VMware™ Cloud Provider Program (VCPP)

Object Storage-as-a-Service Multi-site Architecture with VMware Cloud Director 10.3, Object Storage Extension 2.1 and Cloudian Hyperstore

This diagram shows how to build Object Storage-as-a-Service in a multi-site cloud platform powered and managed by VMware Cloud Director (VCD) 10.3.

This solution can be utilized by service providers who want to provide Object Storage service from multiple locations, where each location has a dedicated cloud platform and object storage infrastructure.

This is an addendum to VCD 10.3 Multi-site Architecture with Global Load Balancing Solution(A).

1 Each location has a dedicated VMware Object Storage Extension (OSE) server group, consisting of three or more OSE Servers. Each server group is load-balanced locally using the NSX Advanced Load-balancer. Alternatively, the NSX-T T1 Gateway can be used as a load balancer. Each OSE server group is supported with a backend highly-available PostgreSQL Cluster.

2 Each OSE deployment is configured with a publicly-accessibly FQDN that points to the load balancer Virtual IP (VIP) for OSE Provider and Tenant portals and S3 API access. To support Virtual Hosted-style S3 API access, public DNS servers must be able to map subdomains of that FQDN to the same VIP. Sub-domains are in the form of s3.ose-FQDN and *.s3.ose-FQDN. A public certificate with multiple Subject Alternative Names (SANs) can be used for secure public communication.

3 Internal provider-managed DNS servers must be able to resolve the public FQDN and its subdomains mentioned above. This is required for internal accessibility and integrations between OSE, VCD and Cloudian Hyperstore clusters.

4 For maximum scale and performance, each location has a Cloudian Hyperstore cluster that consists of three or more physical appliances. Each cluster is load balanced using a physical load balancer. Alternatively, for medium-sized environments, Cloudian Hyperstore OS can be installed on three or more VMs and NSX Advanced Load Balancer can be used(B).

