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The bridge to possible

# HyperFlex Day 2 Operations

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@IOCisco  
BRKDCN-2594



#CiscoLive

# Cisco Webex App

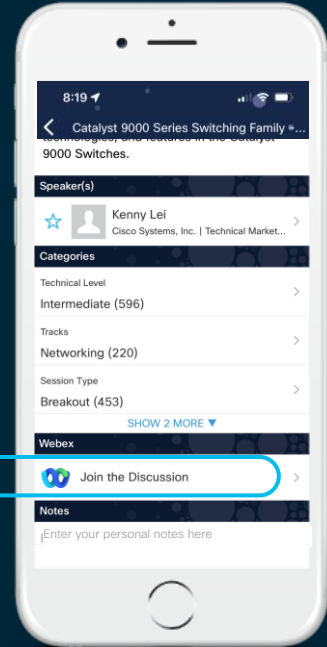
## Questions?

Use Cisco Webex App to chat with the speaker after the session

## How

- 1 Find this session in the Cisco Live Mobile App
- 2 Click “Join the Discussion”
- 3 Install the Webex App or go directly to the Webex space
- 4 Enter messages/questions in the Webex space

Webex spaces will be moderated by the speaker until June 17, 2022.



<https://ciscolive.ciscoevents.com/ciscolivebot/#BRKDCN-2594>



# Agenda

- Introduction
- Operational Best Practices
- Benefits of Intersight for HX Operations
- Upgrade Considerations
- Expansion Considerations

# Introduction



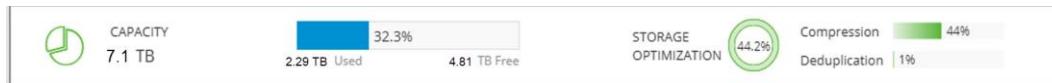
# Operational Best Practices



# Storage Best Practices and Tidbits

# HX Storage Calculations

- Capacity = Raw – (conversion overhead) – (RF overhead) – (metadata overhead)
- Used Space = Total physical space used \*after\* deduplication and compression
- Storage optimization = (1 – (1-%dedupe savings) \* (1 – %Compression savings))



- There is often a delta between the cluster usage and the datastore usage. This is due to the metadata overhead and garbage that has not been collected they the HX cleaner process.

No. of HyperFlex Nodes	3
No. of Disk Drives per Node	8
Disk Drive Size (GB)	960

<b>Total Physical Resources</b>		23.0 TB (21.0 TiB)
Controller VM & Metadata Reserves	8%	-1.8 TB (-1.7 TiB)
Replication Factor	RF3	7.1 TB (6.4 TiB)
<b>Total Usable</b>		7.1 TB (6.4 TiB)
Best Practice Threshold	20.0%	-1.4 TB (-1.3 TiB)
Storage Efficiency Savings Multiplier	1.39	7.9 TB (7.2 TiB)
<b>Best Practice Resources</b>		7.9 TB (7.2 TiB)

Capacity Management Whitepaper: <https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/white-paper-c11-744026.html>  
HyperFlex Sizer: <http://cs.co/hxsizer>



# Storage Best Practices and Tidbits

- Replication Factor (RF) is the number of data copies written across the nodes
- Available Replication Factor are 2, 3 and 2+2 for Stretch Clusters
- Replication Factor of 3 and clusters with 5 or more nodes provides the best resiliency for Standard Clusters.
- Copies of data will be written to different nodes across the cluster
- Deduplication is always on and occurs at the cluster level
- Compression occurs at the Write Log level before being written to the capacity drives

Capacity Management Whitepaper: <https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/white-paper-c11-744026.html>

# Storage Best Practices and Tidbits

- Datastores, less is more!
  - Each HX datastore adds 180 seconds to ESXi boot time
- Storage utilization should remain under 76%\*
- Upgrades may be prevented if usage is at or above 76%
- Performance impacts may be observed when utilization is above 80%\*
- Cluster may go read only when utilization is above 90%\*

\*Storage Industry Best Standards

Capacity Management Whitepaper: <https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/white-paper-c11-744026.html>

# Storage Best Practices and Tidbits

- The HX cleaner process reclaims freed space and performs garbage collection
- Plan and perform periodic space cleanup on VMs (sdelete or dd). This will allow the HX Cleaner process to identify and reclaim deleted space within VMs.
- Cleaner policy-defined conditions:
  - Number of flushes since the last cleaner run
  - Amount of data written since the last cleaner run
  - Amount of data deleted since the last cleaner run
  - Storage cluster space usage
- Cleaner runs on two priority levels:
  - Normal priority – The cleaner generates minimum I/O
  - High priority – The cleaner I/O is increased. This kicks in when the capacity thresholds are near to 76 percent

Capacity Management Whitepaper: <https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/white-paper-c11-744026.html>

# Data Protection

# Data Protection – Factors to consider

- Consider ability to retain multiple recovery points
- Business requirements for Recovery Point Objective
- Business requirements for Recovery Time Objective
- Consider ability to retain multiple copies of important data at Remote/DR site and/or Cloud
- VM Level backups vs Application-level backups

# RPO / RTO

- Recovery Point Objective (RPO)

- It is the maximum allowable data loss following a large-scale disaster. An RPO defines:
  - The point in time to which the system must be recovered after an outage
  - The amount of data loss an organization can endure
  - Different applications/businesses that may have different recovery objectives

- Recovery Time Objective (RTO)

- It is the time available to recover a disrupted service. An RTO defines:
  - How long it takes to recover services after the disaster
  - The amount of downtime an organization can endure

# Data Protection Options

- HX Native Replication
- Third party data protection partners:



# Notifications





# Notifications

- Configure Notification Settings in HX Connect to Receive Notifications for Alarms via Email
- Emails can be used by third party monitoring tools
- Events are reported into vCenter. Monitoring tools for vCenter can consume those events and trigger notifications or actions
- Enabling Auto Support sends periodic information over HTTPS for proactive support and product improvement.

# HX Connect – Where to configure notifications

The screenshot displays the Cisco HyperFlex Connect web interface for a cluster named RCH-HX-07. The interface includes a left-hand navigation pane with sections for MONITOR (Alarms, Events, Activity) and ANALYZE (Performance). The main content area shows three status cards: OPERATIONAL STATUS (Online), RESILIENCY HEALTH (Healthy), and CAPACITY (4.8 TB, 1.5% used). A settings menu is open in the top right corner, with the gear icon highlighted by a red box. The menu contains sections for SUPPORT (Auto-Support Settings, Support Bundle), NOTIFICATION (Notifications Settings), AUDIT LOG EXPORT SETTINGS (Audit Log Export Settings), and CISCO INTERSIGHT (Device Connector).

