

The Fortinet logo is displayed in white, uppercase letters. The letter 'O' is stylized with a red grid pattern. The background features a dark grid of squares, with some squares being semi-transparent and others solid dark grey. There are also several red horizontal bars of varying lengths scattered across the slide.

FORTINET

Protecting the Oil & Gas Sector

Presentation to CyberAlberta

Gaétan Houle
ENTERPRISE CISO

A solid red horizontal bar is located at the bottom left of the slide.

Oil & Gas Industry Main Sectors of Activities

Upstream



- Exploration activities
- Extraction activities

Midstream



- Unprotected pipeline networks moving and storing oil and gas
- Transport CO2 for carbon capture and storage

Downstream



- Refineries
- Retail



Upstream Activities: Security Challenges

Oil & Gas exploration & extraction

- Securing access to remote production sites
- Protection of proprietary data
- Legacy OT systems
- ICS and SCADA vulnerabilities



Midstream Activities: Security Challenges

Oil & Gas pipeline network

- Cross Canadian border regulations
- New TSA regulations for high-risk pipelines
- Sabotage
- Legacy OT systems
- ICS and SCADA Vulnerabilities



Canada overview



98 pipeline companies regulated by the Canada Energy Regulator



73,000 km of pipelines regulated by the Canada Energy Regulator



\$106 billion/year - the value of energy products transported via pipeline (2015)



