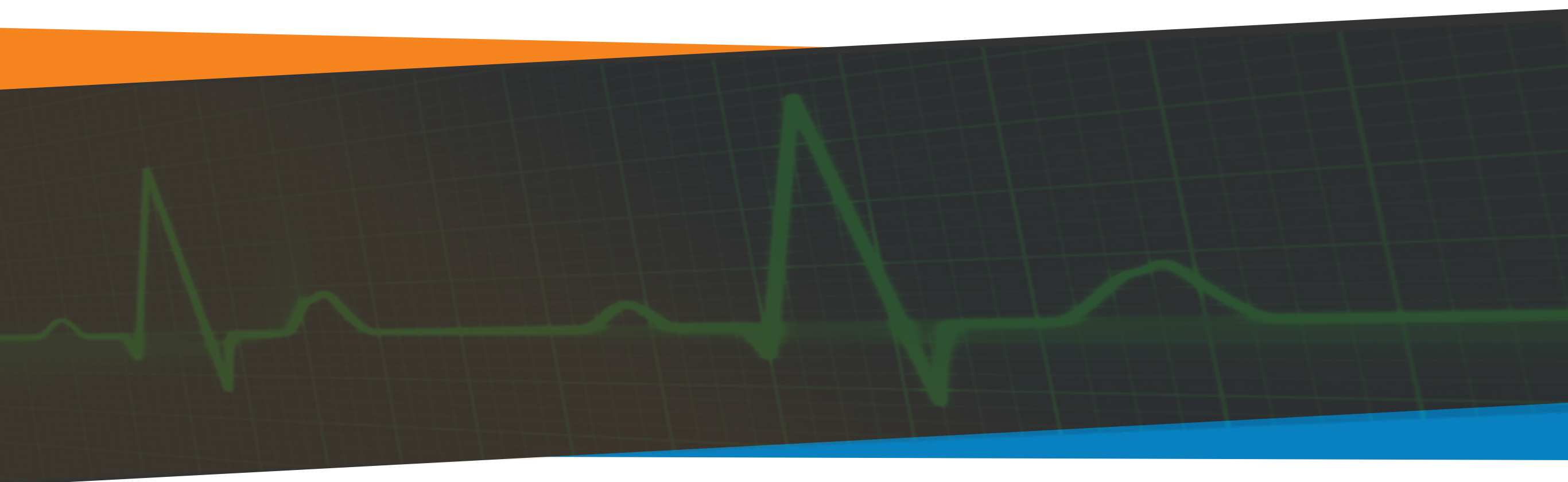


HEALTHCARE HEADS TO THE CLOUDS

A Vertical Market Guide to Cloud Solutions for the Healthcare Industry



INTRODUCTION

Few industries are experiencing more changes more rapidly than US healthcare. The regulatory mandates imposed on the industry by recent legislation are transforming the way healthcare providers process and retain patient data. In addition to government initiatives, other factors are driving major levels of growth in the healthcare IT market, including:

- Aging population
- Need to cut rising healthcare costs
- High return on investment
- Increased demand for integration of critical systems
- Growing focus on improving quality of care and reducing errors

Before now, a number of key obstacles hindered the rate of cloud adoption among healthcare providers, relative to other industries. Among their perceived concerns were high cost, high maintenance and service demands, interoperability issues, a shortage of IT professionals and concerns over security and data breaches of patient info.

Regulations such as the electronic health record guidelines on Meaningful Use and the Health Insurance Portability and Accountability Act (HIPAA) slowed adoption as well, because cloud solutions are hosted by external, third-party service providers who would have access to the sensitive, government-protected data. As cloud technology has matured, however, many of these concerns were addressed. Modern cloud solutions seem to have satisfied many of these points of resistance, and adoption is on the rise. Today, cloud solutions for healthcare are helping to turn the legacy, paper-based systems into digital ones, delivering real-time access to patient data, streamlining internal processes and reducing administrative and IT overhead. Overall, cloud solutions enable care providers to make the best possible decisions for their patients.



ADAPTATION AND GROWTH

PRIMED FOR ADOPTION

More than **90%** of healthcare providers see the value of cloud services for their organizations.

