

## How cloud-based file storage is helping VDI keep its promises to IT and to end-users



## Executive Summary

As businesses look for ways to cut costs, reduce the burden on their IT departments, integrate communications and increase agility, they're giving a fresh look at virtual desktop infrastructure (VDI) as a way to achieve these efficiencies while also boosting their support for a distributed workforce. What they're seeing is that new capabilities enabled by public cloud services are overcoming many of the early limitations of VDI and that deploying cloud-based VDI supported by essential cloud-based file storage services is a smart move for keeping pace in today's information-rich business environment.

Many companies turned to early incarnations of VDI to increase security, enable workforce mobility, and reduce desktop administration for IT departments. Although the costs to install VDI hardware and software were relatively high, having the ability to spin up or tear down virtual machines (VMs) as business demands changed was vital to being a nimble company. Centralized management of these computing resources was a key benefit for the IT organization.

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But early VDI didn't always come through from the end-user's perspective. One problem was latency, which slowed down mouse, keyboard, and screen responsiveness to the point that end-users gave up in frustration. When users were working remotely and located physically far from the VDI data center, even mundane tasks such as typing a document or entering numbers in a spreadsheet would suffer noticeable lags. But especially for high-performance computing needs, VDI was a non-starter. And the universal truth about IT solutions is that when the user experience isn't satisfactory, the end-user will end using the "solution."



Fortunately, today's robust, secure, and ubiquitous public cloud presence has enabled a new generation of cloud-based VDI solutions that are practical, satisfying, and necessary – even for work involving graphics-intensive or other high-performance computing applications with massive file storage requirements. In fact, deploying the right cloud-based VDI solution will allow organizations to avoid the drawbacks that plagued early on-premises VDI deployments.

But success with VDI depends on more than just the cloud-based VDI solution, itself; today's VDI needs the right file storage solution to support a virtual desktop's needs to access home drives, user profiles, and redirected folders, as well as a wide array of group and project shares and to deliver a user experience that end-users will love. Pairing cloud-based VDI with cloud-based file storage and regional caching is essential to eliminating latency created by the back-hauling of data over vast distances. And, it has the added benefit of reducing overall IT costs.

Nasuni's cloud-based file storage platform fully harnesses this public cloud potential to give cloud-based VDI a huge boost in performance along with formidable cost savings. Together, Nasuni and cloud VDI provide a reliable path to distributed work, real-time file-sharing and global collaboration for companies running even the most resource-demanding workloads.

## How VDI Earned a Bad Reputation

If you've had prior experience with VDI, you may have doubts about how well it can substitute for a traditional desktop. And candidly, those concerns are legitimate based on the technology limitations that existed up until just a few years ago. In short, VDI was introduced before other essential technology was available to help it work effectively, except in the narrowest set of cases.

The idea for VDI initially was to save costs and trim workloads for IT departments. Rather than investing heavily in IT hardware and IT personnel in every company location and installing and updating desktop software on individual workstations, the company could deploy VDI in an on-premises data center, letting users access their desktops at the company office or remotely at home, on the road, or anywhere outside the office.



One of the major shortcomings of this model – let's call it “traditional VDI” – was that the employees couldn't be too far physically from the VDI infrastructure without experiencing poor performance, including slow screen refreshes and keyboard and mouse lags. Internet connection speed, VDI hardware configuration, and the nature of the applications running on the virtual desktops all could impede performance. When a traditional VDI architecture served multiple office locations or many employees working remotely, these issues became more pronounced.

The other big challenge with traditional VDI was cost and complexity, especially when trying to scale VDI to regional offices. To provide an acceptable user experience, IT had to bear the expense of building out VDI pods in different regions and shoulder the burden of managing SLAs.

## The Cloud Enables VDI to Clear Earlier Hurdles

The emergence of the cloud has allowed enterprises to overcome the limitations of traditional VDI, especially around cost and complexity. By leveraging the cloud, IT can offload the expense of building out on-premises VDI stacks, shifting from a high, upfront capital expense to a predictable, subscription-based operational expense. Additionally, SLAs are often part of cloud VDI solutions, which frees IT from having to constantly tune VDI to meet demanding service levels.



