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Canary User Conference
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Deploying Canary in Cloud-Based GMP Environments

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Data in the Cloud

How comfortable is your company storing data in the cloud?

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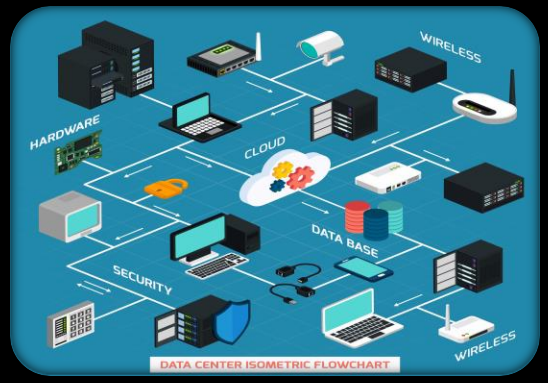
Primary Concerns for Cloud Hosted Solutions

Security

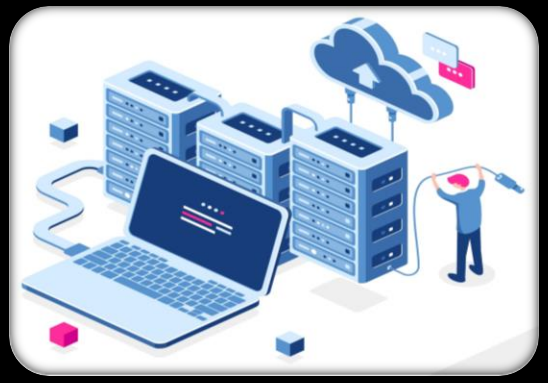
Data Loss

Visibility

Architecture



Maintenance



Compliance

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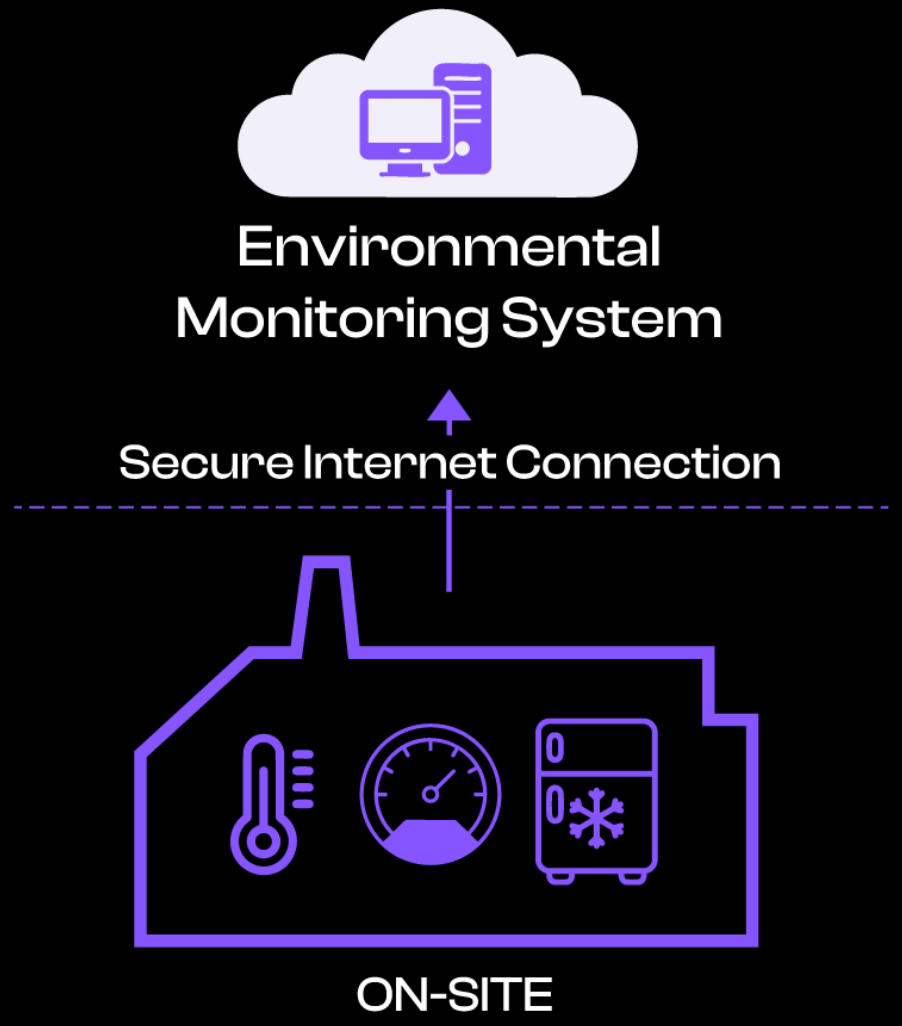
Use Case Opportunity – Environmental Monitoring

Goal

- Create a Modern, low cost, cloud base Environmental Monitoring system for a greenfield site.

