The Challenge
With advances in technology, healthcare providers now have access to sophisticated imaging systems that have improved medical diagnostics. Digital modalities with 3D capabilities allow clinicians to view high-quality 3D images in real time, resulting in more accurate clinical decisions. But this benefit comes at a cost. From MRIs and mMRIs to multislice CTs, RIS, cardiac imaging, ultrasound, and more, imaging data is growing at a staggering rate.

Existing storage infrastructures are being tested with the growing number of departments that create images, the number of imaging procedures per patient, the quantity of images per study, and the size of high-resolution imaging. The ability to share data between multiple remote facilities, meet retention guidelines, and recover from an outage—without sacrificing accessibility or availability—is critical for efficient operations.

The NetApp Solution
NetApp and leading picture archiving and communication systems (PACS) providers, including Agfa Healthcare, FujiFilm, GE Healthcare, Merge, INFINITT, McKesson, Philips, and Siemens, have teamed up to address image storage needs. As part of this effort, the teams also help increase clinical efficiency and ultimately improve delivery of patient care. Working together, we help healthcare organizations share data-intensive medical images and reports with authorized medical specialists and facilities worldwide.

NetApp offers fast, simple, scalable, and reliable data storage: the ideal match for vendors’ PACS systems. Together, we offer a complete enterprise imaging infrastructure solution. You receive a superior image management system and a cost-effective, easy-to-maintain data storage component that lowers your total cost of ownership while enhancing profitability.

Make Better Decisions for You and Your Patients
NetApp’s vision for the future of data management is to create a Data Fabric that spans the entire IT landscape. The Data Fabric enabled by NetApp takes the worry and complexity out of managing and maintaining control of clinical data across private and public cloud resources. This capability enables healthcare organizations to adhere to internal data security policies, maintain compliance with HIPAA and HITECH requirements, and promote greater innovation and IT responsiveness. With a Data Fabric enabled by NetApp, you can:

• Choose the mix of private and public cloud services that will help provide patients with highly secure and cost-effective services.
• Have the data mobility you need for your data to flow seamlessly to wherever your clinicians need it most—across flash, disk, and private and public clouds.
• Achieve the speed to innovate faster using fewer resources to improve patient outcomes.
NetApp helps healthcare organizations embrace the cloud on their terms by integrating on-premises enterprise-class data management and control with the flexibility, speed, and economics of the public cloud. Advances in technology and cloud computing provide key capabilities to help the healthcare industry redesign storage systems to keep pace with the tremendous growth in clinical data. These advances also help you to do more within tight budgets. By enabling you to securely share, store, and retain data—including big data from multiology images, diagnostic reports, and other critical patient-care information systems—the Data Fabric provides the tools to transform patient care.

“Access to information from our PACS is critical for ongoing patient care. The partnership between NetApp and Agfa Healthcare—along with their demonstrated ability to work together—increased our confidence in the overall solution.”

Art Duncan, End-User Computing
UNC Hospitals

**Continuity of Data Access**

The need for always-on data access is mandatory for delivering excellence in patient care. Retrieval of patient information is a critical aspect in providing timely patient care. To support these needs, healthcare organizations must capture and preserve medical data with integrated backup and archiving of EMR and PACS applications.

Achieve maximum performance and scale without wasting resources or affecting availability with NetApp FAS and All Flash FAS storage. Combining reliable, high-performance hardware with the industry-leading NetApp Data ONTAP operating system helps IT seamlessly scale the storage infrastructure to keep pace with increasing patient data requirements.

- **Consolidate images and information for immediate use.**
  NetApp Data ONTAP delivers extreme flexibility with the most robust efficiency toolset built into a single solution, eliminating the need to purchase and integrate disparate components.

- **Protect multisite data with cost-effective archiving.**
  The simplicity and scalability of NetApp FAS systems efficiently store PACS images and patient records without sacrificing accessibility or availability and still meet compliance requirements for data retention.

- **Enhance data protection.**
  Protect against single path failure with storage resiliency, delivering consistent performance in the event of controller failover.

- **Be flash ready to boost performance.**
  Up to 2TB of onboard NetApp Flash Cache™ or Flash Pool™ intelligent caching provide an instant response to workload spikes in access requests for patient files.

- **Reduce change control windows.**
  The NetApp clustered Data ONTAP® operating system enables nondisruptive operations, delivering five-9s uptime that minimizes both planned and unplanned downtime.

- **Get improved speed and scalability.**
  New NetApp FAS systems deliver up to 80% more processing power and 100% more capacity.

**Simplified, Centralized Management**

Consolidating multiple terabytes of PACS data and additional hospital records on NetApp storage can considerably reduce the number of servers and storage devices that IT teams must manage. Tight integration between NetApp and PACS vendor solutions simplifies management of growing imaging data across on-premises and hybrid cloud environments.

To help maximize system use, meet storage SLAs, minimize risks, and boost performance, NetApp OnCommand® management products provide visibility and control across clustered Data ONTAP storage resources. OnCommand intuitive GUIs, automation, and integration also improve operational efficiencies.

