IBM Institute for Business Value

The natural fit of Cloud with Telecommunications

Winning in a new game through new business models

IBM Institute for Business Value

IBM Global Business Services, through the IBM Institute for Business Value, develops fact-based strategic insights for senior executives around critical public and private sector issues. This executive brief is based on an in-depth study by the Institute's research team. It is part of an ongoing commitment by IBM Global Business Services to provide analysis and viewpoints that help companies realize business value. You may contact the authors or send an e-mail to iibv@us.ibm.com for more information.

By Bob Fox, Nick Gurney and Rob van den Dam

As an industry, Telecommunications has been wandering in the mist that is Cloud for the past 18 months. Now, the mist is starting to clear. The industry is beginning to see what Cloud really means to its future success. The good news is that communications service providers can stop considering the Cloud as the end goal, and start pursuing specific Cloud-enabled business moves that can generate substantial growth in revenue and profit.

Cloud is a continuation of the virtualization trend that has been underway for over 15 years. The trend has now reached a tipping point where Cloud can create and deliver business value. Business value can be created in three main areas:

- Performing current business more efficiently and effectively
- Creating new business models for delivery of current services
- Creating entirely new businesses.

A wide variety of players is rushing to exploit these business opportunities in the new evolving Cloud ecosystem. Over-the-top (OTT) providers (for example, Google and Amazon), system integrators, pure Cloud providers and many others seem eager to grab a slice of the Cloud pie. Also, Communications Service Providers (CSPs) have recognized Cloud as a source of new revenues. A number of them have made offering Cloud-based services to clients an integral part of their business strategies.

As providers of connecting networks, CSPs have a unique advantage over other players in the Cloud marketplace and can play a key role in value creation on the back of Cloud technologies. Though only a handful of CSPs generate significant value from Cloud services today, it is now their time to reap the benefits.

To more clearly understand how organizations view Cloud today and for the near future – and how CSPs plan to prepare and position themselves as Cloud enablers – we surveyed, in conjunction with the Economist Intelligence Unit, 572 business and technology executives across the globe. Eighty-eight of them were representatives of the Telecommunications industry, from both mature and emerging markets.

Our research revealed that relatively few CSPs actively embrace Cloud today to drive business model innovation. However, the research also revealed that this will change dramatically in the next few years. CSPs are actively looking to Cloud to drive new business and move up value chains and to the verticals by utilizing their unique industry assets. We identified some game-changing business enablers powered by the Cloud that CSPs can leverage to do business in more efficient, responsive and innovative ways.

We observed three business archetypes to represent the extent to which CSPs use Cloud to impact industry value chains and customer value propositions:

- **Optimizers** use Cloud to perform current business more efficiently and effectively, in this way incrementally enhancing their customer value propositions
- **Innovators** use Cloud to significantly improve customer value through leveraging distinctive CSP assets in the delivery of current services, resulting in new revenue streams based on new business models and possibly an enhanced role within the value chain
- **Disruptors** rely on Cloud to develop radically different value propositions, as well as to generate new customer needs and segments, by enhancing the end-customer experience and, in this way, creating entirely new businesses.

Whether CSPs choose to become optimizers, innovators or disruptors depends on a variety of factors, including how much they want to or can invest, the risks they are willing to assume and the characteristics of their partner ecosystems. We suggest CSP leaders carefully assess their organizations to determine which archetype they most closely match today – as well as which one they aspire to – and how they can leverage Cloud to create new business models that promote long-term growth and benefit.

Cloud's bright future

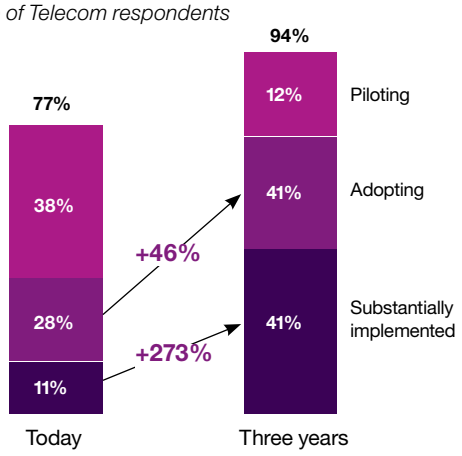
What we now commonly refer to as Cloud computing is the result of an evolution of the widespread adoption of virtualization, service-oriented architecture, autonomic and utility computing. Effectively, Cloud is simply a next evolution of infrastructure management in the data center where we went from an ability to manage heterogeneous hardware, then software, then applications within the data center, then across the enterprise, and now with Cloud, across multiple enterprises.

Cloud can be thought of as a management system, widely recognized for its technological capabilities, and it is seen by many as a goal on its own. In this view, Cloud computing can serve as a commodity for IT optimization.

However, the power of Cloud extends far beyond technological innovation. Cloud's key promise is to open doors to more responsive and innovative ways of doing business. So far, its potential for driving business innovation and realizing new revenue streams remains virtually untapped. The goal of this report is to assess how CSPs can extend the benefits of Cloud adoption into the business realm.

