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DELL EMC VxRAIL™ VCENTER SERVER PLANNING GUIDE

ABSTRACT

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

February 2017

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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

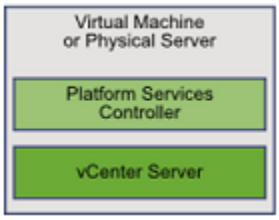
vCenter Server is the centralized platform for managing a VMware environment. It is the primary point of management for both server virtualization and vSAN and is the enabling technology for advanced capabilities such as vMotion, DRS and HA. vCenter scales to enterprise levels where a single vCenter 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 dynamically as needed. 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.

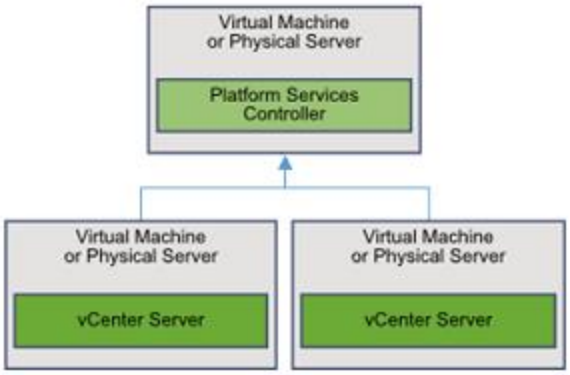
vCenter Server with an Embedded PSC

vCenter Server and PSC are deployed on a single virtual machine or physical server.



vCenter Server with an External PSC

vCenter Server and the Platform Services Controller are deployed on separate virtual machine or physical server. 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 the vSphere 6.0 Installation and Setup Guide.

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 node 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.

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

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 is 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 it is deployed on.

Beginning with release 3.5, a VxRail Appliance can optionally join a vCenter Server 6.0 environment, 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 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 cannot be changed**. If a customer wants to make a change it would require a factory reset and all data would need to be wiped from the VxRail appliance and reinstallation would be required.

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 transferrable 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 the ideal choice for:

- Small configurations
- Standalone environments

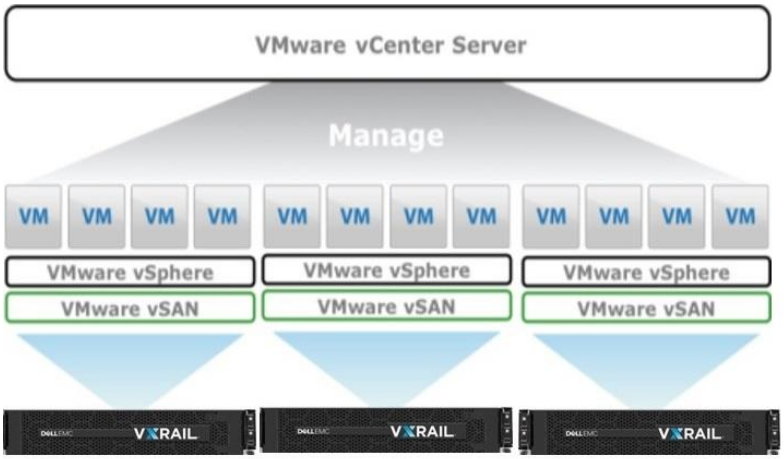
Limitations

- 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 at this time.
- 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 as either a vCenter Server Appliance or in a Windows environment with embedded or external PSC.

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 is part of the solution.
- Enhanced link mode may be desired.
- VxRail is being added into 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

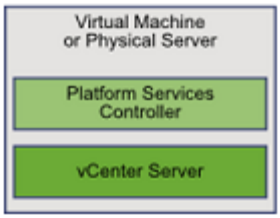
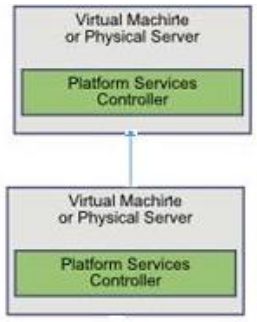
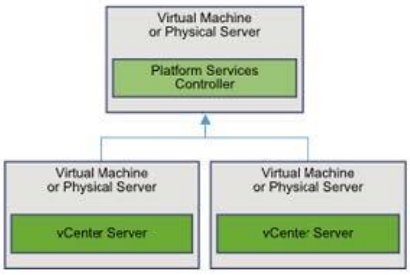
- vCenter Server 6.5 is not supported at this time.
- VxRail Manager does not upgrade the *Customer Supplied vCenter Server*.

