VMware Telco Cloud Automation

Operational agility through unified orchestration and automation for the telco cloud

AT-A-GLANCE

VMware® Telco Cloud Automation™ accelerates time to market for network functions and services, while igniting operational agility through unified automation—across any network and any cloud.

KEY BENEFITS

- Accelerate time to market of network functions and services.

- Integrate 5G network capabilities alongside existing architecture.

- Gain operational efficiencies and avoid error-prone manual tasks.

- Enhance the service experience through workload mobility, dynamic scalability, closed-loop healing and improved resilience.

- Optimize cloud resource utilization through VMware xNF Manager (G-xNFM), NFVO and VIM/CaaS/NFVI integrations.

- Evolve to cloud native with Kubernetes upstream compliancy, cloud-native patterns and CaaS automation.

- Avoid costly integration fees, maximize current VMware investments, innovate faster, reduce project complexity and speed deployment with pre-built VMware integrations.

- Shortcut the time to provision new network sites or to expand capacity into existing ones.

- Leverage best-of-breed network functions and benefit from a healthy and thriving multi-vendor ecosystem.

- Minimize version validation efforts.

- Improve service quality with VMware Telco Cloud Operations integrated AI-driven workflows.

Communications service providers (CSPs) are transitioning from physical to cloud networks to gain operational agility, network resiliency and lower operating costs. This shift marks a radical departure from the traditional single-purpose hardware appliance model, especially as CSPs must now design and operate services across a web of data centers—bridging physical and virtual ecosystems—while enabling interoperability across competing vendors.

Given the complexity of coordinating network functions and managing multiple services, CSPs want an automated approach that removes complexity and error-prone manual processes. To address these challenges and improve operational efficiency, CSPs are turning to VMware Telco Cloud Automation.
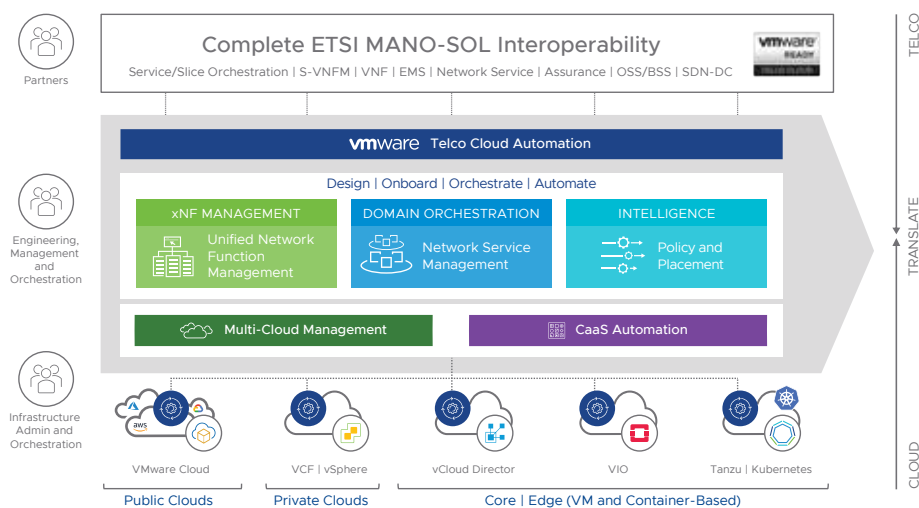

FIGURE 1: VMware Telco Cloud Automation

What is VMware Telco Cloud Automation?

VMware Telco Cloud Automation is an orchestrator that accelerates time to market for network functions and services while igniting operational agility through unified automation—across any network and any cloud. It applies an automated, cloud-first approach that streamlines the CSP's orchestration journey with native integration to VMware Telco Cloud Infrastructure.

VMware Telco Cloud Automation enables multi-cloud placement, easing workload instantiation and mobility from the network core to edge, and from private to public clouds. It also offers standards-driven modular components to integrate any multi-vendor MANO architecture. VMware further enhances interoperability by expanding partner network function certification via the VMware Ready for Telco Cloud program. With simplified and certified interoperability, CSPs can now leverage best-of-breed solutions and reduce their risks.

