2024-25 DCIG TOP 5

ENTERPRISE MULTI-SITE FILE COLLABORATION SOLUTIONS

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File Collaboration Challenges for Distributed Workforces

Many organizations rely on effective file-based collaboration for core business processes. This worked well when employees sat in offices with fast links to local file servers or network-attached storage (NAS) systems. However, for many organizations today, the workforce now spans the globe.

Consider that before the pandemic, an estimated 5.7% of working Americans worked remotely at home. That percentage grew by nearly 18% in two years.[1] This excludes the 28% of hybrid employees that split their working time between home and office[2] as well as remote workers located around the world.

All this to say, is that today's modern workforce spreads between office, home, mobile, and abroad. And when this dispersed workforce needs to work collaboratively on files using legacy systems, the result is frustration, lost time, lost money, and increased organizational risk. Given the competitive pressures any organization faces, implementing solutions that speed collaborative digital production brings multiple benefits.

The challenges around effective file collaboration using legacy systems include:

Limited scalability. Many legacy systems lack scalability to meet current and emerging enterprise capacity and performance requirements. As remote teams grow, on-premises NAS systems may struggle to meet the increased demand for remote file sharing and collaboration.

Version control. When a distributed organization lacks an effective file collaboration solution, troubles occur. An employee realizes they are working on the wrong version of a file. Or worse, they discover this after they have sent an incorrect version to a client. Team members lose time when they must compare versions to find and understand differences between two possible documents. Then, users must spend cycles to resolve and merge different versions into the correct one.

Unmanageable file data growth. Information Technology departments face a continuous increase in the amount of unstructured data they must try to manage. End-users and IT staff members often hesitate to delete files because they fear accidentally deleting something important or necessary. These dynamics contribute to file clutter and dramatically increase storage volumes. And since organizations must protect the data they store, backup and archive storage grow alongside their primary file storage.

Sharing files and folders. Sharing files and folders for collaborative work brings its own concerns. Legacy systems frequently depend on on-premises file storage, making file access challenging for remote workers. Sending files through email presents security risks, delivery failures, and out-of-date files floating around. If a team uses email to send documents, they must spend time messaging, making changes, then emailing files back. Enterprises can create VPNs or other shares for outside partners; however, this frequently involves manual activity and possible mistakes.

Data security and control. Traditional file-sharing approaches often lack security and compliance features. This lack can be a significant concern when collaboration involves sensitive information. Employee negligence, poor security, or compromised end points and storage media can result in data breaches. A single breach or attack can devastate a business and its reputation. Thus, the IT department needs better monitoring, control and visibility into the file data than is provided by many legacy systems.

Handling large files. Whereas a traditional local NAS infrastructure may handle large files with ease, this becomes problematic when sharing large files across the wide area network (WAN). File-sharing can become slow or even impossible when distributed teams are involved. And end-users must completely rule out emailing large files for collaborative work. These challenges slow or even stop workflows necessary for digital production teams.

Enterprise Multi-site File Collaboration Solutions

Many SDS-based file-storage solutions include features that enhance multi-site file collaboration and bring multiple benefits.

Latency. Centralizing file storage, whether on-premises or in the cloud, opens possibilities for multi-site file collaboration but also obstacles. WAN transfer speeds, mobile access, and competition with other applications over the WAN link can result in latency problems that make collaborative work tedious and time-consuming. For files hosted on-premises, a slow user experience is typical for anyone except those local to the hosted files.

Frustrations, costs, and risks. Organizations lose time and money because of the problems above. Additionally, legacy approaches do not provide opportunities for enterprise-wide automation for efficiency benefits. These issues lower productivity, increase costs, and elevate risks to data security, revenue, and brand reputation.

