



VMware Cloud Director service

Data sheet

AT A GLANCE

VMware Cloud Director service is a Software as a Service application providing multi-tenancy support for VMware hyperscale partner cloud SDDC, support into existing Cloud Director instances and on-premises vCenter environments.

VMware Cloud Director service applies tenant isolation and resource pooling over existing SDDC fabric.

VMware Cloud Director service is backed by NSX so that it can connect and manage seamlessly into supported VMware hyperscale partner cloud SDDC instances.

KEY BENEFITS

- Provides multi-tenancy to VMware hyperscale partner clouds SDDC allowing for self-service VM creation and resource pooling of SDDC resources over multiple tenants
- White-labeled interface to represent the customer or Cloud Provider business with their branding
- Monetize Pay as you Go on demand virtual servers, Allocation or Reservation Pool Virtual Data Centers depending on customer tier
- Quickly provision and scale high availability instances for tenants to achieve 99.9% uptime of VMware Cloud Director service
- Provides network isolation for each tenant with Firewalls, NAT and Public IP services
- Uplift security services with L4 and L7 distributed firewalling securing East-West traffic flow
- Hybrid operational model for providers and tenants in multi-site self-service VMware Cloud Director experience
- Automatic upgrade for new features and release with no downtime impacts. Published on status.vmware-services.io and can be subscribed to.
- Inclusive monitoring of VMware Cloud Director instances with VMware service support & escalation.

VMware Cloud Director service is a unique and differentiated SaaS solution available to our VMware Cloud Providers via the Cloud Partner Navigator that helps them deliver new services, differentiate their offerings, increase their efficiency, expand globally and onboard customers onto VMware hyperscale partner clouds and on-premises vCenters.

Addressing Growth

VMware Cloud Director service enables Cloud Providers to leverage a new VMware hyperscale partner cloud SDDC in multi-tenant modality, allowing provisioning and consumption of bite-sized tenant resources. This provides significant flexibility for Cloud Providers that want to use VMware hyperscale partner clouds for smaller customers who don't warrant an entire VMware hyperscale partner cloud SDDC nor fixed terms.

VMware Cloud Director service can be used as a part of a managed service or a self-service 'all you can eat' for providers who wish to gain better economies of scale and provide tenants access to resource pools of CPU, Memory and Storage where tenants can spin up Virtual Machines and vApps. Cloud Providers will be able to manage the site themes, plugins, authentication and customer organizations and resources.

Addressing Agility

VMware Cloud Director service is a managed SaaS service and hence optimizes expense and agility issues often hindered by operational day 2 processes by offsetting these to VMware.

VMware Cloud Director service can be purchased to overlay resource pooling and tenancy on VMware hyperscale partner cloud and on-premises SDDC providing a true hybrid management experience using Cloud Director multi-site pairing you can provide consistency of cloud experience across different VMware hyperscale partner cloud regions and on-premises Cloud Director or vCenter environments. (Less than 150ms latency required) — all regions and availability zones accessible in a single dashboard.

SERVICE REQUIREMENTS

VMWARE CLOUD DIRECTOR SERVICE

- An instance of VMware Cloud Director service will be made available once the commit contract has been signed.
- VMware Cloud Director service availability covers each geo; Americas, EMEA and APJ. Providers can connect SDDC within these GEO to their regional VMware Cloud Director service instance (subject to 150ms latency).
- Cloud Providers can also connect Cloud Director service to their on-premises Cloud Director instance using site association. Also Cloud Director service supports connecting to an on-premises vCenter environment to provision services to (subject to 150ms latency) providing a single control plane for customers.
- End SDDC solutions currently supported H1 2021 include VMware Cloud On AWS, sold by VMware and subject to MSP contract and Google Cloud VMware Engine, sold and supported by Google directly.

CLOUD PARTNER NAVIGATOR

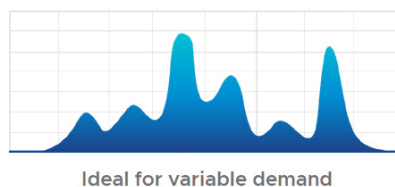
- Cloud Partner Navigator will be used by the Cloud Provider admin to provision the service, 1- or 3-year contract terms are available with monthly billing.
- From within the Cloud Partner Navigator a provider can create a tenant and managed services and service roles. VMware Cloud Director service usage information will also be provided (note – this is not Tenant Org metering data).

