

DELL EMC VxRAIL™ vCENTER SERVER PLANNING GUIDE

ABSTRACT

This planning guide discusses guidance for the various vCenter Server deployment options supported on VxRail Appliances.

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Intended Use and Audience

This guide discusses the various VMware vCenter Server™ deployment scenarios supported to manage your VxRail Clusters. It is intended for customers, Dell EMC Sales Teams and field engineers involved in selling, planning and installing VxRail, including Dell EMC sales and support personnel.

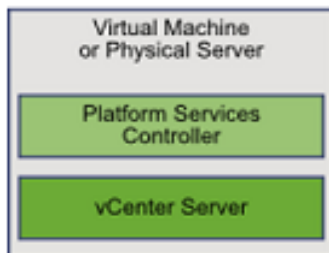
vCenter Server

vCenter Server is the centralized platform for managing a VMware environment. It is the primary point of management for both server virtualization and vSAN and is the enabling technology for advanced capabilities such as vMotion, DRS and HA. vCenter scales to enterprise levels where a single vCenter can support up to 1000 hosts (VxRail nodes) and 10,000 virtual machines. vCenter supports a logical hierarchy of datacenters, clusters, and hosts, which allow resources to be segregated by use cases or lines of business and allows resources to move as needed dynamically. This is all done from a single interface.

vSphere 6.0 introduced vCenter Server with embedded Platform Services Controller (PSC) and vCenter Server with an external Platform Services Controller. The following components are included in the vCenter Server installations:

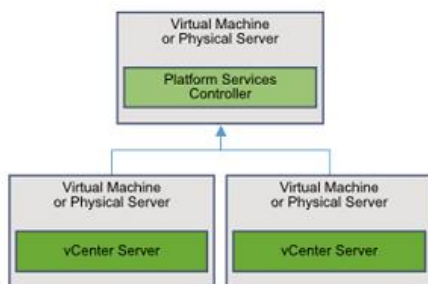
- The PSC group of infrastructure services contains vCenter Single Sign-On, License service, Lookup Service, and VMware Certificate Authority.
- The vCenter Server group of services contains vCenter Server, vSphere Web Client, Inventory Service, vSphere Auto Deploy, vSphere ESXi Dump Collector, VMware vSphere Syslog Collector on Windows and VMware Sphere Syslog Service for the vCenter Server Appliance.

vCenter Server with an Embedded PSC



The vCenter Server and the Platform Services Controller are deployed on a single virtual machine or physical server.

vCenter Server with an External PSC



The vCenter Server and the Platform Services Controller are deployed as separate virtual machines or physical servers. The Platform Services Controller can be shared across several vCenter Server instances. You can install a Platform Services Controller and then install several vCenter Server instances and register them with the Platform Services Controller. You can then install another Platform Services Controller, configure it to replicate data with the first Platform Services Controller, and then install vCenter Server instances and register them with the second Platform Services Controller.

For details, refer to [vSphere Installation and Setup Guide VMware vSphere 6.5](#) for VxRail 4.5.0+ or [vSphere Installation and Setup Guide Update 2 VMware vSphere 6.0](#) for VxRail 3.5 and VxRail 4.0.x.

For day-to-day VM management, customers manage the VMware stack on the VxRail Appliance directly through vCenter Server.

VxRail Appliances

VxRail was jointly developed by Dell EMC and VMware and is the only fully integrated, preconfigured, and tested HCI appliance powered by VMware Virtual SAN (vSAN). Managed through the vCenter Server interface, VxRail provides a familiar vSphere experience that enables streamlined deployment and the ability to extend the use of existing IT tools and processes.

VxRail Appliances are managed using VxRail Manager software for hardware and appliance maintenance tasks as well as software lifecycle management. VxRail Manager incorporates ESRS and other serviceability capabilities. Additionally, VxRail Appliances are discoverable and visible in Dell EMC Vision™ Intelligent Operations.

For day-to-day VM management, customers manage the VMware stack on the VxRail Appliance directly through vCenter Server.

The VxRail software bundle is preloaded and licensed onto hardware and consists of the following components (specific software versions not shown):

- VxRail Manager
- VMware vCenter Server
- VMware vRealize Log Insight™¹
- VMware vSAN™
- EMC Secure Remote Support (ESRS)/VE

Also preloaded is VMware vSphere®; however, licenses are required and can be purchased through Dell EMC, VMware or your preferred VMware reseller partner.

