Dell Engineered Solutions for VMware EVO:RAIL

Version 1.2.1 Initial Configuration and Network User's Guide

Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

Contents

Dell Engineered Solution for EVO:RAIL setup checklist

Read through the Dell Engineered Solution for EVO RAIL Initial Configuration and Network User's Guide, and type the required information in the EVO:RAIL Network Configuration table.

Table 1. Dell Engineered Solution for EVO RAIL setup checklist

Dell Engineered Solution for EVO RAIL setup checklist	
10 GbE Top-of-rack (TOR) switch(es)	• Eight 10 GbE ports (SFP+ or RJ-45) for each EVO:RAIL Appliance • Disable link aggregation (LACP or EtherChannel) on TOR ports connected to EVO:RAIL
VLANs (*Best practice*)	**Important**: Read through the entire section on VLANs in this user's guide • Configure one management VLAN for EVO:RAIL™, vCenter Server™, ESXi™, and vRealize Log Insight™ and enable IPv4 multicast and IPv6 multicast • Configure one VLAN for Virtual SAN™ and enable IPv4 multicast • IGMP snooping and Querier are also recommended • On interfaces between switches, be sure to configure the management and Virtual SAN VLANs to follow the same multicast rules • Configure one VLAN for vSphere® vMotion™ • Configure at least one VM Network • Optional: Configure one VLAN for out-of-band management
IP Addresses	• Reserve one IP address on the management VLAN for EVO:RAIL or vCenter Server • Reserve one IP address on the management VLAN for vRealize Log Insight • Reserve four contiguous IP addresses on the vSAN VLAN for each appliance • Reserve four contiguous IP addresses on the vMotion VLAN for each appliance • Reserve four contiguous IP addresses for vSphere vMotion for each appliance • Reserve four IP addresses for out-of-band management for each appliance (optional)
Additional Information	• The IP address of a DNS server(s) on your network (required, except in totally isolated environments) • The Appliance management IPs need to resolve for both forward and reverse lookup • The IP address or hostname of an NTP server(s) on your network (recommended) • Optional: The hostname, port, and username/password of your proxy server

Dell Engineered Solution for EVO RAIL setup checklist	
	• Optional: The hostname of your third-party syslog server instead of vRealize Log Insight • The IP address for Dell PowerTools Cluster Services Manager
Ensure you have all of the following ready	
EVO:RAIL Appliance(s)	• Your EVO-RAIL Appliance(s) • 2U rack space is required in a 19x30-inch cabinet for each Appliance • A custom management VLAN can optionally be created, as described in this user guide, before you deploy your EVO:RAIL Appliance; it cannot be added after the appliance is configured • Two IEC-C13/C14,10A power cables are provided for power supply unit redundancy. The use of redundant PDU's and power circuits is recommended for high availability
EVO:RAIL Configuration and Management workstation or laptop	• Client workstation or laptop (any operating system) that is able to communicate on the EVO:RAIL management VLAN • If connecting directly into the 10 GbE switch a 1 GbE RJ45 adapter is often required. This port typically will need to be in access mode on the management VLAN. • Access to a browser for EVO:RAIL Configuration and Management. The latest versions of Firefox, Chrome, and Internet Explorer 10 and later are all supported
Out-of-band management switch (optional)	• A separate 1 GbE switch or allocate four additional ports per EVO:RAIL appliance on the TOR switch for iDRAC or BMC • Default BMC username: `root` and password: `root` • Default iDRAC username: `root` and password: `calvin`
Deploy EVO:RAIL	

- Rack and cable: connect the 10 GbE ports on EVO:RAIL to the TOR switch(es)
- Turn on each node on your EVO:RAIL appliance
- Configure the network address of a workstation or laptop to talk to EVO:RAIL or vCenter Server on the management VLAN
- Browse through to the EVO:RAIL IP address (for example, https://192.168.10.200:7443) — when you see browser messages about certificates, continue the process.

2

VMware EVO:RAIL Network Configuration table

Table 2. VMware EVO:RAIL Network Configuration table

Row	Category	Description	Sample Default	Customer Values
1	Client workstation or laptop for EVO:RAIL Configuration and Management	Preconfiguration IP address, netmask, gateway	Example: 192.168.10.210 255.255.255.0 192.168.10.254	
		Post-configuration IP address, netmask, gateway		
2	Management VLAN ID	VLAN ID for EVO:RAIL, ESXi, and vCenter Server	Native VLAN (no tagging)	
3	vCenter Server (port 9443)EVO:RAIL (port 7443)	Hostname and top-level domain	vcenter.local	
		Preconfiguration IP address	192.168.10.200	
		Postconfiguration IP address	192.168.10.200	
4	ESXi Hosts	Host naming scheme	host01.local	
		Gateway	192.168.10.254	
		Starting IP address	192.168.10.1	
		Ending IP address	192.168.10.4	
		Netmask	255.255.255.0	
5	vSphere vMotion	VLAN ID for vMotion	20	
		Starting IP address	192.168.20.1	
		Ending IP address	192.168.20.4	

Row	Category	Description	Sample Default		Customer Values	
		Netmask	255.255.255.0			
6	Virtual SAN	VLAN ID for Virtual SAN	30			
		Starting IP address	192.168.30.1			
		Ending IP address	192.168.30.4			
		Netmask	255.255.255.0			
7	VM Networks (for example, to separate network traffic by department)	Name and VLAN ID	VM Network A	110		
		Name and VLAN ID	VM Network B	120		
		Name and VLAN ID	No default			
		Name and VLAN ID	No default			
		Name and VLAN ID	No default			
8	Passwords	ESXi "root"	Passw0rd!			
		vCenter Server "administrator@vsphere.local"	Passw0rd!			
9	Active Directory (*optional*)	AD domain	No default			
		AD username and password	No default			
10	Global settings	Time zone — required	UTC			
		Existing NTP server(s) — recommended	No default			
		Existing DNS server(s) — required	No default			
11	Proxy settings (*optional*)	Existing proxy server	No default			
		Port	No default			
12	Logging (either vRealize Log Insight or existing syslog server)	Username and password	admin	Passw0rd!		
		Log Insight hostname and IP address	loginsight	192.168.10.201		

Row	Category	Description	Sample Default		Customer Values	
		Existing syslog server(s) — optional	No default			
13	Dell PowerTools Cluster Services Manager	Primary VM IP address	No default			
14	Out-of-Band Management (*optional — configurable only in server BIOS*)	BMC username and password	root	root		
		iDRAC username and password	root	calvin		
		Hostname for each node	<ApplianceID>-01 <ApplianceID>-02 etc.			
		IP address for each node	DHCP provided			

NOTE: You must configure the rows 1 and 2 for EVO:RAIL Configuration and Management workstation or laptop.

EVO:RAIL Networking

To ensure the correct functioning of EVO:RAIL™ and an optimal end-to-end user experience, understanding the recommendations and requirements are document in this User's Guide.

EVO:RAIL Appliance

EVO:RAIL consists of four nodes. Figure 1 shows an example of the physical appliance and simple network setup.

EVO:RAIL ships with either eight RJ-45 or SFP+ NIC ports. Eight corresponding ports are required for each EVO:RAIL appliance on the TOR switch(es). One port, either on the TOR switch or on a management VLAN that can reach the TOR network, is required for a workstation or laptop with a web browser for EVO:RAIL Configuration and Management. Any other ports on the appliance are covered and disabled.
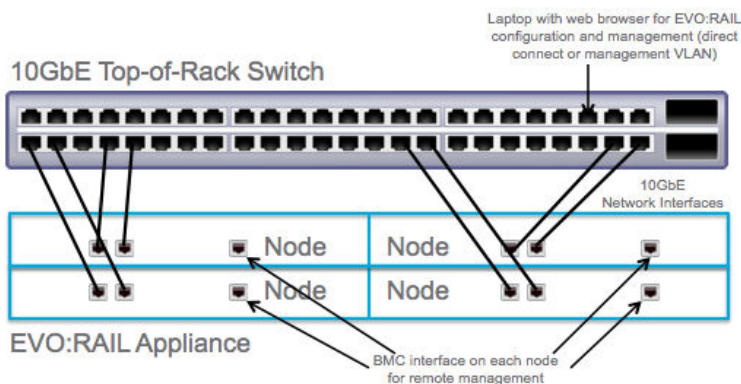
Figure 1. Rear view of one deployment of EVO:RAIL connected to one TOR switch. Appliance port locations vary by Qualified EVO:RAIL Partner.
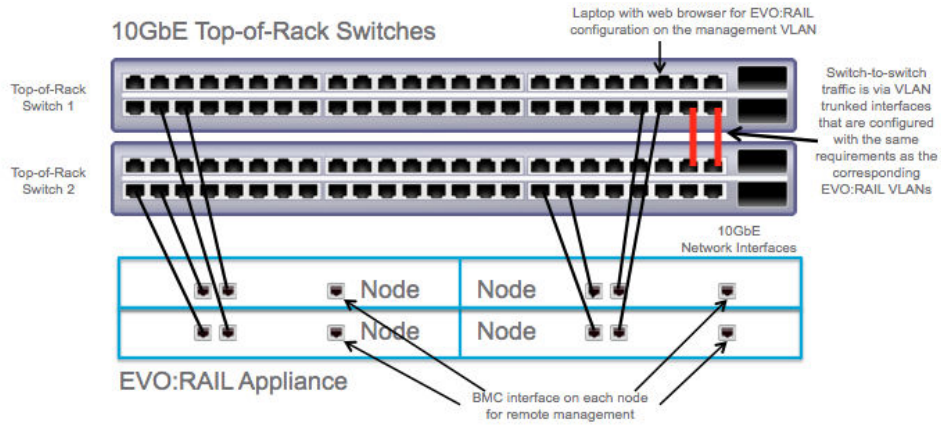
Figure 2. Rear view of one deployment of EVO:RAIL connected to two TOR switches, which can be used for redundancy.

EVO:RAIL is more prescriptive than Virtual SAN in order for customers to have a true "appliance" experience, although VMware Virtual SAN™ drives many of the hardware components in EVO:RAIL.

VMware Loudmouth autodiscovery capability drives the EVO:RAIL network requirements on the basis of the RFC-recognized "Zero Network Configuration" protocol. New EVO:RAIL appliances advertise themselves on a network by using the VMware Loudmouth service, which uses IPv6 multicast. The first EVO:RAIL node in a cluster creates an instance of vCenter Server, and all additional EVO:RAIL nodes in one or more appliances join that first instance.

EVO:RAIL network requirements are also driven by Virtual SAN, which uses IPv4 multicast.

The following figure displays the EVO:RAIL cabling in Dell rack with PowerEdgeC6320, Dell ToR switches, and out-of-band (OOB) switch.

