SwiftStack

SWIFTSTACK WHITEPAPER

Top Five Reasons:

Why You Should Use Object Storage vs. NAS for the Private Cloud

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Object storage is at the heart of some of the largest public cloud deployments in the world. Object storage, in fact, is an enabling technology for these large clouds, allowing the limitless scalability they require at a price point driven down significantly by the use of commodity hardware.

One could say that object storage is to the cloud era what network-attached storage (NAS) was for the client-server era. And therein lies a central question for IT decision makers in this new era: If you are building a private cloud, why should you use NAS when you can use object storage?

The answer is: You shouldn't.

This is not to say that you should scrap your investment in NAS, or not use NAS where it makes sense for file-oriented applications such as databases. It means, however, that in building your next-generation private clouds you should be looking at a software-defined storage architecture built on an object storage platform. And from that platform you can use application programming interfaces (APIs) to support the structured data in your NAS solutions.

Why focus on object storage—specifically, a software-defined object storage platform—for the private cloud? Here are the top five reasons:

Reason No. 1: Improve the Availability of Applications

Object storage is inherently multi-tenant, which is what you want and need in a private cloud. NAS is not. The nature of object storage in a software-defined environment is that it is much more forgiving in the failure of components. That's why it can use commodity servers—you can sustain a dramatic amount of storage without failure. NAS is anything but forgiving. In fact, one of the big challenges with NAS is that when there is a component failure, connections to applications get disrupted, which means there is application downtime.

Object storage enables you to treat storage as a single resource pool so that you can deliver IT as a Service for all of your applications. You can add capacity into the storage environment as you need, at your own pace, and with the right object storage platform in place, the cluster will automatically rebalance the data over time. This level of automated storage provisioning ensures that data is distributed evenly and that there's never a storage disruption to negatively affect application availability or performance.

Reason No. 2: Enhance Durability

As noted, object storage is designed with much higher levels of fault tolerance than previously available solutions. You can create a single storage environment that is deployed across multiple data centers, so that the data in the object storage system exists in all locations. If one site goes down, the data is immediately available somewhere else. If you build your applications around the storage environment, you don't have to worry about disaster recovery: If a site goes down, another site can immediately pick up the workload. In addition, you can enhance durability and availability with a controller failover function by placing a controller in another data center so that you can protect your environment even if a controller goes down. The process for implementing this failover can be completely automated and driven from within the controller.

Reason No. 3: Enable Limitless Scalability

As characterized by Enterprise Storage Forum, "scalability is the rallying cry of object storage advocates,"[1] which notes that massive scale in object storage is enabled by a combination of factors:

- The lack of a traditional file system;
- Automation;
- Continuous protection using replication and/or erasure coding.

As data grows, it puts more pressure on NAS systems to keep up and for IT administrators to overprovision resources to account for growth. File systems need to be managed, rebuilt and maintained.[2] This is not only expensive, but it also continues the "silo-ed" approach to provisioning that is antithetical to what the business is trying to accomplish by moving to a private cloud environment.

Reason No. 4: Simplify Manageability

With a NAS solution, the IT department has to keep track of all resources, manage the silos and typically overprovision resources to account for growth and spikes in demand. With object storage, you don't need to do that: You manage utilization, and usage is distributed across the entire system. With active management, everything is much easier—adding capacity, managing users, provisioning applications, pooling resources.

It's also important to understand the advantages of deploying your object storage platform in a software-defined model, which further simplifies manageability and reduces costs by abstracting the management layer and separating it from both the access layer and the actual storage device. You will have a controller that will give you an omniscient view of your entire storage infrastructure in one place. You will be able to apply policies and manage utilization across all of the various users and applications in a multi-tenant environment.

Reason No. 5: Reduce Costs

Software-defined object storage will provide significant cost savings versus traditional NAS, particularly as we continue to see staggering growth in unstructured data. IDC reports that the amount of data is doubling every two years,[3] and it is estimated that more than 90% of data being created is of the unstructured variety.

Quite simply, a traditional NAS system does not provide a cost-effective way to manage that massive amount of data in a cloud or any other type of IT environment. Even "scale-out" versions of NAS require incremental costs in devices, controllers and ongoing management that make them inefficient and ineffective for massive-scale cloud environments. Plus, NAS is not designed for multi-tenant environments, which is the basis of enterprise private cloud deployments. These are among the reasons why technology leaders such as Amazon Web Services and Google have turned to object storage for the public cloud services.

1 "Object Storage vs. File Storage," Enterprise Storage Forum, Sept. 26, 2014
2 Ibid, footnote No. 1
3 "The Digital Universe of Opportunities: Rich Data and the Increasing Value of the Internet of Things," IDC, April 2014

There are several ways in which software-defined object storage will drive down costs:

- Use of commodity hardware as the basis for the platform.
- Incremental scalability so there is no need to overprovision resources.
- One platform for multiple use cases—no need to provision and manage different silos for different applications or use cases.
- Automated storage provisioning to reduce operational overhead.
- Built-in resiliency so there is no need to set up separate storage silos for disaster recovery.

To be fair, there are some use cases in which NAS and SAN storage solutions will be necessary. In some ways, NAS was purpose-built for transactional systems, so it will continue to be the most effective solution for those types of environments—although there will still be challenges with scalability and manageability.

In the cases where the enterprise continues to use NAS in conjunction with object storage, you want to make sure your object storage platform has a file system gateway that enables you to integrate with existing files. Make sure the solution you choose is truly object-based and not just an API from a legacy NAS vendor that is file-based. If you use that type of solution, you won't be able to take advantage of the myriad benefits of object storage discussed in this paper. Rather, work with a vendor that has an object storage solution with a file system gateway feature.

Conclusion

In today's rapidly evolving technology environment, the massive growth of unstructured data and the shift to multi-tenant cloud computing models are changing the shape of computer storage. The technologies of the past, such as NAS and storage area networks, are not capable of dealing with the challenges of today, and must give way to new models. Object storage is the new storage model for the cloud era. It is designed for massive scale, multi-tenant clouds and simplified manageability. It is the present and future of storage.

For enterprise decision makers, the question is not if they will deploy object storage but when, where and how. At some point, all enterprise applications will rely on object storage to cost effectively keep up with the massive scale of data and access points required by users.

The first step for enterprise IT leaders is to familiarize yourself with the benefits of the technology and understand where it can and should be used in the deployment of your private clouds. In looking at potential object storage solutions, you also want to make sure you consider vendors at the forefront of the technology, with the vision, technology, experience and expertise to help guide you to a successful deployment.

When you look at the field of vendors in object storage, you will see very clearly why SwiftStack is considered one of the leaders in object storage software and how the company is enabling customers to derive unprecedented value and innovation for their storage environments. Are you ready to take the next step in object storage? **Here's where to start**.