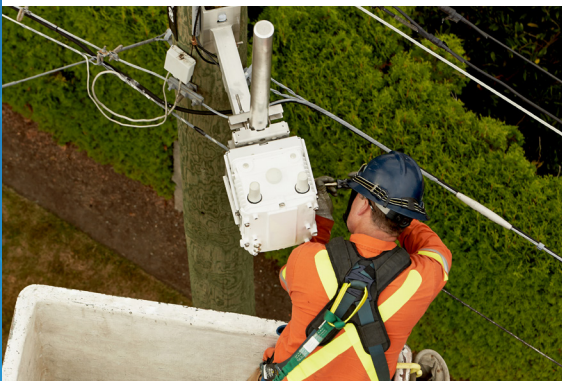


# Cisco IoT Networking

Deploy. Accelerate. Innovate.



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## Cisco IoT Networking Overview

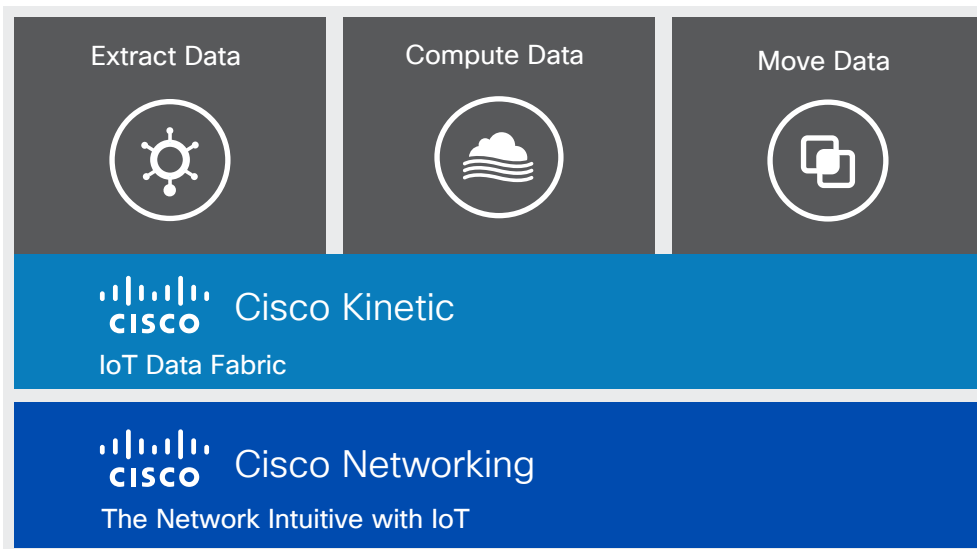
The Internet of Things (IoT) connects things with business and operational applications—energy grids, manufacturing floors, healthcare devices, cars. In fact, 500 billion devices are expected to be connected to the Internet by 2030. By linking smart things to each other and to people, places and data, we can work in ways that are simpler, more automated, and more intelligent.

IoT accelerates digital business transformation through efficiency, new business and improved customer experience.

Cisco® IoT connects things and IoT applications, allowing customers to deliver high value business outcomes across a wide range of production deployments. Cisco IoT addresses challenges across several industries, including manufacturing, energy, transportation, and public sector. Through Cisco IoT solutions, organizations can create and monetize new business models and services; innovate easily and get more things done, boosting productivity; and deliver insight for better user experience and engagement.

Elements of Cisco IoT:

Figure 1. Cisco IoT



## Network Connectivity

### New IoT Requirements

As you deploy IoT, new and more vigorous demands are placed on your networks. Applications and services such as high-speed wireless, high-definition IP video services, and others require high-bandwidth connectivity. In addition, extremely low-latency applications, such as high-speed motion controls, demand high-speed connections. You also need a flexible and scalable network infrastructure to easily deploy your applications from the cloud all the way to the edge with fog computing and to serve the thousands of devices joining the network. And you must secure and manage your IoT network infrastructure.

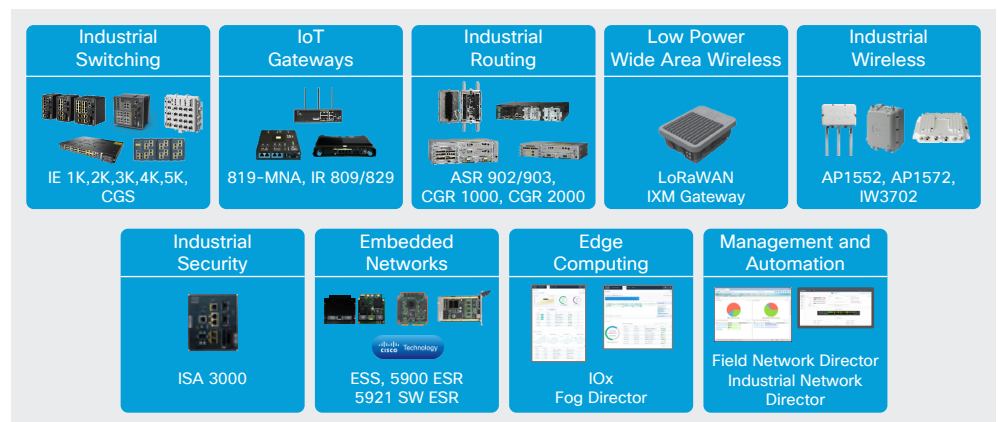
### Cisco Advantage: Certified Network Products with Focus on Industrial Applications

Cisco is addressing these IoT network connectivity challenges by extending our proven expertise in IT networking to industrial operational-technology environments. We offer a broad portfolio of routing, switching, and wireless products in ruggedized and nonruggedized form factors. Cisco delivers the industry's most reliable, scalable, high-performance portfolio of IoT networking solutions, offering a broad selection of routing, switching, and wireless products. Our products meet the IoT needs of several industries, such as manufacturing, oil and gas, utilities, transportation, mining, public sector, among others. With breakthrough products, such as the industry's first industrial 40 Gigabit Ethernet switches, the Cisco Industrial Ethernet 4000 Series Switches, Cisco delivers a comprehensive network connectivity portfolio certified for various industries and geographies.

### Network Connectivity Products

The following figure provides an overview of the Cisco IoT System network connectivity portfolio

Figure 2. Cisco IoT Networking Portfolio



#### Benefits:

- **Resilience at scale:** High availability facilitates networkwide resilience as you scale your networks with millions of new endpoints and applications.
- **Integrated security:** Cisco network-as-a-sensor approach integrates cybersecurity throughout the network, maximizing security visibility and control.
- **Converged networking:** Our broad portfolio of IoT networking solutions supports the disparate needs of IT and operational technology standards and protocols.

## Industrial Switching

Cisco industrial switches are a range of compact, ruggedized switches that handle security, voice, and video traffic across industrial networks. They provide organizations in industries such as manufacturing, oil and gas, mining, transportation, and energy with highly secure access and industry-leading convergence using Cisco Resilient Ethernet Protocol (REP).

The Cisco industrial Ethernet switching portfolio includes the following product families:

- Cisco Industrial Ethernet 2000 Series Switches: A compact fixed switching platform. The 2000 Series Switches are available in two form factor options, one DIN rail mounting and one wall and/or pole mounting qualified for Ingress Protection 67 (ie2000 IP67). On the ie2000, different models provide between 6 and 20 Ethernet interfaces. On the ie2000 IP67, up to 24 Ethernet interfaces are supported. For electrical utilities specific applications, the Cisco IE 2000U Switch is available.
- Cisco Industrial Ethernet 3000 Series Switches: A multilayer switching modular platform. Composed by a main module and expansion modules, allowing scaling the configuration (up to 26 Ethernet interfaces) to grow with customer operational needs. A fixed 19-inch, one rack unit version is also available: the Cisco Industrial Ethernet 3010 Series Switches.
- Cisco 2500 Series Connected Grid Switches: A series of 19-inch, one rack unit fixed configuration switches designed for electrical utilities applications.
- Cisco Industrial Ethernet 4000 Series Switches: The industry's first DIN rail mounting 40 Gigabit Ethernet switch platform that offers high bandwidth and low-latency network connectivity. It is available in various models, up to 20 Gigabit Ethernet interfaces.
- Cisco Industrial Ethernet 5000 Series Switches: A 19-inch one rack unit, highly ruggedized full gigabit aggregation and/or backbone platform equipped with 24 Gigabit Ethernet ports plus 4 x 10 Gigabit line interfaces, making it ideal for the aggregation and/or backbones in large-scale industrial networks.

### Primary Features

- Design for industrial Ethernet applications, including extended environmental, shock and vibration, and surge ratings; a complete set of power input options; convection cooling; and DIN-rail, 19-inch rack or wall mounting
- Support for Power over Ethernet (PoE) and Power over Ethernet Plus (PoE+)
- Native support of industrial automation protocols (that is, Common Industrial Protocol [CIP]/Ethernet IP and PROFINETv2), allowing integration with industry-specific communication protocols and industrial automation management platforms
- High availability, guaranteed determinism, and reliable security using Cisco IOS® Software
- Designed and certified for many industrial and regional specific requirements and standards
- Standard 5-year hardware warranty on all models
- Easy and user-friendly deployment, setup, operation, and management



## Hardware Models

The following figures show the hardware modules available:

Figure 3. Industrial Ethernet 2000 Series Switches

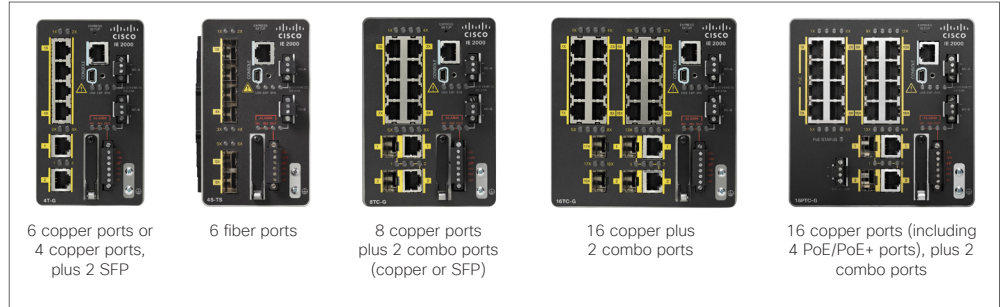


Figure 4. Industrial Ethernet 2000U Series Switches

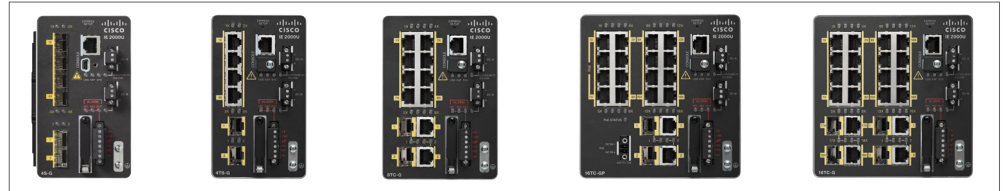


Figure 5. Industrial Ethernet 2000 IP67 Series Switches

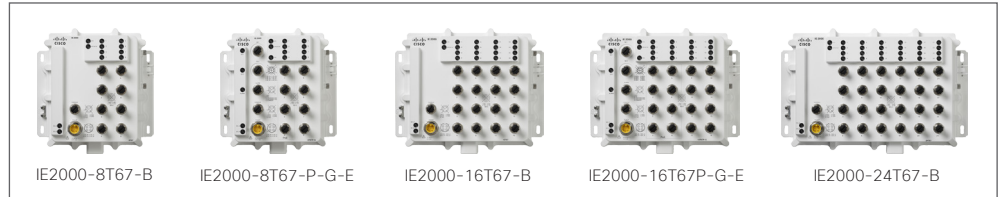


Figure 6. 2500 Series Connected Grid Switches



Figure 7. Industrial Ethernet 3000 Series Switches

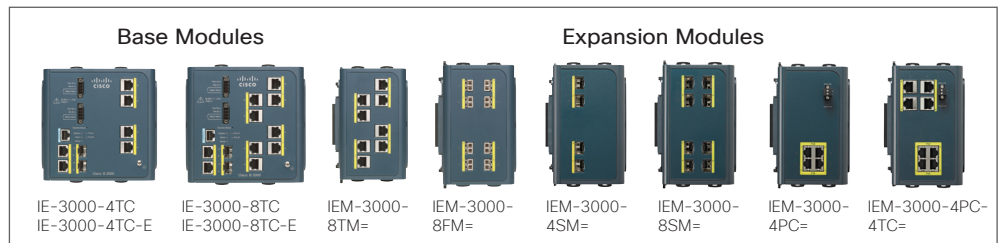


Figure 8. Industrial Ethernet 3010 Series Switches



Figure 9. Industrial Ethernet 4000 Series Switches

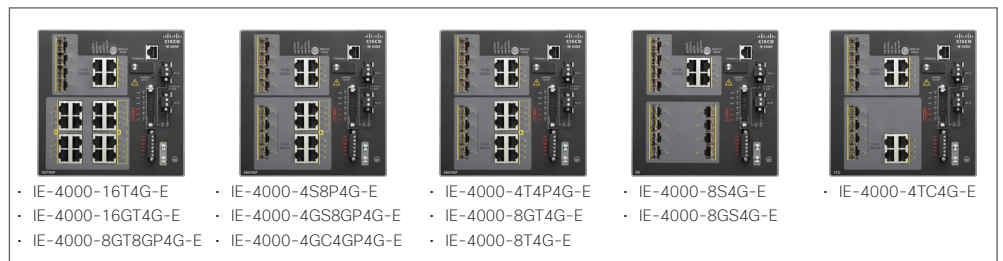










Figure 10. Industrial Ethernet 5000 Series Switches



Table 1. Industrial Ethernet Switches Comparison Summary

Product Family	IE2000	IE2000U	IE2000 IP67	CGS2520	IE3000	IE3010	IE4000	IE5000
								
Number of Models	25	7	5	2	2 Base + 6 Expansion	2	12	1
Total Ports	20	20	24	26	24	26	20	28
Copper Ports	16 FE	16 FE	24 FE/16FE + 2GE	24 FE	24 FE	24 FE	16 FE/16 GE	12 FE/GE
SFP Ports	2 GE	2 GE	-	16 FE	16 FE	16 FE	16 FE/GE	12 FE/GE + 4 GE/10GE
Combo Ports	2 FE	2 FE/GE	-	2 GE	2 GE	2 GE	4 GE	-
PoE/PoE+	Yes	Yes	Yes	Yes	Yes	Yes	Yes (up to 8)	Yes (up to 12)
Mechanical form factor	DIN rail	DIN rail	Wall mountable	19"	DIN rail	19"	DIN rail	19"
Ingress Protection Class	IP30	IP30	IP67	IP30	IP20	IP30	IP30	IP30
Max Dimensions H x W x D (inches and mm)	5.1" x 5.0" x 5.26" (130mm x 127mm x 134mm)	5.1" x 5.0" x 5.26" (130mm x 127mm x 134mm)	9.5" x 14.76" x 3.2" (241.7mm x 374.8mm x 81.5mm)	1.75" x 17.5" x 14.0" (44.5mm x 445mm x 356 mm)	5.8" x 6.0" x 4.4" (147mm x 152mm x 112mm)	1.75" x 17.5" x 14.0" (44.5mm x 445mm x 356mm)	6.12" x 6.12" x 5.09" (155.4mm x 155.4mm x 129.2mm)	1.75" x 17.5" x 14.0" (44.5mm x 445mm x 356mm)
Max Power Consumption (excluding PoE)	30 W	20 W	22 W	40.3 W	15.7 W	34.4 W	42 W	90 W
Max Weight	4.35 lbs (1.97 kg)	4.35 lbs (1.97 kg)	8.86 lbs (4.02 kg)	10 lbs (4.5 kg)	4.4 lbs. (2.0 kg)	10 lbs (4.5 kg)	6.35 lbs (2.88 kg)	13.7 lbs (6.2 kg)
HW Warranty Period	5 years	5 years	5 years	5 years	5 years	5 years	5 years	5 years
MTBF (Hours) - lowest model -	374,052	660,730	374,052	660,730	329,451	543,540	519,190	247,590



## Industrial Routing

The Cisco industrial routing portfolio includes a range of compact, ruggedized modular platforms on which industrial organizations can build a highly secure, reliable, and scalable communications infrastructure. These products are certified to meet harsh environmental standards. They support a variety of communications interfaces, such as Ethernet, Serial, Cellular, WiMAX, RF mesh, and others.

The Cisco industrial routing portfolio includes the following product families:

- **Cisco 1000 Series Connected Grid Routers:** Versatile communications platforms designed to meet the communication infrastructure needs of industrial verticals, allowing integration of multiple applications as well as workforce automation onto a single platform.
- **Cisco 2000 Series Connected Grid Routers:** Rugged routers optimized for use in the multitude of different communications networks in the energy and utility industries.
- **Cisco ASR 903 Aggregation Services Router:** A converged, full-featured, modular, small-footprint, fully redundant aggregation platform. It offers service flexibility and delivers Layer 2, IP, and Multiprotocol Label Switching (MPLS) transport for advanced Layer 2 VPN, Layer 3 VPN, and multicast services.
- **Cisco 500 Series WPAN Industrial Routers:** Compact routers that provide unlicensed 915 MHz industrial, WPAN communications enabling a diverse set of IoT applications.
- **Cisco 809 Industrial Router:** Very compact Cellular (3G and 4G LTE) Industrial Router supporting 2xFE and 2xSerial interfaces for remote deployment in various industries enabling reliable, and secure remote asset management and machine-to-machine (M2M) solutions.
- **Cisco 819H Integrated Services Router:** A compact hardened form factor Cellular (3G and WLAN or 4G options available) Router supporting 1xGE WAN, up to 4xFE, and one Serial interfaces providing a rapidly deployable, highly available, reliable, and secure solution designed for Machine-to-Machine (M2M) and various industrial mobile applications.
- **Cisco 829 Industrial Router:** A highly ruggedized compact Cellular (3G and 4G/LTE with GPS and dual SIM) and WiFi (2.4/5GHz) Industrial Router supporting 5xGE and 2xSerial interfaces for scalable, reliable, and secure fleet management and remote asset monitoring solutions.
- **Cisco 910 Industrial Router:** A multiservice, flexible router offering an open platform to build a highly secure, reliable, and scalable field network infrastructure.

### Primary Features

- Design for Industrial applications, including extended environmental, shock, vibration, and surge ratings; a complete set of power input options; convection cooling; and DIN-rail, 19-inch rack or wall mounting
- High availability, advanced Quality of Service (QoS), guaranteed determinism, and reliable security using Cisco IOS Software
- Diverse modular interfaces (Ethernet, T1/E1, 3G and 4G/LTE Cellular, Asynch/Synch, serial and others) to interface and backhaul for different existing infrastructures
- Advanced QoS capabilities to support mission-critical communications, such as substation communications or Supervisory Control And Data Acquisition (SCADA)
- Support for IEEE 1588v2, a precision-timing protocol with nanosecond-level precision for high-performance applications and compliance with IEC-61850-3 and IEEE 1613 for utility substation environments
- Easy and user-friendly deployment, setup, operation, and management

## Hardware Models

Following figures show the hardware modules available:

Figure 11. Cisco 1000 Series Connected Grid Router



Figure 12. Cisco 2000 Series Connected Grid Router

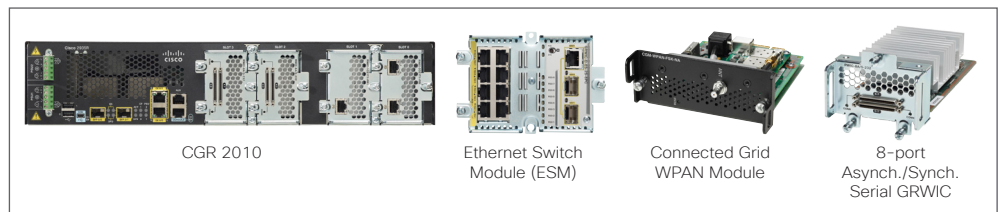


Figure 13. Cisco 819H Integrated Service Router



Figure 14. Cisco 509 WPAN Industrial Router and Cisco 529 WPAN Range Extender



Figure 15. Cisco 910 Industrial Router



Figure 16. Cisco 809 Industrial Router

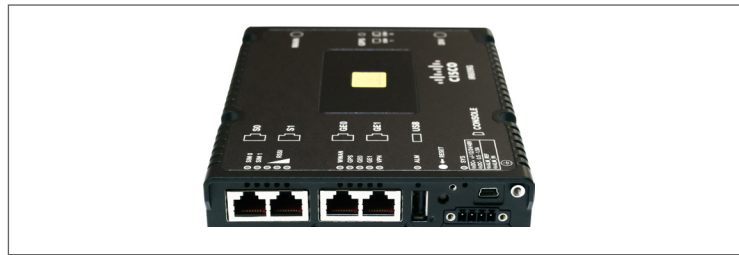


Figure 17. Cisco 829 Industrial Router













Figure 18. Cisco ASR 900 Aggregation Services Router



Table 2. Industrial Routers Comparison Summary

	CGR 1120	CGR 1240	CGR 2000	IR 509	IR529	ISR 819H	IR 809	IR 829	IR 910	ASR902 ASR903
Number of Models	1 (*)	1 (*)	1 (*)	1	3	16	4	5	2	1 (*)
O.S.	IOS M/T	IOS M/T	IOS M/T	TinyOS	TinyOS	IOS M/T	IOS M/T	IOS M/T	Linux	IOS M/T
IOX	Hypervisor + Linux	Hypervisor + Linux	No	No	No	Linux (4G model)	Hypervisor + Linux	Hypervisor + Linux	Linux	No
Raw Socket	Yes (TCP/UDP)	Yes (TCP/UDP)	Yes (TCP/UDP)	Yes (TCP)		Yes (TCP/UDP)	Yes (TCP/UDP)	Yes (TCP/UDP)	No	Yes (TCP/UDP)
Protocol Translation	T101-T104 DNP3-DNP3/IP	T101-T104 DNP3-DNP3/IP	No	No	No	T101-T104 DNP3-DNP3/IP	T101-T104 DNP3-DNP3/IP	T101-T104 DNP3-DNP3/IP	No	No
IP Grade	IP30	IP67	IP30	IP41	IP67	IP41	IP30	IP54	IP30 IP55 (w, enclosure)	IP30

	<b>CGR 1120</b> 	<b>CGR 1240</b> 	<b>CGR 2000</b> 	<b>IR 509</b> 	<b>IR529</b> 	<b>ISR 819H</b> 	<b>IR 809</b> 	<b>IR 829</b> 	<b>IR 910</b> 	<b>ASR902 ASR903</b> 	
<b>Ethernet ports (LAN/WAN)</b>	6 * FE RJ45 2 * GE RJ45/SFP	4 * FE RJ45 2 * GE RJ45/SFP	16 * FE RJ45 8 * FE SFP	1 * FE RJ45	No	4 * FE RJ45 1 * GE RJ45	2 * FE RJ45	4 * GE RJ45 1 * GE SFP	1 * GE RJ45/SFP	8 x GE RJ45 (**) 8 x GE SFP (**) 2 x 10G SFP (**)	
<b>Serial ports (NAN)</b>	1 * RS232 1 * RS232/RS485	1 * RS232 1 * RS232/RS485	8 * RS232	1 * RS232 1 * RS232/RS485	No	1 * RS232	1 * RS232 1 * RS232/RS485	1 * RS232 1 * RS232/RS485	2 * RS232/RS485	14 x RS232 (**)	
<b>Cellular (WAN)</b>	GPRS, 3G, 4G	GPRS, 3G, 4G	No	No	No	GPRS, 3G, 4G	GPRS, 3G, 4G	GPRS, 3G, 4G	GPRS, 3G	No	
<b>Wi-Fi (LAN/WAN)</b>	Yes	Yes	No	No	No	Yes (not 4G model)	No	Yes	Yes (IR910W-K9)	No	
<b>WiMAX (WAN)</b>	Yes	Yes	No	No	No	No	No	No	No	No	
<b>802.15.4g/e (NAN)</b>	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	
<b>1901.2 PLC (NAN)</b>	Yes	Yes	No	No	No	No	No	No	No	No	
<b>LTN (NAN)</b>	No	No	No	No	No	No	No	No	Yes, Semtech LoRA	No	
<b>Operation Temperature</b>	-40°C to +60°C (-40°F to 140°F) with type test to 85°C (185°F) for 16 hours	-40° to +70°C (-40°F to 158°F) with type test to 85°C (185°F) for 16 hours	-40° to +60°C (-40°F to 140°F) with type test to 85°C (185°F) for 100 hours	-40° C to +70° C (-40°F to 158°F) with type test to 85° C (185°F) for 16 hours	-40° C to +70° C (-40°F to 158°F) with type test to 85° C (185°F) for 16 hours	-25° to +60° C (-13° to 140° F)	-45° to +65°C (-49° to 149° F)	-40° to +60° C (-40° to 140° F)	-40° to +70° C (-40° F to 158° F)	-40° to +70° C (-40° F to 158° F)	-40° to 65°C (DC operation) -5° to 55°C (AC operation)
<b>Max Dimensions H x W x D (inches and mm)</b>	11.3 x 9.7x 8.5 in. 287 x 246 x 216 mm (***)	3.5 x 9.0 x 7.8 in. 89 x 229 x 200 mm (*)	3.5 x 17.25 x 15 in. 88.9 x 438.2 x 381 mm (***)	1.125 x 4.0 x 5.0 in. 28.6 x 101.6 x 127 mm	4.85 x 7.23 x 10.37 in. 123.2 x 183.7 x 263.4 mm (***)	1.73 x 7.7 x 9.0 in 44 x 186 x 229 mm	1.25 x 5 x 6.25 in 31.75 x 127 x 158.75 mm	1.73 x 7.7 x 11 in 43.9 x 195.58 x 279.4 mm.	5.1 x 6.2 x 5.38 in. 130 x 157 x 137 mm (*)	5.22 x 17.44 x 9.22 in. 132.6 x 443 x 234.2 mm	
<b>Max Power Consumption (excluding PoE)</b>	40 W	75 W	60 W (****)	6 W	18 W	25 W	29W	30W	12 W	400W (****)	
<b>Max Weight - heaviest model -</b>	8 lbs (3.6 kg)	23 lbs (10.4 kg)	25 lbs (11.4 kg)	0.85 lbs (0.4 kg)	8.48 lbs (3.85 kg)	3.2 lb (1.5 kg)	1 lb 11 oz. (0.77 kg)	5 lbs (2.27 kg)	5.07 lb (2.3 kg)	34.17 lb (15.5 kg)	

