

VMware Cloud Foundation 4.5

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VMware Cloud Foundation 4.5

Q1. What's New with VMware Cloud Foundation 4.5?

Here are the new features in Cloud Foundation 4.5:

- **Support for VMware Cloud Foundation+ (VCF+)**

VCF+ is the next cloud-connected SaaS product offering, which builds on vSphere+ and vSAN+. VCF+ delivers cloud connectivity to centralize management and a new consumption based OPEX model to consume VMware Cloud services. For details of features, see Q3 and see Q29 for the different ways to consume VCF.

- **Parallel workflows and scale enhancements**

- Commission and decommission up to 32 nodes at a given time.
- Grow and shrink cluster in parallel.
- Configure compute-only clusters using vSAN HCI Mesh.

- **Lifecycle management and scale enhancements**

- SDDC Manager Proxy workflows and Async Patch Tool enhancements
- Numerous Usability enhancements including user defined tags and guided onboarding.

Q2. What is being delivered in Cloud Foundation 4.5?

VMware Cloud Foundation 4.5 includes the following components:

- VMware SDDC Manager 4.5
- ESXi 7.0 Update 3g
- vCenter Server 7.0 Update 3h
- vSAN 7.0 Update 3g

- vRealize Suite provides numerous enhancements to vRealize log insight 8.8.2, vRealize Operations 8.8.2, and vRealize Automation 8.8.2.
Note: VMware Cloud Foundation 4.5 deploys vRealize Lifecycle Manager (VRSLCM) 8.8.2, then VRSLCM deploys and provides ongoing life cycle management of other vRealize Components.
- NSX-T 3.2.1.2, includes new networking and security features including NSX Federation scaling to 8 locations, updated security and malware detection and enhanced container support with Antrea/NSX policy integration.

*See Pricing and Packaging section for details.

Q3. What are the VMware Cloud Packs?

The VMware Cloud Packs are bundles of VMware's SDDC portfolio of products. These bundles are designed to simplify the product portfolio. The VMware Cloud Packs are offered as either connected or disconnected subscriptions. Perpetual licensing is not available for Cloud Packs.

There are four different VMware Cloud Packs:

- Compute with Advanced Automation
- HCI
- HCI with Advanced Automation
- VMware Cloud Foundation

For more details on the VMware Cloud Packs please refer to the [VMware Cloud Packs page](#)

Q4. What is included in the VMware Cloud Packs: VMware Cloud Foundation?

The VMware Cloud Packs are available in connected and disconnected subscriptions, so for VMware Cloud Packs: VMware Cloud Foundation, it is similar to the VCF Enterprise edition.

For details on the VMware Cloud Foundation Cloud Packs refer to the [VMware Cloud Foundation edition matrix](#)

Q5. Can existing VMware Cloud Foundation perpetual or subscription deployments be mixed with VMware Cloud Foundation+?

Not at this time, VMware Cloud Foundation+ deployments must be in a separate instance. Contact sales for more information.

Q6. What are the new features available with VCF+?

VCF+ is the next cloud-connected SaaS product offering, which builds on vSphere+ and vSAN+. VCF+ delivers cloud connectivity to centralize management and deliver the following features:

- Full stack HCI enhanced services to streamline maintenance windows, monitor global inventory and manage security through a central cloud console.
- Access to embedded develop services to transform existing virtual infrastructure into an enterprise -ready Kubernetes platform.
- Transform on-premises infrastructure with cloud integration.
- Keyless licensing entitlements across multiple VMware Cloud Foundation instances.

Q7. Are VMware vSphere+ and vSAN+ available with VMware Cloud Foundation+?

Yes. VMware vSphere+ and vSAN+ are cloud connected, subscription-based versions of vSphere and vSAN and are now available as part of VMware Cloud Foundation+. Refer to the VMware Cloud Foundation Edition Matrix for more information (<https://www.vmware.com/content/dam/digitalmarketing/vmware/en/pdf/products/cloud-foundation/vmw-vcf-4-edition-matrix.pdf>)

Q8. What are the new SaaS services offered with VCF+?

New SaaS services from the cloud will enable customers to manage their VCF deployments through a single pane of across all their VCF instances. We currently have the following SaaS services to simplify the management and

operations of VCF+, displayed in the VMware Cloud portal. They include:

Inventory service:

Provides a high-level global inventory view of any VCF+ and vSphere+ connected instances.

VM User Service:

Allows admins to deploy VMs on to any connected vCenter from the cloud.

Lifecycle service:

Provides notifications for pending VCF upgrades.

Q9. Can VMware Cloud Foundation customers upgrade or add vSphere+ or vSAN+ within a VMware Cloud Foundation deployment?

Yes. The vSphere+ and vSAN+ Cloud Gateway, Cloud Console and Cloud Services are now supported by VMware Cloud Foundation+.

Q10. How can customers procure the VMware Cloud Foundation with Tanzu functionality?

Tanzu Standard Edition is included in VMware Cloud Foundation with Tanzu Standard, Advanced and Enterprise editions. The VMware Cloud Foundation Starter, Standard, Advanced and Enterprise editions do NOT include Tanzu Standard. Refer to the [VMware Cloud Foundation Edition Comparison Page](#) for more details.

Q11. Will existing VMware Cloud Foundation 3.x deployments be able to upgrade to VMware Cloud Foundation 4.5?

