

The modern intelligent network serves as the foundation for a digital platform that can deliver innovative services to improve staff and patient experiences.

# Intelligent Networks: The Lifeline of Today's Healthcare Organization

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## Introduction

Advances in information technology (IT) over the past decade have improved the patient and provider experience. Access to a 360-degree view of patient health information via electronic health records (EHRs) has improved clinical decision making at the point of care, reducing medical errors and leading to better patient outcomes. Increased adoption of connected health technologies, including telemedicine, virtual care visits, and patient wearables, enables the delivery of care anywhere there is an internet connection. Patient portals and mobile health applications empower patients to take a more active role in managing their own health. Predictive analytics, clinical decision support, and the application of AI technologies create insights for the next best action from vast volumes of patient data generated by these applications and devices to be stored across multiple clinical systems.

Without an intelligent network, continual IT innovation will be limited by legacy network infrastructure because it cannot keep up with the pace of change associated with the rapidly evolving technology requirements to address healthcare organizations' business priorities and challenges head-on. Chief among healthcare organizations' priorities — and challenges — is delivering continuous and distributed high-quality care across multiple care settings, including the patient's home, via remote patient monitoring and virtual visits. Care anywhere requires always-on, secure, and reliable network services. Disruptions resulting from network outages are unacceptable. Scenarios include business disruptions (e.g., billing and claims processing) and patient negative outcomes when patient information is not accessible. Extended network outages could lead to corresponding revenue shortfalls if patients are diverted to other institutions. Deploying robust network security is imperative, as nefarious malware and ransomware cause many system outages. Healthcare organizations are making the requisite investments to protect their networks. According to IDC's 2022 *U.S. Healthcare Provider Technology and Connected Health Survey*, 21.8% of providers allocated increased IT security services spending to advanced network security from 2022 to 2023.

## AT A GLANCE

### KEY STATS

According to IDC's 2022 *U.S. Healthcare Provider Technology and Connected Health Survey*, from 2022 to 2023:

- » 23.1% of providers allocated their increased IT operations and infrastructure spending to network connectivity and management.
- » 29.8% of providers allocated their increased hardware spending to network equipment.
- » 21.8% of providers allocated increased IT security services spending to advanced network security.

Improving the patient and clinician experience is also a top priority. Access to public and private networks — and how well they perform — shapes the experience of end users when they interact with healthcare IT. The level of data integration across clinical systems is also an important contributing factor. Too often, healthcare providers must log in to multiple applications or click on documents saved in the patient's medical record to find the pertinent data they need for clinical decision making. Clinicians' frustrations with electronic health records are well documented. Poor system performance only adds to clinician burnout, contributing to growing labor shortages of nurses and physicians. The same survey reports that 23.1% of providers allocated their increased IT operations and infrastructure spending to network connectivity and management.

Higher labor costs for temporary clinical staff combined with the overall higher costs of care associated with treating more complex patients — because they deferred routine maintenance and important annual screenings during the global COVID-19 pandemic — are contributing to spiraling healthcare costs. Although healthcare organizations have always run on razor-thin margins, rising costs resulting from labor shortages, supply chain issues, and inflation are leading to more hospitals operating in the red.

### *Intelligent Networks: Coming to Terms*

The modern network encompasses a full stack of intelligent network technologies to create a cloud-ready platform that leverages AI for IT operations (AIOps) and machine learning (ML) to deliver a new and better experience for clinicians, patients, and guests. The full stack of network services for AIOps includes wired and wireless connectivity, secure software-defined wide area networks, and cloud-ready datacenters. The intelligent network provides healthcare organizations with:

- » A microservices cloud-based networking solution that focuses on understanding the end-user experience
- » Real-time insights employing AI and ML for precise and early detection of network performance issues, which then perform self-healing corrective actions to optimize end users' experiences
- » Proactive provisioning using AIOps, which enables faster deployment of technology with fewer resources

### *Technology Trends Driving the Demand for Intelligent Networks*

Three major technology trends in the healthcare industry are driving the need for healthcare organizations to modernize their IT infrastructure and deploy intelligent networks:

- » **Care anywhere:** The pandemic hastened patient access to remote medical services, improving convenience through the adoption of virtual health services, remote patient monitoring, telehealth videoconferencing or virtual visits, digital assistants, and conversation chatbots to enable patients to communicate with a healthcare provider regardless of either's location. These solutions have become mainstream and are considered best practices. Bandwidth optimization improves application performance, enabling faster access to critical patient health information stored across multiple IT environments, including the cloud.
- » **The Internet of Medical Things (IoMT):** While IoMT is not a new or emerging technology per se, securing medical devices is inherently complex because of the scale of their deployment in healthcare settings and at patients' homes. The demand for these devices to bring care closer to the patient has grown in recent years. A shift from

fee-for-service to value-based health and patient-centric care has also contributed to the greater use of connected devices. Remote patient monitoring devices and wearables proactively measure patients' vitals and assess patients' health status, improving healthcare outcomes through better engagement while enhancing the overall patient experience with higher quality of care.

