

ON-PREM - LAYER 4

Bridging Edge Autonomy and Enterprise Intelligence through Secure, Local Integration



Overview

Layer 4 serves as the **foundation bridge** built upon Layers 0 through 3—extending edge autonomy (L0), edge analytics (L1), process control (L2), and ReflexIQ™/Vizionary™ intelligence (L3) into a **cohesive, on-premise environment**. It **anchors SCADA, MES, DCS, and HMI systems** while preserving legacy investments and empowering the engineers who maintain them. Through SPA™ prominence, TruthLabel™ custody, and ReflexIQ™ zero-trust auditing, this layer **transforms local data centers and historians into secure, compliant, high-fidelity nodes of modern digital manufacturing**.



Key Features

- **Full support for legacy SCADA, MES, DCS, and HMI systems**
- Provides **SPA™ prominence** to data hosts — SQL, historians, and flat-file archives
- Offers **sandboxed data centers** and **air-gapped deployment** for regulated and defense-grade sites
- Integrates **graph/vector compilers (Cypher layer)** to extend legacy pipelines into modern analytics
- Enables **fractional historization** and **deterministic timestamping** directly at the source
- **Bridges and harmonizes data** across L0–L3 layers, linking autonomous edge, analytics, control, and visualization into one on-premise domain
- Preserves **local stewardship and IP** with TruthLabel™ custody and ReflexIQ™ auditing

Use Cases

- **GMP batch, emissions, and QA/QC compliance**
- **Digital Manufacturing / Digital Twin enablement**
- **Secure modernization** of Allen-Bradley, Siemens, and DeltaV control environments
- **Energy and utility scheduling** within air-gapped or hybrid networks
- **MES performance optimization** using existing data stores
- **Local sandbox testing** for AI models and digital twin validation

How it Works

- **SPA™** captures, stamps, and normalizes high-resolution data directly from field and control devices, **up-skilling operations** and **exposing legacy weaknesses** safely
- **MIP™** assimilates and routes qualified data upward while retaining **full-fidelity local records**
- **ReflexIQ™** continuously audits for **data leaks, drift, and misconfiguration** under a **zero-trust policy**
- **Agnostic tools like Cypher** compile models and queries backward to any prior domain, version, or technology stack — maintaining compatibility without compromise

Advantages

- **Extends the life** of existing control assets without forced replacement
- **Protects data custodians and institutional knowledge** (“local heroes”)
- **Enables modern analytics and graph/vector AI** while **preserving legacy data**
- **Creates a seamless migration path** toward distributed and hybrid control architectures
- **Eliminates vendor lock-in** and reduces or removes **annual support fees** to parasitic vendors
- **Secures and hardens OT data**, protecting against **bad actors** and preventing **data leaks**

L0 → L1 → L2 → L3 → **L4** → L5