

Cisco Industrial Ethernet Switching Portfolio



Secure, low-latency, high-bandwidth resilient networking for industrial AI in demanding environments

A manufacturer sees its build-to-order cycle times improve by up to 25 percent with a more flexible, integrated plant and IT infrastructure. A transportation department with sensors deployed throughout its track and train system is alerted to a malfunction on its track-signaling system days before it could have caused a serious accident. And an electrical utility identifies fault locations and restores service 20 percent faster than before.

This is what's possible when Cisco® Industrial Ethernet (IE) switches are deployed as part of an industrial network that brings Information Technology (IT) innovations, advanced capabilities and ease of management to Operational Technology (OT). One that also prepares you to capture new opportunities and achieve greater efficiencies as your network expands dramatically with end devices and sensors in the age of the industrial Internet of Things (IIoT).

The Cisco IE switching portfolio includes ruggedized, secure, easy-to-use switches that bring proven IT proficiencies to harsh industrial environments. They provide secure connectivity in challenging conditions in industries such as manufacturing, utilities, transportation, oil and gas, mining, and smart cities.

Cisco industrial switches offer best-in-class Cisco IOS® or Cisco IOS XE Software with advanced Layer 2 and Layer 3 features, along with support for industrial protocols, such as PROFINET and EtherNet/IP, to accelerate industries' digital transformation.

With robust, reliable, secure networking and low-latency, high-bandwidth communications, Cisco industrial switches help build the infrastructure necessary to support AI applications and accelerate innovation in demanding environments.

Benefits



Enable industrial AI by building low-jitter high-bandwidth networks to transport large amounts of operational data in near real-time from sensors, machines, and control systems, which is essential for AI algorithms to learn and make informed decisions.



Simplify securing operations at scale with industrial switches that embed advanced cybersecurity features such as OT visibility, threat detection, zone segmentation, and zero trust remote access, eliminating the need for deploying dedicated security appliances.



Boost partnership between IT and OT with a unified framework for network design and operations, extending IT cybersecurity practices and capabilities to OT environments, and combining monitoring, remote access, and automation with unified network management systems.



Reduce downtime with managed Ethernet switches that are more reliable and include high-availability technology to help ensure a resilient network, even in extreme industrial environments.



Lower operational costs with zero-touch provisioning that automates the work of connecting thousands of new endpoints as part of an IIoT deployment.



Assure network performance in both owned and unowned networks that may exist between industrial sensors and applications in the cloud, enabling organizations to proactively monitor, manage, optimize, and troubleshoot the network to maximize productivity.



Protect investments with modular switches that scale with IoT device growth and software licensing that gives you new and improved software features without hardware upgrades.

Ready for Industrial AI

Cisco IE switches play a pivotal role in enabling industrial AI by facilitating the high-speed, reliable transfer of operational data in near real-time from diverse industrial devices to AI applications in datacenters and cloud. They help build a secure, resilient, and scalable fabric that enables consistent and deterministic data flows crucial for AI algorithms to perform real-time analysis and control.

Select switches offer edge-compute capabilities for local data processing, enabling operations teams to make informed data-driven decisions, right at the source.

Advanced network security

Select models of the IE switch portfolio have edge-compute capabilities to embed advanced network security functions. This eliminates the need for deploying dedicated security appliances and avoids security gaps by enabling the switches connecting assets to protect them as well. This results in a network architecture that sees more, protects more, and is simpler to deploy at scale.

The built-in advanced security functions include:

- **OT visibility:** The built in Cyber Vision sensor provides comprehensive visibility into Industrial Control Systems (ICS) and OT assets and their communication activities, so you have the insights to reduce your attack surface. It profiles all connected devices to help you build segmentation policies. It identifies vulnerabilities so you can reduce your attack surface. It detects malicious traffic and abnormal behaviors, so you can defend operations..
- **Microsegmentation:** The Cisco TrustSec® technology, combined with Cyber Vision and/or Cisco Identity Services Engine (ISE) provides identity-based network access control, segmenting networks and enforcing security policies based on user and device roles, enhancing security by

limiting lateral movement of threats, and simplifying network management through centralized policy enforcement.

- **Zero trust remote access:** The built in Secure Equipment Access gateway enables zero-trust network access (ZTNA) capabilities purpose-built for OT workflows. It empowers operations teams with self-service remote access and lets you easily enforce least-privilege access policies so you can control risks from remote users accessing OT assets for remote configuration, monitoring, or troubleshooting.

