **undo-prepare-for-removal**	

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

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # scope physical-drive 3
Server /chassis/storageadapter/physical-drive # undo-prepare-for-removal
Server /chassis/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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope bbu**	Enter the battery backup unit command mode.
Step 4	Server /chassis/storageadapter # **enable-auto-learn**	Enables the battery auto-learn cycles

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

```
Server # scope chassis
Server /chassis # scope storageadapter SLOT-2
Server /chassis/storageadapter # scope bbu
Server /chassis/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/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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope bbu**	Enter the battery backup unit command mode.
Step 4	Server /chassis/storageadapter # **disable-auto-learn**	Disables the battery auto-learn cycles

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

```
Server # scope chassis
Server /chassis # scope storageadapter SLOT-2
Server /chassis/storageadapter # scope bbu
Server /chassis/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/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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope bbu**	Enter the battery backup unit command mode.
Step 4	Server /chassis/storageadapter # **start-learn-cycle**	Starts the learn cycle for the battery.

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

```
Server # scope chassis
Server /chassis # scope storageadapter SLOT-2
Server /chassis/storageadapter # scope bbu
Server /chassis/storageadapter/bbu # start-learn-cycle
Server /chassis/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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope physical-drive 3**	Enters the physical drive command mode.
Step 4	Server /chassis/storageadapter/physical-drive # **locator-led {on	off}**	Enables or disables the physical drive locator LED.

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

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

Clear 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.

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

The following example shows how to clear the controller configuration:

```
Server # scope chassis
Server /chassis # scope storageadapter SLOT-HBA 1
Server /chassis/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/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 storageadapter** *Slot-ID*	Enters storage adapter command mode.
Step 3	Server /chassis/storageadapter # **set-factory-defaults**	Enter yes at the confirmation prompt. Restores the controller configuration parameters to factory defaults.

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

```
Server # scope chassis
Server /chassis # scope storageadapter SLOT-HBA 1
Server /chassis/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/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 the chassis command mode.
Step 2	Server /chassis # **scope storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **show log**	Displays the storage controller logs.

This example shows how to display storage controller logs:

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

Time                       Severity        Description
----                       --------        ------------
Fri March 1 09:52:19 2013   Warning         Predictive Failure
Fri March 1 07:50:19 2013   Info            Battery charge complete
Fri March 1 07:50:19 2013   Info            Battery charge started
Fri March 1 07:48:19 2013   Info            Battery relearn complete
Fri March 1 07:47:19 2013   Info            Battery is discharging
Fri March 1 07:45:19 2013   Info            Battery relearn started

Server /chassis/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 storageadapter** *slot*	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # **scope physical-drive 2**	Enters the physical drive command mode.
Step 4	Server /chassis/storageadapter/physicsl-drive # **show detail**	Displays the physical drive details.

This example shows how to view the physical drive information:

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # scope physical-drive 202
Server /chassis/storageadapter/physical-drive # show detail
Physical Drive Number 202:
    Controller: SLOT-HBA
    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
```

Managing the Flexible Flash Controller

Cisco Flexible Flash

Some C-Series Rack-Mount Servers support an internal Secure Digital (SD) memory card for storage of server software tools and utilities. The SD card is hosted by the Cisco Flexible Flash storage adapter.

The SD storage is available to Cisco IMC as a single hypervisor (HV) partition configuration. Prior versions had four virtual USB drives. Three were preloaded with Cisco UCS Server Configuration Utility, Cisco drivers and Cisco Host Upgrade Utility, and the fourth as user-installed hypervisor. A single HV partition configuration is also created when you upgrade to the latest version of Cisco IMC or downgrade to the prior version, and reset the configuration.

For information about the Cisco software utilities and packages, see the *Cisco UCS C-Series Servers Documentation Roadmap* at this URL:

http://www.cisco.com/go/unifiedcomputing/c-series-doc

Card Management Feature in the Cisco Flexible Flash Controller

The Cisco Flexible Flash controller supports management of both single and two SD cards as a RAID-1 pair. With the introduction of card management, you can perform the following tasks:

Note

- If you want to upgrade from version 1.4(5e) to 1.5(4) or higher versions, you must first upgrade to version1.5(2) and then upgrade to a higher version of Cisco IMC.

- Reset the Cisco Flexible Flash controller to load the latest Flex Flash firmware after every Cisco IMC firmware upgrade.

