VMware EVO SDDC Overview and Bring-Up Guide

VMware EVO SDDC 1.2

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About the EVO SDDC Overview and Bring-Up Guide

The EVO SDDC Overview and Bring-Up Guide provides an overview of the VMware EVO™SDDC™ product and its components and describes the steps for setting up and configuring an EVO SDDC system.

Intended Audience

The EVO SDDC Overview and Bring-Up Guide is intended for data center cloud administrators who deploy an EVO SDDC system in their organization’s data center. The information in this guide is written for experienced data center cloud administrators who are familiar with:

- Concepts of virtualization and software-defined data centers
- Networking and concepts such as uplinks, NICs, and IP networks
- Hardware components such as top-of-rack (ToR) switches, spine switches, servers with direct attached storage, cables, and power supplies
- Methods for setting up physical racks in your data center
- Using the VMware vSphere® Web Client™ to work with virtual machines

Related Publications

The Administering VMware EVO SDDC contains detailed information about how to administer and operate your data center’s deployed EVO SDDC system.

Your EVO SDDC system includes various VMware software products and components. You can find the documentation for those VMware software products at www.vmware.com/support/pubs.

VMware Technical Publications Glossary

VMware Technical Publications provides a glossary of terms that might be unfamiliar to you. For definitions of terms as they are used in VMware technical documentation, go to http://www.vmware.com/support/pubs.
EVO SDDC is a hyper-converged infrastructure (HCI) solution based on defined hardware configurations pre-integrated with the VMware software-defined data center (SDDC) software. The EVO SDDC solution enables customers to deploy a fully self-contained Infrastructure-as-a-Service (IaaS) and/or Virtual Desktop Infrastructure (VDI) private cloud based on a complete SDDC architecture. EVO SDDC is built in partnership with select hardware partners and systems integrators leveraging VMware best practices.

**Figure 1-1.** EVO SDDC Solution

Attached to corporate network through L2/L3 peering

EVO SDDC
(all vRack traffic stays inside)
This chapter includes the following topics:

- “SDDC Deployment Challenges,” on page 8
- “EVO SDDC Simplifies SDDC Phases,” on page 8
- “Physical Topology,” on page 9
- “Network Topology,” on page 11
- “Storage Topology,” on page 11

SDDC Deployment Challenges

There are a lot of factors today that go into defining a SDDC. These range from the networking ingredient NSX, storage ingredient Virtual SAN, and many other vCloud Suite pieces making it difficult to know where to begin the process. For all of this to come together, a data center administrator needs to touch many different parts of an IT infrastructure. Typically, these departments are heavily siloed. There is a set of people responsible for the network part of the data center, another set responsible for compute, storage, and so on. These folks have different motivations and different budgeting processes. Getting these groups of people to come together for an SDDC is difficult and may require the enterprise to change its procurement and deployment processes. In addition, the whole process requires a broad range of expertise from a set of administrators. The end user then needs to manage the full life cycle of the SDDC - not just the VMware products that are part of it, but also the associated hardware all the way up to the application layer.

EVO SDDC Simplifies SDDC Phases

EVO SDDC simplifies the bring up of an SDDC by providing a self-contained private cloud instance that can be easily deployed in a corporate network. You begin by working with VMware to define workloads you want to run in your SDDC and to determine provisioning and capacity. VMware works with a hardware partner to select the hardware components used to support the SDDC. Hardware components include spine switches, Top of Rack switches, a management switch, and up to 24 servers in a physical rack. The hardware partner assembles the hardware components and installs the necessary software using a prescriptive software bundle and imaging utility from VMware. By creating a virtual abstraction across physical racks of infrastructure, this approach pools compute, storage, and network. This abstracted resource pool, called a virtual rack, is used as a unit of SDDC instantiation and operation. After imaging, the rack is shipped to you. You plug the rack in and cable it according to instructions from VMware. With power and network connectivity established, you can begin configuring EVO SDDC.

To summarize, you can bring up a virtual rack of within a matter of hours once the physical rack(s) is within your data center. This enables you, the end user, to focus on your workloads in the SDDC without being concerned about the underlying hardware. The EVO SDDC user interface provides a single point of control for configuring and deploying new workloads and managing your entire infrastructure.

EVO SDDC adds value to your organization by reducing:

- procurement time - single purchase order and SOW
- time-to-market - the equipment arrives preassembled and can be used immediately
- complexity of configuration
- downtime
- training costs

EVO SDDC also offers automated Lifecycle Management (LCM) with full inventory of relevant software and hardware components down to specific editions, versions, and latest patch bundles.
Physical Topology

EVO SDDC is a logical instance of up to 8 physical racks. Each rack includes up to four smart PDUs for redundancy.

Spine Switches

The EVO SDDC system contains two spine switches. These switches extend the network fabric of the top of rack (ToR) switches between racks. The hardware vendor connects the available uplink ports of the ToR switches to the spine switches.

Spine switches are not required if you do not plan to purchase multiple physical racks.

Management Switch

The management switch provides Out-Of-Band (OOB) connectivity through a baseboard management controller (BMC).

The management network fabric does not carry vSphere management, Virtual SAN, or vMotion traffic. That traffic resides on the network fabric created by the TOR and spine switches. As a result the management switch is a non-redundant component in the physical rack. If this switch goes down, some functionality such as monitoring may not be available until it comes back up. Workloads will continue to run, but the infrastructure associated with them cannot be modified or controlled.

Top of Rack Switches

A physical rack contains two top of rack (ToR) switches, each of which has 48 10GigE ports and 4 40GigE uplink ports. The ToR and spine switches carry all network traffic from the servers including VM network, VM management, Virtual SAN, and vMotion traffic. On rack 1 in a multi-rack EVO SDDC, the ToRs also carry traffic to the enterprise network via two of the uplink ports. The ToR switches provide higher bandwidth as well as redundancy for continued operation in case one of the ToR switches goes down.

If the rack has spine switches, the hardware partner connects two uplink ports from each ToR switch to each spine switch.

Servers

You can purchase a physical rack with a minimum of 8 dual-socket 1U servers (1/3 rack). You can then add servers one at a time with the maximum number of servers being 24, which makes up a full rack. Minimum server specifications are as follows.

- 2 Intel E5-2600 series v3 CPUs
- 384 GE DDR4 ECC
- 2 x 10 GE ethernet network interfaces
  
  Each 10 GE interface is connected to a separate ToR switch to ensure redundancy.

- 1 GE out-of-band management interface
  
  The out-of-band management interface is connected to the management switch by using a 1 GE interface.

- Up to 10 storage slots with 8 mechanical drives and 2 x SSDs
- Disc controller with RAID turned off
Management Domain

EVO SDDC Manager configures the first three servers in each physical rack into an entity called the management domain. After you deploy EVO SDDC, you can expand the management domain to include 4 hosts.

The hosts in the management domain are consumed by management workload domains for managing applications. VMware recommends that you do not run non-management workloads or VMs on these hosts. All disk drives are claimed by Virtual SAN.

The management domain contains the following:

- vCenter Server Appliance (including both vCenter Server and Platform Services Controller as separate VMs) managing the vSphere cluster with HA and DRS enabled.
- The following VMs:
  - NSX Manager VM
  - vRealize Operations VM
  - vRealize Log Insight VM
  - EVO SDDC Manager VMs

Figure 1-2. Management Domain Architecture
Network Topology

All hosts in a physical rack are connected to both the two ToR switches with 10Gb links. On each host, NIC port 1 is connected to ToR switch 1 and NIC port 2 is connected to ToR switch 2 with Link Aggregation (LAG).

Figure 1-3. EVO SDDC Network Topology

The BMC on each host is connected to the management switch over a 1G connection. This connection is used for OOB management. Both ToR switches are further connected to a pair of spine switches in a dual-LAG configuration using 40 G links. The spine switches are an aggregation layer for connecting multiple racks.

EVO SDDC is designed to be resilient to certain network failures. The datapath between hosts and ToR switches can tolerate a failure of one link between the host and ToR switches. Between the ToR and spine switches, the system can tolerate the failure of a ToR switch and/or spine switch.

Storage Topology

The primary source of storage for EVO SDDC is Virtual SAN. Each host in the physical rack has up to 8 mechanical disks and up to 2 SSD disks. These disks are divided into 2 groups, each with 4 capacity disks and 1 cache disk. All disks are claimed by Virtual SAN for storage.

The amount of available physical storage in workload domains depends on the number of physical hosts. The amount of usable capacity depends on availability requirements.

Storage traffic is carried over the 10 G links between the hosts and ToR switches. All Virtual SAN members communicate over this 10 G network.

Network QoS is managed by vSphere Network I/O Control (NIOC), which is enabled automatically by EVO SDDC Manager.
EVO SDDC is a logical instance of orchestrating, provisioning, and deploying an SDDC. It maps a converged view of physical resources (e.g., CPU, memory, storage, and network) to a logical abstraction called a virtual rack. EVO SDDC overlays a software suite on top of the physical hardware for operations management, event reporting, and auditing. This enables EVO SDDC to provide consistent hardware management across switches, servers, and storage, as well as a distributed management solution across your SDDC.

