



Managing Storage Adapters

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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	<p>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.</p> <p>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.</p> <p>Note Enabling full disk encryption secures the drive.</p>
Step 4	Server /chassis/storageadapter # show virtual-drive	Displays the existing virtual drives.

Example

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

```

Server# scope chassis
Server /chassis # scope 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.

Example

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

```
Server# scope chassis
Server /chassis # scope 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 { <i>include-all</i> <i>exclude-all</i> <i>include-dhsp</i> }	<p>Sets the virtual drive to transport ready and assigns the chosen properties.</p> <p>Enter the initialization type using which you can set the selected virtual drive as transport ready. This can be one of the following:</p> <ul style="list-style-type: none"> • exclude-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. <p>When you are prompted to confirm the action. Enter y to confirm.</p> <p>Note When you set a virtual drive to transport ready all the physical drives associated with it are displayed as Ready to remove.</p>

	Command or Action	Purpose
Step 5	(Optional) Server /chassis/storageadapter/virtual-drive # show detail	Display the virtual drive properties with the change.

Example

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.

	Command or Action	Purpose
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	(Optional) Server /chassis/storageadapter/virtual-drive # show detail	Display the virtual drive properties with the change.

Example

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. Note If you do not enter yes , the action is aborted.

Example

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

```
Server# scope chassis
Server /chassis # 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	(Optional) Server /chassis/storageadapter # scope physical-drive 2	Enters the physical drive command mode.
Step 5	(Optional) Server /chassis/storageadapter/physical-drive # show detail	Displays the status of the unlocked foreign drive.

Example

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.

Example

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

Example

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.
Step 3	Server /chassis /storageadapter # disable-jbod-mode	Disables the JBOD Mode for the selected controller

Example

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.

Example

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	(Optional) Server /chassis/storageadapter/physical-drive # show detail	Displays details of the physical drive.

Example

This example shows how to enable security on a JBOD:

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
savbu-stordev-dnl-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/physical-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	(Optional) Server /chassis/storageadapter/physical-drive # show detail	Displays the physical drive details.

Example

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

Converts 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/physical-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	(Optional) Server /chassis/storageadapter/physical-drive # show detail	Displays the physical drive details.

Example

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.

Example

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 or Multiple Controllers Environment



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

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

Consider the following two scenarios:

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

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

Enabling 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. 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.

Example

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.

Example

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

	Command or Action	Purpose
		<p>you want to reset the key-id and the new security key. Enter the appropriate information.</p> <p>At the confirmation prompt, enter y (yes) to confirm, or n (no) to cancel the operation.</p>

Example

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	<p>At the prompt, enter the security key and press Enter.</p> <p>If you enter a security key that does not match the controller security key, a verification failure message appears.</p>

Example

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.
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 # <i>key id</i>	Enter the new key ID at the prompt. Switches to local key management.

Example

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 # <i>security id</i>	Enter the security key at the prompt. Switches to remote key management.

Example

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



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.

Example

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.

	Command or Action	Purpose
Step 3	Server /chassis/storageadapter # scope virtual-drive <i>drive-number</i>	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.

Example

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.
Step 2	Server /chassis # scope storageadapter <i>slot</i>	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # scope virtual-drive <i>drive-number</i>	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.

Example

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.

Example

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



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.

Example

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.

Example

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

```

Server# scope chassis
Server /chassis # scope 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.

Example

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.
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.

Example

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	

Example

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.

Example

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.

Example

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.

	Command or Action	Purpose
Step 3	Server /chassis/storageadapter # scope physical-drive <i>drive-number</i>	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.

Example

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 <i>slot</i>	Enters command mode for an installed storage card.
Step 3	Server /chassis/storageadapter # scope physical-drive <i>drive-number</i>	Enters command mode for the specified physical drive.
Step 4	Server /chassis/storageadapter/physical-drive # undo-prepare-for-removal	

Example

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

```
Server# scope chassis
Server /chassis # scope 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

Example

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.

	Command or Action	Purpose
Step 4	Server /chassis/storageadapter # disable-auto-learn	Disables the battery auto-learn cycles

Example

This example shows how to disable 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.

Example

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.

Example

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.
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.

Example

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.

Example

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.

Example

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/physical-drive # show detail	Displays the physical drive details.

Example

This example shows how to view the physical drive information:

```
Server# scope chassis
Server /chassis # scope 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

```

Viewing NVMe Controller Details

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Server /chassis # show nvmeadapter	Displays the available NVMe adapters.

	Command or Action	Purpose
Step 3	Server /chassis/nvmeadapter # scope nvmeadapter <i>NVMe Adapter Name</i>	Enters the chosen NVMe adapter command mode.
Step 4	Server /chassis/nvmeadapter # show detail	Displays the NVMe controller details.

Example

This example shows how to view the controller information:

```
Server# scope chassis
Server /chassis # show nvmeadapter
PCI Slot
-----
NVMe-direct-U.2-drives
PCIe-Switch
Server /chassis # scope nvmeadapter PCIe-Switch
Server /chassis/nvmeadapter # show detail
PCI Slot: PCIe-Switch
  Health: Good
  Drive Count: 8
  Vendor ID: MICROSEM
  Product ID: PFX 48XG3
  Component ID: 8533
  Product Revision: RevB
  P2P Vendor ID: f811
  P2P Device ID: efbe
  Running Firmware Version: 1.8.0.58-24b1
  Pending Firmware Version: 1.8.0.58
  Switch temperature: 49 degrees C
  Switch status: Optimal
  Link Status: Optimal
Server /chassis/nvmeadapter #
```

Viewing NVMe Physical Drive Details

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Server /chassis # show nvmeadapter	Displays the available NVMe adapters.
Step 3	Server /chassis/nvmeadapter # scope nvmeadapter <i>NVMe Adapter Name</i>	Enters the chosen NVMe adapter command mode.
Step 4	Server /chassis/nvmeadapter # show nvme-physical-drive	Displays the available physical drives.
Step 5	Server /chassis/nvmeadapter # scope nvme-physical-drive <i>Physical Drive Number</i>	Enters the chosen physical drive command mode.

	Command or Action	Purpose
Step 6	Server /chassis/nvmeadapter/nvme-physical-drive # show detail	Displays the NVMe physical drive details.

Example

This example shows how to view the physical drive information:

```
Server# scope chassis
Server /chassis # scope nvmeadapter NVMe-direct-U.2-drives
Server /chassis/nvmeadapter # show nvme-physical-drive
Physical Drive Number Product Name Manufacturer Serial Number Temperature % Drive Life Used
Performance Level LED Fault status % Power on Hours
-----
REAR-NVME-1          Ci... HGST          SDM00000E5EC 48 degree... 3          100
                    Healthy. Driv... 2
REAR-NVME-2          Ci... HGST          SDM00000DC90 47 degree... 2          100
                    Healthy          3
Server /chassis/nvmeadapter # scope nvme-physical-drive REAR-NVME-1
Server /chassis/nvmeadapter/nvme-physical-drive # show detail
Physical Drive Number REAR-NVME-1:
Product Name: Cisco UCS (SN200) 2.5 inch 800 GB NVMe based PCIe SSD
Manufacturer: HGST
Serial Number: SDM00000E5EC
Temperature: 48 degrees C
% Drive Life Used: 3
Performance Level: 100
LED Fault status: Healthy. Drive is overused based on current write pattern
% Power on Hours: 2
Firmware Revision:
PCI Slot: REAR-NVME-1
Managed Id: 10
Controller Type: NVME-SFF
Controller Temperature: 48 degrees C
Fault State: 0
Throttle Start Temperature: 70 degrees C
Shutdown Temperature: 75 degrees C
Server /chassis/nvmeadapter/nvme-physical-drive #
```

Viewing SIOC NVMe Drive Details

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



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

Procedure

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

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

Example

This example shows how to view SIOC NVMe drive details:

```

Server # scope chassis
Server /chassis # scope cmc
Server /chassis/cmc # show detail
Firmware Image Information:
  ID: 1
  Name: CMC1
  SIOC PID: UCS-S3260-PCISIOC
  Serial Number: FCH21277K8T
  Update Stage: ERROR
  Update Progress: OS_ERROR
  Current FW Version: 4.0(0.166)
  FW Image 1 Version: 0.0(4.r17601)
  FW Image 1 State: BACKUP INACTIVATED
  FW Image 2 Version: 4.0(0.166)
  FW Image 2 State: RUNNING ACTIVATED
  Reset Reason: ac-cycle
  Secure Boot: ENABLED
Server /chassis # scope cmc 1
Server /chassis/cmc # scope nvmeadapter NVMe-direct-U.2-drives
Server /chassis/cmc/nvmeadapter # show nvme-physical-drive detail
Physical Drive Number SIOCVMel:
  Product Name: Cisco 2.5 inch 1TB Intel P4501 NVMe Med. Perf. Value Endurance
  Manufacturer: Intel
  Serial Number: PHLF7303008G1P0KGN
  Temperature: 39 degrees C
  % Drive Life Used: 1
  Performance Level: 100
  LED Fault status: Healthy
  Drive Status: Optimal
  % Power on Hours: 8
  Firmware Version: QDV1CP03
  PCI Slot: SIOCVMel
  Managed Id: 1
  Controller Type: NVME-SFF
  Controller Temperature: 39
  Throttle State: 0
  Throttle Start Temperature: 70
  Shutdown Temperature: 80
Physical Drive Number SIOCVMe2:
  Product Name: Cisco 2.5 inch 500GB Intel P4501 NVMe Med. Perf. Value Endurance
  Manufacturer: Intel
  Serial Number: PHLF73440068500JGN
  Temperature: 39 degrees C
  % Drive Life Used: 1
  Performance Level: 100
  LED Fault status: Healthy
  Drive Status: Optimal

```

