VMware Cloud Director service for Enterprise Customers

Solution Brief

The VMware Cloud Director service offers Enterprise Customers the ability to divide and arrange their VMware Cloud resources, including VMware Cloud on AWS, Google Cloud VMware Engine, Azure VMware Solution, and Oracle Cloud VMware Solution (herewith referred to as VMware Hyperscalers), into resource pools. This partitioning and organization process facilitates the delivery of multi-tenant services within the virtual data centers, users, and networks of the organizations. Moreover, the VMware Cloud Director service enables the establishment of connections to on-premises Cloud Director instances and existing vCenter instances, allowing the delivery of Cloud Director services to remote data centers.

Enterprise Customers have the flexibility to utilize application services and Virtual Data Center services within VMware Hyperscalers tailored to their specific requirements. This eliminates the need for physical node footprints within their organization. Enterprise Customers have the freedom to select the appropriate size of their footprint, ranging from a single virtual machine to a resource pool that spans multiple hosts. This unique feature allows Enterprise Customers to optimize the sizing of VMware Hyperscaler environments based on their individual needs.

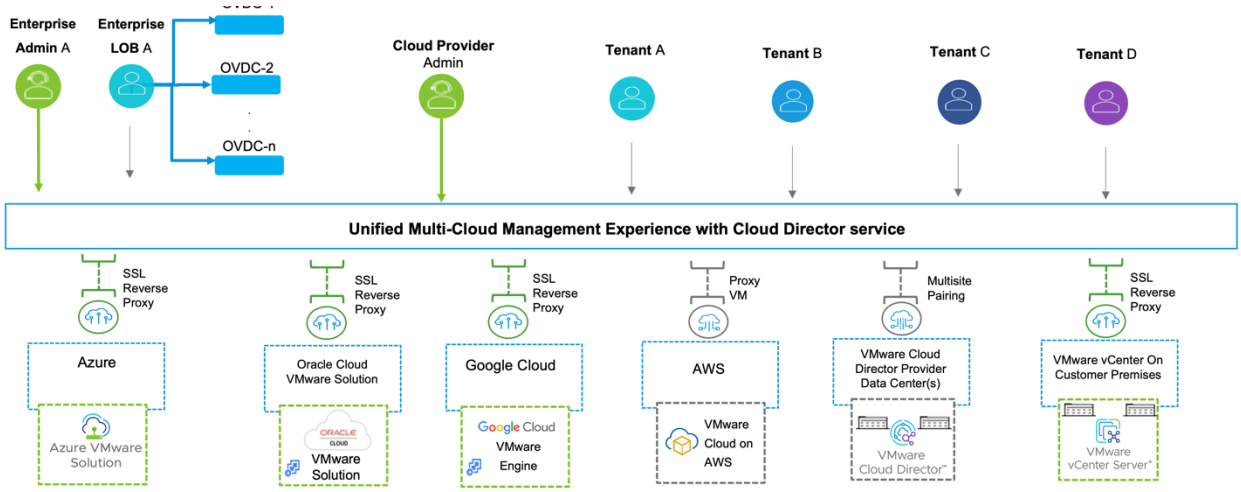
Please note: As of Initial Availability, Azure VMware Solution and Oracle Cloud VMware Solution only supports Enterprise Customers.

Doesn’t vSphere already do this?

Yes, vSphere can pool resources, but Cloud Director service provides securely isolated multi-tenanted self-service and additional/extensible services like networking, security, VMware Cloud Marketplace (inc. Bitnami), Kubernetes and many more without impacting multiple organizations within the company.

Cloud Director service is a truly multi-cloud platform

While vSphere offers resource pooling capabilities, the Cloud Director service goes a step further by providing secure and isolated multi-tenant self-service functionality. Additionally, it offers a range of supplementary and expandable services such as networking, security, VMware Cloud Marketplace (including Bitnami), Kubernetes, and many others. These added services are available without causing any disruptions or interference among multiple organizations within the company.



As illustrated in the diagram, the Cloud Director service employs different communication capabilities for existing endpoints. However, for future endpoints, a unified approach is adopted, leveraging an SSL reverse proxy for secure connectivity between on-premises and other cloud endpoints to the cloud platform. This consistent model ensures secure connections. Furthermore, the Cloud Director service introduces support for on-premises vCenter, enabling Enterprise Customers to utilize Cloud Director services within their on-premises environment without the requirement of installing Cloud Director software on-premises.

What about the availability of the Cloud Director service platform?

VMware Cloud Director service instances are deployed across multiple Availability Zones in the chosen region. If one of the availability zones experiences an outage, new nodes are automatically deployed in another availability zone to replace the nodes that were impacted by the outage, ensuring that the VMware Cloud Director instance remains operational. Even without access to VMware Cloud Director service, however temporary, tenants are still able to access their resources in the target cloud.

What is VMware Cloud on AWS?