Addressing Customization

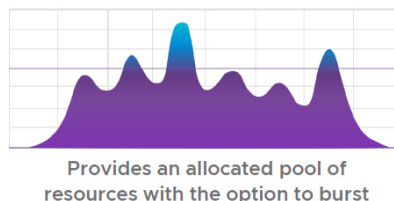
Providing a role-based access SaaS tenant portal allows the members of a VMware Cloud Director service organization to interact with the organization's virtual resources. The user experience is also enhanced and customized with the providers ability to brand and color the UI, meeting their corporate branding requirements. To find out more please see this [blog](#).

VMware Cloud Director service Consumption Models

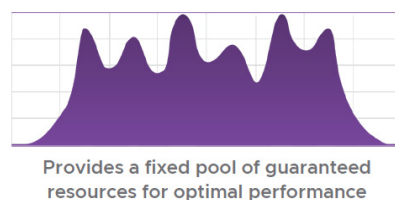
VMware Cloud Director service extends the same management principles as the on-premises VMware Cloud Director solution, thereby providing tenants with either a shared solution for virtual server, virtual data center or dedicated virtual data center cloud models. These tenant resources are applied to an organization in an organization VDC (organization virtual data center) and are dependent on resources from underlying pVDC (provider virtual data center) resources. Cloud Providers can further define service levels based on the allocation models and resource pooling:



Pay-as-you-go is an on-demand Virtual Server offering with no upfront resource allocation or costs, providing a true public cloud experience. Customers only pay for what they use, and it is typically targeted for highly seasonal, variable, transient workloads like dev/test.



Allocation Pools provide a predictable cost model by guaranteeing resources and offering burst capacity to ensure workloads can start if resources are running low. This is ideal for stable workloads that need guaranteed resources, like databases, for example.

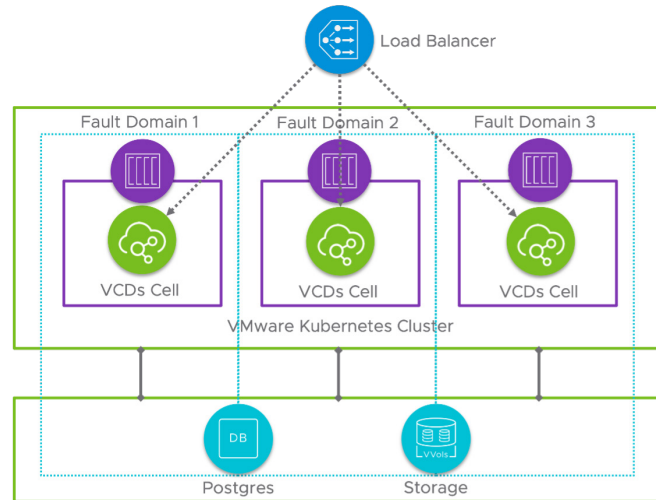


Reservation Pools guarantee 100% of reserved capacity which is ideal for business-critical applications. Reservation Pools are recommended for businesses with predictable and stable workloads to avoid the undesirable potential of underutilized resources.

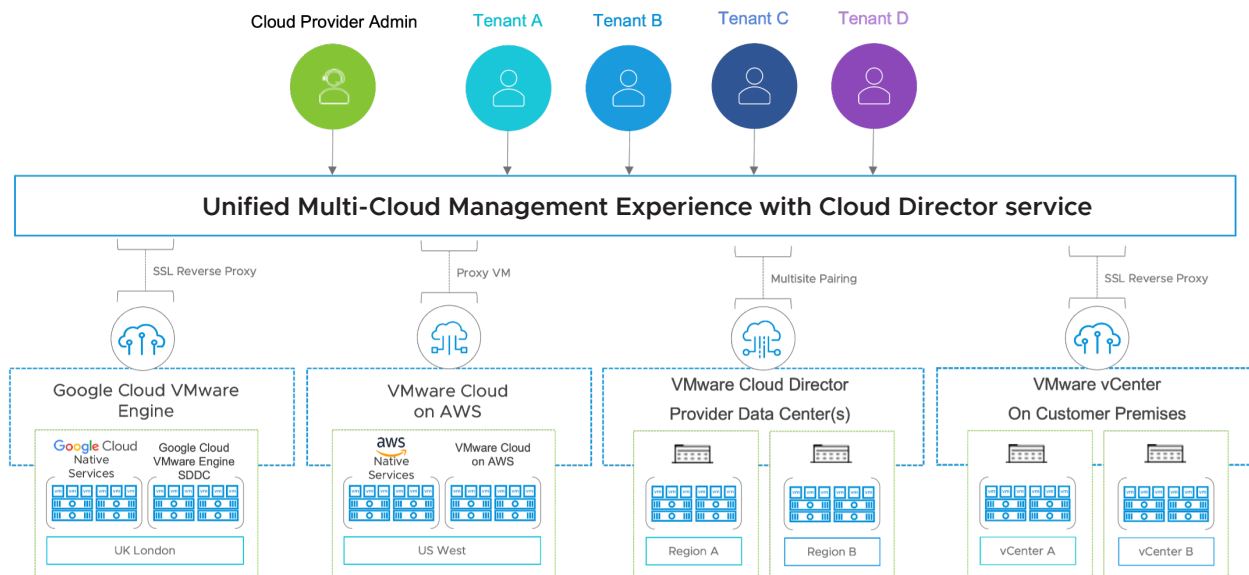
Go further and define a **flexible pay-go and allocation pool model** with compute policies for exceptions such as business critical VMs. This model enables the allocation of available unreserved resources within the provider VDC.