**Figure 2-1. EVO SDDC Logical Instance Maps to Physical Resources**

Though there is an EVO SDDC instance on each physical rack, EVO SDDC's distributed architecture provides the EVO SDDC Manager (ESM) as a single point-of-control web-based interface for managing infrastructure and deploying workloads.
The figure below shows the software components of EVO SDDC and how they are mapped to the physical hosts and switches in the rack.

**Figure 2-2.** Multi-Rack Setup

**Figure 2-3.** EVO SDDC Software Stack
This chapter includes the following topics:

- “VIA,” on page 15
- “EVO SDDC Manager,” on page 15
- “Hardware Management Services and Hardware Plugins,” on page 18
- “SDDC Components of EVO SDDC,” on page 19

VIA

VIA is used by system integrators to prepare physical racks for shipping to customers by imaging the rack components with VMware SDDC software.

EVO SDDC Manager

The EVO SDDC Manager provisions, manages, and monitors the logical and physical resources of EVO SDDC.

The EVO SDDC Manager is responsible for EVO SDDC configuration, operations, and management functions by:

- Abstracting and aggregating the physical resources of an SDDC into a logical entity.
- Performing physical resource management such as adding and removing hosts or switches to the rack, adding new racks to scale, failure management, and maintaining and upgrading hosts and switches.
- Orchestrating the shutdown and boot-up of logical software and management plane components of EVO SDDC such as ESXi, vCenter Server, vRealize Operations, vRealize Log Insight, NSX, and Virtual SAN.
- Generating the logical resource mapping structures based on workload profiles, physical events, and physical operations (such as vCenter clusters, cluster expansion operations, etc.).
- Interacting with the EVO SDDC software components, such as vCenter Server for cluster and Virtual SAN management, Hardware Management Services for hardware management, vRealize Operations for health monitoring; NSX Manager for network management, and the vRealize Automation suite for workload management.
As you expand your EVO SDDC environment horizontally by adding physical racks, the EVO SDDC Manager allows data center administrators to configure the additional racks into a single virtual rack. This consolidates compute, storage, and networking resources of the racks available for assignment to workloads.

The EVO SDDC Manager is a multi-threaded execution engine that includes the Physical Resources Manager (PRM), Logical Resources Manager (LRM), and an events engine.

Services Engine

The services engine enables EVO SDDC Manager to perform its management plane functions. The implementation of this engine uses the Java Executor Service framework initialized with a collection of runnable threads and scheduler threads that pull the next threads for execution. EVO SDDC Manager functions are structured as workloads, workflows, and tasks.

Workloads

Workloads are the applications deployed on EVO SDDC. These include setting up the initial EVO SDDC as well as the IaaS and VDI workloads that are deployed after setting up the management domain. Workloads consume resources and can lead to multiple software component instantiations during their creation. They are configured with various parameters that specify their resource requirements, software components to be deployed, network configuration details, etc. These details may be stored as workload metadata in the EVO SDDC Manager database or can be directly supplied to the workflow context which is also stored in the EVO SDDC Manager database.
Workflows
Workflows are a long running group of tasks that change the state of a workload. Examples of workflows include creating an instance of a workload, changing the allocated capacity, or removing the workload and reclaiming its associated resources.

Tasks
A task is a unit of work from a workflow. A task can do calculations, allocate resources, and/or request resources. A workflow task obtains the input parameters from either the workflow context or workload metadata and then sets the output parameters. A task can include multiple steps.

If the task fails, it is resumed from right before the point of failure. Since a task can include multiple steps, the step that follows the last successful step in the task can be the point where the task is resumed.

Database
Workload and workflow metadata is stored in the EVO SDDC Manager database. Workload metadata includes information that is always important to the system such as a list of racks, hosts, etc. Workflow data is temporary and stops to exist when a workflow changes a workload or when the workflow is successfully executed.

Physical Resources Manager
The Physical Resources Manager (PRM) manages the physical components of a physical rack and maintains a corresponding software physical rack object.

The PRM does the following:
- defines the interfaces that access the physical resource abstractions.
- retrieves the physical hardware state by interfacing with the HMS layer.
- exports the interfaces as HTTP Rest endpoints to the PRM UI controller for the administrator to view the physical resources in EVO SDDC (e.g., hosts, switches, and switch topology) for each component.
- relays HMS events to the EVO SDDC Manager engine.

Logical Resource Manager
The Logical Resource Manager (LRM) manages the logical resource state of EVO SDDC.

LRM Controller
The LRM controller is exported as a logical managed view, which is comprised of vCenters deployed and cluster of hosts and resource stats per vCenter.

Examples of logical resource types include the following:
- VM
- distributed virtual switch
- distributed virtual portgroup
- host system
- datastore
- total storage
LRM Logical Resources
LRM builds its logical resource view of EVO SDDC components by interfacing with vCenter using vSphere APIs.

LRM Services
An example of an LRM service is the LRM alarm service that fetches alarms from vCenter periodically.

Events Engine
The events engine pushes EVO SDDC Manager events to vRealize Log Insight. The events engine process can also display events information on the EVO SDDC Manager UI dashboard.

EVO SDDC Manager in a Multi-Rack Setup
When an EVO SDDC instance includes multiple physical racks, bare-metal provisioning and subsequent installation and configuration of software components (e.g., vCenter, NSX, EVO SDDC Manager on host 0) is executed on each rack sequentially. Though there is an instance of EVO SDDC Manager on each physical rack, you can control and manage your EVO SDDC system through a single interface.

EVO SDDC Manager is highly available. The EVO SDDC Manager on host 0 of rack 1 is the leader, while the manager processes on host 0 of the other racks are secondary. To manage this cluster of EVO SDDC Manager services, EVO SDDC uses Zookeeper as a distributed cluster management service. Zookeeper is also used as a shared distributed datastore.

Zookeeper runs as a ZK server process instance within the EVO SDDC Manager VM on host 0. The EVO SDDC Manager process communicates with Zookeeper servers using a Zookeeper client handle. The Zookeeper server listens on port 2181 for incoming client connections. The IP address to access Zookeeper needs to be a public IP so that Zookeeper server nodes are accessible across all physical racks.

In the event of Zookeeper failure, EVO SDDC Manager continues running but it may lose some workflow state or the ability to create a new Zookeeper state.

Hardware Management Services and Hardware Plugins
The Hardware Management Services (HMS) provides the necessary functions required for discovering, bootstrapping, and monitoring the hardware in a physical rack in the system. The HMS runs on the management switch of each physical rack.

The HMS is an abstracted software mechanism that manages the physical hardware in the physical racks, such as servers and network switches. The HMS provides this abstraction to enable integration of supported hardware from different sources and give the EVO SDDC Manager the capability to interact with the hardware. The HMS is only accessed through the EVO SDDC Manager and is not visible to system administrators directly. With the HMS you can discover, bootstrap, and monitor the hardware by polling received hardware events and handling hardware state changes. The HMS obtains these hardware events and state changes from software plugins that hardware partners create and provide to work with their specific hardware.
SDDC Components of EVO SDDC

This section describes how the SDDC software components work within an EVO SDDC system. A virtual rack is a set of physical racks combined into and managed as a single logical entity. A virtual rack domain is a resource group with specific availability and performance attributes.

ESXi

ESXi is a Type I hypervisor that customers use to implement virtualization on bare metal systems to create their own datacenters. Along with certain add-on management products, many customers use ESXi to create private cloud solutions.

EVO SDDC uses ESXi as a foundation for creating its SDDC architecture by using the hypervisor to run VMs in workload clusters as well as the management domain clusters. vCenter Server manages the clusters using HA and uses internal storage aggregated into a datastore using Virtual SAN.

vCenter Server

vCenter Server provides a single point of management of a VMware virtualized environment with one or more ESXi instances.

The management domain cluster on each physical rack includes a vCenter Server Appliance deployed as two VMs, one for the Platform Services Controller division and one for the vCenter division. All other virtual rack domains include the vCenter division (deployed from a vCenter Server Appliance), logically connected to the management domain cluster’s Platform Services Controller VM.

Each vCenter division is configured as follows:

- A cluster with DRS and HA is enabled.
- Hosts supplying resources to the virtual rack domain are added to the cluster.
- The spinning disk space is aggregated into a Virtual SAN-backed datastore, with the SSDs doing caching and managed by the vCenter Server.

Virtual SAN

Virtual SAN allows you to create a virtual SAN from the local datastores on clustered ESXi instances. The resulting Virtual SAN becomes a shared-datastore for the ESXi instances contributing storage. This leverages local disk storage on servers that have traditionally been underutilized, as well as provides a platform on which you can build an SDDC.

In EVO SDDC, each virtual rack domain contains one or more clusters. The EVO SDDC Manager creates a single Virtual SAN volume spanning all the hosts within each cluster. This means that each cluster must have a minimum of three hosts.

