

# CHOOSING THE RIGHT PRIVATE CLOUD STORAGE

One of the key decisions in architecting an infrastructure for private cloud is selecting a storage platform for the deployment. Storage is a key component of the infrastructure and will play a major role in the overall performance of the private cloud. The storage decision carries additional weight due to its larger investment and typically longer refresh cycle.

When choosing the right platform, several factors must be carefully weighed: protocol, capacity, performance, scalability, manageability and, of course, cost. In addition to these standard decisions, you'll need to ensure that storage isn't chosen in a vacuum outside of network, compute and automation/orchestration platform. The storage must integrate as seamlessly as possible into the infrastructure ecosystem.

Protocol is currently a hot-button issue in the storage arena. Fibre Channel storage networks are the incumbent for enterprise data centers, with iSCSI and NFS playing larger and larger roles. Additionally, Fibre Channel over Ethernet standards have been finalized for some time, with

products shipping for several years and end-to-end systems available. As an industry, there is a large push toward the Ethernet- or IP-based protocols (iSCSI, NFS and Fibre Channel over Ethernet) due to the network consolidation benefits, but Fibre Channel still has a strong hold because of legacy investment, performance reliability and trust.

The protocol chosen plays a large role in the overall decision because it can, and will, dictate the vendors and platforms that can be used.

Additionally, it factors into the overall design, architecture and type of infrastructure. The key is ensuring enough flexibility from the platform to provide the protocol(s) required for the services you intend to deploy over the life of the infrastructure. In most environments, there will be a requirement for both block-based (Fibre Channel, Fibre Channel over Ethernet, iSCSI) and file-based (CIFS and NFS) storage. If Fibre Channel is chosen for block, there will be an infrastructure requirement for an additional dedicated network (or typically two for redundancy); the same can be said for some iSCSI deployments.

Scalability is another factor. Fibre Channel standards are currently at 16 Gbit with 32 Gbit on the horizon. Ethernet-based deployments will typically be 10 Gbit, moving to 40 Gbit and 100 Gbit. With the rapid increase of Ethernet pipes and the bandwidth management capabilities of Ethernet and TCP/IP, the timing is typically right for a migration to Ethernet-based storage protocols.

Capacity and scalability are the next factors to consider closely.

Traditional storage systems have max disk capacities based on the number of drives (spindles) they support and the size of those drives.

That being said, max capacity numbers can easily be confusing because without features such as tiering and cache, performance will be tied to spindles. Therefore you'll require more spindles to maintain appropriate IOPS and have spare capacity that isn't used.

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