

Health plans look to the clouds

Exploring cloud technology opportunities in the face of rising cost pressures and future uncertainty



Context

Cloud computing technologies may represent an intriguing opportunity for health plans to gain a competitive edge in an environment of significant uncertainty and disruption. Health care reform legislation, shifting demographics, rapid clinical innovation, and persistent economic constraints suggest that flexibility and adaptability will be critical factors for future success. In this turbulent climate, cloud technologies seem to be maturing as solutions capable of providing improved cost efficiency and greater scalability, as well as enabling innovative product design to better target and serve new and existing markets. Health plans, however, should balance the possibilities that cloud solutions hold with the levels of change their organizational capabilities can support to make the transition to the cloud.

In the health information technology arena, cloud computing is a game changer — as an architecture, platform, and services strategy. The global market for cloud computing is expected to grow six fold over the next decade, from \$41 billion in 2010 to over \$241 billion in 2020.¹ Industries from media to banking have invested heavily in the cloud in pursuing agility, asset efficiency, and marketplace advantage. Health plans could benefit similarly from the advantages that cloud computing provides.

This paper provides a glimpse of the opportunities available to health plans in using cloud technologies as a central focus of strategies for growth and innovation.

Problem

Valid trepidation exists among health plans that cloud technologies still need to address all of their security and privacy, intellectual property, and control concerns. This is changing rapidly as the cloud computing industry evolves and matures. In industries that have led the way in cloud adoption, production cloud services seem to deliver significant technical and business value while meeting many regulatory and security standards. The current trajectory of cloud security improvement may suggest that these concerns should not pose a barrier to initial exploration of cloud opportunities or to the development of a future technology strategy that includes cloud technologies.

Beyond basic security concerns, health plans are confronted with a broad array of cloud models and options that add further complexity to establishing a clear cloud strategy. Notwithstanding these valid concerns, investments in cloud solutions could help maintain the sustainability of health plans in “the new normal” as clinical, administrative, and financial data are more readily available, and as the industry emerges from health reform with new opportunities and challenges.

Solution

As health plans explore cloud technologies, their strategies could be guided by two initial considerations: enabling infrastructure and applications. These two can collectively provide a broad spectrum of technology permutations to satisfy a wide range of business strategies. Beyond these, health plans have additional options — to be a subscriber to cloud services through a strategic vendor/partnership or to provide cloud services to other organizations.

In addition, health plans should incorporate security and privacy technology standards and components, such as National Institute of Standards and Technology (NIST) 800-53, or a framework like the Common Security Framework that the Health Information Trust Alliance (HITRUST) has established, into their application and infrastructure strategies once identified.

The basics

The enabling mechanisms for cloud solutions include categories of services — Software as a Service (SaaS), Platform as a Service (PaaS), Infrastructure as a Service (IaaS) — as well as delivery models — public, private, hybrid, and community. The suitability of these varies across the health plan application landscape, so effective cloud strategies could include a mix of several best-of-breed solutions to suit business needs and goals.

General terms:

Health plan: Commercial health care insurer

Applications: Specific software programs

Cloud Computing: A model for delivering on-demand, self-service computing resources with ubiquitous network access, location-independent resource pooling, rapid elasticity, and a pay-per-use business model.

Categories of services

Software as a Service (SaaS): Licensing of an application to customers for use as a service on demand.

Platform as a Service (PaaS): Delivery of a computing platform and solution stack to facilitate the deployment of applications.

Infrastructure as a Service (IaaS): Delivery of computer infrastructure (typically a platform virtualization environment) as a service.

Deployment models

Private: Customer-owned environments fully dedicated to a specific business or user group. Typically leverage a shared services model with variable usage of a common pool of virtualized computing resources. Private cloud services are used only by their owners and may provide the most secure environment.

