

# Cloud Director service

## Sales/Design Considerations

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### Scale

VMware Cloud Director service can scale to support many SDDCs with thousands of VMs. However, there are scale limitations which can be found in [docs.vmware.com](https://docs.vmware.com). Most of the limitations are per-tenant and are just averaged over the 16 tenant soft limit to provide general guidance - see [maximums](#). In addition, when using CDS, the following configuration maximums apply to VMware Cloud on AWS:

- 16 Compute Gateways (CGW) per SDDC (soft limit)

Cloud Director Service Supports

- 1 Organization per CGW
- 2000 VM's per SDDC
- 5 (large) SDDC's per Cloud Director service Instance (soft limit)
- 80 Organizations per Cloud Director service Instance
- 120 Concurrent Users
- 10,000 VM's in a single Cloud Director service Instance

### Customer sizes

The ideal customer size for CDs is most likely **mid-tier/small/medium business**. Enterprise accounts are likely to want their own instance of CDs to provide internal tenancy. A provider can multi-tenant other customer tiers such as small SMB who will require an OrgVDC each and given the limits on Orgs per SDDC, this may work out cost ineffective. However, this is a soft limit and as the networking section explains could be increased.

An assumption for customer size is for example a 4 node SDDC supporting 200 VM, across 16 Compute Gateways (CGW) is 16 tenants with 12 VMs per tenant. This would provide adequate coverage for Firewall (60 max) & NAT (40 max) rules, and public IP. Please use our [Cloud Director service modeller](#) to work out the profitability model that suits you best,

### Service offerings

Using CDs a provider can offer resource pool based IAAS and Flex VM based IAAS as a baseline. Using VMware Cloud on AWS as the fabric for multi-tenanted infrastructure, providers are able to rapidly expand host scale and Org Virtual Data Centers, also into new regions.

## A Natural Partnership



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Cloud Providers can offer VCD multi-site association with existing on-premises VCD and CDs instances and customer Org working together as a single offering, single pane of glass to extend customer services. These infrastructure services can be uplifted with Edge firewall services (NB: only CDs created policy rules can be managed from CDs) and IP services (NAT, DHCP & Public IP).

Reporting services are able to be provided by the 'Tenant App' can be consumed via the Tenant App UI, either from on premises/VMC (managed) vRealize Operations or vRealize Operations for VCD Cloud Management pack - not via the CDs plugin. You can provide metering and billing views using the Tenant App capabilities in this way to you customers. Cloud Providers can naturally extend all offerings with additional managed and professional services.

As of November 2020, the native Kubernetes Cluster services using Container Server Extension 3.0 has been validated working in Cloud Director service, so providers can deliver Kubernetes Clusters as a Service to tenants.

Using CDs additional extensibility services can be offered out of the box, when they are supported. Please check that the following services are validated with CDs before engaging in sales / design sessions: NSX Advanced Load Balancer (Avi), Distributed L4/7 firewall, vSphere encryption, App Launchpad, VMware Marketplace (\*inc Bitnami) and Object Storage Extension.

### Networking & Security

The 16 CGW soft (T1 Edge) limit means providers can only support 16 OrgVDC per SDDC, but the number of networks attached to the Edge is not limited. The way to scale this is via increasing the number of SDDCs to the soft limit of 5 for CDs. Providers can simply convert from a small to medium to large SDDC, until the cluster limit is reached for 16 tenants. Exception to this 16 limit could be where the customers have low throughput workloads - assessment should be conducted prior to setup, then a ticket submitted to ensure the number can be supported.

No sharing or networks between Org VDC is an NSX-T limitation and means each Org will have a separate network. Of course, multiple networks on the same T1 Edge can communicate.

(Please check support for Data Center Groups which support sharing networks).

No vAPP Edge networking is supported in NSX-T and hence only isolated vAPPS can be used in CDs. Providers can work around this by using an OrgVDC network instead of a routed vAPP but need keep in mind the limitations mentioned.

IPsec cannot be routed from the T0 to the tenant CGW, hence these must be deployed separately within the tenant Org by the provider outside of CDs scope. L2 VPN is also limited to 1 per SDDC and recommended for provider usage and not tenant (unless a single tenant per SDDC). SSL VPN for access to tenant Org VMs is not included in NSX-T and a 3rd party must be used, the provider will need to enable Public IP, NAT and FW Rule for inbound SSL VPN to Tier 1 External NAT IP of SSL VPN server.

Multi-site support for connecting different SDDCs to CDs is supported, A CDs instance can be associated with SDDC instances in different regions so long as the latency between the CDs instance and the SDDC instance is no more than 150ms round trip.

### Storage

VMware Cloud on AWS supports vSAN storage internal to the hosts, providers may also use a provider or tenant owned AWS S3 Object Storage using each one's appropriate AWS account. Note that this is native access and does not require the Object Storage Extension. All management of S3 will be done in the AWS S3 management UI, not CDs.

When the S3 VPC Endpoint is installed, S3 traffic in the same region as the SDDC will route using the S3 VPC Endpoint (ENI) and will not incur network bandwidth charges and S3 VPC Endpoint Policies can be configured to manage Endpoint access.

### Compute

Placement Policies in CDs are not available, as these are implemented by VMware Cloud on AWS Compute Policies. Providers needing to use placement policies should instead use compute policies in vCenter and apply these to the tenant workloads. Compute can be easily scaled out in line with customer demand and procured additional hosts will allow the VCD placement engine to migrate VM and move vAPP API to balance workloads to required optimum consumption levels.