



Monitoring Hardware

This chapter includes the following sections:

- [Monitoring Fan Modules, page 1](#)
- [Monitoring Management Interfaces, page 3](#)
- [Local Storage Monitoring, page 6](#)
- [Graphics Cards Monitoring, page 12](#)
- [Managing Transportable Flash Module and Supercapacitor, page 13](#)
- [TPM Monitoring, page 14](#)

Monitoring Fan Modules

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope chassis <i>chassis-num</i>	Enters chassis mode for the specified chassis.
Step 2	UCS-A /chassis # show environment fan	Displays the environment status for all fans within the chassis. This includes the following information: <ul style="list-style-type: none">• Overall status• Operability• Power state• Thermal status• Threshold status• Voltage status

	Command or Action	Purpose
Step 3	UCS-A /chassis # scope fan-module <i>tray-num module-num</i>	Enters fan module chassis mode for the specified fan module. Note Each chassis contains one tray, so the tray number in this command is always 1.
Step 4	UCS-A /chassis/fan-module # show [detail expand]	Displays the environment status for the specified fan module.

The following example displays information about the fan modules in chassis 1:

```
UCS-A# scope chassis 1
UCS-A /chassis # show environment fan
Chassis 1:
  Overall Status: Power Problem
  Operability: Operable
  Power State: Redundancy Failed
  Thermal Status: Upper Non Recoverable

  Tray 1 Module 1:
    Threshold Status: OK
    Overall Status: Operable
    Operability: Operable
    Power State: On
    Thermal Status: OK
    Voltage Status: N/A

  Fan Module Stats:
    Ambient Temp (C): 25.000000

  Fan 1:
    Threshold Status: OK
    Overall Status: Operable
    Operability: Operable
    Power State: On
    Thermal Status: OK
    Voltage Status: N/A

  Fan 2:
    Threshold Status: OK
    Overall Status: Operable
    Operability: Operable
    Power State: On
    Thermal Status: OK
    Voltage Status: N/A

  Tray 1 Module 2:
    Threshold Status: OK
    Overall Status: Operable
    Operability: Operable
    Power State: On
    Thermal Status: OK
    Voltage Status: N/A

  Fan Module Stats:
    Ambient Temp (C): 24.000000

  Fan 1:
    Threshold Status: OK
    Overall Status: Operable
    Operability: Operable
    Power State: On
    Thermal Status: OK
    Voltage Status: N/A
```

```

Fan 2:
  Threshold Status: OK
  Overall Status: Operable
  Operability: Operable
  Power State: On
  Thermal Status: OK
  Voltage Status: N/A

```

The following example displays information about fan module 2 in chassis 1:

```

UCS-A# scope chassis 1
UCS-A /chassis # scope fan-module 1 2
UCS-A /chassis/fan-module # show detail
Fan Module:
  Tray: 1
  Module: 2
  Overall Status: Operable
  Operability: Operable
  Threshold Status: OK
  Power State: On
  Presence: Equipped
  Thermal Status: OK
  Product Name: Fan Module for UCS 5108 Blade Server Chassis
  PID: N20-FAN5
  VID: V01
  Vendor: Cisco Systems Inc
  Serial (SN): NWG14350B6N
  HW Revision: 0
  Mfg Date: 1997-04-01T08:41:00.000

```

Monitoring Management Interfaces

Management Interfaces Monitoring Policy

This policy defines how the mgmt0 Ethernet interface on the fabric interconnect should be monitored. If Cisco UCS detects a management interface failure, a failure report is generated. If the configured number of failure reports is reached, the system assumes that the management interface is unavailable and generates a fault. By default, the management interfaces monitoring policy is disabled.

If the affected management interface belongs to a fabric interconnect which is the managing instance, Cisco UCS confirms that the subordinate fabric interconnect's status is up, that there are no current failure reports logged against it, and then modifies the managing instance for the endpoints.

If the affected fabric interconnect is currently the primary inside of a high availability setup, a failover of the management plane is triggered. The data plane is not affected by this failover.