Through our survey, we discovered that CSPs – both big and small, and across all geographies – are embracing Cloud as a way to go forward. More than three-fourths of the CSPs in our survey indicated their companies had piloted, adopted or substantially implemented Cloud in their organizations. And 94 percent expect to have done so in three years (see Figure 1). The number of CSP respondents whose companies have substantially implemented Cloud is expected to rise sharply from 11 percent today to 41 percent in three years.

What is your organization's level of Cloud adoption?
Percentage of Telecom respondents



Source: 2011 IBM Institute for Business Value/Economist Intelligence Unit Cloud-enabled Business Model Survey.

Figure 1: A large majority of CSP participants in the survey have implemented cloud at some level – and adoption is expected to accelerate in coming years.

This level of Cloud adoption is not limited to large CSPs. Our survey revealed that while a higher percentage of large CSPs (those with annual revenues higher than US$20 billion) are experimenting with Cloud, small CSPs are by no means left out of the game. In fact, 53 percent of CSPs with revenues less than US$1 billion and 90 percent of those with revenues between US$1 and US$20 billion have adopted Cloud to some degree. More than organizations in other industries, CSPs turn to Cloud to realize new revenue streams in addition to seeking internal efficiencies.

And indeed, CSPs' Cloud activities are accelerating. According to Informa's Telecom Cloud Monitor, the number of CSPs selling Cloud services has increased from about 60 in 2009 to more than 140 in the first quarter of 2012.[1] What's more, CSPs across the globe spent almost US$14 billion on Cloud pursuits in 2011 (see sidebar, "CSP investments in Cloud").

Total market Cloud forecast are very diverse, but they consistently show that spending on Cloud is high and growing. For example, Ericsson forecasts Cloud investment of $US130 billion in 2015, Gartner cites $US207 billion in 2016 and Forrester predicts US$241 billion by 2020.[2,3,4]

CSP investments in Cloud

CSPs around the world are increasingly investing in Cloud to secure their positions in the Cloud ecosystem. U.S.-based CenturyLink, for instance, entered the Cloud computing market with its April 2011 purchase of Savvis, a global leader in Cloud infrastructure, for US$2.5 billion.[5] In the same year, Verizon invested more than US$2 billion into acquisitions of Cloud provider Terremark and Cloud software player Cloudswitch.[6] Other U.S.-based CSPs that are heavily investing in Cloud include AT&T and Windstream.[7,8]

With its acquisitions of companies like Dimension Data, OpSource and Netmagic, Japan's NTT aims to provide Cloud services on a global scale.[9] Australia-based Telstra, investing close to US$1 billion in Cloud-computing capabilities in the next five years, wants Cloud offerings to generate 25 to 30 percent of the company's overall revenue in the next three to five years in an ambitious plan.[10] And China's three state-run CSPs (China Telecom, China Unicom and China Mobile) announced plans to invest up to 300 billion yuan (US$47.4 billion) in data centers in Chengdu to create a hub of Cloud computing and other Internet-related services.[11]

Due to the economic weakness, investments in Europe have been modest so far, but are growing. Leading European operators investing in Cloud are France Telecom, Deutsche Telekom, Portugal Telecom and Telefonica. France Telecom's Orange Business Services, for instance, has invested €750 million in its global network backbone in 2011 to enable Cloud-based service delivery, one of the strategic pillars of Orange's "Conquests 2015" plan.[12] In other regions of the world, CSPs are actively exploring Cloud opportunities, some through direct investments, and others through partnerships and acquisitions.

More importantly, our survey reveals that CSPs are particularly targeting more strategic business capabilities (see Figure 2). Only one of the top seven objectives cited focus on internal efficiencies, with 73 percent of Telecom industry respondents looking to Cloud to drive competitive and cost advantage through vertical integration. The other six objectives – such as new revenue streams, channels, delivery markets and rebalanced product/service mix – all relate to improved business capabilities. More than half of Telecom respondents cited the creation of new/enhanced revenue streams as "very important," making it the number-one objective. By comparison, only 25 percent of our total sample identified the objective of new/enhanced revenue streams as "very important."

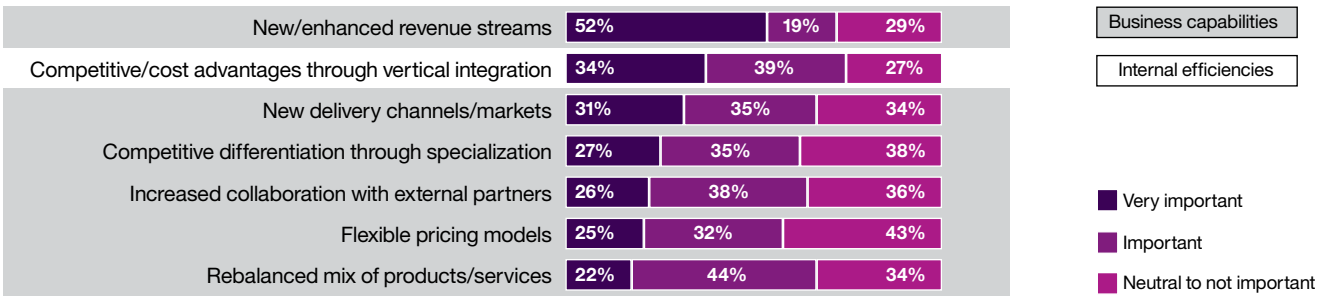
Surprisingly, while our research clearly reveals that CSPs intend to rely on Cloud to enhance their business capabilities, only 46 percent cite Cloud as a leading priority for the entire company. Rather, Cloud is still viewed by many as an IT solution, with 54 percent as a leading priority for their IT organizations. Still, this demonstrates more balance than the full survey sample, in which almost two-thirds relegate Cloud to the IT realm today.