Secure by design

Cisco IE switches are developed according to the Cisco Secure Development Lifecycle (SDL), which enforces a secure-by-design philosophy from product planning through end of life and is certified against ISA/IEC 62443-4-1 as well as ISA/IEC 62443-4-2. The SDL provides assurance that the switches are themselves protected against cyberthreats and contribute to the overall security and resilience of industrial operations. Cisco IE switches also contain several embedded security features that provide additional layers of protection.

Centralized network management

Scaling your industrial network and making it more flexible to adapt quickly to changing requirements is easy with intelligent management. You can easily manage your industrial network with the same tools that manage your IT network, such as [Cisco Catalyst™ Center](#), which allows zero-touch deployments, automates configuration changes, monitors performance, and identifies and helps correct faults, reducing the time and cost of deployment. You may also use other management options such as the included web management tool.

Select Cisco IE switches can also be managed by the Cisco Meraki® dashboard, providing a centralized cloud-based alternative to manage highly distributed deployments.

Cisco ThousandEyes Assurance

Select Cisco IE switches can run an embedded [ThousandEyes®](#) agent that offers a powerful solution for industrial organizations seeking to improve the reliability, security, and performance of both their owned and unowned networks. By providing comprehensive visibility and insights into complex network environments, ThousandEyes Assurance enables proactive problem detection, faster troubleshooting, and enhanced operational continuity, ultimately supporting digital transformation and innovation in industrial sectors.

Comprehensive form factors

Cisco offers its IE switch portfolio in different form factors to suit various industries and use cases.

- **DIN rail switches:** These switches can be mounted on standard DIN rails, which are commonly used in industrial control panels. The switches are also compact and take up less space in these panels, which is useful in tight spaces where there is limited room for equipment. Cisco IE DIN rail switches are available in both fixed and modular forms that gives you the freedom to add, remove, or change copper or fiber ports in the future in sync with your evolving needs, without having to replace the entire switch. They also offer a choice of power supplies, allowing you to choose the right power capacity for your Power over Ethernet (PoE) needs. Select models feature conformal coating for additional resistance against corrosion.
- **Rack-mount switches:** These switches are designed to be mounted in a standard 19-inch equipment rack, which allows for flexibility in deployment – in industrial settings, server rooms, or even data centers. Some of the Cisco rack-mount industrial switches are conformally coated for additional resistance against corrosion.
- **IP67-rated switches:** These switches are wall mounted and can withstand the harshest conditions, including dust, water, and extreme temperatures, as

well as severe shocks and vibrations. Because they are designed to withstand harsh conditions, IP67-rated industrial switches are more reliable and less likely to fail and cause downtime. The switches are equipped with M12 connectors rather than standard RJ-45 connectors. Some Cisco IP67-rated switch models also provide PoE, both fiber and copper ports, and 10GE uplink ports.

- **Embedded switches:** These switches are built for secure, high-bandwidth, mission-critical mobile networks. They enable integrators to build custom solutions for specialized use cases.

Modular DIN rail switches

[Cisco IE3500 Rugged Series](#) (New)



Figure 1. Cisco IE3500 Rugged Series

- Advanced modular DIN rail switches, expandable to up to 27 ports
- All Gigabit Ethernet platform, Layer 2 or Layer 3
- Up to 24 ports of PoE/PoE+/4PPoE (power budget up to 480W), and 3x 10GE uplinks
- Copper, fiber, and PoE/PoE+/4PPoE expansion modules
- Cisco IOS XE operating software
- Microsegmentation based on Cisco TrustSec technology
- Low-jitter switching for time-sensitive critical data
- Cisco SD-Access Fabric Edge node

- Cisco IOx application hosting environment
- Cisco Cyber Vision included for visibility of OT assets, activities and your security posture
- Cisco Secure Equipment Access included for zero-trust remote access to industrial assets
- ThousandEyes agent for visibility into owned and unowned networks
- Choice of management by Catalyst Center or Meraki dashboard*

Expansion modules add versatility and flexibility to your industrial network by expanding the base switch with additional ports, functionalities, and features. These modules let you customize the switch to your specific needs, allow you to accommodate future additions and changes, provide built-in scalability, and promote long-term viability and sustainability. Expansion modules for the Cisco IE3500 Rugged Series allow you to add fiber, copper, or PoE ports. Any expansion module can be attached to any of the base switch models.

