Cisco Catalyst IR8300 Rugged Series Router

Contents

5G, all-in-one, industrial-grade routing and switching platform

The Cisco® Catalyst® IR8300 Rugged Series Router is Cisco's first industrial-grade fully integrated routing and switching platform. Built on the Cisco Unified Access Data Plane (UADP) Application-Specific Integrated Circuit (ASIC) and Cisco Quantum Flow Processor®, which powers the industry-leading Cisco Catalyst products, the IR8300 is designed to provide outstanding flexibility and adaptability to address the latest needs of the network evolution. The IR8300 supports U.S. public safety FirstNet services and new 5G services and is built for accelerated services, multilayer security, and edge intelligence. It can be deployed in the harsh, rugged environments found in the energy, transportation, and oil and gas industries. The router offers advanced security capabilities such as Next-Generation Firewall (NGFW) and Cisco Cyber Vision. It is designed with a high level of modularity that can be customized to help you reduce costs and make your networking investments ready for the future, keeping in mind the needs of tomorrow.

The Catalyst IR8300 is designed to support the communications needs of the energy delivery infrastructure. This infrastructure includes substation applications supporting electrical transmission and distribution, renewable generation, oil and gas, water, distributed generation, co-generation, and trackside operations. Additional applications include transmission pipelines, distribution mains, and service lines for oil and gas and water. The router has been extensively tested to meet challenging substation compliance standards, including IEEE 1613 and IEC 61850-3.

The Catalyst IR8300 with Cisco IOS® XE supports Cisco Catalyst SD-WAN Manager, delivering Cisco's secure, cloud-scale SD-WAN solution. It is purpose-built for high performance and integrated SD-WAN services, with the flexibility to deliver security and networking services together from the cloud or on premises. Powered by the Cisco IOS XE fully programmable software architecture with API support, the platform can facilitate automation at scale. It comes with a Trustworthy Solutions 2.0 infrastructure that secures the platform against threats and vulnerabilities with integrity verification and remediation of threats.

Figure 1.
The Cisco Catalyst IR8340 Rugged Router

Product overview

Table 1. Product highlights

Product feature	Benefits and description
Multicore processors	• Intel® x86 CPU with 8 GB cache memory and 8 CPU cores • High-performance multicore processors that support high-speed WAN traffic • Configurable core profiles based upon service plane, data plane, and control plane requirements
IPsec VPN	• 2 Gbps IPsec throughput • FlexVPN, DMVPN, IKEv1, IKEv2, IPsec
Integrated Gigabit Ethernet (GE) ports	• Provides 14 built-in 1GE ports for WAN or LAN: • 4 RJ-45 (with up to 120 watts of PoE/PoE+/Cisco UPOE®), 4 combo (RJ-45/SFP) ports, 4 SFP LAN ports, and 2 combo (RJ-45/SFP) WAN ports
DRAM	• 8 GB
Flash memory support	• Integrated on-board 8 GB eMMC flash
SD card/mSATA/USB storage	• Additional storage options: • SD-card storage • mSATA 100 GB • USB 2.0 storage
Modularity and form factor	• 2-Rack-Unit (RU) form factor • Supports 2x Network Interface Modules (NIM), and 2x Pluggable Interface Module (PIM) slots
Integrated security	• Hardware-anchored Secure Boot and Secure Unique Device Identification (SUDI) support for Plug and Play to verify the identity of the hardware and software
Time synchronization and distribution	Timing module with support for IRIG-B (in/out), GNSS, TOD/1PPS and IEEE 1588 v2 (PTP), SyncE, 8575.1 and 8265.1. Redistribute GNSS to WAN and LAN profile PTP, as well as NTP and IRIG-B. Stratum 3E holdover. PRTC-A (<= 100ns accuracy)

