

# VDI Will Never be the Same (And Neither Will Your Workforce)

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**Evaluator Group**

*Enabling you to make the best technology decisions*



## Introduction

A recent survey of IT professionals who are coping with the impact of COVID-19 on their IT organizations found that most of them are presently in "react" mode. We found that many were caught unprepared for this scale of workforce displacement to remote urban and suburban locations with over 90% of respondents saying they and their IT staff are now required to work from home.

Are you or your staff required to work from home?

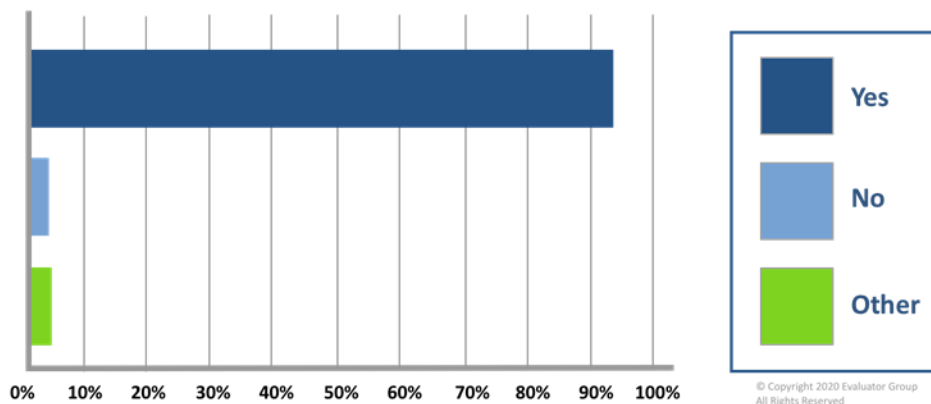


Figure 1. Percentage of Enterprise IT Staff now Working from Home (Source: Evaluator Group)

In order to cope, we saw enterprise IT organizations adapting essentially overnight to a workforce that was, practically speaking, entirely remote. And they did it by deploying resources they found to be immediately accessible. These included VDI instances that were “spun-up” in the cloud which allowed business users to conduct critical, day-to-day operations with little to no lapse in productivity.

Why VDI? The shift to a remote workforce opens new security vulnerabilities leading to increased exposure to ransomware attacks and other malicious activity. As one respondent put it: “We’re in the open, hackers and bad actors are in the dark, always trying something new. Our job is to defeat them every time.” Among other efficiencies gained, VDI allows them to impose centralized security measures for these desktop and laptop instances.

IT organizations' eyes have been opened to the need to be better prepared for the majority - if not all - of their workforces to operate remotely. VDI coupled with public cloud resources are a great fit for the current, remote-heavy operating environment. They can be spun up on-demand and are highly elastic -

meaning they are an ideal fit to quickly provide infrastructure and application resources to end users that suddenly find themselves operating remotely.

While we believe that the mid-to-long term impacts are still being assessed by the organizations we surveyed, we detected a feeling that there will be some permanent versus temporary changes to IT “business as usual.” Indeed, long-term benefits may be realized that include reductions in the need for expensive corporate office space – benefits that can also be realized from VDI deployment in the cloud.

VDI will become the preferred environment for hosting an at-home workforce because security enforcement is more effective, management can be centralized and automated, access to corporate desktops and applications can be delivered through employees’ own computing devices, and supporting infrastructure can be ramped up and down quickly. Therefore, Evaluator Group believes that the ability to support VDI at scale will become a permanent fixture of enterprise IT strategies. Along the way however, IT administrators will be considering the most effective ways to scale and manage VDI environments going forward. This report focuses on the critical role storage plays in delivering a productive VDI-based work environment.

## The Evolution of Enterprise VDI

Early implementations of VDI were prone to a poor user experience caused in part by poor storage performance at scale, understood as latency. To solve the latency problem, IT administrators typically implemented external, centralized, high performance storage systems. Flash storage is now commonly used for its predictable latency-reducing characteristics. However, hosting VDI data in this way adds considerable expense, not only in terms of infrastructure, but also for the management of both storage and VDI data. This additional expense drives up the cost of VDI on a per desktop basis – typically the measure of a cost-efficient VDI implementation.