Figure 3. EVO:RAIL configuration

For more information, see *Dell PowerEdge C6320 Systems Hardware Owner's Manual* at **Dell.com/ poweredgemanuals**.

To understand the physical power and cooling facilities provided for the expected resiliency level of the appliance, see [Appendix B Physical requirements](#).

Top-of-Rack switch

For information about Dell Networking, click http://en.community.dell.com/techcenter/networking/m/networking_files/20441278/download.

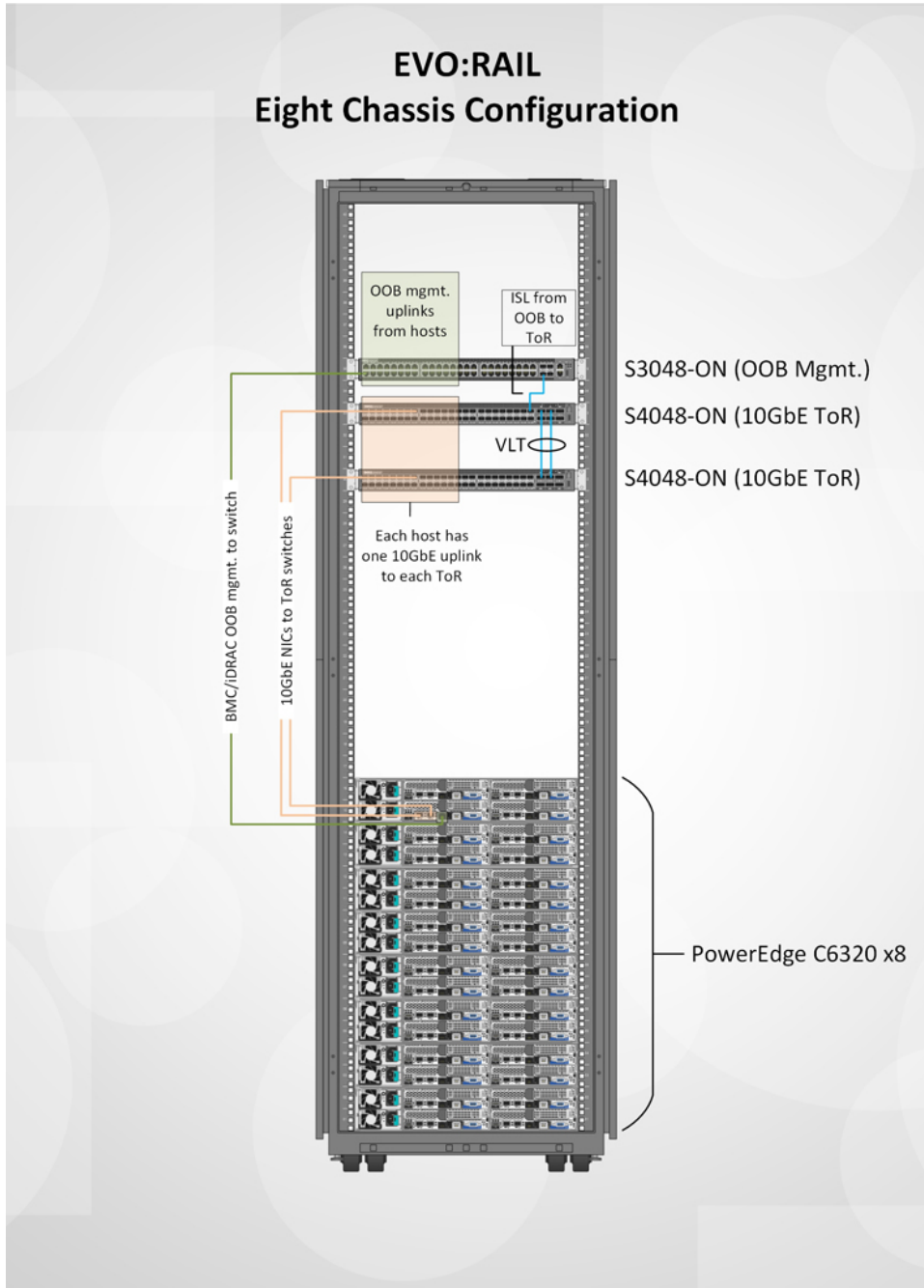A 10 GbE TOR switch that is correctly configured to carry IPv4 multicast and IPv6 multicast traffic is required. IPv4 multicast and IPv6 multicast traffic must be carried to all ports connected to EVO:RAIL on the TOR switch. Multicast is not required on your entire network, just on the ports connected to EVO:RAIL. To configure your TOR switch, see the VLANs section in this document.

Link aggregation, including protocols such as LACP and Ether Channel, must be disabled on all ports connected to EVO:RAIL on the TOR switch(es) because VMware Standard Switch (VSS) does not support this feature.

Two or more TOR switches can be used for high availability or failover. When using multiple TOR switches, multicast traffic for IPv4 and IPv6 must be enabled on ports used for inter-switch communication.

The network can be configured flat or with VLANs, but it is recommended to deploy EVO:RAIL with VLANs. All VLANs must be configured on the TOR switch(es), as described in the VLANs section in this document.

Table 3. Dell Network guidelines

Setting	Mandatory/ Recommended	Notes
IPv6 enabled on all ports		
Eight ports for RJ-45 or SFP+ for each EVO:RAIL appliance. One port for a workstation or laptop to access EVO:RAIL		
IPv4 Multicast	Mandatory for VSAN VLAN	Used for VSAN network for meta data and heart beat communication
IPv6 multicast	Mandatory for Management VLAN	Used for EVO RAIL discovery, update, maintenance and scaling workflows
IGMP Snooping AND IGMP Querier	**Recommended** to prevent additional Multicast traffic. Mandatory for VSAN if you are sharing VSAN VLAN with other hosts in network.	Helps restrict flooding of multicast and non-EVO Rail traffic to all ports. If IGMP snooping is enabled, querier is also required.
MLD Snooping	Optional on management VLAN, not needed on any other VLAN.	EVO RAIL IPv6 multicast traffic is minimal and hence the flooding has little or no impact
L3 Multicast	Not needed	

Understanding switch configuration

In order for EVO:RAIL to function properly, you must configure your TOR switch as instructed by your switch manufacturer. Sample output configurations for common switch modes are provided in the VMware Knowledge Base as examples. Go to http://kb.vmware.com for the EVO:RAIL product.

Ports on a switch operate in one of the following modes:

- *Access mode* — The port accepts only untagged packets and distributes the untagged packets to all VLANs on that port. Access mode is typically the default mode for all ports.
- *Trunk mode* — When this port receives a tagged packet, it passes the packet to the VLAN specified in the tag. To configure the acceptance of untagged packets on a trunk port, you must first configure a single VLAN as a "Native VLAN". A "Native VLAN" is when you configure one VLAN to use as the VLAN for all untagged traffic.
- *Tagged-access mode* — The port accepts only tagged packets.

Workstation or Laptop (for configuration and management)

A workstation or laptop with a web browser for EVO:RAIL Configuration and Management is required. It must be either plugged into the TOR switch or able to logically reach the EVO:RAIL management VLAN on the TOR switch.

For example, with the default preconfiguration IP address shown in the EVO:RAIL Network Configuration Table on Row 5, you could configure your workstation or laptop to an IP address of `192.168.10.210`, netmask `255.255.255.0`, gateway `192.168.10.254`. If you assign a new vCenter Server IP address during EVO:RAIL Initial Configuration, you must reconfigure your workstation or laptop to reach the postconfiguration IP address (same subnet).

In Windows, it is possible to give your workstation or laptop two IP addresses, which allows for a smoother experience. With MacOS or Linux, you have to change your IP address when instructed during EVO:RAIL Initial Configuration.

The EVO:RAIL Network Configuration Table is shown in Table 2 of this document. It is also available separately. References to rows in this document are to rows in this table.

Table 4. Network configuration table

Network Configuration Table4 Row 1	Please fill in the preconfiguration IP address, netmask, and gateway for your EVO:RAIL Configuration and Management workstation or laptop.
Network Configuration Table4 Row 2	Please fill in the postconfiguration IP address, netmask, and gateway for your EVO:RAIL Management workstation or laptop.

You use a browser to talk to EVO:RAIL. The latest versions of Firefox, Chrome, and Internet Explorer 10 and later are all supported.

If you are using Internet Explorer 10 and later and an administrator has set your browser to "compatibility mode", for all internal websites (local web addresses), you get a warning message from EVO:RAIL. Contact your administrator to whitelist URLs mapping to the EVO:RAIL user interface. Alternately,

connect to the EVO:RAIL graphical user interface (GUI) by using either an IP address or a fully qualified domain name (FQDN) configured on the local DNS server (for example, http://evorail.yourcompany.com: 7443).

Port 7443 reaches the EVO:RAIL graphical user interface (GUI) and port 9443 reaches the vSphere Web Client on vCenter Server.

Table 5. Network configuration table

4 EVO:RAIL Management workstation or laptop	Configure your workstation or laptop with the preconfiguration IP address that you decided to use, and entered in the EVO:RAIL Network Configuration Table on Row 1. Decide which browser you want to use.

VLANs

All vSphere vMotion, Virtual SAN, and VM traffic is tagged for the VLANs you specify during EVO:RAIL Initial Configuration. For your convenience, the EVO:RAIL GUI prepopulates VLAN ID fields, but you can easily change them to coordinate with the values on your TOR switch.

VLANs are highly recommended (but not required) in EVO:RAIL. The vSphere vMotion and Virtual SAN networks cannot be routed. Dedicated VLANs are preferred to divide VM traffic. For example, you could have one VLAN for Development, one for Production, and one for Staging. Each VM can be assigned to one or more VLANs.

Multicast traffic

- IGMP Snooping software examines IGMP protocol messages within a VLAN to discover which interfaces are connected to hosts or other devices interested in receiving this traffic.
- By using the interface information, IGMP Snooping can reduce bandwidth consumption in a multiaccess LAN environment to avoid flooding an entire VLAN.
- IGMP Snooping tracks ports that are attached to multicast-capable routers to help manage IGMP membership report forwarding. It also responds to topology change notifications.
- Disabling IGMP Snooping may lead to more multicast traffic on your network.

IGMP Querier sends out IGMP group membership queries on a timed interval, retrieves IGMP membership reports from active members, and allows updates to group membership tables. By default, most switches enable IGMP Snooping, but disable IGMP Querier.

VMware requires that IGMP Querier be run if IGMP snooping is enabled. Also, if Querier is not enabled then snooping should not be enabled.

