

# Amazon WorkSpaces — Don't Forget to Keep the File Storage Close





Amazon WorkSpaces, a desktop-as-a-service or cloud VDI solution, overcomes the two biggest challenges with on-premises VDI — cost and complexity for IT and latency for end-users. Cost and complexity are reduced because you no longer have to worry about the infrastructure. Windows or Linux desktops are provisioned on-demand in the cloud and managed through SLAs.

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COVID-19 has accelerated cloud VDI adoption as enterprises scramble to keep employees productive working from home and provide flexible work schedules. Amazon WorkSpaces is gaining ground because it was built for the cloud and provides a robust desktop solution for IT and employees alike. But what about the file storage behind the virtual desktops?

The benefits of cloud VDI are clear: greater access, tighter security, lower costs, more agility, and a simpler IT environment. However, without modernizing the file storage along with cloud VDI, these benefits can be lost because of the poor user experience working with files. If users don't get the fast file access they're used to, VDI adoption will stall.



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That's where Nasuni comes in. Nasuni cloud file storage keeps files close to the virtual desktops no matter how many VDI regions you deploy. In the same way that deploying multiple VDI sites mitigates the impact of network latency on virtual desktop performance, Nasuni's edge caching and multi-site file synchronization mitigate the impact of network latency on file storage performance. Every user at each WorkSpaces region will enjoy fast access to shared files.

Nasuni delivers cloud VDI file storage at a significantly lower cost. By consolidating file data in scalable, low-cost AWS S3 object storage and eliminating the need for file backup and replication, organizations can save around 50% compared to the cost of traditional NetApp or EMC NAS, Windows file servers, or VM disk storage in the cloud.

Here's a deeper technical look at the two ways companies are starting to implement Amazon WorkSpaces with Nasuni.

### #1 – Consolidate Files in the Cloud

Andres Rodriguez, Nasuni's Founder and CTO, explains this well in his "VDI at the Speed of Light" blog – the only way to make cloud VDI successful is to deploy your virtual desktops close enough to every user to keep latency in the 100-180ms range (less if they use more intensive apps like CAD or Adobe Creative Cloud). For distributed organizations, it is simply not feasible to do this from one cloud location.



*Andres Rodriguez, Nasuni's Founder and CTO*

As Figure 1 below illustrates, there is too much distance and too many network hops between the different locations, to a single WorkSpaces region where virtual desktops are hosted. With every device and switch along the way introducing buffering and delays, users in the more distant locations experience high latency and poor performance.

