

The background is a vibrant, abstract graphic. It features a central bright white light source from which numerous colorful rays emanate, creating a sunburst or starburst effect. The rays transition through a spectrum of colors including yellow, orange, red, and various shades of blue and green. Overlaid on this are several large, semi-transparent, wavy shapes in similar color tones, giving the overall image a sense of motion and energy.

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The bridge to possible

Cisco UCS X-Series for VMware Cloud Foundation

Integrating Cisco Converged Infrastructure as a VCF
Workload Domain

Brian Everitt – Technical Marketing Engineer

BRKCOM-2009



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Cisco Webex App

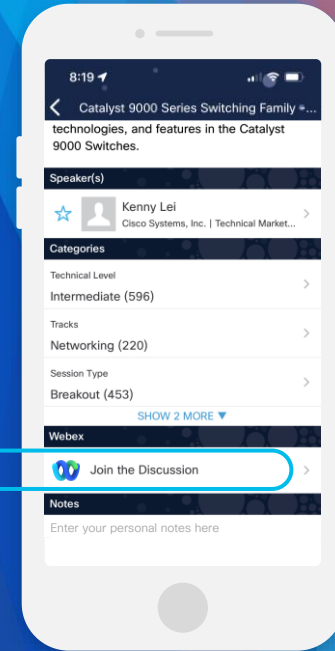
Questions?

Use Cisco Webex App to chat with the speaker after the session

How

- 1 Find this session in the Cisco Live Mobile App
- 2 Click “Join the Discussion”
- 3 Install the Webex App or go directly to the Webex space
- 4 Enter messages/questions in the Webex space

Webex spaces will be moderated by the speaker until June 9, 2023.



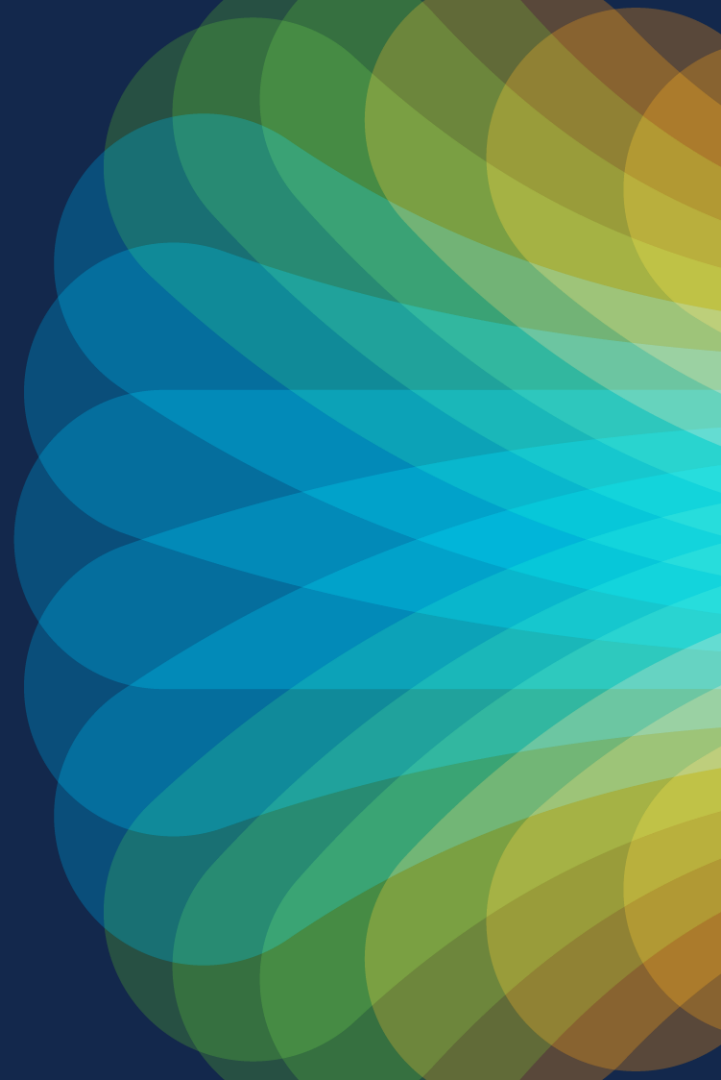
<https://ciscolive.ciscoevents.com/ciscolivebot/#BRKCOM-2009>

Agenda

- Introduction
- VMware Cloud Foundation
- Cisco Converged Infrastructure Solutions
- Integrating Cisco CI Solutions with VCF
- Deployment Details and Automation
- Conclusion

Cisco Converged Infrastructure Systems are an excellent platform for VMware Cloud Foundation Workload Domains

