# HPE AND QUMULO FILE DATA PLATFORM

High-performance scalable storage for healthcare and medical
imaging data with Qumulo for PACS and VNA

Qumulo leverages HPE Apollo 4200 best-in-class storage servers to provide cost-effective, high-performance imaging data collection and management. This solution meets leading imaging vendors' single and multi-tier storage requirements and is ideal for healthcare customers' long-term imaging data archive needs. This solution delivers:

- **Enterprise performance at archive prices**. Flash-first architecture and machine learning, read-ahead cache provides the performance benefits of flash with the cost benefits of spinning disks.

- **Greater true usable capacity; get what you pay for**. Qumulo clusters can be filled to 100% of usable capacity without performance degradation. The clusters are optimized for mixed I/O environments so high efficiency is maintained across all files large and small.

- **Real-time analytics for visibility and control**. Qumulo analytics provides users with real-time insight into what's driving the growth of the storage footprint. It also shows which clients and IP addresses are dominating IOPS and network bandwidth. Reporting is immediate without the traditional delay.

- **Best-in-class cross-protocol support**. This solution automatically manages NTFS and POSIX permissions, preserving ACL inheritance and allowing true collaboration without compromise. Qumulo software supports SMB, NFS, and FTP standard protocols and includes a comprehensive REST API that enables you to easily automate your storage management.

- **Enterprise-grade features**. Qumulo capacity licensing covers all software features presently available—snapshots, replication, reporting, and more—as well as any future enhancements that are released as long as the cluster has an active subscription. Additionally, users can move to newer hardware generations or to the cloud using the value of the existing subscription.

Hybrid cloud infrastructure as a service on an industry-leading storage server
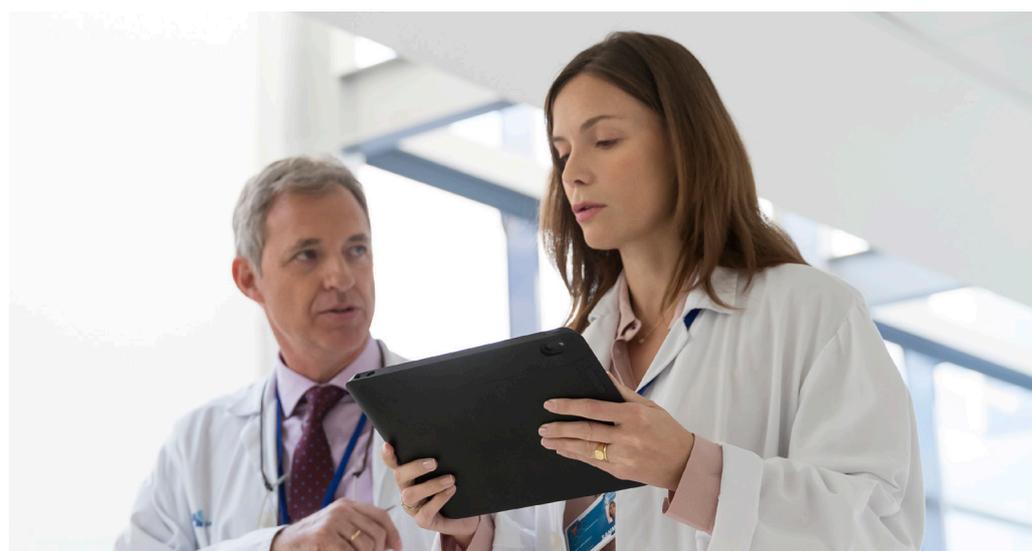
MEDICAL IMAGING IS A POWERFUL TOOL FOR CLINICAL DIAGNOSIS AND PATIENT TREATMENT

However, the growing use of imaging technologies combined with ever-larger file or study sizes are driving greater demand for storage. Increasingly, healthcare IT departments are facing an imaging data storage and management challenge.

Consolidation of providers can also result in a collection of multiple disparate Picture Archiving and Communication Systems (PACS), each with their associated storage requirements, further exacerbating the storage capacity and performance.

Over time, management, maintenance, and scalability of these siloed systems can become increasingly complex and costly.

