

# Transform Your IT Landscape with VMware Cloud Foundation

Integrated Infrastructure Management with SDDC Manager

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7/31/2024

**vmware**<sup>®</sup>  
by **Broadcom**

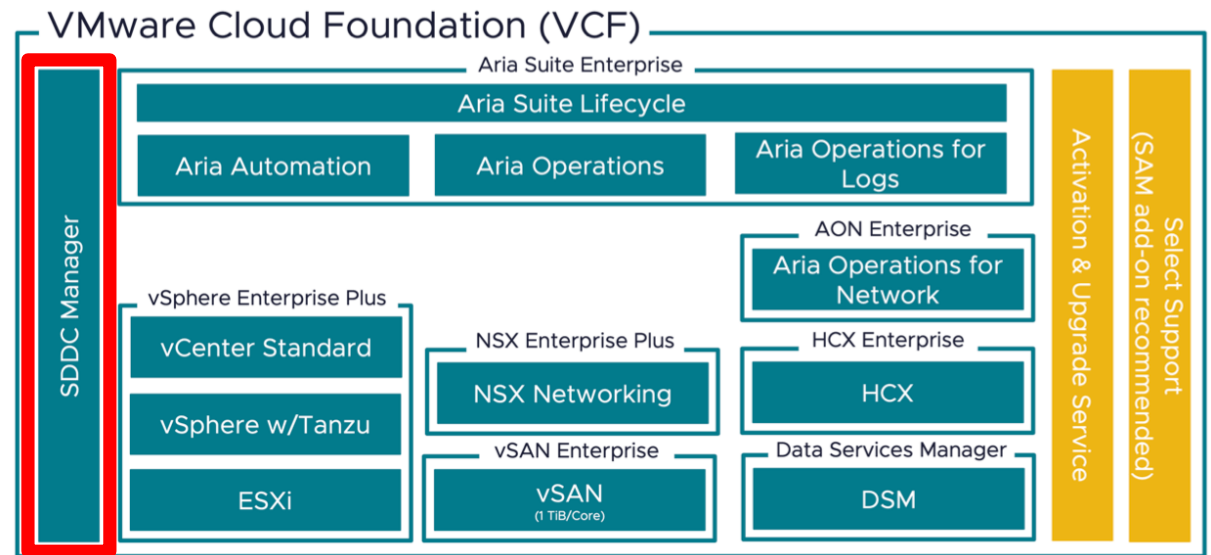
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**carahsoft.**

# Transform Your IT Landscape with VMware Cloud Foundation Series

Today's Session: Integrated Infrastructure Management with SDDC Manager

- **SDDC Manager (7/31/2024)**
- NSX Network Virtualization (8/7/2024)
- HCX Enterprise (8/14/2024)
- Aria Suite Enterprise (8/21/2024)
- Tanzu Platform (8/28/2024)



# Agenda

1. Introducing VMware Cloud Foundation
2. VMware Cloud Foundation Architecture
3. Deploying a Modern Private Cloud
4. Authentication and Identity Management
5. VCF Import
6. Lifecycle Management
7. Demo



# Modernize Private Cloud

Introducing VMware Cloud Foundation



# VMware Cloud Foundation 5.2



# Modernize Infrastructure

Infrastructure transformation and modernization



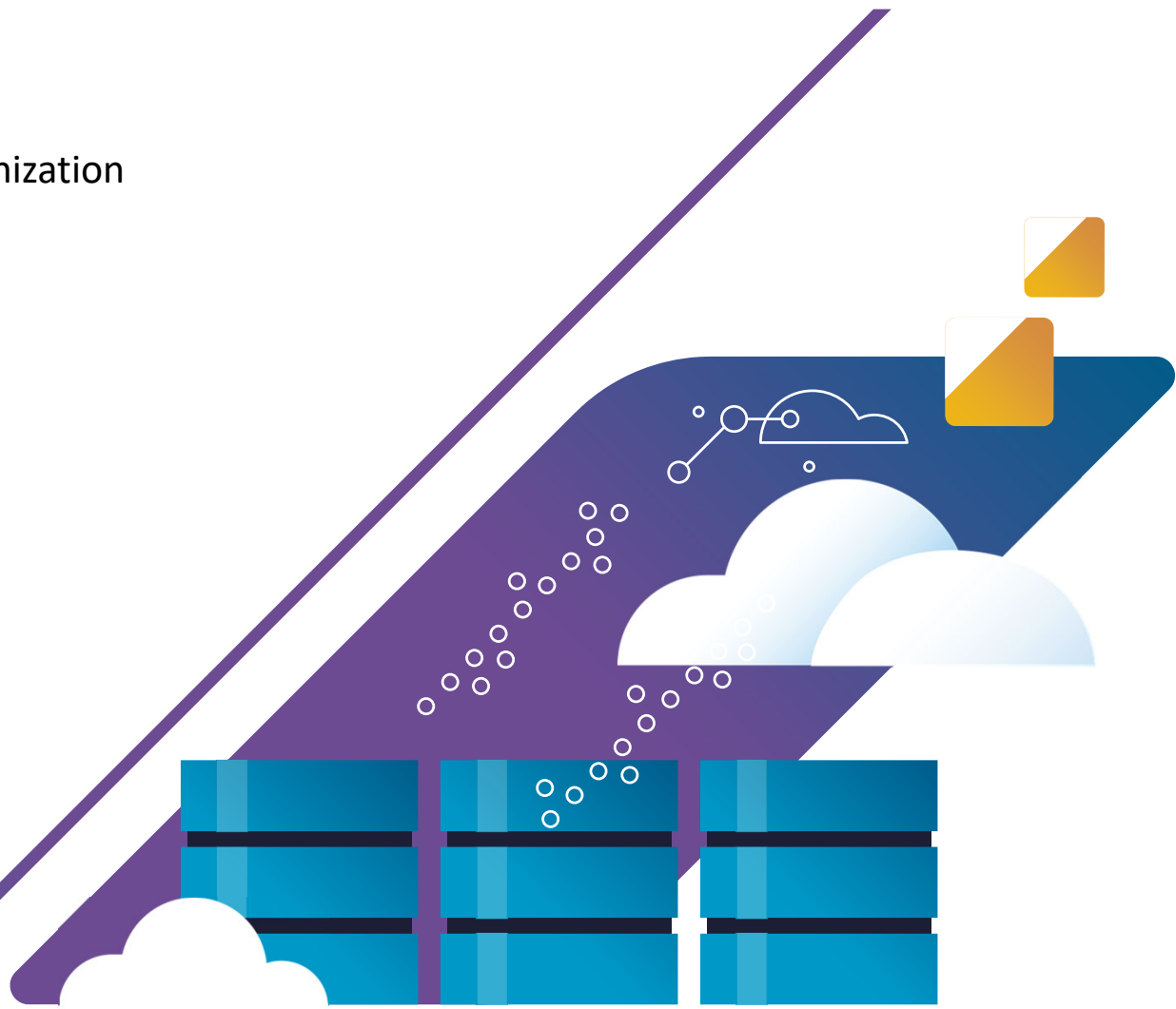
Build or modernize a private cloud infrastructure



Automate to provide IaaS via a self-service catalog

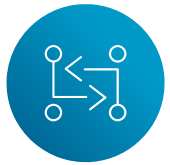


Extend your data center into the cloud



# Cloud Experience for Developers

Modern application support and Private AI



Deliver **Infrastructure-as-Code**



Run business critical and **modern workloads** in production



Implement **Private AI** with NVIDIA (Private AI Foundation with NVIDIA)



# Security and Resilience

Build, protect, and recover systems and data



Protect and recover from ransomware



Design and implement a disaster recovery-ready infrastructure



Build and integrate security, compliance and resilience into IT\*

\* Presales use case only, no discrete deliverable. Outcome leads back to cloud infrastructure capabilities relevant to security, compliance and resilience, also needs external mapping to ANS for any non-VCF Division security considerations (microseg, DFW, etc.)