Yes, there are several methods to perform these migrations. Customers can engage the VMware Professional Service Organization (PSO) to perform an assessment for a potential in-place migration from VMware Cloud Foundation 3.x+ releases to VMware Cloud Foundation 4.5. Contact your sales and channel teams for guidance on choosing the best method for migrating your environment.

Q12. Does VMware Cloud Foundation 4.5 support automated deployment, patching and updating of vRealize Suite?

VMware Cloud Foundation 4.4 and later releases support automated deployment for vRealize Suite Lifecycle Manager (vRSLCM) and then vRSLCM provides deployment of the underlying vRealize components as well as ongoing life cycle management of the vRealize Suite. VMware provides manual guidance to ensure that the vRealize Suite updates are successful.

Q13. Does VMware Cloud Foundation 4.5 support VMware PKS (TKGi)?

Yes. VMware Cloud Foundation 4.5 will support VMware TKGi (formerly VMware PKS). For more information, see: <https://docs.pivotal.io/tkgi/1-11/vsphere-vcf.html>.

Q14. Does VMware Cloud Foundation support the NVIDIA AI Enterprise (NVAIE) Suite and GPUs?

Yes. VMware Cloud Foundation 4.4 or later supports the NVAIE Suite. This integration with NVAIE allows IT admin teams to deliver and provision GPU resources easily, while allowing data scientists to easily consume and scale GPU resources quickly when they need.

By integrating with the NVAIE, VMware Cloud Foundation supports the NVIDIA Ampere A30 and A100 GPUs.

Q15. Does VMware Cloud Foundation 4.5 support GPU virtualization?

Yes. With the support of the NVIDIA AI Enterprise Suite, NVIDIA Ampere A100 and A30 GPUs can now be configured with VMware Cloud Foundation to support AI/ML workloads. VMware in partnership with NVIDIA has integrated the latest virtual GPU (vGPU) capabilities enabled by vSphere, into VMware Cloud Foundation. VMware Cloud Foundation customers can now extend their software defined private cloud platform to support a flexible and easily scalable AI-ready infrastructure.

Learn more at: [Deploy an AI-ready Enterprise platform on VMware vSphere 7 with VMware Tanzu Kubernetes Grid Service](#)

Q16. What is Multi Instance GPU (MIG) support?

MIG is a new feature available with the NVIDIA Ampere A30 and A100 GPUs and helps maximize utilization of GPU devices and provides dynamic scalability by partitioning GPU devices into multiple smaller GPU instances. This enables right sizing the GPU allocations for optimized utilization of these GPUs and better QOS. MIG is supported on the A30 and A100 GPUs.

General

Q17. Where can I find more information and resources?

You can find additional Cloud Foundation information here:

- *VMware Cloud Foundation Resource Center: <http://vmware.com/go/vcfrc>*
- *Product Page: vmware.com/go/cloudfoundation*
- *Documentation: vmware.com/go/cloudfoundation-docs*
- *Community: vmware.com/go/cloudfoundation-community*
- *Talk to your VMware Partner or VMware Sales team.*

Q18. What is VMware Cloud Foundation?

VMware Cloud Foundation™ provides the simplest path to hybrid cloud through an integrated software platform that is the foundation for both private and public cloud environments. Cloud Foundation provides a complete set of software-defined services for compute, storage, network, and security, along with cloud management capabilities. The result is simple, secure, and agile cloud infrastructure that can be deployed on premises and consumed as a service from public cloud.

Q19. How can I use Cloud Foundation in the public cloud?

Select service providers from the VMware Cloud Provider program offer cloud services powered by VMware Cloud Foundation, including CenturyLink, OVH and Rackspace.

Reach out to the specific service providers for more information.

VMware Cloud on AWS is an on-demand service operated, managed, and sold by VMware. VMware Cloud on AWS is powered by VMware Cloud Foundation.

Additional solutions such as [Azure VMware Solution](#) and [Google Cloud VMware Engine](#) which is built upon a consistent SDDC stack that enables seamless migration with VMware Cloud Foundation.

Note: The following questions and answers focus on Cloud Foundation for on-premises deployment.

Q20. What types of OEM integrated systems are available with Cloud Foundation from OEMs?

Integrated Systems from OEMs can be either:

- *Jointly Engineered Solutions - VMware Cloud Foundation on Dell EMC VxRail*
- *VMware vSAN Ready Nodes*

Q21. What is the unique integration of a jointly engineered solution?

Jointly engineered systems, such as VMware Cloud Foundation on VxRail, provide unique integration with VMware Cloud Foundation components. VxRail integration with VMware Cloud Foundation includes, but is not limited to, lifecycle management of the hardware and software sub-systems using native SDDC Manager orchestrated workflows integrated with VxRail Manager. Note that VxRail does require Dell professional services for installation.

Q22. Can vSAN ReadyNodes be added to Dell EMC VxRail deployments (and vice versa)?

No. It is not possible to deploy vSAN ReadyNodes and VxRail nodes within the same deployment. Refer to the [VCF on VxRail admin guide](#) for more information.

Q23. Does VCF+ work with Dell VxRail?

Yes, VMware Cloud Foundation+ is supported on VxRail through a sales-led ELA (no OEM support yet). Contact your VMware Sales team or partner for more information.

Q24. What VMware Technical Support options are available for VMware Cloud Foundation?