Public: Vendor-provided cloud services, used on a subscription basis from a remote location, using “multitenant” environments. This architecture may present security, privacy, and auditing implications to subscribers in certain usage cases. Vendors may offer additional security through “Virtual Private Clouds” to isolate subscriber data and communications traffic.

Hybrid: Offer features of both private and public cloud environments. Using a hybrid environment, companies may operate a variety of regulated and unregulated information services, using design options that are aligned with specific security and privacy requirements.

Community: Used across organizations with similar objectives and concerns, allowing for shared infrastructure and services. Can be deployed using any of the three methods outlined above (private, public, hybrid), simplifying cross-functional IT governance.

Cloud deployment models offer a range of options that can span a broad spectrum of control, from closely managed private clouds to highly autonomous public cloud models. While public cloud models likely will not play a large role in the initial shift to the cloud for health plans, community, hybrid, and private models may offer particular benefits making them worthy of consideration.

The community cloud model, in particular, appears to be making early inroads in health plans, helping connect multiple parties via common applications that have similar or shared functionality. Private community cloud models may offer a secure and effective near-term solution for several non-core processing applications, including customer service (e.g., interactive voice response and Web self-service), HR systems, document management, imaging, and IT functions such as testing.

Hybrid cloud solutions may provide a flexible model that will likely play a key role in both near- and longer-term cloud opportunities for health plans. This model allows plans to combine a mix of internal architectures with vendor cloud services to address privacy and security needs. Potential applications of the hybrid model include sales and marketing solutions in the near term, as well as electronic data interchange (EDI) and data analytics platforms in the longer term as solutions mature further. According to a recent article in eWeek, insurer EmblemHealth recently deployed a hybrid cloud solution that allows their 2.9 million members to use applications on their mobile devices to retrieve insurance card information and to locate nearby in-network providers and services. EmblemHealth utilizes a PaaS cloud service to store generic and nonprivate information for this service, while all patient information is stored internally on a secure, encrypted database.²

Finally, private clouds can provide the most secure and controlled cloud model. Private clouds could be among the most effective cloud options for sensitive core administrative and actuarial/underwriting functions. Given the primary role that private clouds may play in technology solutions for health plans, early exploration of private cloud architecture and design might be critical for health plans that are seriously considering future deployment of cloud solutions.

Infrastructure optimization in action:

- A global media/technology company needed to increase IT efficiency. Deloitte helped create an infrastructure shared services organization and designed an optimization road map to reduce infrastructure spending by approximately 25 percent.
- A large financial services company wanted to reduce its infrastructure and applications footprint to improve the delivery of products and services to global customers. Over the course of three years, Deloitte helped execute a global infrastructure transformation program that delivered more than \$1 billion in estimated run-rate savings.

Laying the cloud foundation

Many organizations face a costly IT infrastructure, scarce IT resources, and steadily increasing capacity requirements. Given these, data center and infrastructure optimization is a logical place to begin harnessing the value of cloud computing. Consolidation, virtualization, rationalization, and service delivery optimization are prime targets for improvements. From on-demand self-service and broad network access capabilities to resource pooling and measured services, innovative ways to improve infrastructure are already in place and gaining momentum. Infrastructure optimization could mean looking beyond existing infrastructure assets, putting more emphasis on cloud computing and software-as-a-service options provided by external vendors. Key benefits possible through data center and infrastructure optimization may include:

- Significant cost savings in IT expenditures
- Deference or avoidance of new expenditures
- Realignment of IT spending to the most pressing IT issues
- Shift from “firefighting” to innovation and business agility
- Reduction in infrastructure complexity
- Increased responsiveness
- Enablement of self-provisioning

Given the strong commitment of major technology vendors in the cloud infrastructure space, confidence levels have been raised for cloud infrastructure to be a viable solution for health plans in the immediate future.