You can set the following properties related to monitoring the management interface:

- Type of mechanism used to monitor the management interface.
- Interval at which the management interface's status is monitored.
- Maximum number of monitoring attempts that can fail before the system assumes that the management is unavailable and generates a fault message.



Important In the event of a management interface failure on a fabric interconnect, the managing instance may not change if one of the following occurs:

- A path to the endpoint through the subordinate fabric interconnect does not exist.
- The management interface for the subordinate fabric interconnect has failed.
- The path to the endpoint through the subordinate fabric interconnect has failed.

Configuring the Management Interfaces Monitoring Policy

Procedure

- Step 1** Enter monitoring mode.
UCS-A# **scope monitoring**
- Step 2** Enable or disable the management interfaces monitoring policy.
UCS-A /monitoring # **set mgmt-if-mon-policy admin-state** {**enabled** | **disabled**}
- Step 3** Specify the number of seconds that the system should wait between data recordings.
UCS-A /monitoring # **set mgmt-if-mon-policy poll-interval**
Enter an integer between 90 and 300.
- Step 4** Specify the maximum number of monitoring attempts that can fail before the system assumes that the management interface is unavailable and generates a fault message.
UCS-A /monitoring # **set mgmt-if-mon-policy max-fail-reports** *num-mon-attempts*
Enter an integer between 2 and 5.
- Step 5** Specify the monitoring mechanism that you want the system to use.
UCS-A /monitoring # **set mgmt-if-mon-policy monitor-mechanism** {**mii-status** | **ping-arp-targets** | **ping-gateway**
- **mii-status** —The system monitors the availability of the Media Independent Interface (MII).
 - **ping-arp-targets** —The system pings designated targets using the Address Resolution Protocol (ARP).
 - **ping-gateway** —The system pings the default gateway address specified for this Cisco UCS domain in the management interface.
- Step 6** If you selected **mii-status** as your monitoring mechanism, configure the following properties:
- a) Specify the number of seconds that the system should wait before requesting another response from the MII if a previous attempt fails.
UCS-A /monitoring # **set mgmt-if-mon-policy mii-retry-interval** *num-seconds*
Enter an integer between 3 and 10.
 - b) Specify the number of times that the system polls the MII until the system assumes that the interface is unavailable.
UCS-A /monitoring # **set mgmt-if-mon-policy mii-retry-count** *num-retries*

Enter an integer between 1 and 3.

Step 7 If you selected **ping-arp-targets** as your monitoring mechanism, configure the following properties:

- a) Specify the first IPv4 or IPv6 address the system pings.
 UCS-A /monitoring # **set mgmt-if-mon-policy** {arp-target1|ndisc-target1} {ipv4-addr|ipv6-addr}
 Type 0.0.0.0 for an IPv4 address to remove the ARP target or :: for an IPv6 address to remove the N-disc target.
- b) Specify the second IPv4 or IPv6 address the system pings.
 UCS-A /monitoring # **set mgmt-if-mon-policy** {arp-target2|ndisc-target2} {ipv4-addr |ipv6-addr}
 Type 0.0.0.0 for an IPv4 address to remove the ARP target or :: for an IPv6 address to remove the N-disc target.
- c) Specify the third IPv4 or IPv6 address the system pings.
 UCS-A /monitoring # **set mgmt-if-mon-policy** {arp-target3|ndisc-target3} {ipv4-addr |ipv6-addr}
 Type 0.0.0.0 for an IPv4 address to remove the ARP target or :: for an IPv6 address to remove the N-disc target.
Note The ping IPv4 ARP or IPv6 N-disc targets must be in the same subnet or prefix, respectively, as the fabric interconnect.
- d) Specify the number of ARP requests to send to the target IP addresses.
 UCS-A /monitoring # **set mgmt-if-mon-policy arp-requests** num-requests
 Enter an integer between 1 and 5.
- e) Specify the number of seconds to wait for responses from the ARP targets before the system assumes that they are unavailable.
 UCS-A /monitoring # **set mgmt-if-mon-policy arp-deadline** num-seconds
 Enter a number between 5 and 15.

