



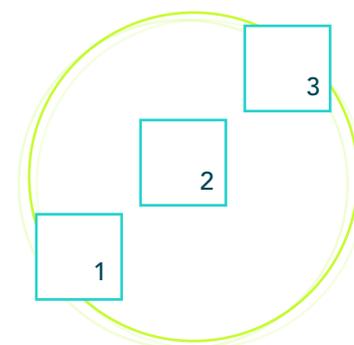
Use VMware vSAN HCI Mesh to manage your vSAN storage resources and share them across server clusters

We set up vSAN HCI Mesh on Dell EMC PowerEdge MX hardware and used the technology to improve hyperconverged resource flexibility

Hyperconverged infrastructure (HCI) has made data centers more efficient by combining the traditional elements of storage, compute, networking, and management into a more condensed footprint than traditional data center infrastructure allowed. However, the draw of HCI has resulted in some shortcomings when it comes to provisioning new resources for existing clusters.

VMware vSAN™ HCI Mesh aims to resolve some of these challenges by enabling organizations to more freely share resources among the different clusters in their data centers.

At Principled Technologies, we set up VMware vSAN HCI Mesh on Dell EMC™ PowerEdge™ MX750c server clusters and used the technology to reallocate resources across the clusters. This report serves as an introduction to VMware vSAN HCI Mesh technology and shows IT staff how to enable its features on Dell EMC PowerEdge MX hardware.



Set up vSAN HCI Mesh in your own data center

We set up the VMware vSAN solution with Dell EMC PowerEdge MX hardware and demonstrated its ability to tier storage and share it across clusters.



Dell EMC MX7000 chassis*

* This image depicts a chassis with eight PowerEdge MX750c blades. Our testing used two PowerEdge MX740c blades and three PowerEdge MX750c blades.

What is vSAN HCI Mesh and how can it help your organization?

Hyperconverged infrastructure has reduced several longstanding problems of traditional infrastructure, including complex deployment, high hardware management overhead, and the large time investment required for proper scaling of resources. With a newer release of VMware vSAN (version 7.0, update 2), IT staff will be able to add even more flexibility to their vSAN clusters by decoupling compute and storage resources within server clusters via VMware vSAN HCI Mesh, thereby increasing the availability and flexibility of hardware resources within an organization's vSAN environments. (Note that vSAN HCI Mesh is available only to users with vSAN Enterprise and Enterprise Plus licenses.)

Disaggregate compute and storage resources with HCI Mesh

According to VMware, vSAN HCI Mesh enables IT staff to join together multiple independent server clusters to create mesh-like architecture where resources are disaggregated and freely shareable.¹ Normally, if an organization needed to add resources to a hyperconverged cluster, they would have to dedicate resources to that cluster specifically. Even if ample resources existed in another cluster, the organization would be unable to repurpose them without physically relocating hardware. With vSAN HCI Mesh, this organization would be able to share unused storage resources in one cluster with another cluster in need while maintaining independent control of cluster CPU resources.

How vSAN HCI Mesh works with your data center hardware

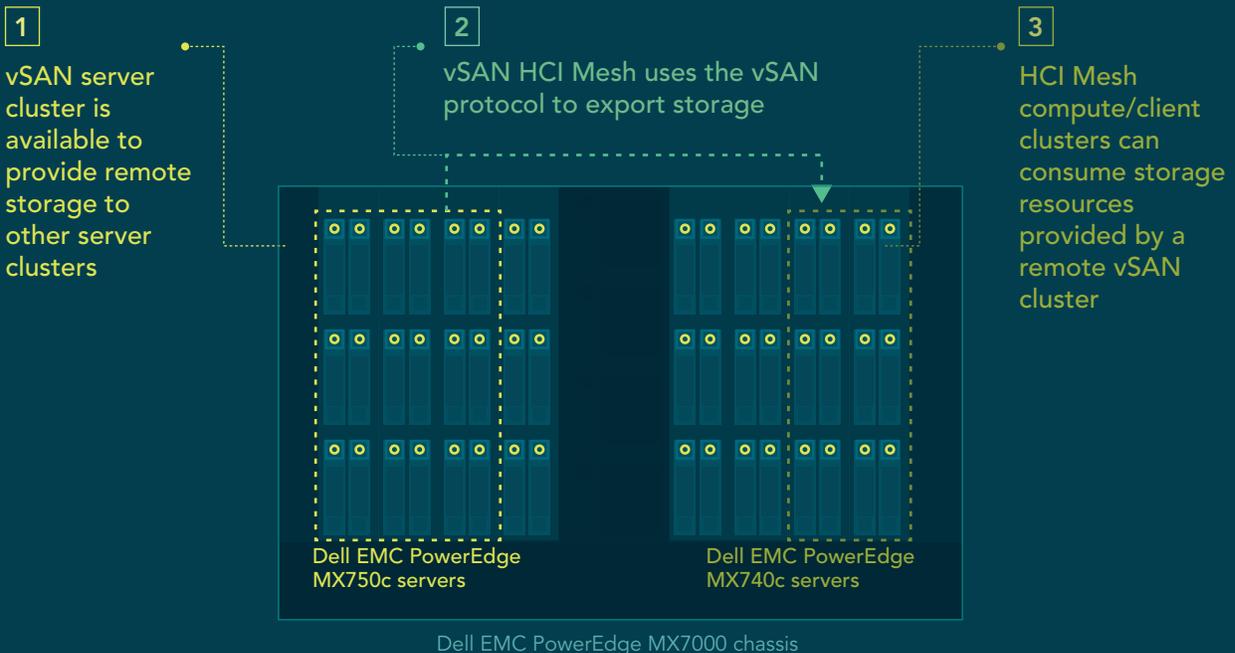


Figure 1: Diagram demonstrating how VMware vSAN HCI Mesh works on Dell EMC PowerEdge MX7000 hardware. Source: Principled Technologies.

