Cisco Catalyst IR1101 Rugged Series Router

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Easily scale connectivity to remote industrial assets with this highly modular 5G router—which also gives you advanced security capabilities. The Cisco® Catalyst IR1101 Rugged Series Router or IR1101, is Cisco's most flexible, FirstNet Capable™ industrial router. Designed in a highly modular form factor makes it an ideal solution for remote asset management across multiple industrial vertical markets.

The IR1101 has an integrated 9.6 to 60V DC power input and is designed to withstand hostile environments, including shock, vibration, dust, humidity and Electrostatic Discharge (ESD). The IR1101 also supports a wide temperature range: –40 to 60°C standard operation, –40 to 75°C in a forced air enclosure with 200 LFM of air, and type-tested at 85°C for 16 hours. This durability makes it ideal for harsh industrial and distributed IoT deployments such as transportation, oil and gas, distribution substations, industrial automation, and financial institutions.

Product highlights

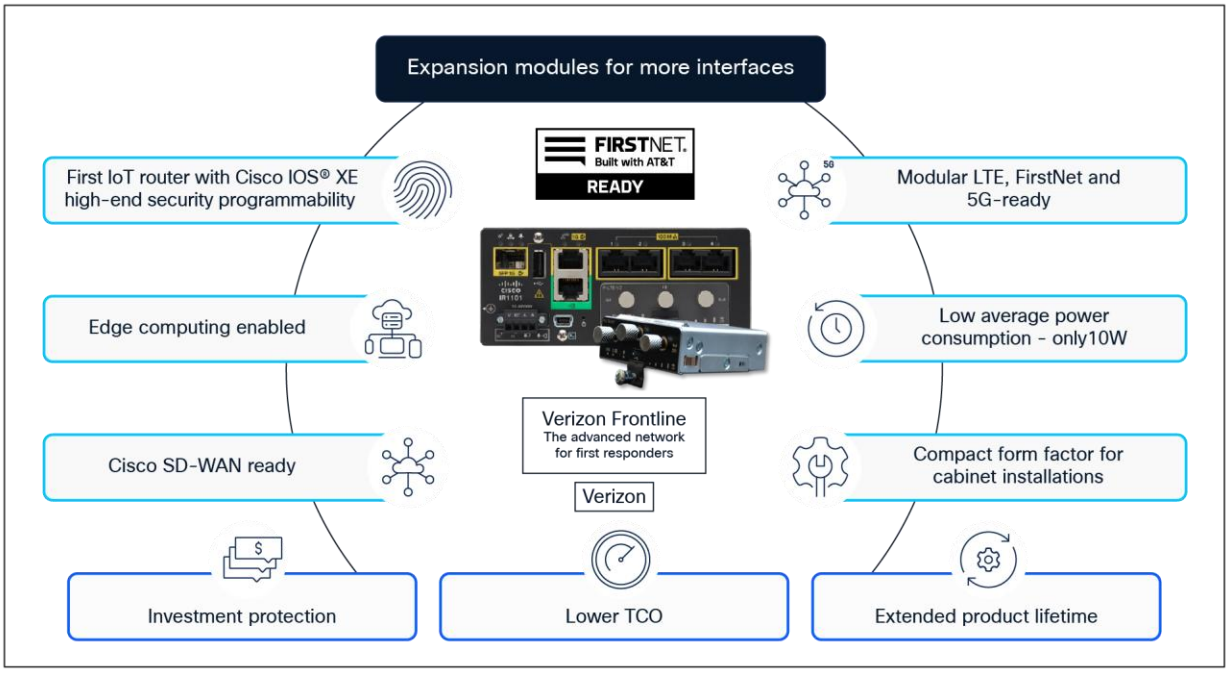


Figure 1.
Product highlights

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Figures 2, 3, and 4 offer visual views of product components and expansion modules.

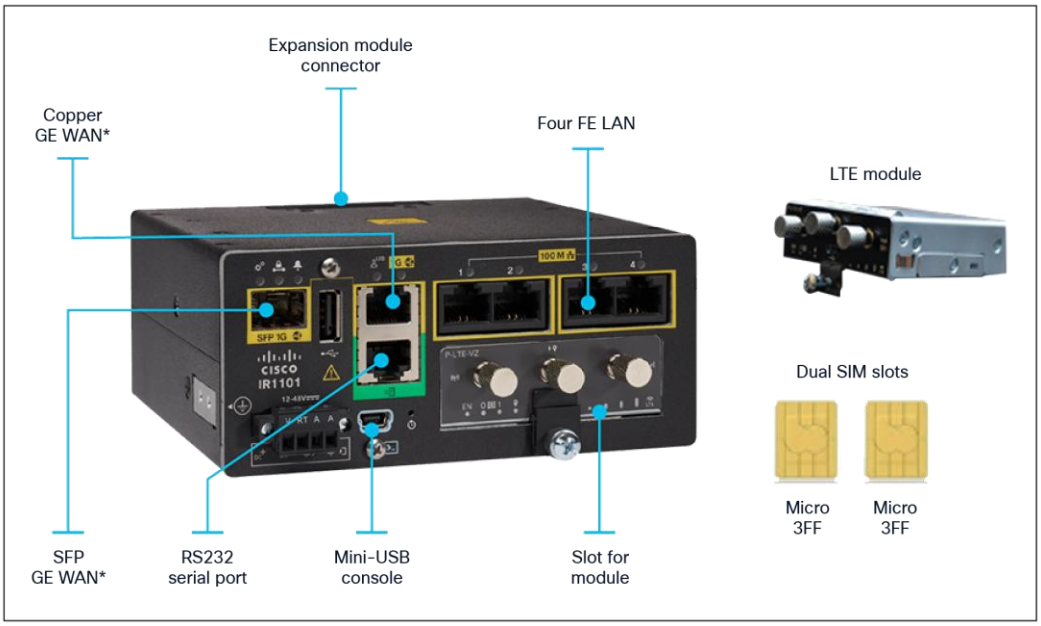


Figure 2.
Cisco IR1101 base platform front view

The IR1101 offers even more flexibility to add or upgrade WAN and storage components through an expansion module.

