PHILIPS

Whitepaper



Imaging meets the cloud

Five questions healthcare leaders should be asking now

A strategic framework to evaluate cost, risk, scalability, and innovation in the era of cloud, AI, and integrated diagnostics.

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Enterprise imaging is reaching a turning point

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Executive summary

Enterprise imaging is no longer just an IT system; it is becoming a strategic platform for clinical operations, data-driven care, and digital transformation. Imaging volumes are growing, data complexity is increasing, and healthcare systems are under pressure to deliver faster, more coordinated care with limited resources. Traditional on-premises models are increasingly difficult to sustain. Cloud-based SaaS is transforming enterprise imaging into a managed service, where infrastructure, security, and scalability are embedded in the platform rather than managed locally.

The key question for healthcare leaders is no longer: What does enterprise imaging cost?

It is: how should enterprise imaging platforms evolve to support the future of healthcare?

This paper outlines five questions to help healthcare leaders evaluate the transition from traditional on-premises imaging infrastructure to scalable enterprise imaging in the era of cloud and AI.

Enterprise Imaging: a strategic shift

According to Signify Research, Enterprise is increasingly being recognized as a strategic element within healthcare organizations.



Cloud represents **55%+** of healthcare IT spend[1]



44% of radiology IT will be cloud-based by 2028

1 What is the real cost of enterprise imaging infrastructure?

Understanding the full economic footprint of imaging systems - from infrastructure and facilities to security, staffing, and operational risk.

Enterprise imaging is not just software, it is an operational ecosystem requiring continuous investment in infrastructure, security, storage, and IT resources. Typical cost components include:

- Compute infrastructure (servers, virtualization, databases)
- Storage and backup systems
- Cybersecurity and compliance tools
- Data center facilities (power, cooling, physical security)
- IT operations and specialized staffing for infrastructure management, performance monitoring, patch management, backup validation and disaster recovery testing.

In addition, infrastructure ownership introduces financial exposure. Power and cooling alone can account for a significant share of data center consumption while infrastructure usually must be refreshed every four to five years. Capacity must often be provisioned in advance, leading to underutilized resources in early lifecycle stages. At the same time, healthcare organizations are increasingly exposed to external factors beyond their control. Hardware costs, for example, have become more volatile, driven by global semiconductor demand and the rapid expansion of AI infrastructure. In some cases, memory and storage components have experienced significant price increases in short periods of time.

In an on-premises architecture, storage planning includes not only primary SAN or NAS arrays, but also architectural overhead: RAID protection, capacity buffers (often ~15%), and file system overhead (commonly ~5%) that materially reduce effective usable storage when compounded. In addition to primary storage, organizations typically operate backup systems (disk or tape), offsite replication, and disaster recovery copies. Backup media and operational handling introduce recurring cost layers. Unlike compute, storage growth is rarely smooth. It often requires stepwise expansion, adding shelves, arrays, or entirely new tiers, resulting in periodic capital spikes.

In this context, traditional capital expenditure models can obscure both the true cost and the financial risk associated with infrastructure ownership and they accumulate continuously throughout the lifecycle of the system. **Over time, enterprise imaging becomes a long-term infrastructure commitment, not just a software purchase.**

What changes when imaging moves to the Cloud? From CAPEX to SaaS.

Cost Category	On-Prem PACS	SaaS Imaging
Infrastructure	Hardware purchased every 4–5 years	Included in subscription
Storage expansion	Stepwise capital upgrades	Elastic cloud scaling
Disaster recovery	Secondary site required	Built-in redundancy
Cybersecurity	Local tools + personnel	Platform-level security
Software upgrades	Planned projects	Continuous updates
Capacity planning	Multi-year forecasting	Usage-based scaling

Traditionally, on-premises enterprise imaging requires healthcare organizations to retain responsibility for infrastructure, security, and lifecycle management. SaaS models redistribute these responsibilities within the platform, enabling scalability, resilience, and more predictable cost structures. Instead of owning infrastructure, organizations consume imaging as a service, reducing complexity, improving cost predictability, enabling dynamic scaling and faster access to innovation (AI, analytics).