Tier storage resources with multiple vSAN clusters for added flexibility and storage control

Another limitation of typical HCI is the lack of flexibility in storage tiering. According to VMware, vSAN HCI Mesh enables IT staff to deploy multiple remote vSAN datastores, each with a different class of storage, that multiple remote clusters can access at once.² This flexibility would enable IT staff to meet the storage requirements for a variety of workloads and increase storage availability.

Storage tiering with VMware vSAN HCI Mesh on Dell EMC PowerEdge MX

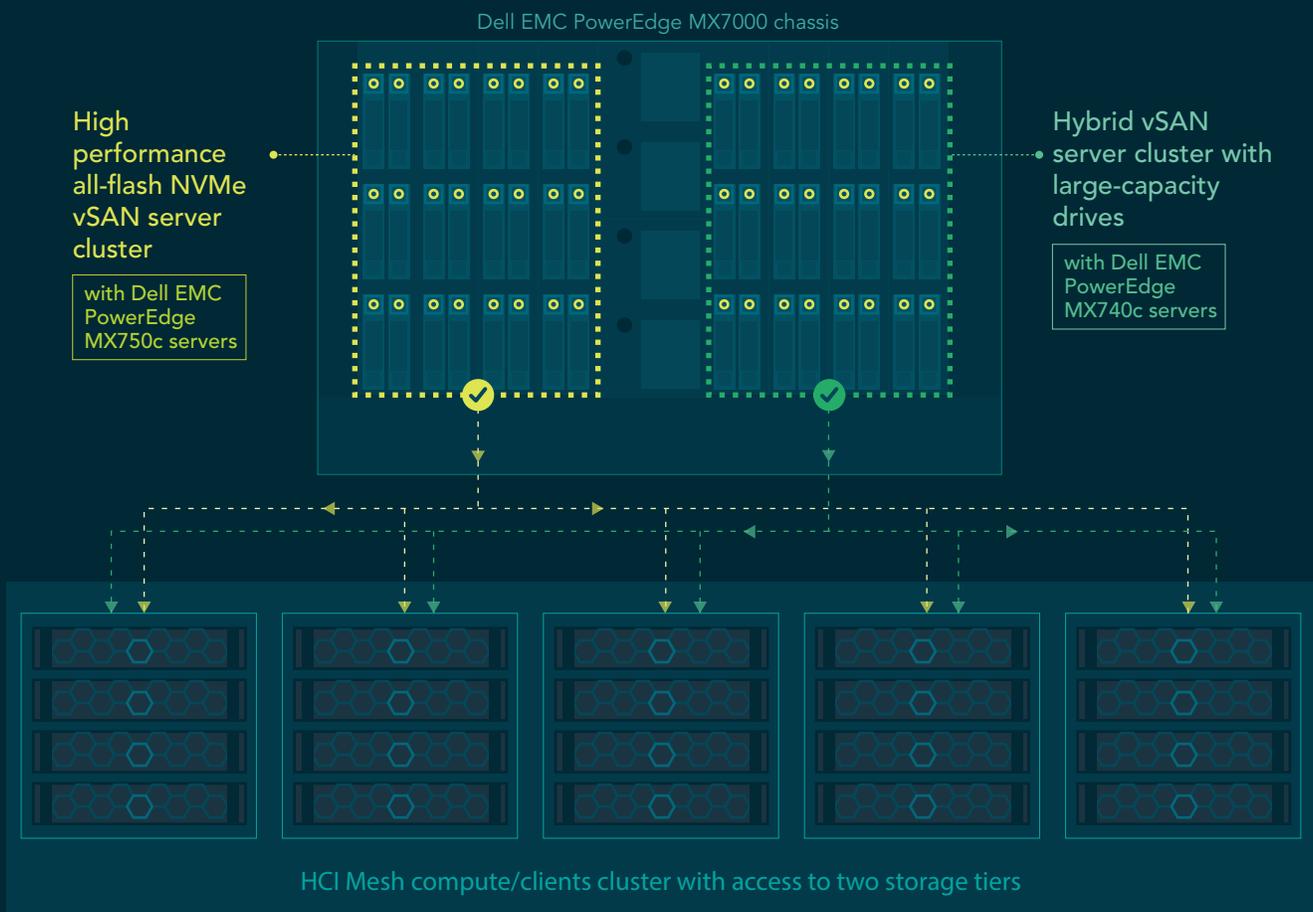
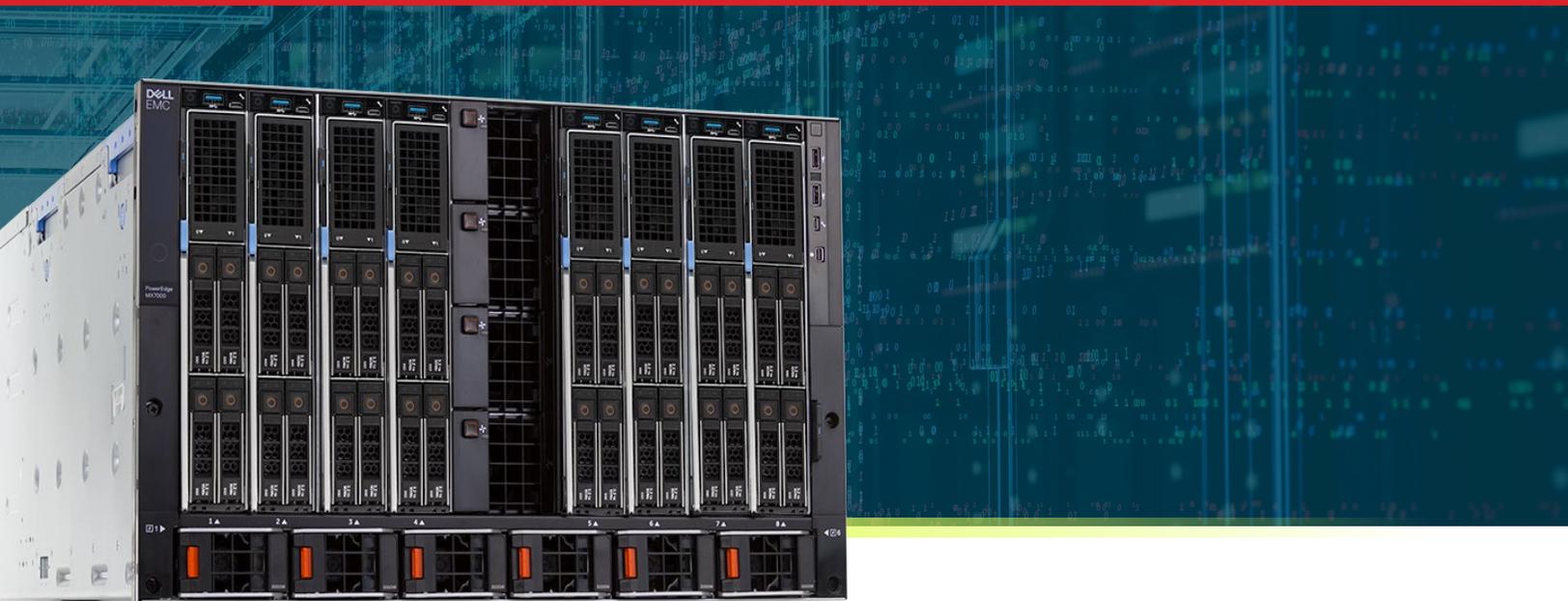


