

ISR1100X-4G

Enhanced fanless SD-WAN branch router; 8x 1GE RJ45 (4 WAN + 4 LAN), 8 GB DRAM, AppQoE enabled, double overlay tunnel scale vs ISR1100-4G.

Cisco ISR 1100X Series - Enhanced Small/Medium Branch SD-WAN Edge Router

The Cisco ISR 1100X-4G is the enhanced variant of the ISR 1100 Series small/medium branch SD-WAN edge router. Compared with the ISR1100-4G, the -X variant doubles the overlay tunnel scale (up to 500 vs 250), supports AppQoE (TCP optimization, FEC, packet duplication), and runs the full security stack including Enterprise Firewall with application awareness, IPS, URL filtering, AMP, and Umbrella. The platform uses the same fanless chassis and 30 W external adapter as the 4G model. Like the 4G, it is controller-mode only (no autonomous IOS XE).

Specification	Value
Form factor	Fixed desktop / 1-RU fanless branch router (enhanced -X)
Fixed ports	8x 10/100/1000 RJ-45 (4 WAN + 4 LAN)
Optical / cellular	No SFP; no integrated LTE (CAT4 via optional USB dongle)
SD-WAN IPsec (1400 B)	477 Mbps (IOS XE SD-WAN 17.12.1)
SD-WAN IPsec IMIX	411 Mbps
Overlay tunnels	500 SD-WAN (2x ISR1100-4G)
AppQoE	Yes (TCP optimization, FEC, packet duplication)
CPU	Intel x86 SoC 2.2 GHz, 4-core (dynamic service/data-plane core allocation)
DRAM / flash	8 GB DDR4 ECC DRAM; 8 GB eMMC + 16 MB serial
Power adapter	External 30 W (PWR-30W-I-AC) - same as 4G
Software	Cisco IOS XE SD-WAN 17.4.1+ or Viptela OS 20.4+
Mode	Controller-mode only (no autonomous IOS XE)
Warranty	Standard Cisco hardware warranty; SNTC available

- Enhanced fanless small-branch SD-WAN router with 8 GB DRAM for AppQoE and full security stack.
- Up to 500 SD-WAN overlay tunnels (2x ISR1100-4G).
- AppQoE: TCP optimization, Forward Error Correction (FEC), packet duplication for WAN optimization.
- Full security stack: Enterprise Firewall with App Awareness, IPS, URL filtering, AMP, Umbrella.
- Same fanless chassis and 30 W adapter as the 4G model; controller-mode SD-WAN only.

Specification	ISR1100X-4G
Fixed ports	8x 10/100/1000 RJ-45 (4 WAN + 4 LAN)

Specification	ISR1100X-4G
USB ports	1x USB 3.0 (4.5 W max; CAT4 LTE dongle)
Console	1x RJ-45 console
SD-WAN IPsec (1400 B)	477 Mbps (IOS XE SD-WAN 17.12.1)
SD-WAN IPsec IMIX	411 Mbps
Overlay tunnels	500 SD-WAN
Routing protocols	OSPF / EIGRP / BGP / IS-IS / static / IPv6 (IOS XE SD-WAN)
AppQoE	TCP optimization, FEC, packet duplication
NAT / firewall	Enterprise Firewall with App Awareness, IPS, URL-F, AMP, Umbrella
Multi-VRF	Supported (scale per platform)

The enhanced -X model adds Cisco Application Quality of Experience (AppQoE) to improve WAN application performance over SD-WAN overlays.

AppQoE Capability	Description
TCP optimization	Improves throughput and responsiveness of TCP applications over the WAN
Forward Error Correction (FEC)	Protects voice / video against packet loss across lossy links
Packet duplication	Duplicates critical packets over a second path for zero-loss delivery
SLA-based path selection	Per-application steering based on measured loss / latency / jitter
App-aware routing	Application and SLA aware routing across active/active WAN links
QoS marking	Automatic DSCP / CoS marking per recognized application
Voice / video	Low-latency handling for real-time collaboration traffic
Visibility	Per-application throughput and SLA analytics in vManage

Component	Specification
CPU	Intel x86 SoC 2.2 GHz, 4-core (dynamic core allocation)
DRAM	8 GB DDR4 ECC
Flash	8 GB eMMC + 16 MB serial NOR
Fixed ports	8x GE RJ-45 (4 WAN + 4 LAN)
USB	1x USB 3.0 (4.5 W, CAT4 LTE dongle)
Console	1x RJ-45
Power adapter	External 30 W (PWR-30W-I-AC)
Fan	Fanless (silent passive cooling)
Form	Desktop / DIN-rail / wall-mount / 1-RU rack

Component	Specification
Operating temp	0 to 50 C (typical, per datasheet)

The Cisco IOS XE routing plane provides a comprehensive set of IPv4/IPv6 services, QoS, multicast and VPN features. The capabilities below are supported on the platform; performance scale numbers are platform-dependent.

