

# Introducing VMware Validated Design Use Cases

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VMware Validated Design 4.2



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# About Introducing VMware Validated Design for Use Cases

*Introducing VMware Validated Design Use Cases* presents the design objectives and a high-level overview of different VMware Validated Design™ use cases. For each use case, you learn about the scope, design objectives, and documentation.

*Introducing VMware Validated Design Use Cases* currently includes the following use cases

- VMware Validated Design for Micro-Segmentation
- VMware Validated Design for IT Automating IT
- VMware Validated Design for Intelligent Operations

## Intended Audience

*Introducing VMware Validated Design Use Cases* is for cloud architects, infrastructure administrators, cloud administrators, and cloud operators who want to decide which of the designs will help them set up their customized data centers.

# Features of VMware Validated Designs



Use VMware Validated Designs to build a Software-Defined Data Center that is based on management components by VMware, and has a scalable and best-practice configuration.

VMware Validated Designs have the following advantages:

## **One path to SDDC**

After you satisfy the deployment requirements, follow one consistent path to deploy an SDDC.

VMware Validated Designs offer an extensively tested solution path with specific information about product versions, networking architecture, capabilities, and limitations.

## **SDDC design for use in production**

A VMware Validated Design supports an SDDC that has the following features:

- High-availability of management components
- Backup and restore of management components
- Monitoring and alerting
- Disaster recovery of management components
- Protection of management application by using NSX Distributed Firewall

## **Validated design and deployment**

The prescriptive documentation of a VMware Validated Design is continuously validated by VMware.

Validation provides the following advantages to your organization:

- Validated product interoperability
- Validated SDDC features, such as:
  - Churn rate of tenant workloads
  - High availability of management components
  - Operational continuity
  - Design with dual-region support in mind
- Reduced risk of deployment and operational problems

- Reduced test effort

**Fast SDDC standup**

You can implement a data center without engaging in design work and product research. After you download all SDDC products, follow the detailed design and step-by-step instructions.

**Support for latest product releases**

Every version of a VMware Validated Design accommodates new product releases. If you have deployed an SDDC according to an earlier version of a VMware Validated Design, you can directly follow the validated design to upgrade your environment.

**Foundation of SDDC deployment use cases**

This VMware Validated Design provides the foundation for use cases that satisfy the requirements of individual organizations or industry segments, such as VMware Validated Design for Micro-Segmentation, VMware Validated Design for IT Automating IT, and VMware Validated Design for Intelligent Operations.

# Advantages of VMware Validated Design Use Cases

# 2

Just like the VMware Validated Design for the Software-Defined Data Center, each use case is fully validated, supports the latest product releases, and enables fast standup.

VMware Validated Design use cases have the following advantages.

## **One path to SDDC**

After you satisfy the deployment requirements, follow one consistent path to deploy an SDDC.

VMware Validated Design for Software-Defined Data Center offers an extensively tested solution path with specific information about product versions, networking architecture, capabilities, and limitations.

Use case solution paths have also been tested with the product versions and networking architectures specified for the use case.

## **SDDC design for use in production**

The VMware Validated Design for the Software-Defined Data Center has the following features.

- High-availability of management components
- Backup and restore of management components
- Monitoring and alerting
- Disaster recovery of management components
- Protection of management application by using NSX Distributed Firewall

Use cases have been tested in a more limited environment.

- The following features are fully supported.
  - High-availability of management components
  - Monitoring and alerting
  - Protection of management application by using NSX Distributed Firewall

- The following features are not tested for use cases, but expansion to an environment that includes the full suite of operations component is possible.
  - Backup and restore of management components
  - Disaster recovery of management components

**Validated design and deployment**

The prescriptive documentation of a VMware Validated Design is continuously validated by VMware.

Validation provides the following advantages to your organization:

- Validated product interoperability
- Validated SDDC features, such as custom workload churn, high availability of management components, operational continuity, efficient monitoring, and a design with dual-region support in mind
- Reduced risk of deployment and operational problems
- Reduced test effort

**Fast SDDC standup**

By downloading all SDDC products or all products included in a use case you can implement a data center without engaging in design work and product research. To do so, you can follow the detailed design decisions and step-by-step instructions of the SDDC foundation and the use case.

**Support for latest product releases**

Every version of a VMware Validated Design, including a validated use case, accommodates new product releases. If you have deployed an SDDC according to an earlier version of a VMware Validated Design, you can follow the validated design to upgrade your environment.

**Foundation of SDDC deployment use cases**

This VMware Validated Design provides the foundation for use cases that satisfy the requirements of individual organizations or industry segments, such as VMware Validated Design for Micro-Segmentation, VMware Validated Design for IT Automating IT and VMware Validated Design for Intelligent Operations.

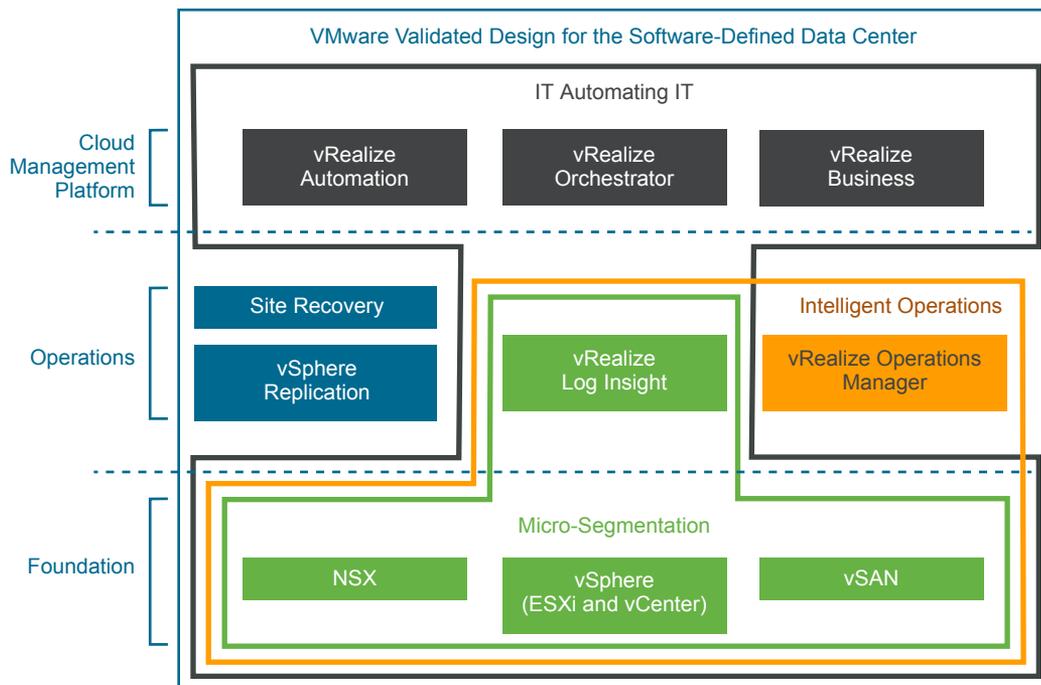
Because the use cases share product versions, procedure, and other aspects of the deployment with the VMware Validated Design for Software-Defined Data Center, expansion of a use case to the full dual-region SDDC is seamless.