Step 8 If you selected **ping-gateway** as your monitoring mechanism, configure the following properties:

- a) Specify the number of times the system should ping the gateway.
 UCS-A /monitoring # **set mgmt-if-mon-policy ping-requests**
 Enter an integer between 1 and 5.
- b) Specify the number of seconds to wait for a response from the gateway until the system assumes that the address is unavailable.
 UCS-A /monitoring # **set mgmt-if-mon-policy ping-deadline**
 Enter an integer between 5 and 15.

Step 9 UCS-A /monitoring # **commit-buffer**
 Commits the transaction to the system configuration.

The following example creates a monitoring interface management policy using the Media Independent Interface (MII) monitoring mechanism and commits the transaction:

```
UCS-A# scope monitoring
UCS-A /monitoring # set mgmt-if-mon-policy admin-state enabled
UCS-A /monitoring* # set mgmt-if-mon-policy poll-interval 250
UCS-A /monitoring* # set mgmt-if-mon-policy max-fail-reports 2
UCS-A /monitoring* # set mgmt-if-mon-policy monitor-mechanism set mii-status
UCS-A /monitoring* # set mgmt-if-mon-policy mii-retry-count 3
```

```
UCS-A /monitoring* # set mgmt-if-mon-policy mii-retry-interval 7
UCS-A /monitoring* # commit-buffer
UCS-A /monitoring #
```

Local Storage Monitoring

Local storage monitoring in Cisco UCS provides status information on local storage that is physically attached to a blade or rack server. This includes RAID controllers, physical drives and drive groups, virtual drives, RAID controller batteries (BBU), Transportable Flash Modules (TFM) and super-capacitors, FlexFlash controllers, and SD cards.

Cisco UCS Manager communicates directly with the LSI MegaRAID controllers and FlexFlash controllers using an out-of-band (OOB) interface, which enables real-time updates. Some of the information that is displayed includes:

- RAID controller status and rebuild rate.
- The drive state, power state, link speed, operability and firmware version of physical drives.
- The drive state, operability, strip size, access policies, drive cache, and health of virtual drives.
- The operability of a BBU, whether it is a supercap or battery, and information about the TFM.

LSI storage controllers use a Transportable Flash Module (TFM) powered by a super-capacitor to provide RAID cache protection.

- Information on SD cards and FlexFlash controllers, including RAID health and RAID state, card health, and operability.
- Information on operations that are running on the storage component, such as rebuild, initialization, and relearning.



Note After a CIMC reboot or build upgrades, the status, start time, and end times of operations running on the storage component might not be displayed correctly.

- Detailed fault information for all local storage components.



Note All faults are displayed on the **Faults** tab.

Support for Local Storage Monitoring

The type of monitoring supported depends upon the Cisco UCS server.

Supported Cisco UCS Servers for Local Storage Monitoring

Through Cisco UCS Manager, you can monitor local storage components for the following servers:

- Cisco UCS B200 M3 blade server
- Cisco UCS C220 M3 rack server

- Cisco UCS C240 M3 rack server

**Note**

Not all servers support all local storage components. For Cisco UCS rack servers, the onboard SATA RAID 0/1 controller integrated on motherboard is not supported.

Prerequisites for Local Storage Monitoring

These prerequisites must be met for local storage monitoring or legacy disk drive monitoring to provide useful status information:

- The drive must be inserted in the server drive bay.
- The server must be powered on.
- The server must have completed discovery.
- The results of the BIOS POST complete must be TRUE.

Legacy Disk Drive Monitoring

**Note**

The following information is applicable only for B200 M1/M2 and B250 M1/M2 blade servers.

The legacy disk drive monitoring for Cisco UCS provides Cisco UCS Manager with blade-resident disk drive status for supported blade servers in a Cisco UCS domain. Disk drive monitoring provides a unidirectional fault signal from the LSI firmware to Cisco UCS Manager to provide status information.

The following server and firmware components gather, send, and aggregate information about the disk drive status in a server:

- Physical presence sensor—Determines whether the disk drive is inserted in the server drive bay.
- Physical fault sensor—Determines the operability status reported by the LSI storage controller firmware for the disk drive.
- IPMI disk drive fault and presence sensors—Sends the sensor results to Cisco UCS Manager.
- Disk drive fault LED control and associated IPMI sensors—Controls disk drive fault LED states (on/off) and relays the states to Cisco UCS Manager.

