SDDC The Easy Way
VMware Cloud Foundation

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Agenda

VMware Vision

Introducing VCF

VCF Deep Dive
  Architecture
  Bring-up Management Domain
  Workload Domain
  Lifecyle Automation
  Sizing

VMware Cloud on AWS
VMware Vision
Deliver the essential, ubiquitous digital foundation

<table>
<thead>
<tr>
<th>Any Device</th>
<th>Cloud Native</th>
<th>Containerized</th>
<th>SaaS</th>
<th>Traditional</th>
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<table>
<thead>
<tr>
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Cloud Native
Containerized
SaaS
Traditional

<table>
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Hybrid Clouds
Public Clouds
5G Telecom Cloud
Edge Computing
Our mission

We create a seamless experience across clouds
What our Customers Need to Achieve

Consistent Infrastructure
VM Infrastructure / Container Infrastructure

Consistent Operations
Automation and Operations / Across Clouds

Consumable Developer Experience
MORE THAN 80% OF ORGANIZATIONS HAVE A HYBRID CLOUD STRATEGY
Software-Defined Data Center
Any Application, Any Device, Any Cloud
Making the hybrid cloud real
VMware Cloud Foundation

Private Cloud World

VMware Cloud Foundation

Public Cloud World

YOUR INFRASTRUCTURE: Owned

OTHERS’ INFRASTRUCTURE: Operated
Delivered as a service
VMware Cloud Foundation for Private Cloud

**Standardized Architecture**
Automated deployment of a standardized, scalable VMware Validated Design

**Integrated Stack**
Engineered integration of entire software defined stack

**Simple to Operate**
Unique lifecycle management (SDDC Manager) that automates day 0 to 2 operations
Brought Together by the SDDC Manager Control Plane
Automated day 0 to day 2 operations of the entire cloud infrastructure

SDDC Manager

Patching and Upgrades
Policy Based Provisioning
Configuration
Deployment

vSphere
vRealize
NSX
vSAN
Truly Software-Defined
Powered by ‘fit for purpose’ hardware
Truly Software-Defined
Powered by ‘fit for purpose’ hardware
Truly Software-Defined
Powered by ‘fit for purpose’ hardware
Overview

- Top-of-Rack Switches
- Management Switch
- VDI Workload Domain
- Available Capacity
- Virtual Infrastructure WLD
- Management Workload Domain

Minimum of 4 ReadyNodes

Expand

Expand
SDDC Manager - Clarity UI
Improved Navigation, Streamlined Operations, Visually Appealing
Workload Mobility: **Reality!**

Private Cloud World

VMware Cloud Foundation

Public Cloud World

YOUR INFRASTRUCTURE:
- Owned

OTHERS’ INFRASTRUCTURE:
- Operated
  - Delivered as a service
Path to SDDC & Hybrid Cloud

- Server Virtualization
- Modernize with Hyper-Converged Infrastructure
- SDDC with Cloud Efficiency
- Build a True Hybrid Cloud
Introducing VCF
Faster and Simpler Path to the SDDC is Now Available...

The Past: Do-It-Yourself

The Present: Integrated, Automated, Easy
What is VMware Cloud Foundation?

<table>
<thead>
<tr>
<th>A license</th>
<th>Architecture built on VMware Validated Designs</th>
<th>Automated</th>
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</thead>
<tbody>
<tr>
<td>Depending on your goals and requirements you can choose for one of the four different editions of VCF.</td>
<td>The architecture of VMware Cloud Foundation is built on VMware Validated Design.</td>
<td>VCF is deployed in an automated way!</td>
</tr>
<tr>
<td>As a service</td>
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<tr>
<td>VCF is available as a service at selected cloud providers.</td>
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</table>
VMware’s approach to SDDC

VMware Cloud Foundation (VCF) - Integrated SDDC platform

VMware Validated Designs (VVDs) - Standardized architecture designs

VMware Bill Of Materials (BOM) - Validated components

STANDARDIZED DESIGNS

LIFECYCLE AUTOMATION

BEST PRACTICES

INTEROP TESTING

vSphere

vSAN

NSX

vRealize

Other VMware
The Power of Choice
Flexible consumption models

ReadyNode™ + Customer Switching
- 21 server vendors
- Choice in switch hardware and topology
- Validated configurations

