Monitoring Cisco HX Storage Clusters

Monitoring HyperFlex Clusters

This chapter describes the monitoring content available through the following HX Storage Cluster interfaces:

• Cisco HX Connect

• Cisco HX Data Platform Plug-in

• Storage Controller VM command line

Monitoring HyperFlex Clusters with HX Connect

The Cisco HX Connect user interface provides a view of the Cisco HX storage cluster status, components, and features.

Key monitoring pages include information about the local Cisco HX storage cluster:

• **Dashboard**—Overall Cisco HX storage cluster status.

• **Alarms, Events, Activity**—See the Cisco HyperFlex Systems Troubleshooting Guide for details.

• **Performance**—Charts for IOPS, throughput, latency, and replication network bandwidth.

• **System Information**—System overview, plus status and tasks for nodes and disks.

See the Cisco HyperFlex Systems Troubleshooting Guide for generating support bundles, Storage Cluster Maintenance Operations Overview for entering and exiting maintenance mode, and Setting a Beacon to set a node or disk beacon.

• **Datastores**—Status and tasks related to datastores.

The **Upgrade** page provides access to HX Data Platform upgrade tasks.

Dashboard Page

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Important   If you are a read-only user, you may not see all of the options available in the Help. To perform most actions in HyperFlex (HX) Connect, you must have administrative privileges.

Displays a status summary of your HX storage cluster. This is the first page that you see when you log into Cisco HyperFlex Connect.

UI Element	Essential Information
Operational Status section	Provides the functional status of the HX storage cluster and application performance. Click **Information** (ⓘ) to access the HX storage cluster name and status data.
Cluster License Status section	Displays the following link when you log into the HX storage cluster for the first time or till the HX storage cluster license is registered: **Cluster License not registered** link—Appears when the HX storage cluster is not registered. To register a cluster license, click this link and provide product instance registration token in the **Smart Software Licensing Product Registration** screen. For more information on how to get a product instance registration token, refer the **Registering a Cluster with Smart Licensing** section in the Cisco HyperFlex Systems Installation Guide for VMware ESXi. Beginning with HXDP Release 5.0(2a), HX Connect users with expired or insuffecient licenses will be unable to access certain features or have limited feature functionality, for more information see License Compliance and Feature Functionality .
Resiliency Health section	Provides the data health status and ability of the HX storage cluster to tolerate failures. Click **Information** (ⓘ) to access the resiliency status, and replication and failure data.
Capacity section	Displays a breakdown of the total storage versus how much storage is used or free. Also displays the storage optimization, compression-savings, and deduplication percentages based on the data stored in the cluster.
Nodes section	Displays the number of nodes in the HX storage cluster, and the division of converged versus compute nodes. Hovering over a node icon displays that node's name, IP address, node type, and an interactive display of disks with access to capacity, usage, serial number, and disk type data.
Performance section	Displays an HX storage cluster performance snapshot for a configurable amount of time, showing IOPS, throughput, and latency data. For full details, see **Performance Page**.

UI Element	Essential Information
Cluster Time field	System date and time for the cluster.

Table Header Common Fields

Several tables in HX Connect provide one or more of the following three fields that affect the content displayed in the table.

UI Element	Essential Information
Refresh field and icon	The table automatically refreshes for dynamic updates to the HX Cluster. The timestamp indicates the last time the table was refreshed. Click the circular icon to refresh the content now.
Filter field	Display in the table only list items that match the entered filter text. The items listed in the **current** page of the table below are automatically filtered. Nested tables are not filtered. Type in the selection text in the **Filter** field. To empty the **Filter** field, click the **x**. To export content from other pages in the table, scroll to the bottom, click through the page numbers, and apply the filter.
Export menu	Save a copy of the **current** page of table data. The table content is downloaded to the local machine in the selected file type. If the listed items are filtered, the filtered subset list is exported. Click the down arrow to select an export file type. The file type options are: cvs, xls, and doc. To export content from other pages in the table, scroll to the bottom, click through the page numbers, and apply the export.

Activity Page

Displays a list of recent activity on the HX storage cluster allowing you to monitor the progress of VM operations, Cluster upgrade/expansion, and enter/exit maintenance mode.

UI Element	Essential Information

Activity list	Displays a list of recent tasks including the following details:
	
	• ID
	
	• Description
	
	• VM power on/off/suspend status
	
	• Task status:
	
	    • **In Progress**
	
	    • **Success**
	
	    • **Failed**
	
	    For failed VM-power operations, the **Existing State** and **Required State** fields are also included.
	
	• Date and time stamp
	
	• Progress bar
	
	An expanded **Activity** list shows the task's step name and status.
	
	Click the circular icon to refresh the content and fetch recent activity. The page refreshes every 2 minutes.

Expand All / Collapse All button	Toggles the view of the job list to display top-level task information or task details. You can also expand and collapse individual tasks.

System Information Overview Page

Displays HX storage cluster system-related information, including node and disk data, and provides access to HX maintenance mode.

HX Storage Cluster Configuration Data

Displays the basic configuration information for this HX storage cluster.

UI Element	Essential Information
HX storage cluster field	Name of this storage cluster.
HX storage cluster status field	Provides functional status of the HX storage cluster. • **Online**—Cluster is ready. • **Offline**—Cluster is not ready. • **Read Only**—Cluster is out of space. • **Unknown**—Transitional state while the cluster is coming online.

