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CRISIS MANAGEMENT AND THE CLOUD: LESSONS FROM COVID-19

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As the novel coronavirus, COVID-19, approached the U.S. in early 2020, state and local governments, public health professionals and healthcare providers kept a close eye on its spread. Health officials encouraged citizens to diligently wash their hands and maintain a safe distance from one another in an effort to stave off a wider outbreak.

By March, every state was reporting cases, however, and it became clear the best response to the disease was to shelter in place, isolating people through social distancing methods and other mitigation techniques. Within days, American institutions — tradeshows and conferences, Broadway theater, professional sports, retail stores and restaurants — closed their doors for an indeterminate time.

Healthcare organizations large and small found themselves in a predicament. While confidence ran high with respect to protecting patients and the public through education and medical care, concerns quickly escalated among many about how to ensure the continuity of patient care while also safeguarding their own staff.

Predictive models and planning aside, there hadn't been a global pandemic of this magnitude in more than 100 years. How would health organizations shut down some offices, build new, temporary facilities for COVID patients, and enable hundreds of thousands of staff and clinicians to work from home — away from the IT and information infrastructure built on-premises? How could they protect patients and employees if they weren't adequately safeguarding and sharing the critical information needed to serve patients — and support the clinicians on the front lines?

And how would they know they were ready for the next crisis?

RAPID RESPONSE AT SCALE

Healthcare organizations learned much in those first few days. The mantra at many hospitals was "anticipate and prepare." Public health officials forecasted an overwhelming influx of COVID-19 patients if no mitigation efforts were employed — and a challenging caseload even with stay-at-home orders.

Hospitals rushed to move as many employees as possible to remote working status. Franciscan Health, Indianapolis, Ind., moved more than 5,000 employees to remote status in days.[1] Connecticut's Yale New Haven Hospital System moved all of its cancer patients — hundreds, along with support staff — out of one hospital and into another building populated with negative pressure rooms in the better part of a day.[1]

Similar stories abound, all taking place during a time one healthcare CIO called "rapid response at scale."[2]

Unprecedented change in an excruciatingly short period. The ability to act quickly to protect front line healthcare workers and enable them to easily access the information needed to do their jobs was a make or break for most organizations.

For many, taking on that innovation wouldn't be possible without the flexibility and security of the cloud.

THE CLOUD'S ROLE IN CRISIS MANAGEMENT

Rolling out new technology and enabling access to critical information for remote workers would seem daunting at best, if not impossible, in the short time many health systems had to adapt. For organizations with on-premises infrastructure, that would include safety concerns for employees and vendors who would likely need to be on site, in person to manage any implementation or maintenance.

Hosting that technology infrastructure in the cloud, however, allows a healthcare organization to quickly adopt new technology and implement solutions remotely alongside its vendor partner. That's just one way the cloud helps in a crisis situation like a global pandemic.

In short, an organization that houses its information architecture in the cloud rather than on-premises are ready to scale up at a moment's notice. And the COVID-19 pandemic is "a 'what-if' scenario made real," according to Craig Lowery, vice president, analyst, Gartner. Organizations that employ the cloud are able to accommodate remote work quickly or to run more workflows through the cloud if data centers face staff reductions, he explains.[3]

In many ways, the industry is already attuned to this. A majority of healthcare organizations — 65 percent, according to a recent study by HIMSS Analytics — use the cloud or cloud services, and presumably leveraged the power of the cloud to enhance and enable its crisis management response. Of those cloud-enabled providers, 37 percent stated disaster recovery concerns as the primary reason for moving to the cloud, making it the No. 1 one driver by far.[4]

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HOW THE CLOUD ENSURES BUSINESS CONTINUITY IN TIMES OF CRISIS

While disaster recovery might seem the most obvious reason to invest, transitioning to the cloud serves a set of benefits that can do more than ease the crisis management burden, regardless of how global — or how local — a crisis may be.

Perhaps the biggest advantage of the cloud is business continuity. As the world changes and the need to respond to patient and employee expectations grows stronger, the cloud allows for a rapid response that cannot be matched by an on-premises solution. If the organization's entire technology stack lives within the hospital's four walls, and, suddenly, access to that infrastructure becomes unsafe or untenable, work stops and access to information could be interrupted.

