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North America 2024

Setting New Standards for Reliability in Cloud-Native Applications

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Reliable Payment Processing is fundamental in a Global Economy

Who is Global Payments?

5M+
merchant accounts

>100
countries served cross-border

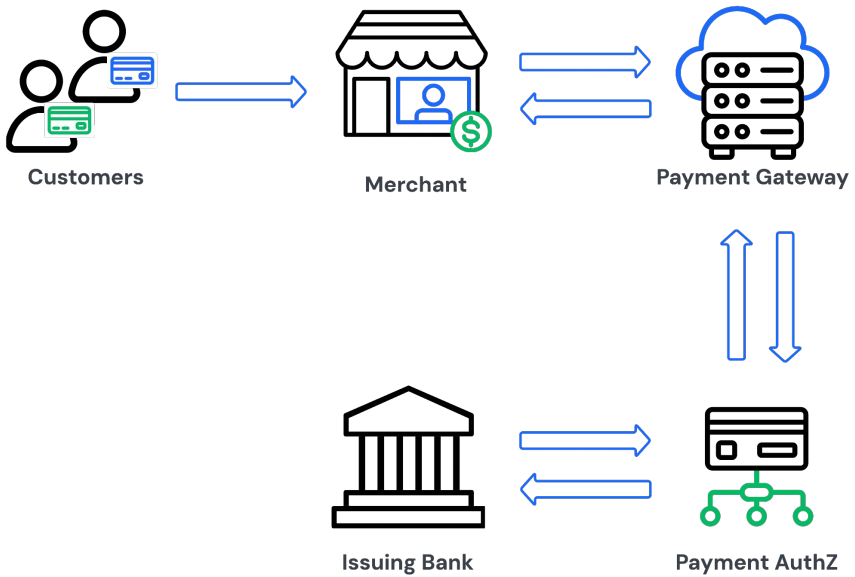
38
countries with a physical presence

75B+
transactions annually

27,000+
global team members

Statistics as of Sept. 2024

Payment Authorization



High transaction volumes with low latency (< 1s) and high throughput (250+ TPS)

Stringent security & compliance standards to protect sensitive financial data and evolving regulations

Global operations ensuring seamless and reliable payments across different regions of the world

24/7 availability to minimize downtime and ensure uninterrupted service for clients

Evolving technology landscape of new payment methods, technologies, and customer expectations

Legacy Application Limitations

Scalability

Legacy applications struggle to handle increasing volume and user growth

Availability & Resilience

Existing infrastructure lacks robust mechanisms for high availability and disaster recovery

Compliance

Evolving regulatory and data sovereignty requirements typically require manual processes and increased operational overhead

Agility

Monolithic architecture hindered rapid development and deployment of new features and updates

A Transformational Journey

Microservices Architecture

Decoupled services for agility, scalability, and independently deployable services.

DevOps Culture

Accelerate transformation by fostering collaboration, automation, and continuous improvement.

Containerization

Leverage containers for application and database portability, consistent deployments, and optimized resource utilization.

Cloud Provider Services

Utilize cloud-native services for enhanced functionality and cost efficiency while reducing overhead.