(\*) with various plug-in modules

(\*\*) for each plug-in module

(\*\*\*) without antennas

(\*\*\*\*) Typical depending on configuration

## Industrial Wireless

Cisco Outdoor and Industrial Wireless can be deployed in a variety of demanding environments. To help ensure an exceptional user experience on the wireless network, these access points provide a variety of capabilities, including:

- Cisco CleanAir® Technology for a self-healing, self-optimizing network that avoids RF interference
- Cisco ClientLink 2.0 and 3.0 to improve reliability and coverage for existing clients
- Band select to encourage 5 GHz client connections in mixed-client environments
- Cisco VideoStream which uses multicast encapsulated in unicast to improve multimedia applications

Whether you need a multilevel mesh network, flexible options such as fiber-based backhaul, or even deployment in hazardous locations, the Cisco industrial wireless portfolio provides a high-performance access point to meet your rugged outdoor requirements.

The Cisco industrial wireless portfolio includes the following product families:

- **Cisco Industrial Wireless 3700 Series Access Point:** Offers industrial-grade environmental qualifications while providing higher speeds for video and other bandwidth-intensive applications and extending support to a new generation of Wi-Fi clients that have integrated 802.11ac support.
- **Cisco Aironet 1550 Series Outdoor Access Points:** Points: A highly ruggedized access point qualified for Hazloc operations. Some models integrate an ISA100-compliant backbone router (Cisco Aironet 1552S Outdoor Access Point) and a WirelessHART gateway (Cisco Aironet 1552WU Outdoor Access Point), providing an easy-to-use solution for wireless sensor networks.
- **Cisco Aironet 1570 Series Outdoor Access Points:** A robust mobility experience for outdoor deployments, supporting IEEE 802.11ac, optimized roaming and cellular handoff, and Cisco High Density Experience.

### Primary Features

- Rugged industrial design and an extended operational temperature range
- Carrier-grade outdoor Wi-Fi access point with dual-band (2.4 GHz 802.11n and 5 GHz 802.11ac) radios
- Industry's only 4x4 MIMO, three-spatial-stream outdoor access point
- Fast workgroup bridge roaming
- Up to 1.3 gigabits (5 GHz) WLAN RF data rates
- Various uplink options: Fiber and SFP, Gigabit Ethernet, cable modem and various power options (AC, DC, cable, PoE, PoE+, UPoE, PoE-Out)



## Hardware Models

The following figures show the hardware models available:

Figure 19. Cisco Industrial Wireless 3700 Series Access Point:



Figure 20. Cisco Aironet 1550 Series Outdoor Access Point:

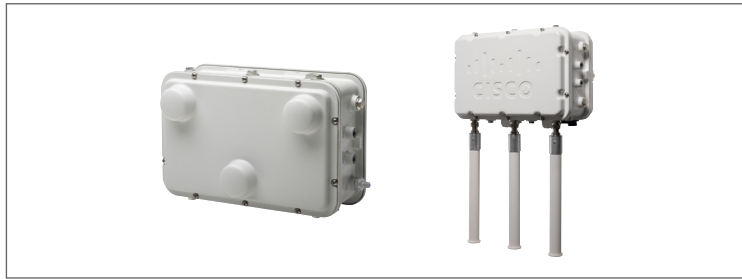





Figure 21. Cisco Aironet 1570 Series Outdoor Access Point:



Table 3. Industrial Wireless: Main Features and Characteristics

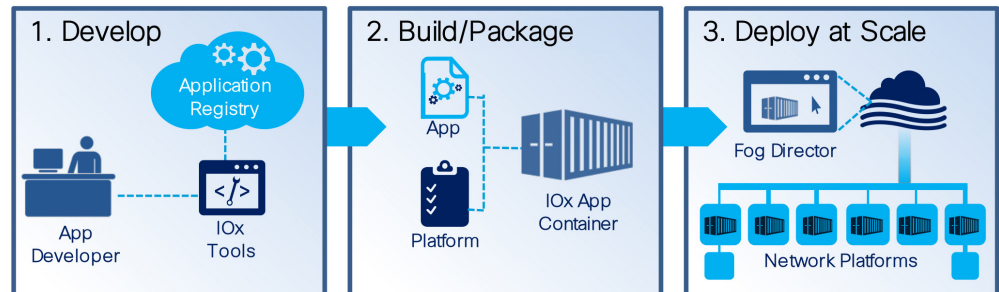
Feature	<p style="text-align: center;"><b>IW 3700</b></p> 	<p style="text-align: center;"><b>Aironet 1550</b></p> 	<p style="text-align: center;"><b>Aironet 1570</b></p> 
<b>Wireless Standard</b>	802.11a 802.11b 802.11g 802.11n 802.11ac	802.11a 802.11b 802.11g 802.11n	802.11a 802.11b 802.11g 802.11n 802.11ac
<b>Radio type</b>	2.4 GHz (802.11b/g/n) 5 GHz (802.11a/n/ac)	2.4 GHz (802.11b/g/n) 5 GHz (802.11a/n)	2.4 GHz 802.11b/g/n) 5 GHz (802.11a/n/ac)
<b>Main Capabilities</b>	<p><b>802.11n and Related:</b></p> <ul style="list-style-type: none"> <li>• 4x4 MIMO with 3 spatial streams</li> <li>• Maximal ratio combining (MRC)</li> <li>• 802.11n and 802.11a/g beamforming</li> <li>• 20- and 40-MHz channels</li> <li>• PHY data rates up to 450 Mbps (40 MHz with 5 GHz)</li> </ul> <p><b>802.11ac Related:</b></p> <ul style="list-style-type: none"> <li>• 4x4 MIMO with 3 spatial streams</li> <li>• Maximal ratio combining (MRC)</li> <li>• 802.11ac Beamforming</li> <li>• 20-, 40-, and 80-MHz channels</li> <li>• PHY data rates up to 1.3 Gbps (80 MHz with 5 GHz)</li> </ul>	<p><b>802.11n and Related:</b></p> <ul style="list-style-type: none"> <li>• 2x3 MIMO with 2 spatial streams</li> <li>• Legacy beamforming</li> <li>• 20- and 40-MHz channels</li> <li>• PHY data rates up to 300 Mbps</li> </ul> <p><b>Wireless Sensor Network Related:</b></p> <ul style="list-style-type: none"> <li>• Honeywell ISA-100 gateway integrated (AP1552SA/AP1552SD)</li> <li>• Emerson WirelessHART gateway integrated (AP1552WU)</li> </ul>	<p><b>802.11n and Related:</b></p> <ul style="list-style-type: none"> <li>• 4x4 MIMO with 3 spatial streams</li> <li>• Maximal ratio combining (MRC)</li> <li>• 802.11n and 802.11a/g Beamforming</li> <li>• 20- and 40-MHz channels</li> <li>• PHY data rates up to 450 Mbps (40 MHz with 5 GHz)</li> </ul> <p><b>802.11ac Related:</b></p> <ul style="list-style-type: none"> <li>• 4x4 MIMO with 3 spatial streams</li> <li>• Maximal ratio combining (MRC)</li> <li>• 802.11ac Beamforming</li> <li>• 20-, 40-, and 80-MHz channels</li> <li>• PHY data rates up to 1.3 Gbps (80 MHz with 5 GHz)</li> </ul>
<b>RF output power</b>	Up to 23 dBm	Up to 27/28 dBm	Up to 30 dBm
<b>Interfacing</b>	<ul style="list-style-type: none"> <li>• WAN port: 10/100/1000BASE-T</li> <li>• (M12 8P female connector with X-coding), PoE In (802.3af), PoE+ In (802.3at)</li> <li>• LAN port: 10/100/1000BASE-T</li> <li>• (M12 8P female connector with X-coding), PoE Out(802.3af)</li> <li>• Management console port (RJ-45) with Reset button</li> </ul>	<ul style="list-style-type: none"> <li>• WAN port: 10/100/1000BASE-T</li> <li>• Ethernet, (RJ-45)</li> <li>• LAN port: 10/100/1000BASE-T</li> <li>• Ethernet (RJ-45)</li> <li>• Fiber SFP</li> <li>• Management console port (RJ-45) with Reset button</li> </ul>	<ul style="list-style-type: none"> <li>• WAN port: 10/100/1000BASE-T</li> <li>• Ethernet, (RJ-45)</li> <li>• LAN port: 10/100/1000BASE-T</li> <li>• Ethernet (RJ-45)</li> <li>• Fiber SFP</li> <li>• Cable modem: NA-DOCSIS3.0/ Euro-DOCSIS3.0/Japan- DOCSIS3.0 (8x4, 16x8, or 24x8), (1572IC/1572EC model)</li> <li>• Management console port (RJ-45) with Reset button</li> </ul>

Feature	<p style="text-align: center;"><b>IW 3700</b></p> 	<p style="text-align: center;"><b>Aironet 1550</b></p> 	<p style="text-align: center;"><b>Aironet 1570</b></p> 
<b>Input power Requirements</b>	<ul style="list-style-type: none"> <li>• 9.6 to 60 VDC (M12 4P male connector with A-coding)</li> <li>• PoE and PoE+ (M12 8P female connector with X-coding)</li> </ul>	<ul style="list-style-type: none"> <li>• 12 VDC (not for hazardous environments)</li> </ul> <p><b>1552H</b></p> <ul style="list-style-type: none"> <li>• 100-240 VAC, 50-60 Hz</li> <li>• PoE with power injector</li> </ul> <p><b>1552SA</b></p> <ul style="list-style-type: none"> <li>• 100-240 VAC, 47-63 Hz</li> </ul> <p><b>1552SD</b></p> <ul style="list-style-type: none"> <li>• 19-30 VDC</li> </ul> <p><b>1552WU</b></p> <ul style="list-style-type: none"> <li>• 24 VDC</li> </ul>	<p><b>1572EAC AC:</b></p> <ul style="list-style-type: none"> <li>• 100-277 VAC, 50/60 Hz DC:</li> <li>• 10 to 16 VDC</li> <li>• PoE-Input: <ul style="list-style-type: none"> <li>- UPOE compliant PSE</li> <li>- Cisco AIR-PWRINJ1500-2= PoE-out: PoE+ (802.3at)</li> </ul> </li> </ul> <p><b>1572IC/1572EC</b></p> <ul style="list-style-type: none"> <li>• DC: 10 to 16 VDC</li> <li>• PoC-Input: 40-90 VAC, 50/60 Hz, quasi-square wave, Power over Cable (PoC)</li> </ul>
<b>PoE output</b>	PoE	PoE (1552H)	PoE+ (1572EAC/1572EC)
<b>Mounting options</b>	Wall, pole, DIN rail	Wall, pole	Wall, pole
<b>Mode of operation</b>	Unified and autonomous	Unified and autonomous	Unified and autonomous
<b>Max Dimensions H x W x D (inches and mm)</b>	11.3 x 8.0 x 2.34 in. (28.7 x 20.3 x 5.9 cm)	12.3 x 8.6 x 6.1 in. (31.2 x 22.9 x 16.3 cm)	11.8 x 7.9 x 7.9 in. (30.0 x 20.1 x 20.1 cm)
<b>Max Weight - heaviest model -</b>	6.7 lb (3.0 kg)	17.6 lbs (8 kg)	13.5 lbs. (6.1 kg)
<b>Ingress Protection Class</b>	IP67	IP67	IP67
<b>Hazloc Certification</b>	N/A	<ul style="list-style-type: none"> <li>• NRTL/CSA: Class I, Division 2; Groups A, B, C, and D</li> <li>• ATEX: Class I, Zone 2; Ex nA IIC T5 Gc</li> <li>• IECEx: Class I, Zone 2, Ex nA IIC T5 Gc</li> </ul>	N/A
<b>Operating temperature</b>	-40° to +167°F (-40° to +75°C) without solar loading or wind cooling	-40° to 131°F (-40 to 55°C) plus solar loading	-40° to 149°F (-40 to 65°C) ambient air with no solar loading
<b>Warranty</b>	5 Year Limited HW	1 Year Limited HW	1 Year Limited HW

## Cisco IOx and Fog Applications

Fast. Simple. Secure. Scalable.