For IPv6, Multicast Listener Discovery (MLD) is essentially the same as Internet Group Management Protocol (IGMP) in IPv4.

Configure VLANs on your TOR Switch(es)

1. Configure a Management VLAN on your TOR switch(es) and set it to allow IPv4 multicast and IPv6 multicast traffic to passthrough.

   - Default Management VLAN:
     Unless Dell preconfigured otherwise, all management traffic is untagged and must be able to go over a Native VLAN on your TOR switch. Else, you will not be able to create the appliance and

configure ESXi hosts. Management traffic includes all EVO:RAIL, vCenter Server, ESXi, and vRealize Log Insight (optional) communication.

- Custom Management VLAN:

  To customize the management VLAN on-site (but before EVO:RAIL is initially configured), changes are required for two different portgroups on all ESXi hosts in an EVO:RAIL cluster. The first portgroup is the ESXi "Management Network", and the second portgroup is the vCenter Server management network ("VM Network").

  Log in to every ESXi host through the command line interface (CLI), and run the following commands:

  ```
  esxcli network vswitch standard portgroup set -p "Management Network" -v
  <VLAN>
  esxcli network vswitch standard portgroup set -p "VM Network" -v
  <VLAN_ID>
  ```

  To verify that the VLAN ID was set correctly, run the following command:

  ```
  esxcli network vswitch standard portgroup list
  ```

  NOTE: If your management VLAN is customized on-site, your backup configBundle does not include the new VLAN. If your appliance is ever reset, the management VLAN has to be reconfigured.

2. Configure a vSphere vMotion VLAN on your TOR switch(es).

3. Configure a Virtual SAN VLAN on your TOR switch(es) and set it to allow IPv4 multicast traffic to passthrough.

4. Configure the VLANs for your VM Networks on your TOR switch(es).

Table 6. Network configuration table

Network Configuration Table4 Row 3	Type your management VLAN for EVO:RAIL, ESXi, vCenter Server, and Log Insight. If you or Dell haven't already set a tagged VLAN, type Native VLAN.
Network Configuration Table4 Row 12	Type a VLAN ID for vSphere vMotion.
Network Configuration Table4 Row 16	Type a VLAN ID for Virtual SAN.
Network Configuration Table4 Rows 20–24	Type a VLAN ID and Name for each VM network you want to create. You may create up to five VM networks.
4 TOR switch(es)	Configure your TOR switch(es) with these VLANs. Configure the corresponding VLANs between TOR switches and/or core switches.

IP addresses

EVO:RAIL ships with a default set of IP addresses unless you have worked with Dell to preconfigure your appliance or it is configured onsite. For your convenience, the EVO:RAIL user interface prepopulates IP

address fields, but you can change them to coordinate with your network. When selecting your IP addresses, ensure that none of them conflict with existing IP addresses in your network.

This section describes the EVO:RAIL supports the IP addresses for EVO:RAIL or vCenter Server, ESXi, vSphere vMotion, Virtual SAN, and the network services.

EVO:RAIL or vCenter Server IP address

EVO:RAIL and vCenter Server share an IP address. Type the IP address in the browser on your EVO:RAIL Configuration and Management workstation or laptop to reach the EVO:RAIL user interface. EVO:RAIL is accessible on port 7443 (https://<evorail-ip-address>:7443) and vCenter Server is accessible through the vSphere Web Client on port 9443 (https://<evorail-ip-address>:9443). EVO:RAIL, vCenter Server, and the ESXi hosts all share netmask (Row 11) and gateway (Row 8).

- Preconfiguration EVO:RAIL or vCenter Server IP address:
  By using this IP address that, you can reach EVO:RAIL Initial Configuration (on port 7443). The VMware default for EVO:RAIL or vCenter Server is initially set to IP address 192.168.10.200, netmask 255.255.255.0 and gateway 192.168.10.254. To configure EVO:RAIL, you can point your browser to this address.

  If you cannot reach the preconfiguration address, check the configuration of your EVO:RAIL Configuration and Management workstation/laptop. If your network does not support access to this address, contact your Dell service provider.
- Postconfiguration EVO:RAIL / vCenter Server IP address:
  By using this IP address, you can reach EVO:RAIL Management (on port 7443) and vCenter Server (on port 9443) in your production network. If you do not want to change the EVO:RAIL or vCenter Server IP address, type the same IP address that was entered in Row 5.

  If you change this IP address during initial configuration, EVO:RAIL instructs you to change the IP address of your workstation or laptop to reach the new EVO:RAIL address (https://<new-ip-address/>:7443) To change the postconfiguration vCenter Server IP address after EVO:RAIL Initial Configuration, contact your Dell service provider.

  > **NOTE:** EVO:RAIL reverts to the original IP address if it is not contacted at the new IP address within 20 minutes in Release 1.1+.

Table 7. Network configuration table

Network Configuration Table4 Row 5	Type the preconfiguration IP address for EVO:RAIL or vCenterServer. This can be either the VMware default IP address or a custom-configured IP address.
Network Configuration Table4 Row 6	Type the postconfiguration IP address for EVO:RAIL or vCenterServer. If the IP address does not be changed during configuration, type the same IP address as Row 5.
4 Your Network	Validate that none of your EVO:RAIL IP addresses collide with any IP addresses used in your local network.

ESXi, vSphere vMotion, Virtual SAN IP addresses

For ESXi, vSphere vMotion, and Virtual SAN, you are allocating 12 IP addresses per appliance. If you allocate more IP addresses for future scale-out, you are able to add EVO:RAIL appliances with no additional configuration; otherwise, you can enter additional IP addresses when you expand EVO:RAIL.

Table 8. IP address requirements

Network	IP Requirements
ESXi hosts	Continuous IP range is required, with a minimum of 4 IPs. You can allocate up to 32 IP addresses for future EVO:RAIL appliances in a cluster. Netmask and gateway are required.
vSphere vMotion	Continuous IP range is required, with a minimum of 4 IPs. You can allocate up to 32 IP addresses for future EVO:RAIL appliances in a cluster. Netmask is required. These IP addresses cannot be routed.
Virtual SAN	Continuous IP range is required, with a minimum of 4 IPs. You can allocate up to 32 IP addresses for future EVO:RAIL appliances in a cluster. Netmask is required. These IP addresses cannot be routed.
Network Configuration Table4 Rows 8–10	Type the starting and ending IP addresses, the netmask, and the gateway for ESXi.
Network Configuration Table4 Rows 13–15	Type the starting and ending IP addresses and netmask for vSphere vMotion.
Network Configuration Table4 Rows 17–19	Type the starting and ending IP addresses and netmask for Virtual SAN.

Hostnames

Hostnames are specified for vCenter Server and for each ESXi host in EVO:RAIL Initial Configuration. For your convenience, the EVO:RAIL GUI prepopulates the hostname fields, but you can easily change them.

ESXi hostnames are defined by a naming scheme that includes: an ESXi hostname prefix (an alphanumeric string), a separator ("None" or a dash "-"), an iterator (Alpha, Num X, or Num 0X), and a top-level domain. The Preview field in the EVO:RAIL GUI shows an example of the result for the first ESXi host. For example, if the prefix is "esxihost", the separator is "None", the iterator is "Num 0X", and the top-level domain is "local", the first ESXi hostname would be "esxihost01.local".

The vCenter Server hostname is an alphanumeric string. The top-level domain is automatically applied to the vCenter Server hostname. (For example, vcenter.local)

Add your EVO:RAIL hostnames to your DNS server, unless you are in an isolated environment.

Table 9. Network configuration table

Network Configuration Table4 Row 7	Type an example of your desired ESXi host-naming scheme. Be sure to show your desired prefix, separator, iterator, and top-level domain.
Network Configuration Table4 Row 4	Type the vCenter Server hostname; the top-level domain is automatically copied from the ESXi host-naming scheme.

Passwords

Passwords are required for ESXi host `root` access and vCenter Server `admin` access. These passwords must contain between 8 and 20 characters, with at least one uppercase, one lowercase, and one special character. No character can be repeated three times consecutively.

Table 10. Network configuration table

Network Configuration Table4 Row 25	Ensure that you know your passwords in these rows, but for security reasons, we suggest that you do not write them anywhere.

Active Directory (AD) can optionally be used to access EVO:RAIL and vCenter Server. To use this feature, you need to type the AD domain and an AD username and password with privileges that allow the user to join that domain. EVO:RAIL does not fully configure AD. You must perform more steps at http:// pubs.vmware.com/vsphere-55/topic/com.vmware.vsphere.install.doc/GUID-B23B1360-8838-4FF2-B074-71643C4CB040.html on the vSphere Web Client.

Table 11. Network configuration table

Network Configuration Table4 Row 26	If you will be using AD, type the domain, username, and password, and then perform the extra steps for AD after EVO:RAIL is configured.

Configuration

EVO:RAIL configures network services on all ESXi hosts in a cluster based on the following parameters:

- **NTP server(s)**

  An NTP server is not required, but it is recommended. If you do not provide at least one NTP server, EVO:RAIL uses the time that is set on ESXi host #1 (regardless of whether or not the time is correct). The default time zone is UTC and you can change it during EVO:RAIL Initial Configuration.

Table 12. Network configuration table

Network Configuration Table4 Row 27	Type your time zone.
Network Configuration Table4 Row 28	type the name(s) of your NTP server(s).

- **DNS server(s)**

  One or more DNS servers are required for production use (it is not required in an isolated environment). You must specify the IP address of your corporate DNS server(s) when you configure EVO:RAIL. Also, you must type the EVO:RAIL or vCenter Server, Log Insight, and ESXi hostnames and IP addresses in your corporate DNS server tables.

⚠ **CAUTION: Make sure that the DNS IP address is accessible from the network to which EVO:RAIL is connected and functioning properly. If the DNS server requires access through a gateway, the gateway must be EVO:RAIL, do not type a DNS IP address. To add a DNS server after you have configured EVO:RAIL, see the [VMware Knowledge Base 2107249](#).**

Table 13. Network configuration table

Network Configuration Table4 Row 29	Type the IP address(es) for your DNS server(s).
4 Your DNS server	Add all EVO:RAIL IP addresses and hostnames to your corporate DNS server(s).

- **Proxy Server**

  A proxy server is optional in EVO:RAIL. If you have a proxy server on your network, and if vCenter Server has to access services outside of your network, you must provide the hostname of the proxy server, a port, username, and password.

Table 14. Network configuration table

Network Configuration Table4 Row 30	Type the proxy server hostname, port, username, and password.

- **Logging**

  EVO:RAIL is deployed with vRealize Log Insight. However, you may choose to use your own third-party syslog server(s). To use vRealize Log Insight, point your browser to the configured IP address; the username is `admin`. If you ssh to Log Insight, the username is `root`. The password, in either case, is the one you specified for vCenter Server.

