



**OWL** Cyber  
Defense

WHITE PAPER

# Why Select Owl?

## An Overview of Owl Cyber Defense Company, Culture, Products & Solutions





# Company Overview

**Owl Cyber Defense** prides itself on leading the market in cross domain and data diode network security technologies. With a singular focus on protecting the most important networks in the world, Owl has been continuously improving data diode technology over two decades to provide targeted products to meet the needs of a variety of vertical markets. From miniature and hardened mobile/tactical solutions to powerful enterprise wide solutions, Owl products are considered the premier data diode solutions on the market, worldwide.

Owl products offer the lowest latency and the highest bandwidth, with the lowest total cost of ownership. Owl solutions are quick to install – over 98% of Owl customers install the products themselves – and easy to maintain, with intuitive GUIs and little requirement for on-going support. They are also extremely reliable and durable – the MTBF on Owl products averages longer than 10 years.

## Company Strength

Owl has consistently improved its performance year after year and remains a financially strong and viable company. More than doubling in size over the last 2 years, Owl had record year in 2018 and is looking forward to a very successful future. To meet the evolving needs of new and existing markets, Owl has several significant product releases planned for 2019 to address applications such as the IoT and cloud services. With a diverse set of customers and markets, Owl is able to maintain a strong and steady business.

### OWL QUICK FACTS:

- Leader in Cross Domain & Data Diode Technologies
- Established 1999
- Private Ownership  
+ DC Capital Partners
- 125 Employees
- HQ - Columbia, MD
- Regional Office - Danbury, CT
- Global Sales & Support
- 10 Regional Distributors

## Markets Served

At its outset, Owl exclusively sold its data diode products to the U.S. Government. This line of cross domain solutions designed for the government, Department of Defense, and intelligence community eventually became the Government product line. These products include advanced filtering and adhere to the specific, rigorous government standards for security and process management, and cannot be sold to the public. They are used to protect classified networks and transfer data from low security networks to higher security Secret or Top Secret enclaves (or vice versa).

A few years later, prompted by new Nuclear Regulatory Commission regulations, Owl designed a new commercial offering to serve the nuclear power industry. Thus, the company opened up its expansion into critical infrastructure, industrial, and commercial markets. This line of solutions is now the Commercial product line. These products are most often used for use cases such as remote monitoring, secure software updates, and remote command and control.

Owl’s current customer base now includes a wide variety of both private and public (government) sector organizations. Vertical markets served include oil & gas, petrochemicals, financial services, manufacturing, defense, water & wastewater, renewable energy, power generation, transportation, mining, intelligence services, homeland security, pharmaceuticals, and more.

## Product Lines



### COMMERCIAL PRODUCTS:

- DiOTa (Single-Purpose Data Diode)
- OPDS-100D (DIN Rail Mountable Data Diode)
- OPDS-100 (Multi-Purpose Data Diode)
- OPDS-1000 (Multi-Purpose Data Diode)
- EPDS (Multi-Purpose Data Diode)
- XD Guardian (Commercial/Exportable CDS)
- ReCon (Bidirectional Data Diode)
- SSUS (Secure Software Update Solution)



### GOVERNMENT PRODUCTS:

- XD Bridge (Bidirectional CDS)
- OCDS-ST06 (Streaming Transfer)
- OCDS-FT15 (File Transfer)
- C2C (Cloud-to-Cloud File Transfer)
- ECDS-PT01 (Ethernet Packet Transfer)
- OCDS-MPP (Multi-Purpose)
- TCDS-MPP (Tactical Cross Domain Solution)
- TCDS-MPP-010 (Compact Tactical Cross Domain Solution)

## Track Record of Innovation

Over the company's history, Owl technology has consistently been at the forefront of industry innovation, with over 35 granted technology patents and more pending. Owl was the first to commercialize data diode technology, the first to develop a powerful server-based two card solution, the first to create an all-in-one 1U appliance solution, and the first to develop a compact, DIN rail-mountable solution, hardened for use in critical infrastructure environments. As needs change and new markets emerge, Owl continues to design the future of the industry.