HyperFlex Connect RCH-HX-07

Dashboard

**MONITOR**

- Alarms
- Events
- Activity

**ANALYZE**

- Performance

**OPERATIONAL STATUS**  
Online ⓘ

**RESILIENCY HEALTH**  
Healthy ⓘ

**CAPACITY**  
4.8 TB  
75 GB Used 4.7 TB Free

**STORAGE OPTIMIZATION**

**SUPPORT**

- Auto-Support Settings
- Support Bundle

**NOTIFICATION**

- Notifications Settings

**AUDIT LOG EXPORT SETTINGS**

- Audit Log Export Settings

**CISCO INTERSIGHT**

- Device Connector

# HX Alarms in vCenter

**vm vSphere Client** | Menu | Search in all environments | Administrator@VSPHERE.LOCAL

**RCH-HX-02-CLS** | ACTIONS

**Summary** | Monitor | Configure | Permissions | Hosts | VMs | Datastores | Networks | Updates

Total Processors: 108  
Total vMotion Migrations: 4

CPU: Free: 246.62 GHz  
Used: 1.78 GHz | Capacity: 248.4 GHz

Memory: Free: 903.32 GB  
Used: 244.65 GB | Capacity: 1.12 TB

Storage: Free: 1.77 TB  
Used: 138.35 GB | Capacity: 1.9 TB

**Alarms:**

- Cluster is unhealthy (Critical) | Acknowledge | Reset To Green
- Cluster access policy compliance has degraded (Warning) | Acknowledge | Reset To Green

**Related Objects:**  
Datacenter: RCH-HX-02-DC

**Cluster Resources:**

**vsphere DRS:**

**Cluster Consumers:**

- Host Baseline Compliance: Compliant (never checked)
- Precheck Remediation State: Remediation status unknown (never checked)

**Recent Tasks | Alarms**

Object	Status	Name	Triggered	Acknowledged	Acknowledged By
RCH-HX-02-CLS	Warning	Cluster access policy compliance has degraded	05/19/2022, 10:13:15 AM		
RCH-HX-02-CLS	Critical	Cluster is unhealthy	05/19/2022, 10:13:15 AM		

2 items

# Benefits of Intersight for HX Operations

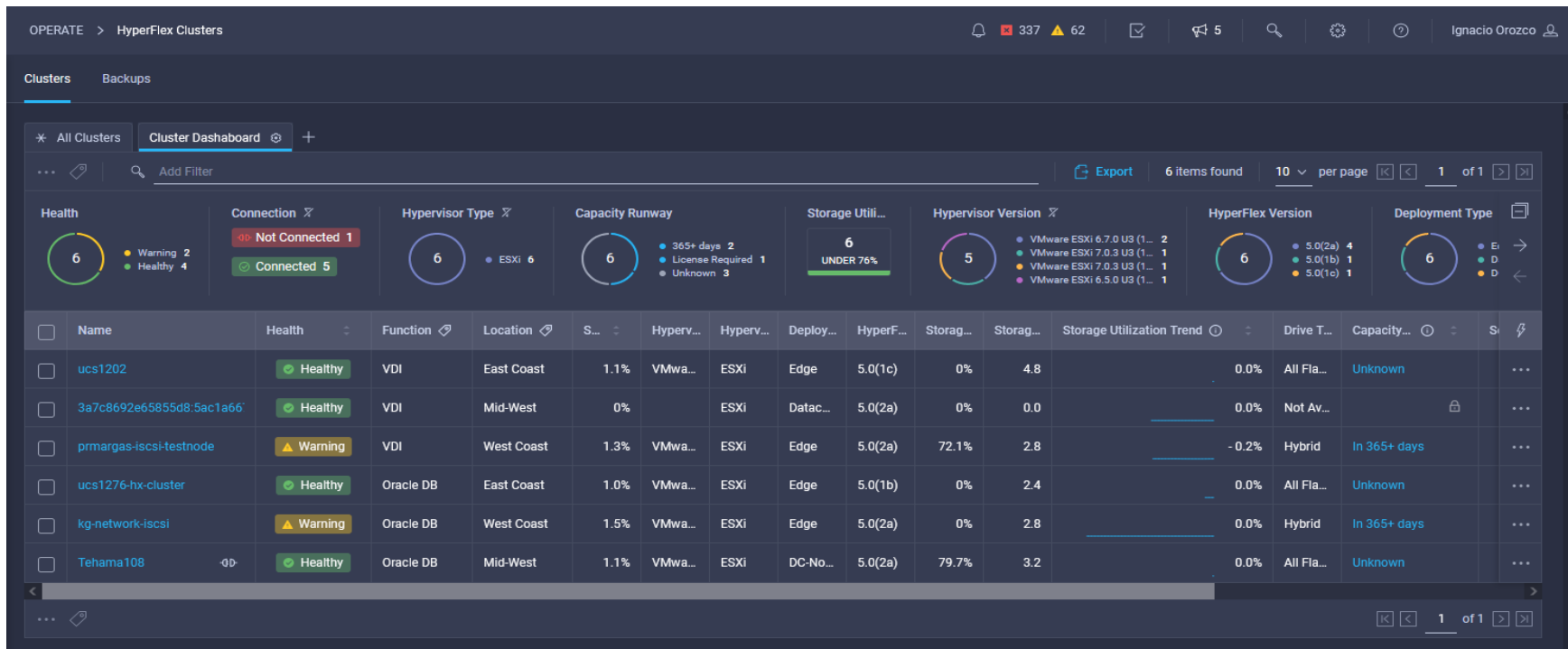


# Benefits of Intersight for HX Operations

- Multi-cluster dashboards
- Storage capacity utilization projection
- Ability to open cases for your HX clusters
- TAC can collect support bundles for connected clusters
- Proactive RMAs of drives, DIMMs and fans.
- Alerts for security advisories, field notices and End of Life advisories
- N:1 Replication
- HX Connect Cross Launch
- Manage Datastores
- HX Health Check
- Upgrades
- Expansions
- Enable and configure Software Encryption
- Create Notification Rules
- Create Webhooks

# Multi-Cluster Dashboard

Available in  
**CISCO**  
INTER-SIGHT

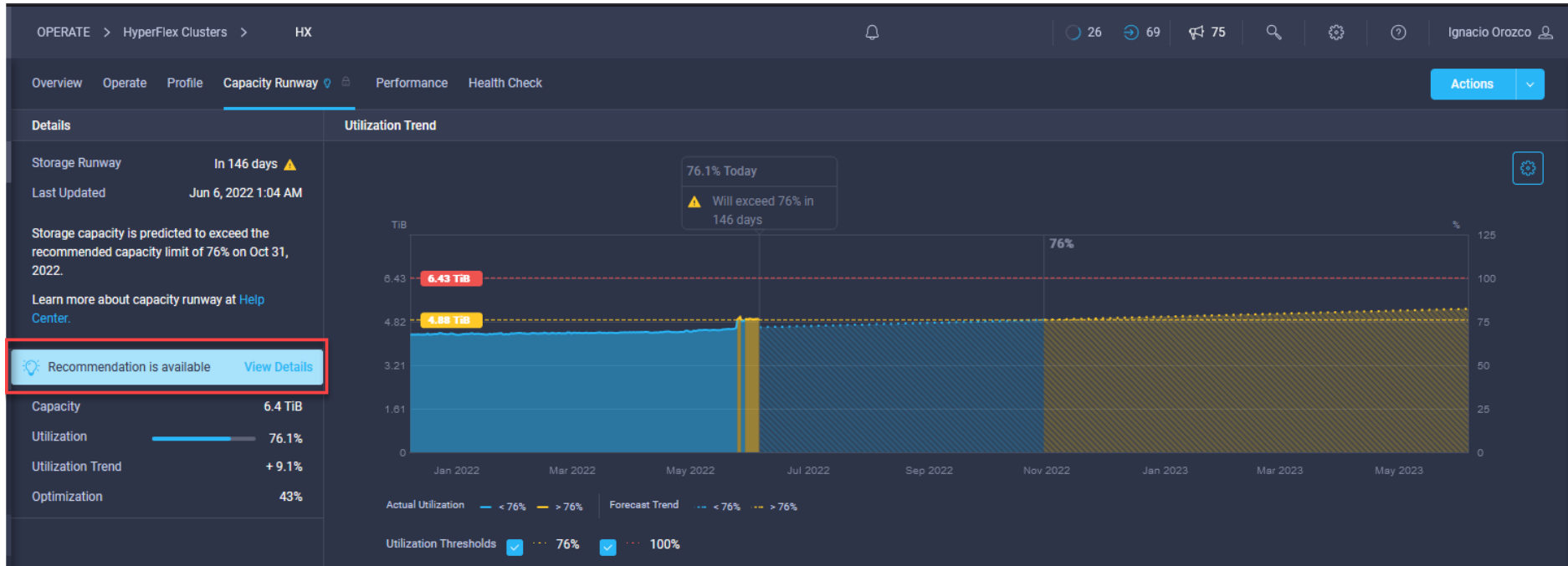


# Storage Capacity Runway

## Forecasting, Trending, and Recommendations



- Predict the storage capacity runway up to 18 months in advance
- Insights on the last 6 months historical trends
- Periodic reminders as you get closer to maximum capacity
- Forecast available 2 weeks after cluster installation

