Hybrid cloud solutions for healthcare payers

Enabling a flexible, security-rich business and IT response to a shifting industry

Contents

In transition: The dramatically evolving healthcare industry

An aging world population. Rising healthcare costs. Financially troubled governments paring back benefits. Emerging economies creating demand for expanded healthcare services. Results-based reimbursement programs driving proactive care. Add extensive market and regulatory changes, and you have an industry on the brink of disruption.

But out of chaos comes opportunity. Organizations throughout the healthcare ecosystem are reinventing themselves to accommodate new industry requirements. For example, healthcare information is now created and revised across the provider and payer spectrum. How do all sides aggregate formerly siloed data? In the United States, millions of new consumers are signing up for healthcare. How do payers handle the spike in online traffic during enrollment periods? Issues like this give healthcare payer business executives and IT leaders a fresh appreciation for how their domains intersect.
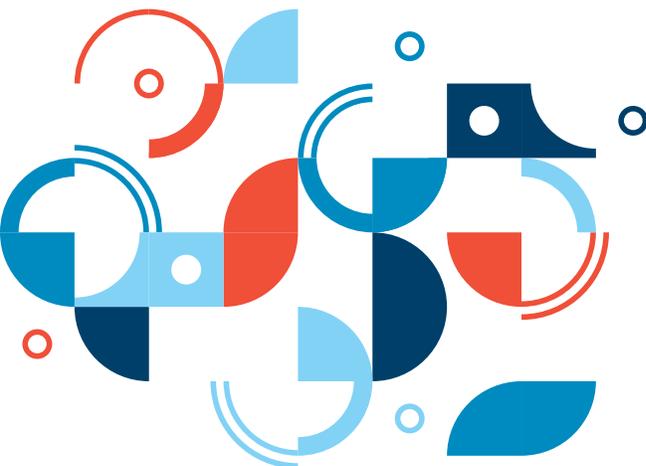
Under pressure: The transformative impact of market changes

The healthcare industry has always endeavored to fulfill the "Triple Aim:" improving patient experience of care, enhancing population health and reducing the per capita cost of health-care.[1] But how, when and where those aims are accomplished is changing. As shown in Figure 1, the industry is navigating seismic shifts on every front, including:

- As reimbursements—and profit margins—shrink, payer bases are expanding through **acquisitions** of other healthcare plan organizations, adding niche markets to their portfolios and broadening geographic reach.
- Declining profit margins are creating **increased pressure to enhance process efficiencies**, often with innovative technology that can handle compliance issues.
- The United States government has implemented the **Affordable Care Act (ACA)**, healthcare reform designed to expand healthcare coverage. This requires increased agility in a payer's enrollment system and motivates healthcare providers to offer quality, economical services.
- **Health insurance exchanges (HIEs** – new online marketplaces in which Americans can shop for coverage from competing private providers) emphasize marketing directly to the consumer.
- Not only do consumers expect secure **technology-enabled access to healthcare plan and claim information**, they expect user-friendly experiences. They also expect healthcare payers to quickly identify consumer demands and bring to market targeted products and services.

- **A shared risk model for reimbursement with accountable care requirements** forms a new ecosystem in which payers must connect electronically with providers and healthcare facilities to access data and process claims and reimbursements.
- **Technology-enabled entrepreneurial ventures** such as Oscar Health Insurance are creating an intuitive, human-scale user experience.[2] According to *Forbes*, Oscar plans to "change the health insurance industry through technological inter-faces, telemedicine and real transparency."[3]
- **The use of mobile phones is proliferating in emerging economies,** with customers often bypassing landlines altogether. Healthcare providers are beginning to use mobile technology to provide and monitor services, generating extensive data that providers and payers can access through analytics.
- **New digital health information technologies (HIT),** such as electronic medical records (EMRs), electronic prescriptions and telemedicine are revolutionizing interactions between physicians, payers, patients and other stakeholders.[4] In emerging markets, these technologies are expanding health services and reducing barriers to access for communities in remote areas, the elderly and populations with severe health issues.[5]

Market forces driving healthcare industry convergence are challenging the current model of how IT services are delivered

Providers

Trend in declining reimbursement coupled with increased accountability to deliver quality services

Market consolidation and new players drive increased competition

Healthcare delivery organizations

New care models delivered outside of traditional care settings reduce cost of delivery

