



Ensuring Performance & Scalability: Centralized Microservices-Based E-Commerce Platform

A unified e-commerce platform for a global fashion retailer, transitioning from disparate third-party systems to a scalable, in-house solution that reduced costs and enhanced performance.

Overview

QBurst partnered with the client to centralize their e-commerce operations, delivering a robust, in-house platform built on a microservices architecture.

- **Platform Ownership:** Helped the client transition from high-cost, inflexible third-party vendors to a scalable, in-house solution, giving the client full control over their platform and data.
- **Cost Efficiency:** Eliminated expensive licensing fees and costly change requests, resulting in significant operational savings.
- **Performance & Scalability:** We implemented a high-performance system capable of handling peak traffic, reducing downtime, and ensuring a seamless shopping experience worldwide.



Client Profile

A leading fashion retail company that owns several brands and operates across diverse markets.

Challenges: Limited Control, High Costs, and Reduced Performance

The client's reliance on third-party systems created a series of critical business and technical challenges:

- **Limited Vendor Control:** The client lacked direct control over their e-commerce applications, making them dependent on third-party roadmaps and approval processes for minor changes.
- **High Costs & Delays:** Licensing fees and change requests were prohibitively expensive and time-consuming, delaying feature rollouts and impacting revenue.

- **Poor Performance & Scalability:** The existing systems were not built to handle peak traffic volumes, leading to frequent performance bottlenecks and downtimes during major sales events.
- **Data Fragmentation:** Critical data was scattered across various third-party systems, preventing a unified view of customer and order information.

QBurst Solution: From Disparate to Unified

QBurst designed and implemented a centralized, microservices-based e-commerce platform, enabling the client to take full ownership and control of their digital ecosystem. We led a complete transition from disparate third-party systems, such as Demandware and Magento, to a single, unified solution. This new architecture streamlined operations and laid the foundation for future growth. The platform is containerized and orchestrated using Kubernetes to ensure high scalability, and utilizes Redis for crucial in-memory performance caching.

The core of our solution was the development of key microservices:

- **Account Microservice:** Centralized account management to provide a single source of truth for all user data across countries.
- **Catalog Microservice:** A high-performance API designed for rapid retrieval of product and inventory data.
- **OMS Microservice:** A robust Order Management System for handling orders and integrating with the client's internal inventory (IMS) and warehouse (WMS) systems.

Technical Highlights

Our implementation focused on a user-centric, scalable, and future-proof approach:

- **High-Performance Catalog:** Employed in-memory caching (Redis) and API caching to significantly reduce database queries and speed up response times.

- **Seamless Data Migration:** Utilized a two-tier approach for migrating historical data, ensuring recent orders were immediately accessible while a Kafka pipeline continuously migrated older data.
- **Optimized OMS:** Enhanced the OMS with an in-memory basket data store for sub-10ms cart updates and integrated Elasticsearch for rapid price lookups.
- **Database Efficiency:** Implemented database sharding, partitioning, and query optimization, which lowered peak CPU usage by 40%.
- **Frontend Enhancements:** Used Server-Side Rendering (SSR) and lazy loading to improve page load times and enhance the overall user experience.

Impact: Significant Reduction in Operational Costs and Time-to-Market

- **Cost Reduction:** Eliminated high licensing fees and costly change requests, resulting in substantial and continuous operational cost savings, estimated at 65% annually.
- **Accelerated Time-to-Market:** The in-house platform provided the flexibility to introduce new features and improvements quickly, reducing the time-to-market for new rollouts by 70%.
- **Superior User Experience:** Front-end and back-end optimizations led to significantly faster load times and improved performance during peak traffic, ensuring a seamless shopping experience.
- **Full Data Ownership:** The client gained direct ownership and access to their customer and order data, enabling better analytics and business intelligence.
- **Enhanced Scalability:** The microservices architecture provides a flexible, scalable foundation to support global expansion and future growth without major refactoring.