vRealize Automation 8.6 Reference Architecture Guide

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vRealize Automation 8.6

vmware®

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https://docs.vmware.com/

Contents

vRealize Automation 8.x Reference Architecture

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The Reference Architecture describes the structure and configuration of typical vRealize Automation deployments.

The Reference Architecture also provides information about high availability, scalability, port requirements, and deployment profiles for these components:

- vRealize Lifecycle Manager

- VMware Identity Manager

- vRealize Automation

For software requirements, installation, and support platforms, refer to the individual product documentation on docs.vmware.com.

Deployment and Configuration Recommendations

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This chapter includes the following topics:

Configuring Deployments

Deploy and configure all VMware vRealize Automation components in accordance with VMware recommendations.

The clocks for vRealize Lifecycle Manager, VMware Identity Manager, vRealize Automation, and vRealize Orchestrator components must be synced to the same timezone. UTC+0 is recommended.

Install vRealize Lifecycle Manager, VMware Identity Manager, vRealize Automation, and vRealize Orchestrator components on the same management cluster. Machines should then be provisioned on a separate cluster to keep user and server workloads isolated.

Authenticating vRealize Automation 8

vRealize Automation 8 requires an external VMware Identity Manager instance.

You can use an existing VMware Identity Manager instance or deploy a new one by using vRealize Lifecycle Manager. For information on how to deploy a new VMware Identity Manager instance, refer to Deployment of VMware Identity Manager.

Configuring Load Balancers

vRealize Automation 8 requires a configured load balancer to direct and manage traffic.

If you are deploying a large vRealize Automation 8 instance, you must configure two load balanced VIPs. However, no session persistence is required.

For detailed configuration information, refer to the Load Balancing Guide for vRealize Automation 8.2.

vRealize Automation and VMware Identity Manager appliances require and use these ports:

- vRealize Automation

  - Port: 443

  - Health Monitor Port: 8008

  - Health Monitor URL: /health

- VMware Identity Manager

  - Port: 443

  - Health Monitor Port: 443

  - Health Monitor URL: /SAAS/API/1.0/REST/system/health/heartbeat

Configuring vRealize Orchestrator

vRealize Automation 8 requires a configured vRealize Orchestrator instance for extensibility functionality.

vRealize Automation 8 supports both an external and embedded vRealize Orchestrator instance. For optimized performance with vRealize Automation 8, configure an embedded vRealize Orchestrator instance.

Configuring High Availability

You can configure high availability on VMware components by deploying clusters full stop. However, not all VMware components support high availability.

Table 2-1. Component High Availability

Product	High Availability Support
vRealize Lifecycle Manager	vRealize Lifecycle Manager does not support a highly available deployment.
VMware Identity Manager	Content is replicated in a VMware Identity Manager cluster. Deploy a cluster behind a load balancer to enable high availability.
vRealize Automation	Content is replicated in a vRealize Automation cluster. Deploy a cluster behind a load balancer to enable high availability.

Hardware Requirements

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Use these hardware specifications when configuring your system.

Table 3-1. Hardware Requirements

Component	vCPU	Memory (GB)	Storage (GB)
vRealize Lifecycle Manager	2	6	78
VMware Identity Manager **Note** For more information on the hardware requirements for VMware Identity Manager, see Upgrading to VMware Identity Manager documentation.	8	16	100
vRealize Automation	Medium profile: 12 XL profile: 24	Medium profile: 42 XL Profile: 96	Medium profile: 246 XL profile: 246

Scalability and Concurrency Maximums

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The scalability and concurrency limit tables outline the recommended maximums on vRealize Automation HA multi-tenant deployment.

Table 4-1. Scalability Maximums

Component	Scale Targets	
	Medium Profile	XL Profile
Tenants	20	50
Cloud Accounts: Private Endpoints - vCenter, NSX, and NSXT	50	50
Cloud Accounts: Public Endpoints - AWS, Azure, GCP, and VMC	20	50
Compute resources - ESXi hosts on a single vCenter	600	600
Compute resources - ESXi Hosts across 50 vCenters	2,000	2,000
Cloud Zones (for all endpoints)	200	200
Cloud Zones for a single endpoint	10	10
Data collected machines (includes private and public cloud)	200,000	280,000
Images collected	150,000	150,000
Image and Flavor Mapping	150	150
Cloud Zones and images per Image Mapping	100	124
Cloud Zone and Flavors per Flavor Mapping	100	124
VPZ created from single endpoint by provider tenant	50	50
VPZ created across endpoints by provider tenant	300	300
VPZ assignment per tenant	60	60

