



Managing Virtual SAN Clusters

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About Virtual SAN Clusters

A virtual storage area network (Virtual SAN) cluster is a collection of virtualized local physical storage resources. A Virtual SAN cluster provides isolation among devices that are physically connected to the same fabric by abstracting them into storage pools.

Cisco UCS Director allows you to create a Virtual SAN storage profile to define the storage requirements for the files and disks of a virtual machine by specifying a set of required storage capabilities.

In Cisco UCS Director you can create Virtual SAN qualification policies. A Virtual SAN qualification policy allows you to filter a unique list of servers based on defined requirements that include server model, storage controller model, and a minimum number of solid state drives and hard disk drives. After creating a Virtual SAN qualification policy, you can use the policy to qualify Virtual SAN-capable servers based on the defined requirements.

Cisco UCS Director supports the following Virtual SAN features:

- Setup of Virtual SAN clusters for manually configured EXi nodes
- Inventory of existing Virtual SAN clusters
- Management of Virtual SAN clusters under the Cisco UCS Director tabs
- Creation of Virtual SAN storage profiles
- Mechanism to select virtual machine storage profiles
- Ability to select datastores matching storage profiles
- Virtual machine provisioning with Virtual SAN capable datastores

Creating Virtual SAN Pods

A Virtual SAN pod lets you manage your Virtual SAN with the addition of a VMware Cloud account and Cisco UCS Manager or Cisco UCS Central . The Virtual SAN Pod Wizard lets you create one pod. Each pod is limited to one VMware Cloud account and one Cisco UCS Manager or Cisco UCS Central account.

Step 1 Choose **Administration > Guided Setup**.

Step 2 Double-click the **Virtual SAN Pod Configuration** icon.

Step 3 Click **Next**.

Step 4 On the **Pod** screen, create or choose an existing pod.

Note A single VSAN pod supports either a Cisco UCS Manager account or a Cisco UCS Central account.

Step 5 Click **Next**.

Step 6 On the **Cisco UCS Manager** screen, create a new Cisco UCS Manager account to add to the pod or choose an existing Cisco UCS Manager account.

You can use an existing Cisco UCS Manager account if you want the pod to reference an account that exists in Cisco UCS Director within another pod.

Step 7 Click **Next**.

Step 8 On the **Cisco UCS Central** screen, create a new Cisco UCS Central account to add to the pod or choose an existing Cisco UCS Central account.

You can use an existing Cisco UCS Central account by updating the pod.

Note You cannot edit the details in the **Cisco UCS Central** screen, if you have added Cisco UCS Manager account to the pod since a single VSAN pod supports either a Cisco UCS Manager account or a **Cisco UCS Central** account.

Step 9 Click **Next**.

Step 10 On the **VMware** screen, create a new VMware account to add to the pod or choose an existing VMware account.

You can use an existing VMware account if you want the pod to reference an account that exists in Cisco UCS Director within another pod.

While adding the VMware account, choose the **Use SSO** option and provide SSO credentials. SSO credentials are required for VM provisioning using storage profiles on the Virtual SAN cluster.

Step 11 At the final wizard screen, review the summary information.

Step 12 Click **Submit**.

Viewing Virtual SAN Pod Reports

Step 1 Choose **Hyper Converged > Virtual SAN**.

Step 2 On the **Virtual SAN** page, click **Pods**.

Step 3 Click the row with the Virtual SAN pod for which you want to view the report.

Step 4 Click **View Details**.

The Virtual SAN pod report provides information on **Virtual SAN Clusters**, **Storage Profile**, **Service Profile Templates**, **Qualification Policies**, and **System Tasks**.

Alternately you can also view the Virtual SAN pod report by choosing the Virtual SAN pod on the **Converged** screen.

Viewing Virtual SAN Cluster Reports

Step 1 Choose **Hyper Converged > Virtual SAN**.

Step 2 On the **Virtual SAN** page, click **Pods**.

Step 3 Click the row with the pod associated with the Virtual SAN cluster for which you want to view a report.

Step 4 Click **View Details**.

All the Virtual SAN clusters related to the selected pod are displayed on the **Clusters** screen.

Step 5 Click the row with the Virtual SAN cluster for which you want to view a report.

Step 6 Click **View Details** to see the details of the Virtual SAN cluster.

By default, the **Summary** screen appears. The Virtual SAN cluster report includes the **Service Request, Datastore Capacity Report, Hosts, Disk Groups, Disks, License, and Topology** screen.

Configuring Virtual SAN settings at the Pod Level

You can configure Virtual SAN settings at the pod level by editing the pod settings. You can select a bare metal agent server, a UCS service profile template, a LAN boot policy, a scrub policy, and various networking policies at the pod level. The selected defined networking policies are applied while creating the cluster in the pod. The UCS service profile template, bare metal agent, LAN boot policy, and scrub policy are required to support bare metal installation of ESXi on UCS servers.

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- Step 1** Choose **Hyper Converged > Virtual SAN**.
 - Step 2** On the **Virtual SAN** page, click **Pods**.
 - Step 3** Click on the row with the Virtual SAN pod for which you want to configure the pod settings.
 - Step 4** Click **Pod Settings**.
 - Step 5** On the **Pod Settings** screen, select the bare metal agent servers, and select one or more UCS service profile templates, LAN boot policies, and the scrub policies.
 - Step 6** Click **Next**.
 - Step 7** On the **Network Policies** screen, select one or more networking policies to apply at the pod level.
 - Step 8** Click **Submit**.
-

Creating Virtual SAN Clusters

Before you begin

- Configure Virtual SAN pod settings.
See [Configuring Virtual SAN settings at the Pod Level, on page 4](#).
- Ensure that the Virtual SAN pod is associated with a VMware account and a Cisco UCS Manager account.