```

% Power on Hours: 7
Firmware Version: QDV1CP03
PCI Slot: SIOCNVMe2
Managed Id: 2
Controller Type: NVME-SFF
Controller Temperature: 39
Throttle State: 0
Throttle Start Temperature: 70
Shutdown Temperature: 80
Server /chassis/cmc/nvmeadapter #
    
```

Viewing PCI Switch Details

This feature is available only on some C-Series servers.

Procedure

	Command or Action	Purpose
Step 1	Server # scope chassis	Enters the chassis command mode.
Step 2	Server /chassis # show pci-switch	Displays the list of PCI switches available in the system.
Step 3	Server /chassis # show pci-switch detail	Displays the details of the PCI switches available in the system.

Example

This example shows how to view PCI Switch details:

```

Server # scope chassis
Server /chassis # show pci-switch
Slot-ID                Product Name           Manufacturer
-----
PCI-Switch-1           PEX 8764               PLX
PCI-Switch-2           PEX 8764               PLX
PCI-Switch-3           PEX 8764               PLX
PCI-Switch-4           PEX 8764               PLX
Server /chassis # show pci-switch detail
PCI SWITCH:
  Slot-ID: PCI-Switch-1
  Product Name: PEX 8764
  Product Revision: 0xab
  Manufacturer: PLX
  Device Id: 0x8764
  Vendor Id: 0x10b5
  Sub Device Id: 0x8764
  Sub Vendor Id: 0x10b5
  Temperature: 43
  Composite Health: Good
  Adapter Count: 3
PCI SWITCH:
  Slot-ID: PCI-Switch-2
  Product Name: PEX 8764
  Product Revision: 0xab
  Manufacturer: PLX
    
```

```

Device Id: 0x8764
Vendor Id: 0x10b5
Sub Device Id: 0x8764
Sub Vendor Id: 0x10b5
Temperature: 43
Composite Health: Good
Adapter Count: 3
PCI SWITCH:
Slot-ID: PCI-Switch-3
Product Name: PEX 8764
Product Revision: 0xab
Manufacturer: PLX
Device Id: 0x8764
Vendor Id: 0x10b5
Sub Device Id: 0x8764
Sub Vendor Id: 0x10b5
Temperature: 42
Composite Health: Good
Adapter Count: 3
PCI SWITCH:
Slot-ID: PCI-Switch-4
Product Name: PEX 8764
Product Revision: 0xab
Manufacturer: PLX
Device Id: 0x8764
Vendor Id: 0x10b5
Sub Device Id: 0x8764
Sub Vendor Id: 0x10b5
Temperature: 43
Composite Health: Degraded
Adapter Count: 3
C480-FCH2213WH02 /chassis #
Server /chassis/ #

```

Viewing Details of a Particular PCI Switch

This feature is available only on some C-Series servers.

Procedure

	Command or Action	Purpose
Step 1	Server # scope chassis	Enters the chassis command mode.
Step 2	Server /chassis # show pci-switch	Displays the list of PCI switches available in the system.
Step 3	Server /chassis # scope pci-switch <i>PCI-Switch Number</i>	Enters the PCI switch command mode of the chosen switch.
Step 4	Server /chassis/pci-switch # show detail	Displays the details of the PCI switch.
Step 5	Server /chassis/pci-switch # show adapter-list	Displays the details of the adapters present on the PCI switch.

Example

This example shows how to view details of a particular PCI Switch:

```

Server # scope chassis
Server /chassis # show pci-switch
Slot-ID                Product Name          Manufacturer
-----
PCI-Switch-1          PEX 8764              PLX
PCI-Switch-2          PEX 8764              PLX
PCI-Switch-3          PEX 8764              PLX
PCI-Switch-4          PEX 8764              PLX
Server /chassis # scope pci-switch PCI-Switch-1
Server /chassis/pci-switch show detail
PCI SWITCH:
  Slot-ID: PCI-Switch-1
  Product Name: PEX 8764
  Product Revision: 0xab
  Manufacturer: PLX
  Device Id: 0x8764
  Vendor Id: 0x10b5
  Sub Device Id: 0x8764
  Sub Vendor Id: 0x10b5
  Temperature: 43
  Composite Health: Good
  Adapter Count: 3
Server /chassis/pci-switch # show adapter-list
Slot                Link Status          Link Speed          Link Width          Status
-----
GPU-3                up                    8.0                  16                  Good
GPU-4                up                    8.0                  16                  Good
12                   up                    8.0                  16                  Good
Server /chassis/pci-switch #

```

Managing the Flexible Flash Controller

Cisco Flexible Flash

On the M5 servers, Flexible Flash Controller is inserted into the mini storage module socket. The mini storage socket is inserted into the M.2 slot on the motherboard. M.2 slot also supports SATA M.2 SSD slots.



Note M.2 slot does not support NVMe in this release.

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 more information about installing and configuring the M.2 drives, see the **Storage Controller Considerations (Embedded SATA RAID Requirements)** and **Replacing an M.2 SSD in a Mini-Storage Carrier For M.2** sections in the Cisco UCS Server Installation and Service Guide for the C240 M5 servers at this URL:

<https://www.cisco.com/c/en/us/support/servers-unified-computing/ucs-c-series-rack-servers/products-installation-guides-list.html>

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 version 1.5(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 .

Scenario	Behavior
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.
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 accidentally 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 M5 and C240 M5 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	Required: 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 <i>threshold</i>	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 # set read-error-count- slot2-threshold <i>threshold</i>	Specifies the number of read 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

	Command or Action	Purpose
		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 <i>threshold</i>	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.

Example

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
```

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	Required: Server /chassis # scope flexflash <i>index</i>	Enters the Cisco Flexible Flash controller command mode for the specified controller. At this time, the only permissible <i>index</i> value is FlexFlash-0 .
Step 3	Server /chassis/flexflash # reset	Resets the Cisco Flexible Flash controller.

Example

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	Required: 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.

	Command or Action	Purpose
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.
Step 9	(Optional) Server /chassis/flexflash # show physical-drive	Displays the status of the configured cards. Note <ul style="list-style-type: none"> • 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.

Example

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 #
```

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	Required: Server /chassis # scope flexflash	Enters the Cisco Flexible Flash controller command mode for the specified controller.

	Command or Action	Purpose
Step 3	Required: 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.

Example

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	Required: Server /chassis # scope flexflash	Enters the Cisco Flexible Flash controller command mode for the specified controller.
Step 3	Required: 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.

Example

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	Required: Server /chassis # scope flexflash	Enters the Cisco Flexible Flash controller command mode for the specified controller.
Step 3	Required: Server /chassis/ flexflash # scope virtual-drive	Enters the virtual drive command mode for the specified controller.

	Command or Action	Purpose
Step 4	Server /chassis/flexflash/virtual-drive # sync-vds Hypervisor	<p>Syncs the virtual drives.</p> <p>Note</p> <ul style="list-style-type: none"> • 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.

Example

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 #
```

Viewing FlexFlash Logs

Before you begin

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	Required: Server /chassis # scope flexflash index	Enters the Cisco Flexible Flash controller command mode.
Step 3	Server /chassis/flexflash # show logs	Displays the Flexible Flash controller logs.