  📝 **NOTE:** The default IP address for Log Insight is preconfigured; for example, 192.168.10.201. If you change the IP address of vCenter Server, you must change the IP address of Log Insight to be on the same subnet.

Table 15. Network configuration table

Network Configuration Table4 Row 31	Type the hostname and IP address for Log Insight OR the name(s) of your existing syslog server(s).

- **Dell PowerTools Cluster Services Manager (CSM)**

  The EVO:RAIL Configuration user interface supports deployment of Dell PowerTools CSM. Users specify the IP address of the VM. EVO:RAIL deploys and configures the VM on the management VLAN (that is, the same VLAN that EVO:RAIL, vCenter Server, the ESXi hosts, and Log Insight communicate on, as noted in the EVO:RAIL Network Configuration Table Row 3).

Table 16. Network configuration table

Network Configuration Table4 Row 32	Type the IP address for Dell PowerTools Cluster Services Manager

Out-of-band management (optional)

Remote- or lights out management is available on each node through a iDRAC or BMC port. To use out-of-band management, connect the iDRAC or BMC port on each node to a separate switch to provide

physical network separation. Although you could use four additional ports on your TOR 10 GbE switch (if the TOR supports your iDRAC or BMC ports), it is more economical to use a lower bandwidth switch.

When EVO:RAIL is shipped, the iDRAC or BMC ports are preconfigured by DHCP. The <ApplianceID> can be found on a pull-out tag located in front of the physical appliance. The default properties are as follows:

iDRAC or BMC interface node 1: *hostname* = <ApplianceID>-01

iDRAC or BMC interface node 2: *hostname* = <ApplianceID>-02

iDRAC or BMC interface node 3: *hostname* = <ApplianceID>-03

iDRAC or BMC interface node 4: *hostname* = <ApplianceID>-04

The default BMC credentials are:

Username: `root` Password: `root`

The default iDRAC credentials are:

Username: `root` Password: `calvin`

4

Networking best practices

- Various network topologies for TOR switch(es) and VLANs are possible with EVO:RAIL. Complex production environments have multiple core switches, TOR switches, and VLANs.

- For high-availability, use two TOR switches and connect one port from each node to each TOR switch. Connect multiple TOR switches through a VLAN trunked interfaces, and ensure that all VLANs used for EVO:RAIL are carried across the trunk following the requirements in this document .

- If you plan to scale out to multiple EVO:RAIL appliances in a cluster over time, allocate extra IP addresses for each of the ESXi, vMotion, and Virtual SAN IP pools when you configure the first appliance (12 extra IP addresses per appliance). Then when you add appliances to a cluster, you only need to enter the ESXi and vCenter Server passwords.

- Only one appliance can be added at a time. To add multiple appliances, turn on one at a time, making sure that each is properly configured before powering on the next appliance.

- All network traffic (except for out-of-band management) is on the 10 GbE NICs. Each node in an EVO:RAIL appliance has two 10 GbE network ports. Each port must be connected to a 10 GbE switch that supports IPv4 multicast and IPv6 multicast.

- Although EVO:RAIL uses IPv6 traffic between nodes, your network does not need to be explicitly configured for IPv6, other than fulfilling the multicast requirements for EVO:RAIL ports and VLANs described in this document.

- EVO:RAIL supports four types of traffic: Management, vSphere vMotion, Virtual SAN, and Virtual Machine. Traffic isolation on separate VLANs is highly recommended. EVO:RAIL traffic is separated as follows:

Table 17. Interfaces for traffic

Network	1st 10 GbE NIC	2nd 10 GbE NIC
Management (EVO:RAIL, vCenter Server, ESXi, Log Insight)	Active	Standby
vSphere vMotion	Active	Standby
Virtual SAN	Standby	Active
Virtual Machines	Active	Standby

- To ensure vSphere vMotion traffic does not consume all available bandwidth on the 10 GbE port, EVO:RAIL limits vMotion traffic to 4 Gbps.

- Dell recommends to use different VLAN IDs for Virtual SAN traffic and for management across multiple EVO:RAIL clusters. Otherwise, all appliances on the same network see all multicast traffic.

5

Avoiding common mistakes

To avoid common network mistakes:

1. The network prerequisites described in this document must be met; otherwise, this results in a failed EVO:RAIL installation and/or does not function. You must fill the EVO:RAIL Network Configuration Table.

2. If you have separate teams for network and servers in your data center, you need to work together to design the network and configure the switch(es).

3. Read through your vendor instructions for your TOR switch.

   a. Remember to configure multicast and do not block IPv6 on your TOR switch. Reread the sections on TOR switches and VLANs in this document.

   b. Remember to configure your TOR switch to allow untagged management traffic to go over a native VLAN, unless your appliance has been customized for a specific management VLAN.

   c. Remember to connect and enable the ports.

   d. If you have two or more switches you must ensure that IPv4 multicast and IPv6 multicast traffic is transported between them, as described in the VLAN section.

4. Ensure that your gateway IP address is accessible (**http://kb.vmware.com/kb/2107249**).

5. You must determine all static IP addresses before you can configure EVO:RAIL. *You cannot change the IP addresses after you have configured EVO:RAIL.*

6. Some network configuration errors cannot be recovered from and you need Dell to reset your appliance to factory defaults. When EVO:RAIL is reset to factory defaults, all data is lost.

7. Ensure you can reach your DNS server from the EVO:RAIL network addresses you are proposing. Then, configure your EVO:RAIL hostnames on your DNS server.

8. Do not try to plug your management workstation or laptop directly into a server node on EVO:RAIL; plug it into your network/TOR switch and make sure that it is logically configured to reach EVO:RAIL. (**http://kb.vmware.com/kb/2099966**)

9. Remember to disable link aggregation on your TOR switch.

10. If you copy a switch configuration, either ensure that the port layout matches exactly or make the necessary changes. For example, the layout is not the same if you move from a TOR to blades.

11. If you have configured Active Directory, NTP servers, proxy servers, or a third-party syslog server, you must be able to reach them from the EVO:RAIL IP addresses.

12. If you are using SFP+, NIC and switch connectors and cables must be on the same wavelength. Contact Dell for the type of SFP+ connector on your appliance.

6

EVO:RAIL Appliance

Dell Engineered Solutions for VMware EVO:RAIL combines Compute, Networking, Storage, and Management resources together with VMware's industry leading infrastructure virtualization and management products to form a radically simple hyperconverged infrastructure appliance.

Hardware

VMware and Dell have collaborated to create Dell Engineered Solutions for VMware EVO:RAIL, the industry's first hyperconverged infrastructure appliance for SDDC, turned on by VMware software and Dell architecture. The EVO:RAIL software bundle is available to Dell. Dell in turn, sells the hardware with integrated EVO:RAIL software, and provides all hardware and software support to customers.

Each EVO:RAIL appliance has four independent nodes with:

- Two Intel® Xeon®Processor E5-2620 V3/E5-2640 V3/E5-2660 V3/E5-2670 V3/E5-2699 V3
- 128 GB/192 GB/256 GB/384 GB/512 GB
- One SAS HDD for the ESXi™ boot device
- Three/Four SAS 10K RPM 1.2TB HDD for the VMware Virtual SAN™ datastore
- One 400 GB/800 GB MLC enterprise-grade SSD for read/write cache
- One Virtual SAN-certified pass-through disk controller
- Two 10 GbE NIC ports (SFP+ /10GbE base-T connections)
- One 1 GbE IPMI port for remote (out-of-band) management

The EVO:RAIL appliance is designed with fault-tolerance and high availability in mind, with four independent nodes each consisting of dedicated computer, network, and storage resources:

- Four ESXi hosts in a single appliance enable resiliency for hardware failures and planned maintenance
- Two redundant power supply units (PSUs)
- Two redundant 10 GbE NIC ports per node
- Enterprise-grade ESXi boot device, HDDs, and SSD
- Fault-tolerant Virtual SAN datastore

EVO:RAIL can scale out to eight appliances for a total of 32 ESXi hosts, and one Virtual SAN datastore backed by a single vCenter Server and EVO:RAIL instance. Deployment, configuration, and management are handled by EVO:RAIL, allowing the compute capacity and the Virtual SAN datastore to grow automatically. New appliances are automatically discovered and easily added to an EVO:RAIL cluster.

Software

EVO:RAIL delivers the first hyperconverged infrastructure appliance 100 percent powered by VMware's proven suite of core products. The EVO:RAIL software bundle, preloaded onto Dell hardware, is included of:

- EVO:RAIL Deployment, Configuration, and Management
- VMware vSphere® Enterprise Plus, including ESXi for compute
- Virtual SAN for storage
- vCenter Server™
- vRealize Log Insight™
- Dell Cluster Services Manager (CSM)

EVO:RAIL is optimized for the new VMware user and for experienced administrators. Minimal IT experience is required to deploy, configure, and manage EVO:RAIL, by allowing it to be used where there is limited or no IT staff onsite. Because EVO:RAIL utilizes VMware's core products, administrators can apply existing VMware knowledge, best practices, and processes.

EVO:RAIL leverages the same database as vCenter Server,. Therefore, any changes in EVO:RAIL Initial Configuration and Management are also reflected in vCenter Server and conversely.

Dell CSM provides ESXi cluster-aware inventory and update of FW, drivers and BIOS. For more information, see *Dell Cluster Services Manager User's Guide* at **Dell.com/support/home**.

Prerequisites

To ensure the correct functioning of EVO:RAIL and an optimal end-to-end user experience, understanding the recommendations and requirements in the EVO:RAIL documentation is essential. Availability of resources and workload is critical for any environment, but even more so in a hyper-converged environment as compute, networking, storage, and management are provided on the same platform.

△ CAUTION: Before you proceed with the deployment and configuration of your new EVO:RAIL appliance:

- Review the **EVO:RAIL Setup Checklist** and fill in the **EVO:RAIL Network Configuration Table** by following all the steps listed in this document. This is essential to help ensure smooth deployment and configuration.
- For more information, see *Dell PowerEdge C6320 Systems Hardware Owner's Manual* available at **Dell.com/poweredgemanuals**.

EVO:RAIL Deployment

To deploying the EVO:RAIL:

1. Rack and cable: connect the 10 GbE adapters on EVO:RAIL to your TOR switch(es).
2. Turn on each node on your EVO:RAIL appliance.
3. Connect a workstation or laptop (any operating system) to the TOR switch and configure the network address to talk to EVO:RAIL or vCenter Server.

