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Hybrid Cloud Storage: Everything You Need to Know

POSTED BY JON TOOR ON JULY 31, 2019

Hybrid cloud combines cloud and on-premises computing environments to create a more efficient operating model. This post looks at what a hybrid cloud is, how it helps, and the architectures that enable seamless storage interaction between public and private clouds.

According to a [recent survey of VARs](#) (conducted by William Blair and Associates), “customers are coming around to the reality that the public cloud is not a panacea and that “lift-and shift” is doomed to fail. Instead, it makes sense to take a balanced approach to workload placement and

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- Business Continuity
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- Hybrid and Private Cloud

rationalize one's on premises environment with the public cloud." In other words, the hybrid cloud's time has come.

- Object Storage
- Performance
- Ransomware
- S3 Storage

Hybrid Cloud



Why Hybrid Cloud

As organizations have gained experience with the cloud, there is a growing realization that public cloud is not the solution to all problems. Like everything else, it has its benefits and issues. Hybrid architectures are evolving to capitalize on these respective strengths of each environment:

■ Public cloud:

- Resources on demand
- No capital expenditure required
- No infrastructure management

■ On-premises or private cloud:

- Predictable costs
- Known performance
- Control of data and assets
- Consistent security

For specific data types or workloads, either cloud may offer compelling benefits. Limiting your options to one or the other unnecessarily limits your potential efficiency and savings. This is what led the analyst firm [IDC](#) make the following prediction:

“

“While most enterprises are accelerating their organization’s shift to the cloud, the majority of IT leaders expect that, for the next five years or more, their computing requirements will be supported by hybrid environments.”

”

What is a Hybrid Cloud

Ask five IT managers to define the “hybrid cloud” and you’re likely to get five different answers. (Whatis.com definition of hybrid is [here](#)) The permutations of “hybrid” are so broad that any universal definition is necessarily vague. The [National Institute of Standards](#) offers this description:

“

“Hybrid cloud is a composition of two or more distinct cloud infrastructures (private, community, or public) that remain unique entities, but are bound together by standardized or proprietary technology that enables data and application portability.”

”

While this is undeniably broad, it does contain two key points

1. **Hybrid is two clouds:** A “hybrid” is not a traditional IT infrastructure with cloud connectivity simply bolted on. Rather, it is for example a public cloud used in conjunction with a private cloud.
2. **Portability is central:** Workload and data flexibility is essential to achieve the full benefit. You should be able to use both environments for a single workflow, using the two together with a seamless flow of information.

A common misconception is that hybrid is only “[cloud bursting](#),” where workloads move back and forth between cloud and on-prem. While that is one use case, it is not the most common. In storage, it is more common to use both environments simultaneously for different stages of a workflow.

Hybrid Cloud Use Case Examples

Two use case examples will help to illustrate how on-prem and public cloud can work together.

Disaster recovery planning

Hybrid provides an ideal platform for meeting the objectives of [backup and disaster recovery planning](#). When backing up data center-based applications, two requirements are critical:

- **Fast RPO / RTO:** To facilitate fast recovery (RTO), and timely snapshots (RPO), an effective backup strategy demands that backup storage be quickly accessible.
- **High data durability:** Backup data should always be accessible, even in the event of equipment or site failure.

Hybrid cloud solution

A hybrid cloud architecture provides a cost effective solution to achieving these goals, employing local storage for fast access, and also replicating data to low-cost public cloud for disaster recovery storage.