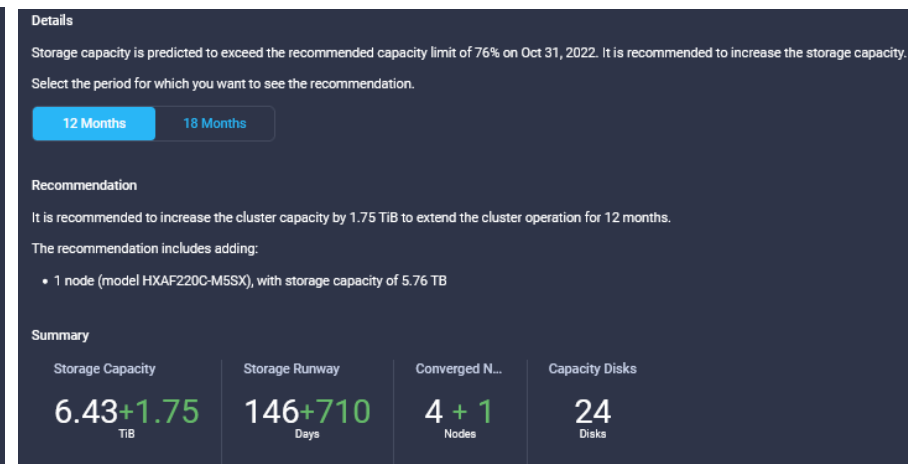
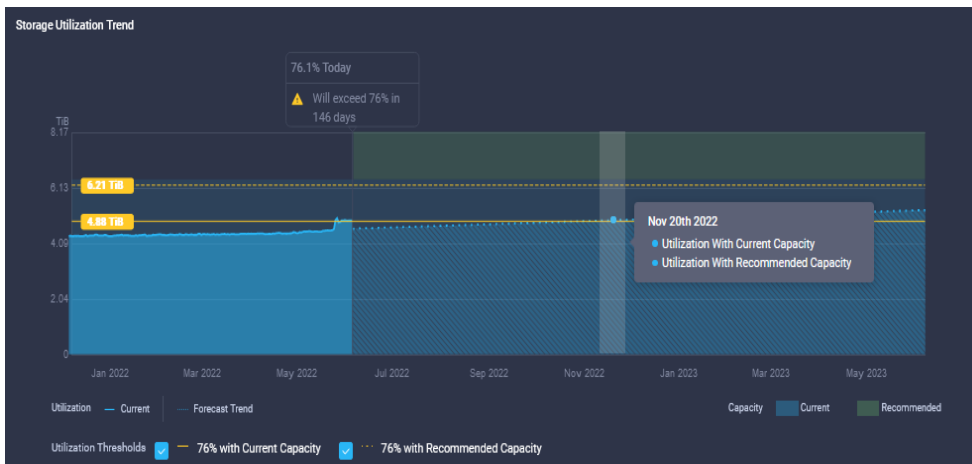


# Storage Capacity Runway

## Forecasting, Trending, and Recommendations



- Recommendation to extend capacity runway to 12 or 18 months
- Get recommendations on number of disks and nodes to add
- View the storage capacity trend before and after additional capacity
- Disk slot info on where to add the disks



[https://intersight.com/help/appliance/resources/hyperflex\\_cluster\\_capacity\\_planning](https://intersight.com/help/appliance/resources/hyperflex_cluster_capacity_planning)



# Advisories



OPERATE > HyperFlex Clusters

Clusters Backups

\* All Clusters +

... Add Filter Export 2 items for

Health 2 Healthy 2

Connection Connected 2

Hypervisor Type 2 IWE 1 ESXi 1

Capacity Runway 2 License Required 2

Average CPU Utilization... 1 UNDER 80% 1 UNKNOWN

Average Memory Utilization... 1 UNDER 80% 1 UNKNOWN

Storage Utilization 2 UNDER 80%

	Name	Health	Avg. CPU Utilization	Avg. Memory Utilization	Storage Utilization	Hypervisor Version	HyperFlex Version	Deployment
<input type="checkbox"/>	rch-hx-iwe	Healthy	3.1%	15.3%	1.5%	0.9.15(g)	4.5(2b)	Datacenter
<input type="checkbox"/>	RCHS-Infra-HX	Healthy			63.4%	VMware ESXi 6.7.0 U3 ...	4.0(2f)	Datacenter

... Add Filter

Advisories

End of Life Advisory Aug 16, 2020 7:00 PM

The last date of any software maintenance releases for HX 4.0(2x) is past

[https://intersight.com/help/saas/features/cisco\\_intersight/settings#advisories](https://intersight.com/help/saas/features/cisco_intersight/settings#advisories)



# Viewing and Managing Alarms



Alarms

Active Acknowledged

\* All Active +

Moid 61b7c01465696e2d3146215e Add Filter

Export 0

Alarms All Critical Warning x

UCS-F0462 Jul 1, 2021 9:06 PM

Log capacity on Management Controller on server 4 is full

Alarms

Active Acknowledged

\* All Active +

Moid 61b7c01465696e2d3146214f Add Filter

Export 1 items found 30 per page 1 of 1

	Message	Severity	Code	Source Name	Source Type	Date/Time	
<input type="checkbox"/>	Log capacity on Management Controller on server 4 is full	Info	UCS-F0462	hx-iwe-01-ucs/sys/rack-unit-4/mgmt/log-SEL-0	UCS Domain	Jul 1, 2021 9:06 PM	...

Acknowledge

[https://intersight.com/help/appliance/features/cisco\\_intersight/monitor#alarms](https://intersight.com/help/appliance/features/cisco_intersight/monitor#alarms)

# Notification Rules



Settings

Notifications

Stay current with notifications on relevant activities including features, firmware, alarms, requests, and important system updates. Learn more at [Help Center](#)

\* All Notifications +

Export 1 items found 10 per page 1 of 1


<input type="checkbox"/>	Name	Enabled	Email	Alarms	Last Updated	
<input type="checkbox"/>	CriticalNotifications	Yes	igorozco@cisco.com	Critical	a few seconds ago	...


