Cloud Computing in the Property & Casualty Insurance Industry

The case for developing a holistic cloud strategy
Table of Contents

1. Highlights .................................................. 3

2. An Overview of Cloud Computing ..................... 4
   2.1. Types of Cloud Computing Services ............... 4
   2.2. Cloud Computing Services Delivery Models ...... 6
   2.3. Use of Cloud Computing Services ................. 8

   3.1. Key Drivers for Cloud Adoption ..................... 9
   3.2. Leveraging Cloud Computing ....................... 10
   3.3. Areas of Potential for Cloud ....................... 11

4. Benefits and Challenges ................................. 13
   4.2. Challenges of Cloud Computing for Insurers ...... 14

5. Choosing the Right Cloud Computing Models ............ 16
   5.1. Cloud Computing Adoption Propensity ............. 16
   5.2. Finding the Appropriate Cloud Computing Delivery Model 17

6. Conclusion .................................................. 18

References ................................................... 19
1. Highlights

According to Forrester, the global market for cloud computing is forecasted to grow 34.9% annually¹, from an estimated $25.5 billion in 2011 to $113.9 billion in 2016. The main driver of this growth is likely to be the Software as a Service (SaaS) market, with a predicted growth rate of 34.3% annually during 2011-16. The SaaS market is expected to continue to be the largest cloud segment, making up more than 81% of the total cloud market revenues in 2016.

The North American and Western European markets represented the largest cloud markets in 2011, while in industry terms, the financial services and manufacturing industries have been the largest early adopters of cloud services.

Cloud computing has the potential to provide significant benefits within the property and casualty (P&C) insurance industry. P&C insurers are increasingly adopting cloud services to gain operational flexibility and generate costs savings, but most P&C insurers lack a holistic cloud strategy to fully reap the business potential of cloud computing.

Deploying a mix of cloud services delivery models across the value chain can benefit P&C insurers by helping to address customer data privacy/security and compliance concerns—making cloud computing one of the top technology priorities for P&C insurers.

According to Gartner, “By year-end 2013, the percentage of the IT budget of insurers allocated to cloud computing will grow from less than 5% today to 25%.”² This paper provides an insight into how P&C insurance companies can leverage cloud computing solutions and delivery models to enhance their operational effectiveness and derive cost efficiencies.

¹ “Sizing The Cloud,” Forrester Research Inc., April 2011
2. An Overview of Cloud Computing

Cloud computing refers to the use of highly scalable offsite IT resources, assembled virtually, accessed over the internet, and used on demand in real-time or near real-time on a pay-per-use or subscription basis, where the workloads are shared among multiple customers.

In simple terms, cloud computing is a model that makes a set of services available through the web, which are provisioned and consumed outside of the enterprises’ firewall.

2.1. Types of Cloud Computing Services

Once a cloud is established, the way cloud computing services are leveraged in terms of business models can differ depending on requirements. Currently, the most commonly leveraged service models are:

- **Software as a Service (SaaS):** SaaS refers to standard software application functionality delivered over the public internet where the application resources are shared among a large number of users. Key examples of SaaS include NetSuite™, Salesforce.com™, Google Apps, Microsoft Office Live™, and Oracle on Demand™

- **Platform as a Service (PaaS):** PaaS represents a complete pre-integrated platform offering for the development and the operation of general purpose business applications. Some examples of PaaS are NetSuite NS-BOS, Force.com, Google App Engine for Business, and Microsoft Windows Azure™

- **Infrastructure as a Service (IaaS):** IaaS refers to highly standardized computing infrastructure components, provided over the public Internet and shared among a large number of users. GoGrid, Amazon’s S3 and EC2, Microsoft Windows Azure, SAVVIS Symphony, and Rackspace Cloud are some of the most commonly used IaaS platforms

- **Business Process as a Service (BPaaS):** BPaaS is the provisioning of highly standardized end-to-end business processes delivered via dynamic, pay-per-use, and self-service consumption models. Examples of BPaaS include Meeting Expectations which provides event management services and PayPal® which provides payment conflict resolution service

Increasingly, the core ideas of cloud computing, such as pay-for-use, multi-tenancy, and external services, are gaining high visibility—especially in the SaaS arena. As shown in the following exhibit, the cloud computing market has witnessed an impressive 63.7% annual growth in revenues during 2008-11. Moreover, the cloud computing market is expected to grow by 34.9% annually, from an estimated $25.5 billion in 2011 to $113.9 billion in 2016.
The SaaS market represents the largest cloud market segment, with $21.2 billion in revenues in 2011. SaaS is expected to continue to be the primary growth driver for cloud computing services, and remain the largest cloud segment during 2011-2016, likely to account for more than 81% of the total cloud market in 2016. The growth in SaaS is mainly driven by rapidly increasing demand for solutions like customer relationship management (CRM), enterprise resource planning (ERP), and supply chain management (SCM).