Action	Description
Reset Cisco Flex Flash	Allows you to reset the controller.
Reset Partition Defaults	Allows you to reset the configuration in the selected slot to the default configuration.
Synchronize Card Configuration	Allows you to retain the configuration for an SD card that supports firmware version 253 and later.
Configure Operational Profile	Allows you to configure the SD cards on the selected Cisco Flexible Flash controller.

RAID Partition Enumeration

Non-RAID partitions are always enumerated from the primary card and the enumeration does not depend on the status of the primary card.

Following is the behavior of the RAID partition enumeration when there are two cards in the Cisco Flexible Flash controller:

Scenario	Behavior
Single card	RAID partitions are enumerated if the card is healthy, and if the mode is either **Primary** or **Secondary-active**.
Dual paired cards	RAID partitions are enumerated if one of the cards is healthy.
	When only one card is healthy, all read/write operations occur on this healthy card. You must use UCS SCU to synchronize the two RAID partitions.

Scenario	Behavior
Dual unpaired cards	If this scenario is detected when the server is restarting, then neither one of the RAID partitions is enumerated.
	If this scenario is detected when the server is running, when a user connects a new SD card, then the cards are not managed by the Cisco Flexible Flash controller. This does not affect the host enumeration. You must pair the cards to manage them. You can pair the cards using the **Reset Partition Defaults** or **Synchronize Card Configuration** options.

Upgrading from Single Card to Dual Card Mirroring with FlexFlash

You can upgrade from a single card mirroring to dual card mirroring with FlexFlash in one of the following methods:

- Add an empty FlexFlash card to the server, and then upgrade its firmware to the latest version.

- Upgrade the FlexFlash firmware to the latest version and then add an empty card to the server.

Prior to using either of these methods, you must keep in mind the following guidelines:

- To create RAID1 mirroring, the empty card that you want to add to the server must be of the exact size of the card that is already in the server. Identical card size is a must to set up RAID1 mirroring.

- Ensure that the card with valid data in the Hypervisor partition is marked as the primary healthy card. You can determine this state either in the Cisco IMC GUI or from the Cisco IMC CLI. To mark the state of the card as primary healthy, you can either use the **Reset Configuration** option in the Cisco IMC GUI or run the **reset-config** command in the Cisco IMC CLI. When you reset the configuration of a particular card, the secondary card is marked as secondary active unhealthy.

- In a Degraded RAID health state all read-write transactions are done on the healthy card. In this scenario, data mirroring does not occur. Data mirroring occurs only in the Healthy RAID state.

- Data mirroring is only applicable to RAID partitions. In the C-series servers, only Hypervisor partitions operate in the RAID mode.

- If you have not configured SD cards for use with prior versions, then upgrading to the latest version loads the latest 253 firmware and enumerates all four partitions to the host.

While upgrading versions of the FlexFlash, you may see the following error message:

```
Unable to communicate with Flexible Flash controller: operation ffCardsGet, status
CY_AS_ERROR_INVALID_RESPONSE"
```

In addition, the card status may be shown as **missing**. This error occurs because you accidently switched to an alternate release or a prior version, such as 1.4(x). In this scenario, you can either revert to the latest version, or you can switch back to the FlexFlash 1.4(x) configuration. If you choose to revert to the latest Cisco IMC version, then the Cisco FlexFlash configuration remains intact. If you choose to switch back to the prior

version configuration, you must reset the Flexflash configuration. In this scenario, you must be aware of the following:

- If multiple cards are present, and you revert to a prior version, then the second card cannot be discovered or managed.

- If the card type is SD253, then you must run the **reset-config** command twice from the Cisco IMC CLI - once to reload the old firmware on the controller and to migrate SD253 to SD247 type, and the second time to start the enumeration.

Configuring the Flexible Flash Controller Properties for C220 M4 and C240 M4 Servers

Note

- In the **Mirror** mode, **Slot1 Read/Write Error Threshold** is applicable to both the SD cards, if two cards are present.

- In the **Util** Mode, **Slot1 Read/Write Error Threshold** is applicable to the card in slot 1 and **Slot2 Read/Write Error Threshold** is applicable to the card in slot 2.