# Driving Modernization, Developer Productivity and Security

## Key Outcomes of VCF 5.2



Improved Resource Utilization



Enhanced Developer Speed



Secure and Reliable

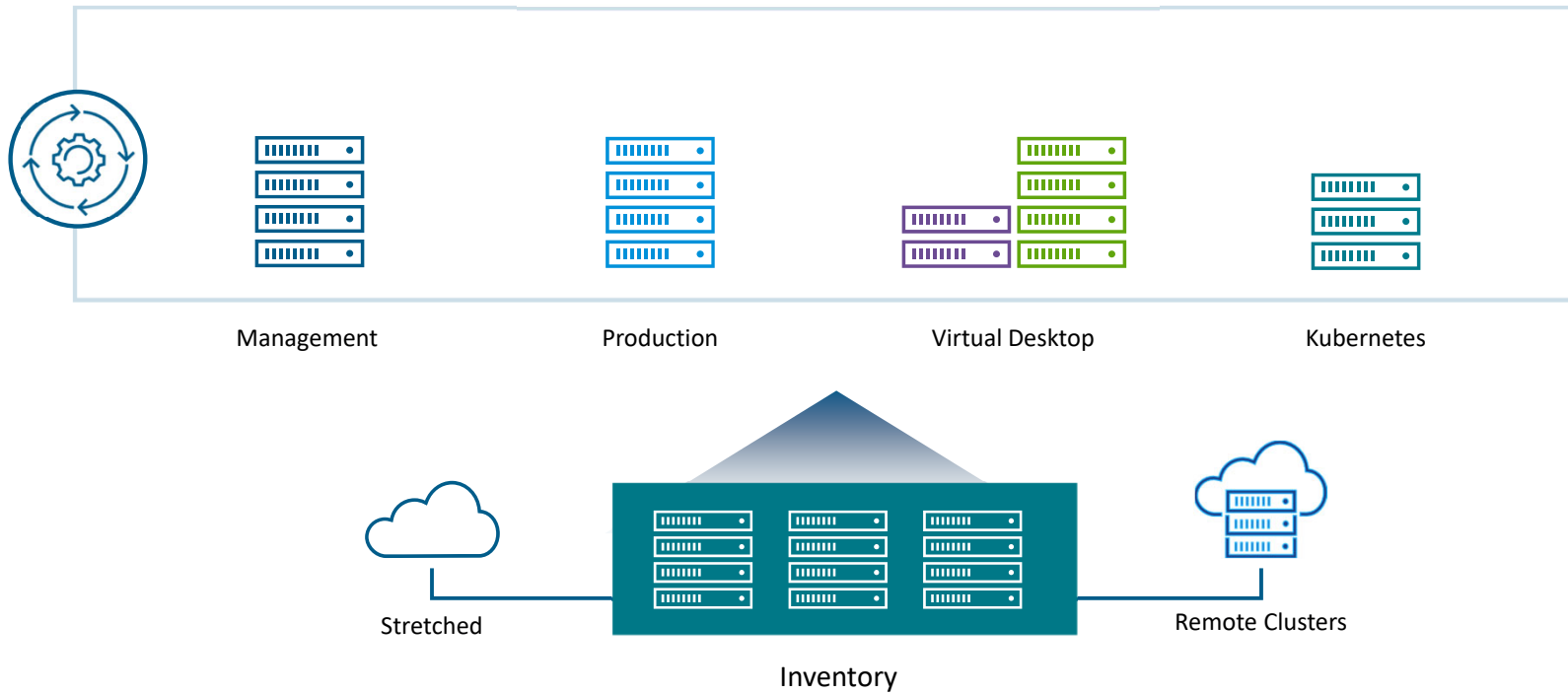


Faster Time to Value

# Application-ready Infrastructure

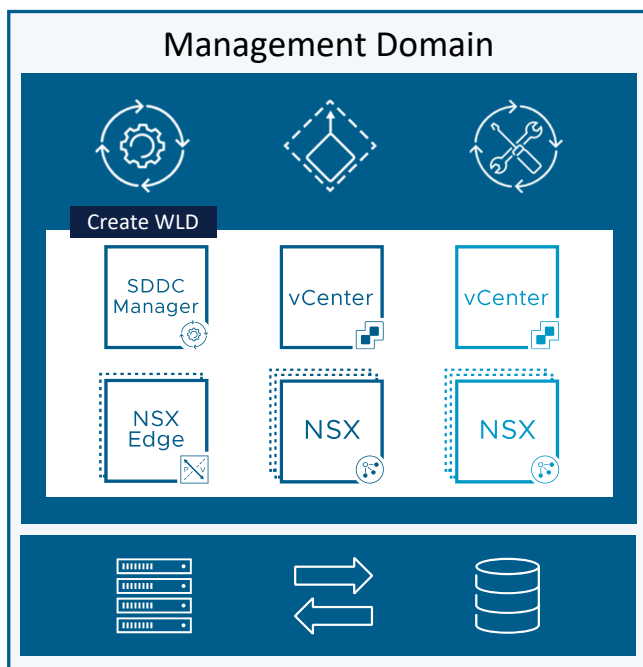
# Workload Domains


Deliver a Scalable Private Cloud

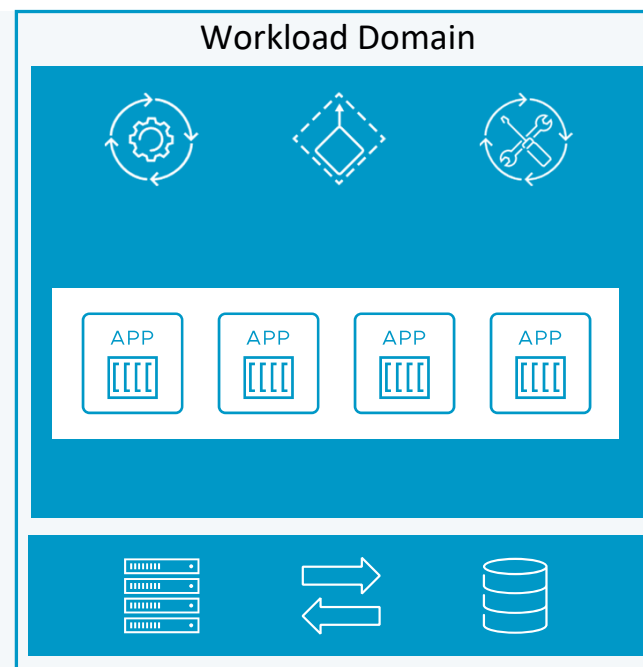


# Create a Workload Domain

Automate the Deployment of an Application Ready SDDC



-  Automated Workflow
- Creates new vCenter server
  - Choose a License
    - Subscription
  - Choice of SSO
    - Shared or Isolated SSO
  - Choice of Update Manager
    - vLCM Images or vLCM Baselines\*
  - Select hosts
  - Choice of NSX network fabric
    - New or Existing
  - Choice of principal storage
    - vSAN, vVOLS, NFS, VMFS on FC
  - Choice of Switch Configuration
    - Default or Custom

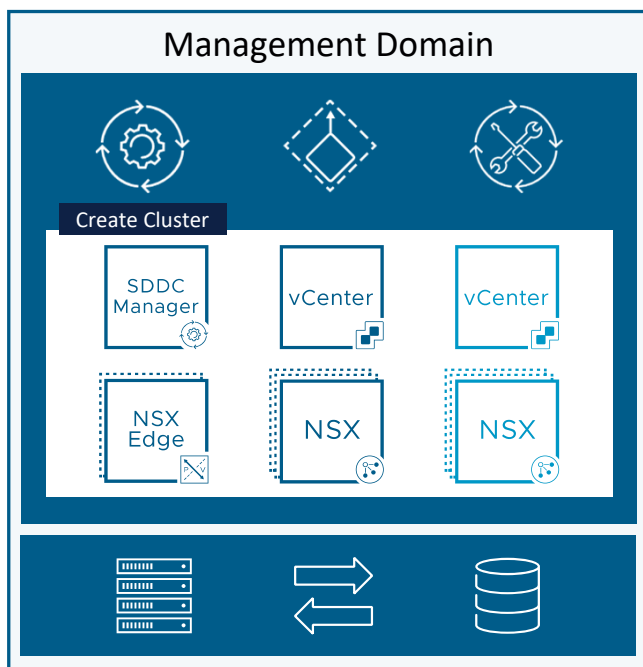


Cloud Foundation Inventory

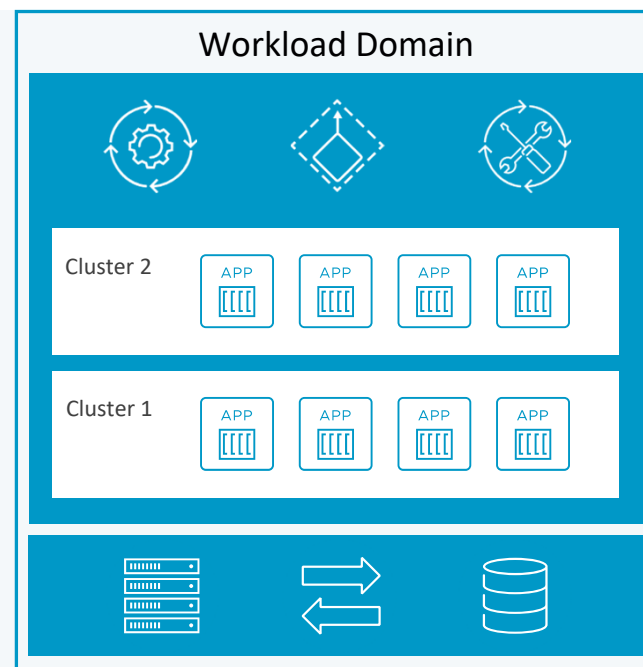
Deployment is fast and automates multiple manual steps

# Create a New Cluster

Automate the Deployment of a New SDDC Cluster

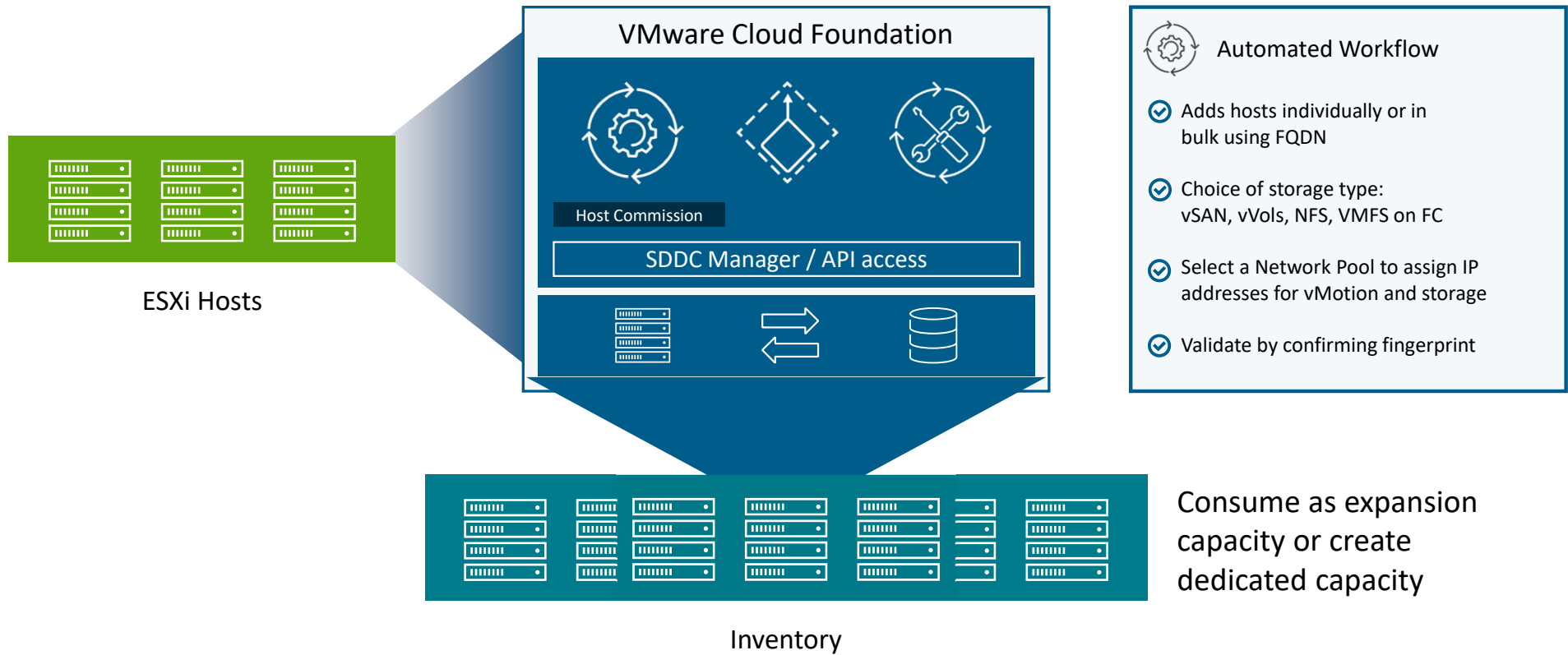


- Automated Workflow**
- ✔ Configures additional clusters in an existing domain
  - ✔ Uses the SSO option configured with the domain
  - ✔ Uses the LCM option configured with the domain
  - ✔ Select hosts
  - ✔ Uses the network fabric configured with the domain
  - ✔ Choice of principal storage
    - vSAN, vVOLs, NFS, VMFS on FC
  - ✔ Choice of Switch Configuration
    - Default or Custom

