

Treating Government Data as a Strategic Asset

A comprehensive approach to consolidated storage

VOLUME AND BLOCK SERVICES BENEFITS:

- Lower acquisition costs by eliminating Fibre Channel SANs
- Scale capacity and performance together
- Proven reliability and resilience with five 9's or higher availability
- Automatic Fail-over/Fail-back – failover in seconds

FILES SERVICES BENEFITS:

- The only turnkey consolidated VM storage and file storage solution on the market
- Unified management and life cycle management
- Single namespace
- Scale and performance are built to handle billions of files by design, and tens of thousands of user sessions.
- Enterprise storage capabilities include high availability by design, intelligent tiering, erasure coding, and compression from distributed storage fabric (DSF)
- Rich file analytics and metadata for management and threat monitoring

Data. We are surrounded by it. IDC estimates that 59 zettabytes (ZB) of data will be generated this year alone and that will grow 5x by 2025¹. Government agencies generate, consume, and publish massive amounts of data—whether it's climate and weather data, health informatics, economic indicators, or mission-critical information for operational awareness and security. 5G promises to unleash a new wave of data requirements for government agencies and defense organizations as it expands information transfer capacity with IoT and Edge devices. Proper data stewardship is of growing importance in government to protect, curate, and extract maximum value from data assets. This is extremely challenging, not only for the raw volume of data and requisite storage requirements, but also in unlocking valuable insights that remain hidden due to siloed storage and inaccessibility. Government organizations need to build in agility and scale. They need to react to new operational needs like supporting maximum telework, and unexpected surges in data volumes such as managing response to health, economic, or security crises. They need to protect their data assets from ever-present cybersecurity threats.

A major challenge for optimum data management are the various data formats. Beyond the basic categories of structured and unstructured data, we find that users' data typically reside in files within folders and directory structures; relational databases that fall under the structured data category traditionally favor block storage for efficiency. Increasingly, IoT and Edge devices like sensors and video surveillance and modern applications like Big Data prefer programmable and API-addressable object storage. As this massive storage growth takes place, storage administrators and application owners are finding themselves bogged down by the complexity of managing and scaling to address rapid storage growth across siloed legacy storage, limited visibility—making it difficult to adhere to new and existing regulations and adopt cloud-like qualities and integrate with external clouds.

Traditional architectures that support diverse storage models for file, block, and object data create separate storage silos to address these requirements, each requiring unique tools and skills to manage. As data volumes grow, so do these silos. This can be a major challenge for government IT shops, as these silos add complexity to your infrastructure, increase OpEx and CapEx, and make automation difficult. With multiple, isolated storage pools, capacity planning is more challenging, and utilization and efficiency are low.

¹ <https://www.idc.com/getdoc.jsp?containerId=prUS46286020>

² <https://strategy.data.gov/>

OBJECT SERVICES BENEFITS:

- Simplified consolidation by running objects alongside VMs, files, and blocks on the same platform
- Easily achieve security compliance by enabling WORM (Write Once Read Many) policies on any object and meet technical regulatory requirements in a few clicks
- Scale with anywhere access with an S3 compatible single namespace that scales from terabytes to petabytes of unstructured storage capacity
- Space-efficient storage capabilities provide erasure coding, compression, and deduplication to optimize capacity utilization

Government agencies need a cloud-smart modern capability with block and file storage services in addition to the object storage commonly found in the public cloud. They need the capability to deploy, manage, and scale a single software-defined storage platform across datacenters, branch offices, or the cloud. They need to enable greater access by delivering files or objects across multiple protocols to all workloads and users. They need their storage management framework to be secure yet simple. Nutanix understands these requirements and delivers solutions to meet them.

VOLUME AND BLOCK SERVICE

Despite the many benefits of virtualization, some workloads often remain on bare-metal servers because of licensing constraints, legacy application portability, or investments in existing infrastructure. In this context, storage silos for these non-virtualized workloads continue to exist. Nutanix private cloud eliminates these silos by delivering the same simplicity for virtualized workloads and file storage for physical workloads. In doing so, you can bridge the physical and virtual worlds, consolidating infrastructure into a single unified platform.

Enabling IT to use Nutanix private cloud for bare-metal production applications, including Oracle RAC and Microsoft SQL Server, can help simplify deployments. Infrastructure can be consolidated onto a dynamic scale-out, highly performant, and resilient platform.

Not just another block device, Nutanix Volumes exposes storage from Nutanix through direct, block-level iSCSI access while maintaining high availability, scalability, and performance to the physical or virtual servers accessing Nutanix storage. Applications including Oracle RAC, Microsoft SQL Server, and IBM DB2 can run outside of the Nutanix cluster on either bare-metal or virtualized servers. Volumes is built with web-scale technology at the core for effortless scaling, even from a small starting footprint. As a result of the consolidation, all applications can now use the same infrastructure for virtualization, file, and block services. This can significantly increase efficiency, reduce risks, and make management a breeze.

FILE SERVICES

Nutanix Files leverages the Nutanix private cloud platform 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.

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.

TAKE A TEST DRIVE

You can [take a test drive](#) of Nutanix infrastructure with no hardware, setup, or cost.

Experience the simplicity and agility of public cloud combined with on-premises performance, security, and control via an easy-to-follow guided tour.

Files can be easily deployed and managed using Prism, the Nutanix management solution. This simple and intuitive interface integrates with all other Nutanix operations, eliminating tool fatigue by reducing the number management tools IT teams use for system administration.

SECURE DATA & DETECT ANOMALIES

Identifying potential threats and risks is vital. Use Files analytics data to define alert policies that trigger when file system anomalies are detected or malicious activities occur. View the alert details and get additional information on the users responsible for the anomalies, and which folders are impacted.

OBJECT SERVICES

Your Nutanix private cloud platform makes objects an integral part of your environment, enabling VMs, files, block, and object storage to coexist on the same platform. It is easily supported on a cluster through a simple software update in just a few clicks. Object services can be deployed on a cluster of servers or nodes—starting with at least three in typical datacenter deployments. One and two-node deployment options are available for ROBO installations. Each node has CPU, memory, storage (SSD + HDD, or all-flash) and a hypervisor for running VMs and Objects components. The core Nutanix Acropolis (HCI) software runs in a user-mode VM called the Controller VM (CVM) on each node in the cluster. The Controller VMs create a single storage pool using the direct-attached storage in each node in the cluster. This is the Distributed Storage Fabric, or DSF. DSF provides Objects with a multitude of enterprise-grade capabilities such as resiliency, seamless scalability, security, and data reduction properties like erasure-coding, deduplication, compression, and high availability. It eliminates the need for standalone storage arrays, like SAN and NAS products while reducing overall costs.

OBJECT SERVICES

Consolidating storage on your Nutanix private cloud solution brings the best of both worlds together. A private cloud built with the Nutanix HCI platform is fault-resistant with no single points of failure and no bottlenecks. The system uses a shared-nothing architecture with data, metadata, and services distributed across all nodes within a cluster. Self-healing allows a cluster to detect, isolate, and recover from failures; survive system hardware, software, and hypervisor issues; and maintain data availability—all without operator intervention. Adding Nutanix storage services to your private cloud means those siloed infrastructure solutions are removed and instead, a more service-oriented architecture is allowed. IT is reassured with a unified management plane that enables easy file, block, and object storage and space savings with on-demand erasure coding, deduplication, and compression technologies.

To learn more about how Nutanix is helping Federal agencies, please visit nutanix.com/federal.



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