Multi-Cloud Engineering Case Study Serverless API · Data Lake ETL · Disaster Recovery

Overview

This case study presents a unified view of three production-style multi-cloud engineering solutions implemented across AWS, Azure, and Google Cloud Platform.
The portfolio demonstrates architectural thinking, cloud-native design patterns, and cross-provider resilience strategies.

1. Serverless Multi■Cloud Contact API

The Serverless Contact API provides CRUD operations using AWS Lambda, Azure Functions, and Google Cloud Functions. The API maintains full behavioral parity across clouds.

Key Decisions:
• Use serverless compute for cost efficiency and elasticity.
• Abstract differences between DynamoDB, Azure Table Storage, and Firestore.
• Implement identical REST contracts to minimize client integration friction.

Business Value:
• Vendor flexibility for clients.
• Extremely low operational overhead.
• High reliability through regional isolation.

2. Multi■Cloud Data Lake ETL Pipeline

The ETL pipeline loads CSV datasets into S3, ADLS Gen2, or GCS using a pluggable storage-client abstraction.

Key Decisions:
• Adopt a Landing　Raw　Processed zone pattern for data quality and lineage.
• Use SDK-specific clients to keep ETL logic cloud-agnostic.
• Support migration scenarios and hybrid cloud environments.

Business Value:
• Enables scalable ingestion across multiple clouds.
• Reduces engineering effort when onboarding new data sources.
• Ensures future-proof portability for enterprise analytics workloads.

3. Multi■Cloud Disaster Recovery Blueprint

The DR architecture uses AWS as the primary environment, Azure as warm standby, and GCP for cold backups.

Key Decisions:
• RPO/RTO drive architecture—not the other way around.
• Warm standby balances cost and failover speed.
• Cold archival storage in GCP minimizes long-term retention cost.

Business Value:
• Protects against provider-level outages.
• Ensures continuity for critical workloads.
• Meets compliance requirements for backup and retention.

Conclusion

Together, these projects form a comprehensive multi-cloud engineering portfolio. They demonstrate the ability to design, document, and implement scalable systems that span compute, data, and resiliency across AWS, Azure, and GCP.

This case study may be included in your job applications, interviews, or LinkedIn as proof of technical capability and architectural maturity.