Nearly **10%** plan to adopt cloud solutions in the near-term.

The rest either have no plans to adopt cloud solutions or don't know their organization's plan.

Over **80%** of healthcare organizations surveyed are currently using some form of cloud solution.

67% use of Software-as-a-Service (SaaS) based app
15.9% run on an Infrastructure-as-a-Service (IaaS) solution
2.4% employ Platform-as-a-Service (PaaS) apps

A GROWTH MARKET

The overall North American healthcare IT market is expected to reach **\$22.6** billion by 2017.*

Hybrid clouds are the **fastest** growing segment for deployment, and software-as-a-service (SaaS) is the largest segment of the service market.**

The cloud computing segment of that market is estimated to reach **\$5.8** billion by 2020, with a CAGR of **20.7%****

The US accounted for the **highest** share (72.6%) of the North American market, with expected CAGR of **7.2%****

COST SAVINGS AND FLEXIBILITY

DYOPATH

Rapid transformations in the healthcare IT sector have supported the growth of cloud computing in the industry. An increasing number of care provider organizations are reducing investments in physical IT infrastructure and shifting to the cloud. Across the board, cloud computing helps quickly cut costs, boost the bottom line and enable internal management and IT staff to focus on their business. This is especially true for healthcare organizations, who are locked in a constant battle to lower expenses and improve efficiencies.

COST REDUCTION

Cloud solutions relieve healthcare organizations of costly capital expenditures for servers and networking, as well as a sizable professional IT staff to manage everything. Because all updates and upgrades to the data center are done by the service provider, a reduced internal IT staff can focus their energies on improving internal processes and protecting the integrity of data. By turning a capital expenditure into a predictable recurring operational expense, the organization can keep revenue and profitability steady.

Depending on their size and scope, medical practices can achieve tremendous cost reductions and save millions, even tens of millions, in revenue over a 5 year period.*

* Healthcare Financial Management report

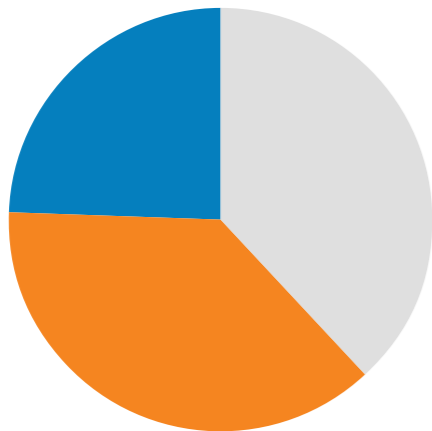
FLEXIBLE, SCALABLE, CUSTOMIZED

In addition to reducing costs, integrated cloud solutions reduce the complexity and risk of IT operations. The unique demands of each individual practice, not to mention the ever-evolving security and regulatory requirements of healthcare IT, mean that a high level of customization is typically required. This need for customization provides the perfect rationale in favor of cloud adoption, and creates a tremendous opportunity for solution providers.

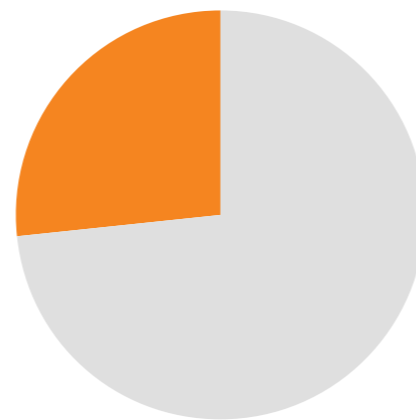
Another key advantage for healthcare organizations, in terms of keeping a handle on IT costs, is that the cloud enables them to provision computing resources and storage on an as-needed basis. As their resource needs change, those changes can be reflected at the cloud service provider level. This mitigates any concerns about over- or under-utilization of capabilities from a budgetary standpoint, and ensures that the healthcare practice is using precisely what it needs at any given time.