### Moving VDI to the Public Cloud

To make VDI implementations more cost-efficient at scale, enterprise IT is looking to the public cloud, which offers the advantages of immediate scalability and centralized, automated management. VDI in the cloud also makes corporate desktops available anytime, anywhere, and through any device. However, this alternative still leaves open the question of how to hold latency down while implementing and managing VDI storage. One option is to keep centralized storage in the data center, but this introduces network latency into the equation and further complicates the management of VDI. The other is to move the on-site VDI storage environment to the cloud as well. However, storage and data management in the cloud gets expensive if not implemented in a cost-effective way.

### Cost-efficient VDI in the Public Cloud

A cost-effective way to run a scalable, automated VDI implementation in the cloud is to leverage native cloud resources in tandem with the data center and remote locations. In this way, automated storage and data services in the cloud can be applied at scale, lowering the cost of VDI on a per-user basis.

Latency-induced performance variability as experienced by the user is also easier to control. Security, data protection and disaster recovery practices can also be implemented in a way that conforms to IT policy.

## Using Nasuni Cloud File Services for Cost-efficient VDI

Nasuni created the first global file system – UniFS® – to natively leverage the vast object storage resources offered by the major public cloud services providers such as Amazon Web Services, Microsoft Azure and Google Cloud. As the heart of the Nasuni cloud file services platform, UniFS uses cloud-based object storage volumes to store all directories and files, as well metadata for data creation/modification, access control and other parameters. Mappings between the volume structure – files, directories, metadata, and objects – are all stored in the cloud as well.

Nasuni uses caching appliances (Nasuni Edge Appliance) to deliver access to frequently used files. These caching appliances can be deployed as virtual machines (VMs) in an on-premises data center or remote office to provide high performance file access without cloud latency or data egress fees. They can also be deployed in the cloud for IT organizations that want to eliminate all on-prem file infrastructure – an advantageous deployment model for cloud VDI.

When a volume is instantiated on a local caching appliance, the corresponding volume structure is built on cloud object storage services such as Azure Blob and AWS S3. As files and directories are created in the process of servicing VDI workloads, data is chunked, deduplicated, compressed and encrypted, then stored as objects in the cloud (see Figure 2 below).

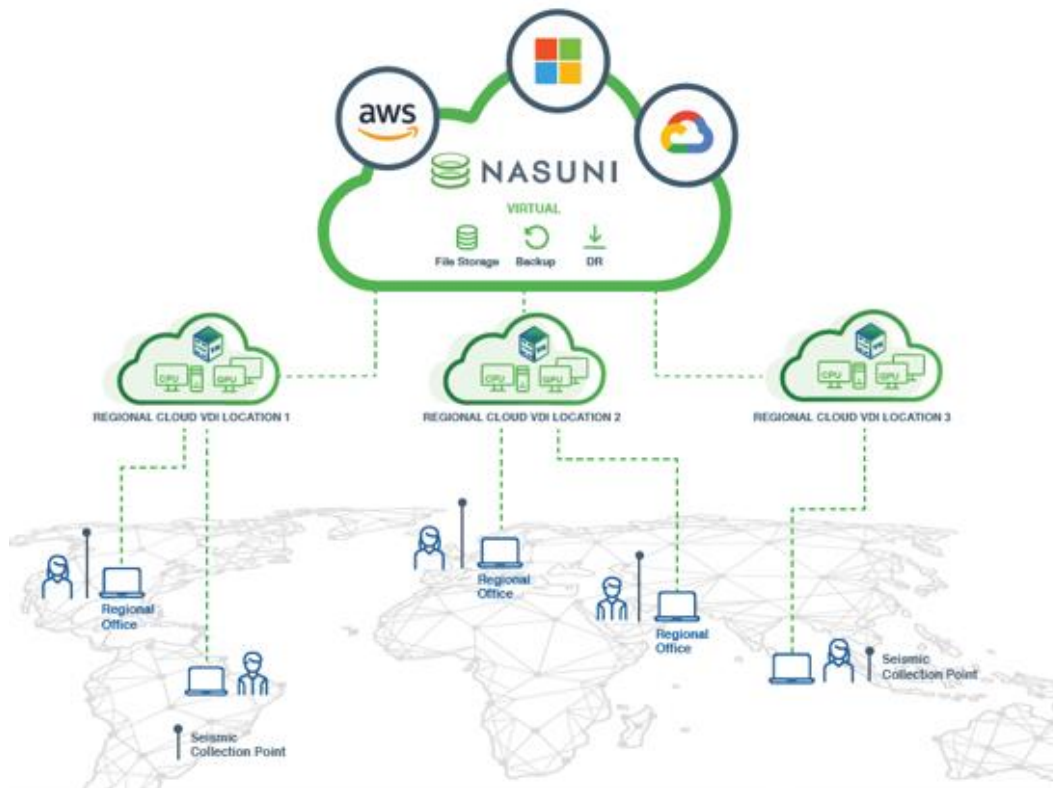


Figure 2. Nasuni Cloud File Services Architecture (Source: Nasuni)

