

# HealthData Management

August 01, 2014

www.healthdatamanagement.com

## Where Health care is Going in the Cloud

By Greg Slabodkin

As a model for enabling on-demand network access to a shared pool of configurable computing resources, the cloud seems to be everywhere these days, challenging traditional approaches to data center and enterprise application design and management.

However, cloud computing is not as ubiquitous in health care as it is in other industries. Out of eight sectors analyzed by technology vendor CDW, health care ranks seventh in terms of cloud adoption—just edging out state and local governments—according to a 2013 survey.

While health care might lag behind, it's still adopting at a pretty brisk clip: A June 2014 HIMSS Analytics survey found that 83 percent of surveyed medical practices, hospitals and health care systems are using cloud services, citing lower maintenance costs, speed of deployment and lack of internal staffing resources.

Cloud computing's value proposition—reduced costs combined with increased computing efficiencies—has been proven to hold up in the real world, so why is health care dragging its feet, comparatively? Security concerns, an oft-cited barrier, are still a factor, but performance issues, such as slow responsiveness of hosted applications and technical integration issues with legacy systems have also checked the cloud's growth.

### Turning the corner

“The very nature of what you are after in cloud computing is the ability to dynamically expand your compute capacity in real time,” says Keith Dunleavy, M.D., CEO of data analytics vendor Inovalon. “To have the compute capacity to do that on demand, you need a very flexible computing stack to handle that computation.”



**Keith Dunleavy, M.D.,**

CEO of data analytics vendor Inovalon.

Damon Auer, vice president of health care practice for Tribridge, a technology services firm, adds that health reform also is an impetus. “Given the accountable care, coordinated care set of processes we’ve seen in the last two and half years, roughly half of health care executives we talk to express a preference for a cloud-based solution—they see some speed to solution advantage in moving to the cloud.”

Auer, who oversees cloud-based care coordination and process and systems integration consulting for health care delivery organizations, believes cloud data to support clinical processes is gaining momentum among providers with clinical workflows and workloads increasingly moving to the cloud environment.

In fact, half the cloud adopters in the 2014 HIMSS Analytics survey are hosting clinical applications in the

cloud, primarily using software-as-a-service models. Other typical cloud services include health information exchange, hosting human resources applications and data as well as backup and disaster recovery. Only a small fraction of survey respondents expressed resistance to adopting cloud services (6 percent). Of them, nearly half cited security concerns as the primary barrier.

“There doesn’t appear to be a significant reluctance to move to the cloud by providers,” says Ed Park, chief operating officer of athenahealth, a vendor of cloud-based services for electronic health records (EHRs), practice management and care coordination. “I think there are still pockets, particularly in some of the larger enterprises, where you have CIOs who still want to have their own bricks and mortar—their own data centers and servers. But, I think everyone else—especially the small- and medium-sized groups—have been moving to the cloud, and an increasing number of forward-thinking large groups.”

Rob Rizk, director of information technology at Good Shepherd Health Care System, a not-for-profit hospital in Hermiston, Ore., has deployed a private cloud solution as part of an overall disaster recovery strategy. Good Shepherd adopted a private cloud solution using a health data management platform from BridgeHead Software to “reduce the number of independent servers and make management a whole lot easier for my IT staff,” says Rizk.

In addition, the cloud-enabled backup and archive allow the hospital to protect three times as much data in the same amount of time to help ensure business continuity, Rizk says. “Overall storage became easier to manage when we developed our cloud infrastructure moving to a storage area network,” he adds.

With EHRs, imaging and other highly diverse patient data sources, the typical hospital now generates about 60 GBs of data per bed per year, Rizk says, noting that Good Shepherd has roughly 25 TB of data and will add another 15 TB over the next two to three years. “The growth has to do with new applications and additional patient information,” he says. “We’re going to be moving to some video imaging in our surgical center, so I expect rapid growth in that area.”