1 of 1

[https://intersight.com/help/saas/features/cisco\\_intersight/settings#configuring\\_email\\_notifications](https://intersight.com/help/saas/features/cisco_intersight/settings#configuring_email_notifications)

# Notification Rules

Notifications > Add Rule


 **Add Rule**  
Create a rule for a notification.

 Notification emails may contain sensitive information from your account. [Learn more at Help Center](#)

☒ Enable

Name \*  
CriticalNotifications

Email \*  
igoroasco@cisco.com +

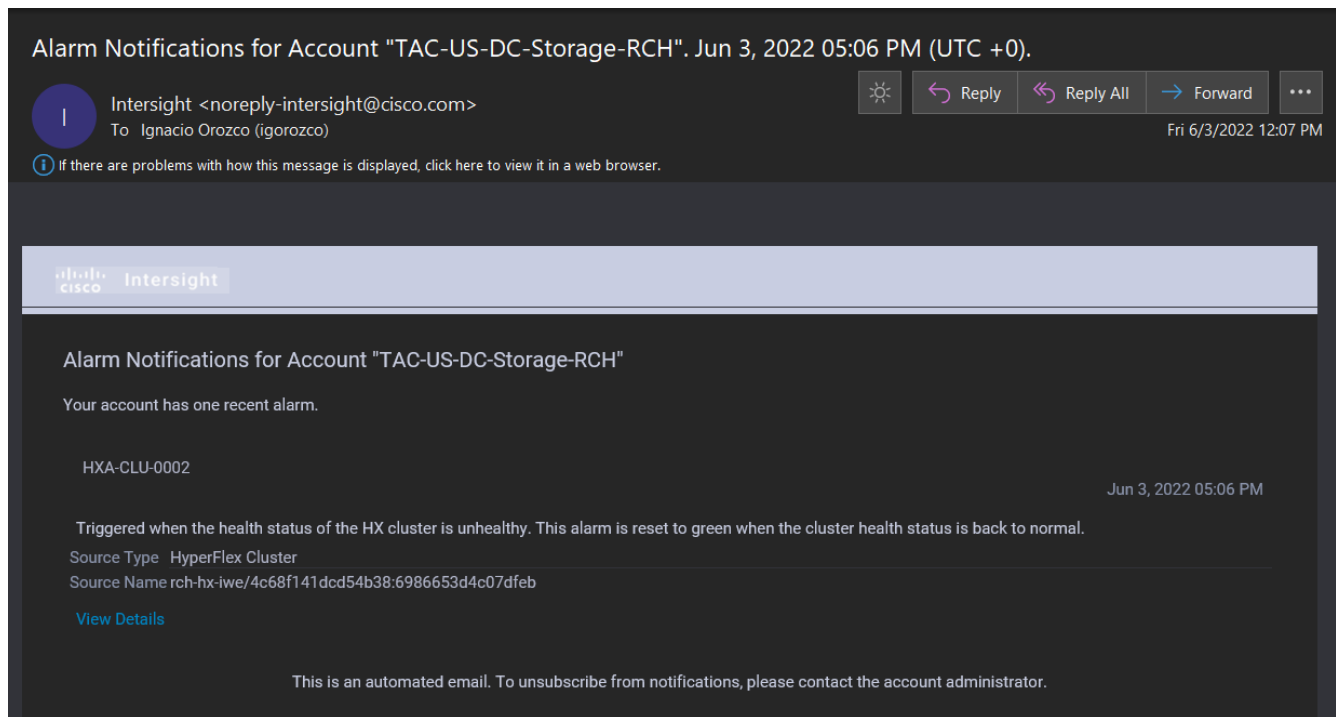
Alarms 

Severity  
☒ Critical ☐ Warning ☐ Info

[https://intersight.com/help/saas/features/cisco\\_intersight/settings#configuring\\_email\\_notifications](https://intersight.com/help/saas/features/cisco_intersight/settings#configuring_email_notifications)

# Notification Rules

Available in  
  
INTER-SIGHT



[https://intersight.com/help/saas/features/cisco\\_intersight/settings#configuring\\_email\\_notifications](https://intersight.com/help/saas/features/cisco_intersight/settings#configuring_email_notifications)

# Notification Rules

Available in  
**CISCO**  
**INTERMIGHT**

Alarms

Active Acknowledged

\* All Active +

Moid 629a3f8965696e2d31ed7e25 Add Filter x

Export 1 items found 26 per page 1 of 1

	Message	Severity	Code	Source Name	Source Type	Date/Time	
<input type="checkbox"/>	Triggered when the health status of the HX clust...	Critical	HXA-CLU-0002	rch-hx-iwe/4c68f141dcd54b38:6986653d4c07df...	HyperFlex Cluster	2 minutes ago	...

1 of 1

[https://intersight.com/help/saas/features/cisco\\_intersight/settings#configuring\\_email\\_notifications](https://intersight.com/help/saas/features/cisco_intersight/settings#configuring_email_notifications)

# Open a TAC case from Intersight



- Opening case from Intersight ensures correct Serial Number or Managed Object is tied to the Service Request for TAC log collection

Name	Health	Avg. CPU Utilization	Avg. Memory Utilization	Storage Utilization	Hypervisor Version	HyperFlex Version	Deployment Type	Software Encryption
RCHS-Infra-HX	Healthy			63.4%	VMware ESXi 6.7.0 U3	4.0(2f)	Datacenter	...
rch-hx-iwe	Healthy	3.1%	15.3%	1.5%	0.9.15(g)	4.5(2b)	Datacenter	...

Open TAC Case

Click Continue to open Cisco Support Case Manager(SCM) with details about your selection from Intersight.

HyperFlex Cluster: RCHS-Infra-HX

Health: Healthy

Deployment Type: Datacenter

Capacity: 12.1 TiB

HyperFlex Version: 4.0(2f)

Hypervisor Type: ESXi

Hypervisor Version: VMware ESXi 6.7.0 U3 (17700523)

Buttons: Cancel, Continue

[https://intersight.com/help/saas/features/cisco\\_intersight/settings#integration\\_with\\_cisco\\_tac](https://intersight.com/help/saas/features/cisco_intersight/settings#integration_with_cisco_tac)



# HyperFlex Health Check



- Run comprehensive health checks across the entire stack. Pick and choose specific tests to run
- Automatic updates for newer checks are added when we detect new issues in the field
- Detailed troubleshooting info along with next steps
- Results viewable across multiple HX clusters in a health dashboard in Intersight
- Ability to run the health check across older HX versions

The screenshot displays the Cisco Intersight interface for HyperFlex Clusters. The left sidebar shows navigation options: MONITOR, OPERATE, and ADMIN. The main content area is titled 'HyperFlex Clusters' and shows a summary of cluster health. A table lists two clusters: 'RCHS-Infra-HX' and 'rch-hx-iwe'. The 'RCHS-Infra-HX' cluster is highlighted, and a dropdown menu is open, showing options like 'Expand Cluster', 'Configure Backup', 'Configure Encryption', 'Upgrade Cluster', 'Launch HyperFlex Connect', 'Run Health Check', and 'Open TAC Case'. The 'Run Health Check' option is highlighted with a red box.

Name	Health	Avg. CPU Utilization	Avg. Memory Utilization	Storage Utilization	Hypervisor Version	HyperFlex Version	Deployment Type	Software Encryption
RCHS-Infra-HX	Healthy			63.4%	VMware ESXi 6.7.0 U3 ...	4.0(2f)	Datacenter	
rch-hx-iwe	Healthy	3.1%	15.3%	1.5%	0.9.15(g)	4.5(2b)	Datacenter	

[https://intersight.com/help/saas/resources/hyperflex\\_cluster\\_health\\_check](https://intersight.com/help/saas/resources/hyperflex_cluster_health_check)

