



XDMATRIX

FOR CRITICAL INFRASTRUCTURE

KEY FEATURES

- Packages multiple (eight or more) independent one-way connections in a single, rack-mounted (1U) appliance
- Modular system that can be configured to match unique network owner requirements
- Hardware root-of-trust validates the administrative processor's secure operating system at boot
- Each 1 Gbps input channel enforces hardware-enforced, one-way transfers of packets
- Low latency data delivery



A high-density, one-way appliance can be assembled using multiple "block" modules – a set of up to four 8-port "blocks" can be combined to form a 32-port system

The Challenge

Industrial network owners want complete OT network visibility and insight for operational improvements and cybersecurity awareness. Complete visibility requires delivery and analysis of IP-enabled data from numerous individual Level 0 devices. Today's approach for managing all those discrete Level 0 feeds entails progressive aggregation of the data via numerous switches and firewalls to a Level 4 or 5 monitoring node. That unnecessarily complex aggregation architecture imposes CAPEX, OPEX, and latency penalties on the network owner while degrading near-real time performance analysis.

The Solution

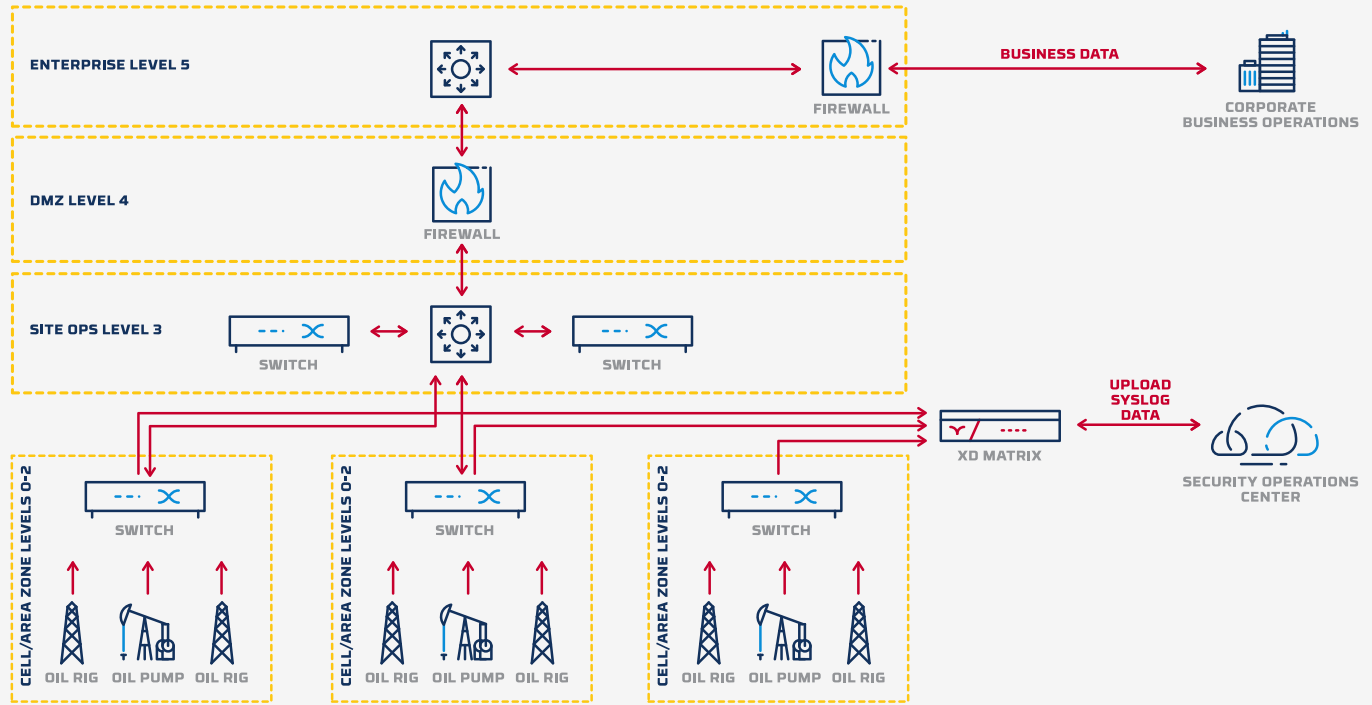
Owl Cyber Defense, a world leader in data diode and cross domain technology, has developed XD Matrix, a scalable appliance that combines up to 64 hardware-enforced, one-way transfer devices (32 channels) and aggregates them into two to eight output channels, in a single 1U rack unit. XD Matrix supports network data aggregation and low-latency data delivery through a single, hardware-enforced, high-throughput, multiple-port data aggregation appliance. XD Matrix enables OT network owners to bypass the network stack and deliver low-level performance data directly to a network monitoring enclave, with no risk of external connections entering the OT network.

