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# Managing Server Configuration at Scale

with vSphere Configuration Profiles

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# vSphere Configuration Profile

- Manage configuration at cluster level
  - Ensures that all hosts in the cluster have consistent settings
  - Eliminates the need for configuring each hosts manually
  - Support per host settings overrides
  - Enable operation at scale
- vSphere Configuration Profiles replace Host Profiles by improving
  - Management
  - Readability
  - Performance
- Host Profiles cannot be attached to a cluster managed with Configuration Profile

# Cluster Configuration Document

- JSON document
- Validated using a JSON Schema
- Contains delta from default configuration
- Sections
  - Profile – common settings for all hosts
  - Host overrides – per host settings overriding the common settings
  - Host-specific settings – per host settings
  - Metadata – additional information for the document
- Hosts Identified by BIOS UUID

```
▼ profile:  
  ▼ esx:  
    ▼ network:  
      ▼ firewall:  
        enabled: true  
  ▼ host-override:  
    ▼ 1A280142-093E-45D5-F599-825A2D6943D2:  
      ▼ esx:  
        ▼ network:  
          ▼ firewall:  
            enabled: true  
  ▼ host-specific:  
    ▼ 1A280142-093E-45D5-F599-825A2D6943D2:  
      ▼ esx:  
        ▼ advanced_options:  
          ▼ misc:  
            host_name: "sc2-10-187-105-65.nimbus.eng.vmware.com"  
  ▼ metadata:  
    ▼ reference_host:  
      uuid: "5CFF0142-571E-B676-69E3-4ACA86FB5254"  
      build: "DEBUGbuild-52983854"  
      patch: "0"  
      update: "3"  
      version: "7.0.3"  
    ▼ reference_vcenter:  
      id: 27  
      cluster: "/Datacenters/Datacenter/host/Demo-3"  
      hostname: "sc1-10-78-131-197.nimbus.eng.vmware.com"
```

# Prerequisites

- Cluster lifecycle must be managed with vSphere Lifecycle Manager Images (vLCM)
- ESXi hosts must be on versions ESXi 8.0 and above
- Requires Enterprise Plus license
- In vSphere 8.0
  - vSphere Configuration Profiles feature is launched as a supported Technology Preview - <https://kb.vmware.com/s/article/88629>
  - Restricted to customers that use vSphere Standard Switch (VSS)
  - No vSphere Distributed Switch configuration & remediation 8.0
- In vSphere 8.0 Update 1
  - vSphere Configuration Profiles is launched as fully supported feature
  - Support vSphere Distributed Switch in coexistence mode (no auto remediation for VDS)

# Operations

- New Cluster (greenfield)
- Transition existing cluster (brownfield)
- Edit Configuration Document
  - Create Configuration Draft
  - Import Configuration
    - Reference Host
    - JSON Document
- Export Configuration & Schema
- Check Compliance
- Pre-check
- Review Impact & Remediate

# How to enable

# New Cluster

Default Configuration Document will be Generated

## New Cluster

- 1 Basics
- 2 Image
- 3 Configuration
- 4 Review

### Basics

Name	<input type="text" value="New Cluster"/>
Location	<input type="text" value="vcqaDC"/>
<input checked="" type="checkbox"/> vSphere DRS	<input type="checkbox"/>
<input checked="" type="checkbox"/> vSphere HA	<input type="checkbox"/>
<input type="checkbox"/> vSAN	<input type="checkbox"/> Enable vSAN ESA <a href="#">i</a>

Manage all hosts in the cluster with a single image [i](#)