VMware Cloud Foundation

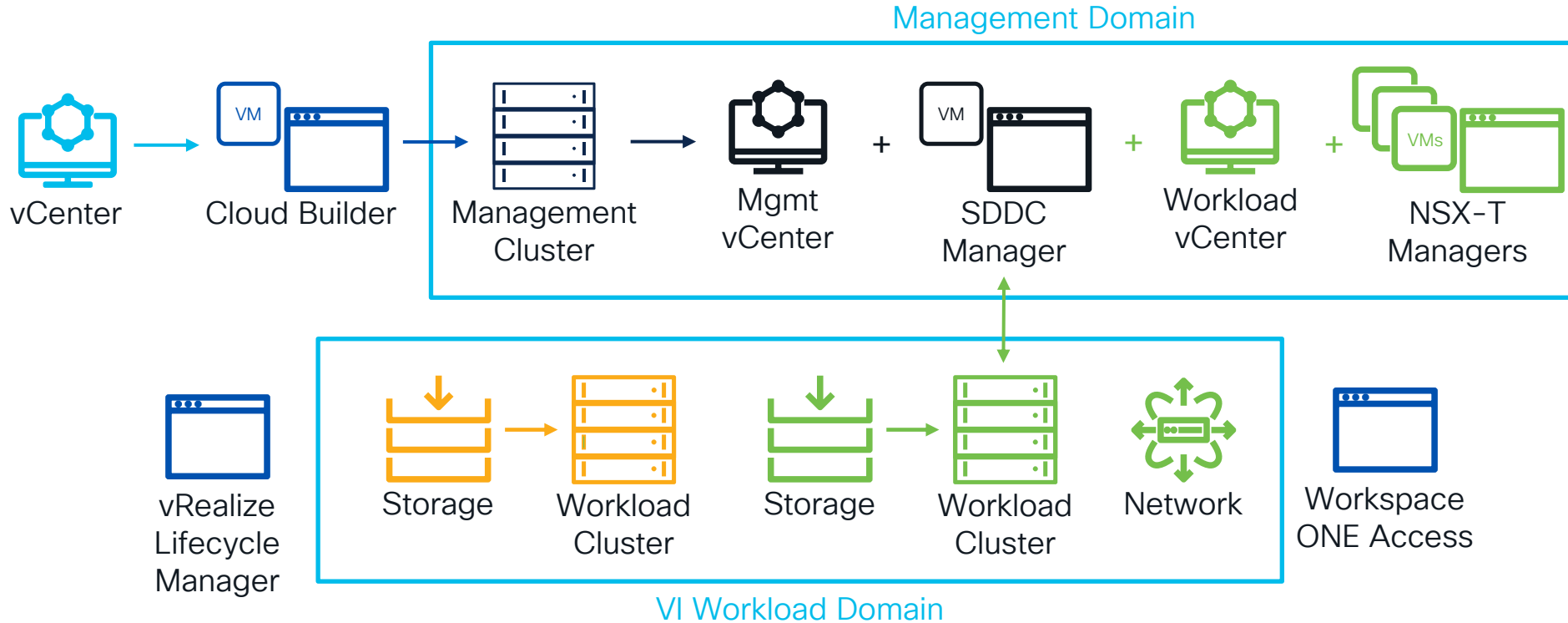


VMware Cloud Foundation 4.5

An integrated hybrid-cloud virtualization platform

- A VMware validated multi-component solution for on-prem and cloud-based virtualization platforms, consisting of:
 - **VMware Cloud Builder** – VM which deploys the VCF Management Domain
 - **VMware Software Defined Data Center Manager (SDDC)** – VM which commissions, deploys and manages VCF Workload Domains
 - **VMware vCenter Server** – multiple instances for managing the VCF Management and Workload domains.
 - **VMware NSX-T Manager** – VM cluster for management of software defined overlay networking used by the Workload domains.
 - **VMware ESXi Hypervisor**
 - **VRealize Lifecycle Manager, Workspace ONE Access**

