



Leading Insurance Brokerage:  
Mendix on AWS migration for enhanced  
scalability, elasticity, and security



## About Leading Insurance Brokerage

Established in 1980, Leading Insurance Brokerage stands as a leading wholesale insurance brokerage in the United States, renowned for its innovative approach and commitment to technological advancement. As a testament to its success, the firm has been consistently recognized among the Top 10 Largest P&C Wholesalers and celebrated for its exceptional workplace environment.

Operating as a fully independent and owner-operated entity, Leading Insurance Brokerage prioritizes long-term strategies and values-driven service, ensuring their solutions are not only advanced but also aligned with the highest standards of quality and professionalism. With a presence in 20 offices nationwide and business operations across all 50 states, Leading Insurance Brokerage sets industry benchmarks by blending technological innovation with a steadfast commitment to client success and employee empowerment.

### The Challenge:

#### Building a robust and agile digital ecosystem

For Leading Insurance Brokerage, migrating their Mendix application to AWS was a strategic decision to build a robust and agile digital ecosystem. They required an AWS infrastructure that excelled in five critical areas:



#### The Challenge



**Scalability:** Designed to handle increasing loads smoothly, ensuring uninterrupted service even during peak demand.



**Elasticity:** Agile infrastructure capable of dynamically adjusting resources in real-time to match fluctuating usage patterns.



**Disaster Recovery:** Resilient architecture for business continuity, equipped for rapid recovery and minimal downtime during unforeseen incidents.



**Cost-Optimized:** Balancing high performance and resilience with economic efficiency, prioritizing cost-effective resource utilization.



**High Security:** Robust protection of user data and application integrity, fortified against security threats to ensure compliance and data safety.

This approach reflects Leading Insurance Brokerage's dedication to a digital environment that's both future-ready and efficient and secure and adaptable, setting a new standard in their industry for robust, value-driven digital infrastructure.



**Required a robust, agile, digital ecosystem.**



**Ecosystem needed to be scalable, elastic, resilient, cost-optimized, and secure.**



**Emphasized uninterrupted service during high demand periods.**



**Infrastructure designed for dynamic resource adjustment.**

## The Solution: Streamlining Leading Insurance Brokerage's AWS migration

The migration of Leading Insurance Brokerage's Mendix app to AWS involved using AWS Elastic Kubernetes Service (EKS) and Karpenter, ensuring an automated and scalable infrastructure. Karpenter was instrumental in enhancing the scaling of Kubernetes clusters, optimizing resource allocation for smooth application scaling. Several key components, like the AWS Load Balancer Controller and ExternalDNS, significantly contributed to efficient traffic management and automated updates of DNS records. Additionally, integrating the Metrics Server and Horizontal Pod Autoscaler (HPA) was vital. They ensured the smart use of resources and dynamically adapted the application's scale according to its usage.

Terraform automation scripts were implemented to complement these technologies for streamlined AWS infrastructure provisioning and maintenance, enhancing consistency, and reducing errors. AWS Managed Grafana was also included to bolster monitoring capabilities with real-time data visualization and insights. This robust solution architecture, tailored to Leading Insurance Brokerage's requirements, marked a significant step towards an efficient, automated, and scalable cloud infrastructure.





Working closely with our Rapid App Development team, we pinpointed Leading Insurance Brokerage's specific needs and crafted a tailored, cutting-edge solution. Our approach involved upgrading their system to the advanced Long-Term Support (LTS) version of Mendix, essential for implementing the necessary features. By combining diverse expertise across various service lines, including AWS solutions, EPI-USE stands out in delivering swift, high-quality outcomes for clients like Leading Insurance Brokerage.



## Outcomes & Benefits:

### Achieving scalability and security in AWS migration

EPI-USE's expertise was instrumental in successfully migrating Leading Insurance Brokerage's Mendix application to AWS. This transformation has yielded a robust application that excels in scalability, elasticity, cost-efficiency, and security, fully utilizing AWS's advanced security services. The newly established AWS infrastructure is fully automated, simplifying future modifications and enhancements. Additionally, the integration of cutting-edge monitoring, alerting, and backup tools provides Leading Insurance Brokerage with real-time performance insights and heightened operational efficiency.