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- Step 1** Choose **Hyper Converged > Virtual SAN**.
 - Step 2** On the **Virtual SAN** page, click **Pods**.
 - Step 3** Click the row with the Virtual SAN pod on which you want to create the Virtual SAN cluster.
 - Step 4** Click **View Details**.
 - Step 5** Click **Virtual SAN Clusters**.
 - Step 6** Click **Create Virtual SAN Cluster**.
 - Step 7** On the **Create Virtual SAN Cluster** screen, complete the fields for the host.
If you are creating a Virtual SAN cluster using ESXi, choose **ESXi Host**.

If you choose **ESXi Host**, you must provide the host node IP addresses in a comma-separated list.

The **Claim Disk Mode** drop-down list lets you expand the cluster by adding disks. If automatic mode is selected, eligible disks from all hosts will be claimed automatically to contribute to the Virtual SAN datastore capacity. Manual mode creates a Virtual SAN cluster with a capacity of 0 GB, and you will have to manually add disks to the cluster.

Step 8 Click **Next**.

Step 9 Leave the DV Switch field empty, and click **Next**.

Note If you already have a Virtual SAN cluster created using Cisco UCS Director and would like to use the DV Switch created for it, select the existing DV Switch.

Step 10 Complete the fields for the data center and cluster name, and check **Enable HA** and **Enable DRS** if you want to enable HA or DRS on the Virtual SAN cluster.

Step 11 Click **Next**.

Step 12 Select the RAID mode and choose the MTU size.

The default RAID mode is JBOD, and the default MTU size is 1500.

Step 13 Click **Next**.

Step 14 On the **Summary** screen, review the **Service Profile Template Compliance** report.

The compliance report verifies if the pre-requisites were met and if the UCS service profile template was configured properly. The compliance report verifies network configuration requirements, boot policy requirements, LAN boot policy requirements, scrub policy requirements, BIOS policy requirements, and local disk configuration policy requirements.

If any of the fields are not compliant, you should edit the corresponding policy in the UCS service profile template so that they are compliant with all requirements.

Step 15 Click **Submit**.

The Virtual SAN cluster appears on the **Virtual SAN Clusters** screen of the Virtual SAN pod report.

Expanding Virtual SAN Clusters

When expanding a Virtual SAN Cluster, the HA and DRS settings will reflect those of the existing cluster.

For information on enabling or disabling HA on a Virtual SAN cluster, see [Enabling HA on Virtual SAN Clusters, on page 10](#) and [Disabling HA on Virtual SAN Clusters, on page 10](#).

For information on enabling or disabling DRS on a Virtual SAN cluster, see [Enabling DRS on Virtual SAN Clusters, on page 11](#) and [Disabling DRS on Virtual SAN Clusters, on page 12](#).

Step 1 Choose **Hyper Converged > Virtual SAN**.

Step 2 On the **Virtual SAN** page, click **Pods**.

Step 3 Click the row with the Virtual SAN pod associated with the Virtual SAN Cluster that you want to expand.

Step 4 Click **View Details**.

All the Virtual SAN clusters associated with the pod are displayed.

Step 5 Click the row with the Virtual SAN cluster that you want to expand.

Step 6 Click **Expand Virtual SAN Cluster**.

Step 7 In the **Expand Virtual SAN Cluster** screen, complete the fields for the UCS Server, UCS Server Pool, or ESXi host.

If you are expanding a Virtual SAN cluster from a bare metal server, choose **UCS Server** or **UCS Server Pool** to install ESXi. Otherwise, choose **ESXi Host**.

By default, the RAID mode and MTU size values are automatically populated from the values selected during the initial cluster configuration.

Step 8 Click **Next**, and click **Submit**.

Virtual SAN Clusters from a Bare Metal Server

Prerequisites for Creating a Virtual SAN from a Bare Metal Server

Before you create a Virtual SAN from a bare metal server, you must meet the following prerequisites.

VMware Virtual SAN Controller Requirements

For CISCO UCS 240 M3 Rack Servers, the `storcliExtractor.sh` script will automatically create a virtual RAID 0 drive for each physical HDD that VMware Virtual SAN uses.

To configure virtual RAID 0 with the LSI controller:

- Download the MegaRAID StorCLI software from the Avago Technologies website.

For more information, see <http://www.avagotech.com/support/download-search/>.

- Run the `storcliExtractor.sh` script located in the `opt/scripts` directory.

The `storcliExtractor.sh` script extracts the downloaded MegaRAID StorCLI software and makes it available for use. The script is available with the Cisco UCS Director Bare Metal Agent, Release 5.2 patch.

UCS Service Profile Template Configuration Requirements

The following UCS service profile template configuration is required for bare metal server actions and workflows.

This configuration does not include all Cisco UCS service profile settings. The settings shown here are specific to an implementation of Cisco UCS with VMware Virtual SAN.



Note You must create a new UCS service profile template. Cisco UCS with VMware Virtual SAN implementation does not support updating an existing UCS service profile template.

When creating a Virtual SAN UCS service profile template, the template should not be associated with any server pool. You can select the **Assign Later** option in the server pool template, to assign the server pool to the Virtual SAN service profile.

For more information on creating a Virtual SAN UCS service profile template, see [About Virtual SAN UCS Service Profile Templates](#).