**Choose how to set up the cluster's image**

Compose a new image

Import image from an existing host in the vCenter inventory

Import image from a new host

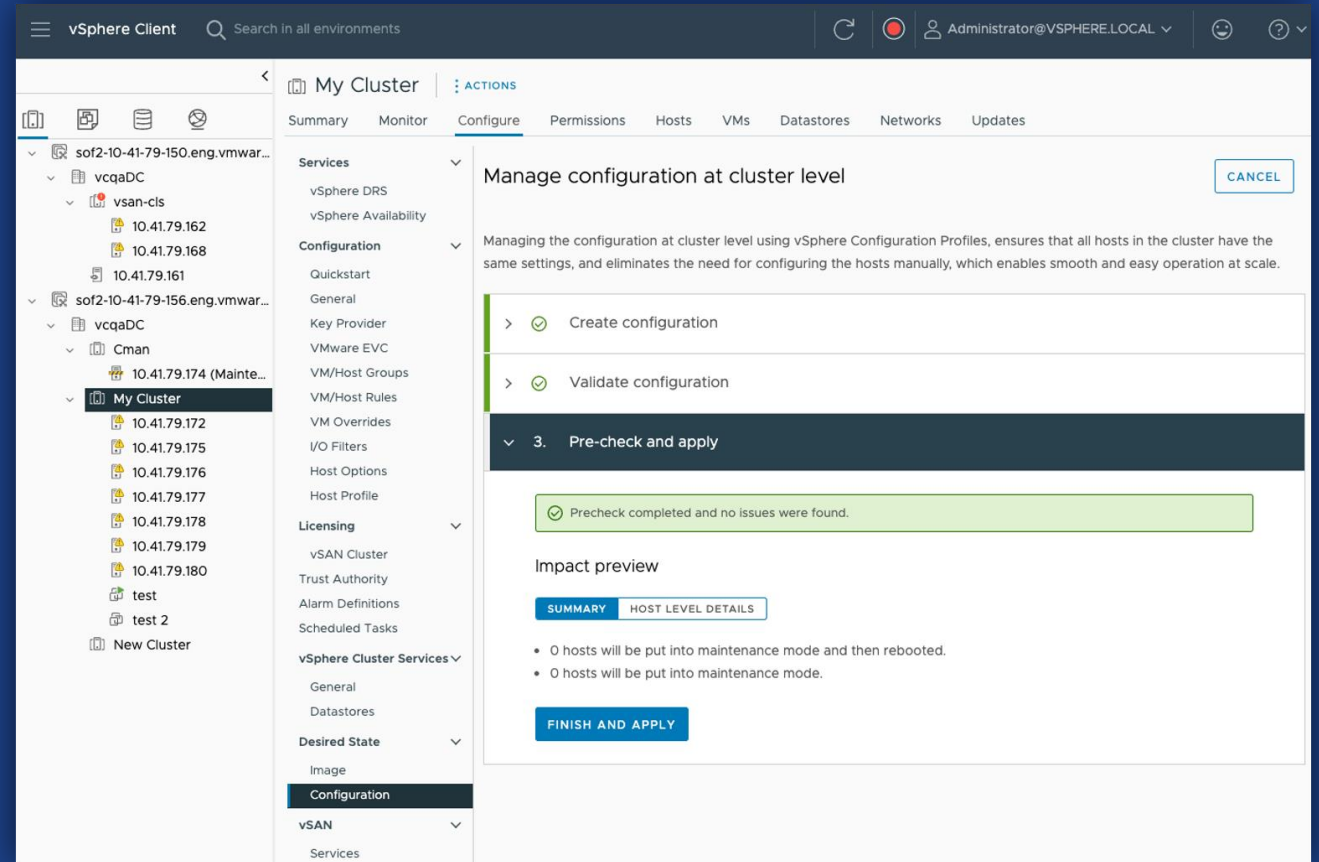
Manage configuration at a cluster level [i](#)

[CANCEL](#) [NEXT](#)



# Transition Cluster

- One click transition for empty clusters.
  - Default configuration document generated
- Transition workflow for brownfield clusters
  - Eligibility check
  - Import configuration
    - From JSON file
    - From reference host
- Validate configuration
- Precheck & Apply configuration



# Day 2 Operations

# Edit Cluster Configuration

- Create Configuration Draft
- Edit Document
  - Use the Draft Editor UI or
  - Export Configuration Document & Schema and use your favourite JSON text editor, than import back to vCenter
- Review and fix validation errors
- Run Precheck and Apply Changes
- Optionally export configuration and add document in source control

The screenshot displays the vCenter Configuration Editor interface. At the top, the title is 'Configuration' with a warning icon and the text 'No compliance information available.' Below this, there are tabs for 'Settings', 'Draft' (which is selected), 'Compliance', and 'Operation Details'. A light blue banner indicates 'You are viewing unapplied draft of edited settings.' Below the banner are buttons for 'SHOW CHANGES', 'RUN PRE-CHECK', 'APPLY CHANGES', and a three-dot menu. The main content area is split into a left sidebar and a right pane. The sidebar lists various configuration categories: network, network\_vss, security, services, storage, storage\_iscsi, storage\_iser, storage\_nvmeof, syslog, system (highlighted with a pencil icon), vmkernel, esx\_update (with a dropdown arrow), and software. The right pane shows the 'keyboard' settings page, with a back arrow and the text 'Go back to system'. It includes a note: 'This setting is not overridden for any hosts.' Below this are two tabs: 'COMMON SETTINGS' (active) and 'HOST OVERRIDES'. There are 'EDIT' and 'DELETE' buttons. The current setting is 'layout' with the value 'Italian'.