Figure 2: Diagram explaining how storage tiering works with VMware vSAN HCI Mesh on Dell EMC PowerEdge MX7000 hardware. Source: Principled Technologies.



vSAN HCI Mesh and PowerEdge MX series servers

Dell EMC PowerEdge MX provides a modular platform that can accommodate a large number of compute nodes and local storage drives. In our past studies with PowerEdge MX, we have found the platform to be easy to manage and quick to get started with. For example, in an April 2021 study, we were able to set up a cluster of PowerEdge MX blades in as little as 2 hours and 22 minutes.³ In two studies from March 2019, we found that PowerEdge MX streamlined routine management tasks and saved time compared to two competing platforms.⁴

With the introduction of vSAN HCI Mesh, the PowerEdge MX platform gains the ability to share vSAN storage resources with compute nodes outside of a specific cluster. This new feature also allows customers to independently scale compute and storage resources while maintaining the management and operational simplicity of HCI.

Dell Technologies offers multiple PowerEdge configurations that are certified for VMware vSAN. To learn more about using PowerEdge servers with VMware vSAN in your data center, visit <https://www.delltechnologies.com/en-us/solutions/vmware/servers-for-vmware.htm>.

Maintain your low management overhead with vSAN HCI Mesh

Administrators can manage vSAN HCI Mesh using the vSphere web client, the same tool they already use to manage vCenter and VMware hypervisors. This means they don't need to deploy or become familiar with additional storage tools to perform everyday storage management tasks such as provisioning or monitoring health and performance. Being able to use a single management tool for vCenter, hypervisors, and vSAN HCI Mesh means that overall administration overhead does not increase with the introduction of the new tool.

Storage flexible to meet customer demands

Like other Dell EMC servers your organization may be familiar with, Dell EMC PowerEdge MX servers can consume storage resources from external storage arrays, such as Dell EMC PowerStore, simultaneously with vSAN HCI Mesh storage. Using both types of storage resources in your data center could help with migrating workloads and could enable your data center to incorporate multiple highly available and resilient storage options. By adding external arrays or vSAN nodes, your organization could also independently scale up its storage resources.

Setting up HCI Mesh with PowerEdge MX hardware: How-to guide

In the following section, we detail the components of our testbed and provide the steps we followed to enable VMware vSAN HCI Mesh on an existing Dell EMC PowerEdge MX750c vSAN cluster and a separate Dell EMC PowerEdge MX740c compute server cluster.

1. In the Hosts and Clusters view, select the compute cluster.
2. Navigate to Configure→vSAN→Services.
3. Click Configure vSAN.