Interestingly, in emerging markets, 64 percent of CSPs that identified Cloud adoption as a high priority for their companies deemed it to be important for the entire organization while just 36 percent view it a leading priority for the IT organization only. Demand for Cloud services is increasingly shifting to emerging countries where CSPs can play a prominent role in vertical industries. For instance, Kenyan CSP Safaricom is now linking Cloud services to m-commerce payments, cleverly adapting to the limitations of Africa's formal banking industry.[13]

Our findings suggest that CSPs are just beginning to understand the power of Cloud to help drive business innovation. Only 24 percent of survey respondents currently use Cloud for sweeping innovation, such as entering new lines of business or industries, reshaping the industry or transitioning into a new role in their industry value chains. However, 57 percent of CSP respondents plan to rely on Cloud for business model innovation within the next three years, significantly more than the 35 percent of the full survey sample.

Though only a handful of CSPs generate significant value from Cloud services today, a growing number recognizes that Cloud's specific business capabilities can create the monetization avenues they need. However, its full business potential has yet to be realized or even understood by most CSPs.

How important are the following objectives for adopting Cloud?
Percentage of Telecom respondents



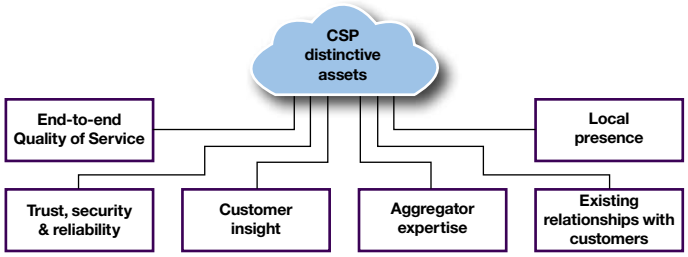
Source: 2011 IBM Institute for Business Value/Economist Intelligence Unit Cloud-enabled Business Model Survey.

Figure 2: CSPs clearly intend for cloud to improve their strategic business capabilities.

CSPs' legitimate role in the Cloud

As providers of connecting networks, CSPs have a crucial role to play and they are well-suited to take a central position in the Cloud ecosystem. CSPs have capabilities that differentiate them from other parties in addressing many aspects of Cloud computing (see Figure 3):

- End-to-end Quality-of-Service (QoS)
- Reliability, security and trust
- Customer insight
- Aggregation expertise
- Existing relationships with customers
- Local presence.



Source: IBM Institute for Business Value 2012.

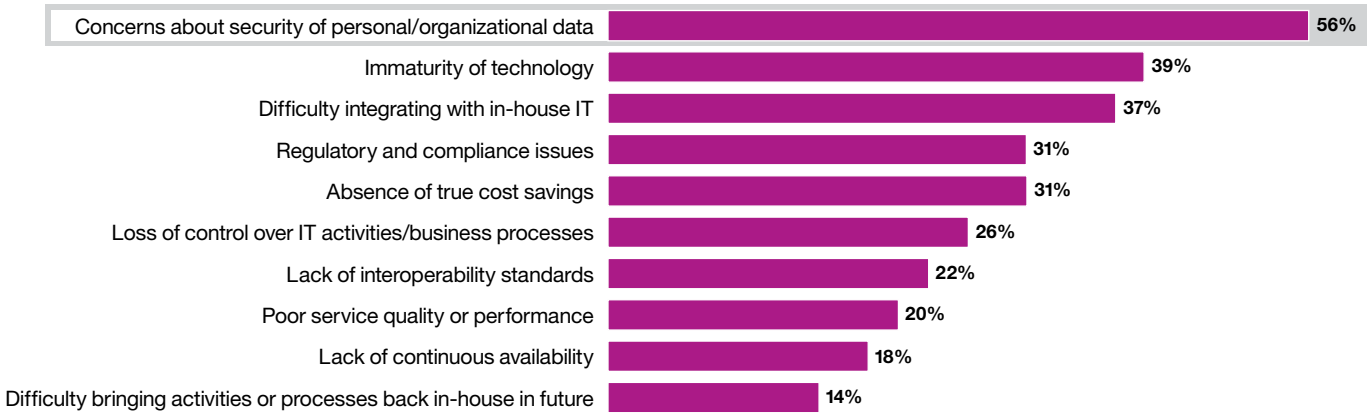
Figure 3: CSPs have several distinctive assets they can bring to bear as they enter the Cloud space.

QoS: Given the control CSPs expertise over the access networks, they fully control QoS at every point in the network. This enables CSPs to offer high availability with different end-to-end QoS levels and to price different tiers of service that cover both Cloud and traditional network services. As an intermediary between Cloud users and third-party Cloud providers, CSPs can also charge these third parties for service quality, resulting in a win-win situation for CSPs.