The [VMware Technical Support Matrix](#) lists the following support options for VMware Cloud Foundation:

- *Basic*
- *Production*

You can compare the support options [here](#). We recommend purchasing **Production** support. Or better, enhance your support experience with [VMware Success 360](#). VMware Success 360 is a comprehensive success offering that can guide you through all stages of your VMware Cloud Foundation journey, including:

- *Success Planning provides personalized guidance to help you achieve outcomes faster*
- *Adoption Guidance and Workshops help you with onboarding, adopting, consuming, and optimizing your VMware technology*
- *Digital Learning empowers your team to gain new skills to accelerate your technology value realization*
- *Dedicated and Proactive Support with predictive issue prevention and fast, prescriptive problem resolution to help maximize productivity and uptime*

Q25. How can I purchase Cloud Foundation software?

There are five ways to purchase Cloud Foundation software:

(1) directly from VMware, (2) from VMware channel partners (3) as part of an integrated system from OEM vendors (4) as a subscription service from a public cloud service provider and (5) as a subscription service with VMware Cloud Foundation+ (cloud connected) or VMware Cloud Foundation-Subscription (on-premises subscription)

Q26. Can I install the Cloud Foundation software myself?

Yes. VMware provides documentation for customers to deploy the Cloud Foundation software on their own. It is highly recommended that you work with VMware

Professional Services or your Solution Provider to receive assistance with your deployment. Visit the Documentation page for more information on how to deploy Cloud Foundation.

Q27. What is the difference between SDDC Manager and vRealize Automation?

SDDC Manager and vRealize Automation automate different aspects of building and running private and Hybrid clouds. SDDC Manager automates the installation and lifecycle management of the vSphere, vSAN, NSX, and vRealize Suite components from bring-up and configuration to patching and upgrading, making it simple for the cloud admin to build and maintain the SDDC.

SDDC Manager is used to deploy vRealize Suite Lifecycle Manager (vRSLCM) in Cloud Foundation mode and creates a two-way communication channel between the two products. When deployed in this way, vRSLCM is now VCF aware, and reports back to the SDDC Manager what vRealize products are installed. With the new flexible upgrades capability, vRSLCM enables the selection of the desired version of vRealize suite independent of the VMware Cloud Foundation version.

Q28. Does SDDC Manager replace other existing management tools, such as vCenter Server?

No. SDDC Manager is exclusive to VMware Cloud Foundation and is used to automate the deployment, scale and lifecycle management of a VCF instance. SDDC Manager deploys a vCenter server for each new workload domain. Once the workload domain has been configured through SDDC Manager, administrators can access the vCenter server console directly to manage the virtualized environment for that workload domain.

Pricing and Packaging

Q29. What editions are available for VMware Cloud Foundation?

VMware Cloud Foundation is available with perpetual licensing in the following SKUs: **Starter, Standard, Advanced and Enterprise** editions, with and without vSAN. These editions do not include Tanzu Standard, but Tanzu can be purchased as an add-on.

For more information on each edition and the software components included in each edition please see <https://www.vmware.com/products/cloud-foundation.html#compare>.

Q30. Is the vCenter Server license included with VMware Cloud Foundation licenses?

For VCF perpetual licensing, vCenter is not included and the customer must separately purchase a VMware vCenter Server license for each Management Domain. vCenter Server licenses for Workload Domains are included and do not need to be purchased separately.

For VCF Term subscription (VCF-S) **based on core licensing metrics**, vCenter is included with the VCF term license so it is not required to purchase additional vCenter licenses. Note: The legacy VCF-S term subscription **based on CPU licensing metrics (now EoA)**, required a vCenter license to be purchased for each management domain.

For VCF+ licensing, vCenter is included within the VCF+ license, so it is not required to purchase additional vCenter licenses.

Q31. What editions are available for VMware Cloud Foundation with Tanzu?

The 'VMware Cloud Foundation with Tanzu' **Standard, Advanced** and **Enterprise** editions with perpetual licensing are offered with VMware Tanzu Standard to run and manage Kubernetes across multiple clouds. Note that these are only available via ELA and SPF. Contact your VMware account team for more information.

For more information on each edition, please see <https://www.vmware.com/products/cloud-foundation.html#compare>.

Q32. What capabilities are added when Tanzu Standard is sold with VMware Cloud Foundation?

VMware Tanzu Standard includes a Kubernetes based container management (Tanzu Kubernetes Grid), global policy management (subset of Tanzu Mission Control capabilities) and support for monitoring (via Prometheus and Grafana). This can be added to 'VMware Cloud Foundation' Starter, Standard, Advanced and Enterprise editions. VMware Cloud Foundation with Tanzu includes Tanzu Standard as part of the standard SKUs.

For more information on each edition, please see <https://www.vmware.com/products/cloud-foundation.html#compare>.

VMware Cloud Foundation Subscription Offerings

Q33. What are the different subscription offerings and how do they differ from each other?

VMware Cloud Foundation-Subscription

VMware Cloud Foundation Subscription (VCF-S) is an on-premises (dis-connected) term subscription offer that is available as a standalone VCF-S offer using physical core metrics and term subscription license keys.

VMware Cloud Foundation+

VCF+ is a new cloud connected consumption offering available with VCF 4.5 using cores metrics and new cloud services. While all components of VCF and workloads remain on-premises, VCF+ must be connected through Cloud Gateway to VMware Cloud. Additional SaaS services will be provided from VMware Cloud.