1,339 million barrels/year of oil transported via pipeline



6,200 billion cubic feet/year of natural gas transported via pipeline



Downstream Activities: Security Challenges

Refining



Highly complex OT environment

Retail



Integration of IoT with retail IT infrastructure

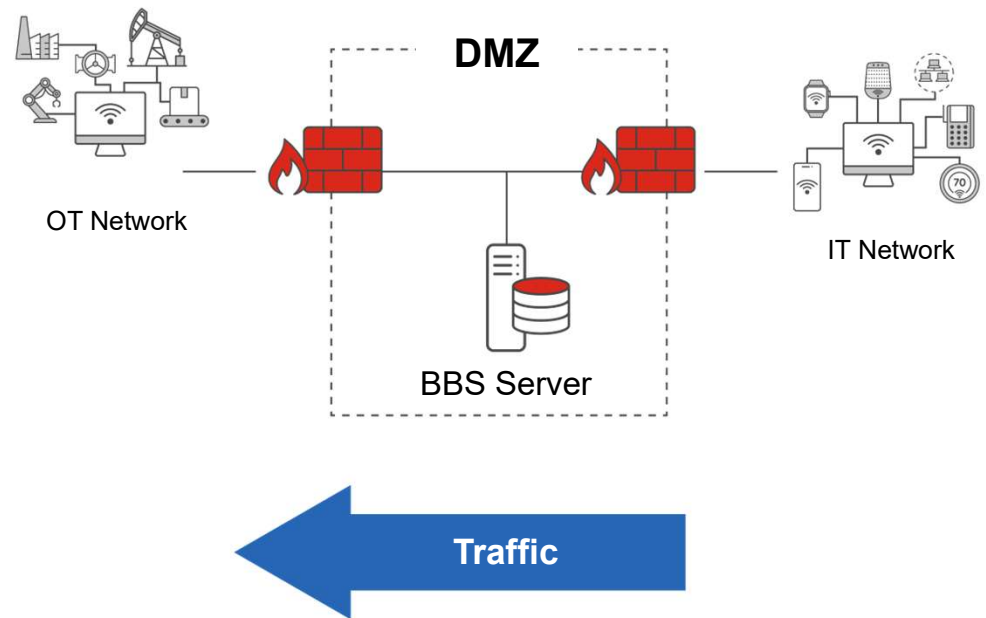
Complex and diverse retail distribution

Fraud and theft



High Assurance IT/OT Network Separation: Inbound Traffic

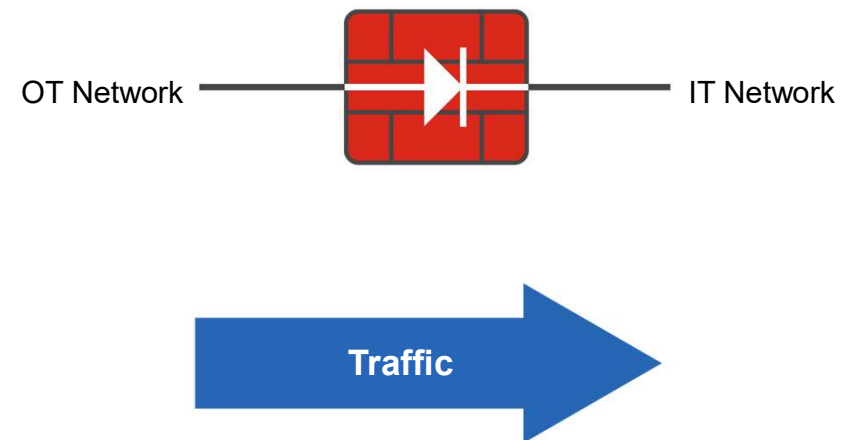
- Access restricted to hardened IT devices
- EDR protection
- MFA+
- Secure File Transfer Protocols (port 22)
 - Security patches
 - Software updates
 - AD updates
- Use of a Bulletin Board System (BBS) in a DMZ
- Sandbox on BBS server
 - Malware scanning
 - Digital signatures validation of all files transferred
- A separate folder for each file type
- SIEM