BIOS Policy Requirements

Cisco UCS C240 M3 servers require a BIOS policy with the USB UI, USBPort:SDCard advanced setting set to Enable.

Network Configuration Requirements

Make sure that three vNICs are defined in the template. Cisco UCS Director Virtual SAN workflows define the management on the first vNIC during the ESXi installation. The next two vNICs are used in explicit failover order for the Virtual SAN traffic.



Note If the vNICs have different VLANs specified, make sure that the vNICs are ordered, and that the first vNIC satisfies the PXE VLANs requirement.

Virtual SAN requires that multicast is enabled on the network. You must define a multicast policy and make sure that the Virtual SAN VLAN is set to use the defined multicast policy.

You can configure jumbo Maximum Transition Unit (MTU) end-to-end across Cisco Data Center devices in a network.

For more information on setting up Cisco uplink switches, see:

[Configuration of Jumbo MTU on Nexus 5000 and 7000 Series](#)

[UCS with VMware ESXi End-to-End Jumbo MTU Configuration Example](#)



Note VLANs and MAC pools must be created and configured prior to service profile creation, and the VLAN must have a multicast policy enabled. You must create the boot policy with a Secure Digital (SD) card as the preferred boot option, and dedicated VMkernel ports are used for VSAN and vMotion traffic.

Boot Policy Requirements

Cisco UCS Director Virtual SAN workflows support installing ESXi with an SD card. The UCS service profile template should specify the SD card as a boot device in the boot order. You must define a boot policy with the boot order SD card and set boot policy to the UCS service profile template.

Local Disk Configuration Policy Requirements

Different Mode settings are required based on the server and storage controller RAID Mode.

To use an SD card, the FlexFlash state must be set to Enable.

LAN Boot Policy Requirement for Virtual SAN

You must define a boot policy with the LAN on the first vNIC defined in the UCS service profile template configuration set first in the boot order.

Creating Virtual SAN Clusters Using Cisco UCS Bare Metal Servers

You can create a Virtual SAN cluster using a Cisco UCS bare metal server.

Before you begin

- Create a Virtual SAN pod with Cisco UCS Manager and VMware accounts if the Cisco UCS servers are managed through Cisco UCS Manager.
- Create a Virtual SAN pod with Cisco UCS Central and VMware accounts if the Cisco UCS servers are managed through Cisco UCS Central.
- Add a Cisco UCS Director Bare Metal Agent account, configure DHCP, and start services.
- Configure the pod settings with bare metal agent and UCS service profile template and policies if Cisco UCS Manager is being used within the Virtual SAN pod.
- Configure the pod settings with bare metal agent and global service profile template and global policies if Cisco UCS Central is being used within the Virtual SAN pod.
- Complete the prerequisites for creating Virtual SAN clusters using Cisco UCS bare metal servers.
- Download the ESXi install (ISO) images and run the `isoExtractor.sh` script.

You must select ESXi 5.5, 6.0, or 6.5 VSAN template as the OS type and provide the required inputs to create an ESXi OS catalog for Virtual SAN. The created ESXi OS catalog is selected when creating a Virtual SAN cluster using a Cisco UCS bare metal server.

For more information about adding a Cisco UCS Director Bare Metal Agent account, see the [Cisco UCS Director Bare Metal Agent Installation and Configuration Guide](#).

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- Step 1** Choose **Hyper Converged > Virtual SAN**.
- Step 2** On the **Virtual SAN** page, click **Pods**.
- Step 3** Click the row with the Virtual SAN pod on which you want to create the Virtual SAN cluster.
- Step 4** Click **View Details**.
- Step 5** Click **Virtual SAN Clusters**.
- Step 6** Click **Create Virtual SAN Cluster**.
- Step 7** On the **Create Virtual SAN Cluster** screen, complete the fields for the host.
- If you are installing ESXi on a bare metal server, choose **UCS Server** or **UCS Server Pool**. The server pools and policies are listed based on the option selected.
- The **Claim Disk Mode** drop-down list lets you expand the cluster by adding disks. If automatic mode is selected, eligible disks from all hosts will be claimed automatically to contribute to the Virtual SAN datastore capacity. Manual mode creates a Virtual SAN cluster with a capacity of 0 GB, and you will have to manually add disks to the cluster.
- Step 8** Select an existing DV Switch, choose the network policies you want to use.
- Note** The selection of an existing DV Switch is optional. If a DV Switch is not selected, a new DV Switch will be created as part of the cluster.
- Step 9** Click **Next**.
- Step 10** Complete the fields for the data center and cluster name, and check **Enable HA** and **Enable DRS** if you want to enable HA or DRS on the Virtual SAN cluster.
- Step 11** Click **Next**.
- Step 12** Select the RAID mode, and click **Next**.

The default RAID mode is JBOD.

Step 13 In the **Summary** pane, review the **Service Profile Template Compliance** report.

The compliance report verifies if the pre-requisites were met and if the UCS service profile template was configured properly. The compliance report verifies network configuration requirements, boot policy requirements, LAN boot policy requirements, scrub policy requirements, BIOS policy requirements, and local disk configuration policy requirements.

If any of the fields are not compliant, you should edit the corresponding policy in the UCS service profile template so that they are compliant with all requirements.

Step 14 Click **Submit**.

The Virtual SAN cluster appears on the **Clusters** screen of the Virtual SAN pod report.

Expanding Virtual SAN Clusters from a Bare Metal Server

When expanding a Virtual SAN Cluster from a bare metal server, the HA and DRS settings will reflect those of the existing cluster.

