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The bridge to possible

A path forward with Cisco's IoT Switching Portfolio

Addressing challenges within your Industrial Networks

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PSOIOT-2007



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Agenda

- What's happening in the Industrial space
- Challenges in Industrial networks
- How are we addressing these imperative challenges
- Cisco IoT Switching Portfolio
- Key Takeaways

The need for agility is accelerating digitization

Connectivity is growing exponentially



Support for hybrid work



Grid resiliency



Improve efficiencies and sustainability



Agile operations

Digitization helps to achieve



Efficiency gains



Reduced downtime



Increased Profitability

Successful deployments require both IT and OT skills and collaboration

82%



CIO's responsibility for OT systems has increased in the last three years and will continue to increase

72%

IT/OT integration contributes highly toward enhanced security and risk management and efficiency creation

Source: Gartner®, Survey Analysis: IT/OT Alignment and Integration, Kristian Steenstrup, Ivar Berntz, 31 August 2021

Challenges in Industrial networks





Imperative challenges to be addressed in order to drive successful Digital Transformation in OT networks



Security



Scalability



Complexity

Security



Lack of Visibility

Unauthorized access, Unknown connected devices



Flat Network

Increased attack surface, vulnerability risk



Counterfeit Products

Network reliability, uptime



Regulatory requirements

operational/safety risk, cybersecurity

Scalability



Inefficient deployment

Improper planning, manual deployment



Difficult to Maintain

Siloed deployments, multiple stakeholders



Inconsistent experience

PoC vs. production experience



Inconsistent network designs

Lack of standard network architecture and components

Complexity



Domain of control for IT/OT
Scope of IT/OT convergence



Heterogenous N/W environment
Retrofit / Brownfield environment



Day 0 – Day N Operations
Sophisticated N/W architectures,
interoperability

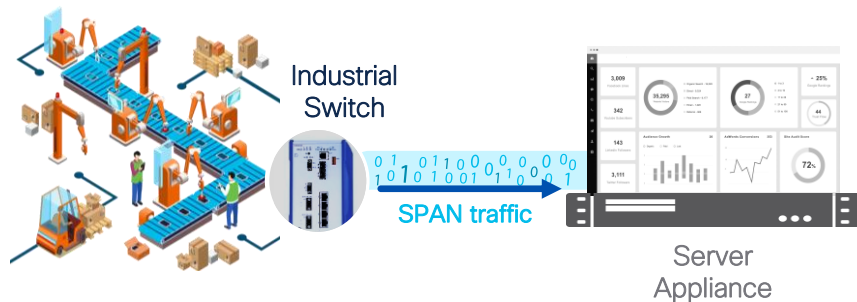


Troubleshooting / Issue resolution
Manual process, Multi-vendor environment

How are we addressing these challenges



Security Starts with Visibility But Beware of Hidden Costs!



Typical industrial Visibility and Detection solutions require SPAN (traffic mirroring)



Additional switches
for SPAN collection



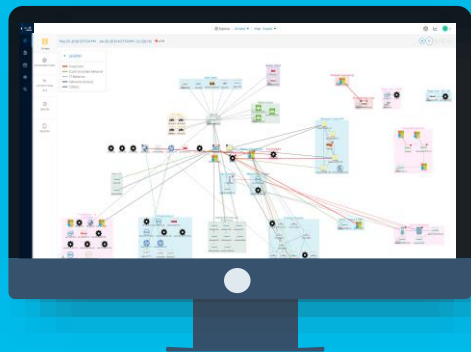
Expensive cabling
for collection network



**Exponential
increase in traffic**
due to SPAN

TCO of SPAN based solutions is not sustainable over long-term growth

Enlist your OT network for security



Cisco Industrial switches **see everything** that attaches to them so you can gain **visibility at scale**

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Cyber Vision Network Sensors



Deep Packet Inspection & Active Discovery
built into your network infrastructure

Industrial Din-Rail / IP67 Switches



IE3400



IE3300-10G



IE3400H

Industrial & Enterprise Rackmount Switches



IE9300 (Q2CY23)