UI Element	Essential Information
Hypervisor field	Hypervisor version installed on this HX storage cluster.
HXDP Version field	Installer package version installed on this HX storage cluster.
Uptime field	Length of time this HX storage cluster has been online.
Total Capacity field	Overall storage size of this cluster.
Available Capacity field	Amount of free storage in this cluster.
DNS Server(s)	IP address for the DNS server(s) for this HX storage cluster.
NTP Server(s)	IP address for the NTP server(s) for this HX storage cluster.

Controller VM Access

You can access the controller VM using SSH as an administrator. To enable access, click **Actions** at the top of the page to enable SSH access.

Node Data

Displays data about individual nodes in this HX storage cluster. To see this information in tabular format, go to the **Nodes** page.

UI Element	Essential Information
Node field	Name of a node on this cluster.
Hypervisor Address field	IP address for the management network to this HX storage cluster.
Hypervisor Status field	• **Online**—Node is available. • **Offline**—Node is not available. • **In Maintenance**—The running (and powered off) node is disconnected from the host. • **In Progress**—a backup job is in progress.
Controller address	IP address for the network controller for this HX storage cluster.
Controller Status	• **Online**—The connection between the VM and the disk is available. • **Offline**—The connection between the VM and the disk is not available. • **In Maintenance**—the connection between the VM and the disk is powered off from the host. • **In Progress**—a backup job is in progress.
Model field	Physical hardware model number of this node.
HXDP Version field	Installer package version installed on this node.

UI Element	Essential Information
Disks field	Number of persistent and caching disks in this node.

For nodes with disks, you can place your cursor over a disk to view an interactive display of information including the following.

Disks

UI Element	Essential Information
Slot Number	Location of the drive, for example Slot Number 2.
Type of Disk	System, Cache or Persistent
Disk State	• **Claimed** • **Available** • **Ignored** • **Blacklisted** • **Ok to Remove** • **Unknown**
Locator LED	Activates a physical light on the host to help locate a disk; options are **On** and **Off**.
Capacity	Total disk size.
Used / Total Capacity (Persistent Disks only)	Amount of the disk used versus the total disk size.
Serial Number	Physical serial number of this disk.
Storage Usage (Persistent Disks only)	Percentage of disk storage used.
Version	Version of the disk drive.
Disk Drive Interface	The disk drive interface type, for example SAS or SATA.

Nodes Page

Displays data about all of the nodes in this HX storage cluster in a table. Each column can be used to sort the data.

UI Element	Essential Information
Enter HXDP Maintenance Mode button	Select a node to access this button. Opens the **Confirm HXDP Maintenance Mode** dialog box.

UI Element	Essential Information
Exit HXDP Maintenance Mode button	Select a node to access this button. After you complete any maintenance tasks, you must manually exit HXDP Maintenance Mode.
Node column	Name of a node in this HX storage cluster.
Hypervisor Address column	IP address for the management network of the Node referred in the Node column.
Hypervisor Status column	• **Online**—Node is available. • **Offline**—Node is not available. • **In Maintenance**—The running (and powered off) node is disconnected from the host. • **In Progress**—a backup job is in progress.
Controller Address column	IP address for the HX storage controller VM of the Node referred in the Node column.
Controller Status column	• **Online**—The connection between the VM and the disk is available. • **Offline**—The connection between the VM and the disk is not available. • **In Maintenance**—the connection between the VM and the disk is powered off from the host.
Model column	Physical hardware model number of this node.
Version column	HyperFlex Data Platform installer package version installed on this node.
Disks column	Number of disks in the node. Click the number to open the **Disks** page filtered by the selected node name.

Disks Page

Displays data about all of the disks in this HX storage cluster in a 7-column table. Each column can be used to sort the data.

UI Element	Essential Information
Node column	Name of the node where the disk resides.
Slot column	Location of the SED drive. This identifies the drive for maintenance procedures.
Capacity column	Total disk size.

UI Element	Essential Information	
Status column	• **Available**—Initial state for a newly added, data-at-rest capable disk. Also, a transitional state when disks move into one of the other states. • **Blacklisted**—State when a disk is not being consumed by the cluster due to either a software error or an IO error. This could be a transitional state while the cluster attempts to repair the disk, if the disk is still available, before the state transitions to **Repairing**. • **Claimed**—State when a disk is recognized and in use. • **Ignored**—State when a disk is not being consumed by the cluster; for example, the HX controller VM system disk, a disk with other data (valid file system partitions), or a disk where the IO is failing. • **Repairing**—State when a blacklisted disk is currently being repaired. • **To Be Removed**—State when a disk is scheduled for RMA.	The following states can be ignored: • **Invalid** • **Normal** • **Removed**—State when an SED disk is removed after using the **Secure Erase** option. • **Time out** • **Unknown**
Type column	• **Unknown** • **Rotational**—Hybrid drive • **Solid State**—SSD drive	
Usage column	• **Unknown** • **Cache** • **Persistent**	
Turn On Locator LED and **Turn Off Locator LED** radio buttons	Select a disk to access the radio buttons. Activates or deactivates a physical light, or beacon, on the host to help locate the disk.	