The VxRail Clusters also includes licenses for software that can be downloaded, installed and configured:

- EMC Recover Point for Virtual Machines (RP4VM) - 15 Full Licenses per G-series appliance chassis or 5 Full Licenses per all other single nodes per chassis VxRail series appliances
- EMC CloudArray - 1 TB local cache/10 TB cloud storage License (per appliance chassis)

VxRail is fully compatible with other software in the VMware ecosystem, including VMware NSX. Refer to the [VMware Product Interoperability Matrixes](#) for specific versions of NSX supported on vSphere specific versions.

VxRail vCenter Server Options

The initial releases of VxRail deployed a vCenter Server Appliance on the VxRail Appliance. The license for this vCenter Server Appliance was included with VxRail. This vCenter Server deployment has been referred to as “internal” vCenter Server or “embedded” vCenter server. For consistency, the term used throughout this guide will be *VxRail vCenter Server*. VxRail orchestrates the deployment and lifecycle management of the *VxRail vCenter Server*. This *VxRail vCenter Server* can only manage the VxRail Cluster on which it is deployed.

Beginning with release 3.5, a VxRail Appliance can optionally join a compatible vCenter Server environment¹, hosted outside of the VxRail Cluster. This allows for a central vCenter Server instance to manage multiple VxRail Clusters. Each VxRail environment appears within vCenter Server as a cluster of hosts configured with a vSAN datastore. This has been referred to “external” vCenter Server or “existing” vCenter Server. For consistency, the term used throughout this guide will be *Customer Supplied vCenter Server*. This instance of vCenter Server must exist before

¹ Log Insight is a configuration option only if *VxRail vCenter Server* is used.

you deploy the VxRail Appliance and requires a separate customer provided license. The Customer is responsible for deployment, configuration and lifecycle management of the *Customer Supplied vCenter Server*.

A VxRail Cluster's virtual infrastructure is managed by a single vCenter Server instance, either *VxRail vCenter Server* or *Customer Supplied vCenter Server*. At this time, when a VxRail Appliance is deployed the vCenter deployment type is selected **and is very difficult to change**. If a customer wants to make a change, for VxRail 3.5 and 4.0.1 it would require a factory reset and all data would need to be wiped from the VxRail appliance and reinstallation would be required. To migrate a VxRail 4.0.2 vCenter Server to a Customer Supplied vCenter requires an RPQ. Starting with VxRail 4.0.301 there is a detailed, lengthy migration procedure available.²

VxRail vCenter Server

As part of a VxRail deployment, a vCenter Server instance with an external Platform Service Controller is configured. The vCenter server and the PSC are separate Linux based virtual machines. Both the *VxRail vCenter Server* and PSC are deployed on the VxRail Appliance cluster it is managing and cannot be moved off the cluster after deployment.

The VxRail vCenter license is for the *VxRail vCenter Server* and is not transferable to use as a *Customer Supplied vCenter Server*. As such, it can be considered a limited or restricted use vCenter Server license as will be seen by the use cases supported and the list of limitations below.

Use Case

A *VxRail vCenter Server* is an ideal choice for:

- Small configurations
- Standalone environments

Limitations

- The *VxRail vCenter Server* will only manage a single VxRail Cluster.
 - It cannot manage other VxRail Clusters.
 - It cannot manage any other ESXi hosts.
 - It cannot be used as a *Customer Supplied vCenter Server*.
- Enhanced link mode is not supported.
- vSAN encryption is not supported.
- Single Sign-On domain cannot be customized and will be *vsphere.local*.

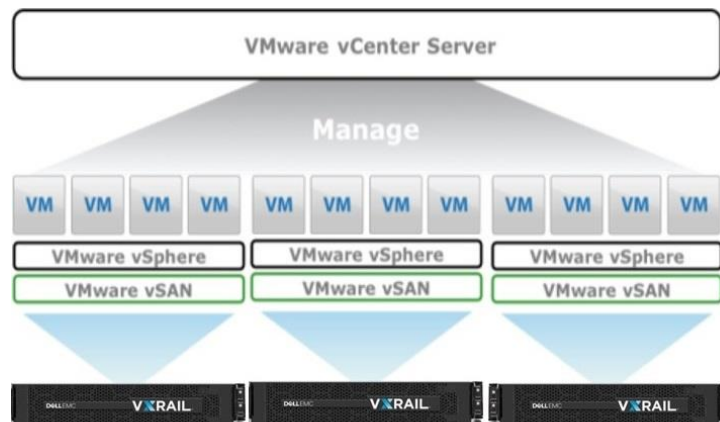
Customer Supplied vCenter Server

The *Customer Supplied vCenter Server* deployment can be a physical server or a virtual server running on either a vCenter Server Appliance or in a Windows environment with embedded or external PSC.