NSX

NSX provides virtualized networking components (virtual routers, virtual firewalls, micro-segmentation, etc.) that can be configured by an administrator to implement software defined networking.

Each virtual rack domain has an NSX Manager VM per vCenter Server VM with NSX Virtual Switches installed in the hypervisors. EVO SDDC Manager uses NSX APIs to configure a VXLAN with the IP parameters specified for the virtual rack domain, and the HMS to configure the ToR ports associated with the servers.

Beyond this, data center administrators can use the vSphere Web Client to perform additional NSX configuration required by the specific VMs deployed within the virtual rack domain.
**vRealize Operations**

vRealize Operations provides an integrated insight into performance, capacity and configuration, and health of your virtualized environment. These insights help administrators provide a high quality of service while maintaining compliance and efficiently detecting and resolving any issues that may arise in the datacenter.

EVO SDDC configures vRealize Operations so that administrators can monitor operations of both the physical and virtual components through a single interface.

**vRealize Log Insight**

While vRealize Operations primarily allows administrators to monitor physical and virtual infrastructure and proactively look for pending failures and performance issues, vRealize Log Insight provides them the ability to quickly perform root cause analysis (RCA) when failures, either in resources or in policies, occur and quickly remediate them.

Each physical rack contains a management domain cluster that contains an instance of the vRealize Log Insight virtual appliance. When deploying EVO SDDC in a multi rack setup, the bring-up process federates the vRealize Log Insight virtual appliances together for redundancy and scalability. Further, the bring-up process configures vRealize Log Insight to receive and process log events for every device in the rack including servers, switches, and PDUs.
EVO SDDC Use Cases

EVO SDDC comes with two pre-packaged workloads, Infrastructure as a Service (IaaS) and Virtual Desktop Infrastructure (VDI). The following sub-sections discuss how EVO SDDC implements each of these use cases.

This chapter includes the following topics:
- “Virtual Infrastructure,” on page 21
- “Virtual Desktop Infrastructure,” on page 22

Virtual Infrastructure

You can use EVO SDDC to offer Virtual Infrastructure (VI) to your consumer. In a VI model, EVO SDDC hosts hardware, software, servers, storage and other infrastructure components on behalf of its users. VI providers also host users’ applications and handle tasks including system maintenance, backup and resiliency planning. VI can thus be utilised by enterprise customers to create cost effective and easily scalable IT solutions where the complexities and expenses of managing the underlying hardware are outsourced to the cloud provider. VI can be used to provide a location for departments to store data or run applications or to provide enterprise infrastructure at a fraction of the cost.

Common benefits of VI include cost savings (shared hardware), scalability, accessibility, and security (no single point of failure).

VI configures a flexible virtual datacenter including the following:
- OS instances in the form of VMs with vCPUs, vRAM, and vDisk including storage and networking resources.
- Networking infrastructure to connect the servers to one another in a multi-tenant datacenter implementation where a customer cannot see another customer’s servers via datacenter infrastructure. Typically, the service provider instantiates a new VLAN or VxLAN for each customer and places their VMs on it.
- Internet connectivity with public IP addresses but no default firewalling.

You can acquire modular EVO SDDC units to match your consumers’ data center capacity requirements and offer the resulting virtual infrastructure to your consumers with minimal overhead. EVO SDDC Manager deploys the following for a VI workload:
- Physical compute
  The servers specified by the administrator or API call are deployed. Each server includes processing, storage, and network connectivity.
- Virtual infrastructure
The specified number of vCenter Server VM are deployed, which connect to the Platform Services Controller in the management domain for credentials and licenses. It creates workload domains according to the specifications, adding hosts and creating Virtual SAN datastores from the storage on those hosts. It also deploys and configures NSX switches into the ESXi instance on each host.

- Physical networking

  EVO SDDC Manager uses the HMS to configure the ToRs to accept traffic for the VLANs created in the virtual infrastructure and to route traffic for the public logical networks of the virtual rack domain.

- Management

  EVO SDDC allows administrators to monitor and manage the virtual rack domain using vRealize Operations Manager, vRealize Log Insight, and vRealize Automation.

**Virtual Desktop Infrastructure**

With EVO SDDC, you can deliver virtual or hosted desktops and applications through a single Virtual Desktop Infrastructure (VDI) platform with VMware Horizon. End users can access all of their desktops and applications through a single unified workspace.

When you deploy a VDI workload, EVO SDDC reserves the necessary hardware resources and deploys the required SDDC components. Your EVO SDDC system auto-configures the physical infrastructure. EVO SDDC Manager deploys the following for a VDI workload:

- Physical compute

  The servers specified by the administrator or API call are deployed. Each server includes processing, storage, and network connectivity.

- Virtual infrastructure

  The specified number of vCenter Server VM are deployed, which connect to the Platform Services Controller in the management domain clusters for credentials and licenses. It creates clusters according to the specifications, adding hosts and creating Virtual SAN datastores from the storage on those hosts. It also deploys and configures NSX switches into the ESXi instance on each host.

- Physical networking

  EVO SDDC Manager uses the HMS to configure the ToRs to accept traffic for the VLANs created in the virtual infrastructure and to route traffic for the public logical networks of the virtual rack domain.

- Management

  EVO SDDC allows administrators to monitor and manage the virtual rack domain using vRealize Operations Manager, vRealize Log Insight, and vRealize Automation.

- VDI

  Horizon 6 provides the VDI environment.

With VDI, you can:

- Create additional users for access to the Horizon 6 environment, probably connecting it to an LDAP or Active Directory server for authenticating enterprise users
- Configure desktop environments including persistence, application access, etc.
- Migrate VMs from VDI infrastructure outside the virtual rack domain into the virtual rack domain’s cluster(s). This is made possible because the EVO SDDC Manager creates the management virtual network as a public one (traffic can flow in and out of the virtual rack domain and physical rack) and vCenter Server 6.0 allows VM migration between vCenter Servers.
Preparing your Site for the EVO SDDC System

The datacenter facility must be prepared for the arrival of the EVO SDDC system.

Prior to the arrival of the EVO SDDC system, you completed the *VMware EVO SDDC Site Readiness Planning Guide*. This document describes the prerequisites and site information you use for planning the deployment of the physical infrastructure. Refer to this document for information on how to prepare your datacenter location for the arrival of the EVO SDDC system.
Bringing-up the EVO SDDC System

Bringing-up the EVO SDDC system involves multiple steps. To ensure a successful bring-up, you must perform the tasks in the order described. If you have procured a multi-rack system, you complete these tasks on rack 1 before you add additional racks to the system.

The default password on all rack components is set to EvoSddc!2016. You can change these after bring-up.

Prerequisites

Verify that you have met the following prerequisites.

- You have your completed copy of the VMware EVO SDDC Site Readiness Planning Guide. You completed this document and provided a completed copy to your VMware representative when you started engaging to participate in the RTP program. The completed document contains networking and other information that you use in the EVO SDDC setup wizard.

- You have prepared your site, including power requirements, as described in the VMware EVO SDDC Site Readiness Planning Guide.

- You have a way for a web browser to communicate with a port on the physical racks’ management switches. The setup wizard runs in a supported browser, such as Mozilla Firefox and Google Chrome. For the list of supported browser versions, see the Release Notes. To run the setup wizard, the browser must be able to connect to port #48 on a rack’s management switch. Some methods to accomplish this prerequisite are:
  - On the physical rack, wire the management switch’s port #48 to a computer (jump host) that has one of the supported browsers, such as a Windows laptop with its integrated monitor.
  - To use a browser on a remote computer, use a switch to connect the management switch’s port #48 to a network that your remote computer can use to access the port.

- For troubleshooting purposes, you must have vCenter Server for Windows installed in your environment. Your system arrives with virtual machines preinstalled on one of the ESXi hosts in each rack. If one of those virtual machines do not power on when you power on the servers in a rack, you can use the vSphere Client application to connect to manually power on the virtual machine. Some methods to accomplish this prerequisite are:
  - If you are wiring the management switch’s port #48 to a jump host to meet the browser prerequisite, also install vSphere Client application on that host.
  - If you are meeting the browser prerequisite using a network-and-switch connection to port #48 and a remote computer, install a vSphere Client application on that remote computer.
  - The NIC on the jump VM or remote computer must support VLAN tagging.
Procedure

1. **Connect Rack 1 to Your Power Source and Network** on page 26
   The EVO SDDC system arrives at your site pre-assembled in the rack configuration that you ordered. Internal cables are connected within the rack.

2. **Bring-Up EVO SDDC on Rack 1** on page 27
   You run the EVO SDDC setup wizard on a computer that can access the management switch in the physical rack. The wizard runs in a standard web browser, such as Mozilla Firefox and Google Chrome.

3. **Change Passwords of Rack Components** on page 45
   EVO SDDC is deployed with factory default passwords. You must replace the default passwords with secure system generated passwords.

4. **Locate EVO SDDC Manager IP Address** on page 46
   The EVO SDDC Manager IP address changes during bring-up. You need to look up the new IP address so that you can log in to change the password on the rack components.

