

# **Life on the Edge from Legacy to Cloud Computing: A Case Study on Insurance Industry**

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## TABLE OF CONTENTS

<b>ABSTRACT.....</b>	<b>2</b>
<b>INTRODUCTION.....</b>	<b>3</b>
<b>COMPANY OVERVIEW .....</b>	<b>4</b>
<b>CHALLANGES.....</b>	<b>4</b>
<b>SOLUTION .....</b>	<b>5</b>
HARDWARE AND SOFTWARE .....	5
IT SUPPORT AND SLA .....	5
PEOPLE AND CULTURE.....	6
<b>KEY CONCEPTS FOR EFFICIENT DIGITALIZATION .....</b>	<b>6</b>
ETHICAL AND LEGAL IMPLICATIONS .....	6
CYBER SECURITY AND PRIVACY OF INFORMATION .....	8
ADVANCED ANALYTICS AND BUSINESS GROWTH.....	8
<b>CONCLUSION AND NEXT STEPS .....</b>	<b>10</b>
<b>REFERENCES.....</b>	<b>11</b>

## **Abstract**

Cloud is not just a word for the future, it's here today. The world is witnessing a rapid growth of technologies and the business interest is increasing towards the cloud environments. The secure, on-demand data storage, retrieval, and elasticity of computing power attract more companies to opt for cloud technologies than before. The journey to cloud witnesses pitfalls and opportunities that differ from business to business. This paper serves as a forum to highlight the struggle and journey of the largest insurers in North America in their journey from the legacy world to the cloud. It points out both the theoretical and practical aspects of choosing, designing, building, and managing different cloud-distributed systems. The cloud strategy addresses the real business needs that are specific to industry type and business requirements. Core companies like Insurance and financial institutions are going through the route of continuous transformation that gives them an added advantage over the competitors through a full cloud-strategy lifecycle and innovation. The tested concepts and pilots to scale up the company are highlighted here in this paper.

**Keywords:** Cloud Computing, Legacy Applications, Strategy, Modernization, PCA

## **Introduction:**

Over the last few years, technology has shaped the world in all formats of business whether it is finance, insurance, healthcare, aviation, education, or taxi sharing business (Dash, 2017). In Industry 4.0, the call for digitalization and cloud adaptability just become louder and louder. With rapid digitalization, doing business and managing IT is more challenging now with high cyber security concerns and data leakages. Hence, all

companies are looking for better flexible technical environments to upscale their business and build a secure firewall around their data. Easy manageability, and less upfront investment on infrastructure, licensing, and security interests more companies to go with cloud computing. The new age on-demand operating model and speed-to-market methods are helpful features to adopt the technologies with some clicks. With innovative business designs in mind, setting up the right governance mechanism and financial management with proper vendor lock-ins are the keys to a successful cloud journey (Qian et al., 2009).

Ethical and smart use of technology and creating social value are very important for 21st-century organizations for sustainability (Dash, 2017). Having said that, when traditional operating models fail, companies need to have a cloud business case thoroughly analyzed by financial teams to optimize cloud spend and drive increased return on investment. Cloud not only gives a technological progression but also gives a better human experience by enabling skill upliftment, digital strategy making, and identifying opportunities for long-term success. Major cloud vendors and providers contribute to designing a client-specific architecture model for flexibility to evolve and expand multi-directionally for all future expansions (Scott et al., 2019). In this journey of digitalization, better communication, and executive involvement play a critical role in its success. As Azim and Naqvi (2016) illustrated, “a cloud-based system has a lot of benefits like scalability, accountability, significant cost reduction apart from ensuring high availability, security, and quality”. But many companies still believe that they will not cross the wall “digital abyss” and believe that should be a business case to add a new chapter in the company’s success story with a solid modernization strategy. In this article, we tried to put a case study from the USA’s biggest auto insurer ‘Statefarm’ and perform a socio-technical analysis.

**Company Overview:**

Financial and Insurance authorities have begun to offer legislation and informal recommendations regarding the use of cloud services in the financial and insurance industry as these institutions migrate their operations, including fundamental functions, to the cloud (Li et al., 2020). These are typically based on the regulator's existing framework for a financial institution's outsourcing to third-party technology providers, under which the risks associated with outsourcing and the supervision of third-party providers are primarily the financial and insurance institution's responsibility. Public cloud adaptation (PCA) is always exciting but full of challenges with steps like crawling (Proof of Concept, walking (Migration), and running(Innovation) (Cardenas, 2019).