Data management type: Policy-based replication

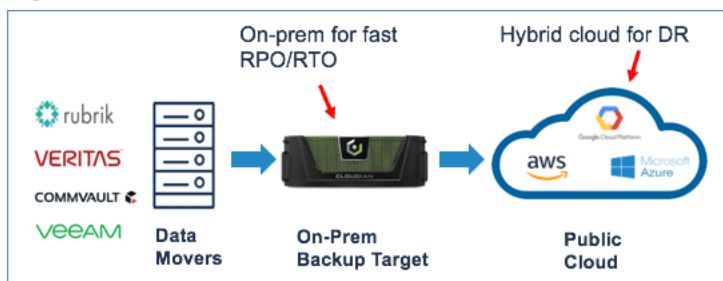
On-prem storage use: Local storage for backup data

Public cloud use: DR copy of backup data

Workflow:

1. Backup data to local, high-performance storage: A NAS or SAN system (or a backup appliance) provides a target for high-speed backup and restore for the most recent data.
2. Tier older data to local private cloud: Migrate data that is over 30/60/90 days old to local, low-cost private cloud storage
3. Replicate private cloud to public cloud: Replicate to low-cost tier in public cloud (eg, AWS Glacier) for disaster recovery purposes

Hybrid Cloud for Data Protection



Flexible Capacity Management

Capacity planning becomes less of a burden when excess capacity can be effortlessly migrated to the public cloud to free up on-prem storage. In a hybrid cloud configuration, integrated tools can transparently migrate infrequently used data.

Data management type: Policy-based data tiering

On-prem storage use: Storage for recent and/or more frequently used data

Public cloud use: Archive for older and/or less frequently used data

Workflow:

1. Store to on-prem system: Local repository for either object data or file data.
2. Policy-based tiering: Migrate older and/or less frequently used data to public cloud.
3. Re-hydrate: Restore data to local storage when needed. Re-hydration is transparent to users.

Hybrid cloud solution

A hybrid cloud architecture provides the most cost effective solution to achieving these goals, employing local storage for fast access, and replicating to low-cost public cloud for disaster recovery storage.

On-premises Storage Options for Hybrid Cloud

For the on-premises portion of the hybrid cloud, there are three storage options:

SAN: Block-level storage

Pros:

- Fast, high IOPs, ultra-low latency
- Well-suited for transactional data processing

Cons:

- Costly; most commonly consists of all-flash arrays
- Single-site architectures
- Not designed for cloud integration

NAS: File-level storage

Pros:

- Fast, low latency and high streaming throughput
- Ideal for file sharing, file data management

Cons:

- Costly: expensive controller infrastructure
- Limited scalability: Usually grows only to single-digit petabyte capacities
- Not designed for cloud integration: requires add-on connectors

Object Storage: Cloud-compatible storage

Pros:

- Cloud compatibility: same underlying technology and language as public cloud
- Scalable: Non-disruptive expansion, scales to an exabyte
- Low cost: 70% less cost per PB than SAN and NAS

Cons:

- Latency: Not for high transaction rate applications

- Unstructured data only: Objects and files (via file connector)

Object Storage Advantages for Hybrid Cloud

Of the three storage types, object storage is the most public cloud-like. Object storage employs the same APIs (or “language”) as the public cloud, and includes built-in public cloud integration.

	On-Prem Object Storage	Public Cloud Storage
Language	S3 API (Integrated connectivity for AWS, GCP, Azure)	S3 API (AWS) (GCP employs an S3-like API, Azure employs the Azure API)
Storage type	Objects (includes user data, user-defined metadata, unique ID)	Objects (includes user data, user-defined metadata, unique ID)
System architecture	Clustered independent nodes	Clustered independent nodes
File system	Flat (no hierarchy)	Flat (no hierarchy)
Scaling limit	No hard limit	No hard limit
Scaling model	Modular, grows within single management environment	Modular, grows within single management environment
File storage support	Yes (via file connectors)	Yes (via file connectors)
Self-protecting storage	Yes (erasure coding + data replication)	Yes
Data management	Yes (Replication and tiering to public cloud or to other private clouds)	Yes (Replication to other instances within same public cloud)
Multi-cloud management	Yes (consolidated management for AWS, GCP, Azure)	No

To learn more, visit [Clodian.com](#), or view this video:

3 Reasons to Build a Hybrid Cloud Infrastructur...

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