Reliability, security and trust: A Cloud solution requires a network that is reliable and secure, and a provider that deals with data in a secure and trusted way. This is the top concern for Cloud adoption by enterprises and organizations across the globe (see Figure 4). CSP brands are more strongly connected with reliability, security and trust than most other Cloud providers. They have a good reputation for managing large-scale secure infrastructures, dealing with personal and business-sensitive data in a confidential way, and flexibly adapting to local legislation and regulation. Seen as a trusted partner, CSPs with Cloud offerings become a natural choice for enterprises taking advantage of the technology.

Our findings suggest that CSPs are just starting to understand the power of Cloud to help drive business innovation.

What are the top three barriers for your organization to adopt Cloud?
Percentage of respondents (total sample of 572 respondents)



Source: 2011 IBM Institute for Business Value/Economist Intelligence Unit Cloud-enabled Business Model Survey.

Figure 4: The top concerns about Cloud computing are how to keep personal and business-sensitive data secure.

Customer insight: What matters most in providing Cloud services is the end user experience, which includes access to the Cloud from a wide variety of devices, from anywhere and as seamlessly as possible. CSPs are in a unique position by possessing an enormous amount of extremely valuable exclusive information about their customers. They can combine customer profiles with information on actual location, presence, device used and the like, then apply analytics to produce insights they can act upon, thus gaining the advantage of enhancing the user's experience.

Aggregator expertise: CSPs are uniquely positioned to group and structure a wide variety of their own and third-party Cloud services for customers, and to provide flexible combinations of private and public Cloud elements, depending on customers' needs. Acting as a distribution channel for third-party Cloud services, CSPs can combine a wide variety of services, including data centers, managed services, aggregated application delivery and e-commerce front-ends into a single, powerful end-to-end experience. In addition, they can exploit their in-house usage-based billing capabilities to bill for clients' Cloud usage or even act as a billing aggregator.

Existing relationships with customers: Since Cloud is a network-centric play, CSPs have a unique advantage of owning the connecting networks. They are already connected to just about every business and home. This built-in direct access to large numbers of enterprise customers, SMB customers and consumers – and the associated billing relationships they have established – offer an unparalleled selling position: no other player is closer to the customer. They can leverage these existing relationships to sell, refine and enhance a variety of Cloud offerings.

Local presence: Typically, regulatory concerns related to Cloud computing include privacy and data protection. As there is no single, over-arching regulatory regime with respect to these issues, Cloud providers usually have to deal with local legislation and regulations. However – unlike global brands such as Google and Amazon – CSPs have strong footprints in locally regulated markets, a potential advantage to deliver Cloud services. They have experience in dealing with regulations related to privacy and data protection, and can flexible adapt to local legislation.

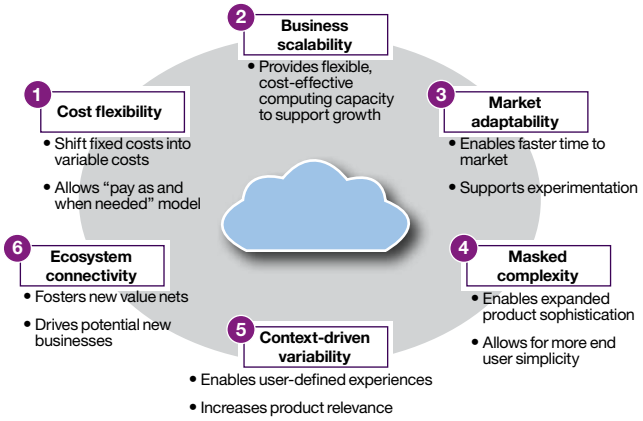
Now is the time for CSPs to combine these unique advantages and take advantage of the business opportunities. By doing so, they will be better able to play a powerful role in the Cloud ecosystem and avoid being reduced to the role of commodity providers of the pipe.

As providers of connecting networks, CSPs have capabilities that differentiate them from other parties in addressing many aspects of Cloud computing.

Tapping the power of Cloud

Rather than being a CIO/IT leadership prerogative, Cloud strategy extends well into the boardroom as the promise of Cloud to generate business value is increasingly recognized and appreciated: its business potential can help the enterprise better meet customers' needs and drive future growth. In fact, our research illuminates six key Cloud attributes being used to power business model innovation, which we have dubbed "business enablers": Cost flexibility, business scalability, market adaptability, masked complexity, context-driven variability and ecosystem connectivity (see Figure 5).

Cloud's business enablers



Source: IBM Institute for Business Value 2012.

Figure 5: Cloud empowers six potentially "game-changing" business enablers.

Cost flexibility

Cost flexibility is a key reason many companies consider Cloud adoption in the first place. More than 31 percent of the full survey sample, and 34 percent of CSP executives surveyed, cited Cloud's ability to reduce fixed IT costs and shift to a more variable "pay as you go" cost structure as a top benefit.

IT capital expenses – which typically include enterprise software licenses, servers and networking equipment – tend to be less fluid, more expensive and harder to forecast than IT operating expenses. The Cloud model provides greater flexibility and eliminates the need for significant capital expenditures. Just like other organizations, cost flexibility is an appealing Cloud attribute for CSPs as "Cloud users" as it can offer internal efficiency gains and substantial cost savings.

