

# SAP HANA ON VMWARE CLOUD FOUNDATION

## A Brief Introduction to VMware Cloud Foundation

### At a Glance

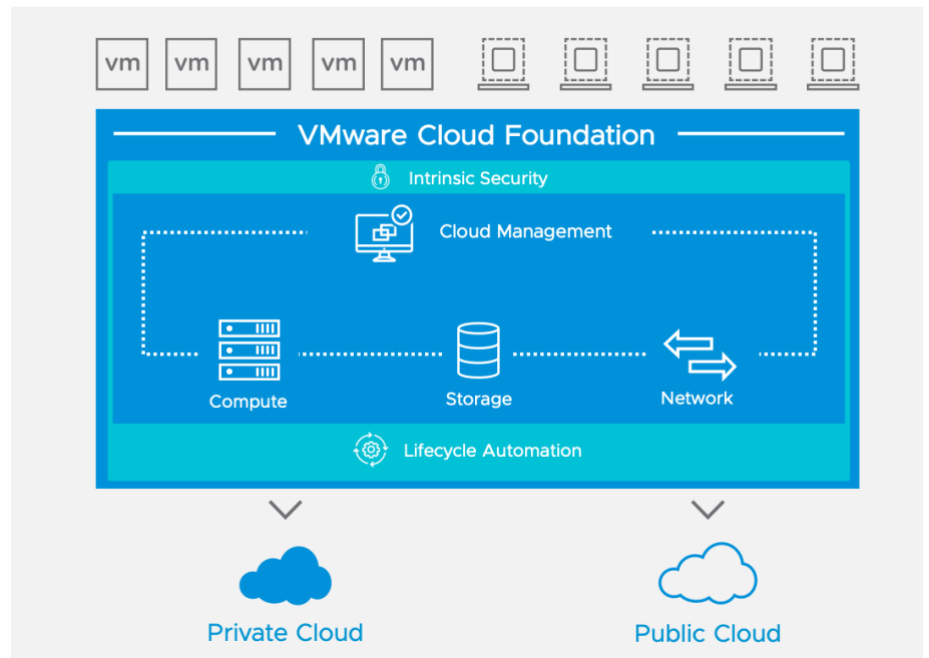
VMware has worked with various partners to achieve the SAP HANA certification with their Hyperconverged Infrastructure (HCI) solutions. VMware technology is the software layer for these solutions.

The SAP HANA business data platform is unrivaled, combining a robust database with services for creating innovative applications. It enables real-time business by converging transactions and analytics on one in-memory platform. SAP HANA enables customers to run a business data platform to deliver data-driven insights throughout their business and predict real-time outcomes.

VMware Cloud Foundation™ is an integrated cloud infrastructure that combines compute, storage, networking, security, and cloud management services. Cloud Foundation provides an ideal platform on which to run enterprise workloads and containerized applications across both private and public environments. VMware Cloud Foundation makes it easy to deploy and run a hybrid cloud by delivering common infrastructure that is fully compatible, stretched, and distributed along with a consistent cloud operational model for your on- and off-premises data centers and public cloud environments.

### KEY BENEFITS OF VMWARE CLOUD FOUNDATION

- Consolidate hardware silos to reduce complexity
- Simplify infrastructure provisioning with automation
- Adopt self-driving operations to assure performance
- Enable lifecycle management of the entire SDDC stack
- Deliver agility via self-service and application automation
- Extend the boundaries of the datacenter with hybrid cloud



See [VMware Cloud Foundation](#) for detailed information.

### Key Benefits of Cloud Foundation

- **Natively integrated software-defined stack** simplifying the path to a hybrid cloud delivered by a single solution.

- **Enterprise-grade functionality** thanks to VMware's market-leading technologies.
- **Automated Infrastructure provisioning** with workload domains.
- **Storage elasticity and high-performance** building on VMware's leading hyperconverged architecture (vSAN) with enterprise-class storage services.
- **End to end security** by delivering micro-segmentation, distributed firewalls, and VPN (VMware NSX®), VM, hypervisor, and VMware vSphere vMotion® encryption, and data at rest, cluster, and storage encryption (vSAN).
- **IT automation** delivering automation of IT service provisioning and day two.