# Pre-check

## Remediate

- 1 Pre-check
- 2 Review Impact

## Pre-check

- ✓ No pre-check issues found  
Pre-check finished at 06/27/2023, 4:37:11 PM
- ✓ Pre-check completed successfully.
- ✓ 10.41.79.174
  - ✓ All pre-checks passed on the host and the host will be put into maintenance mode for remediation.
- > ⓘ Notifications

CLOSE **NEXT**

# Review Impact Summary

## Remediate

- 1 Pre-check
- 2 Review Impact**

## Review Impact

**SUMMARY** HOST-LEVEL DETAILS

Remediating the hosts in the cluster will have the following impact:

- 0 hosts will be put into maintenance mode and then rebooted.
- 1 hosts will be put into maintenance mode.

CLOSE **BACK** **REMEDIATE**

# Review Impact – Host-Level Details

## Remediate

- 1 Pre-check
- 2 Review Impact**

## Review Impact

SUMMARY **HOST-LEVEL DETAILS**

10.41.79.174 🏠

- Host will be put in maintenance mode.
- Configuration 'esx/system/keyboard' will be added on the host.

CLOSE BACK **REMEDIATE**

# Remediate

The screenshot displays the VMware Configuration Manager interface for a 'New Cluster'. The left sidebar contains a navigation menu with categories: Services (vSphere DRS, vSphere Availability), Configuration (Quickstart, General, Key Provider, VMware EVC, VM/Host Groups, VM/Host Rules, VM Overrides, I/O Filters, Host Options, Host Profile), Licensing (vSAN Cluster, Trust Authority, Alarm Definitions, Scheduled Tasks), vSphere Cluster Services (General, Datastores), Desired State (Image, Configuration), and vSAN (Services). The 'Configuration' section is active, showing a summary of remediation status: 'All hosts in this cluster are compliant. (Checked on 06/27/2023, 5:01:22 PM)'. Two green notification boxes indicate 'Remediation pre-check completed. No errors found.' and 'Remediation completed successfully.'. Below this, the 'Operation Details' tab is selected, showing a 'Remediation result' section with a 'SUMMARY' button. The summary indicates '1 Host succeeded', '0 Hosts failed', and '0 Hosts skipped'. A detailed log for host '10.41.79.174' shows the following events: '06/27/2023, 5:01:10 PM: Configuration Apply task finished on host '10.41.79.174'', '06/27/2023, 5:01:07 PM: Configuration 'esx:system:keyboard' remediation completed successfully.', '06/27/2023, 5:01:07 PM: Configuration 'esx:system:keyboard' remediation started.', '06/27/2023, 5:00:55 PM: Host in Maintenance Mode', '06/27/2023, 5:00:55 PM: Host entering Maintenance Mode', and '06/27/2023, 5:00:55 PM: Configuration Apply task started on host '10.41.79.174''.

**New Cluster** | ACTIONS

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

**Services**

- vSphere DRS
- vSphere Availability

**Configuration**

- Quickstart
- General
- Key Provider
- VMware EVC
- VM/Host Groups
- VM/Host Rules
- VM Overrides
- I/O Filters
- Host Options
- Host Profile

**Licensing**

- vSAN Cluster
- Trust Authority
- Alarm Definitions
- Scheduled Tasks

**vSphere Cluster Services**

- General
- Datastores

**Desired State**

- Image
- Configuration**

**vSAN**

- Services

### Configuration

✔ All hosts in this cluster are compliant. (Checked on 06/27/2023, 5:01:22 PM)

✔ Remediation pre-check completed. No errors found. [X]

✔ Remediation completed successfully. [X]