# HyperFlex Health Check

Available in  
**CISCO**  
**INTER SIGHT**

**Progress**

- 1 HyperFlex Cluster Selection
- 2 Health Check Selection

**Step 1**  
**HyperFlex Cluster Selection**  
Select HyperFlex cluster(s) where Health Checks have to run.

**Confirm HyperFlex Cluster Selection 1 Selected**

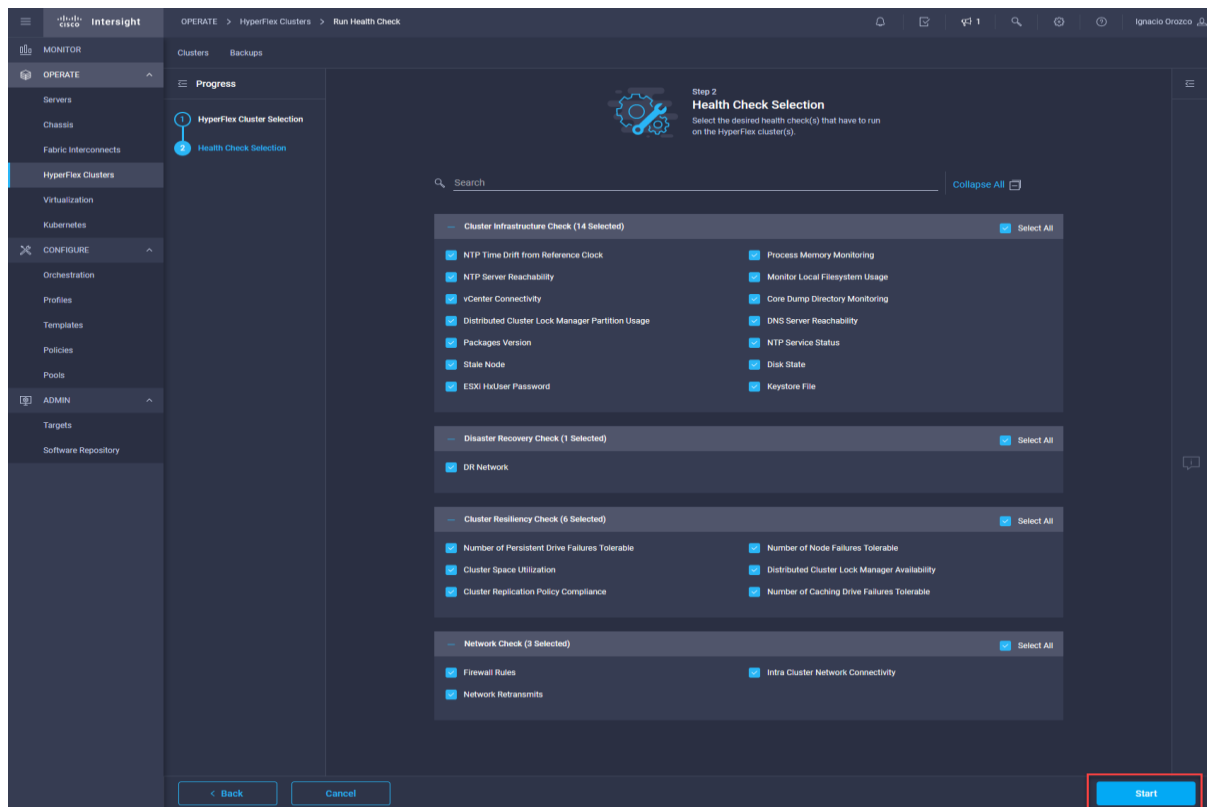
Name	Health	Drive Type	Storage Capacity (TiB)	Storage Utilization
RCHS-Infra-HX	Healthy	Hybrid	12.1	63.4%

Selected 1 of 1 | Show Selected | Unselect All

[https://intersight.com/help/saas/resources/hyperflex\\_cluster\\_health\\_check](https://intersight.com/help/saas/resources/hyperflex_cluster_health_check)

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# HyperFlex Health Check



[https://intersight.com/help/saas/resources/hyperflex\\_cluster\\_health\\_check](https://intersight.com/help/saas/resources/hyperflex_cluster_health_check)

# HyperFlex Health Check

Requests > Run Selected HyperFlex Health Checks

Ignacio Orozco

Details		Execution Flow	
Status	Success	<input type="checkbox"/> Show Additional Details	
Name	Run Selected HyperFlex ...	Update HyperFlex Cluster Health Check Execution State	May 18, 2022 12:51 PM
ID	62853166696f6e2d339db0	Invoke Check: Network Retransmits	May 18, 2022 12:51 PM
Target Type	HyperFlex Cluster	Invoke Check: Intra Cluster Network Connectivity	May 18, 2022 12:51 PM
Target Name	RCHS-Intra-HX	Invoke Check: Firewall Rules	May 18, 2022 12:51 PM
Source Type	Orchestration	Invoke Check: Number of Caching Drive Failures Tolerable	May 18, 2022 12:50 PM
Source Name	Run Health Check	Invoke Check: Cluster Replication Policy Compliance	May 18, 2022 12:50 PM
Initiator	igorozco@cisco.com	Invoke Check: Distributed Cluster Lock Manager Availability	May 18, 2022 12:51 PM
Start Time	May 18, 2022 12:48 PM	Invoke Check: Cluster Space Utilization	May 18, 2022 12:50 PM
End Time	May 18, 2022 12:51 PM	Invoke Check: Number of Node Failures Tolerable	May 18, 2022 12:50 PM
Duration	2 m 47 s	Invoke Check: Number of Persistent Drive Failures Tolerable	May 18, 2022 12:50 PM
Workflow Settings		Invoke Check: DR Network	May 18, 2022 12:50 PM
Workflow Inputs			
Workflow Outputs			
Organizations	default		

[https://intersight.com/help/saas/resources/hyperflex\\_cluster\\_health\\_check](https://intersight.com/help/saas/resources/hyperflex_cluster_health_check)

# Manage Datastores

Available in  
**CISCO**  
INTER-SIGHT

OPERATE > HyperFlex Clusters > RCHS-Infra-HX

Overview **Operate** Profile Capacity Runway Performance Health Check

Sections

- Hosts
- Virtual Machines
- Datastores**
- Storage Containers
- Drives

**Datastores**

Datastore Mount Status: 4 Mounted 4

Datastore By...: 4 UNDER 80%

Datastore - Total Capacity U...: 7 TiB, Used 4.03 TiB, Free 3.96 TiB

+ Create Datastore

4 items found, 10 per page, 1 of 1

<input type="checkbox"/>	Name	Mount Status	Capacity	Capacity Utilization	
<input type="checkbox"/>	filer	Mounted	5120.0 GiB	55.5%	...
<input type="checkbox"/>	vm-storage	Mounted	1536.0 GiB	42.8%	...
<input type="checkbox"/>	crit-infra	Mounted	1024.0 GiB	57.2%	...
<input type="checkbox"/>	iso	Mounted	500.0 GiB	8.8%	...

[https://intersight.com/help/saas/resources/cisco\\_hyperflex\\_systems\\_administration\\_guide#manage\\_datastores](https://intersight.com/help/saas/resources/cisco_hyperflex_systems_administration_guide#manage_datastores)

# Create Datastore

### Create Datastore

• Cisco recommends a maximum of 15 datastores per HyperFlex cluster. Additional datastores increases hypervisor bootup time and may result in failed upgrades due to timeouts.

Datastore Name \*  
CLUS2022

Capacity \*      Unit \*  
1      TiB

Block Size  
8 KiB

☐ Encrypt Datastore

Cancel      Save

Requests > NewHXDatastore

### Details

Status Success

Name	NewHXDatastore
ID	628667c7696f6e2d33a51e4a
Target Type	HyperFlex Cluster
Target Name	StorageDevice
Source Type	Hyperflex Storage Container
Source Name	CLUS2022
Initiator	igorozca@cisco.com
Start Time	May 19, 2022 10:52 AM
End Time	May 19, 2022 10:52 AM
Duration	2 s

If you have software encryption enabled, you can configure encryption on new datastores.