VMware Cloud on AWS brings VMware's robust Software-Defined Data Center software to the AWS Cloud, empowering Enterprise Customers to seamlessly operate production applications across VMware vSphere-based private, public, and hybrid cloud environments. This integration provides optimized access to AWS services that complement the VMware ecosystem. Developed collaboratively by Amazon Web Services (AWS) and VMware, this service is fully supported by VMware, requiring only a paid subscription from the Enterprise Customer to access and utilize its features. VMware Cloud on AWS offers a highly scalable and secure solution, extending VMware vSphere environments to the AWS Cloud, utilizing Amazon Elastic Compute Cloud (Amazon EC2) infrastructure. To access VMware Cloud on AWS, VMware Enterprise Customers can conveniently utilize the Cloud Service Console portal.

What is Google Cloud VMware Engine?

Google Cloud VMware Engine is a cutting-edge Google service that brings together the exceptional features of VMware compute, storage, network virtualization, and management technologies with Google Cloud's advanced infrastructure and networking capabilities. As a VMware Cloud-verified service, it is fully managed and supported by Google, ensuring a seamless and hassle-free cloud experience for Enterprise Customers. By leveraging Google Cloud VMware Engine, you can harness the power of Google

Cloud's highly performant and scalable infrastructure, complete with robust and dedicated 100 Gbps networking that guarantees 99.99% availability. This ensures that even the most demanding workloads can be handled with ease, all at a cost-effective rate. Once your workloads are in the cloud, you can unlock the potential of other Google Cloud services such as BigQuery and Cloud Operations, empowering you to derive data-driven insights and streamline your operational processes.

What is Azure VMware Solution?

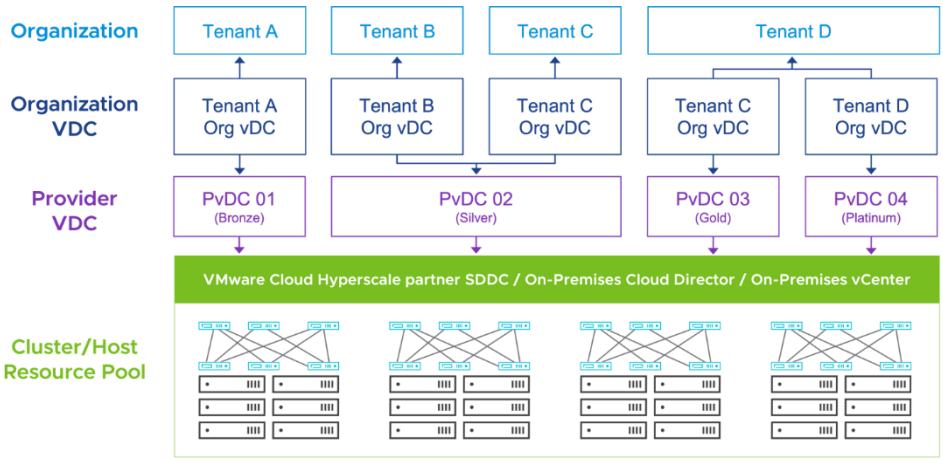
Azure VMware Solution is a collaborative Azure service developed by VMware and Microsoft, offering a complete VMware infrastructure experience within the Azure cloud. With this solution, Enterprise Customers can leverage their existing VMware expertise and tools while benefiting from the expansive global infrastructure of Microsoft Azure. Azure VMware Solution provides a swift and effortless path to the cloud, allowing seamless migration or extension of VMware workloads from on-premises environments to Azure. The process eliminates the need for costly application re-architecting or operational retooling. Enterprise Customers can efficiently build, run, manage, and secure applications across both VMware environments and Microsoft Azure, all while utilizing familiar VMware tools, skills, and established processes.

What is Oracle Cloud VMware Solution?

Oracle Cloud VMware Solution is a collaborative service offered by Oracle, developed in partnership with VMware. This solution ensures a seamless VMware infrastructure experience within the Oracle cloud environment. By integrating on-premises VMware tools, skillsets, and processes, Oracle Cloud VMware Solution allows Enterprise Customers to leverage their existing VMware investments while taking advantage of Oracle's public cloud services. This solution provides a fully tenant-managed and tenant-operated native VMware cloud environment, adhering to the VMware Validated Design principles. It is specifically designed to be used in conjunction with the public Oracle Cloud Infrastructure, offering Enterprise Customers a comprehensive and unified VMware experience within the Oracle cloud ecosystem.

How does it work?

The infrastructure provided by VMware Hyperscalers serves as the underlying framework for the architecture of the Cloud Director service. It delivers a comprehensive set of resources that can be utilized within a Cloud Director Provider Virtual Data Center (PVDC). These resources are directly mapped to vSphere clusters or resource pools within a vSphere cluster. In the diagram below, you can observe that each tenant Organization Virtual Data Center utilizes resources sourced from a Provider Virtual Data Center. The Provider Virtual Data Center acts as the link between the Organization Virtual Data Center and the vSphere resources. To manage resource consumption within an Organization's Virtual Data Center, an allocation model is implemented, which sets limits on the vSphere resources available to the organization. This allocation model ensures a fair distribution of resources and caters to the needs of other Organization Virtual Data Centers that share the same Provider Virtual Data Center.



