The bridge to possible

Cisco SD-WAN vEdge Routers

Contents

Introduction

Cisco's SD-WAN vEdge Routers are routing components of the architecture that delivers the essential WAN, security and multi-cloud capability of the Cisco SD-WAN solution.

Cisco SD-WAN vEdge routers are delivered as hardware, software, cloud or virtualized components that sit at the perimeter of a site, such as remote office, branch office, campus, or a data center. They participate in establishing a secure virtual overlay network over a mix of any WAN transports.

Product portfolio

The entire Cisco SD-WAN routing portfolio includes:

Viptela OS Routers

1. **vEdge-100:** five fixed 10/100/1000 Mbps ports. Comes in three different flavors:

   - **vEdge 100b:** Ethernet only

   - **vEdge 100m:** Ethernet and integrated 2G/3G/4G modem

2. **vEdge-1000:** 8 ports of fixed GE SFP

3. **vEdge-2000:** 2 Pluggable Interface Modules

4. **vEdge-5000:** 4 Network Interface Modules

5. **ISR 1100-4G:** 4 GE WAN ports

6. **ISR 1100-**4GLTE: 4 GE WAN ports, 4G LTE (CAT4)

7. **ISR 1100-6G:** 6 GE WAN ports (4 GE and 2 SFP)

IOS XE SD-WAN Routers

1. **ISR & ASR Series:** With IOS XE SD-WAN software image, SD-WAN capability can be enabled on select ISR 1000 series, ISR 4000 series and ASR 1000 series routers. For more details, refer the respective data sheets.

2. **ENCS:** With IOS XE SD-WAN software image, SD-WAN capability can be enabled on select ENCS 5000 series platforms. For more details, refer to the respective data sheets.

3. **vEdge Cloud** and **CSR** 1000V are the cloud elements of the SD-WAN solution. For more details, refer to the respective data sheets.

vEdge Routers: All of vEdge Routers offer the same software functionality. The key differences between the platforms are in respect to throughput, redundancy in hardware components and port density. Some models of vEdge-100 routers offer additional functionality in the form of Power over Ethernet. Key hardware specifications for vEdge Routers are listed in Table 1.

Table 1.   Key Hardware Specifications of the vEdge Routers

Item	vEdge-100	vEdge-1000	vEdge-2000	vEdge-5000
Services and Slot Density				
Traffic ports	5 x 10/100/1000 Mbps RJ-45 ports	8 x 1 Gbps SFP	4 x 1 Gbps SFP, 2 Pluggable Inter- face Module (PIM) slots. PIM Options: 2 x 10 Gbps SFP, 8 x 1 Gbps SFP	4 Network Interface Module (NIM) slots – NIM Options: 8 x 1Gbps Copper, 8 x 1Gbps SFP and 4 x 10Gbps
Memory DDR3 ECC	2 GB	2 GB	8 GB	32GB DDR4
SD card slot (external)	N/A	Maximum capacity supported 32 GB	Maximum capacity supported 32 GB	N/A
NAND storage (internal)	4 GB	8 GB	8 GB	120GB
External USB Host Port	100b: N/A 100m: 1 (USB 3.0 Type A)	2 (USB 3.0 Type A)	2 (USB 3.0 Type A)	2 (USB 2.0 Type A)
Power-over-Ethernet (PoE)	100b: N/A 100m & 100wm: 1 port, 15.4W (802.3af)	N/A	N/A	N/A
4G LTE	100b: N/A 100m : 1 Integrated	N/A	N/A	N/A
USB console port	1, Mini Type B (115.2 Kbps)	1, Type B (115.2 Kbps)	1, Type B (115.2 Kbps)	N/A
Serial console port	N/A	1, RJ-45 (115.2 Kbps)	1, RJ-45 (115.2 Kbps)	1, RJ-45 (115.2 Kbps)
Management Ethernet port (RJ-45 10/100/1000Mbps)	N/A	1, RJ-45 10/100/1000	1, RJ-45 10/100/1000	1, RJ-45 10/100/1000
Power supply option	100b: External AC-DC power adapter 100m: Internal fixed AC power adapter	External AC-DC power adapter	Hot-swappable Power Supply Units (PSUs)	Hot-swappable Power Supply Units (PSUs)
Redundant power supply support	N/A	Yes	1+1 active-active redundancy	Yes