High Level Architecture

VMware Cloud Director service has been built from the ground up to run in Kubernetes Pods ‘cells’ in a multi-zone cluster managed by VMware. For resiliency this multi-zone capability is also used for the Postgres database instance and storage is provided in highly available NFS, giving the Cloud Provider a 99.9% service uptime. Cloud Providers will access administration via the Cloud Partner Navigator to subscribe and provide service lifecycle and management. The VMware Cloud Director service cells and the supporting services automatically scale on demand and are rapidly created or deleted as necessary.



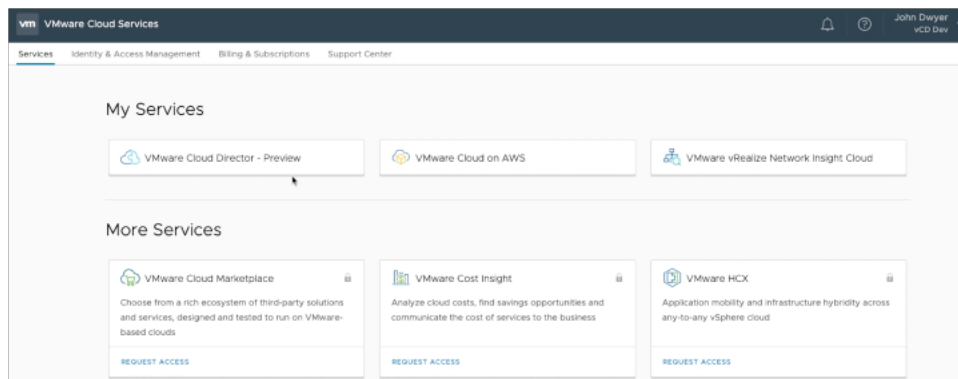
As of H1 2022 VMware Cloud Director service supports connection to a VMware Cloud on AWS SDDC, a Google Cloud VMware Engine private cloud, and on-premises Cloud Director as well as on-premises vCenter instances. Tenants have portal access with direct access to other CSP services and will also have access to the vApps, VMs and Kubernetes Clusters in their Virtual Data Centers via their org VCD Edge Gateway organization networks.