High Assurance IT/OT Network Separation: Outbound Traffic

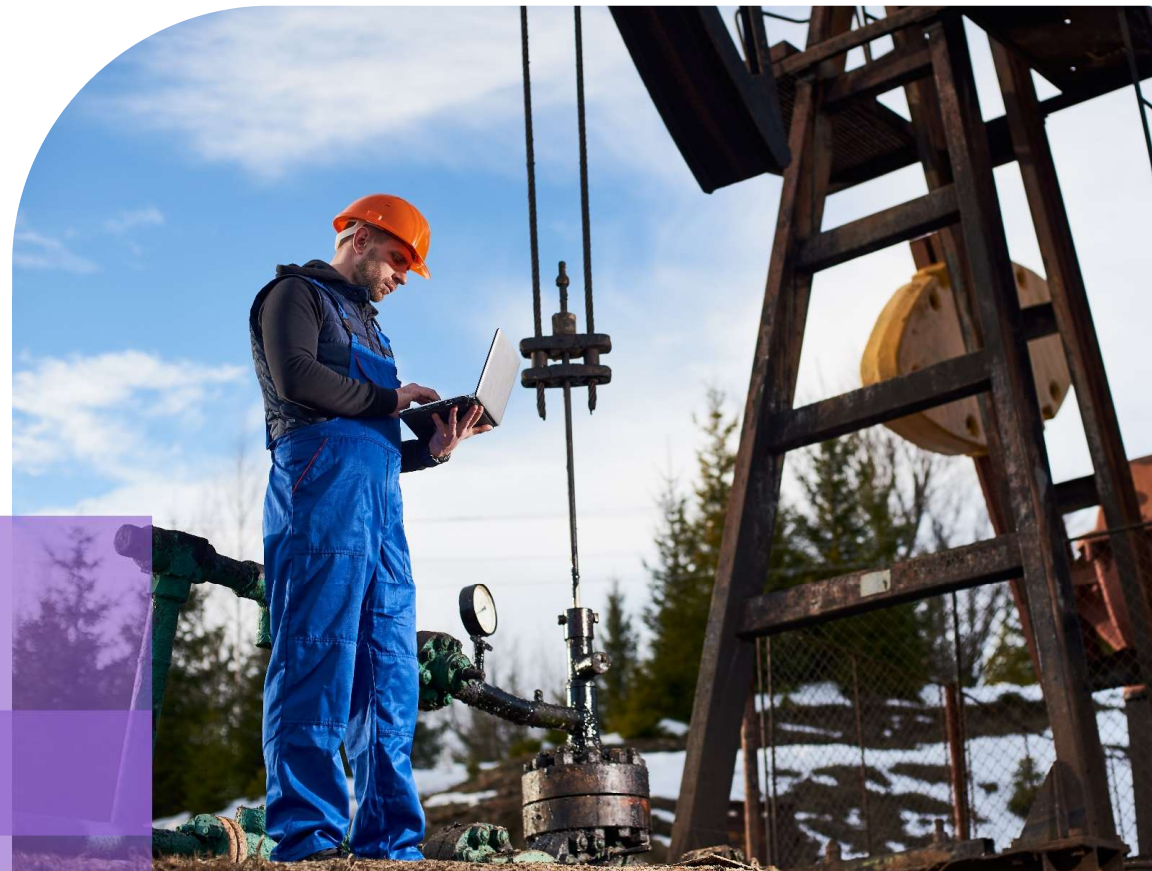
Secure Data Diode

- Unidirectional data flow
 - Billing and consumption data
 - Historian data
 - ERP data
 - Third party monitoring
- Entirely hardware-based (no software patches needed)
- Effective defense against advanced persistent threats
- Tamper-resistant
- Supports compliance with IEC 62443, NERC CIP



Securing IT/OT Integration: Dial up Remote Access to OT Networks

- Secure dial up modem certified for NERC environment
 - Wireline
 - Satellite
 - Cellular
- Hardened devices
- MFA
- CITRIX Connection
- Restricted protocols
- Detailed monitoring





