



Data Diode Engine

Purpose-built proxy software for unidirectional network solutions



The Data Diode Engine is a proxy software optimised for efficient and secure data transfer through Ethernet-based data diodes. Paired with plug-and-play software services it offers tailored network segmentation solutions across diverse installation environments.

Persistent cybersecurity with data diodes

Protecting critical infrastructure from downtime or classified information from leakage often leaves no option but to isolate the system completely using an air-gap solution. However, air-gapped systems come with several cybersecurity related challenges. All interaction with the isolated network must be handled manually which is both inconvenient and introduces the risk of human error.

A data diode is a network device which guarantees unidirectional data flow, achieving the protective characteristics of air-gap and at the same time enabling automation of a unidirectional data flow. Persistent unidirectional data flow is guaranteed in hardware, ensuring a reliable solution regardless of the system configuration.

Unidirectional network solutions made easy

A complicating factor when integrating data diodes is that most applications require bidirectional communication.

The Data Diode Engine takes care of the conversion between bidirectional and unidirectional data flow, significantly lowering the impact on surrounding systems.

The Data Diode Engine can be used with any Ethernet-based (layer 2) data diode and combined with specialised software services from Advenica, enabling flexible and scalable unidirectional network solutions for a variety of usage scenarios.

Multiple integration options

The Data Diode Engine can either be designed into a new system, serve as an additional component in an integrated solution, or extend an existing installation of Ethernet-based (layer 2) data diodes with more functionality.

Supported on several different hardware platforms, a Data Diode Engine installation can easily be optimised for your specific system requirements.

Key features

- Optimised for performance and secure data transfer over Ethernet-based data diodes.
- Manage and run a growing library of software services for multiple use cases.
- UDP and TCP services included. Additional services available on request.
- Easy to scale installations.
- Intuitive system management and configuration tools supporting multiple installations.

Technical brief

- Runs on standard server or customised appliance from Advenica.
- Support for Linux host operating system (Debian and Ubuntu distributions).
- Always-on data encryption between up- and downstream Data Diode Engines.
- Support for automated system setup using Ansible.
- Developed according to IEC 62443 4-1 product development requirements.

Technical data

Data Diode Engine

Supported host operating systems

- Linux (Debian, Ubuntu)
- Arm/Raspbian

Software requirements

- Docker for Linux
- Ansible

Hardware & performance

The following recommendations assume optimising for performance. For more information, please see the online documentation.

CPU recommendations

- Intel Haswell based (Xeon v3, Core 4xxx) or newer
- AMD Zen based (Epyc, Ryzen 1xxx) or newer

Networking

1Gbps interfaces

Memory

4GB (service dependent)

Performance

Compatible with 1Gb Ethernet-based (layer 2) data diodes using recommended hardware.

Configuration & management

System setup

Ansible playbook collection for automated system set-up.

Configuration

Configuration and management of Data Diode Engine systems including services using DD Manager.

Options:

- Web application
- REST API

Compatible products

Data Diodes

- Advenica DD1G
- Advenica SecuriCDS DD1000A

Data Diode Services

The Data Diode Engine comes with a growing library of services covering a large number of use cases. For a complete list of available services, please see our online documentation at advenica.com.



Advenica provides expertise and world-class high assurance cybersecurity solutions for critical data in motion up to Top Secret classification. We enable countries, authorities and companies to raise information security and digitalise responsibly. Founded in 1993, we are EU approved to the highest level of security. Our unique products are designed, developed and manufactured in Sweden.

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