* Management by Meraki dashboard may not be available at first customer shipment

The figure below shows the available expansion modules for the Cisco IE3500 switches.

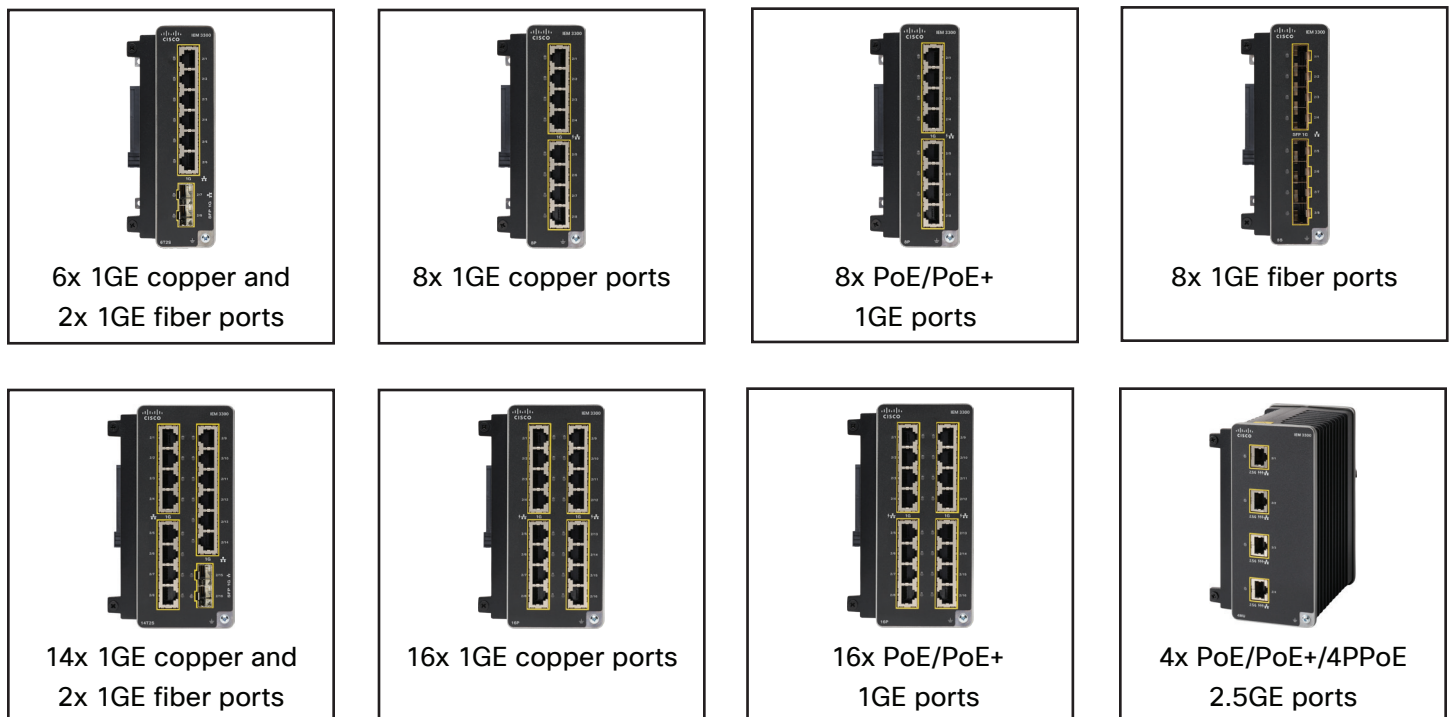


Figure 2. Expansion modules for the IE3500 Rugged Series

Cisco Catalyst IE3400 Rugged Series



Figure 3. Cisco Catalyst IE3400 Rugged Series

- Advanced modular DIN rail switches, expandable up to 26 ports
- All Gigabit Ethernet platform, Layer 2 or Layer 3
- Up to 24 ports of PoE/PoE+ (power budget up to 480W)
- Copper, fiber, and PoE+ expansion modules
- Cisco IOS XE operating software
- Cisco Catalyst Center for management
- SD-Access policy extended node
- Microsegmentation based on Cisco TrustSec technology
- Advanced industrial protocols and additional resiliency and security features
- Cisco IOx application hosting environment
- Cisco Cyber Vision for visibility of OT assets, activities and your security posture
- Cisco Secure Equipment Access for zero-trust remote access to industrial assets

Expansion modules for the Catalyst® IE3400 Rugged Series allow you to add fiber, copper, or PoE ports and include the following. In addition to these, the IE3400 switches can use expansion modules for the Catalyst IE3300 switches, with some limitations.