Regarding IaaS, the early successes of Amazon EC2 and Rackspace have prompted many other providers to offer IaaS solutions, resulting in a tremendous growth of 260.5% annually during 2008-11. However, the IaaS market is forecasted to stagnate going forward due to significant commoditization, price deterioration, and margin pressure.

The Forrester report also shows that although PaaS is expected to be the fastest growing segment in terms of Compound Annual Growth Rate (CAGR) during 2011-16, it is likely to remain relatively small at $11.3 billion in 2016.

2.2. Cloud Computing Services Delivery Models

As shown in the exhibit below, cloud computing services can be hosted using four distinct delivery models, depending on the use case and the business model of the provider. In this section we review the four delivery models and discuss the evolution of these models.

Exhibit 2: Cloud Computing Deployment and Delivery Models

Public Clouds
Public clouds include IT resources that are delivered as services via the Internet in a standardized, self-service, and pay-per-use way. These services allow limited customization and their respective resources are shared on a large scale. Some examples of public clouds are Amazon, Google Apps, Windows Azure, Cordys Process Factory, Salesforce.com’s CRM and Force.com.

Hybrid Cloud
The hybrid cloud model is a combination of the highly standardized public cloud offerings and the more customized privately hosted solutions. Hybrid cloud offerings include dynamic infrastructure services cloud-based integration (CBI), dynamic application services, and dynamic BPO services. Although there are initial initiatives from vendors such as Dell, Fujitsu, HP, and IBM, there are not many hybrid clouds in use.

Community Cloud
Community cloud is a cloud infrastructure shared by several organizations within a specific community that has shared concerns, security requirements, policy, and compliance considerations. It may be managed by the organizations or a third party, and may exist either on or off premise. An example of a community cloud is The Trusted German Insurance Cloud, which was launched as an initiative by the German Insurance Association.
Private Clouds

Private clouds are typically owned by a specific enterprise. Private cloud solutions are made up of licensed software and the internal IT functions of the enterprise, and/or their service providers use these licensed software applications to enable the shared provisioning of on-premises resources and services. The examples of private cloud include eBay® and Fujitsu Flexframe™.

Exhibit 3: Global Share of Cloud Computing Services Delivery Models

Analysts suggest there is a movement from private to public cloud, which is considered a “natural” evolution.

Source: Capgemini Analysis, 2012; CIO Global Cloud Computing Adoption Survey, January 2011

The Evolution of Clouds

To date, there has been a tendency of clouds to evolve from private to public. This is due to the fact that data centers initiating cloud capabilities made use of these features for internal purposes first before selling the capabilities publicly as public clouds. Analysts suggest that this movement from private to public cloud is a “natural” evolution.

Most industries are currently using public clouds for non-core office and support functions; however, private clouds are the preferred model to host core business specific applications because they are more secure.

Only recently have providers gained confidence in the in the public exposure of cloud features in order to come up with hybrid cloud solutions. And, while community clouds are still at a nascent stage, there are already indicators for such development, like The Trusted German Insurance Cloud.

4 Global share is based on 271 total respondents; 110 US respondents; 82 EMEA respondents; 79 APAC respondents currently using or piloting services or applications via the cloud
2.3. Use of Cloud Computing Services

In 2011, the North American and Western European markets represented the largest cloud markets. According to Gartner, North America had the largest share (56%) of the worldwide public cloud services market. North America’s share is likely to remain stable and potentially even grow by 2016, though Western Europe may see a decline as the adoption of cloud computing in other regions is expected to increase. Other countries and regions are expected to adopt cloud computing in larger numbers—most notably in Asia/Pacific, Eastern Europe, Latin America and Eurasia European privacy rules, multi-country business processes, a deep euro crisis, and a lingering recession are likely to delay cloud computing adoption in Europe.