Item	vEdge-100	vEdge-1000	vEdge-2000	vEdge-5000
Fans	100b: N/A (fanless) 100m: 1 fan, fixed	2	2, hot swappable	4, hot swappable
Power Specifications				
AC input voltage	90-264 Vrms (100-240V)	90-264 Vrms (100-240V)	90-264 Vrms (100-240V)	90-264 Vrms (100-240V)
AC input line frequency	47-63 Hz	47-63 Hz	47-63 Hz	47-63 Hz
Typical power consumption	100b: 15W 100m: 35W with PoE, 20W without PoE	28W	125W	Max power consumption 285W
Physical Specifications				
Rack height	100b: 1 RU 100m: 1RU Plus	1 RU	1 RU	1 RU
Chassis height	100b: 1.75 in. (4.4 cm) 100m: 1.8 in. (4.6 cm)	1.75 in. (4.4 cm)	1.75 in. (4.4 cm)	1.75 in. (4.4 cm)
Chassis width	100b: 6.75 in. (17 cm) 100m: 9.25 in. (23.5 cm)	7.5 in. (19 cm)	Chassis only: 17.25 in. (43.82 cm) Chassis with mounting brackets attached: 19 in. (48.2 cm)	Chassis only: 438mm Chassis with mounting brackets attached: 19 in. (482 mm)
Chassis depth	100b: 5.5 in. (14 cm) 100m: 5.75 in. (14.6 cm)	10 in. (25.4 cm)	18.5 in. (47 cm)	580mm
Chassis weight	1.75 lb (0.79 kg)	3.55 lb (1.6 kg)	Chassis only: 11 lb (5 kg) Chassis with two power supplies installed: 15 lb (6.8 kg)	Chassis with Fans and Power supplies installed:37 lbs
Airflow	100b: N/A (fanless) 100m: Top	Front to back	Front to back	Front to back
Rack-mount accessory kit 19 in (48.3 cm) EIA	100b: Provided with the unit 100m: Available and sold separately	Available and sold separately	Provided with the unit	Provided with the unit

Item	vEdge-100	vEdge-1000	vEdge-2000	vEdge-5000
Packaging Specifications				
Package height	3.58 in. (9.09 cm)	8.5 in. (21.6 cm)	8.5 in. (21.6 cm)	9 in. (22.86 cm)
Package width	100b: 7.75 in. (19.68 cm) 100m: 10 in. (25.4 cm)	11.75 in. (29.84 cm)	22 in. (55.88 cm)	24 in. (60.96 cm)
Package depth	13 in. (33 cm)	16.5 in. (41.9 cm)	23.5 in. (59.7 cm)	31 in. (78.74 cm)
Operating Condition				
Temperature	0 to 40°C (32 to 104°F) at sea level (temperature de-rating of 1.5 deg C per 1000 feet of altitude applicable up to max of 10000 feet or 3000 m)	0 to 40°C (32 to 104°F) at sea level (temperature de-rating of 1.5 deg C per 1000 feet of altitude applicable up to max of 10000 feet or 3000 m)	0 to 40°C (32 to 104°F) at sea level (temperature de-rating of 1.5 deg C per 1000 feet of altitude applicable up to max of 10000 feet or 3000 m)	0 to 40°C (32 to 104°F) at sea level (temperature de-rating of 1.5 deg C per 1000 feet of altitude applicable up to max of 10000 feet or 3000 m)
Altitude	Max 3000 m (10000 ft)	Max 3000 m (10000 ft)	Max 3000 m (10000 ft)	Max 3000 m (10000 ft)
Humidity	10 to 85% RH	10 to 85% RH	10 to 85% RH	10 to 85% RH
Transportation/Storage Condition				
Temperature	–40 to 70°C (–40 to 158°F)	–40 to 70°C (–40 to 158°F)	–40 to 70°C (–40 to 158°F)	–40 to 70°C (–40 to 158°F)
Humidity	5 to 95%RH	5 to 95%RH	5 to 95%RH	5 to 95%RH
Altitude	4570 m (15000 ft.)	4570 m (15000 ft.)	4570 m (15000 ft.)	4570 m (15000 ft.)
Reliability				
MTBF	104K hours	80K hours	420K hours	178K hours
Regulatory Compliance				
Safety	AS/NZS 60950-1	AS/NZS 60950-1	AS/NZS 60950-1	AS/NZS 60950-1
	CAN/CSA 60950-1	CAN/CSA 60950-1	CAN/CSA 60950-1	CAN/CSA 60950-1
	CB-IEC60950-1	CB-IEC60950-1	CB-IEC60950-1	CB-IEC60950-1
	CE Marking	CE Marking	CE Marking	CE Marking
	EN 60950-1	EN 60950-1	EN 60950-1	EN 60950-1
	UL60950-1	UL60950-1	UL60950-1	UL60950-1

