# Healthcare in the Cloud:
# A Window of Opportunity is Open

burwood group, inc.

Amidst continuing industry uncertainty and consolidation, today's healthcare organizations are pressured to become agile, reduce costs, and direct capital toward revenue-generating activities that improve patient outcomes. Many healthcare organizations are feeling the pressure to adopt flexible, secure, and scalable IT solutions that support rapidly evolving models of connected care and the "bedless hospital." It's no wonder cloud computing is on the rise in the healthcare sector.

The public cloud supports agility by enabling an IT team to innovate and right-size resources without capital investment. With less hardware and fewer applications to maintain, your team can spend more time on strategic initiatives to improve operations and patient care. Cloud services can help assure business continuity in disaster-prone regions, facilitate HIPAA-compliant sharing of patient data, and unlock new capabilities in the form of genomics and machine learning. And, a well-thought-out cloud strategy can accelerate IT rationalization following a merger or acquisition.

Yet, despite these many advantages of cloud computing, the healthcare industry is still in the early stage of cloud adoption. Protecting patient data is a persistent concern, along with implementation, uncertainty, and risk.

Seventy percent of healthcare organizations have moved at least some applications or IT infrastructure off-premises, according to a KLAS Research survey. However, most of those using off-premises computing are doing so through a hosted application vendor, not through public cloud.

Where healthcare IT teams have turned to the cloud it has been primarily for non-critical applications. Analytics software, Office 365, and other common applications, along with development and testing, are typical candidates. Meanwhile, mission-central applications and data have remained mostly in on-premise data centers.

## Cloud Services Have Matured

While the healthcare sector has largely hesitated to embrace the cloud, cloud services have advanced significantly. Today, you can choose from hundreds of cloud-based services, some created specifically for healthcare, as well as new approaches for managing them. Amazon Web Services (AWS) alone offers services in 20 different categories.

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Also important are the new healthcare-specific solutions emerging in the marketplace. For instance, Google's new cloud-based healthcare application interface (API) integrates multiple healthcare data types, providing a powerful advantage for research hospitals gathering data through multiple applications or clinical care teams generating large image files and patient monitoring data. Researchers at the Broad Institute, for instance, can analyze the human genome 400 percent more quickly with Google Cloud than with in-house computers and storage.

Meanwhile, many of the healthcare software companies either have or are developing their own software as-a-service applications that are hosted in the cloud.

EMR providers and specialized software companies are also developing platforms that will analyze clinical data and predict treatments to improve population health.
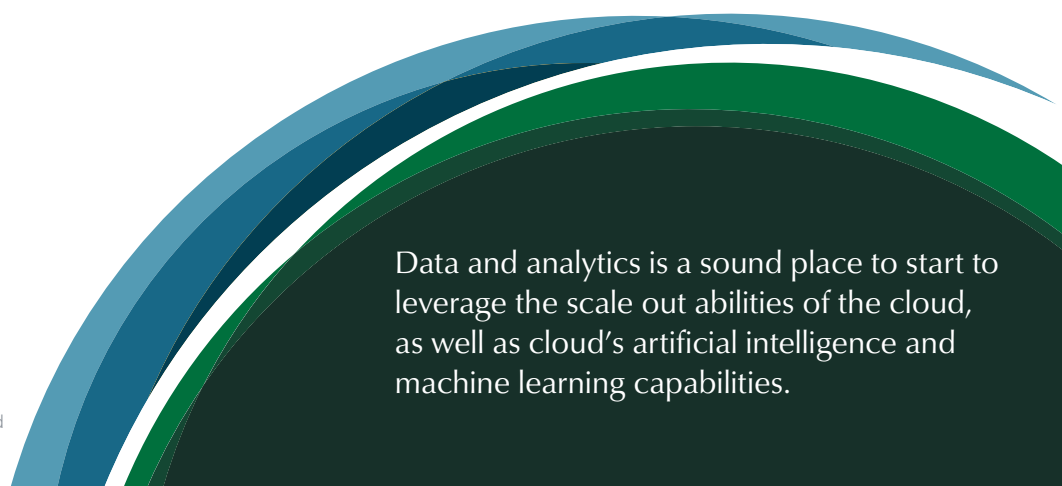
## Where to Start

**Organization Alignment.** Align with your clinical and business organizations so that cloud can be utilized if it is the proper platform for their applications. This will help to prevent shadow IT. Organize a process with your purchasing department so you can identify cloud applications as part of the purchasing process.

**Security.** Update your security framework and risk assessment process to incorporate cloud security. Many popular frameworks such as the NIST Cybersecurity Framework already include controls that cover cloud security

**Identity Management.** Healthcare organizations will have a mix of software as-a-service and public cloud. Cloud identity management is key to ensure that proper access, authorization, and auditing of access is maintained for cloud applications.

**Email, Instant Messaging, and Office Productivity.** Many healthcare organizations have already moved to Microsoft Office 365 or Google's G Suite. These areas are a great starting point when it comes to cloud migration.

**Data & Analytics.** Many organizations are moving their on-premise data lakes/Hadoop and data warehouse environments to the cloud to remove the burdens of continuous management. Most new deployments start in the cloud. Data and analytics is a sound place to start to leverage the scale out abilities of the cloud, as well as cloud's artificial intelligence and machine learning capabilities.

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## Shaping your future strategy

Moving forward, we predict several specific directions for healthcare organizations that cannot be realized without cloud applications.

