

Securing Substation Deployments

REAL-TIME REMOTE HMI MONITORING

The Owl product family offers NERC-CIP compliant solutions for transferring a variety of data types/protocols including remote HMI. Live HMI screens (e.g. InTouch) are captured in real-time and transferred across the data diode to remote monitoring centers. Remote end-users can then monitor the HMI screens of their choice and make informed decisions.

MODEM SUPPORT

It is probably not surprising to hear that there is still equipment widely deployed that uses analog modems to transfer operations data to remote monitoring facilities. The OPDS-100 series products have configurations with built-in modems to support systems that still rely on modem (analog dial-out and cellular) connectivity for data transfer.

LOWEST TOTAL COST OF OWNERSHIP

Designed to meet longer OT deployment lifecycles, Owl data diode platforms typically remain field operational for 10+ years, minimizing equipment refreshes, change management, and downtime. Unlike software-based solutions, such as firewalls, Owl solutions also require little to no ongoing maintenance and upkeep, significantly reducing the need for dedicated specialized resources to service them. Additional protocols and proprietary OEM interfaces can be added to an existing platform without the need for additional equipment. In addition, Owl platforms are bandwidth upgradeable with a simple software license key, enabling users to increase bandwidth quickly and easily to adjust for evolving throughput needs.

The Owl Solution

Based on over 9 years of working with critical infrastructure providers, the Owl product line has multiple hardware interfaces (Ethernet, serial, modem) and a library of software interfaces to support different protocols, standards and vendors. Installed by ABB, Alstom GRID, Mitsubishi Electric, and Siemens, Owl solutions are serving a number of operators nationwide and saving them time and money by reducing support costs, remaining in field service for 10+ years, and preventing operators from having to roll trucks to remote locations.

Owl solutions are commonly used for remotely monitoring substation activities. Static VAR Compensators and other multi-million dollar assets generate network activity that is transferred as Syslog messages, file transfers, secure FTP and email. Remote monitoring can also be achieved using the Owl remote HMI screen viewer. Connectivity to external locations is supported via Ethernet, analog or cellular modems.

Data Diodes Provide Cybersecurity at Power Substations

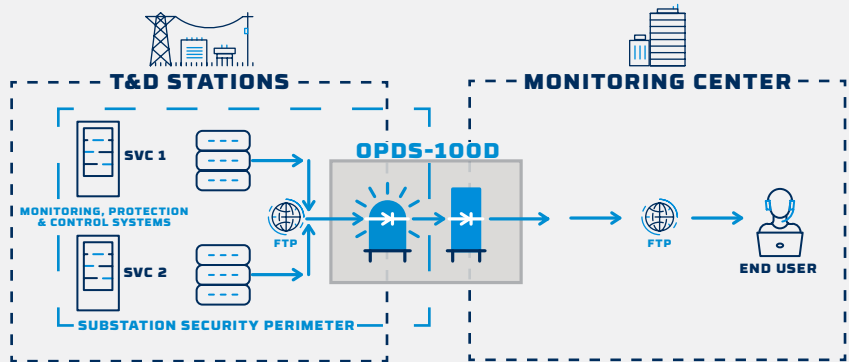
Owl has cultivated a strong presence in the power substation market by providing highly reliable, compact data diode solutions for cybersecurity. Built on 20 years of providing military-grade cybersecurity, the Owl commercial product line protects substations from network cyberattacks while facilitating the secure transfer of monitoring data to remote end-users. Transfers are performed using “external non-routable communications” and are NERC-CIP compliant.

Owl data diode products help operators balance physical security with cybersecurity to ensure reliable operation of the grid. Owl data diodes are hardware-enforced network security solutions proven to be more secure than firewalls. They use a deterministic one-way architecture and are deployed with a number of vendor partners (ABB, Siemens, etc.).

By protecting digital assets located at the substations and allowing remote end-users to receive real-time operational data or view HMI screens remotely, Owl solutions enable secure, remote management and monitoring.

STATIC VAR COMPENSATOR ALERT DATA

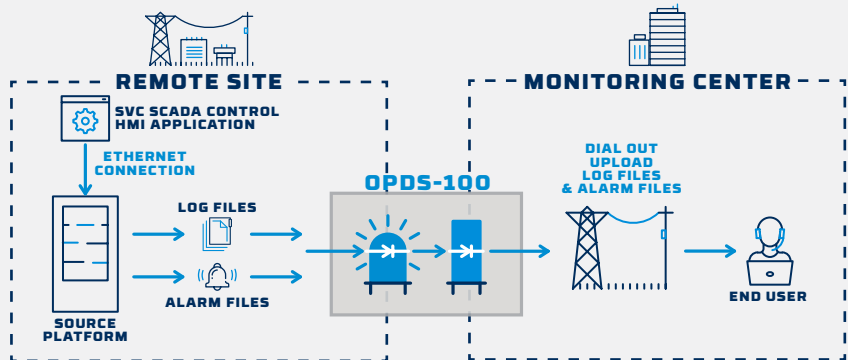
Alert data generated by Static VAR Compensator systems is securely transferred out of the substation to facilitate remote support. The **OPDS-100D** supports SVC alert data generated by two co-located transmission and distribution stations and automatically transfers it when monitored events occur. The solution is integrated with the SVC and requires no additional hardware or software to establish connectivity between the secure substation network and the SVC vendor's access platform.