Medical imaging and EHRs are creating enormous amounts of data, which must be accessed in real time across disparate sites of care. The emerging era in health care will be dominated by EHRs and new care delivery approaches that require real-time coordination

and information exchange among multiple providers, payers, patients and locations.

For its part, athenahealth’s cloud-based network includes more than 52,000 providers and about 40 million patients in all 50 states. “We use that data to reverse engineer patterns across health care to help both with more efficient operations and increased quality of care,” says Park.

### **Data explosion**

Health care data is expected to skyrocket from about 500 PB today to more than 25,000 PB by 2020—a 50-fold increase—according to IDC Health Insights. And the data is becoming more complex and inferring knowledge from its heterogeneous sources is becoming more complicated.

“Historically, the health care environment has been limited in the data access that it has had,” says Dunleavy at Inovalon. “And while the amount of data that can be integrated together to build a more complex and sophisticated profile of that member, the other members in their respective cohort, the provider, the facility, the total population has increased, so have the number of those variables increased dramatically over just the last several years, as has the sophistication of the algorithms that can analyze that data. What used to take weeks and days to calculate outcomes on massive populations now takes just seconds, and we are a pebble’s throw away from real-time impact analysis across massive data sets.”

That’s why the digitization of data over the next decade has enormous implications for health care and research, with cloud computing and the aggregation of big data sets on the brink of enabling breakthroughs in personalized medicine. By unlocking the value of petabytes of patient-specific data, providers and health insurers will be able to help patients and plan members achieve their health care goals, Dunleavy asserts.

“Data is driving how we should manage members and how members want to be managed,” he says. Managing chronic diseases in the face of these market forces and regulatory requirements is a very complex process that can only be achieved using predictive analytics to harness big data to identify how patients’ medical conditions are progressing.

How a member of a health plan “thinks about their disease, themselves, the costs, the provider and where they will get their care is truly unique to that person” and evolves over time, according to Dunleavy. Only

data can answer the central questions of where to focus priorities and how to interact with a member and the provider environment, he notes.

Data latency and data integrity continue to be major problems hindering effective interventions for members, he adds. Many health plans are making progress internally in analyzing the data, “but at the end of the day if all this analysis creates insight that doesn’t result in an action and impact, it is worthless,” Dunleavy warns.

Another issue, he adds, is that big data-unlike cloud computing-doesn’t have a common definition. As a result, he says, “big data is a very abused term” across all industries right now and certainly in health care. Often, big data refers to the tools, processes and procedures allowing a health care organization to create, manipulate and manage very large, complex data sets. The challenge is in capturing, storing, searching, sharing and analyzing these data sets, which are difficult to process using common database management tools or traditional data processing applications. And that is precisely where leveraging cloud computing can help.

### **Democratizing access**

The convergence of cloud computing and big data is giving researchers and government agencies such as the National Cancer Institute and National Human Genome Research Institute unprecedented opportunities in areas

such as DNA sequencing. To date, the research community is only at the tip of the iceberg in its use of cloud and big data and is sitting on a potential treasure trove of data that could open unforeseen avenues of scientific discovery.

At a June roundtable on 21st century cures hosted by the House Energy and Commerce Committee, Brian Druker, M.D., director of the Knight Cancer Center at Oregon Health and Science University, testified about the importance of cloud computing to cancer research.

Druker told lawmakers that access to data is critical to advance research and that the storage, transmission and analysis of data have become too costly for most labs and research organizations to support.

Currently, cancer researchers mine genomics data by downloading data stored at a variety of locations, including project-specific data repositories, and moving it on local hardware using computational tools. But this model is becoming unsustainable given the huge growth in biomedical data.

Meanwhile, the cloud’s enormous computing power is making it easier and less costly for researchers and clinicians to discover new cancer drugs and treatments, Druker explained.

By sharing and analyzing data that used to take years and tens of millions of dollars to evaluate the molecular defect that causes a particular type of leukemia, for instance, he said, in six months the Knight Cancer Center compressed 40 years of work and accelerated progress due to the technologies now available. ■