Cisco Industrial Ethernet Switching
The foundation for industrial networks (systems),
anywhere and everywhere

Manmeet Singh, Product Management Leader

Agenda

- What's happening in the Industrial space
- Cisco IE switching portfolio overview
- What's new in the portfolio
- Deployment scenarios
- Key Takeaways

What's happening in the Industrial space

Industries are accelerating their digital agility

to drive better business outcomes

Improve operational efficiency

Improve resiliency

Reduce downtime

Enhance safety and security

Increase reliability

A new class of **networking for Industrial spaces** is required

More Network Bandwidth

Resilient Communications & Rich Data

Cyber Security

Simplified Scale

Edge Compute

IT needs to play a greater role in key technology transformation initiatives for industrial organizations

Driving the need for further IT/OT collaboration

Industrial networking

Secure connectivity to industrial devices and assets

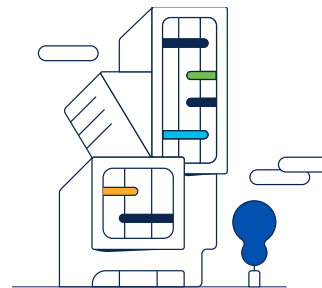## Maintain Assets and leverage Edge Data

Collect and process edge data for remote operations from the cloud

Cybersecurity

Secure operational assets to reduce downtime

Only Cisco IoT solutions meet the needs of IT and Operations

Industrial Grade
Purpose built for Operations

+

## Enterprise IT Grade
Leverage existing knowledge and investments

- Built for harsh and outdoor environments
- Industry use-cases and certifications
- Industrial protocol support and integrations
- Machine data and control

- Industry-leading end-to-end Cisco security architecture
- Less complexity at scale: one network architecture
- Consistent commercial model – software, licensing

Cisco Catalyst
Industrial Networking

Cisco Industrial Ethernet
Switching Portfolio

CISCO *Live!*

Leveraging the Technology & Software You know and Trust
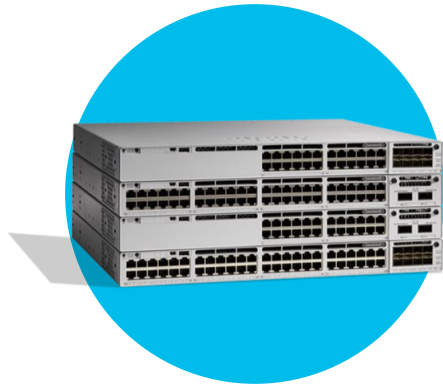
Catalyst **Enterprise** Switching

Catalyst **Industrial** Switching

- Ruggedized hardware
- Industrial Protocols
- Industry Certifications

Common ASICs

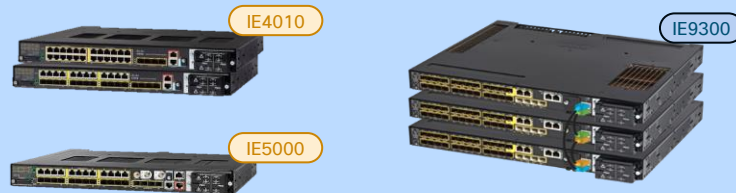IOS-XE Operating System

DNA Center Management

Market-leading, broad portfolio for industrial use-cases

IOS-XE based platform

Fixed & Modular Din Rail

IE3200 IE3300 IE3400

IE3100

New

IE1000 IE2000 IE4000

Fixed & Stackable Rackmount

IE4010 IE9300

IE5000

IP67 Wall Mount

IE3400H

Embedded

ESS9300 ESS3300

#1 Market Share

25% | **32.5%**
Layer 2 | Layer 3

OMDIA

Industrial Cyber Security Leader

FORRESTER
WAVE
LEADER 2021
Industrial Control Systems (ICS) Security Solutions

Bring secure connectivity to your harsh & demanding environment

Manage with tools familiar to IT
Leverage your existing knowledge and investments