Table 1

	Response percent	Response total
Capacity Management	60%	3
Global data governance	100%	5
Cyber resilient storage (data security and protection capabilities, including ransomware mitigation and recovery)	80%	4
Edge - Remote Office/Branch Office (ROBO)	100%	5
Edge - Small Office/Home Office (SOHO)	80%	4
Edge - IoT	40%	2
File Sharing	100%	5
File Collaboration and Synchronization	100%	5
File movement or migration	60%	3
High performance computing (AI/ML, Big Data)	20%	1
Hybrid Cloud	100%	5
Kubernetes-based (containerized)	20%	1
NAS Consolidation (on-premises)	80%	4
NAS Consolidation (cloud-based)	100%	5
Media (images, video, audio)	80%	4
Multi-cloud	80%	4
Secondary Storage (e.g., archive, backup, capacity focused, disaster recovery)	100%	5
Other	0%	0

Organizations can use DCIG TOP 5 solutions for a wide range of enterprise use-cases beyond multi-site file collaboration.

Source: DCIG SDS Research

SDS-based File Collaboration Benefits

Along with the change to a distributed workforce, organizations are integrating software-defined storage (SDS) solutions into their storage infrastructure for the increased flexibility, agility, and capabilities these software products offer. Many SDS-based file-storage solutions include features that enhance multi-site file collaboration and bring multiple benefits.

Scalability. As an organization grows over time, these file storage solutions allow IT departments to easily accommodate adding users, capacity, and collaboration services. The best software products provide consistent performance while scaling.

Version control. As a notable feature, these solutions help manage, track, and retain changes to files over time. Users can roll back to an earlier file version when mistakes are

made or when an earlier version of the file is preferred. These solutions often provide audit trails that present all interactions with a file for compliance and security.

Modern file collaboration. These software products support file and folder sharing with internal and external stakeholders outside the organization. The degree of access can be customized based on need. Changes to collaborators' files are automatically updated to the authoritative source wherever located. To speed synchronization, only the portions of a file that have changed are transmitted across the network. One common feature of these solutions is their ability to handle large files smoothly.

IT departments experience control through their ability to assign file permission attributes at a granular level, leverage data security features to protect data from unauthorized access, and place data where it needs to be for data sovereignty reasons.

Increased storage efficiency. By centralizing shared files and implementing effective version controls, companies realize savings on file storage. Many offerings also utilize compression and deduplication for more efficient storage and reduced data transmission. Thus, organizations save file storage costs and reduce WAN bandwidth needs.

Public cloud integration. SDS solutions commonly integrate with public cloud services. This opens opportunities for public cloud or hybrid cloud deployments. Organizations can leverage public cloud storage for archiving, backup, or hosting files for collaboration. Plus, public cloud providers offer a number of features for securing and protecting data from cyberattacks and unforeseen events.

Data protection, security, and control. With these products, IT administrators can holistically manage shared file data. IT departments experience control through their ability to assign file permission attributes at a granular level, leverage data security features to protect data from unauthorized access, and place data where it needs to be for data sovereignty reasons.

Fast file access. Frequently, these software products integrate technologies that provide fast access to active files for distributed teams and remote end users. For example, while the authoritative file may be stored in a private or public cloud, active data is cached locally for each office or end user. This speeds up performance and overcomes WAN latency issues when users or applications access data. File changes are updated on the back end and are invisible to the end-user. As a result, all users have a near-immediate view of file updates, contributing to a positive end-user experience.

Automation. These file collaboration solutions provide automation features that save time and speed digital production. Many solutions support APIs that allow organizations to integrate file workflows with other software applications. Organizations can automate and orchestrate complex collaborative processes that otherwise would be error-prone manual endeavors. Automation saves organizations time and money and increases revenues by speeding up workflows.

In summary, these solutions speed file collaboration, improve end-user experiences, strengthen security, and reduce organizational storage needs. Ultimately, capabilities like these are essential for increasing the quality and speed at which organizations can produce digital assets for their internal and external stakeholders.

Distinguishing Features of DCIG TOP 5 Enterprise Multi-site File Collaboration Solutions

The *2024-25 DCIG TOP 5 Enterprise Multi-site File Collaboration Solutions* report is an outcome of DCIG's research into the marketplace for software-defined storage (SDS) for file storage. Most solutions DCIG evaluated in this body of research reflect characteristic properties of SDS solutions. A deeper dive shows that a few reflect some, but not all, characteristics of SDS. These few do, however, offer notable file collaboration capabilities. In total, DCIG evaluated twenty-six solutions characterized as file collaboration solutions or software-defined storage solutions for file storage.

