VMWARE CLOUD FOUNDATION

General FAQ

Cloud Foundation 3.9 – Version 1.0

WHAT'S NEW IN CLOUD FOUNDATION 3.9

Q. What's New in VMware Cloud Foundation 3.9?

A. VMware Cloud Foundation 3.9 provides new level of scale and management, including the ability to support global management and visibility across multiple use cases and scenarios for enterprise wide Private and Hybrid Cloud deployments. These new capabilities are surfaced through a set of features and enhancements that now enable customers to manage large, complex multi-region deployments with Cloud Foundation including:

- VCF multi-instance management of large-scale Cloud Foundation deployments with multiple SDDC Managers from a single pane of glass.
- Adds support for Dell/EMC VxRail layer 3 stretch cluster environments enabling VxRail customers to deploy in multi-rack stretch clusters and parity with vSAN ready nodes.
- VCF 3.9 includes new support for layer 3 networking, allowing customers to scale VCF into multi-rack leaf/spine architectures.
- Supports Dell MX composable infrastructure with integration into VMware Cloud Foundation.
- Supports option for external FC arrays as principal (primary) storage selection within workload domains.

For more information on Cloud Foundation Release 3.9 visit the VMware Cloud Foundation Documentation page

GENERAL

Q. Where can I find more information and resources?

- 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.

Q. What is VMware Cloud Foundation?

A. 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 can deployed on premises and consumed as a service from public cloud.

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

A. 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 Solutions by CloudSimple and Google Cloud VMware Solution by CloudSimple are also powered by VMware Cloud Foundation.

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

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

A. Integrated Systems from OEMs can be either:
   - Jointly Engineered Solutions (VCF/Dell EMC VxRail)
   - **Composable** (VCF/HPE Synergy or VCF/Dell MX)
   - Integrated Systems (Fujitsu PRIMEFLEX, Hitachi Unified Compute Platform UCP-RS and QCT QxStack) All integrated systems are delivered ready to install at the customer site.

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

A. Jointly engineered systems, such as VCF on VxRail, provide unique integration with VCF components that enable a turnkey user experience that leverages and extends existing VxRail HCI integrated system features and operations processes into VCF, including but not limited to, lifecycle management of the hardware and software sub-systems using native SDDC Manager orchestrated

vmware®

workflows that have been seamlessly integrated with VxRail Manager.

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

A. Composable systems, such as Dell MX and HPE Synergy integrate with VCF through the Redfish API that enables the ability compose and decompose hardware resources under control of VMware Cloud Foundation.

Q. Who supports Cloud Foundation software and hardware?

A. 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 GSS delivering support for the Cloud Foundation software.

Q. What are the recommended GSS Support options for Cloud Foundation?

A. The VMware GSS support matrix lists the following support options for VMware Cloud Foundation:

- Basic
- Production
- Business Critical
- Healthcare Critical
- Mission Critical
- U.S. Federal Production

We recommend purchasing at least **Production** support, better **Business Critical** or **Mission Critical** with VMware Cloud Foundation.

Q. How can I purchase Cloud Foundation software?

A. There are four 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 and (4) as a subscription service from a public cloud service provider.

Q. Can I install the Cloud Foundation software myself?

A. 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.

Q. Does Cloud Foundation include cloud management capabilities?

A. Cloud Foundation can deploy the full SDDC, including cloud management software based on the capabilities of VMware vRealize Suite components. SDDC Manager can automatically deploy vRealize Automation, vRealize Operations and vRealize Log Insight as part of the Cloud Foundation standardized architecture. Customers must purchase a Cloud Foundation package that includes cloud management, or purchase vRealize Suite separately to license this functionality.

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

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

On the other hand, vRealize Automation automates the delivery and management of the virtual machines and apps, enabling end users to consume these as services and at scale. vRealize Automation is one of the software components of the Cloud Foundation platform for which SDDC Manager automates the deployment.

Q. Does SDDC Manager replace other existing management tools, such as vCenter Server, vRealize Operations Manager, vRealize Log Insight?

A. No. SDDC Manager complements vCenter Server and vRealize Suite products by delivering new functionality that helps cloud admins build and maintain the SDDC. The cloud admin will continue to use vCenter Server as the primary management interface for the virtualized environment.