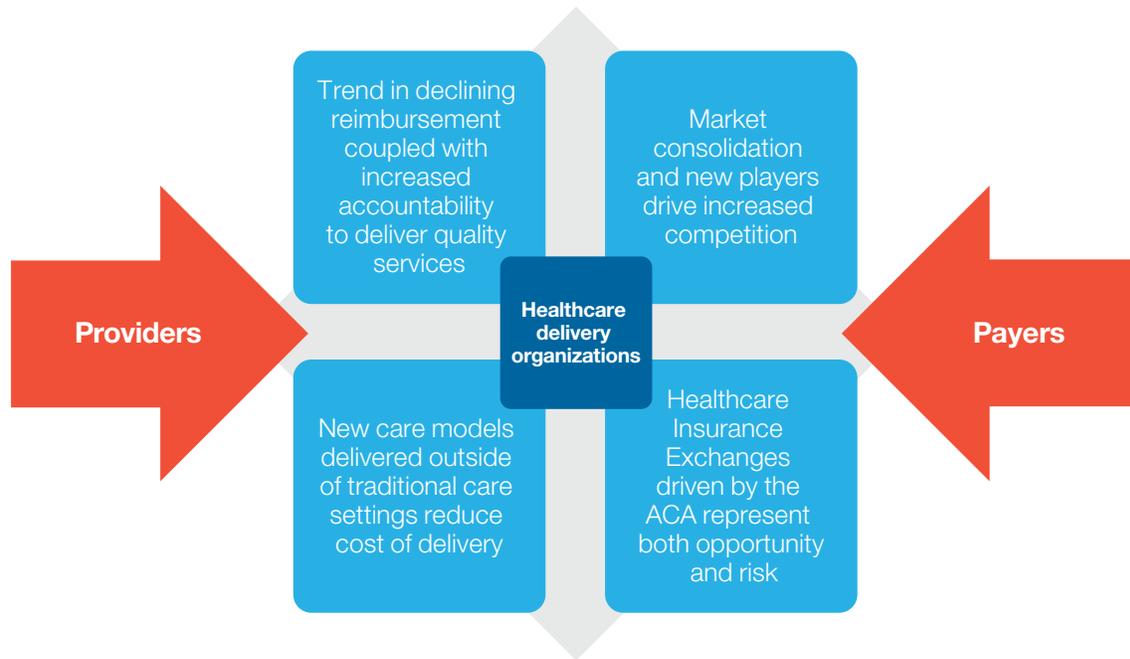Healthcare Insurance Exchanges driven by the ACA represent both opportunity and risk

Payers

Figure 1. Extreme pressures to do more with less are shaping a new IT operating model for healthcare payers.

A new playing field: When governments change the rules

Rapidly changing government regulations can be the catalyst for technology advances, and more regulatory developments are pending. Currently, healthcare payers contend with:

- **The Affordable Care Act (ACA)** is expanding healthcare coverage to millions of additional citizens. Payers need to integrate with HIEs, expand eligibility and redefine service levels in compliance with new regulations.
- **The Accountable Care Organization (ACO)** is a delivery model in which the degree of provider reimbursements depends on quality metrics and cost of care reductions. To effectively manage this new process, provider and payer IT systems must integrate.
- **Countries in Central Europe, the Middle East and Africa also face compliance issues** with privacy and regulatory requirements, and this is a driving force behind IT investments.[6]
- **New regulatory requirements and the need for HIEs can accelerate the adoption of EMRs** among central and eastern European healthcare providers.[7]

The changes wrought by these market and regulatory evolutions have severely strained traditional healthcare IT models, creating a complexity and cost that is unsustainable. Both healthcare payers and providers are demanding strategic services and new healthcare operating models based on technologies embraced by less regulated industries—technologies like hybrid cloud computing.

Simplifying payer acquisitions through a cloud solution

One healthcare payer acquired a business portfolio that included payer services for US military men and women serving overseas. These healthcare records, which could contain sensitive information about secure locations, had to be Federal Information Security Management Act (FISMA) compliant.

This was a complication not anticipated by the acquiring company, which then had to segment the military business onto its own FISMA-compliant IT infrastructure. Additionally, and with extensive manual labor, the acquiring company had to physically destroy redundant devices and send documented evidence to the federal government.

If this organization had opted for a cloud solution, specifically with IBM, it could have utilized a FISMA-certified federal cloud, minimizing a substantial manual effort and the destruction of usable IT components. Using a FISMA-certified federal cloud is an important step toward FISMA compliance.

Where do we go from here? Critical questions for healthcare payers

Today's business objectives and the need for sustainable results require a strong partnership between healthcare payer line of business (LoB) and IT leaders. LoB executives should align marketplace innovation with customer demands, and IT leaders must design and deliver security-rich services within the highly regulated healthcare payer industry.