Enterprise Multi-site File Collaboration Solutions

Using feature-based analysis and comparisons of data derived from publicly available sources, vendors, and DCIG's own experience, the solutions featured in the *2024-25 DCIG TOP 5 Enterprise Multi-site File Collaboration Solutions* report share these characteristics that distinguish them from the other solutions DCIG evaluated.

Multi-cloud support. DCIG TOP 5 solutions evidence rich support for multi-cloud deployments and storage. All of these solutions support the major cloud providers, such as Amazon, Microsoft, and Google, both for deployment as a VM and as a target for storage. Such broad support offers flexibility in matching a cloud provider's capabilities with the needs of the business.

Table 2

	Response percent	Response total
Alibaba	40%	2
Amazon S3	100%	5
Google Cloud Storage	100%	5
IBM Cloud	60%	3
Microsoft Azure Blob	100%	5
Any S3 compatible public cloud provider	60%	3

Object or public cloud storage providers supported as targets by DCIG TOP 5 solutions.

Source: DCIG SDS Research

Wide use case support. Each of the DCIG TOP 5 solutions supports a wide variety of use cases beyond just file collaboration. This means IT departments can meet the needs of multiple applications or departments with a single file storage solution. Such wide use case support also enables organizations to leverage these storage solutions ongoing as business needs evolve.

DCIG TOP 5 providers display robust support capabilities compared to the other evaluated solutions.

Robust technical support. DCIG TOP 5 providers display robust support capabilities compared to the other evaluated solutions. All DCIG TOP 5 vendors provide 24x7x365 availability for trouble resolution, compared to 57% of the other solutions DCIG assessed. Each DCIG TOP 5 provider offers at least four-hour response times to reported troubles, with most offering one-hour response times or better for mission-critical issues. Administrators can utilize a knowledge base for online self-support, and all winners provide the opportunity for an assigned account manager.

Data security features. While cybersecurity software is the first line of defense against viruses and malware, DCIG TOP 5 winners offer many additional security features that help protect data from bad actors. For example, all winners offer both in-flight and at-rest encryption, Role Based Access Controls (RBAC) that limit access and permissions to users, Multi-factor Authentication (MFA) that requires two or more forms of authentication before granting access to data or systems, and file auditing and analytics tools that help identify security risks.

VMware deployments. All DCIG TOP 5 solutions support VMware VM deployments. This allows organizations to leverage the enhanced capabilities these SDS solutions offer with their existing VMware environment.

Other Similarities Among the DCIG TOP 5 Enterprise Multi-site File Collaboration Solutions

In addition to the characteristics that distinguish the DCIG TOP 5 vendors from the others, these five solutions also share the following product features:

Enterprise Multi-site File Collaboration Solutions

All DCIG TOP 5 providers support immutable snapshots so organizations can recover a tamper-proof version of their file data in the event of a successful cyber-attack.

Global namespace. Each of the DCIG TOP 5 solutions provides a global namespace (or its equivalent). A global namespace presents a unified view of data as a single, unified file system across distributed, heterogeneous storage resources. The resulting visibility enables consistent data management across the organization's global data estate.

REST APIs. Enterprises look for solutions that integrate well with their existing infrastructure management tools and applications. REST APIs facilitate the integration of data stores with external applications. Each of the DCIG TOP 5 solutions provides REST APIs.

SMB and NFS support. All DCIG TOP 5 solutions show strong support for the latest versions of SMB and NFS. These are the protocols used by most enterprise applications to address file-based storage. The most recent versions bring benefits of performance, new features, security enhancements, and storage management improvements over previous versions.

Immutable snapshots. Storage administrators value immutability features because they ensure that once data is written, it cannot be changed. Immutable snapshots are an effective way to safeguard enterprise file data against accidental or malicious alterations, such as those caused by ransomware. All DCIG TOP 5 providers support immutable snapshots so organizations can recover a tamper-proof version of their file data in the event of a successful cyber-attack.

CLI and web-based interfaces. Each of the DCIG TOP 5 solutions features both command-line interfaces and web-based interfaces.

Auto-tiering. Most organizations possess different types of storage with varying capacities, speeds and costs. Auto-tiering automatically selects storage media based on predefined policies. All DCIG TOP 5 solutions provide auto-tiering features.