Devices/Equipment

- Temperature/Humidity
- Differential Pressure
- Freezers
- Incubators



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Key Customer Requirements

Cloud Solution

- No data loss
- Scalable
- Secure

Modern

- HTML based interface
- Intuitive design
- Simple configuration

GMP Facility

- Validated System
- 21 CFR Part 11

Distributed Sensors

- Sensors and equipment

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Selected Open Solution Platforms

Open platforms are designed with standardized interfaces and protocols, allowing for easy integration, customization, and interoperability with other systems and components from different vendors.

Ignition!

Open industrial application platform that serves as a central hub for connecting data, designing and deploying industrial applications, and integrating systems across an enterprise.

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Open NoSQL time-series data historian designed for efficiently storing, contextualizing, analyzing, delivering and visualizing process data.

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kepware

Industrial connectivity software platform, specifically known for its flagship product KEPServerEX, which acts as a bridge between industrial devices and client applications.

OPTO 22 groov RIO

Modern edge I/O that can collect, process and transmit data at the edge of a network, independently of a PLC, PAC, or industrial PC.

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Historian Selection canary

- Flexible Licensing
- Proven in Cloud Deployments
- Open Architecture with Web API and gRPC API.
- Free Unlimited Connectors & Client
- Value – Cost vs Capabilities is highly favorable
- Components required to support 21CFR Part 11 Compliance
- Ease of Deployment, Administration and Use
- Proven compatibility with other selected platforms
- Supports data buffering and system redundancies.
- Security (SOC 2, Data encryption, Flexible ISP, Glandular Security to the tag level.
- Scalable – Canary can grow to support additional needs.