C9300

Cisco IOS-XE®

A Single optimized OS for Enterprise & Industrial applications



Security



Complexity



Scalability



Advanced Security

TrustSec, NetFlow, ACT2, Secure Boot, run time defense, MACsec-128/256



Programmability

NETCONF, RESTCONF, gRPC
Interfaces for Network Automation



Streaming Telemetry

YANG-model driven push-based
telemetry for Network Monitoring



Catalyst IE Wall Mount & DIN Rail Switches



Catalyst IE Rack Mount Switches



Built for OT

SD Card swap drive, Alarm Ports, L2NAT,
PTP, MRP, PRP, HSR



Multigigabit Technology

10G, mGig interfaces, 4PPoE @ 60W/90W



Application Hosting

IOx Edge Compute App hosting Infrastructure

Manage the OT network with tools IT knows

Leverage your existing knowledge and investments



Cisco DNA Center



Reduce Downtime

Improve network visibility and performance with AI/ML and machine reasoning



Increase Efficiency

Automation and workflows simplify, empower, and streamline network management



Stay Compliant

Track updates, ensure SW images comply, and remain aware of security updates

A United Solution for IT & Operations/LoB



Complexity



Scalability

IT

Enterprise grade



OT

Industrial grade

Leverage your existing knowledge & investments

- ✓ One network
- ✓ Common OS and Network Management
- ✓ Industry-leading Cisco security
- ✓ Consistent licensing & commercials

Purpose Built for Operations

- ✓ Built for outdoor & harsh environments
- ✓ Industry use-cases & certifications
- ✓ Industrial protocol support
- ✓ Operations security & safety
- ✓ Built-in edge compute

