

CLOUD COMPUTING

AS A DRIVER FOR INNOVATION

IN INSURANCE

BY **MARCEL SMITH** AND **DAAN TE RIELE**

The insurance industry keeps changing, and cloud computing enables innovation and efficiency. Its scalability and computational power unlocks new capabilities for Balance Sheet Management and General Insurance Pricing. Let's explore the benefits and advancements of cloud computing.

USE CASE 1: **BALANCE SHEET MANAGEMENT** **THROUGH SCENARIO ANALYSES**

Balance sheet management is a cornerstone of financial risk management in the insurance industry. Regulatory processes such as Own Risk and Solvency Assessment (ORSA) and Asset Liability Management (ALM) studies necessitate insurers to conduct diverse scenario analyses. These assessments involve complex mathematical models, extensive datasets, and laborious calculations, demanding significant resources and time.

In the past, insurers heavily relied on traditional computing resources for scenario analyses. Modern insurers seek stochastic balance sheet projections, involving a vast amount of scenarios, each marked by variable parameters and complex interrelationships.

This is where the computation power and capacity to parallelize with GPUs of cloud computing becomes a game-changer. Stochastic projections entail running thousands, or even millions, of simulations to investigate potential outcomes across various conditions.

- **Accelerated Scenario Analyses:** Cloud computing with GPU-accelerated simulations allows insurers to execute thousands of stochastic balance sheet projections within minutes, significantly shortening time and resource investments.
- **Enhanced Collaboration:** Cloud solutions cultivate multidisciplinary collaboration, facilitating efficient iterative scenario analyses and encouraging a culture of 'what-if' thinking.
- **Deeper Understanding:** The computational powers of the cloud permits the analysis and visualization of numerous scenarios, resulting in a more profound comprehension of risk exposure and potential financial impacts, both for specialists and decision makers.
- **Informed Decision-Making:** The combination of cloud computing and GPU-accelerated simulations equips insurers to make more informed decisions concerning risk management and balance sheet optimization, enabling the identification of issues and opportunities with unprecedented accuracy and speed. >

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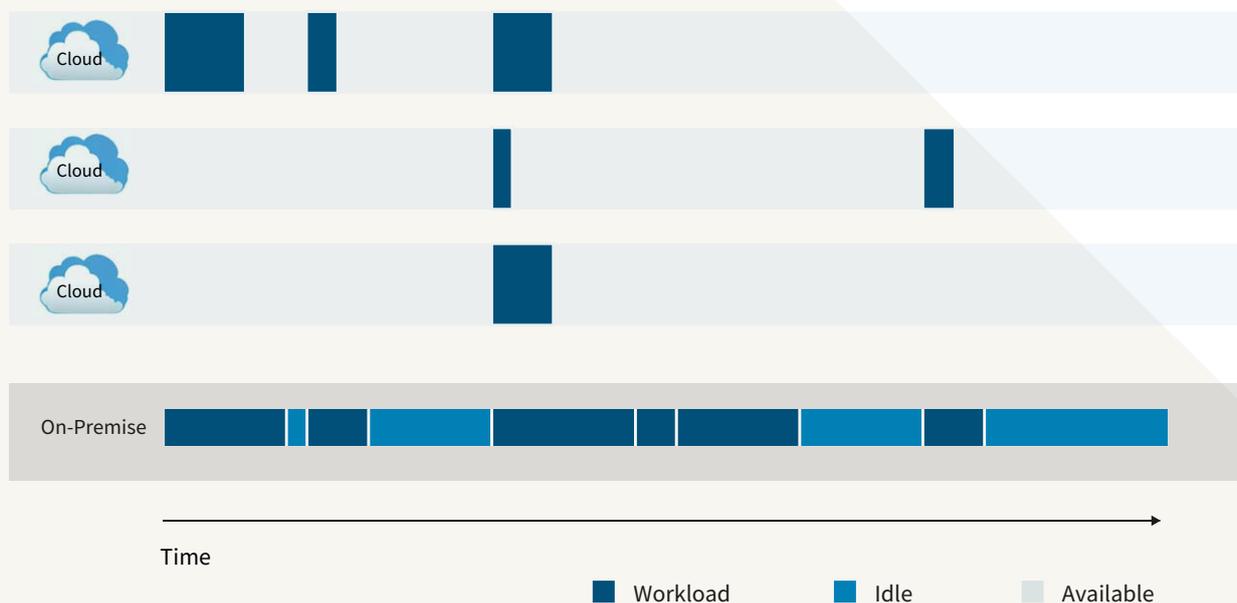
- **Streamlined Operations:** Beyond elevating risk management practices, it streamlines operations, ensuring both financial stability and regulatory compliance.