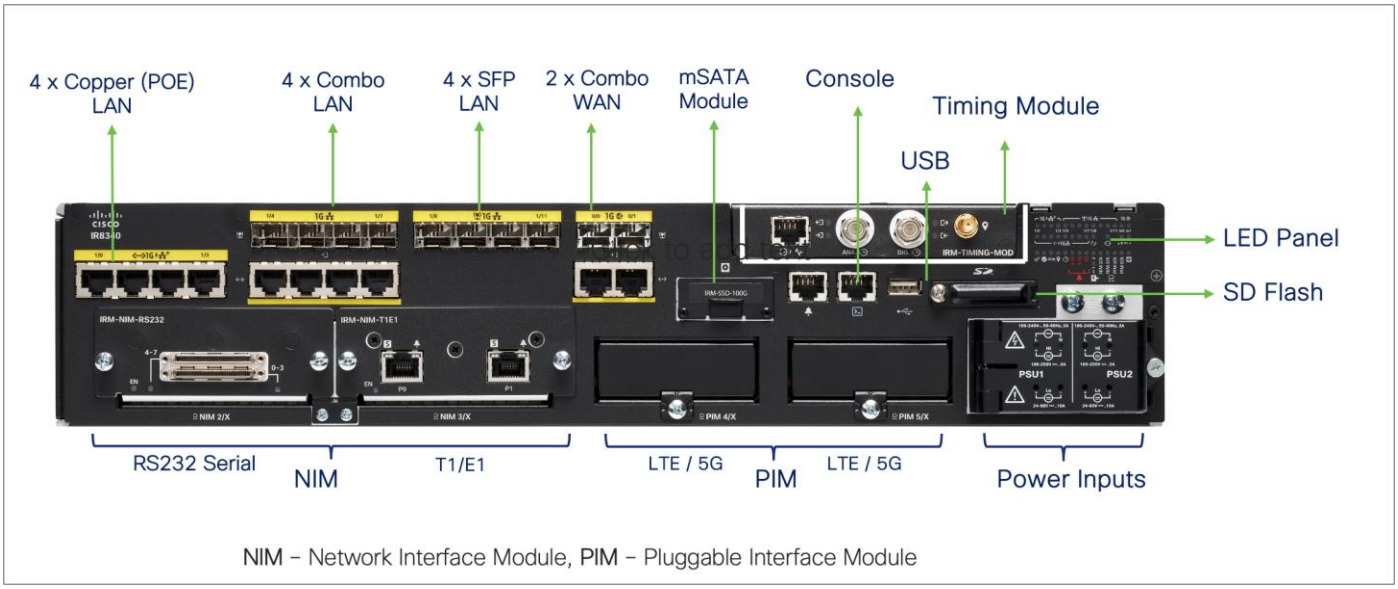

Figure 2.
IR8340 front panel

Use cases

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 monitor remote assets and provide reliable and secure Supervisory Control and Data Acquisition (SCADA) traffic backhauling. 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, intranetworking connectivity. Devices need to be certified and ruggedized to reliably work in these environments.

Roadways and railway intersections

Highways, railroads, and other transportation agencies require reliable networks to connect speed cameras, monitoring cameras, and more using backhaul technologies such as 4G and 5G with secure remote access capabilities to remotely maintain equipment. Railroads are electrifying transport and need a way to monitor the OT and physical network.

Key features and benefits

Table 2. Features and benefits

Feature	Benefit
Reliable connectivity for mission-critical mobile environments	The modular IR8300 with dual cellular slots can run multiple cellular services at once for mission-critical applications, allowing dual cellular band redundancy. • Certified for utilities, making it ideal for mission-critical applications. • Timing module support for precise timing applications at the substation and other use cases.
5G / LTE and modular design	With higher throughputs with 5G, WAN networks are looking at wireless WAN as the primary transport for different use cases. The IR8300 supports both integrated pluggable modules and external cellular gateway modules with LTE/5G capability for improved throughputs that address these use cases. • Ultra-modular design supports evolving business and technical needs, protecting your investment. • Supports multiple different modules, including public or private 4G/LTE and 5G, Wi-Fi 6, FirstNet-capable public safety LTE, and Solid-State Drive (SSD), thus providing a high level of flexibility to choose the desired configuration to suit individual deployments.
Security	You can now move your traditional and complex WAN networks to a more agile software-defined WAN with integrated security. The Catalyst IR8300 Rugged Series Router connects branch offices to the internet and cloud, with industry-leading protection against major web attacks. Secure Direct Internet Access (DIA) to the branches helps optimize branch workloads for improved performance. • Provides end-to-end multilayer enterprise-grade security that is part of Cisco's ultra-secure and advanced Cisco IOS XE operating system. • Supports the full suite of NGFW features such as intrusion prevention and malware detection. • Supports other applications such as Cisco Cyber Vision, providing visibility into industrial and utility assets connected to the router.
Edge computing	Comes with built-in edge compute resources and Cisco IOx app hosting support to securely run your own applications at the edge.
Integrated storage	Provides support to expand the internal storage to save multimedia and mission-critical data at the edge with its field-replaceable industrial-grade SSD.
Cisco Catalyst SD-WAN	Cisco Catalyst SD-WAN is a set of intelligent software services that allows you to connect users, devices, and branch office locations reliably and securely across a diverse set of WAN transport links. • The Catalyst IR8300 router can dynamically route traffic across the "best" link based on up-to-the-minute application and network conditions for great application experiences. • With dual 5G/LTE module support on this platform, customers have multiple wireless carrier options to route their WAN traffic, depending on their needs.
Public safety certifications	• FirstNet capable