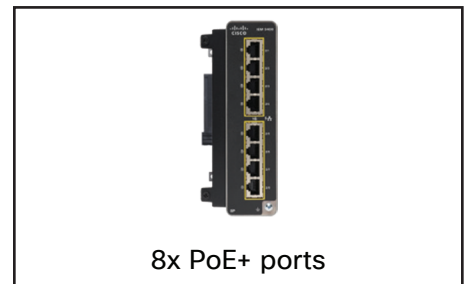
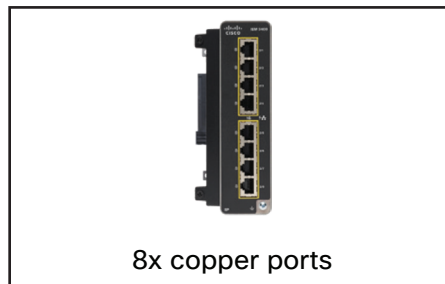
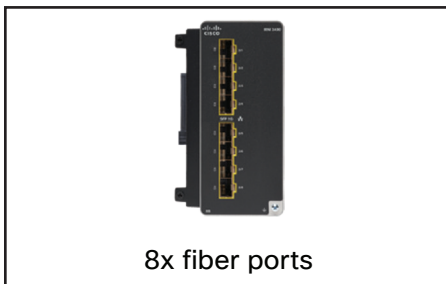


Figure 4. Expansion modules for the IE3400 Rugged Series

Cisco Catalyst IE3300 Rugged Series



Figure 5. Cisco Catalyst IE3300 Rugged Series

- Modular DIN rail switches, expandable up to 26 ports
- All Gigabit Ethernet platform with available 10GE uplink option, Layer 2 or Layer 3

- Up to 24 ports of PoE/PoE+ (power budget up to 480W with expansion modules)
- Copper, fiber, and PoE+ expansion modules
- Cisco IOS XE operating software
- Cisco Catalyst Center for management
- SD-Access extended node
- Cisco IOx application hosting environment
- Cisco Cyber Vision for visibility of OT assets, activities and your security posture
- Cisco Secure Equipment Access for zero-trust remote access to industrial assets

Expansion options for the Catalyst IE3300 allow you to add 8 to 16 copper, fiber, or PoE/PoE+ ports to the base system and include the following.