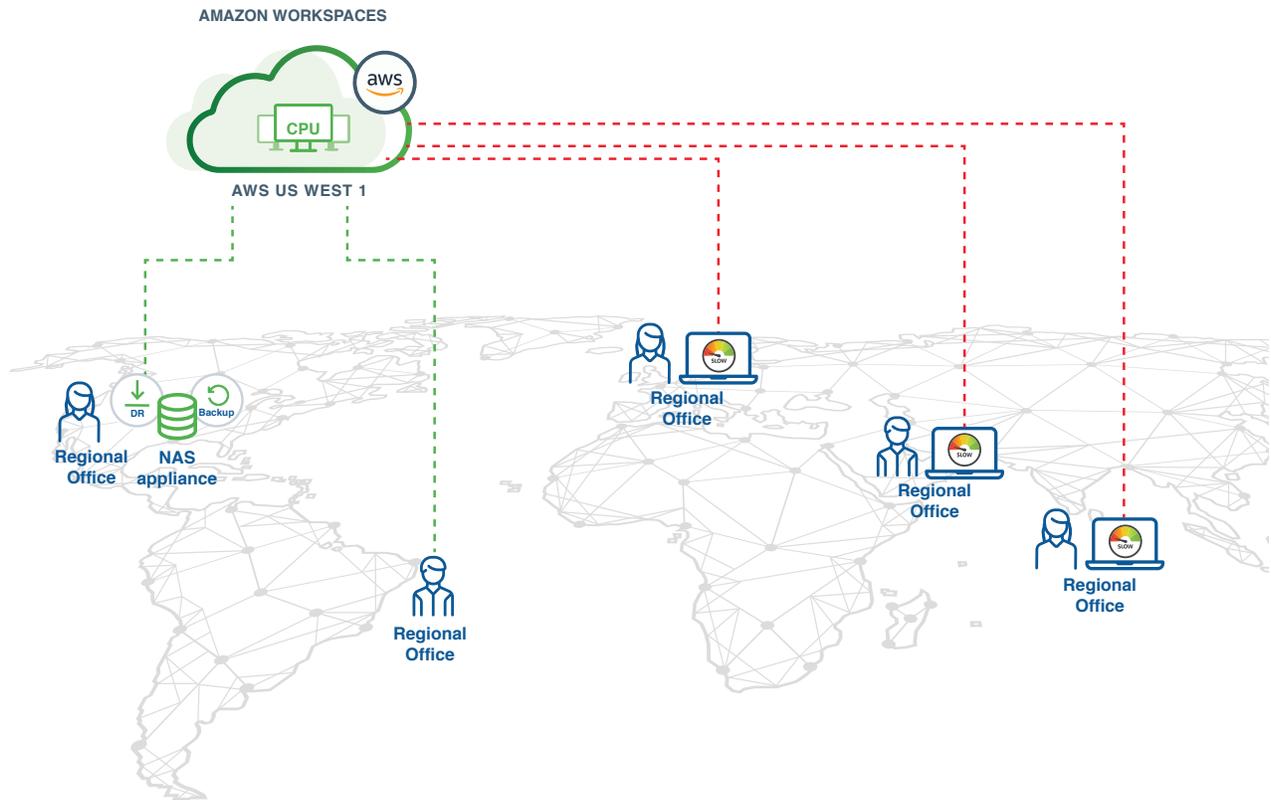


Figure 1. Network latency makes it difficult to provide a great user experience in every location.



Removing desktop latency requires a separate WorkSpaces to be run in multiple AWS cloud regions. As noted above, file storage still needs to be addressed. For example, if London users connect to their virtual desktop in their local UK AWS datacenter, but their files and group shares are in California, slow file access will ruin the whole VDI user experience.

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Knowing that the goal is to move file storage closer to the virtual desktops, file storage needs to be available at each WorkSpaces region. As shown in Figure 2, a common VDI misstep is to create multiple silos of file servers in every region and back them all up separately (let's not get into the topic of disaster recovery and business continuity). This solves the latency problem for both desktops and file access, but creates bigger issues for cost and complexity, dwarfing the original issue.

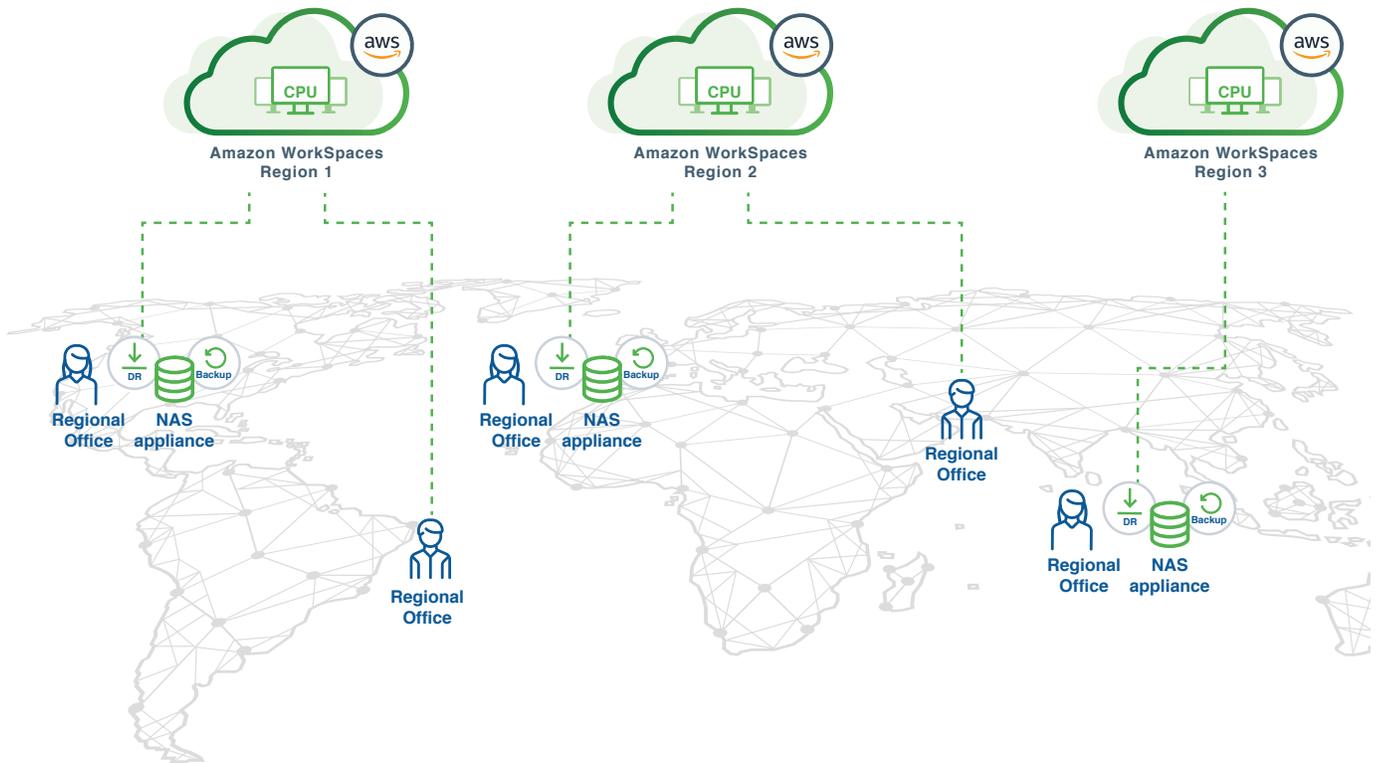


Figure 2. Deploying local file servers close to each WorkSpaces region mitigates latency, but is often cost-prohibitive and too complex to manage.

