

VMware VeloCloud SD-WAN

Edge platform specifications

AT A GLANCE

VMware VeloCloud SASE, secured by Symantec, with VMware VeloCloud SD-WAN as a fundamental building block, brings cloud-delivered networking, security, AIOps, and compute to support ubiquitous access for branch and remote workers as well as digital transformation at the edge.

VMware VeloCloud SD-WAN enables enterprises to securely support application growth, network agility, and simplified branch implementations while delivering high-performance, reliable branch access to cloud services, private data centers, SaaS-based and edge-native enterprise applications. Cloud-native by design, VMware VeloCloud SD-WAN and other SASE services are delivered via a global network of VMware Edge PoPs™, either self-managed or as a managed service.

KEY BENEFITS

Simplified WAN management:

Zero touch deployments, simplified operations, one-click service insertion

Assured application performance:

Transport-independent performance for the most demanding applications, leveraging economical bandwidth

Managed on-ramp to the cloud:

Direct cloud access with performance, reliability, and security

VMware VeloCloud SD-WAN™, a fundamental component of VMware VeloCloud SASE™, secured by Symantec, offers converged cloud networking and security services to achieve flexibility, agility, and scale for enterprises of all sizes. VeloCloud SD-WAN is built on software-defined networking principles to address end-to-end automation, application continuity, branch transformation, and security from the edge to the data center and the cloud.

VeloCloud SD-WAN brings enterprise networking and edge compute together for modern applications, while delivering security and ubiquity of access for the distributed workforce. We deliver SD-WAN and SASE as a cloud-native, edge services architecture for today's distributed enterprises embracing cloud, workforce, and application transformation.

As a cloud-delivered solution, VMware VeloCloud SD-WAN ensures resilient WAN connectivity and allows users to have flexible WAN choices, such as broadband, MPLS, and LTE. VeloCloud SD-WAN offers high application performance and availability while lowering networking costs. It can detect the slightest degradations and dynamically remediate over one or multiple WAN links, resulting in a highly satisfied user experience. While most enterprises deploy SD-WAN hardware appliances at their branch locations, a software-based remote client is also available as an extension of VeloCloud SD-WAN. Moreover, Enhanced Firewall Service, based on VMware's proven NSX security technology, is built into VeloCloud SD-WAN Edges, providing comprehensive security and eliminating the need for legacy firewalls at branch locations.

VMware VeloCloud SD-WAN components

The VeloCloud SD-WAN solution consists of **three** components:

VMware VeloCloud SD-WAN Edge

VMware VeloCloud SD-WAN Edge is an enterprise-class appliance providing secure and optimized connectivity to applications anywhere, on and off the cloud. It is zero-touch provisioned for secure and optimized connectivity to applications.

VeloCloud SD-WAN Edge is available in various form factors: hardware, software (VMs), downloadable from cloud marketplaces, or Virtual Network Functions (VNF), with hardware appliances most widely deployed at customer branch sites.

VeloCloud SD-WAN Edge automatically aggregates multiple links and steers traffic over the optimal links based on Dynamic Multipath Optimization™ (DMPO)

and deep application recognition (DAR). VeloCloud SD-WAN Edge supports high availability (HA) deployment models and can easily integrate into an existing network.

VeloCloud SD-WAN Edge also offers an Enhanced Firewall Service, which includes functions such as IDS/IPS, URL filtering, and malicious IP filtering. This additional layer of security serves as a barrier between a private network and the public Internet, and is crucial for protecting branch sites from unauthorized access and threats.

VMware VeloCloud SD-WAN Gateways

VeloCloud SD-WAN Gateways optimize data paths to all applications, branches, and data centers, along with the ability to deliver network services to and from the cloud. VMware's distributed, global network of gateways, hosted by VMware/service providers or deployed on-premises, provides scalability, redundancy, and on-demand flexibility.

VeloCloud SD-WAN Gateways implement DMPO, cloud VPN, and VMware VeloCloud SD-WAN Multisource Inbound Quality of Service between global cloud services (SaaS or IaaS) and each VeloCloud SD-WAN Edge, enabling broadband and private leased lines to appear as a single, high-performance WAN connection.

