Why a Majority of Healthcare Organizations Are Not Ready for Artificial Intelligence

A HIMSS Market Insights study finds infrastructure limitations are creating strategic barriers to AI implementation

Healthcare stands at a critical digital crossroads, with technologies such as artificial intelligence (AI) poised to revolutionize the industry. Yet despite enthusiasm for AI's transformative potential, most healthcare organizations lack the fundamental infrastructure to implement these technologies effectively.

A recent HIMSS Market Insights study reveals that while healthcare leaders increasingly recognize AI and other emerging technologies as essential to advancing personalized and virtual care delivery, their technology infrastructure remains unprepared.[1] They continue to treat IT infrastructure as a background utility — maintained but rarely strategically developed with advanced capabilities like AI in mind. As digital healthcare applications increasingly depend on sophisticated data processing, seamless integration and robust computational resources, this infrastructure deficit has evolved from an operational challenge to a tactical barrier.

Closing this technology-infrastructure gap requires healthcare leaders to fundamentally reimagine infrastructure as a strategic asset — one that doesn't merely support but actively enables AI-powered care delivery models that improve outcomes, enhance patient experiences and drive operational excellence. Organizations must overcome longstanding challenges, such as security and resource limitations, by prioritizing infrastructure investments, upskilling their workforce and developing strong strategic partnerships with technology vendors to build robust, AI-ready networks that can scale to meet advanced healthcare delivery needs.

From background function to strategic enabler of modern healthcare delivery

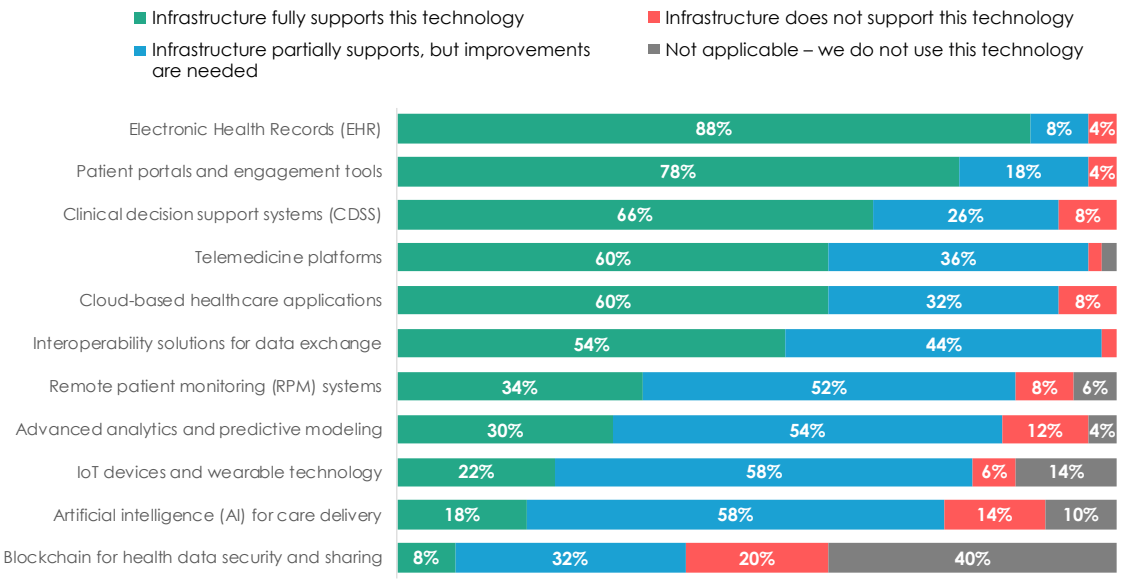
The HIMSS Market Insights study shows healthcare organizations' current infrastructure excels at supporting established technologies like electronic health records (EHRs) and patient portals, while providing moderate support for transitional technologies such as telehealth and cloud applications.

However, a concerning technology gap has emerged in critical areas that will define healthcare's future. Most alarming are the severe limitations in AI for care delivery (18% fully supported). Advanced analytics and predictive modeling receive full support in only 30% of cases, while Internet of Things (IoT)/ wearable technologies lag further at 22% (Figure 1).

This widening gap has major implications for healthcare's evolution. The limited infrastructure support for emerging technologies directly constrains the ability to deliver truly personalized care, significantly hampers remote monitoring capabilities that could revolutionize chronic disease management and creates substantial barriers to data-driven decision making.

Figure 1. Healthcare organizations have robust infrastructure support for traditional technologies like EHRs and patient portals but significantly less capability to support advanced technologies.

Which of the following technologies does your organization currently leverage to achieve strategic goals related to the delivery of care, and how effectively does your IT infrastructure support their use?



Not displayed: 'Other' (n=1)
Data labels <3% not shown
Base: Total Respondents; n = 50

"Network latency and data synchronization issues are particularly concerning as the industry shifts from hardware to software-based solutions."