   For example: IP address: `192.168.10.210`; netmask: `255.255.255.0`; gateway: `192.168.10.254`
4. Browse to the EVO:RAIL IP address (for example, **https://192.168.10.200:7443**). If you see a browser message about certificates, click **Proceed anyway** . The latest versions of Firefox, Chrome, and Internet Explorer 10 and later are all supported. The minimum recommended screen resolution is 1280x1024.
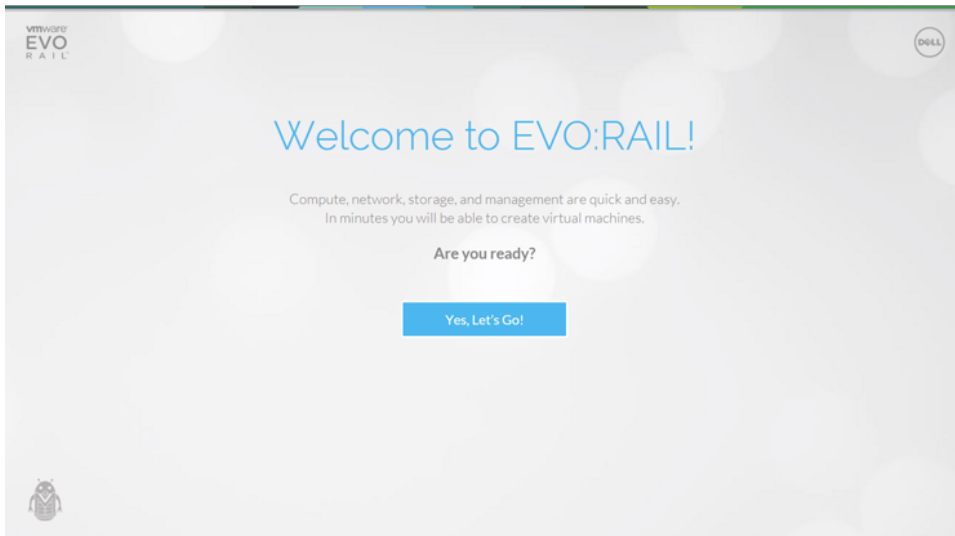

Figure 4. Initial user interface

EVO:RAIL Setup Validation

1. Log in to the EVO:RAIL management web client and check the health status: **https://<configured-vCenterIPAddress>:7743**.

2. Log in to vSphere Web Client at **https:// <configured-vCenterIPAddress>/vsphere-client/**, go to **Home → Hosts and Clusters** and ensure all ESXi nodes, vSphere vCenter Server Appliance, and VMware vRealize Log Insight are accessible. If you see any red critical alerts, it implies that there is an issue in the setup.

3. Go to **Home → Hosts and Clusters → Storage** and under the **MARVIN-Datacenter data center** label, select the datastore starting with **MARVIN-Virtual-SAN-Datastore**. This is the VSAN data store spanning all hosts in the EVO:RAIL cluster. Ensure the hosts # listed is equivalent to the number of server nodes in the EVO:RAIL cluster. Also, ensure that the storage capacity is correct; this depends on how many EVO:RAIL appliances are installed. One EVO:RAIL appliance with 4 x server nodes should show a capacity of 13.10 TB for clusters with three data drives per node or 17.46 TB for clusters with four data drives per node; see example screenshot here.
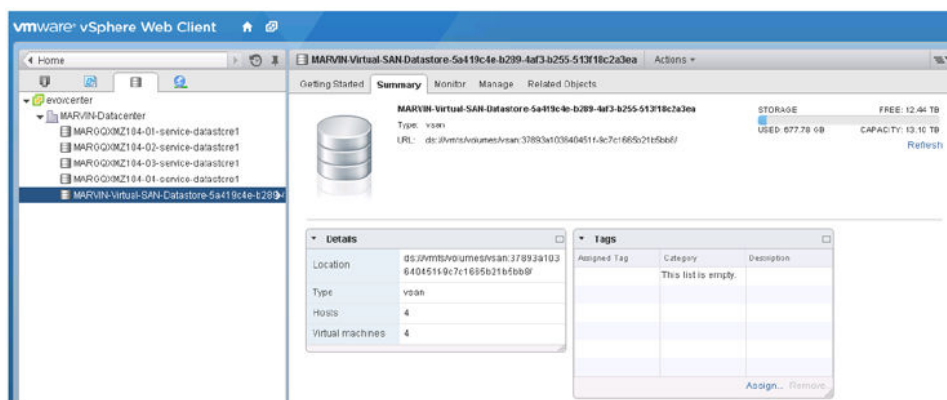

Figure 5. Validating VSAN setup in EVO:RAIL

4. Start one of the VMs and confirm you can PING the gateway configured on the Dell Networking switch. You can be see the Web VM created in the EVO VM Network. A network can PING the virtual IP address of the VRRP gateway configured on the Dell Networking ToR switches.

   The following Dell Networking switches are recommended for ToR connectivity to the EVO:RAIL appliance:

   • Dell S4810
   • Dell S4820T
   • Dell S4048-ON
   • Dell N4032/N4064
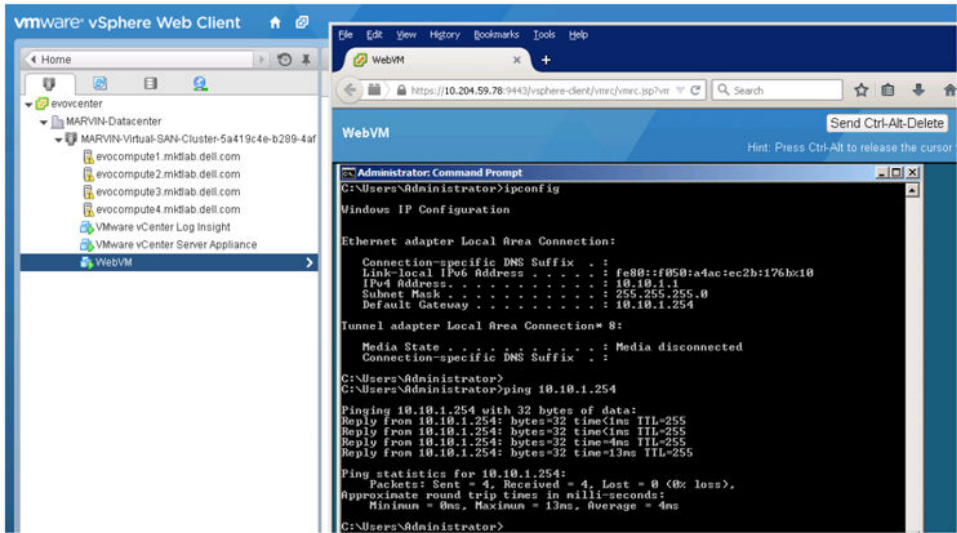   • Dell N4032F/N4064F

Figure 6. Validating VM Can Reach gateway Configured on Dell Networking ToR Switches

5. Console, telnet, or SSH into the second ToR switch in the pair; This switch is receiving the SAN traffic since VMNIC1 (connecting to Dell networking TOR switch) is active and VMNIC0 (connecting to Dell networking TOR switch) is standby for the VSAN port group as discussed earlier. Verify that IGMP snooping is working with the `show ip igmp snooping groups` command.

    NOTE: The switch with the lowest IP address on the respective VSAN VLAN is elected the IGMP snooping Querier per configuration; this can be verified with the `show ip igmp snooping interface vlan 1001` command.

Figure 7. Validating multicast and IGMP Snooping

6. Go to **Home → Hosts and Clusters VMware vCenter Server Appliance**. Click **Summary**, and then click the **View all two IP addresses** link. The screenshot here indicates a sample output.

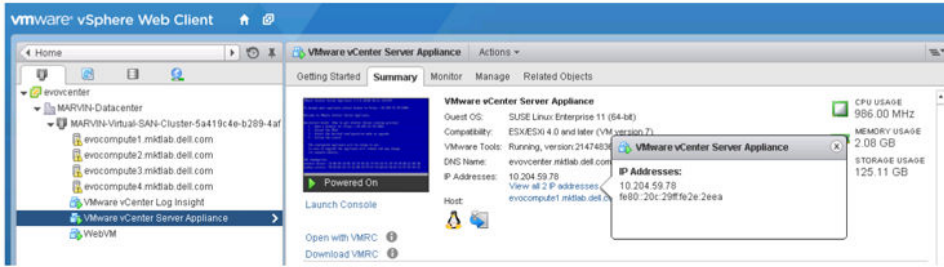   NOTE: The IPv6 link-local address starting with fe80.

28

Figure 8. Validating multicast and IGMP Snooping

7. Go to **Home → Hosts and Clusters** and select the first ESXi server node. Click **Networking**, and then click the **Virtual switches** item in the inner menu. Within the MARVIN Management port group, click the i symbol connecting to the green port as shown in the Verifying ESXi Host IPv6 Address figure.

> **NOTE:** The IPv6 link-local address for the ESXi host. Repeat this process for other ESXi hosts within the cluster and note their IPv6 link-local addresses.
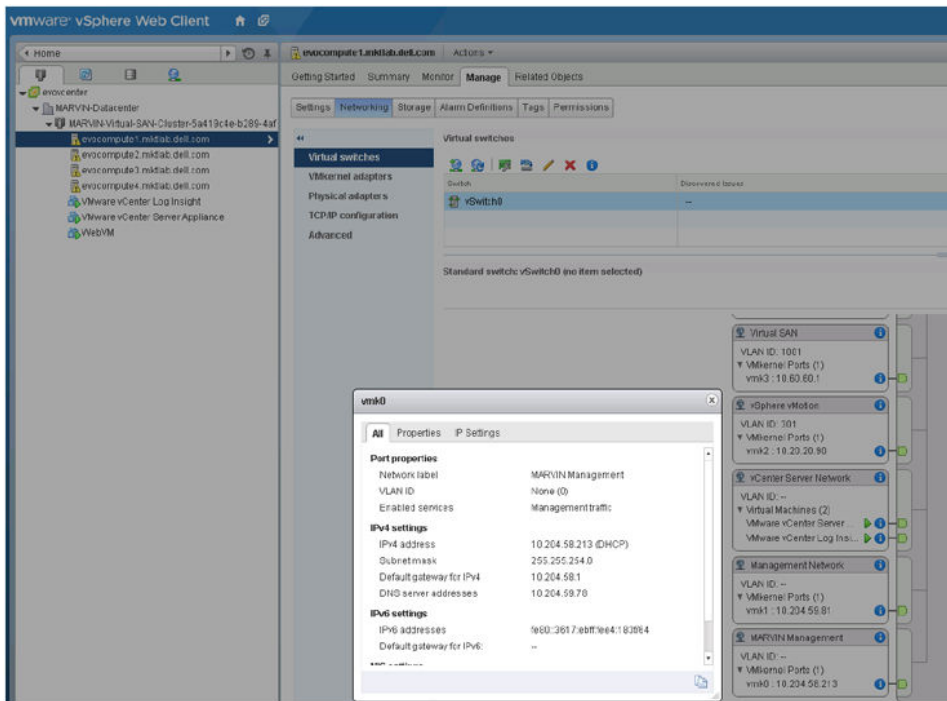

Figure 9. Verifying ESXi Host IPv6 Address

Run the SSH commands on one of the ESXi hosts **ping -6 -I vmk0 ff02::1**. **ff02::1** is the IPv6 link-local scope all-nodes multicast address. All IPv6 entities, including the respective EVO:RAIL ESXi nodes should respond. You see many replies and replies with **DUP!** posted. Confirm within the list, the IPv6 addresses of the vSphere vCenter Server Appliance and respective ESXi hosts is present. This confirms that the required IPv6 and IPv6 multicast is working on the switch.