Flash Life Wear Level Monitoring

Flash life wear level monitoring enables you to monitor the life span of solid state drives. You can view both the percentage of the flash life remaining, and the flash life status. Wear level monitoring is supported on the Fusion IO mezzanine card with the following Cisco UCS blade servers:

- Cisco UCS B22 M3 blade server

- Cisco UCS B200 M3 blade server
- Cisco UCS B420 M3 blade server
- Cisco UCS B200 M4 blade server
- Cisco UCS B260 M4 blade server
- Cisco UCS B460 M4 blade server

**Note**

Wear level monitoring requires the following:

- Cisco UCS Manager must be at release 2.2(2a) or greater.
- The Fusion IO mezzanine card firmware must be at version 7.1.15 or greater.

Viewing Flash Life Status

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope server <i>chassis-id / server-id</i>	Enters chassis server mode for the specified server.
Step 2	UCS-A /chassis/server # show raid-controller detail expand	Displays details for the RAID controller.

The following example shows how to display the flash life status for server 3:

```
UCS-A# scope server 1/3
UCS-A /chassis/server # show raid-controller detail expand

RAID Controller:
  ID: 1
  Type: FLASH
  PCI Addr: 131:00.0
  Vendor: Cisco Systems Inc
  Model: UCSC-F-FIO-1205M
  Serial: 1315D2B52
  HW Rev: FLASH
  Raid Support: No
  OOB Interface Supported: No
  Rebuild Rate: N/A
  Controller Status: Unknown

Flash Life:
  Flash Percentage: N/A
  Flash Status: Error(244)

UCS-A /chassis/server #
```


Viewing the Status of Local Storage Components

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope server <i>chassis-id / server-id</i>	Enters chassis server mode for the specified server.
Step 2	UCS-A /chassis/server # show inventory storage	Displays the local and virtual storage information for the server.

The following example shows how to display the local disk status for server 2:

```
UCS-A# scope server 1/2
UCS-A /chassis/server # show inventory storage
Server 1/2:
  Name:
  User Label:
  Equipped PID: UCSB-B200-M3
  Equipped VID: V01
  Equipped Serial (SN): FCH16207KXG
  Slot Status: Equipped
  Acknowledged Product Name: Cisco UCS B200 M3
  Acknowledged PID: UCSB-B200-M3
  Acknowledged VID: V01
  Acknowledged Serial (SN): FCH16207KXG
  Acknowledged Memory (MB): 98304
  Acknowledged Effective Memory (MB): 98304
  Acknowledged Cores: 12
  Acknowledged Adapters: 1
  Motherboard:
    Product Name: Cisco UCS B200 M3
    PID: UCSB-B200-M3
    VID: V01
    Vendor: Cisco Systems Inc
    Serial (SN): FCH16207KXG
    HW Revision: 0

  RAID Controller 1:
    Type: SAS
    Vendor: LSI Logic Symbios Logic
    Model: LSI MegaRAID SAS 2004 ROMB
    Serial: LSIROMB-0
    HW Revision: B2
    PCI Addr: 01:00.0
    Raid Support: RAID0, RAID1
    OOB Interface Supported: Yes
    Rebuild Rate: 31
    Controller Status: Optimal

  Local Disk 1:
    Product Name: 146GB 6Gb SAS 10K RPM SFF HDD/hot plug/drive sled mounted
    PID: A03-D146GA2
    VID: V01
    Vendor: SEAGATE
    Model: ST9146803SS
    Vendor Description: Seagate Technology LLC
    Serial: 3SD31S4X
    HW Rev: 0
    Block Size: 512
    Blocks: 285155328
    Operability: Operable
```

```

Oper Qualifier Reason: N/A
Presence: Equipped
Size (MB): 139236
Drive State: Online
Power State: Active
Link Speed: 6 Gbps
Device Type: HDD