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² This procedure is for VxRail vCenter Server to Customer Supplied vCenter Server only.

The figure below shows an example where multiple VxRail clusters are part of a *Customer Supplied vCenter* environment. Each VxRail environment appears as a separate cluster within vCenter. In addition to centralized management, being part of the same vCenter environment allows VMs to be easily migrated into and between vSAN environments for optimal workload balance and simplified VxRail Appliance upgrades and expansion.



Use Case

A *Customer Supplied vCenter Server* solution is required when:

- Stretched clusters are part of the solution.
- Enhanced link mode is desired.
- vSAN encryption is desired.
- VxRail is being added to an existing VMware virtualization platform and a single management instance is desired.
- Multiple VxRail Clusters will be deployed and a single management interface is desired.

Limitations

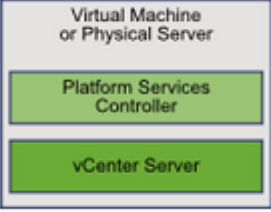
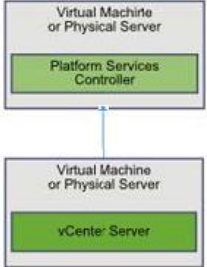
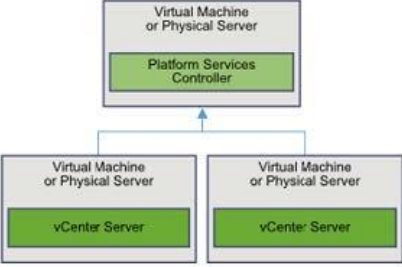
- The vCenter Server must be compatible with the VxRail Release on initial deployment and in subsequent upgrades:
 - VxRail 3.5 is compatible with vCenter Server 6.0 U2
 - VxRail 4.0 is compatible with vCenter Server 6.0 U2
 - VxRail 4.5 is compatible with vCenter Server 6.5 U1
- VxRail Manager does not upgrade the *Customer Supplied vCenter Server*. Before an upgrade of VxRail Appliance software, please refer to the release notes to verify the required vCenter Server release number. It may be necessary to upgrade the *Customer Supplied vCenter Server* prior to the VxRail upgrade.
- The virtual machine name and IP address of the Customer Supplied vCenter Server and PSC cannot be modified after VxRail deployment.

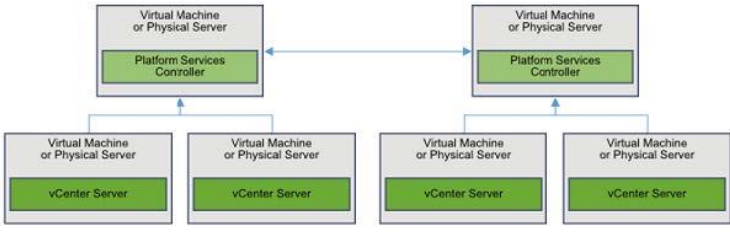
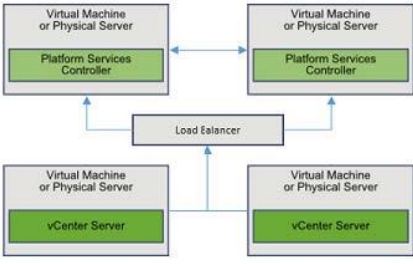
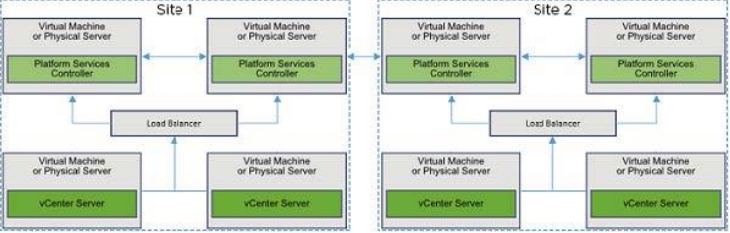
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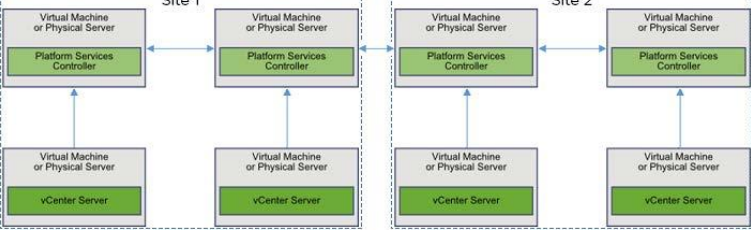
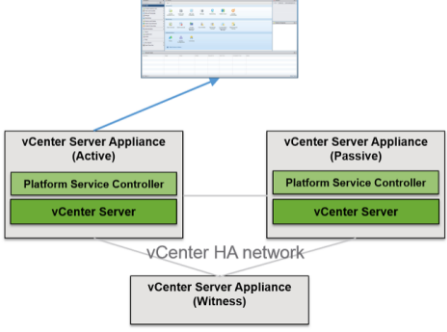
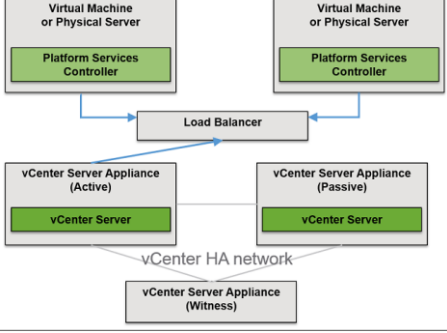
- The Customer is responsible for the *Customer Supplied vCenter Server* license.
- Log Insight is not activated when using a *Customer Supplied vCenter Server*.
- Only one public IP address for the vCenter HA network is supported.