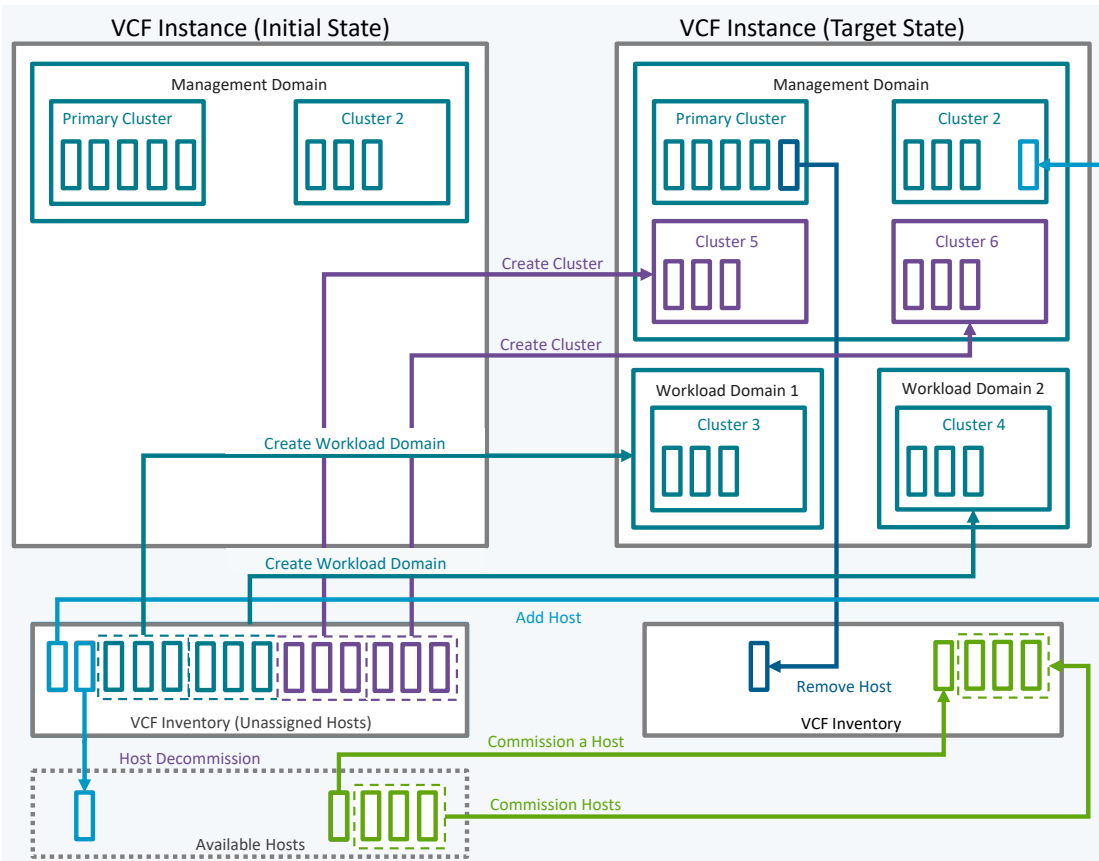


# Host Commissioning

Scale Out Your Infrastructure



# Performing Multiple Parallel Operations Saves Time



## Operations Running in Parallel

- ➔ Add Workload Domain Complete
- ➔ Add Workload Domain Complete
- ➔ Add a Cluster Complete
- ➔ Add a Cluster Complete
- ➔ Add Host to Cluster Complete
- ➔ Shrink a Cluster Complete
- ➔ Commission a Host Complete
- ➔ Commission Hosts Complete
- ➔ Decommission Hosts Complete

# Deploying a Modern Private Cloud

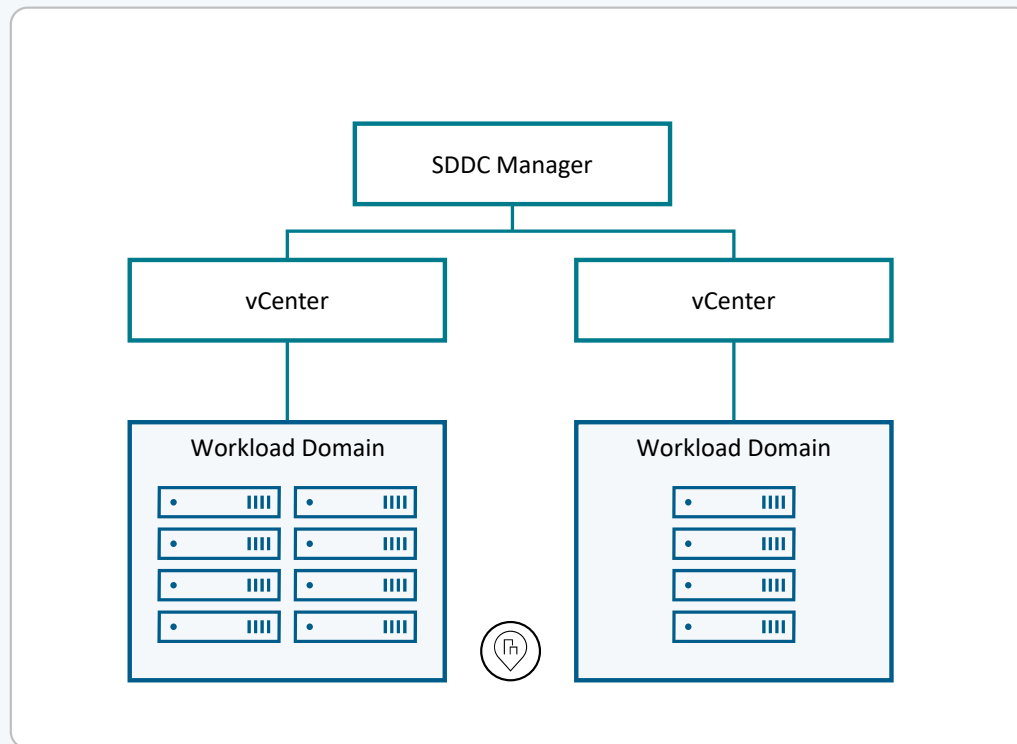
Options for Deployment





# Cloud Foundation Deployment Options

## Single Site VCF Deployments



### VCF Single Site Deployment

A single VCF instance of one or more WLDs deployed to a single location.

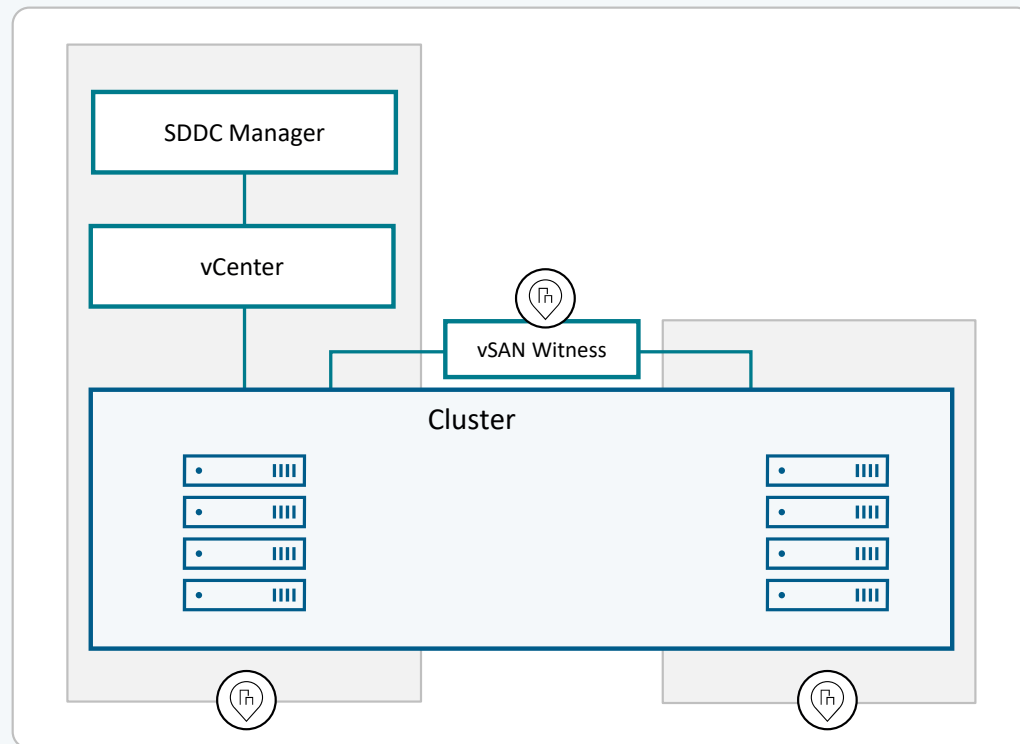
- Consolidated Architecture
- Standard Architecture

The VCF instance is configured as a single Availability Zone

Each workload domain can scale to multiple clusters.