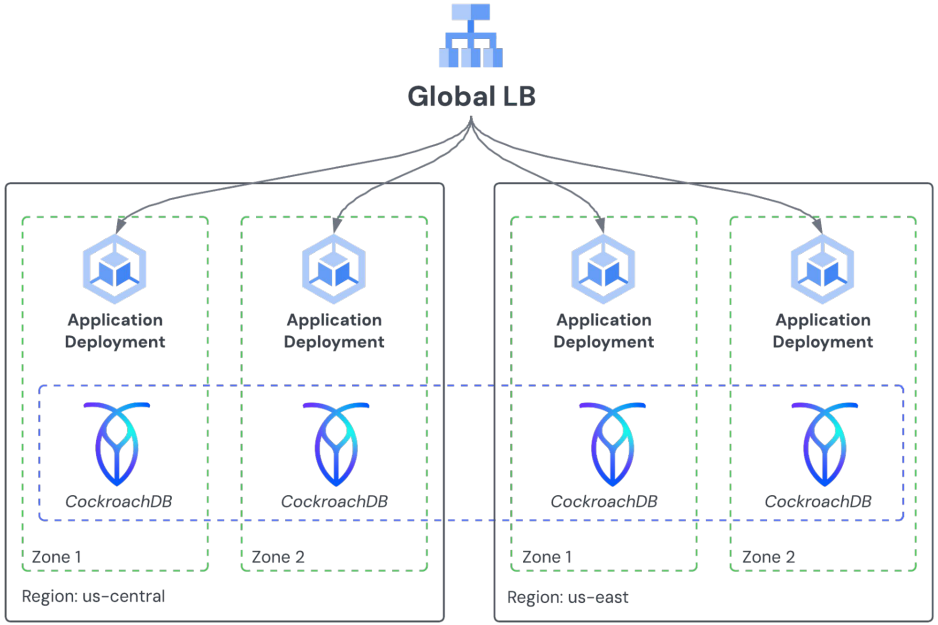
A Blueprint for Global Resilience

Multi-Region Deployments for pervasive high availability with disaster avoidance.

Container-native Load Balancing dynamically distributing traffic across regions for optimal efficiency and scalability.

GKE Enterprise simplifies cluster management through Fleet management including automated on-boarding for Config Sync and Service Mesh

CockroachDB providing the foundation for consistent, scalable, and fault-tolerant transactions across regions.

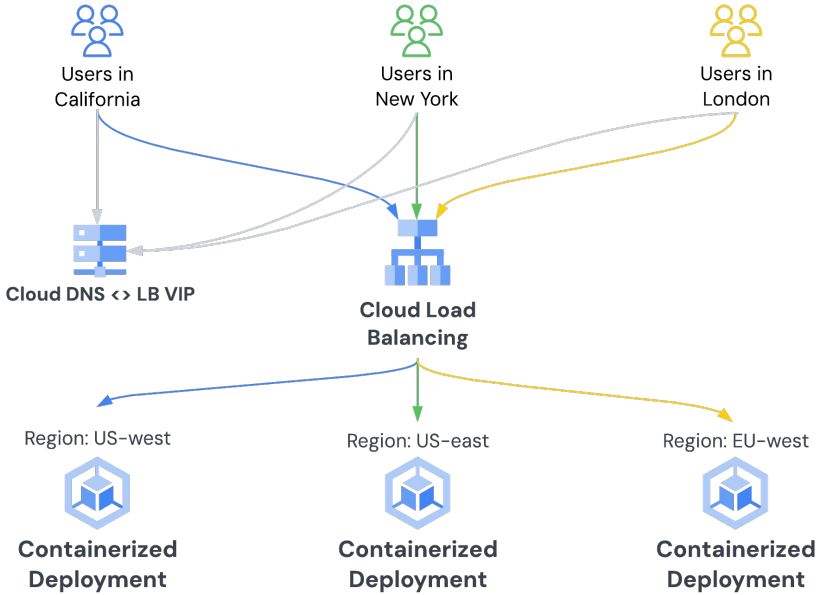


Adding Another Layer of Resilience

GKE Multi-Cluster Ingress simplifies management of multi-region deployments by providing a global IP and automated traffic routing.

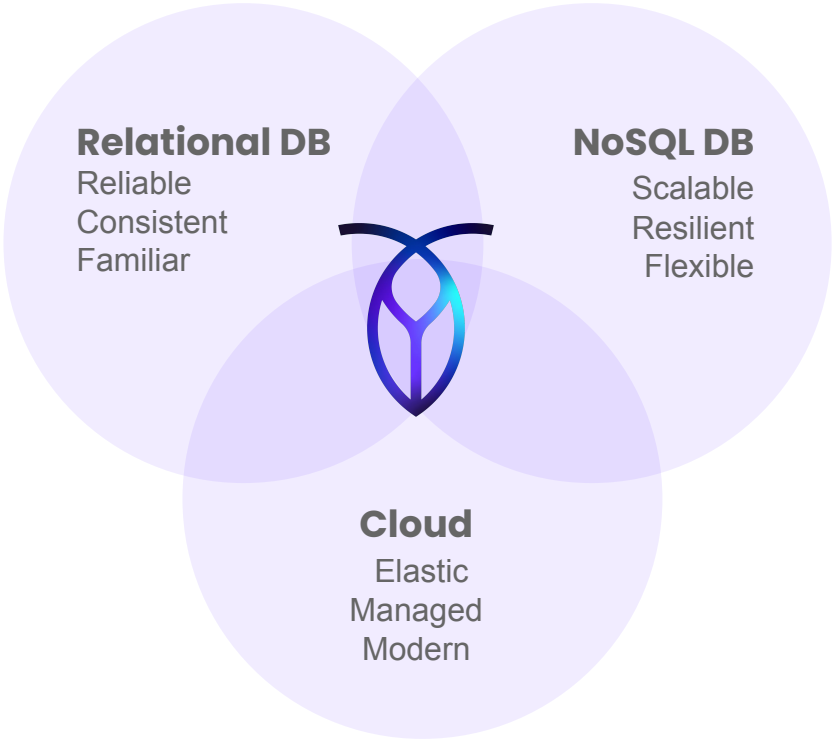
Multi-region clusters protect against regional outages and improve performance for global users.

