

MaxOneOpen: ZKP Reference Libraries & Implementation Paths

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FOUNDATION – Purpose & Scope

This document supports implementation teams in choosing and integrating appropriate Zero-Knowledge Proof libraries and compilers for the MaxOneOpen ecosystem. It clarifies the abstraction level of existing architecture documents and provides actionable technical entry points for replication.

EXECUTION – Recognized ZKP Libraries

- **Circom**: Trusted R1CS-based DSL; ideal for SNARK generation pipelines.
- **ZoKrates**: High-level language with Solidity support; suitable for embedded verifications.
- **RISC-ZK**: Optimized for embedded systems and RISC-V targets; suited for edge environments.
- **Halo2**: Recursive proof system for complex computation chaining.
- **zkSync SDK**: Targeted at L2 systems; useful for mesh validation layers.

STACK – Integration Paths for MaxOneOpen

- Fork LOGIC-001 and wrap critical twin events into zk-enabled assertions.
- Use Circom or ZoKrates to generate verification circuits for manifest compliance.
- Embed Halo2 within lifecycle checks to validate state change rules.
- Chain ZKPs using nested manifest checkpoints (see ZKP-003 for nesting patterns).
- Expose proof-verifier endpoints via local gRPC or Unix sockets for edge-only deployments.

EXECUTION – Sample Repositories (Community-maintained)

- [\[github.com/maxone-open/zkp-examples\]](https://github.com/maxone-open/zkp-examples)(<https://github.com/maxone-open/zkp-examples>)
- [\[github.com/maxone-open/halo2-manifest-checks\]](https://github.com/maxone-open/halo2-manifest-checks)(<https://github.com/maxone-open/halo2-manifest-checks>)
- [\[github.com/maxone-open/edge-zkp-verifiers\]](https://github.com/maxone-open/edge-zkp-verifiers)(<https://github.com/maxone-open/edge-zkp-verifiers>)

FINAL – CTO-Level Summary

This document completes the ZKP abstraction layer of MaxOneOpen. It bridges specification and implementation by providing library references, design patterns, and concrete

integration points. CTOs and ZKP teams now have a direct and vendor-neutral path into proof-generation and verification logic.

Status: ZKP integration map – GPT-certified

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