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

Increase efficiency
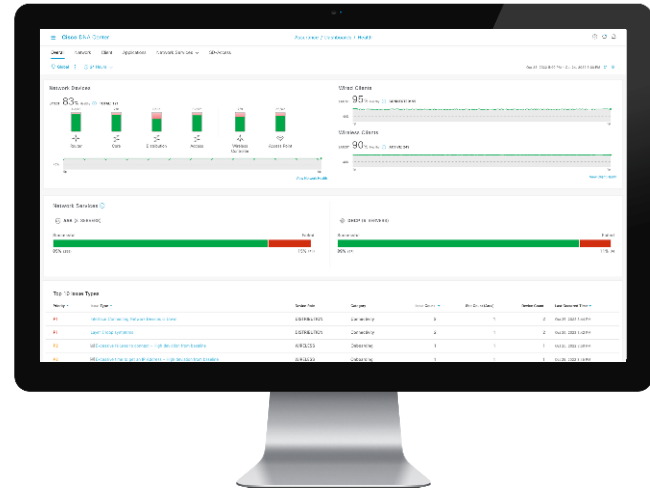Automation and workflows simplify, empower, and
streamline network management

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

Cisco DNA Center

Cisco Catalyst Industrial Networking

Streamline and secure operations networks with a modern, intelligent, and proven network controller

Manage the OT network with tools IT knows
Get granular visibility for securing your operations with Cisco Cyber Vision built-in

Gain visibility into your OT network
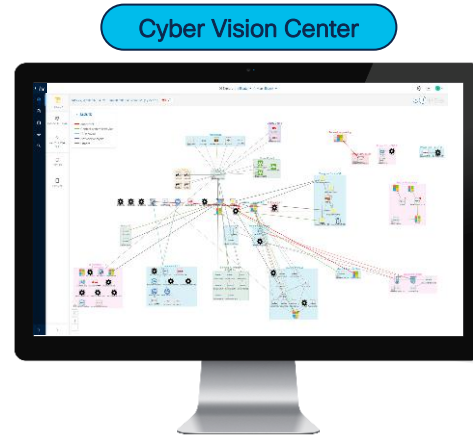Comprehensive asset inventory
Maps of communication patterns

Understand your security posture
Identify device vulnerabilities
Prioritize actions with risk scoring

Improve production with operational insights
Track process/device modifications
Spot network issues and device misconfigurations

Cyber Vision Center

Application Flow Metadata

Sensor

Sensor

Sensor

Sensor

Deep Packet Inspection and Active Discovery built into your network infrastructure

Cisco Catalyst switches see everything that attaches to them so you can secure operations at scale

What's new in
Cisco IoT Switching Portfolio

Cisco Catalyst 3x00 Product Family

The market leading DIN-rail and IP67 wall-mount industrial switch portfolio

Catalyst IE3400
Modular switch with PoE, app hosting, asset visibility, lossless ring redundancy, & micro-segmentation

Catalyst IE3300
Modular switch with 4PPoE, app hosting, asset visibility, mGig ports and 10G Uplinks

Catalyst IE3200
Your entry to power over ethernet industrial networking

NEW

Compact switch for space constrained deployments

Layer 3 Industrial Switches	Layer 2 Industrial Switches

IOS-XE Operating Software   Cisco DNA Center Management   Advanced Visibility and Security

Introducing the Cisco Catalyst IE3100 Rugged Series Switch

Smaller, Faster, Secure

Compact · Gigabit · Layer-2 Industrial DIN Rail Switch

Compact rugged switch for machine builders and space constrained deployments

Connected machines

Trackside/Wayside cabinets

Solar farms

Amusement rides

Faster speeds and comprehensive features in smaller form-factor

- ✓ GE Speeds
- ✓ Basic and Advanced variants
- ✓ Dual power inputs
- ✓ SD Card swap drive
- ✓ Alarm ports
- ✓ L2 NAT*
- ✓ PTP time sync
- ✓ MRP, DLR* ring redundancy
- ✓ Cisco IOS-XE® operating system
- ✓ Cisco DNA Center management

Small Form Factor

Gigabit Ethernet

L2 Switching

Best-in-class security

L2 NAT and DLR available in advanced IE3105 PIDs

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Compact size for with faster speeds

Size comparison of IE3100 with IE2000 Layer–2 Fast Ethernet switches
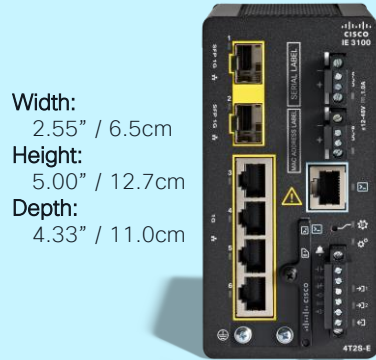
Width:
 2.55" / 6.5cm
Height:
 5.00" / 12.7cm
Depth:
 4.33" / 11.0cm