Security and compliance: a growing budget category

Healthcare continues to be a primary target for cyberattacks. According to the Sophos 2021 ransomware report, 34% of healthcare organizations experienced ransomware incidents in the previous year, with successful file encryption occurring in 65% of cases [1]. On-premises environments require organizations to assume responsibility for several critical areas: firewall configuration, intrusion detection and monitoring, encryption management, audit administration, and enforcement of regulatory compliance.

Meeting regulatory compliance remains a substantial and ongoing operational expense for healthcare institutions. For instance, U.S. hospitals collectively allocate approximately $39 billion annually [2] to activities necessary to satisfy federal regulatory requirements; individual organizations may devote multiple full-time personnel and associated resources to compliance management. As a result, investments in security are not sporadic, but rather fundamental and consistently increasing. Finally, this analysis needs to include exposure.

The average cost of a healthcare data breach is estimated at $7.42 million, significantly higher than the global cross-industry average (IBM Cost of a Data Breach Report) [3] in 2025 when accounting for direct and indirect impact. For comparison, financial industry breaches, such as banking and investing, cost an average of $5.56 million per incident, and in the industrial industry, which includes chemical processing and engineering, breaches cost an average of $ 5million.

Imaging systems are mission-critical; downtime can materially disrupt clinical workflow, revenue capture, and patient care continuity. While not annualized budget line items, this risk factors represent retained financial liability under an ownership model.



2 Can your imaging infrastructure scale with growing data demand?

Evaluating whether traditional infrastructure models can keep pace with rapidly expanding imaging volumes and long-term data retention requirements.

If cost is one dimension of the challenge, scale is another. Imaging data is growing at a pace that traditional infrastructure models struggle to match. Advances in imaging modalities, higher resolution scans, and longer retention requirements are increasing both the size and volume of datasets. In some environments, imaging volumes have more than doubled, while the number of stored images has increased by an order of magnitude. Radiology departments are also facing workforce constraints. According to workforce analyses from the Radiological Society of North America (RSNA), demand for imaging services continues to outpace radiologist supply in many regions. At the same time, clinical teams are under growing operational pressure. This growth is not linear, it is exponential.

According to the Philips Future Health Index 2025, 77% of healthcare professionals report losing clinical time due to incomplete or inaccessible patient data, with 34% losing more than 45 minutes per shift[4]. Over a full year, this equates to approximately 23 working days of lost clinical time per healthcare professional. This highlights a critical challenge: scaling infrastructure is not just about storage; it directly impacts clinical productivity.

To avoid performance bottlenecks, healthcare organizations often overprovision hardware early in the infrastructure lifecycle. Industry surveys indicate that cloud services now represent over 55% of healthcare IT infrastructure spending[5], reflecting growing reliance on scalable infrastructure to support clinical systems, data analytics, and digital health services. Initially accelerated by the adoption of electronic health records and telehealth, today, across Europe, healthcare providers are already spending more on cloud software than on-premises software, with utilization expected to quadruple by 2033. The healthcare computing market in Europe was valued at USD 10.8 billion in 2024 and is estimated to reach USD 12.40 billion by 2025, with projections indicating it could grow to USD 44.1 billion by 2033[6].

Did you know?



Average CT study size increased from 66 MB to 160 MB in less than a decade - roughly **2.4x** growth[7]



PACS environments have seen **104%** growth in study volumes[8]

Imaging infrastructure must scale continuously, not periodically, to support future demand.

3 How resilient and secure is your imaging environment?

As enterprise imaging becomes more central to clinical operations, resilience and security become critical.

Downtime impacts diagnosis, care delivery, and revenue. Any disruption can delay diagnosis, interrupt workflows, and affect patient care. At the same time, cybersecurity threats are increasing in both frequency and sophistication. Healthcare has become one of the most targeted sectors and one of the most costly in terms of breach impact, and as a result, cybersecurity is no longer only a technical concern, it is a core financial and operational risk factor.