Cloud computing is often where business and IT discussions intersect. In fact, a recent survey reported that cloud's strategic importance to business users is expected to double from 34 percent to 72 percent, even surpassing their IT counterparts at 58 percent.[8] Along these lines, healthcare payer organizations

are often delving into questions and strategies that have significant repercussions on both the business and IT organizations. For example:

- Change in care reimbursement models; demand for price and information transparency; a larger focus on a population health management approach; and increasing membership in Medicaid, Medicare, and dual-eligible lines of business are driving innovation and development in core payer systems.[9] **How can payers improve member and provider relationships in this new environment and differentiate from their competitors?** (Note: Dual eligible is defined as roughly 9 million low-income patients covered under Medicare and Medicaid, creating an expensive and complex patient population.)[10]

- Payer executives need greater internal transparency and are also challenged to provide better external transparency to stakeholder groups, in terms of medical loss ratios, actual costs of care, and outcomes for everything from specific episodes of care to the total return on investment (ROI) for wellness programs.[11] **Given these requirements, how can payers securely extend and improve collaboration across HIEs, EMRs and enterprise systems such as claims processing?**

- A post–health reform environment and rising costs of care and insurance mean that payers need more agility and innovation in the development of public and private exchange benefit products, as well as products that better address rising employer costs. Payers need to quickly develop and market insurance products that adjust to the needs of consumers.[12] **How can payers incorporate analytics and IT delivery strategies to develop new benefit products and quickly bring them to market?**

- Consumers are increasingly seeking healthcare engagement through mobile, social and web technologies. **How can payers drive innovation in their value-add to the member experience?** How can they incorporate social media into their enrollment process? How can they best utilize web portals, mobile access and applications, and analytics? For example, Aetna, a leading US insurer, has created an ecosystem of connected health and wellness apps that deliver a consolidated view of user's health.[13]

- This new landscape requires timely eligibility verification, enrollment and processing of Medicaid, Medicare and dual eligible lines of business. Payers need flexible core systems that will more easily accommodate the enrollment, billing and information reporting needs for the market.[14] At the same time, profit margins squeezed by new regulations and competitors put increasing pressure on payers to streamline front- and back-end operations. **How do payers use cloud to optimize organization and business processes?**

- The market and regulatory forces we've discussed place organizations under increasing cost pressure. **How can payers finance an IT upgrade to meet new business and regulatory requirements?**

From here, we'll examine how hybrid cloud technology can help enable business results for healthcare payers while also adhering to industry-specific privacy, security and regulation requirements. We will discuss how CIOs and LoB executives can collaborate on reducing shadow IT and jointly developing an effective hybrid cloud strategy. This strategy includes identifying which workloads should incorporate, migrate to or be developed on a cloud platform—and how adopting cloud can contribute to business outcomes.

The best of both worlds: A security-rich hybrid cloud solution

Despite the considerable benefits of a cloud solution, healthcare payer organizations can fall prey to doubts about cloud's ability to handle regulatory and privacy concerns. In fact, when opting for cloud, healthcare payers have traditionally exercised a preference for private cloud services that better secure handling of confidential member and patient data.

As well, healthcare payers considered extensive regulatory compliance an obstacle to adopting cloud, given the complexity of management and interoperability of public clouds and private clouds. (Public clouds are IT activities and functions provided as a service over the Internet. Private clouds are IT capabilities provided as a service over an intranet, in an enterprise and behind the firewall.) For example, the US government requires adhering to and reporting on security and privacy standards

such as the Health Insurance Portability and Accountability Act (HIPAA), the Payment Card Industry Data Security Standard (PCI DSS), FISMA and others. Many governments, including the United States, have data residency requirements as well as security clearances for IT support personnel.

Taking your hybrid cloud security to Skyhigh levels

IBM has teamed with IBM Business Partner Skyhigh Networks, the cloud visibility and enablement company that allows organizations to embrace cloud services with more appropriate levels of security, better compliance management, and governance. Skyhigh helps healthcare payers govern their cloud adoption lifecycle with virtually unparalleled visibility and risk assessment, usage and threat analytics, and seamless policy enforcement.

IBM and Skyhigh Networks can perform an "at no cost" cloud discovery and risk assessment of all your company's current cloud services. The process is designed to be simple and straightforward: we identify the source of your log data and collect approximately seven days' worth of logs. Our team delivers a custom report for your organization that shows you:

- Cloud services in use by your employees, both shadow IT and sanctioned IT
- The top 20 most-used services
- Robust risk ratings for each cloud service in use
- Detailed usage metrics for your organization
- "Allow or deny" statistics for each service, which is useful in auditing cloud policy enforcement
- Recommendations to include remediation efforts for better securing your data in the cloud

Once Skyhigh has identified the at-risk cloud services in use, IBM can help you consolidate them to more secure cloud services and even migrate them to a security-rich cloud environment such as SoftLayer®. As a follow on, Skyhigh can provide security services in conjunction with IBM to help ensure your corporate data is better secured and protected when stored in cloud services.