For information on enabling or disabling HA on a Virtual SAN cluster, see [Enabling HA on Virtual SAN Clusters, on page 10](#) and [Disabling HA on Virtual SAN Clusters, on page 10](#).

For information on enabling or disabling DRS on a Virtual SAN cluster, see [Enabling DRS on Virtual SAN Clusters, on page 11](#) and [Disabling DRS on Virtual SAN Clusters, on page 12](#).

Step 1 Choose **Hyper Converged > Virtual SAN**.

Step 2 On the **Virtual SAN** page, click **Pods**.

Step 3 Click the row with the Virtual SAN pod associated with the Virtual SAN Cluster that you want to expand.

Step 4 Click **View Details**.

All the Virtual SAN clusters associated with the pod are displayed.

Step 5 Click the row with the Virtual SAN cluster that you want to expand.

Step 6 Click **Expand Virtual SAN Cluster**.

Step 7 On the **Expand Virtual SAN Cluster** screen, complete the host details field.

Choose **UCS Server** or **UCS Server Pool** to install ESXi on the bare metal server.

By default, the RAID mode and MTU size values are automatically populated from the values selected during the initial cluster configuration. You have the option to change the RAID mode from the drop-down menu.

Note A warning message appears if you change the RAID mode to a value different from the RAID mode selected during the initial cluster configuration.

Step 8 Click **Next**, and click **Submit**.

Assigning Virtual SAN Clusters to a Pod

You can discover existing Virtual SAN clusters and assign them to an existing Virtual SAN pod.

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- Step 1** Choose **Hyper Converged > Virtual SAN**.
 - Step 2** On the **Virtual SAN** page, click **Pods**.
 - Step 3** Click the row with the Virtual SAN pod to which you want to assign a Virtual SAN cluster.
 - Step 4** Click **View Details**.
 - Step 5** Click **Virtual SAN Clusters**.
 - Step 6** Click **Assign Cluster(s) to Pod**.
The **Assign Cluster(s) to Pod** screen displays all Virtual SAN clusters discovered from existing VMware vCenter accounts added in Cisco UCS Director.
 - Step 7** In the **Assign Cluster(s) to Pod** screen, select one or more Virtual SAN clusters and click **Submit**.
The assigned Virtual SAN cluster appears on the **Virtual SAN Clusters** details screen for the selected pod.
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Enabling HA on Virtual SAN Clusters

Cisco UCS Director lets you enable VMware vSphere HA on Virtual SAN Clusters. You can enable HA when creating a new Virtual SAN cluster, or enable HA on an existing Virtual SAN cluster. When enabling HA on an existing Virtual SAN cluster, host monitoring and admission control are automatically enabled by default to ensure that there are sufficient resources available in a cluster when recovering from a failure.

-
- Step 1** Choose **Hyper Converged > Virtual SAN**.
 - Step 2** On the **Virtual SAN** page, click **Pods**.
 - Step 3** Click the row with the Virtual SAN pod associated with the Virtual SAN cluster on which you want to enable HA.
 - Step 4** Click **View Details**.
All the Virtual SAN clusters associated with the pod are displayed.
 - Step 5** Click the row with the Virtual SAN cluster on which you want to enable HA.
 - Step 6** Click **Enable HA**.
 - Step 7** In the **Enable HA** screen, choose the **Host Isolation Response**, **VM Monitoring**, and **Datastore Heartbeating** options.
 - Step 8** Click **Submit**.
-

Disabling HA on Virtual SAN Clusters

SUMMARY STEPS

1. \
2. Choose **Hyper Converged > Virtual SAN**.

3. On the **Virtual SAN** page, click **Pods**.
4. Click the row with the Virtual SAN pod associated with the Virtual SAN cluster on which you want to disable HA.
5. Click **View Details**.
6. Click the row with the Virtual SAN cluster on which you want to disable HA.
7. Click **Disable HA**.
8. In the **Disable HA** screen, click **Submit**.

DETAILED STEPS

- Step 1** \
- Step 2** Choose **Hyper Converged > Virtual SAN**.
- Step 3** On the **Virtual SAN** page, click **Pods**.
- Step 4** Click the row with the Virtual SAN pod associated with the Virtual SAN cluster on which you want to disable HA.
- Step 5** Click **View Details**.
All the Virtual SAN clusters associated with the pod are displayed.
- Step 6** Click the row with the Virtual SAN cluster on which you want to disable HA.
- Step 7** Click **Disable HA**.
- Step 8** In the **Disable HA** screen, click **Submit**.
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Enabling DRS on Virtual SAN Clusters

Cisco UCS Director lets you enable VMware Distributed Resource Scheduler (DRS) on Virtual SAN Clusters. You can enable DRS when creating a new Virtual SAN cluster, or enable DRS on an existing Virtual SAN cluster. When enabling DRS on an existing Virtual SAN cluster you can specify the DRS automation level.

For more information on using DRS affinity rules and automation levels, see [About VMware Distributed Resource Scheduler](#).