VMware Cloud Foundation Components

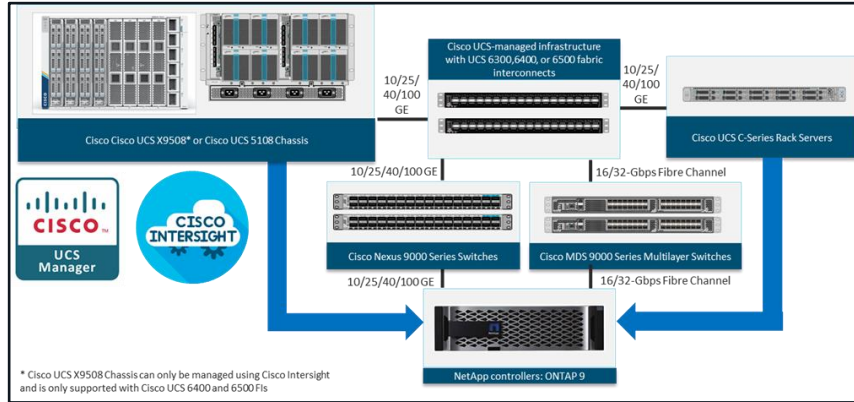


Cisco Converged Infrastructure Solutions

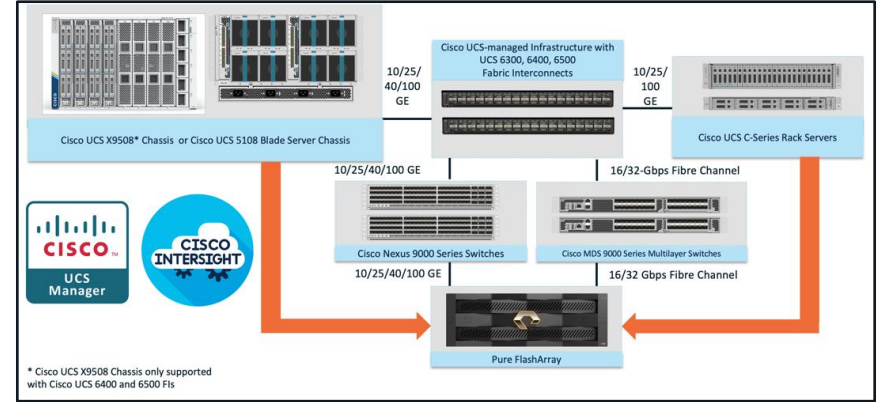
Cisco FlexPod and FlashStack Solutions

Product Overview

Cisco FlexPod Converged Infrastructure



Cisco FlashStack Converged Infrastructure



- Both Solutions integrate Cisco C-series rackmount servers or B-series or X-series blades, with Cisco UCS Fabric Interconnects, managed by Cisco Intersight or Cisco UCS Manager.
- Network connectivity via Cisco Nexus 9000 series switches
- Storage connectivity via ethernet or via FC using Cisco MDS switches to NetApp or Pure Storage arrays

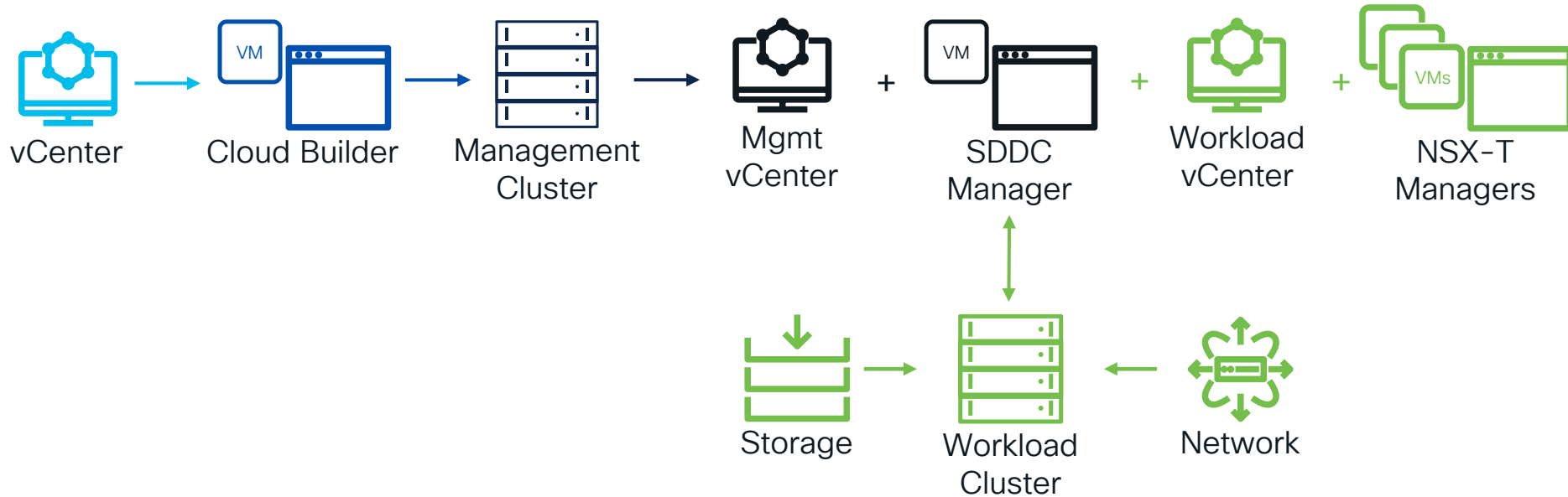
Benefits of FlexPod and FlashStack for VCF

- Cisco Validated standardized architecture for quick, repeatable, error free deployments of FlexPod or FlashStack based workload domains
- Integrated solution that supports the entire VMware Software Defined Datacenter
- Easy to deploy, consume, and manage design which aligns with Cisco, NetApp or Pure Storage and VMware best practices and compatibility requirements
- Extensive choice of compute, network, and storage platforms including latest CPUs, 100G Ethernet, NVMe-o-Fabric and all Flash Arrays
- Support for component monitoring, solution automation and orchestration, and workload optimization
- Cloud based management and automated deployment