SoftLayer, an IBM company, provides solutions that allow a company to specify exactly where their data and servers will reside. The company gains complete transparency, right down to the rack unit. Additionally, it obtains a complete audit trail for every utilized resource—a unique level of control in the industry.

Hybrid cloud: The benefits outweigh the addressable inhibitors

In the past, payers have not deemed the benefits and economies of scale of public cloud as a suitable reward for the perceived risk.[15] While the primary reasons for using either private or public clouds were the same—hardware and software cost savings, reduced maintenance costs, and decreased pressure on internal IT resources—almost one in three respondents to a survey of healthcare payers cited greater security as the reason for using a private cloud instead of a public cloud.[16]

Yet a hybrid cloud solution can provide healthcare payer organizations with the best features of both public and private clouds, as shown in Figure 2. Healthcare leaders increasingly believe the benefits of moving technology to the cloud outweigh the inhibitions—which are addressable.[17] Analysts advise that while healthcare payers should manage security risks, they should not automatically eliminate cloud. **The majority of healthcare CIOs with experience working with cloud service providers find that cloud can offer the same or better breach risk profiles compared with on-premise deployment.**[18] As with on-premise deployments, security issues need to be managed carefully with cloud, but this should not deter the adoption of cloud strategies.

In fact, the cloud computing market in the healthcare sector is expected to grow to US$5.4 billion by 2017, according to the research firm Markets and Markets.[19] Most healthcare organizations moving to cloud computing are doing so to reduce operational costs, because many have very limited budgets—a powerful motivation that will overcome any security and privacy concerns. The growing cloud market in healthcare is evidence that many industry organizations are teaming with cloud service providers to achieve better security models and technology in the cloud.
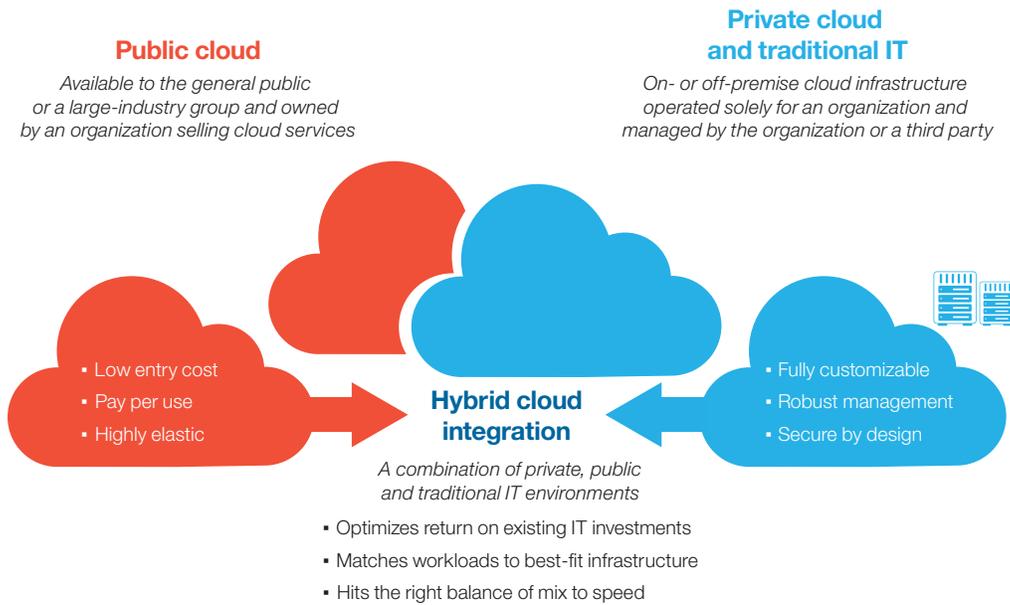
Public cloud

*Available to the general public
or a large-industry group and owned
by an organization selling cloud services*

**Private cloud
and traditional IT**

*On- or off-premise cloud infrastructure
operated solely for an organization and
managed by the organization or a third party*

- Low entry cost
- Pay per use
- Highly elastic

**Hybrid cloud
integration**

*A combination of private, public
and traditional IT environments*

- Fully customizable
- Robust management
- Secure by design

- Optimizes return on existing IT investments
- Matches workloads to best-fit infrastructure
- Hits the right balance of mix to speed

Figure 2. A dynamic hybrid cloud provides the advantages of both public and private cloud environments.

