



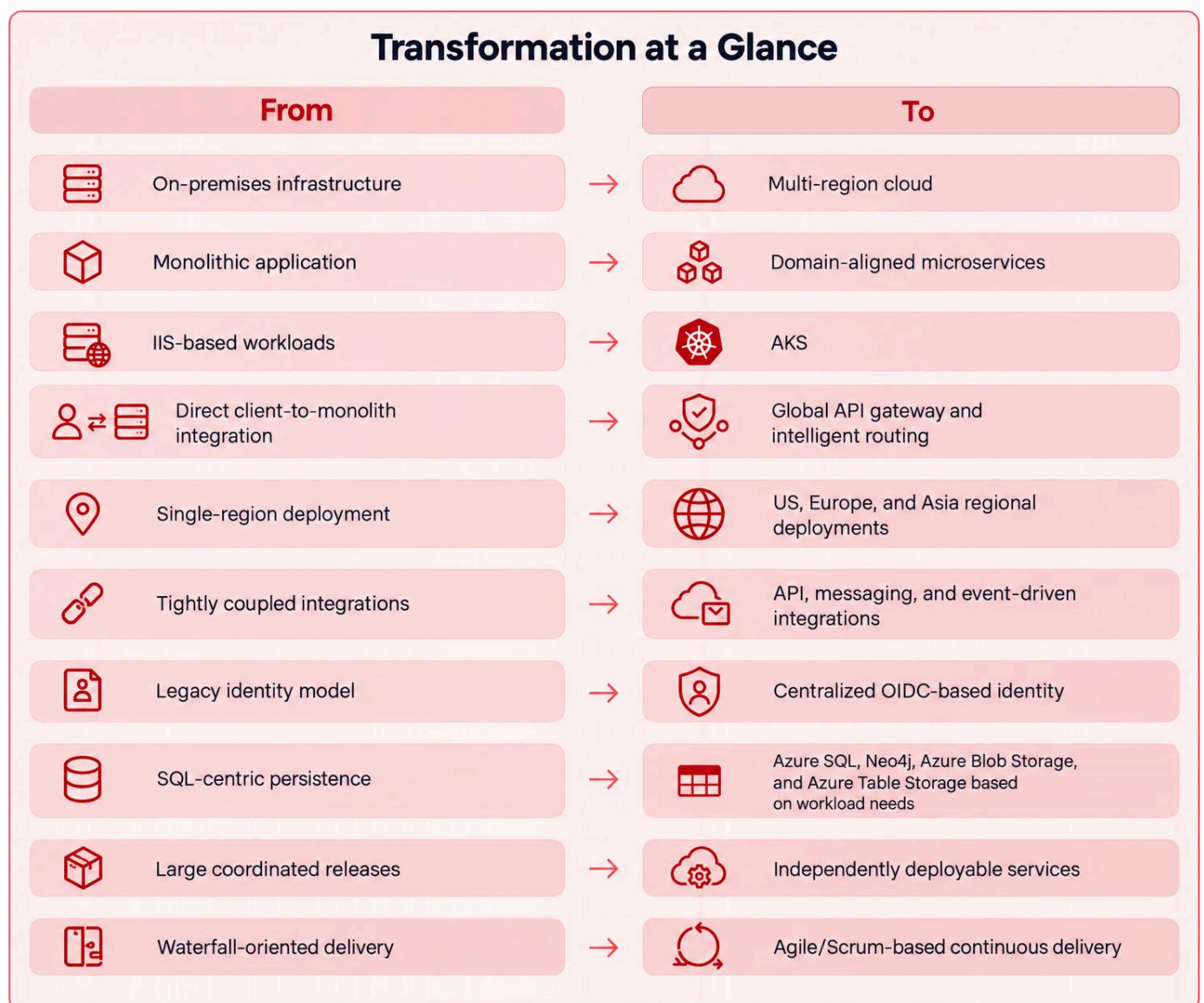
Zero-Disruption Modernization of a Global Monolith

Transforming a business-critical on-premise application into a multi-region, cloud-native microservices architecture without feature freezes or operational downtime.

