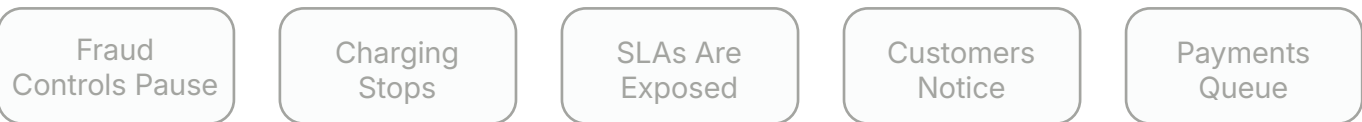


In-Service Software Upgrade (ISSU)

Upgrade Your Platform Without a Maintenance Window

Security patches. Feature releases. Compliance updates. Traditional systems force you to schedule maintenance windows, notify customers, pause operations, and hope nothing breaks.

When a mission-critical system goes offline for an upgrade, the consequences are immediate:



The longer upgrades are delayed, the more risk accumulates. But taking mission-critical systems offline isn't acceptable either. You shouldn't have to choose between staying current and staying operational.

Volt's In-Service Software Upgrade eliminates that trade-off. Nodes are upgraded one at a time while the cluster continues processing live production traffic. No maintenance window. No additional hardware. No reduced geo-redundancy during the upgrade.

How it Works

Volt upgrades clusters node by node. While one node is briefly taken offline, the remaining nodes automatically absorb its traffic. Once upgraded, the node rejoins the cluster silently and resynchronizes. The process repeats until all nodes are running the new version. New features activate only when every node has completed the update, ensuring consistent behavior across the entire cluster.

The cluster evolves while remaining fully authoritative. The upgrade is invisible to the applications and downstream systems depending on Volt for real-time decisions.

What this Means in Practice

No maintenance windows. Security patches, compliance updates, and feature releases can be deployed immediately, on your schedule, without coordinating downtime or notifying operators of a service window.

No extra infrastructure. Upgrades happen in place on existing clusters. There is no need to provision temporary capacity, spin up a parallel cluster, or accept reduced redundancy while the upgrade runs.

No interrupted decisions. Volt continues making and recording authoritative decisions throughout the upgrade. For telco mediation, charging, and policy systems, this means no dropped transactions, no SLA gaps, and no revenue exposure during platform maintenance.

Consistent cluster behavior. New capabilities activate only when all nodes have upgraded. There is no window in which nodes in the same cluster are running different versions of the decision logic.

Availability Guarantees

ISSU is the mechanism that makes five-nines availability (99.999%) achievable as a guarantee rather than a target. Traditional high-availability architectures protect against unplanned failures but still require planned downtime for upgrades. ISSU closes that gap.

	Traditional Approach	Volt with ISSU
Unplanned Node Failure	Automatic Failover	Automatic Failover
Planned Upgrade	Maintenance Window Required	Zero Downtime
Security Patch Deployment	Schedule and Coordinate Downtime	Deploy Immediately
Annual Downtime Budget	Consumed by Planned Maintenance	~26 Seconds Total

Architectural Properties

- > **K-safety redundancy is maintained throughout:** data redundancy is preserved via multiple synchronized copies during every stage of the upgrade; no single point of failure is introduced
- > **Sub-second detection and recovery:** heartbeat monitoring detects node state changes in milliseconds; traffic redistributes automatically
- > **Silent node rejoin:** upgraded nodes resynchronize and resume operations without operator intervention or service disruption
- > **Elastic scaling compatible:** cluster resizing and ISSU can be combined without perceived downtime

Key Outcomes

- > Eliminate planned downtime entirely — 24/7/365 operations without maintenance windows
- > Deploy security patches immediately — no delay, no vulnerability window
- > Maintain SLA compliance through upgrades — five nines as a guarantee
- > Reduce operational complexity — automated, zero-touch process with no runbooks required
- > Protect revenue — no service interruptions, no customer impact from platform maintenance

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