VMware vSphere Recommended Topologies for vCenter Server

VMware provides a list of recommended topologies for VMware vCenter Server deployments. For vSphere 6.5, the vCenter Server topologies are described in VMware KB article [2147672](#). For vSphere 6.0 the vCenter Server topologies are described in VMware KB article [2108548](#). The following table indicates for each topology whether a *VxRail Supplied* or a *Customer Supplied vCenter Server* could support this topology.

Recommended Topology	VxRail vCenter Server	Customer Supplied vCenter Server *Requires a vCenter Server license
 <p>1 Single Sign-on domain 1 Single Sign-on Site 1 vCenter Server with embedded PSC</p> <p><i>Limitations:</i> Does not support Enhanced Linked Mode Does not support PSC replication</p>	<p>No.</p> <p>If a customer wants an embedded PSC, they cannot use the <i>VxRail vCenter Server</i>.</p>	<p>Yes.</p> <p>A customer would be required to have a <i>Customer Supplied vCenter Server</i> with an embedded PSC deployed on a separate host from the VxRail Cluster to achieve this topology.</p>
 <p>1 Single Sign-On domain 1 Single Sign-On site 1 vCenter Server with PSC on a different machine</p>	<p>Yes.</p> <p>Note: there is only one vCenter Server</p>	<p>Yes.</p>
 <p>1 Single Sign-On domain 1 Single Sign-On site 1 or more vCenter Server(s) with PSC on a different machine</p>	<p>No.</p>	<p>Yes.</p>

 <p>1 Single Sign-On domain 2 or more Single Sign-On sites 2 or more external Platform Services Controllers 2 or more vCenter Server with external PSCs</p>	No.	Yes.
 <p>1 Single Sign-On domain 1 Single Sign-On site 2 or more external PSC(s) 1 or more vCenter Server with external PSCs using 1 third-party load balancer</p>	No.	Yes.
 <p>1 Single Sign-On domain 2 Single Sign-On sites 2 or more external PSCs per Single Sign-On Site 1 or more vCenter Server with external PSC(s) 2 third-party load balancers (1 per site)</p>	No.	Yes.