```

```

Local Disk 2:
Product Name: 600G AL12SE SAS Hard Disk Drive
PID: A03-D600GA2
VID: V01
Vendor: TOSHIBA
Model: MBF2600RC
Vendor Description: Toshiba Corporation
Serial: EA00PB109T4A
HW Rev: 0
Block Size: 512
Blocks: 1169920000
Operability: Operable
Oper Qualifier Reason: N/A
Presence: Equipped
Size (MB): 571250
Drive State: Online
Power State: Active
Link Speed: 6 Gbps
Device Type: HDD

```

```

Local Disk Config Definition:
Mode: RAID 1 Mirrored
Description:
Protect Configuration: No

```

```

Virtual Drive 0:
Type: RAID 1 Mirrored
Block Size: 512
Blocks: 285155328
Operability: Operable
Presence: Equipped
Size (MB): 139236
Lifecycle: Allocated
Drive State: Optimal
Strip Size (KB): 64
Access Policy: Read Write
Read Policy: Normal
Configured Write Cache Policy: Write Through
Actual Write Cache Policy: Write Through
IO Policy: Direct
Drive Cache: No Change
Bootable: False

```

```
UCS-A /chassis/server #
```

Viewing the Status of a Disk Drive

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope chassis <i>chassis-num</i>	Enters chassis mode for the specified chassis.
Step 2	UCS-A /chassis # scope server <i>server-num</i>	Enters server chassis mode.

	Command or Action	Purpose
Step 3	UCS-A /chassis/server # scope raid-controller <i>raid-contr-id</i> {sas sata}	Enters RAID controller server chassis mode.
Step 4	UCS-A /chassis/server/raid-controller # show local-disk [<i>local-disk-id</i> detail expand]	

The following example shows the status of a disk drive:

```
UCS-A# scope chassis 1
UCS-A /chassis # scope server 6
UCS-A /chassis/server # scope raid-controller 1 sas
UCS-A /chassis/server/raid-controller # show local-disk 1

Local Disk:
  ID: 1
  Block Size: 512
  Blocks: 60545024
  Size (MB): 29563
  Operability: Operable
  Presence: Equipped
```

Viewing RAID Controller Operations

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope server <i>chassis-id</i> / <i>server-id</i>	Enters chassis server mode for the specified server.
Step 2	UCS-A /chassis/server # show raid-controller operation	Displays the long running operations for the RAID controller.

The following example shows how to display the RAID controller operations for server 3:

```
UCS-A# scope server 1/3
UCS-A /chassis/server # show raid-controller operation

Name: Rebuild
Affected Object: sys/chassis-1/blade-3/board/storage-SAS-1/disk-1
State: In Progress
Progress: 4
Start Time: 2013-11-05T12:02:10.000
End Time: N/A

UCS-A /chassis/server #
```

Graphics Cards Monitoring

Monitoring Graphics Cards

With Cisco UCS Manager, you can view the properties for certain graphics cards and controllers. Graphics cards are supported on the following servers:

- Cisco UCS C240 M3 Rack Server
- Cisco UCS C460 M4 Rack Server

Viewing Graphics Card Properties

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope server <i>blade-id</i>	Enters server mode for the specified server.
Step 2	UCS-A /server # show graphics-card detail	Displays information about the graphics card.

The following example shows how to display the graphics card properties on server 1:

```
UCS-A# scope server 1
UCS-A /server # show graphics-card

Graphics Card:
ID Slot Id Is Supported Firmware Version
-----
1 5 Yes 80.07.6D.00.13|2401.0502.00.02

UCS-A /server # show graphics-card detail

Graphics Card:
ID: 1
Slot Id: 5
Is Supported: Yes
Vendor: nVidia Corporation
Model: Nvidia GRID K1 P2401-502
Serial: NA
Firmware Version: 80.07.6D.00.13|2401.0502.00.02

UCS-A /server #
```

Viewing Graphics Controller Properties

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope server <i>blade-id</i>	Enters server mode for the specified server.
Step 2	UCS-A /server # scope graphics-card <i>card-id</i>	Enters graphics card mode for the specified graphics card.
Step 3	UCS-A /server/graphics-card # show graphics-controller detail	Displays information about the graphics controllers.