# Component Overview of VMware Validated Design Use Cases

# 3

All VMware Validated Design use cases are related with the VMware Validated Design for the Software-Defined Data Center. You install all products in the virtual infrastructure layer. Different use cases might also require installation of additional products.

**Figure 3-1. VMware Validated Design for the Software-Defined Data Center and Use Cases**



The different products have the following components.

Product	Components
VMware Validated Design for Micro-Segmentation	<ul style="list-style-type: none"> <li>■ VMware NSX</li> <li>■ VMware vSphere (ESXi and vCenter Server)</li> <li>■ VMware vSAN</li> <li>■ vRealize Log Insight</li> </ul> <p>The VMware Validated Design for Micro-Segmentation uses a single-region design.</p>
VMware Validated Design for IT Automating IT	<p>All components that are used by the VMware Validated Design for Micro-Segmentation, plus the following additional components.</p> <ul style="list-style-type: none"> <li>■ vRealize Automation</li> <li>■ vRealize Orchestrator</li> <li>■ vRealize Business</li> </ul> <p>According to the use case, additional VMware products, such as vRealize Operations Manager and vRealize Log Insight, or third-party products might be required.</p> <p>Many scenarios in the VMware Validated Design for IT Automating IT are documented as single-region designs. You can expand those scenarios to a dual-region design. The <i>Scenarios</i> documentation also explains how to use a UDLR for cross-region deployment.</p>
VMware Validated Design for Intelligent Operations	<ul style="list-style-type: none"> <li>■ VMware NSX</li> <li>■ VMware vSphere (ESXi and vCenter Server)</li> <li>■ VMware vSAN</li> <li>■ vRealize Log Insight</li> <li>■ vRealize Operations Manager</li> </ul> <p>The VMware Validated Design for Intelligent Operations uses a single-region design.</p>
VMware Validated Design for the Software-Defined Data Center	<p>This design contains a full set of virtual infrastructure, cloud management, operations management and business continuity components.</p> <p>This design has been implemented and tested in a dual-region environment. It includes some products that are not part of the current use cases.</p>

# 4

## Micro-Segmentation Use Case

The micro-segmentation use case includes a subset of the products that are part of VMware Validated Design for Software-Defined Data Center. The use case provides a validated platform for an environment that uses micro-segmentation. That platform enables you to secure all workloads by using NSX for vSphere distributed firewalls and security groups.

Micro-segmentation includes core products that support dynamic security based on attributes. This functionality is part of the NSX for vSphere product offering. However, the use case is a fully tested implementation of all listed product versions.

You can expand the environment from the use case to the full validated SDDC design.

This chapter includes the following topics:

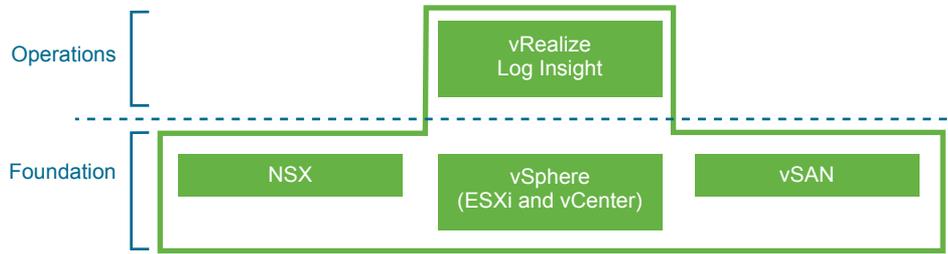
- [Micro-Segmentation Use Case Components](#)
- [Micro-Segmentation Design Objectives](#)
- [Micro-Segmentation Use Case Scope](#)
- [Micro-Segmentation Use Case Workflows](#)
- [Micro-Segmentation Use Case Documentation](#)
- [Micro-Segmentation Use Case Deployment](#)

### Micro-Segmentation Use Case Components

The micro-segmentation use case showcases the networking and security capabilities of VMware NSX for vSphere.

The use case includes the virtual infrastructure components and vRealize Log Insight. VMware vSAN is supported but not required.

**Figure 4-1. VMware Validated Design for Micro-Segmentation Components**



**VMware vSphere** As the base layer, VMware ESXi and VMware vCenter Server support infrastructure virtualization.

**VMware NSX for vSphere** VMware NSX for vSphere provides the functionality for implementing micro-segmentation in the SDDC.

NSX supports flexible security policies. The policies can be based on the virtual network structure, virtual machine or OS type, dynamic security tags, and more. The result is granularity of security down to the virtual NIC.

The resulting data center supports isolation and segmentation, with drastically improved security.

**vRealize Log Insight** VMware vRealize Log Insight supports log management features that enable you to view and analyze security and networking logs by using customizable dashboards.

## Micro-Segmentation Design Objectives

The design objectives of VMware Validated Design for Micro-Segmentation provide fine-grained details about the scope, performance, hardware, and other critical factors.