NOTE: If SSH is not working, ensure that SSH is enabled on the ESXi hosts by logging directly in to the Direct Console User Interface (DCUI) by either directly connecting a monitor and keyboard to the respective server node or by connecting by using vSphere Web Client to the respective ESXi host.

9

EVO:RAIL Initial Configuration

Overview

After you have filled the required information in the **EVO:RAIL Network Configuration Table**, you are ready to begin EVO:RAIL Initial Configuration. There are four methods to configure EVO:RAIL. Default values are based on a JSON-formatted file. For more information, see Appendix A section in this document.

- **Customize**

  When you customize EVO:RAIL, fields are prepopulated with default values, except for the ESXi and vCenter Server passwords. You can easily change these values in the GUI or by uploading your own configuration file.

- **Just Go**

  EVO:RAIL automatically configures the IP addresses and hostnames from a default configuration file. All you need to do is configure your TOR switch, click **Just Go** , and create the passwords for ESXi and vCenter Server. Either VMware or Dell defines the values in default configuration file.

- **Upload Configuration File**

  This feature, available in **Customize**, allows you to select and upload your own JSON configuration file. The *Upload Configuration File* button is displayed (and marked with an arrow) in the lower-right corner of Figure. For more information, see Appendix A in this document. For more information about the sample EVO:RAIL JSON configuration files for each software release, see the *VMware Knowledge Base 2106961*.

- **Automatic Scale-Out**

  When a new appliance is detected by an existing appliance, the **Add EVO:RAIL Appliance** button is displayed in the EVO:RAIL Management user interface. EVO:RAIL automatically distributes the configuration to seamlessly add new appliances. If you have already configured enough IP addresses for expansion (which we recommend during initial configuration),type the passwords that you created for the first appliance in the cluster. If you do not have enough IP addresses, you are prompted to add them and the passwords.

EVO:RAIL verifies the configuration data, and then builds the appliance. EVO:RAIL implements data services, creates the ESXi hosts, and configures vCenter Server.

Customization

If you select **Customize**, you see the EVO:RAIL Initial Configuration GUI with the following tabs in the left pane. Use values from the rows of your **EVO:RAIL Network Configuration Table**.

- **Hostnames**

  Type the ESXi host naming scheme from Row 7 and the vCenter Server hostname from Row 4.

- **Networking**

Type the VLAN IDs, IP addresses, netmask, and gateway for ESXi, Virtual SAN, vSphere vMotion, vCenter Server, and VM Networks from Rows 8–24.

- **Passwords**

  Type ESXi hosts and vCenter Server passwords from Row 25. Type the Active Directory (optional) domain, username and password from Row 26.

- **Globals**

  Type your time zone and your existing NTP and DNS server(s) from Rows 27–29. For logging, enter the IP address and hostname for Log Insight or for an existing third-party syslog server (optional) in your network (Row 31). Type the name, port, username, and password for your proxy server (optional) from Row 30.

- **Dell PowerTools Cluster Services Manager**

  Type one IP address from Row 32 for the VM required by a Dell CSM (look for the Dell tab in EVO RAIL deployment GUI to enter the IP information)
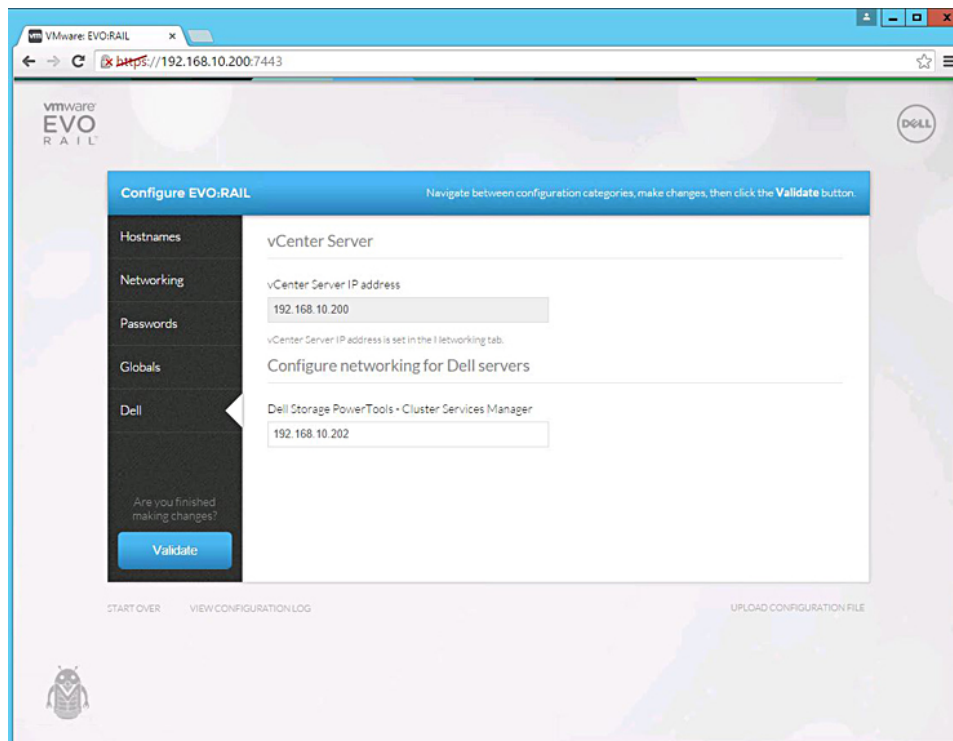

Figure 10. Dell PowerTools Cluster Services Manager

Initial configuration walk-through

Use the information from your EVO:RAIL Network configuration table when you do the following:

1. Browse through the EVO:RAIL IP address (for example, https://192.168.10.200:7443). If you view a browser message about security certificates, click **Advanced**, and then click **Proceed anyway**. The EVO:RAIL welcome splash page is displayed.
2. Click **Yes, Let's Go!**. Read through the license agreement, and accept the EVO:RAIL End-User License Agreement (EULA).
3. If you click **Customize**, you can configure hostnames, IP addresses, VLAN IDs, and passwords. Most fields have default values to make initial configuration quick and easy. **Just Go** configures EVO:RAIL

according to the default JSON configuration file and go to Step 11. To upload your own JSON file, click **Customize**, and then click **Upload Configuration**.

> 📝 **NOTE:** There is no save option in EVO:RAIL. All configuration changes are automatically validated and saved when changing between fields or screens.
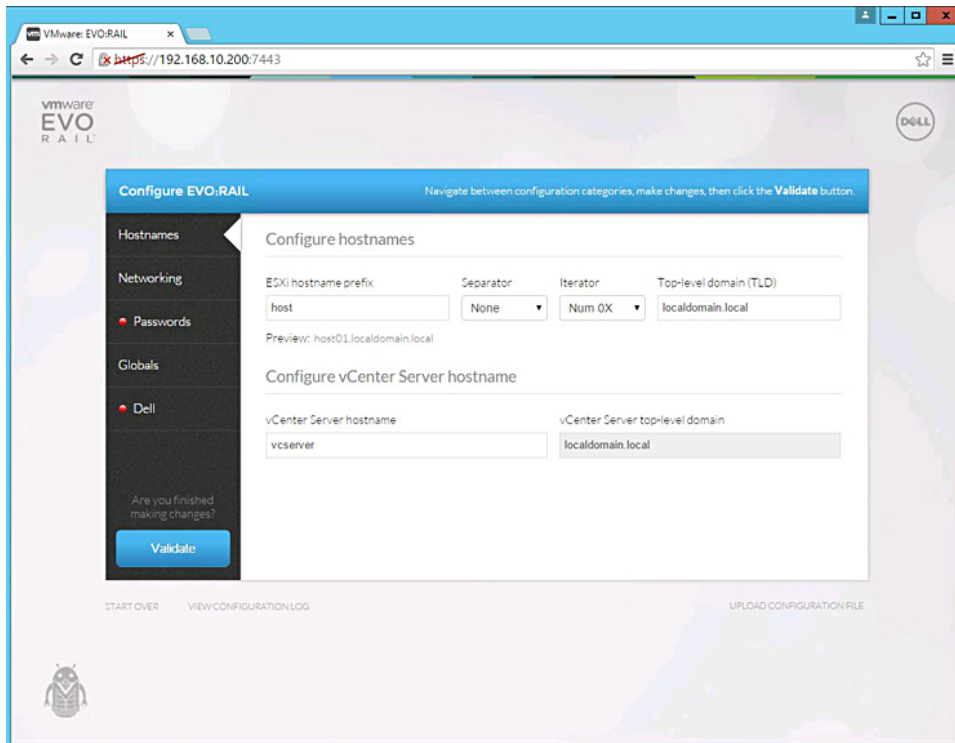

Figure 11. Configure hostnames

4. To customize EVO:RAIL, click **Hostnames** to define a naming scheme for your ESXi hosts. The hostname consists of an ESXi hostname prefix , a Separator, an Iterator, and a Top-level domain. The **Preview** field displays an example of the result of the first ESXi host, see the screenshot here.

   - Type the ESXi hostname prefix.

   - Select the Separator (**None** or a **-** dash), and the Iterator (**Alpha**, **Num X**, or **Num 0X**).

   - Type the Top-level domain name.

   - Type the vCenter Server hostname. The top-level domain is automatically applied to the vCenter Server hostname.

5. Click **Networking** to specify IP and/or VLAN details for each network type: ESXi hosts, Virtual SAN, vSphere vMotion, vCenter Server, and VM Networks.

   - In **ESXi hosts**, type the starting and ending address for IP pool, netmask, and default gateway.

   - In **vMotion**, type the starting and ending address for IP pool, the vSphere vMotion VLAN ID, and the netmask.