Integrated System
- Factory racked and cabled
- Pre-installed software
- Value-added capabilities

Cloud Service
- Managed service
- Greater abstraction of infrastructure
- OpEx model

vSphere, vSAN, VMware Cloud on AWS, and other brands are trademarks of VMware, Inc. in the United States and/or other jurisdictions.
VMware Validated Designs

- Complete Datacenter-level Designs
- Standardized and Consistent
- Proven and Robust
- Applicable to Broad Use-cases
- Bill of Materials
VMware Validated Design 5.1

Update Bill of Materials
Support for PKS
Integration with VMware Skyline
Support for SRM appliance version
Maximum latency between SDDC regions 100ms
Updates to VMware Cloud Builder

VMware Cloud Foundation 3.8

**VMware PKS**
Developer-ready k8s environments, with NSX-T integration, deployed in a few simple steps

**APIs**
Automate Day-0, Day-1 and Day-2 cloud infrastructure operations through APIs

**LCM**
Enhanced lifecycle management for full stack infrastructure and vRealize components

**NSX-T**
Ready for Cloud Native workloads, stretched-cluster support, VxRail support, and lifecycle management
Bill of Materials VCF 3.8

Software Building Blocks for the Private Cloud

- **vSphere 6.7** (vCenter /PSC 6.7 U2c, ESXi EP10)
- **vSAN 6.7** (VSAN 6.7 U2c, ESXi EP10)
- **NSX for vSphere 6.4.5**
- **NSX-T 2.4.1**
- Horizon 7.7
- **vRealize Automation 7.6**
- **vRealize Operations 7.5**
- **vRealize Suite Lifecycle Manager 2.1** (Patch 1)
- **SDDC Manager 3.8** Including integrated VIA
- **vRealize Log Insight 4.8**
## Bill of Materials

### VMware Cloud Foundation 3.8

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### VCF 3.8 Release Notes:

### Correlating VCF version with the versions of its constituent products:
Extensively Tested to Ensure Interoperability and Resiliency

VVD & VCF

Components
Interoperability

Hardened
Security and Compliance

VMware Validated Designs

Design Resilience with Guided Implementation

Management
Resiliency at Scale
## VMware Cloud Foundation

### Evolution and New Capabilities

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VCF Architecture
Cloud Foundation Software Building Blocks...
Automated Deployment and Life Cycle Management of the full SDDC

- vSphere
- vSAN
- NSX-V
- NSX-T
- vRealize Suite
Deployment Types

VCF Consolidated Architecture (4 to 64 hosts)
Run customer workloads in Management WLD.

VCF Standard Architecture (7 to “unlimited” hosts)
Customer workloads run in separate WLD next to Management WLD.

Easy to start with consolidated architecture and evolve to standard architecture
Workload Domain Overview

• Dedicated vSphere Cluster
  – Separate capacity, availability, performance and security policies
• Automated provisioning through SDDC Manager
  – vSphere, vSAN, NSX
  – Integration with vRealize Log Insight, vRealize Operations, vRealize Automation
• Up to 15 workload domains run in parallel
  – Create, expand, and delete independently
  – Each with dedicated vCenter Server, NSX Manager and NSX Controller Cluster
  – Multiple vSphere Clusters per Workload Domain
  – vCenter Servers run in Enhanced Linked Mode
Consolidated Architecture

**Consolidated Architecture**

- **Workload Resource Pool**
  - VMs

- **Management Resource Pool**
  - vCenter
  - vRealize Operations
  - vRealize Automation
  - NSX Manager
  - NSX Ctrl
  - vRealize Log Insight
  - SDCC MGR Controller
  - SDCC MGR Utility

**Management Workload Domain**

- **Infrastructure VMs**
  - ESXi01
  - ESXi02
  - ... ESXiN
  - vSphere Cluster + vSAN
  - NSX vSwitch
  - vSAN
  - vSAN Management Resource Pool
  - Workload Resource Pool

**Targets small deployments**
- 4-64 servers

**Mixed Management/Workload Domain**
- Resource pools are used

**Management resource pool:**
- vCenter + PSCs
- NSX Manager + Controllers
- SDDC Manager
- vRealize components

**NSX-V only**
Standard Architecture

Targets medium/large deployments
- 7 servers or more

Dedicated management domain
- vCenter + PSCs
- NSX Manager + Controllers
- SDDC Manager
- vRealize components