**Table 4-1. VMware Validated Design for Micro-Segmentation Objectives**

VMware Validated Design for Micro-Segmentation Objective	Description
Main objective	Validated micro-segmentation use case in a single-region design.
Scope of deployment	Clean deployment of the management components.
Cloud type	Private cloud.
Number of regions and disaster recovery support	. Single-region SDDC that does not support failover.
Maximum number of virtual machines and security constructs	The use case is tested with the following scale parameters. <ul style="list-style-type: none"> <li>■ 3,000 running virtual machines</li> <li>■ 300 security policies</li> <li>■ 1,200 security groups</li> <li>■ 300 distributed firewall IP sets</li> <li>■ 2,000 distributed firewall rules</li> </ul>

**Table 4-1. VMware Validated Design for Micro-Segmentation Objectives (Continued)**

VMware Validated Design for Micro-Segmentation Objective	Description
Number of clusters in a region	<p>Dual-cluster design</p> <p>The design requires the following clusters for SDDC deployment:</p> <ul style="list-style-type: none"> <li>■ Management cluster. Runs the virtual machines of the management products.</li> <li>■ Shared edge and compute cluster. Runs the tenant workloads (compute) and connects to the NSX for vSphere networks and the external networks (edge).</li> </ul>
Data center virtualization	<ul style="list-style-type: none"> <li>■ Compute virtualization</li> <li>■ Network virtualization</li> </ul>
Scope of guidance	<ul style="list-style-type: none"> <li>■ Storage, compute and networking for the management cluster</li> <li>■ Number of hosts, amount of storage and configuration</li> <li>■ Deployment and initial setup of management components at the infrastructure level</li> </ul>
Overall availability	<p>99% availability</p> <p>Planned downtime is expected for upgrades, patching, and on-going maintenance.</p>
Authentication, authorization, and access control	<p>Use of Microsoft Active Directory as a central user repository.</p> <p>Users can be allocated NSX roles.</p>
Certificate signing	<p>Certificates are signed by an enterprise-internal or an external certificate authority (CA). No self-signed certificates are used.</p>
Hardening	<p>Tenant workload traffic can be separated from the management traffic.</p>
Interoperability between VVD for SDDC and this use case.	<p>You can grow this use case to the Standard SDDC in Validated Design for the Software-Defined Data Center.</p>

## Micro-Segmentation Use Case Scope

The delivery of the use case includes scale validation in an environment with 100 hosts and 3,000 virtual machines.

In the core micro-segmentation use case, logical networking is main component of the design. The use case validates creation of security rules that protect virtual machines by using NSX distributed firewalls.

## Micro-Segmentation Use Case Workflows

The micro-segmentation use case supports a set of workflows that are tested as part of this validated design. To implement static security, you use the vSphere Web Client to configure distributed firewall rules or workflows based on Service Composer.

Prepare your environment.

- Install and configure the ESXi hosts in a compute cluster.

- Set up vRealize Log Insight to receive logs from all hosts. This includes distributed firewall logs and NSX logs.

To implement static security groups, you can use logical switches, IP sets, and virtual machine attributes.

- Create rules for virtual machines on VLAN-backed networks. These rules limit traffic based on virtual machine IP address or based on virtual machine attributes.
- Create rules.

To implement dynamic security groups based on tag creation, you use security policies.

- Create rules that separate virtual machines in different security groups according to assigned tags.
- Create security policies and apply them to security groups.

To implement monitoring, you can use the vRealize Log Insight product, which is part of this use case.

- Send all distributed firewall logs to vRealize Log Insight for analysis.
- Configure monitoring dashboards.

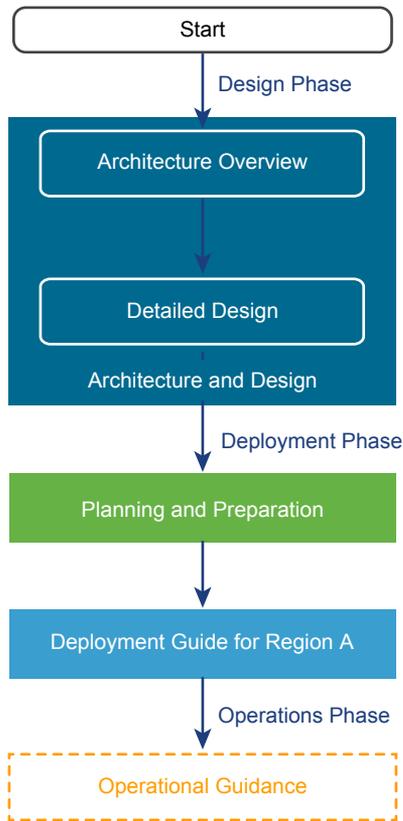
The scenario *Configuring Micro-Segmentation for Multi-Tier Applications* that is a part of the VMware Validated Design for IT Automating IT documentation illustrates the use of micro-segmentation capabilities such as security profiles and distributed firewalls with multi-tier applications.

## Micro-Segmentation Use Case Documentation

Follow VMware Validated Design for Software-Defined Data Center to implement an SDDC that supports micro-segmentation using NSX.

To access the documentation of VMware Validated Design for Software-Defined Data Center, go to [VMware Validated Design documentation](#).

**Figure 4-2. VMware Validated Design for Micro-Segmentation Documentation Flow**



## Architecture and Design

The *Architecture and Design* document has two parts, *Architecture Overview* and *Detailed Design*.

The focus of the *Architecture Overview* are the components in the design and how they interact.

**Table 4-2. Architecture Overview Sections**

Component	Description
Document	Part of the <i>Architecture and Design</i> document
Purpose	<ul style="list-style-type: none"> <li>■ Introduce the fundamentals and components in the SDDC design.</li> <li>■ Provide information about the layered structure of the SDDC.</li> <li>■ Describe the building modules and basic behavior of each management component.</li> </ul>
Audience	Cloud architects and cloud administrators

After you learn about the basic modules in the SDDC design, you proceed with detailed design of the management components and the required infrastructure.

**Table 4-3. Detailed Design Sections**

Component	Description
Guide	Part of the <i>Architecture and Design</i> document
Purpose	<ul style="list-style-type: none"> <li>■ Provide complete details about the configuration of each layer and of the components that are a part of the layer.</li> <li>■ Describe available design alternatives.</li> <li>■ Provide design decisions to reflect the main design issues and the rationale behind a chosen solution path.</li> </ul>
Audience	Cloud architects and cloud administrators

## Planning and Preparation

After you understand the details of the design, the *Planning and Preparation* document helps you plan your environment according to the requirements of the design so that you can deploy the designed SDDC directly without additional testing and troubleshooting efforts.