Data residency requirements can leverage GKE's multi-region deployments to ensure compliance and data sovereignty.



Distributed SQL brings together the best of all DBs

Built from ground up to meet the demands of today's data-driven world



CockroachDB

An agile, distributed database architected and built for the cloud

Guaranteed Transactions

Inherent Resilience & Scale

Familiar, Compliant SQL

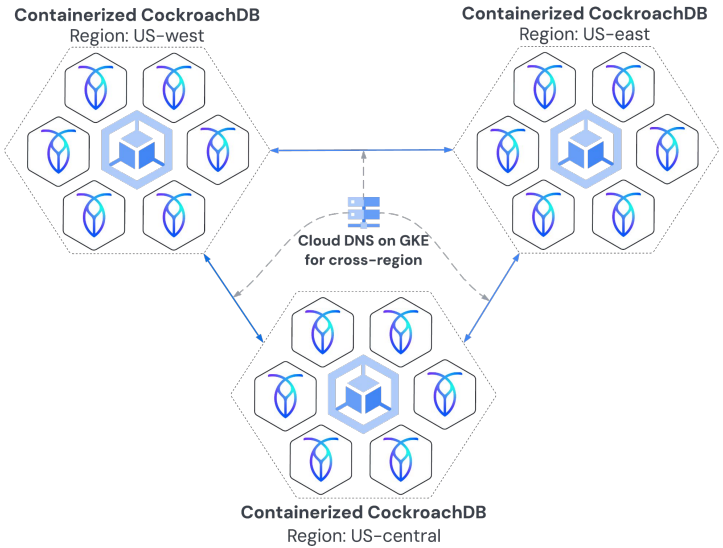
Fully-Elastic Service

..in a truly globally-distributed database

Why CockroachDB?

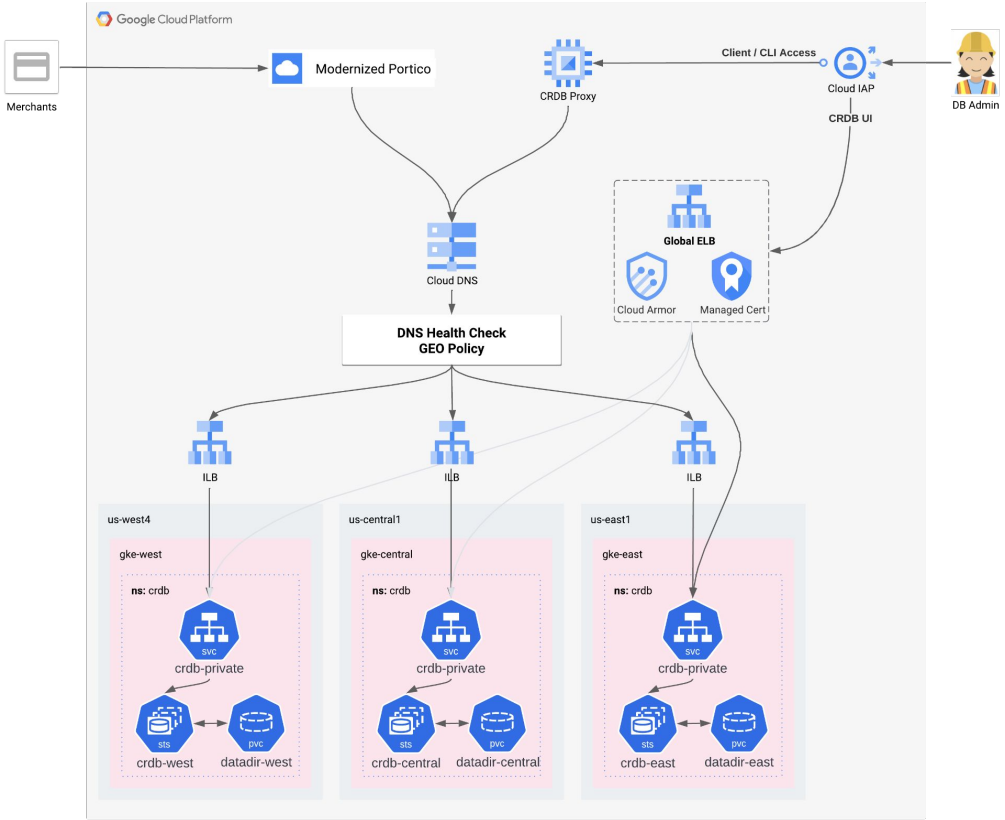
- Multi-Region Active-Active
  - Increased resiliency
  - Survive Node Failure and Region Failure
- Horizontal Scaling
  - Easy to add nodes for more capacity
  - Multi-Master: Each node can serve read-write traffic
  - Auto Sharding: Database handles data distribution. Redistributes and balances data when adding nodes and regions, transparently
  - ACID Transactions: Provides guaranteed consistency - not eventual
- Data Domiciling
  - Ability to specify where the data resides

