

The Challenge of Migrating Healthcare Applications to the Cloud



The acceleration of online and remote services has reinforced the fact that we are living in a digital-first world. To save time wherever possible, consumers are increasingly driven towards experiences which shift manual process to faster, digital alternatives. Indeed, in our personal lives, we have become accustomed to having products and services at our fingertips – whether it's next or same day delivery from online retail or joining a virtual workout to avoid travelling to the gym.

The same is true of our evolving relationship with the healthcare sector. Where in-person visits to the doctor were once prioritised and insisted upon, patients are now becoming more accustomed to digital consultations and the use of apps to manage their health and wellbeing at home. The healthcare crisis of 2020 has only served to catalyse this, sparking a shift to the mainstream use of telehealth and digital patient engagement. To cater to this new demand for a digital-first approach, the healthcare sector is turning to IT modernisation to ensure their technology platforms can underpin and meet the requirements of modern, efficient, and effective care.

The success of digital transformation in the healthcare sector can be measured by the speed and accuracy of the outcomes delivered to patients and staff. These include reduced wait times, the ability to treat more patients in a shorter space of time, and an overall increase in the operational efficiency of institutions. However, at the same time, the healthcare industry faces several challenges, from legacy IT and ongoing staff shortages, to complex requirements of regulatory compliance for data and technology. To achieve positive outcomes and deliver better patient experiences, while mitigating these challenges, the healthcare industry needs modern, resilient, and scalable IT systems, all of which can be accomplished through the cloud.

Here, we explore the decisions that must be made within the healthcare sector when it comes to migrating applications to the cloud, how they can be overcome, and the benefits digital transformation can offer to patients and medical staff alike.

Why migrate to the cloud?

To talk about why cloud, we must first talk about innovation. There is a greater recognition and appreciation of how technology can help transform healthcare services to deliver faster, more effective patient care to improve services and outcomes. Modern innovations such as the use of AI to aid diagnosis and IoT to monitor patients virtually demonstrates how technology can be used to transform the industry to support staff and improve care.

Migrating to the cloud will give healthcare organisations the ability to facilitate greater consistency for staff delivering care, including those working in centralised locations, field-based locations, or a combination of the two. This can be achieved with equal accessibility remotely or on-premises, with a

consistent, reliable and highly-available hybrid cloud environment. The flexibility of cloud infrastructure gives IT teams within healthcare organisations more power and license to innovate with the ability to develop, deploy, test and evaluate new tools to deliver highly engaging digital experiences to patients.

Implementing cloud infrastructure has never been more important for the healthcare industry than it is today. This year has highlighted a greater need for rapid infrastructure to scale to support virtual patient care through telehealth, meet increased patient numbers with pop-up and field healthcare facilities, and keep staff operating while working from home. Migrating to the cloud would not only allow healthcare professionals to respond more effectively to increased demand, but the consolidation of IT systems across different areas of the healthcare system (such as emergency services, hospitals, clinics, ambulatory care, and nursing homes) would allow healthcare professionals to easily access patient data to deliver more efficient and effective care, quickly.

Fast access to patient data is crucial, highlighting the need for interoperability with digitised medical records through the creation of electronic health records (ERH). Using digital records means information can be located quickly by both patients and staff, reducing wait times and creating an overall better patient experience.

With access to innovative native cloud services, healthcare providers can modernize existing applications or build some new modern applications that further facilitates better experiences and improved patient outcomes. Modern applications that serve to improve care, such as diagnostic tools, remote monitoring, digital access to Protective Healthcare Information (PHI), and applications leveraging AI and data analytics services, all play a role in transforming healthcare and the overall patient journey.



Cloud migration requirements in the healthcare sector

As healthcare organisations hold a wealth of sensitive data – personal identifiers, private health details, protected scientific research – ensuring storage systems are both resilient and secure is a pertinent concern. In contrast to traditional infrastructure, where these characteristics are layered on top of the network, healthcare institutions can rely on a cloud-based system with security and resilience built-in. These highly reliable, intrinsically secure parameters ensure essential security through functions such as content filtering and firewall parameters, essential to preventing disruption and to keeping staff and patients from falling victim to ransomware or other cybersecurity attacks.

Making sure that the benefits of an investment in IT can reach every patient and member of staff can present a significant scalability challenge. Digital transformation projects typically involve the deployment and management of new digital services, which inevitably demand higher networking, storage, and compute capacity. For this, healthcare institutions can choose a cloud solution with an infrastructure provisioning model. This allows IT teams to scale capacity based on demand quickly, without the significant upfront costs and time-intensive process of a physical IT upgrade.

There is an ongoing need in the healthcare industry for both public and private organisations to keep up with patient demand for modern, personalised and effective care. Cloud infrastructure gives healthcare organisations the opportunity to enhance patient experience through access to modern applications that support the delivery of care. Organisations can modernise existing applications with cloud services, or they can build new applications utilising 175+ native AWS services in categories like AI, machine learning, Internet of Things, and data analytics. Cloud infrastructure can help healthcare organisations keep up with the pace of innovation and offer patients modern and effective care.



What is holding healthcare organisations back?