At its core, Enterprise Customers have the ability to divide resources among different organizations using resource pools as the foundational framework. This partitioning mechanism allows for the segregation of various business units within the organization. It enables the association of different service levels with specific performance, availability, and cost attributes, which are determined by allocation models.

How does the Cloud Director service connect to VMware Cloud on AWS?

The Cloud Director service operates directly within the native AWS environment, establishing an immediate connection with VMware Cloud on AWS. Communication with VMware Cloud on AWS SDDC components is the default and primary use case for the Cloud Director service. To configure this setup, the Enterprise Customers need to associate a VMware Cloud Director service instance with a VMware Cloud on AWS SDDC. This is accomplished by creating a proxy virtual machine (VM) that acts as a routing mechanism for all network traffic directed towards the underlying VMware Cloud on AWS SDDC resources.

By associating a proxied SDDC, tenants can access the underlying SDDC infrastructure without requiring direct public access to the VMware Cloud on AWS SDDC that supports the Cloud Director service.

How does Cloud Director service connect to Azure VMware Solution, Google Cloud VMware Engine and Oracle Cloud VMware Solution?

The Cloud Director service, being a multi-cloud platform, necessitates connections to other cloud endpoints through a **reverse proxy service**. This reverse proxy function consists of two components: the cloud part and the remote part. The cloud portion is designed to be highly available and scalable, capable of handling a large number of individual connections. The remote part is delivered as an appliance, deployable in VMware Hyperscaler and on-prem environments.

The cloud server side of the reverse proxy server exposes a single external endpoint, while remote clients establish connections using HTTPS and secure web sockets to register the endpoints they can service. To establish a connection, proper authorization is essential, which involves the use of OAuth tokens with sufficient privileges. Enterprise Customers can increase the availability of the connection by running multiple reverse proxies.

How does Cloud Director service connect to on-premises Cloud Director?

The Cloud Director service utilizes the same code base and offers the capability of site association between different Cloud Director instances. This feature, known as Cloud Director Multisite, allows Cloud Services Providers or tenants with multiple geographically distributed Cloud Director installations to effectively manage and monitor them as a unified entity. By associating the Cloud Director service with other Cloud Director sites, it becomes possible to administer all the sites together, treating them as a single entity within the multi-cloud environment.

What are the allocation models I can use in the Cloud Director service?

There are four types of allocation models you can use in Cloud Director service (exactly like Cloud Director on-premises):

1. **Pay as you go** – provides no up-front resource allocation in the Org VDC. Resources are committed as users power up VM/ vApp in an Org VDC. Resources are committed at the VM level in terms of percentage vCPU and vGB RAM — a provider can use these commitments to specify an SLA.

2. **Allocation Pool** – each organization's VDC gets an allocated pool of resources, and only a percentage of resources are committed or reserved to the Org VDC. The provider can construct an SLA and pricing around the volume of reserved resources.

3. **Reservation Pool** – the organization is committed to 100% of the resources, whether needed or not — there is no sharing of resources with other Org VDCs. This ensures resources are available when needed, and tenants can adjust their own reservations and limits per VM.

4. **Flex** – simplifies and provides the best allocation pools and Pay-Go models, by controlling CPU and RAM consumption, both at the Org VDC and individual VM levels, through sizing policies, not to be confused with Compute policies. The provider VDC (PVDC), can define VM to host affinity for tenant workload placement and define Org VDC compute policies to control the compute characteristics of VMs.

What sort of services could I Use?

The range of services offered by Cloud Director service expands beyond the foundational IaaS service derived from the SDDC infrastructure. Through the plugin extensibility framework, Cloud Director service supports various additional services such as Object Storage, Tanzu Kubernetes Clusters, App Launchpad for VMware Marketplace or third-party applications, Data Service Extension, Chargeback services, and custom services. These solutions can be managed either by the Enterprise Customers or offered as self-service options to the tenant within the organization, depending on the allocation models used. Furthermore, catalogs can be utilized to support tenant specific images.

Networking services provided by NSX, including Edge and distributed firewalls, NAT, and dual-stack IP, are available for tenants' Virtual Data Center services. All of these features are supported by the VMware Hyperscaler software-defined data center footprint and are exposed within the Cloud Director service. It's important to note that tenants within the organization will not have direct access to the underlying SDDC systems such as NSX, vCenter, or vSAN. Instead, they will access all their cloud services through the user interface of the extensible Cloud Director service tenant portal.