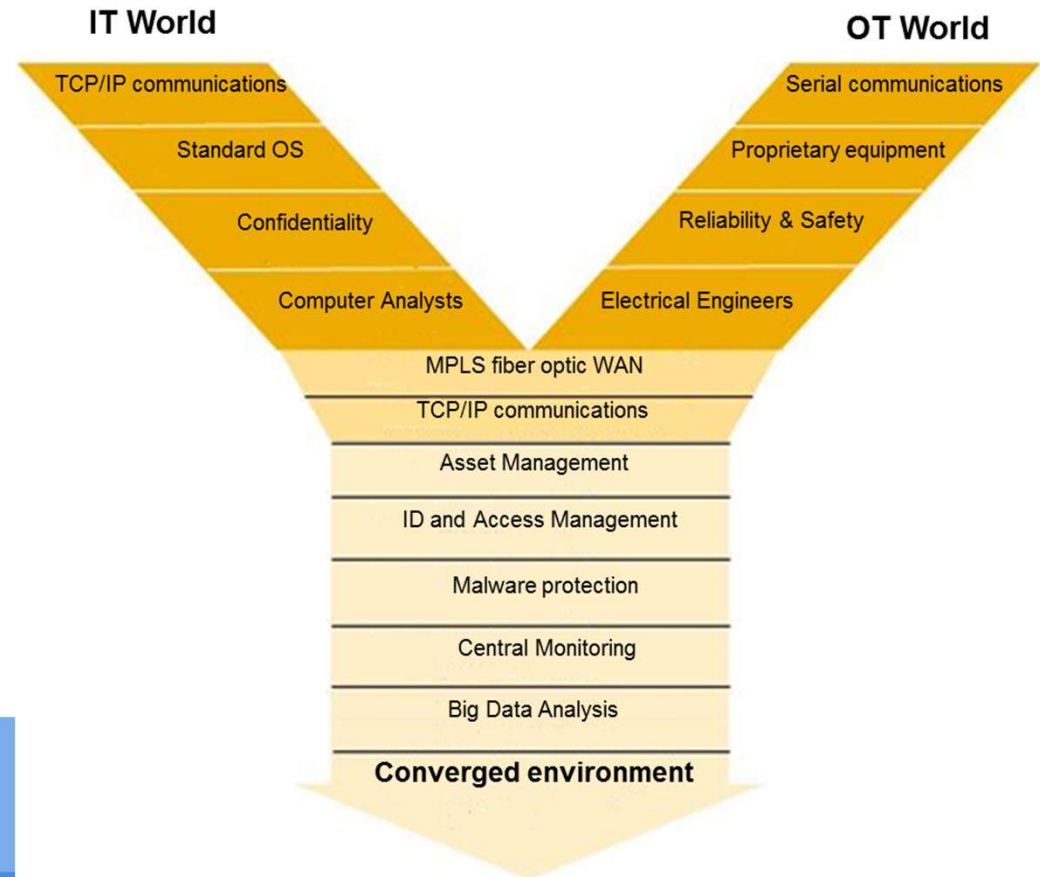
Security Governance Trends



IT and OT systems are converging

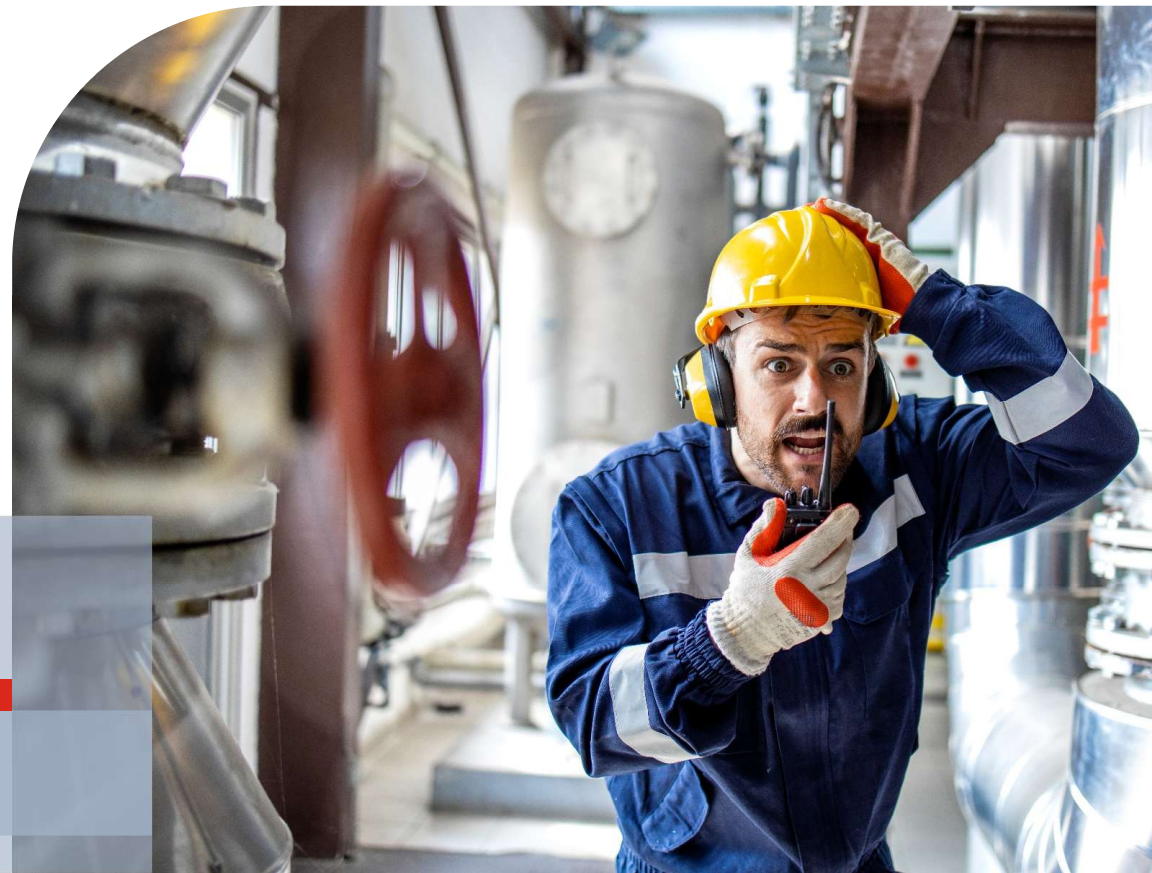
Main Convergence Drivers:

- Network technology convergence
- System management centralisation
- Pressures to reduce OPEX
- Lack of qualified technical resources