5. **Change EVO SDDC Manager Password** on page 47
   Along with the imaged rack, your hardware partner sends you the system generated password for EVO SDDC Manager. This password is not changed during password rotation. VMware strongly recommends that you change this password before creating workloads.

**Connect Rack 1 to Your Power Source and Network**

The EVO SDDC system arrives at your site pre-assembled in the rack configuration that you ordered. Internal cables are connected within the rack.

The pre-assembled physical rack arrives at your datacenter with the internal cables already connected within the rack.

**Procedure**

1. Connect the rack’s power inlets to your power source.
   Both power inlets are single-phase.

2. Connect port 48 of rack 1’s management switch to a laptop that has a standard web browser installed, from where you will run the setup wizard.

3. Configure the NIC on the laptop to tag VLAN traffic.

4. Create two interfaces on the laptop - say interfaces 1 and 2.
   a. Leave interface 1 untagged and assign the 192.168.100.248/24 IP address/subnet mask to it.
      Interface 1 will allow OOB access to all EVO SDDC hardware and software components.
   b. Tag interface 2 with the management VLAN and assign an unused IP address/subnet mask from the management network IP address pool used for management workload domains.
      Interface 2 will allow for OOB access if there is an uplink mis-configuration and the system is unreachable from the upstream customer network.

5. Install a vSphere client application on the jump host.
   Your EVO SDDC system arrives with virtual machines pre-installed on ESX host 192.168.100.50 in the rack. If any of those virtual machines do not power on when you power on the servers in a rack, you can use the vSphere Client application to connect to and manually power on the virtual machine.
What to do next

1. Ping host 0 at 192.168.100.50. If you are unable to ping host 0, contact VMware support.

2. Open a supported browser on the jump host and navigate to https://192.168.100.40:8443/vrm-ui. For a list of the supported browser versions, see the product EVO SDDC Release Notes. If the browser does not display the setup wizard, the required virtual machines might not be powered on. Verify whether the required virtual machines are running and, if not, power them on as described in “Manually Power On Virtual Machines When Setting Up Your EVO SDDC System,” on page 65.

Continue with the steps in “Bring-Up EVO SDDC on Rack 1,” on page 27.

Bring-Up EVO SDDC on Rack 1

You run the EVO SDDC setup wizard on a computer that can access the management switch in the physical rack. The wizard runs in a standard web browser, such as Mozilla Firefox and Google Chrome.

If you accidentally log out of the browser while the configuration process is running, the process continues to progress. You can log back in to continue the configuration.

Prerequisites

1. Ensure that you have completed the steps in “Connect Rack 1 to Your Power Source and Network,” on page 26.

2. Either turn off firewall on the jump host or ensure that the firewall ports required to access EVO SDDC on it are open.

<table>
<thead>
<tr>
<th>Table 5-1. Inbound Ports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port</td>
</tr>
<tr>
<td>TCP 443</td>
</tr>
<tr>
<td>TCP 8443</td>
</tr>
<tr>
<td>TCP/UDP 53</td>
</tr>
<tr>
<td>TCP 22 (optional)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 5-2. Outbound Ports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port</td>
</tr>
<tr>
<td>TCP/UDP 53</td>
</tr>
<tr>
<td>UDP 123</td>
</tr>
</tbody>
</table>

3. Ensure that uplink ports 43-46 (for 10 Gbps uplink connectivity) or 51-54 (for 40 Gbps uplink connectivity) are connected to the uplink switch and configured appropriately.

Procedure

1. After you connect the EVO SDDC system to your network, wait at least 10 minutes before proceeding to the next step. This ensures that all rack components are powered on.
In a web browser on the laptop that you have connected to port #48 of the rack's management switch, navigate to https://192.168.100.40:8443/vrm-ui.

The Welcome page appears.

Click SET TIME.

The System Time for EVO SDDC page appears.
4 Specify the date, time, and time zone for the rack and click Submit. The specified time should match the current time in your environment.

The system sets the time on each EVO SDDC component.

After the time has been set on all EVO SDDC components, EVO SDDC Manager is rebooted and the CONTINUE button turns blue.

5 Click CONTINUE.

The system performs Power On System Validation (POSV), where it verifies that the integrated system delivered to the customer is correct and operational. It validates that the right hardware and software is installed in the racks and also validates the health of the installed hardware and software applications.
POSV verifies the presence of the following hardware components.

a  Switches - ToRs, spines, and management
   ■  Manufacturer and model
   ■  Number of ports and speed of ports

b  Servers
   ■  Manufacturer and model
   ■  Firmware and BIOS settings
- CPUs - model, speed, number of cores
- Local boot device
- HDD and SSD - manufacturer, model, speed, and capacity
- NICs - manufacturer, model, number and speed of ports
- BMC name and version

Pass criteria for POSV is as follows:

a. All switches (management, ToRs, and spine) are healthy
b. Host 0 and at least three other hosts in the rack are healthy

For a list of POSV alerts, see Chapter 7, “Alerts List,” on page 61. You can ignore warning alerts. A critical or error alert indicates that the component is not healthy.

After hardware validation is complete, POSV checks availability of the pre-installed software on the system.

If the validation page displays an error, ensure that all physical connections are in place. Then click RETRY.

6. After the validation is complete, click CONTINUE.

The Login page appears.

### Login

<table>
<thead>
<tr>
<th></th>
<th>Enter user name</th>
<th>Enter password</th>
</tr>
</thead>
</table>

7. Type the default credentials:

   - User name: administrator@vsphere.local
   - Password: vmware123
8 Click **LOGIN**.

The EVO SDDC End User License Agreement (EULA) page appears.

9 Click **AGREE**.

The Create a Superuser Account page appears.

10 Type a user name and password for the superuser.

The password must contain at least one each of the following:

- lowercase letter
- uppercase letter
- number
- special character such as ! or @
The superuser account has the same privileges as the administrator@vsphere.local account. After bring-up is complete, the password for the administrator@vsphere.local account is rotated to a random password, but the password for the superuser account does not change. You can, thus, login to EVO SDDC Manager with the superuser user name and password without having to look up the rotated password for the administrator account.

11 Click CREATE SUPERUSER.

The Initial Setup wizard appears.

12 On the General information page, enter the following information.

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>vRack Name</td>
<td>Name of the virtual rack</td>
</tr>
<tr>
<td>Company Name</td>
<td>Your company name</td>
</tr>
<tr>
<td>Company Department</td>
<td>Your department name</td>
</tr>
<tr>
<td>Root DNS Domain</td>
<td>Type your root DNS domain (for example, vmware.corp). This should be the same as the Active Directory domain.</td>
</tr>
<tr>
<td>EVO SDDC Sub-Domain</td>
<td>EVO SDDC generates this based on the root domain you specified. For example, if you specified the root domain as mycompany.example, the subdomain is auto-populated as subdomain.mycompany.example. You can edit this field. The sub domain is used for all components in EVO SDDC. So everything is named component.subdomain. Based on our example, the NSX VM would be named rack-1-nsxmanager-1.subdomain.vmware.com.</td>
</tr>
<tr>
<td>SSO Domain</td>
<td>Type the authentication domain to be used by SSO. For example, vsphere.local. The root domain and PSC domain must be different if you plan to join Active Directory. If you will not join Active Directory, they can be the same.</td>
</tr>
</tbody>
</table>

   NEXT
Field Name | Description
---|---
EVO SDDC License Key | Type the license key for EVO SDDC. If you do not have the license key now, you can enter it later on the EVO SDDC dashboard.

Joining Active Directory during EVO SDDC bring-up can fail because of unconfigured or misconfigured uplinks, mis-configured upstream firewall, or incorrect corporate DNS configuration. After bring-up, you must identify and correct the cause of the failure. You can then manually connect each PSC to Active Directory. See *ESXi and vCenter Server 6.0 Documentation*.

13 Click **NEXT**.

The Management Configuration page appears.

Five VLANs are configured while setting up networks for the bring-up phase - management, vMotion, VSAN, VXLAN, and corporate (upstream) network. The management and corporate upstream networks are routable to the datacenter. The vMotion, VSAN, and VXLAN networks are routable only within EVO SDDC.

Note that there is a progress bar at the top of the page. To make any changes to a previous screen, click the appropriate page title. After making a change, you must click **NEXT** for the change to take effect.
14 On the Management page, enter your management network values. The DNS server here is the DNS server for your management network.

