

# vmware®

## Cloud Director™



The Leading Cloud Services Platform for Cloud Services Provider

### AT A GLANCE

VMware Cloud Director® (VCD) is a leading cloud service-delivery platform used by some of the world's most popular Cloud Services Provider to operate and manage successful cloud-service businesses. VMware Cloud Director helps Cloud Services Provider derive maximum efficiency from their cloud infrastructure and enables the creation and provisioning of differentiated and value-added cloud services. VMware Cloud Director is available globally through the Cloud Services Provider.

### KEY BENEFITS

- » VMware Cloud Director delivers a hyperscale-class cloud platform in and across Cloud Provider's datacenters helping save operational cost and capital expenditure.
- » VMware Cloud Director is highly automated, extremely operationally efficient, and scale-tested for global cloud environments.
- » VMware Cloud Director delivers a suite of native cloud services and Kubernetes Native & Tanzu clusters, along with custom self service capabilities. Hundreds of Cloud Services Provider across the world have used VMware Cloud Director to up-level from pure IaaS / hosting to a full-fledged portfolio of profitable cloud services.
- » VMware Cloud Director delivers a unified platform to manage applications, VMs as well as containers. VCD offers several ways to code and extend its functions in a developer environment such as python and REST API as well as Terraform Provider support to drive infrastructure as code.
- » *VMware Cloud Director has proven cost saves and revenue generation for Cloud Services Provider, enabling business growth with minimal operational headcount increase.*

### What is VMware VMware Cloud Director?

VMware VMware Cloud Director is VMware's flagship cloud services platform for Cloud Services Provider. It is a pervasive cloud infrastructure control plane for Cloud Services Provider' service-delivery needs, and the management entity for a global VMware cloud estate. VMware Cloud Director allows seamless provisioning and consumption of cloud computing resources and services to geographically distributed lines of business and IT teams in an API-driven approach.

### What are the key features of VMware VMware Cloud Director?

**Multi-tenant Resource Pooling:** VMware Cloud Director helps create virtual datacenters from common or distributed infrastructure to cater to heterogeneous enterprise customer needs. With VMware Cloud Director, a Cloud Services Provider can host and serve multiple customers from a single vCenter that may be stretched across distributed physical servers.

**Cloud-native Offerings:** VMware Cloud Director provides an easy on-ramp to cloud-native application development for enterprise DevOps by delivering enterprise-grade native and Tanzu based Kubernetes runtime, lifecycle management of K8S clusters managed by K8S provider (Tanzu via CSE). With Kubernetes delivered by self-service, tenants can deploy K8S clusters with VMware Cloud Director through Container Services Extension (CSE), they can upgrade, spin up, scale in/out, one or more Kubernetes K8S clusters via native GUI or API and CLI.

**Deep Automation:** VMware Cloud Director delivers unparalleled infrastructure efficiencies with context-aware automation across workflows. Terraform Provider for VMware Cloud Director enables complete provisioning of compute and network resources as code, and enables simple architecture design of a service-ready cloud stack.

**Service Suite and Service Stitching:** VMware Cloud Director has an open extensible form-factor that is leveraged by leading data protection, storage, network, security, and other cloud software vendors to natively integrate their offerings VMware Cloud Director UI. Moreover, Cloud Services Provider can offer each of their customers bespoke user experiences by publishing their own custom services and user-views in App Launchpad with automatic delivery on both containers (Helm charts) and VM.

**Policy-driven Cloud Management:** VMware Cloud Director ensures enterprises have secure, isolated virtual resources and intelligent dynamic distributed firewalling for integral malware spread prevention. Cloud Director provides independent role-based authentication at the levels of Cloud Services Provider and their customers, and fine-grained access control across datacenters, sites, virtual machines, and applications. Moreover, intelligent workload-placement allows Cloud Services Provider to drive higher efficiency from their cloud infrastructure licensing and utilization while delivering outstanding performance and exceeding SLAs.