Table 3

Air-gapped volumes	60%	3
Anti-virus/anti-malware	40%	2
Audit and identify security risks	100%	5
Array-based AES-256 encryption	20%	1
At-rest AES-256 encryption	100%	5
Certified for SEC and FINRA compliance	0%	0
Client authentication	60%	3
Customer controlled encryption keys	100%	5
Edge detection of ransomware attack	60%	3
FIPS compliant encryption	80%	4
File analytics	100%	5
File auditing	100%	5
Hardware security (e.g., locking bezels)	0%	0
In-flight encryption	100%	5
KMIP	60%	3
Native use of immutable object storage	80%	4
Multi-factor authentication	100%	5
Multi-tenancy	80%	4
Role based access controls	100%	5
Security automation	60%	3
Support for self-encrypting drives	60%	3
WORM file format	60%	3

Data security features and capabilities offered by DCIG TOP 5 Multi-site File Collaboration Solutions.

Source: DCIG SDS Research

Directory services integration. DCIG TOP 5 solutions show broad support for directory service and authentication features. Directory service permissions enable administrators to control what data is visible to the authenticated user. All DCIG TOP 5 solutions support AD/LDAP integration and Kerberos authentication for data security.

Differences Between the DCIG TOP 5 Enterprise Multi-site File Collaboration Solutions

DCIG TOP 5 solutions differ from one another in the following ways:

S3 support. While DCIG TOP 5 winners evidence rich support for popular file storage protocols, they vary in native S3 support for object storage. Native S3 support opens possibilities for unified storage solutions that cater to file-based applications as well as cloud-native applications requiring object storage protocols.

DCIG TOP 5 solutions range in their support of popular operating systems and hypervisors.

Third-party array integration. The ability to integrate third-party storage arrays brings existing legacy storage into the unified storage management domain. Many, but not all, DCIG TOP 5 solutions support the integration of third-party storage arrays.

Concurrent protocol access. Within an enterprise, different teams and applications may have different protocol needs. With concurrent multiprotocol access, data can be shared and accessed across diverse environments. DCIG TOP 5 winners vary in support of concurrent protocol access to the same datastore.

File locking. The DCIG TOP 5 collaboration solutions differ in their mechanisms to prevent conflicts when multiple users collaborate on a file.

Capacity optimization. Capacity optimization techniques such as compression and deduplication help organizations save money on storage by reducing the amount of physical storage needed to store unstructured data. The DCIG TOP 5 solutions differ in the capacity optimizations they offer.

Operating system and hypervisor support. DCIG TOP 5 solutions range in their support of popular operating systems (OS) and hypervisors. IT organizations value broad OS and hypervisor support, as it ensures any solution integrates well across the IT environment.

Pre-integrated appliances. Some organizations prefer integrated, turn-key solutions that include the necessary hardware and software for an enterprise storage solution. Several TOP 5 solution providers offer turn-key solutions that include all hardware and software needed for on-premises deployments.

Storage as a Service (STaaS). Some of the DCIG TOP 5 winners offer their solution as a service. Many enterprises value this licensing model as it brings cost predictability, advanced support features, and additional benefits to their file storage solution.

File system characteristics. The DCIG TOP 5 vendors characterize their file system architecture differently between a distributed, global, or parallel file system. Parallel file systems, in particular, are associated with high-performance computing.

Predictive analytics. Predictive analytics provide enhanced storage management capabilities. Analytics can identify issues before they become problems, improve storage performance, and improve overall storage efficiencies. DCIG TOP 5 winners vary in their predictive analytic features.

Quality-of-Service Support. Quality-of-Service (QoS) features ensure organizations can prioritize storage performance for critical applications. Without QoS, lower-priority workloads could dominate resources. Most TOP 5 solutions include QoS features.

Remote file collaboration. While all DCIG TOP 5 solutions provide similar means for providing fast file access from remote office locations, they vary in how they support file collaboration for remote end users working from home with laptops or workstations, and mobile employees using smart devices.