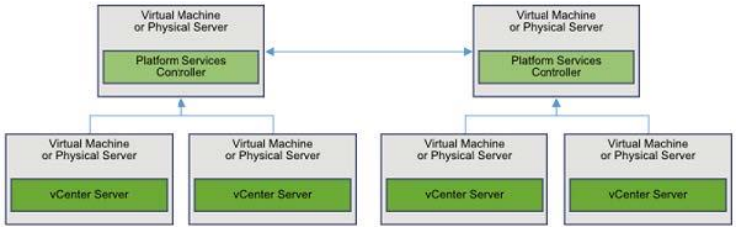
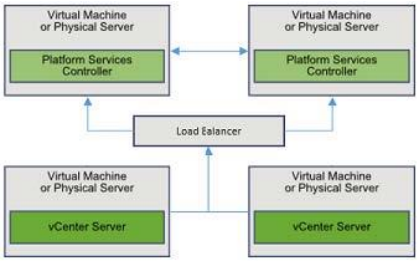
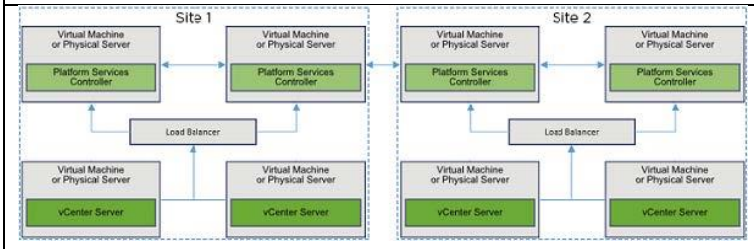
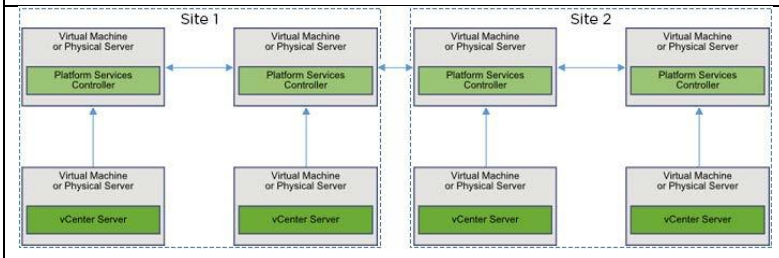
Notes

- The Customer is responsible for the vCenter Server license used.
- Log Insight is not activated when using a *Customer Supplied vCenter Server.*
- Prior to an upgrade of a 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.

VMware vSphere recommended topologies for vCenter Server

VMware provides a list of recommended topologies for VMware vCenter Server deployments. 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**
 1 Single Sign-on domain 1 Single Sign-on Site 1 vCenter Server with embedded PSC Limitations: Does not support Enhanced Linked Mode Does not support PSC replication	No. If a customer wants an embedded PSC, they cannot use the *VxRail vCenter Server*.	Yes. A customer would be required to have a *Customer Supplied vCenter Server* with an embedded PSC deployed on a separate host from the VxRail Cluster to achieve this topology.
 1 Single Sign-On domain 1 Single Sign-On site 1 vCenter Server with PSC on different machine	Yes. Note: there is only one vCenter Server	Yes.
 1 Single Sign-On domain 1 Single Sign-On site 1 or more vCenter Server with PSC on different machine	No.	Yes.

 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	No.	Yes.
 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	No.	Yes.
 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)	No.	Yes.
 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)	No	Yes.

VxRail vCenter Server Deployment Details

The following provides the high-level details of each deployment option. It is important to understand the pre-requisites prior to 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 use of and with the *VxRail vCenter Server* only and is not transferrable to use as a *Customer Supplied vCenter Server*.

Requirements

This scenario requires:

- New
  - vCenter Server hostname
  - IP address for the *VxRail vCenter Server*
  - PSC hostname
  - IP address for the new *VxRail vCenter Server Platform Service Controller*
- DNS names to be configured properly if external DNS is used.

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
- The Windows version or a vCenter Server Appliance virtual machine
- Using enhanced linked mode

Requirements

- vSphere 6.0U2 outside of the VxRail Cluster
- VxRail 3.5 or higher
- Customer provided 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.

- Know the *Customer Supplied vCenter Server* FQDN.
- Know the *Customer Existing* Single Sign-on domain (SSO) (For example vsphere.local)
- Know the *Customer Supplied vCenter Server* administrative username and password.
- Create a VxRail management user and password for this VxRail cluster on the *Customer Supplied vCenter Server*. The user created must be:
    - With **no** permissions
    - With n**o** roles assigned to it
    - Must be unique for each VxRail cluster
- 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 prior to deployment.
- Modify the default IP address for VxRail initial configuration. This will be done by your Dell EMC service representative.

Note

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 provided 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.