Leveraging the Technology & Software You know and Trust



Security



Complexity



Scalability



Catalyst **Enterprise** Switching



Catalyst **Industrial** Switching



Ruggedized hardware



Industrial Protocols



Industry Certifications



Common ASICs



IOS-XE Operating System



DNA Center Management

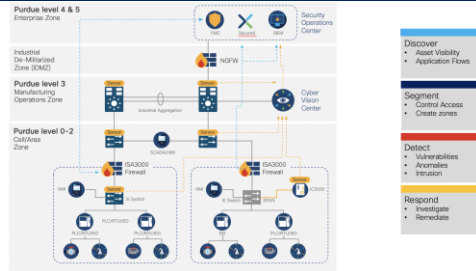
Cisco Validated Designs

Tested to help ensure a faster and more reliable deployment

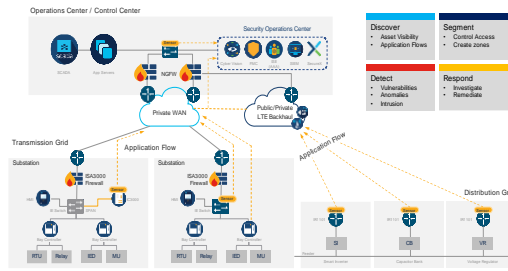


Complexity

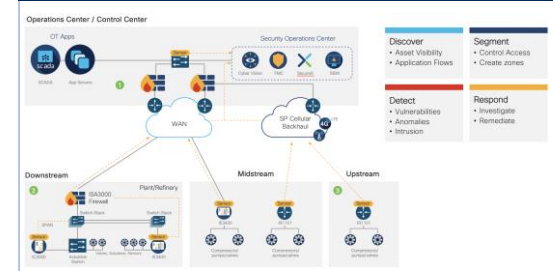
Industrial Automation



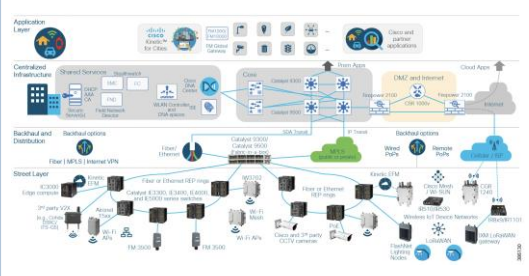
Smart Grid



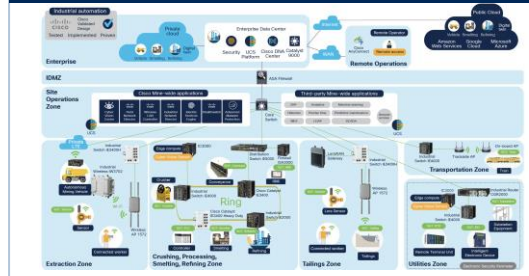
Oil & Gas



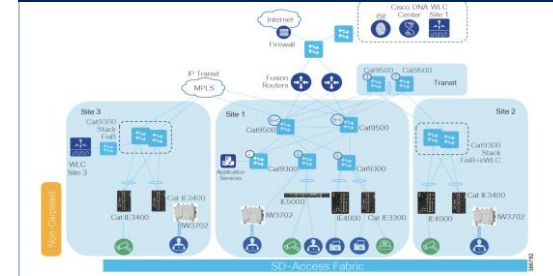
Connected Communities Infrastructure



Underground Mining



Extended Enterprise



Visibility drives segmentation and protects Manufacturing plants



Challenge:

Protect OT networks from ransomware

- Unsegmented OT network and lack of visibility led to a ransomware attack in Customers' premises
- Board directed IT and OT to rollout a global segmentation architecture globally across plants in North America, Europe and Asia

Solution:

- Rollout starting with North America plants which account for 70% of production
- Visibility – Cyber Vision sensors deployed over IE3400 and Cat9K. Cyber Vision Center deployed as local/global center.
- Segmentation – CV integrating with ISE to drive micro segmentation using TrustSec

Outcomes:

- Secure OT network architecture to mitigate the risk of potential threats in the future
- Possible future reference customer for CV driving TrustSec based micro segmentation
- Opens door for Cisco Security portfolio, including Firepower appliance at iDMZ

Refresh Substation Infrastructure with Cisco's Robust and Secure network portfolio



Challenge:

Secure Connectivity and Manageability

- Refresh Legacy equipment and build robust network infrastructure with end-to-end security
- Need zero-touch deployment and simple network management
- Require Secure, Encrypted Datacenter communications to comply with regulatory requirements

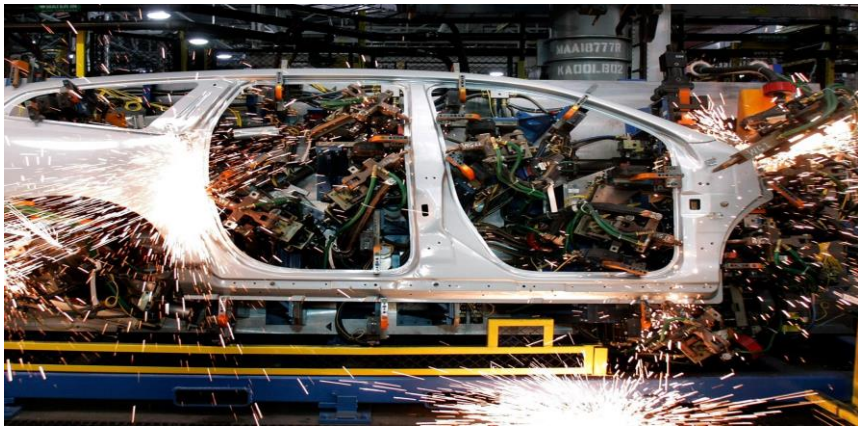
Solution:

- IE4010, IE2000, IR1101 for secure connectivity in substations
- Catalyst 8000, UCS SD-WAN controllers for Data Centers
- Cisco DNA Centre for network management, Zero touch deployment and to monitor device health

Outcomes:

- Reduced exposure to External Threats
- Simplified network design and network management capabilities
- Unified experience with end-to-end Cisco Solution

Securely connecting the plant floors of a leading luxury EV Automotive Manufacturer



Challenge:

Robust Connectivity with Manageability

- Lack of visibility and control of the manufacturing network by NetOps team
- Lack of resources in Control team to deploy configuration and manage cisco network to keep up with rapid growth and scale
- Building environmentally controlled cabinets in manufacturing facility is costly, so needed to use hardened switches

Solution:

- Industrial Network based on Cisco Validated Design
- IE3300 deployed at Access Layer to provide robust network for industrial control systems
- Standardize on single SKU with PoE base + non-POE expansion module for flexible connectivity of Cameras or PLCs

Outcomes:

- OT Network deployed without expensive temperature-controlled cabinets
- Leveraging DNA EA for DNAC licenses to deploy and manage the OT Network
- Blueprint for all future manufacturing lines for the customer

Building a robust, secure and scalable network for making roadways safer



Challenge:

Secure and scalable connectivity to ensure road safety

- ✓ Need to securely connect weather sensors and traffic video cameras along roadside cabinets
- ✓ Visibility to connected endpoints and prevent unauthorized access to network deployed along the roadways
- ✓ Easy to deploy and manage scaled network infrastructure

Solution:

- IE3400 switches deployed along roadside cabinets connected in fiber rings aggregated on C9000 deployed in hubs
- DNA Center used for Zero Touch deployment and management of the entire network

Outcomes:

- Optimized traffic management and improved safety for drivers during adverse weather conditions
- Setting the blueprint for other state DOTs to adopt roadway improvement projects and enhancing safety of commuters

Cisco IoT Switching portfolio

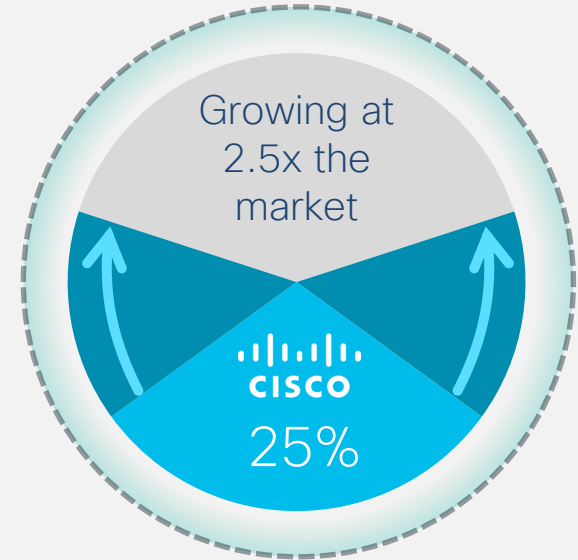


Market leader in Managed Industrial Switching space AGAIN!



Source: ARC IES report-2021

Cisco IoT switching is on Fire !!



OT Starting to Leverage IT

OT & IT
Convergence

IT Recognizing the Criticality of OT

IoT Switching Portfolio

DIN Rail



Rackmount



IP67



Embedded



Bring secure connectivity to your industrial use cases:



Manufacturing



Utilities



Transportation



Parking Lots



Mining



Oil & Gas



Ports



Warehouses



Defense

Key Takeaways



CISCO

IoT Switching



Roadways



Ports



Mining



Kiosk



Manufacturing
Plants



Refinery



Railways



Substation



Airports



Public Safety



Pipeline



Utilities



Cisco Cyber Vision



Cisco DNA Center

Only Cisco can support IT and Operations

Accelerate industrial digitization



Best of enterprise and industrial networks

Single architecture

IT teams - support operations without retraining

Enterprise hardware performance with ASIC

Ruggedized for any environment



Market leading industry expertise

#1 in market share across enterprise and industrial networking

Decades of experience



Resources to ensure success

Cisco Validated Designs

Award-winning dev program

CX services

330 specialized partnerships globally



15
Years

Helping Industrial customers digitize their operations



Technical Session Surveys

- Attendees who fill out a minimum of four session surveys and the overall event survey will get Cisco Live branded socks!
- Attendees will also earn 100 points in the Cisco Live Game for every survey completed.
- These points help you get on the leaderboard and increase your chances of winning daily and grand prizes.



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Related sessions



1

Connected Factory Architecture
(BRKIOT-2720)

2

Digitizing the Physical World with Mass-scale
Industrial IoT to Move Industries Forward
(INTIOT-1300)

3

Securing Industrial Networks: Where do I start?
(BRKSEC-2077)

4

Solving Duplicate IP Addressing Problems with
Layer2 NAT (BRKIOT-2013)

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The bridge to possible

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