Item	vEdge-100	vEdge-1000	vEdge-2000	vEdge-5000
EMC	100b: AS/NZS CISPR22 Class A 100m: AS/NZS CISPR22 Class B	AS/NZS CISPR22 Class A	AS/NZS CISPR22 Class A	EN 550332: 2012+AC: 2013 Class A AS/NZS CISPR 32: 2015 CISPR32: 2015 EN55024: 2010 +A1: 2015 EN 61000-3-2: 2014 CLASS A EN 61000-3-3: 2013
	EN 300 386	EN 300 386	EN 300 386	
	100b: EN 55022 Class A 100m: EN 55022 Class B	EN 55022 Class A	EN 55022 Class A	FCC PART 15, SUBPART B ANSI C63, 4-2014 ICES-003 ISSUE 6: 2016 CISPR 22: 2008 CAN/CSA-CISPR 22-10
	100b: FCC Class A 100m: FCC Class B	FCC Class A	FCC Class A	FCC Class A
	100b: ICES Class A 100m: ICES Class B	ICES Class A	ICES Class A	ICES Class A
	100b: VCCI Class A 100m: VCCI Class B	VCCI Class A	VCCI Class A	VCCI Class A
Environmental	ROHS 6/6	ROHS	ROHS	ROHS

Table 2 below depicts key specifications for the 4G/LTE functionality on vEdge-100m.

Table 2. 4G/LTE Specifications of the vEdge-100m

Item	vEdge-100m
Hardware Components	
LTE modem	Internal PCIe module
SIM card	1, Mini SIM (2FF)
Antenna type	MIMO, Dipole swivel
Antenna connectors	2, type F
Specifications and Features	
User equipment implementation	3GPP, release 9 compliant

Item	vEdge-100m
User equipment category	UE category 3
Maximum data transfer rates	Downlink: 100 Mbps Uplink: 50 Mbps
Voice and SMS	No
Certifications	PTCRB, GCF

Table 3 below depicts 4G/LTE bands supported on vEdge-100 platforms.

Table 3. 4G/LTE Bands Supported on vEdge-100m

Region	100m-VZ	100m-AT	100m-NA	100m-GB	100m-NT
LTE Bands	4 (AWS 1700MHz/2100Hz), 13 (700MHz)	2 (1900MHz), 4 (AWS 1700Hz/2100Hz), 5 (850MHz), 17 (700MHz)	2 (1900MHz), 4 (AWS 1700MHz/2100MHz), 5 (850MHz), 13 (700MHz), 17 (700MHz), 25 (1900MHz)	1 (2100MHz), 3 (1800MHz), 7 (2600MHz), 8 (900MHz), 20 (800MHz)	1 (2100MHz), 19 (800MHz), 21 (1500MHz)
Australia	No	No	No	Yes	No
Europe	No	No	No	Yes	No
Middle East	No	No	No	Yes	No
Latin America and Asia Pacific	No	No	No	Yes	No
United States	Verizon	AT&T	Yes	No	No
Canada	No	No	No	No	No
Japan	No	No	No	Yes	NTT DoCoMo

Table 4 depicts 2G and 3G bands supported on vEdge-100 platforms.

Table 4. 2G and 3G Bands on vEdge-100m

Technology	100m-VZ	100m-AT	100m-NA	100m-GB	100m-NT
UMTS/HSPA+	No	2 (1900MHz), 4 (AWS1700/2100M- Hz), 5 (850Mhz)	A1 (2100MHz), 2 (1900MHz), 4 (AWS 1700/2100MHz), 5 (850MHz), 8 (900MHz)	1 (2100MHz), 2 (1900MHz), 5 (850MHz), 8 (900MHz)	1(2100MHz), 5 (850MHz), 6 (800MHz), 19 (850MHz)

Technology	100m-VZ	100m-AT	100m-NA	100m-GB	100m-NT
GPRS/Edge	No	GSM 850 (850MHz), EGSM 900 (900MHz), DCS 1800 (1800MHz), PCS 1900 (1900MHz)	GSM 850 (850MHz), EGSM 900 (900MHz), DCS 1800 (1800MHz), PCS 1900 (1900MHz)	GSM 850 (850MHz), EGSM 900 (900MHz), DCS 1800 (1800MHz), PCS 1900 (1900MHz)	GSM 850 (850MHz), EGSM 900 (900MHz), DCS 1800 (1800MHz), PCS 1900 (1900MHz)
CDMA EVDO Release 0, EVDO Release A	BC0 (Cellular 800 MHz), BC1 (PCS 1900 MHz), BC10 (Secondary 800 MHz)	No	No	No	No

Software capabilities

The vEdge routers take advantage of standards-based features for the LAN (service) and WAN (transport) side of the network. Key software capabilities of the vEdge Routers are listed in Table 5.