A growing acceptance: Why healthcare payers are taking a closer look at cloud

With a heightened understanding of how security issues can be managed, healthcare payers are growing increasingly comfortable with cloud. IDC notes that nearly half of respondents to a recent survey reported current usage of cloud computing. The remaining organizations said they are either working toward deploying cloud within the next year or actively researching options.[20]

Cloud's attributes make it a powerful delivery model enabling new business models, cost benefits, flexibility and large on-demand capacity. In fact, according to the same survey, speed to market (83.3 percent) and IT infrastructure cost reduction (81.7 percent) are the top two benefits of cloud computing cited by healthcare payer executives.[21]

But healthcare organizations use cloud to achieve more than just cost savings and scalability. They see it as fundamental in helping them become more collaborative, data driven, and patient and family centered. In particular, cloud computing is helping healthcare organizations achieve rapid innovation of novel products and services, improve and re-engineer their business processes and workflows, and increase engagement and collaboration internally and across the healthcare ecosystem. And they are already seeing significant benefits in terms of improving patient outcomes, innovating service delivery, and reducing costs and improving value.[22]

Hiding in the cloud: Reducing shadow IT through collaboration

While many healthcare payer IT organizations have been reluctant to adopt a cloud approach, the LoBs have often gone rogue—outright using cloud-based applications or solutions in an approach known as shadow IT. Business units want and require new functionality at "cloud speed," including application design or acquisition as well as implementation. In fact, research shows that shadow IT cloud deployments can be up to ten times the size of cloud deployments actually authorized by the IT department.[23] Functional areas such as legal, marketing, product management, and supply chain are more susceptible to the lure of shadow IT, while finance, security, HR, R&D and sales are less likely to stray.[24]

How to expose shadow IT? One tactic is for IT executives to investigate the annual spend by the business units, perhaps with the help of the finance department. Once they understand where hidden IT spend occurs, they can avoid a punitive approach and instead seek to understand the root cause. Turning the hidden into known can improve the services IT legitimately provides, while creating an understanding of where to apply security and safeguards to reduce the enterprise security gaps.

As well, these shadow IT reviews can lead to a beneficial needs analysis and the adoption of legitimate, jointly sponsored cloud solutions. IT could even fund a Business Analyst who is embedded in LoB departments to gain knowledge around their work and processes. This Business Analyst can become a translator between IT and the LoBs, and perhaps even serve as a leader or focal point to expedite new department IT projects and refreshes. Research shows the number one issue holding IT back from being a more valuable partner to the business areas is that IT does not demonstrate an understanding of business processes.[25] Engaging across department lines can go a long way toward educating both sides about one another's priorities and challenges.

Ideally, IT and LoB partnerships can build an efficient, flexible organization that proactively manages cost and regulatory requirements and enables growth, transparency and accountability. An enterprise-sponsored self-serve hybrid cloud option can stem the growth of shadow IT or hidden clouds, as well as reduce the risk of unauthorized use of data or system resources and unintended sharing of regulated information.

Whether teaming to understand shadow IT or partnering to develop a co-sponsored hybrid cloud strategy, fostering both formal and informal collaborative approaches between IT and LoBs is imperative. It takes cooperation from both sides for healthcare payers to create a timely response to a volatile market. Ideally, both IT and LoBs can contribute expertise and insights to solutions that fulfill customer demands for innovative services and also deliver those services in a security-rich, regulated environment. As shown in Figure 3, a collaborative approach can create a shared IT and business unit cloud strategy that facilitates business needs and growth while protecting the enterprise.

Figure 3. A collaborative approach between LoBs and IT can fulfill requirements on both sides.

Why hybrid cloud for healthcare payers?

IBM's point of view: a hybrid cloud can be an effective approach for healthcare payer organizations that need to provide innovative, state-of-the-art services to customers and healthcare providers, while also adhering to strict regulatory requirements. Hybrid cloud can help resolve privacy and regulatory issues, reign in rogue IT and utilize existing IT investments.

Healthcare payers can use hybrid cloud solutions to obtain the best of both worlds. Hybrid cloud combines the customization, manageability and security of a private cloud and traditional IT with the ease of entry, cost effectiveness and elasticity of an off-premise public cloud. Hybrid cloud can link the on-premise IT infrastructure to public and private clouds (hosted either on- or off-premise) with the controls necessary to meet compliance and regulatory requirements. As well, hybrid cloud can help enable the continued use of existing IT investments while incorporating new technologies and methods for flexibility and business agility.
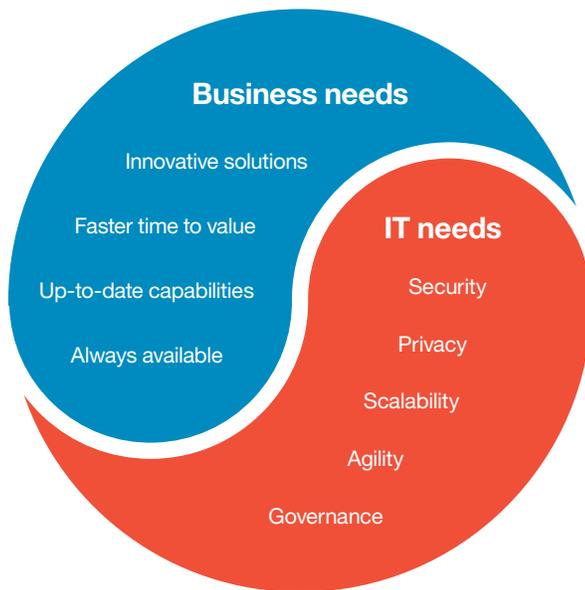
Burn the silos: Connecting systems of engagement and systems of record