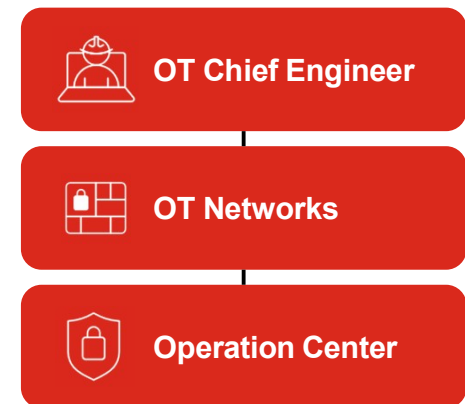
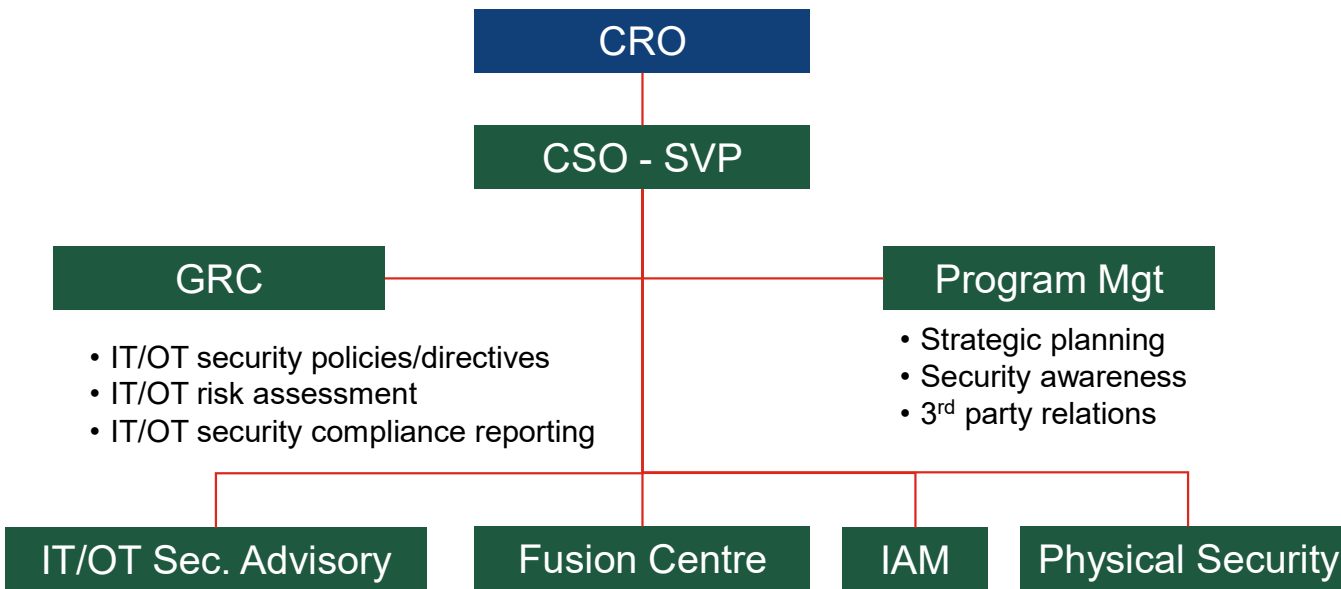


IT/OT Security Governance

- IT, OT and physical security tend to operate in silos
- Cybersecurity specialists lack expertise in OT engineering
- OT engineers lack expertise in IT security
- Response to incidents not well coordinated
- Compliance reporting and accountability for overall security risk management not clear



Optimum IT/OT Security Governance Model



- OT engineers
- IT security analysts







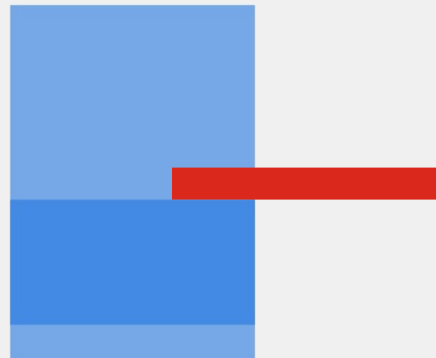
Gaétan Houle

Enterprise CISO

Fortinet | ghoule@fortinet.com



For a copy of the white paper on the integration of IT and OT security for the oil & gas industry contact Gaétan Houle.



The image features the Fortinet logo centered on a black background. The logo consists of the word "FORTINET" in a bold, white, sans-serif font. The letter "O" is replaced by a red square containing a white grid pattern. Surrounding the logo are several abstract geometric shapes: a red horizontal bar in the top left, a red horizontal bar in the middle right, a red horizontal bar in the bottom left, and various dark gray and black shapes, including rounded rectangles and a grid of small dots in the bottom right.

FORTINET