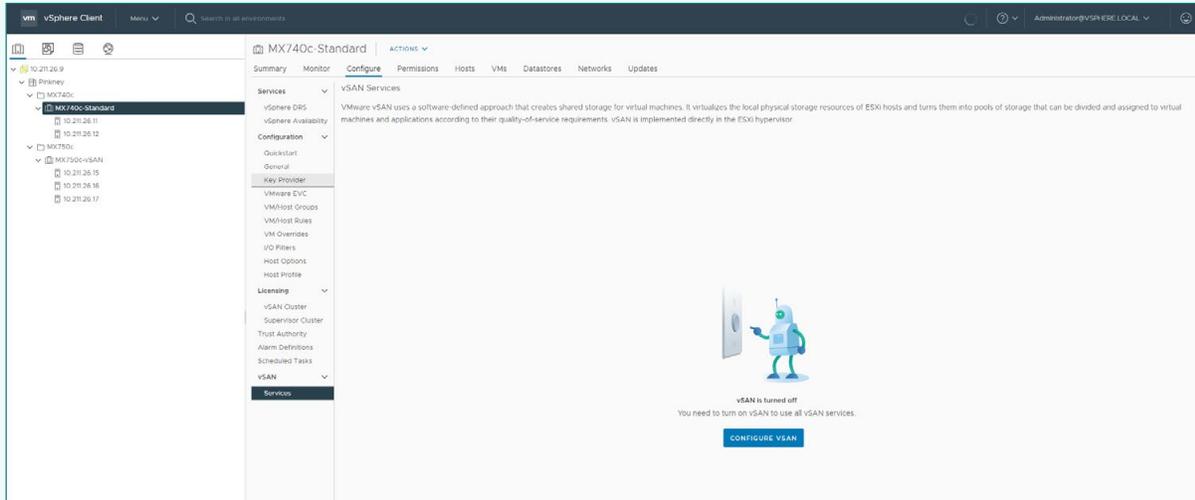


Figure 3: Step 3, vSAN services page. Source: Principled Technologies.

4. Select vSAN HCI Mesh compute cluster, and click Next.

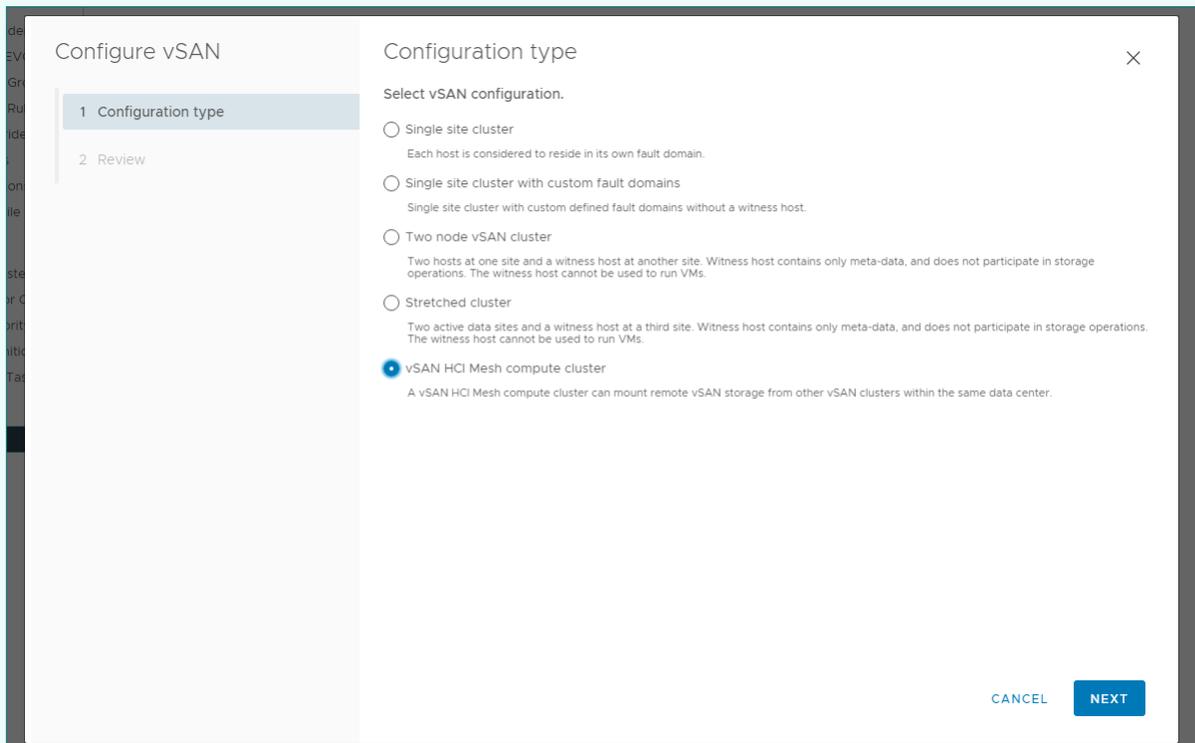


Figure 4: Step 4, Configuration type page. Source: Principled Technologies.