**Table 4-4. Planning and Preparation Information**

Section Attribute	Description
Guide	<i>Planning and Preparation</i>
Purpose	<p>Collect all requirements that your environment must meet so that you can follow a VMware Validated Design to create an SDDC. The <i>Planning and Preparation</i> section provides prerequisites about the following areas:</p> <ul style="list-style-type: none"> <li>■ Required hardware and software including VMware products, scripts, and third-party software</li> <li>■ Networking configuration including VLANs, example IP addresses, and DNS names</li> <li>■ Active Directory user configuration</li> <li>■ Specifications of the virtual machines that you must provide in advance</li> </ul>
Audience	Cloud architects, infrastructure administrators, cloud administrators, and cloud operators

## Deployment Guide for Region A

After you make sure that your environment has the required structure and configuration, follow the *Deployment Guide for Region A* to start the manual single-region SDDC implementation. You can follow the *Microsegmentation Use Case Deployment Using vRealize Suite Lifecycle Manager* for automated deployment of the micro-segmentation use case.

**Table 4-5. Deployment Guide Information**

Section Attribute	Description
Guide	<i>Deployment for Region A</i> for Standard SDDC
Purpose	<ul style="list-style-type: none"> <li>■ Provide step-by-step instructions for each management component of the SDDC according to the selected design path in <i>Detailed Design</i>.</li> <li>■ Cover the single-region setup of the SDDC.</li> <li>■ Provide details about setting up the virtual infrastructure for both management and tenant workloads.</li> <li>■ Provide procedures for integration of the products to form one functional system.</li> </ul>
Audience	Cloud architects, infrastructure administrators, cloud administrators, and cloud operators

## Operational Guidance

For operational guidance, consult the documentation for installing and configuring components that is in VMware Validated Design for Software-Defined Data Center. Install only the components that are in the scope of VMware Validated Design for Micro-Segmentation. See [Micro-Segmentation Design Objectives](#).

## Micro-Segmentation Use Case Deployment

The micro-segmentation use case is a subset of VMware Validated Design for Software-Defined. All scenarios in this documentation have been validated with that architecture. Your environment must meet certain prerequisites before you can perform a scenario.

## Deploying the Components for Micro-Segmentation Manually

To manually deploy the SDDC components that are required to perform micro-segmentation operations, perform all tasks in the following documentation for VMware Validated Design for Software-Defined Data Center:

**Table 4-6. Documentation for Manual Deployment of Intelligent Operations**

Region	Documentation
Region A	Planning and Preparation
	Deployment for Region A <ul style="list-style-type: none"> <li>■ Region A Virtual Infrastructure Implementation</li> <li>■ Region A Operations Implementation               <ul style="list-style-type: none"> <li>■ Region A vRealize Log Insight Implementation</li> </ul> </li> </ul>

## Deploying the Components for Micro-Segmentation by Using vRealize Suite Lifecycle Manager

For automating the deployment of the vRealize Suite solutions that are required to support VMware Validated Design for Microsegmentation, use vRealize Suite Lifecycle Manager. See to the *Micro-Segmentation Use Case Deployment Using vRealize Lifecycle Manager* documentation.

### Documentation Location

You can find the documentation on the [VMware Validated Design Documentation](#) page.

# IT Automating IT Use Case

The IT Automating IT use case is based on the foundation of the VMware Validated Design for Software-Defined Data Center. Its documentation presents a validated set of scenarios for common IT operations for automated workload provisioning. Different scenarios have different prerequisites. Scenarios also differ in the approach to networking.

This chapter includes the following topics:

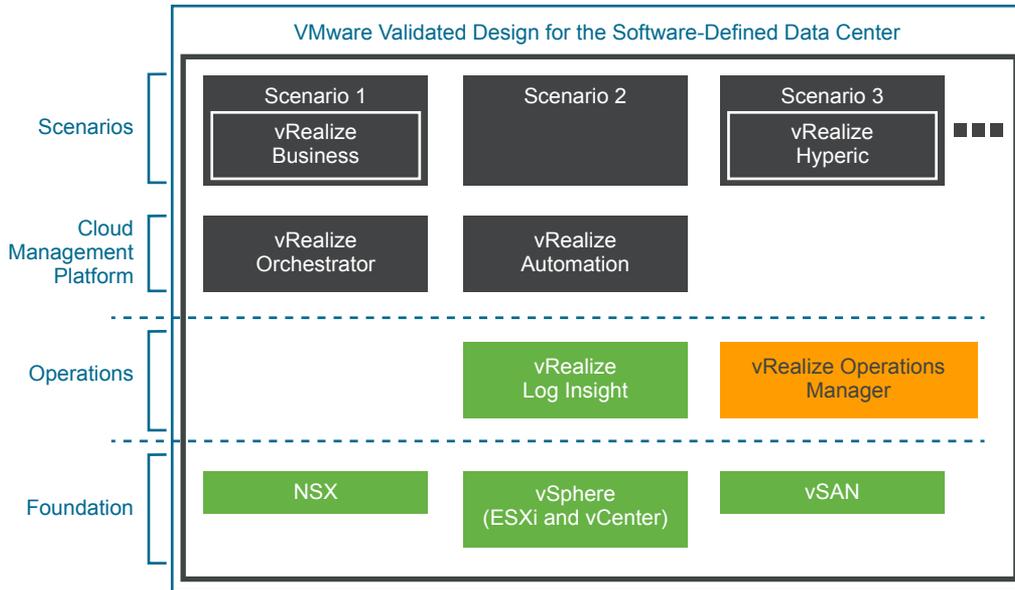
- [IT Automating IT Components](#)
- [IT Automating IT Design Objectives](#)
- [IT Automating IT Use Case Scope](#)
- [IT Automating IT Workflows](#)
- [IT Automating IT Use Case Documentation](#)
- [IT Automating IT Use Case Deployment](#)

## IT Automating IT Components

The IT Automating IT use case showcases different typical use case scenarios of an IT professional.

The use case includes components at the foundation, cloud management, and operations layer.

**Figure 5-1. IT Automating IT Components**



At the management layer, the use case includes the following components.

**vSphere** As the base layer, VMware ESXi and VMware vCenter Server support infrastructure virtualization.

**NSX for vSphere** At the heart of the use case is VMware NSX for vSphere, which supports flexible security policies. The policies can be based on the virtual network structure, virtual machine or OS type, dynamic security tags, and more. The result is granularity of security down to the virtual NIC.

The resulting data center supports isolation and segmentation, with drastically improved security.

At the operations management layer, because of certain automating IT scenarios, the use case includes the following components.

**vRealize Log Insight** VMware vRealize Log Insight supports log management features that enable you to view and analyze logs by using customizable dashboards.