CLOUD ADAPTION

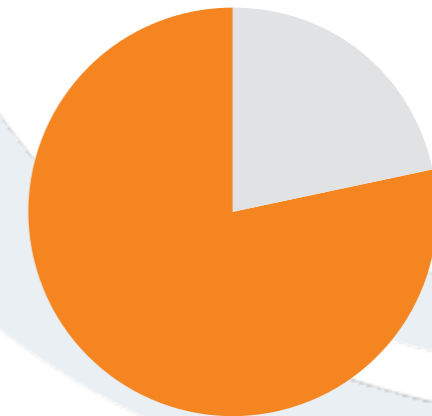
DYOPATH



37.1% of healthcare organizations chose to deploy in a private cloud; 36.3% chose a hybrid model; 23.4% chose a public cloud.



73.4% of cloud-based applications are used to host administrative functions such as financial, operational, human resources and back-office operations and data management.



21.8% of healthcare organizations report that cloud-based applications are used in more than 5 departments.

Top 3 Reasons Why Healthcare Organizations are Moving to the Cloud

- 1) Reduced cost of IT maintenance (55.7%)
- 2) Speed of deployment (53.2%)
- 3) Lack of internal staff and/or expertise to support on-premise solutions (51.6%)

SOURCE: "Survey of cloud computing adoption in healthcare provider organizations," HIMSS Analytic

INCREASING EFFICIENCIES IMPROVING PATIENT CARE

DYOPATH

Beyond the factors of mere cost lies the most important advantage of cloud solutions for healthcare: the power to make it easier for healthcare providers to do their jobs and help people. Clinicians want to leverage technology to deliver better patient care, and the cloud has an almost immediate impact on a patient's experience.

Mobile cloud solutions are commonly used within medical practices to create and review electronic health records (EHR), order treatment and relay information to the pharmacy. In addition, the cloud has streamlined many back-office operations such as revenue cycle management, patient billing and even claims.

As care organizations continue to engage with outside specialists, home health agencies, acute care facilities and other providers, the need to quickly share patient data and other confidential information becomes crucial, especially when a patient's life is at stake. In fact, both Meaningful Use regulations and recent healthcare reform measures mandate this ability to share data.

While this obviously improves collaboration and interoperability, data sharing also carries a risk of data breach or loss of patient privacy. Cloud solutions enable fast, secure access and sharing of this data to authorized users across geographic distances, and speeds up the treatment of patients.

- Cloud solutions enable better care delivery by simplifying accurate data collection and charting at the point of care.

- Mobility cloud solutions permit secure communications and collaboration, regardless of location.

- IaaS solutions greatly simplify IT management and enhance security with data and applications that are centrally managed versus seated in every device.

- Virtual desktops let roaming caregivers log out in one location and then log back in and pick up right where they left off in another location.



MOBILITY

The increasing use of wireless technologies to remotely access data in real-time through mobile devices has created ample opportunities for cloud solution providers in pretty much every industry.

For healthcare, mobile cloud solutions allow nurses and physicians to evaluate and diagnose a patient right at the point of care, because the patient's information is readily available at any time, from anywhere. An attending physician can simply access medical records remotely on a handheld device for immediate care. This helps them maintain a personalized patient interaction while quickly and accurately recording critical data, and correctly administer treatments to reduce the risk of error.

For administrative purposes, it doesn't matter whether a caregiver is at a bedside, on rounds, in their office or away from the facility. With a virtual desktop solution, they can access their computer workspace from the cloud. By eliminating the need for a local workstation, clinicians can always deliver the performance and reliability their patients need.

MOBILITY IS MOVING RIGHT NOW

The market for mobile health applications and devices will grow considerably over the next few years.

- \$26 billion in expected revenue in 2017
- 61% anticipated CAGR
- Most of that revenue will come from mobile health device sales and services, not software.

SECURITY

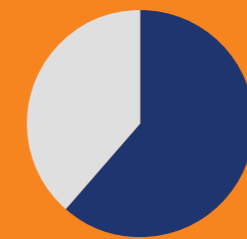
Due to the importance of its mission—patient health and well-being—healthcare has always been a risk-averse industry. The security concerns that hindered the adoption of cloud solutions were magnified by the confidential nature of patients’ Protected Health Information (PHI), not to mention the stiff fines that healthcare organizations face if the data is lost, misused or stolen.

After many years of resistance, however, healthcare organizations are finally beginning to trust the cloud, particularly when it comes to handling sensitive PHI. Better cloud security and lower costs, along with government mandates and the frequent need to share information with other providers, are driving much of this newfound reliance on cloud solutions.