*State Farm - A Case Study:*

The author is highlighting his work and cloud journey analysis on the basis of the insurer – State Farm Insurance. State Farm Insurance is the largest property and casualty insurer and one of the top insurance companies in North America. This nearly 100-year-old, Fortune 46 organization employs more than 50,000+ employees in the USA. As gathered from the state farm site(statefarm.com), the last financial year's operating profit for this company was 8B+ dollars with premium earnings worth \$40B. It sells insurance (Auto, Home, Life) and banking solutions in all major states in the USA with its strong 18,000+ captive agents.

This company is very stable with a strong book of business. The traditional operating model with legacy applications is the key technological milestone this company had achieved till 2012. After the management reshuffle and following a digital wave, the company is focusing more on cloud and new-age technologies through talent hiring,

technological assessment, and digital strategy building. Its new chief data officer is focusing more on secure and stable data with cloud security, machine learning, and Blockchain with an initiative called as “Digital assets and strategy” as part of Digital Farming. In Statefarm, advancement is happening in both the IT and non-IT world to bring innovation across the organization.

**Challenges:**

Data is the real money in this world of business. Unlike the traditional legacy model, if we don't understand our customer data and operational data, then we will struggle to address the real problem of the business. To make a data-driven decision on understanding customer needs and demands, Statefarm must cultivate good data standards and repositories for the future. But data security being the key, proper cyber security measures need to be implemented for safeguarding company data. Zissis and Lekkas (2012) explained it as the rapid transition toward the cloud is fueling critical issues in Cyber security and data theft. Hence, the adaptability of the cloud is going to address the measured data issues and usability concerns.

Finding all legacy enterprise technologies and their related documentation with business owners for migration are the biggest hurdles for business transformation. Also, the same applies in the case of State Farm. The demand to move faster and secure a future with more interaction with customers is the need of the moment. The process, communication, and reporting are very slow with the help of legacy applications. Many CIOs believe this legacy products, poor integration, and heterogeneous set-up are the resistance to change and risk for quick expansion. The data security and data transfer are very slow and tedious process with old technologies. It not only harms performance but

also costs more to manage these technologies with new talents in the market. As Suer(2016) defines, “It can be difficult for legacy businesses with legacy technologies to reimagine themselves through the lens of market needs, customer experience, competing with analytics, leveraging emerging technology, and driving collaborative, smarter, and faster organizations” (see Fig.1 for stages of cloud migration).

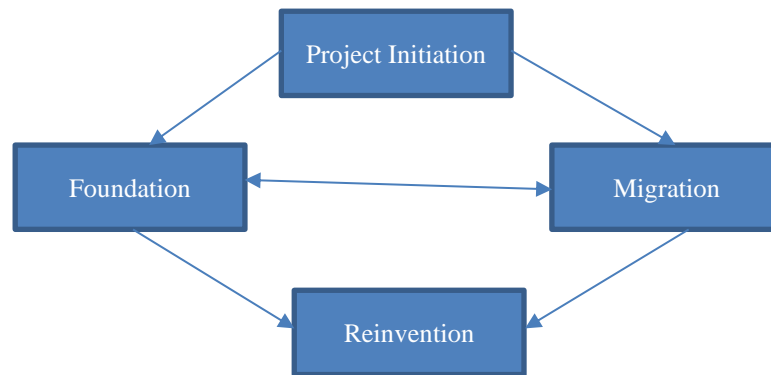


Fig.1 Four stages of cloud migration

Other challenges that are faced by Statefarm are cultural changes and employee mindsets. Long-timers and legacy application owners are not very supportive of respect to change, and they are the inhibitors in the process of change. The fear of failure among C-level managers is another concern in the way of cloud adaptation. They prefer and are comfortable managing the on-premises services better than a third-party vendor-provided application. Leadership failures and poor communication in a vertically organized company face all these traditional problems like any other in its journey to cloud adaptation. Also, what cloud is better for a big organization and what percentage of applications need to be run in the cloud is a bigger discussion topic as explained by Suer(2016) in his article where he tells to-do and not-to-do for CIOs.