Run your IoT Applications at the Network Edge with Cisco IOx in 3 simple steps:



Cisco IOx combines Internet-of-Things (IoT) application execution within the fog and offers highly secure connectivity with Cisco IOS technology, as well as powerful services for rapid, reliable integration with IoT sensors and the cloud.

### Cisco IOx Components

- Cisco IOx application framework provides uniform and consistent hosting capabilities for applications across Cisco IoT network infrastructure. The Cisco IOx application environment brings together Cisco IOS software, the industry-leading & highly secure networking operating system, and Linux, the leading open-source platform.
- Cisco Fog Director allows administrators to deploy, manage, and troubleshoot Cisco IOx applications at scale.
- Cisco IOx Development tools allow the developers to easily package their applications for Cisco IOx-enabled network infrastructure products.
- Cisco IOx Client is a command-line utility for developers to control IOx application lifecycle tasks.
- Cisco IOx Local Manager is an embedded web-based application included with the Cisco IOx Application Framework that provides local management of applications hosted on IOx-enabled network infrastructures.
- Fog applications are packaged as containers, ready for execution on IOx-enabled infrastructure. They may be supplied by ecosystem partners and/or Cisco or developed with a range of common programming languages.

## Benefits

- Transformation of IoT data into new digital business value: Build new business with the ability to process high volumes of data in the fog and deliver closed loop system control in real time.
- Rapid time to value: Achieve business outcomes associated with IoT initiatives more rapidly with application execution within the fog.
- Broad scope of impact: Reach production deployment rapidly with fog application management and execution at IoT scale.

The following Cisco network infrastructure products currently support IOx:

- Cisco Industrial Ethernet 4000 Switches Series
- Cisco 829 Industrial Integrated Services Routers
- Cisco 809 Industrial Integrated Services Routers
- Cisco 800 series Integrated Services Routers

## Next Steps

The Cisco IOx application framework offers consistent management and hosting across network infrastructure products. To find out more about the Cisco IOx visit <https://www.cisco.com/go/iox>



## Embedded Networks

### Cisco Embedded Service Switch

Cisco Embedded Service switches are optimized for mobile and embedded networks that require switching capability in harsh environments. The primary product offering is the Cisco Embedded Service 2020 Series Switches product family. The flexible, compact form factor of the switch cards, complemented by Cisco IOS Software, provides highly secure data, voice, and video communications to stationary and mobile network nodes.

### Primary Features

- Base card-only configuration (8 Fast Ethernet plus 2 Gigabit Ethernet ports) or an optional expansion card capable of providing 16 additional Fast Ethernet ports (board size conforms to the widely accepted PC104 form factor)
- Line rate and/or nonblocking Application-Specific Integrated Circuit (ASIC)-based architecture
- Resiliency includes flex links for fast recovery, Cisco Resilient Ethernet Protocol (REP) for fast convergence
- Advanced security features
- Manageability includes auto Cisco SmartPorts, Web Device Manager, Telnet, HTTPS access, and Simple Network Management Protocol (SNMP)

## Hardware Models

Figure 22. Cisco Embedded Service 2020 Series Switches



### Cisco Embedded Services Routers

The Cisco 5900 Series Embedded Services Routers provide highly secure data, voice, and video communications to stationary and mobile network nodes across wired and wireless links. They solve critical size, weight, and power challenges and can operate reliably in harsh environments. These routers are powered by Cisco IOS Software and feature Cisco Mobile Ready Net capabilities.

Cisco Embedded Services routers can be used to establish mobile networks in vehicles. They also extend resources more securely to workers in harsh environments such as public safety, exploration, transportation, and defense. The Cisco 5900 Series portfolio offers a range of form factors to address diverse requirements.

The Cisco Embedded Services Routers include:

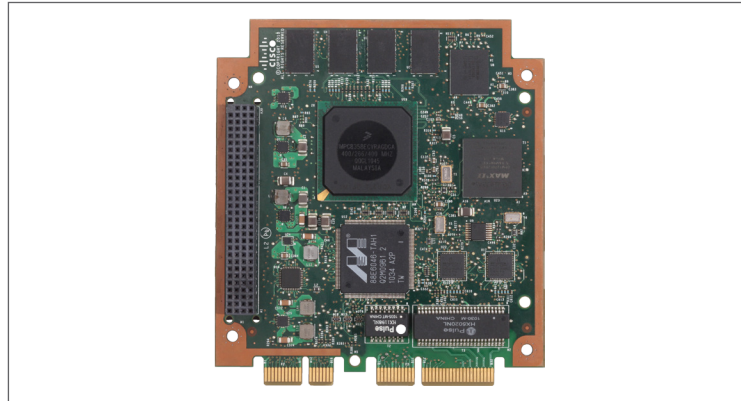
- **Cisco 5915 Embedded Services Router:** A PCI104-based card that provides two Fast Ethernet routed ports and three Fast Ethernet switched ports.
- **Cisco 5940 Embedded Services Router:** A CompactPCI (cPCI)-based card offering four Gigabit Ethernet routed ports.
- **Cisco 5921 Embedded Services Router:** A software router application designed for small, low powered Linux devices.

### Primary Features

- Hardware-based and software-only options to support a variety of form factors based on proven Cisco IOS technologies
- Remote voice services with Cisco Unified Communications Manager Express and streaming multicast video support
- Cisco Mobile Ready Net capabilities such as Cisco Radio Aware Routing and Open Shortest Path First version 3 (OSPFv3) MANET extensions
- Advanced security features integration to protect against malicious attacks and unauthorized access
- Network optimization features that improve bandwidth utilization, including IP multiplexing, QoS, and Cisco Radio Aware Routing

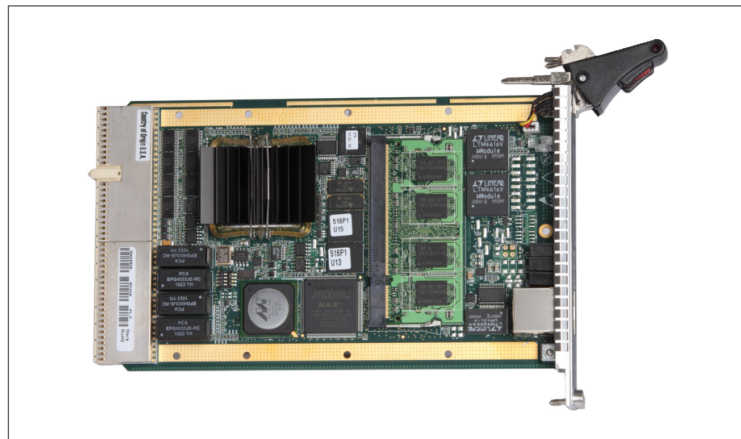
## Hardware Models

**Figure 23.** Cisco 5915 Embedded Services Router



Cisco 5915 ESR Air-Cooled Model

**Figure 24.** Cisco 5940 Embedded Services Router



Cisco 5940 ESR Air-Cooled Model

## Software Models

**Figure 25.** Cisco 5921 Embedded Services Router



## Security

### New IoT Requirements

With converged IT and operational technology networks, the Internet of Things (IoT) significantly expands the breadth and depth of security challenges. The billions of new connected objects dramatically increases the number of potential attack vectors. The wide variety of objects increases the diversity of threats faced. More sensitive data flowing through devices with weak or no security, located in insecure places, increases the risk of a security breach. Because IT and operational technology environments are vastly different, the same security policies cannot be applied to both. This makes remediation more complicated and requires a different approach to security. All these challenges combined have a significant impact on your organization's ability to secure networks and data.

### Cisco Advantage: Addressing the Full Attack Continuum

We are addressing these challenges by integrating comprehensive physical and cybersecurity solutions from the cloud to the fog that address the full attack continuum – before, during, and after an attack.

### Cyber Security Portfolio

Cisco offers scalable, threat-centric cybersecurity solutions, enabling you to quickly and effectively discover, scope, contain, and remediate an attack to minimize damage. These cybersecurity solutions include:

- ISA3000 Industrial Security appliance
- Cloud-based threat protection
  - Cisco Advanced Malware Protection (AMP)
- Network and perimeter security
  - Cisco ASA Firewall with FirePOWER Services
  - Cisco FirePOWER™ Next-Generation Intrusion Prevention Service (NGIPS)
  - Cisco Talos Security Intelligence
- User- and group-based identity services
  - Cisco Identity Services Engine
  - Cisco TrustSec® solutions

#### Benefits:

- **Pervasive security solution:** Cisco delivers a pervasive security solution throughout the extended network. Cisco security products work together to produce robust, actionable security intelligence in real-time, increasing your overall security posture with little or no human intervention required.
- **Unique policies for IT and operational technology:** Recognizing that the practical application of security policies must be different for IT and operational-technology environments, Cisco security solutions are flexible to deliver differentiated policy enforcement across the extended network for organization-driven security policies and response.
- **Actionable security intelligence:** Developers can use Cisco IOx APIs to develop applications that use Cisco security solutions to produce comprehensive, actionable security intelligence across the extended network.

Table 4. ISA3000 detailing features etc.

Product Family	ISA3000
Number of Models	
Total Ports	
Copper Ports	16 FE
SFP Ports	2 GE
Combo Ports	2 FE
PoE/PoE+	Yes
Mechanical form factor	DIN rail
Ingress Protection Class	IP30
Max Dimensions H x W x D (inches and mm)	5.1" x 5.0" x 5.26" (130mm x 127mm x 134mm)
Max Power Consumption (excluding PoE)	30 W
Max Weight	4.35 lbs (1.97 kg)
HW Warranty Period	5 years
MTBF (Hours) - lowest model -	374,052



## Use Cases

### Manufacturing: Cisco Connected Factory Solutions

The Cisco Connected Factory solution is a portfolio of validated, proven architectures, capabilities, and market-leading technologies and services. These solutions are designed to help industrial companies:

- Rapidly and more securely integrate industrial automation and control with business systems
- Build one common, converged, rugged, plant-to-business industrial ethernet network
- Scale your network as your needs change or your business grows
- Improve operational costs and efficiency
- Find and fix problems faster to improve production uptime and equipment availability
- Improve network security to protect IP and production integrity

Cisco provides the breadth of plant infrastructure capabilities across networking, wireless, security, video, computing, and communications. The solution can flexibly support the current and future business needs of manufacturers. It meets the requirements of both business IT and operational technology in a highly secure, reliable, and integrated platform.