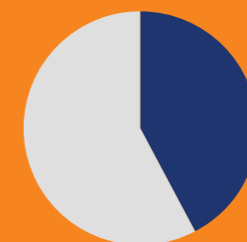
When adopting the cloud, healthcare organizations must migrate and manage huge volumes of patient data, and not just their confidential health records, but also other sensitive information such as payment and credit details. Because the healthcare industry is so heavily regulated, security is paramount for any provider organization.

With this in mind, cloud service providers must ensure strict security and encryption standards for online patient records (EMR/EHR) that comply with federal regulations, including SEC, SOX and HIPAA. In addition, secure backup and robust disaster recovery options are must-haves for any healthcare cloud solution. Data access and user permission controls are, likewise, important components for ensuring compliant solutions.

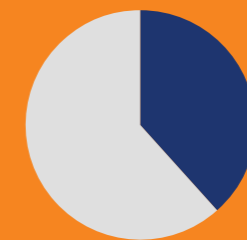
Top 3 Healthcare Industry Concerns About Cloud Adoption



Security (61.4%)



Outsourcing IT operations/giving up control (42.3%)



Availability and uptime (38.4%)

HIPPA COMPLIANCE AND LIABILITY

DYOPATH

HIPAA regulations concerning the handling of a patient's PHI create record-keeping and storage challenges for any healthcare organization. While the data must be secured according to stringent standards, it must also remain immediately accessible to authorized medical personnel in the course of administering critical care.

With the advent of the cloud, data storage and backup providers now share responsibility for the protection of sensitive patient data from the very real threat of theft, mishandling and misuse. Because patient privacy is at stake, federal law requires data storage and backup providers to implement physical security and electronic security measures that specifically protect PHI. In addition, cloud solutions providers are responsible for immediately notifying patients if the PHI storage is ever breached—a costly process in its own right (see diagram).

Many data storage and backup providers do not comply with HIPAA's physical and electronic standards in their data centers, nor do they have the financial means to perform the required notifications in the event of a data breach. This creates a huge problem for healthcare providers, because they can be held liable for their data storage/backup service provider's data breaches or security lapses that compromise patients' PHI.

Because of these liability concerns, compliance with HIPAA requires that cloud solutions be verified by third-party audits to ensure the required levels of data protection and secure access are met. This bolsters the case for cloud adoption among healthcare organizations but creates additional requirements and risks on the cloud solutions provider. To prepare for the worst-case scenario, leading cloud service providers invest in specialized insurance policies to cover costs associated with PHI breach and the required notifications of such breaches.

AN OUNCE OF PREVENTION IS WORTH A POUND OF CURE.

Nearly 91% of healthcare organizations have experienced a healthcare data breach within the past 2 years alone, resulting in the loss of tens of millions of patient records.

Example of Breach Costs for Compromised EMR: $\frac{\text{Information Breach}}{10,000 \text{ patients}} \times \frac{\text{PHI Notification}}{\$50 \text{ per patient}} = \$500,000$

CONCLUSION



Pressure is growing on the healthcare industry to adopt the cloud, in order to meet compliance requirements, reduce costs and stay competitive. The increasing consolidation in healthcare and the availability of mobile platforms and cloud computing for healthcare solutions are expected to drive significant growth opportunities in the US healthcare market.

Healthcare's increasing willingness to use the cloud also comes after years of watching the wrinkles get worked out and seeing how other industries solved problems related to data storage, security, etc. While healthcare remains a risk-averse industry, healthcare organizations are realizing that cloud solutions and service providers continue to address the industry's concerns.

As healthcare systems now push to adopt and innovate, great opportunities exist for service providers, resellers, MSPs and other healthcare IT professionals who are willing to push into this market and deliver solutions that meet the unique needs of healthcare organizations.

DYOPATH delivers custom, cloud-based data storage, backup and recovery and infrastructure solutions and services. Our solutions for healthcare are HIPAA-compliant and more than meet the demand for secure, efficient and reliable technology without a large capital outlay and long-term investments in an IT staff.



We've invested in the cloud so that you don't have to.