**Patient Experience.** As consumers take on an increasing share of the cost of healthcare, they are becoming more engaged and have higher expectations of the consumer experience. These new expectations emphasize attributes of competition similar to the retail and hospitality industries, such as quality, value, convenience, and personalization. By providing a consistent context for communication and data gathering, cloud infrastructure that includes contact centers can deliver an integrated experience across key touchpoints in the patient's journey.

**Patient-Generated Health Data Will Continue to Explode.** Make note of Apple's plans to officially bring medical records onto the iPhone as further indication that the future of outpatient health will require patient generated health data. Data gathered outside of clinical settings, including biometric data from patient wearables such as wireless scales, wireless glucometers, the Apple Watch, FitBit, and the Internet of Medical Things, will leverage the cloud for acquisition and use of the data by patients as well as clinicians, all tied back to their respective EMR.

**Population Health, Chronic Disease Management, and Home Health Need Improvement.** Healthcare delivery across multiple specialties and disparate care and treatment practices benefit from the provision of location- and time-independent, as well as collaborative cognitive support from cloud-based information technology. Patient and governmental demand is high and healthcare organizations and vendors must deliver collaborative solutions. For example, this can be accomplished through a shared data set that is a capable of quickly identifying optimal patient care delivery mechanisms and providing continuous monitoring.

**Cybersecurity and Operations Management.** It is becoming nearly impossible for hospital IT staff to keep up with the continuous threats on an organization especially since the Medical Record Number (MRN) is the most valuable asset on the black market. Cloud management solutions can provide a single solution to manage not only threats but also the reliability of the network and server environment.

**You won't need just one cloud provider.** Cloud orchestration and management enables healthcare organizations to efficiently manage and monitor a multi-cloud provider environment to ensure fiscally optimal performance for many uses. There is no longer a requirement to use just one provider.

**The shrinking on-premise data center.** Now that cloud services and tools are available to support almost every single aspect of healthcare IT, you have fewer reasons to own and manage a data center. The multiple development/train/change management domains, in addition to on-demand requests are often too costly to manage. Eventually, most healthcare organizations will move the majority of their workloads and infrastructure to the cloud.

**Instantaneous Recovery.** Gone are the days where Healthcare organizations can tolerate

even minutes of downtime. Organizations need to be able to provide near real-time business continuity solutions. Cloud offers fiscally responsible on-demand resources near instantaneously to minimize impact to patient care in the event that there are interruptions to services.

**We Haven't Even Scratched the Surface of Precision Genomic Medicine.** Due to the massive size of genomics datasets, researchers are developing storage strategies that minimize the cost of moving and replicating data by storing in a centralized cloud-based location that is accessible across multiple organizations. Organizations that do not leverage the cloud will be left behind.

**Medical Imaging in the Cloud is Only Just Beginning to Take Shape.** Next to genomic research, medical imaging is the fastest growing desire for cloud storage and computing. According to Google more than 300 million advanced images were taken last year alone with nearly every procedure requiring some type of imaging. The requirement for this, in addition to the [potential for advanced research capabilities](#) will further drive the requirement for cloud.

**Deep mining of EMR.** Extensive and rapid mining of hundreds of thousands of EMRs in a collaborative manner to provide better and faster outcomes is now possible with the cloud. According to the Medical Futurist Institute, "Mining medical records is the most obvious application of AI in medicine. Collecting, storing, normalizing, tracing its lineage – it is the first step in revolutionizing existing healthcare systems."

**Predictive Medicine and Artificial Intelligence.** Cloud computing of patient demographics, lab results, and behavior enables providers to accurately predict the onset of adverse events or when someone may be needing to go see a medical professional before the event occurs. Solutions like IBM's Watson Health that are able to diagnose results from medical images are just the start of a [trend in healthcare toward using deep learning to analyze unstructured data](#).

Most healthcare organizations are quickly advancing from "whether" to "how" to advance their cloud adoption. In era of industry consolidation, the cloud provides a timely opportunity to consolidate the numerous applications acquired during a merger or acquisition, and to streamline storage. Even without a merger or acquisition, your institution may use 100 or more different applications for managing revenue, scheduling, and billing. Surely you don't need all of them to reside on-premise.

A cloud consultant can help you create a long-term cloud migration strategy. What workflows should you move to the cloud—or not? Which applications, data, or infrastructure should remain strictly in your hands? What are the risks?

No one can predict where your healthcare organization will be in five years, or what its business model will be. What we do know is that IT teams will need to [spend more time on strategy](#) and creating the right technology ecosystem, and less on keeping the servers running. Cloud adoption is one way to free your team to focus on what's important rather than on what's urgent, and to position your organization for the future—whatever it may hold.

**For questions or further guidance on healthcare cloud strategy from Burwood Group, [contact us](#).**

## About Burwood Group

Burwood Group is an IT consulting and integration firm. We help forward-thinking IT leaders design, use, and manage technology to transform their business and improve outcomes. Our services in consulting, technology, and operations are rooted in technical expertise in cloud, automation, security, and collaboration. Burwood Group was founded in Chicago, IL and is celebrating 20 years in business. Today, Burwood includes 250 employees and seven U.S. offices including a 24x7 Operations Center in San Diego, CA. Whether you are developing strategy, deploying technology, or creating an operational model, Burwood is a dedicated partner. Visit http://www.burwood.com.

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