With the inclusion of VMware Hyperscalers, you have the opportunity to complement your Cloud Director installation with additional cloud-native services from AWS, Google, Microsoft Azure, or Oracle Cloud, depending on the platform you are connected to.

Adjacency - A key differentiator

AWS Native Services:

A crucial aspect of the Cloud Director service is its adjacency feature, which enables Enterprise Customers to leverage AWS Native Services. In addition to the infrastructure of any size, Enterprise Customers have access to various services that offer seamless integration. This includes utilizing AWS Cloud storage from the VMware Cloud on AWS SDDC, enhancing VM workload security through AWS networking services, and leveraging AWS databases and analytics services for workloads running in the SDDC. All AWS native services are accessed and made available through an Enterprise Customer owned Elastic Network Interface (ENI) and Amazon Virtual Private Cloud (VPC). Through VPC connectivity, Enterprise Customers can expose services utilizing Amazon Native EC2, RDS, S3, EFS, traditional VMs, and more.

The Cloud Director service currently provides multi-tenant services to VMware Cloud on AWS regions such as North America, London, Frankfurt, and Tokyo. Support for other VMware Cloud on AWS regions is available, subject to latency considerations.

Google Native Services:

Adjacency is a pivotal feature that enables Enterprise Customers to utilize Google Native Services, empowering their modernization journey. To seamlessly access these services, connectivity is established between the Tenant (Org VDCs) and Google Virtual Private Cloud (VPC). This integration allows Enterprise Customers to leverage various additional Google Native Services, including Cloud Storage, BigQuery, Cloud SQL (requires VPC Peer), NetApp (requires VPC Peer), Marketplace solutions running IBM Power (MPS Networking), and Backup/DR - Actifio. All of these services seamlessly connect to the tenant environment and the Google organization account.

With the Cloud Director service, VMware currently offers multi-tenant services in 11 regions of availability (subject to latency considerations):

- The Cloud Director service in the US West region covers GCVE locations, including Los Angeles, Iowa, and N.Virginia (with Montreal and Toronto available, depending on latency).
- The Cloud Director service in Frankfurt covers GCVE locations in Frankfurt, the Netherlands, and London.
- The Cloud Director service in Tokyo covers Google Cloud VMware Engine locations in Tokyo and Singapore.
- The Cloud Director service in Sydney covers Google Cloud VMware Engine locations in Sydney (with Singapore available depending on latency).

Microsoft Azure Native Services:

Adjacency plays a critical role in empowering Enterprise Customers to leverage Microsoft Azure Native Services and embark on a transformative modernization journey. To enable seamless access to these services, connectivity is established between the Tenant (Org VDCs) and Microsoft Azure Virtual Network (vNet). This integration opens up opportunities for Enterprise Customers to leverage additional Microsoft Azure Native Services like Azure Blob Storage, Azure File Storage, Azure Synapse Analytics, Azure SQL Database, and more.

This offering is available in all Azure regions where Azure VMware Solution is supported. It's important to note that when considering design options, ensure that the region you intend to connect to the Cloud Director service adheres to the 150 milliseconds round trip time latency rule for Cloud Director service.

Oracle Cloud Native Services:

Adjacency serves as a vital component, enabling Enterprise Customers to harness the potential of Oracle Cloud Native Services and embark on a transformative modernization journey. This requires establishing connectivity between the Tenant (Org VDCs) and Oracle Cloud Virtual Cloud Network (VCN) to ensure seamless access to these services.

Enterprise Customers can further use additional Oracle Cloud Native Services such as Oracle File Storage, Oracle Block Storage, Oracle Cloud Database, and more. The availability of these services extends to all Oracle Cloud regions where Oracle Cloud VMware Solution is present. Please note that when considering design options, it is important to ensure that the round-trip latency between your chosen Oracle Cloud Region and the nearest Cloud Director service location adheres to the 150 milliseconds rule.

How do I migrate to the Cloud Director service?

Cloud Director service provides the flexibility to leverage all native capabilities of VMware Cloud, including HCX and VMware Cloud Director Availability. However, it's important to note that HCX operates independently of the Cloud Director service. To successfully onboard Enterprise Customers using HCX, which is offered by all VMware hyperscale partners, the initial step involves performing migration using HCX. Following the migration process, the next step entails importing virtual machines (VMs) into the Cloud Director service using the API import function.

For disaster recovery and migration management, Enterprise Customers can utilize VMware Cloud Director Availability 4.3 (or later versions) as a service, supporting cold or warm migration jobs with Google Cloud VMware Engine and Oracle Cloud VMware Solution as endpoints.

Similarly, for migration management only, Enterprise Customers can utilize VMware Cloud Director Availability 4.2 (or later versions) with support for cold or warm migration jobs, specifically targeting VMware Cloud on AWS and Azure VMware Solution as endpoints.