PRICING AND PACKAGING

Q. What are the software components in Cloud Foundation?

A. At a minimum, customers purchase Cloud Foundation Basic edition, which includes compute (vSphere ENT+), storage (vSAN ADV), networking (NSX DC PRO), and lifecycle automation (SDDC Manager). Standard, Advanced, Enterprise and Platinum Cloud Foundation editions also include cloud management (vRealize Suite and vRealize Network Insight) in corresponding levels of functionality. HCX is also included within NSX DC ENT+; which is part of VCF ENT and Platinum. Although part of the platform deployed by Cloud Foundation, vCenter Server is sold and licensed separately. *Note: work with your Partner or VMware representative to choose the package that is right for you.*

Q. Is there an extra charge or license fee for the Multi-Instance Management available with VCF 3.9?

A. No, multi-instance management is available as part of the standard Cloud Foundation licensing.

Q. What is the licensing model for Cloud Foundation?

A. Cloud Foundation is sold on a per CPU licensing metric with a perpetual license model. For Horizon-only environments a Cloud Foundation with Horizon package is also available, and it is licensed per concurrent user (CCU) metric.

Q. Can I use existing licenses for components of Cloud Foundation I already own?

A. Yes. Customers who possess unused licenses for individual components (vSphere, vSAN, NSX or vRealize Suite) can use them to complete the licensing of the Cloud Foundation environment and just purchase the missing components.

Q. Can I buy SDDC Manager separately?

A. Yes. In situations where the customer possesses licenses for all other software components, SDDC Manager licenses can be purchased incrementally.

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

A. Customers must provide a separate vCenter Server license for a Cloud Foundation environment. Only one vCenter Server license is needed per Cloud Foundation instance, regardless of the number of workload domains in the environment. *Note: SDDC Manager deploys and configures one vCenter Server instance as part of each workload domain.*

Q. Do I need to renew SnS for all the components of Cloud Foundation?

A. If you require support and updates all underlying components must be properly licensed and have active SnS contracts. However, if a customer should want to use the VMware product licenses differently, they have the option to renew the support contract for the software components they want to continue using.

Q. Is SDDC Manager part of the vCloud Suite?

A. No. SDDC Manager is not part of VMware vCloud Suite. SDDC Manager is available exclusively with and for Cloud Foundation.

TECHNICAL

Q. What is VMware SDDC Manager?

A. SDDC Manager is the centralized management software in Cloud Foundation used to automate the lifecycle of components, from bring-up, to configuration, to infrastructure provisioning to upgrades/patches.

Q. Can I add SDDC Manager on top of existing deployments?

A. No. To benefit from SDDC Manager's automation capabilities you do a fresh install from scratch and then move workloads over.

Q. What is the Cloud Foundation Builder?

A. Cloud Foundation Builder is a Photon OS VM that is delivered as an OVA file. It contains all code and product bits to deploy 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 personal laptops and external hosts. The VM can be re-used for additional bring-ups or can be deleted after use. Follow the bring-up UI on the VM to deploy the SDDC stack. Input parameters are passed in via a file import.

Q. How many hosts are supported in a VCF consolidated architecture deployment?

A. Up to 64 hosts can be supported using a VCF Consolidated deployment (to the limits of vCenter) but depends on usage

Q. Can VCF Multi-instance Management be used in a deployment based upon a consolidated architecture?

A. Yes, Multi-instance Management is supported in both a consolidated and standard architecture. The management cluster within a consolidated architecture is managed using resource pools. A standard architecture can be scaled easily by adding more compute and storage.

Hardware

Q. What are the physical server requirements?

A. Cloud Foundation is supported on vSAN ReadyNode server hardware which meets the minimum requirements regarding memory, disk types and capacity, and network interfaces. See the vSAN Compatibility Guide and the Cloud Foundation product documentation for details.

Q. What switching hardware is supported?

A. 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.

Q. How does Cloud Foundation leverage Composable Infrastructure?

A. 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 do this integration. This API talks to the composable hardware manager to request physical infrastructure on demand.

Q. Which Composable Infrastructure systems are supported?

A. With VMware Cloud Foundation 3.9, VCF supports Dell MX and HPE Synergy as Composable Infrastructure systems.

Workload Domains

Q. What is a workload domain?

A. 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.

Q. What is a management domain?

A. 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.

Q. How many Workload Domains can be created?

A. Up to 15 workload domains can be created (including the management domain). 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.

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

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

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

A. Each workload domain has one dedicated vCenter Server instance. (Pricing and Packaging note: Only one vCenter Server license is needed per Cloud Foundation instance)

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

A. Workload domains leverage vSAN and as such require a minimum of three hosts. In VCF 3.5, we have added support for NFS storage in a workload domain. NFS based workload domains require 3 nodes minimum in this release

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

A. Yes, Cloud Foundation provides a fully automated process for creating, extending, and deleting workload domains using SDDC Manager

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

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

Storage

Q. Is vSAN required with Cloud Foundation?

A. vSAN is the required principal storage for any VCF management domain. It is possible however to deploy

workload domains with external FC or NFS storage as an option for principal storage.