Before You Begin

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

- Cisco Flexible Flash must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope flexflash**	Enters the Cisco Flexible Flash controller command mode for the specified controller.
Step 3	Server /chassis/flexflash # **scope operational-profile**	Enters the operational profile command mode.
Step 4	Server /chassis/flexflash/operational-profile # **set read-error-count-slot1-threshold** *threshold*	Specifies the number of read errors that are permitted while accessing the Cisco Flexible Flash card in slot 1. If the number of errors exceeds this threshold, the Cisco Flexible Flash card is disabled and you must reset it manually before Cisco IMC attempts to access it again. To specify a read error threshold, enter an integer between 1 and 255. To specify that the card should never be disabled regardless of the number of errors encountered, enter 0 (zero).
Step 5	Server /chassis/flexflash/operational-profile	Specifies the number of read errors that are permitted while accessing the Cisco Flexible Flash card in slot 2. If the number

	Command or Action	Purpose
	# **set read-error-count-slot2-threshold** *threshold*	of errors exceeds this threshold, the Cisco Flexible Flash card is disabled and you must reset it manually before Cisco IMC attempts to access it again.
		To specify a read error threshold, enter an integer between 1 and 255. To specify that the card should never be disabled regardless of the number of errors encountered, enter 0 (zero).
Step 6	Server /chassis/flexflash/operational-profile # **set write-error-count-slot2-threshold** *threshold*	Specifies the number of write errors that are permitted while accessing the Cisco Flexible Flash card in slot 2. If the number of errors exceeds this threshold, the Cisco Flexible Flash card is disabled and you must reset it manually before Cisco IMC attempts to access it again.
		To specify a write error threshold, enter an integer between 1 and 255. To specify that the card should never be disabled regardless of the number of errors encountered, enter 0 (zero).
Step 7	Server /chassis/flexflash/operational-profile # **commit**	Commits the transaction to the system configuration.

This example shows how to configure the properties of the Flash controller:

```
Server# scope chassis
Server /chassis # scope flexflash FlexFlash-0
Server /chassis/flexflash # scope operational-profile
Server /chassis/flexflash/operational-profile # set read-err-count-slot1-threshold 9
Server /chassis/flexflash/operational-profile *# set read-err-count-slot2-threshold 10
Server /chassis/flexflash/operational-profile *# set write-err-count-slot1-threshold 11
Server /chassis/flexflash/operational-profile *# set write-err-count-slot2-threshold 12
Server /chassis/flexflash/operational-profile *# commit
Server /chassis/flexflash/operational-profile # show detail
FlexFlash Operational Profile:
    Firmware Operating Mode: util
    SLOT1 Read Error Threshold: 9
    SLOT1 Write Error Threshold: 11
    SLOT2 Read Error Threshold: 10
    SLOT2 Write Error Threshold: 12
```

Configuring the Flexible Flash Controller Properties for C220 M3, C240 M3, and C460 M4 Servers

Before You Begin

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

- Cisco Flexible Flash must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope flexflash** *index*	Enters the Cisco Flexible Flash controller command mode for the specified controller. At this time, the only permissible *index* value is **FlexFlash-0**.
Step 3	Server /chassis/flexflash # **scope operational-profile**	Enters the operational profile command mode.
Step 4	Server /chassis/flexflash/operational-profile # **set raid-primary-member {slot1	slot2}**	Specifies the slot in which the primary copy of the data resides. **Important** Currently, Cisco Flexible Flash cards are supported in slot 1 and slot 2. Therefore, you can specify **slot1** or **slot2**.
Step 5	Server /chassis/flexflash/operational-profile # **set raid-secondary-role {active	initializing}**	The role of the secondary RAID. The currently supported value is **active**.
Step 6	Server /chassis/flexflash/operational-profile # **set read-error-count-threshold**	Specifies the number of read errors that are permitted while accessing the Cisco Flexible Flash card. If the number of errors exceeds this threshold, the Cisco Flexible Flash card is disabled and you must reset it manually before Cisco IMC attempts to access it again. To specify a read error threshold, enter an integer between 1 and 255. To specify that the card should never be disabled regardless of the number of errors encountered, enter 0 (zero).
Step 7	Server /chassis/flexflash/operational-profile # **set write-error-count-threshold**	Specifies the number of write errors that are permitted while accessing the Cisco Flexible Flash card. If the number of errors exceeds this threshold, the Cisco Flexible Flash card is disabled and you must reset it manually before Cisco IMC attempts to access it again. To specify a write error threshold, enter an integer between 1 and 255. To specify that the card should never be disabled regardless of the number of errors encountered, enter 0 (zero).
Step 8	Server /chassis/flexflash/operational-profile # **set virtual-drives-enabled** *list*	Specifies a list of virtual drives to be made available to the server as a USB-style drive. The options are as follows: • **SCU**—The server can access the Cisco UCS Server Configuration Utility. • **DRIVERS**—The server can access the Cisco drivers volume. • **HV**—The server can access a user-installed hypervisor.