For VDI deployments in the cloud, Nasuni places VDI file storage in a centralized public cloud “hub” while storing copies of the frequently accessed data in the edge appliances for VDI desktop performance. These edge appliances can be hosted in any public cloud regional data center that is hosting virtual desktops. Using this architecture, Nasuni synchronizes data across any number of cloud locations while providing a centralized portal for managing the entire VDI file infrastructure. The result is a storage architecture that is well suited for today’s enterprise qualified VDI workloads in the following ways:

### ***Cost-efficiency***

Nasuni leverages low-cost public cloud object storage as a centralized, immediately scalable, single source repository for VDI file data. Cached copies of files in use are served to local applications via the caching appliances. In this way, customers are given large scale VDI storage at low cost, paid for based on capacity actually used (OPEX) as opposed buying an expensive, high-performance storage array that is paid for as a capital acquisition (CAPEX). This is done while still satisfying the requirements for high-performance file storage. Centralizing the master or “gold copies” of data in the cloud also allows an administrator to define and automate management processes for all VDI data via a centralized management console, improving the cost efficiency of managing VDI workloads. In addition, traditional on-site data protection

infrastructure and practices that add significant cost to VDI storage administration can be eliminated.

### *Latency Reduction*

Nasuni's hub and spoke architecture locates frequently accessed data – such as group and project shares, home directories, and user profiles – near end user locations. This allows users to access data at LAN speeds, regardless of whether their virtual desktops are located in an on-premises data center or in a regional cloud data center. This approach assures consistent, predictable performance as experienced by VDI users.

### *Immediate Virtual Desktop Deployment*

Because data is consolidated in the cloud but served locally, VDI instances can be provisioned quickly by administrators and immediately connected to Nasuni's edge appliances. In the course of conducting our COVID-19 response research, we found one healthcare IT administrator whose group was tasked with instantiating 8,000 new laptops as cloud virtual desktops within two weeks. With Nasuni, this would only require changing the access points. The IT administrator could deploy a few edge appliance VMs in the cloud, and map shares from the new virtual desktops to the appliances. No change to the back-end volumes in cloud object storage and no movement of data would be required.

### *Improved VDI Security*

As mentioned, remote user security is a critical concern and why VDI implementations are preferred over simple laptop deployments. Nasuni encrypts all data using encryption keys owned and stored by each enterprise. For local access and authentication, each Nasuni edge appliance integrates with and joins on-premises Active Directory and LDAP infrastructures.

### *Distributed Business User Group Collaboration*

With all VDI data consolidated in the cloud, organizations can share the same files across multiple VDI regions, allowing for distributed team collaboration. As VDI users update file data on an edge appliance, only the changed data is used to continuously update the gold copy in the cloud. Once the gold copy is updated, the change is propagated to all other VDI regions that are accessing the same file so every VDI user can access the same file without latency. File locking assures that subsequent users of the file are only served the most up-to-date version.

## **Nasuni Responds to High (and low) Stress VDI**

Our research concluded that IT organizations with functioning and tested disaster recovery capabilities were in the best position to respond quickly to Work from Home mandates. We found that administrators who had architected VDI into their recovery capabilities could maintain business user

productivity despite the disruption. Therefore, VDI will likely become an essential tool in maintaining business continuity going forward

Nasuni, with its cloud-native architecture and scalable UniFS global file system, has proven to be reliable, stable, performant, and meets the needs for those looking to move primary VDI file storage to the cloud. We also note that doing so will ease disaster recovery concerns for primary VDI storage and offer the ability to scale capacity on an immediate, as-needed basis.

Stay-at-home mandates have driven entire workforces out of their offices. VDI was called upon to support business users in what can be seen in the context of a business-continuance scenario. Indeed, Evaluator Group's research showed that the enterprises who were best prepared to cope with Stay-at-home orders were the ones with the most robust and well-tested business continuity plans. Cloud VDI with cloud file storage such as Nasuni is now an attractive way for enterprises to react quickly in stressful times and in normal times.

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