Example

An example of the Flexible Flash Controller logs.

```

Server # scope chassis
Server /chassis # scope chassis flexflash FlexFlash-0
Server /chassis/flexflash # show logs
TimeStamp          Severity          Description
-----
2017 July 10 07:16:17 UTC warning          "CYWB_LOG: CYWB: USB connection status, 3.0
enable=1, 3.0 mode=1"
2017 July 10 07:46:05 UTC warning          "CYWB_LOG: CYWB: USB connection status, 3.0
enable=1, 3.0 mode=1"
2017 July 10 07:46:05 UTC warning          "CYWB_LOG: CYWB FWLOG (usbapp): USB HSChirp
event, data=1"
2017 July 10 07:45:07 UTC warning          "CYWB_LOG: CYWB FWLOG (usbapp): USB Suspend
event, data=0"
2017 July 10 07:45:06 UTC warning          "CYWB_LOG: CYWB FWLOG (usbapp): USB VbusValid
event, data=0"
2017 July 10 07:44:23 UTC warning          "CYWB_LOG: CYWB FWLOG (usb): connect done,
usb_state=4 ctrl_reg=0"
2017 July 10 07:44:23 UTC info            "cywb_blkdev_create_disks: Finished changing
disks: S0=0 S1=0 RAID=0 TOTAL=0"
2017 July 10 07:44:23 UTC info            "cywbbblkdev_blk_put: disk=cd3ad400 queue=cd3bd360
port=0 unit=0 usage=0"
2017 July 10 07:44:23 UTC info            "cywb_blkdev_create_disks: S2 unit 0 has become
unavailable"
2017 July 10 07:44:23 UTC info            "CYWB_LOG: Found 0 RAID partitions, 0 partitions
on port0 and 0 partitions on port 1"
2017 July 10 07:44:23 UTC info            cywb_blkdev_create_disks called
2017 July 10 07:44:23 UTC info            "cywb_blkdev_create_disks: Scheduling driver
callback"
2017 July 10 07:44:23 UTC info            "cywbbblkdev: Added disk=cd3ad400 queue=cd3bd360
port=0 unit=0"
2017 July 10 07:44:23 UTC info            "cywbbblkdev: Registered block device cydiskraida
with capacity 124727295 (major=254, minor=0)"
2017 July 10 07:44:23 UTC info            cywbbblkdev_blk_release exit
2017 July 10 07:44:23 UTC info            "cywbbblkdev_blk_put: disk=cd3ad400 queue=cd3bd360
port=0 unit=0 usage=1"
2017 July 10 07:44:23 UTC info            cywbbblkdev_blk_release entry
2017 July 10 07:44:23 UTC warning          "CYWB_LOG: CyWb: Disk on port0, unit0 is busy,
waiting"
2017 July 10 07:44:23 UTC warning          "CYWB_LOG: CYWB: No device found on storage port
0"
2017 July 10 07:44:23 UTC info            cywbbblkdev_revalidate_disk called
2017 July 10 07:44:23 UTC info            cywbbblkdev_blk_open exit
2017 July 10 07:44:23 UTC info            cywbbblkdev_media_changed called
2017 July 10 07:44:23 UTC info            cywbbblkdev_blk_open entry
    
```

```
2017 July 10 07:44:23 UTC info
disks: S0=0 S1=0 RAID=1 TOTAL=1"
```

```
"cywb_blkdev_create_disks: Finished changing
```

Managing the FlexUtil Controller

The C-Series M5 Rack-Mount servers support microSD memory card for storage of server software tools and utilities. Riser 1 has this microSD memory card slot. Cisco FlexUtil supports only 32GB microSD card.

The following user visible partitions are present on the microSD card:

- Server Configuration Utility (SCU) – 1.25 GB
- Diagnostics – 0.25 GB
- Host Update Utility (HUU) – 1.5 GB
- Drivers – 8 GB
- User



Note The number of partitions and size of each partition on microSD is fixed.

At any time, two partitions can be mapped onto the host. These partitions (except the user partition) can also be updated through a CIFS or NFS share. A second level BIOS boot order support is also available for all the bootable partitions.



Note User partition must be used only for storage. This partition does not support OS installations.

Configuring FlexUtil Operational Profiles

Before you begin

- You must log in as a user with admin privileges to perform this task.
- Cisco FlexUtil must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Required: Server /chassis # scope flexutil	Enters the FlexUtil controller command mode.
Step 3	Required: Server /chassis/flexutil # scope operational-profile	Enters the operational profile command mode.

	Command or Action	Purpose
Step 4	Server /chassis/flexutil/operational-profile # set read-err-count-threshold <i>count</i>	Sets the read error threshold count. Note Zero value for threshold will be treated as special case, cards will not be marked unhealthy if error count crosses zero threshold.
Step 5	Server /chassis/flexutil/operational-profile* # set write-err-count-threshold <i>count</i>	Sets the write error threshold count. Note Zero value for threshold will be treated as special case, cards will not be marked unhealthy if error count crosses zero threshold.
Step 6	Server /chassis/flexutil/operational-profile* # commit	Commits the transaction to the system.

Example

This example shows how to configure the FlexUtil operational profile:

```
Server# scope chassis
Server /chassis # scope flexutil
Server /chassis/flexutil # scope operational-profile
Server /chassis/flexutil/operational-profile # set read-err-count-threshold 49
Server /chassis/flexutil/operational-profile* # set write-err-count-threshold 49
Server /chassis/flexutil/operational-profile* # commit
Server /chassis/flexutilServer /chassis/flexutil/operational-profile
```

Resetting FlexUtil Card Configuration

Before you begin

- You must log in as a user with admin privileges to perform this task.
- Cisco FlexUtil must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Required: Server /chassis # scope flexutil	Enters the FlexUtil controller command mode.
Step 3	Server /chassis/flexutil # reset-card-config	At the confirmation prompt enter y . Resets the FlexUtil card configuration.

Example

This example shows how to reset the FlexUtil card configuration:

```
Server# scope chassis
Server /chassis # scope flexutil
Server /chassis/flexutil # reset-card-config
This operation will wipe all the data on the card.
Any VD connected to host (except UserPartition) will be disconnected from host.
This task will take few minutes to complete.
Do you want to continue?[y|N]y
Server /chassis/flexutil #
```

Viewing FlexUtil Properties

Before you begin

Cisco FlexUtil must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Required: Server /chassis # scope flexutil	Enters the FlexUtil controller command mode.
Step 3	Server /chassis/flexutil # show detail	Displays the FlexUtil controller properties.

Example

This example displays the FlexUtil controller properties:

```
Server# scope chassis
Server /chassis # scope flexutil
Server /chassis/flexutil # show detail
Controller Flexutil:
  Product Name: Cisco Flexutil
  Internal State: Connected
  Controller Status: OK
  Physical Drive Count: 1
  Virtual Drive Count: 5
Server /chassis/flexutil #
```

Viewing FlexUtil Physical Drives Details

Before you begin

Cisco FlexUtil must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Required: Server /chassis # scope flexutil	Enters the FlexUtil controller command mode.
Step 3	Server /chassis/flexutil # show physical-drive detail	Displays the FlexUtil physical drives properties.

Example

This example displays the FlexUtil physical drives properties:

```
Server# scope chassis
Server /chassis # scope flexutil
Server /chassis/flexutil # show physical-drive detail
Physical Drive microSD:
  Status: present
  Controller: Flexutil
  Health: healthy
  Capacity: 30624 MB
  Write Enabled: true
  Read Error Count: 0
  Read Error Threshold: 49
  Write Error Count: 0
  Write Error Threshold : 49
  Product Name: SD32G
  Product Revision: 3.0
  Serial#: 0x1cafb
  Manufacturer Id: 39
  OEM Id: PH
  Manufacturing Date : 12/2016
  Block Size: 512 bytes
  Partition Count: 5
  Drives Enabled: SCU Diagnostics HUU Drivers UserPartition
Server /chassis/flexutil #
```

Viewing FlexUtil Virtual Drives Details

Before you begin

Cisco FlexUtil must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Required: Server /chassis # scope flexutil	Enters the FlexUtil controller command mode.
Step 3	Required: Server /chassis/flexutil # scope virtual-drive	Enters the virtual drive command mode.

	Command or Action	Purpose
Step 4	Server /chassis/flexutil/virtual-drive # show detail	Displays the FlexUtil physical drives properties.

Example

This example displays the FlexUtil physical drives properties:

```
Server# scope chassis
Server /chassis # scope flexutil
Server /chassis/flexutil # scope virtual-drive
Server /chassis/flexutil/virtual-drive # show detail
Virtual Drive SCU:
  ID: 1
  LUN ID: NA
  Size: 1280 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 Diagnostics:
  ID: 2
  LUN ID: 0
  Size: 256 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:
  ID: 3
  LUN ID: NA
  Size: 1536 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 Drivers:
  ID: 4
  LUN ID: NA
  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 UserPartition:
  ID: 5
  LUN ID: NA
  Size: 11159 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/flexutil/virtual-drive #
    
```

Adding an Image to a FlexUtil Virtual Drive

Before you begin

- Log in with admin privileges to perform this task.
- Cisco FlexUtil must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	server # scope chassis	Enters chassis command mode.
Step 2	Required: Server /chassis # scope flexutil	Enters the FlexUtil controller command mode.
Step 3	Required: Server /chassis/flexutil # scope vd-image-configs	Enters the virtual drive image configuration command mode.
Step 4	Server /chassis/flexutil/vd-image-configs # vd-image-cifs {virtual-drive-name remote-share remote-file-path [mount options]}	Maps a CIFS file for the FlexUtil virtual drive. You must specify the following: <ul style="list-style-type: none"> • Name of the virtual drive • Remote share including IP address (IPv4 or IPv6 address) and the exported directory • Path of the remote file corresponding to the exported directory. • (Optional) Mapping options • Username and password to connect to the server
Step 5	Server /chassis/flexutil/vd-image-configs # vd-image-nfs {virtual-drive-name remote-share remote-file-path [mount options]}	Maps an NFS file for the FlexUtil virtual drive. You must specify the following: <ul style="list-style-type: none"> • Name of the virtual drive • Remote share including IP address (IPv4 or IPv6 address) • Path of the remote file • (Optional) Mapping options

	Command or Action	Purpose
Step 6	Server /chassis/flexutil/vd-image-configs # vd-image-www { virtual-drive-name remote-share remote-file-path [<i>mount</i> <i>options</i>]	Maps an HTTPS file to the virtual drive. You must specify the following: <ul style="list-style-type: none"> • Name of the virtual drive to map • Remote share including IP address and the exported directory • Path of the remote file corresponding to the exported directory. • (Optional) Mapping options • Username and password to connect to the server
Step 7	Server /chassis/flexutil/vd-image-configs # show detail	Displays the FlexUtil virtual drive image details.