**Global Hybrid Cloud Management:** VMware Cloud Director helps Cloud Services Provider manage and gain deep visibility into datacenters across sites and geographies, and monitor cloud resources across sites from a single pane of glass. VMware Cloud Director is proven to connect and scale seamlessly across thousands of sites. Multi-site is a core requirement for hybrid customers and is supported by Cloud Director and Cloud Director service bi-directionally.

**Cloud Migration and Availability:** VMware Cloud Director helps enable simple, secure VM migration and data center extension with VMware Cloud Availability. This allows for secure hybridity, simple Layer 2 connectivity and cold or warm migrations to Cloud Director and Cloud Director service on VMware Cloud on AWS and Google Cloud VMware Engine (GCVE). The integration with VMware Cloud Availability makes it easy for Cloud Services Provider to run data protection offerings compatible with on-premises vSphere enterprise environments.

**Networking and Security as an inclusive offering:** VMware Cloud Director supports NSX-T with dynamic distributed firewalling, cross VDC networking, vAPP Edge Networking services, overlapping IP support for tenants using VRF-lite, IPv4 and v6 coverage and layer 2 VPN services natively. NSX Advanced Load Balancer brings application intelligence to load balancing services for customers and combined with basic (standard) Load Balancing self-service from VMware Cloud Director, fully covers the services that used to be provided by NSX-V.

**Operational Visibility and Insights:** Leveraging integration with VMware vRealize Operations' Tenant App for VMware Cloud Director, Cloud Services Provider can use multi-layer analytics and predictive remediation to better serve their enterprise customers. The integration also provides visibility into virtual machine costs and accountability to understand granular costs of virtual infrastructure required to support business services.

## What are the key benefits of VMware Cloud Director for the Cloud Services Provider?

**Operational Efficiency:** VMware Cloud Director enables Cloud Services Provider to obtain extreme operational efficiencies out of their cloud infrastructure, and also reduces operational overheads that come with maintaining silo'd private and multi-cloud environments. VMware Cloud Director significantly reduces time-to-market for Cloud Services Provider services and scales these services globally without external dependencies and ballooning costs.

**Service-expansion and Monetization:** VMware Cloud Director enables Cloud Services Provider to spin up new cloud services on Day 1. Cloud Services Provider can drive more revenue by publishing their own service suite, or 3rd party ISV-provided backup, DR, security, migration, and other leading cloud services that are tenant and site-aware. Services can also be launched by App Launchpad, negating customer knowledge of infrastructure and security to any end point; containers and VMs. VMware Cloud Director forms a unified management plane for the entire service portfolio of a Cloud Services Provider. VMware Cloud Director is also a key element to getting the 'Cloud Verified' certification, a mark of the most capable and differentiated VMware Cloud Services Provider in the world.

**Developer-Readiness:** VMware Cloud Director provides an open platform for Cloud Services Provider and customer developers to build on. Using the programmatic interfaces, automation tools, and extensibility frameworks of VMware Cloud Director, Cloud Services Provider can not only differentiate themselves by providing unique experiences to their customers but also help them get to application-building faster. Using VMware Cloud Director, providers are able to offer tenants various tiers of cloud native services, secure K8s cluster infrastructures (now including Tanzu Kubernetes Grid for vSphere and Multi-Cloud) and marketplace application portfolios / interfaces to meet developer needs.

## What are the key benefits of VMware Cloud Director to the end-customer?

**VMware Cloud-as-a-Service:** Consume turnkey cloud services, including the full VMware Software-Defined Datacenter, as a service from a trusted Cloud Services Provider, with full self-service controls or delivered as part of a managed service.

**Easy-to-Provision and Easy-to-Consume VMware Cloud:** Experience a single access point for all your virtual datacenters via an intuitive UI or APIs. Enjoy easy, self-service consumption and provisioning of cloud services, including 3rd-party services and Cloud Services Provider-built services through a single pane of glass to any target platform. Leverage simplified workflows and container services to build better and faster.

**Easy Workload Migration Across Virtual Datacenters:** Backup, evacuate, or replicate VMs or entire datacenters in a few clicks to a resilient VCD-powered cloud.