Although small, developing regions are forecasted to see their cloud market share growing, this growth is not expected to notably alter the overall regional market share mix during the next four years.

The financial services and manufacturing industries are the largest early adopters of cloud services. The public sector is also displaying interest in the potential of cloud services, and its share of the overall market is expected to climb from near 15% in 2011 to over 16% during 2010-15. However, financial services organizations in aggregate are expected to continue to be the largest users of public cloud services during 2011-15.

5 Source: Gartner, Forecast Overview: Public Cloud Services, Worldwide, 2011-2016, 2Q12 Update, by Ed Anderson et al. 20 August 2012
Cloud computing has the potential to provide significant benefits to the P&C insurance industry, including cost savings and operational flexibility.

3. Cloud Computing Services in the P&C Insurance Industry

Like most industries, P&C insurance is currently using cloud computing services for non-core office and support functions, primarily via SaaS. P&C insurers are mainly using cloud computing services for email and other business support functions such as: sales and service support, collaboration, file sharing, and web conferencing.

3.1. Key Drivers for Cloud Adoption

There are many factors stemming from business and technical challenges that are driving the insurance industry to adopt cloud computing services. However, the four dominant factors accelerating the need to adopt cloud computing services across the insurance value chain are outlined below.

Key Driver #1: Increasing Cost Strains

P&C insurance companies were severely impacted by the ongoing financial crisis and realized they could not afford to depend too heavily on investment income to sustain profits. Insurers need to achieve profitability in a period of reduced premiums and investment income, while also improving their speed to market to resist intensifying competitive pressures. These challenges can be addressed through an infrastructure cloud solution, which increases reuse and sharing due to virtualization, and reduces the cost of IT ownership.

Key Driver #2: Need for Better Business Agility

Cloud technology enables insurance organizations to maintain a lean but highly agile and efficient IT organization that can provide IT services on-demand, further enabling business units to consider a variety of innovative business solutions that can be quickly brought into operations as needed.

Key Driver #3: Call for Fast Deployment

The most important factor driving the need for cloud computing in the P&C insurance industry is to shorten the time to implement new IT applications. An increasingly competitive global insurance market—in which insurers are pressured to reduce the time to market for new products and services—is driving a higher focus on achieving IT agility and shorter deployment times.

Key Driver #4: Expanding Global Footprint

Many P&C insurers are seeking to expand their global footprint to reduce the risk of over-dependence on any particular market or markets. These insurers need the high level of flexibility and standardization fostered by various cloud computing services, facilitating smoother and cheaper integration of “greenfield” operations, acquisitions, and joint-ventures.

There are ample reasons for insurers to adopt cloud computing solutions. Operational flexibility, costs savings, and pay-as-you-use are the key themes expected to drive cloud computing adoption in the coming years.
The average IT budget allocated to cloud computing by insurers is expected to grow to 25% by 2015, from 5% in 2011.

3.2. Leveraging Cloud Computing

Cloud computing is among the top technology priorities for the management of many P&C insurance firms globally. According to Gartner, “By year-end 2013, the percentage of the IT budget of insurers allocated to cloud computing will grow from less than 5% today to 25%.”

Small to midsize insurers or affiliates of large multinational insurers are likely to be the early adopters of cloud computing. Small and midsize P&C organizations typically lack the financial and human resources to maintain all of their IT assets themselves, while affiliates of large multinational insurers are interested in entering new geographical markets swiftly, without imposing a centralized IT architecture.

There are very few insurers that have developed a holistic cloud strategy. Currently, most P&C insurance organizations are just testing the SaaS waters with non-core or non-revenue producing applications, such as test servers and horizontal applications such as email, HR, and CRM. The most common applications in use by those already using SaaS are email and office suites, followed by customer service and support, project planning management and Web conferencing.

Exhibit 4: Top Current SaaS Deployments by Application Type for Insurance industry across Globe (%), 2011
P&C insurers are likely to be more interested in adopting SaaS for non-core support functions because of lower data privacy risk considerations and a higher degree of standardization.

Only 25% of surveyed P&C insurers using SaaS are using a vertical-specific application in regards to core insurance business functions, such as: policy administration, claims management and processing, billing and payments, rating and underwriting.

