

# Nutanix Files

**Traditionally, standalone Network Attached Storage (NAS) appliances have been the solution of choice for file server deployments. These deployments can be complex to set-up and operate, require specialized skills and create additional infrastructure silo.**

## FILES HIGHLIGHTS

- Advanced File Analytics
- User and Share Quotas
- User Self Service File-Level Recovery
- Separate SMB and NFS shares/exports on the same fileserver
- Efficient backups leveraging REST APIs
- Integration with Audit vendors enabled with file monitoring APIs
- Native Backup and Disaster Recovery
- Inline Antivirus Scan Support
- Fileserver Cloning
- Non-disruptive DR Testing
- Advanced Storage Optimization Techniques including Compression, and Erasure Coding

## ELIMINATING STANDALONE NAS SILOS

Nutanix Files is a software-defined scale-out file storage solution designed to address a wide range of use cases, including Linux support and Windows home directories, user profiles and department shares. It precludes the need for a separate NAS appliance by providing a consolidated solution with unified management for VM and file services. Using Files, Nutanix customers can add file services to existing clusters or deploy new clusters of storage-dense nodes to address larger-scale file storage requirements.

## BUILDING UPON THE NUTANIX ENTERPRISE CLOUD ARCHITECTURE

Nutanix Files leverages the Nutanix Enterprise Cloud architecture to provide file services. There are two common deployment modes for Nutanix Files. It can be deployed as a stand alone, software defined, distributed scale-out file storage solution for all of your file storage needs. Or it can be deployed as a fully integrated, core component of the Nutanix enterprise cloud for your HCI file storage needs. Nutanix Files is platform agnostic and supports the same platforms as Nutanix Enterprise Cloud OS Clusters. The new NX5000 has been purpose designed for use cases where large capacity is required and is well suited for Nutanix Files primary data center and remote office implementations.

In both modes, Nutanix Files can be deployed in just a few clicks on any Nutanix cluster. Each node in the Nutanix cluster contains processors, memory, local storage, and networking resources that can be used to run VMs and services like Files. Local storage devices inside the nodes are virtualized into a unified pool by the Distributed Storage Fabric (DSF) which provides Files and other services with advanced data protection and data reduction capabilities including high availability, compression and erasure-coding. By running on the same Nutanix infrastructure that hosts the user virtual machines, Files helps reduce cost by eliminating the need for dedicated file storage systems while increasing business flexibility. Files can be easily deployed and managed using Prism, the Nutanix management solution.

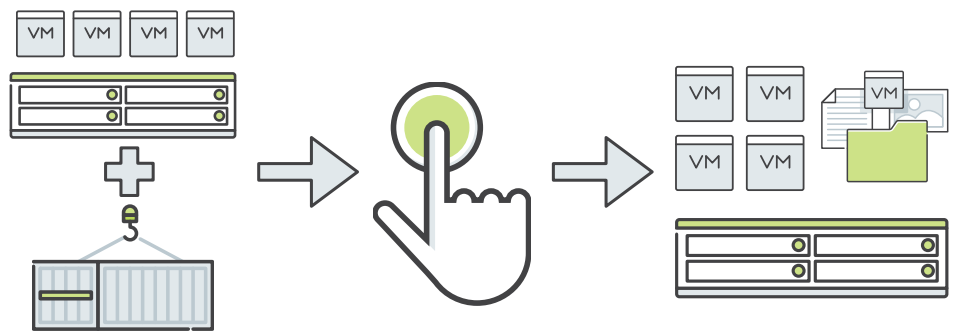


Figure 1: Redefining hyperconvergence by deploying file services on the same cluster as VM storage

## BENEFITS

- Turnkey Consolidation**

Files is the only turnkey consolidated VM storage and file storage solution on the market. It can be deployed stand-alone for centralized management of file data or on an existing Nutanix cluster for better cluster utilization.

- Just Works**

Files can be deployed easily from Nutanix Prism, the same management interface used to manage the entire stack of compute, storage, virtualization and now file storage. Upgrades can be done with a single click using Prism.

- Single Namespace**

A single namespace is exported from the Files cluster, no matter how large the cluster is.