**Fast Path to Hybrid Services:** VMware Cloud Director provides a feature-rich, self-service and modern cloud environment with on-demand elasticity, streamlined on-boarding and hybrid cloud operations across multiple clouds.

**Developer Ready Clouds:** VMware Cloud Director provides Terraform Provider infrastructure-as-Code a range of API capabilities and Kubernetes K8S Tanzu cluster services from the Container Service Extension supporting, Tanzu Kubernetes Grid (TKGs & TGKm) or native Kubernetes that can be consumed by enterprise developers as code. Tenants can deploy and manage K8S cluster using VMware Cloud Director cluster API/CLI/UI. Equally now Cloud Services Provider can offer Platform as a Service VMware Marketplace or custom applications to consumers via the App Launchpad, essentially negating the need for customers to understand underlying infrastructure.

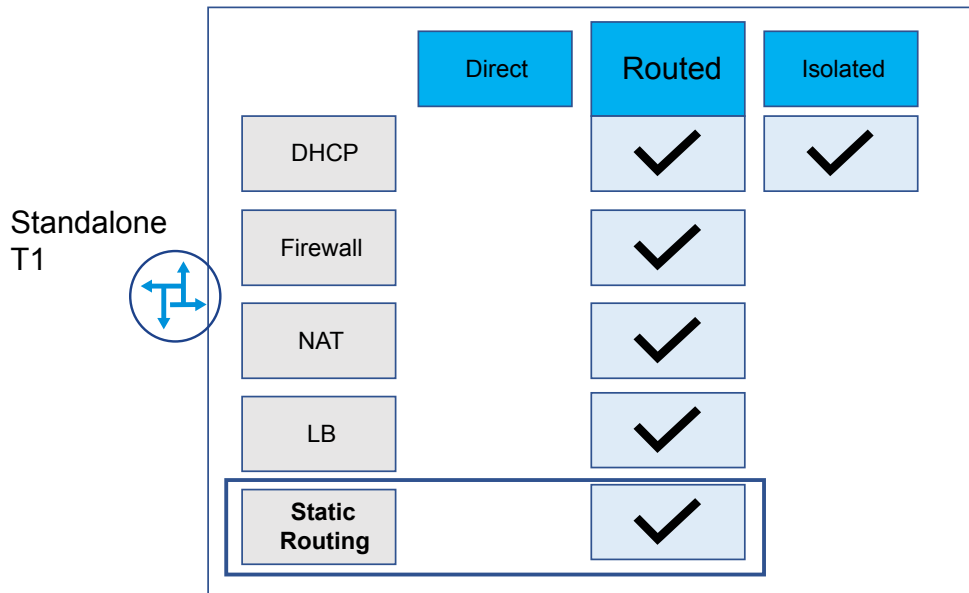
## What is new in VMware Cloud Director 10.4?

### Networking:

Networking is a core feature and the heart of VMware Cloud Director. The more we enhance it the better control and security a provider and the tenant have over their environment. With the release of VCD v10.4, we have a few networking updates and new features that will provide more options to configure from the UI portal.

#### Networking NSX-T Edge Gateway Static Routes:

Edge gateway plays a key role in networking which provides all the gateway functions and allows the network traffic to flow inside and outside the environment. With this release, we have enabled the option for the provider and their tenants to configure static routes manually on the edge gateway. VCD will allow the user to configure static route on an edge gateway by specifying the network, next hop, and any specific networks or interfaces to send traffic along. The use case of this is first, VCD user would like to enable a static route to send traffic through a Service Edge Gateway and along a Service Interface. Second, a user may be aware of an additional route that their system contains.



#### NSX Advanced Load Balancer Enhancements:

NSX Advanced Load Balancer provides comprehensive software load balancing along with application security which then can provide scalable application delivery across infrastructures. With this release, there is a major enhancement with NSX Advanced Load Balancer licensing updates where there is no longer the notion of a Basic and an Enterprise licensed controller. All controllers are now deployed as Enterprise. The service provider can constrain tenants to the Basic feature set, now known as “Standard,” and can allow them to use all the Enterprise feature sets, now known as “Premium” through a setting in the portal.