VCF+ components are cloud entitled, metered, and billed. There are no license keys in VCF+. Once customer is onboarded to VCF+, the components are entitled from the cloud and periodically metered and billed.

Q34. What editions of VCF+ are available?

The initial release of VCF+ will be available as VCF+ Enterprise edition. VCF+ Advanced, and VCF+ Standard editions will be available in Q4 FY23.

Q35. What is the minimum VCF release required for VCF-S and VCF+?

For VCF-S, a customer can be on VCF-S 3.X or VCF 4.X. For VCF+, a VCF 3.x customer must first upgrade to VCF 4.5 before transitioning to a subscription or adding new capacity to a new VCF+ instance.

Q36. Can a customer upgrade from VCF perpetual to VCF+?

Yes, as long as the customer is at the end of a SNS term, customers can use the SUP program to exchange perpetual license for subscription licenses. Contact your VMware account team or channel partner for additional information.

Q37. How do the different VMware Cloud Foundation offerings use key-based and keyless licensing?

VMware Cloud Foundation can be consumed and licensed in three different ways using key-based or keyless licensing. VCF Perpetual (VCF-P) and VCF Subscription (VCF-S) instances are deployed using key-based licenses for each SDDC component (ESXi, NSX and vSAN). VCF-P and VCF-S instances are not connected to the VMware Cloud portal.

Deployments of VCF Plus (VCF+) are securely connected and subscribed to the VMware Cloud portal and utilize keyless licensing.

Q38. What does “VCF+ enabled” mean?

When the management domain of a VCF instance is registered, connected and subscribed to the VMware Cloud portal, it is said to be “VCF+ enabled”. VCF+ environments can utilize a variety of Admin, Developer and Hybrid Cloud services.

Q39. What is mixed licensing mode?

Mixed licensing mode was introduced with 4.5.2. Mixed licensing mode allows customer to create workload domains using either KEY-BASED (VCF-Perpetual / VCF-Subscription) or KEYLESS licensing (VCF+) within the same VCF instance. However, all components and clusters of a workload domain MUST be configured using the same licensing type.

Q40. When can mixed licensing mode be used?

Mixed licensing mode can be used in new or upgraded VCF 4.5.2 instances which have been initially deployed using key-based licensing and later enabled for VCF+. Mixed licensing mode is not available for existing VCF+ environments running VCF 4.5.0 or 4.5.1.

Q41. How is mixed licensing mode enabled?

The management domain of a VCF 4.5.2 instance needs to be registered, connected and subscribed to the VMware Cloud portal. Once subscribed, SDDC Manager workflows provide the option to configure a new workload domain using key-based or keyless licenses. When keyless licenses are used, the workload domain is connected to the VMware Cloud portal and can utilize VMware Cloud services.

Q42. Can a customer upgrade vSphere, vSAN, NSX (perpetual) to VCF-S?

Yes, as long as the customer is at the end of a SNS term. Contact your VMware account team or channel partner for additional information.

Q43. Can customers use VMware Tanzu using VMware Cloud Foundation Subscription

Yes, the Tanzu Standard Edition is included in VMware Cloud Foundation Subscription offering.

Q44. Can customers use VMware Tanzu using VMware Cloud Foundation Subscription

Yes, the Tanzu Standard Edition is included in VMware Cloud Foundation Subscription offering.

Q45. Will existing VMware Cloud Foundation customers be able to consume VMware Cloud Foundation Subscription?

Some limitations apply as far as SPP credits. Contact your VMware account team or partner sales.

Q46. What is different between deploying VMware Cloud Foundation in perpetual mode when compared to deploying in Subscription mode for VCF+?

When deploying a new VCF 4.5 instance for VCF+ it is important to use the Deployment Parameters Workbook from the VMware Customer Connect website. This Excel spreadsheet contains a dropdown option to deploy VMware Cloud Foundation which is VCF+ ready.

Q47. What happens if the VCF+ 60-day trial subscription period expires?

For new VCF 4.5 deployments that wish to enable VCF+, customer have 60 days to enable their subscription. If the Subscription trail period expires the customer will need to redeploy VMware Cloud Foundation.

Q48. Is VMware Cloud Foundation a part of the VMCU program?

No. Effective for VMware's FY24, the VMCU program has been re-positioned as a public cloud hyperscaler solution, so the on-prem components (including VCF+) have been removed, but area available via sales led SKUs. Contact your VMware account team or channel partner for more information.

Q49. Where can I go for additional information on Cloud Foundation Pricing and Packaging?

Consult with your VMware Sales Representative, channel partner or qualified OEM partner for pricing.

Technical

Q50. What is VMware SDDC Manager?

SDDC Manager is the centralized management software in Cloud Foundation used to automate the lifecycle of vSphere, vSAN, NSX Data Center and vRealize Suite, from bring-up, to configuration, to infrastructure provisioning to upgrades/patches. (* limitations noted)*

Q51. Can I use the SDDC Manager with existing deployments?

No. To benefit from SDDC Manager's automation capabilities you do a fresh install of the full SDDC software stack.

Q52. What is the Cloud Builder?

Cloud Builder is a Photon OS VM that is delivered as an OVA file and includes a virtual imaging appliance (VIA). It contains all code and product bits to automate the deployment of the full SDDC stack for the management domain for your VMware Cloud Foundation instance. The VM can be deployed on any physical device that has

connectivity with the ESXi hosts, including laptops and external hosts. Follow the Cloud Builder UI on the VM to deploy the SDDC stack. Input parameters are passed in via a deployment parameters file import.