Embracing cloud-based VDI is the first step, but pairing cloud-based VDI with cloud-based file storage and associated services is also essential. Without full-scale implementation of cloud-native solutions, enterprises will not be able to solve the attendant problems of cost, management, and information-sharing. And worse, the user experience will likely remain less than satisfactory.

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## Avoid These Two Mistakes in Implementing VDI

The advantages of a cloud-based VDI are undermined without moving to a cloud-native file storage system as well. These two approaches provide some benefit from a legacy system of traditional workstations, but they have more significant drawbacks.



### **Mistake 1: Keep file data stored on-premises**

Moving to VDI while retaining existing on-premises network attached storage (NAS) and file server infrastructure perpetuates many of the same issues with traditional file storage:

- NAS and file servers must be constantly refreshed and expanded.
- Backups need to be performed, stored, managed, etc.
- Recovery from a local disaster can take days or weeks.
- Latency becomes a new problem because now the virtual desktops are in a cloud data center and the home directories, group shares, and profiles are still on-prem. Users located far from the VDI will experience latency in accessing this data due to the distance that data has to travel.
- CapEx costs are still an issue due to ongoing hardware and software expenditures.



### **Mistake 2: 'Lift and shift' on-prem file storage technology to the cloud**

Sometimes organizations opt to shift an existing on-prem NAS environment to its cloud-based equivalent. This is NOT the same as adopting cloud-native file storage and associated services. This approach, too, has limitations and drawbacks:

- Cloud-based NAS uses expensive block storage, which can cost up to \$3,000 per terabyte per year.
- Backup and DR are separate technologies that still must be purchased and implemented.
- Companies with multiple locations that require desktops hosted in different cloud regions will end up with multiple silos of file data that must be managed. Cross-location file sharing will still be costly and complex.
- Scalability is limited due to restrictions on volume, directory, file size, and the number of snapshots.

Neither of these file storage approaches can deliver the operational efficiencies and user experience of cloud-based VDI paired with cloud-based file storage and services.

## Cloud-based VDI and Cloud-native File Services: The Ideal Combination

When two cloud-native solutions work in tandem, organizations get a fully realized answer to the problems they've been trying to solve:

- Lower costs. Cloud file services solutions use inexpensive cloud object storage instead of cloud block storage. The typical cost savings is greater than 50%.
- Simplified IT, with built-in backup and DR, as well as centralized management.
- Unlimited scalability, without restrictions on volume, directory, file size or snapshots.
- No latency issues, resulting in an experience on par with a local desktop.
- Global control over file versions to avoid data conflicts or corruption.

## The Potent Combination of Cloud Object Storage and Nasuni Cloud File Services for VDI

Nasuni cloud file services consolidates all file data in scalable, secure, cloud object storage, such as Azure Blob Storage, Amazon Simple Storage Service (S3), or Google Cloud Storage. By leveraging object storage instead of expensive NAS or cloud-based block storage, companies can reduce their file storage spending by 50% or more.

Furthermore, lightweight Nasuni Edge Appliance virtual machines are deployed in each cloud region where virtual desktops are hosted. This deployment provides high-performance cached access to frequently accessed files, using only a small amount of cloud VM block storage. In this configuration, VDI users still get fast file access through standard drive mappings and SMB and NFS file sharing protocols.

## A Better Way To Manage Files

With Nasuni, backup is built in through continuous versioning of files. Rather than replicating the entire file, this backup method captures only the modifications from the previous snapshot. Not only are recovery points and times improved to every few minutes, the costs of traditional file backup are eliminated.



