Fox DataDiode
secure one-way communication

Critical Process Control Systems

Continuity is essential to Critical Process Control Systems such as power plants, water treatment facilities, gas and oil refineries and public transport. Improving IT-security measures can raise the continuity level further. An effective improvement to IT security is to physically disconnect the Process Control Systems (PCS) from other networks. Unfortunately a contradictory requirement is faced: the need for information sharing from PCS networks.

By implementing the Fox DataDiode you can disconnect the critical part of your infrastructure from other networks while still having access to the information from that critical part. This is an effective way to enhance the security level of your network and securely share more information. Your PCS network is disconnected from cyber threats!

CC EAL 7+
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The need for disconnected networks

To enhance the continuity of critical industrial networks one can take many measures. One step is to segment networks and establish clear electronic security perimeters (ESP). This achieves separation of systems based on their role and controlled channels of communication. Another step is to use firewalls between those segments to actually control the flow of information between the segmented networks. There is however no guarantee that an intruder cannot find a way to circumvent those connection measures due to wrongly configured firewalls or vulnerable systems. The best way to restrict the flow of information between networks is to disconnect or air gap them. This method is often used to protect the most critical parts of a network.

The need for sharing information in PCS

Information from sensors, monitoring systems and logging is necessary to share from the PCS network with other systems. Some scenarios in which this information may be needed are; alerting, providing customers with up-to-date information, remote vendor support and backing up of systems. Undeniably the need for sharing information is there and its requirements will only continue to increase.

How to resolve the contradictory requirements

A solution to the two aforementioned trends is to connect a PCS network to other networks using a one-way network connection. This enforces the air gap from the perspective of the intruder and allows for information sharing from a business perspective. This can be done by using the Fox DataDiode.

What is a data diode?

The Fox DataDiode is a certified product that connects two networks while enforcing a one-way network connection. This is achieved at the physical layer by using a single fibre optic connection; there is no hardware to send data the other way. Because connection-oriented protocols require two-way communication the Fox DataDiode comes with two servers that act as proxies. Data is delivered using standard protocols to the proxy, pushed through the data diode to the receiving end using a proprietary one-way protocol and delivered on the receiving network. This results in transparent and reliable one-way communication; which amongst other things assist in achieving NERC CIP-compliancy.

How it works

The Fox DataDiode has a receiving and a sending proxy. The receiving proxy is placed in the supervisory network and sends information to the sending proxy in the administration network. Sensors, HMI's and other SCADA equipment can deliver their information to the receiving proxy using standard SCADA-protocols. The sending proxy forwards this information to systems in the administration network for further processing.
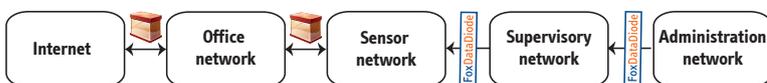
Fox DataDiode for Critical Process Control Systems

- Disconnecting or "air gapping" process control networks gives you optimum protection from cyber threats
- PCS systems require information sharing to other networks
- The Fox DataDiode only allows network traffic in one way enabling information sharing from PCS-systems while they are protected by an air gap
- All standard SCADA protocols are supported including OPC, ICCP, DNP3 and Modbus
- Common Criteria EAL 7+ (Netherlands Scheme)
- Common Criteria EAL 4+ (Norwegian Scheme)
- Certified by NATO for use up to SECRET

Fox-IT

Fox-IT is a leading IT security company with a strong international reputation. From our headquarters in the Netherlands and our offices in Aruba, Curacao and the UK, we deliver specialist security and intelligence solutions for government bodies and other major organizations worldwide. Our core business is developing solutions for the protection of state secrets, conducting digital forensics, audits, managed security services, consultancy and training courses.

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