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KEY CAPABILITIES

- ETSI MANO and cloud-native-compliant architecture integrates seamlessly into telco cloud environments.
- Build services with a combined xNF manager and NFVO feature set.
- Deliver new network functions and services on-demand and at scale across multiple clouds.
- Gain repeatability across network functions and services.
- Onboard VNF and CNF using templates.
- Model network services based on multi-vendor network functions and combination of technologies (VNF/CNF).
- Optimize cloud resources and processes with intent-based placement.
- Automate network functions, services, CaaS and infrastructure lifecycle management.
- Centralize the creation, optimization and management of Kubernetes clusters with CaaS automation.
- Integrate continuous integration and delivery pipeline (CI/CD) to simplify software deployment and upgrades.
- Expand existing sites or provision new ones automatically through ZTP and site templates.
- Gain 360˚ awareness of the telco cloud, from infrastructure to instantiated functions and services.
- Apply new and existing workflows and policies for automated closed-loop actions.
- Achieve end-to-end telco cloud service assurance with Telco Cloud Operations integration.

VMware Telco Cloud Automation core capabilities

- xNF management (G-xNFM) to unify and standardize network function management across VM- and container-based infrastructures
- Domain Orchestration (NFVO) to simplify the design and management of centralized or distributed multi-vendor network services
- Multi-Cloud Infrastructure and CaaS Automation to ease multi-cloud registration (VIM/Kubernetes), enable centralized CaaS management, synchronize multi-cloud inventories/resources and collect faults and performance from infrastructure up to network functions
- Policy and Placement Engine to enable intent-based and multi-cloud workload/policy placements from the network core to edge, and from private to public clouds

Operational efficiency and multi-cloud agility

VMware Telco Cloud Automation delivers operational efficiency at scale to accelerate time to market for new services, adapt existing services to meet customer demands, mitigate the cost of managing more complex networks, and ultimately improve the customer experience. VMware Telco Cloud Automation enables multi-cloud operational agility through simplified design, onboarding, placement and management of network functions and services, across data centers and tenants of the telco cloud.

Tailored design and onboarding

VMware Telco Cloud Automation provides a visual blueprint composer that allows CSPs and equipment providers to easily create optimized xNF and network service TOSCA templates compliant with ETSI standards. Telco Cloud Automation is vendor-neutral and lets you onboard network functions and services with descriptors and packages compliant with ETSI SOL001/004 standards. Hybrid network services can also be designed with a combination of network functions from any vendor in multiple formats (VNF/CNF). The onboarded elements are then available in centralized catalogs for maximum reusability.

Multi-layer lifecycle management automation

Telco Cloud Automation allows you to centrally manage and automate each layer of the virtualized architecture, from infrastructure to network services. New sites can be automatically provisioned, or existing ones expanded, via zero-touch-provisioning. Kubernetes clusters can also be created and optimized automatically to align with network functions and services requirements. Leveraging the centralized Telco Cloud Automation catalogs, CSPs can trigger instantiation action while being guided at each step by an intent-based placement engine that aligns the blueprint requirements with the capabilities of each cloud. It also offers automation driven by a policy engine that executes closed-loop policies plus standard and custom workflows for tailored decisions. These placement and policies apply to the entire lifecycle management (day 0; day 1; day 2 operations) of network functions and services for lean operational processes. They also remove complicated, tedious and repetitive tasks while maximizing overall resource utilization through optimal placement and dynamic workload management.

Enhanced service experience

VMware Telco Cloud Automation enables real-time awareness across every layer of the telco cloud for monitoring and closed-loop operations such as healing and scaling. A holistic fault and performance data collection framework gathers data points across the MANO and cloud architectures, including VIMs/CaaS and, xNF/EMS, to enable these operations. Telco Cloud Automation supports multiple auto-operation models, triggering actions from NFVO, VNFM or EMS for enhanced service quality and resiliency.