But before reaping the benefits of public cloud, healthcare organisations need to successfully move there. This is easier said than done. The first step – deciding whether to move to the cloud at all - is often the hardest. If and when the decision is made to migrate, organisations still struggle to adapt and/or refactor applications to run in their selected cloud environment.

Even after migrating to the cloud, when customers decide to modernise existing applications, they face many challenges that increase the cost, risk, and time of their modernisation project. When healthcare organisations are considering migrating and modernising applications, they must first understand the challenges that come with migration in order to choose the right solution to fit their specific requirements.

1. Adapting people and process:

People and processes must change and adapt to develop new skillsets and tools for public cloud environments. Acquiring cloud skills disrupts current operational effectiveness due to the increased burden of hiring, training, and retraining the appropriate IT talent. In a sector defined by mission-critical processes, IT staff can feel hesitant to implement change for fear of causing disruption.

2. Re-architecting applications to run in public clouds:

Many existing applications running in on-premises data centers are not designed to run on public cloud infrastructure. Applications may need to be rearchitected, machine formats converted, and everything must be thoroughly revalidated. Networks need to be integrated and reconfigured, and storage must be migrated and conformed to capabilities available in the public cloud.

3. Resiliency of mission-critical applications:

Mission-critical applications must meet the same or better performance and availability requirements after migration as before. Applications that have relied on infrastructure to provide the desired level of resiliency need to be re-implemented to in order for it to be built in. All mission-critical workloads need to be thoroughly re-tested in the public cloud environment to ensure that desired availability targets are met.

4. Cost, time and risk:

Migrating applications to the cloud is complex, and the rework required to make the leap can be costly and time-consuming. The effort required to migrate applications to cloud is often underestimated, resulting in projects that run over time and budget, or underdeliver in achieving the goals. Cloud-migration projects can drain resources and budgets from other critical IT activities, increasing the risk to support of ongoing business objectives.

5. Security and governance:

Healthcare organisations face a need to give up a certain degree of control over their infrastructure in public cloud. Security policies and practices must be updated to conform with this new model. The differences between on-premises and public cloud infrastructure limits the reuse of established security and governance procedures and tools. Public cloud infrastructure has different consumption patterns. New governance models will therefore need to be established to control how cloud resources are acquired. Also, lack of security and compliance certifications might lead to security vulnerabilities of sensitive PHI data.

Addressing these challenges with VMware Cloud on AWS

A true hybrid cloud should deliver the ability to work consistently across on-premises and cloud environments, enabling healthcare staff to deliver innovative applications and services, without compromising on cost efficiency or security.

VMware Cloud on AWS provides healthcare organisations with an on-demand, scalable hybrid cloud service that enables them to seamlessly extend, migrate, and protect their infrastructure in the cloud. And once in the cloud, they can start their application modernisation journey with minimal disruption, with the same architecture and operational experience on-premises and in the cloud.

Crucially, with VMware Cloud on AWS, healthcare IT benefits from hardened security and production-grade capabilities required to the run highly sensitive workloads common in the sector. VMware Cloud on AWS helps healthcare organisations to accelerate digital transformation and deliver exceptional experiences to patients in a safe, secure, and sustainable way.



A digitally transformed future

Fortunately for the healthcare sector, these challenges are not insurmountable. Organisations within the sector are more than capable to adapt and commit to cloud migration if they choose to make the leap.

An example of this is a UK public sector department that has implemented a strategy to expand its service portfolio and digitalise the patient experience by shifting a significant proportion of its IT footprint to a public cloud environment. In addition to powering new patient services, this initiative is also aimed at achieving cost savings and boosting efficiencies by rationalising existing IT to avoid the cost of either over or under-provisioning on-premises infrastructure.

VMware Cloud on AWS has enabled the department to overhaul legacy IT systems to act as a single cloud service broker to organisations in the sector. Applications require no re-architecting, and existing policies and IP addresses are maintained so IT teams can manage the cloud resource with their existing skillset. In addition, with cyber threats to the healthcare sector seemingly on the increase, public cloud adoption has been essential to not only facilitate digital adoption, but also in protecting the privacy of patient data.

In the healthcare industry, being able to manage changing needs, volumes, and apps quickly and scale where needed, is critical. Modernising application portfolios leads to improved patient experiences, driving next-generation, patient-centric care. Migrating existing IT to the cloud is the first step to realising the future of healthcare, giving organisations the opportunity to transform the way in which they deliver best in class services to patients.

If you would like to learn more about how VMware Cloud on AWS can help you modernize your IT infrastructure, please check out the [VMware Cloud on AWS website](#)





vmware®



VMware, Inc. 3401 Hillview Avenue Palo Alto CA 94304 USA Tel 877-486-9273 Fax 650-427-5001 vmware.com Copyright © 2020 VMware, Inc. All rights reserved. This product is protected by U.S. and international copyright and intellectual property laws. VMware products are covered by one or more patents listed at vmware.com/go/patents. VMware is a registered trademark or trademark of VMware, Inc. and its subsidiaries in the United States and other jurisdictions. All other marks and names mentioned herein may be trademarks of their respective companies. Item No: VMware AWS_Healthcare Applications 12/20