Cloud Mirroring for Unparalleled Data Protection and Business Continuity

Cloud storage solutions across public, private and hybrid cloud continue to rise as IT leaders responsible for storage and data protection have to cope with the fast changing requirements of a digital business. Analysts predict that over 80% of company workloads will be stored in the cloud by the end of 2020. Data, the lifeblood of a company, needs an increasing layer of protection because the impact of an outage -- whether it is attributed to a network or cloud provider issue, a human error such as an accidental object or bucket deletion, or any other - could cost customers hundreds of thousands of dollars lost in productivity and business disruption.
The Value of Data Protection with Panzura

Addressing this huge challenge, Panzura has brought an industry first capability in its 8th generation Freedom Filer that allows data to be written to two object stores at the same time, enabling the user to have an exact copy of their dataset.

Using cloud mirroring, customers can effectively double the availability SLA of any single cloud storage provider while providing uninterrupted service in the case of a cloud storage service outage. This new feature will automatically fail-over to a redundant cloud storage provider in the case of a failure of the primary provider without disrupting any front-end file services for systems or users. When the primary cloud object store is back up, Panzura will automatically synchronize both clouds to a consistent state – all without human intervention.

Additionally, customers are protected against accidental object or bucket deletion.

The cloud mirroring functionality addresses problems of auto-failover in case of cloud failure, a full backup beyond single cloud replication and automatic synching of clouds after failure. Moreover, with customers increasingly demanding a dual vendor solution or multi-cloud solution, the cloud mirroring feature helps by eliminating dependency on a singular vendor.
While replication solutions available today lead to data consistency eventually, cloud mirroring is unique in delivering immediate consistency because data is committed to two object stores at the time of write. The Panzura Filers require acknowledgement from both the clouds before releasing that data. This ability to ensure immediate consistency allows for failover to a known and consistent object store at time of failure.

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Diving Into the Workflow

When Panzura Filers are configured for cloud mirroring, each cloud has its own independent cloud connector. The connector communicates via that cloud’s RESTful API to the object store. One cloud object store is labeled as the CSP (cloud service provider), or primary cloud, and the other cloud object store is labeled as the CMP (cloud mirror provider) or secondary cloud.

When you have two clouds and data is being written, it is written in parallel to both the clouds at the same time. The data is not released until it is written and verified in both the clouds using an MD5 checksum. This ensures that your data gets to each cloud location without data corruption or data loss.

When the Panzura filer performs a read operation, it only reads data from the primary cloud object store because it’s unnecessary to read from both clouds when
the data is identical and thus avoids unnecessary egress charges or wasted bandwidth. Writing, or ingress to a cloud object store is free of charges, but reading or egress from a cloud object store can be subject to additional charges. Panzura Filers minimize egress charges by caching recently read data and only read from the secondary cloud object store if the primary cloud object store should fail or otherwise become unavailable.

A Global Filesystem consists of multiple filers accessing the same dataset in a common cloud object store from each filer’s respective location. Each filer replicates or mirrors any data written from its location to both clouds configured for cloud mirroring. This ensures that data in both cloud object stores remains consistent.

What Happens When There is a Failure?

A cloud failure is triggered through the detection of multiple consecutive read or write operation failures on the same cloud. Cloud availability is dependent on
multiple infrastructure layers and devices such as routers, Internet links or MPLS links, load balancers, firewalls, etc. any of which could contribute to the unavailability of cloud object storage service.

In the backdrop of a denial of service attack, loss of connectivity or accessibility to the cloud et al., when a Panzura Filer detects multiple read or write failures on a cloud within a certain time frame, that cloud enters a cloud failure mode. If the primary cloud should enter a cloud failure mode while the secondary cloud is still up and available, each filer in the global file system will automatically switch its read path to the secondary cloud. Write operations will continue as normal to the secondary cloud even though write operations can no longer continue to the primary cloud. Each filer will maintain state of any objects written to the secondary cloud that are not immediately replicated to the primary cloud. Each write state is maintained locally on each filer as well as in the cloud so that consistency state can be maintained even in the case of a local filer failure. In this way the Panzura solution maintains a consistency state for each cloud and will not fail back to a cloud that is in an inconsistent state ensuring that data requests are always fulfilled.

When the primary cloud comes back up, the Panzura Filer detects this and starts writing to both clouds in parallel again. In the background, the Panzura Filer will bring
Enforcing strict consistency within each cloud provides the ability to avoid any associated downtime from an outage of a single cloud provider automatically without human intervention. Additionally it increases the overall durability and availability of your cloud data while removing single vendor dependencies should a disaster occur. If a cloud experiences an outage, once cloud services are restored, Panzura’s Global Cloud File System will synchronize data on that cloud to make sure it becomes 100% consistent.

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the previously downed cloud back to a consistent state from data stored locally or stored securely in the secondary cloud. This works much like the resilvering of a bad disk in RAID group.
Unmatched Data Protection with Panzura

By leveraging the cloud mirroring capabilities, customers can effectively double the availability SLA of any single cloud storage provider while providing uninterrupted service in the case of a cloud storage service outage. Cloud providers claim durability SLAs as they can achieve a high number of 9s (16 or more). However, durability only ensures that data will not be lost, not that it will be available. Availability of the same cloud services may have only 4 or 5 9s by comparison. This is why doubling the availability SLA (2X because of 2 clouds) is very meaningful.

Customers have complete freedom of choice to use this functionality offered in Freedom 8. They can choose to replicate data between an on-premise object store and a public cloud storage provider. They also have the choice to replicate between two independent providers or simply between regions of the same provider or between cloud storage tiers. Moreover, they have the flexibility of implementing cloud mirroring from the onset - or - adding a mirrored cloud after getting started with a single cloud. The Panzura Freedom Ffilers will automatically sync the data between clouds without you having to manage the process.
While catastrophic failures are few, several outages in the recent past have impacted businesses and are a real possibility. The data stored by the customer is of immense value to them, and data availability and durability are critical to good customer service. Various techniques in the industry offer data recovery yet these have limitations. With Panzura Freedom’s cloud mirroring functionality, you can enjoy peace of mind knowing that data has another layer of protection and high availability.

Additionally, customers get the path to migrate data between two or more providers if needed without disrupting services for its users or applications that depend on file services.

**Peace of Mind with Another Layer of Cloud Data Protection**

With Panzura Freedom’s cloud mirroring functionality, you can enjoy peace of mind knowing that data has another layer of protection and high availability.

To learn more, request a Freedom 8 demo.