Q53. Is Multi-Instance Management obsolete?

Multi-instance Management capability was deprecated beginning with the VCF 4.4 release.

Hardware

Q54. What are the physical server requirements?

VMware Cloud Foundation is supported on vSphere-compatible server hardware which meets the minimum requirements for VMware Cloud Foundation and the desired workloads. For Workload Domains using vSAN, refer to the vSAN Compatibility Guide and the VMware Cloud Foundation product documentation for details.

Q55. What switching hardware is supported?

You can use those Enterprise-grade network switches that meet the requirements of vSAN, and which are capable of meeting the scale demands of a highly connected set of vSAN hosts.

Q56. How does Cloud Foundation leverage Composable Infrastructure?

Composable Infrastructure allows building physical servers on the fly using an API. Cloud Foundation has a composability plug-in which uses the "RedFish API" to perform this integration. This API communicates with the composable hardware manager to request physical infrastructure on demand.

Q57. Which Composable Infrastructure systems are supported?

VMware Cloud Foundation supports Dell MX and HPE Synergy as composable infrastructure systems.

Q58. How does VMware Cloud Foundation integrate with composable systems?

Composable systems, such as Dell MX and HPE Synergy integrate with Cloud Foundation through the Redfish API that enables the ability to compose and decompose

hardware resources under control of VMware Cloud Foundation.

Q59. Who supports Cloud Foundation software and hardware?

When purchasing an OEM Solution, the OEM partner will be the single point of contact for support of both hardware and software. When Cloud Foundation software is purchased from VMware, the support model will follow the standard practice of VMware products with VMware Technical Support delivering support for the Cloud Foundation software.

Workload Domains

Q60. What is a workload domain?

Workload Domains are a logical abstraction of private Cloud capacity that is provisioned automatically by SDDC Manager and administered and patched independently. Workload Domains provide a unit of consumption at the SDDC level by presenting an integrated selection of compute, storage, and network resources for business workloads to run in.

Q61. Why would a user create another workload domain?

In order to scale deployments, assign unique characteristics and maintain workload isolation, it is a best practice to create additional workload domains for new workloads.

Q62. What is a management domain?

The management domain is a special purpose workload domain that is used to host the infrastructure components needed to instantiate, manage, and monitor the Cloud Foundation infrastructure. The management domain is automatically created using the Cloud Builder appliance when it is initially configured.

Q63. How many nodes are required for the management domain?

The management domain leverages vSAN for storage and requires a minimum of 4 nodes.

Q64. How many vCenter Server instances can be deployed in a workload domain?

Each workload domain has one dedicated vCenter Server instance. (Note: Only one vCenter Server license is needed per Cloud Foundation instance or 15 workload domains)

Q65. Can a vCenter Server configured as part of a workload domain be used to manually configure a cluster of hosts outside of VCF?

No, this is not a support configuration. SDDC Manager should be used to commission new hosts into the VCF inventory. Following this, SDDC manager is then used to add a cluster into a new or existing workload domain.

Q66. What is the minimum number of vSphere hosts that can be in a Virtual Infrastructure Workload Domain?

When vSAN is used workload domains require a minimum of three hosts [four is recommended] and when supplemental storage options such as NFS, vVOLS or VNFS on FC are used, clusters of two nodes can be configured.

Q67. Can I extend/delete a workload domain after it has been created?

Yes, Cloud Foundation provides a fully automated process for creating, extending, and deleting workload domains using SDDC Manager. If supplemental storage has been added to the workload domain, manual processes may be required to provision or un-provision this storage accordingly.

Q68. Can I reduce the size of a workload domain?

Yes, Cloud Foundation allows removing hosts and clusters from workload domains.

Storage

Q69. What is the difference between Principal storage and Supplemental storage within VMware Cloud Foundation?

Principal storage is selected when creating a management domain, workload domain, or when creating a new cluster within a workload domain. Supplemental storage may be added to management or workload domain clusters after their creation. Principal

storage is required for every cluster. Supplemental storage can be used for additional storage options. Both principal and supplemental storage can be used for primary workloads/use-cases.

Q70. Can I change the principal storage selection after creating a workload domain cluster?

No, you must create a new cluster within the workload domain or a new workload domain to change the principal storage selection. vMotion can be used to move the VMs to the newly created cluster. Supplemental storage can be manually added or removed without re-creating the cluster.

Q71. Is vSAN required with Cloud Foundation?

vSAN is required for the Cloud Foundation management domain principal storage. It is possible to add supported storage options as supplemental storage for the management domain (see Q51). The workload domains may use vSAN or a supported storage option for principal storage, with a variety of additional storage options available as supplemental storage (see Q51).

Q72. Which principal storage options are supported with VMware Cloud Foundation?

VMware Cloud Foundation can consume and is validated against vSAN, vVols, NFS v3, and VMFS on FC. vSAN is the only principal storage option for the management domain.

NVMe-oF and iSCSI are not currently supported as principal storage for Workload Domains.

VMware recommends using vSAN as the principal storage for all workload domains to leverage the benefits of managing and maintaining a full software defined stack. vSAN is also updated and patched by SDDC Manager. Updating and patching non-vSAN storage is a manual task and falls outside of the lifecycle management offered by SDDC Manager. To ensure supportability, the storage system will need to be validated on the vSphere SAN/NAS Compatibility Guide: <http://vmw.re/storagevcg>.

