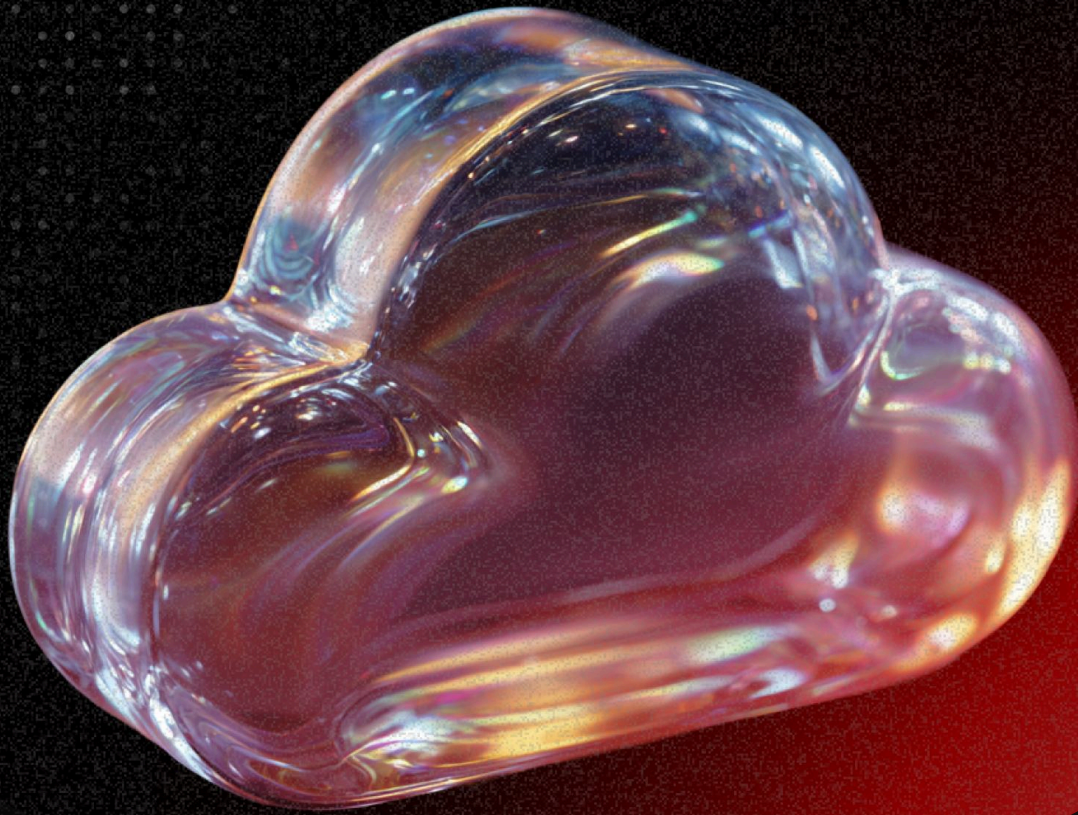




A High AI-Q[™]
Company



Easy Migration of Core Business Applications to the Cloud

Transforming legacy infrastructure into a high-availability AWS ecosystem to manage seasonal traffic spikes and optimize operational costs.

Overview

QBurst migrated the client's core business workloads from a rigid on-premises environment to a multi-AZ AWS architecture. We eliminated manual traffic management and established a fault-tolerant foundation for field operations.

- 45% reduction in IT costs achieved through pay-as-you-go efficiencies and resource optimization.
- Infrastructure deployment time slashed from weeks to minutes, enabling rapid response to business demands.



Client Profile

Based in Europe, the client is a premier provider of professional winter services and ground maintenance. They manage a large-scale operation involving field workers, supervisors, and managers who rely on real-time data to execute time-sensitive maintenance tasks across diverse regions.

Challenges: Static Infrastructure and Seasonal Spikes

The seasonal nature of the business created extreme fluctuations in system load that the existing legacy hardware could not accommodate.

- Frequent service disruptions caused a ripple effect, preventing operators and managers from completing critical field tasks for customers.
- Manual intervention was required to manage traffic spikes, as servers could not scale vertically or horizontally in real-time.
- Critical components, including load balancers and databases, lacked redundancy, making the system highly prone to downtime during failures.

- High overhead costs persisted during the off-season due to underutilization of expensive, fixed-capacity server infrastructure.

QBurst Solution: High-Availability Cloud Architecture

We transitioned the existing workloads to Amazon Web Services (AWS), architecting a solution that prioritizes bifurcation and fault tolerance. The environment was split across separate AWS accounts for development, staging, and production to reduce the "blast radius" of any potential outages.

- **Elastic Compute & Auto-scaling:** Implemented Application Load Balancers (ALB) and placed EC2 instances—including socket driver servers—under Auto-scaling Groups (ASG) across multiple Availability Zones to ensure high availability.
- **Re-architected Messaging:** Leveraged Amazon SQS (Standard and FIFO) to replace the legacy queuing system, providing a resilient and scalable message-driven architecture.
- **High-Performance Caching:** Deployed a 2-node AWS ElastiCache with Redis cluster to provide high-speed, in-memory caching for faster application response times.
- **Managed Database & DNS:** Migrated to AWS RDS for MySQL for automated backups and failover, while using AWS Route53 for robust DNS management.
- **Global Content Delivery:** Integrated Amazon CloudFront to enable edge caching, ensuring faster content delivery to field workers regardless of their location.

Technical Highlights

The migration focused on removing single points of failure while automating the resource lifecycle. The system now scales automatically based on real-time demand, ensuring the client only pays for the resources they use.

- **Multi-AZ Strategy:** Distribution of EC2 instances across different zones ensures the system remains operational even during a data center failure.

- **Horizontal Scaling:** Auto-scaling groups allow the platform to add m4.large instances dynamically during peak winter storms.
- **Standardized Environments:** Separate account structures ensure that development and testing activities never impact production workloads.
- **Edge Caching:** CloudFront significantly reduces latency for the mobile workforce by serving assets from locations closest to the field workers.

Impact: Performance Excellence and Cost Leadership

The solution allows the business to focus on service delivery rather than server maintenance.

- **Significant Cost Savings:** Achieved a 45% reduction in overall IT costs by eliminating the maintenance of idle hardware.
- **Agile Resource Provisioning:** The time required to deploy new infrastructure resources was reduced from weeks to minutes.
- **Zero Manual Intervention:** Automatic scaling successfully manages high-traffic periods without requiring human support or manual server configuration.
- **Enhanced Resilience:** Integrated redundancy and Multi-AZ deployments eliminated critical single points of failure in the load balancer and database layers.