**3.3. Areas of Potential for Cloud**

The greatest potential for P&C insurance vertical-specific applications in the next twelve months is for agent/broker applications and underwriting tools. Many insurers are currently using or planning to use PaaS to build their own agent/broker or underwriting tools business applications within the next twelve months.

**Exhibit 5: Expected Cloud Deployments for Insurance Vertical-Specific Software Applications (%), 2011**

The most common barriers to deployment of cloud services for core insurance business systems are:

- P&C insurers are accustomed to making extensive customizations to their core applications, and are increasingly deploying solutions using only configuration capabilities
- Many insurance software projects have major integration elements that can take up 20% to 30% of the overall project budget; these integration costs are not addressed through a cloud offering
- Since core solutions typically have a long life, P&C insurers need to understand the options for an exit strategy. If they use SaaS for their policy administration for example, they also need to know how long they will likely use the SaaS solution, and who will help them move off that platform in 10 to 15 years

7 Vertical-specific software is a software that is specific to the insurance industry, such as software applications for policy administration, claims, billing, or underwriting etc. functions
8 Capgemini Analysis, 2012
However, through 2015, the cloud computing opportunities for business support as well as enterprise applications are expected to increase.

Here are the areas of major opportunities for cloud adoption by P&C insurers:

- **Business Support Applications:** Through 2015 and beyond, there will likely be increasing opportunities for email and other business support applications including office suites, and sales and service management applications such as Salesforce.com. These applications are not seen as competitive assets, are typically highly standardized, and require no industry expertise. Cloud computing can generally provide significant economies of scale

- **Infrastructure Services:** Services such as storage, server infrastructure, and Web hosting are expected to enjoy growing demand during the next three years due to their low degree of vertical specialization required

- **Enterprise Applications:** Applications such as financial management, HR, and procurement may lead to cloud adoption in the insurance industry—especially when organizations are changing their operations model and are, for example, implementing shared services

- **Vertical Applications:** Vertical applications that are highly standardized, such as billing and collections, are anticipated to become increasingly of interest to small and midsize insurers that are being forced to modernize their IT legacy environments

- **Housing Global Applications:** National or multinational insurers that are interested in housing global applications or expanding their geographic presence, and want to become more nimble in establishing greenfield operations, are likely to be among the early adopters of cloud computing

- **Private Clouds:** Private clouds are expected to be the preferred cloud deployment scenario and need to be able to provide strong integration capabilities with insurers’ IT legacy systems

- **Community Clouds:** Community clouds that are operated by industry associations may emerge over the next three years, facilitating cloud adoption among insurers. An example is the Trusted German Insurance Cloud, launched as an initiative by the German Insurance Association in 2011 to provide common services, such as customer black lists, to the industry
4. Benefits and Challenges

Cloud computing services that enable real-time data access and collaboration between insurers, distributors, and customers, help insurers develop strong collaborative capabilities and better information sharing—and improve their bottom line by enhancing procedural efficiency, and reducing the total cost of ownership of IT infrastructure.

4.1. Benefits of Cloud Computing for Insurers

By deploying and implementing cloud computing solutions, P&C insurers are likely to achieve six key strategic benefits.

Benefit #1: Better Economies of Scale
Cloud computing enables P&C insurers’ IT organizations to commoditize IT infrastructures and related services, such as development systems and storage or e-mail applications, removing the complexity of on-premises deployment and management.

Benefit #2: Scalable Storage and Processing
Many P&C insurers’ IT organizations face the challenge of providing system resources that meet peak-time data requirements. Cloud computing enables them to avoid over-provisioning of IT resources and to increase the storage or processing capacity by orders-of-magnitude at a more affordable cost.

Benefit #3: Higher Productivity/Collaboration
Cloud computing can help insurers provide their agents, brokers, and underwriters with a common platform, allowing them to gain faster access to real-time data, and increasing productivity. Such collaboration may also reduce conflicts between traditional and other alternative channels.

Benefit #4: Achieve Standardization
Cloud computing provides P&C insurers with the ability to standardize and roll-out systems consistently across multiple geographies. Moreover, as mergers and acquisitions continue to be a factor in many regions, the ability to standardize becomes a major driving factor.