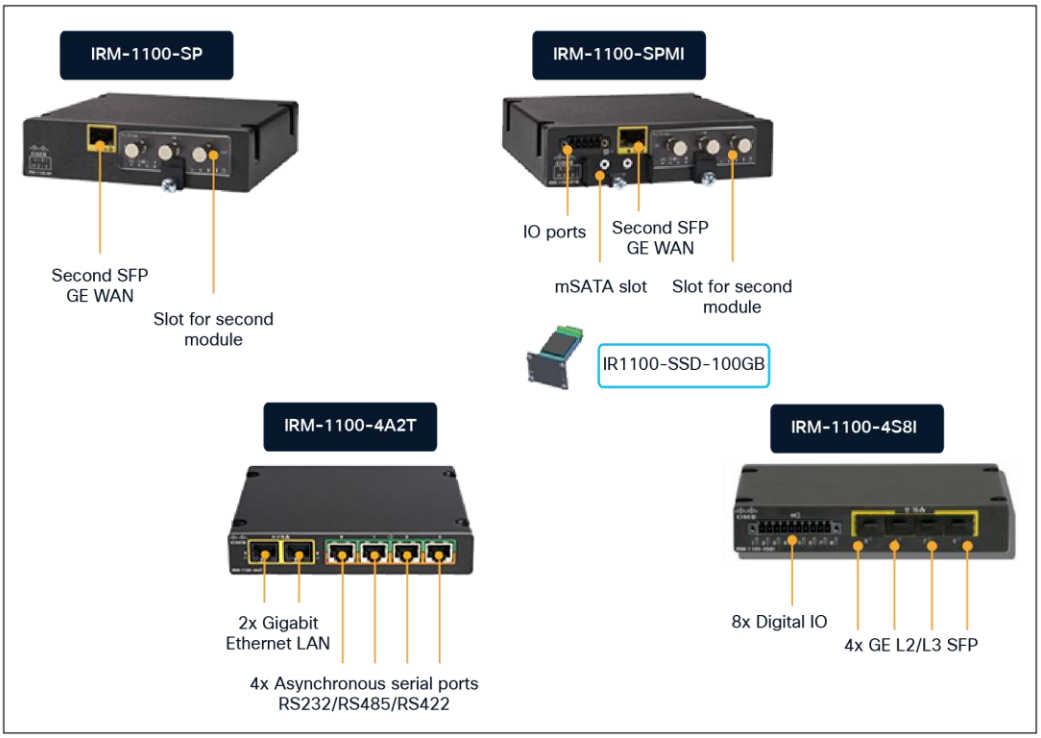


Figure 3.
Expansion Modules

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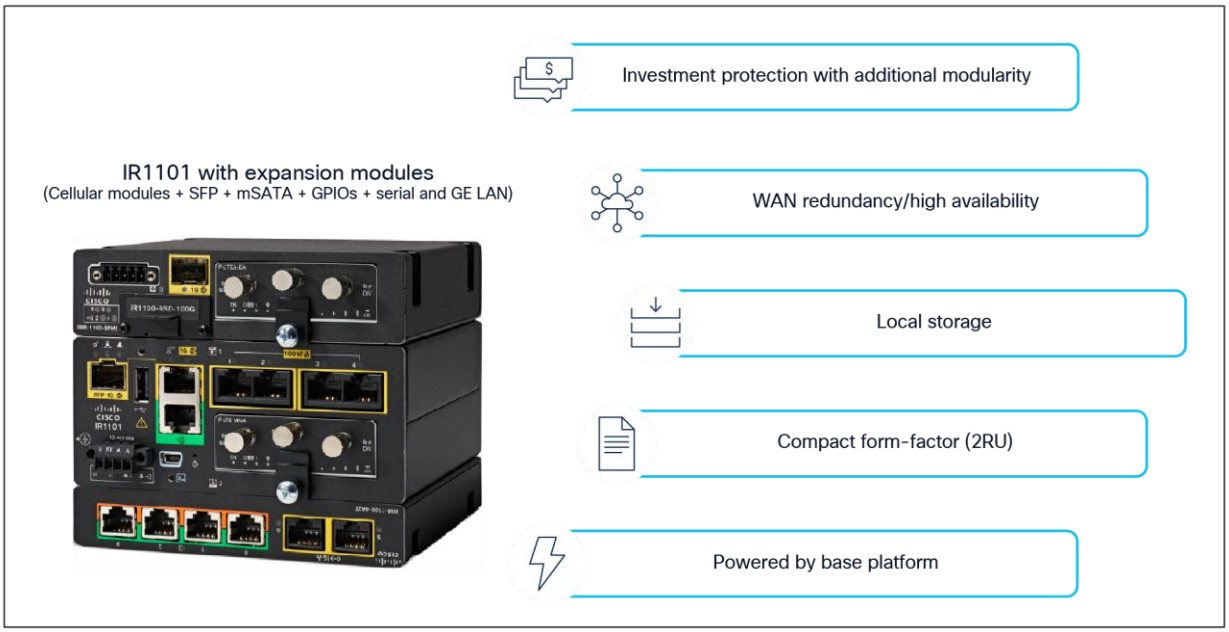


Figure 4.
IR1101 with expansion module offering more flexibility

Product overview

The Cisco Catalyst IR1101 Rugged Series Router offers a broad range of features for the Internet of Things (IoT).