*One of the things that makes Nasuni different from other storage approaches is the platform's reliance on Nasuni Edge Appliances, small-footprint virtual machines that cache copies of the frequently accessed files from object storage for fast access by the virtual desktops.*

The better choice is to use Nasuni cloud file storage that keeps files close to each WorkSpaces region without all the cost and complexity of file storage silos. Nasuni consolidates all files in low-cost Amazon S3 object storage, which has no limits and is a significantly simpler environment for IT to manage. Gone are the racks of NAS and file server storage along with all the backup gear and disaster recovery (DR) infrastructure. Nasuni includes the functionality of infinite backups and DR in 15 minutes. One of the things that makes Nasuni different from other storage approaches is the platform's reliance on Nasuni Edge Appliances, small-footprint virtual machines that cache copies of the frequently accessed files from object storage for fast access by the virtual desktops. The files can't get any closer to the WorkSpaces.

Nasuni then keeps all the files synchronized between all of the VDI regions, providing SMB- and NFS-based file access to every virtual desktop. It's important to note that file access is not over the WAN between the end-user and the cloud, it is between the virtual desktop and the cached files on the Nasuni Edge Appliance in the same cloud region, at local area network speeds.



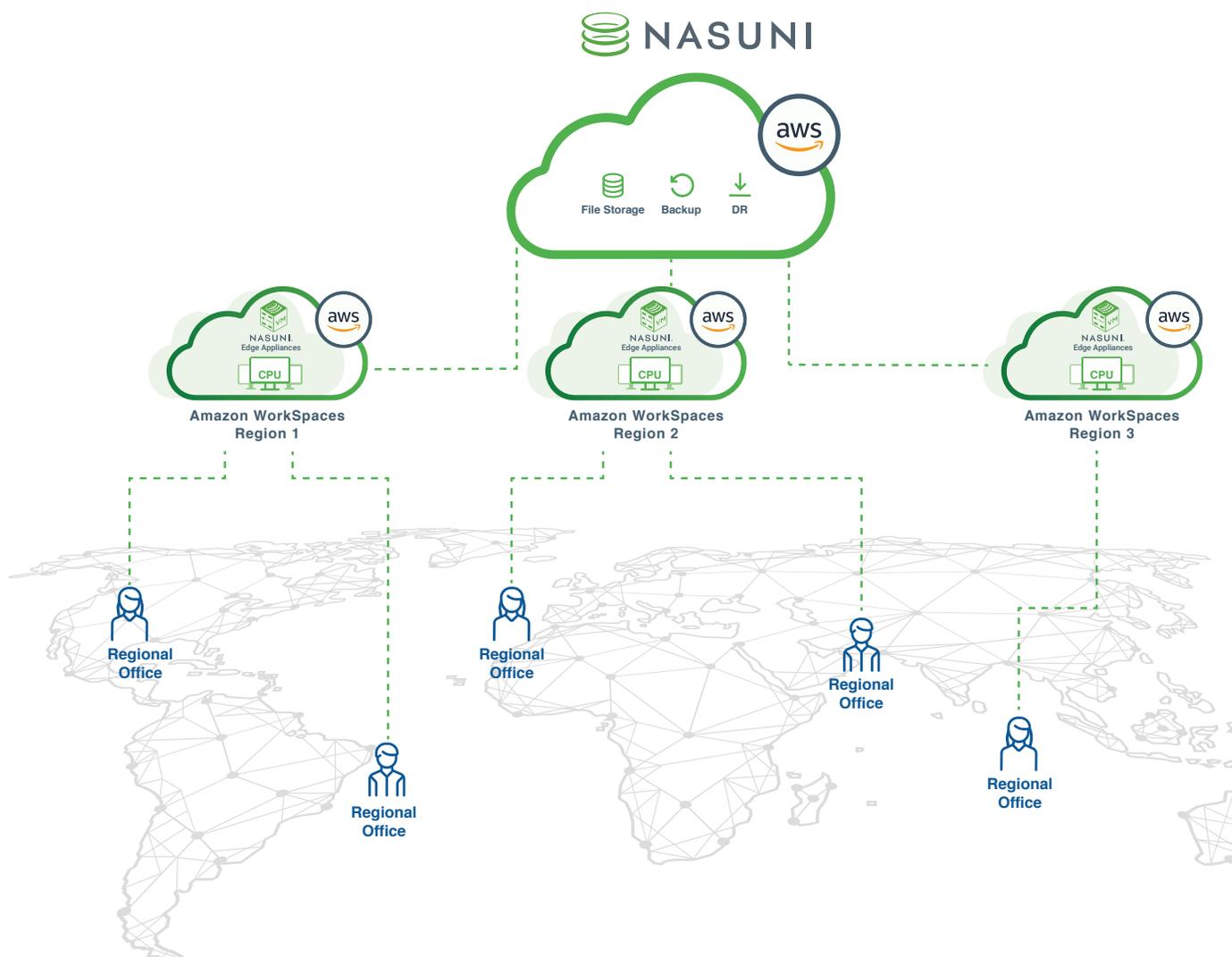


Figure 3. Nasuni Edge Appliances cache frequently accessed files from object storage in each WorkSpaces region to make file storage “close” to every desktop, mitigating latency and speeding up file access.

Figure 3 shows what a multi-region WorkSpaces deployment could look like with Nasuni. In each AWS region, a Nasuni Edge Appliance is deployed next to the virtual desktops in the same AWS datacenters. As a result, the users in each region access their home drives, group shares, and project files in the cloud, which mitigates latency and ensures a high-performance file sharing experience everywhere.

## #2 – File Sharing Everywhere (via the cloud)

When a company pairs Amazon WorkSpaces with Nasuni cloud file storage, new advantages open up – the ability to share the same files across every cloud VDI region anywhere in the world to enable distributed team collaboration and boost worker productivity.

Nasuni’s UniFS® global file system — the first file system designed to have its inode structure live and scale natively in object storage — provides a universal namespace that can be accessed from any user (with permission), anywhere in the world. Changes to a file saved to a Nasuni Edge Appliance in one cloud VDI region are automatically synchronized to all the other Nasuni Edge Appliances in all the other regions immediately. Nasuni uses a hub-and-spoke architecture, instead of a mesh network, to ensure the scalability of the number of locations

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that can be supported. The Edge Appliance synchronization is highly optimized by transferring only the changed bits of data (not the entire file) after compressing, deduplicating, and encrypting them. The result is users get fast access to the most recent versions of files anywhere in the world, without worrying about version mismatches or editing conflicts.