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- Step 1** Choose **Hyper Converged > Virtual SAN**.
- Step 2** On the **Virtual SAN** page, click **Pods**.
- Step 3** Click the row with the Virtual SAN pod associated with the Virtual SAN cluster on which you want to enable DRS.
- Step 4** Click **View Details**.
All the Virtual SAN clusters associated with the pod are displayed.
- Step 5** Click the row with the Virtual SAN cluster on which you want to enable DRS.
- Step 6** Click **Enable DRS**.
- Step 7** In the **Enable DRS** screen, check the **Enable DRS** checkbox and select the DRS automation level.
- Step 8** Click **Submit**.
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Disabling DRS on Virtual SAN Clusters

SUMMARY STEPS

1. Choose **Hyper Converged > Virtual SAN**.
2. On the **Virtual SAN** page, click **Pods**.
3. Click the row with the Virtual SAN pod associated with the Virtual SAN cluster on which you want to disable DRS.
4. Click **View Details**.
5. Click the row with the Virtual SAN cluster on which you want to disable DRS.
6. Click **Disable DRS**.
7. In the **Disable DRS** screen, click **Submit**.

DETAILED STEPS

- Step 1** Choose **Hyper Converged > Virtual SAN**.
- Step 2** On the **Virtual SAN** page, click **Pods**.
- Step 3** Click the row with the Virtual SAN pod associated with the Virtual SAN cluster on which you want to disable DRS.
- Step 4** Click **View Details**.
All the Virtual SAN clusters associated with the pod are displayed.
- Step 5** Click the row with the Virtual SAN cluster on which you want to disable DRS.
- Step 6** Click **Disable DRS**.
- Step 7** In the **Disable DRS** screen, click **Submit**.
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Viewing Virtual SAN Storage Profile Reports

- Step 1** Choose **Hyper Converged > Virtual SAN**.
- Step 2** On the **Virtual SAN** page, click **Pods**.
- Step 3** Click the row with the Virtual SAN pod for which you want to view the storage profile..
- Step 4** Click **View Details**.
- Step 5** Click **Storage Profile**.
All the Virtual SAN storage profiles displayed in Cisco UCS Director are at cloud-level and are associated with a selected pod.
- Step 6** Click the row with the Virtual SAN storage profile you want to view.
- Step 7** Click **View Details** to see the details of the Virtual SAN storage profile.
-

Creating Virtual SAN Storage Profiles

- Step 1** \
- Step 2** Choose **Hyper Converged > Virtual SAN**.
- Step 3** On the **Virtual SAN** page, click **Pods**.
- Step 4** Click the row with the Virtual SAN pod.
- Step 5** Click **View Details**.
- Step 6** Click **Storage Profile**.
- Step 7** Click **Create Virtual SAN Storage Profile**.
- Step 8** In the **Create Storage Profile** screen, enter the storage profile name, the storage profile description, and complete the rule-set fields based on vendor-specific capabilities.
- Step 9** Click **Submit**.
-

Viewing Virtual SAN UCS Service Profile Templates

Before you begin

Create a Virtual SAN UCS service profile template.

See [About Virtual SAN UCS Service Profile Templates](#).

- Step 1** Choose **Hyper Converged > Virtual SAN**.
- Step 2** On the **Virtual SAN** page, click **Pods**.
- Step 3** Click the row with the Virtual SAN pod for which you want to view the UCS Virtual SAN service profile templates.
- Step 4** Click **View Details**.
- Step 5** Click the **Service Profile Template**.
All the Virtual SAN UCS service profile templates associated with the pod are displayed.
- Step 6** Click the row with the Virtual SAN UCS service profile template.
- Step 7** Click **View Details**.
- By default, the **Summary** screen appears. You can also view related local disk configuration policy, boot policy, vNIC, scrub policy and BIOS policy details, respectively, by clicking **Local Disk Configuration Policies**, **Boot Policies**, **vNICs**, **Scrub Policy**, or **BIOS Policy**.
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Claiming Virtual SAN Disks

At the Virtual SAN cluster level, you can claim disks to create shared storage across multiple hosts.

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- Step 1** Choose **Hyper Converged > Virtual SAN**.
 - Step 2** On the **Virtual SAN** page, click **Pods**.
 - Step 3** Click the row with the Virtual SAN pod associated with the Virtual SAN cluster.
 - Step 4** Click **View Details**.
All the Virtual SAN clusters associated with the pod are displayed.
 - Step 5** Click the row with the Virtual SAN cluster.
 - Step 6** Click **Claim Disk**.
The dialog box displays all of the hosts with available unused data disks.
 - Step 7** In the **Claim Disk** screen, choose the disks you want to claim, and click **Submit**.
-

The all disks will appear on the **Disks** screen under the selected Virtual SAN cluster report.

Adding Disks to a Virtual SAN Disk Group

You can add a disk group to a Virtual SAN disk group.

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- Step 1** Choose **Hyper Converged > Virtual SAN**.
 - Step 2** On the **Virtual SAN** page, click **Pods**.
 - Step 3** Click the row with the Virtual SAN pod associated with the Virtual SAN host.
 - Step 4** Click **View Details**.
All the Virtual SAN clusters associated with the pod are displayed.
 - Step 5** Click the row with the Virtual SAN cluster.
 - Step 6** Click **View Details**.
 - Step 7** Click **Disk Groups**.
All of the disk groups associated with the Virtual SAN cluster are displayed.
 - Step 8** Click the row with the disk group to which you want to add disks.
 - Step 9** Click **Add Disks to Disk Group**.
 - Step 10** In the **Add disks to Disk Group** screen, select the disks to add to the Virtual SAN disk group.
 - Step 11** Click **Submit**.
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Viewing Virtual SAN Disk Groups

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- Step 1** Choose **Hyper Converged > Virtual SAN**.
 - Step 2** On the **Virtual SAN** page, click **Pods**.
 - Step 3** Click the row with the Virtual SAN pod associated with the Virtual SAN cluster.
 - Step 4** Click **View Details**.
All the Virtual SAN clusters associated with the pod are displayed.