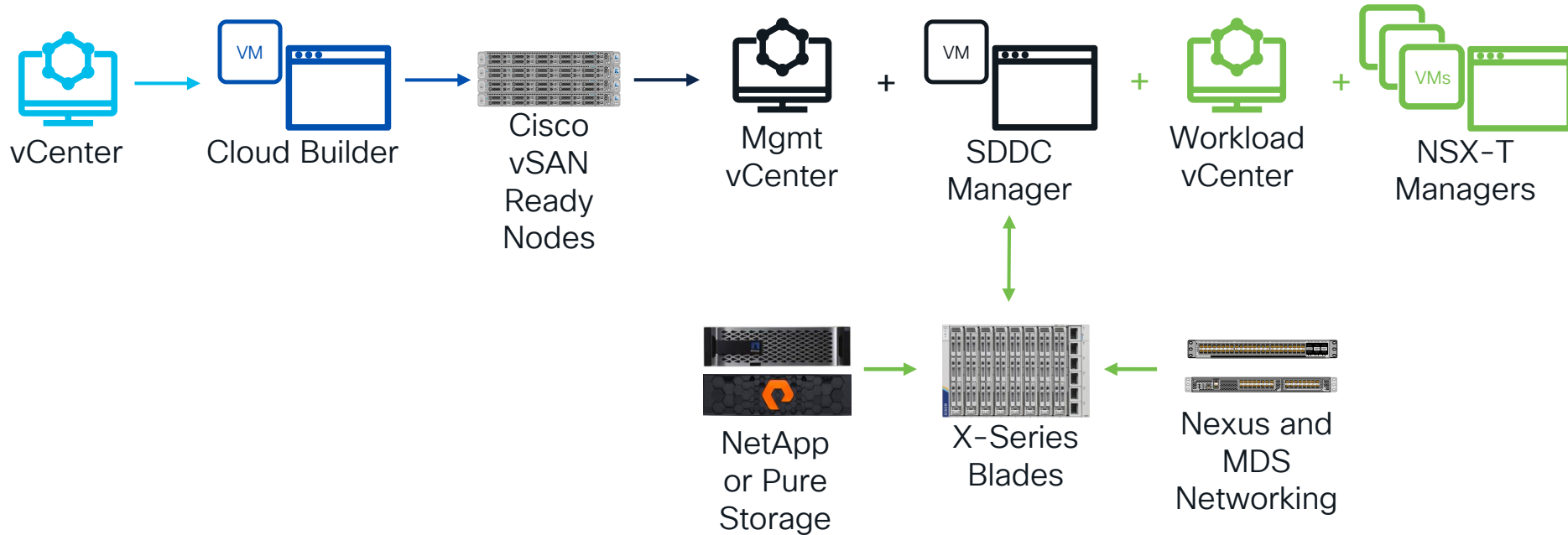


Integrating Cisco CI Solutions with VCF

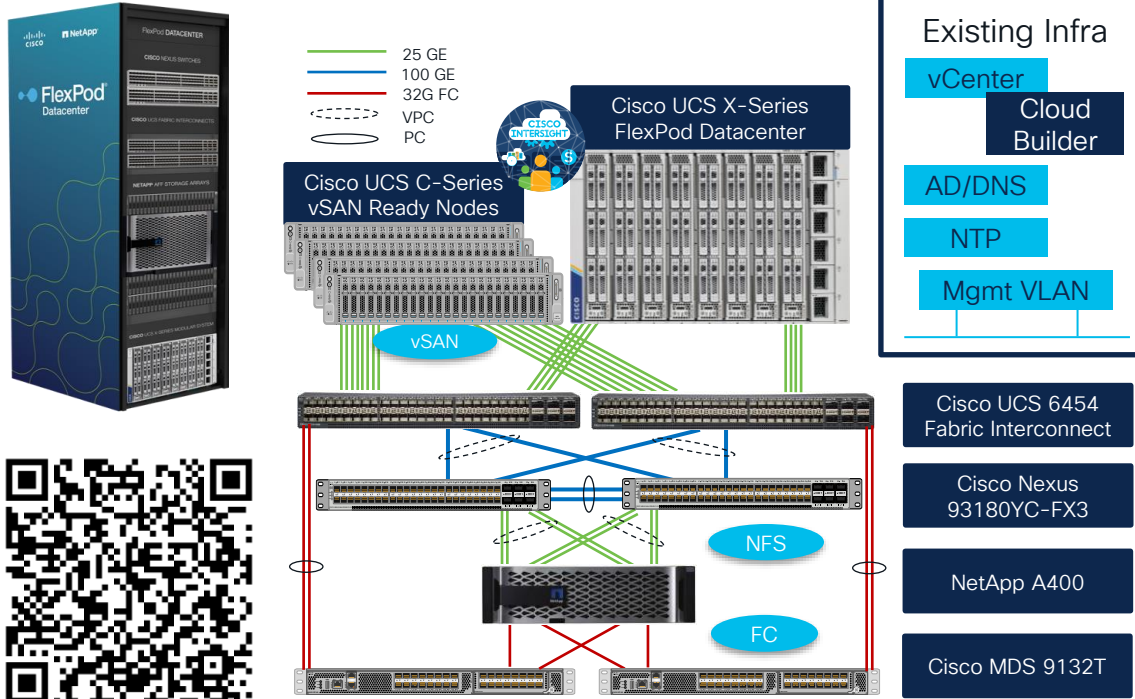
Cisco Converged Infrastructure for VCF



Cisco Converged Infrastructure for VCF



FlexPod VCF Solution



Management domain consists of 4 vSAN nodes and hosts vCenter servers and NSX controllers for all management and workload domains

Workload domains (WD) can easily expand by adding hosts to existing clusters or by adding new clusters to the existing WD