Dedicated workload domain(s)
- Maximum 15 workload domains
- Maximum 64 host per cluster
- NSX Controllers

NSX-V or NSX-T in the WLD
From Consolidated to Standard Architecture

**Consolidated Architecture**

- **Workload Resource Pool**
  - VM
  - VM
  - VM
  - VM
  - VM

- **Management Resource Pool**
  - vCenter
  - NSX Manager
  - PSC
  - vRealize Log Insight
  - vRealize Operations
  - vRealize Automation
  - SDDC MGR Controller
  - SDDC MGR Utility

- **ESXi01**
  - NSX vSwitch

- **ESXi02**
  - NSX vSwitch

- **ESXi32**
  - NSX vSwitch

**Standard Architecture**

- **VI Workload Domain**
  - VM
  - VM
  - VM
  - VM

- **VI Workload Domain**
  - VM
  - VM

- **Management Workload Domain**
  - vCenter
  - NSX Manager
  - PSC
  - vRealize Log Insight
  - vRealize Operations
  - vRealize Automation
  - SDDC MGR Controller
  - SDDC MGR Utility

- **ESXi01**
  - NSX vSwitch
  - vSAN

- **ESXi02**
  - NSX vSwitch
  - vSAN

- **ESXi32**
  - NSX vSwitch
  - vSAN
Availability Zones & Regions

Region 1
Availability Zone 1
VI Workload Domain

Availability Zone 2
VI Workload Domain

Management Workload Domain

Region 2
Availability Zone 1
VI Workload Domain

Availability Zone 2
VI Workload Domain

Management Workload Domain

SRM
Stretched Cluster
VMware Cloud Foundation: Workload Domains
On-demand, policy managed infrastructure for workloads

- **External Interfaces**: Can be specific to certain Workload Domains (WLD)
- **Software Flexibility**: Products, Versions, 3rd party software
- **Application Mapped Infrastructure**: Capacity, Performance, Security/Compliance, HW requirements
- **Hardware Choice**: Vendors, Configuration, Composability

**Mapping to specific HW infrastructure capabilities**

**HETEROGENEOUS HARDWARE RESOURCE POOL**
e.g. GPUs, Large Storage/Memory, Higher Performance Storage

**External API Integrations**
- PKS
- NSX-T (future)
- v1 on WLD1
- v2 on WLD2

**External IP Storage**: e.g. Hytrust, Palo Alto FW

**3rd Party Software**: e.g. HCX, HLM

**MANAGEMENT DOMAIN**
- Horizon VDI
- App Volumes
- vRA
- IaaS
- Container

**WORKLOAD DOMAINS**
- Database
- Desktop
- IaaS
- Machine Learning
- Container
Virtual Infrastructure Domain
VMware Cloud Foundation Architecture Deep Dive

Dedicated vCenter Server
• Shared SSO with Management domain

One or more vSphere Clusters
• Dedicated vSAN Datastore per VI domain
• Choice of:
  – NSX-V based VI domain
  – NSX-T based VI-domain

Minimum of 3 hosts
• Use VSAN Sizing Tools
• https://vsansizer.vmware.com

Create, expanded, shrink and delete
VCF Bring-up

Automated Deployment of the Management Domain
VMware Cloud Builder
VMware Photon-based Virtual Appliance which automates deployment of VCF

- Contains all required software (VCF Software Bill of Materials)

- Deployed from an OVA file on external host with ESXi/Workstation
  - Exception for Dell EMC VxRail (deployed on VxRail cluster)

- Accepts “Deployment Parameter” spreadsheet or JSON file as input
  - Provides automated validation of input

- Fully automated deployment of the VMware SDDC components
  - Creates Management Domain

- Runs embedded “VIA Imaging” service for ESXi deployment / host preparation
VIA Imaging Service
Deploys ESXi and host pre-requisite configurations
Cloud Foundation Pre-Bring-up Steps

Deployment Pre-Requisites

VMware Cloud Foundation Pre-Bring-up Steps

First run setup for VMware Cloud Foundation.