- Step 5** Click the row with the Virtual SAN cluster.
 - Step 6** Click **View Details**.
 - Step 7** Click **Disk Groups** to view the details for the disk groups associated with the Virtual SAN cluster.
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Viewing Virtual SAN Qualification Policy Reports

- Step 1** Choose **Hyper Converged > Virtual SAN**.
 - Step 2** On the **Virtual SAN** page, click **Pods**.
 - Step 3** Click the row with the Virtual SAN pod for which you want to view the Virtual SAN qualification policy report.
 - Step 4** Click **View Details**.
 - Step 5** Click **Qualification Policies**.
All the Virtual SAN qualification policies associated with the pod are displayed.
-

Creating Virtual SAN Qualification Policies

You can create and define a qualification policy at the pod level. You can create new qualification policies with different combinations of server qualifications depending on your requirements.

- Step 1** Choose **Hyper Converged > Virtual SAN**.
 - Step 2** On the **Virtual SAN** page, click **Pods**.
 - Step 3** Click the row with the Virtual SAN pod on which you want to create the Virtual SAN qualification policy and then click **View Details**.
 - Step 4** Click **Qualification Policies**.
 - Step 5** Click **Create Virtual SAN Qualification Policy**.
 - Step 6** On the **Create Virtual SAN Qualification Policy** screen, in the **Standard Policy** drop-down menu, choose **None**, **Standard M3 Policy**, or **Standard M4 Policy**, and complete the fields for the qualification policy. If you choose **Standard M3 Policy** or **Standard M4 Policy**, the **Server Model PID (Regex)**, **Storage Controller Model (Regex)**, **SSD count**, and **HDD Count** fields are automatically populated.
 - Step 7** Click **Submit**.
-

Qualifying Virtual SAN Capable Servers

After you create a Virtual SAN qualification policy, perform the following procedure to qualify any Virtual SAN-capable servers.

- Step 1** Choose **Hyper Converged > Virtual SAN**.

- Step 2** On the **Virtual SAN** page, click **Pods**.
 - Step 3** Click the row with the Virtual SAN pod for which you want to qualify any Virtual SAN-capable servers.
 - Step 4** Click **View Details**.
 - Step 5** Click **Qualification Policies**.
 - Step 6** Click **Run Qualification Task**.
 - Step 7** On the **Run Qualification Task** screen, click **Submit**.
The Virtual SAN-qualified servers are added to the server pool.
-

Viewing Virtual SAN Qualified Servers

- Step 1** Choose **Physical > Compute**.
 - Step 2** Expand the pod and then click the Cisco UCS Manager account.
 - Step 3** Click **Organizations**.
 - Step 4** Click the row with the organization that contains the server pool.
 - Step 5** Click **View Details**.
 - Step 6** Click **Server Pools**.
 - Step 7** Click the row with the server pool to which you have added the qualified Virtual SAN servers.
 - Step 8** Click **View Details**.
 - Step 9** Click **UCS Servers** to view all Virtual SAN servers qualified using the Virtual SAN qualification policy.
-

Adding Virtual SAN Qualified Servers to a Virtual SAN Cluster

After you qualify any Virtual SAN capable servers, you can add the discovered servers to a Virtual SAN cluster.

- Step 1** Choose **Hyper Converged > Virtual SAN**.
- Step 2** On the **Virtual SAN** page, click **Pods**.
- Step 3** Click the row with the Virtual SAN pod on which you want to create the Virtual SAN cluster.
- Step 4** Click **View Details**.
- Step 5** Click **Virtual SAN Clusters**.
- Step 6** Click **Create Virtual SAN Cluster**.
- Step 7** On the **Create Virtual SAN Cluster** screen, choose **UCS Server Pool** from the **Scope** drop-down menu.
- Step 8** Click the **Select** button to select the discovered Virtual SAN qualified servers to add to the Virtual SAN cluster.
- Step 9** Complete the fields for the host, data center, cluster details, and RAID mode.
The default RAID mode is JBOD.

Step 10 Click **Submit**.

Viewing Virtual SAN System Tasks

Step 1 Choose **Hyper Converged > Virtual SAN**.

Step 2 On the **Virtual SAN** page, click **Pods**.

Step 3 Choose the row with the Virtual SAN pod for which you want to view the related Virtual SAN system tasks.

Step 4 Click **View Details**.

Step 5 Click **System Tasks**.

All the Virtual SAN system tasks for the accounts associated with the pod are displayed.

What to do next

For more information on executing, enabling, and disabling system tasks, see the [Cisco UCS Director Administration Guide](#).

Viewing Virtual SAN Hardware Topologies

You can view the hardware topology for a Virtual SAN cluster. This topology view displays the connectivity between the cluster, hosts, and VMs.

Step 1 Choose **Hyper Converged > Virtual SAN**.

Step 2 On the **Virtual SAN** page, click **Pods**.

Step 3 Click the row with the Virtual SAN pod associated with the Virtual SAN cluster.

Step 4 Click **View Details**.

All the Virtual SAN clusters associated with the pod are displayed.

Step 5 Click the row with the Virtual SAN cluster.

Step 6 Click **View Details**.

Step 7 Click **Topology**.

Step 8 Click the row with the topology.

Step 9 Click **Sync Topology**, and click **Submit** and **Ok** to refresh the topology report.

The **Sync Status** column displays the current status of the topology sync.

Step 10 Click **View Connectivity**.