Benefits

- A modular, scalable, and configurable device that enables network owners to select the model that best fits their monitoring and security objectives
- Aggregates high-throughput data between 8x to 32x 1 Gbps discrete RJ45 inputs
- Low-latency data delivery between 2x to 8x 10 Gbps discrete SFP+ outputs
- Ability to bypass the network stack and deliver low-level performance data directly to the network monitoring enclave via hardware-enforced one-way transfer flows - no risk of external connections into the OT network
- Minimal maintenance and configuration OPEX - FPGA logic is "set and forget"

A large multinational oil refiner wanted to gain visibility into Level 0 device status and performance data for real-time network health monitoring. The refiner wanted to minimize the latency in receiving the data and found that pulling 50K+ tags through the entire OT-to-IT network introduced unacceptable latency – up to several seconds.

The refiner turned to Owl seeking a solution and selected XD Matrix – Owl’s secure, one-way, hardware-enforced data aggregation and delivery appliance. The refiner conducted a Proof-of-Concept by connecting XD Matrix directly to a Level 1 switch span port which enabled XD Matrix to aggregate the data flow and deliver it to a Security Operations Center for performance monitoring. XD Matrix’s secure data aggregation and 10 Mbps output reduced latency by 57% and greatly improved real-time monitoring. The successful POC led the refiner to connect two more switch span ports to XD Matrix so all Level 0 performance data (50K+ tags) can be monitored effectively.



	ONE BLOCK MODEL	TWO BLOCK MODEL	THREE BLOCK MODEL	FOUR BLOCK MODEL
DIMENSIONS	29.5 × 19 × 1.75in	29.5 × 19 × 1.75in	29.5 × 19 × 1.75in	29.5 × 19 × 1.75in
WEIGHT	22 lbs (est)	25 lbs (est)	28 lbs (est)	31 lbs (est)
POWER CONSUMPTION	140W @ idle 190W @ max (est)	210W @ idle 280W @ max (est)	280W @ idle 360W @ max (est)	350W @ idle 450W @ max (est)
COOLING	470 BTU typical 650 BTU maximum	720 BTU typical 960 BTU maximum	960 BTU typical 1230 BTU maximum	1200 BTU typical 1540 BTU maximum
POWER SUPPLY VOLTAGE	100~264 VAC Full Range	100~264 VAC Full Range	100~264 VAC Full Range	100~264 VAC Full Range
FRONT PANEL PORTS	8× 1Gbe RJ45 2× 10G SFP+	16× 1Gbe RJ45 4× 10G SFP+	24× 1Gbe RJ45 6× 10G SFP+	32× 1Gbe RJ45 8× 10G SFP+
OPERATIONAL TEMPERATURE	0°C to 40°C	0°C to 40°C	0°C to 40°C	0°C to 40°C
STORAGE TEMPERATURE	-20°C to 70°C	-20°C to 70°C	-20°C to 70°C	-20°C to 70°C
ALTITUDE (UNPRESSURIZED)	3048m / 10,000ft	3048m / 10,000ft	3048m / 10,000ft	3048m / 10,000ft
HUMIDITY	30% - 70%	30% - 70%	30% - 70%	30% - 70%
PROTOCOLS	UDP, TCP (Future)	UDP, TCP (Future)	UDP, TCP (Future)	UDP, TCP (Future)
REAR PANELS	1× 1Gbe RJ45 1× USB 1× HDMI 1× Data Key	2× 1Gbe RJ45 2× USB 2× HDMI 2× Data Key	3× 1Gbe RJ45 3× USB 3× HDMI 3× Data Key	4× 1Gbe RJ45 4× USB 4× HDMI 4× Data Key