Table 3. Product SKUs

Name and SKU	Description
Cisco Catalyst IR8300 Rugged Series Router	
IR8340-K9	Cisco Catalyst IR8340 Rugged Router - 67.5 base watts, 21 lb/9.52 kg
Power supplies	
PWR-RGD-AC-DC	High AC/DC (100-250 VDC/100-240 VAC) - 2.5 lb/1.13 kg
PWR-RGD-LOW-DC	Low DC (24-60 VDC) - 2.5 lb/1.13 kg
PWR-RGD-AC-DC-250	High AC/DC (100-250 VDC/100-240 VAC) 250 W – 2.55 lb/1.15 kg

Supported modules

Table 4. Modules supported

Product number	Description
Interface modules	
IRM-NIM-2T1E1	IR Series 2-port T1/E1 Network Interface Module - 6.5 Watts, 0.6 lb/0.27 kg
IRM-NIM-RS232	IR Series RS232 8-port Serial Network Interface Module - 5.5 Watts, 0.55 lb/0.24 kg Cable options: CAB-HD4-232MT – 4 port EIA 232-DTE, 10ft, Male DB-25 CAB-HD4-232FC – 4 port EIA 232 DCE, 10ft, Female DB-25 CAB-QUAD-ASYNC-M - 4 port EIA-232 DTE, 10ft, Male RJ-45 CAB-QUAD-ASYNC-F – 4 port EIA232 DTE, 10ft, Female RJ-45 CAB-9AS-M - 4 port EIA-232 DTE, 10ft, Male DB-9
IRM-TIMING-MOD	IR Series Timing Module: PTP IEEE 1588 v2, 8275.1, 8265.1, GNSS (SMA Connector) 25db CNR threshold, Constellation (BeiDou, Galileo, GLONASS, GPS) IRIG-B (Mini BNC), SyncE, TOD/1PPS (G.703), Stratum 3E OCXO - 6 Watts, 0.45lb/0.2 kg
Wireless WAN (LTE)	
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 and United Arab Emirates
P-LTEA7-JP(=)	Category 7 LTE module for Japan
P-LTE-MNA(=)	Category 4 LTE module for AT&T, FirstNet™ Capable and Verizon, US
P-LTE-US(=)	Category 4 LTE module for AT&T, U.S

Product number	Description
P-LTE-VZ(=)	Category 4 LTE module for Verizon, U.S
P-LTE-GB(=)	Category 4 LTE module for Europe
P-LTE-IN(=)	Category 4 LTE module for India
P-LTE-JN(=)	Category 4 LTE module for Japan

IR8300 compatible pluggable WAN modules

Cellular pluggable modules

Table 5. LTE (3GPP Category 4) modules

Feature	P-LTE-MNA	P-LTE-VZ	P-LTE-US	P-LTE-GB
Countries / Regions	United States, Canada, North America	United States	United States	Europe
LTE Bands	**LTE Bands** B2, B4, B5, B12, B13, B14, B17, B66 **FDD LTE** 1700 MHz and 2100 MHz (B66 Ext AWS), 700 MHz (B17, B14, B13, B12), 850 MHz (B5 CLR), 1700 MHz and 2100 MHz (B4 AWS), 1900 MHz (B2)	**LTE Bands** B4, B13 **FDD LTE** 700 MHz (B13), 1700 MHz and 2100 MHz (B4 AWS)	**LTE Bands** B2, B4, B5, B12 **FDD LTE** 700 MHz (B17), 700 MHz (B12), 850 MHz (B5 CLR), 1700 MHz and 2100 MHz (B4 AWS)	**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), 2600 MHz (B7)
Backward Compatibility	UMTS, HSPA+ (B2, B4, B5)	-	HSPA+ (B2, B4, B5)	UMTS, HSPA+ (B1, B8), EDGE, GSM, GPRS (900/1800)
Theoretical Download and Upload Speeds1	150 Mbps / 50 Mbps	150 Mbps / 50 Mbps	150 Mbps / 50 Mbps	150 Mbps / 50 Mbps
Carrier(s) Certified	US - AT&T, Verizon, PTCRB2	US - Verizon	US - AT&T	Europe - Generic Carrier Firmware (GCF)
FirstNet Capable™ (B14)	Approved by AT&T FirstNet	-	-	-

Table 6. LTE (3GPP Category 4) modules

Feature	P-LTE-IN	P-LTE-JN
Countries / Regions	India	Japan
LTE Bands	**LTE Bands** B1, B3, B5, B8, B40, B41* **FDD LTE** 2100 MHz (B1), 1800 MHz (B3), 850 MHz (B5), 900 MHz (B8) **TDD LTE** 2300 MHz (B40), 2500 MHz (B41) *B41 supported frequency range: 2535–2655 MHz	**LTE Bands** B1, B3, B8, B11, B18, B19, B21 **FDD LTE** 2100 MHz (B1), 1800 MHz (B3), 900 MHz (B8), 1500 MHz (B11), 850 MHz (B18, B19), 1500 MHz (B21)
Backward Compatibility	HSPA+, UMTS (B1, B8)	HSPA+, UMTS (B1, B6, B19)
Theoretical Download and Upload Speeds1	150 Mbps / 50 Mbps	150 Mbps / 50 Mbps
Carrier(s)	India – Generic Carrier Firmware (GCF)	Japan – NTT Docomo, KDDI, Softbank