5. Click Finish.

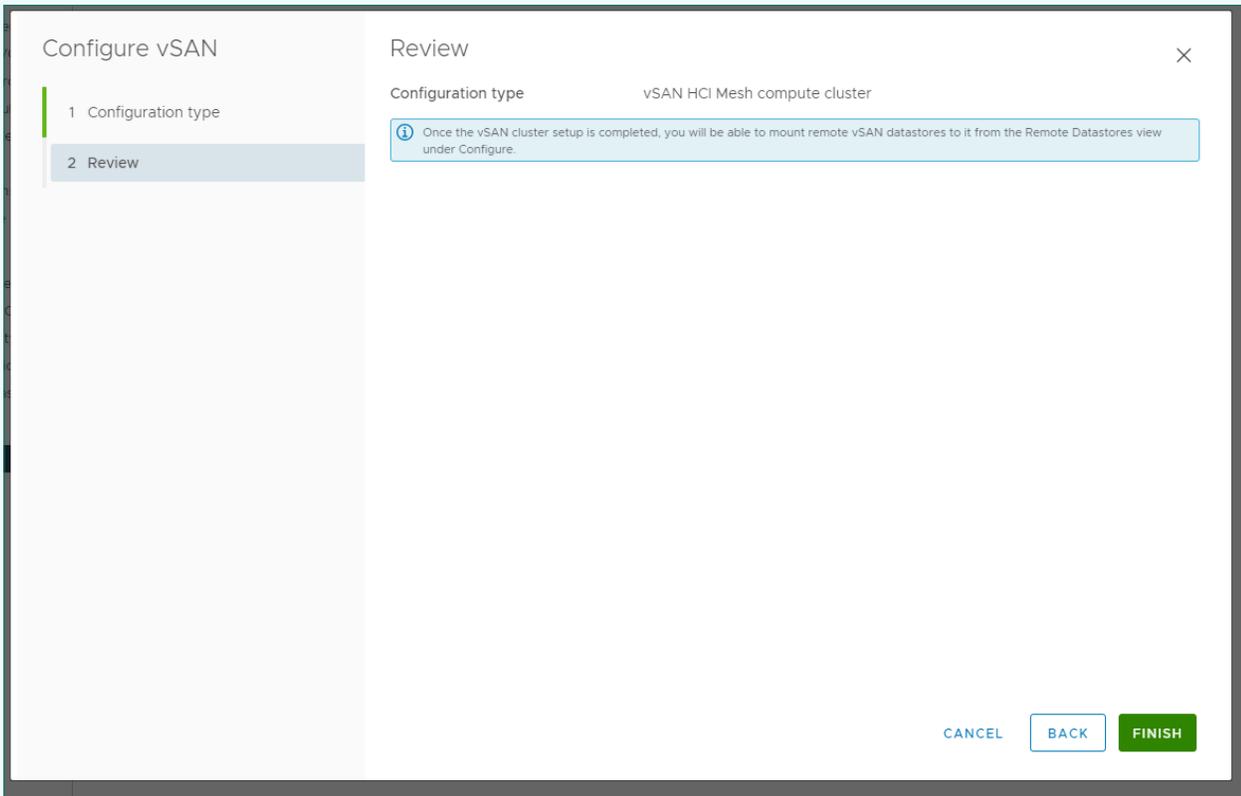


Figure 5: Step 5, Review page. Source: Principled Technologies.

6. Click Mount Remote Datastores.

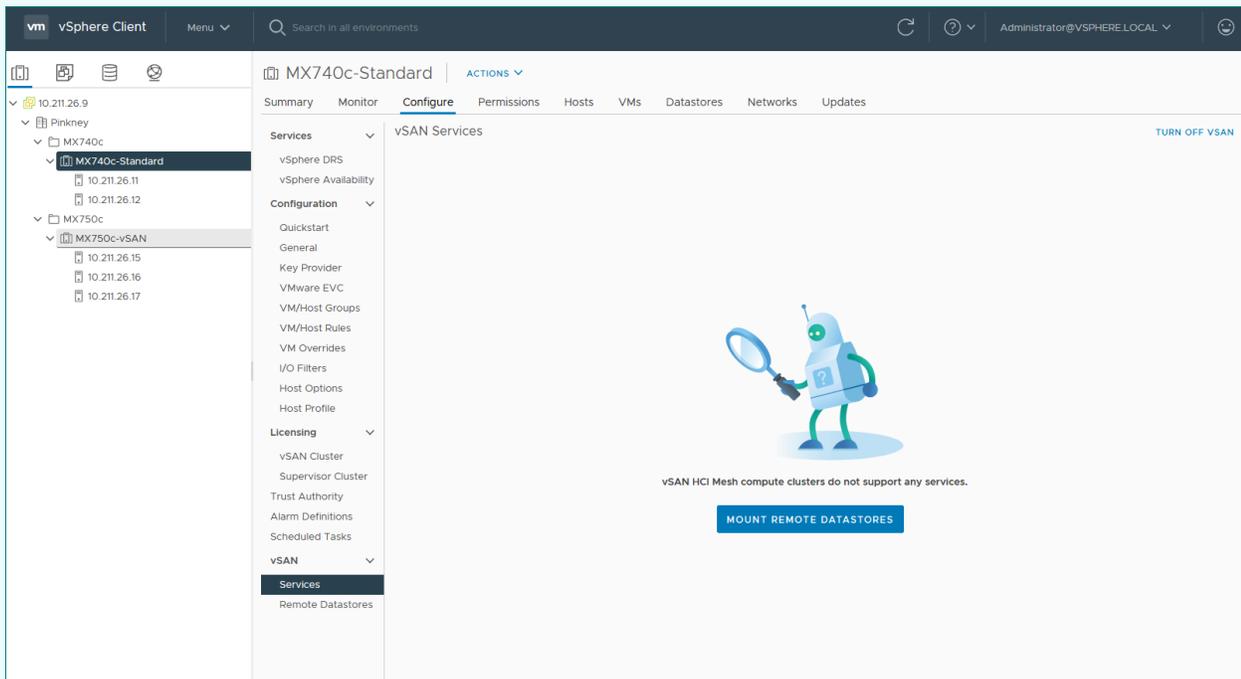


Figure 6: Step 6, vSAN services page. Source: Principled Technologies.