## Professional Services

Owl offers a number of services to help customers design install, configure, and maintain their systems, including:

- Proof of Concept/On-site Evaluations
- Training – Classroom and Onsite
- Installation
- System Configuration
- Commissioning/Testing
- Tier 1,2,3 Support
- Network Design Services

All professional services are performed by Owl employees or trained & certified partners.

## Thought Leadership

Owl is always out in front of the market – every year attending over 30 events, invited to give over 20 presentations, participating in webinars and podcasts, and writing articles and blog posts for industry-leading publications.

## Operating Globally

Owl operates globally both direct and through partners. Leveraging the local expertise and knowledge of extensively trained regional partners, Owl is able to maintain timely service, for exceptional customer satisfaction and success worldwide. Owl now features 10 regional Master Distributor partners, as well as a large number of technical partners with which the company has developed new interfaces and cross-compatible products.

## Strength and Investment in Employees

- Owl employees are smart, motivated, driven to succeed and love to solve problems.
- 40% of Owl employees have advanced degrees in Computer Engineering, Cybersecurity and/or Computer Science – including PhD's!
- Owl staff is a blend of cutting-edge experience along with seasoned cybersecurity professionals
- Owl is a healthy, positive organization, encouraging and sponsoring professional development, including tuition reimbursement for advanced education, along with onsite meditation, yoga, and fitness reimbursement.

## Accreditations

As a provider of cybersecurity products for highly critical environments, Owl understands and implements stringent processes for developing, delivering and supporting products.

Owl products meet a number of standards for quality, performance, interoperability and security including:

- Common Criteria EAL4+ certification
- TUV testing for safety
- ISO 9001:2015
- Dept. of Homeland Security SAFETY Act
- US government accredited solutions
- NIST SP800-82
- API Standard 1164
- ChemITC
- AWWA G440-09
- ANSI/ISA-62443
- NRC 5.71
- NERC CIP 002-009



All products are developed in-house by Owl employees with highly-controlled supply chain assurance, according to the GIDEP government standard.



ONE-WAY  
BY DESIGN



SECURE  
COMMUNICATION



COMPLETE SEPARATION  
OF SOURCE &  
DESTINATION NETWORKS



UNMATCHED  
PERFORMANCE



UNPARALLELED  
SCALABILITY



MULTIPLE  
FORM FACTORS



LOWEST TOTAL COST  
OF OWNERSHIP



TESTED & ACCREDITED  
SOLUTION



SIMULTANEOUS  
MULTI-FUNCTION  
SOLUTION



DEFENSE IN DEPTH



INDUSTRY-LEADING  
MTBF (MEAN TIME  
BETWEEN FAILURE)



FAST & EASY  
DEPLOYMENT



## OWL ADVANTAGE

THE GOLD STANDARD IN DATA DIODE TECHNOLOGY

### 1. ONE-WAY BY DESIGN

- I. All of the components and circuitry are designed to be one-way. Owl data diodes do not start with inherently two-way components or protocols that are subsequently compromised to only work one-way. They are designed to be one-way from the ground up.
- II. The design includes two one-way diodes working as a pair (one send, one receive). Provides a tested, proven and accredited deterministic one-way only transfer.
- III. Physical separation (air gap) between the send and receive side. Some industries require an air gap between the source and destination networks, the two diode design provides exactly this.
- IV. Use of an optimized, ATM based, one-way protocol to move data. ATM is used because it was designed as a highly reliable, low latency protocol used to support real-time high-bandwidth data transfer for telecommunications (voice & video).

### 2. SECURE COMMUNICATION

- I. Non-routable data transfer – all routing information (IP address, etc.) associated with the protected devices remain secure within the source network and never cross the data diode. Unlike other solutions which transfer whole packets and expose IP addresses to the outside world.
- II. Payload only transfer – no header information is transferred, thwarting any attacks originating in the packet itself.
- III. Protocol conversion – The data payload in the originating protocol (TCP, UDP, etc.) is extracted, placed in an ATM packet, sent across the diode, pulled out of the ATM packet and inserted into a new packet that matches the original protocol.



### 3. COMPLETE SEPARATION OF SOURCE AND DESTINATION NETWORKS

- I. Two data diodes create a physical demarcation point between source and destination networks.
- II. Separate power supplies – one for source, one for destination.
- III. Separate fans – one for source, one for destination.
- IV. Separate admin ports – one for source, one for destination.