	Command or Action	Purpose
		• **HUU**—The server can access the Cisco Host Upgrade Utility. When specifying more than one option, you must enclose the list in quotation marks (").
Step 9	Server /chassis/adapter # **commit**	Commits the transaction to the system configuration.

This example shows how to configure the properties of the Flash controller:

```
Server# scope chassis
Server /chassis # scope flexflash FlexFlash-0
Server /chassis/flexflash # scope operational-profile
Server /chassis/flexflash/operational-profile # set read-error-count-threshold 100
Server /chassis/flexflash/operational-profile # set write-error-count-threshold 100
Server /chassis/flexflash/operational-profile *# set raid-primary-member slot1
Server /chassis/flexflash/operational-profile # set raid-secondary-role active
Server /chassis/flexflash/operational-profile *# set virtual-drives-enabled "SCU HUU"
Server /chassis/flexflash/operational-profile *# commit
Server /chassis/flexflash/operational-profile #
```

Booting from the Flexible Flash

You can specify a bootable virtual drive on the Cisco Flexible Flash card that will override the default boot priority the next time the server is restarted, regardless of the default boot order defined for the server. The specified boot device is used only once. After the server has rebooted, this setting is ignored.

Note

Before you reboot the server, ensure that the virtual drive you select is enabled on the Cisco Flexible Flash card.

After you upgrade to the latest verison of Cisco IMC or downgrade to a prior version, and reset the configuration, the server boots through the HV partition only. If the prior version has valid SCU data, then the server will boot through SCU in spite of single HV partition.

Before You Begin

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

- Cisco Flexible Flash must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# **scope bios**	Enters the BIOS command mode.
Step 2	Server /bios # **set boot-override** {**None** | **HV**}	The virtual drive from which the server attempts to boot the next time it is restarted. This can be one of the following: • **None**—The server uses the default boot order

	Command or Action	Purpose
		• **HV**—The server boots from the hypervisor virtual drive
Step 3	Server /bios # **commit**	Commits the transaction to the system configuration.

This example specifies that the server boots from the Cisco UCS Server Configuration Utility the next time it is restarted:

```
Server# scope bios
Server /bios # set boot-override HV
Committing the boot override BIOS will try boot to
the specified boot device first. Failure to detect
the boot device BIOS will boot from the list
configured in the BIOS boot order.
Server /bios *# commit
Server /bios #
```

Resetting the Flexible Flash Controller

In normal operation, it should not be necessary to reset the Cisco Flexible Flash. We recommend that you perform this procedure only when explicitly directed to do so by a technical support representative.

Note   This operation will disrupt traffic to the virtual drives on the Cisco Flexible Flash controller.

Before You Begin

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

- Cisco Flexible Flash must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope flexflash** *index*	Enters the Cisco Flexible Flash controller command mode for the specified controller. At this time, the only permissible *index* value is **FlexFlash-0**.
Step 3	Server /chassis/flexflash # **reset**	Resets the Cisco Flexible Flash controller.

This example resets the flash controller:

```
Server# scope chassis
Server /chassis # scope flexflash FlexFlash-0
Server /chassis/flexflash # reset
This operation will reset Cisco Flexible Flash controller.
```

```
Host traffic to VDs on this device will be disrupted.
Continue?[y|N] y

Server /chassis/flexflash #
```

Configuring the Flexible Flash Controller Cards in Mirror Mode

Configuring controller cards in mirror mode:

Before You Begin

- You must log in with admin privileges to perform this task.
- Cisco Flexible Flash must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope flexflash**	Enters the Cisco Flexible Flash controller command mode for the specified controller.
Step 3	Server /chassis/flexflash # **configure-cards-mirror SLOT-1**.	Configures SLOT-1 as healthy primary.
Step 4	Enter **y** at the **Enable auto sync(by default auto sync is disabled)?[y|N]** prompt.	Sync the card on slot 1 with the card on slot 2.
Step 5	Enter **y** at the **Set Mirror Partition Name(Default name is Hypervisor)?[y|N]** prompt.	Enables you to set the name of the mirror partition.
Step 6	Enter the name of the mirror partition at the **Enter Partition Name Mirror Partition Name :***Hypervisor* prompt.	Sets the name of the mirror partition.
Step 7	Enter **y** at the **Set Virtual Drive as non-removable (Default is removable)?[y|N]** prompt.	Enables you to set the VD as non-removable. The following message displays: This action will mark the SLOT-1 as healthy primary slot and SLOT-2 (if card existing) as unhealthy secondary. This operation may disturb the host connectivity as well.
Step 8	Enter **y** at the **Continue?[y|N]y** prompt.	Configures the cards in Mirror mode and sets the card in SLOT-1 as primary healthy and SLOT-2 (if card existing) as unhealthy secondary.