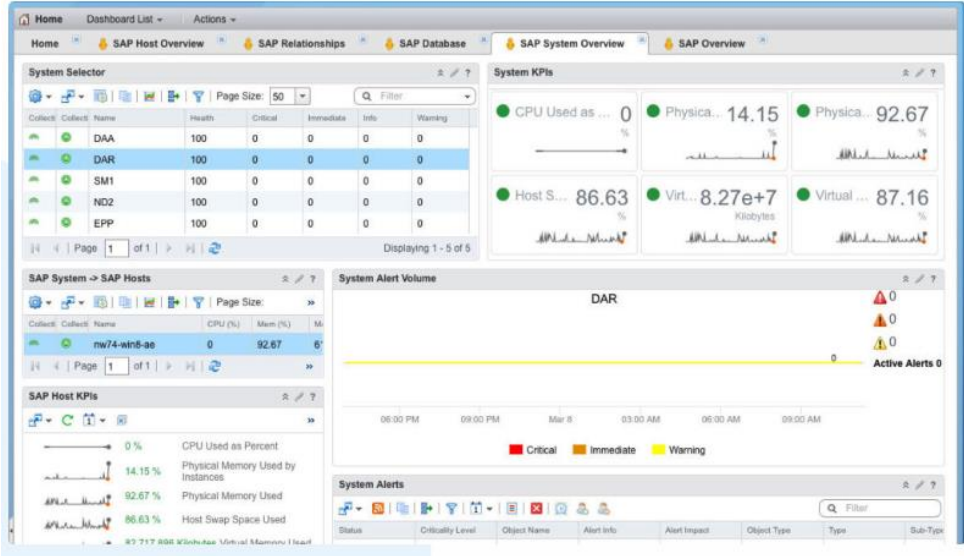
### Management and Operational Simplicity

Cloud Foundation automatically deploys and maintains VMware vRealize Suite® with VMware vRealize Suite Lifecycle Manager™. Customers can easily enable the entire vRealize Suite for their SAP environments.

SAP leverages the capabilities of VMware vRealize Suite to simplify management and operations. VMware vRealize Operations Management Pack™ for SAP from Blue Medora drives better application performance with predictive analytics for better capacity planning, as well as a series of out-of-the-box dashboards to extend visibility and monitoring beyond SAP and into the virtual layer. In addition, the management pack features relationship mapping, which enables you to clearly understand what may be causing the issue, eliminating the mean time to innocence and ensuring your end-user experience does not suffer when problems arise. Combined with access to more detailed alerts and notifications, transform your troubleshooting process with valuable insights into root-cause issues.

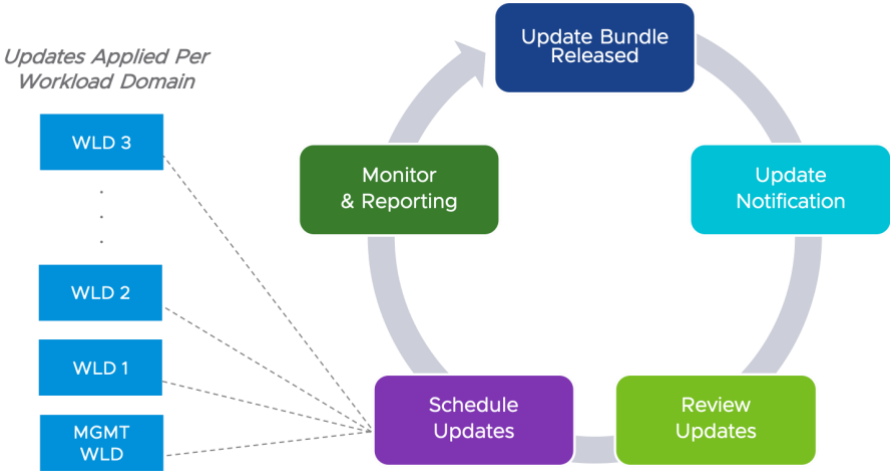
### VMware Adapter™ for SAP Landscape Management

VMware Adapter for SAP Landscape Management is part of the VMware private cloud solution for SAP and a virtual appliance that integrates SAP Landscape Management with VMware management software (VMware vCenter Server® and VMware vRealize Automation). It delivers unique automation capabilities that radically simplify provisioning and management of SAP Landscapes. The appliance accepts application calls from SAP Landscape Management, then uses vRealize Automation or VMware vRealize Orchestrator™ workflows to execute commands to VMware vCenter for VMware-related operations, such as starting and stopping a virtual machine. Furthermore, IT admins can leverage SA-API to automatically provision SAP systems from templates with vRealize Automation in conjunction with SAP Landscape Management.