 <p>1 Single Sign-On domain 2 Single Sign-On sites 2 or more external PSCs per Single Sign-On site 1 or more vCenter Server with external PSC(s)</p>	No	Yes.
 <p>1 Single Sign-On domain 1 Single Sign-On site vCenter Server with PSC on same vCenter Server Appliance 3 vCenter Server Appliances are used (1 Active, 1 Passive, and 1 Witness connected to the vCenter HA network).</p>	No	<p>Only vCenter Server 6.5, which requires VxRail 4.5.x.</p> <p>NOTE: Only one public IP address for the vCenter HA Network is supported.</p>
 <p>1 Single Sign-On domain 1 Single Sign-On site 2 or more external PSCs vCenter Server connected to PSC using 1 third-party load balancer 3 vCenter Server Appliances are used (1 Active, 1 Passive, and 1 Witness connected to the vCenter HA network).</p>	No	<p>Only vCenter Server 6.5, which requires VxRail 4.5.x</p> <p>NOTE: Only one public IP address for the vCenter HA Network is supported.</p>

VxRail vCenter Server Deployment Details

The following provides the high-level details of each deployment option. It is important to understand the pre-requisites before deployment. This document covers the requirements related to vCenter Server only. See the [Dell EMC VxRail Network Guide](#) for complete VxRail implementation requirements.

VxRail vCenter Server

Please note, the vCenter license included with the VxRail Appliance is for the use of and with the *VxRail vCenter Server* only and is not transferable for use as a *Customer Supplied vCenter Server*.

Requirements

This scenario requires:

- A reserved vCenter Server hostname
- A reserved IP address for the VxRail vCenter Server
- A reserved PSC hostname
- A reserved IP address for the new VxRail vCenter Server Platform Service Controller
- DNS names to be configured correctly.

Customer Supplied vCenter Server

When deploying a VxRail Appliance into an existing VMware virtualization infrastructure, it makes sense to use the *Customer Supplied vCenter Server* that is managing the current environment to manage the VxRail Appliance. This allows a remote central vCenter Server to manage multiple VxRail clusters in a single management instance.

The *Customer Supplied vCenter Server* can be:

- Standalone with an embedded PSC or external PSC
- A vCenter Server Appliance virtual machine or vCenter Server for Windows³
- Using enhanced linked mode

Requirements

- Compatible VxRail and vSphere versions, either:
 - VxRail 3.5 and vSphere 6.0 U2
 - VxRail 4.0.x and vSphere 6.0 U3b
 - VxRail 4.5.x and vSphere 6.5 U1a
- The Customer Supplied vCenter can **NOT** be hosted on the VxRail Cluster it is managing.
- Customer provides the vCenter Server license.

If you want VxRail to join a *Customer Supplied vCenter Server*, you will need to:

- Know whether your *Customer Supplied vCenter Server* has an embedded or non-embedded Platform Services Controller. If the PSC is non-embedded, you will need the PSC FQDN.

³ Starting after vCenter Server 6.5, VMware plans to deprecate vCenter Server for Windows with the next numbered release (not update release) of vSphere.

- Know the *Customer Supplied vCenter Server* FQDN.
- Know the *Customer Existing* Single Sign-on domain (SSO) (For example *vsphere.local*)
- Create a VxRail management user and password for this VxRail cluster on the *Customer Supplied vCenter Server*. This user must be:
 - Created with no permissions
 - Created with no roles assigned to it

If a previous VxRail Cluster has been deployed on the Customer Supplied vCenter Server, the VxRail Management User can be re-used if the customer chooses.

- Create or select a datacenter on the *Customer Supplied vCenter Server* for the VxRail Cluster to join.
- Specify the name of the cluster that will be created by VxRail in the selected datacenter when the cluster is built. It will also be the name of the distributed switch. This name must be unique and not used anywhere in the datacenter on the *Customer Supplied vCenter Server*.
- Verify the customer DNS server can resolve all VxRail ESXi hostnames before deployment.
- (Optional) Create a VxRail non-admin user and password for VxRail on the *Customer Supplied vCenter Server*. The following will be done by your Dell EMC Representative:
 - Create two new roles, VxRail Initial Global and VxRail Datacenter Global.
 - Assign each of these roles to the new VxRail non-admin user.

It is possible to deploy a Customer Supplied vCenter Server on an existing VxRail Cluster. This vCenter Server will NOT manage the VxRail Cluster it is deployed on, but can manage all new VxRail Clusters. Your Dell EMC service representative can facilitate this deployment choice.

Please note this still requires a customer provide vCenter Server license.

Conclusion

During the planning stage of a VxRail Cluster configuration, careful planning should take place to determine the best vCenter Server deployment topology for your environment. VxRail gives you the option to use a *Customer Supplied vCenter Server* so more topologies can be supported. The *VxRail vCenter Server* has very limited use case application. The decision for the topology to use is not changeable after deployment for any use case, so planning is essential.

For further details on the best vCenter deployment options contact your Dell EMC sales team or your VMware representative.



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