JILL BREWER | Market Insights Lead | HIMSS

"While many organizations can partially support these innovations, they lack capacity for full integration — despite these technologies representing healthcare's future direction. Infrastructure upgrades are therefore essential," said Jill Brewer, the HIMSS Market Insights Lead who conducted the study.

Half of executives and IT leaders said their organization had experienced reduced efficiency in imaging uploads or transfers due to network latency. "Network latency and data synchronization issues are particularly concerning as the industry shifts from hardware to software-based solutions," she said. "As healthcare increasingly depends on these advanced technologies to improve outcomes and efficiency, addressing these infrastructure limitations becomes not just desirable but necessary to realizing the promise of modern healthcare delivery."

Healthcare IT foundations unprepared for coming care innovations

Competitive healthcare organizations continue to find ways to deliver care to more people without increasing clinical burden. They accommodate a distributed workforce and both mobile point-of-care devices and AI solutions being integrated into today's workflows. This requires healthcare organizations to assess current network capabilities and the costs to add more bandwidth for data storage and AI processing while removing any network lag that could negatively impact patient care.

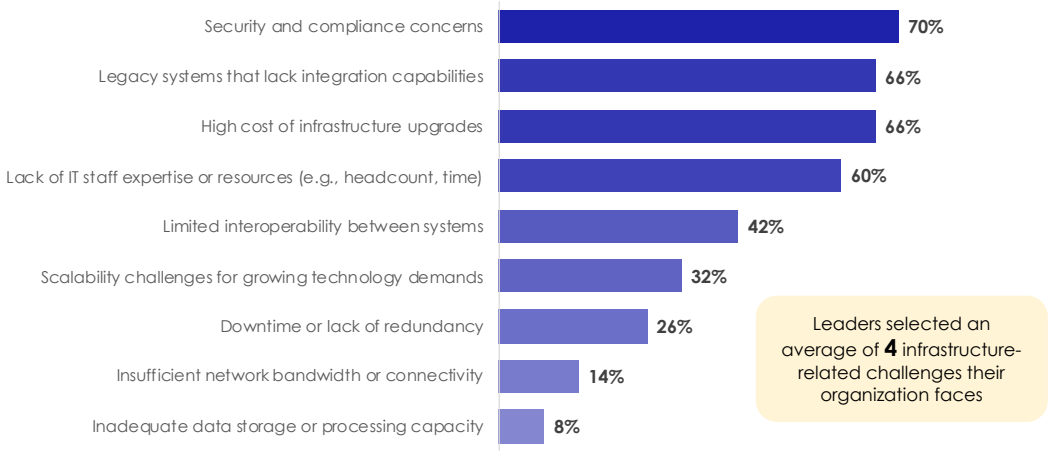
"These findings show there's work to be done because many organizations are partially there but need to fill some gaps in order to get these technologies fully integrated and be most effective," Brewer said.

One reason for such gaps may stem from multiple formidable barriers organizations face in modernizing their IT infrastructure for contemporary care delivery models. Security and compliance concerns top the list, with 70% of leaders citing regulatory requirements specific to healthcare and patient data protection challenges as major obstacles. Equally significant are legacy system integration obstacles, reported by 66% of leaders, which create persistent interoperability issues that prevent seamless data exchange across platforms (Figure 2).

Financial constraints present another substantial hurdle, with 66% of leaders pointing to the high costs of upgrades. Resource limitations further compound these challenges, as 60% report significant staffing and expertise gaps alongside time constraints that make implementation of new technologies particularly difficult.

Figure 2. Security concerns, legacy integration and costs hamper IT progress, while staffing shortages and interoperability issues compound challenges.

What are the primary infrastructure-related challenges, if any, your organization faces in supporting these technologies?



Not displayed: 'Other' (n=2) and 'We do not face any infrastructure-related challenges with these technologies' (n=1)
Base: Total Respondents; n = 50

Technical barriers round out these multilayered challenges, with 42% of organizations citing limited interoperability as a key concern. Scalability challenges affect 32% of organizations attempting to expand their technological capabilities, while system reliability concerns trouble 26% of healthcare leaders.

Together, these challenges point to a need for healthcare organizations to transform their approach to AI implementation to become more operationally and clinically efficient. While AI drives advancements in medical research, clinical workflows and revenue cycle management, its effectiveness depends on strategic cloud deployment decisions. Success requires not just technological investment but a fundamental shift in operational thinking — balancing innovation with practical constraints while maintaining control over mission-critical research and sensitive patient data.

A growing need for cloud-based solutions and strategic partnerships

Healthcare organizations are embracing cloud-based solutions as their preferred infrastructure strategy, with 86% prioritizing solutions that reduce hardware costs and 84% focusing on system reliability during cloud transitions. Integration capabilities have become central to decision-making, as 80% of organizations seek platforms supporting seamless integration while placing high importance on reducing migration complexity. Scalability has emerged as a strategic investment driver for 76% of organizations, who view it as essential for future-proofing infrastructure and supporting organizational growth (Figure 3).