Hybrid cloud technology and business processes can create a bridge between a healthcare payer's on- and off-premise systems and services. This bridge can facilitate:

- **Interactions between on-premise systems of record or back office systems with off-premise systems of engagement** as shown in Figure 4. For instance, a hybrid model can link new social and mobile systems as secure access points to core business systems such as underwriting and claims. A three-step, secure process could go like this:
1. A claim is adjudicated and paid in the system of record on a private cloud.
2. Through the secure service integration enabled by hybrid cloud, a mobile Facebook interface retrieves the claim payment record.
3. The end user can validate the information through the mobile Facebook interface—via a public cloud.

- **Secure connectivity and access with network extenders** that allow an organization to more safely broaden its reach beyond its data centers and physical structures to hosted infrastructures.

- **Data loss prevention and access control** through bare metal cloud servers (see sidebar on page 11) that allow you to determine exactly where your data and applications reside and who has authorization and service access.
- **End-to-end compliance, governance and documentation** that provides evidence of breach resistance and satisfies data protection inspections. Cloud governance and systems management tools can prevent unauthorized access to services.
- **Holistic management of the IT environment** via a single pane of glass or portal with cloud orchestrator software providing the interfaces.
- **Ability to tap into public cloud resources dynamically** for dev and test on public cloud and then shift an application to private cloud for production.
- **Orchestration solutions** that allow you to automatically coordinate and manage workloads over the various physical and virtual realms—whether data center resources; cloud-enabled business processes; or cloud services without additional system administration labor costs, complexities and effort. Workloads can move seamlessly between clouds on- and off-premise depending on capacity requirements. For example, payers could "burst" to public cloud for workloads like basic healthcare plan information during enrollment periods.
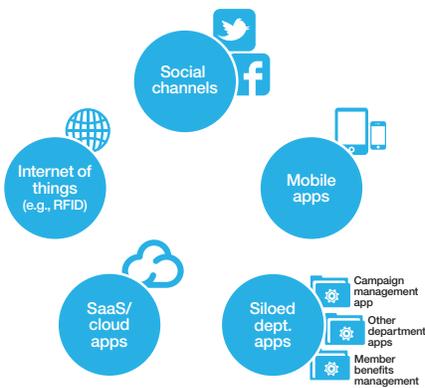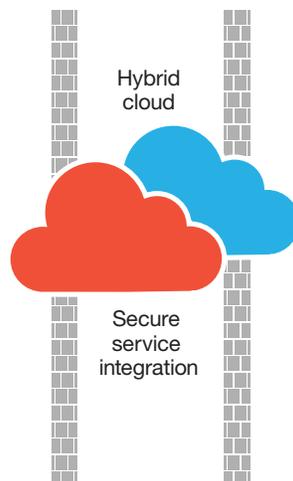

Figure 4. A hybrid cloud strategy can bridge systems of engagement and systems of record. (Note: RFID means Radio-frequency identification.)

A **bare metal cloud** is like a separate physical server with a virtualized Infrastructure as a Service (IaaS) that is ideal for security-rich or regulated workloads. It provides:

- On-demand server usage (by the hour) for rapid deployment
- Usage-based pricing with metered pricing
- Self-service tools via a portal with performance monitoring
- A high level of isolation that is provided by separate physical servers

The path forward: Recommendations

The transformation of the healthcare industry will likely take years, with no plateau of "status quo" in sight. The agility of a hybrid cloud computing strategy gives your healthcare payer organization the flexibility you need to navigate this era of change, because today's IT solution may not fit tomorrow's reality. To best unlock hybrid cloud's enormous potential, you will need to invest upfront "think time" with key IT and LoB stakeholders to define what exactly hybrid cloud will mean for your organization, both now and in the future. Throughout these discussions, you should:

1. **Be methodical.** Healthcare payer organizations should take a structured approach and utilize IT industry best practices to understand areas where a cloud computing delivery or consumption model can impact your LoB and IT organizations and service delivery model.

