CONTAINERIZATION ENABLES RAPID DEPLOYMENT USING DOCKER

Accelerated deployment, configuration and future cloud migration for the cloud services division of a Fortune 100 Tech Firm

Client Background

Our client is a global leader in mobile interconnection and consumer engagement services, and a cloud service group of a Fortune 100 company. The client's chief architect had undertaken the major challenge of re-designing the primary application architecture. The project leader approached Xoriant's team to build containers and microservices to package the main application components for eventual hosting on one of the major cloud platforms. Due to spikes in utilization, containerization was also required to enable quick and easy deployment and configuration of the constantly changing functionality requirements of the main application. The key objective for this engagement was to build a scalable microservices architecture for rapid application deployment.

Xoriant Solution | Key Contributions

Xoriant experts deployed the new run-time environment using Docker EE and approximately 15 containers. Containerization for the microservices was comprised of approximately 14 app-specific microservices (excluding databases).

Designed a new architecture to use microservices principles: We implemented role-based access management using Keycloak and LDAP. In addition, we implemented a dockerized Kafka on both the UI and the service layer. This layer is used for in-app notification and inter-service communications. The in-app communications can be UI to UI, service to UI, user to app, app to app, app to user, or all combinations.

KEY BENEFITS

- Created an architecture that is scalable to two or three orders of magnitude growth

- Delivered the capability to independently deploy and upgrade all managed services with minimum downtime

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Developed a web application as UI microservices: We implemented two separate UI containers for Sales and Operations. Each microservice can be dockerized into composable units to speed startup and increase agility. These containers can be independently deployed and managed. Also, autoscaling and failover can now be achieved at the UI layer. We used Hystrix as a circuit breaker to prevent cascading errors and Zuul for routing and filtering.

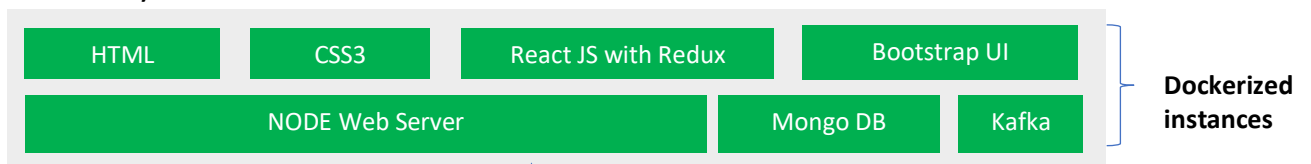**Ensured seamless integration of application with Kafka, MongoDB Docker containers:** There are two layers of microservices – one for the Gateway and the other for Business Logic microservices. The backend layer manages sales, pricing, sourcing, and routing.
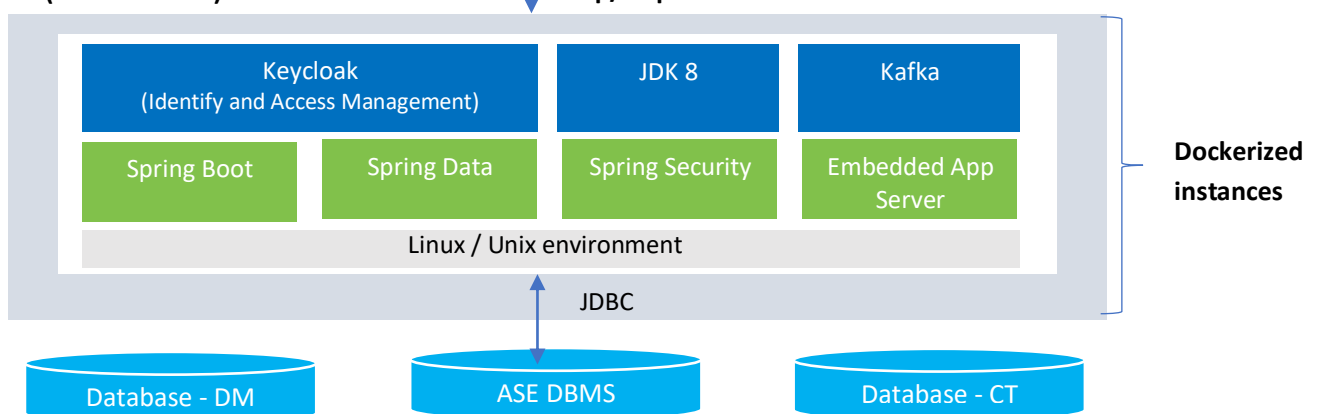
KEY BENEFITS

- Improved process efficiency with microservices architecture
- Enabled rapid deployments

High Level Architecture

UI (Microservices)

HTML	CSS3	React JS with Redux	Bootstrap UI

NODE Web Server	Mongo DB	Kafka

Dockerized instances

Backend (Microservices)   ↕ **http/https**

Keycloak (Identify and Access Management)	JDK 8	Kafka
Spring Boot	Spring Data	Spring Security	Embedded App Server

Linux / Unix environment

Dockerized instances

JDBC

Database - DM	ASE DBMS	Database - CT

Technology Stack

HTML5 | CSS3/Bootstrap | React JS | Node Web Server | Mongo DB | Sybase ASE | Docker | Spring Boot | Keycloak | JPA

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