The shift toward cloud infrastructure is also transforming financial approaches, with 72% of organizations valuing predictable subscription pricing models that improve budgeting predictability. Meanwhile, edge-computing adoption has gained significant traction, with 64% of organizations implementing it to optimize performance and streamline costs. This technology evolution is occurring alongside a fundamental change in how healthcare organizations view vendor relationships.

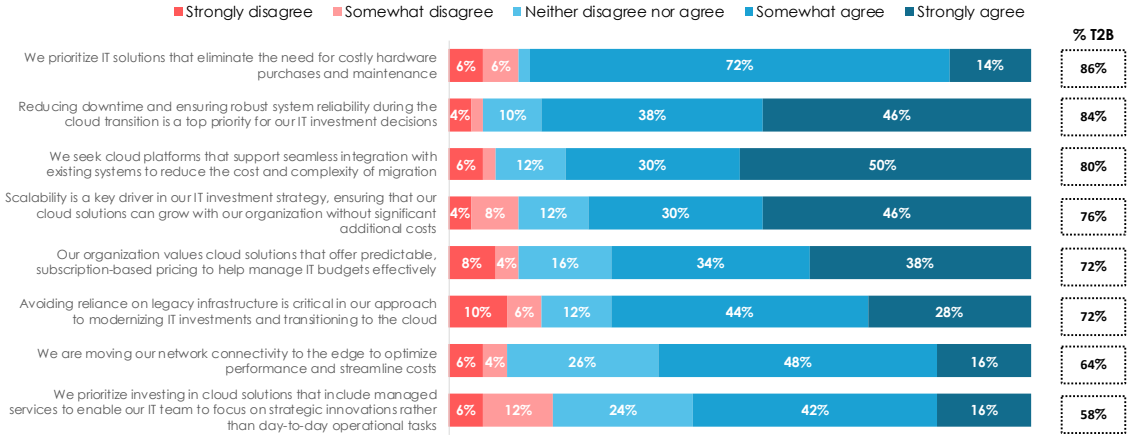
The vendor partnership imperative represents a critical shift from transactional to strategic relationships, with 58% of organizations prioritizing managed services that enable them to maintain a strategic focus. This evolution moves beyond traditional procurement toward true partnership models based on specific criteria: technical expertise, integration capabilities and comprehensive ongoing support.

"The best service providers understand the network demand and management complexity created by the proliferation of devices," said Andrew Craver, Vice President of Portfolio Marketing for Spectrum Business®. "They work in tandem with healthcare leaders to deliver sound infrastructure solutions offering robust automation, layered security, data prioritization and scalable capacity."

There's an inflection point where managing technology complexities can outweigh the benefits and distract health systems. One solution is to work with managed service providers to ensure the integrity and security of expanding infrastructure stands up to such increased demand.

Figure 3. Cloud adoption is becoming imperative for organizations wanting more data storage and computing power without all of the hardware and maintenance.

To what extent do you agree or disagree with each of the following statements?



Data labels <3% not shown
Base: Total Respondents; n = 50

"The best service providers understand the network demand and management complexity created by the proliferation of devices."

ANDREW CRAVER | Vice President of Portfolio Marketing | Spectrum Business

"To overcome this, healthcare organizations should seek managed solutions that integrate all necessary technology within one tailored solution," Craver advised. "The right partner leverages its scale and expertise to design, deploy and manage the network, saving clients time and money while allowing IT teams to focus on patient care."

A roadmap for building out IT infrastructure to handle what's ahead

Healthcare organizations must assess infrastructure capabilities against future needs, identifying gaps that impact strategic objectives like AI-driven care and IoT integration.

"I think that organizations need to take a really hard look at their priorities and find the best ways to utilize their budgets because that's always another issue," Brewer said. "In my opinion, to be successful moving forward, they're going to have to look at what they can be proactive on right now instead of just trying to plug holes. That's so much easier said than done, but it's what keeps coming up in our research. I think they need to be asking themselves, 'How can we be creative? What are the most important things to do, knowing where the future needs to go?' and then make those decisions."

Effective prioritization balances clinical impact with financial sustainability and implementation feasibility. Successful strategies implement changes in phases while addressing resistance and ensuring staff development. Many organizations find vendor partnerships vital to achieve these goals.

"The challenge lies in finding a single partner that can meet the full range of requirements across different site types and geographies along with managed services that comprise a high-performance, secure modern network that is especially critical for health systems with large or multi-region networks," Craver advised.

"Utilizing multiple vendors across these complex environments can lead to uneven network performance, more trouble resolution complexity and higher management overhead," he continued. "Choosing a single-source provider capable of delivering high-performance networking solutions in tandem with seamless service is the best path to overcoming these challenges."

Learn more about improving your IT infrastructure at enterprise.spectrum.com/digitalhealth.

Reference

1. HIMSS Market Insights. December 2024 and January 2025. *Bandwidth and Digital Infrastructure* [research report]. This research was conducted among 50 executives and IT/technology leaders (managers and above) in healthcare in the United States. Spectrum Business' sponsorship was not divulged to survey participants.

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