Q. Does VMware Cloud Foundation support external Fibre Channel Storage Arrays as a principal (primary) storage within a VCF Workload Domain?

A. Yes – with VCF 3.9, while vSAN is always the default preferred storage choice within a workload domain, administrators have the option to provision external FC storage systems as the principal (primary) storage system. For management domains, vSAN is the only storage option that may be assigned.

Q. Does Cloud Foundation support all-flash vSAN storage?

A. Yes, Cloud Foundation supports both the Hybrid and All-Flash vSAN configurations. Note that clusters within a multi-cluster workload domain can have both Hybrid and All-Flash vSAN configurations, mixing Hybrid and All-Flash nodes within a single cluster is not supported.

Q. How do I stretch vSAN Clusters?

A. If you would like to use a Stretched Cluster, then the Management Workload Domain needs to be stretched first. Stretched vSAN can be done on a per-cluster basis. The maximum size of a stretched cluster is 15 hosts per availability zone. A vSAN witness must be deployed on a third site for each stretched cluster.

Q. Can I use Network Attached Storage (NAS) with Cloud Foundation?

A. Yes, you can create VI workload domains with external NFS storage. iSCSI storage can be connected manually as supplemental storage to a workload domain.

Q. Which NFS version can I use with VMware Cloud Foundation?

A. VMware Cloud Foundation supports NFS version 3.x.

Q. Can I use any server to create a VI Workload Domain utilizing external NFS storage?

A. Yes, the servers can be any vSphere-compatible rack or blade system. You do not need vSAN ReadyNodes for the VI Workload Domain in this case.

Q. Can I change an NFS Workload Domain to use vSAN later?

A. No, you need to create a new vSAN-based workload

domain and vMotion the VMs over.

Q. Can I use Fibre Channel (FC) SAN with Cloud Foundation?

A. Yes. You can add the FC datastores as supplemental storage to the Virtual Infrastructure (VI) workload domains. The FC storage must be managed independently from the workload domain vCenter instance. Check with your storage vendor for a list of support storage arrays. With VCF Release

Networking

Q. Can I use NSX-T in a VI workload domain?

A. Yes. When you create a workload domain you can chose if it has NSX-V or NSX-T. The same NSX instance will be used for all clusters in same workload domain under the same vCenter Server. If you deploy multiple NSX-T Workload Domains, then only one NSX-T Manager will be deployed for all your NSX-T Workload Domains.

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

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

Q. Can I use Cisco ACI with Cloud Foundation?

A. Yes. ACI can come up to the ESXi server, but there is no ACI into the ESXi host, we do not support ACI VDS.

Cloud Management

Q. vRealize Suite has lifecycle management capabilities of its own. How do SDDC Manager and the vRealize Suite's lifecycle management capabilities work with / complement one another?

A. SDDC Manager calls into the APIs of vRealize Suite Lifecycle Manager to automate the deployment and configuration of vRealize Automation and vRealize Operations. SDDC Manager directly automates the deployment and configuration of all other components of the platform including vSphere, vSAN, NSX and vRealize Log Insight.
SDDC Manager does not patch and upgrade vRealize Suite components. This is handled by using vRealize Suite Lifecycle Manager directly.

vmware®

Q. Is it possible to deploy vRealize Automation and vRealize Operations into a VI Workload Domain instead of using the auto-deployed vRealize Automation and vRealize Operations in the Management Workload Domain?

A. You do not have to use the auto-deployed vRealize Automation and vR Ops in the Management Workload Domain. Instead you can deploy vRealize Automation and vRealize Operations manually in a VI workload domain to consider specific customer SLAs.

Q. Can I use vRealize Suite Life Cycle Manager (vRSLCM) which gets deployed by Cloud Foundation for vRealize components which were not deployed by Cloud Foundation itself?

A. Yes, you can use vRSLCM to manage other components, because there is no dependency on SDDC Manager. Be aware that when you upgrade vRSLCM from SDDC Manager we re-create the vRSLCM from scratch, so all manual configuration will be lost.

Q. Does Cloud Foundation provide LifeCycle Management for vRealize components?

A. Yes, Cloud Foundation supports the automated upgrade of vRealize products through vRealize Suite Lifecycle Manager (vRSLCM) – this includes vRealize Log Insight, vRealize Operations Manager, and vRealize Automation.