**vRealize Operations Manager** VMware vRealize Operations streamlines and automates IT operations management. Deliver intelligent operations management from applications to infrastructure across physical, virtual and cloud environments with VMware vRealize Operations.

At the cloud platform management layer, the use case includes the following components.

- vRealize Automation** VMware vRealize Automation provides a service catalog from which tenants can deploy applications, and a portal that lets you deliver a personalized, self-service experience to end users.
- vRealize Orchestrator** VMware vRealize Orchestrator is a platform that provides a library of extensible workflows to allow you to create and run automated, configurable processes to manage the VMware vSphere infrastructure as well as other VMware and third-party technologies.
- vRealize Business** VMware vRealize Business is a platform that provides automates cloud costing analysis, consumption metering, cloud comparison and planning, delivering the cost visibility and business insights you need to run your cloud more efficiently. It is also integrated with vRealize Operations Manager.

## IT Automating IT Design Objectives

The design objectives of VMware Validated Design for IT Automating IT provide fine-grained details about the scope, performance, hardware, and other critical factors.

**Table 5-1. Objectives of VMware Validated Design for IT Automating IT**

VMware Validated Design Objective	Description
Main objective	Common IT scenarios implemented on top of the SDDC foundation.
Scope of deployment	<p>Most scenarios in this use case assume that you deployed the following components.</p> <ul style="list-style-type: none"> <li>■ Virtual infrastructure layer (ESXi, vCenter Server, NSX)</li> <li>■ vRealize Automation</li> <li>■ Other components, as listed in the introduction to each scenario in <i>IT Automating IT Scenarios</i>.</li> </ul>
Cloud type	Private cloud
Number of regions and disaster recovery support	<p>The <i>Scenario</i> documentation offers different solution paths. It includes a discussion of the limitations of each approach at the beginning.</p> <ul style="list-style-type: none"> <li>■ Single-region only</li> <li>■ Dual-region deployment using distributed logical routers (DLRs)</li> <li>■ Cross-region deployment using a universal distributed logical router (UDLR).</li> </ul> <p>The documentation includes guidance for a deployment that can support two regions for failover.</p>
Maximum number of virtual machines	<ul style="list-style-type: none"> <li>■ 10,000 running virtual machines</li> <li>■ Churn rate of 150 virtual machines per hour</li> </ul> <p>Churn rate is related to provisioning, power cycle operations, and decommissioning of one tenant virtual machine by using a blueprint in the cloud management platform. A churn rate of 100 means that 100 tenant workloads are provisioned, pass the power cycle operations, and are deleted.</p>

**Table 5-1. Objectives of VMware Validated Design for IT Automating IT (Continued)**

VMware Validated Design Objective	Description
Number of clusters	<p>Dual-cluster setup</p> <p>The validated design requires the following clusters for SDDC deployment.</p> <ul style="list-style-type: none"> <li>■ Management cluster. Runs the virtual machines of the management products.</li> <li>■ Shared edge and compute cluster                             <ul style="list-style-type: none"> <li>■ Runs the tenant workloads.</li> <li>■ Runs the required NSX services to enable north-south routing between the SDDC and the external network, and east-west routing inside the SDDC.</li> </ul> </li> </ul>
Data center virtualization	<ul style="list-style-type: none"> <li>■ Compute virtualization</li> <li>■ Software-defined storage in the management cluster</li> <li>■ Network virtualization</li> </ul>
Scope of guidance	<p>The scope of guidance depends on the use case. The <i>Scenarios</i> documentation changes as the Validated Design adds more use cases. Some example use cases are as follows. See the <i>Scenarios</i> documentation for the complete current set.</p> <ul style="list-style-type: none"> <li>■ Configuring Reservation Policies and Network Policies</li> <li>■ Publishing Templates and Blueprints</li> <li>■ Creating Self-Service Catalog</li> <li>■ Creating Blueprints with Dynamic Resource Tiering</li> <li>■ Integrating vRealize Automation with IPAM Using the Infoblox vNIOS Appliance</li> <li>■ Creating Multi-Tier Applications</li> <li>■ Micro-Segmentation for Multi-Tier Applications</li> <li>■ Managing Virtual Machine Lease and Ownership</li> <li>■ Cost Modeling and Monitoring</li> <li>■ Forwarding Log Events to vRealize Log Insight</li> <li>■ Monitoring Workload Health and Capacity</li> <li>■ Configuring Unified Single-Machine Blueprints for Cross-Region Deployment</li> </ul>
Overall availability	<p>99% availability</p> <p>Planned downtime is expected for upgrades, patching, and on-going maintenance.</p>
Authentication, authorization, and access control	<ul style="list-style-type: none"> <li>■ Use of Microsoft Active Directory as a central user repository.</li> <li>■ Use of service accounts with minimum required authentication and Access Control List configuration.</li> <li>■ Use of basic tenant accounts.</li> </ul>

**Table 5-1. Objectives of VMware Validated Design for IT Automating IT (Continued)**

VMware Validated Design Objective	Description
Certificate signing	Certificates are signed by an external certificate authority (CA) that consists of a root and intermediate authority layers.
Hardening	<p>Because this design is based on the VMware Validated Design for the Software-Defined Data Center, it supports hardening options.</p> <ul style="list-style-type: none"> <li>■ Tenant workload traffic can be separated from the management traffic.</li> <li>■ The design uses a distributed firewall to protect all management applications. To secure the SDDC, only other management solutions and approved administration IP addresses can directly communicate with individual components.</li> </ul>

## IT Automating IT Use Case Scope

The first delivery of the use case includes detailed instructions for performing common IT tasks. This includes multi-tier applications and work with blueprints.

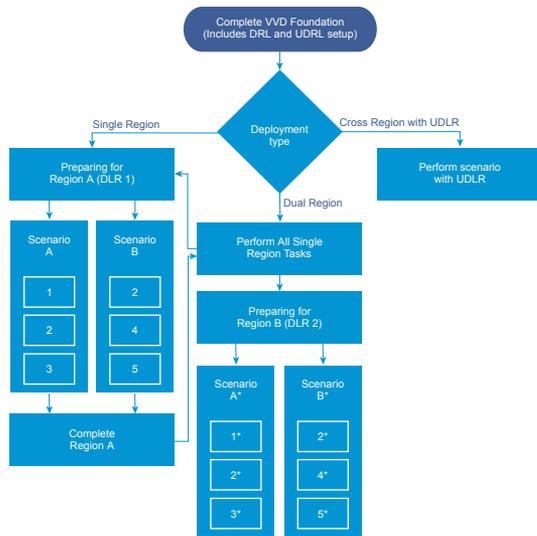
The use case is built entirely on the design of the VMware Validated Design for the Software-Defined Data Center, so all design decisions, product versions, and other prerequisite information are covered there. In addition, the first chapter of the *Scenarios* document steps you through some setup for the use case.