### Reducing Cloud VDI File Storage Costs by 50%

The technical advantages of using Nasuni and AWS S3 object storage over traditional EMC and NetApp or virtual machine disk storage should now be clear. But the cost-saving advantages are just as important.

#### Hard Cost Savings

Focusing on the capital cost savings first:

- Nasuni and its UniFS global file system uses limitless, low-cost Amazon S3 cloud object storage instead of expensive, hardware-constrained block storage.
- Nasuni Edge Appliances cache only the frequently accessed files in each WorkSpaces region. Without the need for full-sized NAS, file servers, or VM disk storage to store multiple copies of all file data, the file storage capacity footprint in each region can be reduced by 85-95%, leading to significant cost savings.
- Nasuni Continuous File Versioning®, which stores file changes as they occur in object storage to create an infinite, immutable file version history, eliminates the cost of third-party backup software, media servers, and backup storage.

#### Operational Soft Cost Savings

With Nasuni providing cloud file storage to WorkSpaces, you'll substantially reduce IT operational costs as well, thanks largely to the web-based Nasuni Management Console (NMC). The NMC replaces all the point tools that would otherwise be needed to administer a multi-site file infrastructure. The NMC allows IT administrators located anywhere with a browser to access:

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##### **Multi-site management**

Shares, volumes, Edge Appliances, and protocols can be created, monitored, and managed as a collection. One configuration change made centrally will be automatically propagated across all WorkSpaces regions.



##### **Instant provisioning**

More capacity for group shares, project directories, and home drives can be added instantly to ensure virtual desktops never run out of space.



##### **Centralized file recoveries and ransomware mitigation**

Individual files, entire shares, or full volumes can be restored to almost any point-in-time, making it easy to mitigate a ransomware attack or simply recover an accidentally deleted file.



##### **Workflow automation**

The NMC REST API enables your cloud VDI file storage to be integrated with business workflows such as chargeback, employee onboarding and offboarding, and new project provisioning, as well as existing workflow tools such as Jira.

**Together, these savings typically add up to around 50% reduction in file storage costs.**

Nasuni is the best way to provide cloud file storage to Amazon WorkSpaces, by keeping files close to the virtual desktops. Nasuni can replace file server silos, drastically reduce costs, and simplify the entire VDI operation. Nasuni's multi-site file synchronization enables the same files to be shared across all regions to boost distributed team collaboration and workforce productivity.

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### **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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