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>vLAN ID</td>
<td>The supported VLAN range is 3-3299.</td>
</tr>
<tr>
<td>Subnet</td>
<td>VMware recommends using a /22 network. This is to allow for adequate IP address capacity as you expand your EVO SDDC deployment by adding racks.</td>
</tr>
<tr>
<td>Subnet Mask</td>
<td>VMware recommends using a /22 network.</td>
</tr>
<tr>
<td>Gateway</td>
<td>Gateway address.</td>
</tr>
<tr>
<td>DNS</td>
<td>DNS of your datacenter.</td>
</tr>
<tr>
<td>NTP</td>
<td>NTP of your datacenter.</td>
</tr>
<tr>
<td>Exclude Individual IP Addresses</td>
<td>Enter a set of IP addresses to exclude from the provisioning process. For example, you can exclude those IP addresses that are already assigned to your network availability services such as HSRP. To add multiple addresses, type an IP address, click the + sign, and type the next IP address.</td>
</tr>
<tr>
<td>Exclude IP Address Ranges</td>
<td>Enter a set of IP address ranges to exclude from the provisioning process. For example, you can exclude a range of IP addresses that you want reserved for other uses in your network. To add multiple address ranges, type an IP address range, click the + sign, and type the next IP address range.</td>
</tr>
</tbody>
</table>

15 Click **USE DEFAULTS** to allow EVO SDDC to specify system generated IP address ranges for vMOTION, VSAN, and VXLAN. Since the EVO SDDC network is an enclosed ecosystem, it is recommended that you select this option.

16 Click **NEXT**.

The vMotion page appears.
The progress bar is displayed with additional wizard steps.

To make any changes to a previous screen, click the appropriate page title. After making a change, you must click NEXT for the change to take effect.

17 On the vMotion Configuration page, review or enter your network addresses for VLAN ID, Subnet, Subnet Mask, Gateway, and excluded IP addresses and IP address ranges.

**Note**: The supported VLAN range is 3-3299. VMware recommends using a /22 network for the subnet and subnet mask. This is to allow for adequate IP address capacity as you expand your EVO SDDC deployment by adding racks.
18 Click NEXT.

The VSAN information page appears.

19 On the VSAN Information page, review or enter your Virtual SAN network addresses for the VLAN, Subnet, Subnet Mask, Gateway, and excluded IP addresses and IP address ranges.

**Note** The supported VLAN range is 3-3299. The subnet and subnet mask must be at least a /22 network. This is to allow for adequate IP address capacity as you expand your EVO SDDC deployment by adding racks.
20 Click NEXT.

The VXLAN information page appears.

21 On the VXLAN information page, review or enter your VXLAN information for the VLAN ID, Subnet, Subnet Mask, Gateway, and excluded IP addresses and IP address ranges.

**Note** The supported VLAN range is 3-3299. VMware recommends using a /22 network for the subnet and subnet mask. This is to allow for adequate IP address capacity as you expand your EVO SDDC deployment by adding racks.
22 Click NEXT.

The Data Center connections page appears.

<table>
<thead>
<tr>
<th>VLAN ID</th>
<th>VLAN ID(required)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data Center Connections

Specify the settings to use to connect the system to your corporate network. Because these settings will not be validated until later in the configuration process, please ensure the accuracy of the values you enter before continuing.

<table>
<thead>
<tr>
<th>Connection Name</th>
<th>Connection Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subnet</th>
<th>Subnet Mask</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gateway</th>
<th>Gateway</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DNS</th>
<th>DNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exclude Individual IP Addresses</th>
<th>Exclude Individual IP Addresses</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exclude IP Address Ranges</th>
<th>Exclude IP Address Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

BACK CANCEL NEXT
23 The Data Center Connections page contains information for EVO SDDC to connect to the external network. Enter your corporate network information for the VLAN ID, Connection Name, Network Start IP, Subnet Mask, Gateway, DNS, NTP, and excluded IP addresses and IP address ranges.

**IMPORTANT** Review these values carefully before clicking NEXT because external connections are not validated at this time.

The Data Center Uplink page appears.

24 If the uplink is an L2 connection, provide the following information.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uplink Type</td>
<td>L2</td>
</tr>
<tr>
<td>Uplink LAG Enabled</td>
<td>It is recommended that you select this option.</td>
</tr>
<tr>
<td>Uplink Ports</td>
<td>Port numbers on the ToR switches that are connected to the uplink network.</td>
</tr>
<tr>
<td>Uplink Speed</td>
<td>Speed for uplink connections.</td>
</tr>
</tbody>
</table>

25 If the uplink is an L3 connection, provide the following information.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uplink Type</td>
<td>L3</td>
</tr>
<tr>
<td>Uplink LAG Enabled</td>
<td>It is recommended that you select this option.</td>
</tr>
<tr>
<td>Uplink Ports</td>
<td>Port numbers on the ToR switches that are connected to the uplink network.</td>
</tr>
<tr>
<td>Uplink Speed</td>
<td>Speed for uplink connections.</td>
</tr>
<tr>
<td>Uplink IP</td>
<td>IP address of the uplink IP on the ToR switches.</td>
</tr>
<tr>
<td>Mask IP</td>
<td>Subnet mask for the uplink IP.</td>
</tr>
<tr>
<td>Next Hop IP</td>
<td>IP address of the uplink switch for the data center.</td>
</tr>
</tbody>
</table>
26 Click NEXT.

The Configuration Review page appears.

27 On the Configuration Review page, review the information carefully.

28 After you ensure that all values on the Review page are accurate, click NEXT.

After a few moments, the Component IP Allocation page appears and displays the IP addresses for the VMs that will be deployed for the Log Insight, NSX, PSC, EVO SDDC Manager, vCenter Server, and vRealize Operations software components.
If you need to make any change on the IP Reallocation page, click CANCEL to make edits as required.

29 Note down the virtual machine IP addresses. You will need these later in the bring-up process.

30 After you ensure that the IP Reallocation values are correct, click CONFIRM.

The EVO SDDC configuration process begins. The Configure Systems page displays the progress and information about the package being compiled.
You can see progress on the individual tasks by clicking Task Details.

The following tasks are completed during this process.

a. IP addresses allocated for all components by contacting the component's local IPAM server.

b. EVO SDDC Manager: The EVO SDDC Manager is assigned a new non-routable and management IP address.
c vCenter Server:
   1 Verified that all servers are reachable and have necessary uplinks available.
   2 Updated IP addresses for vCenter appliance.
   3 Created data center and vSphere cluster.
   4 Created vSphere Distributed Switch and port groups (vMotion, Virtual SAN, Management, Non-Routable, and VM).
   5 For each server:
      a Set the new IP addresses (non-routable and management).
      b Added the server into a vSphere cluster.
      c Created vMotion and Virtual SAN vmknics.
      d Migrated VMs, vmknics, and uplinks from the standard switch to vSphere Distributed Switch.
      e Deleted the standard switch.
   6 Tagged all port groups with user-specified VLAN tags.

d Virtual SAN:
   1 Enabled Virtual SAN and claimed all available disks on all of the servers in the vSphere cluster.
   2 Created Virtual SAN policies.
   3 Applied Virtual SAN policies to all VMs.

e NSX:
   1 Deployed NSX Manager.
   2 Registered with vCenter Server.
   3 Created NSX Controller cluster, with three servers.
   4 Configured VXLAN across the vSphere cluster.
   5 Created the appropriate segment range and transport zone.

f Log Insight:
   1 Deployed Log Insight.
   2 Configured Log Insight.

g vRealize Operations: Deployed.

h Enabled vSphere HA and DRS.

If there is an error during the configuration of the system, an error page appears. Click RETRY. The configuration process remembers where it was in the sequence and start over from that point. If an error occurs even after you rerun, contact VMware Support.
After the system configuration is completed, the EVO SDDC Manager is restarted. When EVO SDDC Manager comes up, the Password Rotation page is displayed. For information on rotating the system passwords, see “Change Passwords of Rack Components,” on page 45.

### Password Rotation

![Password Rotation](image)

31 Note the IP address on the URL. If you accidentally close the browser, you will need this IP address to navigate to the Dashboard.

32 Leave this browser window open.

33 Configure DNS delegation for automatic resolution of all names in EVO SDDC.

EVO SDDC Manager runs on an internal DNS server so that name resolution works during the EVO SDDC bring-up. You must now configure the corporate DNS server to delegate zone control for the EVO SDDC domain to EVO SDDC Manager.

For example, if your corporate domain is mycompany.example, and the EVO SDDC Sub Domain is subdomain. mycompany.example, the corporate DNS server must be configured to delegate control of subdomain. mycompany.example to EVO SDDC Manager.

a Install DNS on your jump server by adding a new role through Server Manager and selecting DNS.

b Ensure that your jump server uses the local DNS for name resolution.

c Configure the primary zone (mycompany.example) as a zone managed by Windows DNS.

d Right-click the zone and select New Delegation.

e Enter the name of the sub-domain (subdomain).

f In the Server fully qualified domain name (FQDN) field, type the IP address of EVO SDDC Manager and click Resolve.

g Click OK.

The new zone appears as a delegated zone under your primary domain.

h In a command line window, ping psc.EVO_SDDC_Sub_Domain (psc.subdomain. mycompany.example in our example).

### Change Passwords of Rack Components

EVO SDDC is deployed with factory default passwords. You must replace the default passwords with secure system generated passwords.

**Note** In a multi-rack setup, you must change the passwords on rack 1 before bringing-up additional racks.
Prerequisites
You must have completed bring-up on the rack and the Password Rotation blocker screen must have been displayed.