Feature	Description
IPv4/IPv6 unicast	OSPFv2/v3, IS-IS, EIGRP, BGP-4, MP-BGP, static v4/v6, policy-based routing
First-hop redundancy	HSRP v1/v2, VRRP, GLBP (IPv4/IPv6)
Multicast	PIM Sparse / Dense / SSM, IGMPv3, MLDv2, mroute hardware scale
MPLS	MPLS forwarding, L3VPN (VRF-aware), Segment Routing awareness (platform capable)
VPN / overlay	IPsec, DMVPN, FlexVPN, GETVPN, EZVPN; SD-WAN overlay, OMP, vSmart
QoS	Cisco-class QoS with 8 queues per egress port; DSCP/ 802.1p; shaping / policing
High availability	NSF/NSR, SSO, hitless software upgrades, ISSU
Application visibility	NBAR2 / Flexible NetFlow / IPFIX, AppQoE (where licensed)
TrustSec / SGT	802.1AE MACsec, TrustSec SGT/SGACL for segmentation
Management	NETCONF/YANG, RESTCONF, gRPC, NETCONF over SSH, gNMI telemetry

Cisco IOS XE edge platforms provide multiple WAN and overlay connectivity options. The capabilities below apply to the router platform and are enabled in software or through the installed modules.

Capability	Description
WAN uplinks	Gigabit / 10G SFP+/QSFP; T1/E1 TDM via NIMs; cellular LTE / 5G via NIMs
Catalyst SD-WAN	Controller-mode SD-WAN: OMP, control-plane, vSmart / vManage integration
SD-Routing	Distributed routing under Catalyst Center (DNA) management
DMVPN / FlexVPN	Dynamic multipoint VPN and FlexVPN hub-and-spoke overlay
IPsec / IKEv2	Hardware-accelerated IPsec ESP with AES-GCM encryption
Application Aware Routing	SLA-based path selection and failover (AppQoE on IOS XE SD-WAN)
Cloud / Internet edge	Cloud on-ramp for IaaS, direct Internet access, guest internet
QoS / shaping	Per-tunnel and per-class QoS with hierarchical queueing
NAT / firewall	Stateful NAT, zone-based firewall with App awareness
Multicast over VPN	mVPN / mLDP and multicast over DMVPN/FlexVPN
High availability	SSO, NSF/NSR, BFD, dual WAN failover

Capability	Description
WAN analytics	Flow export (IPFIX), AppQoE analytics, telemetry to vManage

Cisco IOS XE platforms provide a comprehensive set of operational features to keep the network and the device itself resilient and predictable in production deployments.

Capability	Description
Software redundancy	Two independent IOS XE processes for software fault isolation (where supported)
Hardware redundancy	1+1 / N+1 redundant AC or DC power supplies with hot-swap FRUs
Stateful switchover	SSO / NSF for routing protocols across supervisor or RFD failures
ISSU	In-Service Software Upgrade to minimize downtime during IOS XE upgrades (where supported)
Modular QoS	Per-tunnel and per-class QoS policies for SD-WAN overlay
Graceful restart	OSPF / IS-IS / BGP graceful restart helpers (RFC 3623 / RFC 5306)
Modular optics	Pluggable SFP/SFP+ for fast optical replacement without service impact
Smart licensing	Cisco Smart Licensing with PnP enrollment and offline reservation
Telemetry streaming	gNMI/gRPC streaming telemetry to DNA Center / 3rd-party collectors
Application visibility	NBAR2 / FNF for application-level telemetry and visibility
BFD	Bidirectional Forwarding Detection for sub-second failure detection
Hardware crypto offload	AES-NI / QFP / ASIC-accelerated IPsec encryption

Interface expandability for ISR1100X-4G is provided through Network Interface Modules (NIM), Service Modules (SM), Platform Interface Modules (PIM), and the supported optics family. Representative options follow; specific combinations should be confirmed against the platform ordering guide.