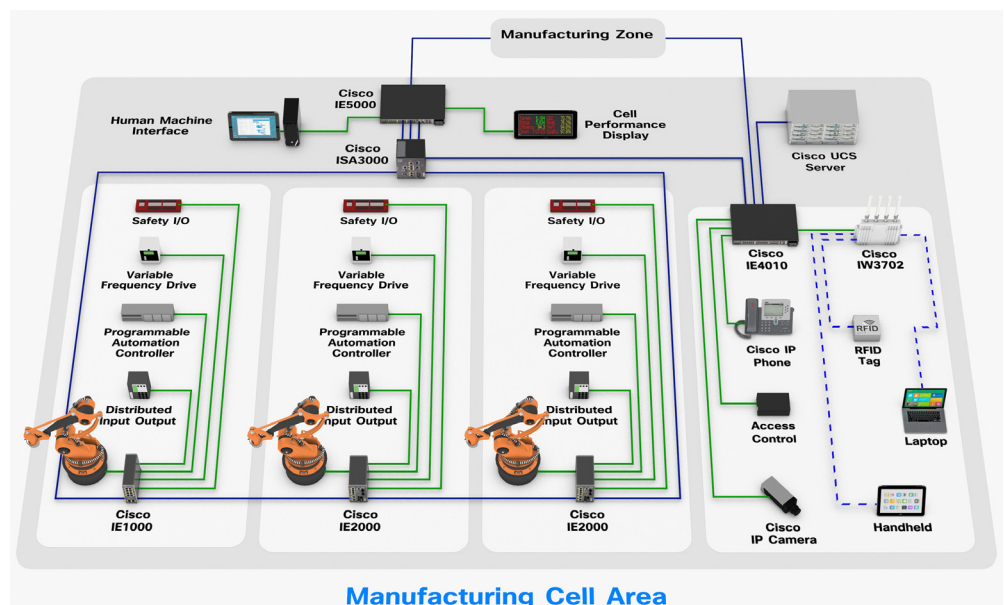
Cisco Solutions for Manufacturing include:

- [Connected Factory Network](#)
- [Connected Factory - PROFINET](#)
- [Connected Factory Wireless](#)
- [Connected Factory Security](#)
- [Time Sensitive Networking](#)

For additional info and details: [www.cisco.com/go/manufacturing](http://www.cisco.com/go/manufacturing)

The following figure provides an illustration of a manufacturing cell area using Cisco IoT Infrastructure products

Figure 26. Cisco Digital Factory: Manufacturing Cell Area Use Case



## Cisco Digital Utilities and Oil & Gas Solutions

With Cisco solutions, energy customers are connecting production, assets, machines and people across the diverse energy ecosystem. Cisco IoT solutions enable power and grid operators, and oil & gas companies to achieve more value from their operations on a single, intelligent platform. Sensor-based solutions offer real-time security, increased control and visibility to accelerate the pace of that transformation.

Modernizing infrastructure and integrating diverse energy resources are top priorities. Utilities are digitizing the grid – from generation to distribution to consumption. Oil & gas companies are keeping product and profits flowing. And they're using the power of Cisco networks and IoT solutions to:

- Achieve greater cyber and physical security/safety
- Improve operational efficiency and cost savings
- Increase field productivity and empower the mobile workforce
- Offer new levels of customer experiences and care
- Enable compliance with regulatory requirements

Cisco Energy Solutions:

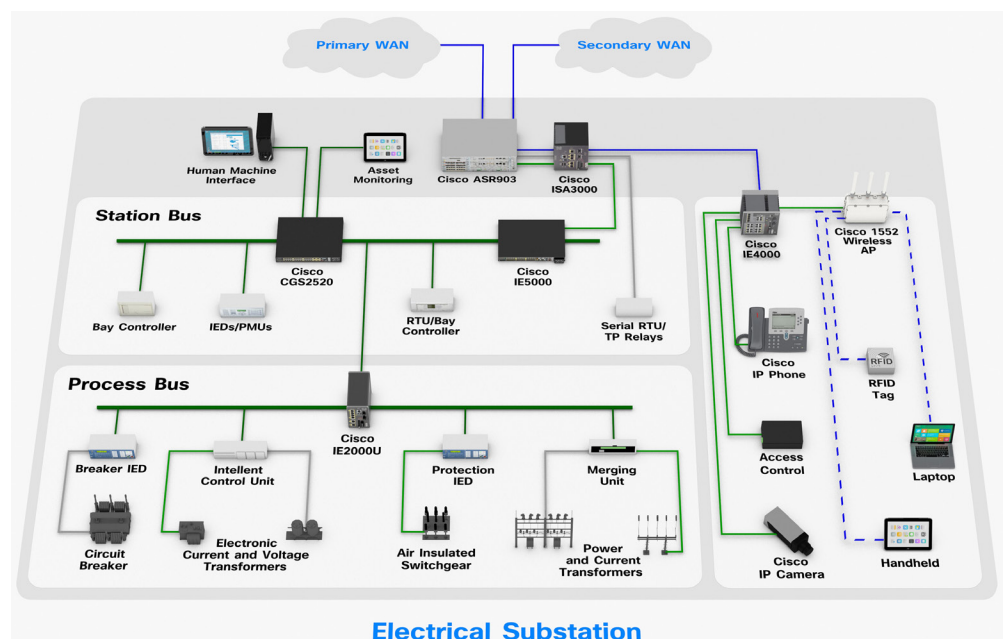
- Substation Automation
- Substation Security
- Field Area Network
- Distribution Automation
- Utility WAN
- Connected Pipeline
- Connected Refinery
- Connected Workforce

For additional info and details:

- <https://www.cisco.com/go/utilities>
- <https://www.cisco.com/go/oilandgas>

The following figure provides an illustration of an automated substation using Cisco IoT products

**Figure 27.** Cisco Connected Substation: Substation Automation Use Case



## Digital Transportation

### Cisco Digital Transportation Solutions

Digitization and advances in technology are transforming the transportation industry like never before. Cisco's new approach to integrating information and communication technology with intelligent and converged networks, create the foundation for new infrastructures of connected roads, railways, airports, stations, and ports. These new digital networks are also deployed onboard buses, trains, planes, ships, and connected vehicles.

Cisco transportation solutions meet new demands and requirements for traffic management, mass transit, data analytics, telematics, vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I) and machine-to-machine (M2M) communications. Cisco solutions and architectures help transportation operators and transit agencies create greater safety and mobility for both workers and passengers while using new opportunities for future growth and expansion. Utilizing the power of a secure IP network, transit operators gain a competitive edge and help to make sure of greater safety, operational efficiency, and improved productivity by providing seamless, secure access from any location.

Regardless of the mode of transit, the benefits that Cisco Digital Transportation solutions deliver include:

- Greater safety and security
- Converged networks to lower costs and to simplify and centralize management
- Improved operational efficiencies and employee productivity
- New business models and opportunities for added revenue generation and competitive differentiation
- Reduced complexity with Cisco services to help plan, build and manage networks and systems
- Extensive partner ecosystem for end-to-end transportation solutions

Cisco Solutions for Transportation include:

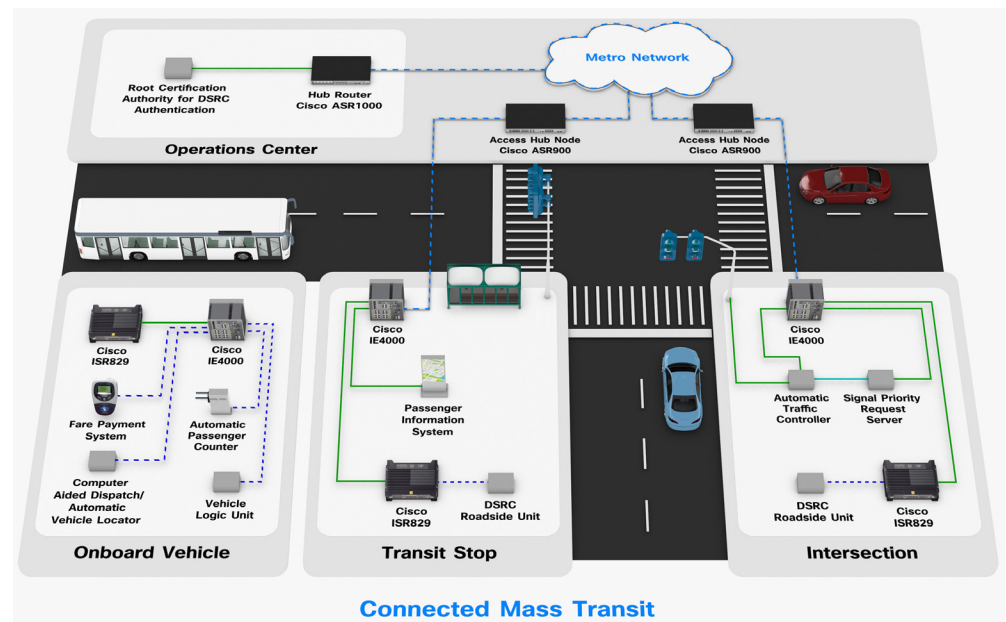
- [Cisco Connected Roadways](#)
- [Cisco Connected Rail](#)
- [Cisco Connected Mass Transit](#)

For additional info and details: [www.cisco.com/go/transportation](http://www.cisco.com/go/transportation)

The following figure provides an illustration of Transit Signal Prioritization (TSP) using Cisco IoT products.

Transit Signal Prioritization provides priority treatment for mass transit vehicles at signalized intersections. By reducing delay of transit vehicles idling at intersections, cities can improve their public transit service, maintain on-time schedules and also reduce pollution and carbon emissions. TSP can also be utilized by emergency response vehicles for safer passage through busy intersections and faster response times that can save lives when valuable seconds are often critical.

Figure 28. Cisco Digital Transportation: Transit Signal Prioritization Use Case



## Cisco IoT Networking

### Deploy, Accelerate, and Innovate

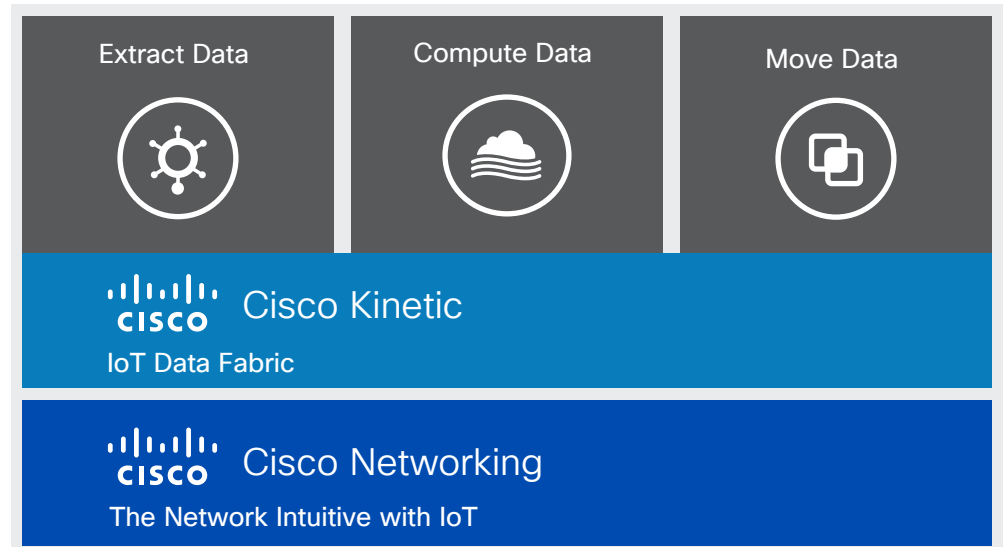
As IoT creates opportunity, it increases complexity, producing vast amounts of data and connected infrastructure. To overcome those challenges and realize the value of IoT, the Cisco IoT enables you to:

- Bridge IT and operational technology, supporting your entire organization with a scalable network infrastructure
- Understand, act on, and protect the data you collect
- Secure your entire technology ecosystem – from edge to cloud

The Cisco IoT makes all that possible with secure connectivity.