Essential Features and Capabilities

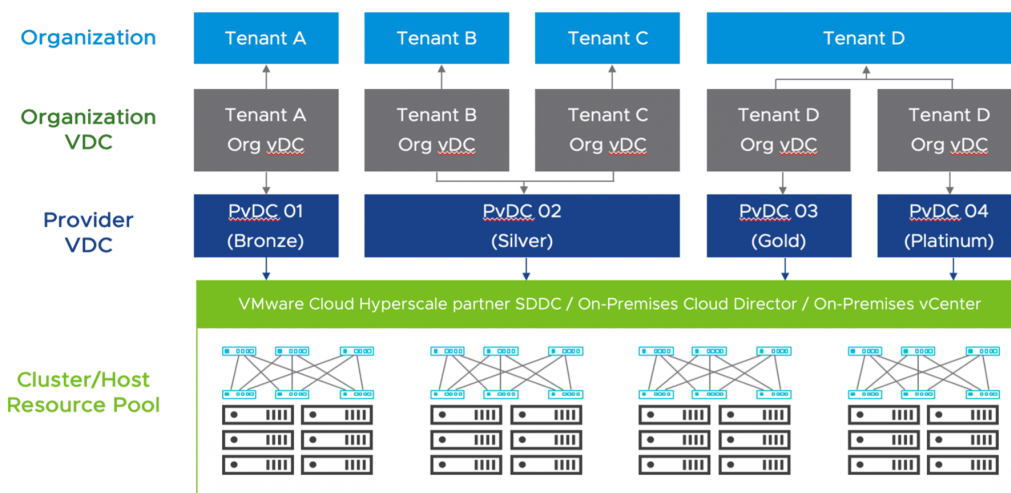
LIFECYCLE OF SERVICE

VMware Cloud Director service is available through Cloud Partner Navigator, a portal that allows Cloud Providers to deploy, provision and manage VMware XaaS offerings and the tenant lifecycle. Using Cloud Partner Navigator, a Cloud Provider can subscribe to the VMware Cloud Director service, then launch into VMware Cloud Director service to create VMware Cloud Director service instances for tenants, join an instance to a VMware Hyperscale partner SDDC infrastructure and then provision organization resources and allocation pools.



MULTI-TENANCY ON VMWARE CLOUD ON AWS AND GOOGLE CLOUD VMWARE ENGINE

VMware Cloud on AWS, Google Cloud VMware Engine, and other supported hyperscale VMware partner infrastructure provide the foundation for Cloud Director service architecture, providing a consumable set of resources into a Cloud Director Provider Virtual Data Center (pVDC). The pVDC is directly mapped to a vSphere DRS cluster or to a resource pool within a vSphere DRS cluster.

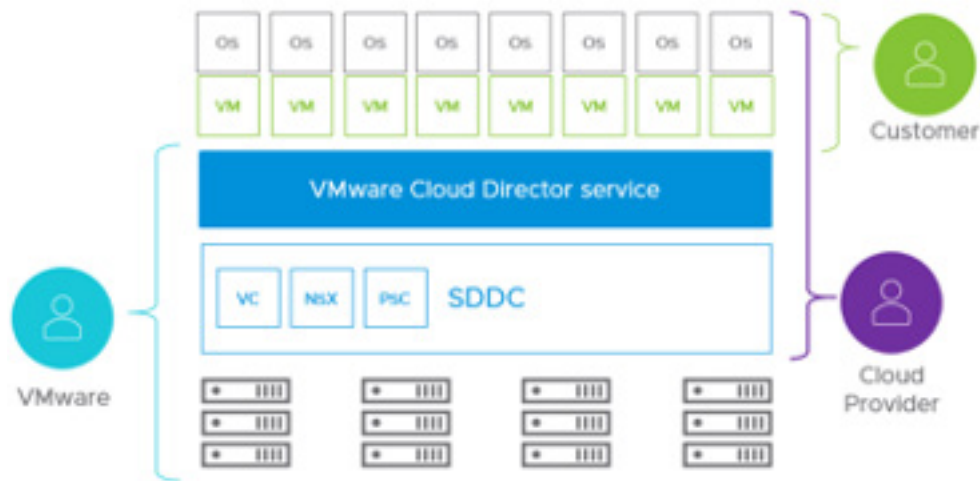


Each customer Organization Virtual Data Center (oVDC) uses resources from a pVDC. The pVDC associates the oVDC and vSphere resources. To control how much an oVDC can consume an allocation model is applied to the oVDC restricting the vSphere resources, helping balance the needs of other oVDC sharing the same pVDC.

Fundamentally, Cloud Providers can partition resources to different organizations based on resource pools as the basic construct of boundary. This allows different classes of service to be associated to performance, availability and cost characteristics to be sold to your customers and differing SLA used to guarantee service.


SECURITY


The varying endpoints have different levels of security. The VMware Cloud on AWS service solution is provided by VMware and uses a least privilege restrictive access model whereby there is no root ESXi access, no VIB installations are permitted, and no VMware Cloud Director service configuration access is allowed, all these layers are managed and serviced by VMware. Other hyperscale partner solution endpoints may vary in terms of root access and VIB installation.





At the backend, VMware manages a shared Kubernetes cluster for VMware Cloud Director service and tenants cannot see each other's namespaces, providing isolation. One instance of the core services (Provider and Operator) will be run for each deployment (development / staging / production). The services will use Kubernetes autoscaling to adapt to incoming tenant / Cloud Provider service requests.

