

## USE CASE

# Bridging the IT/OT Gap Securely: The Owl Cyber Defense & VTScada Integration

## Secure, Real-Time Historian Replication Without Compromising Plant Isolation

Today's industrial operators face a critical dilemma: the business requires real-time operational data (OT) to drive market decisions and efficiency, but connecting isolated plant networks to corporate IT environments exposes critical infrastructure to devastating cyber threats. Firewalls—being software-based—can be misconfigured, bypassed, or breached.

By combining VTScada's native **Data Diode Publisher** with Owl Cyber Defense's **hardware-enforced data diodes**, operators can achieve real-time, seamless Historian replication to outside zones while maintaining an impenetrable, physical barrier against inbound cyber threats.

## Core Value Propositions

### 1. Hardware-Enforced "Air Gap" Security

Owl's data diodes rely on physical hardware components that only allow data to travel in one direction.

→ **The Impact:** It is physically impossible for malware, ransomware, or malicious actors to traverse back into the OT network. You achieve the operational visibility of a connected network with the security posture of an entirely disconnected (air-gapped) plant.

### 2. Native, Seamless Historian Replication

This is an engineered, out-of-the-box integration. VTScada has been specifically designed to work hand-in-hand with Owl's architecture.

→ **The Impact:** Using the VTScada "Data Diode Publisher" tag on the secure side, data chunks are automatically pushed to a "Data Diode Client" on the corporate side. Remote users and market operators get an identical, real-time copy of the plant's historical data for analysis, while the primary control system remains completely invisible to the outside world.

### 3. Automated Bulk Sync & "Catch-Up"

A common challenge with one-way data transfer is handling network interruptions on the destination side. The VTScada and Owl integration solves this intelligently.

→ **The Impact:** VTScada tracks the last successfully published record. If the corporate server goes down and comes back online, the system utilizes an automated Bulk Sync process. It automatically back-fills any missing data from the exact point of interruption, ensuring corporate databases are 100% complete without requiring engineers to manually transfer files via USB.

### 4. Deterministic, High-Speed Transfer

Industrial environments require deterministic reliability that standard IT protocols cannot guarantee.

→ **The Impact:** Owl utilizes proprietary protocol filtering and FPGA technology to move VTScada data with near-zero latency and zero packet loss. Only authorized VTScada data types are permitted through, stripping away all unnecessary network noise and hidden payloads.

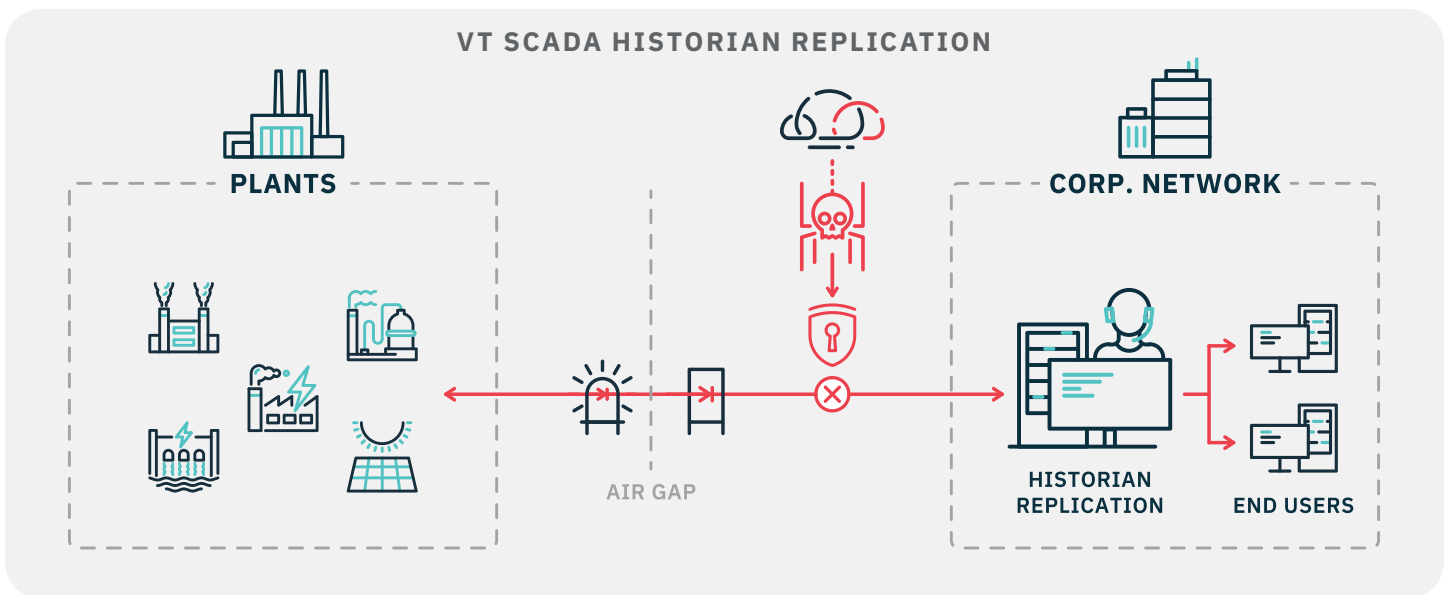
### 5. Future-Ready Compliance

Meeting stringent regulatory standards is mandatory for critical infrastructure and power generation.

→ **The Impact:** Owl's technology is globally certified (including EAL certification) and represents the gold standard for boundary protection. Implementing this joint solution drastically simplifies the audit process for compliance frameworks like NERC CIP and IEC 62443 by proving absolute network segmentation.

## Executive Summary of Benefits

Operational Goal	The Owl + VTScada Solution
<b>Eliminate Cyber Risk</b>	Hardware-enforced one-way data flow prevents any inbound network traffic or command injection.
<b>Ensure Data Integrity</b>	Automated sync ensures the IT-side Historian is always an accurate, complete replica of the plant floor.
<b>Reduce Maintenance</b>	"Set and forget" infrastructure that eliminates the need for manual data extraction or complex firewall rule management.
<b>Deploy Flexibly</b>	Available in ruggedized DIN-rail formats for the plant floor or 1U rackmounts for enterprise data centers.



### In the data diode configuration:

- VTScada Publisher (blue) sends large, compressed historian over TCP.
- VTScada Client (red) listens for the diode connection and backfills a DMZ Historian, creating an exact replica of the source dataset.
- Buffered data is retained and transmitted when connectivity is restored, then real-time publishing resumes.

### Key differences:

- Unidirectional only (no real-time delivery validation or two-way sync).
- Custom TCP ports are used and can differ across the diode.
- Client operates as a TCP listener, maintaining the session initiated by the diode side.



Owl Cyber Defense Solutions, LLC, headquartered in Columbia, MD, leads the industry in data diode and cross-domain network cybersecurity solutions for faster, safer and smarter decision making. We create solutions tailored for high-risk sectors including the military, government and critical infrastructure. Our advanced technologies enable secure, near-instantaneous collaboration, bridging network barriers to protect critical missions. With a focus on scalability and interoperability, Owl ensures that organizations can maintain secure, reliable, and compliant communication channels against evolving cyber threats.

For more information on Owl, or to schedule a demo, visit [www.owlcyberdefense.com](http://www.owlcyberdefense.com).

