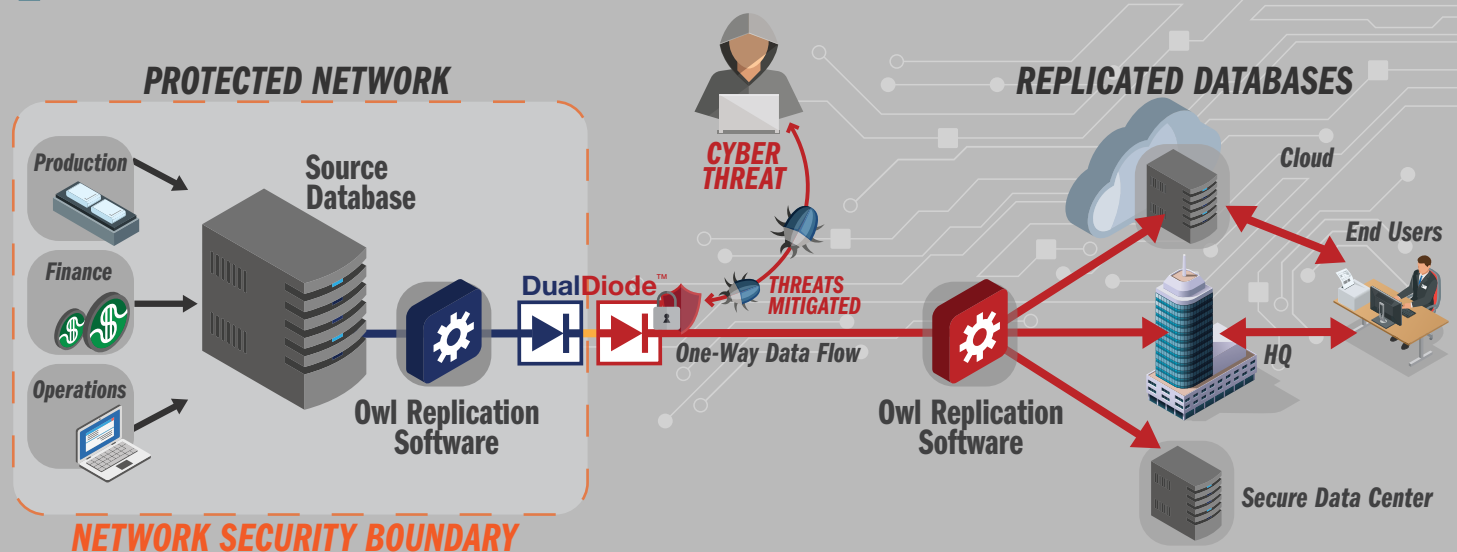


## Secure Universal Database Replication

Databases are keystones of the modern enterprise, utilized across almost every industry for data storage and analytics, and critical to business operations. Due to their importance, these databases are particularly vulnerable to threats initiated against the networks they reside on. While most organizations protect their databases through some sort of role-based access control or at-rest encryption, none of these methods fully protects the systems from threats such as ransomware or other malware infections. This is why organizations also tend to back up their databases, often offsite, in case such an attack were to breach their systems, or their data was lost by other means. Owl data diodes and specialized software provide a means to both mitigate network cyber threats and securely replicate and transfer partial or complete databases one-way, to another network or the cloud, for redundancy or data sharing.

## The Owl Solution

In conjunction with their ability to segment and protect networks from cyber threats while allowing data to securely flow from one network to another, Owl data diode solutions also feature specialized software for database replication and transfer out of the source network (data center, plant, field office) into the IT network or the cloud, for use, analysis, or backup. An exact copy of the source database is created and transferred outside of the protected network to an external location enabling remote end-users the ability to access database information generated within a plant or facility in real time without introducing a potential cyber threat vector against the network.



## How it Works

Owl specialized software interfaces with the database on the source network to replicate its data and then utilizes any of the Owl data diodes to transfer the data across the network security boundary to the destination network. Once the data has been transferred to the destination network, the Owl software has the capability to either build a completely replicated database or modify (add, change, delete) an existing one. Owl also offers the ability to identify a subset of tables and only replicate that portion of the database.

Owl database replication and transfer software is available for purchase as an add on to any of Owl's all-in-one data diode appliances (OPDS-5D, OPDS-100D, OPDS-100, or OPDS-1000). Appliances feature the convenience of a single, all-in-one solution, and are capable of supporting the majority of database data transfer situations. Server-based configurations (EPDS), designed for very high throughput requirements, are also available.