BRANDED TENANT / PROVIDER PORTAL

Moonbeam

Cloud Resources





administrator
System Administrator

Organizations

Organization VDCs

Organization VDC Templates

Provider VDCs

Cloud Cells

Edge Gateways












External Networks

Network Pools

VM Sizing Policies

Organizations

NEW

	Name		State	Organization VDCs	Can Publish	Catalogs	vApps	Running VMs	Users
<input type="radio"/>	acme		Enabled	2	No	0	2	1	0
<input type="radio"/>	coke		Enabled	1	No	0	0	0	0
<input type="radio"/>	hooli		Enabled	0	No	0	0	0	0
<input type="radio"/>	krustykrab		Enabled	0	No	0	0	0	0
<input type="radio"/>	Ollivanders		Enabled	0	No	0	0	0	0
<input type="radio"/>	pepsi		Enabled	1	No	0	0	0	0
<input type="radio"/>	sprite		Enabled	1	No	0	0	0	0
<input type="radio"/>	Stark		Enabled	1	No	0	0	0	0
<input type="radio"/>	support		Enabled	1	Yes	1	1	0	0
<input type="radio"/>	wayne		Enabled	0	No	0	0	0	0
<input type="radio"/>	Wonka		Enabled	0	No	0	0	0	0

1 - 11 of 11 organization(s)

As a SaaS offering, it is important for the service to be personalized to the consumer, whether the tenant or a Cloud Provider. The portal UI, provided by VMware Clarity 1.0 and Angular 6, from login splash screen to UI functionality can be color branded with a company logo throughout to ensure the look and feel of the business is represented.

NETWORKING

Networking in VMware Cloud Director service within supported hyperscale partner clouds (VMware Cloud on AWS and Google Cloud VMware Engine) is provided by NSX. Currently in VMware Cloud on AWS there is no capability for vApp networking (please check other hyperscale supported endpoints), the only aspects of networking that will be included is edge Firewall distributed L4 / 7 Firewall, NAT, L2 VPN and IPsec VPN and Public IP address assignment available in VMware Cloud Director service to be configured.

Within VMware Cloud Director service and VMware Cloud Director there are three layers of networks:

External Networks – these are networks that are external to Cloud Director. Created in vSphere then mapped by Cloud Director service to provide external connectivity to Organizations such as accessing the Internet. In Cloud Director service in VMware Cloud on AWS these networks are created in front of each tenant's T1 and the T1 is responsible for NATing (only in VMware Cloud on AWS) the traffic for inbound and outbound access to workloads. In Google Cloud VMware Engine traffic in an out to the internet will go via the IPsec tunnel to the customers Virtual Private Cloud in Google Cloud Platform, it will not require NAT.

Organization Virtual Data Center (vDC) Networks – these are tenant networks providing connectivity for vApps and VMs and contained within an organization vDC. In Cloud Director service with VMware Cloud on AWS and Google Cloud VMware Engine these are the networks created behind the Tenant's T1 gateway and, since each one is a separate routing domain, different tenants can have overlapping IP space.

vApp Networks: (Not supported in NSX in VMware Cloud on AWS Cloud Director service, please validate other supported VMware hyperscale partners) – these networks are contained entirely within a vAPP and can be attached to an Organization Network.

From a management perspective, the Cloud Provider will manage the internet gateway and management gateway (T0) for all tenants and the compute gateway (T1) per tenant. The customer's Org Edge compute gateway (T1) is mapped to VMware Cloud on AWS, Google Cloud VMware Engine, or hyperscale partner's Compute Gateway (CGW) through which they access the service. Although tenants can self-manage their Edge compute gateway (T1) in VMware Cloud Director service if required.