### 4. UNMATCHED PERFORMANCE

- I. Fastest throughput – Owl solutions range from 3 Mbps to industry leading 20 Gbps. Customers select a solution based on need, knowing it can be expanded by software license in the future.
- II. Extremely low latency – packets are transferred across the data diode in less than 9 milliseconds.
- III. No packet loss – with the system operating within the specified bandwidth tier, there is no reason why packets would ever be dropped or lost.
- IV. Single packet transmission – the reliability, high bandwidth and low latency of the design doesn't require packets to ever be retransmitted, creating a highly tuned and optimized solution.

### 5. UNPARALLELED SCALABILITY

- I. Owl offers the exclusive ability to extend bandwidth capacity using a software license. Customers can purchase enough bandwidth to meet today's needs with the knowledge that it can be extended in the future to meet new needs.
- II. New protocols and interfaces can be added to existing solutions using a software license. The exact same data diode solution can support multiple interfaces without having to add any new hardware.

### 6. MULTIPLE FORM FACTORS

- I. Exclusive Single device solutions: All functionality of the solution is contained in a single device. No flanking servers required.
  - + Compact vertically mounted DIN rail solutions for industrial environments
  - + Horizontal, 19" 1U rackmount solutions for enterprise IT environments
  - + Secured against tampering
  - + Low SWaP (Size, Weight and Power)
  - + Solutions to operate in environment extremes (temperature, smoke, dust, shock, vibration)
- II. Communication Card Kit solutions: Cards can be installed in existing or new servers.
  - + One send server, one receive server
  - + No other computing platforms (flanking servers) needed
  - + Connected by single strand fiber cable



### 7. LOWEST TOTAL COST OF OWNERSHIP

- I. Owl offers a range of solutions with different price levels to meet different needs.
- II. Entry level solutions start below \$5,000 for an all-inclusive, single appliance solution.
- III. Shipped configured and ready to install (most customers install it themselves).
- IV. Low ongoing operating expenses, with little to no upkeep required.
- V. Highly reliable, long lifespan solutions - MTBF > 11 years.
- VI. Supports multiple applications & streams simultaneously.

## 8. TESTED AND ACCREDITED SOLUTION

- I. Tried and tested technology for 20 years.
- II. EAL certified, independent 3rd party testing verified Owl solutions.
  - + Are Hardware Enforced One Way devices
  - + Maintain network security if a device failure occurs
  - + Cannot be altered through software modifications
  - + Create a non-routable protocol break - maintaining the confidentiality of the protected network domain
- III. NCDSMO baseline listed (authorized, accredited and approved to operate in U.S. Government DoD and Intelligence community networks).
- IV. Recommended by DHS.

## 9. SIMULTANEOUS MULTI-FUNCTION SOLUTION

- I. Hundreds of sources and destinations can be supported in a single solution.
- II. Multiple data flows simultaneously.
- III. Multiple protocols (TCP, UDP, Files, OPC, Modbus, etc.) supported simultaneously.
- IV. Resulting in lower cost per supported application.

## 10. DEFENSE IN DEPTH

- I. Secure operating system implemented per government operating specifications.
- II. Role based access controls.
- III. Menu based interface prevents access to operating system command line when operating.
- IV. System check audits system for any file changes, automatically shuts down if tampering is discovered.
- V. Logs and alarms stored on the system to trace normal and abnormal activity.
- VI. Admin ports separated from data transfer ports.
- VII. System can only operate as a one-way device.

## 11. INDUSTRY LEADING MTBF (MEAN TIME BETWEEN FAILURE)

- I. Full system tested to run 11+ years before failure of any component.
- II. Far exceeds any typical commercial enterprise computing platform lifespan.
- III. Full support for Active/Standby configurations.

## 12. FAST AND EASY DEPLOYMENT

- I. All single-box solutions come preconfigured and ready-to-install.
- II. Minimal time to install – typically up and running within a few hours.
- III. Most customers require no onsite assistance for deployment.
- IV. Unless the architecture changes, solutions require little to no reconfiguration or maintenance – “Set it and forget it”.

# Owl Company History

## 1995

As a part of the indefinite extension to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) by the United Nations, a requirement was added to develop a secure method to remotely monitor nuclear material/munitions, under the responsibility of the International Atomic Energy Agency (IAEA). It was from this requirement that the underlying idea for Owl data diode technology was born.