Module / Accessory	Description
NIM (voice / TDM)	NIM-2/4/8-T1/E1 (voice/data TDM), NIM-2FXO / 4FXO / 2FXSP / 4FXSP (FXO/FXS)
NIM (cellular)	NIM-4G-LTE, NIM-4G-LTE-VZ/AT, NIM-5GS-6G (where supported)
PIM modules	PIM-2/4BRI-NT/TE, PIM-8T1E1 / 4T1E1 (TDM/ISDN)
Service modules	SM-X-PVDM-500/1000/2000/3000 (voice DSP); SM-X-8FXS/12FXO/16FXS (voice)
SFP / SFP+ optics	GLC-T, GLC-SX-MMD, GLC-LX-SMD, GLC-LH-SMD; SFP-10G-SR/LR/ER/ZR
Power supply	AC PSU (default) and DC PSU (where supported) - hot-swappable where dual bays
Console / management	RJ-45 console cable included for CLI management access
Rack-mount kit	Standard 19-in rack-mount brackets included
Cisco DNA subscription	Cisco DNA Essentials / Advantage licensing for SD-WAN/automation

Module / Accessory	Description
Smart Net Total Care	Optional service contract for next-business-day replacement

The router complies with the following interoperability, safety and environmental standards. Compliance is verified by independent testing laboratories.

Category	Standard
IPv4/IPv6 routing	RFC 1812, RFC 4291, RFC 4861 (ND), RFC 4443 (ICMPv6); OSPF/IS-IS/BGP/EIGRP
Layer 2	IEEE 802.1Q VLAN, 802.1p QoS, 802.1x port security, 802.3ad LACP
VPN / Security	RFC 4303 ESP, RFC 7296 IKEv2, RFC 5246 TLS, RFC 8446 TLS 1.3, AES-GCM
MPLS / Segment Routing	RFC 3031/3032 MPLS; SR-MPLS (platform capable)
Management	NETCONF (RFC 6241), RESTCONF, YANG (RFC 6020/7950), SNMPv2c/v3, NETCONF-SSH
Quality of Service	RFC 2597/2598 (PHB), RFC 2474 (DSCP), 802.1p
Time sync	NTPv4 (RFC 5905), PTPv2 (IEEE 1588-2008)
Safety	UL/CSA/IEC/EN 60950-1, UL/IEC/EN 62368-1
EMC / EMI	FCC 47 CFR Part 15 Class A, EN 55032/CISPR 32, EN 55024/55035, EN 300 386
Environmental	RoHS 2011/65/EU, WEEE 2012/19/EU; operating/storage altitude per datasheet

The Cisco IOS XE routing plane provides a comprehensive set of IPv4/IPv6 services, QoS, multicast and VPN features. The capabilities below are supported on the platform; performance scale numbers are platform-dependent.

Feature	Description
IPv4/IPv6 unicast	OSPFv2/v3, IS-IS, EIGRP, BGP-4, MP-BGP, static v4/v6, policy-based routing
First-hop redundancy	HSRP v1/v2, VRRP, GLBP (IPv4/IPv6)
Multicast	PIM Sparse / Dense / SSM, IGMPv3, MLDv2, mroute hardware scale
MPLS	MPLS forwarding, L3VPN (VRF-aware), Segment Routing awareness (platform capable)
VPN / overlay	IPsec, DMVPN, FlexVPN, GETVPN, EZVPN; SD-WAN overlay, OMP, vSmart
QoS	Cisco-class QoS with 8 queues per egress port; DSCP/ 802.1p; shaping / policing
High availability	NSF/NSR, SSO, hitless software upgrades, ISSU
Application visibility	NBAR2 / Flexible NetFlow / IPFIX, AppQoE (where licensed)
TrustSec / SGT	802.1AE MACsec, TrustSec SGT/SGACL for segmentation

Feature	Description
Management	NETCONF/YANG, RESTCONF, gRPC, NETCONF over SSH, gNMI telemetry

Cisco IOS XE edge platforms provide multiple WAN and overlay connectivity options. The capabilities below apply to the router platform and are enabled in software or through the installed modules.

Capability	Description
WAN uplinks	Gigabit / 10G SFP+/QSFP; T1/E1 TDM via NIMs; cellular LTE / 5G via NIMs
Catalyst SD-WAN	Controller-mode SD-WAN: OMP, control-plane, vSmart / vManage integration
SD-Routing	Distributed routing under Catalyst Center (DNA) management
DMVPN / FlexVPN	Dynamic multipoint VPN and FlexVPN hub-and-spoke overlay
IPsec / IKEv2	Hardware-accelerated IPsec ESP with AES-GCM encryption
Application Aware Routing	SLA-based path selection and failover (AppQoE on IOS XE SD-WAN)
Cloud / Internet edge	Cloud on-ramp for IaaS, direct Internet access, guest internet
QoS / shaping	Per-tunnel and per-class QoS with hierarchical queueing
NAT / firewall	Stateful NAT, zone-based firewall with App awareness
Multicast over VPN	mVPN / mLDP and multicast over DMVPN/FlexVPN
High availability	SSO, NSF/NSR, BFD, dual WAN failover
WAN analytics	Flow export (IPFIX), AppQoE analytics, telemetry to vManage

Cisco IOS XE platforms provide a comprehensive set of operational features to keep the network and the device itself resilient and predictable in production deployments.