Bring-up Checklist

Ensure the following criteria are met before bring-up

- Check All
- All hardware is vSAN compliant and certified on the VMware Hardware Compatibility Guide, including but not limited to BIOS, HBA, SSD, HDD, etc.
- Identical hardware (CPU, Memory, NICs, SSD/HDD, etc.) within the management cluster is highly recommended. Refer to vSAN documentation for minimal configuration.
- Physical hardware health status is "healthy" without any errors.
- Hardware and firmware (including HBA and BIOS) is configured for vSAN.
- ESXi is freshly installed on each host. The ESXi version matches the build listed in the Cloud Foundation Build of Materials.
- TSM-SSH service is running on each ESXi host with the policy configured to 'Start and stop with host'.
- All hosts are configured and in synchronization with a central time server (NTP). NTP service policy set to 'Start and stop with host'.
- All hosts are configured with a DNS server for name resolution. Management IP of hosts is registered and queryable as both a forward (hostname-to-IP), and reverse (IP-to-Hostname) entry.
- Top of Rack switches are configured. Each host and NIC in the management domain must have the same network configuration. No ethernet link aggregation technology (LAG/VPC/LACP) is being used.
- VLANs for management, vMotion, NSX, VTEP, and vSAN are created and tagged to all host ports. Each VLAN is 802.1q tagged.
- Jumbo Frames (MTU 9000) are recommended on all VLANs. At a minimum, MTU of 1600 is required on the NSX VTEP VLAN end to end through your environment.
## Bring-up - Deployment Parameter Sheet

### Pre-requisite Checklist Tab

- Pre-requisite Checklist
- Management Workloads
- Users and Groups
- Hosts and Networks
- Deployment Parameters

### Deployment Parameters

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Hostnames</th>
<th>IP Address</th>
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<tr>
<td>vCenter &amp; vRO - Hostnames Defined</td>
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</tr>
<tr>
<td>vCenter &amp; vRO - Basic IPs Defined</td>
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<tr>
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<tr>
<td>vCenter Name Defined</td>
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<tr>
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<tr>
<td>NSX Controller - IP Pool</td>
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| vRealize Log Insight | Hostnames Defined for all components | | |
|----------------------|-------------------------------------|------------|
| vRealize Log Insight | |  |
| vRealize Log Insight | | | |
| vRealize Log Insight | | | |

| SDDC Manager | Hostnames Defined | | |
|---------------|-------------------|------------|
| SDDC Manager | |  |
| SDDC Manager - Basic IP Defined | | | |
| SDDC Manager - Components reachable in vRO | | | |

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| vCenter SDN | Hostnames Defined | | |
|-------------|-------------------|------------|
| vCenter SDN | |  |
| vCenter SDN | | | |

| Management Domain - Segment IDs | | | |
|---------------------------------|------------|
| |  |

### Existing Infrastructure Details

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### vSphere Infrastructure - vRO Hosts

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### vCenter SDN

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### vCenter SDN - vRO Hosts

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<td>vCenter SDN</td>
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<td>vCenter SDN - Basic Ports</td>
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<td>vCenter Name</td>
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### Management Domain - Segment IDs

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</tbody>
</table>
Cloud Foundation Bring-up Process

VMware Cloud Builder

- Two Top of Rack Switches Configured with Specified VLANs
- Minimum 4 vSAN ReadyNodes (pre-installed with ESXi)
- User File Upload
- Cloud Builder Appliance

*Cloud Foundation Infrastructure VMs*

*Management Domain*

*Virtual SAN Datastore*

*Virtual Distributed Switch*

- ESX01
- ESX02
- ESX03
- ESX04

- vCenter
- NSX Manager
- NSX Ctrl
- vRealize Log Insight
- PSC
- SDDC Manager

*vSphere Cluster + vSAN*
SDDC Manager interface
Streamlined Operations, Visually Appealing (built with VMware Clarity UI Framework)
VCF Workload Domains
Automated Workload Domain Deployment

Configure VI
- Choose from VSAN or NFS
- WLD Settings
- Choose from NSX-V or NST-T
- Configure vSAN FTT / hosts
- Select hosts
- License
- Review
- Execute workflow
## Virtual Infrastructure Workload Domain Workflow