As "an enabler of Cloud," a CSP can create new revenue streams by offering cost flexibility – based on the CSP Cloud propositions – to its customers. CSPs own the connecting networks and many already possess large and distributed data centers that have been used for hosting and colocation services for many years. To better serve their customers worldwide, several CSPs – such as Verizon and Orange Business Services – have increased capacity by expanding their data center networks across multiple continents.[14,15]

Business scalability

IT scalability is recognized by many as a major benefit of Cloud adoption. However Cloud offers more than just IT scalability – it allows an organization to more easily scale its business operations as well.

By allowing for rapid provisioning of resources with fewer scale limitations, Cloud enables a company to benefit from economies of scale without achieving large volumes on its own. Recognizing Cloud's ability to facilitate efficient growth and expanded options, approximately one-third of our survey respondents view business scalability as a top Cloud benefit.

CSPs are well positioned to address scalability in business operations compared to other type of Cloud providers. Given their control over access networks and data centers, CSPs can tailor peak/nonpeak responsiveness to customers' needs. For instance, by dynamically upgrading the connectivity between sites involved in high-definition video streaming, they could cope with large surges of capacity at peak times.

Market adaptability

In today's economic environment, the ability to respond to rapidly changing customer needs is a key competitive differentiator. As such, companies continuously seek ways to improve their agility to adjust to market demands. A third of the executives we surveyed believe Cloud can assist in this respect, citing market adaptability among Cloud's top benefits.

Cloud facilitates rapid prototyping and innovation and enables CSPs to easily test and integrate partner solutions into their own systems, thus reducing the time it takes to bring new offerings to the market. As an example, China Telecom's Jiangxi subsidiary slashed time-to-market for new offerings from three or four months to just two or three days – representing a key competitive advantage.[16]

In turn, CSPs can accelerate time-to-market for their customers by opening up their distinctive capabilities such as usage-based billing – which they know better than anyone in the world – or Cloud-based machine-to-machine (M2M) capabilities given their traditionally strong expertise in efficient communication networks. AT&T, for instance, provides its customers with Cloud-based M2M connectivity, applications and development services on both its nationwide and global wireless networks.[17]

Masked complexity

In addition to business scalability and market adaptability, Cloud also offers the advantages of masking complexity. Cloud provides a way for organizations to hide some of the intricacies of their operations from end users, which can help attract a broader range of consumers. Because complexity is veiled from the end user, a company can expand its product and service sophistication without also increasing the level of user knowledge necessary to utilize or maintain the product or service. For example, upgrades and maintenance can be done in the background without the end user having to participate.

Masked complexity is perhaps less recognized than some of the other enablers: only 20 percent of respondents cited it as a top benefit. However, hiding the details of where and how data is being stored and how a seamless experience across the various mediums and devices can be realized is important. Many end users – both business and consumers – will lack the skill and time required to maintain the Cloud environment.

CSPs can play a key role by performing a lot of the necessary actions for the end user, for example, in the area of device management. They are also uniquely able to provide managed connectivity between Cloud users and third-party providers, such as enabling end users to switch Cloud vendors without worrying about network-related details.

Context-driven variability

Because of its expanded computing power and capacity, Cloud can store information about user preferences that can enable product or service customization. The context-driven variability provided via Cloud allows businesses to offer users personal experiences that adapt to subtle changes in user-defined context and thus allow a more user-centric experience. This is a significant Cloud attribute, as cited by 52 percent of full sample respondents – and 59 percent of CSP executives.

CSPs can exploit features as location, presence and subscriber profiles – and activities and analytics thereof – by embedding these attributes with third-party Cloud offerings, enhancing their value by making them more relevant and meaningful to users. They can, of course, also embed these attributes with their own Cloud offerings. Context-driven Cloud computing will appear in targeted areas such as location-based services, mobile commerce and augmented reality on mobile devices. One of the companies active in bringing augmented reality to the Cloud is Qualcomm.[18]

Ecosystem connectivity

Another business enabler powered by Cloud is ecosystem connectivity, which is recognized by a third of our respondents – across the entire sample and within CSPs – as a major benefit. Cloud facilitates external collaboration with partners and customers, which can lead to improvements in productivity and increased innovation. Cloud-based platforms can bring together disparate groups of people who can collaborate and share resources, information and processes.

Strong examples of how Cloud can enable ecosystem connectivity exist in the healthcare industry. An increasing number of CSPs provide Cloud-based solutions to integrate healthcare, supporting the exchange of health information and transactions among healthcare providers, insurance companies, practitioners, third-party administrators and patients to facilitate better collaboration and improve care (see sidebar, “The role and value of CSPs in Healthcare”).