[https://intersight.com/help/appliance/resources/hyperflex\\_software\\_encryption](https://intersight.com/help/appliance/resources/hyperflex_software_encryption)

# Datastore – Edit, Delete, Unmount

**Datastores**

**Datastore Mount Status** 5 Mounted 5

**Datastore By...** 5 UNDER 80%

**Datastore - Total Capacity U...** 8 TIB  
Used 4.02 TIB  
Free 4.96 TIB

+ Create Datastore

5 items found 10 per page 1 of 1

<input type="checkbox"/>	Name	Mount Status	Capacity	Capacity Utilization	
<input type="checkbox"/>	filer	Mounted	5120.0 GiB	55.5%	...
<input type="checkbox"/>	vm-storage	Mounted	1536.0 GiB	42.8%	...
<input type="checkbox"/>	crit-infra	Mounted	1024.0 GiB	57.2%	...
<input type="checkbox"/>	iso	Mounted	500.0 GiB	8.8%	...
<input type="checkbox"/>	CLUS2022	Mounted	1024.0 GiB	0%	...

Edit  
Delete  
Unmount

[https://intersight.com/help/saas/resources/cisco\\_hyperflex\\_systems\\_administration\\_guide#manage\\_datastores](https://intersight.com/help/saas/resources/cisco_hyperflex_systems_administration_guide#manage_datastores)

# HX Cluster Upgrade

OPERATE > HyperFlex Clusters

Clusters Backups

\* All Clusters +

... Add Filter

Export 4 items found 10 per page 1 of 1

Health: 4 (Critical 1, Warning 1, Healthy 2)

Connection: 1 Connected, 6 Not Connected

Hypervisor Type: 8 ESXi

Storage Utilization: 4 UNDER 76%

Hypervisor Version: 8 (VMware ESXi 6.7.0 U3 (17700523) 2, VMware ESXi 6.5.0 U3 (17700523) 1, VMware ESXi 6.5.0 U3 (17700523) 1, VMware ESXi 7.0.2 U2 (17700523) 1, Other 3)

HyperFlex Version: 8 (4.5(2a) 2, 4.5(2b) 2, 4.0(2a) 2, 5.0(1b) 1, 4.0(2b) 1)

Deployment Type: 8 (Datacenter 6, Edge 2)

Drive Type: 8 (Hybrid 5, All Flash 3)

Software Encryption: 1 Enabled, 7 Not Supported

Name	Health	Storage Utilization	Hypervisor Version	HyperFlex Version	Deployment Type	Encryption	
RCH-HX-20	Healthy	0.9%	VMware ESXi 6.7.0 U3 (17700523)	4.0(2e)	Edge	Not Supported	...
RCH-HX-07	Critical	1.1%	VMware ESXi 7.0.2 U2 (18426014)	5.0(1b)	Datacenter	Enabled	
RCH-HX-08	Healthy	0.5%	VMware ESXi 6.7.0 U3 (16713306)	4.5(2b)	Datacenter	Not Supported	
root	Warning	2.2%	VMware ESXi 6.5.0 U3 (17477841)	4.5(2b)	Datacenter	Not Supported	

Expand Cluster

Configure Backup

Configure Encryption

Upgrade Cluster

Launch HyperFlex Connect

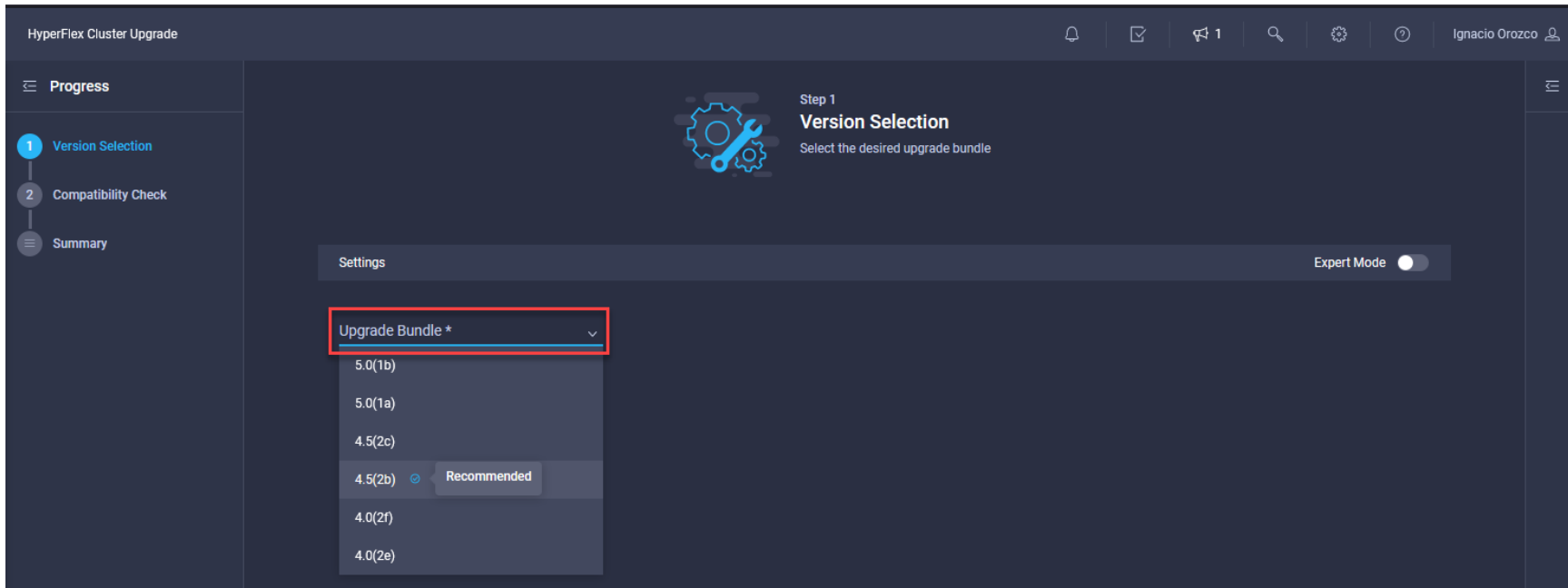
Run Health Check

Open TAC Case

[https://intersight.com/help/saas/resources/upgrade\\_cisco\\_hyperflex\\_systems\\_with\\_cisco\\_intersight](https://intersight.com/help/saas/resources/upgrade_cisco_hyperflex_systems_with_cisco_intersight)



# HX Cluster Upgrade – Basic Mode



HyperFlex Cluster Upgrade

Progress

- 1 Version Selection
- 2 Compatibility Check
- Summary

Step 1  
**Version Selection**  
Select the desired upgrade bundle

Settings Expert Mode ☐

Upgrade Bundle \*

- 5.0(1b)
- 5.0(1a)
- 4.5(2c)
- 4.5(2b) Recommended
- 4.0(2f)
- 4.0(2e)

[https://intersight.com/help/saas/resources/upgrade\\_cisco\\_hyperflex\\_systems\\_with\\_cisco\\_intersight](https://intersight.com/help/saas/resources/upgrade_cisco_hyperflex_systems_with_cisco_intersight)

# HX Cluster Upgrade – Basic Mode

Available in  
**CISCO**  
INTER-SIGHT

The screenshot shows the 'HyperFlex Cluster Upgrade' interface. On the left is a 'Progress' sidebar with three steps: 1. Version Selection (active), 2. Compatibility Check, and 3. Summary. The main area is titled 'Step 1 Version Selection' with the instruction 'Select the desired upgrade bundle'. It features a 'Settings' section with an 'Expert Mode' toggle (currently off). Under 'Settings', the 'Upgrade Bundle \*' is set to '4.5(2b)'. Below this, the 'Upgrade to latest Hypervisor patch' toggle is turned on and is highlighted with a red rectangle. The 'Bundle Details' section lists the following information:

HyperFlex Data Platform Version	4.5(2b) (build 39637)
Hypervisor Version	VMware ESXi 6.7 U3 (18828794)
M3/M4 Server Firmware Version	4.2(11)

A link for 'View Release Notes' is provided below the bundle details. At the bottom of the interface are 'Cancel' and 'Continue >' buttons.