- Scale and Performance**

Files is built to handle billions of files by design, and tens of thousands of user sessions. As the environment grows, the cluster can be scaled up by adding more vCPU and memory to the file server VMs, or scaled out by adding more file server VMs.

- Enterprise Storage Features**

Highly available by design, Files inherits enterprise storage features including intelligent tiering, erasure coding, and compression from DSF. It also enables per user quota for finer control of the file server deployment with organization policies.

## THE NUTANIX FILES ARCHITECTURE

A Nutanix Files cluster consists of two parts: File server VMs to handle the client connections, and the highly scalable and available Nutanix Volumes for storing the data. Nutanix Volumes ensures that the Files cluster has access to the entire storage pool on the Nutanix cluster, and can grow on-demand. There is a minimum of three file server VMs in each Files cluster, with each VM using as little as 4vCPUs and 12GB of RAM. The Files architecture allows seamless performance scaling by either adding more file server VMs to the Files cluster, or by providing more CPU and RAM resources to each VM. Multiple File clusters can be created on a Nutanix cluster for those environments that need complete namespace isolation between departments or customers. The file server VMs can be scaled out as needed in lock step with the applications, files, and number of users. Files supports both SMB and NFS protocols.

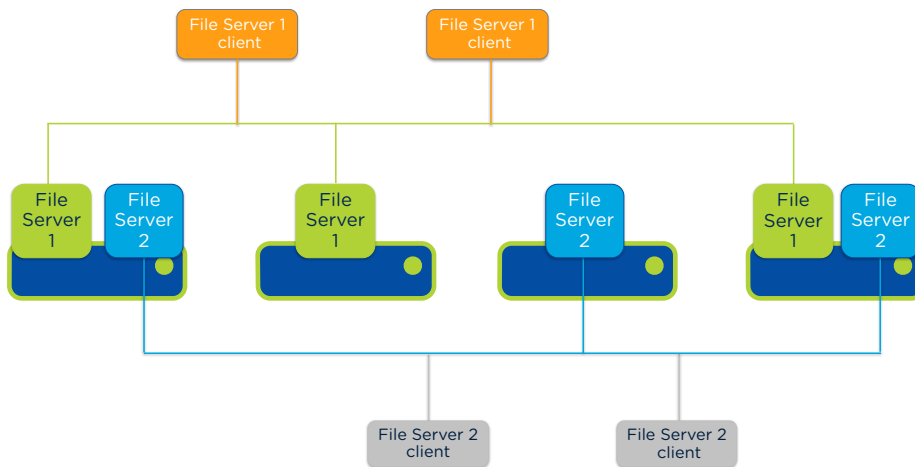
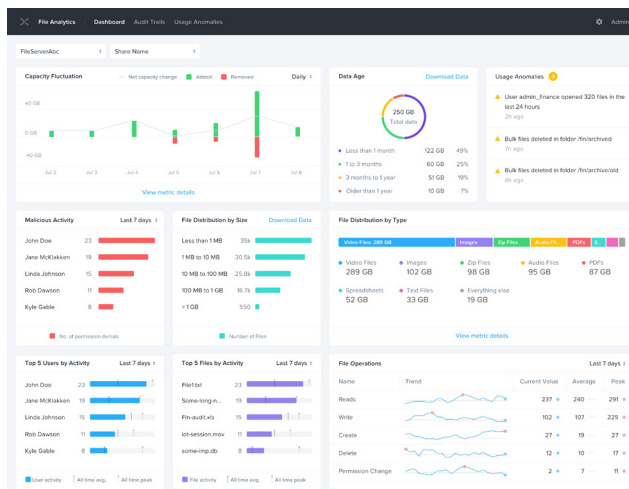


Figure 2: Allowing multiple file service clusters on the same Nutanix cluster

## FILE INTELLIGENCE FOR THE CLOUD SCALE ERA

In an era where massive scale is the norm, understanding the data that your infrastructure is hosting is critical. That is why Nutanix Files provides deep insights and rich analytics on your file data. File analytics is Nutanix Files native analytics solution. Our solution gives deeper insights and greater visibility into what and how users are accessing files. File Analytics provides audit trails to track file access over time. It provides anomaly detection to identify potential threats and risks. It enables permission visualization so that administrators can understand at a glance who has access to what data or all the data that a single user has access to. Easy to use dashboards give high level visibility across your file storage estate. Dashboards allow for click through drill down to gain deeper insight into the data underlying the dashboard.