   - In **Virtual SAN**, type the starting and ending address for IP pool, the Virtual SAN VLAN ID, and the netmask.

Figure 12. Configure Networking

6. Click **vCenter Server** to type the IP address for EVO:RAIL Management and vCenter Server. The Netmask and Default gateway IP addresses are automatically copied from **ESXi hosts**.

   • If you type a new vCenter Server IP address, EVO:RAIL automatically reconfigure and informs you its new IP address, as described in Step 11.

   • The IP address of vRealize Log Insight (in Step 9, Globals)must be same as subnet and vCenter Server.

   • Port numbers remain the same. EVO:RAIL — 7443 and vSphere Web Client — 9443.

7. Click **VM networks** to configure VM networks. Type a VM Network Name and VM Network VLAN ID. Click **Add a VM network** to add more networks.

8. Click **Passwords** to specify the passwords for the ESXi hosts and vCenter Server. Type and confirm the ESXi hosts root password, and the vCenter Server admin password.

   Passwords must contain 8 −20 characters, with at least one uppercase, one lower case, and one special character. No character can be repeated three consecutive times.

   Optional: To use AD for authentication, type the AD username, AD password, and AD domain. EVO:RAIL does not fully configure Active Directory. You must perform more steps http:// pubs.vmware.com/vsphere-55/topic/com.vmware.vsphere.install.doc/GUID-B23B1360-8838-4FF2-B074-71643C4CB040.html on the vSphere Web Client.

9. Click **Globals** to specify the time zone, logging, and any existing DNS, NTP, or Proxy servers on your network. If you have multiple servers, separate them with commas. EVO:RAIL configures each of these services, as needed. For example, all ESXi hosts and the vCenter Server are configured with the specified NTP server when this field is filled out.

   Logging combines information for auditing and to track the functionality of EVO:RAIL, vCenter Server, and ESXi. By default, logging is set to vRealize Log Insight. You may alternately select an existing third-party syslog server. The default IP address for Log Insight is preconfigured; for example, 192.168.10.201. If you change the IP address of vCenter Server in step 6, change the IP address of Log Insight to be on the same subnet.

10. Click **Dell** to specify the IP address for the Dell PowerTools Cluster Services Manager solution.

34

11. Click **Validate**. EVO:RAIL verifies the configuration data, checking for conflicts. After validation is successful, click **Build Appliance**.

12. This step is only necessary if you change the IP address of vCenter Server from the default value.

    If you set a new IP address for vCenter Server or EVO:RAIL in step 6, you see the following screen:
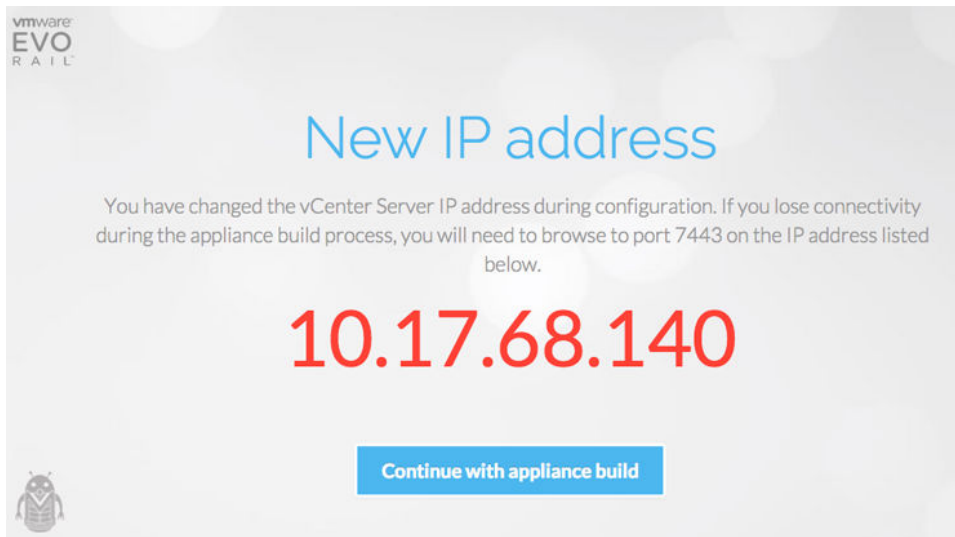

Figure 13. New IP address for EVO:RAIL Management, if you change the IP address of vCenter Server

Before you proceed, manually change the IP address of your EVO:RAIL Configuration and Management workstation or laptop to a new address on the same subnet as the new EVO:RAIL Management IP address. (For example, if the new management IP address is 10.10.10.200, you could set your client laptop to 10.10.10.210). Return to the browser window and click **Continue with appliance build**. If you see a browser message about certificates, click **Proceed anyway**.

If you lose connectivity during the appliance build process, browse to port 7443 on the new IP address. (for example, https://10.10.10.200:7443).

⚠ **CAUTION: If EVO:RAIL cannot connect to the new IP address that you configured, you get a message to fix your network and try again.**

⚠ **CAUTION: If you are not able to connect to the new IP address after 20 minutes, EVO:RAIL reverts to its original configuration and re type your custom configuration.**

13. Finishing up: Building your appliance!

    EVO:RAIL implements data services, creates the ESXi hosts, and configures the vCenter Server. When you see the **Hooray!** screen, click **IP address** to continue to EVO:RAIL Management. Also bookmark this IP address in your browser for future use.
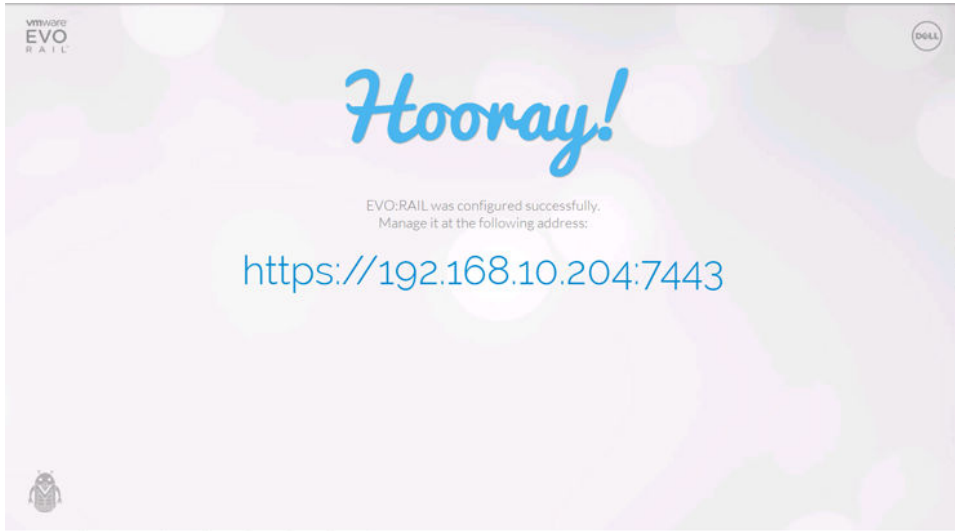
Figure 14. Finished configuration

Appendix A: JSON configuration file

EVO:RAIL relies on a JSON-formatted file to initially populate fields in the user interface. The end user is presented with this data during initial appliance configuration (both for Customize and Just Go workflows). The initial configuration file is found on the EVO:RAIL service datastore at: `/usr/lib/vmware-marvin/marvind/webapps/ROOT/WEB-INF/classes/default-config-static.json`

Before configuring EVO:RAIL, customers must read through the Network configuration section in this document and fill out the EVO:RAIL Network Configuration Table. Sample JSON configuration files that correspond to the default values listed in this table are found in VMware KB articles for each EVO:RAIL release.

A similarly formatted JSON file could be used with Upload Configuration File, which is available after you select Customize. This feature allows you to use a modified configuration file on-site, after shipment from Dell. The primary use case for this feature is a ROBO environment, where EVO:RAIL appliances are distributed with a similar configuration file for multiple locations.

> 📝 NOTE:
>
> - The JSON file format may change throughout EVO:RAIL releases. Get the sample JSON file that corresponds to the software release that your appliance was built with at the Dell factory and then edit the sample file for your configuration.
> - EVO:RAIL expects the data in the configuration file in a specific format. Any changes to the JSON format results in unexpected results and/or stops responding.
> - There is no built-in capability to generate and export an updated copy of an EVO:RAIL JSON configuration file from the GUI.

Upload configuration file

Prepopulate a custom configuration file for use in the Customize workflow with the following steps:

1. Obtain a copy of the default-config-static.json file for the EVO:RAIL release that you are configuring from *VMware Knowledge Base 2106961*.
2. Edit your new configuration file to insert the values from the EVO:RAIL Network Configuration Table.
3. Ensure that the filename has a `.json`extension.
4. Ensure that the file is in valid JSON format because EVO:RAIL are not validate the syntax (for example, a missing comma causes the configuration file to fail). EVO:RAIL validates the content of a correctly formatted JSON file in the same manner that it validates manual entries, verifying data entry and performing deep validation prior to building the appliance.
5. Make this file accessible from the EVO:RAIL Configuration and Management workstation or laptop.

Deploy EVO:RAIL as usual by configuring your ToR switch, racking and cabling your new EVO:RAIL appliance, and turning on each EVO:RAIL node. Connect the EVO:RAIL Configuration and Management workstation or laptop to the network, and continue with the following steps:

6. Go to the initial IP address in Row 5. Click the **Yes, Let's Go!** button. Accept the VMware End-User License Agreement.
7. Click the **Customize** button.
8. On the lower-right corner of the page, click **Upload Configuration File**.(See the red arrow in Figure 2).
9. Upload your new JSON configuration file from your EVO:RAIL Configuration and Management workstation or laptop.
10. Fix any mistakes that are highlighted with a red period (.). The **Passwords** tab should be highlighted with a red period because it would not be secure to enter passwords in clear text in a JSON file.
11. Click the **Validate** button.
12. If the configuration is valid, click the **Build Appliance** button.
13. If you changed the IP address of vCenter Server in the JSON file (that is, Row 6 is not the same as Row 5 in the EVO:RAIL Network Configuration Table), follow the on-screen instructions to go to the new IP address for EVO:RAIL Management.