Example

This example shows how to map an image to a FlexUtil virtual drive:

```
Server# scope chassis
Server /chassis # scope flexutil
Server /chassis/flexutil # scope vd-image-configs
Server /chassis/flexutil/vd-image-configs # vd-image-nfs HUU 10.10.10.10:/nfssdata
ucs-c240m5-huu-3.1.0.182.iso
Server /chassis/flexutil/vd-image-configs # show detail
Virtual drive: SCU
  mount-type: nfs
  remote-share: 10.10.10.10:/nfssshare
  remote-file: ucs-cxx-scu-4.0.12.3.iso
  mount-options: 'nolock,noexec,noac,soft,timeo=60,retry=2,rsize=3072,wsiz=3072'

Virtual drive: Diagnostics
  mount-type: nfs
  remote-share: 10.10.10.10:/nfssshare
  remote-file: ucs-cxx-diag.5.0.1a.iso
  mount-options: 'nolock,noexec,noac,soft,timeo=60,retry=2,rsize=3072,wsiz=3072'

Virtual drive: HUU
  mount-type: nfs
  remote-share: 10.10.10.10:/nfssdata
  remote-file: ucs-c240m5-huu-3.1.0.182.iso
  mount-options: "nolock,noexec,noac,soft,timeo=60,retry=2,rsize=3072,wsiz=3072"

Virtual-drive: Drivers
  mount-type: None
  remote-share: None
  remote-file: None
  mount-options: None
Server /chassis/flexutil/vd-image-configs #
```

Updating a FlexUtil Virtual Drive

Before you begin

- You must be logged in with admin privileges to perform this task.
- Cisco FlexUtil must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Required: Server /chassis # scope flexutil	Enters the FlexUtil controller command mode.
Step 3	Required: Server /chassis/flexutil # scope virtual-drive	Enters the virtual drive command mode.
Step 4	Server /chassis/flexutil/virtual-drive # update-vds virtual-drive	Updates the chosen virtual drive.
Step 5	(Optional) Server /chassis/flexutil/virtual-drive # update-vds-cancel	Cancels an ongoing virtual drive update.
Step 6	Server /chassis/flexutil/virtual-drive # show detail	Displays the FlexUtil virtual drive image details.

Example

This example shows how to updates a FlexUtil virtual drive:

```
Server# scope chassis
Server /chassis # scope flexutil
Server /chassis/flexutil # scope virtual-drive
Server /chassis/flexutil/virtual-drive # update-vds HUU
Server /chassis/flexutil/virtual-drive # show detail
```

```
Virtual-drive: SCU
  partition-id: 1
  lun-id: NA
  size: 1280 MB
  partition-scope: Non-RAID
  partition-status: Healthy
  partition-type: Removable
  writable: R/W
  host-accessible: Not-Connected
  operation-in-progress: NA
  operation-completion-status: none
```

```
Virtual-drive: Diagnostics
  partition-id: 2
  lun-id: NA
  size: 256 MB
  partition-scope: Non-RAID
  partition-status: Healthy
  partition-type: Removable
  writable: R/W
```

```

host-accessible: Not-Connected
operation-in-progress: NA
operation-completion-status: none

Virtual-drive: HUU
partition-id: 3
lun-id: NA
size: 1536 MB
partition-scope: Non-RAID
partition-status: Healthy
partition-type: Removable
writable: R/W
host-accessible: Not-Connected
operation-in-progress: Updating
operation-completion-status: none

Virtual-drive: Drivers
partition-id: 4
lun-id: NA
size: 8192 MB
partition-scope: Non-RAID
partition-status: Healthy
partition-type: Removable
writable: R/W
host-accessible: Not-Connected
operation-in-progress: NA
operation-completion-status: none

Virtual drive: UserPartition
partition-id: 5
lun-id: NA
size: 11159 MB
partition-scope: Non-RAID
partition-status: Healthy
partition-type: Removable
writable: R/W
host-accessible: Not-Connected
operation-in-progress: NA
operation-completion-status: none
Server /chassis/flexutil/virtual-drive #

```

Enabling FlexUtil Virtual Drive

Before you begin

- You must be logged in with admin privileges to perform this task.
- Cisco FlexUtil must be supported by your platform.
- Update the virtual drive image before mapping the drive to a host.

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Required: Server /chassis # scope flexutil	Enters the FlexUtil controller command mode.

	Command or Action	Purpose
Step 3	Required: Server /chassis/flexutil # scope virtual-drive	Enters the virtual drive command mode.
Step 4	Server /chassis/flexutil/virtual-drive # enable-vds virtual-drive	Maps the virtual drive to host.
Step 5	Server /chassis/flexutil/virtual-drive # show detail	Displays the FlexUtil virtual drive image details.

Example

This example shows how to map a virtual drive image to a host:

```

Server# scope chassis
Server /chassis # scope flexutil
Server /chassis/flexutil # scope virtual-drive
Server /chassis/flexutil/virtual-drive # enable-vds HUU
Server /chassis/flexutil/virtual-drive # show detail
Virtual Drive ID      LUN ID Size      VD Status  Host Accessible  Operation in  Last
Operation
                    progress completion status
-----
SCU                  1      NA      1280 MB  Healthy      Not-Connected  NA           none
Diagnostics         2      0      256 MB   Healthy      Connected       NA
Update-Success
HUU                  3      1      1536 MB  Healthy      Connected       NA
Update-Success
Drivers              4      NA      8192 MB  Healthy      Not-Connected  NA           none
UserPartition       5      NA      11159 MB Healthy      Not-Connected  NA           none
Server /chassis/flexutil/vd-image-configs #
    
```

Mapping an Image to a Virtual Drive

Before you begin

- You must be logged in with admin privileges to perform this task.
- Cisco FlexUtil must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Required: Server /chassis # scope flexutil	Enters the FlexUtil controller command mode.
Step 3	Required: Server /chassis/flexutil # scope vd-image-configs	Enters the virtual drive image configuration command mode.

	Command or Action	Purpose
Step 4	Required: /chassis/flexutil/vd-image-configs # vd-image-nfs HUU <i>nfs/cifs share IP and path</i> <i>ISO image file</i>	Specify the IP and the path of the nfs/cifs share, and the ISO image file.
Step 5	/chassis/flexutil/vd-image-configs # show detail	Displays the FlexUtil virtual drive image details.

Example

This example shows how to add an image to a FlexUtil virtual drive:

```
Server# scope chassis
Server /chassis # scope flexutil
Server /chassis/flexutil # scope vd-image-configs
Server /chassis/flexutil/vd-image-configs # vd-image-nfs HUU 10.127.54.176:/nfsdata
ucs-c240m5-huu-3.1.0.182.iso
Server /chassis/flexutil/vd-image-configs # show detail

virtual-drive: SCU
mount-type: nfs
remote-share: 10.104.236.81:/nfsshare
remote-file: ucs-cxx-scu-4.0.12.3.iso
mount-options: 'nolock,noexec,noac,soft,timeo=60,retry=2,rsz=3072,wsz=3072'

virtual-drive: Diagnostics
mount-type: nfs
remote-share: 10.104.236.81:/nfsshare
remote-file: ucs-cxx-diag.5.0.1a.iso
mount-options: 'nolock,noexec,noac,soft,timeo=60,retry=2,rsz=3072,wsz=3072'

virtual-drive: HUU
mount-type: nfs
remote-share: 10.127.54.176:/nfsdata
remote-file: ucs-c240m5-huu-3.1.0.182.iso
mount-options: "nolock,noexec,noac,soft,timeo=60,retry=2,rsz=3072,wsz=3072"

virtual-drive: Drivers
mount-type: None
remote-share: None
remote-file: None
mount-options: None

Server /chassis/flexutil/vd-image-configs
```

Unmapping an Image From a Virtual Drive

Before you begin

- You must be logged in with admin privileges to perform this task.
- Cisco FlexUtil must be supported by your platform.

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Required: Server /chassis # scope flexutil	Enters the FlexUtil controller command mode.
Step 3	Required: Server /chassis/flexutil # scope vd-image-configs	Enters the virtual drive image configuration command mode.
Step 4	Server /chassis/flexutil/vd-image-configs # unmap virtual-drive	Unmaps the chosen virtual drive image.
Step 5	Server /chassis/flexutil/vd-image-configs # show detail	Displays the FlexUtil virtual drive image details.