Q73. Which supplemental storage options are supported with VMware Cloud Foundation?

VMware Cloud Foundation supports the use of NFS (v3, or v4.1), VMFS on FC, iSCSI, NVMe-oF, and vVols as

supplemental storage. Supplemental storage is not integrated to or shown within SDDC Manager.

Q74. Can I use any server to create a workload domain when utilizing non-vSAN storage?

Yes, any vSphere-compatible server can be used for a workload domain cluster not using vSAN. They do not need to be vSAN ReadyNodes in this case.

Q75. Does VMware Cloud Foundation 4.5 support vSAN Stretched Clusters?

vSAN stretched clusters are currently only supported on workload domains using vLCM Baselines (formally known as vSphere Upgrade Manager (VUM)) vs. vLCM Images (formally known as vSphere Lifecycle Manager (vLCM)).

Note: In VCF 4.2 vSphere Update Manager was rebranded as vSphere Lifecycle Manager Baselines in the SDDC Manager UI.

Metro cluster/stretch solutions on external storage are supported for both principal and supplemental storage within Workload Domains. Please consult with your external storage vendor for guidance on how to implement metro cluster/stretch cluster in VMware Cloud Foundation.

Q76. Is stretched clustering supported for a workload domain configured for Kubernetes?

No. vSAN Stretched Clustering for workload domains that are configured for Kubernetes Workload Management is currently not supported.

Q77. What is VMware HCI Mesh?

VMware HCI Mesh is vSAN's all new feature that provides for "Disaggregated HCI" or DHCI exclusively through software. HCI Mesh allows an administrator to easily define a relationship between two vSAN clusters, and borrow capacity from another cluster, improving the agility and efficiency in an environment. This disaggregation allows the administrator to separate compute from storage. HCI Mesh uses vSAN's native protocols for optimal efficiency and interoperability between clusters. Complimenting the inherent capability within vSAN to treat storage as an exclusive resource of the cluster, HCI Mesh delivers the flexibility in resource

provisioning that many of our customers have been asking for.

Q78. Which vSAN features are not supported by VMware Cloud Foundation 4.5?

- HCI Mesh support for remote or stretched clusters – Not Supported
- 2-node vSAN clusters in Remote Office Branch Office (ROBO) scenarios. – Not Supported
- Storage DRS – Not Supported
- Multiple pNIC (physical NIC) with external storage and vVols – Not Supported
- vSAN Direct – Not Supported
- L3 support for external storage including vVols – Not Supported

Networking

Q79. Can I connect the NSX-T Manager in Cloud Foundation to other non-Cloud Foundation infrastructure?

No. This is not supported. NSX-T is only aware of the corresponding Cloud Foundation Workload Domains

Q80. Does VMware Cloud Foundation support Bare Metal Edge Servers in NSX-T?

Yes. The overwhelming majority of customers deployment use case can be fulfilled with VM form factor edge nodes. Support for Bare Metal Servers configured as NSX-T Edge Nodes is provided for customers specific use cases which cannot be supported on an VM form factor edge node.

Q81. Does VCF support Bare Metal Servers (i.e., Windows or Linux servers) or KVM as NSX-T transport nodes?

No, VCF does not support hosts which are not managed by SDDC Manager to be part of the NSX-T installation. Today, SDDC manager does not support KVM or other NSX-T bare metal servers as transport nodes.

Q82. What is NSX-T Federation?

NSX-T Federation capabilities provide a cloud-like operating model for network administrators by simplifying the consumption of networking and security constructs. This includes centralized management, consistent networking and policy configuration with enforcement and synchronized operational state across large scale federated NSX-T deployments.

Q83. What value does NSX-T Federation provide?

With NSX-T Federation, VCF customers can leverage stretched networks and unified security policies that span multi-region VCF deployments providing workload mobility and simplifying disaster recovery.

Q84. How does NSX-T Federation work in VMware Cloud Foundation 4.5?

VCF customers can now leverage NSX-T Federation capabilities to federate and manage multiple NSX-T domains through a single pane of glass, using Global Manager (GM). GM provides a graphical user interface and an intent-based REST API endpoint. Through the GM, you can configure consistent security policies across multiple locations and stretched networking objects: Tier0 and Tier1 gateways.

Q85. For which use cases is NSX-T Federation support in VMware Cloud Foundation targeted?

NSX-T Federation can support a variety of use cases based on business demands and preferred architectures. NSX-T is well-suited for hybrid cloud connectivity, workload mobility, and disaster recovery across cloud environments.

Q86. Is NSX-T Federation automatically implemented by SDDC Manager?

NSX-T Federation in 4.5 is implemented and supported through manual guidance, including architecture and design documentation, on the VMware Docs site [here](#) ([link](#)).

Q87. Are there limitations with NSX-T Federation in VMware Cloud Foundation 4.5?

SDDC Manager is not integrated with NSX-T Global Manager in this release. As such, SDDC Manager

functions (like password rotation, certificate replacement, and LCM) do not interact with NSX-T Global Manager. Further, vRealize Operations cannot collect data from the Global Managers, and vRealize Automation cannot provision workloads with Global Managers.

Q88. Are there any limitations with NSX-T Federation working with 2nd/3rd party products?