7. Click Mount Remote Datastore.

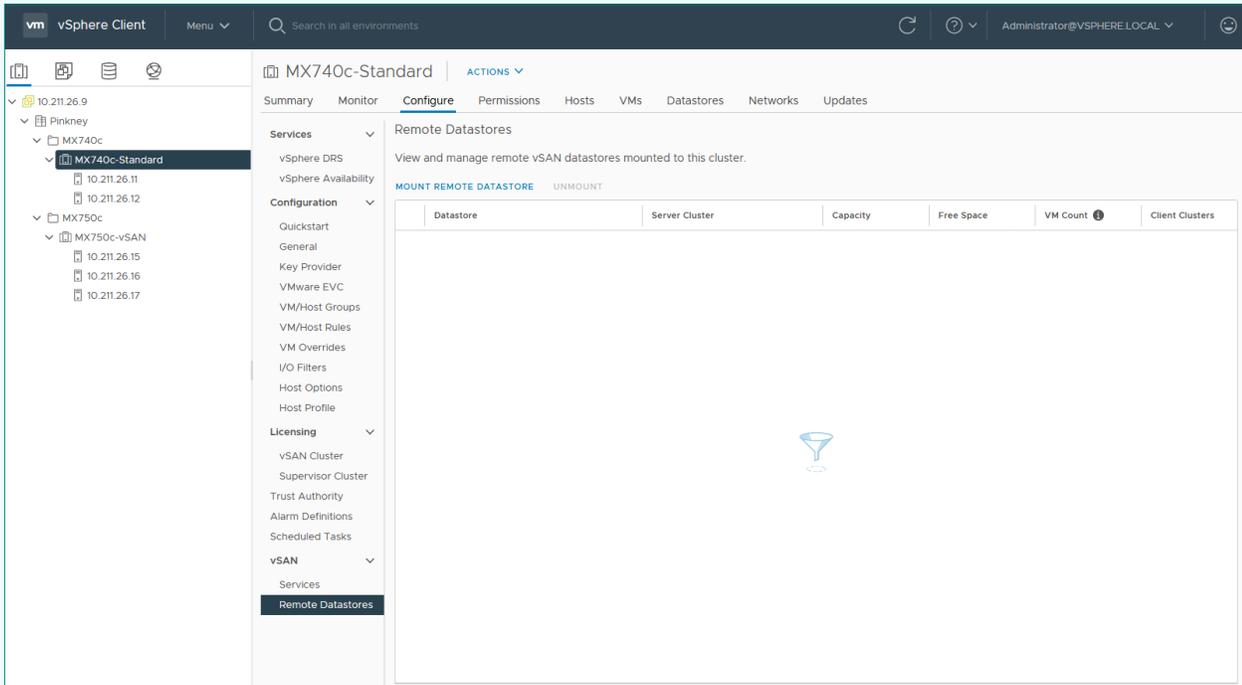


Figure 7: Step 7, Remote databases page. Source: Principled Technologies.

8. Select the datastore from the vSAN cluster, and click Next.

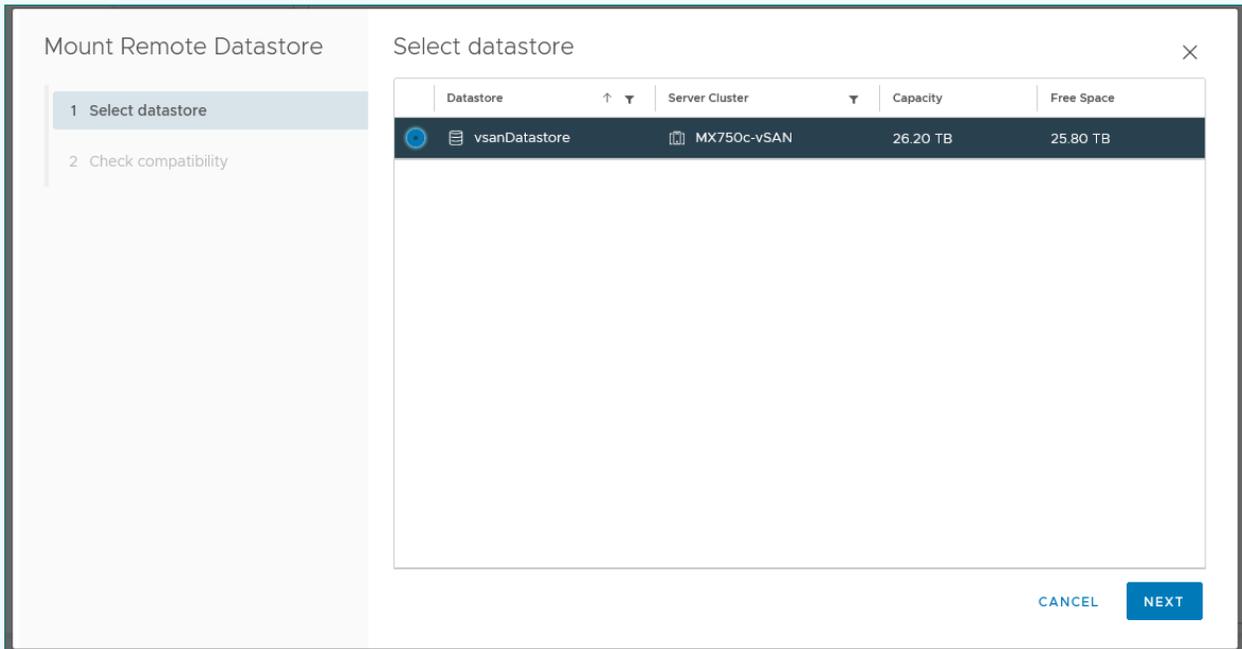


Figure 8: Step 8, Datastore selection screen. Source: Principled Technologies.