Along with this there are other enhancements made to the NSX Advanced Load Balancer behaviour with VMware Cloud Director:

- Multiple Protocols and Ports on One Virtual Service
- IPv6 Support
- Overlapping VIP Ips on Existing subnets
- Multiple Services being Configured with the Same VIP IP

### Storage Enhancements:

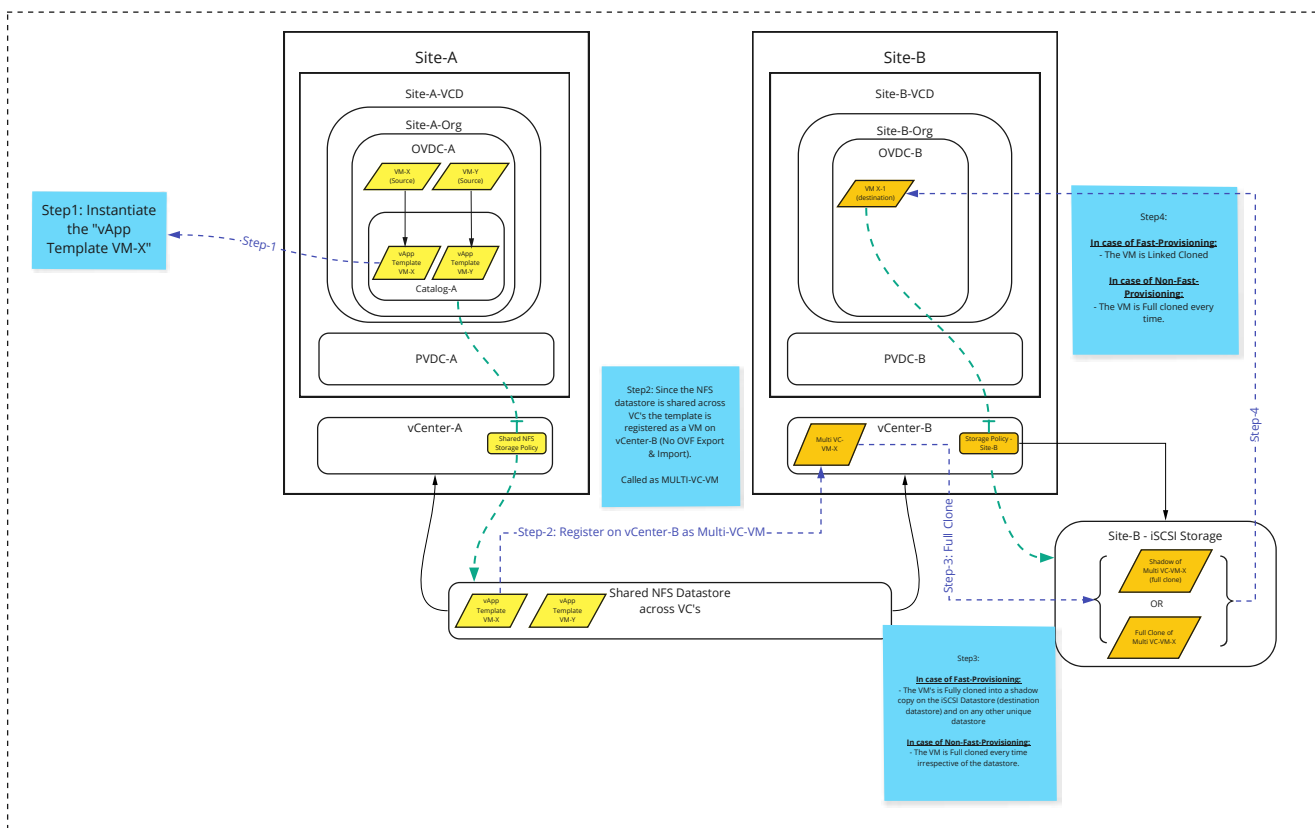
VMware Cloud direct evolves with every release and provides greater optimization considering storage as well. With this release, the VCD VM placement on the vCenter SDRS cluster has got smarter, faster, more optimized and more accurate on how the VM files are placed on the SDRS cluster datastores. This is an enhancement which will save a lot of time and resources in the background from an operations perspective.