Table 7. LTE Advanced (3GPP Category 7) modules

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 Speeds1	300 Mbps / 150Mbps	300 Mbps / 150Mbps	300 Mbps / 150Mbps
Carrier(s) Certified	US – Verizon, AT&T, T-Mobile, PTCRB2 Canada – Rogers	LATAM, Europe, APJC – Generic Carrier Firmware (GCF)	–
Carrier(s) Coming Soon	Canada – Bell, Telus	Australia – Telstra	NTT Docomo, KDDI, Softbank
FirstNet Capable™ (B14)	Approved by AT&T FirstNet	–	–

Table 8. Standalone and non-standalone 5G sub-6 GHZ module

Features	P-5GS6-R16SA-GL
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 Speeds1	4.9 Gbps / 660 Mbps
Carrier(s) Certified	US - AT&T, Verizon, T-mobile, PTCRB2 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

Table 9. Memory, storage, and accessory options

Product number	Description
IRM-SSD-100G	mSATA storage – 100 GB, Spare
IRM-NIM-BLNK	Blank for NIM slot
IRM-P-Blank	Blank for PIM slot
IRM-SSD-Blank	Blank for SSD

Table 10. Optics and transceivers modules

Product number	Max distance	Cable type	Temperature range
GLC-FE-100FX-RGD	2 km	MMF	INDUSTRIAL
GLC-FE-100LX-RGD	10 km	SMF	INDUSTRIAL
GLC-FE-100FX	2 km	SMF	COMMERCIAL
GLC-FE-100LX	10 km	SMF	COMMERCIAL
GLC-FE-100EX	40 km	SMF	COMMERCIAL
GLC-FE-100ZX	80 km	SMF	COMMERCIAL
GLC-FE-100BX-D	10 km	SMF	COMMERCIAL
GLC-FE-100BX-U	10 km	SMF	COMMERCIAL
GLC-SX-MM-RGD	550 m	MMF	INDUSTRIAL
GLC-LX-SM-RGD	550 m/10 km	MMF/SMF	INDUSTRIAL
GLC-ZX-SM-RGD	70 km	SMF	INDUSTRIAL
GLC-SX-MMD	850 m	MMF	EXTENDED
GLC-LH-SMD	550 m/10 km	MMF/SMF	EXTENDED
GLC-EX-SMD	40 km	SMF	EXTENDED
GLC-ZX-SMD	70 km	SMF	EXTENDED
CWDM-SFP-xxxx (8 freq)	80 km	SMF	COMMERCIAL
DWDM-SFP-xxxx (40 freq)	80 km	SMF	COMMERCIAL
GLC-BX-D	10 km	SMF	COMMERCIAL
GLC-BX-U	10 km	SMF	COMMERCIAL
GLC-TE	100 m	GE	EXTENDED
GLC-T-RGD	100 m	GE	INDUSTRIAL

Resiliency and high availability

Platform redundancy is critical for branch operations, as any downtime has a direct impact on a customer's business. To address this priority, Cisco makes a dual power supply the default on the Catalyst IR8300 to help ensure that backup power is available in case the primary power supply fails.

Power supplies

Table 11. Power supply specifications

Product number	Wattage	Rated nominal (supported) input operating range	Use case scenario
PWR-RGD-AC-DC **PWR-RGD-AC-DC-H**	150W	AC 100-240V (85-264V)/2.0A 50-60Hz or DC 100-250V (88-300V)/2.0A Inrush current: AC Less than 30A at 115V/60 Hz, maximum load, at 25° C Less than 60A at 230V/50 Hz, maximum load, at 25° C Less than 70A at 230V/50 Hz, maximum load, at 65° C DC Less than 30 A at cold start, maximum load, at 25° C and at 125 V. Less than 60 A at cold start, maximum load, at 25° C and at 250 V.	High-voltage AC or DC power source
PWR-RGD-LOW-DC PWR-RGD-LOW-DC-H	150W	DC 24-60V (18-75V)/10A Inrush current: Less than 25A at cold start, maximum load, at 25° C and at 24V or 48V Less than 40A at cold start, maximum load, at 25° C and at 36V or 75V	Low-voltage DC power source
PWR-RGD-AC-DC-250 PWR-RGD-AC-DC-250-H	250W	AC 100-240V (85-264V)/3.3A 50-60Hz or DC 100-250V (88-300V)/3.3A Inrush current: AC Less than 40A at cold start, maximum load, at 25° C and at 125V Less than 70A at cold start, maximum load, at 25° C and at 250V DC Less than 40 A at cold start, maximum load, at 25° C and at 125 V. Less than 70 A at cold start, maximum load, at 25° C and at 250 V.	High-voltage AC or DC power source