	Command or Action	Purpose
Step 9	Server /chassis/flexflash # **show physical-drive**	(Optional) Displays the status of the configured cards. **Note** • When the cards are configured in auto sync mode and if the cards go out of sync then syncing from a good card with the bad card will start automatically. • If the cards are configured in auto sync mode and if a card goes out of sync, then syncing from a good card starts automatically. • If the server is running with one auto mirror healthy card and if a new card is inserted then the metadata is automatically created on the new card and data syncing starts from auto mirror configured card to the new paired card.

This example shows how to configure the controller cards in mirror mode:

```
Server# scope chassis
Server /chassis # scope flexflash
Server /chassis/flexflash #  configure-cards-mirror SLOT-1
Enable auto sync(by default auto sync is disabled)?[y|N]y
Set Mirror Partition Name(Default name is Hypervisor)?[y|N]y
Enter Partition Name Mirror Partition Name :HV
Set Virtual Drive as non-removable (Default is removable)?[y|N]y
This action will mark the SLOT-1 as healthy primary slot and SLOT-2 (if card existing) as
unhealthy secondary.
This operation may disturb the host connectivity as well.
Continue?[y|N]y
Server /chassis/flexflash # show detail
Controller FlexFlash-0:
    Product Name: Cisco FlexFlash
    Controller HW: FX3S
    Vendor: Cypress
    Firmware Version: 1.3.2 build 159
    Firmware Operating Mode: mirror
    Firmware Configured Mode: mirror
    Has Error: No
    Error Description:
    Internal State: Disconnected
    Controller Status: OK
    Cards Manageable: Yes
    Startup Firmware Version: 1.3.2 build 159

Server /chassis/flexflash # show physical-drive
Physical Drive  Status    Controller  Card Type         Card mode         Health     Sync
 Mode
--------------- --------- ----------- ----------------- ----------------- ----------
---------
SLOT-1          present   FlexFlash-0 FX3S configured   mirror-primary    healthy    auto
SLOT-2          present   FlexFlash-0 FX3S configured   mirror-secondary  unhealthy  auto

Server /chassis/flexflash #
```

Configuring Controller Cards in Util Mode

Procedure

	Command or Action	Purpose
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope flexflash**	Enters the Cisco Flexible Flash controller command mode for the specified controller.
Step 3	Server /chassis/flexflash # **configure-cards-util SLOT-1**	Configures card in slot-1 as Util card with four partitions - scu, huu, drivers, and user partition).
Step 4	Enter **y** at the **Set User Partition Name on Util Card (Default name is UserPartition)?[y|N]** prompt.	Enables you to set the name of the user partition.
Step 5	Enter the name of the user partition at the **Enter User Partiton Name:***UserPartition* prompt.	Sets the name of the user partition.
Step 6	Enter **y** at the **Set Partition Name on Non Util Card(Default name is Hypervisor)?[y|N]** prompt.	Enables you to set the name of the single partition on non-Util card.
Step 7	Enter the name of the mirror partition at the **Enter Partition Name of Non Util Card:***Hypervisor* prompt.	Sets the name of the non-Util partition. The following message displays: This action will create util configuration (4 partition) on SLOT-1 card and non-util configuration(1 partition) on SLOT-2 (if card existing). This operation may disturb the host connectivity as well.
Step 8	Enter **y** at the **Continue?[y|N]y** prompt.	Configures the cards in the Util mode; creates four partitions of the card on SLOT-1 and sets it as primary healthy, and SLOT-2 (if card existing) as healthy secondary.
Step 9	Server /chassis/flexflash # **show physical-drive**	(Optional) Displays the status of the configured cards. **Note** On a Util card with four partitions, an extra partition is created and used during OOB update of SCU, HUU, and drivers.