The average healthcare data breach costs **$7.42 million**[9], making healthcare the **most expensive sector for breaches**[9].

According to the reports, healthcare breaches also took an average of 279 days to identify and contain, which is more than five times longer than the global average and still, healthcare remains the most expensive sector for data breaches for the 14th consecutive year accordingly to the survey conducted by IBM in 2024. Maintaining robust security controls internally requires:

- intrusion detection systems
- Encryption Management
- vulnerability scanning
- compliance auditing
- incident response programs



According to the reports, Healthcare breaches also took an average of **279 days** to identify and contain

Still, only 49% of organizations plan to increase investment in new security programs within the next year, the report says. This is a 22% decrease from last year[9]. Maintaining robust security environments internally requires sustained investment in personnel, tooling, and operational processes. In cloud architectures, many security and resilience capabilities are embedded directly, also providing multi-zone resilience and continuous monitoring within the infrastructure platform itself, including:

- multi-zone redundancy
- automated backup and recovery
- continuous monitoring
- encryption at scale

These capabilities benefit from hyperscale infrastructure engineering that would be extremely expensive to replicate locally. Rather than building and maintaining these capabilities internally, healthcare organizations consume them as part of the service platform.





Philips HealthSuite Imaging is designed with robust security architecture , encryption in transit and at rest, continuous monitoring, structured vulnerability testing, and resilient archival mechanisms. Security engineering is embedded at platform scale rather than dependent on local capacity. The relevance lies in delivery model:

- Controls are standardized across deployments.
- Monitoring is continuous rather than episodic.
- Encryption and key management are architected into the platform.
- Archive durability and immutability mechanisms are implemented at infrastructure scale.

HealthSuite Imaging benefits from a modern, robust cloud security framework that enhances protection well beyond the capabilities of traditional on-premises environments. Each HealthSuite Imaging instance is deployed in an AWS region selected by Philips based on its proximity to the healthcare provider, supporting low latency and optimal performance. This architecture promotes fast access to imaging studies while maintaining compliance with local data residency and performance requirements. HealthSuite Imaging utilizes the full range of AWS services to secure its infrastructure, including Amazon EC2, S3, ELB, VPC, IAM, KMS, CloudWatch, AppStream, Route53, WAF, and CloudTrail. The cloud infrastructure is architected with strong network segmentation, isolating public-facing services (e.g., diagnostic viewers and enterprise portals) from backend services (e.g. databases and storage). Virtual Private Cloud (VPC) constructs, security groups and network access control lists (NACLs) are used to strictly control inbound and outbound network flows, supporting secure and controlled access to all resources.

All the services available as part of the HealthSuite Imaging portfolio are developed following the comprehensive security framework established for Philips Radiology Informatics solutions. To learn more about the HealthSuite Imaging security framework, please reference the white paper: HealthSuite Imaging: Delivering secure cloud computing to protect data and enhance operation

Did you know? Healthcare has the highest cost of data breaches

Breaches take **~279** days to identify and contain

Healthcare remains the **#1** most expensive industry for breaches

Security is no longer just a technical issue, it is a financial risk factor.

4 Is your IT team focused on innovation or maintenance?

Determining how much organizational capacity is spent sustaining legacy systems rather than enabling digital transformation and clinical innovation.

Healthcare IT teams face a fundamental trade-off: maintain infrastructure or enable innovation with typical workload that includes system maintenance, upgrades, storage planning, performance monitoring and disaster recovery testing.

While these activities are essential for system reliability, they limit the ability of IT teams to focus on initiatives such as: AI adoption, interoperability programs, digital health innovation, and clinical workflow optimization. SaaS shifts these responsibilities to the platform, allowing IT teams to focus on higher-value initiatives allowing IT teams to reallocate resources from infrastructure maintenance to initiatives that directly impact clinical performance and patient outcomes.