## IT Automating IT Workflows

Each scenario in the *Scenarios* document gives step-by-step instructions to a workflow. All scenarios require the installation and configuration of the core components of the VMware Validated Design for the Software-Defined Data Center.

Three different types of scenarios are included. For each type, the workflow differs. A list of tasks required for each scenario is at the beginning of the scenario.

**Figure 5-2. Solution Paths for Scenarios**

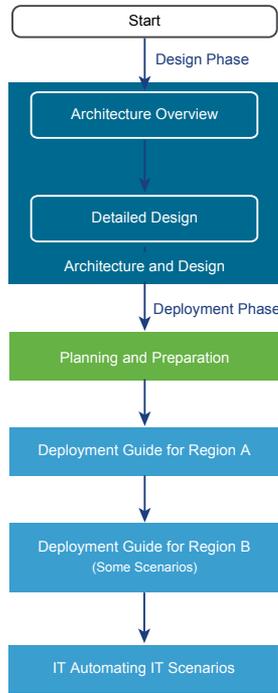


- If you plan on deploying a scenario in a single-region environment, you follow these steps.
  - a Perform all tasks in Preparing for Region A.
  - b Perform all procedures listed on the first page of the scenario.
  - c Perform all tasks in the scenario itself.
- If you plan on deploying a scenario in a dual-region environment, you follow these steps.
  - a Set up Region A.
  - b Perform all tasks in Preparing for Region B.
  - c Perform the scenario itself and its prerequisites in Region B. The documentation does not include separate instructions for Region B, but only minor adjustments to the Region A instructions are necessary.
- If you plan on performing a cross-region deployment with a UDRL, follow the instructions in that scenario.

## IT Automating IT Use Case Documentation

The documentation components are organized according to audience and deployment stage. You use the documents in a specific order. Because the VMware Validated Design for IT Automating IT builds on the VMware Validated Design for the Software-Defined Data Center, many of the documentation components are shared.

**Figure 5-3. IT Automating IT Documentation Flow**



## Documentation for the VMware Validated Design for the Software-Designed Data Center

Before you start with implementing scenarios, you install and configure components of the VMware Validated Design for the SDDC following the guidelines in these documents.

### Architecture and Design

The Architecture and Design document includes the *Architecture Overview*, which discusses the components in the design, and the *Detailed Design*, which explains configuration details.

### Planning and Preparation

The *Planning and Preparation* document helps you plan your environment according to the requirements. This document has detailed information on required software versions and other details including IP addresses and user configuration. You can abstract from the information in this document to requirements in your environment.

### Deployment Guides

Deployment Guides have step-by-step instructions and screen shots for manually installing and configuring the components of the design. All scenarios expect that you install and configure the set of products for Region A. Some scenarios also require that you install and configure Region B.

You can follow the *IT Automating IT Use Case Deployment Using vRealize Suite Lifecycle Manager* for automated deployment of the IT Automating IT use case.

## Scenarios for IT Automating IT

The *Scenarios* document for the IT Automating IT use provide step-by-step instructions for common IT scenarios.

The scope of guidance depends on the use case. The Scenarios documentation changes as the Validated Design adds more use cases. Below is a list of some example use cases. See the *Scenarios* documentation for the complete current set.

- Configuring Reservation Policies and Network Policies
- Publishing Templates and Blueprints
- Creating Self-Service Catalog
- Creating Blueprints with Dynamic Resource Tiering
- Integrating vRealize Automation with IPAM Using the Infoblox vNIOs Appliance
- Creating Multi-Tier Applications
- Micro-Segmentation for Multi-Tier Applications
- Managing Virtual Machine Lease and Ownership
- Cost Modeling and Monitoring
- Forwarding Log Events to vRealize Log Insight
- Monitoring Workload Health and Capacity
- Configuring Unified Single-Machine Blueprints for Cross-Region Deployment

## IT Automating IT Use Case Deployment

The IT automating IT use case is based on VMware Validated Design for Software-Defined. All scenarios in this documentation have been validated with that architecture. Your environment must meet certain prerequisites before you can perform a scenario.

## Deploying the Components for IT Automating IT Manually

To manually deploy the SDDC components that are required to perform automating IT operations manually, perform all tasks in the following documentation for VMware Validated Design for Software-Defined Data Center:

**Table 5-2. Documentation for Manual Deployment of Intelligent Operations**

Region	Documentation	
Region A	Planning and Preparation	
	Deployment for Region A	<ul style="list-style-type: none"> <li>■ Region A Virtual Infrastructure Implementation</li> <li>■ Region A Cloud Management Platform Implementation</li> <li>■ Region A Operations Implementation according to the scenario                             <ul style="list-style-type: none"> <li>■ Region A vRealize Operations Manager Implementation</li> <li>■ Region A vRealize Log Insight Implementation</li> </ul> </li> </ul>
Region B (Optional)	Planning and Preparation	
	Deployment for Region B	<ul style="list-style-type: none"> <li>■ Region B Virtual Infrastructure Implementation</li> <li>■ Region B Cloud Management Platform Implementation</li> <li>■ Region B Operations Implementation according to the scenario                             <ul style="list-style-type: none"> <li>■ Region B vRealize Operations Manager Implementation</li> <li>■ Region B vRealize Log Insight Implementation</li> </ul> </li> </ul>

## Deploying the Components for IT Automating IT by Using vRealize Suite Lifecycle Manager

For automating the deployment of the vRealize Suite solutions that are required to support VMware Validated Design for IT Automating IT, use vRealize Suite Lifecycle Manager. See the *IT Automating IT Use Case Deployment Using vRealize Lifecycle Manager* documentation.

### Documentation Location

You can find the documentation on the [VMware Validated Design Documentation](#) page.

# Intelligent Operations Use Case

The Intelligent Operations use case provides proactive monitoring of the Software-Defined Data Center (SDDC) by using vRealize Operations Manager and vRealize Log Insight from a central place.