The cloud provides continuity — and access to critical solutions and information — from virtually anywhere, often with a support staff who can help you navigate the change.

There's more to consider, as well.

Compute power and data overload

The compounded growth of EMR data and medical images and video combined with the emergence of genomic data and information from the Internet of Things (IoT) has outgrown the capabilities of most on-premises healthcare data centers. The ability to not only store this information, but ensure it is properly encrypted and fully redundant requires an infrastructure that, for most, is only realistically available in the cloud.

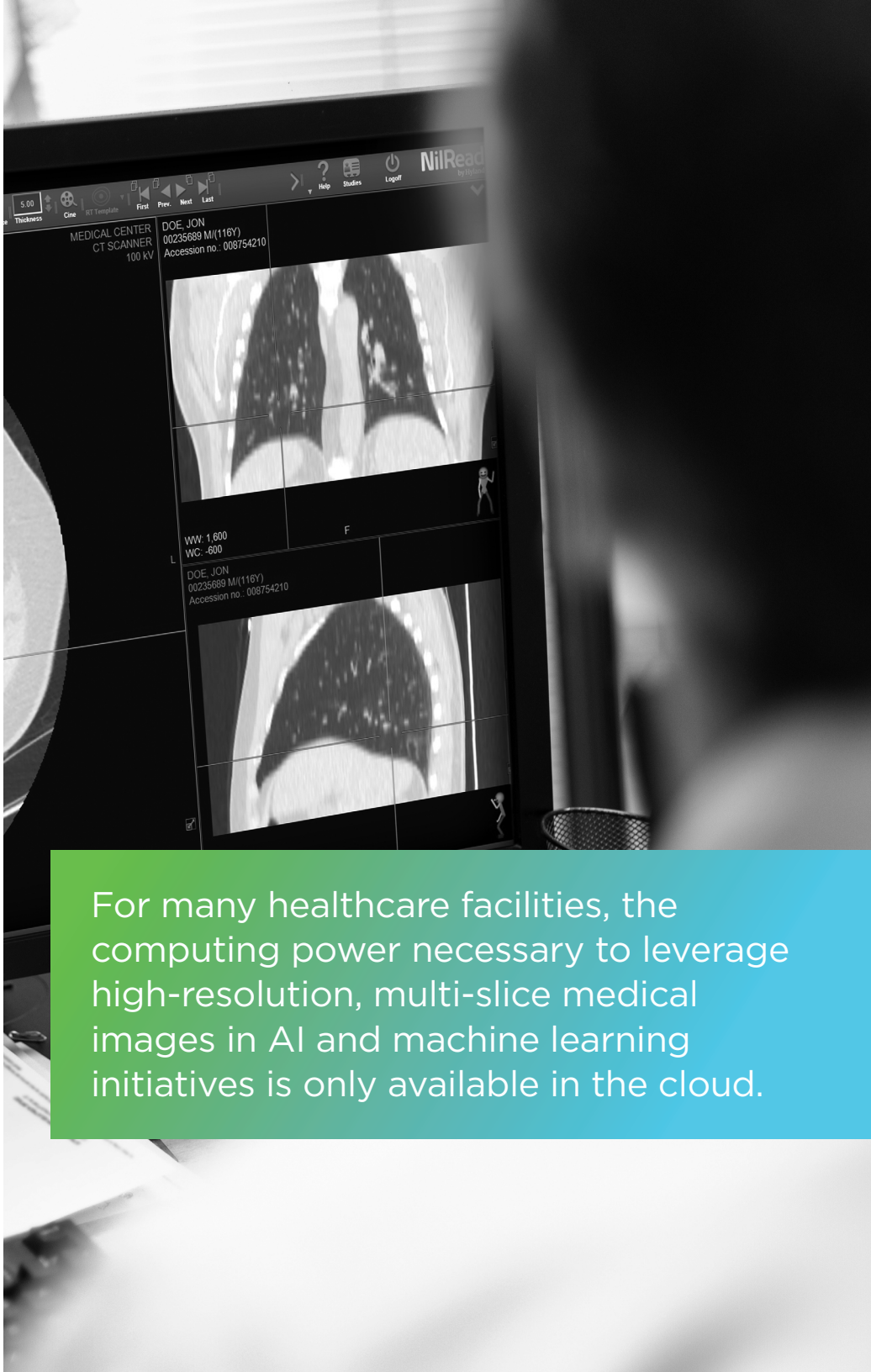
For example, a substantial amount of computing power is required to render and manipulate multi-slice and 3D medical imaging studies. Even more power is required to leverage these types of images in artificial intelligence (AI) and machine learning initiatives — a practice becoming more and more valuable at facilitating early disease detection with limited manpower. These higher-resolution studies provide more detail and may allow clinicians, researchers and AI algorithms to identify bone, tissue and cell changes that are indicative of certain types of diseases much earlier than before.