When enterprise imaging delivery models differ structurally, financial evaluation must reflect those structural differences. Healthcare organizations today typically evaluate three models:

1. CAPEX + Support (on-premises ownership)
2. Managed Services (on-premises, vendor-operated)
3. SaaS (cloud-based service model)

Each model distributes responsibility, cost, and risk differently

Comparing delivery models on a total responsibility basis

Model	CAPEX + support	Managed services	SaaS
Infrastructure location	On premises	On premises	Cloud
Cost structure	Upfront capital plus ongoing maintenance	More OPEX-oriented, but infrastructure still local	Subscription or consumption aligned
Scalability	Fixed; stepwise expansion	Operational burden reduced; physical constraints remain	Elastic; scales with demand
Risk / retained responsibility	Highest level retained internally	Shared operational responsibility; infrastructure exposure remains	Responsibility redistributed across provider and platform

CAPEX, Managed Services, and SaaS fundamentally differ in how cost, scalability, and risk are distributed, with SaaS shifting infrastructure burden away from healthcare organizations toward platform-based delivery.



Under a traditional CAPEX model, the organization owns the infrastructure and licenses the software. All infrastructure lifecycle management, facilities cost, security execution, disaster recovery design, and operational risk remain internal.

Managed Services may instead reduce operational burden, but infrastructure remains in the health system environment. Local facility costs, refresh exposure, and many resilience requirements persist. The vendor typically supplies and monitors infrastructure under SLA, performs patching and maintenance, and shifts the commercial structure toward OPEX.

SaaS changes the model more fundamentally by abstracting infrastructure from the local environment and redistributing lifecycle, scalability, and some operational risk to the service provider. Enterprise imaging is delivered as a cloud-based service where Infrastructure provisioning, scalability, lifecycle management, embedded high availability, and infrastructure-level security are part of the service envelope. This alters the economic structure:

- Hardware refresh cycles are abstracted.
- Scalability becomes elastic rather than stepwise.
- Multi-site redundancy may be architected into the platform.
- Certain categories of infrastructure risk are reduced.
- Internal operational engineering burden decreases.

Unlike Managed Services, SaaS removes physical infrastructure dependency from the local environment. Philips SaaS delivery removes physical infrastructure dependency while maintaining transparency, SLA accountability, and regulatory alignment - driving structural economic differentiation.

Did you know? Cloud adoption delivers measurable performance gains

Healthcare organizations adopting cloud infrastructure reported*:

43% lower IT infrastructure costs

42% faster image access and retrieval

56% lower image storage costs

35% higher daily reading volumes

Cloud impacts both cost efficiency and clinical productivity.

* The survey and interview research and analysis contained in this document has been conducted by a consultant engaged by AWS through Gerson Lehrman Group's network of independent consultants and subject-matter experts ("Network Members"). Network Member survey respondents and interviewees were compensated for their participation in the research. All information is as of October 13, 2022, is for informational purposes, and does not constitute legal, accounting, tax, investment or other professional advice. No representations or warranties (express or implied) are made regarding this document.

5 Is your imaging platform ready for the future of diagnostics?

Preparing infrastructure to support artificial intelligence, integrated diagnostics, cross-site collaboration, and the next generation of clinical workflows.

The analysis on moving towards a new model, especially for overall enterprise imaging strategy, is largely influenced by factors affecting clinical efficiency. Critical components include the speed of image ingestion and retrieval, radiologist throughput, and report turnaround times. Additional considerations are the cost per study and overtime exposure. Optimizing these metrics enables organizations to improve operational performance, minimize unnecessary expenses, and increase productivity within clinical workflows, thereby ensuring greater cost-effectiveness in enterprise imaging.

Medical imaging is rapidly evolving with artificial intelligence and advanced analytics become more and more integrated into diagnostic workflows. AI applications are already being used to support radiologists by prioritizing urgent cases in worklists, assisting with image interpretation, automating measurements and annotations and improving reporting efficiency. According to a report from the American College of Radiology, AI-assisted radiology workflows can reduce diagnostic interpretation time by up to 30% in certain imaging applications. At the same time, healthcare systems are increasingly adopting integrated diagnostics models, where imaging data is combined with pathology, laboratory, and clinical data to support more comprehensive patient insights.