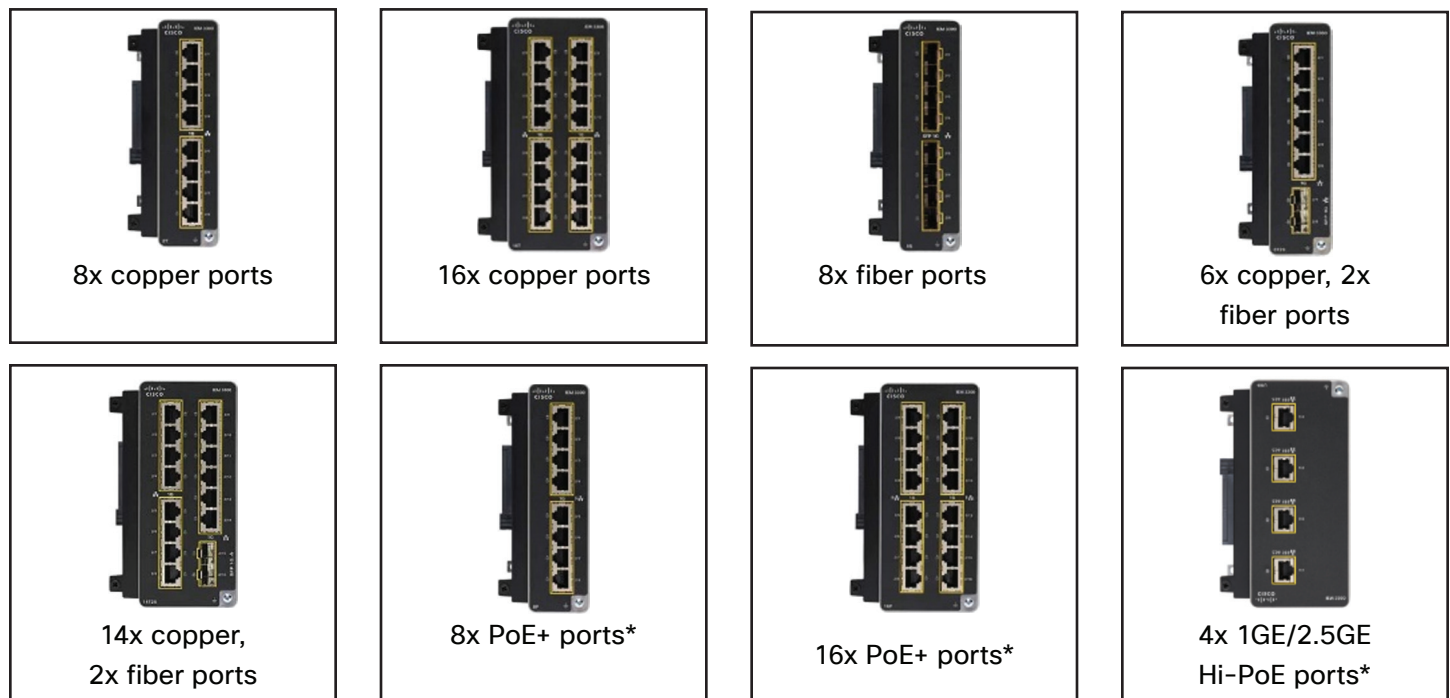


Figure 6. Expansion modules for the IE3300 Rugged Series

*Compatible with select models of the Catalyst IE3300 and IE3400 Rugged Series. Please consult the respective data sheets.

Fixed DIN rail switches

[Cisco Catalyst IE3200 Rugged Series](#)



Figure 7. Cisco Catalyst IE3200 Rugged Series

- Fixed DIN rail switches, 10 ports
- All Gigabit Ethernet platform, Layer 2
- 8 ports of PoE/PoE+ (power budget up to 240W)
- Cisco IOS XE operating software
- Cisco Catalyst Center for management
- SD-Access extended node

[Cisco Catalyst IE3100 Rugged Series](#)

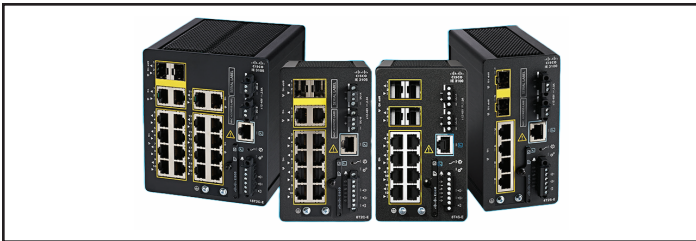


Figure 8. Cisco Catalyst IE3100 Rugged Series

- Compact form-factor fixed DIN rail switches with 6, 10, 12, or 20 ports
- 2x 1GE combo or up to 4x 1GE fiber uplink ports

- All Gigabit Ethernet platform, Layer 2
- Up to 8 ports of PoE/PoE+/4PPoE with up to 90W per port
- Total PoE power budget up to 240W per switch
- Conformal coating for added environmental protection (on select model)
- Cisco IOS XE operating software
- Cisco Catalyst Center for management
- SD-Access extended node
- Cisco Secure Equipment Access for secure zero-trust remote access to industrial assets

[Cisco IE1000 Series Switches](#)



Figure 9. Cisco IE1000 Series

- Fixed DIN rail switches, up to 10 ports
- Up to 8x Fast Ethernet (FE) ports, 2x 1GE combo uplinks (on select models)
- Lightly managed Layer 2
- Up to 8 ports of PoE/PoE+ (power budget up to 180W)
- Security: Port security, TACACS, 802.1X
- Plug and Play (PnP) for easy deployment

Rack-mount switches

Designed to fit into a standard 19-inch rack, Cisco rack-mount switches offer several models with options for 1 Gigabit Ethernet, Multigigabit, and 10 Gigabit Ethernet ports, supporting up to 28 ports for versatile connectivity, up to 90W of PoE per port, and up to 720W per switch. A new model features both 1GE fiber and copper PoE/PoE+ ports.