The role and value of CSPs in healthcare

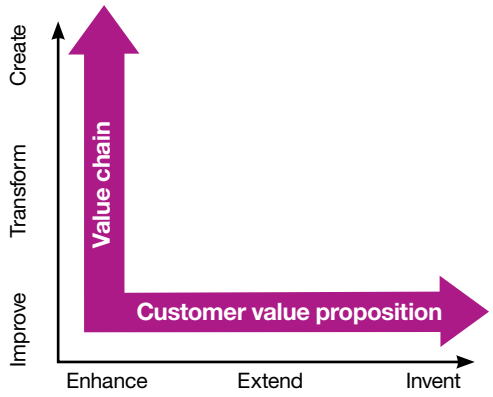
Cloud-based healthcare is experiencing the fastest growth among the vertical industries. As the number of locations of healthcare practices increases, Cloud is gaining traction as a lower-cost alternative to deploying and maintaining traditional client-server models.

A CSP's ability to offer health-specific solutions such as Cloud-based medical records hosting, remote monitoring solutions to manage chronic diseases or sophisticated telemedicine capabilities incorporating collaboration technologies with remote diagnostic equipment is contingent upon its business integration capabilities. Leveraging those core business integration capabilities enables the CSP to differentiate its offerings. Depending on the CSP's business strategy, such capabilities can be developed either through internal development, partnering or acquisition.

Using the Cloud to offer large-scale, flexible and secure storage of health information is a natural extension of many CSP Cloud strategies. Virtually every major CSP has an initiative aimed at the healthcare industry, including Telefónica, France Telecom Orange, AT&T Wireless, Sprint, Verizon, Vodafone, NTT DOCOMO, and KDDI. AT&T, for instance, set up its ForHealth business unit in 2010, with a vision to "accelerate the delivery of innovative wireless, networked and Cloud solutions specifically for the healthcare industry," organized around their Cloud-based solutions.[19]

Cloud-enabled business innovation

A number of CSPs are already driving Cloud-enabled innovation across customer value propositions and industry value chains. They are applying Cloud to generate additional revenue streams by enhancing, extending and inventing new customer value propositions. And Cloud is being used to improve, transform and create their roles in industry value chains (see Figure 6). This has shifted who creates value, as well as how it is created, delivered and captured.



Source: IBM Institute for Business Value 2012.

Figure 6: Cloud business enablers help spur innovation across customer value propositions and across company and industry value chains.

Customer value propositions

- **Enhance:** CSPs can use Cloud to garner incremental revenue by improving current products and services, and enhancing customers' experiences to retain current and attract new customers.
- **Extend:** Cloud can help a CSP attempt to generate significant new revenues by creating new business/payments models for delivery of current products and services, or utilizing new channels to attract existing or adjacent customer segments.
- **Invent:** CSPs can use Cloud to create a new need and "own" a new market by attracting new customer segments and generating entirely new revenue streams.

Value chains

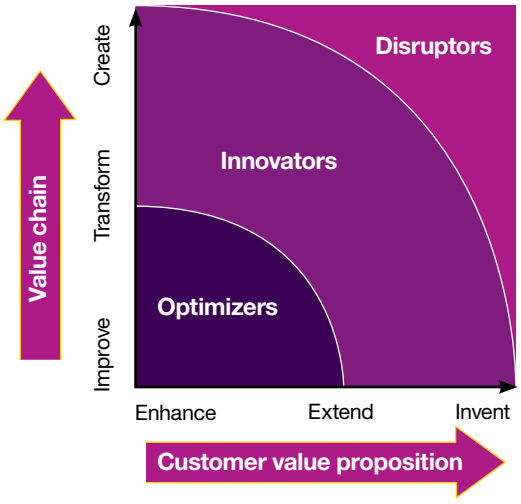
- **Improve:** Cloud adoption can help a CSP maintain its place in an existing value chain through increased efficiency and an improved ability to partner, source and collaborate.
- **Transform:** By assisting in developing new operating capabilities, Cloud can help a CSP change its role within its industry or enter a different industry.
- **Create:** CSPs can use Cloud to build a new industry value chain or disintermediate an existing one, radically changing industry economics.

Cloud Enablement Framework

To measure the extent to which a CSP's use of Cloud can affect value propositions and value chains, we created a "Cloud Enablement Framework" that identifies three organizational archetypes: Optimizers, innovators and disrupters (see Figure 7). These archetypes characterize the impact of a CSP's Cloud-enabled business strategy. They are based on the extent to which a CSP enhances, extends or invents customer value propositions – and improves, transforms or creates its role in the industry value chain.

The framework is not a maturity model. We don't expect or recommend that CSPs first start as optimizers and then become innovators and disruptors. Instead, a CSP should determine its place in the Cloud Enablement Framework based on the company's strategy, risk profile and competitive landscape.

Cloud Enablement Framework



Source: IBM Institute for Business Value analysis, 2012.

Figure 7: The Cloud Enablement Framework helps organizations classify the extent to which their use of cloud impacts value propositions and value chains.

Optimizers

Optimizers use Cloud to perform current business more efficiently and effectively, in this way incrementally enhancing their customer value propositions. Given the control CSPs have over access networks, they are well-positioned to optimize the network connectivity of their customers, as well as that between third-party Cloud providers and end users. Focused on Cloud, they can make connectivity "smarter" using network-based techniques such as caching, optimization and data acceleration. CSPs can tailor connectivity to the needs of their customers, and charge for an agreed-upon level of service quality.