The other storage enhancement made is from a UI observability with regards to the IOPS Limit. With this release the VCD user (with the "View Disk IOPS" rights) can view the vCenter Server Storage Policies configuration from the VCD UI portal. Previously seen as the IOPS column will now be seen as "IOPS Reservation" and "IOPS Limit" (two separate columns) on a VM disk or a Named Disk.

### Catalog Enhancements:

There are major changes in how the Subscriber Catalog sees the catalog sync in progress from the Publisher Catalog. We have now added better observability where the sub-tasks of the catalog sync are seen along with which file is being synced and at what percentage. This will allow the administrator to analyse the time taken for the data sync to complete and calculate the network speed or bandwidth accordingly.

The other major enhancement made to the catalog is the "Fast Cross-VC Catalog Instantiation with Shared Storage". Fast Cross VC Instantiation is a new under the hood workflow in VCD 10.4 supported across both Fast-Provisioned and non-Fast-Provisioned VDC's where there is a shared NFS datastore across all the vCenter Server backing the VDC's. This will help the provider not configure a separate catalog per vCenter Server to achieve fast instantiation.



## Extensibility Enhancements:

Around the VMware Cloud Director 10.4 release we will also be rolling out extensibility enhancements as follows:

### Terraform 3.7

This rollout will support CSE environment setup automation with a single click along with a few networking supportability enhancements.

### VRA-VCD Adapter 1.2

This rollout will bring in features like snapshot operations for the onboarding VMs along with vRA proxy support. Plus there will be improvements to some of the existing features.

### CSE 3.1.4 & 4.0(.NEXT)

#### CSE 3.1.4

It will be released along with VCD 10.4 release to support VCD 10.4 along with a few bug fixes.

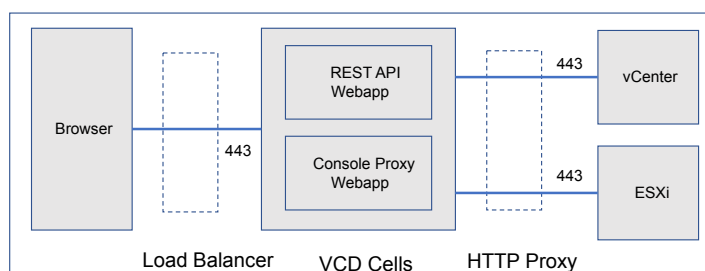
#### CSE 4.0

This will be a major rollout which will be delivered as an OVA template and bring in a load of new features to better support Kubernetes as a Service on VMware Cloud Director. Major updates are around:

- Multi-tenant Control plane UI for TKGm workload cluster
- Pre-installation of Tanzu core packages in CAPVCD clusters
- GPU support for containers in CSE-TKGm clusters

## Other VMware Cloud Director Enhancements:

- With VCD v10.4 we have introduced Service Account API Token with which you can use service account for automate access to VMware Cloud Director.
- With this release, VM console proxy traffic is now using the same IP and port as UI and API instead of a separate IP/port in previous releases. VM console traffic is using by default HTTPS 443 port together with UI/API.



- Going forward, if a provider wants to migrate the workload from old cluster to a new cluster, having a shared storage between the clusters is no longer needed.
- Virtual Appliance upgraded to Photon OS 3.0 (from Photon OS 2.0).
- We now support restoring of PostgreSQL and appliance management UI certs.

Finally, with this release we have updated the interoperability with the solutions supported with VMware Cloud Director. And lastly a newer API version 37 will be supported with VMware Cloud Director v10.4.

To Learn more about how VMware Cloud Director works, please visit [cloudsolutions.vmware.com](https://cloudsolutions.vmware.com) or please watch and subscribe to our YouTube Channel or any of the resources below:

- [HTTP://BIT.LY/VCPP\\_TWITTER](http://bit.ly/vcpp_twitter)
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