This example shows how to configure the controller cards in Util mode:

```
Server# scope chassis
Server /chassis # scope flexflash
Server /chassis/flexflash #  configure-cards-mirror SLOT-1
Set User Partiton Name on Util Card (Default name is UserPartition)?[y|N]y
Enter User Partiton Name :UserPartition
Set Partition Name on Non Util Card(Default name is Hypervisor)?[y|N]y
```

```
Enter Partition Name of Non Util Card :Hypervisor
This action will create util configuration (4 partitons) on SLOT-1 card and
non-util configuration(1 partition) on SLOT-2 (if card existing)
This operation may disturb the host connectivity as well.
Continue?[y|N]y

Server /chassis/flexflash # show detail
Controller FlexFlash-0:
    Product Name: Cisco FlexFlash
    Controller HW: FX3S
    Vendor: Cypress
    Firmware Version: 1.3.2 build 159
    Firmware Operating Mode: util
    Firmware Configured Mode: util
    Has Error: No
    Error Description:
    Internal State: Disconnected
    Controller Status: OK
    Cards Manageable: Yes
    Startup Firmware Version: 1.3.2 build 159

Server /chassis/flexflash # show physical-drive
Physical Drive  Status    Controller   Card Type         Card mode         Health     Sync
 Mode
--------------- --------- ------------ ----------------- ----------------- ----------
----------
SLOT-1          present   FlexFlash-0  FX3S configured   util              healthy    NA
SLOT-2          present   FlexFlash-0  FX3S configured   util              healthy    NA

Server /chassis/flexflash #
```

Configuring the Flexible Flash Controller Firmware Mode

Before You Begin

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

- Cisco Flexible Flash must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope flexflash**	Enters the Cisco Flexible Flash controller command mode for the specified controller.
Step 3	Server /chassis/flexflash # **configure-firmware-mode** .	Switches the firmware mode from the current state to the other.
		The following messages appear:
		This action will switch firmware mode from util to mirror
		This operation may disturb the host connectivity as well.
Step 4	Enter **y** at the **Continue?[y|N]y** prompt.	Switches the firmware mode from mirror to Util or Util to mirror.

This example shows how to configure the firmware mode of a controller:

```
Server# scope chassis
Server /chassis # scope flexflash
Server /chassis/flexflash #  configure-firmware-mode
This action will switch fimrware mode from util to mirror
This operation may disturb the host connectivity as well.
Continue?[y|N]y
Server /chassis/flexflash # show detail
Controller FlexFlash-0:
    Product Name: Cisco FlexFlash
    Controller HW: FX3S
    Vendor: Cypress
    Firmware Version: 1.3.2 build 159
    Firmware Operating Mode: mirror
    Firmware Configured Mode: mirror
    Has Error: Yes
    Error Description:
    Internal State: Failed
    Controller Status: Mode Mismatch SDcard(s)
    Cards Manageable: NO
    Startup Firmware Version: 1.3.2 build 159

*+-----------------------------------------------------------------------+
+ Based on type and number of cards please execute mirror/util Configuration +
+ (configure-mirror/configure-util) commands to start monitoring/managing SD cards +
+                               OR                                        +
+                     Switch Firmware Operating Mode                      +
+-----------------------------------------------------------------------+

Server /chassis/flexflash #
```

Resetting the Configuration of the Cards in the Cisco Flexible Flash Controller

You can reset the configuration of a selected slot in the Cisco Flexible Flash controller to the default configuration.

When you reset the configuration of the slots in the Cisco Flexible Flash card, the following situations occur:

- The card in the selected slot is marked as primary healthy.

- The card in the other slot is marked as secondary-active unhealthy.

- One RAID partition is created.

- The card read/write error counts and read/write threshold are set to 0.

- Host connectivity could be disrupted.

If you upgrade to the latest version and select reset configuration option, a single hypervisor (HV) partition is created, and the existing four partition configurations are erased. This may also result in data loss. You can retrieve the lost data only if you have not done any data writes into HV partition, and downgrade to prior version.

Before You Begin

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

- Cisco Flexible Flash must be supported on your server.

Procedure

	Command or Action	**Purpose**
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope flexflash** *index*	Enters the Cisco Flexible Flash controller command mode for the specified controller. At this time, the only permissible *index* value is **FlexFlash-0**.
Step 3	Server /chassis/flexflash # **reset-partition-defaults** *primary slot ID*	Resets the configuration of the selected slot to the default configuration.

This example shows how to reset the configuration from a slot to the default configuration:

```
Server# scope chassis
Server /chassis # scope flexflash FlexFlash-0
Server /chassis/flexflash # reset-partition-defaults slot1

This action will mark the slot1 as the healthy primary slot, and slot2 (if card exists)
as unhealthy secondary active.
This operation may disturb the host connectivity as well.
Continue? [y|N] y

Server /chassis/flexflash/operational-profile #
```

Retaining the Configuration of the Flexible Flash Controller

You can copy the configuration of a given slot in the Cisco Flexible Flash card to the other slot. However, the slot from which the configuration is copied from must be of the SDK523 type. You can retain the configuration in the following situations:

- There are two unpaired FlexFlash

- The server is operating from a single FlexFlash, and an unpaired FlexFlash is in the other slot.