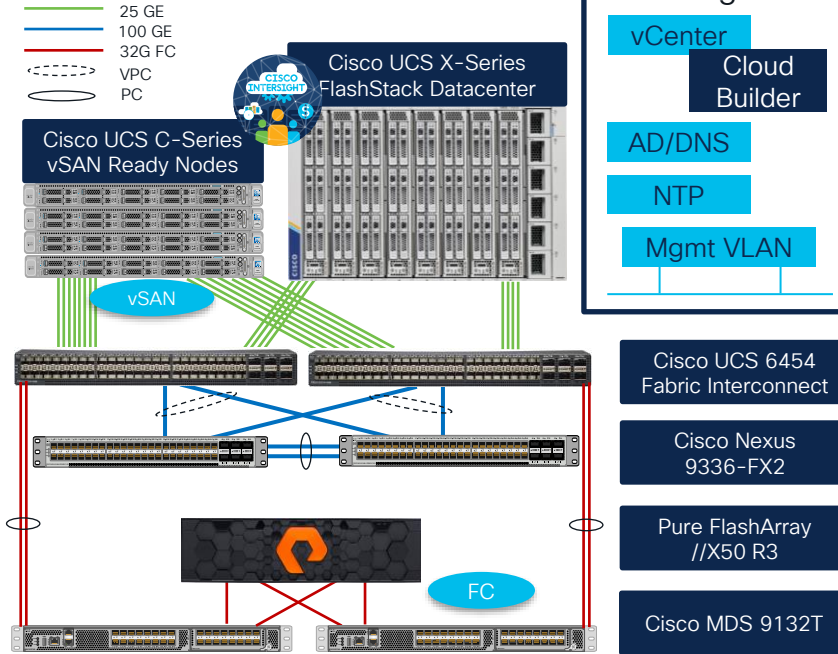
X-Series Blades boot from SAN via Fibre Channel for stateless computing and easy server profile migrations

NFS is used as principal storage option for FlexPod. Additional storage options (FC, NFS, iSCSI or vVol) available post domain-setup



Scan Here to open the Validated Design Document

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Workload domains (WD) can easily expand by adding hosts to existing clusters or by adding new clusters to the existing WD

X-Series Blades boot from SAN via Fibre Channel for stateless computing and easy server profile migrations

FC is used as principal storage option for FlashStack. Additional storage options (FC, NFS, iSCSI or vVol) available post domain-setup

 Scan Here to open the Validated Design Document

Deployment Details and Automation



VMware Cloud Foundation Software Details

- Solutions based on VCF 4.5
- VCF deployments follow strict version requirements for vCenter, ESXi and NSX-T
 - VCenter, SDDC and NSX-T are included in the Cloud Builder OVA
 - ESXi must be version 7.0 Update 3g for use with VCF 4.5
- Cisco does not distribute a vendor-specific ISO for ESXi 7.0 U3g, so a custom installation ISO must be built using vCenter Image Builder
- Instructions are included in the FlashStack for VCF CVD document
- Create DNS records and ensure NTP synchronization

VMware Cloud Foundation Storage Requirements

- Management Domain hosts boot from local disks
- Management Domain can only use vSAN as principal storage
 - NFS can be used for supplemental secondary storage
- Workload Domain hosts boot from FC (SCSI) SAN
 - Cannot boot from iSCSI due to commissioning errors from multiple standard vSwitches
- Workload Domains can use FC (SCSI), NFS, vSAN or vVol as principal storage
 - FC (SCSI), NFS, iSCSI and vVol can be used for secondary storage
 - NVMe protocol not supported at this time

Cisco Intersight Automation



GitHub

ANSIBLE

```
TASK [create_server_profile_template : Get IMC Access Policy Details] ***
ok: [localhost]

TASK [create_server_profile_template : Get Power Policy Details] *****
ok: [localhost]

TASK [create_server_profile_template : Get IPMI over LAN Policy Details]
ok: [localhost]

TASK [create_server_profile_template : Get Local User Policy Details] ***
ok: [localhost]

TASK [create_server_profile_template : Get KVM Policy Details] *****
ok: [localhost]

TASK [create_server_profile_template : Get Virtual Media Policy Details]
ok: [localhost]

TASK [create_server_profile_template : Get LAN Connectivity Policy Detail
ok: [localhost]

TASK [create_server_profile_template : Get SAN Connectivity Policy Detail
ok: [localhost]

TASK [create_server_profile_template : include_tasks] *****
included: /Users/beveritt/Documents/CVD/FlashStack vCF Workload/Ansible/C

TASK [create_server_profile_template : Configure Server Profile Template
changed: [localhost]

PLAY RECAP *****
localhost : ok=16  changed=1  unreachable=0  failed=0
```

Physically connect the hardware and configure Cisco Fabric Interconnects in Intersight Managed Mode (IMM)

Claim the Cisco UCS Domain in Cisco Intersight

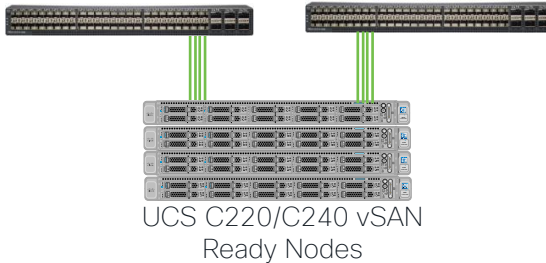
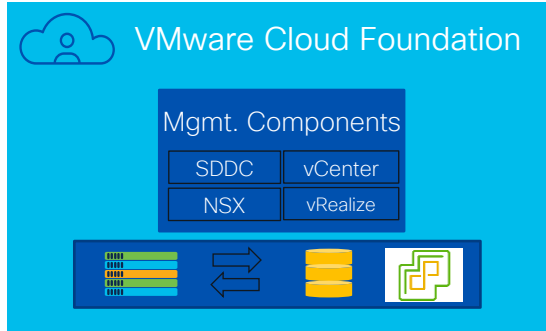
Create Cisco Intersight API keys for security access to run the provided Ansible playbooks

Fill in the variable values for the playbooks and run them, creating all the pools, policies and profile templates

Instantiate profiles from the templates for the management and workload hosts, and deploy them

Additional playbooks available for configuring ESXi post-installation required settings

VCF Management Domain Setup



Create customized ESXi installation ISO file with current supported version Cisco nenic and nfnic drivers

Install ESXi on the management hosts and setup base management parameters (mgmt. IP, DNS, NTP)

Deploy Cloud Builder VM

Fill in the deployment parameters workbook to provide names, addresses and licenses

Start VCF management domain cluster deployment

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VCF Management Domain Deployment

vm Cloud Builder™

?

admin

VMware Cloud Foundation

Cloud Builder will deploy your SDDC.