Software requirements

Table 12. Minimum software requirements

Platform product ID	Description	Minimum software requirement
IR8340-K9	Cisco Catalyst IR8340 Rugged Router	Cisco IOS XE Software Release 17.7.1

Table 13. Software features and protocols for autonomous mode

Feature	Description
Cisco IOS Software requirements	• Cisco IOS XE Software: Universal Cisco IOS Software image • Cisco IOS XE Software Release 17.7.1 or later (17.8.1 with Timing Module) • Cisco IOS XE Software: Unified image for Autonomous and Controller (SD-WAN) mode
WAN/LAN features	• Spanning Tree Protocol (STP/RPVST/PVST/MSTP/RSTP) 802.1d, 802.1w, 802.1s • Layer 2 EtherChannel (LACP 802.3ad/PAgP) • WAN/LAN MACsec 802.1ae • VLAN and Switch Virtual Interface • VLAN Trunking 802.1q • REP, HSR, PRP Protection • SPAN and RSPAN • Root Guard, BPDU Guard, Loop Guard, Unidirectional Link Detection (UDLD), Source Guard, Storm Control • Q in Q Tunneling • LLDP and Cisco Discovery Protocol • VTPv2 and VTPv3 (VLAN Trunking Protocol) • Layer 2 Multicast, IGMPv2, IGMPv3, IGMP Snooping, IGMP Querier • Private VLAN • RSVP • VXLAN, Ethernet Pseudowire, EVPN, L2TPv3 • Jumbo Frame up to 9216
IPv4 and IPv6 services features	• Routing Information Protocol Versions 1 and 2 (RIPv1 and RIPv2) and RIPng (IPv6) • Generic Routing Encapsulation (GRE) and Multipoint GRE (MGRE) • Network Address Translation (NAT) • Dynamic Host Configuration Protocol (DHCP) server, relay, and client for IPv4 and IPv6 • Access control lists (ACLs) for IPv4 and IPv6 • IPv4 and IPv6 multicast (Source Specific/Any Source) • Protocol Independent Multicast + IGMP • IP Service-Level Agreement (IP SLA)

Feature	Description
	• Open Shortest Path First (OSPF) v2 and v3 • Multiprotocol Border Gateway Protocol (MP-BGP) • Enhanced Interior Gateway Routing Protocol (EIGRP) for IPv4 and IPv6 • RIP • IS-IS • Virtual Route Forwarding (VRF) and VRF Lite • Next-Hop Resolution Protocol (NHRP) • Asynchronous serial data encapsulation and relay • Layer 2 Tunneling Protocol (L2TP) v3 over sub interfaces and VLAN • MPLS, LSP with BFD (OAM) and FRR, TE, L2 and L3 VPN • Performance Routing (PfR), Optimized Edge Routing (OER), Policy Based Routing • Raw socket UDP/TCP • Async Serial MPLS Encapsulation Pseudo wire
Security features	**Secure connectivity** • Trusted Anchor Module (TAM) • Hardware-accelerated encryption with minimal impact to system performance • Next-Generation Encryption (NGE) algorithms such as AES-CBC-256, AES-GCM-256, SHA-384, and SHA-512, DH 14,15,16,19,20,21 • Public-key infrastructure (PKI) support • 1000 IPsec tunnels (IKEv2) • Cisco Easy VPN solution client and server • NAT transparency • Dynamic Multipoint VPN (DMVPN) • Tunnel-less Group Encrypted Transport VPN (GETVPN) • FlexVPN • IPsec stateful failover • Secure Sockets Layer (SSL) VPN for secure remote access • VRF-aware IPsec • IPsec over IPv6 • 802.1X authentication and Cisco TrustSec® **Cisco IOS Firewall** • 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

Feature	Description
	• VRF-aware firewall **Integrated threat control** • Control-Plane Policing (CoPP) • Flexible packet matching • Network foundation protection • Cisco Umbrella® • Unified Threat Defense • As supported by Cisco IOS XE
Quality of Service (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
High-availability features	• Dual active LTE backhaul • Virtual Router Redundancy Protocol (VRRP) (RFC 2338) • Hot Standby Router Protocol (HSRP) • Dual SIM support on the LTE module for cellular failover • WAN monitoring to handle dual-SIM failover
IPv6 features	• IPv6 addressing architecture • IPv6 unicast and multicast forwarding • IPv6 ACLs • IPv6 over cellular, including DHCP Prefix Delegation • IPv6 routing (Static, RIPng, OSPFv3, EIGRP, MP-BGP) • IPv6 domain name resolution • IPv6 DHCP services