MIGRATION

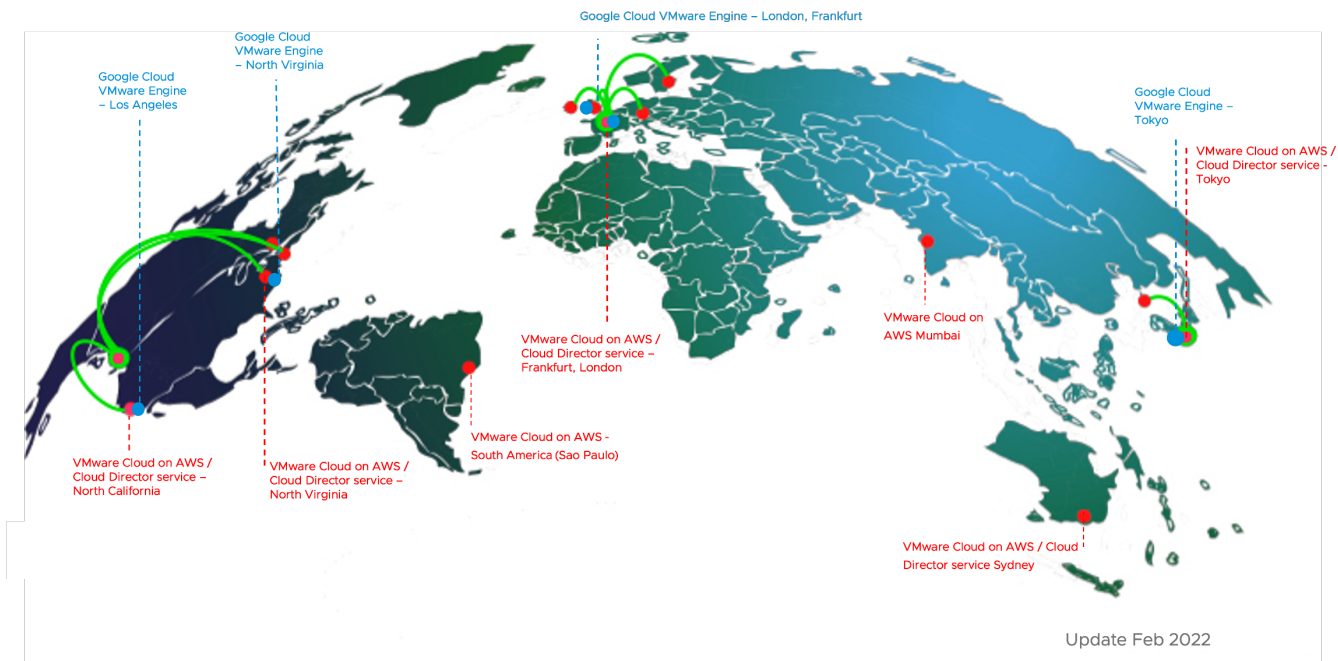
Migrating workloads to cloud is a key use case for partners to grow their cloud consumption with customer workloads, moving them from on-premises or existing provider Cloud Director instance to Cloud Director service on VMware Cloud on AWS or Google Cloud VMware Engine endpoints. For both endpoints Cloud Director Availability can be used with the following conditions. Cloud Director Availability 4.2 or later can be used to migrate one way a customer from on-premises or existing provider Cloud Director instance to VMware Cloud on AWS, and Cloud Director Availability 4.3 is required for Google Cloud VMware Engine with full Disaster Recovery and Migration workflows supported.

CATALOGS

VMware Cloud Director service organizations can use catalogs to store vApp templates and media files. Customer users in an organization that have access to a catalog can use its vApp templates and media files to create their own vApps. Organization administrators can copy items from a provider managed public catalogs to their organization catalog.

GLOBAL PRESENCE, INSTANTLY

With VMware Cloud on AWS available in almost all AWS regions, Cloud Director service has availability to deliver in Americas, EMEA and APJ, providing VMware Cloud on AWS data centers are less than 150ms roundtrip latency then VMware Cloud Director service can manage them. With Google Cloud VMware Engine, the same is true and in fact any other supported endpoint — vCenter on-premises or other Cloud Director instances — can also be managed with the same latency prerequisite.



There are some limitations for VMware Cloud Director service, depending on the endpoint, for VMware Cloud on AWS these are found in the configuration maximums guide [here](#). Main limitations to note are the soft limit 16 Compute Gateways limit that effectively means no more than 16 tenants should be on a single Cloud Director service instance. However, this is a soft limit and will depend on the packet throughput requirements for each tenant. This limit may not apply to other endpoints as they may have different bandwidth configurations.

MSP PROGRAM VMWARE CLOUD DIRECTOR SERVICE AVAILABILITY

The VMware Cloud Provider partner program is an ecosystem of over 4,500+ service providers located in more than 120+ countries offering VMware-based cloud services that address every business case, data sovereignty and compliance requirement, as well as specialized vertical markets. The Managed Service Provider (MSP) route to market gives partners the option to use VMware software-as-a-service offerings without investment in their own data center infrastructure, delivering managed services on top. VMware Cloud Director service is available via the MSP program and can be transacted via Cloud Partner Navigator.

HOW TO TRANSACT

Below is an overview of the Managed Service Provider (MSP) process:

- **Commit Contract** – Partner signs a VMware Cloud Director service Managed Service Provider commit contract with a VMware Aggregator. Partner then commits to VMware an MSRP (list price) spend to obtain a volume discount for their purchases.
- **Cloud Provider builds MSP Pipeline** – Partner initiates go to market activities and starts building their business for Managed Services.
- **Deliver Managed Services and Own the Terms of Service** – Once the opportunity has been identified, partners can order Cloud Director service from VMware and provide Managed Services as part of the offering to their customers. Partners must provide their own terms of service and managed services as part of the offering to the end customer. At a minimum this must include technical support for the service and all functions associated with service configuration, add-ons, renewals and anything pertaining to billing.
- **On-Board and Provide Support to their Customers** – Partner will on-board Cloud Director services for their customers. Subsequently, they may obtain technical support from VMware as needed, with the following [provisions](#). In turn, partners are responsible for all customer support, which may include but may not be limited to customer communication, any managed services, answering installation, configuration and usage questions.
- **Complete Monthly End Customer Reports and Pay Invoices** – On the 5th of every month, the partner will log into the Business Portal and review the prior month's usage. Partner will review the report and submit it to their Aggregator. Following that, the Aggregator will send the partner an invoice for the month.