Example

This example shows how to unmap a FlexUtil virtual drive:

```
Server# scope chassis
Server /chassis # scope flexutil
Server /chassis/flexutil # scope vd-image-configs
Server /chassis/flexutil/vd-image-configs # unmap HUU
Server /chassis/flexutil/vd-image-configs # show detail
Virtual drive: SCU
  mount-type: nfs
  remote-share: 10.10.10.10:/nfsshare
  remote-file: ucs-cxx-scu-4.0.12.3.iso
  mount-options: 'nolock,noexec,noac,soft,timeo=60,retry=2,rsize=3072,wsiz=3072'

Virtual drive: Diagnostics
  mount-type: nfs
  remote-share: 10.10.10.10:/nfsshare
  remote-file: ucs-cxx-diag.5.0.1a.iso
  mount-options: 'nolock,noexec,noac,soft,timeo=60,retry=2,rsize=3072,wsiz=3072'

Virtual drive: HUU
  mount-type: None
  remote-share: None
  remote-file: None
  mount-options: None

Virtual-drive: Drivers
  mount-type: None
  remote-share: None
  remote-file: None
  mount-options: None
Server /chassis/flexutil/vd-image-configs #
```

Erasing an Image on a Virtual Drive

Before you begin

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

	Command or Action	Purpose
Step 2	Server /chassis # scope storageadapter MSTOR-RAID	Enters the Cisco Boot Optimized M.2 raid controller command mode.
Step 3	Server /chassis/storageadapter # show detail	Displays the Cisco Boot Optimized M.2 raid controller details.

Example

This example shows how to view the controller information:

```
Server# scope chassis
Server /chassis # show storageadapter MSTOR-RAID
Server /chassis/storageadapter # show detail
PCI Slot MSTOR-RAID:
  Health: Good
  Controller Status: Optimal
  Product Name: Cisco Boot optimized M.2 Raid controller
  Serial Number: FCH222877A7
  Firmware Package Build: 2.3.17.1009
  Product ID: Marvell
  Flash Memory Size: 2 MB
  Product PID: UCS-M2-HWRAID
Server /chassis/storageadapter #
```

Viewing Cisco Boot Optimized M.2 Raid Controller Physical Drive Details

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Server /chassis # scope storageadapter MSTOR-RAID	Enters the Cisco Boot Optimized M.2 raid controller command mode.
Step 3	Server /chassis/storageadapter # scope physical-drive <i>Physical Drive Number</i>	Enters the physical drive command mode.
Step 4	Server /chassis/storageadapter/physical-drive # show general	Displays the general physical drive information.
Step 5	Server /chassis/storageadapter/physical-drive # show detail	Displays the physical drive details.
Step 6	Server /chassis/storageadapter/physical-drive # show inquiry-data	Displays the physical drive serial number.
Step 7	Server /chassis/storageadapter/physical-drive # show status	Displays the health status of the physical drive.

Example

This example shows how to view the physical drive information:

```

Server# scope chassis
Server /chassis # show storageadapter MSTOR-RAID
Server /chassis/storageadapter # scope physical-drive 253
Server /chassis/storageadapter/physical-drive # show general
PCI Slot MSTOR-RAID:
  Health: Good
  Controller Status: Optimal
  Product Name: Cisco Boot optimized M.2 Raid controller
  Serial Number: FCH222877A7
  Firmware Package Build: 2.3.17.1009
  Product ID: Marvell
  Flash Memory Size: 2 MB
  Product PID: UCS-M2-HWRAID
Server /chassis/storageadapter/physical-drive # show detail
Physical Drive Number 253:
  Controller: MSTOR-RAID
  Info Valid: Yes
  Info Invalid Cause:
  Drive Number: 253
  Health: Good
  Status: Online
  Manufacturer: ATA
  Model: Micron_5100_MTFDDAV240TCB
  Drive Firmware: DOMU054
  Type: SSD
  Block Size: 512
  Physical Block Size: 512
  Negotiated Link Speed: 6.0 Gb/s
  State: online
  Operating Temperature: 32
  Enclosure Association: Direct Attached
  Interface Type: SATA
  Block Count: 468862127
  Raw Size: 228936 MB
  Non Coerced Size: 228936 MB
  Coerced Size: 228936 MB
  Power State: active
Server /chassis/storageadapter/physical-drive # show inquiry-data
Physical Drive Number 253:
  Controller: MSTOR-RAID
  Info Valid: Yes
  Info Invalid Cause:
  Vendor: ATA
  Product ID: Micron_5100_MTFDDAV240TCB
  Drive Firmware: DOMU054
  Drive Serial Number: 18201CB94A2C
Server /chassis/storageadapter/physical-drive # show status
Physical Drive Number 253:
  Controller: MSTOR-RAID
  Info Valid: Yes
  Info Invalid Cause:
  State: online
  Online: true
  Fault: false
Server /chassis/storageadapter/physical-drive #

```

Viewing Cisco Boot Optimized M.2 Raid Controller Virtual Drive Details

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Server /chassis # scope storageadapter MSTOR-RAID	Enters the Cisco Boot Optimized M.2 raid controller command mode.
Step 3	Server /chassis/storageadapter # scope virtual-drive Virtual Drive Number	Enters the virtual drive command mode.
Step 4	Server /chassis/storageadapter/virtual-drive # show detail	Displays the virtual drive information.
Step 5	Server /chassis/storageadapter/virtual-drive # show lrop-info	Displays the status of the virtual drive rebuild.

Example

This example shows how to view the virtual drive information:

```
Server# scope chassis
Server /chassis # show storageadapter MSTOR-RAID
Server /chassis/storageadapter # scope virtual-drive 0
Server /chassis/storageadapter/virtual-drive # show detail
Virtual Drive 0:
  Health: Good
  Status : Optimal
  Name: test
  Size: 228872 MB
  Physical Drives: 253, 254
  RAID Level: RAID 1
  Target ID: 0
  Strip Size: 32 KB
Server /chassis/storageadapter/virtual-drive # show detail
LROP:
  LROP In Progress: false
  Current Long-Running Op: No operation in progress
  Percent Complete: 0
Server /chassis/storageadapter/virtual-drive #
```

Creating a Cisco Boot Optimized M.2 Raid Controller Virtual Drive

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Server /chassis # scope storageadapter MSTOR-RAID	Enters the Cisco Boot Optimized M.2 raid controller command mode.

	Command or Action	Purpose
Step 3	Server /chassis/storageadapter # create-virtual-drive	Enters the virtual drive name and the stripsize at the respective prompts. This creates the virtual drive.

Example

This example shows how to create a virtual drive:

```
Server# scope chassis
Server /chassis # show storageadapter MSTOR-RAID
Server /chassis/storageadapter # create-virtual-drive
Please enter Virtual Drive name (15 characters maximum, hit return to skip name)--> test

Unused physical drives available 2:
   ID  Size (MB)   Model   Interface  Type
   ---  ---
  253  228936        ATA     SATA       SSD
  254  915715        ATA     SATA       SSD

PD sizes NOT equal. NOT Assigning VD_size for RAID1

Optional attribute:

  stripsize: defaults to 64K Bytes

    0: 32K Bytes
    1: 64K Bytes
  Choose number from above options or hit return to pick default--> 0
  stripsize will be set to 32K Bytes (4 and 'strip-size\:32k')

New virtual drive will have the following characteristics:
- RAID level: '1'
- Name: 'test'
- stripsize: 32K Bytes

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

Deleting a Cisco Boot Optimized M.2 Raid Controller Virtual Drive

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Server /chassis # scope storageadapter MSTOR-RAID	Enters the Cisco Boot Optimized M.2 raid controller command mode.
Step 3	Server /chassis/storageadapter # delete-virtual-drive	Enters yes at the confirmation prompts. This deletes the virtual drive.

Example

This example shows how to delete a virtual drive:

```
Server# scope chassis
Server /chassis # show storageadapter MSTOR-RAID
Server /chassis/storageadapter # delete-virtual-drive
Are you sure you want to delete virtual drive 0?
All data on the drive will be lost. Enter 'yes' to confirm -> yes
Server /chassis/storageadapter #
```

Importing Cisco Boot Optimized M.2 Raid Controller Foreign Configuration

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Server /chassis # scope storageadapter MSTOR-RAID	Enters the Cisco Boot Optimized M.2 raid controller command mode.
Step 3	Server /chassis/storageadapter # import-foreign-config	Enter yes at the confirmation prompt to import the controller configuration.

Example

This example shows how to import the controller configuration:

```
Server# scope chassis
Server /chassis # show storageadapter MSTOR-RAID
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 #
```

Clearing Cisco Boot Optimized M.2 Raid Controller Foreign Configuration

Procedure

	Command or Action	Purpose
Step 1	Server# scope chassis	Enters the chassis command mode.
Step 2	Server /chassis # scope storageadapter MSTOR-RAID	Enters the Cisco Boot Optimized M.2 raid controller command mode.
Step 3	Server /chassis/storageadapter # clear-foreign-config	Enter yes at the confirmation prompt to clear the controller configuration.

Example

This example shows how to clear the controller configuration:

