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Building a High-Performance Engine for Healthcare:

Why the Cloud Matters



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Introduction

Organizations in both the public and private sectors are confronting the operational implications of healthcare reform fueled by mandates and continually rising health costs as executives across industries analyze their options. Many are realizing that their most significant opportunities for taking control of healthcare management challenges lie within their own business processes and IT environments and may require them to transform the way they do business.

The convergence of sweeping regulatory demands for increased transparency, connectivity and security have combined with the industry's long-standing dependence on legacy applications, data silos and point solutions, to generate a "perfect storm" that can overwhelm many organizations. This storm has the potential to disrupt organizations that do not evolve from their fragmented information systems into environments that integrate business processes at all levels of health service delivery.

For many organizations, the answer to these challenges lies in moving to cloud-based computing environments. Cloud computing enables on-demand network access to a shared pool of configurable technology resources (such as networks, servers, storage, applications and services).¹ Because the cloud creates a computing environment in which resources can be rapidly provisioned and released with minimal management effort or service provider interaction, it represents a way to address new regulatory and market trends. It can help organizations reduce the healthcare cost curve while improving outcomes.

New Challenges in Healthcare Management

Healthcare reform brings a multitude of challenges and opportunities to the business of healthcare management for enterprises. Legislative mandates, cost containment, a more consumer-friendly focus and requirements for more coordinated healthcare will result in the restructuring of the U.S. healthcare market. In response to these trends, new operational processes are being designed while many existing business processes are modified.

For example, Health Insurance Exchanges (HIXs) and Accountable Care Organizations (ACOs) are driving new operational models that have never existed before. The combination of emerging business models, legacy applications and a variety of point solutions has created complications for all stakeholders in the healthcare continuum.

The problem for most organizations (in both the public and private sectors) is that they do not have the time, expertise or money to meet these new challenges using traditional approaches to software deployment. Legacy systems are too cumbersome to satisfy the urgent legislative mandates within the requisite timelines, data, performance and knowledge management requirements. These challenges can only be solved by a paradigm shift in the business models and supporting technologies of healthcare delivery. For all stakeholders in the healthcare continuum, survival depends on choosing the technology-enabled business strategies that manage the cost of care and bend the cost curve while improving the quality of outcomes.

However, integrating existing business processes into advanced cloud-based solutions presents significant technical challenges. Ultimately, these challenges boil down to the need for organizations to choose between:

- Completely redeveloping their legacy applications from the ground up at great cost, or
- Adding an intelligent “middleware” engine (a software layer that connects data, services and applications) that provides access to cloud functionality directly from their existing applications and data.

This white paper examines the business challenges that are driving organizations of all sizes to evaluate their healthcare management strategies. It also explores alternatives for managing people, processes and technologies in this context.

It specifically addresses how cloud computing allows enterprises to integrate — or even replace — existing business and data management processes. It demonstrates how advanced cloud-based solutions not only streamline important business transformation initiatives, but also provide many operational and functional benefits, including:

- Faster implementation at lower costs
- Easier integration of disparate data sources to drive superior analytics and reporting
- More agile deployment of capabilities to more varied communities of users
- Improved health outcomes and reduced overall healthcare costs
- Increased regulatory compliance with healthcare reform requirements, such as medical and administrative loss ratios (MLR/ALR)

A Technological Answer to Rising Healthcare Costs

U.S. employers can expect to see healthcare costs rise by 8.5 percent in 2012, compared with an increase of 8 percent in 2011, according to the annual “Behind the Numbers” report on medical cost trends, published by the PricewaterhouseCoopers (PwC) Health Research Institute. Many organizations hope to keep this number closer to 7 percent next year by making changes to health benefit plan designs, such as increasing cost-sharing with employees.² In difficult economic times, these moves are not only unpopular, they often are counterproductive. As a result, organizations across industries are looking for other ways to control costs.

The healthcare sector itself is looking for ways that cloud technologies can help in the fight against the upward cost trend. According to analysts at In-Stat — the Scottsdale, Ariz.-based market intelligence firm — healthcare and social services organizations are making big investments in cloud technology at the infrastructure level. The researchers forecast that healthcare will spend \$518 million on Infrastructure-as-a-Service in 2015.³

There is a growing chorus of experts who believe employers and other plan providers should integrate with the healthcare sector in using these same cloud resources.

“I think there’s a perfect storm that has occurred in the healthcare industry,” notes Lynn Barnard, Program Design and Strategy Specialist for Optimetra, a Monument, Colo.-based business development and project management consultancy for healthcare organizations.

“The healthcare and insurance industry has lagged behind in the uptake of technology because providers wanted to have more of a hands-on approach and felt that technology might have impeded that,” she says. “However, it’s clear to the majority of the new providers coming in, as well as providers who are deeply involved with the analysis and measurement of quality and value, versus volume, that the costs have become exorbitant and out of control for a fee-for-service structure.”

Next-generation technologies, such as cloud computing, are giving organizations more powerful tools in their fight against these rising healthcare costs. Cloud computing enables strategic integration of Healthcare Performance Management (HPM) solutions into their IT environments. It allows HPM tools to aggregate healthcare data from disparate sources, providing analytic and reporting capabilities to support management decisions that can help enterprises to proactively bend their healthcare cost curves while improving overall health and wellness.

