The benefits of a more modern healthcare IT infrastructure accrue to IT, healthcare professionals, and patients through improved clinician access to health information.

Modernize Your Infrastructure Foundation to Deliver a Better Patient Experience

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Questions posed by: VMware

Answers by: Lynne A. Dunbrack, Group Vice President, Public Sector

Q. How do you modernize your infrastructure without disrupting patient care?

A. Modernizing IT infrastructure is a business imperative as healthcare organizations attempt to keep up with the rapid pace of change driven by both the new and evolving business models focused on value-based care and the need for digital-first strategies to respond to the global COVID-19 pandemic. Healthcare organizations need to be nimble to remain competitive and become more resilient. A modern infrastructure creates the agile healthcare IT environment required for digital transformation; 21.3% of providers responding to IDC's *U.S. Healthcare Provider Technology and Connected Health Survey* reported a more agile IT environment as a top 5 benefit of modernizing their IT infrastructure.

Healthcare organizations are accelerating their adoption of third-party platform technologies to deploy multicloud environments, virtualization, and infrastructure that converges compute, storage, and networking services. A modern architecture ensures the highest level of data availability, reliability, and cost efficiency. Using a multicloud approach, healthcare organizations can break down data silos, improving access to patient data from anywhere at any time and allowing that data to follow the patient. An architecture that is patient centric, interoperable, and access enabled allows for care coordination and collaboration to be ubiquitous across clinical workflows.

As healthcare organizations start their cloud journey, one of their first steps is to evaluate which workloads to move to which compute environment, prioritizing operational and financial applications offered on a SaaS basis that do not process patients' protected health information. As healthcare organizations gain confidence and expertise in public cloud services, they will deploy platform-as-a-service (PaaS) technologies to build out a platform for connecting enterprisewide applications, integrating data, and applying analytic solutions. Thorough testing with end users will reduce the risk of missing key usability and functionality issues and will identify unexpected integration issues or functionality gaps that would disrupt patient care as legacy applications and systems are rationalized and workloads move to the cloud.

Q. Why does a multicloud strategy matter for healthcare?

A. Healthcare organizations have steadily embraced the cloud — first private clouds and now public clouds for certain workloads, including clinical workloads. It's no longer about private or public clouds. Constrained IT budgets were the primary "trigger event" that led healthcare organizations to use cloud services. Data growing beyond the capacity of existing systems and hardware nearing the end of its shelf life were also important factors. The proliferation of structured and nonstructured data from disparate internal sources combined with exponential growth in data's size and complexity is driving the need for a robust data architecture along with elastic, highly scalable multicloud storage.

Today's cloud environment is inherently complex with its distributed infrastructure, clouds, and applications that connect a distributed workforce and extend to patients and partners. Multicloud environments provide the flexibility to move workloads efficiently to the appropriate cloud environment, enabling healthcare IT departments to respond quickly to new technology and business requirements and increase speed to value when healthcare organizations pursue new initiatives. Multicloud environments also offer healthcare organizations a way to deploy, manage, and refresh IT to increase operational efficiencies and reduce costs. Working with multiple public cloud providers, healthcare organizations receive best-of-breed IT services based on the strengths of the respective service provider. This approach also helps prevent vendor and price lock-in to a single public cloud provider, which was a major concern cited by 38.7% of healthcare provider respondents in IDC's 2021 *CloudPath Survey*.

Q. What does the next generation of patient engagement and consumer-driven healthcare look like?

A. Forward-thinking healthcare organizations are integrating artificial intelligence (AI), 5G, and other cutting-edge technologies into their patient-facing applications to create a frictionless digital patient experience. Sometimes referred to as the "digital front door," this digital-first approach represents all the touch points where providers and payers can digitally interact with their patients or members to drive better access, engagement, and experiences across the service continuum. The digital front door serves as a powerful technology vehicle that can facilitate improvement in the delivery of connected care as the first point of contact between patients, providers, and payers. As such, it should feature a data integration layer to enable easy access to legacy and new data sources to allow users to quickly address their needs.