Overview

QBurst executed an architectural transition program using a strangler-fig pattern to incrementally modernize a global on-premise monolith into an Azure microservices platform across the US, Europe, and Asia.

- **Hybrid Coexistence & Routing:** Established a global multi-region API Gateway and ExpressRoute interconnect with OIDC identity management, enabling live, transparent traffic switching between legacy on-premise services and cloud microservices.
- **Modernization & Business Impact:** Transitioned infrastructure from IIS/SQL to Linux containers, AKS, and polyglot cloud storage while maintaining 100% operational uptime and preserving uninterrupted bi-monthly release cadences.





Client Profile

Operating globally across North America, Europe, and Asia, the client serves a broad international user base through a mission-critical platform that demands high availability, strict data residency compliance, and continuous feature delivery.

Architectural Bottlenecks and Continuous Delivery Imperatives

- **Legacy Architectural Bottlenecks:** Monolithic IIS and SQL dependencies restricted developer velocity, prevented independent service scaling, and introduced security risks.
- **Strict Delivery Continuity:** The client's bi-monthly release schedule had to proceed without interruption, precluding feature freezes or temporary development halts.
- **Zero Disruption Requirement:** End users could not experience downtime, service degradation, or visible friction while capabilities migrated between environments.
- **Multi-Region & Data Residency Needs:** The platform required local presence across the US, Europe, and Asia to address regional availability, latency, and compliance rules.

Solution: Coexistent Hybrid Modernization Strategy

We designed a multi-phase architectural transition program that allowed legacy and modern platforms to coexist, progressively routing endpoints and capabilities to cloud microservices.

- **Secure Cloud Landing Zone & OIDC Identity:** Established Azure cloud landing zones in target regions and unified identity management using OpenID Connect (OIDC) across legacy on-premise and modern cloud environments.
- **Global Abstraction Layer:** Deployed a multi-region API Gateway serving as a proxy that independently routed requests to on-premise monolithic modules or new cloud microservices.
- **Hybrid Coexistence Architecture:** Implemented low-latency ExpressRoute connections and asynchronous event-driven messaging to support reliable hybrid operations throughout the transition.
- **Endpoint-by-Endpoint Microservices Rollout:** Built new capabilities natively in Azure Kubernetes Service (AKS) and extracted legacy modules stream-by-stream, updating API Gateway routing as each service matured.
- **Complete Monolith Retirement:** Reduced monolithic traffic in controlled waves until all business domain capabilities were absorbed into the target architecture, enabling complete decommissioning.

Technical Highlights

- **Monolith to Cloud-Native Microservices (k8s):** Decomposed a rigid, single-tier monolith into loosely coupled microservices, modernizing legacy Windows IIS hosting to containerized Linux workloads on AKS for automated scaling.
- **Polyglot Data Persistence Architecture:** Replaced a single SQL database bottleneck with fit-for-purpose cloud stores: Azure SQL for relational data, Neo4j for graph relationships, and Azure Blob/Table Storage for unstructured content.
- **Global Multi-Region Cloud Footprint:** Expanded from one on-premise data center to a high-availability, multi-region deployment across the US, Europe, and Asia, ensuring low latency, compliance, and strict data residency.
- **Zero-Downtime Hybrid API Routing & OIDC Security:** Deployed a global API Gateway with low-latency Azure ExpressRoute connections for live, transparent traffic switching between on-premise and cloud microservices, secured by centralized OpenID Connect (OIDC).

- **Agile & DevOps Delivery Acceleration:** Transitioned from slow Waterfall releases to high-velocity Agile/Scrum methodologies backed by continuous integration and automated CI/CD deployment pipelines.

Impact: Progressive Evolution with Continuous Business Delivery

- **Zero Disruption Migration:** Fully modernized the global platform without taking application downtime or conducting a high-risk cutover event.
- **Uninterrupted Release Schedule:** Maintained the established bi-monthly release cadence with zero feature freezes or roadmap delays.
- **Enhanced Engineering Velocity:** Shifted to domain-aligned microservices and CI/CD automation, drastically cutting time-to-market for new features.
- **Global Compliance & Scale:** Provided low-latency regional performance and ensured localized data residency compliance across the US, European, and Asian markets.