Table 1. Key features and benefits

Feature	Benefit
	Modularity and investment protection. A single form factor with multiple WAN (LTE, LTE Advanced, 5G, 5G RedCap, SFP, Ethernet) and storage options enable flexibility to add or upgrade modules as technologies evolve.
	Dual active LTE-capable With two cellular modules (LTE or 5G with carrier aggregation), the IR1101 enables concurrent connectivity to two cellular networks for WAN redundancy, enhanced data throughputs, load balancing, and differentiated services, making it a highly reliable and high-performance platform.
	Cisco IOS XE Software. IOS XE is a highly secure, standards-based and flexible operating system for a new era of IoT deployment. It's an enterprise-class OS with advanced routing and security.
	Software Defined WAN (SDWAN) capable. For high WAN availability and simplicity for large-scale distributed networks.

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Feature	Benefit
	**Industrial security**. With Cisco Trust Anchor Technology ensuring authenticity of hardware and software, hardware-accelerated Next Generation Encryption and Quantum Computer Resistant algorithms, firewall and VPN services, and alerts and notifications enabling physical and cyber security, the IR1101 offers a multi-layer security for mission-critical deployments.
	**Edge computing**. Speed up awareness and response to events and conserve network bandwidth by analyzing the most time-sensitive data at the network edge, close to where it is generated. A highly secure, extensible environment for hosting applications ensures authenticity of applications. An optional mSATA SSD field-replaceable unit on the expansion module enables storage of application data for recording and analysis.
	**Supervisory Control and Data Acquisition (SCADA).** Supports migration of data from legacy control systems in an industrial environment to an IP-based network using DNP3 serial-to-DNP3/IP and IEC 60870 T101-to-T104 protocol translations.
	**Smart grid-compliant.** Designed for installation in harsh secondary substation environments. Complies with IEEE 1613 and IEC 61850-3 for distribution automation.
	**GPS**. Location-based services for tracking assets and protecting from theft and intrusion.
	**Ease of management**. On-premises and cloud-based network management solutions cater to businesses across multiple industry verticals. Tools such as Cisco Catalyst SD-WAN, Cisco Catalyst Center, Cisco IoT Field Network Director (FND), simplify deployment and offer the breadth of cross-network management and the depth of multi-layer visibility.
	**Multiple Packet Data Network (PDN)**. Gain connectivity to different Access Point Names (APNs) for traffic segregation over a cellular link. For example, public Internet traffic can be kept separate from mission-critical traffic emerging from the sensors and devices connected to the router.
	**4G LTE/5G multiple-bearer QoS**. Differentiated treatment of traffic with multiple simultaneous bearers as per 3GPP standards for an enhanced user experience. Multi-bearer QoS depends on the cellular carrier's ability to support the service in their network.
	**Network Segmentation**. Multi-VRF, VLAN, and VPN enable businesses to configure and maintain more than one instance of a routing and forwarding table within the same customer edge device, enabling dynamic changes in the network with a minimal maintenance window. Service providers can enable this feature to support two or more VPNs with IP addresses that overlap across the VPNs.

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Business benefits and application examples

Industrial customers are looking for real-time monitoring and control of industrial assets to help increase operation efficiency.

Utilities

Utilities are seeking the capability to monitor tens of thousands of miles of electric distribution lines or water infrastructure often located in harsh environments over cellular networks to provide remote assets monitoring and reliable and secure SCADA traffic backhauling. In many cases, these are power constrained and space-constrained environments. Devices that enable this connectivity need to be highly reliable and able to be remotely monitored and configured. They also need to support traditional serial interfaces to interconnect with existing monitoring devices and fiber overlay for long-distance, intranetwork connectivity. Needless to say, the device is expected to have a long lifetime to support such a massive scale of deployment.

Oil and gas

Oil and gas companies need to monitor pipeline infrastructure across wide geographic areas and remote locations using 4G LTE and 5G cellular networks to collect data from remote terminal units and securely transport SCADA traffic to a Network Operations Center (NOC).

Transportation

Highways and transportation agencies require reliable, always-on communication between speed cameras, monitoring cameras, ticket terminals, and so on. Wireless devices to support such continuous communication need to support 4G LTE and 5G networks to help ensure good, wide coverage; continuous operation in very harsh environments; compact form factor for deployment in roadside cabinets and ticketing machines; local decision-making for a rapid response time; and serial interfaces to existing traditional devices.

Additional features and benefits

Table 2. Additional features and benefits of the Cisco IR1101

Features	Benefits
IoT enablement	
Lightweight, compact, modular, and ruggedized form factor	Designed for tight installation inside cabinets. All the Input/Output (I/O) ports and connectors are located on the front panel for easy wiring inside cabinets.
No additional power supply for the expansion module	Easily add an expansion module without requiring an additional power input.
Raw socket transport and SCADA	The raw socket can be used to transport SCADA data from RTUs. This method is an alternative to the Block Serial Tunnel (BSTUN) protocol. The Cisco IR1101 also supports DNP3 serial-to-DNP3/IP and IEC 60870 T101-to-IEC 60870 T104 protocol translations, serving as a SCADA gateway.
Multiple mounting options	Surface and DIN rail mounting in horizontal or vertical orientations.
Increased performance to run concurrent services	The multi-core processor architecture allows businesses to take advantage of network-supported speeds.