Settings | Draft | Compliance | **Operation Details**

DRAFT PRE-CHECK | PRE-CHECK STATUS | **REMEDIATION STATUS**

#### Remediation result

Completed 06/27/2023, 5:01:10 PM

**SUMMARY** | DETAILS

✔ 1 Host succeeded • 0 Hosts failed • 0 Hosts skipped

- ✔ 10.41.79.174
  - 📄 Notifications
    - 📄 06/27/2023, 5:01:10 PM: Configuration Apply task finished on host '10.41.79.174'
    - 📄 06/27/2023, 5:01:07 PM: Configuration 'esx:system:keyboard' remediation completed successfully.
    - 📄 06/27/2023, 5:01:07 PM: Configuration 'esx:system:keyboard' remediation started.
    - 📄 06/27/2023, 5:00:55 PM: Host in Maintenance Mode
    - 📄 06/27/2023, 5:00:55 PM: Host entering Maintenance Mode
    - 📄 06/27/2023, 5:00:55 PM: Configuration Apply task started on host '10.41.79.174'



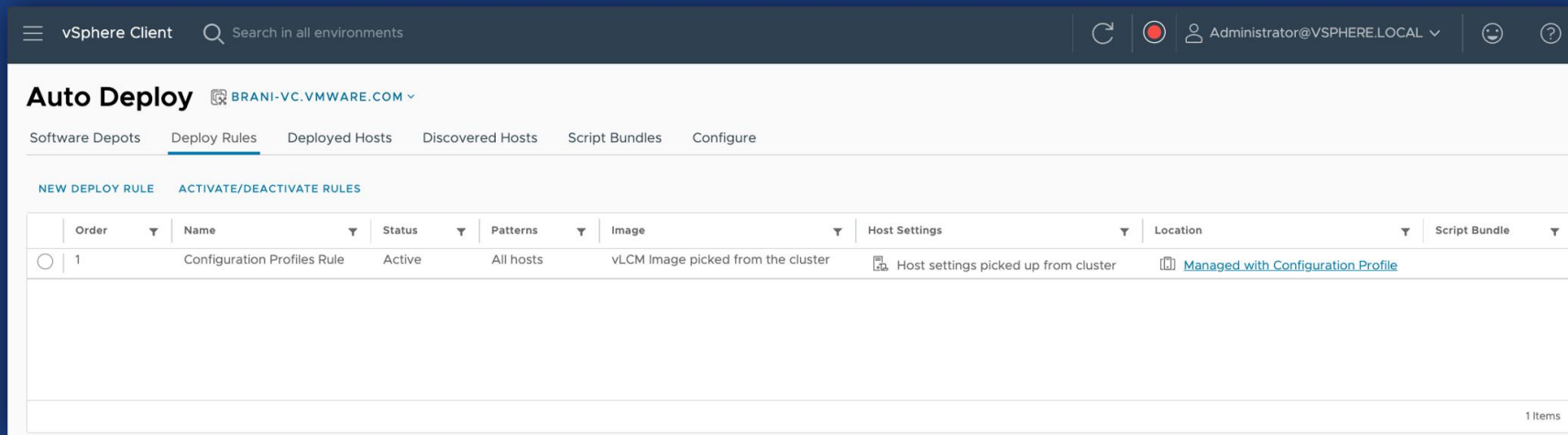
# Automation



# Bootstrap ESXi host with desired config

## AutoDeploy rule-based deployment

- Set cluster's desired software and configuration
- Create Rule to bootstrap servers into the cluster
- Power on servers
- Servers are added to the cluster
- Servers are compliant with desired software and configuration



The screenshot shows the vSphere Client interface for the 'Auto Deploy' section. The top navigation bar includes 'vSphere Client', a search bar, and user information 'Administrator@VSPHERE.LOCAL'. The main content area is titled 'Auto Deploy' and has a sub-header 'BRANI-VC.VMWARE.COM'. Below this, there are tabs for 'Software Depots', 'Deploy Rules', 'Deployed Hosts', 'Discovered Hosts', 'Script Bundles', and 'Configure'. The 'Deploy Rules' tab is active, showing a table with one rule. The table has columns for Order, Name, Status, Patterns, Image, Host Settings, Location, and Script Bundle. The rule listed is 'Configuration Profiles Rule' with status 'Active', pattern 'All hosts', and image 'vLCM Image picked from the cluster'. The location is 'Managed with Configuration Profile'. There is a 'NEW DEPLOY RULE' and 'ACTIVATE/DEACTIVATE RULES' link above the table. The bottom right corner of the table area says '1 Items'.