**Agility and simplicity thanks to automation**

Over 50 manual tasks combined into single workflow

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>VRM: Import Input Parameters</td>
<td>18</td>
</tr>
<tr>
<td>2</td>
<td>ESX: Initial Backup of the ESXi Servers</td>
<td>19</td>
</tr>
<tr>
<td>3</td>
<td>Network: Configure VLAN Tags on Switches</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>VRM: Configure DNS Host Name</td>
<td>21</td>
</tr>
<tr>
<td>5</td>
<td>vCenter: Deploy vCenter</td>
<td>22</td>
</tr>
<tr>
<td>6</td>
<td>Give vSphere Permissions to SSO Admini Group</td>
<td>23</td>
</tr>
<tr>
<td>7</td>
<td>vCenter: Apply vCenter License</td>
<td>24</td>
</tr>
<tr>
<td>8</td>
<td>vCenter: Install RPM Agents</td>
<td>25</td>
</tr>
<tr>
<td>9</td>
<td>vCenter: Create Cluster</td>
<td>26</td>
</tr>
<tr>
<td>10</td>
<td>VRM: Update vCenter Status</td>
<td>27</td>
</tr>
<tr>
<td>11</td>
<td>vCenter: Create Distributed Virtual Switch</td>
<td>28</td>
</tr>
<tr>
<td>12</td>
<td>vCenter: Tag VLAN ID</td>
<td>29</td>
</tr>
<tr>
<td>13</td>
<td>vCenter: Check Host Network Configuration</td>
<td>30</td>
</tr>
<tr>
<td>14</td>
<td>vCenter: Configure Host</td>
<td>31</td>
</tr>
<tr>
<td>15</td>
<td>Log Hosts VSAN Network Config 1</td>
<td>32</td>
</tr>
<tr>
<td>16</td>
<td>vCenter: Configure LACP on VDS</td>
<td>33</td>
</tr>
<tr>
<td>17</td>
<td>Log Hosts VSAN Network Config 2</td>
<td>34</td>
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# Virtual Infrastructure Workload Domain Workflow

## Agility and simplicity thanks to automation

Over 50 manual tasks combined into single workflow

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<th>Network: Configure MLAG on TOR Switches</th>
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<td>2</td>
<td>ESX: Update vCenter Status</td>
<td>Log hosts VSAN network config 1</td>
<td>Wait vCenter Ready After Virtual SAN Enabled</td>
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<td>VRM: Import Input Parameters</td>
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<td>vCenter: Enable Virtual SAN Policy Applied</td>
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<td>4</td>
<td>ESX: Initial Backup of the ESXi Servers</td>
<td>Virtual SAN: Post Check After Virtual SAN Enabled</td>
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<td>Network: Configure MLAG on TOR Switches</td>
<td>vCenter: Enable Virtual SAN Policy Applied</td>
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</table>
Automated Cluster Creation
Automatically create a new cluster from within any Workload Domain
Cluster Expansion
Made Easy with Cloud Foundation

- Select Cluster in Workload Domain
- Add Host
- Select Host(s)
- License
- Review
- Done
Lifecycle Management
Automated Patch & Upgrade at the Workload Domain Level
Patching and Upgrading the SDDC
Now includes automated updates for vRealize Suite Components

**SDDC Components**
- Compute
  - ESXi
  - PSC
  - vCenter
- Storage
  - vSAN
- Network
  - NSX-V
  - NSX-T
- Management
  - vRS LCM
  - vRLI
  - vROps
  - vRA

**Updates over Time**
- 3.7.2
- 3.8

**Workload Domains**
- WLD 3
- WLD 2
- WLD 1
- MGMT WLD

SDDC Manager
LCM
Lifecycle Automation – Automated Upgrading and Patching
Made Easy with Cloud Foundation

- Notification
- View Details
- Precheck
- Schedule or Update now
- Monitor
- Complete
VCF Sizing
Pre-planning – Cloud Foundation Documents

Detailed Documentation for every VCF version:

- Release Notes
- Planning and Preparation Guides
  - Includes min hardware requirements
  - Includes capacity planning guidelines
- Architecture and Deployment Guide
  - Includes deployment parameter sheet instructions
- Operations and Administration Guide
- Site protection and Disaster Recovery Guide

Meten is weten

**RVTools**
- Free tool – to be installed
- Current state
- Relation between components

**vRealize Operations**
- Paid tool - to be installed
- Current state
- Capacity + performance

**Live Optics**
- Free tool – SaaS solution
- Current state
- Capacity + performance
- Work with VMware/Partner
Meten is weten
LiveOptics

Gratis meting aanvragen? Stuur een mailtje naar mdehaan@vmware.com
Deployment Types

VCF Consolidated Architecture (4 to 64 hosts)
Run customer workloads in Management WLD.