CLOUD PARTNER NAVIGATOR

VMware Cloud Director service is offered to our MSPs through our centralized service provisioning portal, VMware Cloud Partner Navigator that helps MSPs transact, deploy and provision SaaS offerings from a single pane of glass. With Cloud Partner Navigator the provider is an MSP for VMware Cloud on AWS and an MSP for VMware Cloud Director service.

THE BUSINESS MODEL FOR CLOUD DIRECTOR SERVICE

Cloud Providers need two critical items to enable them to provide a healthy margin on a service; economies of scale to drive the cost to produce and manage a unit of service and profit derived from a market suitable sell price for service.

Economies of scale

Each hyperscale partner has their own minimum footprint SDDC, depending on the level of availability required this is usually a 3-node cluster which is either sold by VMware in the case of VMware Cloud on AWS or the hyperscale provider (if the case for GCVE or other). When looking at VMware Cloud on AWS an MSP commit contract is required at either a committed price or a rental contract. Depending on the contract type and volume varying discount applies.

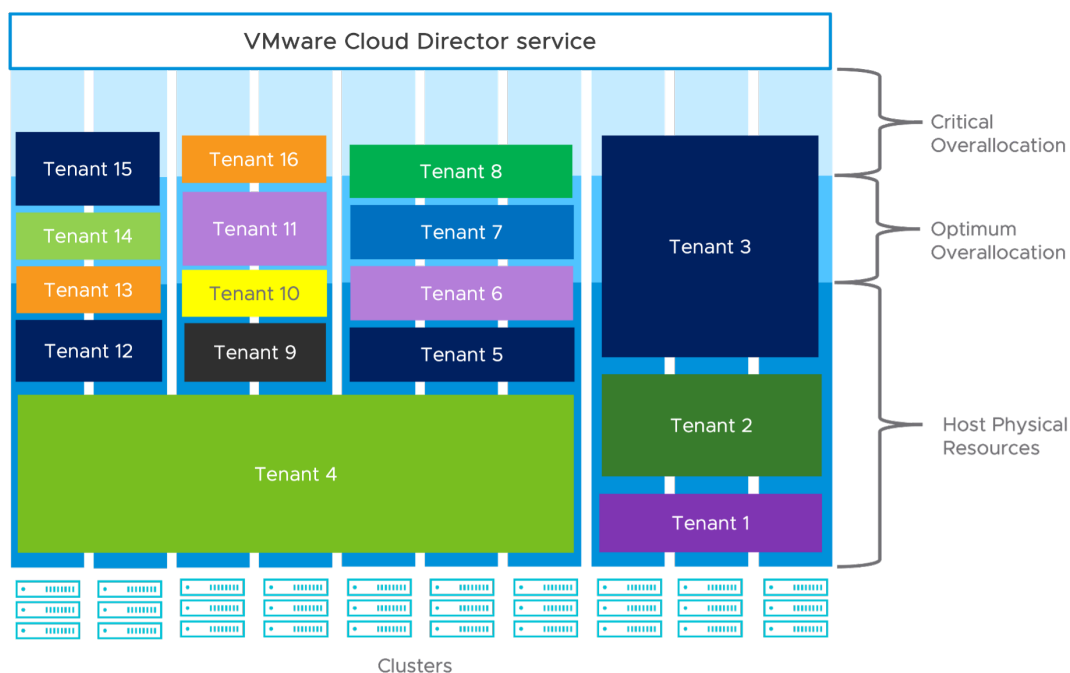
UNIT OF SERVICE - VMWARE CLOUD DIRECTOR INFRASTRUCTURE SERVICES

With the ability to sell per VM or per org VDC, there are several ways you can construct your infrastructure service, but there needs to be careful thought about the resource settings for the allocation models and how this relates to services – Allocation, Guarantee and vCPU speed are directly related to vSphere settings for Limit, Reservation, and limit on CPU on VM level.