✓

✓

✓

✓

○

Select PlatformReview PrerequisitesPrepare ConfigurationValidate ConfigurationDeploy Cloud Foundation

✓ Deployment of VMware Cloud Foundation is successful.

DOWNLOADPRINT

SDDC Bringup finished at 3/9/23, 8:01 PM. 0 tasks in progress

Search TasksStatus

Tasks	Start Time	End Time	Status
✓ Validate SSH/SSL Thumbprints			✓ Success
Generate Security Thumbprints Input Data	6:40:02 PM	6:40:02 PM	✓ Success
Validate Security Thumbprints	6:40:02 PM	6:40:02 PM	✓ Success
✓ Add Certificates in Trust-Store			✓ Success
Generate input for Trust Certificates	6:40:03 PM	6:40:03 PM	✓ Success
Trust Certificates	6:40:04 PM	6:40:04 PM	✓ Success
✓ Import SSH Keys			✓ Success
Generate input for Import SSH Keys	6:40:05 PM	6:40:08 PM	✓ Success

BACKRETRYFINISH

SDDC Manager Dashboard

The screenshot displays the SDDC Manager Dashboard interface. The top navigation bar includes the VMware Cloud Foundation logo, a home icon, a help icon, and the user email administrator@vsphere.local. The left sidebar contains a menu with options: Dashboard, Solutions, Inventory, Workload Domains, Hosts, Lifecycle Management, Administration, Network Settings, Storage Settings, Licensing, Single Sign On, Proxy Settings, Online Depot, Composable Infrastructure, vRealize Suite, Backup, and VMware CEIP. The main content area shows the 'BACK TO WORKLOAD DOMAINS' link and the 'RTP-AA01' workload domain. Below this, the 'MANAGEMENT' section indicates the domain is 'ACTIVE' and the version is '4.5.0.0'. The 'Hosts' tab is selected, showing a table of hosts with columns for FQDN, Host IP, Network Pool, Configuration Status, Cluster, CPU Usage, Memory Usage, Storage Type, and Data Store Type. The table lists four hosts, all with 'Active' status and 'VCF-Cluster' as the cluster. The bottom right of the table indicates 'Hosts 1 - 4 of 4'.

vmw Cloud Foundation

administrator@vsphere.local

BACK TO WORKLOAD DOMAINS

RTP-AA01 ACTIONS

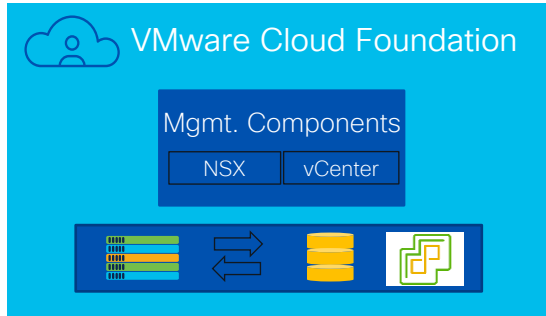
MANAGEMENT ACTIVE Version : 4.5.0.0

Summary Services Update/Patches Update History Hosts Clusters Edge Clusters Certificates

FQDN	Host IP	Network Pool	Configuration Status	Cluster	CPU Usage	Memory Usage	Storage Type	Data Store Type
vcf-esxi-01.vcf.local	10.101.1.81	np01	Active	VCF-Cluster	4%	25%	Hybrid	VSAN
vcf-esxi-02.vcf.local	10.101.1.82	np01	Active	VCF-Cluster	5%	26%	Hybrid	VSAN
vcf-esxi-03.vcf.local	10.101.1.83	np01	Active	VCF-Cluster	6%	21%	Hybrid	VSAN
vcf-esxi-04.vcf.local	10.101.1.84	np01	Active	VCF-Cluster	3%	14%	Hybrid	VSAN

Hosts 1 - 4 of 4

VCF Workload Domain Setup



or



Configure boot LUNs, principal storage volumes, NFS, FC zoning and VMFS datastores

Install ESXi on the workload hosts and setup base management parameters (mgmt. IP, DNS, NTP)

Run additional Ansible playbook to perform post-install configuration steps required on Workload domain hosts

Commission VI workload domain ESXi hosts in SDDC

Create a JSON parameter file for creating multiple (two) VDSs and the appropriate storage config

Use VCF API to deploy the workload domain

Commission New Hosts

The screenshot displays the VMware Cloud Foundation (VCF) interface. The top navigation bar includes the VMware logo, 'Cloud Foundation', a home icon, a help icon, and the user 'administrator@vsphere.local'. A notification banner states 'Successfully updated depot user credentials'. The left sidebar contains navigation links: Dashboard, Solutions, Inventory, Workload Domains, Hosts, and Lifecycle Management. The main content area is titled 'Hosts' and features a 'Capacity Utilization across Hosts' section with three progress bars for CPU (315.2 GHz Total, 10.54 GHz Used, 304.66 GHz Free), Memory (149 TB Total, 0.22 TB Used, 127 TB Free), and Hosts (4 Total, 4 Used, 0 Unallocated). A 'COMMISSION HOSTS' button is highlighted with a hand cursor. Below this, a table titled 'ALL HOSTS' shows the host inventory. The table has columns for FQDN, Host IP, Network Pool, Configuration Status, Host State, and Cluster. Three hosts are listed with 'Unassigned' status and are highlighted with a red border. Below the table, a 'Lifecycle Management' sidebar is visible with options like Release Versions, Bundle Management, Image Management, Administration, Network Settings, Storage Settings, Licensing, Users, Repository Settings, Composable Infrastructure, vRealize Suite, and Security.

