Lessons from the Rapid Closure of Nirvanix

Silverton Consulting, Inc. StorInt™ Briefing

Introduction

All sorts of cloud services have surfaced over the past decade due primarily to their ease of use and pay-as-you-go economics model. However, the potential risks of using cloud-based services are often not well understood. Case in point: In 2013, Nirvanix, an early and seemingly well-funded cloud storage provider, declared Chapter 11 bankruptcy.

On September 17, 2013, Nirvanix announced that its cloud storage service would close down on October 1, 2013 (in 14 days), and that after that date customers would no longer have access to their stored data. The company later expanded this timeframe to October 15, 2013 (28 days). Such a rapid failure of a cloud storage provider presents an appropriate example of the risks that all IT users of cloud services must understand.

Lessons learned from Nirvanix

A number of lessons can be learned from Nirvanix's rapid closure, or service End of Life (EoL). Many of the difficulties encountered as a result of the company's closure were serious considerations at the time but now that they are better understood, appropriate solutions can be devised to counter them.

Insufficient time to remove data from the service

Most small businesses use broadband services that support data transfer speeds of 15 to 100 mbps. At these speeds, it would have taken a minimum of ten to a maximum of ninety days to download 10 TB of data off of Nirvanix. Small companies with 25 or more TB of data stored on Nirvanix servers would have lacked sufficient time to remove their data from the servers before the service closed down. Larger organizations, of course, enjoy higher speed broadband options but would also probably have more data stored on the service. Indeed, Nirvanix's cloud storage service had a number of multi-PB users. As such, most of those multi-PB users would likely have suffered similar time constraints.

Data transfer wouldn't have been as much of an issue had the cloud storage supplier provided a quick method to egress large amounts of data. For example, cloud storage services that offer standard linear tape-open (LTO) data egress could have easily sent out a set of tape cartridges containing each company's data within a matter of days (or even overnight if needed). LTO tape is a data center standard, meaning the data can be read by any LTO drive, and with the recent addition of Linear Tape File System (LTFS), sharing LTO tape data across systems is even easier. As such, LTFS-LTO tape provides quick access to almost any amount of data within a few days' time. Other types of removable media would also have sufficed. The key is to be able to access all of one's data rapidly without depending on Internet bandwidth.

There have been indications in the press that engineering teams from Nirvanix were ultimately able to transfer large amounts of data off the service by using removable media on a case-by-case basis for select data center customers. This process would have been more fully available had Nirvanix offered this support from the start.

Insufficient time to move the data to another service provider

Data centers rarely have spare TB or PB of storage to account for the possibility that a service provider may go under. Thus, in this instance the data centers probably had to move their Nirvanix data back out to another cloud service provider as soon as possible after that data was retrieved in order to restore normal operations. Given that most Internet suppliers' upload speeds are much slower than download speeds, this process could have taken potentially five to ten times as long as it took to download the data in the first place.

Although this problem is the reverse of the one described above, similar solutions could apply. Again, cloud storage providers that support LTO tape or other removable media for data ingress could have quickly reestablished cloud storage services for Nirvanix users.

Another potential solution is to replicate customer data across different cloud storage providers. For instance, companies can work with service providers that support externally replicating data to other cloud storage services or perform the data replication themselves internally before that data goes out to the cloud service. In addition, selecting cloud service providers that utilize different technologies, such as tape and disk versus disk-only, could increase data availability even more than multiple providers using similar technologies alone.

Again, it has been suggested that Nirvanix engineers and other co-located cloud storage services were able to use high-speed networking to transfer customer data to those other services. Although this capability was available in some select instances, it would not work for non-co-located cloud storage providers.

Data ownership was not clearly established

Legal ownership of any customer data that might have been left on Nirvanix servers or storage is not clear.[1] While customers theoretically retain ownership of their data that resides in the cloud, any data storage equipment would have become the property of the court, and disposition of such equipment would have occurred without any recourse to the owners of the data that resided on that equipment.

Legal issues over data ownership would have been greatly simplified had companies retained ownership to LTO tape or other removable media that held their data. IT users should work with cloud service providers that support or even require the retention of a copy of all user data on the users' own media. In this way, at the very least a company owns the rights to the copy of the data that resides on its own media. As a result, the legality of data and media ownership would be much easier to substantiate during litigation.

[1] We are not lawyers, so please consult with legal counsel for more information on this topic.

Working with smaller service providers can be risky

Finally, Nirvanix was a cloud storage provider with no other successful lines of business; as such, the company had no lasting corporate profit stream that could fund a longer EoL duration. If the company had had multiple profitable lines of business, the company might have had the cash flow needed to sustain the service for a longer EoL period, allowing for a more reasonable and judicious exit period.

Summary

As far as is known, no customer data was lost during the Nirvanix EoL process. However, it's possible that some customers using Nirvanix to store backup data could have decided that they had no choice but to delete some of that data and to live with the increased exposure for a time. Furthermore, as indicated above, removable media and high-speed direct network access were used to speed data migration for some clients of the Nirvanix service.

Nevertheless, in today's highly competitive economy companies come and go all the time. If Nirvanix has taught us anything, it is that a means of gaining and maintaining rapid access to data stored in the cloud is critical. The lessons to be learned from the Nirvanix bankruptcy aren't that hard to understand, but acting accordingly may take some extra consideration, especially when choosing future cloud storage service providers.