DCIG TOP 5 Enterprise Multi-site File Collaboration Solution Profiles

Each of the following Solution Profiles highlights several notable features or capabilities that make the product attractive to organizations and helped the solution earn a spot in the *2024-25 DCIG TOP 5 Enterprise Multi-site File Collaboration Solutions* report.

Nasuni File Data Platform

Nasuni Multi-site Collaboration enables consistent file locking and data propagation to speed file collaboration between users and locations around the globe.

Natively built for the cloud, the Nasuni File Data Platform places the object store at the center of its software-defined architecture. Enterprises can replace legacy file infrastructure consisting of multiple file servers, NAS appliances, data protection storage, and management tool sets with a single global file system. Leveraging the scalability and inherent protection of cloud object storage, Nasuni provides unlimited storage capacity, fast file access, data protection, centralized storage management, and multi-site file sharing for any number of users and locations.

Notable features that helped Nasuni earn a DCIG TOP 5 award for multi-site file collaboration include:

Cloud architecture. Nasuni integrates with all popular cloud storage providers and leading on-premises object storage solutions. This gives organizations the flexibility to use whichever cloud best fits their requirements. Presented as a single global namespace, Nasuni's patented UniFS® Global File System organizes file data, metadata, and snapshots within cloud storage. The Nasuni Orchestration Center (NOC) serves as the control plane, providing file synchronization, monitoring, analysis, and tuning of an organization's file platform. With the Nasuni Management Console (NMC), administrators can centrally manage all file data services.

Ransomware protection. With Continuous File Versioning®, Nasuni protects data from ransomware attacks by taking frequent snapshots of file changes. Snapshots are compressed, encrypted, and chunked, then kept secure as encrypted, immutable objects in cloud storage. Removing the need for a separate backup process, the NMC displays all available recovery points. Administrators can quickly recover down to one minute granularity a previous file, folder, volume, or system enabling rapid recovery to just before an attack occurred.

Nasuni Add-on Services. Nasuni offers several add-on services for its core solution that enhance ransomware protection, file collaboration, and remote file access for edge locations, hybrid workforces, and remote users. In addition to Nasuni's Ransomware Protection add-on service for detecting, limiting, and quickly recovering from ransomware attacks at the edge, Nasuni offers:

- ***Nasuni Access Anywhere*** which provides high-performance, compliant file access from any device, anywhere. Among its features, Nasuni Access Anywhere accelerates file transfer speeds to remote users by splitting files into pieces and sending data in multiple parallel streams. Organizations can securely share files and folders of any size with external collaborators. Nasuni Access Anywhere also integrates with Microsoft Office 365 to further smooth file collaboration.
- ***Nasuni Multi-Site Collaboration*** which enables consistent file locking and data propagation to speed file collaboration between users and locations around the globe. Nasuni's Global File Lock® feature provides encrypted collaboration between users free from conflicts. Nasuni's Global File Acceleration (GFA) enhances file synchronization by accelerating the propagation of newly created data to all locations globally. GFA also provides even tighter Recovery Point Objectives on newly created data to minimize the likelihood of data loss.

Enterprise Multi-site File Collaboration Solutions

CTERA Enterprise File Services Platform

With the CTERA Enterprise File Services Platform, organizations can unify remote users, branch offices, and cloud file services into a single operating environment that combines the benefits of local file services with the advantages of unified cloud object storage. For flexibility on object storage, CTERA works with all major cloud providers. Alternatively, enterprises can deploy CTERA within a customer-owned or CTERA-managed private cloud. Administrators can oversee devices, users, deployments, and data stores world-wide through the CTERA Portal, which serves as the central management console for effectively managing enterprise file data.

CTERA Drive Share, an enterprise-grade file sync and share tool, provides home and roaming end-users the ability to access, edit, and share files from any laptop or mobile device for secure, internal, and external collaboration.

Notable features that helped CTERA earn a DCIG TOP 5 award include:

CTERA Edge Filers. Organizations can simplify IT at the edge by replacing legacy file servers and NAS appliances with virtual or physical CTERA Edge Filers. The CTERA Edge Filer becomes an all-in-one solution for branch office storage, file collaboration, and backup. CTERA's intelligent caching of active files provides fast file access plus infinite storage capacity with minimal hardware at the edge. Streaming technologies allow users to access large files in cloud storage without copying the entire file locally. Through the CTERA Portal, administrators can centrally manage, monitor, and analyze file data stored in the cloud, at endpoints, offices, and mobile devices from a single pane of glass.