Order	Name	Status	Patterns	Image	Host Settings	Location	Script Bundle
1	Configuration Profiles Rule	Active	All hosts	vLCM Image picked from the cluster	Host settings picked up from cluster	Managed with Configuration Profile	

# REST APIs

The screenshot displays the vSphere Client interface, specifically the Developer Center's API Explorer. The left sidebar shows navigation options like Home, Shortcuts, Inventory, and Administration. The main area is titled 'Developer Center' and shows the 'API Explorer' tab. The 'Select Endpoint' section is set to 'brani-vc.vmware.com' and 'esx'. The 'API Categories' section is expanded to show the 'settings/clusters/configuration' category. A list of REST API endpoints is displayed, including GET, POST, and PUT methods for various configuration actions like export, apply, precheck, validate, import, and check compliance. Each endpoint is accompanied by a brief description of its function and any required privileges.

Method	Endpoint	Description
GET	/api/esx/settings/clusters/{cluster}/configuration	Get the cluster configuration and related metadata. The configuration returned by this API only contains the user-visible configuration properties available for a cluster. If you do not have all of the privileges described as follows: - Operation execution requires VcIntegrity.ClusterConfiguration.View. - The resource ClusterComputeResource referenced by the parameter cluster requires VcIntegrity.ClusterConfiguration.View.
POST	/api/esx/settings/clusters/{cluster}/configuration?action=exportConfig	This API will export the configuration associated with the cluster. If you do not have all of the privileges described as follows: - Operation execution requires VcIntegrity.ClusterConfiguration.Export. - The resource ClusterComputeResource referenced by the parameter cluster requires VcIntegrity.ClusterConfiguration.Export.
POST	/api/esx/settings/clusters/{cluster}/configuration?action=apply&vmw-task=true	Applies the cluster configuration associated with the cluster on the hosts associated with the cluster.
POST	/api/esx/settings/clusters/{cluster}/configuration?action=precheck&vmw-task=true	This API will perform precheck of the desired cluster configuration on each of the hosts in the cluster. The API will check against the desired image schema whether the desired configuration has added any requirements for the host to be put in maintenance mode or to be rebooted. The API will also invoke plugins provided by the configuration owner to detect if the host needs to be put in maintenance mode or to be rebooted. If any host needs to be put in maintenance mode or rebooted, prechecks will be performed at the cluster and host level. The result will specify the validation errors if the desired configuration is not valid on the host. If valid, the result will specify host impact of the desired configuration, and list the configurations that will change on applying the desired configuration. If host impact is maintenance mode or reboot, precheck results will also be specified in the result.
POST	/api/esx/settings/clusters/{cluster}/configuration?action=validate&vmw-task=true	Check whether the desired cluster configuration is valid.
POST	/api/esx/settings/clusters/{cluster}/configuration?action=importConfig&vmw-task=true	This API replaces the existing desired configuration of the cluster with the configuration provided in the input parameter document. The API will internally validate the input configuration against the configuration schema derived from the cluster software specification associated with the cluster. If the input configuration document passes validation, then it will be the desired configuration of the cluster. The result will specify whether the input document was import successfully. The result will also list the validation errors in case the import operation failed.
POST	/api/esx/settings/clusters/{cluster}/configuration?action=checkCompliance&vmw-task=true	Check all the hosts in the cluster for compliance with the desired document.

# Useful Links

- Transitioning from Host Profiles to vSphere Configuration Profiles
  - <https://core.vmware.com/resource/transitioning-host-profiles-vsphere-configuration-profiles>
- vSphere Configuration Profiles - Demo Videos
  - <https://core.vmware.com/vsphere-configuration-profiles#demos>
- Documentation for Technology Preview of vSphere Configuration Profiles feature.
  - <https://kb.vmware.com/s/article/88629>

If you liked this,  
you should also try

# Power Actions 1.0

The screenshot shows the vSphere Client interface with the Developer Center open. The 'Power Actions' tab is selected, and the console displays the following output:

```
RESET

To disable this warning and set your preference use the following command and restart PowerShell:
Set-PowerCLIConfiguration -Scope User -ParticipateInCEIP $true or $false.

Name                Port  User
-----
sc2-10-185-108-80.nimbus.eng... 443  VSPHERE.LOCAL\Administrator

PS /app> Get-VM

Name                PowerState Num CPUs MemoryGB
-----
VM-RedhatEnt74_64bit PoweredOff 1      2.000
VMware-Power-Action... PoweredOn  4      8.000
VM-Windows2016_64bi... PoweredOff 1      4.000
VM-Windows2016_64bi... PoweredOff 1      4.000

PS /app>
```

Below the console, the 'Recent Tasks' section is visible, showing a table with columns: Task Name, Target, Status, Details, Initiator, Queued For, Start Time, Completion Time, and Server. The table is currently empty, showing 0 items.