2. **Collaborate.** IT and LoBs should collaborate to provide solutions that meet business unit strategic objectives and IT requirements for agility. Investing in upfront joint planning and strategy work will enable you to place workloads on the right type of cloud in the most efficient and effective location.
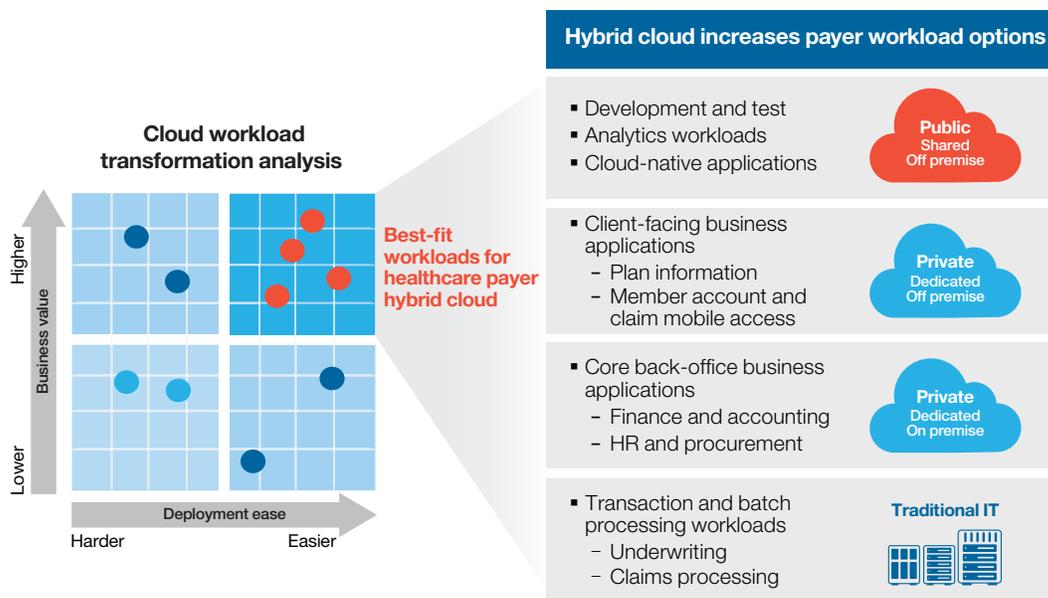
3. **Build a roadmap.** Begin building your roadmap to hybrid cloud by objectively analyzing your business and IT priorities, requirements and current workloads. For more detailed information, check out our series of three white papers, *Your roadmap to cloud adoption:*

- Part I: Creating a cloud computing strategy (http://ibm.co/TXqLpE)
- Part II: Defining a cloud ecosystem (http://ibm.co/WiOqm7)
- Part III: Establishing a relationship with your cloud service provider (http://ibm.co/1k3aITy)

As well, you may want to investigate two other informative white papers from IBM:

- Success in the cloud: Why workload matters (http://ibm.co/successincloud)
- Simplifying cloud management and data center automation (http://bit.ly/QbuBu8)

As you embark upon these discussions, IBM has a number of cloud advisory offerings to help you determine your cloud affinity, strategy and roadmap to hybrid cloud implementation. For example, our Cloud Infrastructure Strategy and Plan services engagement can:

- Identify where and how cloud computing can drive business value
- Assess the current IT and business state—determining strengths, gaps and readiness
- Develop a strategy, plan and roadmap to successfully implement a cloud delivery model

Our Workload Transformation Analysis for Cloud (WTA) uses advanced analytics and patented tooling to take the next step in the hybrid cloud roadmap. The WTA will assist you in answering the following:

- Which workloads fit the available cloud environments?
- What is the migration impact to the application and system infrastructure?
- What are the cost savings of moving those workloads to the cloud?

The results are an analysis that can help identify business applications and infrastructure components that fit various target cloud environments. The assessment uses criteria like data sensitivity, support costs, dependencies, processing requirements, and security requirements to provide a granular and quantitative analysis of your workloads. As shown in Figure 5, we will work with you to identify and prioritize your selected workloads for delivery and quantify the benefits.