**Maintain Compliance with Cost-Effective Archiving**

NetApp and its PACS partners help you to comply with HIPAA, Joint Commission, and European Union Directive requirements to protect your stored patient images and other records. We help you meet state, federal, and county mandates for disaster recovery, security, and retention. The simplicity and scalability of NetApp FAS systems efficiently store PACS images and patient records without sacrificing accessibility or availability and still meet compliance requirements for data retention.

**Secure cloud archiving**

NetApp AltaVault™ cloud-integrated storage helps healthcare organizations securely back up PACS imaging data to any cloud at up to 90% less cost compared to that of on-premises solutions. Healthcare organizations can now include the public and private cloud as part of backup and recovery and archiving strategies for cost-effective data protection. AltaVault helps organizations achieve faster recovery, reduce data loss, and deliver ironclad security, all with minimal management overhead.

AltaVault can help healthcare organizations:

- **Modernize backup environments.**
  Vaults older tape and disk solutions to the cloud, enabling rapid restores with off-site protection.

- **Integrate the cloud into backup strategies.**
  Integrates with all leading backup solutions and all major public and private cloud providers for a long-term cloud tier.
• **Store large volumes of cold storage.** Retains large volumes of data that is infrequently accessed.
• **Maintain cost-effective archive storage.** Reduces the cost of storage with deduplication and network-efficient replication to meet compliance requirements for data retention.

**High-performance, disk-based data retention**
NetApp SnapLock® software helps meet government standards for retaining, protecting, and accessing regulated and reference data with a flexible, integrated, cost-effective solution. SnapLock software helps you to comply with records retention regulations by creating nonrewritable, nonerasable volumes to prevent files from being altered or deleted before a predetermined retention date.

NetApp Snapshot® technology enables administrators to simultaneously back up multiple databases of any size in seconds, and NetApp SnapManager® software helps you to recover from server outages in minutes, not hours or days.

**Vendor-neutral archive**
NetApp partners with leading vendor-neutral-archive (VNA) companies, such as Agfa Healthcare, BridgeHead, DeJarnette, GE Healthcare, INFINITT, Lexmark, Mach7 Technologies, Merge, and TeraMedica, to centralize clinical data. A VNA functions as a central repository for medical images and other related patient data based on an open architecture for multiple departments of multiple hospitals. By interfacing with numerous PACS providers, the VNA gives central access to medical images for second opinions, EHR integration, provision to health information exchanges (HIEs), and more. In addition to sharing information based on secure access and authorization, the VNA also offers resilience against network interruptions, long-term archiving, and disaster recovery services.

“Implementing the PACS solution with NetApp and its partner has increased the efficiency of our physicians, improved the quality of patient care, and facilitated training. NetApp enables us to cost-effectively support our PACS solution today while enhancing our ability to accommodate exponential growth in the future.”

Art Duncan, End-User Computing
UNC Hospitals

**Comprehensive Data at the Point of Care**
**Connecting multiple sites or health systems**
Digital imaging and PACS enable instant access to radiology studies among healthcare providers regardless of location—and without duplicating or transporting films or risking their loss.

Although single sites can use NetApp FAS based technology, NetApp and its PACS providers have worked together on many technology installations to address a continuous and growing need for sophisticated, multisite healthcare connectivity. Using technology such as NetApp StorageGRID® software, NetApp and these partners can help healthcare organizations share medical data with multiple facilities. They can also help organizations share data between hospital groups (EHR), HIE, and Nationwide Health Information Network applications. NetApp simplifies replication of data to multiple healthcare facilities with disk-to-disk backup. This approach requires fewer support personnel and lowers cost. And NetApp SnapMirror® and SnapVault® technologies can save up to 95% in storage space.

**Enhancing clinician mobility**
NetApp’s easy-to-manage virtual desktop infrastructures deliver reliable, secure access to critical data, images, and files for thousands of users anytime, anywhere. NetApp’s partnering with companies such as VMware and Citrix enables workflows to be coordinated and streamlined through virtualized desktops to improve productivity and efficiency. Clinicians can now easily access sensitive patient information by using mobile devices from a virtual environment as they meet with patients throughout the workday, both within the facility and across buildings.

**High Availability**
NetApp storage delivers high reliability of healthcare data—as high as 99.999% in recent deployments—using both hardware and software solutions. Our hardware solutions include use of industry-standard components; hardware redundancy; and proven, well-tested drives and disk storage. Our software-based solutions include NetApp RAID DP® (RAID 6) technology and accelerated backup and recovery capabilities to minimize unplanned downtime and enhance the availability of patient-critical data.
Why NetApp?
Today’s leading healthcare provider and payer organizations rely on NetApp to help store growing patient data and medical images reliably, efficiently, and affordably. We help healthcare organizations deliver high-quality patient care by providing powerful, integrated hardware and software solutions that enable fast, cost-effective, scalable storage. Drawing upon our many years of experience, leading healthcare application providers collaborate closely with NetApp as certified solution partners.

Contact NetApp today to learn more about how we partner with leading healthcare innovators to help you better manage data and ultimately improve the efficiency and quality of patient care.

About NetApp
Leading organizations worldwide count on NetApp for software, systems and services to manage and store their data. Customers value our teamwork, expertise and passion for helping them succeed now and into the future.

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