VMware Edge Cloud Orchestrator™

VMware Edge Cloud Orchestrator is a cloud-hosted (or on-premises) central management tool for VMware VeloCloud SD-WAN, VMware VeloCloud SD-Access™, VMware VeloCloud Cloud Web Security™, and VMware Edge Intelligence™. Its web-based user interface (UI) provides simplified configuration, provisioning, monitoring, fault management, logging, and reporting functions. VMware Edge Cloud Orchestrator enables flexible implementation of business-based policies for application delivery and traffic management.

VMware Edge Intelligence

VMware Edge Intelligence is a vendor-agnostic artificial intelligence for IT operations (AIOps) solution focused on the enterprise edge that ensures end user and internet of things (IoT) client performance, security, and self-healing through wired and wireless LAN, SD-WAN and SASE.

The solution employs machine learning algorithms and modern big data analytics to process high volumes of data from a wide range of network, device, and application sources. In doing so, VMware Edge Intelligence auto-discovers end user and IoT devices, automatically establishes baselines, understands every single client interaction, and monitors for deviations to provide actionable insights that operations teams can proactively remediate. See the VMware Edge Intelligence [datasheet](#) for more information.

Software features

Category	Features
AAA	RADIUS, local authentication and authorization, multitenant 3 Tier RBAC architecture, auditing, roles and privileges
Availability	High availability* for VMware VeloCloud SD-WAN Edge, disaster recovery for VMware Edge Cloud Orchestrator, multilink for high availability of WAN Edge clustering
Configuration and monitoring	REST API, SDK (Java and Python), Syslog, SNMP, NetFlow, 4,000+ applications/categories, ANPM, application usage, device identification, live mode, zero IT touch activation, per-flow visibility
Deployment flexibility	Eliminate pre-stage, no CLI, group policies, consolidated ICOM and end customer dashboard, VNF form-factor, multitenant stateless headend, transport group for business policy abstraction, application-aware service insertion on premises or in cloud, RMA workflow, customized application maps
Dynamic Multipath Optimization	Application and network condition aware sub-second steering, jitter/loss correction, fast intelligent routing, intelligent gateway selection, link aggregation, TCP flow optimization, unidirectional link measurements, bandwidth detection
Multitenancy	VMware VeloCloud SD-WAN Controller, VMware VeloCloud SD-WAN Gateway, VMware Edge Cloud Orchestrator

Category	Features
Network services	IPv4, IPv6, DNS, DHCP client, DHCP server, DHCP relay, NAT
QoS	Shaping, policing, per-flow queueing, tunnel shaper, multi-source inbound QoS, rate-limiter, COS aware, outer/inner DSCP tagging, smart defaults, MPLS COS
Remote troubleshooting	Live mode, alerts, events, remote diagnostics (examples: DNS test, ping test, flush active flows, list active flows, paths, VPN tests, packet capture, etc.), PKI infrastructure with certificate management workflows, diagnostic bundles
Routing	OSPF, BGP, static, connected, ICMP probes/responders, overlay flow control, per-packet application aware steering, route filter, route redistribution
SaaS/laaS	Improved performance for cloud apps, supports well-known IaaS (e.g., AWS, Azure, GCP), VMware VeloCloud Cloud Web Security (e.g., Check Point, Zscaler, Palo Alto Networks, Netskope, Menlo Security, Websense, OpenDNS)
Cloud providers	AWS, Azure, GCP, Alibaba, VMware Cloud on AWS, Azure VMware Solution. Performance data is available upon request.
Security	AES 256/128, SHA1/SHA2, IKEv2, VPNC compliant IPsec, PKI, segmentation, TLS1.2, SCEP, firewall L2-7, 1:1 NAT, port forwarding, dynamic branch to branch, MAC filtering Security service Insertion capabilities include simplified service insertion of third-party NGFW running locally on Edge VNF, and simplified cloud-based NGFW, AV, IPS/IDS, threat-detection service insertion Protects users and infrastructure accessing SaaS and Internet apps from threats, at the same time providing visibility and control with VMware VeloCloud Cloud Web Security
Enhanced Firewall Service	Advanced firewall features including Intrusion Detection and Prevention (IDS/IPS), URL Filtering, Malicious IP Filtering, and security monitoring
Hosted firewall logging	A hosted logging infrastructure on the cloud is provided to customers to capture and store firewall logs received from Edges
Security monitoring dashboard	The new "Security Overview" screen displays real-time security related statistics such as Threats Detected/Prevented, Edge Impacted/Protected, and more. To access it, use the VMware Edge Cloud Orchestrator UI > Monitor > Security Overview.
Port security	Wi-Fi 802.1x – WPA-Enterprise (EAP-MD5, EAP-TLS), WPA-Personal 802.1x- Enterprise (EAP-MD5, EAP-TLS) - MAC address-based access (local) 802.1x is supported on both switched and routed ports MAC Address Bypass (MAB): For LAN devices that do not support 802.1x authentication, their MAC addresses can be checked against a RADIUS server
VLAN tagging	802.1Q, 802.1ad, QinQ (0x8100), QinQ (0x9100), native
WAN overlay support	Public/private/hybrid transport, cloud and on-premises

