

White Paper

Zadara Cloud Migration



Executive Summary

Zadara® Cloud Migration enables the migration of corporate data into the cloud through a practical and cost-effective method.

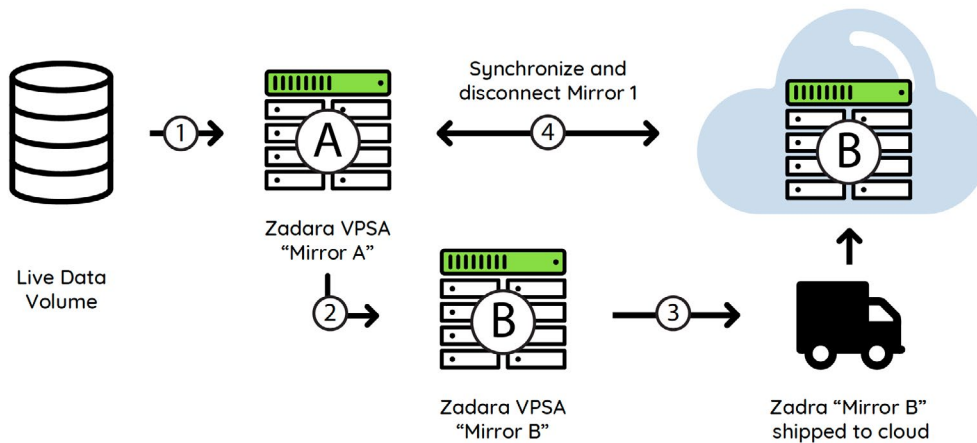
Enterprise Storage Features

- Block, File and Object Storage
- NFS, CIFS (with Active Directory), iSCSI, iSER
- Large Volume Sizes
- Data Encryption at rest and in flight (company owns keys)
- Cluster Support
- Thin Provisioning
- Tiered Storage
- Non-disruptive Upgrades

Move To The Cloud While Maintaining Performance

Transferring multiple petabytes of data requires a considerable amount of dedicated bandwidth and spare hardware. Data migration must be secured and backed-up, and performed without causing performance challenges, which poses a difficult challenge for organizations physically isolated or without powerful high-speed Internet connections.

In some cases, those organizations in a physically isolated location, or without cost-effective high-speed Internet connections, face an impediment to getting onto a target cloud. Data must be secured, backed-up, and in the case of production environments, migrated without missing a beat.



Network Architecture

To access the storage from the public cloud, customers are connected to the front-end VLAN that is provisioned for them. Currently, routing from the cloud to Zadara's infrastructure is via a single shared VLAN with isolated subnets for individual customer accounts. IPSec connectivity is highly recommended for this configuration.

A future proposed offering of layer-3 networking to external networks will enable a layer of flexibility and security where encrypted traffic requirements may be lifted. Zadara also has the capability route other network traffic from other public clouds such as AWS and Azure or private infrastructure in a co-lo or data center. This cloud hybridization gives customer an easy migration pathway into GCP using a common NFS or SMB/CIFS shares

High Availability

All physical and virtual components are deployed in a minimum of two for a high availability storage cloud environment. Redundant front-end/back-end switches with bonded Ethernet connections ensure data accessibility given a port, cable or switch failure. Likewise, redundant servers cover the case when a server fails. VPSA and ZIOS resource allocation of physical and virtual assets are scheduled such that there is no single point of failure.

Controller Architecture

Zadara's VPSA consists of two virtual array controllers running in an active-passive configuration. This configuration allows fail over to the standby controller in the event of a hardware failure. This design also gives the customer the option to scale up or down their controller by adding or reducing the number vCPUs. Moreover, maintenance and or upgrades can be applied on the standby controller and failing over the controller with the new version with the same process applied on the previous active controller.

Drive Architecture

Customers can select a variety of media types suited to meet their performance and bandwidth requirements. The cloud supports SAS, SATA and SSD with the latter two as the predominate choice. With rotating media, a hybrid drive of SSD and SATA/SAS can be configured with up to 3.2 TB of a caching layer. The hybrid configuration can provide lower-cost high IOPS solution rather than going with an all flash solution.

Durability Architecture

Different levels of RAID protection are offered as a balance between performance, durability and storage efficiency. Customers can stripe RAID groups for increased performance. Current durability levels are:

- RAID-1 – for all media types and hybrid SSD caching
- RAID-1+1 – (3-way mirror) for all media types
- RAID-5 – for SSD and SAS media types
- RAID-6 – for all media types
- 2-Way – copies for Object Storage
- 3-Way – copies for Object Storage

Scalability

Zadara provides customers the capability to scale up, scale down and scale out their storage requirements as needed. Rigid physical constraints are removed with seamless migration of data between different media and controllers. Migration is pool based and does not require downtime or remounting of shares on host servers. Some example use cases:

- Scale Down Storage – Move data to smaller or slower media pool. Remove drives from media pool.
- Scale Up Storage – Move data to faster or larger media pool. Add drives and expand media pool
- Scale Down Controller – reduce number of vCPUs (requires failover)
- Scale Up Controller – increase number of vCPUs (requires failover)
- Scale Out – Quickly provision additional VPSA and mirror data to array

Enterprise Feature Set

Each virtual private storage array includes enterprise features available for customer use.

Snapshots

- Zadara's copy-on-write uses efficient technology where physical data is not moved, but reallocated within the virtual metadata for the volume or share
- Low 1-minute RTO
- Quick zero-copy mounting of snapshots for recovery of lost data
- Clone volumes for sandbox testing of production data
- Mirroring
- Asynchronous snapshot-schedule block copy of volumes or shares to target endpoint
- Mirroring to lower cost media for higher durability or backup within VPSA
- Mirroring to local cloud-based VPSA to scale out
- Mirroring to remote VPSA for disaster recovery with bi-directional re-synchronization of data

Backup to Object Storage

- Block copy of volume or share to AWS S3 or another S3/Swift target
- Zero-copy restoration to any VPSA
- Restoration of data to public cloud block devices
- Restoration of data to VM running on desktop or laptop

Encryption

- Customer owns keys
- AES-256 encryption at rest
- IPSec for in-flight data

Protocol Support

- iSCSI for block access
- FCP-SCSI for Fibre Channel (if available in public/private cloud)
- NFS 3 or NFS 4
- SMB/CIFS 3.0 with Windows Active Directory integration
- S3/Swift

Docker

- Run public and private Docker containers on the array
- Fast local disk access to NFS shares
- Quick administration of shares with SSH accessibility
- Run anti-virus directly on the array without scanning over network

What's Next

See additional documentation on the Zadara website:

- [Zadara Quick Start Guides](#)
- [Zadara FAQ](#)
- [Zadara User Manual](#)

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+1 949 251 0360
sales@zadara.com
www.zadara.com