The setting of these consumption models will affect your SLA as there will be differences between guaranteed amounts (reservations) and a maximum amount (limits) of physical resources that are available to the org VDC. To guarantee physical resources, vSphere can set a reservation on resource pool level and virtual machine level. A limit is set on resource pool level and virtual machine level if a maximum number of resources is defined in the organization VDC.

The opportunity for Cloud Providers to make additional margin at the infrastructure layer only is dependent on the allocation model chosen and how oversubscribed the resources are. Depending on the chosen allocation model, reservations and limits will be set on resource pool level, virtual machine level or both. Cloud Providers can use vSphere DRS to balance tenant workloads across physical resources within provider determined operational limits.

Cloud Providers can scale out the SDDC nodes and add new clusters. After adding a new cluster to the SDDC instance from the VMC Console and importing the cluster resources into Cloud Director service, cross cluster resource management is handled by the Cloud Director service placement engine for elastic organization Virtual Data Center (VDC). Such placement is performed when a workload is (re)deployed or its resources are reconfigured. Non-elastic org VDCs always use only the primary Resource Pool of a provider VDC and cannot be moved. A provider can migrate workloads between clusters within a PVDC (for elastic org VDC) using the migrate VM API. If an org VDC outgrows PVDC resources that cannot be scaled anymore a new PVDC must be created with a new org VDC for the tenant. Since a PVDC does not scale beyond the vCenter data center object, an org VDC is always limited by the PVDC. If customer has multiple org VDCs that are spread across multiple VCs they cannot use some features: Live migration, Catalog media ISO mounts and Shared networks.



Please remember that VMware Cloud Director service uses the terminology “allocations” and “guarantees,” whereas the vSphere layer provides “limits” and “reservations.” Using a Reservation pool, resources are allocated to the org VDC and are completely dedicated. This is identical to an allocation pool with all guarantees set to 100 percent. Reservation pool VDCs map to resource pools with the reservations set equivalent to the limits. Using an allocation pool allocated resources are provided with a certain percentage guaranteed. The percentage guaranteed directly translates into reservations configured on the child resource pool.

The difference between the reservation and the limit is in the resources that can be oversubscribed — this is essential in managing cloud resources and can lead to greater economies of scale, but also provide more risk to SLA.

LEARN MORE

To learn more about the solution please visit

<https://cloud.vmware.com/managed-services/cloud-director-service>

FAQ:

<https://cloud.vmware.com/managed-services/images/pdf/Cloud-director-service-on-VMware-Cloud-Partner-Navigator-FAQ.pdf>

Or visit our program pages at

<https://cloudsolutions.vmware.com/>

For more information on Cloud Director resource controls please visit:

http://bit.ly/VCD_Resourcing

For more information about the MSP Program, please visit the [webpage](#) or access the [Solution Brief](#)

For more information about Cloud Partner Navigator, please visit the webpage or access the Solution Brief.

FOR MORE INFORMATION OR TO PURCHASE VMWARE PRODUCTS

CALL 877-4 -VMWARE (outside North America, +1-650 -427-5000)

VISIT

<http://www.vmware.com/products>, or search online for an authorized reseller. For detailed product specifications and system requirements, refer to the documentation.

PUBLIC CLOUD (SHARED) SERVICES

For customers that are small, only need a few VM, have highly seasonal / variable / transient workloads, or are not interested in a whole org VDC associated to them a Public Cloud experience is ideal. This would cover a pay-as-you-go consumption model and could be priced per t-shirt size VM / Hour. The pay-as-you-go model provides customers with the illusion of a resource pool with no configured limited of reservations. Resources are only committed when a vApp is deployed and resources such as CPU and RAM can be guaranteed in the settings

VIRTUAL PRIVATE CLOUD / VIRTUAL DATA CENTER (SHARED) SERVICES

Using a mix of Reservation and Limits, you can deliver guaranteed resource performance and cloud economics with a ratio of oversubscription for stable production workloads with a potential pricing model of per Resource Pool / Month.

FLEX SERVICES

With the combination of flex allocation and VDC compute policies, Flex provides control over CPU and RAM consumption at both the VDC and the individual virtual machine levels. The flex allocation model supports all allocation configurations that are available in the existing allocation models.

PRIVATE CLOUD (DEDICATED) SERVICES

Typically, private clouds use 100% guarantees on resources to ensure an SLA can be met as these types are services are typically for more mission/business critical applications or verticals, for example: ERP, CRM, SCM, Healthcare with increased security and compliance needs. This could be assigned to hosts and priced: Per VMware Cloud on AWS (or VMware Hyperscale partner) Host / Month.