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Features	Benefits
Multiple WAN and LAN connections	
Four fast Ethernet interfaces	• Allows multiple Ethernet devices (sensors, Remote Terminal Unit [RTU], PLCs) in an industrial environment to connect for visibility and management of assets • IEEE 802.1Q VLANs • Layer 3 support through VLAN interfaces • 4KV isolation for Electrostatic Discharge (ESD) protection
WAN diversity	• Multiple WAN links for high reliability: Gigabit Ethernet layer 3 SFP (copper and fiber) and 4G LTE/5G provides WAN diversity and business continuity • Gigabit Ethernet WAN interface can be configured for layer 3 routing or layer 2 switching
Dual active LTE interfaces	Concurrent connectivity to two cellular networks for high reliability, load balancing, and differentiated services.
Serial interface	A RS-232 asynchronous serial interface (RJ45 DTE) can be used with raw socket, protocol translation, and connections to locate Remote Terminal Unit (RTU), sensors, and PLCs for SCADA transport and management.
Transparent roaming between wireless networks	
Dual Subscriber-Identity-Module (SIM) over cellular	Provides active and backup connectivity for high reliability over LTE and HSPA networks.
Cisco IOS® mobile IP	• Transparent roaming for mobile networks, enabling mission-critical applications to stay connected, even when moving between networks • The assigned IP addresses to the home network are maintained in private and public networks • Supports Proxy Mobile IP (PMIPv6) and Network Mobility (NEMO)
Cellular fallback	Multiple technologies (5G, 4G LTE, 3G, and 2G) are available to support connectivity to the best one available. 2G fallback is not supported in North America.
Software	
Cisco IOS XE	Designed to enable businesses to deploy services more quickly with lower TCO and complexity. • Openness and programmability: Standards-based programmable interfaces enable process and workflow automation. NETCONF, RESTCONF, IETF YANG, Python scripting, and custom libraries enable automation of event-based workflows • Modular: Enables patching of software bug fixes and graceful insertion and removal of software modules for ease of maintenance • Common software stack: Reduces business and network complexity while managing an array of Cisco devices

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Table 3. Network management solutions

Operational phase	Application	Description
Device staging and configuration for a few routers	Cisco WebUI	• A GUI-based device-management tool that simplifies provisioning of devices for a small-scale deployment through easy-to-use wizards.
Deploy, manage, monitor, and maintain IoT routers and assets at scale	Cisco IoT Field Network Director (FND) for hosting on premises	• Rapid scaling - zero-touch deployment and secure enrollment for tens of thousands of gateways • Enhanced security – role-based access and user audit trail and secure communications for data transport across networks, VPN tunnels, geo-fencing, alerts, and notifications for data and physical security • Increased reliability – reliable communications over cellular or Ethernet networks, lifecycle management, and 24/7 real-time monitoring and alerts
Extend your enterprise network to configure, monitor, and manage industrial assets	Cisco Catalyst Center or Cisco Catalyst SD-WAN Manager	• Cisco Catalyst Center offers a network infrastructure that is not only fully programmable and open to third-party innovation, but can also fully and seamlessly integrate the cloud as an infrastructure component • Simplifies and automates processes and workflow by bringing the notion of user-aware and application-aware policies into the foreground of network operations • With Cisco Catalyst Center, the network can provide continuous feedback to simplify and optimize network operations • Single management dashboard for configuration and management of WAN, that includes advanced security capabilities. • Cisco SD-WAN automates application flexibility over multiple connections, such as the Internet, MPLS, and wireless 4G LTE/5G

Table 4. Embedded management capabilities

Feature	Description
Cisco IOS Embedded Event Manager (EEM)	A distributed and customized approach to event detection and recovery. Provides the ability to monitor events and take corrective or any other desired action when the monitored events, such as a high or low threshold, occur.
Cisco IOS XE IP Service-Level Agreements (IP SLA)	Helps assure the performance of new, business-critical IP applications as well as IP services by actively monitoring and reliably reporting traffic statistics such as jitter, response time, packet loss, and connectivity.
Simple Network Management Protocol (SNMP), Syslog, NetFlow	Open-standards-based network monitoring and accounting tools, such as SNMP for 3G, 4G and, provide a common management platform for many different devices.
LTE network management and diagnostics	A dedicated diagnostic port on a cellular module enables logging of data during debugging sessions that can be analyzed by industry-standard tools such as Qualcomm CDMA Air Interface Tester (CAIT) and Spirent Universal Diagnostic Monitor (UDM).

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Product specifications

Table 5. Cisco IOS XE Software Features on the IR1101

Feature	Description
Cisco IOS Software requirements	• Cisco IOS XE Software: Universal Cisco IOS Software image • Cisco IOS XE Software Release 16.10.1 or later
IPv4 and IPv6 services features	• Routing Information Protocol Versions 1 and 2 (RIPv1 and RIPv2) • Generic Routing Encapsulation (GRE) and Multipoint GRE (MGRE) • Standard 802.1d Spanning Tree Protocol (STP) • Network Address Translation (NAT) • Dynamic Host Configuration Protocol (DHCP) server, relay, and client • Dynamic DNS (DDNS) • DNS proxy • DNS spoofing • Access Control Lists (ACLs) • IPv4 and IPv6 multicast • IP Service-Level Agreement (IP SLA) • Open Shortest Path First (OSPFv2 and OSPFv3) • Border Gateway Protocol (BGP) • Enhanced Interior Gateway Routing Protocol (EIGRP) • Virtual Route Forwarding (VRF) Lite • Next-Hop Resolution Protocol (NHRP) • Serial data encapsulation and relay • L2TPv3 over sub-interfaces and VLAN
Security features	**Secure connectivity** • Secure Sockets Layer (SSL) VPN for secure remote access • Hardware-accelerated encryption with minimal impact to system performance • Next Generation Encryption (NGE) and Quantum Computing Resistant (QCR) algorithms such as AES-256, SHA-384, SHA-512, and ML-KEM • Public-Key-Infrastructure (PKI) support • IPsec tunnels • NAT transparency • Dynamic Multipoint VPN (DMVPN) • Tunnel-less Group Encrypted Transport VPN • Flex VPN • IPsec stateful failover • VRF-aware IPsec • IPsec over IPv6 **Cisco IOS-XE Application Aware Firewall**