9. Confirm that the compatibility check completes successfully, and click Finish.

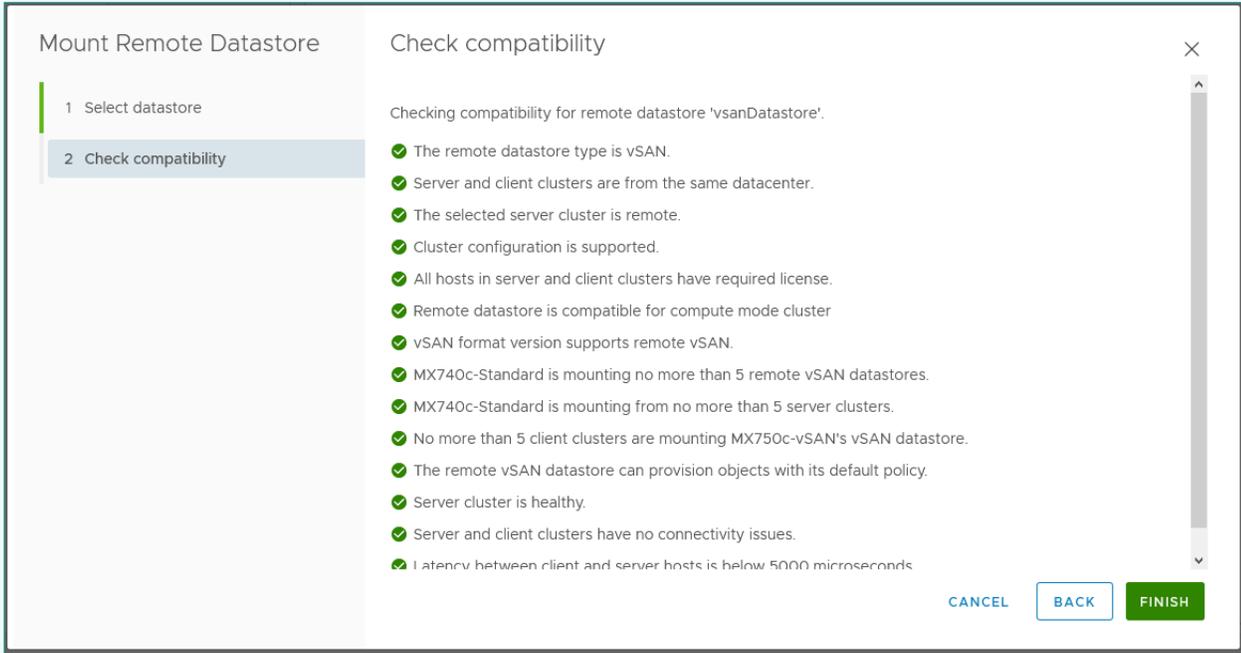


Figure 9: Step 9, Compatibility check screen. Source: Principled Technologies.

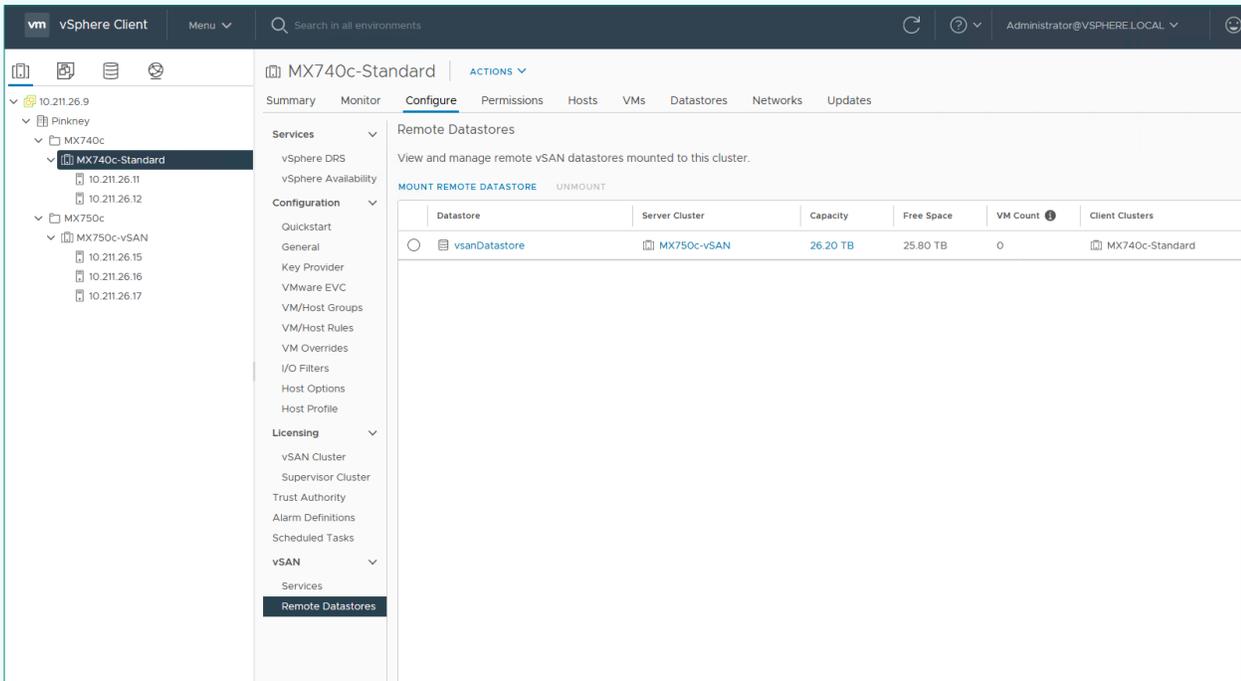


Figure 10: How the view should look after completing step 9. Source: Principled Technologies.

10. If you are using vSphere HA, return to the Hosts and Clusters view, select the compute cluster, and click the Configure tab.
11. Select vSphere Availability, and click Edit.
12. Enable vSphere HA, and Enable Host Monitoring.
13. In the drop-down menu for the datastore with APD, select Power off and restart VMS – Conservative restart policy.