CTERA Drive Share. CTERA Drive Share, an enterprise-grade file sync and share tool, provides home and roaming end-users the ability to access, edit, and share files from any laptop or mobile device for secure, internal, and external collaboration. For external shares, administrators can set date limits for added security. CTERA's proprietary WAN-optimization protocols ensure fast file transfer across globally distributed sites. Built-in integration with Microsoft Office 365 supports collaborative, real-time editing.

Data security. From the endpoint to the cloud, CTERA encrypts all data with AES-256 and FIPS 140-2 validated encryption with keys generated and managed by the customer. Additionally, the CTERA platform works from a zero-trust security model. CTERA fully supports features such as WORM, RBAC, AD/LDAP integration, and multi-tenancy. Further, infrastructure managers can leverage CTERA's cloud-to-cloud, cross-region, and cross-account replication to protect data from bad actors and unforeseen events.

CTERA's Ransom Protect provides real-time detection and blocking of ransomware attacks on edge filers. Ransom Protect can detect and block an attack within 30 seconds. With unlimited file versioning and CTERA's immutable snapshots, organizations can rapidly recover from an attack to a known good state. In addition, CTERA limits the spread of malware by scanning for known malware threats before transferring file data into the global file system.

Enterprise Multi-site File Collaboration Solutions

NetApp Cloud Volumes Edge Cache

NetApp is well-known for its storage appliances and proprietary ONTAP data management software. NetApp Cloud Volumes Edge Cache (CVEC) extends ONTAP's data management to distributed and branch office locations. With CVEC, organizations can create a centralized file store in the cloud that serves remote locations around the globe for both file access and file collaboration. Cloud Volumes ONTAP (CVO) provides the centralized data store. CVEC protects consolidated file storage through snapshots, backups, and cross-region replication. NetApp's BlueXP offers the dashboard for overseeing data stores across the cloud, on-premises, and edge locations, thus reducing the complexity of data management for multi-site organizations.

CVEC combines CVO, Cloud Backup, and Global File Cache to address the unstructured data management needs of multi-site organizations.

Notable features that helped NetApp's Cloud Volumes Edge Cache earn a DCIG TOP 5 multi-site file collaboration award include:

Bundled branch office solution. CVEC combines CVO, Cloud Backup, and Global File Cache (GFC) to address the unstructured data management needs of multi-site organizations. The GFC component of the bundle provides a LAN-like experience to workers and applications in remote offices by intelligently caching each location's active files on site. At the same time, while preserving bandwidth, CVEC compresses and transmits changed file blocks to the golden copy within CVO. CVEC includes file backup to the cloud, where the inherent durability of cloud object storage protects against data loss.

Authoritative file locking. Rather than a 'replication/synchronization' architecture for file storage, CVEC is based on a single authoritative instance of data in the cloud. CVEC also uses real-time global file locking and a single, centralized file lock database to ensure users cannot overwrite each other's work. Thus, there is no need for distributed locks to be kept in sync via metadata syncing. When any user opens a file, CVEC immediately places a lock on that file in the cloud-based data store. Since CVEC does not replicate locking information across all sites, it does not rely on maintaining lock synchronization databases, which can result in data inconsistency and loss.

Tight Windows Server integration. NetApp GFC deploys on a physical Windows Server or virtual machine at each location using standard SMB file storage and sharing protocols. CVEC integrates with many underlying Windows Server technologies, including Microsoft Active Directory, DNS, DHCP, Microsoft Distributed File System (DFS) Namespaces, System Center Configuration Manager (SCCM), and Software Distribution Service. And, of course, CVEC integrates with Microsoft Azure for hybrid cloud use cases. When deployed in Microsoft Office 365 environments, CVEC users can seamlessly collaborate with popular Microsoft productivity applications.