Procedure
1. In a command line window, SSH to one of the base IP addresses for EVO SDDC Manager on the rack. See “Locate EVO SDDC Manager IP Address,” on page 46.
2. Stop the services on EVO SDDC Manager:
   ```
   service vrm-watchdogserver stop
   service vrm-tcserver stop
   ```
3. Navigate to `/home/vrack/bin`.
4. Type the following command:
   ```
   ./vrm-cli.sh lookup-password
   ```
   The output displays the passwords and IP addresses for all components.
5. Save the output to a secure location so that you can access it later.
6. Save a copy of the `/home/vrack/Vmware/vRack/vrm.properties` file to a secure location where you can access it later.
7. In the EVO SDDC Manager console window, navigate to `/home/vrack/bin`.
8. Type the following command:
   ```
   ./vrm-cli.sh rotate-all
   ```
   This command changes the passwords of physical and logical components on the rack. Wait for 10 minutes before proceeding to the next step.
9. In the EVO SDDC Manager console window, type the following command again:
   ```
   ./vrm-cli.sh lookup-password
   ```
   Save the output. Compare the output file you saved in step 5 with the output file you saved now and ensure that all passwords have been changed. Note the password for the administrator account, which you will need for logging in to the EVO SDDC dashboard.
10. Restart EVO SDDC Manager services by typing the following command.
    ```
    service vrm-watchdogserver start
    service vrm-tcserver start
    ```
11. Refresh the browser window where you were running the Initial Setup wizard.
    The EVO SDDC Dashboard is displayed.

Locate EVO SDDC Manager IP Address
The EVO SDDC Manager IP address changes during bring-up. You need to look up the new IP address so that you can log in to change the password on the rack components.

Procedure
1. Look up the vCenter Server IP address from the notes you took when the Component IP Allocation page of the Initial Setup wizard displayed the IP addresses allocated to the virtual machines.
2. Login to this IP address via the vSphere Web Client. Use your superuser account credentials for the user name and password.
Navigate to the **Hosts and Clusters** view and click the EVO SDDC Manager VM (VRM) in the left pane.

On the right pane, click the **Summary** tab.

The **IP Address** field displays the EVO SDDC Manager IP address.

Click **View all** to display all the IP addresses.

Identify the base IP addresses for EVO SDDC Manager.

There are three IP addresses displayed for EVO SDDC Manager. The IP address that was displayed for VRM on the IP Allocation page is the virtual IP (VIP) of the EVO SDDC Manager. The other two IP addresses are the base addresses. You need a base IP address for password rotation because the VIP disappears when the vrm-tcserver service is shut down, which will make you lose connectivity when you shut down the service as required during password rotation.

**Change EVO SDDC Manager Password**

Along with the imaged rack, your hardware partner sends you the system generated password for EVO SDDC Manager. This password is not changed during password rotation. VMware strongly recommends that you change this password before creating workloads.

**Procedure**

1. In a command line window, SSH to the EVO SDDC Manager on the rack.
2. Login as **root**. Use the password provided to you by the partner.
3. Type the following command to change the password:
   
   ```
   passwd
   ```

   At the prompt, type and re-type the new password.

   The EVO SDDC Manager password is changed.
4. Refresh the web browser window where you were running the Initial Setup wizard.
5. Type in one of the following set of credentials:
   - superuser account username and password that you created during the initial setup
   - administrator@vsphere.local user name and the password you noted down after rotating it (credentials appear in the Single Sign On section in the output of the `lookup-password` command)
The dashboard page appears.

For information on how to administer and operate your data center's EVO SDDC system, see the Administering VMware EVO SDDC.
Adding Racks to your EVO SDDC System

Once EVO SDDC is running on rack 1, you can bring up EVO SDDC on additional physical racks in your environment.

Procedure

1. **Power on Additional Rack and Connect it to Spine Switches** on page 49
   - This procedure refers to the rack being added as rack 2. Follow the same procedure for adding any rack.
2. **Bootstrap Additional Rack** on page 50
   - Bootstrap EVO SDDC Manager on rack 2 from EVO SDDC Manager on rack 1.
3. **Manual Steps for Rack Addition** on page 53
   - Complete these steps before bringing-up the additional rack.
4. **Bring-Up on Additional Rack** on page 54
   - Complete bring-up on the rack you are adding to your EVO SDDC system.
5. **Changing Passwords of Rack Components** on page 58
   - EVO SDDC is deployed with factory default passwords. It is highly recommended that you replace the default passwords with secure system generated passwords.
6. **Change EVO SDDC Manager Password on Each Additional Rack** on page 59
   - Along with each imaged rack, your hardware partner sends you the system generated password for EVO SDDC Manager. During password rotation, the EVO SDDC Manager is not changed. VMware strongly recommends that you change this password on each rack before creating workloads.

**Power on Additional Rack and Connect it to Spine Switches**

This procedure refers to the rack being added as rack 2. Follow the same procedure for adding any rack.

**Prerequisites**

1. Make the following connections while rack 2 is powered down so that there is no connectivity between rack 1 and rack 2:
   - Rack 1 ToR 1 port 49 to spine 1 port 1 on rack 2
   - Rack 1 ToR 1 port 50 to spine 2 port 1 on rack 2
   - Rack 1 ToR 2 port 49 to spine 1 port 2 on rack 2
   - Rack 1 ToR 2 port 50 to spine 2 port 2 on rack 2
2. Verify that the ports on the spine switches on rack 2 are up.
3 Verify that the link connectivity LED between the racks is up.
4 The bring-up process must have been completed successfully on rack 1. Rack 1 Dashboard must be accessible and the EVO SDDC Manager VM (VRM) on rack 1 must be powered on.
5 Password rotation must have been completed on rack 1.

**Procedure**

1 Power on rack 2.
   
   Wait at least 10 minutes before proceeding to the next step. This ensures that all rack components are powered on.
2 Ensure that you can ping EVO SDDC Manager on rack 2 from rack 1.
   a SSH to EVO SDDC Manager on rack 1 with your superuser account credentials.
   b Ping EVO SDDC Manager on rack 2 (192.168.100.40).

**What to do next**
Bootstrap additional rack.

### Bootstrap Additional Rack

Bootstrap EVO SDDC Manager on rack 2 from EVO SDDC Manager on rack 1.

**Procedure**

1 On the EVO SDDC Manager Dashboard for rack 1, click **SETTINGS > Physical Rack Settings**.
2 Click the **Additional Rack** tab.
   
   The thumbprint of rack 2 is displayed here.
3 Click **ADD RACK**.

The Add a Rack wizard appears.

```
3 Click ADD RACK.

The Add a Rack wizard appears.
```

4 Compare the thumbprint displayed on the screen with the thumbprint you received from the partner.

5 If the thumbprints match, click **CONFIRM**.

The Validation page appears.

```
4 Compare the thumbprint displayed on the screen with the thumbprint you received from the partner.

5 If the thumbprints match, click CONFIRM.

The Validation page appears.
```
6 On the Validation page, type the bootstrap password and click CONFIRM.

The Confirmation page confirms that the additional rack has been added to the EVO SDDC system.

7 Click DONE.

The Additional Rack page displays the thumbprint of the rack you just added. The CONFIGURE button is grayed out until you complete the manual steps required at this point. See “Manual Steps for Rack Addition,” on page 53.

8 Leave this browser window open.

What to do next
Complete manual steps for rack addition.
Manual Steps for Rack Addition

Complete these steps before bringing-up the additional rack.

Procedure

1 Copy the file encryption keys from rack 1 to rack 2. This file will be used to perform encryption and decryption while saving and retrieving the ESXi and PSC passwords to and from Zookeeper.
   a In a command line window, SSH to the EVO SDDC Manager on rack 2.
   b Run the following script:
      ```bash
      /home/vrack/VMware/vRack/copycryptokeys.sh
      ```
   c Specify the source file to copy. The default is `/home/vrack/VMware/vRack/etc/vrm-security.keystore` on EVO SDDC Manager on rack 1.
   d Specify the destination path. The default is `/home/vrack/VMware/vRack/etc/vrm-security.keystore` on EVO SDDC Manager on rack 2.

   If the files are copied successfully, appropriate rights are assigned (`chgrp vfabric destination`, `chmod 640 destination`) and the message `File copied successfully` is displayed.

2 Confirm that the ISVMs on rack 2 are deleted.

3 In an SSH session on EVO SDDC Manager, stop watchdog and tcserver.
   ```bash
   service vrm-watchdogserver stop
   service vrm-tcserver stop
   ```

4 Navigate to `/home/vrack/bin`.

5 Sync the EVO SDDC Manager properties by typing the following command.
   ```bash
   ./vrm-cli.sh sync-properties
   ```

6 Restart EVO SDDC Manager services by typing the following command.
   ```bash
   service vrm-watchdogserver start
   service vrm-tcserver start
   ```
   Wait till the tcserver starts.
Bring-Up on Additional Rack

Complete bring-up on the rack you are adding to your EVO SDDC system.