Table 4-1. Scalability Maximums (continued)

Component	Scale Targets	
Resources per deployment	100	300
Cloud Template	8,000	10,000
Catalog items	8,000	10,000
Catalog - content sources	1,000	2,000
Projects across tenants	5,000	5,000
Projects per 5,000 admin users	5,000	5,000
Non-admin users per single project	5,000 maximum non-admin users that can be part of a single project	5,000 maximum non-admin users that can be part of a single project
5,000 Non-admin users per project	50 maximum projects that can contain 5,000 non-admin users each	50 maximum projects that can contain 5,000 non-admin users each
Projects per single non-admin user	5,000 maximum projects that a single non-admin user can be a part of	5,000 maximum projects that a single non-admin user can be a part of
5,000 Projects per non-admin users	50 maximum non-admin users that can be part of 5,000 projects	100 maximum non-admin users that can be part of 5,000 projects.
Custom Role Across tenants	500	1,000
Custom Roles per User	100	500
Subscriptions	3,000	3,000
Subscriptions per deployment	40	40
Blocking subscription per event topic	50	50
Non-Blocking subscription per event topic	50	50
Approval policies	4,500	4,500
Pipelines	3,000	5,000
ABX Actions - AWS lambda and Azure function providers	1,000	2,000
ABX Actions - On-prem provider	150	150

Table 4-1. Scalability Maximums (continued)

Component	Scale Targets	
HCMP Active Alerts	70,000	70,000
Maximum RTT Latency for Private Endpoints (ms)	300	300

Table 4-2. Concurrency Maximums

Action	Medium Profile Sustain Load	XL Profile Sustain Load
Concurrent Cloud Template resource provisioning, Day 2 actions on deployments, Provisioned Resources, ABX Action and vRO workflow. Additional Requests stay in the queue.	250 Active Requests	750 Active Requests
Concurrent pipeline executions	20/minute	50/minute
Bulk-Imported machines using workload on-boarding - Multiple plans	19,000/hour	30,000/hour
Bulk-Imported machines using workload on-boarding - Single Plan	3,500/hour	6,000/hour

Network and Port Communication

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This chapter includes the following topics:

- Network Requirements
- Port Requirements

Network Requirements

Use these network requirements with your vRealize Automation 8 components.

All vRealize Automation 8 components must be deployed layer 2 adjacent. vRealize Automation 8 cannot be deployed with an IP address or access external services with IP addresses in these ranges.Reserve these network ranges for intra-service communication:

- 10.244.0.0/22
- 10.244.4.0/22

Port Requirements

The inbound and outbound ports for VMware components with vRealize Automation 8 are outlined in the Port Requirements table.

To view all vRealize Automation ports in a single dashboard, refer to the Ports and Protocols tool.

Table 5-1. Port Requirements

Component	Inbound Ports	Outbound Ports
VMware Identity Manager Load Balanced VIP	User - HTTPS 443 vRealize Automation Appliance - HTTPS 443 vRealize Lifecycle Manager Appliance - HTTPS 443	VMware Identity Manager - HTTPS 443
vRealize Automation Appliance Load Balanced VIP	User - HTTPS 443	vRealize Automation - HTTPS 443 - Health Monitor 8008

Table 5-1. Port Requirements (continued)

Component	Inbound Ports	Outbound Ports
VMware Identity Manager Appliance	User ■ *HTTPS 443 VMware Identity Manager Load Balanced VIP ■ HTTPS 443 vRealize Automation Appliance ■ *HTTPS 443 vRealize Lifecycle Manager Appliance ■ *HTTPS 443	VMware Identity Manager Load Balancer ■ **HTTPS 443
vRealize Lifecycle Manager Appliance	User ■ HTTPS 443	VMware Identity Manager Load Balanced VIP ■ HTTPS 443 vRealize Automation Appliance Load Balanced VIP ■ HTTPS 443 VMware Identity Manager Appliance ■ SSH 22 ■ HTTPS 443 vRealize Automation Appliance ■ SSH 22 ■ HTTPS 443
vRealize Automation Appliance	User ■ *HTTPS 443 vRealize Automation Appliance Load Balancer VIP ■ HTTPS 443 ■ Health Monitor 8008 vRealize Lifecycle Manager Appliance ■ SSH 22 ■ HTTPS 443 vRealize Automation Appliance ■ **10250 ■ **6443 ■ **UDP 8285 ■ **2379 ■ **2380 ■ **UDP 500 ■ **UDP 4500	VMware Identity Manager Appliance ■ *HTTPS 443 VMware Identity Manager Load Balanced VIP ■ HTTPS 443 vRealize Automation Appliance ■ **10250 ■ **6443 ■ **UDP 8285 ■ **2379 ■ **2380 ■ **UDP 500 ■ **UDP 4500 ESXi host 902
* Direct access only. Required only in deployments that are not load balanced. ** Intra-cluster communication.		