The digital front door also offers healthcare organizations the opportunity to accelerate their digital transformation journey in meaningful ways. Through the application of 3rd Platform–related technologies (cloud, big data, social, and mobile) combined with innovation accelerators (e.g., AI and IoT) and 5G, healthcare organizations can unlock the digital front door through better:

» Front-end patient access and service optimization

» Consumer-centric virtual care and digital service delivery

» End-to-end platform automation with empathic intelligence

The digital front door offers a new model for sharing data, insights, applications, operations, and expertise. The application of advanced analytics and AI solutions enables healthcare organizations to shift from being "data rich" to "data driven." These initiatives help create and maintain a high-performance digital environment that can drive clinical and operational excellence. 5G plays a critical role in driving operational efficiencies and providing the transformative patient experiences that are foundational to consumer-driven healthcare. The ability to connect via 5G to AI and edge compute resources provides the opportunity to further automate healthcare by removing friction from processes while offering consumers, staff, or healthcare providers next best actions. Modernizing IT infrastructure will also help break down data silos across departments, the enterprise, and the healthcare ecosystem. This change makes it easier to share patient data securely with a focus on the best outcomes for patients through more intelligent care coordination and collaboration.

Q. What barrier will need to be removed or worked through to drive greater adoption for digital therapeutics?

A. Digital therapeutics (DTx) is evidence-based prescription-only software that delivers therapeutic interventions to prevent, manage, or treat a medical disorder or disease. DTx commonly requires regulatory approval as "software as a medical device" and may be used independently or in combination with standard treatments. Largely complementing existing therapies, they will transform how care is delivered for neurological and psychiatric conditions as well as chronic conditions. Increased DTx use will improve patient outcomes, lower healthcare costs by improving patient adherence to care plans and medication compliance, and reduce avoidable emergency department visits and hospital admissions. The flexibility and rapid scalability of this digital-first model are important differentiators compared with conventional therapies.

DTx is in the early stages of the technology adoption life cycle. While development of DTx software is the first step, its true adoption by providers and patients will be driven by the integration with electronic health records (EHRs) and clinical workflows along with patients' daily lives. There will be a lot of focus on gathering real-world evidence to demonstrate improved health outcomes to build data to support reimbursement decisions. A robust infrastructure and flexible operations are important considerations as healthcare organizations embrace DTx to collect and analyze increasing volumes of patient-generated data.

Critical success factors for DTx include physician engagement and buy-in, FDA approval, and payer coverage. Without these, DTx initiatives will fail. Effective January 1, 2022, the new Medicare Remote Therapeutic Monitoring CPT codes can be used for billing for the management of patients using medical devices, including DTx, that collect non-physiological data related to musculoskeletal and respiratory conditions. In the future, these codes could be expanded to cover more conditions and would serve as a model for commercial plans to follow. In turn, more healthcare providers would recommend DTx to their patients who would be more willing to use them. When it comes to critical risks associated with deploying new technologies impacting patient safety for applications associated with behavioral and mental health, data privacy security and confidentiality take center stage. Patient trust is a key driver for adoption, and transparency around how the algorithms operate is important. Any concerns regarding algorithm bias can cause the product to fail through consumer abandonment. Patients are more willing to accept new technology when their healthcare providers recommend it. Healthcare providers will prescribe DTx when it has been clinically validated, shown to be as effective as the prevailing standard of care, and cleared by the FDA. Awareness campaigns will be critical to encourage healthcare professionals to recommend DTx to their patients.

Q. What advice do you have for healthcare providers seeking to set up their digital foundation?

A. Establishing a solid digital foundation is an enterprisewide project that will span both IT and line-of-business (LOB) units. This initiative should be considered a journey given the pace at which 3rd and 4th Platform technology advances. IDC recommends that healthcare organizations take the following steps that combine people, technology, and business processes to reduce risk, promote adoption, and realize the potential benefits of a more agile healthcare IT environment built on a strong digital foundation:

» **People.** Get stakeholders across the enterprise involved. Strong leadership is essential to bridging the gap between how IT and LOBs define success. Solid project management, communication, and collaboration will also be critical success factors.

» **Technology.** Conduct a thorough assessment of legacy applications, systems, and infrastructure. Similarly, do a skills assessment of current staff and identify skills needed for the future. Determine which workloads remain on premises and which can move to the cloud. Rationalize applications and systems to reduce redundancy.

» **Business processes.** Establish a change management process. There will be a certain level of upheaval as legacy applications and systems are rationalized and others are sunsetted. Organizations should identify the right people for the right role at the right time to address cultural issues.

Last, seek out vendor partners with healthcare expertise as well as a comprehensive understanding of the regulatory environment and the unique challenges facing the healthcare industry as it shifts from fee-for-service care to value-based care. Look to vendors that have worked with other healthcare organizations similar in size and business model to leverage best practices and lessons learned.

About the Analyst
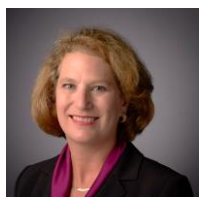
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