Benefit #5: Shortened Time to Implementation
Due to intensifying competitive pressures, P&C insurers need to increase their speed to market. In a cloud-enabled insurance organization, the business and IT project implementation timelines are drastically reduced as the infrastructure is available upfront, tailor made, and scalable as per the business needs.

Benefit #6: Lower Total Cost of Ownership
There is a decreasing desire among insurers for potentially high upfront fixed-cost agreements and capital investments, making cloud computing licensing models—primarily SaaS—more attractive. Cloud computing reduces upfront IT investments for P&C insurers by shifting these costs to vendors who can spread them across their clients.
4.2. Challenges of Cloud Computing for Insurers

Although P&C insurers can derive significant benefits by investing in cloud computing solutions, there are certain obstacles that are acting as barriers to the wide adoption of cloud computing strategies by P&C insurance companies. Data privacy and regulatory compliance are among the main challenges to cloud computing for the P&C insurance industry.

Challenge #1: Data Privacy/Security Concerns

P&C insurers are apprehensive about the possibility of their customers’ sensitive personal data being compromised on a public cloud. Any leak of customer data could have reputational implications for insurers, and it may also lead to lawsuits.

Challenge #2: Compliance

Compliance requirements from local regulators, as well as domestic data privacy norms, put constraints on the ownership and management of cloud-based services. Emerging data privacy regulations in the U.S., Europe and other regions may create additional uncertainty for P&C insurers in coming years.

Challenge #3: Lack of Integration

Integrating applications hosted on the cloud with an enterprise management system is critical to leverage the full potential of mobile solutions. The lack of technical integration will prevent insurers from leveraging the full potential of cloud computing services in terms of process efficiency, data accessibility, and business partner integration.

Challenge #4: Lack of Standardization

P&C insurance firms generally have too many IT applications and lack a high degree of data and business process standardization to be able to fully take advantage of the scalability promised by cloud computing.
Success Stories

Efficiently Managing Claims using Cloud Services

A large Mexican insurance company, a subsidiary of one of the largest European multi-line insurers, offering a wide range of insurance solutions including auto, medical expense, home, damage, and education insurance, had a claims management system that lacked development flexibility and could not easily be adapted to meet changing business needs. The system required extensive, and costly, maintenance and support. The carrier wanted a new claims-management system that did not rely on manual processes or infrastructure destined for obsolescence, but instead had the flexibility and scalability to grow with the business. At the same time, the insurance company did not want to make costly financial investments or go through the time-consuming process of procuring new infrastructure hardware.

The insurer decided to implement a cloud-based platform in a pilot deployment for a new claims-management system. The cloud-based solution has custom workflows that route claims to the appropriate department for resolution and then back to the agent, and alerts that notify employees when action needs to be taken on a customer’s behalf.

Using cloud computing, the insurer was able to implement its solution in only eight weeks, compared to between 18 and 30 weeks for an on-premises solution. By using the cloud-based solution, the insurance firm built a highly scalable application without having to invest in costly infrastructure—avoiding a one-time hardware investment of almost US$10,000. On average, the insurer estimates it will spend $97/month for using cloud-based solution—a 65% savings over three years.

Overcoming Security Issues Surrounding a SaaS Solution

An insurance group—one of the largest insurers in the U.S. offering both personal lines automobile and homeowners insurance, as well as a wide range of other insurance and financial services products—wanted to leverage a SaaS solution to offer electronic signature capabilities. However the insurer was concerned about the security and privacy aspects of such an offering and how to ensure compliance with the parent company’s data privacy requirements, based on industry regulations in the U.S. and Europe.

The insurance firm employed a third-party cloud-hosted security solution that enabled the firm to manage data security and encryption at the application layer. The security solution allowed the firm to protect the data in both the public and private clouds with patent-pending policy-based key management that gave the control over the access of sensitive data to the insurance firm’s executives. With the security solution in place, the insurer was able to validate that the virtual machine security posture was safe to process sensitive data.

The cloud-hosted service was approved by security and privacy officers, allowing the business team to introduce the new online signing service to customers. It restricted access to keys, extending protection to sensitive information even in the event of a data leak.
The key to success for P&C insurers lies in selecting the right cloud delivery models to match their business priorities.