In addition, CSPs can leverage their data centers and key strengths in communication technology to offer hosted Cloud-based integrated communications services that combine voice telephony, SMS, instant messaging, video conferences, collaboration and the like (see sidebar, "Telefonica O2 Ireland in Cloud communications"). Cloud communications based on the latest virtualization techniques is attractive because the Cloud as a platform for voice, data and video can be just as effective as a software-based platform, but at a much lower cost. Because CSPs control the network and possess large amounts of contextual data – such as location and presence information – CSP Cloud communications can be more attractive that those of OTT providers.

The Cloud Enablement Framework identifies three organizational archetypes based on the extent to which a CSP enhances, extends or invents customer value propositions – and improves, transforms or creates its role in the industry value chain.

Telefonica O2 Ireland in Cloud communications[20]

O2 has rolled out a new hosted IP telephony service aimed at large businesses and public sector organizations that wish to outsource the management of their Telecommunications infrastructure to the Cloud.

The new service, called O2 Unified Communications allows business to combine their fixed and mobile telephone, voice mail, instant messaging and videoconferencing operations into a single managed Cloud-based service with no upfront capital expenditure.

It enables users to interact in real time no matter where they are or what device they are using. This can be achieved across the wide variety of today's devices from landlines to smartphones, and from desktop PCs to laptops and tablets. This allows the integration of office and home workers without additional investments or complexity.

The service charge is based on a monthly rental and number of users. It is available to large organizations – including enterprise customers and public-sector bodies – in the Republic of Ireland. The elimination of a PBX and fixed cables means that employees can be deployed more flexibly.

Optimizers stand to deepen their customer relationships without risking the potential failure inherent in completely new business models. While optimizers can expand the value they offer through improved products and services, enhanced customer experiences and broader channel delivery options, they tend to realize lower revenue and market share than innovators and disruptors.

Innovators

Innovators use Cloud to significantly improve customer value through leveraging CSPs' distinctive assets in the delivery of current services, resulting in new revenue streams based on new business models. The opportunity for the CSP is to maximize its role in the value chain to deliver, either as a vendor or partner, both horizontal and vertical Cloud-based applications to large enterprises, vertical industries and small-and-medium sized businesses (SMBs).

Horizontal applications include communication/collaboration services, sales force automation, work flow management, enterprise resource management and customer relation management; in many cases, these are provided through partnerships with third parties. Already supplying many enterprises with bandwidth, CSPs have a foot in the door and thus are a natural fit to provide additional business services, especially corporate-wide, mission-critical applications.

Vertical applications involve complete end-to-end Cloud services for industry verticals, in particular highly security, privacy-conscious industries like Healthcare, Government and Financial Services (see sidebar, "SingTel provides Cloud to Singapore government"). The CSPs then offer specialized applications and options that best meet industry specifications. CSPs differentiate from other Cloud players through their strength in data integrity, security and their trusted relationships.

SingTel provides Cloud to Singapore government[21]

SingTel has been awarded two key contracts by the Infocomm Development Authority (IDA) to accelerate the Singapore government's adoption of Cloud computing.

The first contract involves the deployment of G-Cloud, a private Cloud computing infrastructure on a whole-of-government basis. To be rolled out by the end of 2012, the G-Cloud marks the first private Cloud infrastructure to be developed on such a scale to cover all government bodies in Singapore. It is multi-tenanted and meets the required security assurance for the government. G-Cloud services redefine the government sector's delivery of e-services, both internally and to the public.

The second contract involves the offering of public Cloud services to the government. This is part of IDA's plan to support the growth and competitiveness of Singapore industries by promoting the use of Cloud services. The public Cloud services include compute, storage and software services that enable the government to simply deploy applications and projects in the Cloud and pay for the usage without owning the IT infrastructure.

Another option is providing Cloud solutions over the Internet to SMBs. Offerings could include applications such as "office-in-the-box," sales force automation, and invoicing and billing. The SMB market is still largely untapped, but CSPs can leverage their substantial existing SMB customer bases. According to research from AMI Partners, the SMB Cloud market in the U.S., for example, is predicted to double by 2015 to more than US$49 billion, and CSPs will likely benefit from a strong preference for bundling hosted services.[22]

By extending and transforming, innovators have the opportunity to combine previously unrelated elements of the value chain and value proposition to gain competitive advantage.

Disruptors

Disruptors rely on Cloud to *develop radically* different value propositions, as well as to generate new customer needs and segments, by enhancing the end-customer experience. In this way, they can create entirely new businesses.

Perhaps the most valuable underutilized resource CSPs own is the enormous amount of unique information they possess about their customers. By combining this knowledge with their other unique assets, CSPs can accelerate the explosion of innovative disruptive services that either they or other parties develop.

In fact, by adopting a "two-sided" business model, CSPs can generate revenue from both customers and third parties including OTT providers by offering prioritized or guaranteed services – instead of best effort – on selected OTT Cloud applications. Such a model also has the potential to enhance advertising revenue and yield.

By developing radically different Cloud-based applications or services, they can create a new need or attract new customer segments. A number of CSPs, for instance, have started offering Cloud-based gaming. They offer the new segment of gamers a radically different value proposition through easier access to a wide range of games (see sidebar, "SFR offers Cloud-based gaming to TV customers").

