STORMATICS

The Stormatics Signature Methodology

PostgreSQL High Availability

At Stormatics, we approach high availability (HA) as a layered, outcome-driven methodology that evolves based on business continuity requirements, technical constraints, and operational readiness. We guide each customer through a structured decision-making process that can achieve up to 99.999% true availability, depending on their business requirements.

Define Availability Scope

The first step to achieve 99.99% or even beyond that is to clarify whether the customer needs high availability within a single data center or across multiple geographic zones:

- **Single-zone clusters:** offer protection against hardware or service failures but not against regional outages.
- **Multi-zone clusters:** add resilience against data center-level disasters or geographic disruptions.

This scope shapes every subsequent design decision.

Achieving True Four-Nines High Availability

Achieving four-nines availability (99.99%) is not feasible within a single zone. To meet this level of reliability, the cluster must be distributed across multiple regions.

- **Primary Region:** A typical setup includes a cluster, such as 3 data nodes and 3 witness nodes, deployed in a primary region.
- **Disaster Recovery Region:** Warm standby node is deployed in another region, often referred to as the disaster recovery (DR) site.

The primary cluster asynchronously or synchronously replicates data to the DR cluster. In the event of a complete outage in the primary region, the DR cluster can be promoted to act as the new primary, and the application can be redirected accordingly. While this can introduce brief latency on the application side, it ensures data durability and business continuity.

Achieving True Five-Nines High Availability

While open-source Postgres can approach 99.99% uptime, true five nines (99.999%) requires advanced commercial tooling.

As an EDB Strategic Services Provider, Stormatics brings extensive hands-on experience implementing EDB's Postgres Distributed (PGD) for mission-critical workloads. For customers needing always-on operations with zero RPO and near-zero RTO, PGD provides:

- Multi-master replication for continuous availability
- Built-in conflict resolution to protect data integrity
- Low-latency connections across geographically distributed nodes

Enriching High Availability with Performance & Security

We enhance HA deployments with:

- **Load Balancing:** Route SELECT queries to standby nodes using Pgpool-II or HAProxy to reduce primary load and improve performance.
- **Connection Pooling:** Use PgBouncer or Pgpool-II to optimize connection management.
- **Robust Backup & Recovery:** Implement Barman or pgBackRest for point-in-time recovery.
- **Data Encryption:** Apply LUKS or Transparent Data Encryption (TDE) for data protection.

With Stormatics, high availability is a proven methodology, deployed repeatedly in production for organizations where uptime, data integrity, and performance are non-negotiable.

Why Stormatics?

Stormatics is a boutique consulting firm specializing in helping businesses keep critical Postgres databases fast, reliable, and resilient.

We have delivered results for FinTechs, SaaS platforms, and enterprise teams that need better performance under growing traffic, continuous availability with automated failover, reduced cloud spend without vendor lock-in, and deep PostgreSQL expertise without adding headcount.

With 100+ years of combined hands-on experience managing production databases, we have developed signature methodologies that combine reliable open-source tools and proprietary innovations to optimize performance, ensure high availability, and build disaster recovery solutions. We partner with CTOs who demand robust, scalable, and cost-efficient PostgreSQL infrastructure to power their applications and fuel growth.

Let’s help your Postgres database remain always-on.

Contact us today to get started!