Cloud computing models offer P&C insurance companies the option to move from a capital-intensive approach to a more flexible, pay-as-you-use business model that lowers operational costs. However, when an insurance company seeks to move its core business-specific application into cloud computing, data privacy and security, and regulatory compliance are the two primary challenges that must be addressed.

The key to success lies in selecting the right cloud computing delivery model to match the business priorities of generating cost saving and improved business agility while being in compliance with data privacy norms and without compromising security of highly sensitive customer data.

5.1. Cloud Computing Adoption Propensity

For P&C insurers, due to the data privacy and regulatory compliance concerns, it is not easy to decide to what extent and for which functions cloud computing services should be leveraged.

A holistic cloud strategy that can be implemented across the core and non-core functions of the insurance value chain is vital to leverage the full potential of cloud computing services. However, to develop a holistic cloud strategy it is critical to choose the function and application that is best suited to be moved to a cloud.

Exhibit 6: Cloud Computing Adoption Propensity across Insurance Value-Chain

A holistic cloud strategy is vital to leverage the full potential of the cloud computing services.

Like most industries, for P&C insurance the highest cloud computing adoption propensity is for non-core business support functions—where systems are usually standardized and the risk of compromising the security of highly sensitive customer data is relatively low.

However, insurers may not want to leverage cloud computing services—at least during the early stages of the cloud adoption strategy—for their core policy administration and claims management function where the data migration risk is very high and the applications are disparate.
Once the cloud adoption propensity analyzed is finalized, the P&C insurers need to decide the best cloud computing delivery model to leverage to achieve their goals of cost saving and enhanced business agility without compromising customer data.

### 5.2. Finding the Appropriate Cloud Computing Delivery Model

No single cloud computing delivery model alone can best meet the two most important business priorities: data security and cost savings. P&C insurers need to deploy a mix of cloud services delivery models based on the risk considerations at each core and non-core function.

For core functions like product design and front office applications, including agents and broker portals, P&C insurers are likely to prefer a hybrid cloud delivery model where the cloud infrastructure is composed of two or more clouds (private or public) based on insurers’ business needs and security concerns.

For policy administration and underwriting, and claims management applications, P&C insurers are likely to invest in private/community cloud delivery models to overcome customer data privacy/security and compliance concerns. Although private clouds are likely to be current preference, community clouds that are owned and managed by industry associations are increasingly expected to emerge as the model of choice.

Most P&C insurance organizations may seek to leverage public clouds for non-core or non-revenue producing applications because of relatively lower risk considerations and a higher degree of standardization in the industry. This will help the insurers to reduce the total cost of ownership of these applications.

P&C insurers should develop a holistic cloud strategy based on risk consideration, level of standardization, and target total cost of acquisition.
The cloud computing services market is forecasted to continue growing at a rapid pace over the near-to-medium term. This growth will be driven by key business priorities including operational flexibility, cost savings, and pay-as-you-use models.

P&C insurers are expected to enter the cloud computing arena cautiously, with no single cloud services delivery model being a silver bullet for best meeting all their business needs.

Cloud computing solutions will help insurers develop strong collaborative capabilities and better information sharing, as well as improve their bottom line by enhancing procedural efficiency, and reducing the total cost of ownership of IT infrastructure.

The key for P&C insurers to succeed is to develop a holistic cloud strategy that can be implemented across the core and non-core functions of the insurance value chain. P&C insurers should develop their cloud strategy based on risk consideration, level of standardization, and target total cost of acquisition at each core and non-core functions level.

The use of cloud computing solutions in the insurance industry is likely to continue expanding going forward. The insurance companies who want to gain a competitive edge are already developing their holistic cloud computing strategy and program. In the absence of a holistic cloud computing strategy, insurers will be challenged to achieve their business priorities of cost saving and enhanced business agility without compromising customer data and security.
References


About the Authors

**Sree Rama Edara** is a Manager in the Insurance Centre of Excellence (CoE) for Capgemini Financial Services with over 20 years of experience in insurance.

**Ranjith Kumar Kandagatla** is an Assistant Manager with the Global Insurance practice for Capgemini Financial Services and has ten years experience in insurance.

The authors would like to thank **Rengarajan Appan, William Sullivan,** and **David Wilson** for their contributions to this publication.

For more information, contact us at: insurance@capgemini.com or visit: www.capgemini.com/insurance