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Deloitte's experience in helping health plans adapt infrastructure and cloud applications to their current business strategies point to seven lessons that could inform a health plan's considerations around the cloud:

- **Simplify:** Remove unnecessary complexity—duplication, redundancy, overlap.
- **Standardize:** Utilize a smaller number of select vendors who can provide the technologies that can deliver the scale and capabilities your organization needs.
- **Virtualize:** Move capabilities, services, and applications out of your hosting environment and onto someone else's where there is a clear business strategy.
- **Integrate and automate:** Minimize repetitive tasks and manual work, leveraging application services (SaaS) where the business case makes sense, such as working with multiple parties or for one-time service needs.
- **Centralize and consolidate:** Simplify infrastructure regionally, globally, and functionally where favorable.
- **Innovate:** Continue investing in new capabilities and mechanisms to drive business results.
- **Don't forget your people:** Foster change management; altering attitudes and approaches toward infrastructure can be highly challenging

Targeting applications for transition: Where do you start?

For most health plans, implementation of cloud technologies may follow a path from “the edge to the core”—less sensitive applications make the transition first, while core administrative functions represent a longer-term cloud opportunity (Figure 1). Immediate opportunities may exist for health plans to deploy cloud solutions for noncore applications, including customer service and internal reporting systems, where active experimentation and adoption are already underway and there is potential to yield near-term cost reduction and improvements in operational effectiveness. The barrier to entry for these applications is low, as several SaaS cloud vendors currently compete in the cloud market, and generally less privacy concerns exist if Personal Health Information (PHI) is not exchanged.

As health plans move toward more security-sensitive core applications, the threshold of privacy and control desired may increase, likewise extending the timeline to implementation for suitable cloud solutions.

Figure 1: Health plan application landscape

Health plan application landscape (Groupings of typical key health plan software application types)					
Members (Individuals, groups, etc.)	Channels (CRM, sales portals, PHR)	Product and benefits management	Case install	Billing	Information management (Book of records, reporting, analytics and business intelligence)
		Enrollment and member management	Provider and network management	Member services	
		Underwriting and pricing	Claims adjudication management	Medical management	
Partners (Brokers, providers, facilities, plans, alliances)	Integration and workflow services				
	Business shared services (Internal and Partners) (Internal: Document management; External: ID cards/welcome kits printing, etc.)		Corporate shared services (Financial, HR services, etc.)		

Legend* ■ Near-term (< 1 year) ■ Medium-term (1 – 3 years) ■ Long-term (>3 years)

* Indicates when future opportunities for moving applications to cloud solutions will likely become viable, from present

Current trends in health plan cloud solutions

Several vendors already offer cloud solutions to support several non-core health plan applications. At the edge of the application landscape, Salesforce.com is a provider of cloud-based customer relationship management (CRM) solutions that endeavor to provide a more effective sales process for both internal and external sales teams.

Within the core of the health plan application landscape, traditional vendors have ventured into the cloud computing space, pushed along by their vendor collaborators, clients, and new entrants. Trizetto, through its ICD-10 collaboration with 3M, have teamed together to offer two new services through SaaS. This on-demand environment is designed to allow health plans to model the impact of ICD-10 coding on provider contracts.³ iKaSystems has also emerged as a provider of enterprise-level cloud computing solutions for health insurance plans, demonstrated by their recent Medicare gateway and member portal solution offered via the Internet.⁴ As established vendors, such as Trizetto and iKaSystems, continue to gain traction in providing cloud-based services for core organizational functions, it is likely that new entrants will emerge and competition will increase greatly. Health plans that remain out in front of this market maturation in their planning could be well-positioned to capitalize on the competitive advantages cloud technologies can provide.

Smart first steps: Assess opportunities and capabilities

A good start for most health plans exploring the cloud is the development of a cloud strategy and implementation road map that take into consideration the fit, feasibility, and value of cloud technologies for applications across the enterprise. Regardless of whether the resulting implementation road map targets one application or all for migration to the cloud, a detailed cloud assessment could provide valuable knowledge and insight for future IT planning.