JSON file format and valid values

The JSON configuration file must be properly formatted and the values must be valid for EVO:RAIL and for your network. The following list contains the field restrictions:

*   minIP, maxIP, netmask, gateway, ip: valid IP addresses and netmask in your network
*   vlanId: valid numeric VLAN ID, configured on your top-of-rack switch
*   name: alphanumeric string to identify a VM network segment
*   prefix: alphanumeric string for the first part of an ESXi hostname
*   separator: "" (no separator) or "-" (dash)
*   iterator: "NUMERIC_N" or "NUMERIC_NN" or "ALPHA"
*   tld: valid top-level domain name in your network
*   vcenter: alphanumeric string for the vCenter Server hostname
*   passwords: clear text password containing 5–20 characters, at least one of which must be a special character. It cannot have any character repeated three or more times in a row. (typing the password in clear text in a configuration file is not secure.)
*   logging: "LOGINSIGHT" or "SYSLOG"
*   timezone: "UTC" or any value in http://en.m.wikipedia.org/wiki/List_of_tz_database_time_zones.
*   other fields: alphanumeric strings

Modification instructions for the sample JSON file

1. Variables in red can be replaced with custom names or IP addresses. Data is mandatory is all the fields identified in red color.
2. Fields in purple contain multiple options as follows:

    *   separator:

- The general formula for the FQDN (fully qualified domain name) of an ESXi host is: <hostname><separator><iterator>.<domain>
- When using "-" as the separator, the FQDN of an ESXi host is: <hostname>-<iterator>.<domain> (i.e. host-01.vsphere.local)
- When using "" as the separator, the FQDN of an ESXi host is: <hostname><iterator>.<domain> (i.e. host01.vsphere.local)

- iterator:

  - ALPHA means that the first host starts with A, the second host with B, and so on.
  - NUMERIC_N means that the first host starts with "1", the second host with "2", and so on.
  - NUMERIC_NN means that the first host starts with "01", the second host with "02", and so on.

- logging:

  - LOGINSIGHT means that Log Insight is used as the log collection server. When this option is used, data must be entered in "loginsightServer" and "loginsightHostname".
  - SYSLOG means that an external log collection server is used as the log collection server. When this option is used, data must be entered in "syslogServerCSV".

- timezone:

  - Any value listed in http://en.m.wikipedia.org/wiki/List_of_tz_database_time_zones in the TZ column is accepted as valid input.

3. Fields in green are optional. If the field is not used, it should be left unfilled with just opening and closing quotation marks, that is "".

4. The brown field indicates that the "logging' field is set to "SYSLOG" (that is "logging": "SYSLOG"). Up to two IP addresses (or FQDNs) are supported in this field. If the field is set to ("logging": "LOGINSIGHT"), the field in brown, must be left blank (that is "syslogServerCSV": "")

5. Fields in yellow are required if the "logging" field is set to "LOGINSIGHT" (that is "logging": "LOGINSIGHT"). If the field is set to ("logging": " SYSLOG"), the fields in yellow, must be left blank (that is "loginsightServer": "" and "loginsightHostname": "")

6. Type data during configuring in fields that contain passwords. They should not be prefilled in the JSON file for security reasons.

7. No other fields must be modified.

The following is a sample JSON file based on EVO:RAIL Release 1.1.0 and 1.2.0. Data is mapped to the rows in the EVO:RAIL Network Configuration Table.

Figure 15. Sample JSON file based on EVO:RAIL Release 1.2.1

40

```
42.    "hostnames": {
43.         "hosts": {
44.              "prefix": "host",
45.              "separator": "-",
46.              "iterator": "NUMERIC_NN"              ⎤ Row 7
47.         },
48.         "tld": "localdomain.local",                ⎤ Row 4
49.         "vcenter": "vcserver"
50.    },
51.    "passwords": {
52.         "esxiPassword": "",
53.         "esxiPasswordConfirm": "",
54.         "vcPassword": "",                            ⎤ Row 25
55.         "vcPasswordConfirm": "",
56.         "activeDirectoryDomain": "optional_leave_blank_if_not_needed",
57.         "activeDirectoryUsername": " optional_leave_blank_if_not_needed ",   ⎤ Row 26
58.         "activeDirectoryPassword": "",
59.         "activeDirectoryPasswordConfirm": ""
60.    },
61.    "global": {                                      Row 31
62.         "logging": "LOGINSIGHT",                     Row 27
63.         "timezone": "UTC",
64.         "loginsightServer": "required_if_logging_field_is_LOGINSIGHT-    Row 31
     otherwise_it_must_be_blank",
65.         "loginsightHostname": "required_only_if_logging_field_is_LOGINSIGHT   Row 28
     otherwise_it_must_be_blank",
66.         "ntpServerCSV": "optional_leave_blank_if_not_needed",
67.         "syslogServerCSV": "required_only_if_logging_field_is_SYSLOG-    Row 29
     otherwise_it_must_be_blank",
68.         "dnsServerCSV": "optional_leave_blank_if_not_needed",           Row 30
69.         "proxyServer": "optional_leave_blank_if_not_needed",
70.         "proxyPort": "optional_leave_blank_if_not_needed",
71.         "proxyUsername": "optional_leave_blank_if_not_needed",
72.         "proxyPassword": ""
73.    },
74.    "vendor": {
75.         "ovfs": [{
76.              "ip": "192.168.10.202"
77.         }]
    }
```

Figure 16. Sample JSON file based on EVO:RAIL Release 1.2.1

Appendix B: Physical requirements

For more information, see *Dell PowerEdge C6220 II and C6320 Systems Hardware Owner's Manual* at **Dell.com/poweredgemanuals**.

- Default BMC username: *root* and password: *root*
- Default iDRAC username: *root* and password: *calvin*

Technical specifications

Table 18. Technical specifications

Power	
AC power supply (per PSU)	
Wattage	1400 W
Voltage	200–240 VAC, 50-60 Hz , maximum input current: 9.0 A
Heat dissipation	6024.376 BTU/hr maximum
Maximum in-rush current	Initial In-rush current cannot exceed 55 A (peak). Secondary In-rush current cannot exceed 25 A (peak).
Wattage	1600 W
Voltage	200–240 VAC, 50-60 Hz , maximum input current: 10 A
Heat dissipation	6033.979 BTU/hr maximum
Maximum in-rush current	Initial In-rush current and secondary In-rush cannot exceed 50 A (peak)
HVDC power supply (per power supply)	
Watt age	1400 W (for China only)
Voltage	240 VDC, 50-60 Hz , maximum input current: 9 A
Heat dissipation	5440.614 BTU/hr maximum
Maximum in-rush current	Initial In-rush current cannot exceed 55 A (peak). Secondary In-rush current cannot exceed 25 A (peak).

Power	
Battery (per system board)	
System battery	CR 2032 3.0-V lithium ion coin cell
Physical	
Height	8.68 cm (3.42 in)
Width	44.8 cm (17.6 in)
Depth	79.0 cm (31.1 in)
Weight (maximum configuration)	41 kg (90.38 lb) (with 12x3.5-inch HDD)
	39 kg (86.00 lb) (with 24*2.5-inch HDD)
Weight (empty)	15.7 kg (34.61 lb) (with 2.5-inch HDD bay)
	15.1 kg (33.29 lb) (with 3.5-inch HDD bay)
Environmental	
NOTE: For more information about environmental measurements for specific system configurations, go to **www.dell.com/environmental_datasheets**.	
Operating	10° to 35°C (50° to 95°F) wit h a maximum temperature gradation of 10°C per hour
	NOTE: For altitudes above 2950 feet, the maximum operating temperature is derated 1°F/550 ft.
	CAUTION: The maximum number of memory modules and hard drives supported on 1U node configuration, with 135W and 145W processors, depends on the power supply installed.
Storage	−40° t o 65°C (−40° t o 149°F) wit h a maximum temperature gradation of 20°C per hour
Relative humidity	
Operating	20% t o 80% (noncondensing) with a maximum humidity gradation of 10% per hour
Storage	5% to 95% (noncondensing)
Maximum vibration	
Operating	0.26 Grms at 5−350 Hz
Storage	1.88 Grms at 10−500 Hz for 15 min
Maximum shock	

Power	
Operating	One shock pulse in the positive z axis (one pulse on each side of the syst em) of 31 G for 2.6 ms in the operational orientation
Storage	Six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 71 G for up to 2 ms; Six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 27 G faired square wave pulse with velocity change at 235 inches/ second (597 centimeters/second)
Altitude	
Operating	-15.2 to 3,048 m (-50 t o 10,000 ft.)
Storage	-15.2 to 10,668 m (-50 to 35,000 ft.)
Airborne Contaminant Level	
Class	G1 as defined by ISA-S71.04-1985

Getting help

Contacting Dell

Dell provides several online and telephone-based support and service options. If you do not have an active internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical assistance, or customer-service issues:

1. Go to **Dell.com/support**.
2. Select your country from the drop-down menu on the bottom right corner of the page.
3. For customized support:
   a. Enter your system Service Tag in the **Enter your Service Tag** field.
   b. Click **Submit**.
      The support page that lists the various support categories is displayed.
4. For general support:
   a. Select your product category.
   b. Select your product segment.
   c. Select your product.
      The support page that lists the various support categories is displayed.

Documentation matrix

The documentation matrix provides information on documents that you can refer to for setting up and managing your system.

Table 19. Documentation matrix

To...	See the...
Install your system into a rack	Rack documentation included with your rack solution
Set up your system and know the system technical specifications	*Getting Started With Your System* that shipped with your system or see **Dell.com/poweredgemanuals**
Install the operating system	Operating system documentation at **Dell.com/operatingsystemmanuals**
Get an overview of the Dell Systems Management offerings	Dell OpenManage Systems Management Overview Guide at **Dell.com/openmanagemanuals** > **OpenManage software**

To...	See the...
Configure and log in to iDRAC, set up managed and management system, know the iDRAC features, and troubleshoot by using iDRAC	Integrated Dell Remote Access Controller User's Guide at **Dell.com/idracmanuals**
Know about the RACADM subcommands and supported RACADM interfaces	RACADM Command Line Reference Guide for iDRAC at **Dell.com/idracmanuals**
Launch, enable, and disable Dell Lifecycle Controller, know the features, use and troubleshoot Dell Lifecycle Controller	Dell Lifecycle Controller User's Guide at **Dell.com/idracmanuals**
Use Dell Lifecycle Controller Remote Services	Dell Lifecycle Controller Remote Services Quick Start Guide at **Dell.com/idracmanuals**
Set up, use, and troubleshoot OpenManage Server Administrator	Dell OpenManage Server Administrator User's Guide at **Dell.com/openmanagemanuals** > **OpenManage Server Administrator**
Install, use, and troubleshoot OpenManage Essentials	Dell OpenManage Essentials User's Guide at **Dell.com/openmanagemanuals** > **OpenManage Essentials**
Know the features of the storage controller cards, deploy the cards, and manage the storage subsystem	Storage controller documentation at **Dell.com/storagecontrollermanuals**
Check the event and error messages generated by the system firmware and agents that monitor system components	Dell Event and Error Messages Reference Guide at **Dell.com/openmanagemanuals** > **OpenManage software**