Table 14. Software features and protocols for controller mode

Feature	Description
Core features	IPv4, IPv6, static routes, OSPF, EIGRP, BGP, Overlay Management Protocol (OMP), Application-Aware Routing (AAR), Traffic Engineering, Service Insertion, zero-trust, whitelisting, tamper-proof module, DTLS/TLS, IPsec, classification, prioritization, low-latency queuing, remarking, shaping, scheduling, policing, mirroring, Multicast IPv4 support, service advertisement and insertion policy, Simple Network Management Protocol (SNMP), Network Time Protocol (NTP), DNS client, (DHCP, DHCP client, DHCP server, DHCP relay, archival, syslog, Secure Shell (SSH), Secure Copy (SCP), Cflowd v10 IPFIX export, IPv6 for transport-side, Virtual Router Redundancy Protocol (VRRP), MPLS, NAT (DIA, Service-side, overload/PAT, NAT64, etc.), NAT pools, split DNS, ACL, BFD, NETCONF over SSH, Command-Line Interface (CLI), NTP server support, BFD with service-side BGP, BGP community propagation to OMP, 6 SLA classes for AAR, Cisco TrustSec/SD-Access (inline Scalable Group Tag [SGT] propagation), custom app with Software-Defined Application Visibility and Control (SD-AVC), multicast AAR, dynamic on-demand tunnels, PIM-SM, OSPFv3, route policies, multi-VRF support
Encapsulations	GRE, Ethernet, 802.1q VLAN, Serial over MPLS
Application experience	QoS, Forward Error Correction (FEC), CoS Marking, WRED, Hierarchical QoS, PBR, NBAR, SD-AVC, per-tunnel QoS, Cloud OnRamp for SaaS, Enhanced Office 365 traffic steering, DIA, FNF
Cryptographic algorithms	Encryption: AES-256 (in CBC and GCM modes), IKE, Cisco Public Key Infrastructure (PKI) Authentication: AAA, RSA (2048 bit), ESP-256-CBC, HMAC-SHA1, ECDSA (256/384 bit) Integrity: SHA-1, SHA-2 Group: DH 14,15,16,19,20,21
Security	Built-in end-to-end segmentation (VPNs), zone-based firewall (ZBFW), PKI, Snort® intrusion prevention and detection (IPS/IDS), URL filtering, Cisco Secure Firewall, Cisco Secure Malware Analytics, Application-Level Gateway (ALG) for ZBFW

Table 15. Network management tools

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.
Secure and manage your distributed OT WAN assets with agility at massive scale using Catalyst SD-WAN Manager	Cisco Catalyst SD-WAN Manager	**Gain comprehensive security** • Zero-trust approach and end-to-end security stack helps customers achieve segmentation, threat protection, content filtering, and more. **Scale with confidence** • IT network management solutions that scale to tens of thousands of devices with centralized security, policy, and configuration. • Simplify IT and OT collaboration and save costs

Operational phase	Application	Description
		• Give OT the best of IT with easy-to-deploy templates, centralized policies, remote updates, and application-aware routing to reduce backhaul costs.
Extend your enterprise network to configure, monitor, and manage industrial assets	Cisco Catalyst Center	• 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.

Licensing

The Cisco Catalyst IR8300 offers two feature licensing packages and three throughput tiers.

Network stack:

- Network Essentials
  - All features except those specified in Network Advantage
- Network Advantage
  - Required for features: MPLS, MPLS Flex LSP, Multicast, Policy-Based Routing (PBR), PIM, RSVP, Performance Routing (PfR), Optimized Edge Routing (OER), Policy Based Routing (PBR), PTP, GNSS, TOD/1PPS, IRIG-B In/Out, NTP to PTP translation, SyncE, Multiple VRF

Cisco DNA stack required for Catalyst Center and Catalyst SD-WAN:

- Cisco DNA Essentials
- Cisco DNA Advantage

Encrypted throughput:

- Tier 0: Up to 25 Mbps (default)
- Tier 1: Up to 200 Mbps without HSEC, 400 Mbps with HSEC
- Tier 2: Uncapped, HSEC required

License SKUs:

- SL-8300-HSEC: U.S. Export Restriction Compliance license for IR8300 series
- SL-8300-NA-D-T0: Network Advantage License for Cisco IR8300 - Tier 0
- SL-8300-NA-P-T1: Network Advantage License for Cisco IR8300 – Tier 1
- SL-8300-NA-B-T2: Network Advantage License for Cisco IR8300 – Tier 2
- SL-8300-NE-D-T0: Network Essentials License for Cisco IR8300 – Tier 0
- SL-8300-NE-P-T1: Network Essentials License for Cisco IR8300 – Tier 1
- SL-8300-NE-B-T2: Network Essentials License for Cisco IR8300 – Tier 2
- IOT-IRDNA: Cisco IoT Catalyst Center and Catalyst SD-WAN License
- Combinations of Essentials, Advantage, tiers, and terms. Reference the Cisco DNA Software for SD-WAN and Routing Ordering Guide.