### Automated Lifecycle

Cloud Foundation offers automated lifecycle management on a per-workload domain basis. Available updates for the supported components are tested for interoperability and then bundled with the necessary logic for proper installation order. The updated bundles are then scheduled for automatic installation on a per-workload domain basis. This allows the cloud administrator to target specific workloads or environments (development vs. production, for example) for independent updates of the rest environment.

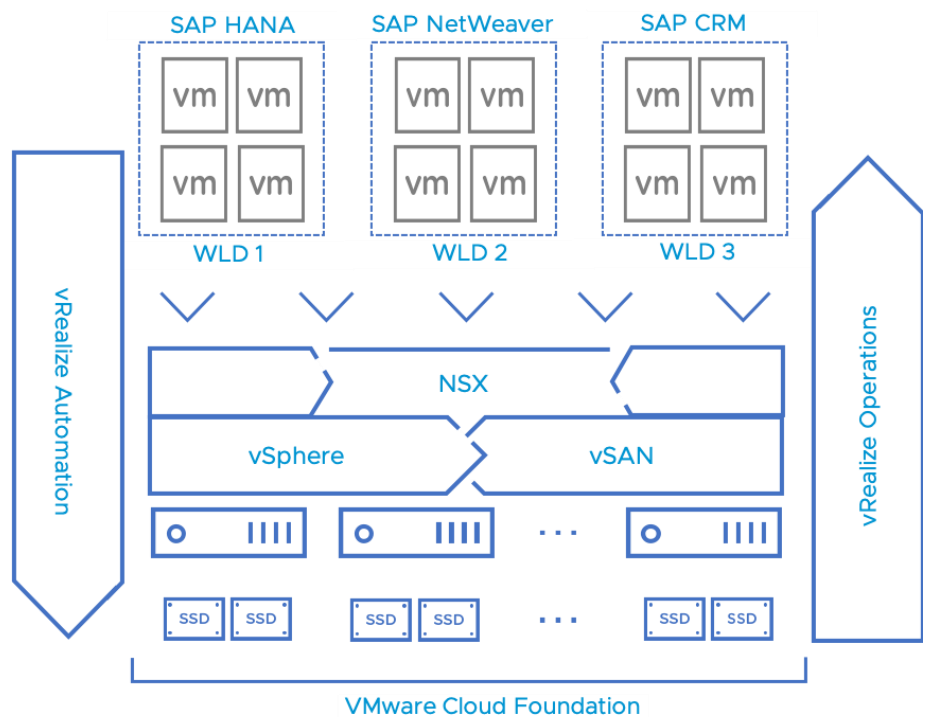


### Elastic and Scalable Infrastructure

Customers can deploy a new SAP instance, scale up or down capacity for the existing SAP workloads easily with Cloud Foundation. For SAP HANA, the physical hosts need to be one of the HCI certified appliances or servers listed on the [SAP site](#). A Cloud Foundation solution can support a maximum of 15 workload domains, and each domain supports ESXi hosts in accordance with vCenter maximums. As the demand for SAP workload goes up and down, ESXi hosts can be easily added or removed from the workload domain.

### Highly Available and Secure Applications

Cloud Foundation automatically installs and configures VMware NSX® in each workload domain. NSX provides high availability, load balancing, and security for SAP workloads. For external communication with SAP HANA servers that are initiated by a Web browser or a mobile application, a VMware NSX edge service perimeter gateway manages and optimizes north-south network traffic and leverages its multifunction capabilities as a firewall, load balancer, and virtual private network (VPN) device. And because these external connections can have vastly different security requirements, customers can use VMware NSX to associate firewall rules at the router or at the VM level to achieve greater granularity. NSX micro-segmentation enables flexible security policies that align to the multitier architecture of an individual SAP system—presentation, application, and database tiers—and also to the landscape of the SAP environment, separating production from nonproduction.



VMware Cloud Foundation abstracts the individual building blocks of the Software-Defined Data Center—compute, storage, networking, and cloud management—through the workload domain construct. The workload domain is the unit of consumption in the private cloud. It aggregates the physical servers created on the composable infrastructure into logical pools of capacity on top of which the SDDC building blocks of compute, network, and storage virtualization are deployed. Each workload domain is automatically deployed based on an architecture designed and validated by VMware architects, providing unparalleled reliability, consistency and supportability. Workload domain is a rock-solid infrastructure for running SAP workloads.

This paper focuses on the key advantages VMware Cloud Foundation can bring to your SAP HANA HCI deployment. The solution overview of [SAP HANA running on vSAN](#) details the advantages vSAN can bring to your SAP HANA deployment. vSAN is a core product in the Cloud Foundation stack.



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