# Cloud Foundation Deployment Options

## Stretched Site VCF Deployments



### VCF Stretched Deployment

A single VCF instance with WLDs configured across two (2) sites using a vSAN stretched cluster

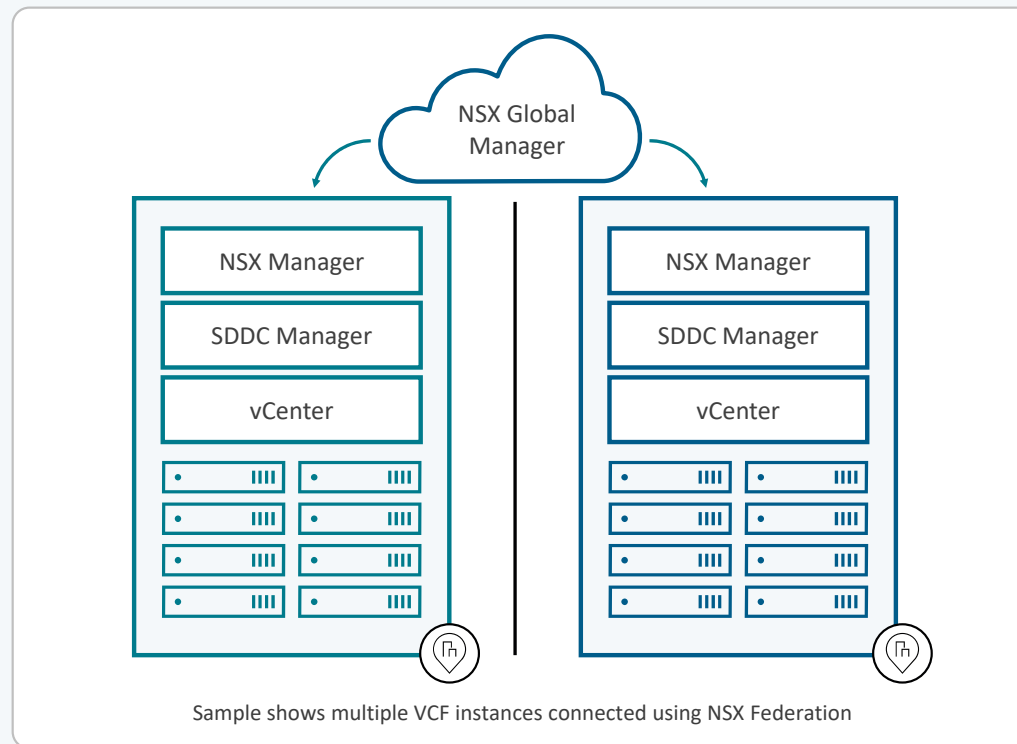
Stretched domains are configured across two (2) Availability Zones

The management domain cluster must be stretched first

Option to stretch additional clusters as required

# Cloud Foundation Deployment Options

## Multi-region VCF Deployments



### Multiple VCF Instances

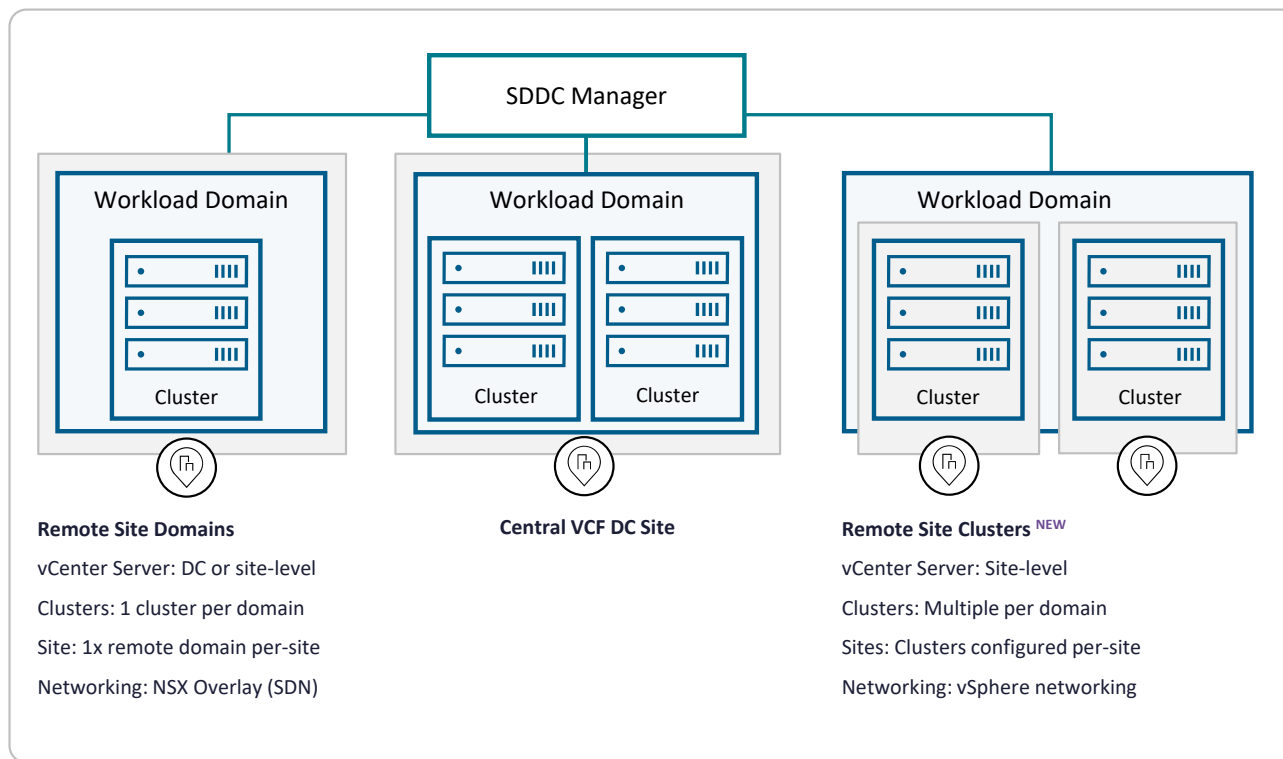
Option to connect multiple VCF instances using a multi-region architecture to protect against catastrophic failure

Configure NSX Federation for consistent policy, global networking, and disaster recovery.

NSX Federation is supported between VCF and non-VCF deployments

# Cloud Foundation Deployment Options

## Remote Site Domains and Remote Site Clusters



Use SDDC Manager to perform day 2 operations, scaling and lifecycle management for each remote site. Each edge location configured as :

- Remote Site Workload domain
- Remote Site Cluster

Choose the topology that best suits your requirements for:

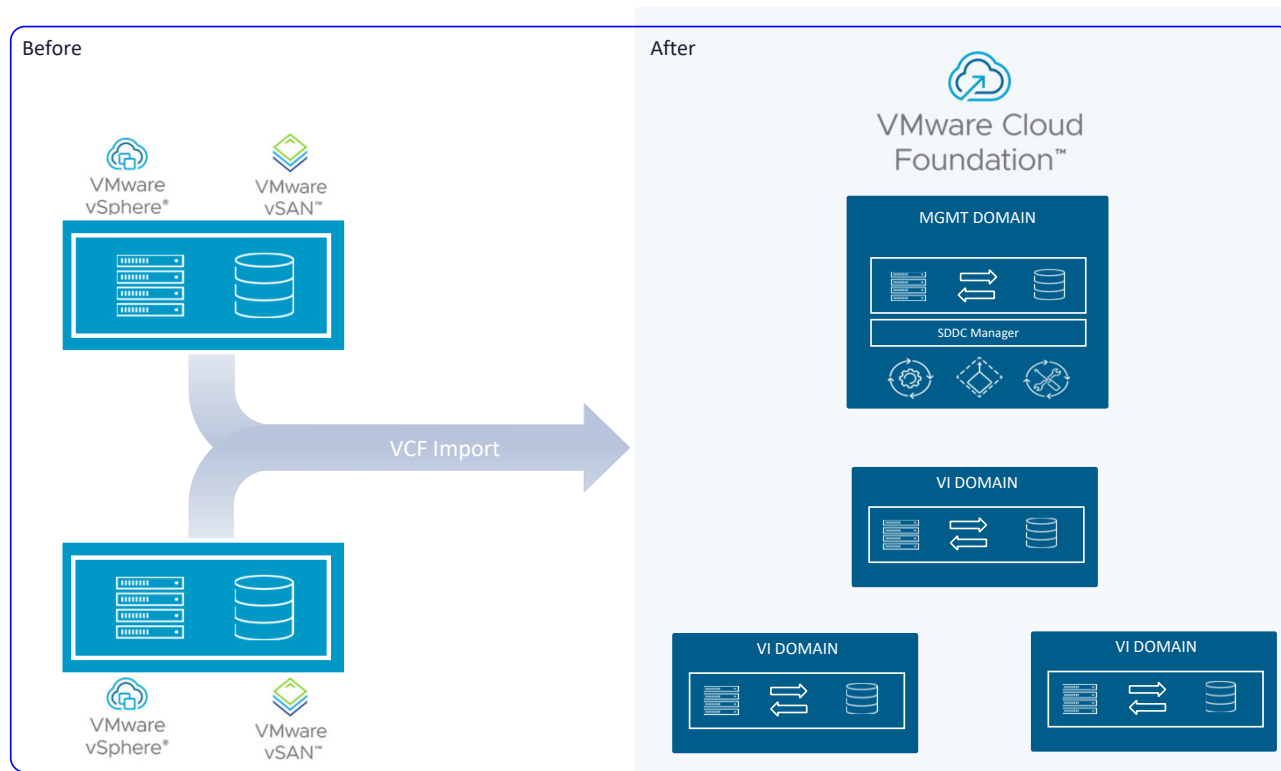
- Management
- Scale
- Networking

VCF Edge licensing can be used with 25 or more sites

# VCF Import (New for 5.2)

# Migrate Existing Infrastructure to Cloud Foundation

## VCF Import



CLI tool to quickly add existing vSphere/vSAN infrastructure into Cloud Foundation.

Expedite move to private cloud.

