

Cloud File Services



Finally, move the enterprise to the cloud! By John Reed, SNIA ESF member, NetApp.



WHAT ARE YOUR CHALLENGES in adopting the cloud? While many new companies have found success starting out with a cloud infrastructure, enterprises and existing companies have found it complicated to make the transition. One reason is that many existing enterprise applications run over File Services (NAS-based) protocols like SMB or NFS, but there are precious few clouds out there with these offerings.

Customers have found little success requesting applications be entirely re-written for cloud storage, so how is a business supposed to adopt the cloud?

As I wrote in last year's article "Take your Datacenter into the Future with SMB 3.0," applications – especially in the enterprise – are adopting File Services faster than ever. New protocol versions like SMB 3 and NFS 4.1 are specially designed for applications, and more importantly, File Services is easy to deploy and easy to manage. Traditional SAN apps and specialized apps from almost every industry have been (or are being) updated for NAS.

File services + Cloud

With so much of the enterprise using File Services, and now, with every IT shop in the world shifting their focus to the cloud, we need a solution that addresses these two trends together.

Not only does this solution need to provide File Services in the cloud, but also it needs to assuage concerns of data and application mobility, while providing a consistent management experience across all locations. That's a big objective, to be sure, but there is a path forward.

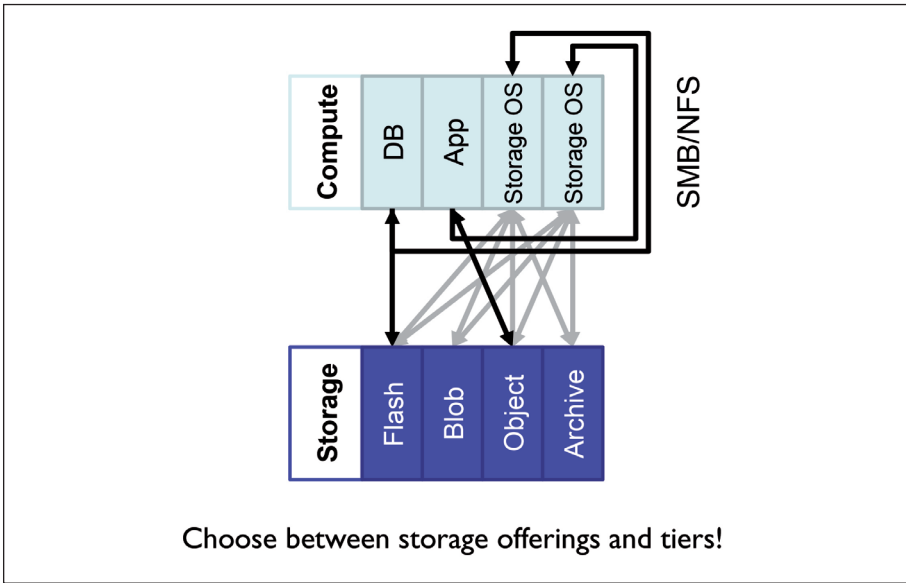
Introducing Cloud File Services

Cloud File Services is a common File Services platform across all of your environments, including on-premises Private Clouds, Service Providers, and Hyperscalars (large-scale public clouds). Storage admins can have the same experience across all of their locations, geographies, and deployment models.

How do we get to Cloud File Services? The short answer is to place your favorite Storage OS everywhere you operate. To explain how to do this, it is worth reviewing the roles of compute and storage in both private and public datacenters.

Most modern datacenters have the concepts of compute and storage "layers," which are either logically or physically separate. Traditionally, in the compute layer, applications and hosts run on server OS's on physical machines. Today, these server OS's are mostly virtualized (into VMs) in hypervisors, which allow one physical machine to run many virtual machines. Further, this virtualization allows VMs to move between machines and platforms. Just like compute servers, storage servers also run an OS, and these Storage OS's can be virtualized in a similar way.

Since Storage OS's can also run as a VM, they also have the flexibility to take advantage of different hardware and software platforms. In fact, the major storage management vendors offer a variety of virtualized platforms (including hardware- and hypervisor-based), and deployment models (including on-premises, Service Providers, near the cloud, and in the cloud).



Traditional hardware-based storage servers can run alongside the same Storage OS running on a hypervisor. While this blurs the line between the compute and storage resources (read: hardware), the compute and storage layers are still defined by the OS's and the different roles they play.

From one point of view, Hyperscalars (pick your favorite large public cloud) look a lot like on-premises infrastructure, with both compute and storage layers. The compute layer (also based on a hypervisor) offers a scalable platform allowing VMs the memory and cycles to run, while the storage layer offers different tiers with varying levels of performance and latency.

SMB and NFS in the Cloud

How does all of this get you to Cloud File Services? As previously mentioned, if you take your favorite Storage OS and virtualize it, it will appear just like any other VM. If you place that VM in the compute layer of your Hyperscaler, then voila! You will have the same storage platform available in the public cloud that you have on-premises.

The Storage OS can then leverage and distribute data across the different tiers of storage available from the Hyperscaler, while providing the same interfaces that you and your applications are used to.

These same interfaces are not just limited to management; they include storage protocols, too. Remember, that Storage OS is the same thing you have in your datacenter: it is a server offering SMB and NFS file storage to your applications...running anywhere.

Using your Storage OS operating as VM in the public cloud, you will have File Services

running in your Hyperscaler of choice. With File Services in the cloud, you can have your enterprise apps there, too.

Data and application mobility

“Wow!” you say. “Now I have the ability to run all of my enterprise apps in the cloud! But how do I get them there?” That’s the best part! By running the same platform across all of your environments, you can leverage the storage-level movement that those platforms are so good at. The same operations and processes you currently use to move data between two physical storage arrays can be applied here as well. That means storage-efficient movement, and no host-based copies. Normal and VM-level copies work the same way, too. Once the data is moved, it is served exactly the same way it is in your datacenter.

This ease of data movement offers one thing in particular many cloud adopters are lacking: an exit strategy. Let’s say a

Service Provider isn’t working out as well as you had hoped, and you need to move everything back on-premises. Using the storage-level data movement, your data will be back home in no time. “But now I need to change my apps again,” you say. Not with Cloud File Services! Your data is accessed and managed in exactly the same way. No changes to your apps, no changes to your management tools, and no re-training required.

There are many possibilities with this concept. You can move between any combination of Service Providers, Hyperscalars, and on-premises Private Clouds depending on your needs, pricing, and availability. Did a Hyperscaler go offline? Switch over to another one. Is one of your skunk-works apps you were developing in the cloud ready for production? Move it back on-premises. This newfound flexibility can provide amazing opportunities and new business models.

Cloud File Services allows you to have your data anywhere you choose without changes to existing applications. Regardless of which architecture combination you have, use, or plan to implement (on-premises Private Cloud, Service Provider, and/or Hyperscaler), you will have the same data platform, the same management, the same services, and the same experience across your entire environment. “To the Cloud!” is finally a reality.

The SNIA Ethernet Storage Forum (ESF) is responsible for driving the broad adoption of Ethernet-connected storage networking technologies and solutions. For more information about SNIA and Ethernet Storage, visit www.snia.org/forums/esf and to follow the ESF and John Reed’s blog, visit <http://sniaesfblog.org/?p=365>

