DiodeGuard

Cnergee
Secure by design

Unidirectional Gateway

One-way software data diode on Cnergee' s Sovereign Hardened OS

Model
CNR-12

OVERVIEW

DiodeGuard connects two networks so that data moves in one direction only. Information flows from the protected network to the receiving network, and nothing can travel back.

It is built for sites that need to export logs, video, files and plant data from a protected network without opening a path into it.

Ordinary network traffic never crosses the gateway. A proxy on each side handles the conversation with local equipment, and only the data itself is carried across a one-way internal link.

KEY BENEFITS

One-way by design

There is no return path across the gateway, for any protocol.

No end-to-end connection

A device on the receiving side cannot open, answer or influence a connection on the protected side.

Air-gap network protection

The protected network stays closed to all incoming traffic, as an air-gapped network is, while its data can still be sent out.

Proves itself

A built-in test confirms on demand that nothing can travel in reverse.

Works with existing equipment

Cameras, log sources, file users and plant devices keep using their normal protocols. No changes are needed on either network.

Cnergee hardened OS

DiodeGuard runs on Cnergee's own hardened operating system, with unused services removed and the data ports kept apart from management.

Simple to operate

A local web interface shows status, configures channels and runs the built-in compliance check.

HOW IT WORKS

Protected network	Send side	One-way link →	Receive side	Receiving network
Cameras, log sources, plant devices, file users	Local proxies collect the data	Data only. No return path.	Local proxies rebuild the data	Viewers, log servers, file users, monitoring

1. The send side talks to local equipment in its normal protocol and collects the data.
2. The data crosses the internal one-way link.
3. The receive side rebuilds the data and offers it to the receiving network.

The two sides are separate network compartments. Routing between them is switched off, and the link between them is blocked in the reverse direction by five independent safeguards.

SUPPORTED DATA TYPES

Data type	Protected side	Receiving side
Syslog and other UDP feeds	Accepts UDP from listed senders	Delivers to the configured destination

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Each data type is set up as a channel. Channels are added, changed and removed from the web interface.

SECURITY FEATURES

One-way enforcement

- No return path for data, replies, acknowledgements or address discovery.
- Five independent safeguards on the internal link, so a single fault does not open a path.
- The gateway stays closed during start-up, when stopped and after any fault.
- IPv6 is disabled on the data path.

Access control

- Each channel accepts traffic only from an approved list of sender addresses.
- Write requests from the receiving side to plant data are refused and logged.
- Management is on its own port and cannot be reached from either data port.

Data integrity

- Every packet delivered is re-created by the gateway, not passed through.
- Files are checksum-verified. A file that fails is quarantined and reported.
- Sequence numbering detects and logs lost data.

Administration

- Encrypted (HTTPS) web interface.
- Administrator and view-only roles.
- Account lockout after repeated failed logins.
- Password change required at first login.
- Audit log of every login and change.

MANAGEMENT AND MONITORING

Feature	Detail
Web interface	Dashboard, settings, channels, compliance test, logs
Dashboard	Gateway state, data rate and loss per channel, link health
Built-in compliance test	Confirms one-way operation, UDP delivery, throughput and management separation
Heartbeat	The receive side raises an alarm if the send side goes silent
Link monitoring	Detects cable removal and unstable links on both data ports
Alerts	Forwarded to a remote syslog server
SNMP	Read-only monitoring, where the OS image includes an SNMP agent

SPECIFICATIONS

Item	Value
Data direction	Unidirectional, no return path
Transport across the gateway	UDP
Throughput	70 Mbps minimum
Data interfaces	1 x 1Gbps protected side, 1 x 1Gbps receiving side (port type and speed depend on the hardware platform)
Management interface	Dedicated port, HTTPS web interface
Operating system	Cnergee hardened OS
Network protection	Air-gap protection for the protected network: no inbound path

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IMPORTANT NOTE ON ISOLATION

DiodeGuard enforces one-way data flow in software. Both sides run on one hardware platform and share one operating system core.

It does not provide hardware-enforced (physical layer) isolation, such as a one-way optical link or a dedicated isolation circuit. Where a requirement calls for hardware-enforced isolation, this must be declared as a deviation.

CONTACT

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