Figure 5. Begin building a roadmap to hybrid cloud by objectively analyzing your business and IT priorities, requirements and current workloads.
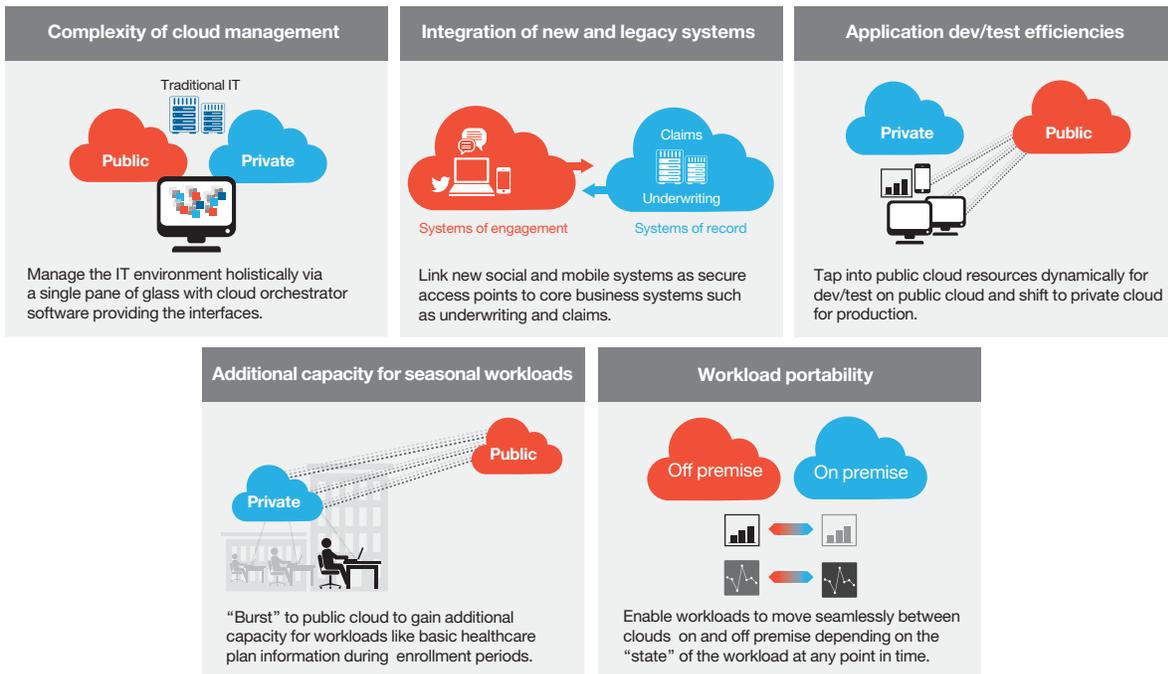
Figure 6. Hybrid clouds increase workload options and solve a variety of business needs and IT concerns.

Summary

Leading healthcare payers are unlocking the deeper potential of a hybrid cloud as a way to manage not just their IT, but their businesses as well. They are discovering how hybrid cloud can help them safely and securely create new marketplaces, develop smarter business services and establish profitable new revenue streams. Healthcare payers understand how cloud agility and efficiency can reduce time to market for new services, help reconfigure business processes, reduce business risks associated with project failures, encourage collaboration and overall help to transform their business.

A dynamic hybrid cloud combines the customization, manageability and security of an on- or off-premise cloud and traditional IT with the ease of entry, cost effectiveness and elasticity of an off-premise public cloud. In addition, hybrid cloud can help to preserve and prolong your existing IT investments by connecting your old and new, on- and off-premise technologies—a sound strategy in an era of expense pressures. **By making the best use of old and new, onsite and offsite investments, a hybrid cloud strategy creates a flexible IT environment that transcends the sum of its parts.** See Figure 6 for examples.

Our approach

With our collaborative approach, we can specifically guide you in:

- Identifying where and how cloud computing can drive business value
- Assessing the current environment to help determine strengths, gaps and readiness
- Providing a stronger value proposition for cloud computing in the enterprise
- Developing a strategy, plan and roadmap to help successfully implement the selected cloud delivery model

Figure 7. IBM Cloud Advisory Services adopts a collaborative approach with its clients.

Why IBM?

A solid strategy for cloud computing is critical to helping you deliver innovative IT services that can create new business value, and IBM Cloud Advisory Services can help. In fact, overall IBM was positioned as a leader in the IDC Marketscape: Worldwide Cloud Professional Services, 2014 Vendor Analysis. According to IDC's 2014 *Global Cloud Professional Services Buyer Perception Survey*, clients highlighted IBM as strongest in providing functional and industry insights and competence, and using resources globally.[26] And **Synergy Research has ranked IBM as the #1 hybrid cloud provider for the enterprise**.[27]

At IBM Cloud Advisory Services, we take a collaborative approach, as shown in Figure 7. We weave together business insight, advanced research and technology to help give you a distinct advantage in today's rapidly changing environment. Our integrated perspective on cloud consulting, design and implementation can turn strategies into action. With expertise in 17 industries and global capabilities that span 170 countries, we help clients around the world benefit from new opportunities available on the cloud. To learn more, visit: **ibm.com**/cloudcomputing.

For more information

To learn more about IBM Cloud Advisory Services, please contact your IBM representative or visit the following website: **ibm.com**/cloud computing

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Tedi Wells is a Certified Executive Consultant in the IBM® Global Technology Services® (GTS) Cloud Advisory Services Global Center of Competency. Tedi has over 30 years of IT consulting, managed services and transformation projects with government entities, financial clients and healthcare payers and providers.

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