Enterprise Multi-site File Collaboration Solutions

Panzura CloudFS

Panzura CloudFS simplifies the management of unstructured data and files for complex enterprises. Panzura does this through patented (37+ patents and counting) cloud-native technology that supports both on-premises and hybrid cloud use. With CloudFS, enterprises leverage a single, authoritative data set held in a private or public cloud and organized into a global file system. A global namespace provides a unified view of these file resources for locations and users around the globe. The result is a centralized file services platform well-suited for cloud-based NAS consolidation, global file collaboration, active archiving, and disaster recovery across unlimited locations.

Panzura Edge provides real-time file access for end-users and third-party collaborators on Android, iOS, Windows, macOS, and web-based clients without needing a VPN.

Notable features that helped earn Panzura a DCIG TOP 5 award for multi-site file collaboration include:

Intelligent caching and synchronization. Local Panzura nodes deliver fast file access through intelligently cached data. Each node supplies local caching and access for the unique users and workloads, providing the flexibility of a multi-location organization without the standalone storage silos. Enterprises deploy Panzura nodes as virtual machines on the hypervisor of choice with the ability to scale up to and beyond 100 nodes. To reduce the total storage footprint and file transfer times, Panzura deduplicates and compresses stored data and only transmits the deltas to cloud storage, even as data is being synchronized across the enterprise. The low latent synchronization means that at every 60-second interval, CloudFS synchronizes globally, across all Panzura nodes, new and changed data and metadata.

File and byte-range locking. Panzura has developed its own locking systems to ensure conflict-free file collaboration. Organizations can utilize global write locking to prevent more than one user from opening a file and making modifications. Panzura also offers byte range locking for applications that support it, where teams can work on the same file simultaneously. Both lock types can be used across the cloud network across any number of locations. For file collaboration, Panzura exchanges data yet to be sent to the cloud through peer-to-peer communication to ensure real-time updates occur.

Panzura Edge. Panzura Edge natively integrates with Panzura CloudFS to add enterprise file sync and share to an organization's file services. It provides real-time file access for end-users and third-party collaborators on Android, iOS, Windows, macOS, and web-based clients without needing a VPN. Intelligent bandwidth management speeds file access and minimizes latency. Policy-based controls restrict file and folder sharing to specific domains and other customizable controls. IT departments retain complete control of shared content through public or password-protected links for Active Directory and non-Active Directory users. These features enable an organization's workforce and partners to collaborate effectively from any device, anywhere.

Enterprise Multi-site File Collaboration Solutions

Qumulo Scale Anywhere Platform

Qumulo's Scale Anywhere™ platform enables enterprises to consolidate their unstructured data into a unified data plane across edge, core, and cloud locations. Organizations can deploy the Qumulo solution on hardware of the customer's choosing or purchase it through distributors and OEMs including Arrow, Fujitsu, HPE, and Supermicro. Qumulo also runs in the public cloud on Microsoft Azure and AWS. Enterprises can access their data over standard protocols NFS, SMB, and S3 to support a variety of enterprise applications and user environments. Qumulo bases its licensing on actual usage that covers everything, including upgrades, new features, and technical support.

Notable features that helped Qumulo earn a DCIG TOP 5 award include:

Qumulo features ensure high-performance collaboration for data-intensive organizations wherever their teams and users may be located.

Data-intensive file collaboration. With Qumulo, enterprises can scale up to billions of files and 100 EB in a single, unified namespace. Organizations can enable data-intensive workloads with all-flash or hybrid flash/disk Qumulo nodes. Qumulo then places all metadata and the most active virtual blocks on the fastest durable media to increase file performance.

Several additional features accelerate workflows. Fine-grained file locking ensures data consistency when collaboratively working on files, while intelligent cache management provides remote users with low-latency access to file data. Additionally, Qumulo uses client behavior to prefetch new data into memory on the node closest to the client to further speed access times. These features ensure high-performance collaboration for data-intensive organizations wherever their teams and users may be located.

Real-time visibility. Qumulo Nexus allows organizations to monitor petabytes of data usage and performance across edge, on-premises, and public cloud clusters with real-time operational analytics (ITOps.) through a single web-based portal. Customers may see, near instantly, key metrics such as hardware health status, capacity (growth or shrinkage), applications consuming resources, IOPs, throughput, latency, and other active parts of the file data platform. Views can be as granular as a specific Qumulo instance or rolled up across the total data estate of an enterprise. Real-time visibility allows enterprises to optimize workflows and identify issues before they impact production.