VCF Standard Architecture (7 to “unlimited” hosts)
Customer workloads run in separate WLD next to Management WLD.

Easy to start with consolidated architecture and evolve to standard architecture
Scaling a Workload Domain

Scale-out

- CPU
- Mem
- Storage
Cluster Host Count Matters
Levels of resilience depend on quantity of hosts within a vSAN cluster

- RAID-1 (FTT=1)
- RAID-1 (FTT=2)
- RAID-1 (FTT=3)
- RAID-5 (FTT=1)
- RAID-6 (FTT=2)

x2 for Stretched Clusters
Scaling a Workload Domain

Scale-up

[Diagram showing CPU, Mem, Storage scaling]
## Minimum Hardware Requirements

### VMware Cloud Foundation Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Servers</td>
<td>• Four vSAN ReadyNodes For information about compatible vSAN ReadyNodes, see the <a href="https://kb.vmware.com/s/article/2004784">VMware Compatibility Guide</a>.</td>
</tr>
<tr>
<td>CPU per server</td>
<td>• Dual-socket, 8 cores per socket minimum requirement for all-flash systems</td>
</tr>
<tr>
<td></td>
<td>• Single-socket, 8 cores per socket minimum requirement for hybrid (flash and magnetic) systems Note: Cloud Foundation also supports quad-socket servers for use with all-flash or hybrid systems.</td>
</tr>
<tr>
<td>Memory per server</td>
<td>• 192 GB</td>
</tr>
<tr>
<td>Storage per server</td>
<td>• 16 GB Boot Device, Local Media; see <a href="https://kb.vmware.com/s/article/2004784">https://kb.vmware.com/s/article/2004784</a></td>
</tr>
<tr>
<td></td>
<td>• One NVMe or SSD for the caching tier</td>
</tr>
<tr>
<td></td>
<td>• Two SSDs or HDDs for the capacity tier See <a href="https://docs.vmware.com/en/VMware-Cloud-Foundation/3.8">Designing and Sizing a vSAN Cluster</a> for guidelines about cache sizing.</td>
</tr>
<tr>
<td>NICs per server</td>
<td>• Two 10 GbE (or higher) NICs (IOVP Certified)</td>
</tr>
<tr>
<td></td>
<td>• (Optional) One 1 GbE BMC NIC Note: Servers cannot have more than two NICs for primary communication, plus one BMC NIC for out-of-band host management.</td>
</tr>
</tbody>
</table>
Live Optics

On-premises

As a service
vSAN ReadyNode Sizer
https://vsansizer.vmware.com/
vSAN Effective Capacity
Community tool

https://kauteetech.github.io/vsancapacity/

Usable space
Replica or Parity (RAID5/6)
Required for maintenance
What can you change in a ReadyNode?

More of the same...

<table>
<thead>
<tr>
<th>Components</th>
<th>Modifiable</th>
<th>Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>√</td>
<td>• Higher core count with similar or better CPU clock speed is supported.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Switching between different generation of CPU platform is not supported e.g. Romley vs Purley.</td>
</tr>
<tr>
<td>Memory</td>
<td>√</td>
<td>• Adding more memory than what is listed is supported.</td>
</tr>
<tr>
<td>Caching Tier</td>
<td>√</td>
<td>• Caching tier device needs to be of same or higher endurance and performance class.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Follow Caching to Capacity ratio guidance discussed in Designing vSAN Disk groups – All Flash Cache Ratio Update.</td>
</tr>
<tr>
<td>Capacity Tier</td>
<td>√</td>
<td>• Capacity tier device needs to be of same or higher endurance and performance class.</td>
</tr>
<tr>
<td>Controller</td>
<td>×</td>
<td>• Only tested, certified and listed controller configurations for that vSAN ReadyNode is supported.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The firmware and driver for the controller should be an exact match as listed on the vSAN VCG.</td>
</tr>
<tr>
<td>NIC</td>
<td>√</td>
<td>• You can add more NICs if there are available slots in the server.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• NIC of similar or higher configuration allowed and supported e.g. 10G with 25G or 40G.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The NIC needs to be IOVP (ESXi) certified.</td>
</tr>
<tr>
<td>Boot Device</td>
<td>√</td>
<td>• Changing boot devices is allowed, see vSphere SSD and Flash Device Support (2145210).</td>
</tr>
</tbody>
</table>
VMware vSAN Compatibility Guide

VMware Compatibility Guide

Need Help? Try out the vSAN ReadyNode™ Configurator.