Patching and Upgrades

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

A. VMware vSphere, vSAN, NSX, vCenter Server and SDDC Manager components are patched/upgraded. To patch and upgrade the vRealize Suite components use the vRealize Suite Lifecycle Manager which is included in VMware Cloud Foundation.

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

A. Users are automatically notified from the SDDC Manager user interface when patches and upgrades become available.

Q. How often will VMware release software updates?

A. Patches are released as they become available and based on criticality (e.g. a security patch). Upgrades are typically released on a quarterly cadence.

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

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

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

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

Q. How can I automate hardware lifecycle management in a Cloud Foundation environment?

A. Yes, you can automate hardware lifecycle management in a Cloud Foundation environment including firmware updates on Dell/EMC VxRail, Fujitsu vSAN Ready Nodes and with Fujitsu PRIMEFLEX for VMware Cloud Foundation. To do this you leverage the vRealize Orchestrator which comes with VMware Cloud Foundation (pdf with instructions).
To find out if other vendors offer this type of LCM, contact the respective vendor to see if their hardware platform supports this functionality.

Use Cases and Applications

Q. Can I use PKS on Cloud Foundation?

A. Yes, with Cloud Foundation 3.8.1, VMware Cloud Foundation now automates full-stack deployment and operation of end to end PKS workload domains, eliminating manual steps for host configuration, creating logical relationships, managing hypervisors and creating a more secure, virtual network. Previous versions of Cloud Foundation supported PKS, but the installation and provisioning is manual.

Q. Can I run Horizon View virtual desktops on Cloud Foundation?

A. Yes, you can deploy a Horizon View environment in a VI workload domain, where Cloud Foundation automatically deploy a full Horizon 7 environment, complete with unified access gateways, user environment manager and application volumes.

Q. Can I use vSphere Integrated Openstack (VIO) on top of Cloud Foundation?

A. Yes, you can install vSphere Integrated Openstack manually after you created a Workload Domain.

Q. Can I use vSphere Integrated Containers (VIC) on Cloud Foundation?

A. Yes, VIC is a vCenter Server add on which you can install and use in VI workload domains.

Q. Can I use vCloud Director on Cloud Foundation?

Yes, you can deploy vCloud Director in a VI Workload Domain. See this Whitepaper for details.

vmware®

Configuration Minimums And Maximums

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

A. You need at least 4 servers to run Cloud Foundation. In this scenario, workload VMs are placed in a dedicated Resource Pool in the Management Domain. Additional VI workload domains are not available in this small environment.

Q. What is the minimum size of a Cloud Foundation environment with a standard deployment?

A. You need at least 7 servers to run Cloud Foundation. In this scenario, workload VMs are placed in the workload domain

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

A. You need at least 7 servers to run Cloud Foundation with a VI workload domain. 4 servers are used by the management domain, 3 servers is the minimum size of other workload domains.

Q. What is the maximum size of a Cloud Foundation environment?

A. Cloud Foundation inherits configuration maximums from the component products. For information on sizing VMware Cloud Foundation refer to https://configmax.vmware.com

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

A. Cloud Foundation always has 1 management domain and up to 14 VI workload domains. This is because the Cloud Foundation linked vCenter Server environment can have up to 15 vCenter Servers, and each workload domain has its own vCenter Server, see https://configmax.vmware.com

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

A. Each workload domain has its own vCenter Server and it can have as many hosts and clusters as a single vCenter Server can handle. The vCenter Server limits apply, see https://configmax.vmware.com

MISCELLANEOUS

Q. Does SDDC Manager automate the deployment of other management components, such as vRealize Business for Cloud or vRealize Network Insight?

A. These components can be manually deployed and externally integrated with cloud foundation by leveraging the design and implementation guidance that is available as part of the VMware Validated Designs.

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

A. Cloud Foundation sends event logs for vSphere, vSAN, NSX, SDDC Manager, vCenter and Horizon into vRealize Log Insight.

Q. Do I need to pay for vRealize Log Insight for the logs sent in the management cluster?

A. No. Each instance of Cloud Foundation includes the right to use 50 OSI instances of vRealize Log Insight to capture logs from the management domain components only. The edition used is the full vRealize Log Insight, which includes features such as log forwarding and HA for those management domain components. If a customer wants to use vRealize Log Insight functionality for actual workloads, the customer must acquire the appropriate vRealize Log Insight licenses.

vmware®