```
Server# scope chassis
Server /chassis # show storageadapter MSTOR-RAID
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 #
```

Configuring Drive Diagnostics

Overview of Drive Diagnostics

Drive Diagnostics feature supports running diagnostics on HDD/SSD and SAS/SATA drive types. The feature allows you to determine the device health by obtaining information from the device to determine usage, temperature, age, media wear, resource consumption etc. In addition, you can collect and read log pages maintained by the drive to gather diagnostic data and perform analytics.

From release 4.1(3b) onwards, you can perform drive diagnostic self-test on SSD drives.

You can perform the device self-test in two modes:

- On-demand device self-test: In this mode, you can perform the drive self-test by executing the commands and view the diagnostic report using the technical support utility.
- Background device self-test: In this mode, you can schedule periodic self-tests on the drives and view the diagnostic report using the technical support utility.

You can schedule the periodic background self-test mode for the following frequencies:

- Daily
- Weekly
- Fortnightly
- Monthly



Note By default, this frequency is set to weekly.

When the controller puts the unconfigured good and hot spare HDD drives in power-save mode, the diagnostic self-test cannot be initiated on drives. So, the drives have to be spun up to run the diagnostic drive self-test. You can use the parameter **bg_diag_powersave_override** to set the diagnostic drive self-test policy on the HDDs which are in power-save mode. For more information, see [Setting the Diagnostics Drive Self-test Policy on HDDs in Power-Save Mode, on page 83](#).

You can evaluate the actual state and health of the device using the comprehensive set of results from the device self-test. You can run the commands to collect the diagnostic data by using the two interfaces in Cisco IMC: CLI and Redfish API.

Initiating the On-Demand Device Self Test

You can initiate the on-demand device self test and use the Technical Support utility to download the diagnostic data.

Before you begin

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

Procedure

- Step 1** Server# **scope chassis**
Enters the chassis command mode.
- Step 2** Server chassis# **scope storageadapter**
Enters the storage adapter command mode.
- Step 3** Server chassis storageadapter# **show physical-drive {I}**
View the list of the physical drives in the storage adapter and select the physical drive in the megaraid controller on which you want to run the on-demand device self test.
- Step 4** Server chassis storageadapter# **scope physical-drive {I}**
Enters the command mode for the physical drive 1.
- Step 5** Server chassis storageadapter physical-drive# **start-diag**
Initializes the on-demand self device test on the physical drive 1 connected to the megaraid controller, to collect the diagnostic data.
The on-demand diagnostic self-test job runs in the background on the physical drive.
- Note** If the `bg_diag_powersave_override` parameter is set to `false` in the drive self-test, then the drive self-test will not be run on the drives in power-save mode.
-

Example

What to do next

- See [Viewing the Status of the Drive Self-test, on page 80](#): You can view the status of the current running device self-test.
- See [Viewing the Diagnostic Self Test Report, on page 84](#): You can use the technical support utility to view the diagnostic report

Viewing the Status of the Drive Self-test

Run the self device test on the physical drive and verify the self-test status is completed until the field `selftest-percent-complete` displays the value 100 and the test is complete with no errors. You can then use the Technical Support utility to download the diagnostic data.

Before you begin

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

Procedure

-
- Step 1** Server# **scope chassis**
Enters the chassis command mode.
- Step 2** Server chassis# **scope storageadapter**
Enters storage adapter command mode.
- Step 3** Server chassis storageadapter# **scope physical-drive**
Enters the command mode for the physical drive.
- Step 4** Server chassis storageadapter physical-drive# **get-diag-status**
Gets the status of the current running self device test on the drive.
-

Example

```
Server# scope chassis
Server /chassis # scope storageadapter SLOT-3
Server /chassis/storageadapter # scope physical-drive drive-number
Server /chassis/storageadapter/physical-drive # get-diag-status
selftest-type: Background
selftest-status: Self test in progress
selftest-percent-complete:11
Server /chassis/storageadapter/physical-drive # get-diag-status
selftest-type: Background
selftest-status: Self test in progress
selftest-percent-complete:34
Server /chassis/storageadapter/physical-drive # get-diag-status
selftest-type: Background
selftest-status: Self test completed without error
selftest-percent-complete:100
Server /chassis/storageadapter/physical-drive #
```

What to do next

You can use the Technical Support utility and view the diagnostic results. See [Viewing the Diagnostic Self Test Report, on page 84](#).

Aborting the Diagnostic Self Test

Before you begin

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

Procedure

- | | |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Step 1 | <code>Server# scope chassis</code>
Enters the chassis command mode. |
| Step 2 | <code>Server chassis# scope storageadapter</code>
Enters storage adapter command mode. |
| Step 3 | <code>Server chassis storageadapter# scope physical-drive</code>
Enters the command mode for the physical drive. |
| Step 4 | <code>Server chassis storageadapter physical-drive# cancel-diag</code>
Aborts the current running self device test on the drive. |
-

Example

Initiating Background Diagnostic Drive Self Test

Before you begin

You must verify and set the following configuration parameters before you set the background diagnostic drive self-test policy.

- **bg_diag_enabled**: This configuration parameter specifies whether the background diagnostics should be run on the system or not. By default, this parameter is set to **false**.
- **bg_diag_frequency_interval**: This configuration parameter specifies the frequency at which the drive diagnostic job is initiated on the drives.

You can schedule the background diagnostic drive self-test mode to run on the physical drive for the following frequencies:

- Daily
- Weekly
- Fortnightly
- Monthly

By default, this parameter is set to **weekly**.

- **bg_diag_powersave_override**: This configuration parameter sets the diagnostic drive self-test policy on HDDs which are in power-save mode.

If you enable this parameter, then the drives in power-save mode are spun-up and drive self-test is run. If you disable this parameter, then the drive self-test is not initiated on the drives in power-save mode.

By default, this parameter is set to **true**.

Procedure

- Step 1** Server # **scope diag-config**
Enters the diag config mode.
- Step 2** Server diag-config # **scope drive-diag-config**
Enters the drive-diag-config mode.
- Step 3** Server diag-config/drive-diag-config # **show**
Displays the configured background diagnostic self-test parameters.
- Step 4** (Optional) Server diag-config/drive-diag-config # **set bg_diag_enabled {true|false}**
Set the background diagnostic enabled parameter to `true` to enable the background drive self-test.
- Step 5** (Optional) Server diag-config/drive-diag-config # **set bg_diag_frequency_interval {daily|weekly|fortnightly|monthly}**
Set the background diagnostic frequency interval parameter to the desired frequency for which the background diagnostic device self-test must run on the physical drive.
- Note** To change the frequency parameter value change to be immediately take into effect, you must disable and enable the `bg_diag_enabled` parameter.
- Step 6** (Optional) Server diag-config/drive-diag-config # **set bg_diag_powersave_override {true|false}**
Set the background diagnostic power-save parameter to `false` to disable the power-save mode on the physical drive.
By default, this parameter is set to **true**.
- Step 7** Server diag-config/drive-diag-config # **commit**
Commits the changes made to the configuration parameters to the system configuration.
-

Example

This example displays the background drive self-test configuration parameters :

```
Server# scope diag-config
Server /diag-config # scope drive-diag-config
scope /diag-config/drive-diag-config* # set bg_diag_frequency_interval fortnightly
scope /diag-config/drive-diag-config # set bg_diag_enabled true
scope /diag-config/drive-diag-config # set bg_diag_powersave_override false
```

```

scope /diag-config/drive-diag-config* # commit
Config parameters committed successfully
scope /diag-config/drive-diag-config* # show
Background DST Enabled Background DST Frequency Powersave Override
-----
True fortnightly False

```

What to do next

You can view the diagnostic drive self-test report from the technical support utility.

Setting the Diagnostics Drive Self-test Policy on HDDs in Power-Save Mode

When the controller puts the unconfigured good and hot spare HDD drives in power-save mode, the diagnostic self-test cannot be initiated on drives. So, the drives have to be spun up to run the diagnostic drive self-test.

You can use the parameter **bg_diag_powersave_override** to set the diagnostic drive self-test policy on the HDDs which are in power-save mode.

By default, the **bg_diag_powersave_override** parameter is enabled. So the drives in power-save mode are spun up to initiate the diagnostic drive self-test.

If you do not want to run the diagnostic drive self-test to be run on the drives in power-save mode, then you must disable the **bg_diag_powersave_override** parameter.

Procedure

-
- Step 1** Server # **scope diag-config**
Enters the diag config mode.
- Step 2** Server diag-config # **scope drive-diag-config**
Enters the drive-diag-config mode.
- Step 3** Server diag-config/drive-diag-config # **show**
Displays the drive diagnostics configuration parameters.
- Step 4** (Optional) Server diag-config/drive-diag-config # **set bg_diag_powersave_override {true|false}**
Set the **bg_diag_powersave_override** parameter to *false* to disable the power-save mode in the HDD.
- Note** By default, the **bg_diag_powersave_override** parameter is enabled.
- Step 5** Server diag-config/drive-diag-config # **commit**
Commits the changes made to the configuration parameters to the system configuration.
-

Example

This example displays the drive diagnostics configuration parameters and how to disable the **bg_diag_powersave_override** parameter:

```

Server# scope diag-config
Server /diag-config # scope drive-diag-config
scope /diag-config/drive-diag-config # set bg_diag_powersave_override false
scope /diag-config/drive-diag-config* # commit
Config parameters committed successfully
scope /diag-config/drive-diag-config* # show
Background DST Enabled Background DST Frequency Powersave Override
-----
True weekly False

```

Viewing the Diagnostic Self Test Report

Initiate the technical support utility and view the details of the drive diagnostic self-test report.

Before you begin

Perform this task when requested by the Cisco Technical Assistance Center (TAC). The technical support utility creates a summary report containing configuration information, logs and diagnostic data that will help TAC in troubleshooting and resolving a technical issue.



Important If any firmware or BIOS updates are in progress, do not export the technical support data until those tasks are complete.



Note See [Overview of the Diagnostic Self-Test Report, on page 85](#) to know more about the information available in the diagnostic self-test report.

Procedure

-
- Step 1** Server # **scope chassis**
Enters chassis command mode.
- Step 2** Server /chassis # **scope tech-support**
Enters the tech-support command mode.
- Step 3** Server /chassis/tech-support # **set remote-ip ip-address**
Specifies the IP address of the remote server on which the technical support data file should be stored.
- Step 4** Server /chassis/tech-support # **set remote-path path/filename**
Specifies the file name in which the diagnostic self-test report should be stored on the remote server. When you enter this name, include the relative path for the file from the top of the server tree to the desired location.
- Tip** To have the system auto-generate the file name, enter the file name as **default.tar.gz**.
- Step 5** Server /chassis/tech-support # **set remote-protocol protocol**
Specifies the protocol to connect to the remote server. It can be of the following types:

- TFTP
- FTP
- SFTP
- SCP
- HTTP

Note The Cisco UCS C-Series server now supports fingerprint confirmation of the server when you update firmware through a remote server. This option is available only if you choose SCP or SFTP as the remote server type.

If you chose SCP or SFTP as the remote server type while performing this action, a prompt with the message Server (RSA) key fingerprint is <server_finger_print_ID> Do you wish to continue? Click y or n depending on the authenticity of the server fingerprint.

The fingerprint is based on the host's public key and helps you to identify or verify the host you are connecting to.

- Step 6** Server /chassis/tech-support # **set remote-username** *name*
Specifies the user name on the remote server on which the technical support data file should be stored. This field does not apply if the protocol is TFTP or HTTP.
- Step 7** Server /chassis/tech-support # **set remote-password** *password*
Specifies the password on the remote server on which the technical support data file should be stored. This field does not apply if the protocol is TFTP or HTTP.
- Step 8** Server /chassis/tech-support # **commit**
Commits the transaction to the system configuration.
- Step 9** Server /chassis/tech-support # **start**
Begins the transfer of the data file to the remote server.
- Step 10** (Optional) Server /chassis/tech-support # **show detail**
Displays the progress of the transfer of the data file to the remote server.
- Step 11** Server cimc tech-support# **tar -xvzf nv/log/storaged/diag/diagnostic-report.tar.gz**
Navigate to the filepath: `nv/log/storaged/diag/` and access the diagnostic report.

What to do next

Provide the generated report file to Cisco TAC.

Overview of the Diagnostic Self-Test Report

The technical support utility creates a self-test report containing the summary of the configuration information, logs and diagnostic data that will help TAC in troubleshooting and resolving a technical issue.

The self-test reports are generated in `.txt` and `.bin` formats.

The following list provides the configuration information and log details that are available in the diagnostic self-test report:

- Drive Slot ID
- Drive self-test result
- Vendor name
- Manufacture Part number
- Serial Number
- Firmware revision
- Manufacture date
- Build date
- Self-Monitoring, Analysis, and Reporting Technology (SMART) monitoring system values
- Temperature reading
- Power-on hours
- Verify errors
- Non medium errors
- Protocol errors
- Power transitions
- Background media scan
- Read/Write error recovery



Note

- The values in the self-test report are in hexadecimal number format. You must convert the values to decimal number format.
 - You can view the drive-specific details like ID, vendor in the section **Diagnostic Summary** at the end of the self-test report.
-

Sample Diagnostic File Report Format

The below sample displays the format of a sample diagnostic file report for SATA drives.

```

-----
DRIVE DIAGNOSTIC REPORT
-----
DIAG TIME STAMP := Thu Feb 24 04:43:01 2022

-----
READ IDENTIFY DEVICE :0xec : 512 Bytes
-----
Vendor Id           : ATA

```

Product Id : INTEL SSDSC2KG960G8K
 Firmware revision : XCV1CS04
 Unit serial number : BTYG817308KB960CGN

 READ SMART ATTRIBUTES :0xd0 : 512 Bytes

Self test status : 0 (Self test completed without error)
 Short self test rec poll time : 1 (mins)
 Extended self test rec poll time : 2 (mins)
 Conveyance self test rec poll time : 2 (mins)
 Offline data collection capability : 121
 Abort/restart offline by host not supported
 Offline read scanning supported
 Short and extended self-test supported
 Conveyance self-test supported
 Selective self-test supported

Offline data collection status : 2 (Offline data collection activity was completed without error)
 Total time Offline data collection : 2 (secs)
 Smart capability : 3 (Smart save enabled, Smart attribute autosave enabled)
 Error log capability : 1 (Error logging supported)

READ SMART THRESHOLDS :0xd1 : 512 Bytes

SMART ATTRIBUTES SUMMARY

ID#	ATTRIBUTE_NAME	FLAGS	VALUE	WORST	THRESH	RAW_VALUE
5	Reallocate Sector Count	0x32	100	100	0	0
9	Power On Hours	0x32	100	100	0	4318
12	Power Cycle Count	0x32	100	100	0	1756
171	Program Fail Count	0x32	100	100	0	0
172	Erase Fail Count	0x32	100	100	0	0
184	End To End Data Path Error Count	0x33	100	100	90	0
187	Uncorrectable Error Count	0x32	100	100	0	0
194	Operating Temperature	0x22	100	100	0	36
199	CRC Error Count	0x3e	100	100	0	0
232	Reserved Capacity Consumed	0x33	100	100	10	0
233	Percentage Life Left	0x32	98	98	0	98
233	Wear Status In Days	0x32	98	98	0	1764

DIAGNOSTIC SUMMARY

Date of drive diag test : Thu Feb 24 04:43:01 2022
 DST result (PASS/FAIL) : PASS: Self test completed without error
 Drive slot id : 102
 Drive Interface type : SATA
 Drive Media type : SSD
 Vendor : ATA
 Mfg Part Number : INTEL SSDSC2KG960G8K
 Serial Number : BTYG817308KB960CGN
 Firmware revision : XCV1CS04

The below sample displays the format of a sample diagnostic file report for SAS drives.

DRIVE DIAGNOSTIC REPORT

DIAG TIME STAMP := Tue Apr 12 14:43:54 2022

```

-----
INQUIRY EPVD0 PAGE:0x0 ( EVPD0 PAGE:0h ) : 96 Bytes
-----
Vendor Id           : TOSHIBA
Product Id          : AL14SXB60EN
Firmware revision   : 5703
Unit serial number  : X060A05HFJVJF
-----
INQUIRY EPVD1 PAGE:0x0 ( SUPPORTED EPVD1 PAGES ) : 19 Bytes
-----
Page 0x0
Page 0x80
Page 0x83
Page 0x86
Page 0x8a
Page 0x90
Page 0x91
Page 0xb1
-----
INQUIRY EPVD1 PAGE:0x83 : 76 Bytes
-----
LUN(World Wide ID)           := 0x5000039a780alfad
Target Port Identifier(World Wide ID) := 0x5000039a780alfae
Relative Port Identifier      := 0x1
Target Device Name(World Wide ID) := 0x5000039a780alfac
Target Device Name(World Wide ID) in ASCII := 5000039A780A1FAC
-----
INQUIRY EPVD1 PAGE:0x8a : 18 Bytes
-----
Standby Z           := 0x1
Standby Y           := 0x1
Idle A              := 0x1
Idle B              := 0x1
Idle C              := 0x1
Stopped condition recovery time := 0x3a98
Standby Z condition recovery time := 0x3a98
Standby Y condition recovery time := 0xfa0
Idle A condition recovery time := 0x64
Idle B condition recovery time := 0x4b0
Idle C condition recovery time := 0xfa0
-----
INQUIRY EPVD1 PAGE:0xb1 : 64 Bytes
-----
Medium rotation rate := 0x3a98
Nominal form factor := 0x3
-----
LOG SENSE PAGE:0x0 ( SUPPORTED PAGES ) : 18 Bytes
-----
Page 0x0
Page 0x1
Page 0x2
Page 0x3
Page 0x5
Page 0x6
Page 0xd
Page 0xe
Page 0xf
Page 0x10
Page 0x15
Page 0x18
Page 0x1a
Page 0x2f
-----
LOG SENSE PAGE:0x10 ( SELF TEST RESULTS ) : 404 Bytes

```



```

-----
Parameter code           : 0x1
General parameter data  : 0x3
Parameter len           : 0x10
Self test result        : 0x0 : Self test completed without error
Function code           : 0x1
Extended segment number : 0x0 : No extended segment failures
First failure LBA       : 0xffffffffffffffff
Sense key                : 0x0
Add Sense Code           : 0x0
Add Sense Code Qual     : 0x0
Vendor data              : 0x0
Timestamp( Power on hours) : 0x123e
-----

```

LOG SENSE PAGE:0x2f (SMART STATUS) : 12 Bytes