“The purpose of HPM for many companies has been to save money,” says Henry Cha, President of Glenwood, Md.-based Healthcare Interactive (HCI). “But the real value of HPM revolves around the ability to collaborate. When software runs in traditional silos from multiple vendors, it is difficult for people across organizations to share information. That is why organizations are leveraging the cloud to make Customer Relationship Management (CRM), Enterprise Resource Planning (ERP) and other enterprise applications more effective. HPM represents our ability to finally get control of healthcare by using distributed software,” he says.

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Lynn Barnard, Program Design and Strategy Specialist for Optimetra

HPM, he points out, provides a way to identify the actual health risks that exist in an organization based on immediate access to current data. More importantly, it allows different disciplines and interested parties to collaborate on the same data set to make effective decisions about how to proactively manage healthcare risks.

“For example, one of our clients, The Men’s Wearhouse, has saved more than \$3 million in healthcare costs in one year by utilizing cloud-based analytics, incentives and proactive member engagement,” notes Cha.

One way for organizations of all sizes to streamline adoption of advanced HPM tools is by selecting, from a trusted technology partner, a cloud-based solution that leverages existing development and expertise in conjunction with an enterprise’s own data stores and business processes.

Operational Benefits of Cloud-Based Architecture for HPM

The technological engine underlying HPM consists of software-enabled processes that track, monitor and manage the constantly changing healthcare landscape of an organization. Annual, or even semiannual, assessments of healthcare spending are not good enough. To be fully responsive to rapid changes, enterprises require frequent — or even real-time — windows into the wellness of their beneficiaries and the resulting cost patterns that emerge.

“The bottom line is this: Unless you have the data in a way that is readily accessible and actionable, you don’t have an ability to manage healthcare spending,” notes Brian Klepper, Managing Principal of Healthcare Performance Inc., a business development practice based in Atlantic Beach, Fla., and Chief Development Officer for WeCare TLC, LLC, an onsite clinic firm based in Lake Mary, Fla.

“You’ve got health systems, for example, that have immense investments in [legacy] client-server technology, and they’re loath to get rid of it ... by swapping it out for cloud-based technology.”

Experience is showing, however, that the most efficient and responsive HPM engines are built on cloud-based platforms that integrate external information resources with an organization’s own data sources and business processes.

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Brian Klepper, Managing Principal of Healthcare Performance Inc.

The Need for Speed

Perhaps the most important business drivers favoring cloud-based architectures are the time pressures and costs to rapidly implement HPM solutions. Redeveloping a new generation of homegrown applications to support new Healthcare Performance Management operations places a heavy burden on time, capital and technical resources. This is because legacy systems that most organizations have in place today were not built on open platforms. Nor were they designed to support

integration across applications and data silos. As a result, legacy systems and architectures simply cannot deliver the agility and flexibility that organizations now need to keep up with evolving market drivers and support HPM decision making.

“There are a number of legacy environments out there that are very structured and built on legacy code,” says Gene Walker, President of Healthcare Interactive Federal (HCI Federal). “The problem is that the business drivers themselves — be they legislative, technical costs or even manpower — have changed so rapidly that they are forcing companies to look for new solutions that aren’t designed around redeveloping an entire application portfolio,” he says.

By contrast, cloud-based models with an established technology partner can be implemented quickly and economically. This is because cloud solutions are based on more open application program interfaces that revolve around well-understood and commonly used Web services.

“Speed to market is absolutely critical,” Barnard points out. “Without cloud-based middleware, it’s just not going to be possible to [rapidly integrate and use] applications that you already have developed and all of your staff is used to using. You’ve got to have an engine to drive the interface, integration and analytics. Without it, you’re going to have to start over. No one has the money to start over, and yet, you’ve got to be able to take your existing systems and platforms and make them work together in a high-performing engine,” she says.

“Cloud technology,” says Walker, “makes it possible to leverage data that organizations already have in place in new and innovative ways.”

“It allows organizations to pull content out of existing data and turn it into business information. Instead of buying bigger pipes, buying bigger mainframes or buying more servers, organizations can actually look at how to manage the data more effectively,” Walker explains.

In addition to deploying functionality much faster and with more flexibility than legacy systems, cloud-based solutions also allow service organizations to more readily integrate disparate data sources to support richer analytics and more detailed reporting to meet evolving statutory requirements.

“With the requirements of higher-level reporting and monitoring from the payers in the Centers for Medicare & Medicaid Services (CMS), there is an even greater need to have the analysis of data. There are requirements, for instance, to show the gaps in care — as well as data on how providers and members are closing these gaps — so that the payers can draw information from a segregated data warehouse directly. This makes it possible to generate ad hoc reports and show their stakeholders — whether it’s an employer or the state legislature — what they’re doing to contain costs and improve the quality of care,” says Barnard.

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Gene Walker, President of Healthcare Interactive Federal

The Proven Secure Cloud

Cloud-based architectures and functionality have already been tested and proven in highly secure and sensitive environments. Healthcare Interactive Federal, for instance, is already providing cloud-based HPM solutions to the public sector in the form of its Healthspace Operating System.