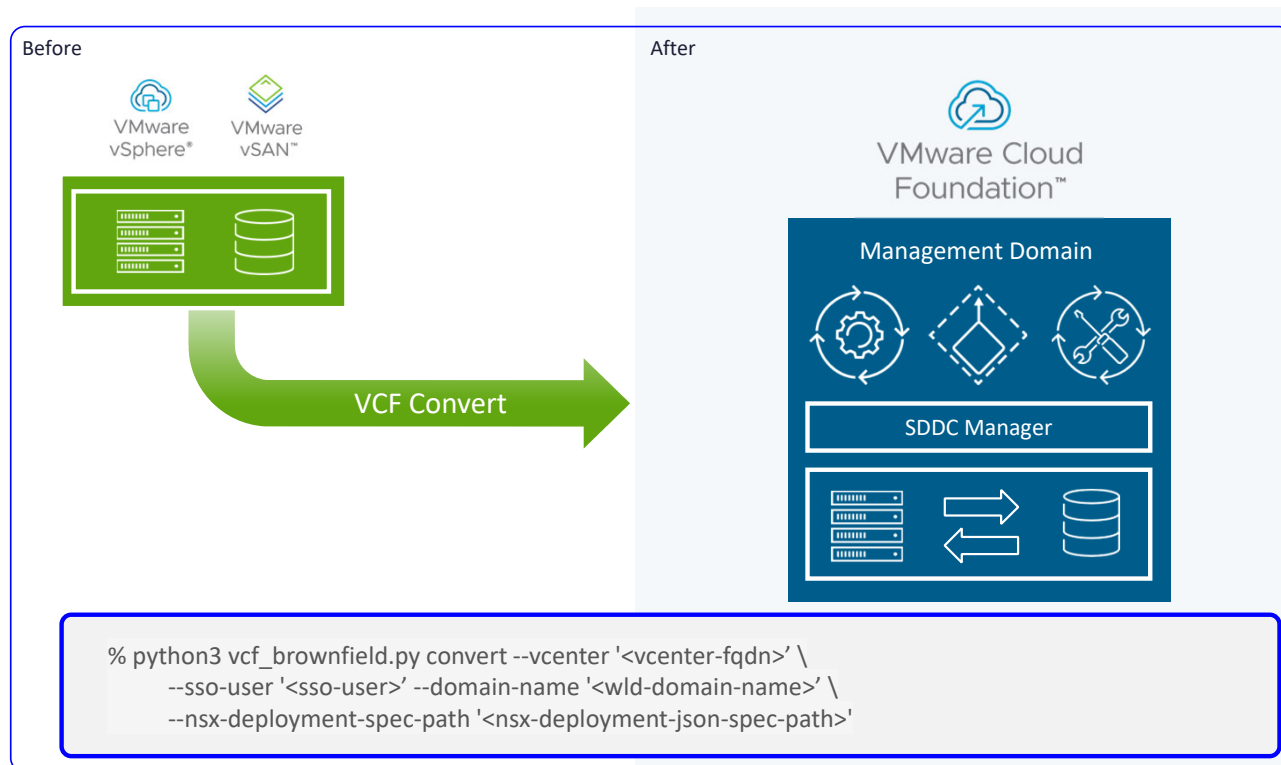
Extend SDDC Manager benefits to existing infrastructure.

Features:

- Convert
- Import
- Sync

# Migrate Existing Infrastructure to Cloud Foundation

Use Case: Convert a vSphere cluster to VMware Cloud Foundation



## Convert

Create a new Cloud Foundation instance on existing infrastructure

Run once when you do not already have SDDC Manager

### Step 1:

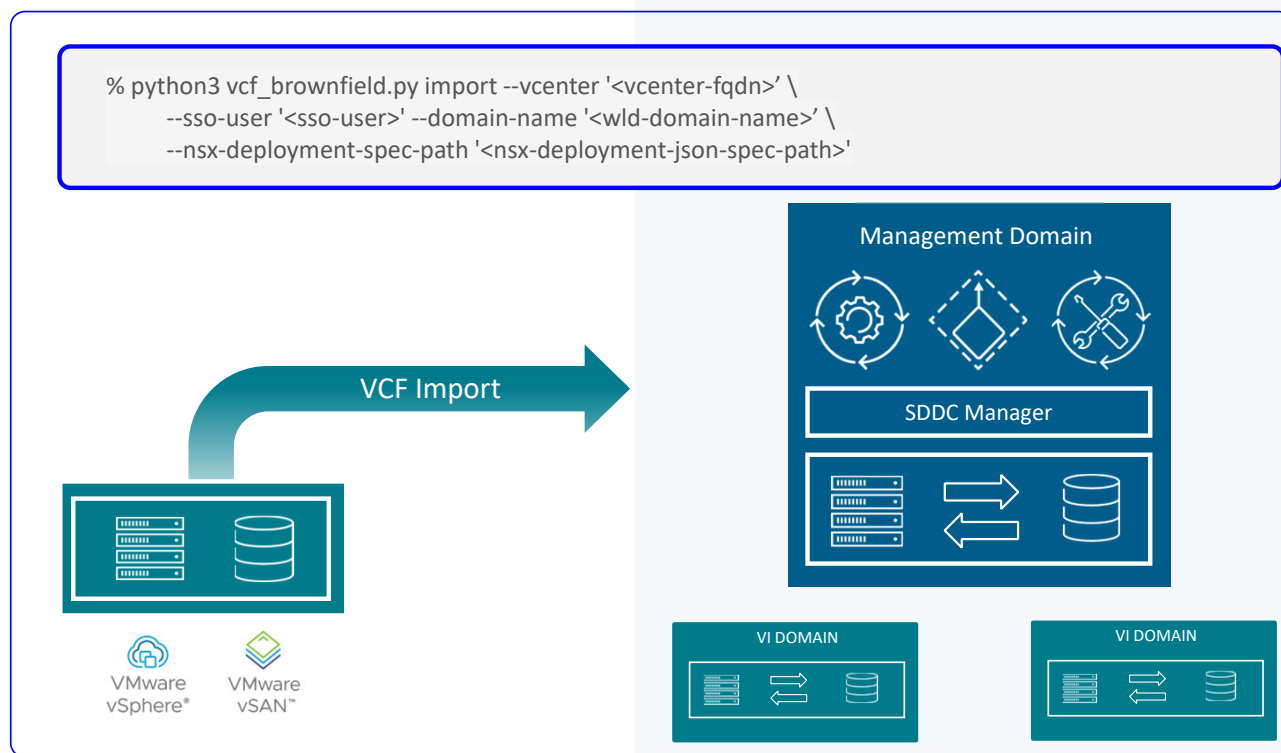
Deploy the SDDC Manager and seed the import scripts

### Step 2:

Convert the vCenter Server instance into a Cloud Foundation Management Domain

# Migrate Existing Infrastructure to Cloud Foundation

## Use Case: Import a vSphere Cluster



### Import

Add existing vSphere and vSAN infrastructure to Cloud Foundation.

Run once per VI workload domain.

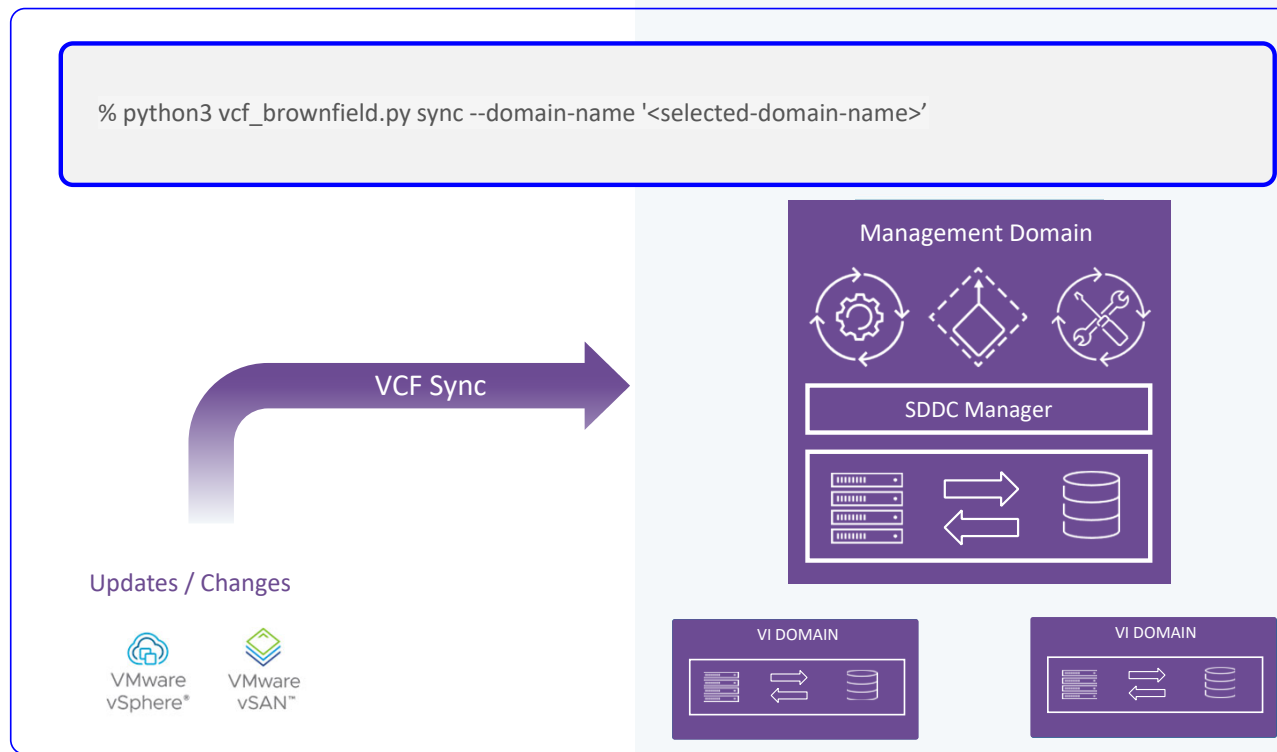
#### Step 1:

Import existing vSphere environments as a VI Workload Domains



# Migrate Existing Infrastructure to Cloud Foundation

## Sync a cluster with SDDC Manager



### Sync

Update the SDDC Manager with changes made in vCenter Server.

Continue to manage vCenter Server from vSphere client.

Can be used with new, upgraded or imported domains.

Note: some SDDC Manager workflows may be blocked if vCenter Server and SDDC Manager are not in-sync

# Migrate Existing Infrastructure to Cloud Foundation

## VCF Import Requirements

### Convert Requirements

Must align with VCF 5.2 BOM (vSphere 8.0U3) or higher.

Only use when SDDC Manager does not already exist (run once).

Manually deploy SDDC Manager & copy import scripts.

vCenter must be co-located with cluster to be converted.

Run “[precheck](#)” on management domain vCenter to validate its configuration.

### Import Requirements

Must align with VCF 4.5.0 BOM (vSphere 7.0U3) or higher.

Run for each vCenter to be imported as a VI Domain.

vCenter instances must be centralized on the management domain

vCenter instances imported as isolated domains, ELM is not supported.

Run “[check](#)” on SDDC Manager to validate vCenter configuration.

### Common Requirements

Storage must be vSAN, NFS, or VMFS-FC

- vSAN requires 3-nodes
- NFS, VMFS-FC requires 2-nodes

Clusters must be homogeneous.