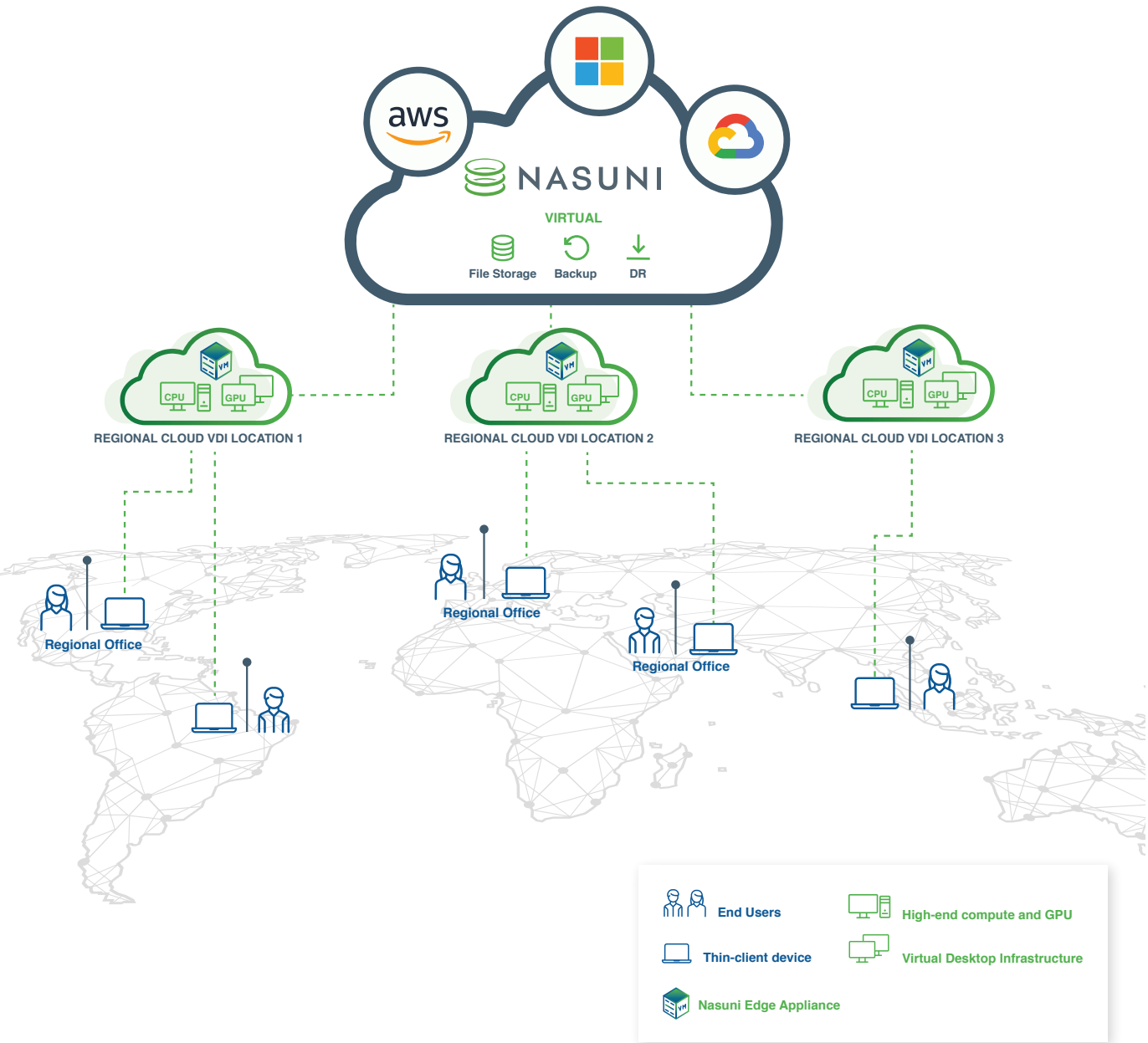
Because Nasuni's global file system – UniFS® – resides and scales within unlimited object storage, there are no limits on the number or size of files, directories, volumes, or snapshots. This is a critical capability that enables enterprises working with large data files — oil and gas companies, architecture, engineering, and construction firms, healthcare organizations and the like — to reap the benefits of cloud VDI and digital transformation.

With all file data consolidated in the cloud, organizations can share the same files across multiple VDI regions. Because end-users in different locations no are longer saddled with long delays and frustrating file transfers, organizations can for once experience true distributed team collaboration along with higher worker productivity. In addition, patented Nasuni Global File Lock® technology ensures that two people (even in different countries) cannot edit a file at the same time, eliminating version conflicts.

**Why It Works For The End-User: Solving Latency Issues Through Regional Edge Caching**

Nasuni solves the issues of latency and file coordination in multi-region cloud VDI deployments through its unique platform of regional edge caching appliances and its UniFS cloud-based global file system. Nasuni’s “hub-and-spoke” architecture uses object storage as the hub and caches frequently accessed files on edge appliance VMs that can be deployed in any regional cloud data center.