[https://intersight.com/help/saas/resources/upgrade\\_cisco\\_hyperflex\\_systems\\_with\\_cisco\\_intersight](https://intersight.com/help/saas/resources/upgrade_cisco_hyperflex_systems_with_cisco_intersight)

# HX Cluster Upgrade – Basic Mode



## Running Pre-Upgrade Validations

- ✓ Checking Cluster Profiles
- ✓ Initiating Cluster Pre-upgrade validations
- Waiting for Cluster Pre-upgrade Validations to Complete
- ⌚ Verifying Configuration Results
- ⌚ Retrieving Configuration Result Details

[https://intersight.com/help/saas/resources/upgrade\\_cisco\\_hyperflex\\_systems\\_with\\_cisco\\_intersight](https://intersight.com/help/saas/resources/upgrade_cisco_hyperflex_systems_with_cisco_intersight)

# HX Cluster Upgrade – Basic Mode

Available in  
**CISCO**  
**INTER-SIGHT**

The screenshot shows the 'HyperFlex Cluster Upgrade' interface in 'Basic Mode'. The left sidebar indicates the progress through three steps: 1. Version Selection, 2. Compatibility Check, and 3. Summary (the current step). The main area is titled 'Step 3 Summary' with the instruction 'Review all selections before starting the upgrade'. It displays the 'Target Version' as 'HyperFlex Data Platform Version 4.5(2b)-39637' and 'Clusters to be upgraded 1'. Below this is a table with a search filter 'Add Filter' and one cluster entry: 'RCHS-Infra-HX' with 'HyperFlex Data Platform' version '4.0.2f-35930' (marked with a green checkmark), 'Hypervisor' 'VMware ESXi 6.7.0 U3 (17700523)', 'M3/M4 Server Firmware' as '-', and 'Upgrade Length' shown as a progress bar. At the bottom, there are buttons for '< Back', 'Cancel', and 'Upgrade' (the 'Upgrade' button is highlighted with a red box).

HyperFlex Cluster Upgrade

Progress

- 1 Version Selection
- 2 Compatibility Check
- 3 Summary

Step 3  
**Summary**  
Review all selections before starting the upgrade

Target Version

HyperFlex Data Platform Version 4.5(2b)-39637

Clusters to be upgraded 1

Add Filter

Name	HyperFlex Data Platform	Hypervisor	M3/M4 Server Firmware	Upgrade Length
RCHS-Infra-HX	4.0.2f-35930	VMware ESXi 6.7.0 U3 (17700523)	-	<div></div>

< Back Cancel Upgrade

[https://intersight.com/help/saas/resources/upgrade\\_cisco\\_hyperflex\\_systems\\_with\\_cisco\\_intersight](https://intersight.com/help/saas/resources/upgrade_cisco_hyperflex_systems_with_cisco_intersight)

# HX Cluster Upgrade – Expert Mode



HyperFlex Cluster Upgrade

Progress

- 1 Version Selection
- 2 Compatibility Check
- Summary

Step 1  
**Version Selection**  
Select the desired upgrade bundle

Settings

Expert Mode ☒

☒ Upgrade HyperFlex Data Platform

☐ Upgrade Hypervisor

☐ Upgrade Server Firmware

HyperFlex Data Platform Version \*

- 5.0(1b)
- 5.0(1a)
- 4.5(2c)
- 4.5(2b) **Recommended**
- 4.0(2f)
- 4.0(2e)

[https://intersight.com/help/saas/resources/upgrade\\_cisco\\_hyperflex\\_systems\\_with\\_cisco\\_intersight](https://intersight.com/help/saas/resources/upgrade_cisco_hyperflex_systems_with_cisco_intersight)

# HyperFlex Licensing Requirements



- HyperFlex Data Platform License is required
- License required to receive support
- You must have both an InterSight license and a HXDP license to access these HyperFlex features and functionality in InterSight

HyperFlex Licensing Requirements							
HyperFlex Features	InterSight License			HyperFlex Data Platform License			
	Essentials	Advantage	Premier	Edge Advantage	Edge Premier	Datacenter Advantage	Datacenter Premier
HyperFlex Cluster Upgrade (VMware ESXi, HyperFlex Data Platform and HyperFlex server firmware)	✓	✓	✓	✓	✓	✓	✓
N:1 Replication for HyperFlex Clusters	✓	✓	✓		✓		✓
HyperFlex Cluster Capacity Runway	✓	✓	✓	✓	✓	✓	✓
HyperFlex Software Encryption	✓	✓	✓		✓		✓
HyperFlex Cluster Expansion	✓	✓	✓	✓	✓	✓	✓
HyperFlex Cluster Health Check	✓	✓	✓	✓	✓	✓	✓

Licensing Information:

[https://intersight.com/help/saas/getting\\_started/licensing\\_requirements#Cisco\\_HyperFlex\\_Licensing](https://intersight.com/help/saas/getting_started/licensing_requirements#Cisco_HyperFlex_Licensing)

[https://www.cisco.com/c/en/us/td/docs/hyperconverged\\_systems/HyperFlex\\_HX\\_DataPlatformSoftware/HX-Ordering-and-Licensing-Guide/b\\_Cisco\\_HyperFlex\\_Systems\\_Ordering\\_and\\_Licensing\\_Guide.html](https://www.cisco.com/c/en/us/td/docs/hyperconverged_systems/HyperFlex_HX_DataPlatformSoftware/HX-Ordering-and-Licensing-Guide/b_Cisco_HyperFlex_Systems_Ordering_and_Licensing_Guide.html)

# Upgrade Considerations

# Factors for upgrading HyperFlex



Feature(s)



Long-lived  
release



Bug driven

For more information:

[https://www.cisco.com/c/en/us/td/docs/hyperconverged\\_systems/HyperFlex\\_HX\\_DataPlatformSoftware/release-guidelines-and-support-timeline/b-release-bulletin-hyperflex.html](https://www.cisco.com/c/en/us/td/docs/hyperconverged_systems/HyperFlex_HX_DataPlatformSoftware/release-guidelines-and-support-timeline/b-release-bulletin-hyperflex.html)



# HyperFlex Release Model



## Feature Release

Contains new feature(s)

May contain bug fixes

Example Release: 4.5(1a)



## Long-lived Release/Maintenance Release

Contains bug fixes

Serviceability improvements

Example Release: 4.5(2a)

For more information:

[https://www.cisco.com/c/en/us/td/docs/hyperconverged\\_systems/HyperFlex\\_HX\\_DataPlatformSoftware/release-guidelines-and-support-timeline/b-release-bulletin-hyperflex.html](https://www.cisco.com/c/en/us/td/docs/hyperconverged_systems/HyperFlex_HX_DataPlatformSoftware/release-guidelines-and-support-timeline/b-release-bulletin-hyperflex.html)

# HyperFlex Feature Release Milestones

- End of SW Maintenance (EOSM) Release Date
  - 6 months from the release date
- End of Security and Vulnerability Fixes
  - 6 months from the release date
- Last Date of Support
  - 9 months from the release date

For more information:

[https://www.cisco.com/c/en/us/td/docs/hyperconverged\\_systems/HyperFlex\\_HX\\_DataPlatformSoftware/release-guidelines-and-support-timeline/b-release-bulletin-hyperflex.html](https://www.cisco.com/c/en/us/td/docs/hyperconverged_systems/HyperFlex_HX_DataPlatformSoftware/release-guidelines-and-support-timeline/b-release-bulletin-hyperflex.html)