Business Results and Benefits

The suitability of VMware Cloud on AWS, Google Cloud VMware Engine, Azure VMware Solution, and Oracle Cloud VMware Solution with Cloud Director service will vary depending on your specific use case. Over the years, many customers have encountered challenges tied to data center processes, impacting service delivery and organizational agility. By leveraging these cloud solutions, customers can experience enhanced agility and innovation, delivering intangible benefits beyond simple cost comparisons.

Agility and differentiation play a crucial role in driving customer growth, allowing organizations to respond to demands swiftly and provision new hosts within hours, compared to the weeks or months typically required in traditional data centers. By entrusting Cloud Director service to VMware, Enterprise Customers can offload the complexities and management responsibilities to focus on their core business objectives.

Expanding the footprint and achieving interoperability across multiple clouds is a significant requirement for many businesses. Enterprise Customers with geographical or sovereignty requirements rely on cloud providers that manage their services within their respective nations. However, they also desire the advantages offered by VMware Cloud on AWS, Google Cloud VMware Engine, Azure VMware Solution, and Oracle Cloud VMware Solution when data sensitivity permits. The ability to seamlessly transition between these environments and leverage the native services provided by AWS, Google Cloud, Microsoft Azure, and Oracle Cloud enables Enterprise Customers to derive business value from these adjacent ecosystems.

Use Cases

- ### Asset-Light Geo Expansion

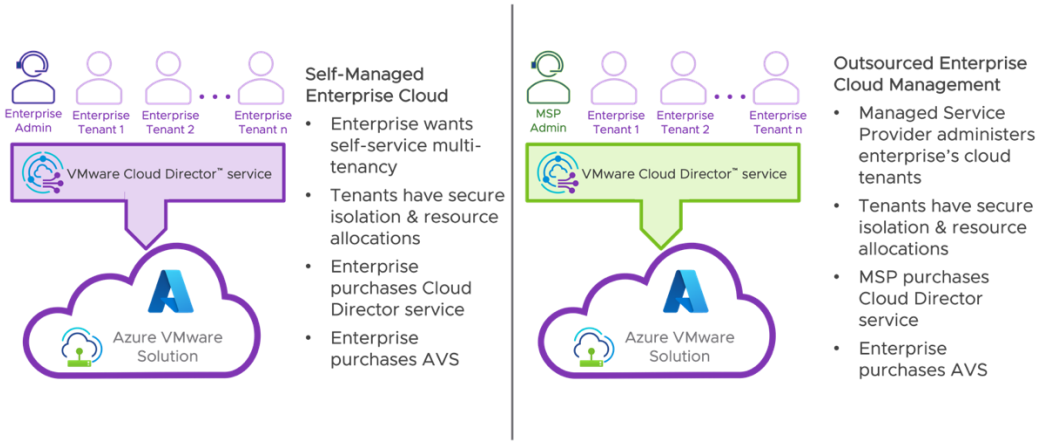
  Enterprise customers are seeking opportunities to broaden their presence on VMware-powered hyperscale clouds such as VMware Cloud on AWS, Google Cloud VMware Engine, Azure VMware Solution, and Oracle Cloud in a cost-effective manner. However, Enterprise customers may need help in realizing the necessary economies of scale to achieve global expansion. Cloud Director service addresses this challenge by empowering Enterprise Customers to seamlessly integrate new lines of business and expand into new geographical regions rapidly, facilitating their growth and diversification.

- ### Multi-Tenancy

  – #### Multi-Tenancy on VMware Cloud on AWS and Google Cloud VMware Engine

  Through the integration of multi-tenancy into both VMware Hyperscaler and on-premises solutions, the VMware Cloud Director service enables organizations to effectively deliver customized and dedicated cloud resources perfectly aligned with the distinct needs of their business units. This shared approach optimizes the utilization of physical node instances across multiple business units within the same organization, enabling agile cloud expansion while maintaining consistent operations. As a result, business units of all sizes can benefit from cost-effective scalability and enhanced operational efficiency within their cloud environments.

  – #### Enterprise Multi-Tenancy on Azure VMware Solution



Use Case 1: Enterprises with self-service capabilities that want multi-tenancy

In this use case, the Enterprise customer purchases the Azure VMware Solution service offered by Microsoft, which provides a private cloud that contains VMware vSphere clusters built from dedicated bare-metal Azure infrastructure.

Additionally, the Enterprise customer purchases the Cloud Director service offering from VMware. Thereafter, the Enterprise customer in this case can onboard their internal tenants separated using multi-tenancy.

For example:

An Enterprise customer, Acme Corp, that wants to own all the SDDC endpoint resources without sharing them with any other Enterprise customers has purchased Azure VMware Solution and onboarded their different internal tenants. Each tenant will have access to the Cloud Director service to provide them with self-service capabilities. Thereafter, Acme Corp can multi-tenant and manage the resources within the organization into multiple departments. For example, they can have one tenant within their organization for all the production applications and can have another tenant within the same organization for all the staging applications.

