

v3.4-EDGE-001 – Twin Execution on Edge Nodes & Offline Operations

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1. Purpose & Scope

This document defines the architecture and requirements for executing MaxOneOpen twins on edge nodes, including full offline operability. It enables certified forks to function independently from centralized or online infrastructures.

2. Edge Execution Requirements

- Twin runtimes must operate fully on local hardware
- No cloud fallback permitted for critical operations
- Offline execution must support all schema-bound logic, inference and storage
- All interactions must be ZK-traceable and replayable post-sync

3. Offline State Management

Offline Capability	Persistence Requirement	Reintegration Trigger
Inference Execution	Full schema trace	Next sync or keypair match
Policy Enforcement	Immutable local log	Ops console pull
Data Access Control	Token-proven namespace map	User reconfirmation
Error Rollback	Local snapshot vault	Reentry watchdog

4. Security & Isolation Guarantees

- Edge twins must be runtime-isolated and schema-sealed
- Storage encryption and execution boundary must be hardware-enforced
- Peer interaction must be optional and always request-signed
- Reintegration must not override local logs unless explicitly approved

5. Certification Triggers

- Certification requires evidence of full offline execution traces
- Runtime logs and state diffs must survive power loss or reboot
- Forks must prove schema consistency across offline/online mode

6. Certification Relevance

Certified MaxOneOpen forks must support sovereign edge execution. No dependency on centralized systems is permitted for critical functions.