- **Project:** The company assesses the AWS Cloud as a potential solution and determines whether it meets its unique requirements. At this point, AWS expertise is not necessary.
- **Foundation:** The company begins connecting its data centers to AWS as proof of concept. Particularly, the company:
  - i. Scalable security and compliance models are established on AWS.
  - ii. Deploys the basic structure of the landing zone in a non-production environment with the help of AWS migration specialists.
  - iii. Establish AWS and cloud-focused employee training programs.
  - iv. 3-5 enterprise-level production applications are transferred to AWS.
- **Migration:** At this stage, Organizations:
  - i. Make preparations for ongoing cloud operations.
  - ii. IT roles are described for cloud operations.
  - iii. Creates a Cloud Center of Excellence (CCoE), a multidisciplinary team that coordinates an organization's cloud adoption initiatives.
  - iv. Data centers and groups of production applications are migrated.
- **Reinvention:** The cloud now serves as the standard option for all projects. The company investigates novel cloud-based business models and grows accustomed to cloud operations rather than on-premises operations.

**Solution:**

The right fit of technology is the key to ROI and business process improvement. Statefarm being a large enterprise, needs to find the best cloud fit (private, public, or Hybrid cloud) to migrate all its technologies to the cloud. Before any cloud adaptation, Statefarm did multi multi-departmental assessment to get the business-critical applications and



related documentation. These steps took almost 1-2 years for a solid confirmation in this case. StateFarm tried to get a list of technologies highly used across the enterprise with less maintenance cost and vice versa. With a thorough architectural assessment and owner evaluation, the cloud journey got management approval to move ahead with Amazon Web Services (AWS). The below Fig.2 shows how the cloud architecture works in an organizational setup (Unknown, 2020).

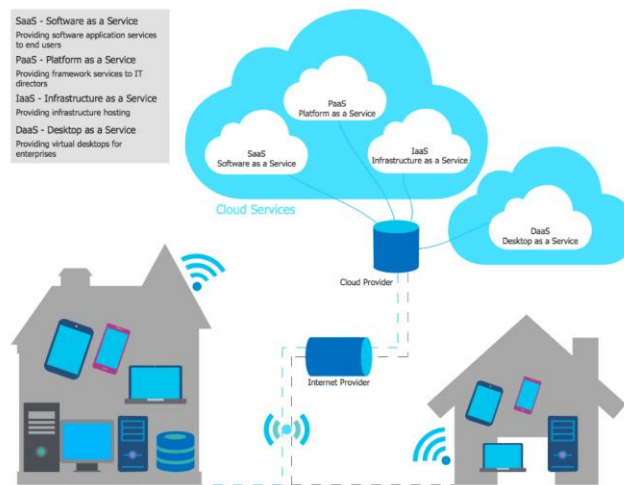


Fig 2. Basic cloud architecture in an organizational setup

*a) Hardware & Software:*

The initial up-front investment for hardware, VM, and Cluster size with data storage mechanisms (LRS, ZRS, and GRS) is always a differential factor when we calculate ROI. So, Statefarm selected its cloud provider AWS considering its strong market presence and IaaS capabilities. They started small with less expenditure on data centers or servers, with a Hybrid-Cloud architecture (AWS and Private Cloud) in mind. Below are some of the software and hardware products StateFarm(SF) did focus on as an early cloud investment.

Point of Sale System (POS) - This is a critical payment/billing system where the customers interact more, and it always demands 24\*7 availability with security. This system was the first application chosen for cloud migration from a .Net code pool.