# VMware vCenter Converter 6.4

- VMware vCenter version 8.0
- VMware ESXi version 8.0
- VMware Workstation version 17
- VMware Fusion version 13
- NVMe disk controllers
- Paravirtual SCSI disk controllers
- VM Hardware version support up to v20
- UEFI secure boot



# vSphere UI Advanced Filter

The screenshot shows the vSphere UI 'Hosts' page. On the left, a sidebar lists 11 hosts with their IP addresses and status (e.g., Maintenance Mode). The main area displays a table of these hosts with columns for Name, State, Status, Cluster, Consumed Memory %, Uptime, and Memory Size (MB). An 'Advanced Filter' bar at the top of the table shows three active filters: 'Consumed Memory % Greater than: 20', 'Memory Size (MB) Greater than: 6 GB', and 'Name Starts with: 10.41.79'. The table contains 11 rows of data, all showing a 'Warning' status. At the bottom, there are 'Manage Columns' and 'Export' buttons, and a footer indicating 'Items per page 35' and '10 items'.

<input type="checkbox"/>	Name	↑	State	Status	Cluster	Consumed Memory %	Uptime	Memory Size (MB)
<input type="checkbox"/>	10.41.79.162		Connected	Warning	vsan-clc	51%	8 days	32,763.43 MB
<input type="checkbox"/>	10.41.79.168		Connected	Warning	vsan-clc	52%	8 days	32,763.43 MB
<input type="checkbox"/>	10.41.79.172		Connected	Warning	My Cluster	27%	8 days	8,187.43 MB
<input type="checkbox"/>	10.41.79.174 (Maintenance Mode)		Maintenance Mode	Warning	New Cluster	28%	8 days	8,187.43 MB
<input type="checkbox"/>	10.41.79.175		Connected	Warning	My Cluster	30%	8 days	8,187.43 MB
<input type="checkbox"/>	10.41.79.176		Connected	Warning	My Cluster	29%	8 days	8,187.43 MB
<input type="checkbox"/>	10.41.79.177		Connected	Warning	My Cluster	27%	8 days	8,187.43 MB
<input type="checkbox"/>	10.41.79.178		Connected	Warning	My Cluster	27%	8 days	8,187.43 MB
<input type="checkbox"/>	10.41.79.179		Connected	Warning	My Cluster	28%	8 days	8,187.43 MB
<input type="checkbox"/>	10.41.79.180		Connected	Warning	My Cluster	31%	8 days	8,187.43 MB

# vSphere UI Capacity and Usage summary card

The screenshot displays the vSphere Client interface for host 10.41.79.172. The left sidebar shows a tree view of the environment, including clusters and hosts. The main content area is divided into several sections:

- Issues and Alarms:** A notification bar at the top indicates "SSH for the host has been enabled".
- Host Details:** A card showing key system information:
  - Hypervisor: VMware ESXi, 8.0.2, 21895065
  - Model: VMware Virtual Platform
  - Processor Type: Intel(R) Xeon(R) Gold 6230 CPU @ 2.10GHz
  - Logical Processors: 2
  - NICs: 2
  - Virtual Machines: 0
  - State: Connected
  - Uptime: 8 days
- Capacity and Usage:** A card showing resource usage statistics, last updated at 12:12 AM:
  - CPU:** 4.09 GHz free, 0.1 GHz used, 4.19 GHz capacity
  - Memory:** 5.86 GB free, 2.13 GB used, 8 GB capacity
  - Storage:** 582.78 GB free, 4.97 GB used, 587.75 GB capacity
- Configuration:** A table listing various settings:

Image Profile	ESXi-8.0.2-21895065-standard
vSphere HA State	? N/A
Fault Tolerance (Legacy)	Unsupported
Fault Tolerance	Unsupported
EVC Mode	Disabled
- Related Objects:** A list of objects including the current cluster, "My Cluster".



# Send Feedback

vSphere Client Search in all environments Administrator@VSPHERE.LOCAL

### Send Feedback

Help us improve the vSphere Client by sharing your feedback with the team!

Select a type

Problem  Compliment  Idea

Description

Your feedback is welcome!

Email address (Optional) In case we need additional information

Additional details

.png, .jpeg files supported