The following example shows how to display the graphics controller properties for graphics card 1 on server 1:

```
UCS-A# scope server 1
UCS-A /server # scope graphics-card 1
UCS-A /server/graphics-card # show graphics-controller detail
Graphics Controller:
  ID: 1
  Pci Address: 07:00.0

  ID: 2
  Pci Address: 08:00.0
UCS-A /server/graphics-card #
```

Managing Transportable Flash Module and Supercapacitor

LSI storage controllers use a Transportable Flash Module (TFM) powered by a supercapacitor to provide RAID cache protection. With Cisco UCS Manager, you can monitor these components to determine the status of the battery backup unit (BBU). The BBU operability status can be one of the following:

- **Operable**—The BBU is functioning successfully.
- **Inoperable**—The TFM or BBU is missing, or the BBU has failed and needs to be replaced.
- **Degraded**—The BBU is predicted to fail.

TFM and supercap functionality is supported beginning with Cisco UCS Manager Release 2.1(2).

TFM and Supercap Guidelines and Limitations

Supported Cisco UCS Servers for TFM and Supercap

The following Cisco UCS servers support TFM and supercap:

- Cisco UCS C220 M3 rack server
- Cisco UCS C240 M3 rack server

Monitoring RAID Battery Status

This procedure applies only to Cisco UCS servers that support RAID configuration and TFM. If the BBU has failed or is predicted to fail, you should replace the unit as soon as possible.

Procedure

	Command or Action	Purpose
Step 1	UCS-A # scope chassis <i>chassis-num</i>	Enters chassis mode for the specified chassis.
Step 2	UCS-A /chassis # scope server <i>server-num</i>	Enters server chassis mode.
Step 3	UCS-A /chassis/server # scope raid-controller <i>raid-contr-id</i> {flash sas sata sd unknown}	Enters RAID controller server chassis mode.
Step 4	UCS-A /chassis/server/raid-controller # show raid-battery expand	Displays the RAID battery status.

This example shows how to view information on the battery backup unit of a server:

```
UCS-A # scope chassis 1
UCS-A /chassis #scope server 3
UCS-A /chassis/server #scope raid-controller 1 sas
UCS-A /chassis/server/raid-controller # show raid-battery expand
RAID Battery:
  Battery Type: Supercap
  Presence: Equipped
  Operability: Operable
  Oper Qualifier Reason:
  Vendor: LSI
  Model: SuperCaP
  Serial: 0
  Capacity Percentage: Full
  Battery Temperature (C): 54.000000

  Transportable Flash Module:
    Presence: Equipped
    Vendor: Cisco Systems Inc
    Model: UCSB-RAID-1GBFM
    Serial: FCH164279W6
```

TPM Monitoring

Trusted Platform Module (TPM) is included on all Cisco UCS M3 blade and rack-mount servers. Operating systems can use TPM to enable encryption. For example, Microsoft's BitLocker Drive Encryption uses the TPM on Cisco UCS servers to store encryption keys.

Cisco UCS Manager enables monitoring of TPM, including whether TPM is present, enabled, or activated.

Viewing TPM Properties

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope server <i>chassis-id / server-id</i>	Enters chassis server mode for the specified server.
Step 2	UCS-A /chassis/server # scope tpm <i>tpm-id</i>	Enters TPM mode for the specified TPM ID.
Step 3	UCS-A /chassis/server/tpm # show	Displays the TPM properties.
Step 4	UCS-A /chassis/server/tpm # show detail	Displays detailed TPM properties.

The following example shows how to display the TPM properties for blade 3 in chassis 1:

```
UCS-A# scope server 1/3
UCS-A /chassis/server # scope tpm 1
UCS-A /chassis/server/tpm # show

Trusted Platform Module:
  Presence: Equipped
  Enabled Status: Enabled
  Active Status: Activated
  Ownership: Unowned
UCS-A /chassis/server/tpm # show detail

Trusted Platform Module:
  Enabled Status: Enabled
  Active Status: Activated
  Ownership: Unowned
  Tpm Revision: 1
  Model: UCSX-TPM1-001
  Vendor: Cisco Systems Inc
  Serial: FCH16167DBJ
UCS-A /chassis/server/tpm #
```