"We have linked the identity management, knowledge management and application management within an operating system kernel so we don't have to redevelop those capabilities," explains Walker.

"Any time we want to share data, we've already developed the ontology of the data. We know where it is. We are able to secure the data and leverage Web services to isolate information and provide a second layer of security over what is currently within a customer's environment. That not only gives our customers assurances that their information is going to be protected in the cloud, but it also starts giving them the ability to be agile in terms of developing workflow on the fly while turning data into real usable information," he says.

Extending Functionality and Value via the Cloud

Beyond the operational benefits of faster, more economical deployment, many organizations are finding that cloud-based engines for HPM actually enhance functionality and value. The cloud's Internet architecture makes it easier to incorporate more data sources. It also has a foundation for securely delivering tools and access to more users.

The greater visibility that results from allowing organizations to aggregate data more easily, affordably and securely is the most critical advantage of cloud-based architecture, according to WeCare TLC's Klepper.

"Those data allow us to do a lot of things. They allow us to quantify our risk scores at both individual and aggregated levels. Our clinicians can identify who needs to be attended to and what the severity of their risk is. It makes it possible for us to see what other services patients have had outside our clinic. They allow us to check against a care-gap analysis tool to see what kinds of services people have had, versus what kind of services they need. So if a diabetic patient walks in and he or she has not had a hemoglobin A1C in six months, we can identify that and immediately address it. So to us, the analytics tools are the very basis of being able to do the management. And having the data come out in a way that is actionable is everything."

This improved visibility into all aspects of an organization's healthcare landscape translates directly into more effective and timely tactical changes in plan management by giving organizations the ability to track their outcomes and fine-tune their policies.

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Lynn Barnard, Program Design and Strategy Specialist for Optimetra

“Organizations want to see in real time what their campaigns — their disease management, care-coordination, pharmaceutical adjustments — are doing to their population. If things change, they want to be able to adjust if they’re off course,” says Optimetra’s Barnard.

“They don’t want to wait for a year to adjust. They want to make adjustments in near real time, even within a month. If the adjustment doesn’t work, they want to be able to readjust again. So there’s this immediacy of adjustment and modification to how we’re interacting with our members and providers that makes all the difference for generating immediate cost-savings.”

Cloud-based solutions allow organizations to provide secure access to more users by way of role-based protocols. This in turn enriches an HPM system’s content by enabling different stakeholders to interact with cloud applications that are relevant to them. This interaction forms the basis for enhanced collaboration within an organization’s community.

“There are a number of constituents who are involved with the continuation-of-care provision,” says Barnard. “Cloud computing can provide a single portal system to collaborate appropriately with multiple types of providers — not just specialists and PCPs, but also DME and rehab, OT and social services,” she says.

“Behavioral health,” she points out, “is an absolutely critical and incredibly important part of how well this whole operation is going to work in terms of cost containment and coordination across systems of care. Portal systems that have role-based access through the cloud allow this collaboration of interdisciplinary teams to take place.”

Conclusion

The immediate need for health plans to respond to health reform, transition their business model to the cloud and bend the healthcare cost curve is creating an unprecedented sense of urgency to embrace new solutions. Their agility and flexibility, as well as their potential for cost savings and rapid deployment, are causing more organizations to select cloud-based models for their HPM strategies.

“Once you get a chance to see cloud computing — and cloud-to-cloud computing — it gets you thinking about other possibilities and capabilities and how you might be able to solve new challenges,” says HCI Federal’s Walker. “A lot of the legislative mandates that are coming down — not only for the healthcare industry, but for other industries as well — are very time sensitive and political in nature. You need to be able to react to those. In the healthcare industry, those responses have to occur within very tight timelines.”

“The infrastructure needs to serve not only internal management and operations, but also external providers and members,” Barnard adds. “It is a completely holistic system now, not just a claims system with some coordination or high-risk management on top of it. We are moving more toward a provider-driven structure now, and that requires coordination, collaboration, communication, consultation and consideration of the value of services that promote the greatest wellness and prevention.”

End Notes

¹ NIST Special Publication (SP) 800-145, Draft, Regarding the Definition of Cloud Computing

² <http://www.pwc.com/us/en/press-releases/2011/Employer-Medical-Costs-Expected-to-Increase.jhtml>

³ Healthcare to Spend \$518 Million on Infrastructure as a Service in 2015 <http://www.instat.com/press.asp?Sku=IN1105131SBA&ID=3218>

About the HPM Institute

The Healthcare Performance Management Institute (HPM Institute) is a research and education organization dedicated to promoting the use of business technology and management principles that deliver better and more cost-effective healthcare benefits for employers who cover their employees.

The Institute's mission is to introduce and develop a new corporate discipline called Healthcare Performance Management (HPM) — a technology-enabled business strategy that tackles the challenge of controlling healthcare cost and quality in much the same way that enterprises have optimized customer relations, supply chain management and enterprise resource management. HPM provides C-level executives with visibility and control over company healthcare benefits spending trends and risk management postures, while protecting individual employee privacy.

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