Procedure

1. Do one of the following to begin bring-up:
   - In the Add a Rack wizard that you had left after bootstrapping the additional rack, click CONFIGURE.
   - Open a new browser window and type the following URL:
     https://192.168.100.40:8443/vrm-ui
     The Welcome page appears.
2. Click **SET TIME**.

The System Time for EVO SDDC page appears.

3. Specify the date, time, and time zone for the rack and click **Submit**. The specified time should match the current time in your environment.

The system sets the time on each EVO SDDC component.
After the time has been set on all EVO SDDC components, EVO SDDC Manager is rebooted and the \textbf{CONTINUE} button turns blue.

4 Click \textbf{CONTINUE}.

The system performs Power On System Validation (POSV), where it verifies that the integrated system delivered to the customer is correct and operational. It validates that the right hardware and software is installed in the racks and also validates the health of the installed hardware and software applications.

If the validation page displays an error, ensure that all physical connections are in place and that the VMs listed in “Manually Power On Virtual Machines When Setting Up Your EVO SDDC System,” on page 65 are powered on. Then click \textbf{RETRY}.
5 Log in using the default credentials:
   User name: administrator@vsphere.local
   Password: vmware123

6 Click LOGIN.

The EVO SDDC EULA page appears.

7 Click AGREE.

The Initial Setup wizard appears.

8 Type a name for the rack. It must be different from the name for rack 1. Each rack in the EVO SDDC system must have a different name.

   The company and department name, root domain, sub domain, and PSC domain values are displayed as specified for rack 1. You cannot edit these values.

9 Click NEXT.

The Management page displays the network values specified for rack 1.

10 Click Next.

The vMotion information page displays the values specified for rack 1.

11 Click NEXT.

The vSAN information page displays the values specified for rack 1.

12 Click NEXT.

The vXLAN information page displays the values specified for rack 1.

13 Click NEXT.

The Data Center Connections page displays the values specified for rack 1.
14 Click NEXT.
The Configuration Review page displays the values specified for rack 1.

15 Click NEXT.
The Review page appears.

16 Review the information.

17 Click CONNECT.
After a few minutes, the Component IP Allocation page appears and displays the IP addresses for the VMs that will be deployed for the NSX, EVO SDDC Manager, vCenter Server, and vRealize Operations software components. Ignore the Log Insight IP address. Log Insight is only deployed on rack 1.

18 After you ensure that the IP Reallocation values are correct, click CONFIRM.

The Configuring System page displays the task that is running and the list of tasks that need to be completed. Click TASK DETAILS to view additional details for the tasks. Click next to the task to see further details. You can filter tasks by status (Running, Successful, or New) or time range.

In case a task fails, click RETRY to run the task again.

19 After the system configuration is completed, the EVO SDDC Manager is restarted. When EVO SDDC Manager comes up, the Password Rotation page is displayed.

20 Leave this browser window open.


You cannot access the EVO SDDC Manager Dashboard on rack 1 till you complete this step.

22 If DNS delegation for automatic resolution is configured in your environment, you are redirected to the login page in the browser window you had left open. Log in using the superuser credentials or the system administrator account name (administrator@domainName) and password that you noted down after password rotation. The Dashboard page appears. The Physical Resources on the Dashboard includes both rack1 and rack 2.

### Changing Passwords of Rack Components

EVO SDDC is deployed with factory default passwords. It is highly recommended that you replace the default passwords with secure system generated passwords.

You must change the passwords on each rack that you add to your EVO SDDC system.

**Note** The additional rack must have successfully completed bring-up before you change the passwords.

1. In a command line window, SSH to one of the base IP addresses for EVO SDDC Manager on the rack. See “Locate EVO SDDC Manager IP Address,” on page 46.

2. Stop the services on EVO SDDC Manager:
   
   ```
   service vrm-watchdogserver stop
   service vrm-tcserver stop
   ```

3. Navigate to `/home/vrack/bin`.

4. Type the following command:
   
   ```
   ./vrm-cli.sh lookup-password
   ```

The output displays the passwords and IP addresses for all components on rack 1.
5 Save the output to a secure location so that you can access it later.

6 Save a copy of the /home/vrack/VMware/vRack/vrm.properties file to a secure location where you can access it later.

7 In the EVO SDDC Manager console window for rack 1, navigate to /home/vrack/bin.

8 Type the following command:
   ./vrm-cli.sh rotate-all
   This command changes the passwords of the physical components on rack 1 and logical components on all racks in your environment.

9 In the EVO SDDC Manager console window, type the following command:
   ./vrm-cli.sh lookup-password
   Save the output. Compare the output file you saved in step 5 with the output file you saved now and ensure that all passwords have been changed.

10 Restart EVO SDDC Manager services by typing the following command.
   service vrm-watchdogserver start
   service vrm-tcserver start

11 Refresh the browser window where you were running the Initial Setup wizard.
   The EVO SDDC Dashboard is displayed.

Change EVO SDDC Manager Password on Each Additional Rack

Along with each imaged rack, your hardware partner sends you the system generated password for EVO SDDC Manager. During password rotation, the EVO SDDC Manager is not changed. VMware strongly recommends that you change this password on each rack before creating workloads.

Procedure

1 In a command line window, SSH to the EVO SDDC Manager on the rack.

2 Login as root. Use the password provided to you by the partner.

3 Type the following command to change the password:
   passwd

4 At the prompt, type and re-type the new password.
   The EVO SDDC Manager password is changed.
An alert is a record of a known detected problem. Alerts can be raised at Power On System Validation (POSV), at a set interval when the system polls the alert catalog, or when an event is generated. An event is a record of a system condition that is potentially significant or interesting to you, such as a degradation, failure, or user-initiated configuration change.