NSX-T Federation moves the management plane from Local Manager to Global Manager. Any products that integrate with NSX-T or consume NSX-T APIs should evaluate their compatibility with NSX-T Federation

Q89. Once I upgrade to VMware Cloud Foundation 4.2 or later, can my existing VCF deployment adopt NSX-T Federation?

NSX-T Federation in VCF 4.2 or later releases is targeted for greenfield (pre-production) deployments only. Please raise a ticket with GSS and your account team to evaluate if your brownfield VCF deployment (production) is suitable to adopt NSX-T Federation.

Q90. Is NSX-T Federation supported between VCF and non-VCF deployments?

No. NSX-T Federation in VCF 4.5 is targeted between VCF deployments only.

Q91. Is NSX-T Federation supported between VCF Ready Node and VCF on VxRail deployments?

Yes, with some exceptions noted below:

- *NSX-T Federation for vSAN Ready Node (vSRN) and VxRail is supported on VCF 4.3 greenfield only. There is no process available for brownfield environments.*
- *VCF deployments on both environments need to have Application Virtual Networks (AVNs) deployed so the NSX-T edges are deployed and configured.*
- *Designating which site is primary is up to the customer, there is no VCF preference.*

Q92. What are NSX Edge clusters and when should they be used?

NSX Edge clusters in VMware Cloud Foundation comprise of a pair of NSX Edge transport nodes (VMs) that can be deployed at a per workload domain level or a per cluster level. NSX Edge clusters provide ingress and egress access as well as other networking services such as routing, firewalling, load balancing and NAT. Edge clusters are recommended for all workload domains. Edge clusters are required prior to deploying vSphere with Tanzu and when deploying the vRealize suite.

Q93. Do I need to federate the Management Domain in order to federate the VI Workload domain?

No. You can choose to federate VI Workload domains without federating the management domain. If you need availability of the management components such as vRA, vROps deployed in the management domain, then you need to federate the management domain.

Q94. Can I federate between the Management domain and VI Workload domain?

No. This is not supported.

Q95. Can a customer connect externally configured vCenter servers or instances to a VCF deployment?

No, connecting externally configured vCenter servers or NSX-T instances to VCF is not supported. VCF provides automated capabilities to scale and lifecycle manage the platform using SDDC workflows or the API.

Q96. Does VCF 4.5 require the configuration of Application Virtual Networks (AVNs) at Bring-up?

No. Cloud Foundation no longer provides an option to deploy AVN at Bring-up with VCF 4.3 and later releases. This results in a faster and seamless initial deployment. For customers who are looking to deploy vRealize Suite components through vRSLCM, AVN is configured through SDDC Manager.

VCF Remote Clusters

Q97. Is there a hard requirement of 3-4 nodes per VCF Remote Cluster site?

If vSAN is used, VCF only supports a minimum of 3 nodes and a maximum of 4 nodes per VCF Remote Cluster. If NFS, vVOLs or Fiber Channel is used as principal storage, then VCF supports a minimum of 2 and a maximum of 4 nodes.

Q98. What is the license requirement for VCF Remote Clusters?

VCF standard pricing applies to VCF Remote Clusters, no special pricing or licensing is required.

VMware Cloud Foundation ROBO licensing is available, allowing up to 25 VMs in remote office/branch office locations. Contact your VMware Sales representative or Partner for additional information.

Q99. Are there any hardware specific requirements for VCF Remote Clusters?

No, any vSAN Ready Nodes or Dell VX Rail system will support VCF Remote Clusters.

Q100. Why is the requirement to have two active WAN links from the remote sites to the central site?

VCF Remote Cluster is designed to optimize for cost when deploying a VCF workload domain in a remote site. The SDDC Manager & NSX Manager is in the central, so if the WAN link between the central site and remote sites fails when a node in the remote site reboots, resulting in a dual failure state, the VMs running on the node at the remote site will not be operational until the WAN link becomes active. This can cause application instability in the remote sites. To avoid, it is strongly recommended to use dual active WAN links across sites.

Q101. What is VMware Cloud Foundation ROBO?

VCF ROBO is a cost-effective licensing option for a VCF remote cluster as it is licensed on a 25-VM pack. VCF ROBO includes vSphere, vSAN, NSX, and SDDC Manager, all licensed on a 25-VM pack basis.

Q102. Does VCF+ support the configuration of a Remote Cluster?

No. Remote clusters and remote workload domains are not supported when VCF+ is enabled. When VCF+ is enabled in a VCF 4.5 deployment, each workload domain is subscribed and connected to the VMware Cloud Console.

Patching and Upgrades

Q103. What software components can be patched/upgraded using SDDC Manager?

VMware vSphere, vSAN, NSX, vCenter Server and SDDC Manager components are patched and upgraded using SDDC Manager or the API. SDDC Manager is used to manage the inventory and lifecycle management of a VMware Cloud Foundation instance and should be used to operate and maintain the environment.

Q104. How am I notified when patches/upgrades become available?

Users are automatically notified from the SDDC Manager user interface when patches and upgrades become available. From VCF 4.5, the vRealize Suite, components are updated using vRealize Suite Lifecycle Manager.

Q105. Can I schedule when patches and upgrades are applied?

Yes, SDDC Manager allows patches and upgrades to be scheduled to coincide with regular maintenance windows.

Q106. Can I patch/upgrade workload domains independent of each other?