[Cisco Catalyst IE9300 Rugged Series](#)



Figure 10. Cisco Catalyst IE9300 Rugged Series

- 19-inch rack-mount switch, 28 ports
- Based on the Cisco Unified Access Data Plane (UADP) Application-Specific Integrated Circuit (ASIC)
- All Gigabit Ethernet platform, Layer 2 or Layer 3
- All-fiber, all-copper or a mix of copper and fiber ports with speeds of 1GE, 2.5GE, or 10GE
- PoE/PoE+/4PPoE ports with up to 90W per port and up to 720W PoE power budget per switch
- GNSS/GPS antenna interface and conformal coating (on select model)
- Vertical stacking up to four members (on select models)
- Advanced industrial and redundancy protocols
- Cisco IOS XE operating software
- Cisco Catalyst Center for management
- SD-Access fabric edge node
- Cisco IOx application hosting environment
- Cisco Cyber Vision included for visibility of OT assets, activities and your security posture
- Cisco Secure Equipment Access included for zero-trust remote access to industrial assets

[Cisco IE4010 Series Switches](#)

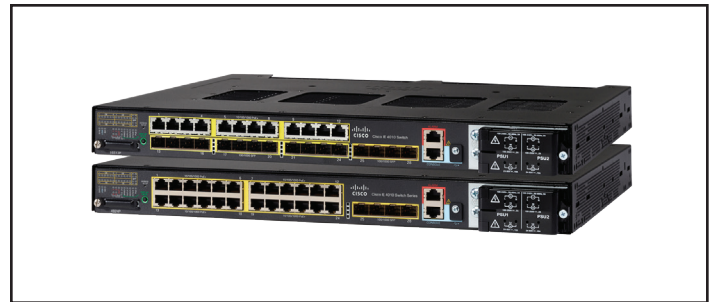


Figure 11. Cisco IE4010 Series

- 19-inch rack-mount switch, 28 ports
- All Gigabit Ethernet platform, Layer 2 or Layer 3
- Up to 24 ports of PoE/PoE+ (power budget up to 385W)
- Both copper and fiber ports on a single chassis
- Advanced industrial protocols and additional security features
- Cisco Catalyst Center for management
- SD-Access extended node

Heavy-duty IP67-rated switches

Cisco IP67-rated industrial switches are designed to withstand extreme environments. These switches are certified to protect against dust and water submersion, meeting rigorous standards for temperature, vibration, humidity, and electromagnetic emissions.

[Cisco IE3500 Heavy Duty Series \(New\)](#)



Figure 12. Cisco IE3500 Heavy Duty Series

- Wall-mount IP66/IP67-rated switches with M12 interfaces
- Fast Ethernet and Gigabit Ethernet platform, Layer 2 or Layer 3
- 8, 16, or 24 copper or fiber ports with speeds of 1GE, 2.5GE, or 10GE
- Up to 14 ports of PoE/PoE+/4PPoE with up to 60W per port and PoE power budget up to 240W per switch
- Cisco IOS XE operating software
- Microsegmentation based on Cisco TrustSec technology
- Low-jitter switching for time-sensitive critical data
- Cisco SD-Access Fabric Edge node
- Cisco Catalyst Center for management
- Cisco IOx application hosting environment
- Cisco Cyber Vision for visibility of OT assets, activities and your security posture
- Cisco Secure Equipment Access for zero-trust remote access to industrial assets
- ThousandEyes agent for visibility into owned and unowned networks

[Cisco Catalyst IE3400 Heavy Duty Series](#)



Figure 13. Cisco Catalyst IE3400 Heavy Duty Series

- Wall-mount IP66/IP67-rated switches with M12 interfaces
- Up to 24 all Gigabit Ethernet or all Fast Ethernet ports, Layer 2 or Layer 3
- Cisco Catalyst Center for management
- SD-Access policy extended node
- Advanced industrial protocols and additional security features
- Cisco IOx application hosting environment
- Cisco Cyber Vision for visibility of OT assets, activities and your security posture
- Cisco Secure Equipment Access for zero-trust remote access to industrial assets

[Cisco Catalyst IE3100 Heavy Duty Series \(New\)](#)