To find out how the Cisco IoT can help you innovate faster, make smarter decisions, and strengthen security, visit [www.cisco.com/go/iot](http://www.cisco.com/go/iot)

Figure 29. Cisco IoT Networking





## Appendix

### Network Connectivity

**Table 6.** Industrial Ethernet Switches: Main Common Features

Layer 2 and Layer 3	Security	Management	Quality of Service (QoS)
802.1 Q VLAN trunking	802.1 x	Auto Configuration	2 Ingress and 4 Egress Queues
Auto MDIX	BPDU Filtering	Auto QoS	802.1p Priority
Auto-negotiation on all ports	BPDU Guard	Auto Smartport	Auto QoS 1.5
Configurable IGMP Leave Timer	Dynamic ARP Inspection	CLI-based management console	AutoQoS - VoIP
Dynamic Access Ports (Dynamic VLAN)	Generic Message Authent. for SSH Protocol	Digital Optical Monitor (DOM) support	AutoQoS - VoIP Enhancement
Dynamic ARP Inspection	HTTP(S)	Embedded Event Manager (EEM)	DSCP Mapping/Filtering
Dynamic MAC addressing	Ip device tracking (IPDT)	Express Setup via Device Manager	Egress Bandwidth Limiting/port shaping
Etherchannel	IP source guard	IP SLA responder	Egress Shaped Queues
FlexLink Mac Move Notification	Local RADIUS Server	LLDP	Global QoS (enable QoS)
FlexLink Multicast fast convergence failover	Loopguard	Macro Smartport	Hierarchical QOS
FlexLink/Back up Interface	MAC address notification	Mini USB console port	ingress policer
IGMP Filtering/Snooping Timer/Throttling/Querier	Multilevel Console Security	RS232 serial console port	Ingress Rate Limiting
IGMP v1, v2, v3 Snooping	Port Security	RSPAN session	Ingress/egress Shared Queues
Indirect IPV4 routing	Port Security for Voice VLANs	SNMP v1 v2 v3	Ingress/Egress Strict Priority Queuing (Expedite)
Inter-VLAN routing (or IPv4 static routing)	Port Security MAC Aging	Software Alarm Relay	Packet Based Storm Control
Mini-jumbo/Jumbo frame	Private VLAN Edge (Protected Port)	SPAN session	Per VLAN Policy & Per Port Policer
MSTP	RADIUS Client	Web Device Manager	Shaped Round Robin (SRR)
MVR (Multicast VLAN Registration)	RADIUS Server Load Balancing	DHCP	Storm Control - Unicast, Multicast, Broadcast
Per Port Storm Control Unicast/Multicast	Secure Copy Protocol (SCP)		Trust Boundary Configuration
Port duplex/speed	Secure Shell SSH 2 Server	DHCP Snooping	Weighted Tail Dop (WTD)
REP LSL Age-out timer/Edge no Neighbor	Secure Shell SSHv 1.5	DHCP Option 82 data Insertion	Industrial Protocols
REP redundant ring	SPAN	DHCP Option 82 Pass Through	
RSTP	Spanning Tree Root Guard (STRG)	DHCP Option 82 - Configurable Remote ID and Circuit ID	Ethernet/IP (CIP protocol)
Static MAC addressing	SSL	DHCP Snooping Statistics and SYSLOG	Modbus TCP/IP
STP PortFast	SXP (Secure Group Access Exchange Protocol)	DHCP server port-based address allocation	PROFINET I/O
SVI interface	TACACS+	IPv6	Network Address Translation (Layer2 NAT)
TrustSec: Auto Smart Port/Device Sensor/Device profiling	Trunk Port Security		1588 PTP, CIP sync
UDLD	TrustSec: Auto Smart Port (ASP)	IPv6 host addressing	Industrial automation Smartport (template)
Voice Vlan	TrustSec: Device Sensor, Device profiling	IPv6 MLD v1 and V2 snooping	Port based DHCP allocation
VTP v2, v3	Unicast MAC Filtering	HTTP and HTTPs	Duplicate Address Detection

**Table 7.** Industrial Ethernet Switches Power Supply Units: Main Specifications and Use Case Scenarios

Product Number	Wattage	Rated Nominal Input Operating Range	Supported Input Voltage Operating Range	Power Output	PoE/PoE+ Support	Use Case Scenario
PWR-IE170W- PC-AC=	170W	AC 100-240V/2.3A 50-60Hz or DC 125-250V/2.1A	AC 90-264V or DC 106-300V	54VDC/3.15A	Yes	Maximum PoE/PoE+ port support in a AC or high DC environment1
PWR-IE170W- PC-DC=	170W	DC 12-54V/23A	DC 10.8-60V	54VDC/3.15A	Yes	Maximum PoE/PoE+ port support in a DC environment1
PWR-IE50W- AC=	50W	AC 100-240V/1.25A 50-60Hz or DC 125-250V/1.25A	or DC 106-300V	24VDC/2.1A	No	No PoE/PoE+ support needed in an AC or DC environment
PWR-IE50W- AC-IEC=	50W	AC 100-240V/1.25A 50-60Hz	AC 90-264V	24VDC/2.1A	No	No PoE/PoE+ support needed when IEC plug is desired
PWR-IE65W- PC-AC=	65W	AC 100-240V/1.4A 50-60Hz or DC 125-250V/1.0A	AC 90-264V or DC 106-300V	54VDC/1.2 A	Yes	Minimum (1~2 port) PoE support needed in an AC or high DC environment2
PWR-IE65W- PC-DC=	65W	DC 24-48VDC/4.5A	DC 18-60V	54VDC/1.2 A	Yes	Minimum (1~2 port) PoE support needed in a DC environment2

**Table 8.** Industrial Ethernet Switches: Available Models (Product IDs)

IE 2000	Cisco Industrial Ethernet 2000 Series Switches
IE-2000-4T-B	IE 4 10/100,2 FE, Base
IE-2000-4T-L	IE 4 10/100,2 FE, Lite
IE-2000-4TS-B	IE 4 10/100,2 FE SFP, Base
IE-2000-4TS-L	IE 4 10/100,2 FE SFP, Lite
IE-2000-4T-G-B	IE 4 10/100,2 Gig port, Base
IE-2000-4T-G-L	IE 4 10/100,2 Gig port, Lite
IE-2000-4TS-G-B	IE 4 10/100,2 SFP Gig port, Base
IE-2000-4TS-G-L	IE 4 10/100,2 SFP Gig port, Lite
IE-2000-4S-TS-G-B	IE 2000 with 4-port SFP, 2-port GE SFP uplinks, LAN Base ima
IE-2000-4S-TS-G-L	IE 2000 with 4-port SFP, 2-port GE SFP uplinks, LAN Lite ima
IE-2000-8TC-B	IE 8 10/100,2 FE SFP+2 T/SFP FE, Base
IE-2000-8TC-L	IE 8 10/100,2 FE SFP+2 T/SFP FE, Lite
IE-2000-8TC-G-B	IE 8 10/100,2 T/SFP, Base
IE-2000-8TC-G-L	IE 8 10/100,2 T/SFP, Lite
IE-2000-8TC-G-E	IE 8 10/100,2 T/SFP, Base with 1588
IE-2000-8TC-G-N	IE 8 10/100,2 T/SFP, Base with 1588 & NAT
IE-2000-16TC-B	IE 16 10/100,2 FE SFP+2 T/SFP FE, Base
IE-2000-16TC-L	IE 16 10/100,2 FE SFP+2 T/SFP FE, Lite
IE-2000-16TC-G-E	IE 16 10/100,2 FE SFP+2 T/SFP, Base with 1588
IE-2000-16TC-G-L	IE 16 10/100,2 FE SFP+2 T/SFP, Lite
IE-2000-16TC-G-N	IE 16 10/100,2 FE SFP+2 T/SFP, Base with 1588 & NAT
IE-2000-16TC-G-X	IE 16 10/100,2 FE SFP+2 T/SFP, Base with 1588, Conf. Coat
IE-2000-16PTC-G-E	IE 16 10/100,2 FE SFP+2 T/SFP, with 1588, NAT and PoE
IE-2000-16PTC-G-L	POE on LAN Lite base. GE uplinks
IE-2000-16PTC-G-NX	POE on LAN base with 1588, NAT and Conf. Coat. GE uplinks

<b>IE 2000U</b>	<b>Cisco Industrial Ethernet 2000U Series Switches</b>
IE-2000U-4S-G	IE 2000U 4 SFP FE, 2 SFP GE ports
IE-2000U-4T-G	IE 2000U 4 x 10/100, 2 x 10/100/1000 ports
IE-2000U-4TS-G	IE 2000U 4 x 10/100, 2 SFP GE ports
IE-2000U-8TC-G	IE 2000U 8 x 10/100,2 T/SFP GE ports with 1588
IE-2000U-16TC-G	IE 2000U 16 x 10/100,2 FE SFP,2 T/SFP GE ports with 1588
IE-2000U-16TC-GP	IE 2000U 16 x 10/100,2 T/SFP GE ports with 1588, PoE
IE-2000U-16TC-G-X	IE 2000U 16 x 10/100,2 FE SFP,2 T/SFP GE ports with 1588, C
<b>IE2000 IP67</b>	<b>Cisco Industrial Ethernet 2000 IP67 Series Switch</b>
IE-2000-8T67-B	IP67 IE 8 10/100
IE-2000-8T67P-G-E	IP67 IE 8 10/100 poe, 2 GE, with 1588 & NAT
IE-2000-16T67-B	IP67 IE 16 10/100
IE-2000-16T67P-G-E	IP67 IE 8 10/100, 8 poe, 2 GE, with 1588 & NAT
IE-2000-24T67-B	IP67 IE 24 10/100
<b>CGS 2520</b>	<b>Cisco 2520 Connected Grid Switch</b>
CGS-2520-24TC	Cisco CGS2520 front/rear cabling w/2GE, 24-10/100 copper
CGS-2520-16S-8PC	Cisco CGS2520 front/rear cabling w/2GE, 16-SFP, 8-10/100 PoE
<b>IE3000</b>	<b>Cisco Industrial Ethernet 3000 Series Switches</b>
IE-3000-8TC-E	IE 3000 Base Switch 8-Port 10/100 + 2 T/SFP w/ Layer 3
IE-3000-4TC-E	IE 3000 Base Switch 4-Port 10/100 + 2 T/SFP w/ Layer 3
IE-3000-8TC	IE 3000 Base Switch, 8 ports 10/100 + 2 T/SFP, LAN Base
IE-3000-4TC	IE 3000 Base Switch, 4 ports 10/100 + 2 T/SFP, LAN Base
IEM-3000-8SM=	IE 3000 Expansion module8 port SFP
IEM-3000-8FM=	IE 3000 Expansion Module, 8 100FX
IEM-3000-4PC-4TC=	IE 3000 Expansion Module, 4 POE 10/100 4 non-POE 10/10
IEM-3000-4SM=	IE 3000 Expansion module 4 port SFP
IEM-3000-4PC=	IE 3000 Expansion Module, 4 POE 10/100
IEM-3000-8TM=	IE 3000 Expansion Module, 8 10/100
<b>IE 3010</b>	<b>Cisco Industrial Ethernet 3010 Series Switches Layer 2/Layer 3</b>
IE-3010-16S-8PC	Cisco IE 3010 Switch, 16 SFP, 8 PoE, 2 Combo GE uplinks
IE-3010-24TC	Cisco IE 3010 Switch, 24 Port 10/100, 2 Combo GE uplinks
<b>IE 4000</b>	<b>Cisco Industrial Ethernet 4000 Series Switches</b>
IE-4000-4GC4GP4G-E	IE 4000 4 x combo 1G with 4 x 1G PoE, 4 x 1G Combo, LAN Bas
IE-4000-4GS8GP4G-E	IE 4000 4 x SFP 1G with 8 x 1G PoE, 4 x 1G Combo, LAN Base
IE-4000-4S8P4G-E	IE 4000 4 x SFP 100M with 8 x PoE, 4 x 1G Combo, LAN Base
IE-4000-4T4P4G-E	IE 4000 4 x RJ45 10/100M, 4 x PoE 10/100M, 4 x 1G Combo, LA
IE-4000-4TC4G-E	IE 4000 4 x combo 10/100M, 4 x 1G Combo, LAN Base
IE-4000-8GS4G-E	IE 4000 8 x SFP 1G, 4 x 1G Combo, LAN Base
IE-4000-8GT4G-E	IE 4000 8 x RJ45 10/100/1000, 4 x 1G Combo, LAN Base
IE-4000-8GT8GP4G-E	IE 4000 8 x RJ45 10/100/1000 with 8 x 1G PoE, 4 x 1G Combo,
IE-4000-8S4G-E	IE 4000 8 x SFP 100M, 4 x 1G Combo, LAN Base
IE-4000-8T4G-E	IE 4000 8 x RJ45 10/100M, 4 x 1G Combo, LAN Base
IE-4000-16GT4G-E	IE 4000 16 x RJ45 10/100/1000M, 4 x 1G Combo, LAN Base
IE-4000-16T4G-E	IE 4000 16 x RJ45 10/100/1000M, 4 x 1G Combo, LAN Base
<b>IE 5000</b>	<b>Cisco Industrial Ethernet 5000 Series Switches</b>
IE-5000-12S12P-10G	12 port RJ45 10/10/1000, 12 port 1G SFP, 4 port 1G/10Guplinks