Host VMkernel adapters:

- IPs must be statically assigned.
- Dedicated vMotion network required.
- Only single traffic type per VMkernel.

# Migrate Existing Infrastructure to Cloud Foundation

## VCF Import Guardrails & Limitations

### Not supported in VCF 5.2:

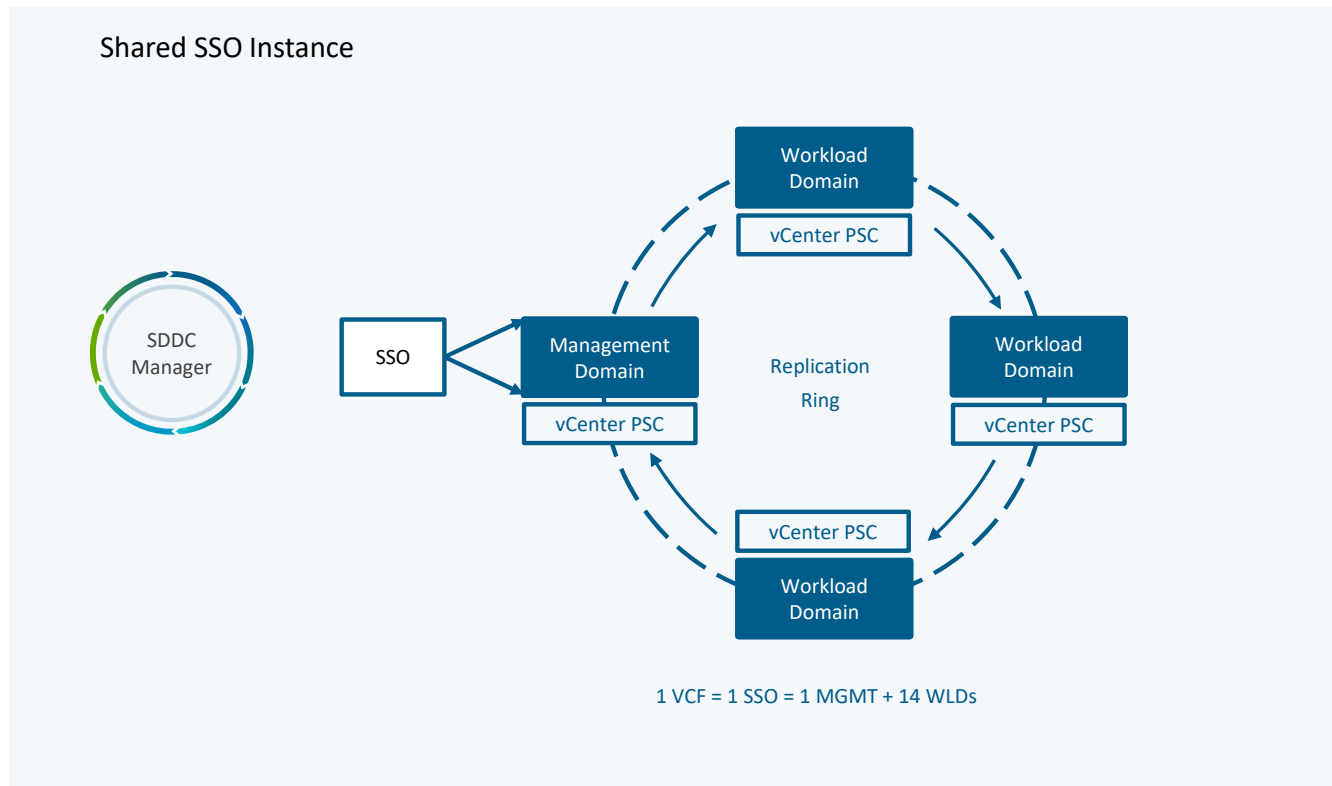
- Enhanced Linked Mode (ELM).
- vSAN Stretched Clusters.
- vSAN “compression only” Clusters.
- vCenter Instances registered with NSX.
- Clusters configured with LACP.
- vVOLs based storage.
- Clusters with mixed VDS configurations.
- vCenter instances with standalone hosts.
- Clusters with vSphere Standard Switches.
- Clusters with Workload Management Enabled (K8s).
- VCF on VxRail.

<https://docs.vmware.com/en/VMware-Cloud-Foundation/index.html>

# Authentication & Identity Management

# Single Sign-on Architecture

## Shared SSO



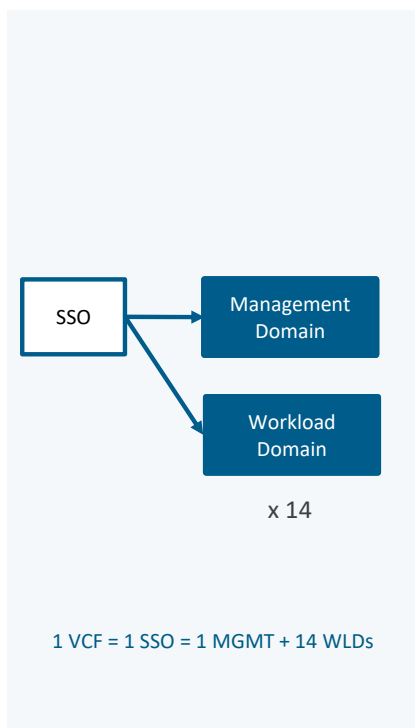
### Overview

- All workload domain vCenter servers are connected using Enhanced Linked Mode (ELM)
- SSO replication ring maintained by SDDC Manager
- Users configured for SDDC Manager access authenticate via the vCenter Server PSC
- ELM provides seamless user access into all the products in the stack without challenging the user to authenticate again

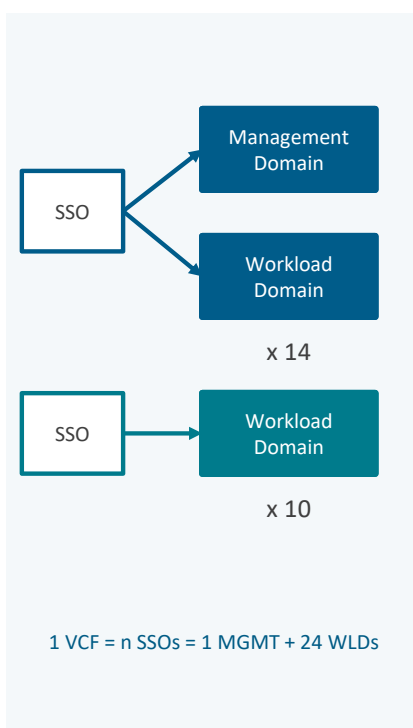
# Choice of Single Sign-on Architecture

## Shared SSO instances and Isolated SSO instances

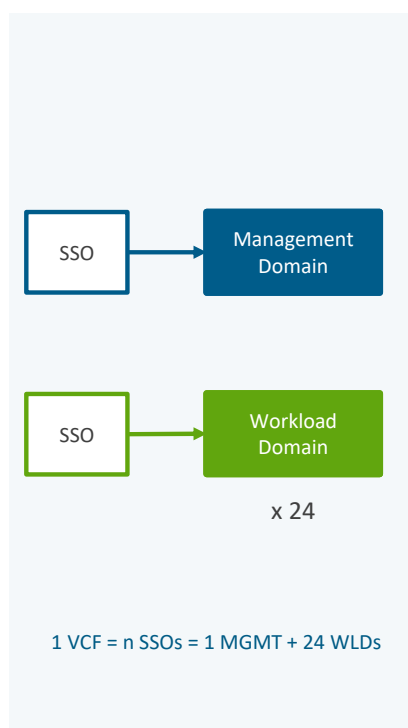
Shared SSO instance



Add Isolated instances



All instances Isolated



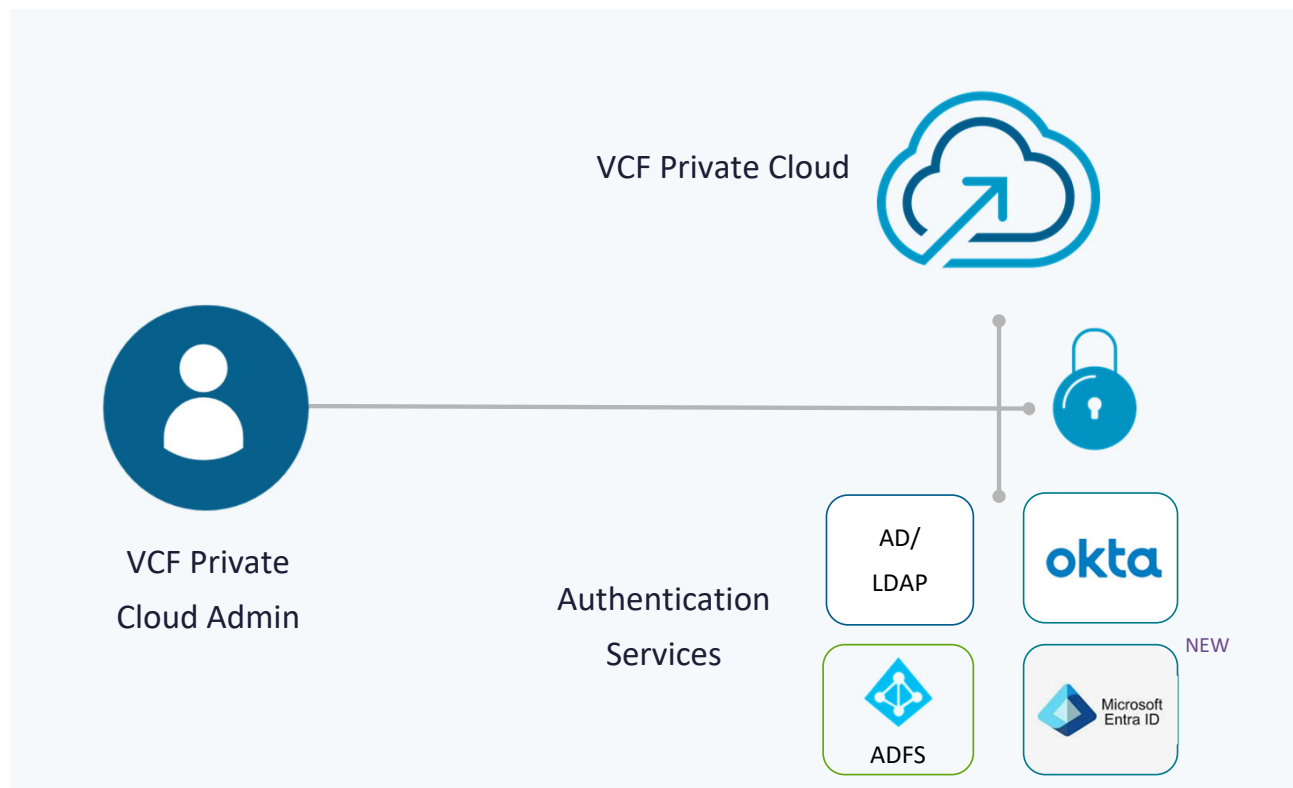
Workload domains can be configured in one of two (2) ways:

- Join and authenticate to the Management Domain SSO using ELM
- Configure as an isolated workload domain to join and authenticate to a separate SSO instance

Option to configure a separate identity provider for each isolated SSO domain

# Identity Federation Support with Microsoft Entra ID

SSO Authentication and Token/Claim support



## Overview

Support for 3<sup>rd</sup> party authentication services

Support for 3<sup>rd</sup> party MFA tokens

Token Provides Claim to VCF resources

Authenticated users can seamlessly move between SDDC Manager, vCenter Server and NSX Manager

Microsoft Entra ID support is new to VCF 5.2

# Modern Private Cloud Lifecycle Management



# Lifecycle Management - Ease of Upgrades and Patching

A New Way to Manage Data Center Infrastructure, Not Individual Components

Core SDDC Components



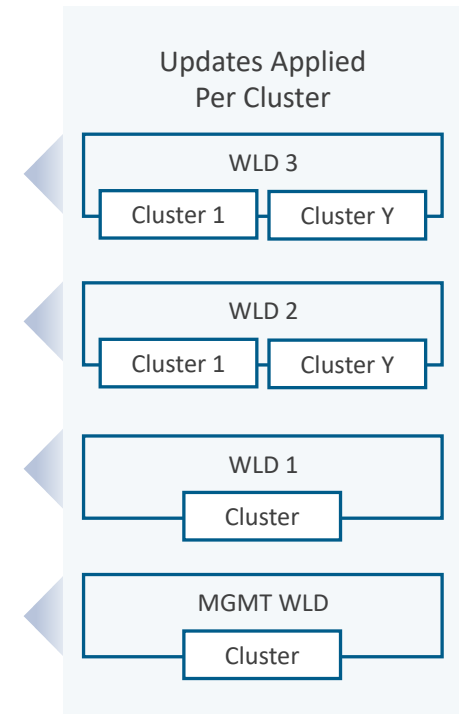
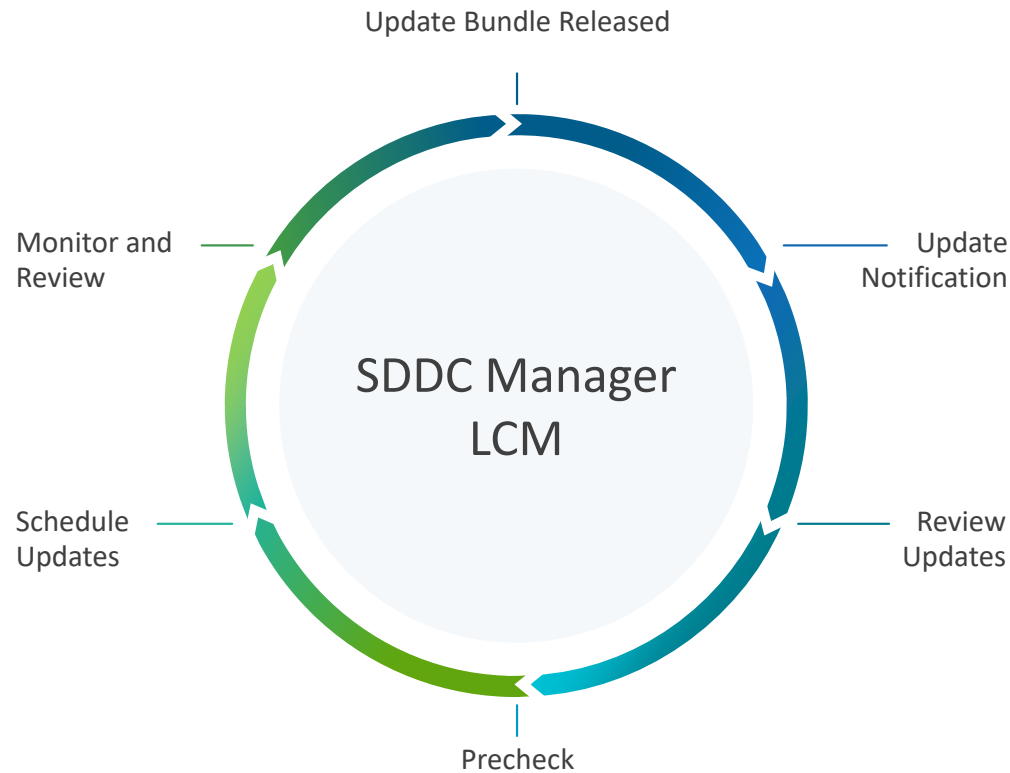
Compute vSphere



Storage vSAN



Network NSX



# Cloud Foundation Software is Delivered via Bundles

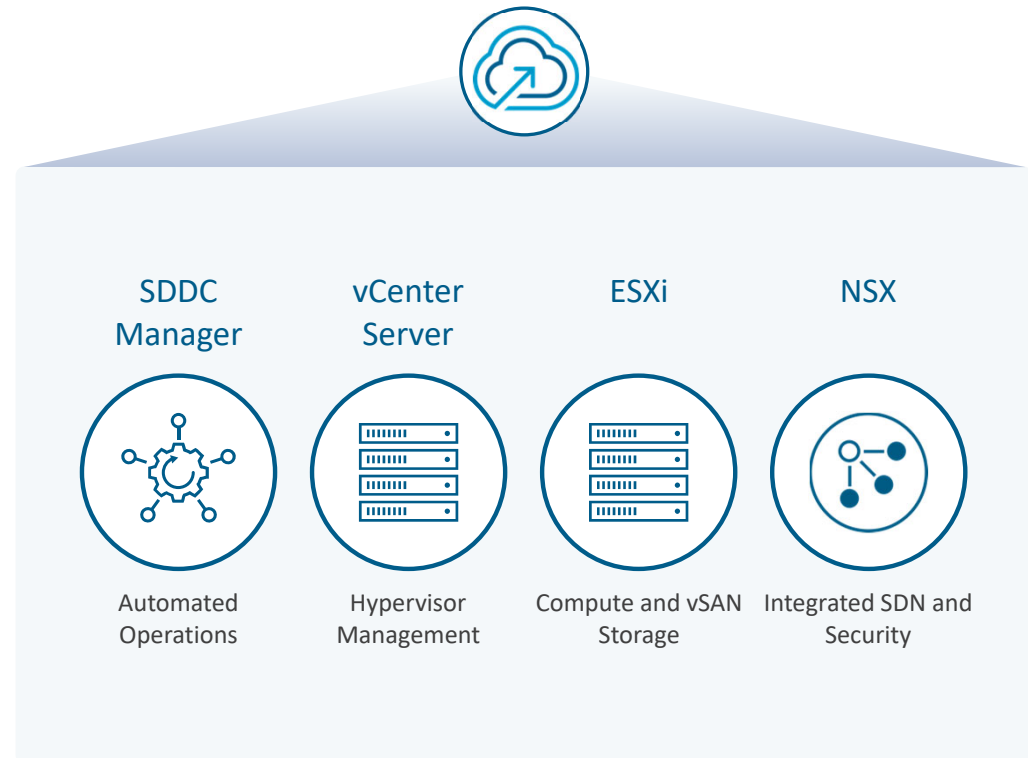
Lifecycle management operations use upgrade, install, or async patch bundles

Bundles provide software for updating existing infrastructure or for deploying new workload domains

Downloaded from the online depot using CustomerConnect credentials

SDDC Manager provides a notification when a new bundle is available

Bundles are released for each specific component and version



# Software Bundle Download Options

Different approaches based upon SDDC Manager access

## Direct download from the VMware Online Depot

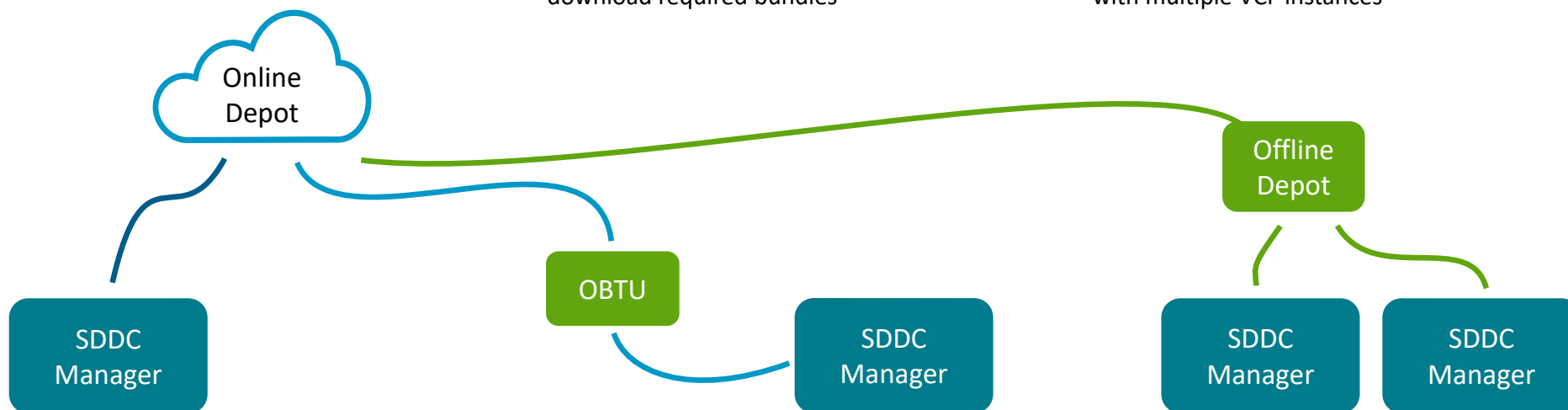
Default configuration, just enter Broadcom Support Portal credentials

## Download and import to a disconnected VCF deployment

Install the Offline Bundle Transfer Utility (OBTU) on a system with Internet access and download required bundles