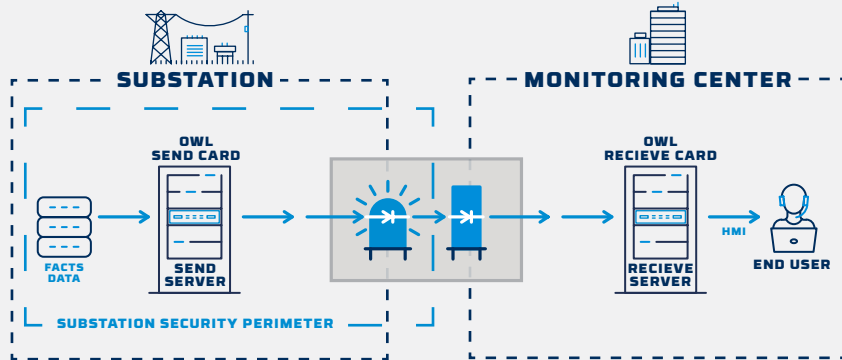


SECURE TRANSFER OF MONITORING INFORMATION FROM SVCs

A major manufacturer of Static VAR Compensators (SVC) systems need to monitor and analyze log files and respond to system alerts from multiple SVC installations. Due to the increasing threat from cyberattacks, SVC control systems are “air gap” isolated from outside networks. The only connection into the facilities is an analog phone line resulting in a resource intensive system monitoring process.

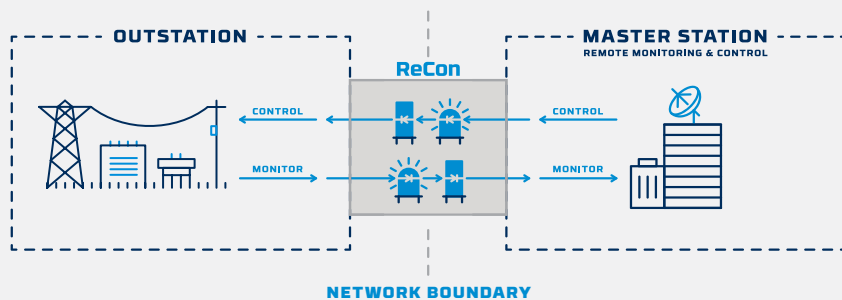
The **OPDS-100** was installed to provide secure and automated connectivity from the substation network out to the monitoring facility using the existing analog connections.





SECURE, REMOTE HMI FOR FACTS EQUIPMENT

A leading international manufacturer of flexible alternating current transmission systems (FACTS) needed a NERC-CIP5 compliant solution to automate the transfer of FACTS data from a substation high security domain to an external HMI system. Owl EPDS two server solution, using a pair of Owl Send/Receive cards, was integrated with the HMI system and now transfers data from the substation to the HMI platform at a remote monitoring center.



RECON IN ACTION

Most substations are not staffed 24x7 but they do need to be monitored 24x7. Alarms or other events generated within the substation need to reach remote users. If one of these alarms or events requires a response, the ReCon solution can be utilized. Owl's ReCon data diode solution supports secure, live, remote monitoring of substations and is NERC-CIP compliant. Alarms, alerts and events are transferred through the data diode and delivered to the monitoring center (or other remote location), allowing secure, remote monitoring.

ReCon combines two, independent one-way paths, allowing a communication "round-trip". A corrective action or command is sent over one of the data diode one-way paths into the substation. Upon execution, the response to that command is returned to the user over a separate, independent one-way path.



OWL SOLUTIONS

Owl solutions offer application specific network protection and data transfer capabilities. These single-chassis products provide hardware enforced one-way transfer solutions that stop 100% of network based cyber attacks. They come in a range of bandwidth speeds from 3 Mbps up to 10 Gbps and different form factors, including horizontal 1U 19" rackmount and vertical DIN rail configurations.

Owl supports Ethernet and analog interfaces including a version with an integrated V.92 modem. This provides end-users with direct connectivity or the ability to "dial-in" to the destination side of the data diode (not the secure source side) and access files/data that have already crossed the data diode.

Protocols and Data Types - Owl products offer a single software load capable of supporting many different interfaces including: data streams (UDP, TCP), file transfer (FTP/SFTP), syslog, email (SMTP), SNMP trap messages, database replication, and historian replication. We also support protocols and data types commonly used in T&D environments - DNP 3, SIEM, OPC and OSIsoft PI server. Owl also provides remote HMI and a variety of other standards and vendor based interfaces.

Flexible Bandwidth License - Owl is the only vendor to provide customers with the flexibility to increase bandwidth as network requirements evolve. Through a licensing mechanism, customers can incrementally increase the maximum bandwidth supported by the platform.



DiOTa, OPDS-100D, OPDS-100, OPDS-1000, ReCon, & SSUS

Partners

Owl's success in the critical infrastructure market depends heavily on our ability to work with specific protocols, interfaces and equipment providers. Owl supports industry standard protocols like Modbus, OPC, SMTP, and DNP 3 to transfer data out of the protected network to remote users. Owl also works closely with a number of equipment providers who serve critical infrastructure operators and the T&D market: ABB, GE GRID Solutions, Mitsubishi Electric, OSIsoft, and Siemens, Rockwell Automation, Rockwell Collins, Rolls Royce and Schneider Electric. This assures that end-users can reliably access operations data without jeopardizing the security of the substation.



OWL Cyber Defense

Owl Cyber Defense Solutions, LLC leads the world in data diode and cross domain network cybersecurity. With a constant focus on customers in the military, government, critical infrastructure, and commercial communities, Owl develops market-first, one-way data transfer products to meet a variety of operational needs, from entry level to enterprise.

For more information on Owl, or to schedule a demo, visit www.owlcyberdefense.com