**Table 9.** Industrial Ethernet Switches: Main Certifications and Compliances

Product Family	EMI	EMC	EN 50155	FCC Part 15	IEC 61850	UL	Hazardous Location	Manufacturing	Oil and Gas	Mining (facilities)	Utilities	Traffic Control	Railways	Marine	Public Safety	RoHS	CE Declaration	Service Provider	Australia	China	EU	India	Korea	US
IE 2000	X	X	X	X	X(**)	X	X(*)	X	X	X	X(**)	X	X	X	X	X	X	X	X	X(**)	X	X	X	X
IE2000U	X	X		X	X	X	X(*)	X	X	X	X				X	X	X	X	X	X	X	X	X	X
IE 2000 IP67	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
CGS 2520	X	X	X	X	X	X(***)		X	X	X	X	X			X	X	X	X	X	X	X	X	X	X
IE 3000	X	X	X	X	X	X	X(*)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
IE 3010	X	X	X	X		X		X	X	X		X	X	X	X	X	X		X	X	X	X	X	X
IE4000	X	X	X	X	X	X	X(*)	X	X	X	X	X	X	X	X	X	X	X	X	X(**)	X	X	X	X
IE 5000	X	X	X	X	X	X	X(*)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

(\*): requires cabinet enclosure

(\*\*): subset of PIDs in family

(\*\*\*): CUL

**Table 10.** Industrial Routers: Available Models and Options (Product IDs – Descriptions)

Cisco Connected Grid Router (CGR) 1000	
CGR1120/K9	CGR 1120 w/ 2 module slots,2 GE,2 serial,6 FE LAN,Wi-Fi,GPS
CGR1240/K9	CGR1240 w/ 4 module slots,2 GE,2 serial,4 FE LAN,Wi-Fi,GPS
Cellular Connected Grid Modules for Cisco CGR 1000 Series	
CGM-3G-EVDO-S=	Connected Grid Module - 3G Sprint EV-DO Rev A/0/1xRTT
CGM-3G-EVDO-V=	Connected Grid Module - 3G Verizon EV-DO Rev A/0/1xRTT
CGM-3G-HSPA-A=	Connected Grid Module - 3G AT&T HSPA+/UMTS/GSM/GPRS/EDGE
CGM-3G-HSPA-AB-G=	Connected Grid Module - 3G (All Bands) HSPA+/UMTS/GSM/EDGE
CGM-3G-HSPA-G=	Connected Grid Module - 3G (Global) HSPA+/UMTS/GSM/GPRS/EDGE
Cisco Connected Grid Router (CGR) 2000	
CGR-2010-SEC/K9	Cisco CGR2010 security bundle w/SEC license PAK
CGR-2010/K9	Cisco CGR2010 w/2GE, 4 GRWIC slots, 256MB CF, 1GB DRAM, IPB
Cisco 2010 Connected Grid Router GRWIC Options	
GRWIC-1CE1T1-PRI=	1 port channelized T1/E1 and PRI GRWIC (data only)
GRWIC-2CE1T1-PRI=	2 port channelized T1/E1 and PRI GRWIC (data only)
GRWIC-2SHDSL=	Cisco Connected Grid G.SHDSL GRWIC
GRWIC-4G-LTE-A=	Cisco Connected Grid 2G/3G/4G Multimode LTE GRWIC for ATT
GRWIC-4G-LTE-G=	Cisco Connected Grid 2G/3G/4G Multimode LTE GRWIC - Global
GRWIC-4G-LTE-V=	Cisco Connected Grid 2G/3G/4G Multimode LTE GRWIC for VZW
GRWIC-4T=	4-Port Serial GRWIC
GRWIC-8A/S-232=	8-Port Async/Sync Serial GRWIC, EIA-232
GRWIC-D-ES-2S-8PC=	EtherSwitch 8x 10/100T (4 PoE) ports + 2 100/1000 SFP
GRWIC-D-ES-6S=	EtherSwitch 4 100FX SFP ports + 2 100/1000 SFP
GRWIC-VA-DSL-A=	Cisco Connected Grid VDSL2 and ADSL2/ADSL2+ GRWIC - Annex A
GRWIC-VA-DSL-M=	Cisco Connected Grid VDSL2 and ADSL2/ADSL2+ GRWIC - Annex M
SGRWILK9-15002SE=	Cisco GRWIC ESM IP SERVICES WITH EXPRESS SETUP
SGRWISK9-12258EY=	Cisco GRWIC ESM IP SERVICES
SGRWISK9-15002SE=	Cisco GRWIC ESM IP SERVICES

Cisco 819H 3G M2M GW Series Products	
C819H-K9	C819 M2M Hardened Secure Router with Smart Serial
C819HG+7-K9	C819 Secure Hardened M2M GW (non-US) 3.7G HSPA + R7, SMS/GPS
C819HG-4G-A-K9	C819 Hardened 4G LTE M2M GW for ATT 700 MHz Band 17
C819HG-4G-G-K9	C819 Hardened 4G LTE for Global, 800/900/1800/2100/2600 MHz
C819HG-4G-V-K9	C819 Hardened 4G LTE M2M GW for Verizon 700 MHz Band 13
C819HG-S-K9	C819 Secure Hardened Router, SPRINT EVDO Rev A w/ SMS/GPS
C819HG-U-K9	C819 Secure Hardened M2M GW (non-US) 3.5G HSPA R6 w/ SMS/GPS
C819HG-V-K9	C819 Secure Hardened Router, VERIZON EVDO Rev A w/ SMS/GPS
Cisco 819H 3G M2M GW with WLAN Series Products	
C819HGW+7-A-A-K9	C819 M2M Hardened 3.7G HSPA+ North America w/ Dual Radio FCC
C819HGW+7-E-K9	C819 M2M Hardened 3.7G HSPA+ (non-US) w/ Dual Radio ETSI
C819HGW+7-N-K9	C819 M2M Hardened 3.7G HSPA+ (non-US) w/ Dual Radio WiFi
C819HGW-S-A-K9	C819 M2M Hardened for Sprint EV-DO Rev A w/ Dual Radio FCC
C819HGW-V-A-K9	C819 M2M Hardened for Verizon EV-DO Rev A w/ Dual Radio FCC
C819HWD-A-K9	C819 M2M Hardened with Dual Radio FCC WiFi
C819HWD-C-K9	C819 M2M Hardened with Dual Radio China WiFi
C819HWD-E-K9	C819 M2M Hardened with Dual Radio ETSI WiFi
Cisco Industrial Router (IR) 509 and 529 WPAN	
IR509UWP-915/K9	IR509 915Mhz WPAN router w/ 2 serial,1 FE LAN
IR529UBWP-915D/K9	IR529 915Mhz WPAN IP67 Range Ext. BBU Adv PS Dual antenna
IR529UBWP-915S/K9	IR529 915Mhz WPAN IP67 Range Ext. BBU Adv PS Single antenna
IR529UWP-915D/K9	IR529 915Mhz WPAN IP67 Range Ext. Adv PS Dual antenna
Cisco Industrial Router (IR) 809	
IR809G-LTE-VZ-K9	IR809 Hardened WAN 4G LTE secure platform multi-mode Verizon LTE/DoRa
IR809G-LTE-NA-K9	IR809 Hardened WAN 4G LTE secure platform multi-mode ATT and Canada LTE/HSPA+
IR809G-LTE-GA-K9	IR809 Hardened WAN 4G LTE secure platform multi-mode Global (Europe) LTE/HSPA+
IR809G-LTE-ST-K9	IR809 Hardened WAN 4G LTE secure platform multi-mode Sprint LTE/DoRa
Cisco Industrial Router (IR) 829	
IR829GW-LTE-VZ-AK9	IR829 Hardened WAN GE 4G LTE secure platform multi-mode Verizon LTE/DoRa with 802.11n, PoE, FCC compliant
IR829GW-LTE-NA-AK9	IR829 Hardened WAN GE 4G LTE secure platform multi-mode ATT and Canada LTE/HSPA+ with 802.11n, PoE, FCC compliant
IR829GW-LTE-GA-EK9	IR829 Hardened WAN GE 4G LTE secure platform multi-mode Global (Europe) LTE/HSPA+ with 802.11n, PoE, ETSI Compliant
IR829GW-LTE-GA-ZK9	IR829 Hardened WAN GE 4G LTE secure platform multi-mode Global (Australia) LTE/HSPA+ with 802.11n, PoE, Australia Compliant
IR829GW-LTE-ST-AK9	IR829 Hardened WAN GE 4G LTE secure platform multi-mode Sprint LTE/DoRa with 802.11n, PoE, FCC compliant
Cisco Industrial Router (IR) 910	
ACC-IR910-H-M=	Cisco IR910 IP55 Enclosure
ACC-IR910-W-M=	Cisco IR910 Sensor Module Mount Kit
IR910G-NA-K9	Cisco IR910 3G Sku for North America
Cisco ASR 903 Systems	
ASR-903	ASR 903 Series Router Chassis
A903-FAN=	ASR 903 FAN Tray, Spare
A903-RCKMNT-19IN=	ASR 903 EIA /JIS 19in Rack Mount Kit, Spare
A903-RCKMNT-ETSI=	ETSI Rack mount Option for the Cisco ASR 903, Spare

Cisco ASR 900 Common Equipment	
A900-PWR550-A=	ASR 900 550W AC Power Supply, Spare
A900-PWR550-D-E=	ASR 900 550W Enhanced DC Power Supply, Spare
Cisco ASR 900 Route Switch Processor	
A900-RSP2A-128=	ASR 900 Route Switch Processor 2 - 128G, Base Scale, Spare
A900-RSP2A-64=	ASR 900 Route Switch Processor 2 - 64G, Base Scale, Spare
A903-RSP1A-55=	ASR 903 Route Switch Processor 1, Base Scale, Spare
A903-RSP1B-55=	ASR 903 Route Switch Processor 1, Large Scale, Spare
Cisco ASR 900 Interface Modules	
A900-IMA16D=	ASR 900 16 port T1/E1 Interface Module, Spare
A900-IMA1X=	ASR 900 1 port 10GE XFP Interface Module, Spare
A900-IMA2Z=	ASR 900 2 port 10GE SFP+/XFP Interface Module, Spare
A900-IMA4OS=	ASR 900 4 OC3/STM1 or 1 OC12/STM4 Interface Module, Spare
A900-IMA8S1Z=	ASR 900 Combo 8 port SFP GE and 1 port 10GE IM, Spare
A900-IMA8S=	ASR 900 8 port SFP Gigabit Ethernet Interface Module, Spare
A900-IMA8T1Z=	ASR 900 Combo 8 port 10/100/1000 and 1 port 10GE IM, Spare
A900-IMA8T=	ASR 900 8 port 10/100/1000 Ethernet Interface Module, Spare
A900-IMASER14A/S=	ASR 900 14 port Sync/Async Interface Module, Spare

**Table 11.** Industrial Routers: Main Certifications and Compliances

Product Family	EMI	EMC	EN 50155	FCC Part 15	IEC 61850	UL	Hazardous Location	Manufacturing	Oil and Gas	Mining (facilities)	Utilities	Traffic Control	Railways	Marine	Public Safety	RoHS	CE Declaration	Service Provider	Australia	China	EU	India	Korea	US
CGR 1000	X	X		X	X	X(***)	X(*)	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X
CGR 2000	X	X		X	X	X(***)	X(*)	X	X	X	X	X			X	X	X	X	X		X	X	X	X
IR 509	X	X		X	X	X	X(*)				X					X	X	X	X	X				X
ISR 819H	X	X	X	X		X		X	X	X			X		X	X	X	X	X	X	X	X	X	X
IR 809	X	X	X	X	X	X	X(*)	X	X	X	X	X	X	X	X	X	X	X	X		X			X
IR 829	X	X	X	X	X	X	X(*)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
IR 910	X	X		X		X									X	X	X	X		X	X	X		X
ASR 903	X	X		X	X	X		X	X	X	X				X	X	X	X	X	X	X	X	X	X