## 1996

In response to the NPT requirement, scientists at Sandia National Laboratories developed a design for a one-way transfer device and patented it for possible commercialization. Sandia then contacted various systems integrators, such as Northrop Grumman, Lockheed Martin, and IBM to present the technology and business case. As their representative, IBM sent research scientist Dr. Ronald Mraz to meet with Sandia, to understand the technology and report back his findings.

## 1997

After being presented the business case, IBM and all of the other systems integrators contacted by Sandia declined to license the technology. However, believing in the potential of the technology, the developer of the patent at Sandia then reached out to Dr. Mraz personally and sold him on the idea of licensing the patent himself to commercialize the technology.

## 1999

With an exclusive license on the Sandia patent in hand, Dr. Mraz founded what would become Owl Computing Technologies out of his home garage. From that initial patent, Dr. Mraz developed the first Owl data diodes using modified commercial components, customized one-way transfer protocols, and operating system drivers – the Version 1 Owl Communication Cards. Dr. Mraz continued to work at IBM during the first year of his new business, before deciding to dedicate his time fully to Owl.



## 2001

In the wake of 9/11, U.S. Government agencies identified the potential of the technology and began looking for hardware-based data diodes to implement in classified systems. In their research they discovered Owl and contacted Dr. Mraz, looking to procure enough data diodes to outfit multiple agencies. These sales enabled Owl to move out into a new office space and bring in more employees to help design and build products.

## 2002

Over the next few years, the U.S. Government, Department of Defense, and Intelligence community formed the initial customer base for Owl, and from those relationships Owl grew into a burgeoning small business. New proprietary versions of the Owl Communication Cards were developed, along with new transfer applications and drivers to support additional operating systems.

## 2007

In a similar circumstance to the NPT requirement, in the mid 2000's the Nuclear Regulatory Committee (NRC) released a requirement that all nuclear power plants install data diode cybersecurity to monitor and protect their control system networks. Naturally, this was a perfect fit for Owl's technology and the nuclear power operators became Owl's first critical infrastructure customers. Because the technology was relatively new to the industry, Owl began pre-installing the Communication Cards into commercial servers for customers, creating the first EPDS systems.

## 2011

To better meet the requirements of a growing private sector market, Owl developed and released a new “all-in-one” data diode solution, the OPDS-MP. This new solution included both send and receive Version 4 Communication Cards and complete proxy computers in a single, standard 19” 1U chassis. This smaller form factor allowed customers to use less server rack space, saving room for other valuable assets.

## 2016

Owl data diode technology continued to advance, with smaller and faster solutions, tailored to various markets, such as the new OCDS-FT15 advanced file transfer cross domain solution for the U.S. Government & DoD, and the OPDS-100D DIN rail compatible data diode for the industrial market.

## 2017

In January 2017, Owl was purchased by DC Capital Partners, a private equity firm based in Washington, D.C., and was rebranded as Owl Cyber Defense Solutions, LLC. The investment and renewed focus on innovation and growth spurred development of more new products and software to kickstart Owl’s path to market leader in its industry.



## 2018

Owl launched two new products to kick off the year, Owl Cloud-to-Cloud ultra-high-speed cross domain solution, and the revolutionary Owl ReCon two-way data diode solution, opening up new opportunities such as remote command and control use cases. Added direct presence in Europe & Middle East. In Q4, Owl moved to a bigger, completely revamped Class A facility in Danbury, CT.

## TODAY

In 2019, Owl launched DiOTa - an affordable, easy-to-use data diode solution to secure IIoT assets and endpoints. Launched a brand refresh to represent the broadening market presence in commercial verticals and applications. Owl’s leadership team sees great things coming for the company. We are now aggressively growing the company and expanding into new markets, such as healthcare, industrial automation, and financial services. We’ve increased the employee head count, literally doubling in size since 2017.

It is a very exciting time for Owl with record sales and many great opportunities on the horizon. Our goal is to ensure that our people succeed both professionally and personally, to help Owl continue to grow and become a global leader in the cybersecurity market, with the highest quality products and services available in the market today.



**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](http://www.owlcyberdefense.com)



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