The Foundation for Fault Tolerance



Distributed SQL	Scales horizontally with no single point of failure
Automatic Replication	Data replicated across multiple nodes for redundancy
Survivability	Nodes can go down without impacting availability
Automatic Failover	Seamlessly switches to healthy replicas in case of failure
Strong Consistency	Ensures data accuracy even during network partitions

CockroachDB on GKE



- CRDB currently deployed in three regions with five planned
- Add some GCP sugar to the CockroachDB deployment:
  - Cloud DNS for GKE
  - DNS Health Checks
- Separate node pool for performance reqs:
  - Higher clock speed CPUs
  - SSD persistent disk for boot disk
  - gVNIC
  - ***premium-rwo*** storage class

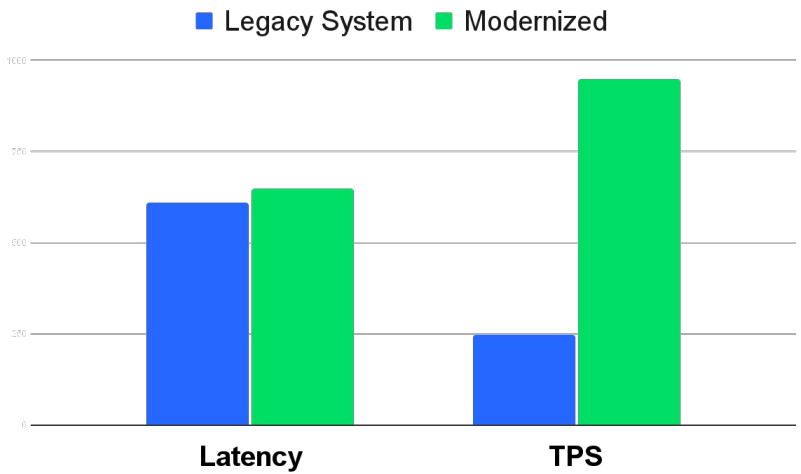
CockroachDB X Google Cloud

Performance Benchmarks & Results

+380%

System Capacity

with minimal impacts to latency



Mission-Critical Reliability

15+

Chaos Experiments

Container and pod deletes
CPU and memory hogs
Node failures
Network interruptions
Simulated regional outages

100%

System Uptime

0

Impacts during Upgrades

Including CockroachDB upgrades and schema changes

Building on Success

This transformation is just the beginning. Global Payments will leverage this cloud-native foundation to empower applications, accelerate modernization, expand and extend, and set new standards for reliability and performance.

Expand and Extend

Broaden the architectural design to include additional global regions and explore hybrid cloud capabilities

Platform as a Service

Empower additional applications to modernize through the built foundational platform

Continuous Innovation

Stay ahead of the curve and adopt new cloud-native features and technologies as they become available.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Thank you!