Use Case 2: Cloud Director service for Cloud Services Providers (SaaS) with Enterprise Customers

In this use case, the Enterprise customer purchases the Azure VMware Solution service offered by Microsoft, which provides private clouds that contain VMware vSphere clusters built from dedicated bare-metal Azure infrastructure. The Cloud Service Provider – SaaS will buy the Cloud Director service offering available from VMware. Thereafter, the Cloud Services Provider - SaaS, in this case, can onboard the Enterprise customer and enable multi-tenancy like the 1st use case.

For example:

An Enterprise customer, Acme Corp, that wants to own all the SDDC endpoint resources without sharing them with any other Enterprise customer has purchased Azure VMware Solution. A Cloud Services Provider (SaaS) would onboard Acme Corp onto Cloud Director service. Thereafter Acme Corp and the Cloud Services Provider - SaaS can multi-tenant and manage the resources within their organization into multiple departments. For example, they can have one tenant within their organization for all the production applications owned by the IT department and can have another tenant within the same organization for all the applications owned by the DevOps department.

Note: Currently, the Cloud Services Provider - SaaS is not able to buy Azure VMware Solution and resell it to their customers.

– Enterprise Multi-Tenancy on Oracle Cloud VMware Solution

Like Azure VMware solution, VMware Cloud Director service introduces multi-tenancy to Oracle Cloud VMware Solution, allowing Enterprise customers to offer custom-sized, tenant-based cloud resources to better align with the needs of internal enterprise users by sharing the costs of physical node instances across multiple internal tenants. This allows Enterprise customers of all sizes to enjoy agile cloud expansion with consistent operations. These are some of the primary use cases with the Initial Availability of Cloud Director service on Oracle Cloud VMware Solution.

Use Case 1: Enterprises with Self-Service Capabilities that want Dedicated/Multi-Tenancy

In this use case, the **Enterprise customer will buy the Oracle Cloud VMware Solution service** offered by Oracle, which provides a private cloud that contains VMware vSphere clusters built from dedicated bare metal Oracle Cloud compute instances. Additionally, the Enterprise customer will buy the Cloud Director service offering from VMware. Thereafter, the Enterprise customer can onboard their internal tenants separated using multi-tenancy.

For Example*:*

An Enterprise customer, Acme Corp, that wants to own all the SDDC endpoint resources without sharing them with any other Enterprise customer, has purchased Oracle Cloud VMware Solution and onboarded their different internal tenants. Each tenant will have access to the Cloud Director service to provide them with self-service capabilities. Thereafter Acme Corp can multi-tenant and manage the resources within the organization into multiple departments. For example, they can have one tenant within their organization for all the production applications and can have another tenant within the same organization for all the staging applications.

Use Case 2: Cloud Director service for Cloud Services Providers (SaaS) with Enterprise Customers for Multi-Tenancy.

In this use case, the **enterprise customer will buy the Oracle Cloud VMware Solution** service offered by Oracle, which provides private clouds that contain VMware vSphere clusters built from dedicated bare-metal Oracle infrastructure. The **Cloud Services Provider – SaaS will buy the Cloud Director service** offering available from VMware. Thereafter, the Cloud Services Provider - SaaS, in this case, can onboard the Enterprise customer and enable multi-tenancy like the 1st use case.

***For Example**:*

An Enterprise customer, Acme Corp that wants to own all the SDDC endpoint resources without sharing them with any other Enterprise customer has purchased Oracle Cloud VMware Solution. A Cloud Services Provider - SaaS would onboard Acme Corp onto Cloud Director service. Thereafter Acme Corp and the Cloud Services Provider - SaaS can multi-tenant and manage the resources within their organization into multiple departments. For example, they can have one tenant within their organization for all the production applications owned by the IT department and can have another tenant within the same organization for all the applications owned by the DevOps department.

- ## Data Center Extension

By leveraging VMware Cloud Director service, Enterprise customers can seamlessly expand their cloud infrastructure without the traditional challenges of hardware procurement, data center capacity rental, and compliance obligations. This eliminates the need for capital investment and physical data center expansion, presenting customers with a new market opportunity. With the ability to provision and consume virtual data center resources based on their specific needs, companies can achieve cloud expansion while maintaining consistent operations. The service follows an asset-light, pay-as-you-go model, delivered as-a-service with seamless integration right out of the box.

- ## Hybrid Operations

Enterprise customers have the capability to seamlessly extend their data centers by associating multiple Cloud Director instances. This integration provides a unified view and access to geographically dispersed data centers, on-premises vCenter(s), as well as VMware Hyperscalers. As long as the latency to the target data center resources is below 150 ms, they can be efficiently managed from a single VMware Cloud Director service instance. This empowers global, and regional expansion and enables smooth hybrid operations.