The *Intelligent Operations Scenarios* documentation provides the consumer step-by-step guidance for performing policy, alert and threshold configuration, troubleshooting and resolution across the SDDC based on VMware best practices. Intelligent Operations procedures are based on the use of out of the box dashboards or the creation of custom dashboards to support individual persona needs.

You can use out of box alerts and dashboards to monitor your production environment.

- Receive alerts for critical performance, out of capacity, hardware failures, misconfigurations and also issues that are identified in logs. You can review critical alerts in various ways to decide which issues to address first, for example group by time, criticality, type of problem, environment, object type etc. You can also forward critical alerts to other teams.
- Use out of the box and custom dashboards that provide an operational overview on overall operations, capacity, configurations, proactive workload balancing to prevent performance issues, top N and so on.

This chapter includes the following topics:

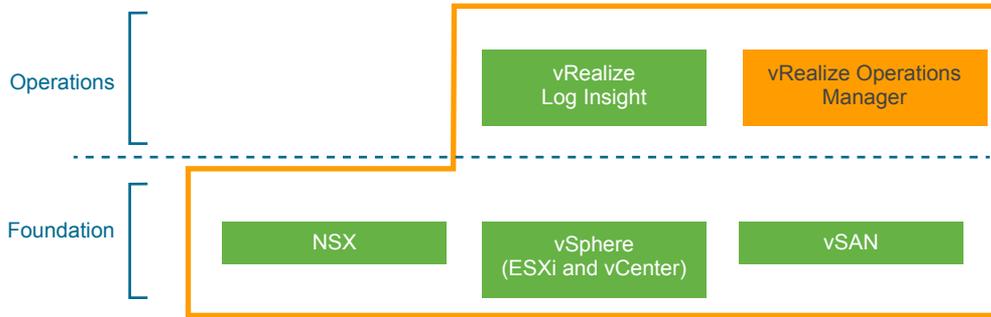
- [Intelligent Operations Components](#)
- [Intelligent Operations Design Objectives](#)
- [Intelligent Operations Use Case Scope](#)
- [Intelligent Operations Workflows](#)
- [Intelligent Operations Use Case Documentation](#)
- [Intelligent Operations Use Case Deployment](#)

## Intelligent Operations Components

The Intelligent Operations use case provides step-by-step guidance for performing proactive monitoring procedures to IT operations teams according to best practices from VMware.

The use case includes components at the foundation and operations management layer.

**Figure 6-1. Components of VMware Validated Design for Intelligent Operations**



## Foundation Components

At the foundation layer, the use case includes the following components.

- vSphere** As the base layer, ESXi and vCenter Server support infrastructure virtualization.
- NSX for vSphere** NSX for vSphere supports the network infrastructure and flexible security policies for the use case. The resulting data center supports isolation and segmentation, with drastically improved security.

## Operations Management Layer

At the operations management layer, the use case includes the following components.

- vRealize Operations Manager** vRealize Operations Manager streamlines and automates the centralized monitoring and proactive VM placement across the SDDC. You can deliver intelligent operations management from applications to infrastructure across physical, virtual and cloud environments.
- vRealize Log Insight** vRealize Log Insight supports log management features that enable you to view and analyze logs by using customizable dashboards.

You can use the Launch in Context capability of these components to access vRealize Log Insight events and dashboards from within the operations interface of vRealize Operations Manager.

## Intelligent Operations Design Objectives

The design objectives of VMware Validated Design for Intelligent Operations provide fine-grained details about the scope, performance, hardware, and other critical factors.

**Table 6-1. Objectives of the Intelligent Operations Use Case**

VMware Validated Design Objective	Description
Main objective	Common monitoring scenarios implemented on top of the Operations Management Layer of the SDDC.
Scope of deployment	<p>Most scenarios in this use case assume that you deployed the following components.</p> <ul style="list-style-type: none"> <li>■ Virtual infrastructure layer (ESXi, vCenter Server, NSX)</li> <li>■ Operations management layer (vRealize Operations Manager, vRealize Log Insight)</li> <li>■ Other components, as listed in the introduction to each scenario.</li> </ul>
Cloud type	Private cloud
Number of regions and disaster recovery support	. Dual-region SDDC.
Maximum number of virtual machines	<ul style="list-style-type: none"> <li>■ 10,000 running virtual machines</li> <li>■ Churn rate of 150 virtual machines per hour</li> </ul> <p>Churn rate is related to provisioning, power cycle operations, and decommissioning of one tenant virtual machine by using a blueprint in the cloud management platform. A churn rate of 100 means that 100 tenant workloads are provisioned, pass the power cycle operations, and are deleted.</p>
Number of clusters	<p>Dual-cluster setup</p> <p>The validated design requires the following clusters for SDDC deployment.</p> <ul style="list-style-type: none"> <li>■ Management cluster. Runs the virtual machines of the management products.</li> <li>■ Shared edge and compute cluster                             <ul style="list-style-type: none"> <li>■ Runs the tenant workloads.</li> <li>■ Runs the required NSX services to enable north-south routing between the SDDC and the external network, and east-west routing inside the SDDC.</li> </ul> </li> </ul>
Data center virtualization	<ul style="list-style-type: none"> <li>■ Compute virtualization</li> <li>■ Software-defined storage in the management cluster</li> <li>■ Network virtualization</li> </ul>
Scope of guidance	<p>The scope of guidance depends on the scenario. The <i>Scenarios</i> documentation changes as the Validated Design use case is extended with more scenarios. Some example scenarios are as follows. See the <i>Scenarios</i> documentation for the complete current set.</p> <ul style="list-style-type: none"> <li>■ Monitoring the SDDC Using Out-the-Box Dashboards in vRealize Operations Manager</li> <li>■ Monitoring the SDDC at Scale</li> </ul>
Overall availability	<p>99% availability</p> <p>Planned downtime is expected for upgrades, patching, and on-going maintenance.</p>
Authentication, authorization, and access control	<ul style="list-style-type: none"> <li>■ Use of Microsoft Active Directory as a central user repository.</li> <li>■ Use of service accounts with minimum required authentication and Access Control List configuration.</li> <li>■ Use of basic tenant accounts.</li> </ul>

**Table 6-1. Objectives of the Intelligent Operations Use Case (Continued)**

VMware Validated Design Objective	Description
Certificate signing	Certificates are signed by an external certificate authority (CA) that consists of a root and intermediate authority layers.
Hardening	<p>Because this design is based on the VMware Validated Design for the Software-Defined Data Center, it supports hardening options.</p> <ul style="list-style-type: none"> <li>■ Tenant workload traffic can be separated from the management traffic.</li> <li>■ The design uses a distributed firewall to protect all management applications. To secure the SDDC, only other management solutions and approved administration IP addresses can directly communicate with individual components.</li> </ul>

## Intelligent Operations Use Case Scope

The Intelligent Operations use case includes detailed instructions for performing operational tasks in a Software-Defined Data Center using the VMware Validated Design for Software-Defined Data Center.