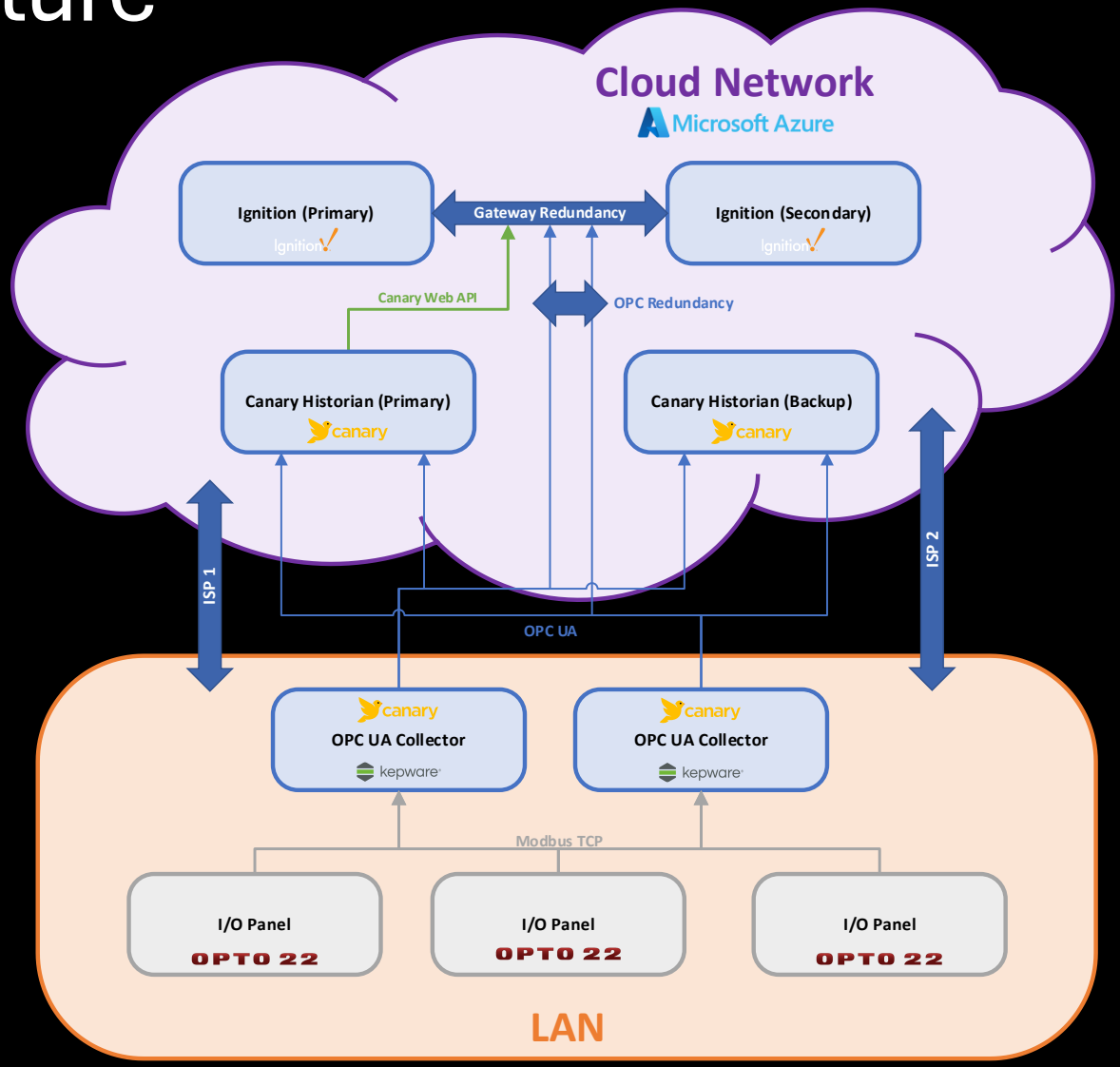
Resilient System Architecture

Key Design Features

- Distributed OPTO 22 I/O
- Canary Store & Forward with edge buffering
- Redundant ISP connections
- Redundant Collectors
- Redundant Canary Historians
- Redundant Ignition Gateways