Deployment Configurations

<div style="text-align: right; font-size: 3em; color: #bbb;">6</div>

The components and communication ports in your deployment depend on the deployment's size.

Small deployments require these components:

- 1 vRealize Lifecycle Manager Appliance
- 1 VMware Identity Manager Appliance
- 1 vRealize Automation Appliance

Note Small deployments do not require load balancers.

Large deployments require these components:

- 1 vRealize Lifecycle Manager Appliance
- 3 VMware Identity Manager Appliances
- 3 vRealize Automation Appliances

Note A Load Balancer VIP is required for the 3 VMware Identity Manager Appliances and the 3 vRealize Automation Appliances.

This chapter includes the following topics:

- Small Deployment Configuration
- Large (Clustered) Deployment Configuration

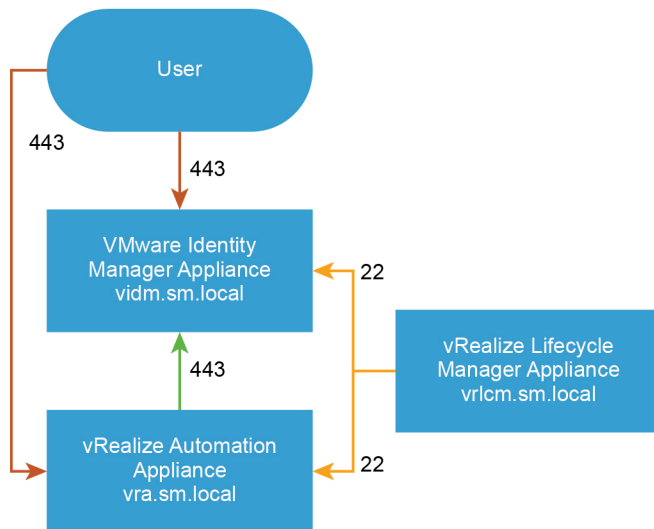## Small Deployment Configuration

Table 6-1. Small Deployment Hostnames

Component	Hostname
vRealize Lifecycle Manager Appliance	vrlcm.sm.local
VMware Identity Manager Appliance	vidm.sm.local
vRealize Automation Appliance	vra.sm.local

Table 6-2. Certificates

Server Role	Common Name or Subject Alt Name
VMware Identity Manager	Common name contains the hostname vidm.sm.local
vRealize Lifecycle Manager	Common name contains the hostname vrlcm.sm.local
vRealize Automation	Common name contains the hostname vra.sm.local

Large (Clustered) Deployment Configuration

Large (clustered) deployments include several component types and communication ports.

Large (clustered) deployments are comprised of these components:

- Identity Manager Appliance Load Balanced VIP

- vRealize Automation Appliance Load Balanced VIP

- vRealize Lifecycle Manager Appliance

- VMware Identity Manager Appliance x3

- vRealize Automation Appliance x3

Table 6-3. Large Deployment Hostnames

Components	Hostname
Identity Manager Appliance Load Balanced VIP	vidmlb.lg.local
vRealize Automation Appliance Load Balanced VIP	vralb.lg.local
vRealize Lifecycle Manager Appliance	vrlcm.lg.local

Table 6-3. Large Deployment Hostnames (continued)

Components	Hostname
VMware Identity Manager Appliance	- vidm1.lg.local - vidm2.lg.local - vidm3.lg.local
vRealize Automation Appliance	- vra1.lg.local - vra2.lg.local - vra3.lg.local

Table 6-4. Certificates

Server Role	Common Name or Subject Alt Name
VMware Identity Manager Appliance	Subject Alt name contains the hostnames: - vidmlb.lg.local - vidm1.lg.local - vidm2.lg.local - vidm3.lg.local
vRealize Lifecycle Manager	Common name contains the hostname vrlcm.lg.local
vRealize Automation	Subject Alt name contains the hostnames: - vralb.lg.local - vra1.lg.local - vra2.lg.local - vra3.lg.local

The diagram outlines the communication ports between large deployment components.