USE CASE 2: PRICING OF GENERAL INSURANCE

Pricing is very important to the general insurance sector. Not only does it drive profits, but it is a good marketing tool. The pricing process is a combination of data processing, advanced statistical modelling, domain expertise, intuition, and seamless integration with systems like data warehouses and core administration systems. In this intensely competitive and data-rich landscape, effective pricing hinges on several pivotal factors. Insurers must execute these tasks with speed and accuracy to stay competitive and align with evolving customer demands.

- **Accurate Modelling:** Pricing models must accurately capture the risks associated with different policies to ensure that premiums strike the right balance between competitiveness and profitability.
- **Collaboration Across Disciplines:** Effective pricing strategies often necessitate collaboration across diverse disciplines. Actuaries, underwriters, and data scientists must collaborate to craft accurate models.
- **Agile Tariff Updates:** The insurance realm is dynamic, marked by shifting regulations, market conditions, and customer preferences. Pricing models and tariffs must adapt to remain competitive.
- **Data Processing:** General insurance companies have access to massive data volumes, encompassing customer information, claims histories, and external market data. Efficient data processing is essential for accurate pricing. >

FIGURE 1: CLOUD VS ON PREMISE



- **Automation:** Historically, tasks like feature selection, model building, and model testing were manual and time-intensive. Automation streamlines these processes, optimizing pricing efficiency.
- **Machine Learning:** Cloud solutions provide the computational power needed to implement machine learning in pricing, empowering insurers to construct more accurate models in shorter lead times and make better-informed risk assessments.
- **Cloud-Native APIs:** Insurers can publish their tariff models via cloud-native APIs, ensuring precise control over how pricing information is shared. Instead of pushing tariff definitions to third parties like websites and aggregators, these entities can access pricing information as needed, safeguarding insurance companies' intellectual property.

CLOUD COMPUTING PROVIDES INSURANCE COMPANIES WITH AN ARRAY OF BENEFITS

Cloud computing has emerged as the linchpin of enhanced efficiency, competitiveness, and risk management. This technology gives insurers superior data analytics, predictive modelling capabilities, scalability, and streamlined collaboration. By embracing cloud solutions, insurance companies are well-positioned to lead in a data-driven, efficient, and competitive future, where innovation, agility, and collaboration take centre stage.

- **Scalability:** The capacity to scale computing resources as needed ensures efficient workload management, a valuable asset in the insurance sector marked by fluctuating workloads.
- **Cost Efficiency:** Cloud computing eliminates the necessity for hefty upfront investments in physical infrastructure. Insurers can embrace a pay-as-you-go model, substantially reducing overall costs and capital expenditures. >

- **Flexibility and Development Speed:**

The dynamic nature of the insurance industry demands adaptability. Cloud solutions offer the agility to swiftly adjust operations, introduce new services, and explore innovations without the confines of traditional on-premises setups.

- **Data Management:** Insurance firms contend with vast data volumes, from policyholder information to historical claims data. Cloud computing provides the infrastructure and tools essential for efficient data processing, storage, and management.

- **Computational Power:** Actuarial science, risk modelling, and underwriting rely on substantial computational power. Cloud platforms offer the resources required to perform complex calculations and simulations with speed and precision.

- **Data Security:** Cloud service providers heavily invest in security measures and compliance certifications, ensuring the safeguarding of sensitive policyholder information and helping companies adhere to data protection regulations.

- **Accessibility and Collaboration:** Cloud solutions enable convenient access to data and tools from any location with an internet connection, fostering seamless collaboration and facilitating remote work capabilities.

- **Disaster Recovery:** Cloud-based backup and disaster recovery solutions help insurers secure critical data and maintain business continuity, even in the face of unexpected crises.

CONCLUSION

Cloud computing is the catalyst for transformation, reshaping how the industry operates and innovates.^{1,2,3} Cloud technology matches very well with the insurance sector, as seen in the case studies on Balance Sheet Management and General Insurance Pricing. Cloud computing delivers accelerated scenario analyses, profound insights, and streamlined operations. <



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¹ <https://www.pwc.com/us/en/tech-effect/cloud/cloud-business-survey.html#four-ways-cloud-powered-companies-are-driving-value>

² <https://hbr.org/sponsored/2022/02/accelerating-forward-the-state-of-cloud-driven-transformation>

³ <https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/what-every-insurance-leader-should-know-about-cloud>