Capability	Description
Software redundancy	Two independent IOS XE processes for software fault isolation (where supported)
Hardware redundancy	1+1 / N+1 redundant AC or DC power supplies with hot-swap FRUs
Stateful switchover	SSO / NSF for routing protocols across supervisor or RFD failures
ISSU	In-Service Software Upgrade to minimize downtime during IOS XE upgrades (where supported)
Modular QoS	Per-tunnel and per-class QoS policies for SD-WAN overlay
Graceful restart	OSPF / IS-IS / BGP graceful restart helpers (RFC 3623 / RFC 5306)
Modular optics	Pluggable SFP/SFP+ for fast optical replacement without service impact
Smart licensing	Cisco Smart Licensing with PnP enrollment and offline reservation
Telemetry streaming	gNMI/gRPC streaming telemetry to DNA Center / 3rd-party collectors
Application visibility	NBAR2 / FNF for application-level telemetry and visibility
BFD	Bidirectional Forwarding Detection for sub-second failure detection

Capability	Description
Hardware crypto offload	AES-NI / QFP / ASIC-accelerated IPsec encryption

Interface expandability for ISR1100X-4G is provided through Network Interface Modules (NIM), Service Modules (SM), Platform Interface Modules (PIM), and the supported optics family. Representative options follow; specific combinations should be confirmed against the platform ordering guide.

Module / Accessory	Description
NIM (voice / TDM)	NIM-2/4/8-T1/E1 (voice/data TDM), NIM-2FXO / 4FXO / 2FXSP / 4FXSP (FXO/FXS)
NIM (cellular)	NIM-4G-LTE, NIM-4G-LTE-VZ/AT, NIM-5GS-6G (where supported)
PIM modules	PIM-2/4BRI-NT/TE, PIM-8T1E1 / 4T1E1 (TDM/ISDN)
Service modules	SM-X-PVDM-500/1000/2000/3000 (voice DSP); SM-X-8FXS/12FXO/16FXS (voice)
SFP / SFP+ optics	GLC-T, GLC-SX-MMD, GLC-LX-SMD, GLC-LH-SMD; SFP-10G-SR/LR/ER/ZR
Power supply	AC PSU (default) and DC PSU (where supported) - hot-swappable where dual bays
Console / management	RJ-45 console cable included for CLI management access
Rack-mount kit	Standard 19-in rack-mount brackets included
Cisco DNA subscription	Cisco DNA Essentials / Advantage licensing for SD-WAN/automation
Smart Net Total Care	Optional service contract for next-business-day replacement

The router complies with the following interoperability, safety and environmental standards. Compliance is verified by independent testing laboratories.

Category	Standard
IPv4/IPv6 routing	RFC 1812, RFC 4291, RFC 4861 (ND), RFC 4443 (ICMPv6); OSPF/IS-IS/BGP/EIGRP
Layer 2	IEEE 802.1Q VLAN, 802.1p QoS, 802.1x port security, 802.3ad LACP
VPN / Security	RFC 4303 ESP, RFC 7296 IKEv2, RFC 5246 TLS, RFC 8446 TLS 1.3, AES-GCM
MPLS / Segment Routing	RFC 3031/3032 MPLS; SR-MPLS (platform capable)
Management	NETCONF (RFC 6241), RESTCONF, YANG (RFC 6020/7950), SNMPv2c/v3, NETCONF-SSH
Quality of Service	RFC 2597/2598 (PHB), RFC 2474 (DSCP), 802.1p
Time sync	NTPv4 (RFC 5905), PTPv2 (IEEE 1588-2008)
Safety	UL/CSA/IEC/EN 60950-1, UL/IEC/EN 62368-1
EMC / EMI	FCC 47 CFR Part 15 Class A, EN 55032/CISPR 32, EN 55024/55035, EN 300 386

Category	Standard
Environmental	RoHS 2011/65/EU, WEEE 2012/19/EU; operating/storage altitude per datasheet