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Feature	Description
	• Zone-based policy firewall • VRF-aware stateful inspection routing firewall • Stateful inspection transparent firewall • Advanced application inspection and control • Secure HTTP (HTTPS), FTP, and Telnet Authentication Proxy • Dynamic and static port security • Firewall stateful failover • VRF-aware firewall • Integrated Threat Control • Control-Plane Policing (CoPP) • Flexible packet matching • Network foundation protection
QoS features	• Provides LTE QoS with support for up to 8 concurrent bearers on each cellular WAN interface for traffic classification and prioritization • Provides traffic precedence to delay-sensitive and mission-critical services • Facilitates low-latency routing of delay-sensitive industrial applications • Supported on all LAN and WAN interfaces, including cellular • Low Latency Queuing (LLQ) • Weighted Fair Queuing (WFQ) • Class-Based WFQ (CBWFQ) • Class-Based Traffic Shaping (CBTS) • Class-Based Traffic Policing (CBTP) • Policy-Based Routing (PBR) • Class-Based QoS MIB • Class of Service (CoS) to Differentiated Services Code Point (DSCP) mapping • Class-Based Weighted Random Early Detection (CBWRED) • Resource Reservation Protocol (RSVP) • Real-Time Transport Protocol (RTP) header compression (cRTP) • Differentiated Services (DiffServ) • QoS pre-classify and pre-fragmentation • Hierarchical QoS (HQoS)

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Feature	Description
High-availability features	• Dual active LTE backhaul with expansion module • Virtual Router Redundancy Protocol (VRRP) (RFC 2338) • Hot Standby Router Protocol (HSRP) • Dual SIM support on the LTE module for cellular failover
IPv6 features	• IPv6 addressing architecture • IPv6 unicast and multicast forwarding • IPv6 ACLs • IPv6 over cellular • IPv6 routing • IPv6 domain name resolution

Software licensing

The IR1101 offers two software tiers - network Essential and Network Advantage. The Network Essential license offers the essential elements of routing and security necessary for typical IoT deployments. The Network Advantage license enables advanced features, including Multiprotocol Label Switching (MPLS) for a highly scalable and cost-effective solution; mobile IP for seamless migration between networks; and application-aware QoS policies for built-in intelligence. The Network Advantage license also entitles users to Cisco Edge Intelligence, starting in EI Release 2.0.

A single Cisco IOS XE universal image encompassing all functions gets delivered with the product. Software feature licenses are pre-installed in the factory depending on the selection made at the time of purchase, thereby simplifying software delivery and decreasing operational costs of the deployment.

Licenses can be upgraded after deployment by going through the Cisco Smart License activation process. For a more detailed overview on Cisco Licensing, visit the Licensing Hub.

For more information on the feature differences between Network Essentials and Network Advantage, go to: https://www.cisco.com/c/dam/m/en_us/products/software/ir-network-licensing-feature-matrix.pdf

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Table 6. System specifications for Cisco Catalyst IR1101 Rugged Series Router

Feature	Specification
Physical characteristics	
Ingress protection rating	IP30
Physical dimensions (H x W x D) **Chassis** **Expansion Module (IRM-1100-SP or IRM-1100-SPMI)** **Expansion Module (IRM-1100-4A2T or IRM-1100-4S-8I)**	2.36 in. x 5.22 in. x 4.92 in. (60 x 132.5 x 124.9 mm) 1.3 in. x 5.2 in. x 4.9 in. (33 x 132 x 124 mm) 0.9 in. x 5.2 in. x 4.9 in. (23 x 132 x 124 mm)
Weight **Chassis** **Expansion Module** **IRM-1100-SPMI:** **IRM-1100-SP:** **IRM-1100-4A2T or IRM-1100-4S8I:**	2.25 lbs (1.02 kg) 1.65 lbs (0.75 kg) 1.45 lbs (0.66 kg) 0.94 lbs (0.43 kg)
Mounting options	Panel, wall, and din rail (vertical and horizontal) mount
Power specifications	Nominal voltage: +/-12V to +/-48V DC Minimum and maximum input voltage: 9.6-60V DC Maximum and minimum input current: 1.24A (9.6V DC) and 0.26A (60V DC)
Power consumption	At idle: 6.6W Typical: 9.8W Maximum: 12W Additional 10W (typical) with -SP or -SPMI expansion module and 2nd cellular Additional 6.4W with IRM-1100-4S8I expansion module
Interfaces on the base platform	
Console	Mini type-B USB
WAN interfaces	Combo 10/100/1000 Gigabit Ethernet port (RJ45 and SFP) on the base platform An additional 10/100/1000 Gigabit Ethernet SFP on the expansion module. Refer to Table 8 for supported SFPs 5G/LTE: Modular with options for single and dual active LTE and LTE-Advanced
LAN interfaces	• Four 10/100BASE-T Fast Ethernet ports
Input and output	• ALARM input port

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Feature	Specification
Interfaces on Serial and Ethernet Expansion Module	
Serial Interfaces	• 4 x Isolated asynchronous serial ports (RS232/RS485/RS422)(DCE)
Ethernet Interfaces	• 2 x GE RJ45 LAN ports on serial expansion module
LEDs	• System OK • Link for Ethernet WAN ports • VPN • Tricolor user-configurable LED • ALARM
Serial interface	Isolated RS-232 RJ45 DTE port Support for asynchronous mode with speeds up to 115,200 baud
Serial protocols	SCADA, DNP3, T101-104, Raw Socket TCP, and UDP
Interfaces on SFP and GPIO Expansion Module	
SFP Interfaces	• 4 x GE L2/L3 SFP ports
GPIO Interfaces	• 8 x dry/wet contact GPIO ports
Environmental characteristics	
Environmental operating temperature range	• -40 to 140°F (-40 to 60°C) in a sealed NEMA cabinet with no airflow • -40 to 158°F (-40 to 70°C) in a vented cabinet with 40 Linear Feet per Minute (LFM) of air • -40 to 167°F (-40 to 75°C) in a forced air enclosure with 200 LFM of air • Type tested at 85°C for 16 hours
Operating altitude	• 40°C up to 13,800 ft (operating) per IEC 68-2-41
Non-operating temperature	• -40 to 185°F (-40 to 85°C)
Non-operating shock and vibration	• 50-60G (3.76 m/s minimum) • 3-500Hz at 1.12 GRMS (BP at 10 and 100 Hz)
Standard safety certifications	• UL 60950-1, 2nd edition • CAN/CSA C22.2 No. 60950-1, 2nd edition • EN 60950-1, 2nd edition • CB to IEC 60950-1, 2nd edition with all group differences and national deviations
Hazardous locations standards	• ANSI/ISA 12.12.01 (Class 1, Div 2 A-D) • CSA 213 (Class 1, Div 2 A-D) • IEC 60079-0 and -15 IECEx test report (Class I, Zone 2, gas groups IIC) • EN 60079-0 and -15 ATEX certification (Class I, Zone 2, gas groups IIC)

