Expert Service Providers and VMware Cloud Director service

A Natural Partnership

VMware Cloud Director service

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 Cloud on AWS.

ADDRESSING GROWTH

VMware Cloud Director service enables Cloud Providers to leverage a new VMware Cloud on AWS SDDC in multi-tenant modality, allowing provisioning and consumption of bite-sized tenant based VMC resources. This provides significant flexibility for Cloud Providers that want to use VMware Cloud on AWS for smaller customers who don’t warrant an entire VMware Cloud on AWS 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 from VMware and hence optimizes expense and agility issues often hindered by operational day 2 processes by offsetting these to VMware, who also manages the VMware Cloud on AWS SDDC toolset as well.

VMware Cloud Director service can be purchased to overlay resource pooling and tenancy on a new VMware Cloud on AWS SDDC instance and can easily deployed into existing VMC managed sites VMware Cloud Director service will provide a true hybrid management experience using Cloud Director multi-site pairing you can provide consistency of cloud experience across different VMware Cloud on AWS regions and on-premises Cloud Director environments. (less than 150ms latency required) – all regions and availability zones accessible in a single dashboard.

AT A GLANCE

VMware Cloud Director service is a software as a service application providing multi-tenancy support for VMware Cloud on AWS SDDC.

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

VMware Cloud Director service is backed by NSX-T so that it can connect and manage seamlessly into VMware Cloud on AWS SDDC instances.

KEY BENEFITS

• Provides multi-tenancy to VMware Cloud on AWS SDDC allowing for self-service VM creation and resource pooling of SDDC resources over multiple tenants
• White labelled 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 and VMC on AWS SDDC with VMware service support & escalation

Vary your SLA from 99.9% (single availability zone) to 99.99% with SDDC cluster stretched across more than one availability zone
SERVICE REQUIREMENTS

VMWARE CLOUD ON AWS

- A new VMC on AWS instance will be required and a VMware Cloud Director service instance, using the MSP contract mechanism available today.
- VMC on AWS and VMware Cloud Director service can both be managed from Cloud Partner Navigator if you are a Cloud Provider signed up to contract on the MSP program.
- The VMware Cloud Director service needs to connect to a new VMC on AWS cluster to work.

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 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-premise 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 Org 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 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.

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. VMware Cloud Director service requires access to SDDC via the Management Gateway. 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 Cloud on AWS SDDC infrastructure and then provision organization resources and allocation pools.
MULTI-TENANCY ON VMWARE CLOUD ON AWS

VMware Cloud on AWS vSphere infrastructure provides 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 patrician resources to different organisations 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

As with VMware Cloud on AWS, the 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 of these layers are managed and serviced by VMware only.
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**

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 on AWS is provided by NSX-T. There is no capability for vApp networking, the only aspects of networking that will be included is edge Firewall distributed L4 / 7 Firewall, NAT, VRF-Lite services, L2 VPN and IPSec VPN and Public IP address assignment available in VMware Cloud Director service to be configured.

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 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.

**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 Availability restrictions and future capability

Although the global availability is focused at providing parity with VMware Cloud Director on premise functionality, there is some functionality outside of VMware Cloud Director service control, like VMware Cloud on AWS infrastructure. As such new items like vSphere native Kubernetes and NSX Advanced Load Balancer don’t work until VMware Cloud on AWS supports them, also vAPP routed networking, this too is not currently supported by NSX-T.

Global availability means that there is a presence in Americas, EMEA and APJ, as long as VMware Cloud on AWS datacenters are less than 150ms roundtrip latency then VMware Cloud Director service can manage them, not all sites have been tested and it is not recommended to cross continents using the same VMware Cloud Director service instance.

There are some limitations for VMware Cloud Director service and 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.

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**
Previously VMware Cloud on AWS minimum footprint SDDC was a 3-node cluster which if you chose the MSP commit contract, was $144k/yr or a rental contract including discount would vary on your price per point.

Pre VMware-Cloud Director service, assuming a commit contract of $144k and a Cloud Provider markup of 40% you would be looking for a single tenant contract of around $201k per year. Now with VMware Cloud Director service you could provide a service to 3 tenants for say 30 VM per tenant (at approx. 6GB/VM) with a RAM overcommit of approx. 35% and you could be then looking at a tenant contract for ~$67k per year. Using the VMware Cloud Director service allocation models to the resource pools you should consider a higher % overcommit to provide a Pay-as-you-go service, a medium % committed / reserved resource pools per Org and a low % overcommit should be dedicated cloud 100% committed / reserved allocation.
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 their will be differences between guaranteed amounts (reservations) and a maximum amounts (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 amount of resources is defined in the organization VDC. Depending on the chosen allocation model, reservations and limits will be set on resource pool level, virtual machine level or both.

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.

<table>
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<th>Cloud Director service consumption model</th>
<th>Service Tier</th>
<th>Infrastructure</th>
<th>Typical Unit of Sale</th>
<th>Typical Customers &amp; Use Cases</th>
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</table>
| Pay As You Go (On Demand Virtual Server) | Bronze       | Shared         | Fixed Price per VM / Hour (CPU/RAM per VM t-shirt sizes) | • 1-100 VMs  
• SMB and mid-market  
• Highly seasonal / variable / transient workloads  
• Only pay for what you use, when you use it  
• Example: month end reporting, dev/test, DaaS on recovery site, etc. |
| Allocation Pool (Virtual Data Center)  | Silver       | Shared         | Fixed Price per VDC / Month (Reserved pool of CPU/RAM capacity) | • 1-100 VMs  
• Medium and large enterprise  
• Predictable resources and performance  
• Flexibility to burst on demand  
• Example: e-commerce web application |
| Reservation Pool (Private Cloud)       | Platinum     | Shared or Dedicated | Fixed Price per Server / Month (physical CPU/RAM capacity or pool) | • 50–400+ VMs  
• Large enterprise and public sector  
• Mission/business critical applications  
• Security and compliance  
• Example: ERP, CRM, SCM, Healthcare |
LEARN MORE
VMware Cloud Director service is in initial availability now (April 2020) and limited to a minimum set of partners. GA and global rollout is expected later in 2020.

To learn more about the solution please visit
https://cloud.vmware.com/managed-services/cloud-director-service

FAQ:

Or visit our program pages at https://cloudsolutions.vmware.com/

For more information on Cloud Director resource controls please visit:

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)
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)
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
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)
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 Host / Month.