19% Volume Reduction
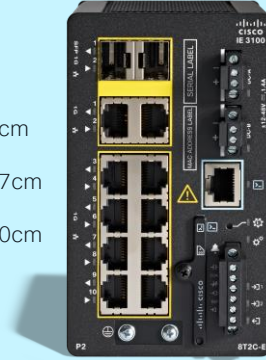
14% Width Reduction

Width:
 3.00" / 7.6cm
Height:
 5.00" / 12.7cm
Depth:
 4.33" / 11.0cm

21% Volume Reduction

17% Width Reduction
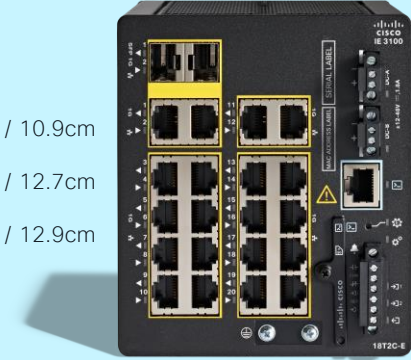
Width:
 4.30" / 10.9cm
Height:
 5.00" / 12.7cm
Depth:
 5.08" / 12.9cm

19% Volume Reduction

14% Width Reduction

Small Form Factor

Gigabit Ethernet

L2 Switching

Best–in–class security

Product investment towards a circular economy
for a more sustainable future

Eliminating paint with anodization

100% recyclable packaging

Anodizing **saves 10.5 Tons** of powder coating per year

Reduce foam and carton waste, and save on logistics

Small Form Factor

Gigabit Ethernet

L2 Switching

Best-in-class security

Cisco IE3100 Rugged Series SKUs

*Roadmap Feature

	IE-3100-4T2S-E	IE-3100-8T2C-E	IE-3100-18T2C-E	IE-3105-8T2C-E	IE-3105-18T2C-E
Ports	4 GE + 2 GE SFP	8 GE + 2 GE Combo	18 GE + 2 GE Combo	8 GE + 2 GE Combo	18 GE + 2 GE Combo
Layer 2 Port Security	✓	✓	✓	✓	✓
802.1x NAC	✓	✓	✓	✓	✓
TrustSec SXP	✓	✓	✓	✓	✓
Downloadable ACLs	✓	✓	✓	✓	✓
MRP / PTP / REP	✓	✓	✓	✓	✓
L2 NAT				✓	✓
DLR				✓	✓
TSN				✓*	✓*
SDA Extended Node				✓*	✓*

IOS-XE Operating Software | Cisco DNA Center Management | Network Essentials License

Deployment Scenarios

Catalyst IE3100 for machine builders

Challenges

- Very little space available in machines for networking equipment
- Machine builders use unmanaged switches in their designs and prefer to use the same set of IP addresses in each machine
- Open ports are security risks
- Cannot build resilient networks
- Cannot segment the network, prioritize or monitor traffic

The Catalyst IE3100 solution

- Small form-factor makes desired placement easier
- Full-featured IOS-XE with L2 NAT to avoid changing IP address and DLR/MRP for rapid fault detection and reconfiguration
- Dynamic NAC policy through ISE for secure operations
- Managed by Cisco DNA Center for QoS and performance assurance
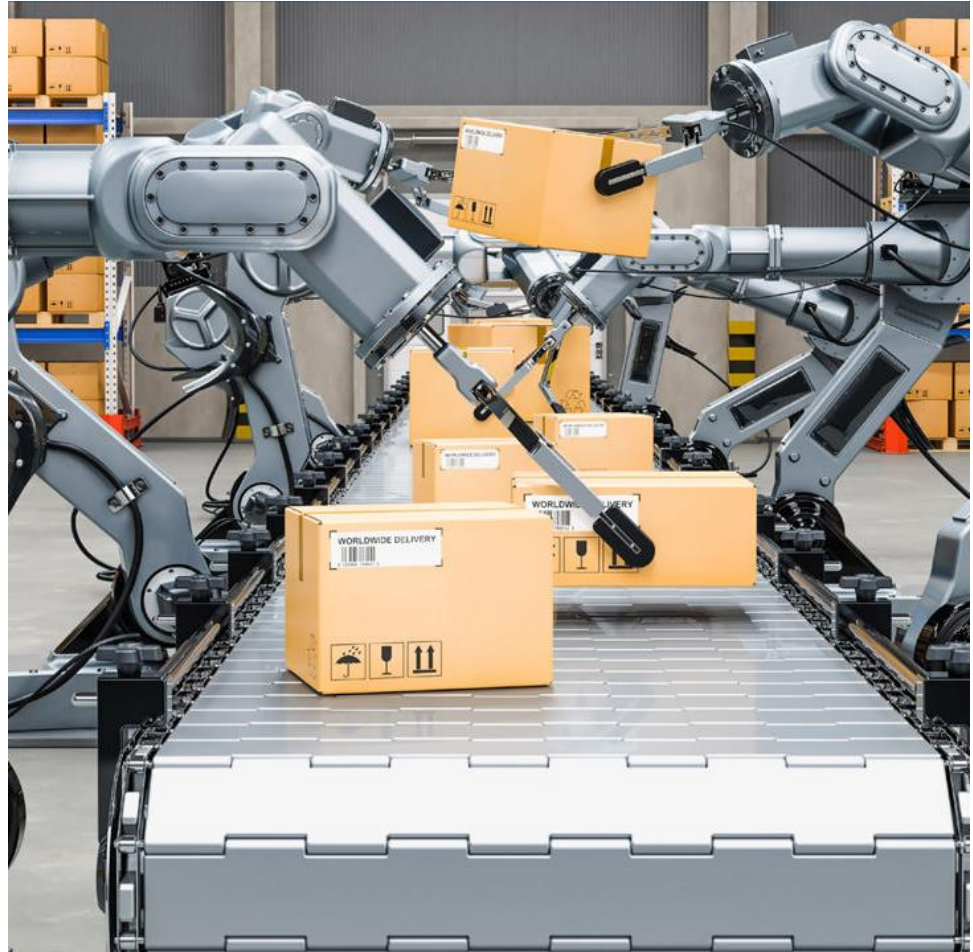
Catalyst IE3100 for
space constrained environments