## Database Compatibility

**Compatible databases include: Oracle Database / Oracle TimesTen In-Memory Database / MySQL / Microsoft SQL Server / PostgreSQL / Sybase / IBM DB2 / IBM DB2 Connect for z/OS / IBM DB2 for System i / HP NonStop / Informix / Teradata Database.**

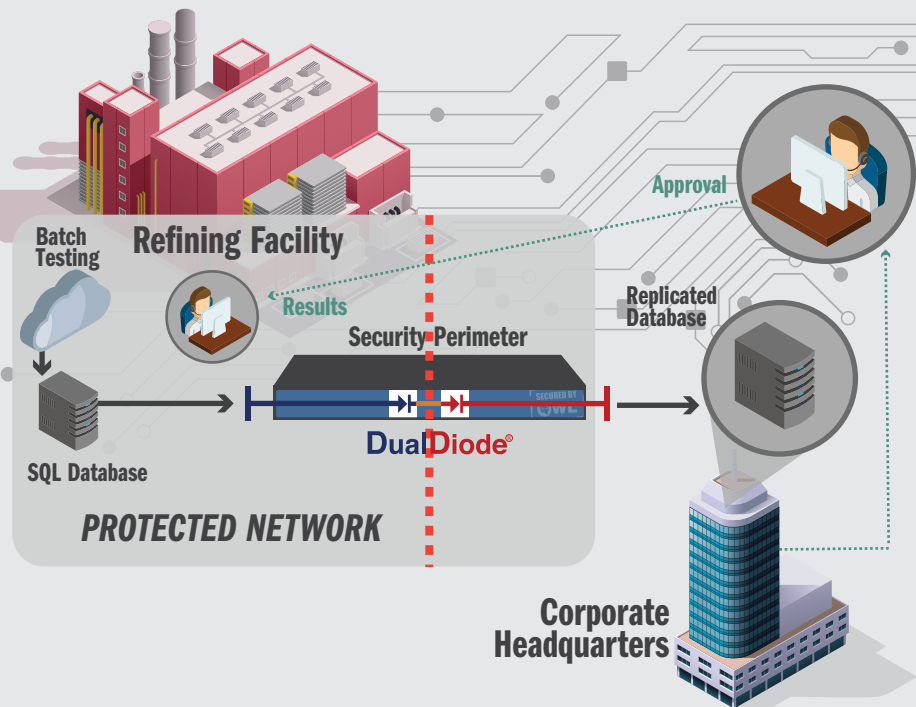
In addition to Owl's native support for a number of major databases, our database replication and transfer is now also compatible with Oracle GoldenGate database replication software for log-based replication.

## USE CASE:

### Secure Quality Control Approval

A petroleum production facility uses a laboratory information management system to maintain quality control over their production processes. At remote locations, labs process the outputs of each step in the refining process and record those results locally to a database. However, prior to moving to the next step in the refining process, approval of the testing results is required from the corporate headquarters. This would introduce a potential security issue if the labs were opened up to external access in order to approve these results.

In order to solve this issue, the data containing the lab results is extracted and replicated from the database, then transferred one-way across an Owl data diode to a centralized database at the corporate headquarters. From there, supervisors review the results and call the plant operators to confirm the approval of the results. The plant and laboratory networks remain secure from external threats, while the database information is available to business users who require access.



### ✓ Patented Backfill

Owl employs a patent-pending automatic backfill component in the event of a network or service outage. Under normal operation, data is transferred across the data diode from the source network to the destination on a recurring basis. As a redundancy measure, all updates are also accumulated into a second, larger update file, which is sent less frequently. This ensures the system can bridge any network outages and keep the source and destination databases synchronized.

### ✓ Custom Transfer Frequency

Owl database replication can be configured to perform replication and transfer at a frequency to suit the needs of your organization. For example, a government facility may replicate a database as discrete files once per day and upload them to a destination to build a complete database. Or a refinery may replicate and transfer smaller amounts of data much more frequently (minutes or seconds), allowing remote supervisors to stay up to date on plant activities.

### 📁 Compatible Owl Data Diode Hardware Platforms

**OPDS-5D: Entry-level appliance - Throughput up to 5 Mbps**

**OPDS-100D: DIN rail appliance - Throughput up to 100 Mbps**

**OPDS-100: 1U appliances - Throughput from 10 Mbps up to 100 Mbps**

**OPDS-1000: 1U appliances - Throughput from 10 Mbps up to 1000 Mbps**

**EPDS: Server-based solution - Throughput up to 10 Gbps**



### ☰ Proprietary Algorithm

Owl utilizes a proprietary, patent-pending database query algorithm to perform extremely reliable, real-time database replication between source and destination networks. For example, Owl data diodes could replicate data from a high security source database to a read-only (for users) database on a different security domain, thereby protecting the sensitive source network from cyberattack, while still allowing users on the lower security network limited access rights to the data. This technology has also been recently tested and verified for use with Oracle GoldenGate software.

### 🦉 About Owl

With over 2000 deployments globally, Owl Computing Technologies is the leader in data diode cybersecurity solutions, enabling hardware-enforced network segmentation and deterministic, one-way transfer of all data types and file sizes. USA owned and operated, Owl offers validated and accredited products, servicing the intelligence, military, government, and critical infrastructure communities.