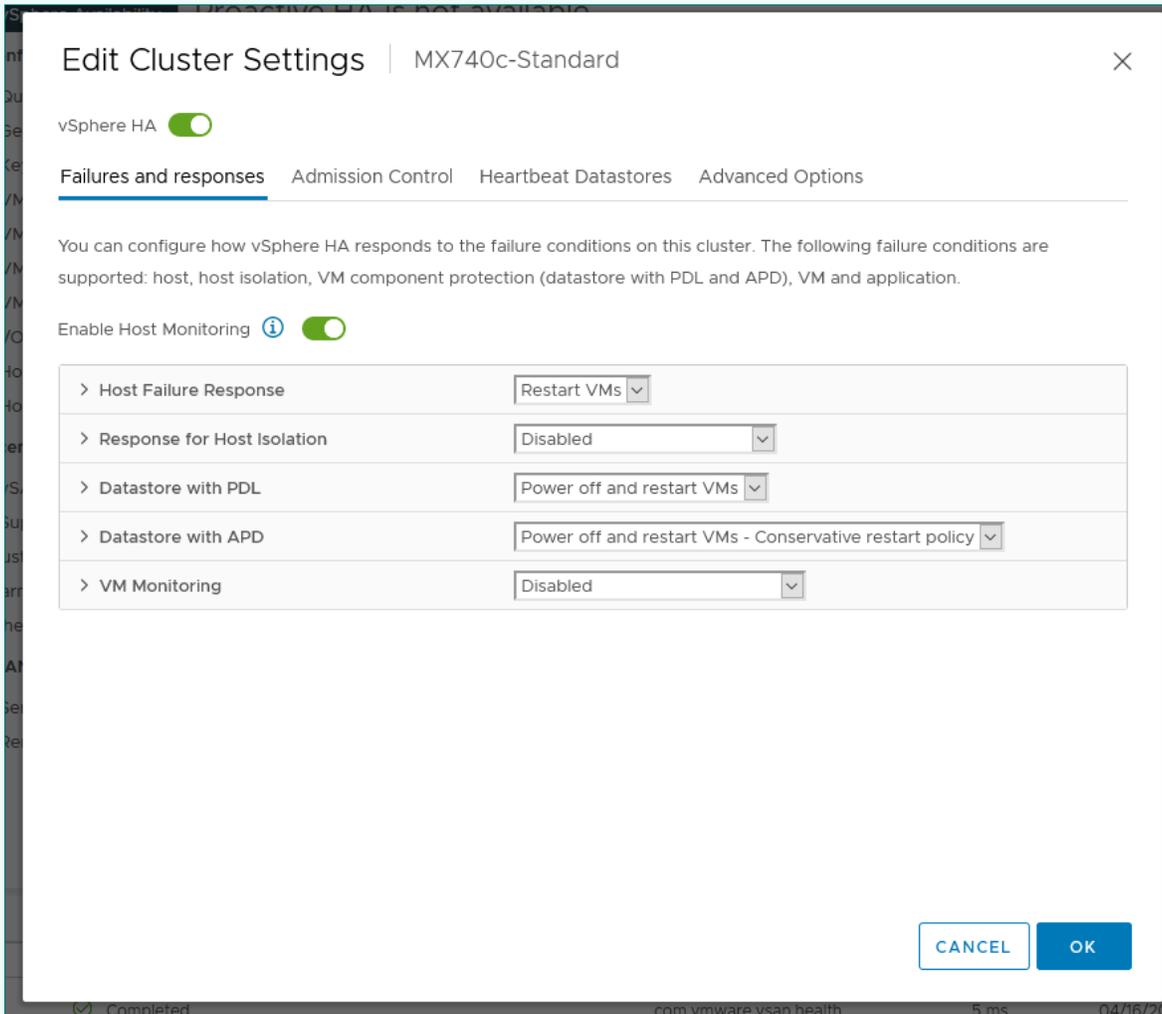


Figure 11: Step 13, Cluster settings page. Source: Principled Technologies.

14. Click OK.



Conclusion

Hyperconverged infrastructure has many advantages over traditional data center infrastructure; however, there are some use cases in which hyperconverged infrastructure's main draws are also significant limitations. VMware vSAN HCI Mesh aims to alleviate some of the limitations around resources by disaggregating compute and storage resources from independent clusters and joining them together in a mesh network. In this report, we have given context for HCI Mesh use cases and demonstrated how to set up VMware vSAN HCI Mesh with Dell EMC PowerEdge MX hardware. For more information on HCI Mesh, visit <https://blogs.vmware.com/virtualblocks/2020/09/16/introducing-vmware-vsan-hci-mesh/>. For more information on Dell EMC PowerEdge MX, visit <https://www.delltechnologies.com/en-us/servers/modular-infrastructure/poweredge-mx/index.htm>.

- 1 John Nicholson, "Introducing VMware vSAN HCI Mesh," accessed April 19, 2021, <https://blogs.vmware.com/virtualblocks/2020/09/16/introducing-vmware-vsan-hci-mesh/>.
- 2 John Nicholson, "Introducing VMware vSAN HCI Mesh."
- 3 "Add next-generation Dell EMC PowerEdge MX servers to your VMware Cloud Foundation infrastructure with ease," accessed April 19, 2021, <https://www.principledtechnologies.com/Dell/PowerEdge-MX-deployment-process-0421.pdf>.
- 4 "Maximize time savings for your IT admins with the Dell EMC PowerEdge MX platform and OpenManage Enterprise," accessed April 19, 2021, <https://www.principledtechnologies.com/Dell/PowerEdge-MX-HPE-Synergy-Cisco-UCS-0319.pdf>.

Read the science behind this report at <http://facts.pt/t1gk9IP> ►



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