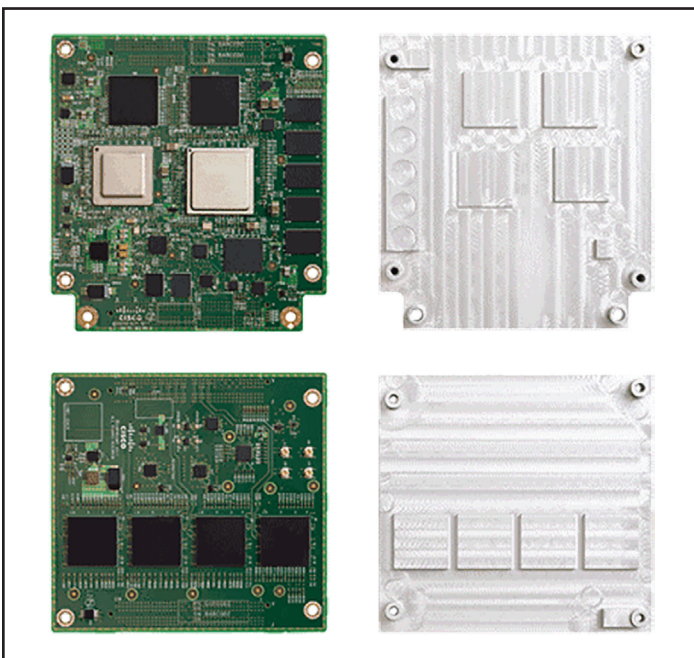
- Wall-mount IP66/IP67-rated switches with M12 interfaces
- Compact form factor with 6x FE + 2x 1GE or 8x 1GE ports, Layer 2
- Cisco IOS XE operating software
- Cisco Catalyst Center for management
- SD-Access extended node
- Cisco Secure Equipment Access for zero-trust remote access to industrial assets

Figure 14. Cisco Catalyst IE3100 Heavy Duty Series

Embedded switches

Cisco industrial embedded switches are designed for custom networking for mission-critical applications in extreme environments. Their advanced features, optimized size, weight, and power, and robust security make them ideal for industries like defense, mining, and oil and gas. These switches are used by Cisco partners who bring complementary technologies and their deep knowledge of the use-case domain to build tailored, scalable, innovative solutions that meet specific requirements.

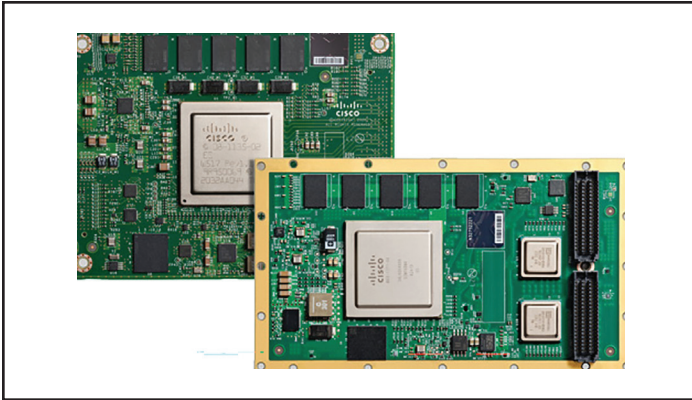
[Cisco Embedded Services 3300 Series](#)



- Modular Gigabit Ethernet small form-factor board
- Available with or without expansion module or cooling plates
- 2x 10GE SFP and up to 24x GE copper ports, Layer 2 or Layer 3
- Choice of up to 8 combo ports
- PoE/PoE with power budget up to 240W
- Cisco IOS XE operating software

Figure 15. Cisco Embedded Services 3300 Series

Cisco Catalyst ESS9300 Embedded Series Switch



- Ultra-compact switching card for custom solutions
- Up to 10x 10GE SFP ports or 8x 10GE and 16x 1GE ports, Layer 2 or Layer 3
- Select model available as a mezzanine card conformant to OpenVPX standards
- FIPS-140 and MIL-STD-810H certifications
- Cisco IOS XE operating system

Figure 16. Cisco Catalyst ESS9300 Embedded Series Switch

Next steps

Talk to a [Cisco sales representative](#) or channel partner to learn more about the Cisco Industrial Ethernet switching portfolio. Visit <http://www.cisco.com/go/ie> and use the [Cisco Switch Selector](#) to find the best switch for your particular use case.