Specifications

Table 16. Mechanical specifications

Description	Specification
Substation hardening compliance	IEC 61850-3 IEEE1613
Embedded hardware-based cryptography acceleration (IPsec + SSL)	Yes
Gigabit Ethernet WAN ports	2x combo (RJ45/SFP)
Gigabit Ethernet LAN ports	12x 1GE LAN ports 4x RJ-45 4x combo (RJ-45/SFP) 4x SFP
POE/POE+/UPOE budget	120W max: Ports 1 and 2: Up to UPOE (60W) each Ports 3 and 4: Up to POE+ (30W) each
Number of slots	4 (2 NIM, 2 PIM)
Memory (DDR4)	8 GB
eMMC flash	Integrated on-board 16 GB flash, 7.2 GB usable
External USB 3.0	1
RJ-45 console port	1
RJ-45 alarm port	1x RJ-45 with 2x Alarm IN and 1x Alarm OUT

Description	Specification
Power supply options	**Three power supply options:** • 150W low-voltage DC power supply • 150W AC or high-voltage DC power supply • 250W AC or high-voltage DC power supply
Power specifications	
150W AC/DC input voltage	Nominal range: 100 to 240 VAC / 100 to 250VDC
150W Low DC input voltage	Nominal range: 24 to 60 VDC
250W AC/DC input voltage	Nominal range: 100 to 240 VAC / 100 to 250 VDC
AC input frequency	50 to 60 Hz
Physical specifications	
Dimensions (H x W x D)	3.5 x 17.25 x 15 in. (88.9 x 438.2 x 381 mm)
Rack height	2 Rack Units (2RU)
Rack-mount 19 in. (48.3 cm) EIA	Yes - included
Weight with 1 power supply (no modules)	24 lb (10.9 kg)
Typical weight fully configured with 2 power supplies 4 modules, timing module	28 lb (12.7 kg)
Airflow	Convection and conduction cooling (no fans)
Mean time between failures	239,274 hours
Environmental specifications	
Operating conditions	
Operating temperature	-40°F to 140°F (-40 to +60°C) continuous operating temperature range
Shock/vibration	30G at 11 ms
Altitude	10,000 ft (3,048 m). Max operating temp is de-rated with increasing altitude per IEEE 1613-2009
Relative humidity	5% to 95% noncondensing
Nonoperating conditions	
Temperature	-40° to 185°F (-40° to 85°C)
Relative humidity	5% to 95% noncondensing

Description	Specification
Altitude	16,000 ft (4,876 m) Max operating temp is de-rated with increasing altitude per IEEE 1613a-2008
Nonoperating free-fall drop	4 in. (100 mm) per ENG-339611
Operating seismic/earthquake	IEC 60255-21-3 Class 1
Nonoperating shock/vibration	40 to 50G (3.26 m/s minimum)
Regulatory compliance*	
Environmental substation compliance	IEC-61850-3 IEEE1613
Immunity	EN61000-6-2 • IEC 61000-6-4 • IEC 61000-6-5 (AC, I/O) • EN61000-4-2 (ESD) • EN61000-4-3 (RF) • EN61000-4-4 (EFT) • EN61000-4-5 (SURGE) • EN61000-4-6 (CRF) • EN61000-4-11 (VDI) • IEC 61000-4-12 (AC, I/O) • EN 55024, CISPR 24 • EN50082-1 (AC) • IEEE 1613: High Voltage Impulse
EMC – Emissions	IEC / CISPR 22 EN/KN 61000-3-3 NM EN 61000-3-3 EN/KN 61000-3-2 NM EN 61000-3-2 47 CFR Part 15 Subpart B CISPR32 CNS13438 EN300 386 EN55032 ICES-003: Iss:6 KS C 9832 NM EN 55032 VCCI-CISPR 32 EAC