The **Topology View - Host VM Mapping** screen displays the Virtual SAN cluster and associated hosts, and the VMs associated with the host.

Step 11 If desired, you can modify the following view options:

- **View Mode** drop down list -- Adjusts the spacing and positioning of the devices. The mode determines which options are available for you to customize the topology view. You can choose between the following view modes:
 - Hierarchical

- Concentric
 - Circular
 - Force Directed
- **Allow Item Spacing** check box -- Increases the distance between devices for the Hierarchical view mode.

Moving Virtual SAN Hosts to Maintenance Mode

Cisco UCS Director lets you move Virtual SAN hosts to the following maintenance modes:

- **Ensure accessibility** -- This is the default host maintenance mode. All accessible virtual machines on the host remain accessible when the host is either powered off or removed from the cluster. Partial data migration is performed.
- **Full data migration** -- This host maintenance mode consumes the most time and resources. VMware Virtual SAN moves all data to other hosts in the cluster and fixes availability compliance for the affected components in the cluster. This option can be used to permanently migrate a host. The host cannot enter maintenance mode if a virtual machine object has data on the host, and is not accessible and cannot be fully migrated. When migrating data from the last host in the cluster, you must make sure that you migrate the virtual machines to another datastore, and then put the host in maintenance mode.
- **No data migration** -- This host maintenance mode does not migrate any data from the host. If the host is powered off or removed from the cluster, some virtual machines may become inaccessible.

Before you begin

Before you move a Virtual SAN host to maintenance mode, you must note the following:

- All associated virtual machines should be powered off. The task fails if any associated virtual machines are not powered off.
- The task moves all the virtual machines to other hosts in the cluster.
- The virtual machines should migrate storage to other hosts in the cluster. You should verify the data before and after moving the host to maintenance mode.

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- Step 1** On the menu bar, choose **HyperConverged > Virtual SAN**.
 - Step 2** Choose **Hyper Converged > Virtual SAN**.
 - Step 3** On the **Virtual SAN** page, click **Pods**.
 - Step 4** Click the row with the Virtual SAN pod associated with the Virtual SAN host.
 - Step 5** Click **View Details**.
All the Virtual SAN clusters associated with the pod are displayed.
 - Step 6** Click the row with the Virtual SAN cluster that you want to move to maintenance mode.
 - Step 7** Click **Move Host To Maintenance Mode**.

- Step 8** On the **Move Host To Maintenance Mode** screen choose the Host Node, and in the **Maintenance Mode** drop-down menu, choose **Ensure accessibility**, **Full data migration**, or **No data migration**.
- Step 9** Click **Submit**.
-

Decommissioning Virtual SAN Hosts

Cisco UCS Director lets you decommission a Virtual SAN host from a Virtual SAN cluster. The **Decommission Host** action completely removes a host from a cluster by performing the following tasks:

- Puts the Virtual SAN host node into maintenance mode.
- Removes the Virtual SAN host from any associated DV Switch.
- Removes the Virtual SAN host from the Virtual SAN cluster and VMware vCenter.

In the **Decommission Host** screen, you can also select the following decommission options:

- Disassociate UCS Service Profile - This option lets you decommission the Virtual SAN host from the Virtual SAN cluster, and also disassociates the respective UCS Service profile from Cisco UCS Manager.
- Delete UCS Service Profile - This option lets you decommission the Virtual SAN host from the Virtual SAN cluster, and also disassociates and deletes the respective UCS Service profile from Cisco UCS Manager.



Note You cannot decommission a Virtual SAN host from a Virtual SAN cluster that is running with the minimum number of required nodes.

- Step 1** Choose **Hyper Converged > Virtual SAN**.
- Step 2** On the **Virtual SAN** page, click **Pods**.
- Step 3** Click the row with the Virtual SAN pod associated with the Virtual SAN host.
- Step 4** Click **View Details**.
All the Virtual SAN clusters associated with the pod are displayed.
- Step 5** Click the row with the Virtual SAN cluster from which you want to decommission the Virtual SAN host.
- Step 6** Click **View Details**.
- Step 7** Click **Hosts**.
All the Virtual SAN hosts associated with the cluster are displayed.
- Step 8** Click the row with the Virtual SAN host that you want to decommission from the Virtual SAN cluster.
- Step 9** Click **Decommission Host**.
- Step 10** On the **Decommission Host** screen, enter the host password and check one of the following options:
- Decommission Host
 - Disassociate UCS Service Profile
 - Delete UCS Service Profile

Step 11 Click **Submit**.

Decommissioning Virtual SAN Clusters

Cisco UCS Director lets you decommission a Virtual SAN cluster from VMware vCenter. The **Decommission Cluster** action completely removes a Virtual SAN cluster from VMware vCenter by performing the following tasks:

- Turns off the Virtual SAN host.
- Cleans up the Virtual SAN host.
- Removes the Virtual SAN host from any associated DV Switch.
- Deletes any associated DV Switch and DV port group.
- Deregisters the host and removes the Virtual SAN cluster from VMware vCenter.
- Disassociates and deletes any associated UCS service profiles from Cisco UCS Manager.



Note You cannot decommission a Virtual SAN cluster from VMware vCenter if any VMs exist on the Virtual SAN Cluster.

Step 1 Choose **Hyper Converged > Virtual SAN**.

Step 2 On the **Virtual SAN** page, click **Pods**.

Step 3 Click the row with the Virtual SAN pod associated with the Virtual SAN cluster that you want to decommission from VMware vCenter.

