The State of Cloud Adoption in Healthcare

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Abstract

Although legacy systems have been supporting operations in the healthcare sector for long, their efficacy in the modern age is dwindling. These systems are costly, insecure, and less scalable. Cloud technology is emerging as the most suitable alternative to legacy systems. The technology is relatively affordable, scalable, and features futuristic security mechanisms. This document discusses legacy technologies' limitations in the healthcare sector and how cloud technology is bridging these issues. The document also explores adoption of the technology in the sector and how barriers to cloud migration can be addressed.

Keywords: Cloud Technology, Cloud Computing, Legacy Systems, Healthcare.

Introduction

Technology is reshaping virtually every aspect of the healthcare sector. Healthcare providers rely on digital technologies to collect and store patient records. Today, critical processes such as diagnosis and prescription of treatments are supported by information technology systems. Patient management and remote patient monitoring are emerging fields that significantly rely on digital technologies. It is not just healthcare providers leveraging digital technologies; research and development companies in the sector primarily rely on digital systems for coordination, collaboration, and data collection and storage. Although digital technologies have revolutionized and continue to transform operations in the healthcare sector, they are not free of issues.

Challenges with digital technologies

Digital technologies offer numerous benefits to health facilities. They streamline operations in care facilities, enhance the efficiency and productivity of the workforce, improve access to information, and facilitate innovation and flexibility. Besides, healthcare facilities using advanced digital technologies such as AI report better customer experience and decision-making at the management level. Despite the numerous benefits of these technologies, they are vulnerable to various weaknesses. These weaknesses include;

Cost challenges

Operating complex IT infrastructures can be expensive. Initial installment costs can be astronomical, especially when hardware and software components must be sourced. Installing and maintaining in-house servers requires a dedicated IT team and regular updates on software and hardware, which is expensive [1]. Besides, related costs such as backup and disaster recovery, licensing costs, and compliance challenges significantly increase digital technologies' overhead.

Security problems

In-house digital technologies are vulnerable to cybersecurity threats. Typical applications used in health-

care facilities do not have robust security measures to safeguard against sophisticated cyberattacks. Due to limited security expertise in in-house teams, IT staff managing digital technologies may not have comprehensive knowledge of emerging security threats, the latest vulnerabilities, and advanced protective measures [2]. In-house systems are also vulnerable to misconfigurations that expose them to security breaches. For example, misconfigurations such as weak access control protocols, open ports, and improperly secured services permit breaches.

Reduced scalability and access

Although traditional digital tools are scalable and designed to facilitate data access, these functions are greatly limited. Traditional digital tools are designed with specific capabilities that cannot be advanced beyond a certain limit. This impels users to overhaul entire systems to pave the way for major upgrades. These tools are also not designed to support remote access to data. While users within the workplace premise can conveniently access and share data, these systems are poor at supporting remote workers.

These are the top issues with traditional digital technologies. The advent of cloud technology promises to mitigate these problems. Appropriate use of cloud technology reduces IT costs for healthcare facilities, bolsters security for patients' records, and enhances data access and scalability of IT infrastructure in accordance with users' needs.

Cloud Computing

Cloud computing refers to technologies that allow healthcare facilities to access data and applications over the Internet, eliminating the need for local servers and storage facilities. The technology is primarily used to store, manage, and share medical data such as electronic health records, patient data, and medical images. The architectural design of cloud technology allows ubiquitous access to data, making it ideal for supporting remote teams and facilitating collaboration. Some of the key features of cloud computing that make it suitable for healthcare facilities include;

Security centric architecture

Cloud technologies are designed with security at the core. Security is embedded in system design and the code used to implement these systems. Cloud platforms like Amazon AWS and Microsoft Azure have dedicated resources and security protocols to ensure cybersecurity. Configurations in cloud ecosystems are automated, reducing the likelihood of security breaches due to misconfigurations. Cloud providers are for maintaining and patching systems – this address problems that arise from knowledge gaps in internal teams. Since applications and databases are hosted remotely, physical security threats to data are mitigated.

