VMware Cloud Director Object Storage Extension (OSE) 2.1

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What is OSE?

VMware Cloud Director Object Storage Extension is a modern data storage exclusive to VMware Cloud Director and Cloud Director service ecosystem. VMware Cloud Director Object Storage Extension (OSE) is easy-to-use, highly available and compatible with S3 – which is a widely adopted and massively scalable object storage service.

OSE is accessible seamlessly through the VMware Cloud Director UI and API, as it uses the VMware Cloud Director extensibility engine framework and offers a native user experience. Moreover, with the introduction of Object Storage Interoperability Services (OSIS), OSE boasts a REST API for integration with any S3 compatible third-party storage vendor. To date, S3 compliant storage vendors such as Cloudian Hyperstore, Dell ECS are supported by VMware Cloud Director Object Storage. With OSIS, OSE can now integrate with Ceph and any other S3 compliant storage vendors.

Moving beyond integration, the updated OSE 2.1 protects the persistent state of applications and makes backup data productive for accelerating Kubernetes application development, followed by the dynamic provisioning capability for multi-tenancy, multi-site, and multi-user storage requirements. OSE 2.1 is fully optimized to achieve economies of scale, efficient collaboration with S3 compatible vendors, it protects data integrity and leverages on-demand Kubernetes Backup & Restore and so much more.

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What opportunities does it address?

The evolution of technology and digital transformation has opened the flood gates for large volumes of unstructured and noisy data. Although the adoption of cloud-based storage solution is slowly becoming the norm, enterprises are still in search of a storage solution that can avoid storage silos and data anarchy. Most enterprises expect data growth of 30% annually which will predominantly be unstructured data. The installed base of enterprise storage capacity is expected to grow at a CAGR of 17.8% (2019–2024), resulting in an installed base of storage capacity of 13.2ZB in 2024, compared with 5.8ZB in 2019 (IDC Whitepaper, 2021).

Furthermore, the pandemic was a powerful catalyst for rapid, cloud-first world; building compelling use cases for cloud object storage:

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1. **Cloud Infrastructure Modernization and Migration**
   To keep up with rapid innovation, enterprises need to modernize their infrastructure and create a virtualized ecosystem. Evidently, on-premises to cloud migration is becoming the norm which naturally drives demand for highly compatible object storage services. Along with a host of decisions and challenges, enterprises go through a series of non-negotiable evaluation of cloud services to ensure migration is successful. Workload migrations, disaster recovery and data security are archetypically uncompromisable. VMware Cloud Director Object Storage is highly available and reliable, it is indispensable asset for cloud continuum.

2. **Cloud Security and Protection**
   Mitigating ransomware and malware attacks remains a top priority for enterprises. Cloud Providers with IAAS offerings are frequently challenged to convey IAAS as a secure and resilient solution compared to on-premises infrastructure. VMware Cloud Director Object Storage protects a wide variety of unstructured data through on-demand Kubernetes Backup & Restore, native S3 object-lock and, custom bucket and policy encryption features. OSE removes a lot of the stress around data protection, increasing security and performance of cloud infrastructure.

With S3 vendors such as Cloudian, Dell ECS and Ceph or using native AWS S3, Cloud Providers can offer modern object storage that is robust, agile and extensible. In addition to the use cases, VMware Cloud Director Object Storage Extension supports a plethora of opportunities to expand the storage services into: -

- **Storage-as-a-Service (STaaS)** Capacity for archive, Dev/Test, etc.
- **Backup-as-a-Service (BaaS)** Backup services
- **Archive-as-a-Service (AaaS)** Long-term data repository
- **Disaster Recovery-as-a-Service (DRaaS)** Maintain an offsite data copy
- **Big Data-as-a-Service (BDaaS)** Provide scalable data lake services

What new functionality is provided in OSE 2.1?

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1. **On-demand Kubernetes Backup & Restore (K8s B&R)**
   Cloud Providers can offer multi-tenant K8s Backup & Restore services within VMware Cloud Director Object Storage to replicate, backup and restore native K8s clusters managed by Container Service Extension (CSE) 3.0. This feature is built-in with developers in mind as it endeavors to simplify DevOps, reduces operational overhead (i.e., no separate backup vendor is required to manage storage), reduces cost and complexities.

2. **Access to Cloudian Storage Policies**
   VMware Cloud Director Object Storage Extension offers a default storage policy, the value add with 2.1 release is that it allows tenants who use Cloudian platform to create custom storage policy from within the OSE interface. Storage policies ensure the protection, distribution, and management of data across the organization. With a simple set of rules Cloud Providers can enable tenants to create and manage their own buckets & objects.

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3. **Improved Bucket Synchronization and listing of objects**
As most Cloud Providers offer multi-tenancy services, OSE 2.1 has made it easier for Cloud Providers to manage multi-tenant and multi-site bucket synchronization and improved bucket object loading time. Cloud Providers can trigger sync job by turning on the global bucket sync option to ensure multi-site tenant buckets are in-synced together for a single view in VMware Cloud Director.

4. **AWS S3 Archived Object Restoration**
Within the four AWS S3 storage classes, object from Standard and Intelligent storage classes could be accessed at any time by the Cloud Providers and tenants. However, with this release, tenants can access object from archived in Glacier and Glacier Deep storage classes. Tenants must first enable the restore function for the object to be accessible.

5. **Role-based access control**
To cater to the growing demands of multi-tenancy environment, OSE 2.1 has enabled rich features around custom role setting. These features enable Cloud Providers to supervise and allow or restrict privileges to multiple tenants to manage vApps, Catalogs, Buckets, and all other features within VMware Cloud Director Object Storage Extension.

6. **Enhanced management features for VMware Cloud Director resources: vApps, VM, Catalogs**
Cloud Provider can now run end-to-end vApp, VM, Catalogs storage functions with user-centric improvements on management UI - tenant administrators can get detailed snapshots of tenant users import and export history. Overall, the enhancements in Object Storage Extension 2.1 increase transparency and operational visibility within VMware Cloud Director.

Additional Support

Object Storage Interoperability Services (OSIS)

With OSIS, Cloud Providers now have the flexibility to integrate any third-party S3 compatible object storage platform into VMware Cloud Director. The newly developed interoperability services allow Cloud Providers to expand their offerings and collaborate with numerous partners. In addition, OSIS also offers a dedicated reference implementation guide for Ceph - available to all the Cloud Providers and their tenant upon request.

If you would like to get a deeper understanding of the new features, please read our blog – 'What's New with OSE 2.1'