STEP 1: Refer to the "vSAN Hardware Quick Reference Guide" for guidance on how to build a vSAN ReadyNode.

STEP 2: To build a vSAN ReadyNode:

Select your vSAN ReadyNode of choice based on following certified vSAN ReadyNodes.

vSAN ReadyNode Types:
- All

vSAN ReadyNode Supported Releases:
- All
  - ESXi 6.7 U1 (vSAN 6.7)
  - ESXi 6.7 (vSAN 6.7)
  - ESXi 6.6 (vSAN 6.6)
  - ESXi 6.5 U2 (vSAN 6.5 U2)
  - ESXi 6.5 U1 (vSAN 6.5)
  - ESXi 6.5 (vSAN 6.5)
  - ESXi 6.0 U3 (vSAN 6.2 Update 1)

Pre-Install Options:
- ESXi Pre-installed
- ESXi Not Pre-installed

Keyword:

Update and View Results
Reset
VMware Cloud Foundation

- Integrated software defined cloud platform
- Simplest to deploy and operate
- Built-in intrinsic security
- Supports traditional and new workloads
- Enables path to hybrid cloud
VMware and AWS partnering to deliver a seamlessly integrated hybrid cloud
Jointly engineered solution delivers the best of VMware and AWS for customers

- Leading compute, storage and network virtualization capabilities
- Support for a broad range of workloads
- De-facto standard for the enterprise DC

+  

- Flexible consumption economics
- Brodest set of cloud services
- Global scale and reach
Building a Hybrid Cloud with VMware Cloud on AWS
Public cloud service sold, delivered and supported by VMware

Operational Consistency Across the Hybrid Cloud
VMware Cloud on AWS

Delivering proven enterprise capabilities on the world's most popular public cloud

As-a-Service
Rich VMware SDDC delivered as a cloud service on AWS

Consistent
Consistency and familiarity of VMware technologies

Portable
Easy workload portability and hybrid capabilities

Integrated
Direct access to the power of native AWS services

Any App
Existing and new apps with Containers and VMs
VMware Cloud on AWS: Jointly engineered cloud service

- VMware SDDC running on AWS bare metal
- Sold, operated & supported by VMware and its partners
- On-demand capacity and flexible consumption
- Full operational consistency with on-premises SDDC
- Seamless large-scale workload portability and hybrid operations
- Global AWS footprint, reach, availability over time
- Direct access to native AWS services
VMware Cloud on AWS is a cloud service
Jointly engineered, one-stop shop for customers

Operations
- Support provided by VMware directly
- AWS infrastructure (for VMware Cloud on AWS) support managed by VMware
- Physical resources managed by AWS
- Ongoing infrastructure monitoring

Maintenance
- Ongoing stack maintenance managed directly by VMware
- Upgrade implementation and execution
VMware In-Product Support Experience

**Intelligent Search:** Surfaces popular content based on the user’s location and contextual usage in the product.

**Chat with VMware Support:** Quickly address questions or issues with highly skilled VMware Support Engineers and Customer Support Representatives.

**Support Requests (SRs):** Create and manage SRs or our Support Engineers can create SRs on their behalf via chat without leaving the product.

**Ask the Community:** Engage and pose questions to actively moderated communities backed by passionate VMware Support Engineers and VMware Experts around the globe.

**Service Health:** Review live status of VMware Cloud Services and receive important service notifications.
Use Cases

- Data Center Extension
- Disaster Recovery
- Cloud Migrations
- Application Modernization
Simultaneously expanding to multiple global AWS Regions

Available Regions:
- US West (Oregon)
- US East (N. Virginia)
- Europe (London)
- Europe (Frankfurt)
- Asia Pacific (Sydney)
- Europe (Ireland)
- US West (N. California)*
- US East (Ohio)
- Asia Pacific (Tokyo)
- Gov Cloud US West

Available-Mar 2019:
- Asia Pacific (Singapore)
- Canada (Central)*
- Europe (Paris)

Q2 2019:
- South America (Sao Paulo)*
- Asia Pacific (Seoul)*
- Asia Pacific (Osaka-Local)**
- Asia Pacific (Mumbai)*