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Feature	Specification
Industry standards	**Public Safety:** • FirstNet Capable™ • Verizon Frontline **Smart Grid:** • IEC 61850-3 • IEEE 1613 **Railway:** • EN 50121-4 Security: • FIPS 140-2 • Common Criteria **Department of Defense** • DoDIN APL **IPv6** • USGv6 **Industrial Automation and Control Systems** • IEC 62443-4-1
EMC emissions CLASS A	• 47 CFR Part 15 B • EN 55032:2015 • CISPR 32 Edition 2 • CNS13438: 2006 • EN 300 386 V1.6.1 • ICES-003 Issue 6: 2016 • KN 32: 2015 • TCVN 7189: 2009 • V-2/2015.04 • V-3/2015.04 • AS/NZ CISPR32
EMC immunity	• EN 61000-4-2, 3, 4, 5, 6, 8, 9, 16, 17, 18, and 29 • CISPR24: 2010 + A1: 2015 • EN 300 386 V1.6.1 • EN 55024: 2010 + A1: 2015 • EN 55035:2017 • KN35: 2015 • TCVN 7317:2003 • QCVN 18:2014

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Cellular Modules

Table 7. LTE (3GPP Category 4) Modules Available with IR1101

Features	P-LTE-GB
Countries/Regions	Europe
LTE Bands	**LTE Bands** B1, B3, B7, B8, B20, B28 **FDD LTE** 700 MHz (B28), 800 MHz (B20), 900 MHz (B8), 1800 MHz (B3), 2100 MHz (B1), and 2600 MHz (B7)
Backward Compatibility	UMTS, HSPA+ (B1, B8), EDGE, GSM, GPRS (900/1800)
Theoretical Download and Upload Speeds1	150 Mbps/50 Mbps
Carrier(s) Certified	Europe – Generic Carrier Firmware (GCF)
FirstNet Capable™ (B14)	–

Table 8. LTE Advanced (3GPP Category 7) Modules Available with IR1101

Features	P-LTEA7-NA	P-LTEA7-EAL	P-LTEA7-JP
Countries /Regions	United States, Canada, North America	Europe, LATAM, Australia, New Zealand, India, Singapore, Malaysia, United Arab Emirates	Japan
LTE Bands	B2, B4, B5, B7, B12, B13, B14, B25, B26, B41, B42, B43, B48, B66, B71	B1, B3, B7, B8, B20, B28, B32, B38, B40, B41, B42, B43	B1, B3, B5, B8, B18, B19, B39, B41, B42, B43
3G HSPA+ Bands	B2, B4, B5	B1, B5, B8	B1, B5, B6, B19
Theoretical Download and Upload Speeds[1]	300 Mbps/150Mbps	300 Mbps/150Mbps	300 Mbps/150Mbps
Carrier(s) Certified	US – Verizon, AT&T, T-Mobile, PTCRB[6] Canada – Rogers, Bell, Telus	LATAM, Europe, APJC – Generic Carrier Firmware (GCF)	–
Carrier(s) Coming Soon		Australia – Telstra	NTT Docomo, KDDI, Softbank
FirstNet Capable™ (B14)	Approved by AT&T FirstNet	–	–

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Table 9. 5G NR RedCap (3GPP Release 17) Modules Available with IR1101

Features	P-5GS6-RC-GL
Countries/Regions	United States, Canada, LATAM, Europe, Australia, New Zealand, Japan, Hong Kong, Indonesia, Singapore, India, China
RF Bands	**5G NR Sub-6** n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n30, n38, n40, n41, n48, n66, n70, n71, n77, n78, n79 **LTE Bands** B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B30, B34, B38, B39, B40, B41, B42, B43, B48, B66, B70, B71, B106
Theoretical Download and Upload Speeds1	5G DL/UL: ~220 Mbps / ~120 Mbps LTE: DL/UL: ~195 Mbps / ~75 Mbps
Carrier(s) Certified	US - AT&T, T-mobile, PTCRB, Verizon LATAM, Europe, APJC - Generic Carrier Firmware (GCF)
Carrier(s) Coming Soon	Canada - Bell, Telus, Rogers Australia - Telstra Japan - NTT Docomo, KDDI
FirstNet Capable™ (B14)	Coming soon with AT&T FirstNet
Frontline Capable™ (B13)	Coming soon with Verizon Frontline
eSIM SGP.32 Capable	Supports GSMA SGP.32 remote SIM profile swaps OTA via 3FF removable eSIMs (eUICC)
GPS/GNSS Capable	ANT-3-5G2G1-P-O (3-1 antenna) ANT-GNSS-P-OUT-SMA (single port) Designed for passive GPS/GNSS antenna as part of low-power architecture. Active antennas requiring bias voltage are not supported.