The use case is built entirely on the design of VMware Validated Design for the Software-Defined Data Center, so all design decisions, product versions, and other prerequisite information are covered there. In addition, the first chapter of the *Scenarios* documentation steps you through some setup for the use case.

## Intelligent Operations Workflows

Each scenario in the *Scenarios* document contains step-by-step instructions to common operational tasks that are performed by operational teams managing a Software-Defined Data Center (SDDC).

Each scenario in the *Scenarios* document contains step-by-step instructions to common operational tasks that are performed by operational teams managing an SDDC . Each scenario requires the installation and configuration of the virtual infrastructure layer and operations management layer of the SDDC. The scenarios also assume that you deployed a set of tenant applications in the environment manually or by using an IaaS cloud platform.

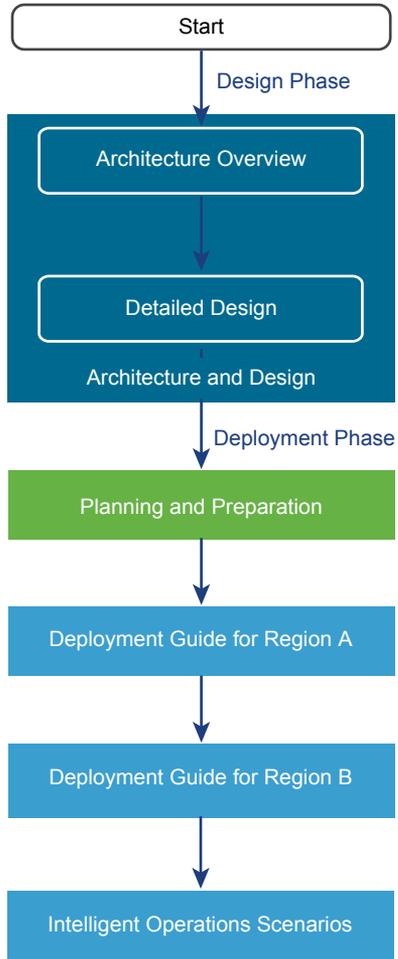
Intelligent Operations scenarios support a single workflow that can be performed in a Consolidated SDDC or Standard SDDC. Follow these steps.

- 1 Perform all tasks in *Prepare for Performing the Intelligent Operations Scenarios*.
- 2 Perform all tasks in the scenario itself.

## Intelligent Operations Use Case Documentation

The documentation components are organized according to audience and deployment stage. You use the documents in a specific order. Because the VMware Validated Design for Intelligent Operations builds on the VMware Validated Design for the Software-Defined Data Center, many of the documentation components are shared.

**Figure 6-2. Intelligent Operations Documentation Flow**



## Documentation for the VMware Validated Design for the Software-Designed Data Center

Before you start with implementing scenarios, you install and configure components of the VMware Validated Design for the SDDC following the guidelines in these documents.

**Architecture and Design** The Architecture and Design document includes the *Architecture Overview*, which discusses the components in the design, and the *Detailed Design*, which explains configuration details.

**Planning and Preparation** The *Planning and Preparation* document helps you plan your environment according to the requirements. This document has detailed information on required software versions and other details including IP addresses and user configuration. You can abstract from the information in this document to requirements in your environment.

**Deployment Guides** Deployment guides have step-by-step instructions and screen shots for manually installing and configuring the components of the design. All scenarios expect that you install and configure the set of products for Region A and Region B.

You can follow the *Intelligent Operations Use Case Deployment Using vRealize Suite Lifecycle Manager* for automated deployment of the Intelligent Operations use case.

## Scenarios for Intelligent Operations

The *Scenarios* documentation for the Intelligent Operations provide step-by-step instructions for common IT operational scenarios.

The scope of guidance depends on the scenario. The *Scenarios* documentation changes as the Validated Design is extended with more scenarios. Below is a list of some example scenarios. See the *Scenarios* documentation for the complete current set.

- Monitoring the SDDC Using Out-the-Box Dashboards in vRealize Operations Manager
- Monitoring the SDDC at Scale

## Intelligent Operations Use Case Deployment

The Intelligent Operations use case is based on VMware Validated Design for Software-Defined. All scenarios in this documentation have been validated with that architecture. Your environment must meet certain prerequisites before you can perform a scenario.

## Deploying the Components for Intelligent Operations Manually

To manually deploy the SDDC components that are required to perform intelligent operations, perform all tasks in the following documentation for VMware Validated Design for Software-Defined Data Center:

**Table 6-2. Documentation for Manual Deployment of Intelligent Operations**

Region	Documentation	
Region A	Planning and Preparation	
	Deployment for Region A	<ul style="list-style-type: none"> <li>■ Region A Virtual Infrastructure Implementation</li> <li>■ Region A Operations Implementation                             <ul style="list-style-type: none"> <li>■ Region A vRealize Operations Manager Implementation</li> <li>■ Region A vRealize Log Insight Implementation</li> </ul> </li> </ul>
Region B (Optional)	Planning and Preparation	
	Deployment for Region B	<ul style="list-style-type: none"> <li>■ Region B Virtual Infrastructure Implementation</li> <li>■ Region B Operations Implementation                             <ul style="list-style-type: none"> <li>■ Region B vRealize Operations Manager Implementation</li> <li>■ Region B vRealize Log Insight Implementation</li> </ul> </li> </ul>

## Deploying the Components for Intelligent Operations by Using vRealize Suite Lifecycle Manager

For automating the deployment of the vRealize Suite solutions that are required to support VMware Validated Design for Intelligent Operations, use vRealize Suite Lifecycle Manager. See the *Intelligent Operations Use Case Deployment Using vRealize Lifecycle Manager* documentation.

### Documentation Location

You can find the documentation on the [VMware Validated Design Documentation](#) page.