H2 2019:
- Europe (Sweden)
- China (Hong Kong)
- Bahrain
- Gov Cloud US East

Last updated: March 8, 2019
* Stretched cluster not supported
** Disaster Recovery site only, gated entry
Cloud SDDC Configurations

2 SDDCs per Organization*

Up to 20 vSphere clusters per SDDC

3 to 16 hosts per cluster

Only Cluster-01 has management workloads

2 types of hosts
  - I3
  - R5

* Soft Limit
Cluster Configuration

Overview

VMware infrastructure VMs stored on vSAN
- vCenter
- NSX
- HCX

Cluster size 3-16 nodes
- Dynamically add and remove nodes

vSphere High Availability
vSphere DRS
Restrictive Access Model

Cloud Service Operating Model

- No root vSphere access
- No VIB installations
- No VDS configuration access
- No direct management VM access
vSphere Availability Configuration

**Availability:** Enabled

**Host Monitoring:** Enabled

**Admission Control Policy:** Percentage Based

**Host Failures to Tolerate:** 1

**VM & App Monitoring:** Enabled

**Host Isolation Response:** Power off & Restart VMs
vSphere DRS Configuration

- DRS: Enabled
- Migration threshold: 3
- DPM: Disabled
- Resource Pools created to isolate MGMT from customer VMs
- Affinity Rules via Compute Policy
Expand the Cloud SDDC automatically as needed
Automatic Host Configuration

1. Host is added
2. Network is automatically configured
3. vSAN datastore capacity automatically increased
Elastic DRS
Scaling Hosts For On-Demand Requirements

- Enabled at the cluster level
- Automatically scale cluster based on utilization
- Monitoring interval every 5 minutes
- Enabled by default for storage only scale up
- Scales up when ANY resource crosses pre-defined threshold
- Scales down when ALL resources consistently remain below thresholds
Expand the Cloud SDDC automatically as needed

Elastic DRS Integration

1. Any resource above threshold.
2. Add Host.
3. All resources below threshold.
4. Remove Host.

Sleeps for 30min after two successive scale events.
Default Cluster Configuration

One Cluster, One region

Restricted to one AWS Region and Availability Zone (AZ)

Automatically detects failed hardware

Auto remediation hardware allows automatic recovery from HA events

Provision new host and eject failed node without customer intervention
Host Failure Remediation: VMware

Evacuation of failed/problem hosts and provisioning new host is automated

1. Problem Identified
2. Add Host
3. Data Rebuilt/Resynced (where needed)
4. Problem Host Removed
Stretched Cluster Configuration
One Cluster, One region, Multi AZ High Availability

- Stretched cluster with common logical networks with vSphere HA/DRS enabled
- Synchronous replication between AZs for mission-critical applications
- If one AZ goes down, it is simply treated as a vSphere HA event and VM is restarted in the other AZ
- First time infrastructure level AZ resilience!
VMware Site Recovery
Disaster Recovery in the Cloud

Delivered as an add-on service

Built on VMware’s proven disaster recovery solutions

Automated DR runbook with application-centric runbooks

Bi-directional protection between cloud and on-prem as well as between AWS availability zones

Integrated deeply with the VMware Cloud on AWS services
VMware HCX
Accelerating the SDDC Modernization and Cloud Journey

vSphere 5.0+
KVM, Hyper-V
Legacy VMs

Modern Enterprise Datacenter
Modern vSphere

IBM, OVH
Fujitsu, CTC
VCD / VCF

VMC on AWS
Modern SDDC

PREM
HCX Hybrid Interconnect
CLOUD
Summary
## Summary

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<td>Bring-up Management Domain</td>
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<td>Workload Domain</td>
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<tr>
<td>Lifecyle Automation</td>
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<tr>
<td>Sizing</td>
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<td>VMware Cloud on AWS</td>
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  Learn from top VMware and industry experts about what’s coming next in IT.

- **Connect and Collaborate**
  Catch up with colleagues, meet new friends, and explore ideas with fellow attendees.

- **Advance Your Career**
  Build your skills to solve tomorrow’s challenges today with VMware certifications and hands-on labs.

- **Have Serious Fun**
  Relax and let loose with games, recreation events, sponsored get-togethers, and VMworld Fest—our can’t-miss party.
Thank You