(\*): requires cabinet enclosure

(\*\*): CUL

**Table 12.** Industrial Wireless: Available Models and Options (Product IDs – Descriptions)

Cisco Industrial Wireless IW3700 Series Access Points	
IW3702-2E-UXX9	2 antenna connectors on top and bottom for pole or wall mounting with direct attach antennas
IW3702-4E-UXX9	4 antenna connectors on one side for convenience in cabinet mount cabled scenarios
Cisco Aironet 1530 Series Outdoor Access Points	
AIR-CAP1532E-x-K9	802.11n Low-Profile Outdoor AP, External Ant., x Reg Dom.
AIR-CAP1532I-x-K9	802.11n Low-Profile Outdoor AP, Internal Ant., x Reg Dom.
Cisco Aironet 1550 Series Outdoor Access Point	
AIR-CAP1552C-x-K9	802.11N Outdoor Mesh Access Point, Cable Modem, Internal Antenna
AIR-CAP1552C-x-K9G	802.11N Outdoor Mesh Access Point, Cable Modem, Internal Ant., w/ GPS
AIR-CAP1552CU-x-K9	802.11N Outdoor Mesh Access Point, Cable Modem, Single band Ext. Antenna
AIR-CAP1552CU-xK9G	802.11N Outdoor Mesh Access Point, Cable Modem, Single band Ext. Ant., w/ GPS
AIR-CAP1552E-x-K9	802.11N Outdoor Mesh Access Point, Dual band Ext. Antenna
AIR-CAP1552E-x-K9G	802.11N Outdoor Mesh Access Point, Dual band Ext. Ant., w/ GPS
AIR-CAP1552EU-x-K9	802.11N Outdoor Mesh Access Point, Single Band Ext. Antenna
AIR-CAP1552EU-xK9G	802.11N Outdoor Mesh Access Point, Single Band Ext. Ant., w/ GPS
AIR-CAP1552H-x-K9	802.11N Outdoor Mesh Access Point, Hazardous Locations
AIR-CAP1552I-x-K9	802.11N Outdoor Mesh Access Point, Dual band, Internal Antenna
AIR-CAP1552SA-x-K9	802.11n Outdoor Access Point w/ISA100 Gateway, AC
AIR-CAP1552SD-x-K9	802.11n Outdoor Access Point w/ISA100 Gateway, DC
AIR-CAP1552WU-x-K10	802.11n Outdoor Access Point w/WiHartGateway, DC
Cisco Aironet 1570 Series Outdoor Access Point	
AIR-AP1572EAC-x-K9	AP 1572EAC, E: External Antennas, AC: AC power
AIR-AP1572EC1-x-K9	AP 1572EC1, E: External Antennas, C1: Cable Backhaul; NA-DOCSIS 42/88 MHz
AIR-AP1572EC2-x-K9	AP 1572EC2, E: External Antennas, C2: Cable Backhaul; NA-DOCSIS 85/108 MHz
AIR-AP1572EC3-x-K9	AP 1572EC3, E: External Antennas, C3: Cable Backhaul; Euro-DOCSIS 65/108 MHz
AIR-AP1572EC4-x-K9	AP 1572EC4, E: External Antennas, C4: Cable Backhaul; Japan-DOCSIS 65/108 MHz
AIR-AP1572IC1-x-K9	AP 1572IC1, I: Internal Antennas, C1: Cable Backhaul; NA-DOCSIS 42/88 MHz
AIR-AP1572IC2-x-K9	AP 1572IC2, I: Internal Antennas, C2: Cable Backhaul; NA-DOCSIS 85/108 MHz
AIR-AP1572IC3-x-K9	AP 1572IC3, I: Internal Antennas, C3: Cable Backhaul; Euro-DOCSIS 65/108 MHz
AIR-AP1572IC4-x-K9	AP 1572IC4, I: Internal Antennas, C4: Cable Backhaul; Japan-DOCSIS 65/108 MHz

**Table 13.** Industrial Wireless: Main Certifications and Compliances

Product Family	EMI	EMC	EN 50155	FCC Part 15	UL 60950	Hazardous Location	Manufacturing	Oil and Gas	Mining (facilities)	Utilities	Traffic Control	Railways	Public Safety	RoHS	CE Declaration	Service Provider	Australia	China	EU	India	Korea	US
IW 3700	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Aironet 1530	X	X		X	X		X						X	X	X	X	X		X		X	X
Aironet 1550	X	X		X	X	X(*)	X	X	X	X				X	X	X	X	X	X	X	X	X
Aironet 1570	X	X		X	X		X		X		X		X	X	X	X	X	X	X	X	X	X

(\*) subset of PIDs in family



**Table 14.** Embedded Networks: Available Models and Options (Product IDs – Descriptions)

Cisco Embedded Service 2020 Series Switches	
ESS-2020-16TC-NCP	Embedded Service 2020 Switch, Expansion board, No cooling plate
ESS-2020-16TC-CON	Embedded Service 2020 Switch, Expansion board, Conduction cooled
ESS-2020-NCP	Embedded Service 2020 Switch, Main board, No cooling plate, LAN Lite software
ESS-2020-CON	Embedded Service 2020 Switch, Main board, Conduction cooled, LAN Lite software
ESS-2020-NCP-B	Embedded Service 2020 Switch, Main board, No cooling plate, LAN Base software
ESS-2020-CON-B	Embedded Service 2020 Switch, Main board, Conduction cooled, LAN Base software
Cisco 5915/Cisco 5940 Embedded Services Router Series	
CISCO5915RA-K9	Cisco 5915 ESR - PC104, Rugged, Air-cooled
CISCO5915RC-K9	Cisco 5915 ESR - PC104, Rugged, Conduction-cooled
CISCO5940RA-K9	Cisco 5940 - cPCI, 3U, Rugged, Air-cooled/AES
CISCO5940RC-K9	Cisco 5940 - cPCI, 3U, Rugged, Conduction-cooled/AES
CISCO5940-RTM	Cisco 5940 - cPCI, 3U, Rear Transition Module
Cisco 5921 Embedded Services Router	
CISCO5921-K9	Cisco 5921 Embedded Services Router SW for x86 processor

## Security

### Cyber Security

ISA-3000-2C2F-K9=	Cisco Industrial Ethernet 2000U Series Switches
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**Table 15.** IP Cameras: Available Models and Options (Product IDs – Descriptions)

Cisco IP Camera	
CIVS-IPC-2830	Cisco Video Surveillance SD Outdoor IP PTZ Camera, NTSC
CIVS-IPC-2835	Cisco Video Surveillance SD Outdoor IP PTZ Camera, PAL
CIVS-IPC-3520	Cisco Video Surveillance IP Dome Body, Indoor, 1MP DN, IO
CIVS-IPC-3535	Cisco Video Surveillance IP Dome Body, Outdoor, 1.3MP DN, IO
CIVS-IPC-6000P	HD Box IP Camera, 1080P, P-Iris
CIVS-IPC-6020	Cisco Video Surveillance IP Camera, Indoor HD Dome Body
CIVS-IPC-6030	Cisco Video Surveillance IP Camera, Outdoor VR HD Dome Body
CIVS-IPC-6050	Cisco Video Surveillance IP Camera, Outdoor, Ruggedized, M12
CIVS-IPC-6400E	Cisco Video Surveillance IP Camera, HD Bullet Camera, VR, IR
CIVS-IPC-6500PD	HD Box IP Camera, 1080P, P-Iris, DSP
CIVS-IPC-6930	Cisco Video Surveillance HD Outdoor IP PTZ Camera
CIVS-IPC-7030	Cisco Video Surveillance 5MP IP Outdoor Dome Camera
CIVS-IPC-7030E	Cisco Video Surveillance 5MP IP Outdoor Dome Camera, IR
CIVS-IPC-7530PD	Cisco Video Surveillance 5MP IP Outdoor Dome Camera, DSP, IR
CIVS-IPC-7070	Cisco Video Surveillance IP Camera 5MP IP 360° Outdoor Dome Camera
CIVS-IPC-3050	Cisco Video Surveillance IP Dome Transportation
CIVS-SENC-4P	Video Encoder, 4-port, Standalone
CIVS-SENC-8P	Video Encoder, 8-port, Standalone

**Table 16.** Video Surveillance Manager: Available Models and Options (Product IDs – Descriptions)

Cisco Video Surveillance Manager	
FL-CPS-MS-SW7	License for One Media Server
FL-CPS-OM-SW7	License for One Operations Manager
L-CPS-MS-SW7=	eDelivery License for One Media Server
L-CPS-OM-SW7=	eDelivery License for One Operations Manager
L-CPS-SASD-7=	eDelivery License for 1 Safety and Security Desktop with VSM7
L-CPS-VSM7-1CAM=	eDelivery License for 1 Camera Connection with VSM7
L-CPS-VSMS7-B-VM=	eDelivery License for one Media Server on B-Series
L-CPS-VSMS7-C-VM=	eDelivery License for one Media Server on C-Series
L-CPS-VSMS7-E-VM=	eDelivery License for one Media Server on E-Series
L-CPS-VSOM7-B-VM=	eDelivery License for one Operations Manager on B-Series
L-CPS-VSOM7-C-VM=	eDelivery License for one Operations Manager on C-Series
L-CPS-VSOM7-E-VM=	eDelivery License for one Operations Manager on E-Series
L-CPS-VSMX7=	eDelivery License for Video Surveillance Manager Express limited to 32 cameras
L-CPS-VSMX7-UPG=	eDelivery License to upgrade from VSM Express to VSM
L-CPS-VSM7-FD=	eDelivery License for base Federator, purchased for each Federator installed
L-CPS-FD-VSOM=	eDelivery License for one VSOM in Federator
L-CPS-FD-VSOM-X=	eDelivery License for one VSOM Express in Federator

**Table 17.** Physical Access Manager: Available Models and Options (Product IDs – Descriptions)

Cisco Physical Access Manager	
Hardware Appliance	
CPS-MSP-1RU-K9	Cisco Multiservices Platform Server, 1-RU MSP assembly
CIVS-HDD-1000	1 TB SATA drive for CIVS-MSP
CIVS-CAB-16-CE	CIVS C16 power cable for Europe (CE)
CIVS-CAB-16-CI	CIVS C16 power cable for Italy (CI)
CIVS-CAB-16-CU	CIVS C16 power cable for UK (CU)
CIVS-CAB-16-AC	CIVS C16 power cable for North America (AC)
CIAC-PAME-M1X-K9	Cisco Physical Access Manager Software
Virtual Appliance	
R-CIAC-PAME-VM-K9=	Downloadable OVF virtual appliance in the form of a single file with the extension .OVA
Spare PIDs	
Via Physical Delivery	
CIAC-PAME-BD=	Cisco Physical Access Manager Badge Designer and Enroller
CIAC-PAME-HA=	Cisco Physical Access Manager High-Availability License
CIAC-PAME-M64=	Cisco Physical Access Manager 64-Module Capacity Upgrade License
CIAC-PAME-M128=	Cisco Physical Access Manager 128-Module Capacity Upgrade License
CIAC-PAME-M512=	Cisco Physical Access Manager 512-Module Capacity Upgrade License
CIAC-PAME-M1024=	Cisco Physical Access Manager 1024-Module Capacity Upgrade License
CIAC-PAME-EDI=	Cisco Physical Access Manager Enterprise Data Integration License
CIAC-PAME-WSAPI=	Cisco Physical Access Manager Web Services API License

## Cisco Physical Access Manager

### Via E-Delivery

L-CIAC-PAME-BD=	Cisco Physical Access Manager Badge Designer and Enroller
L-CIAC-PAME-HA=	Cisco Physical Access Manager High-Availability License
L-CIAC-PAME-M64=	Cisco Physical Access Manager 64-Module Capacity Upgrade License
L-CIAC-PAME-M128=	Cisco Physical Access Manager 128-Module Capacity Upgrade License
L-CIAC-PAME-M512=	Cisco Physical Access Manager 512-Module Capacity Upgrade License
L-CIAC-PAME-M1024=	Cisco Physical Access Manager 1024-Module Capacity Upgrade License
L-CIAC-PAME-EDI=	Cisco Physical Access Manager Enterprise Data Integration License
L-CIAC-PAM-WSAPI=	Cisco Physical Access Manager Web Services API License

For more information, visit: <http://iwe.cisco.com/web/internet-of-things/iot-system>.





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