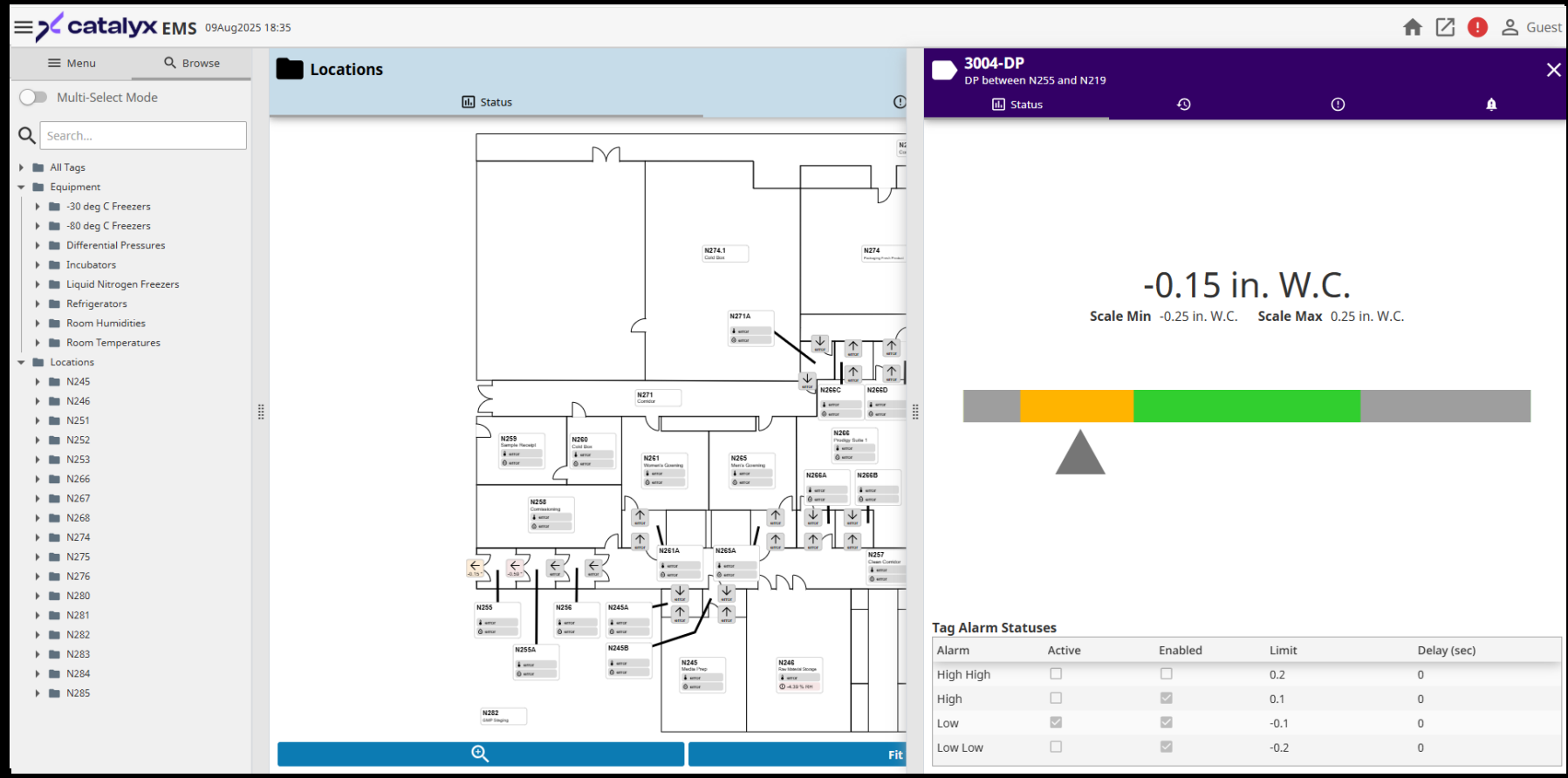
Protocols

- OPC UA
- Canary Web API



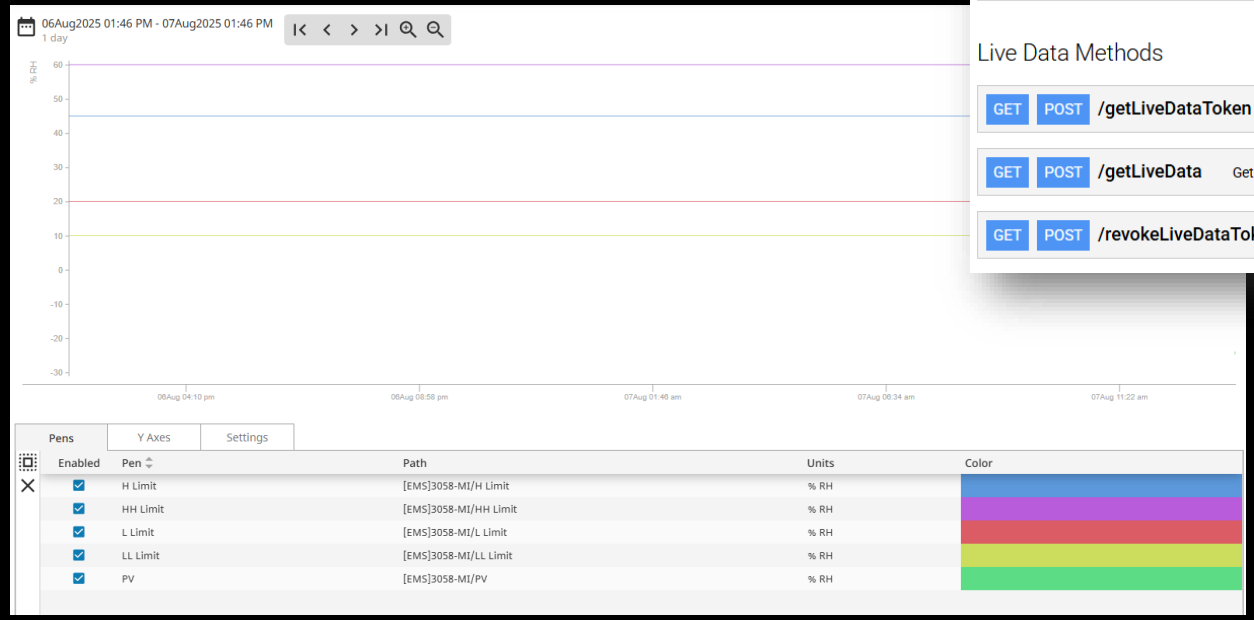
System Interface

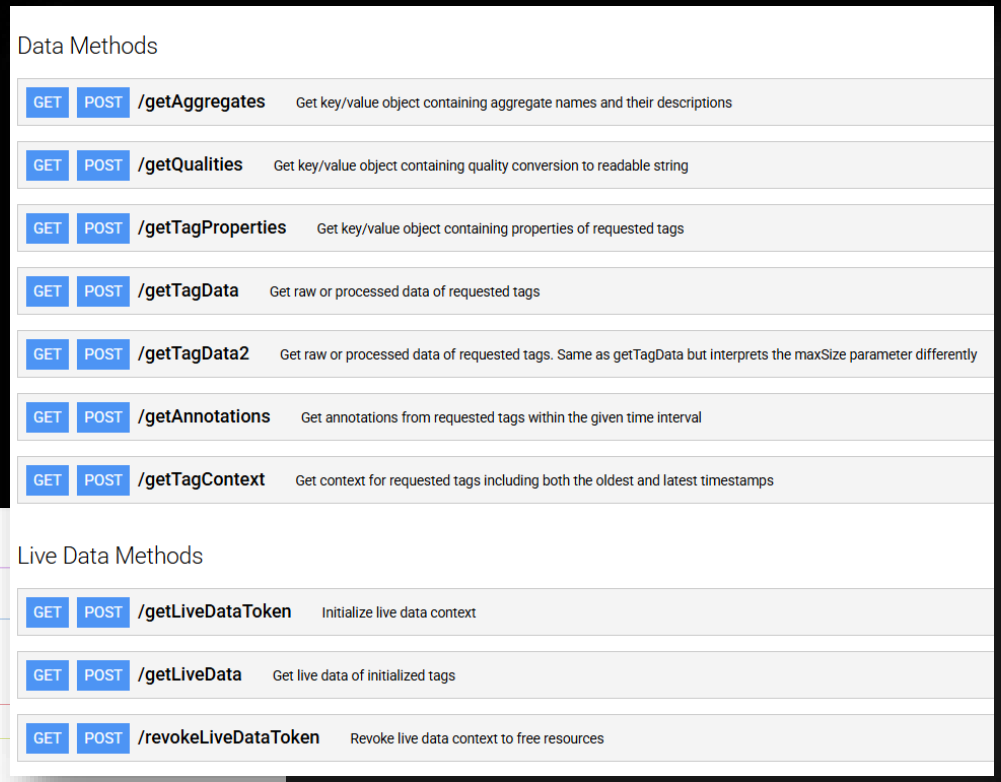
- Simple organization
- Templatized but tailored to site
- Alarming
- Remote Notifications
- Historical trending



Canary Web API

- API to pull in historical trending
- Token based security
- High tag performance





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Meeting Design Challenges

- **Canary 21 CFR Part 11 Compliance**
  - Every action is audited
  - Tracks before and after values
  - Provides a centralized audit trail
  - Proven to meet validation requirements.
  - 24/7 Data Access
  - SOC 2 , Flexible ISP and tag level security, data encryption, secured endpoints.

- Canary's "First in wins"
  - Creation of local buffer file on collector

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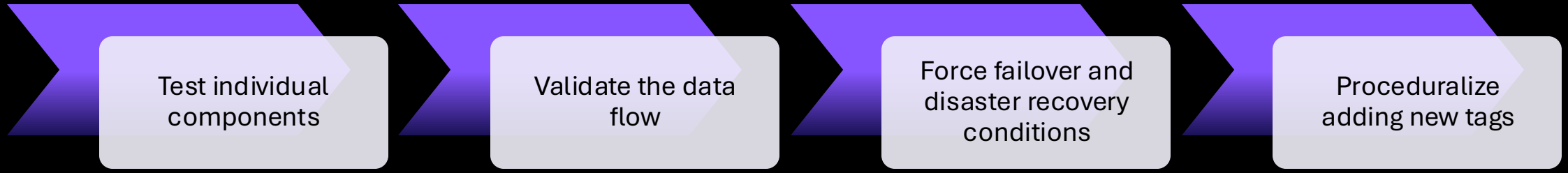
Validation Process

It is important to plan and execute a through validation process to ensure data accuracy, precision, quality as well as validation that all 21 CFR Part 11 Compliance requirements are met and documented.



21 CFR Part 11 compliance validation is the process of ensuring that electronic records and electronic signatures used in place of paper-based documentation and handwritten signatures are trustworthy, reliable, and equivalent to their paper counterparts, as required by the U.S. Food and Drug Administration (FDA). This involves validating the computer systems used to manage these records and signatures to ensure they function as intended and preserve data integrity.

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Project Impact and Results

Impact	Description
82% License Cost Savings	Reduced cost of licenses compared to other Historian platforms
40% Lower Total Cost of Ownership	Cloud-first design reduced the need for expensive on-prem infrastructure.
100% Data Capture Reliability	Buffered data and redundant historian streams ensured uninterrupted records.
Regulatory Confidence	The system passed validation and internal audits with zero compliance issues.
Modular Scalability	Additional areas and devices are able to be integrated quickly and without system redesign.
>99.9% System Uptime	Always-on performance delivered peace of mind in a GMP-critical environment.

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Questions

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