Software subscriptions editions

VMware VeloCloud SD-WAN software is based on different subscription editions with different features designed for a wide variety of use cases. They are listed below.

Features	Standard Edition	Enterprise Edition	Premium Edition
VMware Edge Cloud Orchestrator	✓	✓	✓
Dynamic Multipath Optimization (DMPO)	✓	✓	✓
Number of Edges supported	Unlimited	Unlimited	Unlimited

VMware VeloCloud SD-WAN Edge Platform Specifications

Features	Standard Edition	Enterprise Edition	Premium Edition
Maximum number of data segments	4	128	128
Maximum number of profiles	4	Unlimited	Unlimited
Partner gateway support	✓	✓	✓
Virtual services orchestration for NGFW deployment on Edges	✓	✓	✓
Routing support	BGP, OSPF	BGP, OSPF, Multicast	BGP, OSPF, Multicast
Cloud gateway to SaaS and cloud security service (without tunneling)	✗	✗	✓
Cloud gateway to legacy DCs, IaaS, or cloud security service via tunnels (non-SD-WAN destinations)	add-on	add-on	✓
Enhanced Firewall Service (incl. IDS/IPS, URL Filtering, Malicious IP Filtering)	add-on	add-on	add-on
Hosted firewall logging	✓	✓	✓
Security monitoring dashboard	✓	✓	✓
Direct Edge to Internet/cloud security service (BGP over IPsec)	✓	✓	✓
Automated tunnel setup via API to IaaS or third-party cloud security service	✗	from Edge	from Edge or Gateway
PCI certified service	add-on	add-on	add-on
Upgradeable to a higher edition	✓	✓	N/A
Hub clustering	✓	✓	✓
Gateways as cloud VPN hub	✗	✗	✓
Auto VPN setup	Hub to spoke	Hub to spoke plus dynamic B2B	Hub to spoke plus dynamic B2B
Customizable business & security policy	✓	✓	✓
Path visibility	Last-mile	Last-mile plus site-to-site	Last-mile plus site-to-site
Wired/wireless/LAN/WAN analytics with VMware Edge Intelligence	add-on	Includes 1 node, additional nodes available as add-on	Includes 2 nodes, additional nodes available as add-on
VMware Edge Intelligence IoT Operational Assurance	add-on	add-on	add-on
PKI certificate management	Embedded certificate of authority (CA)	Embedded CA plus intermediate and external CA	Embedded CA plus intermediate and external CA
Mixed editions	✓	✓	✓

VMware VeloCloud SD-WAN Bandwidth Tiers

VMware VeloCloud SD-WAN is licensed by bandwidth tier as shown in the table below:

Edge / BW	10 M	30 M	50 M	100 M	200 M	500 M	1 G	2 G	10 G
Edge 510, 510N, 510-LTE	•	•	•	•	•	•			
Edge 520, 520V	•	•	•	•	•	•			
Edge 540				•	•	•	•		
Edge 610, 610C, 610N, 610-LTE	•	•	•	•	•	•			
Edge 710-W	•	•	•	•	•	•			
Edge 620, 620C, 620N	•	•	•	•	•	•	•		
Edge 640, 640C, 640N				•	•	•	•	•	
Edge 680, 680C, 680N				•	•	•	•	•	
Edge 840				•	•	•	•	•	
Edge 2000						•	•	•	•
Edge 3400, 3400C					•	•	•	•	•
Edge 3800, 3800C							•	•	•
Edge 3810							•	•	•

Refer to the Product Lifecycle Updates for a complete list of end-of-sale Edge models.