Workload Domain hosts are commissioned using VMware SDDC Manager.

FQDN	Host IP	Network Pool	Configuration Status	Host State	Cluster
aa01-esxi-01.vcf.local	10.101.1.101	AA01-NP	Active	Unassigned	-
aa01-esxi-02.vcf.local	10.101.1.102	AA01-NP	Active	Unassigned	-
aa01-esxi-03.vcf.local	10.101.1.103	AA01-NP	Active	Unassigned	-
vcf-esxi-01.vcf.local	10.101.1.81	np01	Active	Assigned (RTP-AA01)	VCF-cluster
vcf-esxi-02.vcf.local	10.101.1.82	np01	Active	Assigned (RTP-AA01)	VCF-cluster
vcf-esxi-03.vcf.local	10.101.1.83	np01	Active	Assigned (RTP-AA01)	VCF-cluster
vcf-esxi-04.vcf.local	10.101.1.84	np01	Active	Assigned (RTP-AA01)	VCF-cluster

VCF API for validation and deployment

APIs for managing Domains

> GET	/v1/domains	Get the Domains
> POST	/v1/domains	Create a Domain
> GET	/v1/domains/{id}	
> DELETE	/v1/domains/{id}	
> PATCH	/v1/domains/{id}	
> GET	/v1/domains/{id}/tags	
> POST	/v1/domains/validations	
> GET	/v1/domains/{id}/endpoints	

Multi-VDS configuration is deployed using VMware Cloud Foundation API. A JSON file is created with appropriate network parameters and definitions and pushed to VMware Cloud Foundation API

POST /v1/domains/validations

Validate the input spec for domains operations

Description

No description

Response Types

Try it out

Parameter	Value	Type	Description/Data Type
domainCreationSpec (required)		Body	Domain Creation Spec DomainCreationSpec{ ... }

```
1 {
2   "domainName": "AA01-WD",
3   "vcenterSpec": {
4     "name": "aa01-vc",
5     "networkDetailsSpec": {
6       "ipAddress": "10.101.1.100",
7       "dnsName": "aa01-vc.vcf.local",
8       "gateway": "10.101.1.254",
9       "subnetMask": "255.255.255.0"
10    },
11    "rootPassword": "12345678",
12    "datacenterName": "AA01-WD-DC",
13    "vmSize": "small"
14  },
15  "computeSpec": {
16    "clusterSpecs": [
17      {
18        "name": "AA01-WD-Cluster",
19        "hostSpecs": [
20          {
21            ...

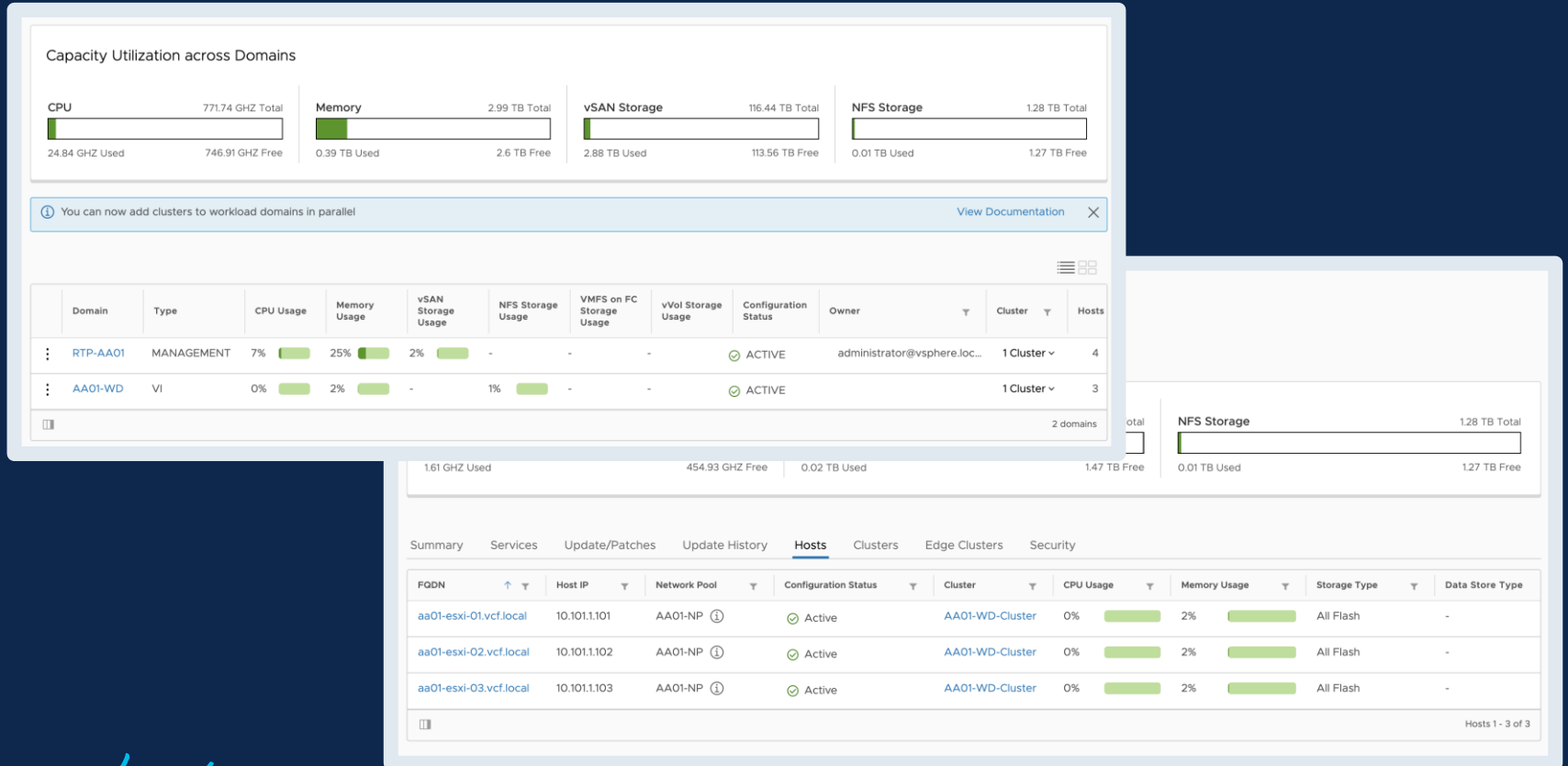
```