- One FlexFlash supports firmware version 253, and the other FlexFlash is unpartitioned.

Before You Begin

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

- Cisco Flexible Flash must be supported on your server.

Procedure

	Command or Action	**Purpose**
Step 1	Server# **scope chassis**	Enters the chassis command mode.

	Command or Action	Purpose
Step 2	Server /chassis # **scope flexflash** *index*	Enters the Cisco Flexible Flash controller command mode for the specified controller. At this time, the only permissible *index* value is **FlexFlash-0**.
Step 3	Server /chassis/flexflash # **synchronize-card-configuration***primary slot ID*	Copies the configuration from the primary slot to the secondary slot.

This example shows how to copy the configuration from one slot to the other:

```
Server# scope chassis
Server /chassis # scope flexflash FlexFlash-0
Server /chassis/flexflash # synchronize-card-configuration slot1

This action will copy the config of slot1 to both the slots, mark slot1 as healthy,
primary slot and slot2 (card must be present) as unhealthy secondary active.
This operation may disturb the host connectivity as well.
Continue? [y|N] y

Server /chassis/flexflash/operational-profile #
```

Adding an ISO Image Configuration

Before You Begin

- You must log in with admin privileges to perform this task.
- Cisco Flexible Flash must be supported by your platform.
- Card must be in Util mode.

Procedure

	Command or Action	Purpose
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server/chassis # **scope flexflash**	Enters the Cisco Flexible Flash controller command mode for the specified controller.
Step 3	Server/chassis/flexflash/ # **scope vd-image-configs**	Enters the virtual drive configuration command mode.
Step 4	Server/chassis/flexflash/vd-image-configs # **vd-image-cifs** *virtual_drive //serverip/remote_share <remote_file>*	`Server username:` prompt is displayed. 1 Server username: *server username* Enter a server username. 2 Server password: *server password* Enter a server password.

	Command or Action	Purpose
		3 Confirm password: *server password*
		Repeat the server password.
Step 5	Server/chassis/flexflash/vd-image-configs # **vd-image-nfs** *virtual_drive serverip:/remote_share <remote_file>*	`Server username:` prompt is displayed.
Step 6	Server/chassis/flexflash/vd-image-configs # **show detail**	(Optional) Displays the details of the virtual drives.

```
Server # scope chassis
Server/chassis # scope flexflash
Server/chassis/flexflash # scope vd-image-configs
Server/chassis/flexflash/vd-image-configs # vd-image-cifs SCU //10.106.146.69/pdagguma
/softwares/ucs-cxx-scu-3.1.9.iso
Server/chassis/flexflash/vd-image-configs # show detail
Vritual Drive SCU:
    Mount Type: cifs
    Remote Share: //10.106.146.69/pdagguma
    Remote File: /softwares/ucs-cxx-scu-3.1.9.iso
    Mount Options:
"username=pdagguma,password*********,soft,nounix,noserverino,rsize=3072,wsize=3072"
Vritual Drive HUU:
    Mount Type: cifs
    Remote Share: //10.101
    Remote File: DFLJD_huu.iso
    Mount Options:
"username=pdagguma,password*********,soft,nounix,noserverino,rsize=3072,wsize=3072"
Vritual Drive Drivers:
    Mount Type: None
    Remote Share: None
    Remote File: None
    Mount Options: None
Server/chassis/flexflash/vd-image-configs #
```

Enabling Virtual Drives

Before You Begin

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

- Cisco Flexible Flash must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope flexflash**	Enters the Cisco Flexible Flash controller command mode for the specified controller.

	Command or Action	Purpose
Step 3	Server /chassis/ flexflash # **scope virtual-drive**	Enters the virtual drive command mode for the specified controller.
Step 4	Server /chassis/flexflash/virtual-drive # **enable-vds** *"SCU HUU dlfd"*	Enables the virtual drives to the host.