SFR offers Cloud-based gaming to TV customers

French service provider SFR has launched a Cloud-based, gaming-on-demand service, allowing subscribers to access games via the Neufbox TV service. Games are available via a games-on-demand icon or a TV channel. Users can begin playing immediately without the need to download. Since the service is Cloud-based, users do not need to acquire a console, PC or additional software.

Users can play using the Neufbox Evolution remote control, SFR's dedicated games controller or one of several other PC games controllers. Users can transfer a game that is underway from the TV to the PC, and SFR introduced the ability to play on smart phones or tablets.

For SFR, this means potential new direct revenue streams in the form of subscription fees and pay-per-play, and indirect revenue from advertising. It also supports SFR's acquisition/retention strategy. The CSP control points make it difficult for OTT providers to deliver the same type of services with comparable quality.

Another current focus area is "second screen interaction" that uses Cloud-based signal processing to enable companion screens such as tablets and smartphones to:

- Interact with the main TV screen
- Integrate social media to share viewing habits and chat with others
- Participate in live quizzes, show recommendations, or look up for information related to a show
- Recognize TV ads as a way to open the door to potential commercial tie-ins.

The Orange TVCheck iPhone app is one example of this.[23]

It is the nature of disruptors to often provide customers what they weren't even aware they wanted or needed. By taking a risk, disruptors can gain first-mover advantage. Our survey indicates a larger number of disruptors expect to outperform their peers in the next three years than do innovators or optimizers. While they face greater risks, disruptors tend to anticipate higher rewards.

To optimize, innovate or disrupt?

We recommend that CSPs carefully evaluate the various opportunities available to harness the power of Cloud as an optimizer, innovator or disruptor – and find the right opportunity for their particular circumstances or product/service lines. To assist with this, we recommend three key actions to help reap the potential rewards associated with Cloud-enabled business models:

1. Establish shared responsibility for Cloud strategy and governance across the business and IT to help ensure Cloud remains a top business priority. Formulate an optimal Cloud strategy clearly, and link it with your business and marketing strategies. Determine which Cloud business enablers should be leveraged and how they will be used. Develop and oversee the implementation of business changes (such as processes and outcomes) that Cloud will enable for your organization and throughout the Telecommunications industry ecosystem.

2. Look within and beyond your organization's borders to optimize the value derived from Cloud adoption. Determine how your Cloud strategy can impact your industry ecosystem, and identify new partners that Cloud can help draw into your ecosystem. Evaluate whether Cloud can or should change your role in the ecosystem. Use Cloud to respond to your customers more effectively. Explore whether Cloud can help enhance your value proposition with your current customers, and examine whether you can reach other customer segments by leveraging Cloud.

3. Strategize whether your organization will be an optimizer, innovator or disruptor through the use of Cloud-enabled business models.
   - Consider organizational and market factors – including corporate strategy, competitive dynamics, customer strategy, your firm's risk profile and how empowered your customers are – that impact your Cloud strategy.
   - Determine where – if at all – your organization is positioned in the Cloud Enablement Framework today
   - Determine where your organization should be in the next three to five years – should it be an optimizer, innovator or disruptor?
   - Build business and technology skills and capabilities to close the gap between your current and future position, or to maintain your current position, if that is the goal.

CSPs should establish shared responsibility for Cloud strategy across business and IT, look within and beyond organizational borders to optimize Cloud's value, and strategize whether to be an optimizer, innovator or disruptor.

Navigating your course in the Cloud

As CSPs reflect on how their organizations can best realize the full potential of Cloud to optimize, innovate or disrupt business models, they need to challenge existing approaches and realities. We suggest they imagine the possibilities associated with Cloud-enabled business models by considering some questions:

- What if you had access to previously unaddressed customers or markets, and could target them based on their individualized preferences through analytics insights?
- What if you could give customers access to your – and your partners' – products and services anytime, anywhere and on any device?
- What if you help your customers to inexpensively and rapidly develop and launch new products and service offerings?
- What if you could easily and seamlessly connect and collaborate with business partners and customers?
- What if you could redefine your role in the Telecommunications industry and change your competitive positioning?
- What if your organization can only defend its core business – telecommunication services – by adopting Cloud?

Winning in the new game

Although Cloud has practically become mainstream in the IT world, its promise extends well beyond technological innovation. In fact, Cloud offers the potential for CSPs to open doors to more efficient, responsive and innovative ways of doing business. Cloud-enabled business as a new source of revenue can contribute to reversing the declining profit levels in the Telecommunications industry.

CSPs worldwide are beginning to recognize Cloud's capabilities to generate new business models and promote sustainable competitive advantage. As more and more CSPs join the bandwagon, we believe those that come out on top will be those that carefully harness the power of Cloud. Whether they choose to become optimizers, innovators or disruptors, successful CSPs will leverage Cloud as a key point of differentiation in driving business value and success.

To win in this new game, CSPs must make sure they understand the evolving ecosystems, partnerships and business models. They have to evaluate where they can play most successfully given their formidable strategic assets, and then to consider how to play. Finally, they need to determine which other players they can partner with most effectively in order to build the best Cloud offerings possible. CSPs can play a key role in value creation on the back of Cloud technologies – and now is the time to expand and exploit the opportunities.

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