EXECUTE

COPY JSON

DOWNLOAD

SDDC Manager – VI workload domain



Day 2+ Activities

- Management Integrations
 - Intersight Assist Appliance
 - Claim Nexus, MDS, storage and vCenter in Intersight
 - DCNM/DCNM-SAN
 - NetApp and Pure vSphere plugins
 - NetApp ONTAP Tools
 - NetApp Active IQ
 - Pure1
 - vRealize Suite Lifecycle Manager
 - Workspace ONE Access
- NSX-T Design
 - Overlay network availability
 - Edge Server Cluster Deployments
 - Connections to static or BGP upstream routers
 - Create Application Virtual Networks (AVN) for guests
 - NSX-T Edge config required for VMware Tanzu
- Deploy Workloads
 - Traditional Virtual Servers
 - Virtualized Applications
 - VDI
 - VMware Tanzu
 - RedHat OpenShift

Learn More

- Cisco FlexPod for VCF CVD: https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/UCS_CVDs/flexpod_vcf.html
- Cisco FlashStack for VCF CVD: https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/UCS_CVDs/flashstack_vcf.html
- FlexPod for VCF GitHub repo: <https://github.com/ucs-compute-solutions/IMM-VCF-MgmtDomain>
- FlashStack for VCF GitHub repo: <https://github.com/ucs-compute-solutions/CVD-FlashStack-IMM-VCF>
- Cisco FlexPod: <https://www.cisco.com/c/en/us/solutions/data-center-virtualization/flexpod/index.html>
- Cisco FlashStack: <https://www.cisco.com/c/en/us/solutions/global-partners/purestorage.html>
- VMware Validated Solutions: <https://core.vmware.com/vmware-validated-solutions>

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- Visit the On-Demand Library for more sessions at www.CiscoLive.com/on-demand



The bridge to possible

Thank you

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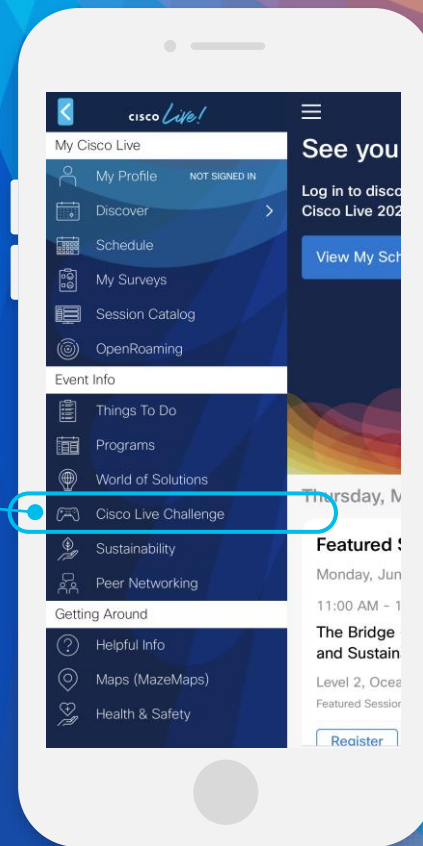
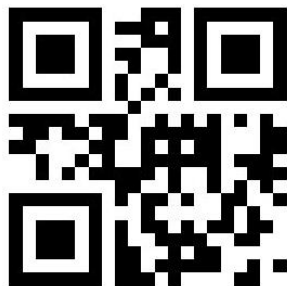
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- 3 Click on View Your Badges at the top.
- 4 Click the + at the bottom of the screen and scan the QR code:



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