Category	Features
AAA	TACACS+, RADIUS, local, role-based access control
Routing	OSPF, eBGP, iBGP, static, connected, OMP
Bridging	802.1Q, native VLAN, bridge domains, IRB, host-mode bridging
Security	Zero-trust, whitelisting, tamper-proof module, DTLS/TLS, IPSec, ESP-256-CBC, Authentication Header, HMAC-SHA1, DDOS protection, control plane protection, NAT traversal
Forwarding and Quality of Service (QoS)	Classification, prioritization, low latency queuing, remarking, shaping, scheduling, policing, mirroring, NAT/PAT
Multicast	IGMP v1/v2, PIM, Auto-RP, scale-out traffic replication
Policy	Route policies, app-aware routing, control policy, data policy, ACL policy, VPN member- ship policy, service advertisement and insertion policy
Cellular	Integrated 4G/LTE modem (vEdge 100m), circuit of last resort
System and network services	IPv4, SNMP, NTP, DNS client, DHCP client, DHCP server, DHCP relay, config archival, Syslog, SSH, SCP, NAT/PAT, Cflowd v10 IPFIX export
Configuration and monitoring	Netconf over SSH, CLI, REST (vManage), Linux shell
Out-of-band management	Management port (vEdge-1000, vEdge-2000, vEdge-5000), serial console port (vEdge-1000, vEdge-2000, vEdge-5000), USB console port

Ordering information

Ordering information for vEdge Routers is listed in Table 5.

Table 5.   Ordering Information for vEdge Routers

SKU	SKU Description
VEDGE-100B-AC-K9	vEdge-100b AC router chassis with external power supply, 5 Ethernet ports, cables and mounting kit
VEDGE-100M-AT-K9	VEdge-100 AC router 4G/LTE SIM slot US. AT&T
VEDGE-100M-GB-K9	VEdge-100 AC router 4G/LTE SIM slot – World Wide
VEDGE-100M-NA-K9	VEdge-100 AC router 4G/LTE SIM slot NA PTCRB certified
VEDGE-100M-NT-K9	VEdge-100 AC router 4G/LTE SIM slot Japan ATT Docomo
VEDGE-100M-SP-K9	VEdge-100 AC router 4G/LTE SIM slot US Sprint
VEDGE-100M-VZ-K9	VEdge-100 AC router 4G/LTE SIM US Verizon
VEDGE-1000-AC-K9	VEdge-1000 AC router base chassis with 8x1GE fixed ports
VEDGE-2000-AC-K9	Cisco VEDGE-2000 AC Router Base Chassis
VEDGE-5000-AC-K9	VEdge 5000 AC router with 4 NIM slots
NIM-8-1GE-RJ45	VEdge 5000 AC router with 8 NIM 1GE Copper Slot
NIM-8-1GE-SFP	VEdge 5000 AC router with 8 NIM 1GE fiber Slot
NIM-4-10GE-SFPP	VEdge 5000 AC router with 4 NIM 10GE SFP+ Slot
PIM-2X10GE-SFP+	Cisco VEDGE-2000 2x 10GE SFP+ PIM
PIM-8X1GE-SFP	Cisco VEDGE-2000 8x 1GE SFP PIM
VIP-SFP-1GE-BASET	Small form-factor pluggable transceiver – 1GE BaseT 10/100/1000
VIP-SFP-1GE-LX	Small form-factor pluggable transceiver – 1GE LX
VIP-SFP-1GE-SX	Small form-factor pluggable transceiver – 1GE SX
VIP-SFP+-10GE-LR	Small form-factor pluggable plus transceiver – 10GE LR
VIP-SFP+-10GE-SR	Small form-factor pluggable plus transceiver – 10GE SR

For ordering details of SD-WAN capability on ISR 1000 series, ISR 4000 series, ASR 1000 series, and ENCS refer the respective data sheets.

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

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