## Create local offline depot for multiple VCF instances

Deploy an internal web server and use OBTU to mirror the VMware depot locally. Can be used with multiple VCF instances



# ESXi Host Patching and Upgrade Options

## vSphere Lifecycle Management in Cloud Foundation

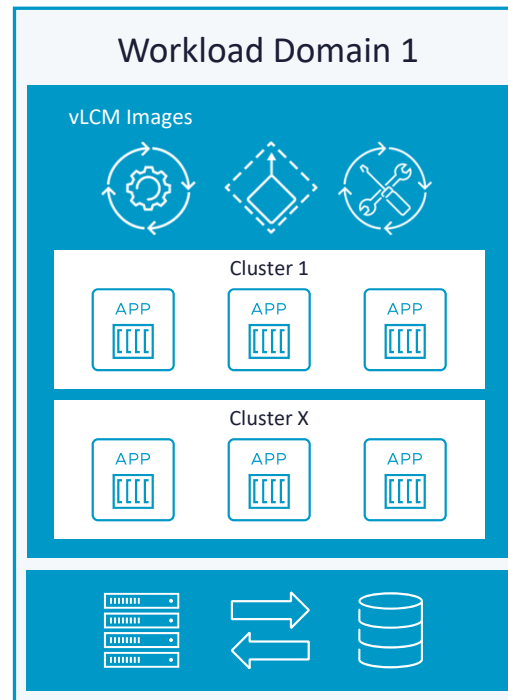
Choose to configure a workload domain to use vLCM Images or vLCM baselines

The vLCM option is used to patch and upgrade ESXi (includes vSAN)

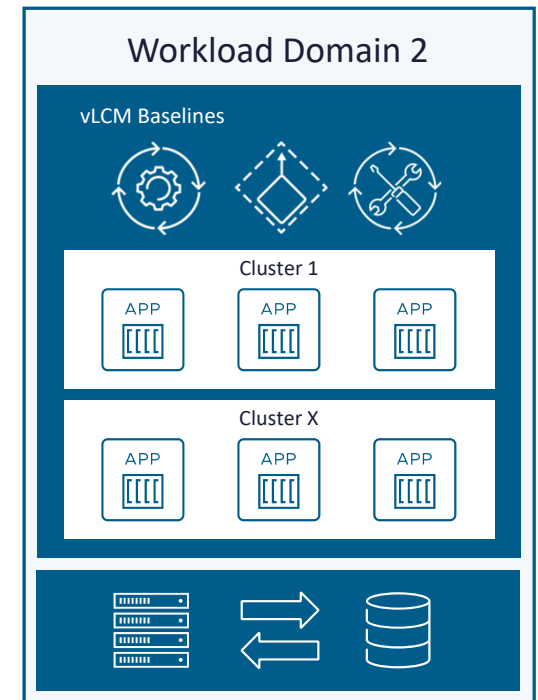
All clusters within the workload domain inherit the vLCM option chosen

A vLCM desired state image maintains hardware firmware/bios/drivers and ESXi components at a cluster-level

A vLCM baseline is applied at per host level. All hosts in a cluster should use the same baseline.



All clusters within this workload domain will use a vLCM Image



All clusters within this workload domain will use a vLCM Baseline

# vSphere Lifecycle Manager (vLCM) Images

Using qualified hardware

Uses desired-state model for all lifecycle operations

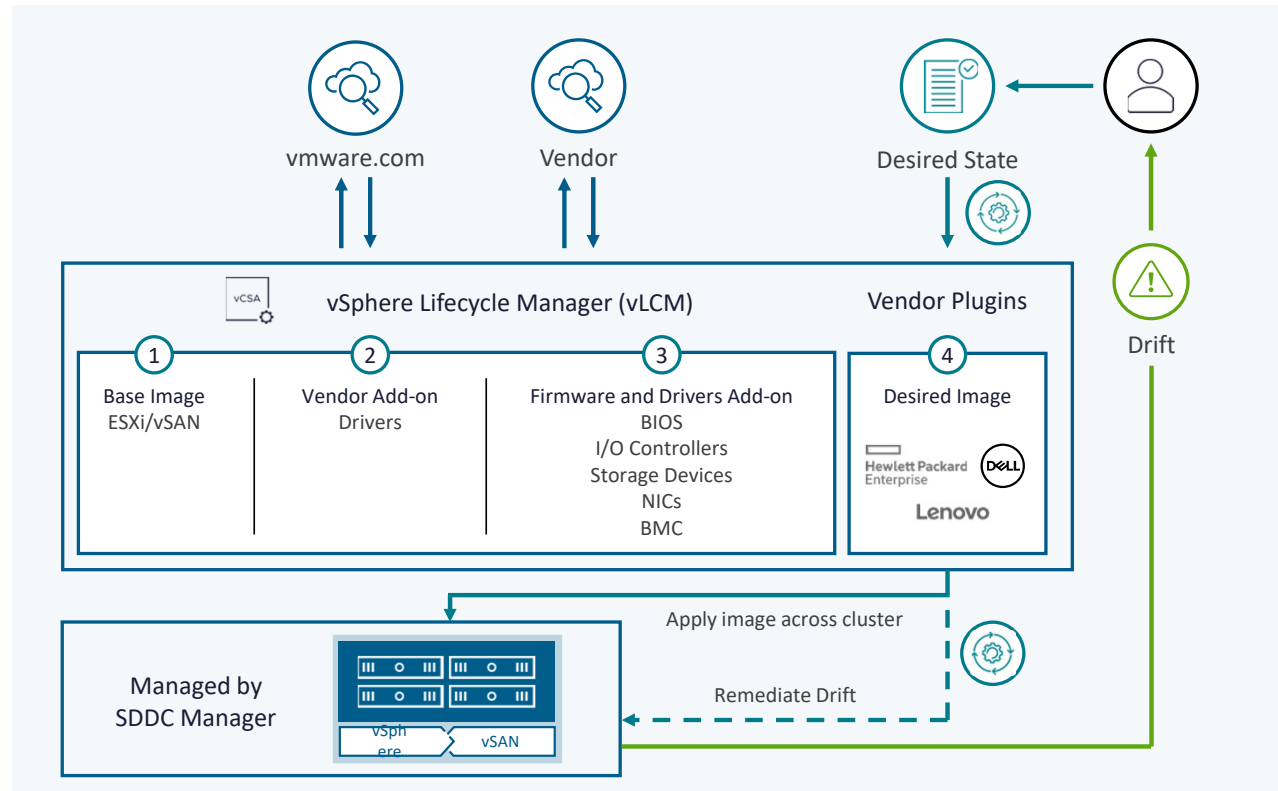
Monitors compliance “drift”

Remediates back to desired state

Built to manage hosts at cluster level

- Hypervisor
- Drivers
- Firmware

Modular framework supports vendor firmware plugins



# vSphere Live Patching

Eliminate host reboots and save time during patching operations

### Assign Images ✕

Select clusters to apply images and firmware/driver addons. All clusters must be assigned a new image before proceeding.

⚠ You must assign a cluster image to all selected clusters before proceeding. ✕

**Step 1** Select a cluster or multiple clusters of the same vendor to assign a cluster image.

Selected Clusters	Target Image	Hardware Vendor	Current HSP	Target HSP
<input checked="" type="checkbox"/>	vi-cluster1	N/A	N/A	
<input checked="" type="checkbox"/>	1			Cluster per page 10 1 - 10 of 0 cluster

**Step 2** Select a cluster image to assign to the selected clusters. If there are no applicable cluster images, go to Image Management to import or create a new cluster image.

Cluster Image i qpimage ▼

🔥 Live Patch eligible from 8.0 Update 3 - 23515467 i

**ESXi Version**  
8.0.3-23516229

**Vendor Addon** i  
No ESXi Version

**Components** i  
0 Components  
[Show Details](#)

**Firmware/Driver Addon** i  
No Firmware Addon

APPLY IMAGE

New category of ESXi patches intended for security fixes

Uses Partial Maintenance Mode

Eliminates:

- VM evacuation
- Maintenance mode
- Host reboot

Applies to clusters configured using a vLCM image

Uses familiar VCF host update workflows

# VMware Cloud Foundation Training Opportunity

2-Day Class – Instructor Led

Date: August 22-23 & September 9-10

Number of Seats: 16 per class

Audience: Virtual Admins, IT Managers.

- Must have hands on experience with VMware.

## Lecture:

Module 1: VMware Cloud Foundation Overview

Module 2: Operate VMware Cloud Foundation with NSX

Module 3: Operate vSphere with Tanzu in VMware Cloud Foundation

Module 4: Operate VMware Cloud Foundation Storage

Module 5: VMware HCX with VMware Cloud Foundation

## Hands-On Labs:

Lab 1: (Simulation) Deploying VMware Cloud Foundation

Lab 2: VMware Cloud Foundation Advanced Security with NSX

Lab 3: Operate VMware Cloud Foundation with Tanzu

Lab 4: Operate VMware Cloud Foundation with HCI

Lab 5: Monitoring VMware Cloud Foundation with Aria Suite

Reach out to Davis Falk ([davis.falk@carahsoft.com](mailto:davis.falk@carahsoft.com)) to Register

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Hands on Experience with  
VMware Cloud Foundation

Reduce complexity with consistent IT infrastructure and operations,  
mitigating operational cost and risk with VMware Cloud Foundation.

Register Now

August 22 - 23, 2024  
10:00am - 6:00pm ET

Hands on Experience with VMware Cloud  
Foundation

Thursday, August 22, 2024 -  
Friday, August 23, 2024

10:00am - 6:00pm ET

Online

Register Now

[Join our complimentary](#) advanced end-user workshop to learn and interact with VMware Cloud Foundation and see the benefits of this solution firsthand. Learn how your organization can effectively and efficiently modernize both applications and the underlying infrastructure with VMware Cloud Foundation.

[During this 2-day hands on technical workshop](#), you will learn about:

- The VMware Cloud Foundation deployment process
- The VMware Cloud Foundation Tanzu deployment process
- How VMware Cloud Foundation protects modern apps with NSX
- Advanced infrastructure and overlay network monitoring technologies
- How to operate and migrate workloads in a multi cloud environment
- VMware HCX for seamless workload migration

Don't wait, spots are limited - [register today](#) to learn more and take meaningful steps towards an integrated and future-ready hybrid cloud platform.

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