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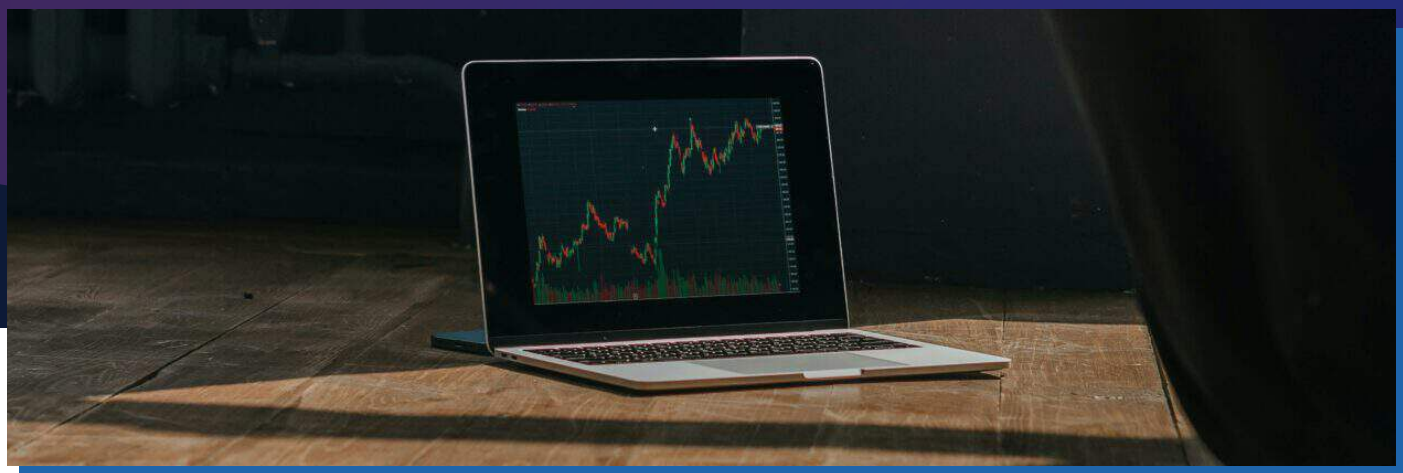
How to: Implement AI-driven predictive maintenance using a DataDiode



Bringing in many advantages, AI is becoming increasingly embedded in business operations. A good way for organizations to use AI is by implementing AI-based predictive analytics for their operational technology (OT). However, when you transfer your OT data into your IT environment, you need to be absolutely certain that external parties cannot use this data transfer to get into your OT environment.

Our DataDiode solves this issue by providing a secure, one-way data transfer from the OT environment to the IT network, ensuring that no data or potential threats can flow back into the OT systems.

The challenge

Think about power plants: their OT systems, which monitor and control critical operations like turbines, boilers, and cooling systems, generate vast amounts of data. By monitoring the data, the power plant is able to predict maintenance, hereby enhancing its operational efficiency and reducing unplanned downtime.

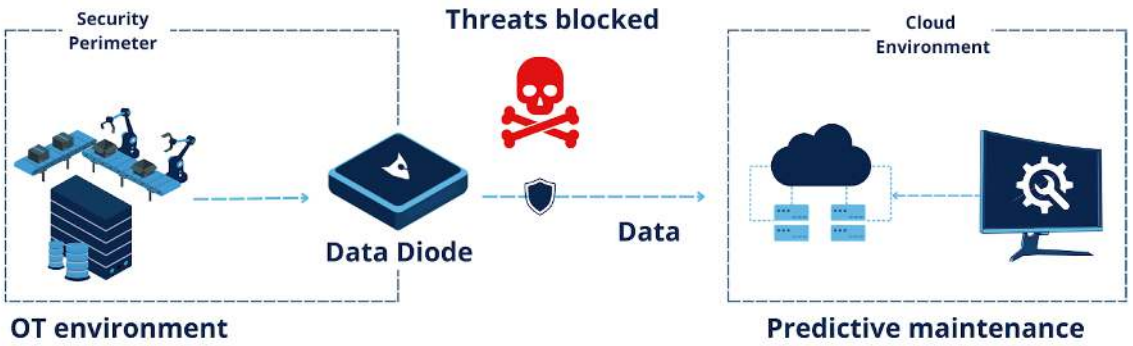
The key challenge lies in securely transferring data from the OT network to the IT network, while ensuring the OT systems remain isolated from potential cyber threats. Traditional methods like firewalls are insufficient to protect against sophisticated cyber threats, which call for a more robust solution that guarantees unidirectional data flow.

The solution

Rather than relying on traditional firewalls, the hardware-enforced DataDiode ensures a unidirectional data flow. This way, you can safely transfer your OT data into your monitoring platforms, without the risk of unwanted reverse data transfers.

This approach allows the power plant to leverage AI for predictive maintenance while maintaining the security and integrity of its critical infrastructure.

How it works



Step-by-Step Approach

Step 1
Identify critical operational data from OT systems that need to be analyzed for predictive maintenance.

Step 2
Install the DataDiode at the boundary between the OT and IT networks, ensuring it connects to the relevant data collection points.

Step 3
Integrate algorithms to analyze the incoming data for patterns, anomalies, and potential issues related to maintenance.

Step 4
Regularly monitor and audit the DataDiode and IT systems to ensure continuous security and compliance with industry regulations.

The benefits

- **Security at the highest level:** the OT systems remain isolated and protected from external cyber threats, ensuring the safety of critical infrastructure.
- **Operational efficiency:** AI-driven insights optimize operational parameters, improving overall efficiency and performance.
- **Reduced downtime:** Predictive maintenance based on AI analysis reduces unplanned downtime, leading to significant cost savings.
- **Regulatory compliance:** Secure data transfer and processing ensure compliance with industry regulations and standards.

Interested? Talk to an expert!

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