OPCITO TECHNOLOGIES

Application Modernization with Microservices and Containers

About The Customer

The customer is a leading provider of enterprise contract management solutions in the cloud. The contract management applications by the customer have an active user base of more than 72,000 from 23 different organizations with locations in more than seven countries.

Business Challenge

The customer had a monolithic application running on the on-premise infrastructure. The application was a typical three-tier architecture with an ever-growing user stack, and as a result, the customer started facing the following challenges:

- **Lack of flexibility:** It took a lot of work to cope with new requirements, affecting new product development and resulting in increased time to market.
- **GUI bloating and reduced processing speed:** The application was a web-based, monolithic application suffering from GUI bloat, where the business logic and visual components grew over time and slowed down the user experience, particularly when loading the browser components.
- **Scalability problems:** The application was sharing a single data store, which meant even if you scale the application, each copy of the instance would access the same store of data. This resulted in a bottleneck as I/O traffic was increasing. In addition to this, caches were becoming stale, and their value was compromised.

There was a need to scale the entire application and not just individual tiers to solve the scalability issue. This meant the requirement for more computing resources. Plus, the application should support various customers, including desktop browsers running Single Page Applications (SPAs), traditional web apps, mobile web apps, and native mobile apps.

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How Opcito Helped

The Opcito team suggested options that involved the use of microservices-based architecture. The approach involved identifying non-critical and somewhat loosely coupled components to replace microservices. It consisted of two parts – application development and application deployment. The Opcito team designed and implemented a multi-container and a microservice-based Python/Flask application.

The application consists of the following components:

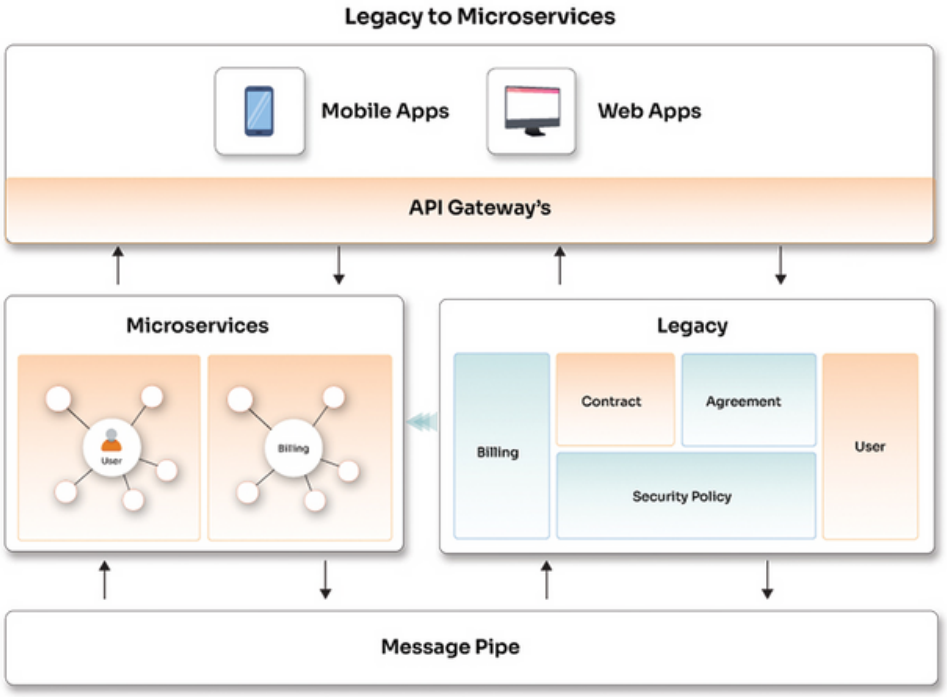
- Presentation components responsible for handling the UI and consuming remote services
- Domain or business logic which is the application's domain logic
- Database access logic that consists of data access components responsible for accessing databases (SQL or NoSQL)
- Application integration logic includes a messaging channel mainly based on message brokers

We migrated the existing datastore from on-prem to the cloud with schema update as per the microservices architecture. We handled the below database migration scenarios with respective microservices:

- The relational databases shared between multiple components
- The distributed database associated with each microservice, like business transactions from/to accounts
- Updated the data without loss and avoided duplication
- Isolated islands of data
- Batch data updates

The application deployment part included using cloud containers, making it easy for rapid application development and lifecycle management of deployment with microservices. The solution included the following:

- An optimized container hosting solution
- Scaling and orchestration using DC/OS, Docker Swarm, or Kubernetes
- Image repository management
- Start-up script for configuration
- Standard automation for managing the microservices deployment



Technologies, Tools, and Platforms used

- DC/OS
- DOCKER SWARM
- KUBERNETES
- MICROSERVICES

Benefits

DEPLOYMENT AGILITY	Hassle-free application deployment in multiple infrastructure environments
BUSINESS-FOCUSED CODE ORGANIZATION	Better source code organized around business capabilities
SERVICE UPGRADABILITY	Flexibility to upgrade individual services with little to zero impact on other services
SCALABILITY AND LOAD HANDLING	Ability to handle increased loads without bottlenecks

About Opcito

At Opcito, we believe in designing transformational solutions for our customers, start-ups, and enterprises, with our ability to unify quality, reliability, and cost-effectiveness at any scale. Our core work culture focuses on adding material value to your products by leveraging best practices in DevOps, like continuous integration, continuous delivery, and automation, coupled with disruptive technologies like containers, serverless computing, and microservice-based architectures. We also believe in high standards for quality with a zero-bug policy and zero downtime deployment approach.

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