PERFORMANCE AT SCALE

Healthcare providers are increasingly leveraging modalities such as MRI, CT, PET scans, and more recently digital pathology in diagnosis and care provision. The large size of these files/studies places greater stress on the underlying storage infrastructure. The storage component of a medical imaging system faces the dual challenge of absorbing the data growth while maintaining user performance. Limited clinician access to data slows processes and impacts patient care and organizational profitability.

Proprietary storage can also result in vendor lock-in, migration costs, and challenges, further preventing healthcare organizations from harnessing more recent cost-effective performant storage solutions. Vendor-neutral archive implementation demands storage capable of similar seamless, cost-effective, and open-ended scale, without the pain and disruption of platform/data migration. The storage infrastructure also needs to offer the necessary performance to support storage, management, and rapid retrieval of studies potentially gigabytes in size.

Capacity demand combined with the regulatory patient privacy concerns and the requirement for personal health records mean increased pressure on the demand for compliant, secure, consolidated storage.

SINGLE-TIER STORAGE

Healthcare providers are challenged to give their imaging departments sufficient capacity (potentially petabytes) of cost-effective storage that also meets technical, regulatory, and fiscal requirements. Some imaging vendors are moving their storage requirements toward a single-tier architecture with the potential for large-scale seamless growth.

Imaging data storage systems should meet imaging vendor requirements and provide:

• Predictable large file-size performance

• Seamless ability to scale

• Options to leverage the cloud

WHY QUMULO STORAGE FOR MEDICAL IMAGING

Qumulo is a high-performance cloud-native file data platform that meets the performance and capacity demands of medical imaging data.

Qumulo is easy to manage with real-time IT operational analytic that gives you instant visibility of every file and user and cost-efficient capacity to serve your performance peaks while meeting your budget constraints, all from one namespace.

Qumulo stores your data securely on-prem and in the public cloud with dynamic scaling in a single namespace for active, archived, and backed-up data without the need for third-party data management applications.

The Qumulo file data platform running on HPE Apollo 4200 series storage servers allows healthcare organizations to symmetrically scale capacity and performance in real-time without disruption. With industry-leading file system efficiency, Qumulo offers the best raw-to-usable capacity, allowing customers to leverage 100% of usable storage.

QUMULO STORAGE AND HPE APOLLO

Healthcare providers require modern, flexible storage systems to manage the consolidated imaging output from higher-resolution diagnostic imaging systems. Qumulo scale-out NAS software running on HPE Apollo 4200 storage servers provides a cost-effective, reliable, scalable, high-performance, storage solution that meets both providers' and leading imaging vendors' needs.

Built for the hybrid cloud
Qumulo provides a single file solution for cloud or on-premises environments. Customers can burst compute in Amazon Web Services (AWS) or Google™ Cloud Platform (GCP) and shift primary workloads to the cloud without application changes.

Real-time analytics for data transparency
Qumulo software assigns the aggregation of real-time metadata to all data as it is ingested, providing real-time insight into crucial information without performance degradation or long file system scans.

Greater storage utilization
Erasure coding provides data protection at the block level and is more configurable and space-efficient than mirroring and RAID. The efficient Qumulo software architecture enables 100% usable storage, unlike legacy systems, so customers use what they pay for.

Reliable medical imaging and data assurance and security
This solution provides built-in data protection through local and remote snapshots and continuous replication to ensure data is preserved and remains highly available. In addition, always-on software based encryption at-rest and over-the-wire encryption ensure confidential records are secure.

HPE APOLLO 4200 STORAGE SERVERS

Density-optimized HPE Apollo 4200 systems are designed specifically for highly scalable storage. They provide an optimal platform for Qumulo scale-out NAS software and can scale from terabytes to petabytes while meeting single or multisite requirements.

Custom configurations
An HPE Apollo 4200 for Qumulo solution can be configured as follows:

• Custom memory and SSD sizing for large file size imaging applications

• Customizable capacity points with specific SSD/HDD sizes to maximize bulk data capacity

• From a 36 TB node to 100s of petabytes in larger-capacity server nodes

• 2U and 4U form factors

• HPE GreenLake IaaS capable

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HPE Solutions for Qumulo

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