API-first data platform. Qumulo provides programmable API endpoints for system creation, data management, performance, analytics, authentication, and accessibility. Qumulo offers enterprises the opportunity to download and explore its self-documenting API. Customers can test each endpoint and see sample JSON outputs. Further, enterprises can use a single API-enabled runbook to automate the management of both their on-premises and cloud-based Qumulo deployments. With the help of these API features, IT departments can build integrated solutions that automate administrative tasks, workflows, configurations, and data movements for digital production teams, enhancing agility and saving organizations valuable time.

Inclusion and Evaluation Criteria for DCIG TOP 5 Enterprise File Collaboration Solutions Report

In this report, DCIG specifically focused on file collaboration software or software-defined storage solutions possessing the following characteristics. DCIG identified twenty-six different solutions meeting these inclusion criteria:

- Commercially available as of October 1st, 2023.
- Sufficient, publicly available information available for DCIG to make an informed decision.
- The solution must support file protocols either natively or via a provider-supported gateway.
- The solution must be available as a storage software-only product that can be installed on hardware from multiple OEMs, as a VM, or deployed in the cloud.
- The product may also be available from the solution provider as a pre-integrated software and hardware appliance.

To arrive at the DCIG TOP 5 solutions included in this report, DCIG went through a seven-step process to reach the most objective conclusions possible.

1. DCIG established which features would be evaluated.
2. The features were grouped into six general categories.
3. DCIG identified solutions that met DCIG's inclusion criteria.
4. A survey was created and completed for each solution. Vendors were given the opportunity to review and complete the survey.
5. DCIG weighted each feature to establish a scoring rubric.
6. DCIG evaluated each solution based on information gathered in its survey.
7. DCIG ranked the solutions using standard scoring techniques.

DCIG evaluated each of these solutions in the following areas:

- ***Deployment capabilities.*** Evaluated the capabilities concerning on-premises deployment options, cloud provider deployment options, cloud provider targets supported, storage protocols supported, virtual environments supported, and self-certifications of equipment, operating systems, and applications.
- ***Data protection and security capabilities.*** Evaluated solution capabilities supporting availability, encryption, replication, and snapshot features.
- ***File collaboration features.*** Evaluated capabilities to support multi-site file collaboration between geographically dispersed users. Examples include selective sharing, file synchronization, versioning, and file locking.
- ***Product and performance management features.*** Evaluated options to manage the underlying hardware and optimize it for performance. Examples include dashboard views, predictive analytics, storage optimization, quality of service features, auto-tiering capabilities, and directory service integration.
- ***Technical support.*** Evaluated the availability and technical support options of the solution provider. Examples include self-service documentation, support availability, response time commitments, options to open cases, escalation support, and proactive problem resolution.
- ***Licensing and pricing.*** Evaluated the relative ease of doing business through flexibility and simplicity in contract lengths, pricing elements, and bundled pricing options.

Enterprise Multi-site File Collaboration Solutions

Vendors of some of the solutions covered in this DCIG TOP 5 report are or have been DCIG clients. In that vein, there are some important facts to keep in mind when considering the information contained in this TOP 5 report and its merit.

- All research was based upon publicly available information, information provided by the vendors, and/or the expertise of those evaluating the information.
- No vendor paid DCIG any fee to research this topic, to include its solutions in DCIG's research, or to arrive at predetermined conclusions.
- DCIG did not guarantee any vendor that its solution would receive a DCIG TOP 5 designation.
- No vendor was privy to how DCIG weighted individual features. In every case, the vendor only found out the rankings of its solution after the analysis was complete.
- DCIG conducted no hands-on testing to validate how or if the features worked as described.
- No negative inferences should be drawn against any vendor or solution not covered in this DCIG TOP 5 report.
- It is a misuse of this DCIG TOP 5 report to compare solutions included in this report against solutions not included in it. ■

Sources referenced January 2024

1. https://www.usnews.com/news/health-news/articles/2023-05-18/how-the-covid-pandemic-impacted-working-from-home
2. https://www.forbes.com/advisor/business/remote-work-statistics/

About DCIG

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