Yes, patches and upgrades are scheduled on a per-workload domain basis allowing updates to be “rolled-in” over time.

With VMware Cloud Foundation 3.9, you can apply cluster level upgrades for ESXi.

With VMware Cloud Foundation 3.10, you can apply cluster level upgrades and parallel cluster upgrades for both ESXi and NSX-T.

With VMware Cloud Foundation 4.1 and later releases, you can apply cluster level upgrades and parallel cluster upgrades for ESXi and NSX-T on VUM enabled domains. This feature is not available for NSX-T on vLCM enabled domains yet. Customers are given an option to choose vSphere Update Manager (VUM) or vSphere Lifecycle Manager (vLCM) when creating a workload domain.

Q107. Can an existing VCF environment be manually upgraded and patched?

Performing manual deployment, scaling operations and lifecycle management of VMware Cloud Foundation outside of SDDC Manager or the API may break the integration of SDDC components of the platform and is not supported.

Q108. How can critical patches be applied to a VCF component?

The Async Patch Tool (AP Tool) can be used to apply critical patches to VCF components between VCF releases. The AP Tool is supported for VCF 4.2.1 and above.

Configuration Minimums and Maximums

Q109. What is the minimum size of a Cloud Foundation environment with a consolidated deployment?

You need at least 4 servers to run Cloud Foundation in a consolidated architecture. Workload VMs are placed in dedicated resource pools in the Management Domain.

Q110. What is the minimum size of a Cloud Foundation environment to use VI workload domains?

With a standard architecture, you need at least 7 servers to run Cloud Foundation with a VI workload domain. When vSAN is being used, we can create workload domains of 2 servers when using NFS, Fiber Channel or vVOLS.

What is the maximum size of a Cloud Foundation environment? Cloud Foundation inherits configuration maximums from the component products. For information on sizing VMware Cloud Foundation refer to <https://configmax.vmware.com>

Q111. What is the maximum size of a workload domain?

Each workload domain has its own vCenter Server and it can have as many hosts and clusters as a single vCenter Server can handle. Within Cloud Foundation 4.3 and later releases, you may also size the vCenter Server instance during VI WLD creation via the API or change the vCenter size after deployment. vCenter Server limits apply, see <https://configmax.vmware.com> for more information.

Q112. How many workload domains can a Cloud Foundation instance have?

Cloud Foundation always has 1 management domain and up to 14 VI workload domains. Each workload domain can contain multiple ESXi host clusters. This limit is imposed by the max number of vCenter Server instances that can be configured in enhanced linked mode which supports up to 15 vCenter Servers, and each workload domain has its own vCenter Server.

Note that the initial release of VCF+ with VCF 4.5 supports a maximum of 4 workload domains.

Note: the number of workload domains is different while using mixed licensing mode. For the VCF 4.5.2 release, administrators can deploy up to eight (8) domains when using mixed license mode. The management domain must be enabled for VCF+ and subscribed to the VMware Cloud portal. An additional seven (7) workload domains can be configured using key-based or keyless licensing.

See <https://configmax.vmware.com> for more information.

Advanced Security for VMware Cloud Foundation Addon

Q113. What is VMware Advanced Security for Cloud Foundation?

VMware Advanced Security for Cloud Foundation brings together world-class workload protection, intrusion

detection and prevention, advanced load balancing, and web application firewall for public and private clouds based on VMware Cloud Foundation.

Q114. How is VMware Advanced Security for Cloud Foundation sold?

VMware Advanced Security for Cloud Foundation is sold as an add-on to VMware Cloud Foundation. Two bundles are now available: Network and App Security Add-on for Cloud Foundation, and Advanced Security Add-on for Cloud Foundation. What is included with the Network and App Security Add-on for Cloud Foundation?

The Network and App Security Add-on for Cloud Foundation includes VMware NSX® Advanced Threat Prevention (includes VMware NSX® Firewall, VMware NSX® Distributed IDS/IPS and VMware NSX® Intelligence) and VMware NSX® Advanced Load Balancer/WAF

The Advanced Security Add-on for Cloud Foundation includes VMware Carbon Black Cloud Workload, VMware NSX® Advanced Threat Prevention (includes VMware NSX® Firewall, VMware NSX® Distributed IDS/IPS and VMware NSX® Intelligence) and VMware NSX® Advanced Load Balancer/WAF for increased protection for workloads running within a Cloud Foundation environment.

Q115. Can the security bundle be added to previous versions of Cloud Foundation?

The Network and App Security Add-On for Cloud Foundation is available on Cloud Foundation 4.2 and above.

Q116. Will Network and Security Add-On for Cloud Foundation work in a vSphere environment?

Only as part of a VMware Cloud Foundation environment running NSX-T 3.1 or later.

Miscellaneous

Q117. Does SDDC Manager automate the deployment of other management components, such as vRealize Network Insight (vRNI)?

vRNI can be manually deployed and externally integrated with VMware Cloud Foundation

Q118. What logs are sent to the vRealize Log Insight in the Cloud Foundation management cluster?

Cloud Foundation can be configured to send event logs for vSphere, vSAN, NSX, SDDC Manager, vCenter and Horizon into vRealize Log Insight.

Q119. How can SDDC Manager be protected by backup?

In Cloud Foundation 4.3 and later releases, SDDC Manager backup and recovery capabilities have been enhanced, allowing administrators to configure external backup targets as well as scheduled backups.