Successfully migrated client's Mendix application to AWS with EPI-USE's expertise.



Achieved a robust application excelling in scalability, elasticity, and cost-efficiency.



Established a fully automated AWS infrastructure for easy future modifications.

## TCO Analysis:

### Key steps for Leading Insurance Brokerage

To understand the most cost-effective and efficient AWS infrastructure, a detailed Total Cost of Ownership (TCO) analysis was conducted. This analysis was crucial in mapping out the financial landscape of the proposed infrastructure, ensuring that it met both performance and budgetary requirements.

- 1. Load testing:** Simulated real-world traffic, including peak usage, to accurately estimate resource needs for different scenarios.
- 2. Resource sizing:** Automated tests determined precise resource needs, including instance types and database configurations, for optimal performance.
- 3. Traffic scenarios:** Tested across various conditions, from daily operations to peak and surge loads, ensuring readiness for all scenarios.
- 4. Cost estimates:** Calculated costs for each scenario from testing and sizing data, providing Leading Insurance Brokerage with clear financial insights for decision-making.

These steps collectively proved that Leading Insurance Brokerage's AWS infrastructure was not only efficient and robust but also financially optimized for their specific needs.



Simulated real-world traffic to accurately estimate resource needs for different scenarios.



Used automated tests to determine precise resource requirements for optimal performance.



Tested in various conditions to ensure readiness for any situation.



Calculated scenario-specific costs from testing and sizing data, offering clear financial insights for decision-making.





## Lessons Learned:

### Key insights from AWS migration

The migration of Leading Insurance Brokerage's Mendix application to AWS yielded significant insights, particularly in WebSocket scaling and connection management. A critical aspect of the project's success involved understanding and managing the complexities of WebSocket scaling within AWS. This process was essential to ensure seamless, real-time interactions. Managing WebSocket connections was also crucial, encompassing the initiation, ongoing maintenance, and orderly closure of these connections to maintain stable and reliable communication channels.

However, scaling WebSocket services presented a major challenge, especially in ensuring compatibility with auto-scaling. The team successfully enabled auto-scaling for WebSocket services, integrating it with Horizontal Pod Autoscaling (HPA) in Kubernetes. This adaptation was vital for handling variable workloads. This project also highlighted the importance of graceful pod termination in Kubernetes. Proper termination processes were key to preventing data loss and ensuring seamless transitions during updates or scaling operations.

Additionally, employing the Flood Load Testing tool proved vital in rigorously testing the AWS environment. This tool was key in pinpointing bottlenecks, fine-tuning resource distribution, and confirming the application's capacity to manage heavier workloads effectively. The experience of identifying and resolving scalability challenges highlighted the critical need for an infrastructure that is both adaptable and robust.



**Enabling auto-scaling for WebSocket services and integrating with HPA was essential.**



**Implementing graceful pod termination in Kubernetes prevented data loss during updates.**



**The Flood Load Testing tool was instrumental in identifying and addressing AWS environment bottlenecks.**



## About EPI-USE Services and AWS



EPI-USE Services for AWS offers robust and scalable hosting solutions, based on AWS. As a Next-Gen Managed Services Provider (MSP) we provide managed services and consulting services for AWS, including assessment, development, migration, management, and optimization, allowing our clients to focus on their core business. By providing a flexible cloud migration methodology, we tailor our migrations to each client's unique requirements. This allows any business to move from traditional server environments to AWS quickly and efficiently, with little to no impact on existing environments.

**To learn more about how we can help your business, contact [aws@epiuse.com](mailto:aws@epiuse.com) or visit [epiuse.com/aws-services](https://epiuse.com/aws-services).**

## About EPI-USE Rapid App Development

EPI-USE and Mendix have formed a strategic partnership to offer customers cutting-edge solutions in the low-code development space. By combining EPI-USE's deep expertise in enterprise applications and the Mendix™ powerful low-code platform, we can deliver custom, scalable solutions at lightning speed.



Group Elephant is a largely employee-owned group of companies, nonprofits and impact investment organizations, with a strong global presence. The Group is characterized by a primary strategic imperative in terms of which it goes 'Beyond Corporate Purpose' in its day-to-day activities.