BUILT FOR A THRIVING OPEN MULTIVENDOR ECOSYSTEM

While many vendor ecosystems inherently restrict interoperability, VMware Telco Cloud Automation follows the ETSI and CNCF guidelines. The xNF manager and the NFVO are used as combined or standalone modules interfacing ETSI SOL-compliant components of the MANO framework (OSS, BSS, EMS/VNFM, etc.). And the solution xNF composer, coupled with the VMware Ready for Telco Cloud program, bolsters innovation and interoperability—providing ready access to new capabilities.

LEARN MORE

Visit *vmware.com/products/telco-cloud-automation.html* to learn more about how VMware Telco Cloud Automation can help you leverage the telco cloud to its full potential.

Call 877-4-VMWARE (outside North America, +1-650-427-5000), visit *telco.vmware.com*.

Streamline the orchestration journey

VMware Telco Cloud Automation delivers a cloud-first solution where all layers— from infrastructure to domain orchestration (NFVO)—are coupled for consistency, optimized deployment and workload management across any cloud. Telco Cloud Automation supports hybrid networks and is a foundational element of the VMware Telco Cloud Platform for 5G.

Cloud-first approach

Because VMware Telco Cloud Automation natively integrates with VMware Telco Cloud Platform and VMware Cloud™ technologies, it can transform integration-intensive projects into efficient product deployments. It also eliminates the risks of error-prone configurations, simplifies future upgrades and reduces overall project costs. Close integration between VMware Telco Cloud Automation and the infrastructure also means continuous knowledge of the telco cloud state, optimized placements, VIM-Kubernetes configurations auto-discovery capabilities and continuous synchronization of the telco cloud components (inventories, resources, faults and performance, etc.).

Unified network function management

VMware Telco Cloud Automation xNF manager offers a unified network function ecosystem (VNF/CNF), supporting the design and automation of TOSCA-compliant network functions. The platform orchestrates workloads seamlessly from VM- and container-based infrastructures for an optimized service-delivery foundation. Through the Ready for Telco Cloud program, new versions and updates of partner network functions are certified to validate continued interoperability.

Hybrid network, multi-cloud, multi-VIM and cloud-native ready

As the telco cloud evolves, the need to distribute workloads across core, edge private and public clouds becomes mandatory. VMware Telco Cloud Automation natively integrates with VMware Telco Cloud Infrastructure (Cloud Director®/OpenStack editions), VMware Cloud (VMC/VCF) and VMware Tanzu™ (Kubernetes), allowing turnkey registration of multiple VIMs or Kubernetes clusters and consistent workload management for network functions across registered clouds.

INTEROPERABILITY		
Standard interfaces	• Vi-Vnfm: VMware vCloud NFV/Telco Cloud Infrastructure (vCD/VIO editions), vSphere, VMC, Tanzu Kubernetes Grid Cluster API (CAPI) plus Helm support for resource description • Ve-Vnfm-vnf: ETSI NFV IFA008/SOL002; VNF and NS descriptors compliant with IFA011/SOL001; VNF and NSD package format of IFA014/SOL004	• Ve-Vnfm-em: Third-party EMS per ETSI NFV IFA008/SOL002 • Or-Vnfm: ETSI NFV IFA007/SOL003 • Os-Ma-nfvo: ETSI NFV IFA013/SOL005 and TM Forum (633,638,641)
Open architecture	• Modular NFVO / G-VNFM architecture • Pre-built integrations with VMware Telco Cloud Platform and VMware Cloud technologies	• Supports of Ansible Playbooks, Netconf and ConfigMaps for commissioning • Simplified integration with third-party OSS, VIM, VNF, SDN-C and S-VNFM
VMware actively cooperates with multiple network function vendors including all key NEPs, having them certify in the VMware Ready for Telco Cloud program. This is a comprehensive certification program that ensures interoperability and operational readiness between third-party-developed network functions and the ETSI-compliant VMware Telco Cloud platform. The program helps ensure that CSPs can rapidly onboard and deploy multi-vendor network functions with the VMware Telco Cloud platform. VMware Telco Cloud Automation leverages this program to certify interoperability with network function vendors, offering a neutral and pretested end-to-end MANO solution.		