These models require infrastructure platforms capable of:

- managing large volumes of multimodal data
- enabling collaboration across specialties
- supporting distributed clinical workflows
- integrating AI algorithms at scale

Beyond infrastructure scalability, cloud-based platforms are fundamentally changing how clinical data is accessed and used in care delivery. Beyond infrastructure scalability and security, one of the key advantages of cloud computing is the ability to access healthcare data anytime and from virtually any location. In a cloud-enabled environment, clinicians, including physicians, nurses, and other healthcare professionals can securely access patient information, including diagnostic images and clinical records, in real time, regardless of their geographic location. This capability supports more coordinated care delivery across departments, facilities, and regions.

For example, a surgeon in the operating room can retrieve radiology results or clinical notes within seconds, enabling faster and more informed decision-making at critical moments in patient care. More broadly, the ability to collect, process, and analyze large volumes of healthcare data in real time supports improved diagnostic accuracy and more personalized treatment pathways. By enabling timely access to comprehensive clinical information, cloud-based platforms contribute directly to better clinical outcomes and more efficient care delivery.

In this environment, enterprise imaging evolves from a departmental system into a foundation for integrated diagnostics and AI-driven healthcare innovation.

Measured impact of cloud adoption in healthcare.

Metric	Improvement
IT infrastructure costs	↓ 43%
Data management costs	↓ 36%
Image storage costs	↓ 56%
Image ingestion/retrieval time	↑ 42% faster
Daily read counts	↑ 35%

Healthcare organizations adopting cloud infrastructure report measurable improvements in imaging performance, operational efficiency, and infrastructure cost optimization.
Sources: AWS – The Business Value of Cloud in Healthcare

Deep Dive:

The Role of the Technology Partner

HealthSuite Imaging, Philips cloud-native enterprise imaging platform is designed specifically for Software-as-a-Service delivery. The platform integrates imaging archiving, diagnostic viewing, reporting, workflow management, and collaboration tools into a unified environment accessible from anywhere.

HealthSuite Imaging is hosted on **Amazon Web Services (AWS)**, one of the world's leading hyperscale cloud infrastructure providers. AWS operates globally distributed cloud environments designed for mission-critical workloads with multiple availability zones and built-in redundancy. The infrastructure supports high levels of security, durability, and operational resilience. Philips' strategic collaboration with AWS combines Philips' deep clinical expertise in imaging informatics and AWS' global cloud infrastructure and security capabilities.

This partnership enables HealthSuite Imaging to deliver capabilities that are difficult to replicate in traditional on-premises environments, including hyperscale infrastructure resilience, automated lifecycle management, continuous security monitoring and elastic scalability aligned with imaging demand. Together, Philips and AWS provide healthcare organizations with a platform designed to support both current operational needs and future innovation. In addition, integrated platform capabilities including image archiving, diagnostic viewing, reporting, scheduling, and collaboration can be delivered within a unified environment. This integration helps simplify radiology workflows, support enterprise interoperability, and enable multi-site imaging collaboration.

Enabling cloud-based enterprise imaging

The collaboration between Philips and AWS combines clinical imaging expertise with global cloud infrastructure to deliver secure, scalable enterprise imaging platforms



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Deep Dive:

HealthSuite Imaging

HealthSuite Imaging is Philips' cloud-native enterprise imaging platform designed to deliver radiology workflows as a fully managed Software-as-a-Service solution. The platform brings together imaging archiving, diagnostic viewing, reporting, workflow orchestration, and clinical collaboration within a single unified cloud environment.

By shifting infrastructure management to Philips, healthcare organizations can reduce operational complexity designed to help maintain security, scalability, and up-to-date system capabilities.