Pay-as-you-go model

Cloud computing eliminates initial IT costs. Also, the technology obviates costs related to system maintenance. Healthcare facilities only incur subscription costs, which are pretty affordable. The pay-as-you-go model, which most cloud providers use, enables healthcare providers to pay only for the services and the storage space they use.

Highly scalable

Cloud computing is highly scalable. Healthcare facilities can conveniently scale up and down their operations without worrying about technological limitations. The pay-as-you-go pricing model allows users to flexibly use more or less resources on the platforms depending on their needs. According to Continuum, this flexibility is vital for supporting digital transformation in the healthcare sector [3].

Enables patient-centric approach

Cloud computing facilitates technologies such as telehealth and telemedicine. These technologies are at

the heart of delivering patient-centric care. They allow healthcare providers to remotely monitor patients and manage their conditions. They also enable patients to access their health information and charges, schedule appointments, and fill out health-related documents online.

Proliferation of Cloud Technology in Healthcare

As mentioned, cloud computing is transforming healthcare by providing solutions to major challenges. Consequently, industry data shows that healthcare providers are increasingly assimilating the technology. According to a survey by Forrester, 73 percent of healthcare organizations use public clouds [4]. The report further found that, on average, healthcare organizations are spending about $9.5 million annually across multiple clouds. Organizations lean on cloud technology for temperature- and time-specific delivery, genomic sequencing, access to modern data center technologies, and software-as-a-service (SaaS). Besides, the technology is being adopted in the sector for its security benefits and ability to facilitate adaptability and resilience. In the report, 44 percent of the respondents cited improved security as a key factor for their organization embracing cloud technology.

A similar report by DuploCloud suggests a similar adoption rate. According to the report, 70 percent of healthcare IT professionals report that their organizations have assimilated cloud solutions [5]. The report further points out that 20 percent say their organizations will assimilate the technology within the next two years, suggesting a possible assimilation rate of 90 percent by the end of 2025. Although cloud solutions have permeated the healthcare industry, a considerable portion of the sector is yet to migrate to the technology. Some of the barriers limiting the move include;

- **Concerns with achieving compliance**: According to DuploCloud, 60 percent of organizations that are yet to migrate to cloud solutions cite compliance concerns.
- **Data migration costs**: Moving data from legacy systems to the cloud can be complex and time-consuming. Most legacy systems use proprietary data structures and workflows that cannot be imported directly to the cloud [6].
- **Cultural shift**: Moving from legacy systems to the cloud requires a cultural shift. Change in workplace processes and digital tools may mean moving to a new workplace culture. People tend to struggle with assimilating new culture.

Best Cloud Migration Practices

Healthcare providers can observe best rules of thumb to address problems in cloud migration. These practices include;

Compliance: Compliance is all about ensuring data privacy and the safety of patient data. This is primarily achieved through enforcing data encryption in cloud databases and leveraging robust access control and authentication protocols. Concerns about loss of data during migration can be addressed by backing up the data before migration.

Data migration costs: Incompatibility of legacy systems and cloud solutions is the leading cause of data migration costs. Incompatibility issues can be addressed using integration platforms. These platforms use connectors and APIs that simplify data syncing.

Cultural shift: Resistance to new technology can be addressed by providing relevant training and emphasizing the new technology's benefits.

Conclusion

Although digital technologies offer a plethora of benefits to healthcare facilities, legacy systems are turning out to be inconvenient. These systems are expensive to install and maintain, not entirely scalable, and prone to security breaches. Cloud technology addresses all these limitations. It eliminates installment costs, and subscriptions are affordable. The pay-as-you-go pricing model ensures scalability, and its advanced security features guarantee the safety of patient records. These benefits have prompted more than 70 percent of healthcare providers to embrace the technology, with two-thirds of the non-migrated expressing a desire to shift to the cloud before the end of 2025. But what's the impact of cloud technology on healthcare? Cloud technology supports advanced patient management approaches such as telehealth and telemedicine. The technology also increases operational efficiency, saves costs, and allows safe sharing of medical records. Are you still skeptical about migrating to the cloud? More than 70 percent of healthcare providers have already made the move. Do not risk your competitive edge – migrate to the cloud and start leveraging its benefits today.

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