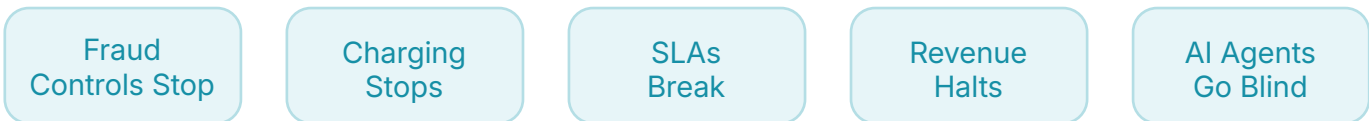


Active(N)

Active-Everywhere Cross Data Center Replication

Real-time decision systems are only as reliable as the infrastructure they run on. Cloud regions go dark. Data centers fail. Networks partition. When that happens to a system responsible for fraud control, charging, payments, or operational control, the consequences are immediate:



Most geo-replication architectures weren't built for this. They were designed for backup and analytics using eventual consistency, primary-replica hierarchies, and manual failover. When a region fails, they force a choice: continue on stale data and risk incorrect decisions, or stop processing and wait for recovery.

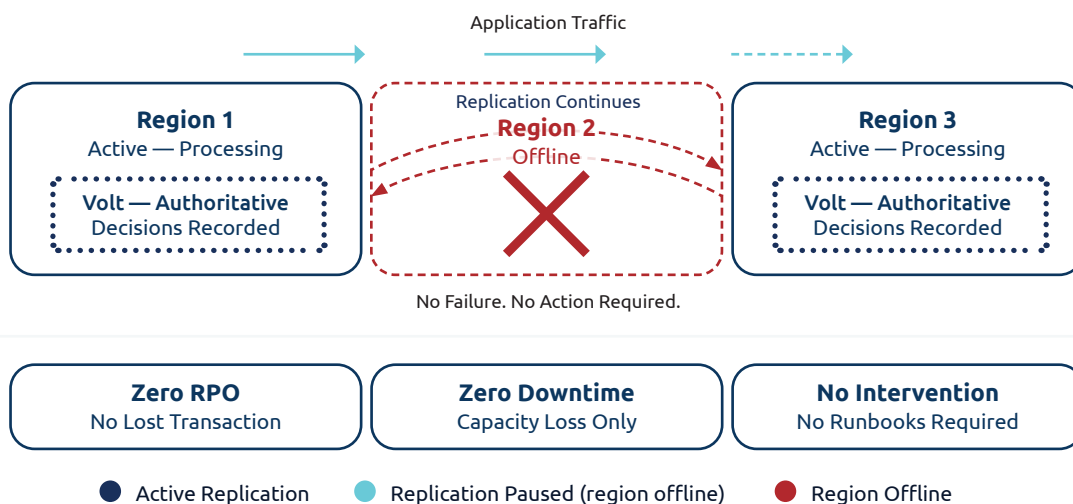
For a real-time decisioning layer, neither is acceptable. Decision authority that degrades under infrastructure failure isn't authoritative.

Active(N) is Volt's solution for cross-data-center replication (XDCR) that makes regional failures operationally invisible. Every region runs live production traffic simultaneously. When a region fails, healthy regions are already processing. Nothing needs to be promoted, reconfigured, or restarted.

Active-Active-Active. No Standby. No Failover.

Traditional geo-replication protects against failure by maintaining a standby that can be promoted when a primary goes offline. That model accepts a gap - however brief- between failure and recovery. For systems making millions of decisions per second, that gap has a cost.

Active(N) eliminates the gap entirely. There is no primary. There is no standby. Every deployed region is fully authoritative at all times.



- > **Every region is always active.** Any number of regions process transactions concurrently. Failure is absorbed by the architecture, not handled by an operator.
- > **Failure equals capacity loss, not downtime.** When a region goes offline, healthy regions are already carrying traffic. Decision authority continues without interruption.
- > **Deterministic multi-region consistency.** Concurrent updates across regions converge predictably using defined merge logic: last-write-wins or application-defined resolution. No silent corruption. No guesswork.
- > **No central coordination bottlenecks.** Regions scale independently. No global coordinators. No single points of failure are introduced as the deployment grows.
- > **Partition-tolerant by design.** Regions continue operating independently during network splits and reconcile automatically when connectivity returns.

Volt XDCR eliminates the trade-off between availability and correctness. Healthy regions already carry traffic when a peer region fails — zero data loss, zero manual intervention, zero downtime. Traditional geo-replication architectures require choosing between stale data and stopped processing. Volt removes that choice entirely.

	Traditional Geo-Replication	Volt XDCR
Regional Failure	Manual failover — data loss risk	Automatic continuity — zero RPO
Data Consistency	Eventual — stale reads possible	Deterministic convergence — no silent corruption
Write Architecture	Primary–replica — standby required	Multi-master — every region accepts writes
Failover Event	Required — minutes of downtime	None — failure equals capacity loss, not downtime
Annual Downtime	Minutes to hours per region	Zero — regional outages invisible to applications

What Active(N) Delivers

- > Decision authority that remains intact through regional infrastructure failures
- > Zero RPO. No lost committed transactions, even during catastrophic failures
- > Local latency for users served from the nearest region, without consistency trade-offs
- > Compliance with data residency and regulatory requirements across geographies
- > No manual failover procedures. No runbooks, no operator action required
- > Global scale without central coordination overhead
- > All traffic is processable from any region. Volt does not home entities to specific regions or route transactions back to a designated primary. Every region can make authoritative decisions on any subscriber, account, or session without cross-region lookups

Why It Matters for Decisioning Architecture

The value of a real-time decisioning layer depends entirely on its availability. A system that makes authoritative decisions under normal conditions but degrades or stops under infrastructure failure cannot be trusted as the decision authority for mission-critical operations.

Active(N) is the architectural answer to that requirement. Combined with Volt's core decisioning layer (deterministic decision logic, ACID-grade consistency, sub-10ms latency), Active(N) ensures that decision authority holds across regions, across failures, and at global scale.

For architects evaluating real-time decisioning infrastructure, the question isn't just whether a system can make correct decisions. It's whether it can make correct decisions when the infrastructure beneath it fails. Active(N) is how Volt answers that question.

Talk to Our Team or Book a Technical Call

www.voltactivedata.com/contact

Volt Active Data is the real-time decisioning layer for mission-critical systems.