ANALYST CONNECTION
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Healthcare provider organizations are modernizing medical imaging ecosystems with AI, cloud, and cybersecurity innovations to unify data, accelerate diagnosis, and improve clinical, operational, and administrative workflows and outcomes.

Modernizing Enterprise Medical Imaging: Balancing AI, Cybersecurity, and the Cloud

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Questions posed by: Pure Storage

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Q. What key trends are shaping the modernization of enterprise medical imaging today?

A. Enterprise medical imaging has become a key part of healthcare modernization as organizations aim to unify data across multiple clinical domains. According to IDC's August 2025 *Industry AI and Cloud Path Survey,* only 3.2% of healthcare organizations do not have an enterprise imaging workload, while over 83% already operate in a cloud or hybrid model. Among these, 36.8% rely on private cloud, 29.6% on public cloud, and 16.8% use hybrid cloud combining both, confirming that hybrid architectures are becoming the standard for balancing performance, compliance, and scalability.

The rapid growth of imaging data, emerging cybersecurity needs, and the swift integration of AI into imaging workflows are driving this change. Health systems are transitioning from departmental PACS environments to large-scale enterprise ecosystems that handle diagnostic, clinical, and research imaging in a unified way. Imaging platforms are advancing beyond static storage to become dynamic data fabrics that offer real-time access, AI-assisted triage, automated image categorization, and long-term imaging records that span the patient journey.

As a result, infrastructure decisions now focus on orchestration, interoperability, and resiliency alongside raw storage performance. CIOs and CTOs face the challenge of building infrastructure that can elastically scale, meet strict data governance standards, and support next-generation analytics while maintaining cost predictability and continuous clinical uptime. The merging of AI, cloud, and cybersecurity issues is redefining enterprise imaging as a strategic foundation for digital healthcare transformation.

Q. How does the transition to enterprise medical imaging benefit healthcare organizations?

A. Transitioning to enterprise medical imaging provides clinical and operational advantages by consolidating medical imaging data across radiology, cardiology, oncology, and digital pathology. This integration eliminates departmental silos that impede data sharing and cause workflow delays. Clinicians can now have access to a comprehensive, long-term view

of patient medical imaging history, enhancing diagnostic accuracy, care coordination, and patient safety while minimizing redundant studies.

IDC's September 2025 *U.S. Healthcare Provider IT Survey* found that 36.3% of organizations are expanding enterprise imaging investments from 2025 to 2026, with an additional 15.6% planning system replacements, indicating strong modernization momentum. These investments are driven by goals to improve operational efficiency and enable AI-driven workflow automation, including automated image routing, structured reporting, and anomaly detection.

From a technical perspective, organizations moving from spinning disk storage to more modern all-flash and hybrid cloud infrastructures report significant improvements in latency and uptime. Sub-second retrieval of DICOM image sets enables faster diagnostic turnaround in high-acuity settings, while centralized policy management and consistent security controls streamline IT operations. Unified architectures also help lower unplanned downtime and make compliance auditing easier. Overall, these improvements lead to increased clinician productivity, improved patient throughput, and better alignment with value-based care goals.

Q. How are economic and pricing models for medical imaging storage evolving?

A. Economic pressure is changing how healthcare providers finance medical imaging infrastructure. Traditionally, providers purchased capacity in large up-front amounts, leading to overprovisioning and an unpredictable total cost of ownership. The current trend is shifting toward per-study or outcome-based pricing, which links costs directly to the actual clinical workload. This method allows healthcare IT leaders to pay only for the imaging volume they produce, rather than for fixed storage tiers, thereby improving financial transparency and predictability.

IDC's 2025 cloud adoption data supports this. It shows that 29.6% of providers already use public cloud for enterprise imaging, while another 8.8% plan to migrate within the next year. Combined with 36.8% leveraging private cloud and 16.8% using hybrid models, these figures confirm an industrywide shift toward flexible, service-based economics. This evolution also aligns with new storage-as-a-service (StaaS) offerings that blend on-premises performance with cloudlike scalability and uptime guarantees backed by service-level agreements (SLAs).

The benefits go beyond budgeting. As imaging data rapidly increases, organizations using usage-based or per-study pricing avoid capital lock-in, allowing funds to be directed toward AI integration or cybersecurity, for example. However, CIOs must also ensure that pricing models remain flexible in response to workflow changes, such as splitting or merging studies, and include clear performance metrics. Overall, predictable, consumption-based models are essential for sustainable enterprise imaging strategies, helping providers modernize without sacrificing financial stability.

Q. What are the major challenges or risks organizations face when implementing modern enterprise medical imaging architectures?

A. While modernization offers clear benefits, it also introduces challenges. Integrating legacy medical imaging systems across different departments can reveal inconsistencies in metadata, image formats, and governance structures. The

shift to hybrid or cloud architectures, with 16.8% of providers using hybrid models and adoption continuing to rise, demands strong data migration plans and improved connectivity to maintain clinical continuity.

Cybersecurity remains a vital concern. Imaging archives are key targets for ransomware due to their critical role and the valuable data they contain. Immutable storage snapshots and zero trust network segmentation are now common protections, while continuous anomaly detection quickly identifies potential breaches. Data sovereignty and compliance with HIPAA and GDPR add extra governance challenges, especially in multicloud environments.

Organizational change management presents its own challenges, especially now in the AI era of healthcare. Radiology and IT teams need to collaborate on workflow redesign and retraining and establish new governance policies to ensure interoperability and user acceptance. In addition, IDC's 2025 *Industry AI and Cloud Path Survey* indicates that 20.4% of providers are still assessing how to use generative AI (GenAI) in medical imaging, while 33.3% are in pilot phases. Early AI deployments often face integration challenges, from compute scalability to model validation. Successful modernization requires a comprehensive approach that balances innovation with risk management by integrating technical readiness, security protocols, and process governance into a unified modernization plan.

Q. What criteria should healthcare leaders use when evaluating enterprise medical imaging platform providers?

A. When evaluating and selecting an enterprise medical imaging platform, healthcare leaders should balance immediate clinical needs with long-term scalability and innovation potential. The evaluation should focus on performance, resilience, and openness. Across healthcare, IDC research shows that 35.2% of healthcare organizations are already using GenAI, while within medical imaging specifically, 33.3% are piloting solutions and 20.4% remain in the assessment phase. This variation highlights the importance of AI readiness as a key evaluation criterion. Platforms must support seamless integration of AI inference workloads and analytics without causing disruptive data movement or requiring separate infrastructure.

Cyber-resilience is equally important. Immutable backup features, zero trust models, and ransomware recovery SLAs are now crucial factors in selection. From a technical perspective, all-flash or NVMe-based systems seem well-suited to deliver reliable sub-millisecond latency for mixed workloads. Hybrid cloud capability is essential for balancing compliance (often better managed on premises) with flexibility and disaster recovery (best suited for the cloud).

Economically, organizations increasingly favor as-a-service models that provide predictable costs based on imaging study volume. Transparency in contract terms, such as guaranteed per-study pricing and flexible data retention options, supports more effective budget planning. Finally, interoperability and standards compliance (DICOM, HL7, FHIR) should not be overlooked, as these impact how easily the platform integrates into existing electronic health record systems.

By focusing on these factors, healthcare CIOs can select platforms that support not only current imaging performance and compliance goals but also future AI-driven diagnostic innovations.

About the Analyst

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