# HyperFlex Long-lived Release Milestones

- End of SW Maintenance (EOSM) Release Date
  - Minimum of 18 months from the release date
- End of Security and Vulnerability Fixes
  - 27 months from the release date
- Last Date of Support
  - 30 months from the release date

For more information:

[https://www.cisco.com/c/en/us/td/docs/hyperconverged\\_systems/HyperFlex\\_HX\\_DataPlatformSoftware/release-guidelines-and-support-timeline/b-release-bulletin-hyperflex.html](https://www.cisco.com/c/en/us/td/docs/hyperconverged_systems/HyperFlex_HX_DataPlatformSoftware/release-guidelines-and-support-timeline/b-release-bulletin-hyperflex.html)

# Perform the Following Pre-upgrade Checks

- Storage Data Network failover test
- Run Hypercheck script or HX Health Checks from Intersight and correct any identified issues
- Review and follow Cisco Documentation

Hypercheck : Hyperflex Health & Pre-Upgrade Check Tool:

<https://www.cisco.com/c/en/us/support/docs/hyperconverged-infrastructure/hyperflex-hx-data-platform/214101-hypercheck-hyperflex-health-pre-upgr.html>

Do I need to also  
upgrade UCS?



# Qualified UCS Firmware Releases

- Review the Software Requirements and Recommendations guide for qualified UCS firmware releases
- If your current UCS firmware release is on the qualified releases list for the HXDP version, UCS firmware upgrade is not required.
- The highest listed version is recommended\*
- Review the HyperFlex Software Requirements and Recommendations for qualified UCS firmware releases (see link below)

Cisco HyperFlex Software Requirements and Recommendations:

[https://www.cisco.com/c/en/us/td/docs/hyperconverged\\_systems/HyperFlex\\_HX\\_DataPlatformSoftware/release-guidelines-and-support-timeline/b-recommended-hx-data-platform-sw-releases/m-recommended-releases.html](https://www.cisco.com/c/en/us/td/docs/hyperconverged_systems/HyperFlex_HX_DataPlatformSoftware/release-guidelines-and-support-timeline/b-recommended-hx-data-platform-sw-releases/m-recommended-releases.html)

# vSphere ESXi Upgrade Guidance

# vSphere ESXi

- Use the offline upgrade bundle posted on CCO under HyperFlex or version listed on the Intersight HX Upgrade wizard.
- VUM is not recommended
- Additional patches can be applied if they are within the qualified ESXi Update release (U2, U3)
  - Example: If you are on ESXi 7.0 Update 2d, you can apply patch release ESXi 7.0 Update 2e.
- Always review documentation for any exceptions

ESXi and HXDP Compatibility Guidelines: [https://www.cisco.com/c/en/us/td/docs/hyperconverged\\_systems/HyperFlex\\_HX\\_DataPlatformSoftware/b\\_ESXi\\_HXDP\\_Compatibility\\_Guidelines.html](https://www.cisco.com/c/en/us/td/docs/hyperconverged_systems/HyperFlex_HX_DataPlatformSoftware/b_ESXi_HXDP_Compatibility_Guidelines.html)



# Expansion Considerations



# Expansion Considerations

- Ensure drives in new node are compatible with existing nodes in cluster
- Ensure cluster is running minimum HXDP version for the drives
- New nodes must have the same number of drives as existing nodes
- When expanding clusters with Logical Availability Zones (LAZ), add nodes equally across the zones. If cluster has 4 zones, add 4 nodes, one per zone
- For stretch clusters, add nodes to each site so that each side has the same number of nodes
- Run Hypercheck script or HX Health Check from Intersight to ensure cluster is in good state.

Cisco HyperFlex Drive Compatibility Guide: [https://www.cisco.com/c/en/us/td/docs/hyperconverged\\_systems/HyperFlex\\_HX\\_DataPlatformSoftware/hyperflex-drive-compatibility/b-hx-drive-compatibility-guide.html](https://www.cisco.com/c/en/us/td/docs/hyperconverged_systems/HyperFlex_HX_DataPlatformSoftware/hyperflex-drive-compatibility/b-hx-drive-compatibility-guide.html)  
Cluster Expansion Guidelines: [https://www.cisco.com/c/en/us/td/docs/hyperconverged\\_systems/HyperFlex\\_HX\\_DataPlatformSoftware/AdminGuide/4-5/b-hxdp-admin-guide-4-5/m\\_expand\\_the\\_cisco\\_hx\\_cluster.pdf](https://www.cisco.com/c/en/us/td/docs/hyperconverged_systems/HyperFlex_HX_DataPlatformSoftware/AdminGuide/4-5/b-hxdp-admin-guide-4-5/m_expand_the_cisco_hx_cluster.pdf)

# Technical Session Surveys

- Attendees who fill out a minimum of four session surveys and the overall event survey will get Cisco Live branded socks!
- Attendees will also earn 100 points in the Cisco Live Game for every survey completed.
- These points help you get on the leaderboard and increase your chances of winning daily and grand prizes.



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From technology training and team development to Cisco certifications and learning plans, let us help you empower your business and career. [www.cisco.com/go/certs](https://www.cisco.com/go/certs)

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IT learning hub that guides teams and learners toward their goals

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Subscription-based product, technology, and certification training

### Cisco Modeling Labs

Network simulation platform for design, testing, and troubleshooting

### Cisco Learning Network

Resource community portal for certifications and learning



## Train

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Intensive team & individual automation and technology training programs

### Cisco Learning Partner Program

Authorized training partners supporting Cisco technology and career certifications

### Cisco Instructor-led and Virtual Instructor-led training

Accelerated curriculum of product, technology, and certification courses



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Award-winning certification program empowers students and IT Professionals to advance their technical careers

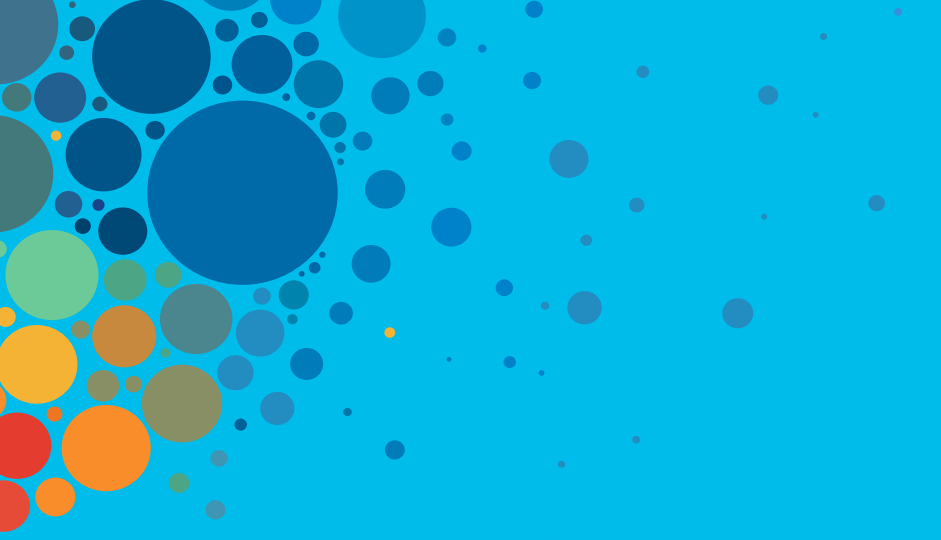
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- Book your one-on-one Meet the Engineer meeting
- Attend the interactive education with DevNet, Capture the Flag, and Walk-in Labs
- Visit the On-Demand Library for more sessions at [www.CiscoLive.com/on-demand](https://www.CiscoLive.com/on-demand)



The bridge to possible

# Thank you

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