This type of computing power can be instrumental during a pandemic such as COVID-19. For example, the power it provides to fuel artificial intelligence is helping some healthcare organizations expedite patient diagnosis and treatment by using AI algorithms to quickly distinguish COVID-19 from community acquired pneumonia by looking for certain indicators in chest CT scan images.

Scalability

One of the main advantages of moving to the cloud is that it allows a healthcare organization to more easily scale over time. The scalability and flexibility the cloud delivers helps providers more readily add analytics, intelligence and actionable insight to their healthcare data. Because of these qualities, many healthcare systems are also turning to the cloud to handle exponentially growing applications and solutions, like electronic health records.[5]

In terms of crisis management, healthcare organizations might look to these examples to apply the cloud's flexibility the next time they need to quickly deploy overflow facilities, ensuring staff have access to the information they need easily and intuitively. Managing systems in the cloud, IT staff could conduct system administration and maintenance requirements remotely, keeping them safe and productive.



For many healthcare facilities, the computing power necessary to leverage high-resolution, multi-slice medical images in AI and machine learning initiatives is only available in the cloud.

Data availability

Healthcare organizations need to ensure staff and physicians can access mission-critical and patient-centric information where and when they need it — as soon as they need it. Legacy on-premises systems and siloed information can make this difficult. This also becomes an interoperability deterrent, if solutions are disconnected and information is difficult to access.

Data availability can enhance overall healthcare interoperability. Simple access to patient data from multiple, connected sources, and the ability to share that information with others, anytime, anywhere, allows fellow physicians and specialists to collaborate on treatment plans regardless of where their offices are in the world.

More importantly, during a crisis, the cloud provides safe access to critical information without the need for a Virtual Private Network (VPN), allowing an organization to pivot and place employees in a work-from-home status with minimal impact on productivity. It also helps ensure clinicians continue to have unobstructed access to comprehensive patient information during the crisis period when workflows can be hectic.

This same access to data fuels telemedicine. Cloud-based telehealth allows easy sharing of patient data, provides better accessibility and wider healthcare coverage to patients.

In the first two months after stay-at-home orders were issued during the pandemic, Yale New Haven conducted more than 120,000 telehealth visits, an increase of "a hundred fold or more," according to Lisa Stump, senior vice president and CIO for the Yale New Haven Health System, New Haven, Conn. Moreover, in 2020, the U.S. telehealth market is expected to grow 80 percent year-over-year.[6]

The cloud will inevitably help healthcare organizations manage that growth, since it can enable easier data access and exchange with patients during a virtual visit. While on a telehealth visit, for example, a patient could access test results via the patient portal and review those results in real time with the doctor. During a pandemic, when time is of the essence — either in delivering information or assisting a large group of patients confined to their homes — this ability to share information remotely becomes invaluable.

80% Expected year-over-year growth for the U.S. telehealth market[6]

RAPID DEPLOYMENT OF CRITICAL SOLUTIONS

More than 58 percent of the U.S. workforce now works remote[7], and those numbers include hospital support staff, like IT departments, and even clinicians, like radiologists. That's why the ability to rapidly deploy new technology solutions, ensuring employees and clinicians have access to real-time, critical information, is one of the biggest lessons learned.

Technology infrastructures based on modern, cloud-based architectural styles — such as REST (Representational State Transfer) and APIs (Application Programming Interface) — help ensure speed of implementation and deployment and are purpose-built for mobile environments.