Step 4 Click **View Details**.
All the Virtual SAN clusters associated with the pod are displayed.

Step 5 Click the row with the Virtual SAN cluster that you want to decommission from VMware vCenter.

Step 6 Click **Decommission Cluster**.

Step 7 On the **Decommission Cluster** screen, enter the host password and check one of the following options:

- Decommission Hosts
- Disassociate UCS Service Profiles
- Delete UCS Service Profiles

Note All of the hosts in the cluster should have the same host password.

Checking **Disassociate UCS Service Profiles** also checks the **Decommission Hosts** option. Checking **Delete UCS Service Profiles** also checks the **Disassociate UCS Service Profiles** and **Decommission Hosts** options.

Step 8 Check **Delete DVSwitch** to delete any associated DV Switch and DV port group.

Step 9 Click **Submit**.

Managing Infrastructure as a Service for Virtual SAN

You can manage all of your Virtual SAN infrastructure resources on the **IaaS** screen. By viewing the details of a Virtual SAN pod, you can manage the following:

- Virtual Machines (VMs)
 - Virtual Data Centers (VDCs)
 - Catalogs
-

Step 1 Choose **Hyper Converged > Virtual SAN**.

Step 2 On the **Virtual SAN** page, click **IaaS**.

Step 3 Click the row with the Virtual SAN pod.

Step 4 Click **View Details**.

By default, the **VMs** page appears. You can power on, power off, or view the details of an associated VM. You can also view the VDC and catalog details by clicking **vDC** and **Catalog**. All VM-level actions are supported.

Creating a Virtual SAN Virtual Data Center

You can create a Virtual SAN Virtual Data Center (VDC) that combines Virtual SAN resources, operation details, rules, and policies to manage specific Virtual SAN group requirements. The Virtual SAN VDC creation wizard enables you to configure the policies required to provision Virtual SAN VMs in the private cloud associated with the selected pod.

Before you begin

Ensure that you have added a virtual account in the Virtual SAN pod.

Step 1 Choose **Hyper Converged > Virtual SAN**.

Step 2 On the **Virtual SAN** page, click **IaaS**.

Step 3 Click the row with the Virtual SAN pod.

Step 4 Click **View Details**.

By default, the **VMs** page appears. All the VMs associated with the Virtual SAN pod are displayed.

Step 5 Click **vDC**.

Step 6 Click **Virtual SAN vDC Creation Wizard**.

Using the wizard, you can create VDC virtual policies, and configure the service delivery policies. By default, this wizard automatically creates standard VDC compute, network, and storage policies for the Virtual SAN cluster. You can also select an existing or create a new system, computing, and networking policy for the Virtual SAN cluster.

If you check the **Use Linked Clone** check box to use a linked clone, the linked clone is set in the storage policy automatically created for the Virtual SAN vDC.

To edit the policies for your specific needs, choose **Policies > Virtual/Hypervisor Policies**.

What to do next

Once you create the Virtual SAN VDC, you can select or modify the VDC.

Creating Virtual SAN Catalogs

You can create a Virtual SAN standard catalog solely for the cloud that is associated with the selected pod. The Virtual SAN **Add Catalog** screen provides the same functionality as the **Add Catalog** screen available under **Policies**, but displays only VMware standard catalogs and it associates the catalog with the selected pod.

For more information on adding a catalog, see the [Cisco UCS Director Administration Guide](#).

- Step 1** Choose **Hyper Converged > Virtual SAN**.
 - Step 2** On the **Virtual SAN** page, click **IaaS**.
 - Step 3** Click the row with the Virtual SAN pod.
 - Step 4** Click **View Details**.
All the VMs associated with the Virtual SAN pod are displayed.
 - Step 5** Click the **Catalog**.
 - Step 6** Click **Add**.
 - Step 7** On the **Basic Information** screen, complete the required fields and click **Next**.
The standard catalog type and cloud name are pre-selected. You can also choose to provision new VMs using an ISO image.
 - Step 8** On the **Application Details** screen, complete the fields, and click **Next**.
 - Step 9** On the **User credentials** screen, specify the VM user credential access options, and click **Next**.
 - Step 10** On the **Customization** screen, specify customization options and custom actions, and click **Next**.
 - Step 11** On the **VM Access** pane, specify whether end users will have access to the VM, and click **Next**.
 - Step 12** On the **Summary** pane, review the catalog information and click **Submit**.
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What to do next

Once you create the Virtual SAN catalog, you can select the catalog and create a service request or modify the catalog.

Provisioning VMs using Virtual SAN VDC Policies

Once you create a Virtual SAN catalog, you can create a service request to provision VMs on the Virtual SAN cluster using the VDC policies defined for the cluster. The **Create Service** dialog lets you provision VMs based on values specific to the Virtual SAN clusters and VDC policies that are defined at the pod level.

For more information on creating a service request, see the [Cisco UCS Director Administration Guide](#).

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- Step 1** Choose **Organizations** > **Service Requests**.
 - Step 2** On the **Service Requests** page, click **Service Requests**.
 - Step 3** Click **Create Request**.
 - Step 4** Choose the catalog type, and click **Submit**.
 - Step 5** On the **Create Service** screen, complete the required fields and choose the Virtual SAN catalog.
 - Step 6** Click **Next**.
 - Step 7** On the **Provisioning Configuration** screen, choose the Virtual SAN VDC and complete the required fields.
 - Step 8** Click **Next**.
 - Step 9** Review the summary for the service request.
 - Step 10** Click **Submit**.
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