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Table 10. Standalone/Non-Standalone 5G Sub 6 GHZ Module Available with IR1101

Features	P-5GS6-R16SA-GL5
Countries/Regions	United States, Canada, LATAM, Europe, Australia, New Zealand, Japan, Hong Kong, Indonesia, Singapore, India, China
RF Bands	**5G FR1** n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n29-n30, n38, n40, n41, n48, n66, n70, n71, n75, n76, n77, n78, n79 **LTE Bands** B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46 (LAA), B48 (CBRS), B66, B71
Theoretical Download and Upload Speeds[1]	4.9 Gbps/660 Mbps
Carrier(s) Certified	US - AT&T, Verizon, T-mobile, PTCRB[6] LATAM, Europe, APJC - Generic Carrier Firmware (GCF)
Carrier(s) Coming Soon	Canada - Bell, Telus, Rogers Australia - Telstra Japan - NTT Docomo, KDDI
FirstNet Capable™ (B14)	Approved by AT&T FirstNet

450MHz LTE Module

Extending connectivity to remote sites can be challenging, especially when connectivity requirements differ depending on location and use case. As organizations are automating and establishing remote operations, Cisco is expanding the capabilities of the Catalyst IR1100 Rugged Series Router (1101-A-K9 only) to meet the connectivity requirements of businesses wherever they operate. Network Advantage license is required.

Cellular communications in the 400-450MHz band, also called 450MHz LTE, have a longer wavelength, lower frequency and lower energy requirements compared to the traditional LTE and 5G. Due to the physical properties of the frequencies, it has benefits of covering a larger geographical area. It has been employed across several parts of Europe for connecting utility grids, maritime and other mission critical networks.

Cisco has partnered with Intelliport, a Hungary based technology provider in developing a module for the IR1101 to meet the market needs. The 450MHz LTE band provides high resiliency and deep indoor signal penetration to connect the Catalyst IR1101 anywhere onsite. Datasheet for the module is available here - https://www.intelliport.hu/dinamic/P-LTE-450%20datasheet%20v1dot0.pdf.

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Cisco Small Form-Factor Pluggable (SFPs) modules

The IR1101 Ethernet SFP module provides connections to other devices. These field-replaceable transceiver modules provide the uplink interfaces. Local connectors provide the fiber-optic connection. RJ-45 connectors allow for copper connections.

Table 11. Supported Ethernet SFP modules

GE SFP	Distance	Fiber	Classification
GLC-SX-MM-RGD	220-550 m	MMF	Industrial (-40C to +85C)
GLC-LX-SM-RGD	550m/10 km	MMF/SMF	Industrial (-40C to +85C)
GLC-ZX-SM-RGD	70 km	SMF	Industrial (-40C to +85C)
GLC-SX-MMD	220-550m	MMF	Extended (-5C to +85C)
GLC-LH-SMD	550m/10 km	MMF/SMF	Extended (-5C to +85C)
GLC-ZX-SMD	70 km	SMF	Extended (-5C to +85C)
GLC-BX-U	10 km	SMF	Commercial (0C to +70C)
GLC-BX-D	10 km	SMF	Commercial (0C to +70C)
GLC-LH-MMD	550m/10km	MMF/SMF	Extended (-5C to +85C)
GLC-EX-SMD	40 km	SMF	Extended (-5C to +85C)
GLC-FE-100FX-RGD	2 km	MMF	Industrial (-40C to +85C)
GLC-FE-100LX-RGD	10 km	SMF	Industrial (-40C to +85C)
GLC-FE-100FX	2 km	MMF	Commercial (0C to +70C)
GLC-FE-100LX	10 km	SMF	Commercial (0C to +70C)
GLC-FE-100EX	40 km	SMF	Commercial (0C to +70C)
GLC-FE-100ZX	80 km	SMF	Commercial (0C to +70C)
GLC-FE-100BX-U	10 km	SMF	Commercial (0C to +70C)
GLC-FE-100BX-D	10 km	SMF	Commercial (0C to +70C)
GLC-TE	100m	NA (RJ45)	Extended (-5C to +85C)

Note : The IR1101 is designed to operate in the industrial temperature range (-40C to +85C internal component temperature range) and therefore, using a non-industrial or commercial-rated SFP modules could bring down the temperature profile of the system.

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Ordering information

The IR1101 is a Smart License-enabled product. Cisco Smart Accounts and Virtual Accounts are required to order the product. For more information how to order the IR1101 and Cisco Smart Accounts, visit the Cisco Smart Account user guide.

Table 12. Ordering information for Cisco Catalyst IR1101 Rugged Router

Hardware	Description
IR1101-K9	Cisco Catalyst IR1101 Rugged Series Router with SL-IR1101-NE software license
IR1101-A-K9	Cisco Catalyst IR1101 Rugged Series Router with SL-IR1101-NA software license

Management	SKU	Description
Cisco IoT Field Network Director (FND) for hosting on premises	IOTFND-SOFTWARE-K9 IOTFND-IR1100	FND Top Level Subscription IoT FND License for Managing IR1101 Router
Cisco Catalyst SD-WAN Manager and Catalyst Center	IOT-IRDNA	Cisco IoT DNA Subscription License for IR1101 with Catalyst SD-WAN Manager or Catalyst Center
FirstNet Bundle	Hardware PID	Cloud manager (subscription PID)
FirstNet Capable™ LTE Module	Description	RF band information

Expansion Module	Description
IRM-1100-SPMI	Expansion module for dual active LTE, local storage for applications, SFP and input/output ports
IRM-1100-SP	Expansion module for dual active LTE and SFP
IRM-1100-4A2T[4]	Serial and Ethernet Expansion Module for Asynchronous Serial and GE interfaces
IRM-1100-4S8I	Expansion module enabling 4 L2/L3 SFP ports and GPIO expansion

Software license	Description
SL-IR1101-NE	Network Essentials for core routing and security features
SL-IR1101-NA	Network Advantage for advanced routing and app-based policy management
SL-IR1101-NE-NPE	Network Essentials tied for No Payload Encryption software
SL-IR1101-NA-NPE	Network Advantage for No Payload Encryption software