- » **AI everywhere in healthcare:** AI is today's hot technology trend across all industries, including healthcare. Everyone is discussing how AI tools, such as ML, natural language processing, computer vision, pattern recognition algorithms, and conversational and generative AI, will transform healthcare administrative, business, and clinical operations by creating real-time insights from vast data storage across disparate IT systems. AI has applications in other technologies — including intelligent networks — to make them smarter, streamline and automate processes, and accelerate these solutions' speed to value.

## Intelligent Networks Benefit IT Teams and End Users

The intelligent network provides tangible benefits for both IT teams and end users. For IT teams, it offers greater visibility over the ever-expanding network of wireless or wired devices, which, in addition to conventional laptops and smartphones, can also include workstations on wheels, medical imaging machines, ultrasound devices, and bedside telemetry. Enhanced automation using QR codes for single-click activation leads to faster provisioning of devices. For end users, improved network visibility enables the early detection of network issues and the initiation of self-healing processes before end users become aware of them and submit help desk tickets. Troubleshooting is further optimized by leveraging AI algorithms and ML advances, making the network smarter and improving the overall end-user experience.

Intelligent networks also reduce the number of data silos and facilitate data integration, which leads to a greater patient and healthcare provider experience. Providing real-time data among providers and clinicians and also releasing timely information to patients enhance patient-centric care. Data integration and seamless sharing also improve resource allocations, streamline workflows, and support providers and clinicians in delivering high-quality care.

## Considerations

When evaluating intelligent network technology, IDC recommends that healthcare organizations assess their current network infrastructure regarding how well it supports — and how it needs to evolve to support — specific scenarios:

- » **Operations and IT staff:** At the core of making it easier for IT staff to manage network operations is understanding what is happening with the network. What tools does the IT team need to proactively provision the network faster and more accurately and troubleshoot network issues more precisely?
- » **Clinicians, patients, and guests:** How can healthcare organizations use technology differently to deliver new experiences for end users? This can be particularly challenging for large medical centers with multiple facilities spread across campuses in greater metropolitan areas or rural parts of the country (or both, for regional health systems). Consider whether end users are having a good or poor network experience. Is their satisfaction with the network quantifiable, and can issues be remediated quickly to get end users back online, even before they become aware of a network issue? Can updates be pushed frequently and without disruption to end users? Use cases that improve the patient experience include guest networks and wayfinding. Self-locking doors mitigate the risk of patients with cognitive issues wandering off the unit, improving patient safety. Use cases for clinicians include the

delivery of stat lab and diagnostic results, clinician communication and collaboration, and mobile panic alerts when a patient or visitor becomes violent and needs to be subdued.

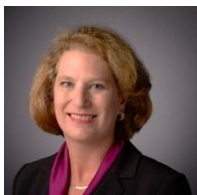
- » **Asset location services:** Clinicians, especially nurses, spend an inordinate amount of time searching for assets such as wheelchairs, crash carts, mobile lab carts, telehealth carts, and medical devices. Can the network support real-time location services to automate device tracking and save clinicians' time, allowing them to focus more on direct patient care?

## Conclusion

IT infrastructure modernization is well underway, as healthcare organizations must be more agile in responding to digital transformation initiatives. The modern intelligent network serves as the foundation for a digital platform to deliver innovative services that improve staff and patient experiences. This ability extends beyond network performance by providing new ways to connect digitally and engage with end users. To that end, network architecture is a virtue. Network operations need to be continuous to support distributed healthcare settings that operate 24 x 7 x 365. Distributed care and work environments and the growing number of IoMT devices on the network increase the number of attack vectors, requiring more sophisticated network security. Healthcare organizations are leveraging private, public, and hybrid clouds to modernize their infrastructure and provide continuous access to healthcare IT systems.

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## About the Analyst



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Lynne Dunbrack is group vice president for Public Sector, which includes IDC Government Insights and IDC Health Insights. She manages a group of analysts who provide research-based advisory and consulting services for payers, providers, accountable care organizations, IT service providers, and the IT suppliers that serve those markets. Lynne also leads IDC Health Insights' Connected Health IT Strategies program and Industry Operations team and is the practice lead for Future of Operations.

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