Challenges

- Limited amount of shared space in outdoor cabinets
- Modifications and engineering required to fit a larger switch
- Smaller switches sometimes means compromising with management, security, and resiliency

The Catalyst IE3100 solution

- Small form-factor makes desired placement easier and reduces engineering effort
- Managed by Cisco DNA Center
- Fully integrated with Cisco security solutions
- Choice of 6, 10, or 20 ports for flexibility

Solar farm control cabinets

Amusement rides

Trackside/Wayside cabinets

Oil/Gas pipelines
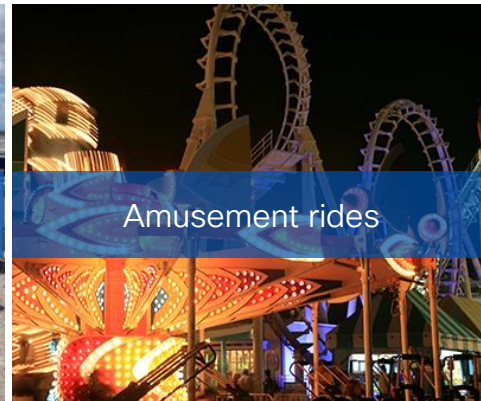
Utilities : Deploying **industrial network embedded visibility** to **secure** its electric distribution network

IE3400 **Cyber Vision**

Business Need

- Roll out cyber security across its distribution network spread across a wide area to comply with critical infrastructure security directives set by the National Electric System Operator

Solution:

- Substation Security Network based on Cisco Validated Design
- 670 substations with one IE3400 running Cyber Vision sensor
- 30 larger substations with Cat 9300/IC3000 running Cyber Vision sensor

Outcomes:

- Simultaneously refresh its network and comply to security requirements with IE3400+Cisco Cyber Vision
- Meet cybersecurity standards for OT, reducing operational risks and help to attend country's Utility Regulator availability targets.

Manufacturing: **Securely connecting** the plant floors of a leading luxury EV Automotive company

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

Infrastructure: 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

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Key takeaways

CISCO
IoT Switching

www.cisco.com/go/ie

Cisco Cyber Vision   Cisco DNA Center

Roadways

Ports

Mining

Kiosk

Manufacturing Plants

Refinery

Railways

Substation

Airports

Public Safety

Pipeline

Utilities

Industrial IoT CVD Solutions on Cisco.com

What you will find here

- At-a-Glance

- Solution Briefs

- Design Guides

- Implementation Guides

www.cisco.com/go/iotcvd

Only Cisco can support IT and OT to accelerate Digital Agility

Cisco Industrial Networks

Connect anything anywhere

Cisco Security

Comprehensive IT/OT cybersecurity

Cisco Validated Designs

State-of-the-art architecture guides

Cisco Customer Services

Expertise to enable deployments

All working together for successful industrial IoT/OT deployments

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