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Software license	Description
SL-IR1101-NA=	Upgrade license from Network Essentials to Network Advantage

Cellular module	Description
P-5GS6-RC-GL (=)	5G Reduced Capability module for North America, LATAM, Europe and Asia Pacific
P-5GS6-R16SA-GL(=)	5G (SA/NSA) Sub 6 GHZ module for North America, LATAM, Europe and Asia Pacific
P-LTEA7-NA(=)	Category 7 LTE module for North America
P-LTEA7-EAL(=)	Category 7 LTE module for Europe, LATAM, Australia, New Zealand, India, Singapore, Malaysia, Thailand, United Arab Emirates, China
P-LTEA7-JP(=)	Category 7 LTE module for Japan
P-LTE-GB(=)	Category 4 LTE module for Europe

Mounting	Description
IR1101-DINRAIL(=)	Din-rail clip for vertical or horizontal mounting
IR1101-WALLMNT(=)	Wall-mount kit
IRM-1100-DINRAIL(=)	Din-rail kit for Expansion Module

Power supply	Description
PWR-IE50W-AC-L=	AC power adapter for 110/220V AC and 88-300V DC input (temperature profile: -40C to 60C)
PWR-IE50W-AC=	Expansion power module: Input AC 100-240V/1.25A or DC 125-250V/1A, Output DC 24V/2.1A, DIN-Rail Mount.
PWR-IE50W-AC-IEC=	Power Module supporting input AC 100-240V/1.25A 50-60Hz, Output DC 24V/2.1A, IEC Plug, DIN-Rail Mount

Antenna and lightening arrestors	Description
Refer to the Cisco Antenna and Options Guide **Note:** Antennas and other accessories are not included automatically with the IR1101.	

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Warranty coverage and technical service options

The IR1101 comes with the Cisco 5-year limited hardware warranty. Adding a contract for a technical service offering, such as Cisco SMARTnet® Service, provides benefits not available with the warranty, including access to OS updates, Cisco.com online resources, and Cisco Technical Assistance Center (TAC) support services. Table 14 shows the available technical services.

Find more information about Cisco product warranties.

Learn more about Cisco Technical Services.

Table 13. Cisco technical services for the Cisco IR1101

Technical Services
Cisco SMARTnet Service ◦ Global access to the Cisco TAC 24 hours daily ◦ Unrestricted access to the extensive Cisco.com resources, communities, and tools ◦ Next-Business-Day (NBD), 8 x 5 x 4, 24 x 7 x 4, and 24 x 7 x 2 advance hardware replacement and onsite parts replacement and installation available4 ◦ Ongoing operating system software updates within the licensed feature set[3] ◦ Proactive diagnostics and real-time alerts on Cisco Smart Call Home-enabled devices
Cisco Smart Foundation Service ◦ NBD advance hardware replacement, as available ◦ Business-hours access to Small and Medium-sized Business (SMB) Cisco TAC (access levels vary by region) ◦ Access to Cisco.com **SMB knowledge base** ◦ Online technical resources through the Cisco Smart Foundation portal ◦ OS software bug fixes and patches

Cisco environmental sustainability

Information about Cisco's environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the "Environment Sustainability" section of Cisco's Corporate Social Responsibility (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the "Environment Sustainability" section of the CSR Report) are provided in the following table:

Sustainability Topic	Reference
Information on product-material-content laws and regulations	Materials
Information on electronic waste laws and regulations, including products, batteries and packaging	WEEE Compliance

Reference links to product-specific environmental sustainability information that is mentioned in relevant sections of this data sheet are provided in the following table:

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Sustainability Topic	Reference
Power	
Power specifications and consumption	Table 6: System Specifications for Cisco Catalyst IR1101 Rugged Series Router
Environmental Characteristic	
Operating temperature, industry standards, EMC emissions	Table 6: System Specifications for Cisco Catalyst IR1101 Rugged Series Router
Material	
Unit Weight	Table 6: System Specifications for Cisco Catalyst IR1101 Rugged Series Router

Cisco makes the packaging data available for informational purposes only. It may not reflect the most current legal developments, and Cisco does not represent, warrant or guarantee that it is complete, accurate or up-to-date. This information is subject to change without notice.

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For more information

For more information about the Cisco Catalyst IR1100 Rugged Series Routers visit https://www.cisco.com/go/IR1101 or contact your local Cisco account representative.

Footnotes reference

[1] Throughput degradation may be observed at a high temperature.

[2] Advance hardware replacement is available in various service-level combinations. For example, 8 x 5 x NBD indicates that shipment is initiated during the standard 8-hour business day, 5 days a week (the generally accepted business days within the relevant region), with NBD delivery. Where NBD is not available, same-day shipment is provided. Restrictions apply. Review the appropriate service descriptions for details.

[3] Cisco OS updates include maintenance releases, minor updates, and major updates in the licensed feature set.

[4] The ethernet ports of IRM-1100-4A2T will work only when the module is attached on the top side (expansion module) of IR1101.

[5] PTCRB stands for 'PCS Type Certification Review Board'

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Document history

New or Revised Topic	Described in	Date
Added new certifications **Added new LTE Pluggables: P-LTEAP18-GL, P-LTE-IN and P-LTE-JN**	Table 6 Table 7 and Table 10	May, 2020
Added information on FirstNet approval	Product highlights, Table 6, Table 7 and Table 12	September, 2020
Added 5G pluggable and IRM-1100-4A2T expansion module	Table 6 and Table 11	Jan 2022
Added P-5GS6-R16SA-GL, the next-gen 5G module supporting standalone and non-standalone modes as a replacement for P-5GS6-GL	Table 11	February, 2024
Added IRM-1100-4S8I	Table 6 and Table 13	August, 2025
Added 5G RedCap module	Table 10	May, 2026
Added licensing matrix	Figure 5	September, 2026

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