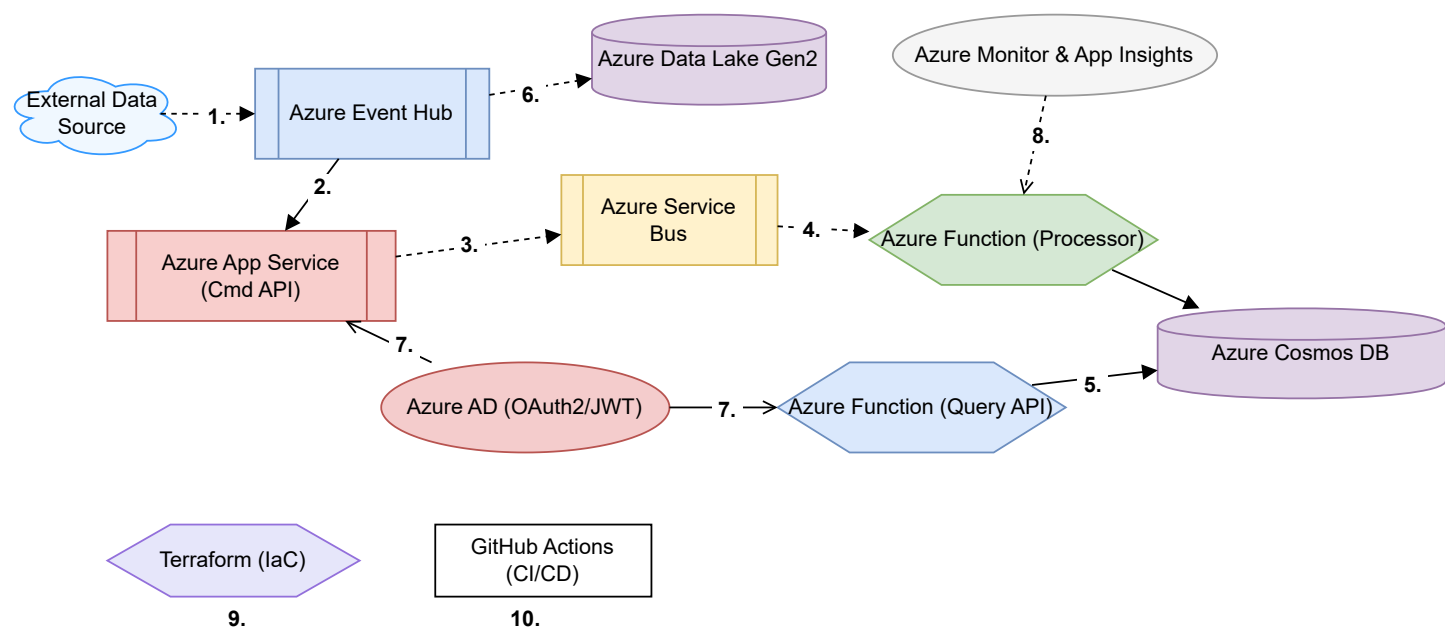# FinancialRiskNavigator - Azure Cloud Architecture

Component Flow Summary

1. Data Ingestion
Real-time financial data is streamed into Azure Event Hubs and archived into Azure Data Lake Gen2 using Event Hubs Capture. This supports compliance, historical analysis, and ML retraining.

2. Command Processing & Risk Scoring
The Azure App Service hosts the Command API, which receives risk evaluation requests. It invokes Azure ML models to generate real-time risk scores based on financial inputs.

3. Event Dispatch
Scored results and business events are published to Azure Service Bus, enabling asynchronous, decoupled processing and resilience.

4. Event Handling & Read Model
Azure Functions subscribe to Service Bus messages, apply post-processing, and persist results into Cosmos DB, which serves as the read-optimized store (CQRS read model).

5. Query API
Separate Azure Functions expose the Query API. Clients can retrieve risk scores, audit trails, and risk metadata from Cosmos DB securely and efficiently.

6. Expected Output
• Risk scores available via authenticated API
• Raw input archived in Data Lake Gen2
• Queryable, structured records in Cosmos DB
• Telemetry data in Azure Monitor and App Insights

7. Security
All APIs are protected by Azure AD using OAuth2 and JWT. Role-based access control (RBAC) ensures proper authorization across services.

8. Monitoring
Logs, metrics, and distributed traces are captured by Azure Monitor and Application Insights for full observability, diagnostics, and alerting.

9. Terraform
Allows for automated infrastructure setup of Event Hubs, App Services, Cosmos DB, Key Vault, and networking resources.

10. GitHub Actions
Automates the entire build, test, and deployment pipeline.