### Table 7-1. EVO SDDC Alerts

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<th>Alert Name</th>
<th>Short Description</th>
<th>Severity Level</th>
<th>Detected By</th>
</tr>
</thead>
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<tr>
<td>BMC_AUTHENTICATION_FAILURE_ALERT</td>
<td>The system is unable to authenticate to the server’s out-of-band (OOB) management port.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>BMC_MANAGEMENT_FAILURE_ALERT</td>
<td>The system failed to perform a management operation using the server’s OOB management port.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>BMC_NOT_REACHABLE_ALERT</td>
<td>The system is unable to communicate with the BMC server’s out-of-band (OOB) management port.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>COORDINATION_SERVICE_DOWN_ALERT</td>
<td>Cannot establish connection with Zookeeper.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>CPU_CAT_FAILURE_ALERT</td>
<td>A processor has shutdown due to a catastrophic error.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>CPU_EXTRA_ALERT</td>
<td>Mismatch between CPU spec in manifest file and physical CPU inventory reported by HMS. An extra CPU is present in the physical inventory.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>CPU_INITIALIZATION_ERROR_ALERT</td>
<td>The system detected that a CPU initialization error has occurred.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>CPU_INVALID_ALERT</td>
<td>The polling detected a type of CPU in the server that does not match what is expected according to the manifest.</td>
<td>ERROR</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>CPU_MACHINE_CHECK_ERROR_ALERT</td>
<td>A server CPU has failed due to CPU Machine Check Error.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>CPU_POST_FAILURE_ALERT</td>
<td>A server CPU has shut down due to POST failure.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>CPU_TEMPERATURE_ABOVE_UPPER_THRESHOLD_ALERT</td>
<td>A CPU temperature has reached its maximum safe operating temperature.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>CPU_TEMPERATURE_BELOW_LOWER_THRESHOLD_ALERT</td>
<td>A CPU temperature has reached its minimum safe operating temperature.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>Alert Name</td>
<td>Short Description</td>
<td>Severity Level</td>
<td>Detected By</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>----------------</td>
<td>--------------</td>
</tr>
<tr>
<td>CPU_THERMAL_TRIP_ERROR_ALERT</td>
<td>A server CPU has shut down due to thermal error.</td>
<td>ERROR</td>
<td>Yes</td>
</tr>
<tr>
<td>CPU_UNDETECTED_ALERT</td>
<td>A CPU matching the manifest was not detected.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>DIMM_ECC_MEMORY_ERROR_ALERT</td>
<td>The system detected an uncorrectable Error Correction Code (ECC) error for a server's memory.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>DIMM_TEMPERATURE_ABOVE_THRESHOLD_ALERT</td>
<td>Memory temperature has reached its maximum safe operating temperature.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>DIMM_THERMAL_TRIP_ALERT</td>
<td>Memory has shut down due to thermal error.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>EVO_SDDC_BUNDLE_INCOMPLETE_ALERT</td>
<td>The EVO SDDC ISO file is missing some elements.</td>
<td>CRITICAL</td>
<td>POSV</td>
</tr>
<tr>
<td>EVO_SDDC_BUNDLE_INVALID_ALERT</td>
<td>MD5 checksum generated on the EVO SDDC ISO bundle does not match the MD5 checksum provided by VIA in the Virtual SAN datastore.</td>
<td>CRITICAL</td>
<td>POSV</td>
</tr>
<tr>
<td>EVO_SDDC_BUNDLE_MISSING_ALERT</td>
<td>The EVO SDDC bundle ISO file or MD5 checksum file is missing.</td>
<td>CRITICAL</td>
<td>POSV</td>
</tr>
<tr>
<td>HDD_DOWN_ALERT</td>
<td>Operational status is down for an HDD.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>HDD_EXCESSIVE_READ_ERRORS_ALERT</td>
<td>Excessive read errors reported for an HDD.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>HDD_EXCESSIVE_WRITE_ERRORS_ALERT</td>
<td>Excessive write errors reported for an HDD.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>HDD_EXTRA_ALERT</td>
<td>Additional HDD detected that does not match the manifest.</td>
<td>WARNING</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>HDD_INVALID_ALERT</td>
<td>Detected HDD does not match the manifest.</td>
<td>ERROR</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>HDD_TEMPERATURE_ABOVE_THRESHOLD_ALERT</td>
<td>HDD temperature has reached its maximum safe operating temperature.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>HDD_UNDETECTED_ALERT</td>
<td>HDD matching the manifest was not detected.</td>
<td>ERROR</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>HDD_WEAROUT_ABOVE_THRESHOLD_ALERT</td>
<td>Wear-out state of an HDD is above its defined threshold.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>HMS_AGENT_DOWN_ALERT</td>
<td>A physical rack's Hardware Management Services agent is down.</td>
<td>CRITICAL</td>
<td>POSV</td>
</tr>
<tr>
<td>HMS_DOWN_ALERT</td>
<td>The HMS is down.</td>
<td>CRITICAL</td>
<td>POSV and event</td>
</tr>
<tr>
<td>HOST_AGENT_NOT_ALIVE_ALERT</td>
<td>ESXi on a server in a physical rack is not running.</td>
<td>POSV</td>
<td></td>
</tr>
<tr>
<td>MANAGEMENT_SWITCH_DOWN_ALERT</td>
<td>Operational status is down for a physical rack's management switch.</td>
<td>WARNING</td>
<td>POSV, system poll, and event</td>
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<thead>
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<th>Alert Name</th>
<th>Short Description</th>
<th>Severity Level</th>
<th>Detected By</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANAGEMENT SWITCH_EXTRA_ALERT</td>
<td>Additional management switch detected that does not match the manifest.</td>
<td>WARNING</td>
<td>POSV, system poll, and event</td>
</tr>
<tr>
<td>MANAGEMENT SWITCH_INVALID_ALERT</td>
<td>Detected management switch does not match the manifest.</td>
<td>CRITICAL</td>
<td>POSV, system poll, and event</td>
</tr>
<tr>
<td>MANAGEMENT SWITCH PORT DOWN ALERT</td>
<td>Operational status is down for a port in a physical rack’s management switch.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>MEMORY_EXTRA_ALERT</td>
<td>Detected additional memory that does not match the manifest.</td>
<td>WARNING</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>MEMORY_INVALID_ALERT</td>
<td>Detected memory type does not match manifest.</td>
<td>ERROR</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>MEMORY UNDETECTED_ALERT</td>
<td>Memory matching the manifest was not detected.</td>
<td>ERROR</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>PCH TEMPERATURE ABOVE THRESHOLD ALERT</td>
<td>Platform controller hub (PCH) temperature has reached its maximum safe operating temperature.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>SERVER DOWN ALERT</td>
<td>Server is in the powered-down state.</td>
<td>ERROR</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>SERVER EXTRA_ALERT</td>
<td>Detected additional server that does not match the manifest.</td>
<td>WARNING</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>SERVER INVALID_ALERT</td>
<td>Detected server does not match the manifest.</td>
<td>ERROR</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>SERVER_PCIE_ERROR_ALERT</td>
<td>A server’s system has PCIe errors.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>SERVER_POST_ERROR_ALERT</td>
<td>A server has POST failures</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>SERVER UNDETECTED_ALERT</td>
<td>Server matching the manifest as not detected.</td>
<td>ERROR</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>SPINE SWITCH DOWN ALERT</td>
<td>Operational status is down for a physical rack’s spine switch.</td>
<td>ERROR</td>
<td>POSV, system poll, and event</td>
</tr>
<tr>
<td>SPINE SWITCH EXTRA_ALERT</td>
<td>Detected spine switch does not match the manifest.</td>
<td>WARNING</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>SPINE SWITCH INVALID_ALERT</td>
<td>Detected spine switch does not match the manifest.</td>
<td>ERROR</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>SPINE SWITCH PORT DOWN ALERT</td>
<td>Operational status is down for a port in a physical rack’s spine switch.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>SSD DOWN ALERT</td>
<td>Operational status is down for an SSD.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>Alert Name</td>
<td>Short Description</td>
<td>Severity Level</td>
<td>Detected By</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>------------------------------------------------------------------------------------</td>
<td>----------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>SSD_EXCESSIVE_READ_ERRORS_ALERT</td>
<td>Excessive read errors reported for an SSD.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>SSD_EXCESSIVE_WRITE_ERRORS_ALERT</td>
<td>Excessive write errors reported for an SSD.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>SSD_EXTRA_ALERT</td>
<td>Detected additional SSD that does not match the manifest.</td>
<td>WARNING</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>SSD_INVALID_ALERT</td>
<td>Detected SSD does not match the manifest.</td>
<td>ERROR</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>SSD_TEMPERATURE_ABOVE_THRESHOLD_ALERT</td>
<td>SSD temperature has reached its maximum safe operating temperature</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>SSD_UNDETECTED_ALERT</td>
<td>SSD matching the manifest was not detected.</td>
<td>ERROR</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>SSD_WEAROUT_ABOVE_THRESHOLD_ALERT</td>
<td>Wear-out state of an SSD is above its defined threshold.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
<tr>
<td>STORAGE_CONTROLLER_DOWN_ALERT</td>
<td>Operational status is down for a storage adapter.</td>
<td>ERROR</td>
<td>Event</td>
</tr>
<tr>
<td>TOR_SWITCH_DOWN_ALERT</td>
<td>Operational status is down for a physical rack’s ToR switch.</td>
<td>ERROR</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>TOR_SWITCH_EXTRA_ALERT</td>
<td>Detected extra ToR switch that does not match the manifest.</td>
<td>WARNING</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>TOR_SWITCH_INVALID_ALERT</td>
<td>Detected ToR switch does not match the manifest.</td>
<td>ERROR</td>
<td>POSV and system poll</td>
</tr>
<tr>
<td>TOR_SWITCH_PORT_DOWN_ALERT</td>
<td>Operational status is down for a port in a physical rack’s ToR switch.</td>
<td>WARNING</td>
<td>Event</td>
</tr>
</tbody>
</table>
You can troubleshoot issues that you might experience during deployment of your EVO SDDC system.

This chapter includes the following topics:

- “Manually Power On Virtual Machines When Setting Up Your EVO SDDC System,” on page 65
- “Restart HMS,” on page 66

**Manually Power On Virtual Machines When Setting Up Your EVO SDDC System**

When you power on a rack, the virtual machines that are preinstalled on host 0 are supposed to power on. If the preinstalled virtual machines do not power on, you can manually power them on using the vSphere Client application.

**Problem**

You open your browser to the address for the EVO SDDC Manager setup wizard, and you do not see the wizard’s starting screen. Instead of displaying the wizard, the browser shows there is no connection.

**Cause**

The setup wizard requires the preinstalled EVO SDDC Manager VM to be running. If it is not powered on when the ESXi host powers on, the setup wizard cannot run.

**Solution**

1. On the machine that is connected to port #48 on the management switch, start the vSphere Client and open it to IP address 192.168.100.100.

2. Log in to the host.

3. In the vSphere Client, navigate to the Inventory view to see the vrm VM. Ensure that it is powered on. If a virtual machine does not have a green arrow icon, it is not powered on.

   The EVO SDDC LCM Repository and 3 Zookeeper VMs are also preinstalled. Once the vrm VM is powered on, it powers on the 3 Zookeeper VMs. The LCM Repository VM is activated during the EVO SDDC deployment.

4. If vrm VM is not powered on, power it on.
Restart HMS

You may need to restart HMS while deploying the EVO SDDC system.

**Problem**

While deploying the EVO SDDC system, the following error message is displayed:

vRack has encountered an error. Problem connecting with HMS host: http://localhost:8080/hms-local at the moment.

**Cause**

HMS may have stopped running.

**Solution**

1. Verify if HMS is running by connecting to the management switch and typing the following commands:

   ```bash
   jobs
   ps -lef | grep -i hms
   ```

2. If HMS is not running, restart HMS by typing the following commands.

   ```bash
   cd /opt/vrack/hms
   service start hms.sh start
   ```
Refer to the appropriate documentation for help with VMware SDDC products that are part of EVO SDDC.

<table>
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<th>Documentation</th>
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</thead>
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<td>ESXi and vCenter Server 6.0 Documentation at <a href="http://pubs.vmware.com/vsphere-60/topic/com.vmware.ICbase/Welcome/welcome.htm">http://pubs.vmware.com/vsphere-60/topic/com.vmware.ICbase/Welcome/welcome.htm</a></td>
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VMware, Inc.