This example shows how to enable the virtual drives to the host:

```
Server# scope chassis
Server /chassis # scope flexflash
Server /chassis/flexflash #  scope virtual-drive
Server /chassis/flexflash/virtual-drive # enable-vds "SCU HUU dlfd"
Server /chassis/flexflash/virtual-drive # show detail

Virtual Drive SCU:
    VD ID: 1
    Size: 2560 MB
    VD Scope: Non-Raid
    VD Status: Healthy
    VD Type: Removable
    Read/Write: R/W
    Host Accessible: Connected
    Operation in progress: NA
    Last Operation completion status: none
Virtual Drive HUU:
    VD ID: 2
    Size: 1536 MB
    VD Scope: Non-Raid
    VD Status: Healthy
    VD Type: Removable
    Read/Write: R/W
    Host Accessible: Connected
    Operation in progress: NA
    Last Operation completion status: none
Virtual Drive Drivers:
    VD ID: 3
    Size: 8192 MB
    VD Scope: Non-Raid
    VD Status: Healthy
    VD Type: Removable
    Read/Write: R/W
    Host Accessible: Not-Connected
    Operation in progress: NA
    Last Operation completion status: none
Virtual Drive dlfd:
    VD ID: 4
    Size: 9952 MB
    VD Scope: Non-Raid
    VD Status: Healthy
    VD Type: Removable
    Read/Write: R/W
    Host Accessible: Connected
    Operation in progress: NA
    Last Operation completion status: none
Virtual Drive dfdff:
    VD ID: 5
    Size: 30432 MB
    VD Scope: Non-Raid
    VD Status: Healthy
    VD Type: Removable
    Read/Write: R/W
    Host Accessible: Not-Connected
    Operation in progress: NA
    Last Operation completion status: none
```

```
Server /chassis/flexflash/virtual-drive #
```

Erasing Virtual Drives

Before You Begin

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

- Cisco Flexible Flash must be supported by your platform.

Procedure

	Command or Action	**Purpose**
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope flexflash**	Enters the Cisco Flexible Flash controller command mode for the specified controller.
Step 3	Server /chassis/ flexflash # **scope virtual-drive**	Enters the virtual drive command mode for the specified controller.
Step 4	Server /chassis/flexflash/virtual-drive # **erase-vds "SCU HUU"**	Initiates erasing FAT32.

This example shows how to erase data on the virtual drives:

```
Server# scope chassis
Server /chassis # scope flexflash
Server /chassis/flexflash #   scope virtual-drive
Server /chassis/flexflash/virtual-drive #   erase-vds "SCU HUU"
Server /chassis/flexflash/virtual-drive # show detail

Virtual Drive SCU:
    VD ID: 1
    Size: 2560 MB
    VD Scope: Non-Raid
    VD Status: Healthy
    VD Type: Removable
    Read/Write: R/W
    Host Accessible: Not-Connected
    Operation in progress: Erasing
    Last Operation completion status: none
Virtual Drive HUU:
    VD ID: 2
    Size: 1536 MB
    VD Scope: Non-Raid
    VD Status: Healthy
    VD Type: Removable
    Read/Write: R/W
    Host Accessible: Connected
    Operation in progress: Erase-Pending
    Last Operation completion status: none
Virtual Drive Drivers:
    VD ID: 3
    Size: 8192 MB
    VD Scope: Non-Raid
    VD Status: Healthy
    VD Type: Removable
```

```
        Read/Write: R/W
        Host Accessible: Not-Connected
        Operation in progress: NA
        Last Operation completion status: none
Virtual Drive dlfd:

Server /chassis/flexflash/virtual-drive #
```

Syncing Virtual Drives

Before You Begin

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

- Cisco Flexible Flash must be supported by your platform.

- The cards must be configured in manual mirror mode.

Procedure

	Command or Action	Purpose
Step 1	Server# **scope chassis**	Enters the chassis command mode.
Step 2	Server /chassis # **scope flexflash**	Enters the Cisco Flexible Flash controller command mode for the specified controller.
Step 3	Server /chassis/ flexflash # **scope virtual-drive**	Enters the virtual drive command mode for the specified controller.
Step 4	Server /chassis/flexflash/virtual-drive # **sync-vds** *Hypervisor*	Syncs the virtual drives. **Note** • If the cards are configured in auto sync mode and if a card goes out of sync, then syncing from a good card starts automatically. • If the server is running with one auto mirror healthy card and if a new card is inserted then the metadata is automatically created on the new card and data syncing starts from auto mirror configured card to the new paired card.

This example shows how to sync the virtual drives:

```
Server# scope chassis
Server /chassis # scope flexflash
Server /chassis/flexflash #  scope virtual-drive
Server /chassis/flexflash/virtual-drive # sync-vds Hypervisor
Server /chassis/flexflash/virtual-drive # show detail

Virtual Drive Hypervisor:
    VD ID: 1
    Size: 30432 MB
    VD Scope: Raid
    VD Status: Degraded
    VD Type: Removable
    Read/Write: R/W
```

```
        Host Accessible: Not-Connected
        Operation in progress: Syncing(Manual)10% done
        Last Operation completion status: none

Server /chassis/flexflash/virtual-drive #
```