Software support levels

Software Support Plans	Basic	Production	Premier
Call center	24x7 (Sev1) 12x5 (Sev2, Sev3, Sev4)	24x7 (Sev1) 12x5 (Sev2, Sev3, Sev4)	24x7 (Sev1, Sev2) 12x5 (Sev3, Sev4)
Response time	Sev1: within 1 hour Sev2: within 6 hours Sev3: within 12 hours Sev4: not applicable	Sev1: within 30 mins Sev2: within 4 hours Sev3: within 8 hours Sev4: within 24 hours	Sev1: within 30 mins Sev2: within 2 hours Sev3: within 4 hours Sev4: within 12 hours Sev5: per schedule
Software maintenance	Yes	Yes	Yes
Federal support	-	Yes	Yes

Hardware replacement services

Hardware support/replacement is an option that customers can select with the Edge hardware purchase/renewal.

Physical Edge models

VMware VeloCloud SD-WAN Edge appliance models available for sale include the 510, 6x0, and 3xx0 series. Flexible deployment options are available, including models with or without integrated Wi-Fi and models certified for sale in China.

- VeloCloud SD-WAN Edges (with integrated Wi-Fi): Please refer to the Physical Edge Specifications table below.
- VeloCloud SD-WAN Edges (without integrated Wi-Fi): These Edges have identical specifications to the integrated Wi-Fi models except they do not have Wi-Fi built in. Please refer to the Physical Edge Specifications table below. These models are denoted by the “N” suffix in the model’s name.
- VeloCloud SD-WAN Edges with China certifications: These Edges have identical specifications to their “non-China” counterparts but include China-specific regulatory certifications and the China version of the TPM module. These are denoted by the “C” suffix in the model’s name.

Physical Edge specifications (performance and scale)

Please note: Software release 6.0 offers optimized performance and improved efficiency. Edges must be on software code R6.0+ to achieve similar performance below.

Edge	510, 510N	510-LTE	520*	520V*	540*	610, 610C, 610N	610-LTE	710-W
Max throughput per Edge with routed-mode ports (1300-byte)	850 Mbps	850 Mbps	850 Mbps	850 Mbps	1.5 Gbps	850 Mbps	850 Mbps	950 Mbps
Max throughput per Edge with routed-mode ports (IMIX)	300 Mbps	300 Mbps	300 Mbps	300 Mbps	650 Mbps	300 Mbps	300 Mbps	350 Mbps
Max throughput per Edge with IPS, Malicious IP Filtering, and Stateful Firewall enabled (IMIX) ³	150 Mbps	150 Mbps	150 Mbps	150 Mbps	350 Mbps	175 Mbps	175 Mbps	250 Mbps
Max throughput per Edge with VMware Edge Intelligence enabled (IMIX) ⁴	200 Mbps	200 Mbps	200 Mbps	200 Mbps	500 Mbps	200 Mbps	200 Mbps	265 Mbps

VMware VeloCloud SD-WAN Edge Platform Specifications

Edge	510, 510N	510-LTE	520*	520V*	540*	610, 610C, 610N	610-LTE	710-W
Max throughput per Edge with VMware Edge Intelligence, IPS, Malicious IP Filtering, and Stateful Firewall enabled (IMIX)	150 Mbps	150 Mbps	150 Mbps	150 Mbps	350 Mbps	175 Mbps	175 Mbps	250 Mbps
Max tunnel scale	50	50	50	50	100	50	50	50
Flow per second	2,400	2,400	2,400	2,400	4,800	2,400	2,400	4,000
Flow per second with VMware Edge Intelligence enabled	1,200	1,200	1,200	1,200	1,200	1,200	1,200	3,200
Max concurrent flows	225K	225K	225K	225K	225K	225K	225K	225K
Max concurrent flows with IPS, Malicious IP Filtering and Stateful Firewall enabled	110K	110K	110K	110K	110K	110K	110K	110K
Max concurrent flows with VMware Edge Intelligence enabled	110K	110K	110K	110K	110K	110K	110K	110K
Max concurrent flows with VMware Edge Intelligence, IPS, Malicious IP Filtering and Stateful Firewall enabled	110K	110K	110K	110K	110K	110K	110K	110K
Max number of BGP routes	100K	100K	100K	100K	100K	100K	100K	100K
Max segments	32	32	32	32	32	32	32	32
Maximum NAT entries	225K	225K	225K	225K	225K	225K	225K	225K