Description	Specification
	SDPPI SNI ISO/ IEC CISPR 32 CNCA / SAC GB AS/NZ CISPR 32
Industrial EMC	EN 61000-6-2 – Industrial (Immunity) EN 61000-6-4 – Industrial (Emissions) EN 61000-6-1 – Generic Immunity standard
Safety	UL/CSA 62368-1 IEC/EN 60950-1 IEC/EN 62368-1 CB report and certificate to IEC 62368-1 with all country deviations NOM to NOM-019-SCFI (via UL certificate of conformity) UL/CSA 61010-2-201
Radio – Cellular and Global Navigation Satellite System (GNSS)	FCC CFR Part 22H, 24E, 27, 90, 96 - GSM/WCDMA/LTE RSS - 130, 132, 133, 139, 140, 195, 199 EN 301 908 Part 1/2/13 - WCDMA/LTE EN 301 511 - GSM AS/NZ: ACMA EMR, AS/CA S042.1, 4 -WCDMA, LTE MIC Article 2 Paragraph 1, Item 11-3,7,19 - GSM/WCDMA/LTE 2017.3.31 (RRA notice# 2017-3), (KS X 3123:2017), (KS X 3142:2018, draft) - WCDMA/LTE ETSI TS 151 010-1 V6.5.0 (2005-11), ETSI TS 134 121-1 V9.1.0 (2010-07), 3GPP TS 36.521-1 V9.5.0 (2011-06) - GSM/WCDMA/LTE Resolutions: 1463/2016, 1474/2016, 271/2017 - GSM/WCDMA/LTE 3GPP TS 36.521-1 V9.7.0 - LTE, TS 51.010-1-S12 10.1.0 - GSM/WCDMA EN 301 489 – 1/52 EN 301 489 -1/19 EN 303 413 - GNSS
RF exposure	FCC Part 2.1091, 2.1093 RSS 102 EN62311 AS/NZ 2772
Railway	AREMA C&S Manual Part 11 IEC 62236-4 (description) EN 50121-4 EN 50125-3 EN 50153 EN 50155

Description	Specification
Automotive	NEMA TS-2
Industry standards	Public Safety: • FirstNet Ready Smart grid: • IEC 61850-3 • IEEE 1613 Security: • FIPS 140-2 • Common Criteria Department of Defense • DoDIN APL IPv6 • USGv6
EMC (ETSI/EN)	EN300 386: Telecommunications Network Equipment (EMC) EN55032: Multimedia Equipment (Emissions) EN55024: Information Technology Equipment (Immunity) EN55035: Multimedia Equipment (Immunity) EN61000-6-1: Generic Immunity Standard
Telecom	T1/E1 (excluding ISDN) • AS/ACIF S016 • DGT ID 0002 • HKTA • IC; CS-03, Part II, Issue 9 • ITU-T G.703 • G.704 • G.706 • G.823 • TBR 12 , TBR 13 • KS X 3074, KS X 3078 • K.21 Serial • ITU V.10, V.11, V.28, V.36, X.21 • TBR 1, 2

* For more information, consult the Product Approval Database (https://tools.cisco.com/cse/prdapp) or your local Cisco representative (Cisco.com login required).

Warranty information

The Catalyst IR8340 comes with the Cisco 1-year limited hardware warranty. Adding a contract for a technical service offering, such as Cisco Smart Net Total Care® 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 9 shows the available technical services.

Find more information about Cisco product warranties.

Learn more about Cisco Technical Services.

Table 17. Cisco Technical Services for the Catalyst IR8340

Technical services
Cisco Smart Net Total Care 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), 8x5x4, 24x7x4, and 24x7x2 advance hardware replacement and onsite parts replacement and installation available • Ongoing operating system software updates within the licensed feature set • 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

Product sustainability

Information about Cisco's Environmental, Social and Governance (ESG) initiatives and performance is provided in Cisco's CSR and sustainability reporting.

Table 18. Product sustainability

Sustainability topic		Reference
General	Information on product-material-content laws and regulations	Materials
	Information on electronic waste laws and regulations, including our products, batteries and packaging	WEEE Compliance
	Information on product takeback and reuse program	Cisco Takeback and Reuse Program
	Sustainability inquiries	Contact: csr_inquiries@cisco.com
	Environmental specifications	Table 16. Mechanical specifications

Sustainability topic		Reference
	Regulatory compliance	Table 16. Mechanical specifications
Power	Power supplies	Table 3. Product SKUs
	Power supply specifications	Table 11. Power supply specifications
	Power supply options	Table 16. Mechanical specifications
	Power specifications	Table 16. Mechanical specifications
Material	Product packaging weight and materials	Contact: environment@cisco.com
	Physical specifications	Table 16. Mechanical specifications

Cisco and partner services

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- Mitigating risks by enabling proactive or expedited problem resolution
- Lowering TCO by taking advantage of Cisco expertise and knowledge
- Minimizing network downtime
- Supplementing your existing support staff so they can focus on additional productive activities

For more information about Cisco Services, refer to Cisco Technical Support Services or Cisco Advanced Services at https://www.cisco.com/web/services/

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For more information

For more information about the Cisco Catalyst IR8300 Rugged Series Router, please visit https://www.cisco.com/go/ir8300 or contact your local account representative.

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