- ## On-Demand Capacity

Enterprise customers can utilize the Cloud Director service in our multi-cloud environment to harness the power of various cloud resources from VMware Hyperscalers and on-premises vCenter data centers. This enables them to dynamically provision and utilize custom-sized, tenant-based cloud resources as per needs. By offering flexible options like 'Pay-as-you-Go' on-demand virtual servers, allocation, or reservation pool virtual data centers, organizations can effectively monetize their services and cater to diverse requirements.

- ## Security and Compliance

VMware Cloud Director service ensures network isolation for every business units within the company by offering Firewall, NAT, and Public IP services within the designated SDDC infrastructure. This allows the Enterprise customer to deliver a secure and efficient cloud infrastructure, leveraging the enhanced NSX integration for native multi-tenancy. To establish communication with the target SDDC infrastructure, SSL encryption is employed to secure all traffic between the reverse proxy (client) in the SDDC and the Cloud Director service in AWS.

Now available in the Cloud Director service

VMware Cloud Director service provides as much feature parity to Cloud Director on-premises capability as possible if the underlying Cloud SDDC supports the feature.

- **App Services with App Launchpad:**

  The Cloud Director service enables the delivery of a curated catalog consisting of VMware Cloud Marketplace applications (including Bitnami) as well as custom or third-party applications to tenants. With the convenience of 1-click app deployment, these applications can be provisioned to any infrastructure endpoint, whether it's a virtual machine, vApp, or container. Users can access and deploy these apps without requiring knowledge of the underlying infrastructure. The latest version of App Launchpad (2.x) extends its endpoint support to Container Service Extension managed Tanzu Kubernetes on vSphere, allowing tenants to automatically launch apps into the relevant infrastructure, be it an Org VDC or a Kubernetes cluster. As a developer-ready cloud solution, App Launchpad provides a platform equipped with enterprise-grade Kubernetes, vCloud Director Terraform infrastructure-as-code capabilities, and NSX multi-cloud fabric, enabling the development of applications across diverse environments.

- **S3 Object Storage with Object Storage Extension:**

  The VMware Cloud Director Object Storage Extension is a comprehensive storage solution seamlessly integrated into the VMware Cloud Director framework. It provides a unified and streamlined approach to provisioning and managing storage resources within the VMware Cloud Director environment. With this extension, users can easily allocate, configure, and utilize object storage for their virtualized workloads. By integrating storage management directly into the VMware Cloud Director platform, organizations can simplify their storage infrastructure and leverage the benefits of object storage in a more efficient and cohesive manner.

  The VMware Cloud Director Object Storage Extension is a dedicated middleware service designed to enhance the capabilities of VMware Cloud Director by providing seamless access to object storage functionalities. This extension operates on top of a storage cluster or integrates with AWS S3, enabling users of VMware Cloud Director to leverage object storage for their data storage needs.

  The VMware Cloud Director Object Storage Extension offers support for various object storage platforms, including Cloudian Hyperstore, DELL ECS, and Amazon native S3. Additionally, it provides flexibility by allowing integration with any S3-compliant object storage platform through the Object Storage Interoperability Service (OSIS) extension point. OSIS defines a standardized set of management APIs that facilitate communication between the VMware Cloud Director Object Storage Extension and third-party object storage platforms, ensuring seamless data exchange and access for tenants and users. For detailed information, you can refer to the VMware Object Storage Interoperability Service Development Guide.

  It's worth noting that in the context of Google Cloud VMware Engine, customers have the option to utilize Object Storage services through their own Google Cloud Platform interfaces, independent of the Cloud Director service automation. This allows users to take advantage of Google Cloud's native object storage capabilities alongside the Google Cloud VMware Engine environment.

- **Efficiency Gains:**

  VMware Cloud Director strives to enhance efficiency for both providers and tenants, offering improved usability and a range of new features in the provider and tenant portal. These enhancements aim to simplify user experiences and streamline operations.

  For new users, the introduction of Guided Tours within the user interface assists in familiarizing them with the platform and its functionalities. Providers can leverage this feature to showcase the services and features they offer, ensuring a smooth onboarding process.

Through the use of 'Advisories', customers can effectively communicate important information to tenants, such as planned maintenance schedules or updates. This feature enables seamless collaboration and keeps tenants informed about any relevant notifications.

Furthermore, a new Quick Search functionality has been implemented to facilitate efficient navigation within the interface, particularly when dealing with numerous objects. This feature enables users to swiftly locate specific items or resources, improving overall productivity and ease of use.

By continuously enhancing usability and introducing new features, VMware Cloud Director service aims to optimize operational efficiency and deliver an intuitive user experience for both providers and tenants.

- **Kubernetes Cluster services with Container Service Extension:**

  VMware Cloud Director treats Kubernetes as a primary component, offering seamless integration and management capabilities. Enterprise customers have the ability to enable the orchestration of Tanzu Kubernetes cluster resources within the platform, allowing for the implementation of layered solutions such as developer readiness tools.