Identify target cloud technologies and assess fit: Do your homework!

As with any significant shift in IT strategy, the first step toward implementation of cloud technologies should involve a detailed assessment of the strategic and operational fit among target solutions. To be effective, cloud services should be capable of supporting the privacy and security needs of the enterprise, in addition to delivering the cost efficiency, scalability, and capability objectives desired. For each application targeted for transition to the cloud, health plans should consider evaluating fit based upon these key objectives.

The appropriate cloud service and model for each application should also be determined based on its ability to meet organizational goals, as well as corporate and regulatory requirements. In addition to identifying the fit with key objectives, this review may consider the technological feasibility and financial attractiveness of targeted solutions to determine the viability and favorability of the intended course. An evaluation of the feasibility of available technologies may entail an analysis of the maturity of existing solution architectures, the expected complexity of migration to target solutions, and the capability of existing vendors to support targeted applications in accordance with desired levels of performance and security and privacy.

Finally, an organization's readiness to implement and operate a cloud should be considered. The product of the initial fit assessment will form the basis of the implementation road map, with a view of the target service categories, delivery models, and implementation sequencing for applications slated to make the move to the cloud.



This appraisal should estimate the return on investment for each individual project, including estimates of transition costs, and include a quantification of benefits projected with the new technology, such as operating cost savings, scalability, and added capabilities, that will help drive new revenues. Health plans may find that some target cloud investments do not make the cut when considered within this holistic context.

Closing thoughts

Cloud computing represents a tectonic shift in the IT landscape, and health plans may be compelled to take a fresh look at their current technology road map. Regardless of whether health plans are skeptical, cautiously intrigued, or enthusiastically invested in the potential of cloud technologies, it may be time to begin exploration, and planning should begin as soon as possible. An assessment of the potential gains from cloud computing in light of costs could help position health plans for competitive advantage.

Health plans as cloud subscribers vs. providers

To determine whether a cloud service should be accessed as a provider or subscriber, Deloitte developed a delivery framework called CloudPrint built around three distinct offerings:

CloudPrint for providers: A suite of offerings covering business and process transformations involved in becoming an internal or external cloud service provider, including channel strategies, market analysis, and maturity and operating models.

CloudPrint for subscribers: A suite of offerings covering business, organizational, and process transformations involved in becoming a subscriber to cloud services, including Information as a Service, Software as a Service, and Platform as a Service.

CloudPrint for sectors: Specific sector editions containing industry insights into the most relevant and complex challenges facing clients. Offerings include Subscriber editions focused on health plans, banking, consumer products, insurance, life sciences and media; and Provider editions focused on technology and telecom.

Endnotes

¹ Ried, Stefan; Kisker, Holger "Sizing the Cloud: Understanding and Quantifying The Future of Cloud Computing", Forrester Research, April 21, 2011.

² Horowitz, Brian "Microsoft Azure Cloud Platform Powers EmblemHealth Mobile Apps", eWeek, July 18, 2011.

³ Healthcare IT news, May 2010.

⁴ NASCO press release, July 2011 / UCare press release, November 2010.

Key contacts

Jason Wainstein

Principal
Deloitte Consulting LLP
jwainstein@deloitte.com

Cindy Patterson

Principal
Deloitte Consulting LLP
cipatterson@deloitte.com

Subject matter specialists

Rajeev Ronanki

Director
Deloitte Consulting LLP
rronanki@deloitte.com

Quinn Solomon

Senior Manager
Deloitte Consulting LLP
qsolomon@deloitte.com

Chris Weitz

Director
Deloitte Consulting LLP
cweitz@deloitte.com

Paul Clemmons

Principal
Deloitte Consulting LLP
pclemmons@deloitte.com

Paul Roma

Principal
Deloitte Consulting LLP
proma@deloitte.com

Scott Seay

Senior Manager
Deloitte Consulting LLP
sseay@deloitte.com

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