5 Cloudian clusters in all locations are configured in a Multi-DC setup. New storage policies must be configured with the required replication method and number of replicas in each location before utilizing the platform to ensure that any user data is replicated as needed. This can be done from Cloudian Management Console (CMC) or from OSE directly. These storage policies can be assigned to different tenants as needed using OSE APIs.
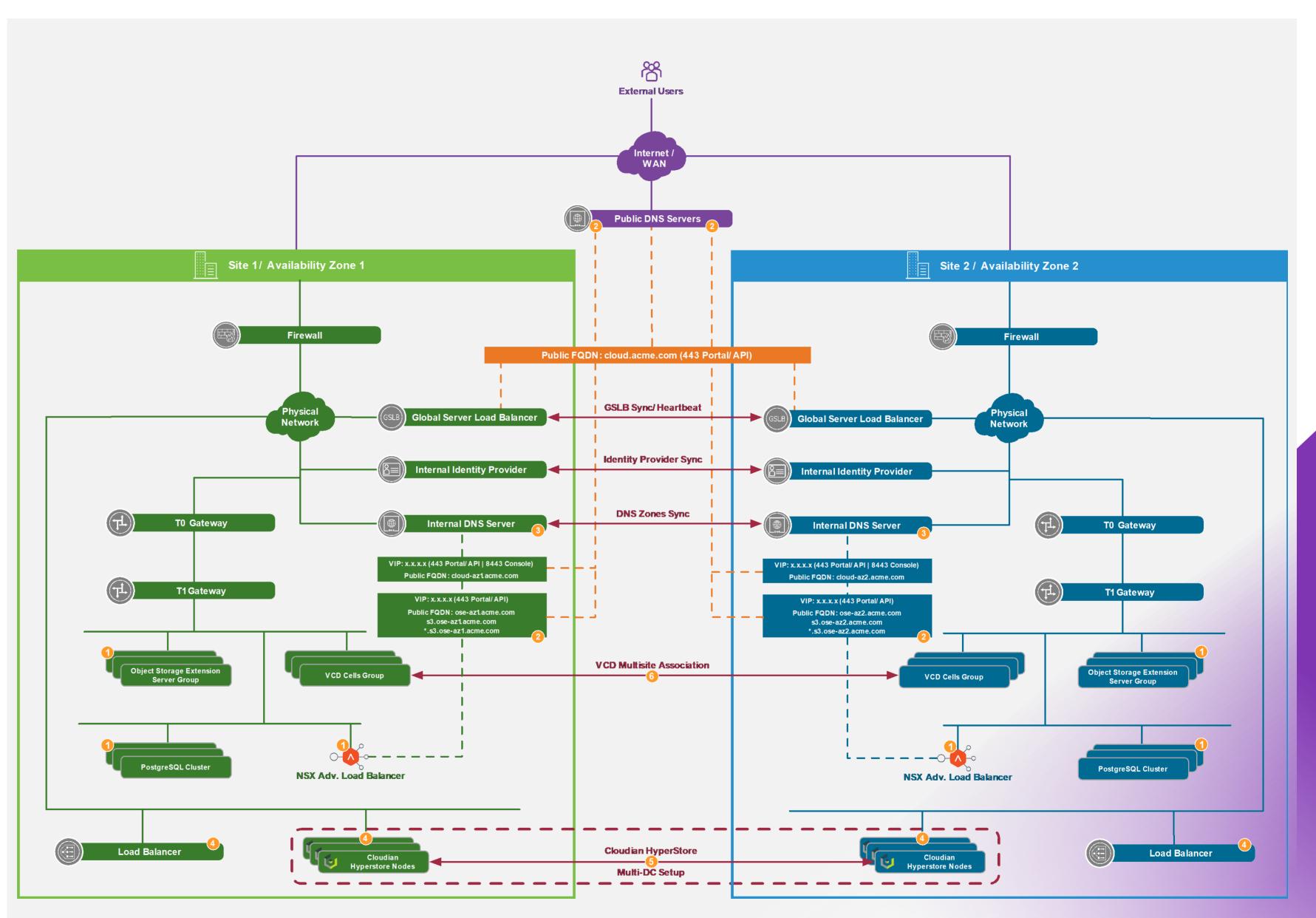
6 VCD Multi-site association is configured between all VCD deployments. The provider should configure organization-level association to allow organization users to view their data across different locations from a single pane of glass.

References:

(A) VCD 10.3 Multi-site Architecture with Global Load Balancing Solution

(B) VMware Cloud Director Object Storage Extension 2.1.1 – Reference Design

External Users

Internet / WAN

Public DNS Servers

Site 1/ Availability Zone 1

Firewall

Physical Network

Public FQDN: cloud.acme.com (443 Portal/ API)

GSLB Global Server Load Balancer

Internal Identity Provider

T0 Gateway

Internal DNS Server

T1 Gateway

VIP: x.x.x.x (443 Portal/ API | 8443 Console)
Public FQDN: cloud-az1.acme.com

VIP: x.x.x.x (443 Portal/ API)
Public FQDN: ose-az1.acme.com
s3.ose-az1.acme.com
*.s3.ose-az1.acme.com

Object Storage Extension Server Group

VCD Cells Group

PostgreSQL Cluster

NSX Adv. Load Balancer

Load Balancer

Cloudian Hyperstore Nodes

Site 2 / Availability Zone 2

Firewall

Physical Network

Global Server Load Balancer GSLB

Internal Identity Provider

T0 Gateway

Internal DNS Server

T1 Gateway

VIP: x.x.x.x (443 Portal/ API | 8443 Console)
Public FQDN: cloud-az2.acme.com

VIP: x.x.x.x (443 Portal/ API)
Public FQDN: ose-az2.acme.com
s3.ose-az2.acme.com
*.s3.ose-az2.acme.com

VCD Cells Group

Object Storage Extension Server Group

PostgreSQL Cluster

NSX Adv. Load Balancer

Load Balancer

Cloudian Hyperstore Nodes

GSLB Sync/ Heartbeat

Identity Provider Sync

DNS Zones Sync

VCD Multisite Association

Cloudian HyperStore Multi-DC Setup

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