Automated Agency System (AAS) - This business-critical application was chosen as it was the agency portal and is mostly one of the most complex ones when comes to integration. This mainframe piece interacts with many third-party and internal tools.

b) *IT Support and SLA:*

With the help of the current Database Administrator, Network Engineer, IT Engineer, and Security Engineer, the technical support group chosen to support this cloud infrastructure was all well-trained and ready for a 24x7 support model. Accenture was chosen as the implementation partner with Amazon as the provider with proper development and support SLAs in the plan. This is a very critical step concerning manageability and meeting the target migration timeline.

c) *People and Culture:*

It's very difficult to progress in digitalization when you have a conservative mindset. In the case of SF, executives, and operational managers arranged collaborative meetings to join both IT and non-IT people in this process. They all worked hand-in-hand during requirement analysis, current business understanding, gap analysis, and during execution to set up a culture of change in this organization. Historically, Insurance and Financial institutions have not been very aggressive when bringing immediate change or automation to the industry. So, management support, training, and accountability need to be shared across the group to bring change in the innovative culture which is time time-consuming initiative. But I see the change was visible here for cloud adaptation.

**Key Concepts for Efficient Digitalization:**

As estimated, more than 70% of applications in Statefarm are now running in the cloud. It has now a mobile app, web app, and AI all running on cloud platforms. Soni (2015) explained in his journal “End to End Automation on Cloud” that modern environments need to understand the exact segment, process, or sub-process where they can utilize the new age technologies before adopting them. The benefits of this disruptive technology are impacting both internally and externally for a better economy and society:

- Opportunity creation: Enterprises like Statefarm are trying to move faster and take over the young masses by becoming digital enterprises.
- Moving with time: Statefarm is moving with time and bringing an intra-cultural shift to promote these technical innovations.
- Brand generation: The value-creation model in Statefarm provides the best customer support at their fingertips anytime anywhere.

*a) Ethical and legal implications:*

Well-infused technologies with the cloud are critical for long-term growth and compliance. Through the adaptation of technology, there will come some ethical and legal implications. As insurers deal with customer PII, PCI, and NPI data, they need to abide by all these government compliances. When working with the cloud, Statefarm is bound to choose its cloud data centers in the USA only. The blob storage data needs to be stored securely and with a high degree of encryption for maximum protection. The support SLA must be bound by multi-organizational master agreements for data readability and manageability.

*b) Cyber security and the protection of privacy:*

Cloud security is the biggest worry for its adaptation. As Statefarm is running on the cloud, they are dealing with more cyber threats than before. Each value creation and data handling comes with a high cost and responsibility. Zimmerman, Keller, et al. 2016, in their book “Digitalization-Perspectives for Conceptualization” clearly mentioned how from a product and value-creation perspective cloud computing provides bidirectional support to organizations. As companies are storing and utilizing customer data, and credit card details, they need to have better cloud firewalls and encryption rules for storage drives.

*c) Advanced analytics and business growth:*

Cloud supports simple, high-performance, and cost-effective computation power to run high-performance queries on petabytes of unstructured, semi-structured, and structured data so that you can build powerful machine-learning models, reports, and dashboards. Advanced analytics with cloud data lakes are a pathway for data-driven decision making which has a direct impact on customer value creation or business growth. Advanced analytics can help organizations study customer behaviors, cost analysis, fraud detection, employee satisfaction, and many more.

**Conclusion and Recommendations:**

The journey of new technology adaptation is always a roller coaster ride. Keeping the organizational structure simple for effective decision-making in all layers is the key to digitalization and innovation. To technically prosper, organizations should have the right vision, the right people, and the right process in place to bring changes in any legacy business model. The good news is that Statefarm is in safe hands to better respond to the dynamic market changes and faster time to market by utilizing the technologies to solve

critical business needs. It's a successful enterprise because of its quick technical adaptability and cultural values.

Technological innovations here are inevitable, and techno-revolution is going to come at regular intervals. A 2014 survey in CIO magazine highlights that the hybrid cloud (multi-cloud) is going to be the end goal of organizations. But during the hybrid cloud, the perimeter is extended beyond the company boundaries and the compatibility gap is greater as well. It sometimes creates a bigger threat to organizations on cyber-attacks, that needs to be addressed. As Statefarm is on a Hybrid cloud platform, they need to address the above concerns. The world of the cloud is daily facing new challenges and it is still in an experimental mode, so Statefarm needs to ready itself for future challenges. We all need to understand that disruption always comes from outside of the organization and industries need to prepare themselves to absorb and act on this quickly to maintain competitiveness in a global market. As Statefarm is moving with time, it is gaining huge competitive advantages in the market establishing itself as the number one insurer in the USA.

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