By locating the files in the same cloud region as virtual desktops, latency is mitigated and high-performance file access is assured. Nasuni also synchronizes file changes from all cloud regions in which edge appliances have been deployed, ensuring that VDI users in each region are always accessing the latest version of any file. The Nasuni Management Console provides the proverbial “single pane of glass” for managing an otherwise unwieldy global file infrastructure.



## Other Advantages Of Pairing Nasuni And Cloud VDI

In addition to the tremendous flexibility and adaptability of the Nasuni-enhanced cloud VDI model, enterprises also experience numerous additional advantages over the local desktop model that so many have been relying upon for decades:



**Work from anywhere:** Ensure employees are productive wherever they happen to be, with fast access to the business files they need without latency delays.



**Collaboration on the largest of files:** Users can collaborate on huge files that they thought were beyond the capacity of remote work.



**IT management from anywhere:** The Nasuni Management Console greatly reduces IT operational costs, as shares, volumes, and more can be centrally created, monitored, and managed from anywhere, important for complying with shelter-in-place mandates.



**Limitless file storage:** With Nasuni, file data scales in limitless, low-cost cloud object storage, not on expensive, hardware-constrained block storage, across all VDI regions, without any limits on volume, directory, or file size.



**Flexible capacity:** The combination of virtual edge appliances and the UniFS global file system is unmatched in the market, giving a NAS experience that overcomes latency issues and is scalable depending on organizational needs.



**Fast file access:** Edge-caching of frequently used data allows end users to manipulate even the largest data files easily and quickly, with no latency.



**Full-time infrastructure:** Nasuni becomes the single file services platform used 365 days a year whether one or all locations are experiencing a disaster scenario.



**Eliminate backup:** Nasuni Continuous File Versioning® eliminates the need for expensive third-party backup software, hardware, and backup storage.



**Built-in business continuity:** No need to worry about separate systems for these functions. It's all part of the Nasuni system.



**Minimize downtime:** Nasuni slashes file restoration from days to minutes and mitigates the impact of everything from ransomware attacks to accidentally deleted files.



**OpEx rather than CapEx costs:** Shifting from on-prem to the cloud means costs can be shifted to operational expenses rather than capital outlays, giving companies more budget flexibility to put toward options with strong ROI potential.



**Reduced desktop costs:** Costs are lowered by not having to replace high-powered workstations every 3 to 5 years. Instead, a thin client can be used, with an estimated lifespan of 7 to 10 years.



**Enhanced security:** From a security standpoint, VDI is unsurpassed. A thick-client workstation is a security risk because it contains the valuable data in its local storage. A thin-client device accessing a VM does not store the data locally, eliminating this security risk.

## Accelerate Your Enterprise's Future

Enterprises around the globe are rethinking the way they operate. Remote work is more important than ever before, and distributed working models are likely to become the new norm. Legacy file storage and access processes have been made all but obsolete, and VDI without cloud-based storage can only solve some of the problems.

Now is the time to look at what makes sense in the new reality of anytime/anywhere access, real-time collaboration and remote work. The limitations of legacy approaches are overcome with Nasuni cloud file services and cloud-based VDI. This modern, cloud approach adds up to a superior user experience, a better use of corporate resources, and a coordinated information-sharing endeavor that will allow distributed enterprises to thrive in the enduring reality of remote work.

Contact a Nasuni rep for a free assessment of how this solution may be just what you need to move forward in this new era.

## About Nasuni

Nasuni is a file services platform built for the cloud, powered by the world's only global file system. Nasuni consolidates network attached storage (NAS) and file server silos in cloud storage, delivering infinite scale, built-in backup, global file sharing and local file server performance, all at half the cost of traditional file infrastructures. Leading companies from a wide array of industries rely on Nasuni to share and collaborate on files across multiple sites, enhance workforce productivity, reduce IT cost and complexity, and maximize the business value of their file data. Sectors served by Nasuni include manufacturing, construction, creative services, technology, pharmaceuticals, consumer goods, oil and gas, financial services, and public sector agencies.



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