Rapid support and upgrades

Another push for cloud adoption is the decision to partner with a vendor that provides expert support services and will take on the burden of securing data that would otherwise be stored on-site. During a public health crisis, staff members in all areas of the health system need to focus their efforts more keenly on patient care and treatment. In other words, healthcare providers need to ensure their focus is on delivering care, not servicing and supporting IT systems.

A good cloud partner should provide services support around the clock, seven days a week, especially in a time of crisis, when deploying new solutions and ensuring healthcare workers have access to the patient information they need is the most critical.

Another reason healthcare organizations are moving to the cloud is to benefit from regular technology upgrades and the ease with which to deploy them. Upgrades also occur faster and more often than traditional on-premises systems, which also tend to have higher up-front costs. On-premises software is expensive, and monitoring the systems, especially in a healthcare system, is an around-the-clock responsibility that can drain internal IT staff energy.

Software upgrades, often performed only once a year, will be quickly obsolete given the rapid pace of change today, according to IDC's "Digital Transformation: Removing adoption barriers to cloud content services" report. Investment in education to address this demand is time intensive and expensive. And if an update is missed, that could make the organization vulnerable to costly data breaches.

Security and compliance

Healthcare providers have historically been hesitant to move to the cloud due to fears about giving up control of their data and putting patient privacy at risk. However, the realization of its ultimate inevitability is replacing the hesitancy that used to surround cloud adoption in healthcare as more organizations come to understand just how secure a reputable cloud provider can be.

That security is even more important during an emergency like the novel coronavirus pandemic. When crisis hits, cybercriminals understand that distractions multiply for affected organizations, leaving them with an opening to attack. During the first few months of the pandemic, the World Health Organization reported twice as many cyberattacks on healthcare organizations than normal[8]. Attacks occurred at the U.S. Department of Health and Human Services, a U.K.-based facility working on a coronavirus vaccine, a Czech hospital that had to shut down its technology and more[8].

Cloud providers today offer security features that combat many of thwse attacks, providing some ease of mind for healthcare professionals. That includes everything from network infrastructure security to transport and physical security at data centers[9].

Today, more organizations are entrusting their data to a managed cloud that operates accredited and certified servers then ever before. With a reliable vendor, data is backed up in multiple locations, meaning that a power outage, weather incident or the side effects of a global pandemic ensures information is always available to staff and physicians when they need it — especially when it is impossible to be on-premises due to natural disaster or stay-at-home orders.

That said, companies should seek cloud service providers that adhere to strict standards for security and compliance, and have technical controls in place for managing intrusion detection and potential hacking issues, among others, according to IDG. Furthermore, the cloud provider's data centers should be certified for HIPAA and safe harbor compliance controls.

CONCLUSION

The COVID-19 pandemic has changed the course of healthcare delivery for the foreseeable future. It has asked hospital systems large and small to make both patient care and staffing decisions in the blink of an eye — and implement the technology to support those decisions even faster.

Most healthcare providers know that COVID-19 won't be the last public health crisis they face and they realize it is they're collective duty to anticipate and prepare. Moving to the cloud — or enhancing the cloud strategy already in place — will help those organizations act on game changing decisions faster and with the support to do it right.

[1] Tales from treating COVID-19: Building PCs from scratch and implementing software solutions in days (May 2020) Tennant, Tom

[2] Response to COVID-19 fuels creativity and innovation for healthcare IT leaders. (May 2020)

[3] Cloud scalability shows its worth in the wake of COVID-19. (April 2020) Ruth, Joao-Pierre S.

[4] Healthcare providers can do more in the cloud (March 2020) Congdon, Ken

[5] Leveraging cloud for improved IT and business outcomes (2020)

[6] Telehealth may see big long-term gains due to COVID-19: 10 observations (April 2020) Dydra, Laura

[7] Millions of Americans are working from home with varied productivity (April 2020) Pastore, Alexandra

[8] WHO, coronavirus testing lab hit by hackers as opportunistic attacks ramp up (March 2020) Eddy, Nathan

[9] 5 cloud security tips you're not thinking about (September 2014) Hout, Kevin

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