```

-----
SMART sense code byte      := 0x0
SMART sense qualifier      := 0x0
Most recent temperature reading := 0x1f
Vendor HDA temperature trip point := 0x0
-----

```

LOG SENSE PAGE:0x2 (WRITE ERROR COUNTERS) : 88 Bytes

```

-----
errs_recovered_without_delay := 0x10004
errs_recovered_with_delay    := 0x2000400000000
total_errors_recovered       := 0x1c8cbeba000006
times_recovery_invoked       := 0x0
total_bytes_written          := 0x0
count_hard_errors            := 0x0
-----

```

LOG SENSE PAGE:0x3 (READ ERROR COUNTERS) : 88 Bytes

```

-----
errs_recovered_without_delay := 0x10004
errs_recovered_with_delay    := 0x2000400000000
total_errors_recovered       := 0x6f0de26344000006
times_recovery_invoked       := 0x0
total_bytes_read             := 0x0
count_hard_errors            := 0x0
-----

```

LOG SENSE PAGE:0x5 (VERIFY ERROR COUNTERS) : 88 Bytes

```

-----
errs_recovered_without_delay := 0x10004
errs_recovered_with_delay    := 0x2000400000000
total_errors_recovered       := 0x6
times_recovery_invoked       := 0x0
total_bytes_verified         := 0x0
count_hard_errors            := 0x0
-----

```

LOG SENSE PAGE:0x6 (NON-MEDIUM ERROR COUNTERS) : 16 Bytes

```

-----
error_count                := 0x4000000000
-----

```

LOG SENSE PAGE:0xd (TEMPERATURE INFO) : 16 Bytes

```

-----
Temperature(celsius)       := 0x1f
Ref Temperature(celsius)   := 0x41
-----

```

LOG SENSE PAGE:0xe (START STOP CYCLE INFO) : 56 Bytes

```

-----
Year of Manufacture        := 2020
Week of Manufacture        := 41
Accounting date year       :=
Accounting date week       :=
Specified cycle count over device lifetime := c350
-----

```

```

Accumulated start stop cycles           := 46
Specified load unload count over device lifetime := 927c0
Accumulated load unload cycles          := a84
-----
LOG SENSE PAGE:0x1a ( POWER TRANSITION INFO ) : 52 Bytes
-----
Accumulated transitions to active state   := 5a83
Accumulated transitions to idle A        := 5a47
Accumulated transitions to idle B        := a3e
Accumulated transitions to idle C        := 0
Accumulated transitions to standby Z     := 0
Accumulated transitions to standby Y     := 0
-----
LOG SENSE PAGE:0x15 ( BMS TEST RESULTS ) : 503 Bytes
-----
Power on mins                           := 0x446a3
BMS status                               := 8 (BMS suspended until BMS interval timer expires)
BMS num_bg_scans_performed               := 203
BMS medium_scan_progress                 := 0
BMS num_bg_medium_scans_performed        := 0
-----
MODE SENSE PAGE:0x0 ( VENDOR UNIQUE PARAMS ) : 14 Bytes
-----
Merge Glist into Plist(MRG)              : 0x0
Report Recovered Non Data Errors(RRNDE)  : 0x0
Veggie mode(VGMDE)                       : 0x0
Command Aging Enable(CAEN)                : 0x0
Format Degraded Disable(FDD)              : 0x0
Overall Command Timer(OCT)                : 0x0
AV ERP Mode(AVERP)                       : 0x0
Ignore Reassigned LBA(IGRA)               : 0x0
First Format Enable(FFMT)                 : 0x0
Disable Restore Reassign Target(DRRT)     : 0x0
Format Certification(FCERT)                : 0x0
Overall Command Timer(low byte)            : 0x8
Temperature Threshold                     : 0xdd
Command Aging Limit(Hi byte)               : 0x2f
Command Aging Limit(Low byte)              : 0xb0
Read reporting threshold                   : 0x0
Write reporting threshold                   : 0x0
-----
MODE SENSE PAGE:0x1 ( READ/WRITE ERROR RECOVERY PARAMS ) : 10 Bytes
-----
Automatic Write Reallocation Enabled(AWRE) : 0x0
Automatic Read Reallocation Enabled(ARRE)  : 0x0
Transfer Block (TB)                        : 0x0
Read Continous(RC)                         : 0x0
Enable Early Recovery(EER)                 : 0x0
Post Error(PER)                            : 0x0
Data Terminate on Error(DTE)               : 0x0
Disable Correction (DCR)                   : 0x0
Read Retry Count                           : 0x10
Write Retry Count                           : 0x45
Read Retry Count                           : 0x10
Recovery Time Limit                         : 0x0
-----
MODE SENSE PAGE:0x3 ( FORMAT DEVICE PARAMS ) : 22 Bytes
-----
Tracks per Zone                           : 0x1000
Alternate sectors per Zone                  : 0x0
Alternate Tracks per Zone                   : 0x800
Alternate Tracks per Logical Unit           : 0xdd45
Sectors Per Track                          : 0xb02f

```

```

Data Bytes per Physical Sector      : 0x0
Interleave                          : 0x2
Track Skew Factor                   : 0x1683
Cylinder Skew Factor                : 0xdc00
Support Soft Sector Formatting(SSEC) : 0x0
Removable Fixed Disk(RMB)           : 0x0
Hard Sector Formatting(HSEC)        : 0x0
SURF                                : 0x0

```

```
-----
MODE SENSE PAGE:0x7 ( VERIFY ERROR RECOVERY PARAMS ) : 10 Bytes
-----
```

```

Early Error Recovery (EER) : 0x0
Data Terminate on Error (DTE) : 0x0
PER : 0x0
DCR : 0x0
Verify Retry Count : 0x10
Verify Recovery Time Limit : 0x0

```

```
-----
MODE SENSE PAGE:0x8 ( CACHING PARAMS ) : 18 Bytes
-----
```

```

Initiator Control (IC) : 0x0
Abort Pre-fetch(ABPF) : 0x0
Caching Analysis Permitted(CAP) : 0x0
Discontinuity(DISC) : 0x0
Size Enable(SIZE) : 0x0
Write Cache Enable(WCE) : 0x0
Multiplication Factor(MF) : 0x0
Read Cache Disable(RCD) : 0x0
Disable Read Ahead(DRA) : 0x0
Force Sequential Write(FSW) : 0x0
Logical Block Cache Segment Size(LBCSS) : 0x0
Write Retention Priority : 0x0
Demand Read Retention Priority : 0x1
Disable Prefetch Transfer Len : 0x0
Minimum Pre-fetch : 0x800
Maximum Pre-fetch : 0xdd45
Maximum Pre-fetch Ceiling : 0xb02f
Number of Cache Segments : 0x0
Cache Segment Size : 0x2
Non Cache Segment Size : 0x12

```

```
-----
MODE SENSE PAGE:0xa ( CONTROL MODE PAGE PARAMS ) : 10 Bytes
-----
```

```

Descriptor Sense Data (D_SENSE) : = 0x0
Disable Protection Info Check (DPICZ) : = 0x0
Queue Error Management(QERR) : = 0x0
Disable Queuing(DQUE) : = 0x0
Application Tag Owner(ATO) : = 0x0
Application Tag Mode Page Enabled(ATMPE) : = 0x0
Reject Write Without Protection(RWWP) : = 0x0
Queue Algorithm Modifier : = 0x1
Busy Timeout Period : = 0xdd45
Extended Self Test Completion time : = 0x0

```

```
-----
MODE SENSE PAGE:0x1a ( POWER CONTROL ) : 38 Bytes
-----
```

```

Standby_Y : 0x0
Standby_Z : 0x0
Idle_A : 0x0
Idle_B : 0x0
Idle_C : 0x0
Idle A Condition Timer : 0x8000000
Idle B Condition Timer : 0x20000
Idle C Condition Timer : 0x640269a

```

Standby Y Condition Timer : 0x14000000
 Standby Z Condition Timer : 0xb02fdd45
 PM BG Precedence : 0x0

 MODE SENSE PAGE:0x1c (INFORMATIONAL EXCEPTIONS CONTROL) : 10 Bytes

Performance (PERF) : 0x0
 Enable Background Function (EBF) : 0x0
 Enable Warning ASC (EWASC) : 0x0
 Disable Exception Control (DEXCPT) : 0x0
 TEST : 0x0
 Enable Background Error (EBACKERR) : 0x0
 Log Errors (LOGERR) : 0x0
 Method of Reporting : 0x0
 Interval Timer : 0x8000000
 Report Count : 0xdd45

SMART ATTRIBUTES SUMMARY

DIAGNOSTIC SUMMARY

Date of drive diag test : Tue Apr 12 14:43:54 2022
 DST result (PASS/FAIL) : PASS: Self test completed without error
 Drive slot id : 1
 Drive Interface type : SAS
 Drive Media type : HDD
 Vendor : TOSHIBA
 Mfg Part Number : AL14SXB60EN
 Serial Number : X060A05HFJVF
 Firmware revision : 5703
 Build date :
 Mfg date : 2020/10