## FILE ANALYTICS CAPABILITIES

- **File Auditing**

Nutanix File Analytics will help audit the file system usage, such as who is creating, accessing, moving, deleting and modifying files and permissions (Audit trails) and ability to filter data based on a particular event or time range). Find out who owns the data and how to involve them for effective remediation. (Visibility of owners information and ability for the owner to control the file access)

- **Data Usage trend**

Who is most using the system and what data are being used most (Ability to show Top users and files in the file system)

- **Capacity Management**

Administrator can get the visibility of how capacity is being utilized over the period of time and what kind of files are being added to the defined capacity. Analytics will give the visibility on File type and File size distribution and their growth pattern. This can help administrator on quota enforcement.

- **Storage Tiering decision**

Nutanix File Analytics will give the visibility on data used and the dormant data so that storage tiering decision can be made.

- **Anomalies and Security**

Define the policy to get an alert in case of file system anomalies detection and malicious activity performed. Ability to view the alert details and get the information on users responsible for anomalies and which folder is impacted.

- **Manageability (Infra)**

Simplified deployment and subscription to the analytics platform (Integration with Prism) Easy to upgrade and update with a single click.

## ENTERPRISE FILE STORAGE CAPABILITIES AND BEYOND

Nutanix Files leverages the architecture of the Nutanix Enterprise Cloud OS to provide all the capabilities organizations have come to expect from enterprise file storage systems.

### Efficiency

Software defined compression and ensures highly efficient file shares.

Disaggregation of storage services from the underlying hardware eliminate vendor lock-in and allow IT organizations to adopt the hardware that makes the most sense for their needs including low cost commodity hardware. Capacity based licensing lets organization pay for what they need when they need it. Automated tiering ensures data is placed on the tier of storage that makes the best performance and economic sense.

### Simplicity

Integration with Nutanix Prism software makes for simple single pane of glass management for all your file services. Prism management extends to Nutanix Volumes, Nutanix Buckets, Acropolis Hyper Visor and other Nutanix Enterprise Cloud OS services making Nutanix Files easy to manage in context of your HCI deployment. User facing portals for file share creation and file data protection and recovery empowers users to control file data at their speed. And REST API access for most Nutanix Files activity result in easy automation and consistency.

### Scalability

Nutanix Files can deploy on a single server node making it ideal for remote and branch office deployments. Standard clusters can start with three nodes and non-disruptively expand to 16 nodes which represents a single namespace and petabytes of total storage. A single Nutanix Files cluster can support billions of files. As with the Nutanix Enterprise Cloud OS, scaling out increases storage and performance in a linear manner. Storage can be scaled independently of compute. A storage heavy or storage only Nutanix node can be added to the cluster, and additional file server VMs can be deployed instantaneously to improve access speeds.

### Multi-tenancy

Role based access control and the ability to host multiple protected and separate file shares, each with their own active directory or LDAP integrated security context on the same underlying infrastructure provides unparalleled multi-tenancy capabilities. User and share based quotas allow for automated control of your file storage environment.

### Availability

Nutanix Files offers native snapshot capabilities for operational recovery, change block tracking for highly efficient backup for reduced recovery time objective, and self-service recovery to make sure users have the data they need when they need it. Beyond recovery, Nutanix Files provides prevention technologies to avoid outages in the first place. It leverages machine learning to identify hotspots or trouble spots. It provides recommended remediation that administrators can implement with a single click allowing for self-balancing and self-healing of the file storage cluster.

### File Intelligence

Nutanix Files goes beyond file services to offer a rich set of file analytics capabilities, which Admins can use to monitor and alert on unusual user behavior, or review audit trails or track file permissions lineage. This is critical for highly regulated industries, where admins are required to show the history of access and permission changes for secure data. It is also valuable for industries with fewer regulations as automated behavior tracking can alert admins to abnormal user behavior, giving the admins time to respond before a breach becomes a crisis. Nutanix Files provides APIs to the file analytics data to support governance, risk & compliance initiatives.



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