Key capabilities

Unified imaging platform	Cloud-native infrastructure	Operational simplicity	Clinical enablement
Enterprise image archive (VNA)	Hosted on Amazon Web Services (AWS)	Automated software updates and upgrades	Remote diagnostic access
Diagnostic viewer and reporting	Multi-zone architecture for high availability	Embedded security monitoring and patching	Multi-site imaging collaboration
Workflow management and orchestration	Automated lifecycle management	Predictable subscription-based pricing	Support for AI-enabled workflows
Secure enterprise image sharing	Elastic storage and compute scaling		

This approach enables healthcare organizations to move beyond infrastructure management and focus on delivering faster, more efficient diagnostic care. A central objective of HealthSuite Imaging is to support an improved radiologist experience. The platform provides a unified diagnostic workspace where image interpretation and reporting are integrated within a single application. This environment is enhanced with AI-enabled tools that support advanced image processing while helping streamline clinical workflows.

Because HealthSuite Imaging is cloud-based, clinicians can access imaging studies more quickly from both hospital settings and remote locations. At the same time, Healthcare organizations also benefit from a cloud-hosted storage environment designed with robust security features

Did you know? Healthsuite Imaging operates at enterprise scale

Philips managed over **25 million** imaging exams in the past **12 months**.

Over **311 million** diagnostic imaging exams have been archived and managed

Every second, more than **600 images** are archived within Philips' global PACS systems.

HealthSuite Imaging provides a unified diagnostic workspace where image interpretation, reporting, and workflow management are integrated into a single cloud-based environment, enabling faster access to imaging data and more efficient clinical workflows.

Deep Dive:

Key Takeaways and Strategic Considerations

Enterprise Imaging is evolving from a locally managed application environment into a strategic digital infrastructure platform. Evaluating the transition to SaaS requires healthcare organizations to consider not only software costs, but also infrastructure lifecycle management, operational staffing, security architecture, scalability requirements, and innovation readiness. By reframing Enterprise Imaging transformation around these strategic questions, healthcare leaders can better assess whether their current infrastructure model remains aligned with long-term clinical and financial objectives.

In this new model, enterprise imaging evolves from a cost center into a strategic enabler helping support clinical excellence, operational efficiency and long-term innovation,

Cloud-based SaaS platforms may offer an opportunity to reduce reliance on capital-intensive local infrastructure and support a more scalable and resilient foundation for ongoing digital innovation. This combination of clinical functionality and cloud-based delivery can help healthcare organizations align imaging operations with broader digital transformation and efficiency goals

Learn more:
HealthSuite Imaging Cloud PACS

References

1. Sophos – The State of Ransomware in Healthcare 2021 Reports ransomware incidents across healthcare organizations and their operational impact. https://www.sophos.com/en-us/content/state-of-ransomware
2. American Hospital Association – Regulatory Overload Report Estimated regulatory compliance costs in U.S. hospitals. regulatory-overload-report-exec-summary.pdf
3. IBM – Cost of a Data Breach Report (Healthcare Sector) Healthcare remains the most expensive industry for data breaches https://www.bakerdonelson.com/webfiles/Publications/20250822_Cost-of-a-Data-Breach-Report-2025.pdf
4. Philips Future Health Index 2025 Global research on healthcare workforce challenges and data accessibility. Philips Future Health Index 2025
5. Signify Research / Imaging Wire – Cloud Adoption in Healthcare IT Cloud services represent an increasing share of healthcare IT infrastructure spending. https://theimagingwire.com/tag/signify-research/
6. Europe Healthcare Cloud Computing Market Forecast Market growth projections for healthcare cloud computing in Europe. Europe Healthcare Cloud Computing Market Size & Share, 2033
7. European Radiology – Data Growth in CT Imaging Studies Research on CT dataset size growth and its impact on storage infrastructure. https://link.springer.com/article/10.1007/s00330-025-12023-z https://link.springer.com/article/10.1007/s00330-025-12023-z
8. Large PACS Workload Growth Study (Imaging Data Expansion) Evidence of large-scale growth in PACS imaging volume and datasets. https://pubmed.ncbi.nlm.nih.gov/31072246/
9. Europe Healthcare Cloud Computing Market Forecast Market growth projections for healthcare cloud computing in Europe. Europe Healthcare Cloud Computing Market Size & Share, 2033

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