  Customers can leverage VMware Cloud Director's cluster functionality to deploy Kubernetes clusters through the Container Service Extension. The Container Service Extension provides a comprehensive set of tools, including the CLI and UI plugin, for performing lifecycle management tasks on various types of clusters.

  It's important to note that while Kubernetes support and usage of the Container Service Extension are available, they may not be universally supported across all endpoints. It is advisable to consult the Cloud Director service documentation to verify the specific endpoints where Kubernetes support is available and to access detailed information on its usage.

- **Data Solution as a Service:**

  Deliver multi-tenant data services that work with VMware Data Solutions like VMware RabbitMQ, VMware SQL and Postgres and Kubernetes support. VMware Data Solutions enables users to modernize their approach to data, providing organizations with a rich portfolio of solutions that are supported on Kubernetes, virtualized platforms, and in multi-cloud deployments.

- **Migration as a Service:**

  Customers can avail of Cloud Migration services, which can be provided as either self-service or managed service options. These services enable seamless migration from on-premises vSphere client or VMware Cloud Director Availability Cloud Director instances to various cloud platforms such as VMware Cloud on AWS (starting from Cloud Director Availability 4.2), Google Cloud VMware Engine (starting from Cloud Director Availability 4.3), Azure VMware Solution (starting from Cloud Director Availability 4.3), and Oracle Cloud VMware Solution (starting from Cloud Director Availability 4.3).

- **Disaster Recovery as a Service:**

  Customers can benefit from Disaster Recovery as a Service (DRaaS) options, which can be offered as either self-service or managed service solutions within the Cloud Director service user interface. These solutions enable disaster recovery replication with a maximum Recovery Point Objective (RPO) of 1 minute between instances of Google Cloud VMware Engine and Oracle Cloud VMware Solution. Additionally, for on-premises environments in Google Cloud VMware Engine or Oracle Cloud VMware Solution, the RPO is set to 5 minutes, allowing for efficient disaster recovery replication between the two environments and vice versa.

How do Enterprise Customers Benefit?

- **Expansion:** Companies can rapidly expand their cloud footprint to new geographies and lines of business whilst minimizing Capex costs and enjoying faster time to market. With VMware Cloud Director service, Enterprise Customers can launch new software-defined data center resources in new VMware Cloud on AWS and/or Google Cloud VMware Engine and/or Azure VMware Solution and/or Oracle Cloud VMware Solution and/or on-premises vCenter SDDC locations and manage this constantly from the same Cloud Director service instance (subject to 150ms latency).
- **Agility:** VMware Cloud Director service significantly reduces the operational overhead from the ongoing maintenance of siloed multi-cloud environments. With automated workflows and rapidly delivered updates it increases business agility.
- **Fragmented offerings:** Enterprise Customers get a consistent, customizable, and simplified self-service cloud user experience, irrespective of whether they are familiar with VMware technologies or not and irrespective of the target endpoint infrastructure.
- **Unified management:** Reduces operational overheads and delivers a consistent experience to Enterprise Customers in a single UI for applications, resources, and Dev Ready Cloud infrastructure.
- **Right-Sized Solutions:** Now that Cloud Services Providers can offer Virtual Data Center resource services of all sizes, the sizing and commercial subscription benefits can be passed onto tenants.
- **Predictable Costs:** Enterprise customers can offer an allocation pool to each business unit organization Virtual Data Center (OVDC) where only a percentage of resources allocated can be committed if required. This makes a predictable cost model for Enterprise Customers and lowers the risk of VM not being able to start due to resource constraints.
- **Continuity and Security:** Business units (tenants) receive network edge firewalls, distributed L4 and L7 application firewalls, NAT and automatic upgrades of new features and releases with no downtime.
- **Simple Protection:** With self-service or managed service Disaster Recovery as a Service workflows and testing, Enterprise Customers can rest assured that their workloads are protected in and from Google Cloud VMware Engine and/or Oracle Cloud VMware Solution.
- **Simple Migration:** Migration as a Service, either self-service or managed service, means Enterprise Customers can move workloads to VMware Cloud on AWS resource pools or Google Cloud VMware Engine or Azure VMware Solution or Oracle Cloud VMware Solution to achieve their cloud onboarding.

How to Get Started

- Step 1: Simply complete the Free Trial Form provided here to kickstart your journey.
- Step 2: Sit back and relax as our dedicated Sales team promptly reaches out to you, guiding you every step of the way.
- Step 3: While you eagerly await our contact, ensure your SDDC environment is prepared to integrate with the complimentary Cloud Director service instance seamlessly.
- Step 4: Once your Cloud Director service instance is set up and ready, immerse yourself in its robust capabilities, testing and exploring the solution extensively.
- Step 5: After experiencing the full potential of our Cloud Director service during the free trial period, take the next leap forward and effortlessly transition to a purchase that aligns perfectly with your unique requirements.