Edge	620, 620C, 620N	640*, 640C, 640N	680*, 680C, 680N	840*	2000*	3400, 3400C	3800, 3800C	3810
Max throughput per Edge with routed-mode ports (1300-byte) ¹	1.55 Gbps	5.5 Gbps	8.5 Gbps	6.5 Gbps	15.5 Gbps	11 Gbps	16 Gbps	16 Gbps
Max throughput per Edge with routed-mode ports (IMIX) ²	950 Mbps	2.2 Gbps	3.2 Gbps	2.2 Gbps	6.2 Gbps	3.6 Gbps	6.5 Gbps	6.5 Gbps
Max throughput per Edge with IPS, Malicious IP Filtering, and Stateful Firewall enabled (IMIX) ³	600 Mbps	800 Mbps	1.5 Gbps	1.0 Gbps	4.0 Gbps	2.3 Gbps	4.5 Gbps	4.5 Gbps
Max throughput per Edge with Edge Intelligence enabled (IMIX) ⁴	700 Mbps	1.0 Gbps	2.0 Gbps	1.5 Gbps	5.0 Gbps	3.0 Gbps	5.0 Gbps	5.0 Gbps
Max throughput per Edge with VMware Edge Intelligence, IPS, Malicious IP Filtering, and Stateful Firewall enabled (IMIX)	600 Mbps	800 Mbps	1.5 Gbps	1.0 Gbps	4.0 Gbps	2.3 Gbps	4.5 Gbps	4.5 Gbps
Max tunnel scale	100	400	800	400	6,000	4,000	6,000	6,000
Flow per second	4,800	19,200	19,200	19,200	50,000	38,400	50,000	50,000
Flow per second with VMware Edge Intelligence enabled	2,400	9,600	9,600	9,600	25,000	19,200	25,000	25,000
Max concurrent flows	460K	1.15M	1.9M	1.9M	1.9M	1.9M	3.8M	3.8M

VMware VeloCloud SD-WAN Edge Platform Specifications

Edge	620, 620C, 620N	640*, 640C, 640N	680*, 680C, 680N	840*	2000*	3400, 3400C	3800, 3800C	3810
Max concurrent flows with IPS, Malicious IP Filtering, and Stateful Firewall enabled	230K	460K	960K	460K	1.9M	960K	1.9M	1.9M
Max concurrent flows with VMware Edge Intelligence enabled	230K	460K	960K	460K	1M	960K	960K	960K
Max concurrent flows with VMware Edge Intelligence, IPS, Malicious IP Filtering, and Stateful Firewall enabled	230K	460K	960K	460K	1M	960K	960K	960K
Max number of BGP routes	100K	100K	100K	100K	100K	100K	100K	100K
Max segments	128	128	128	128	128	128	128	128
Maximum NAT entries	460K	960K	960K	960K	1.9M	960K	1.9M	1.9M

* Edge marked with an asterisk has reached end-of-sale. VMware recommends customers use 640N and 680N (non-Wi-Fi models) to replace 640 and 680 (Wi-Fi models).

1. Maximum performance of the Edge based on large packet (1300-byte) payload with AES-128 encryption and DPI turned on
 2. Internet traffic (IMIX) performance based on average packet size of 417-byte payload with AES-128 encryption and DPI turned on
- Note: VMware VeloCloud SD-WAN Edges also support clustering deployments for multi-gigabit performance.
3. Performance numbers with IPS and Stateful Firewall measured using TREX setup based on 400-byte payload.
 4. Performance numbers with VMware Edge Intelligence are measured using a 400-byte payload.

Enhanced HA link performance

Edge	510, 510N	510-LTE	520	520V	540	610, 610C, 610N	610-LTE	710-W
Max throughput (IMIX) across EHA Link	220 Mbps	220 Mbps	220 Mbps	220 Mbps	480 Mbps	220 Mbps	220 Mbps	260 Mbps

Edge	620, 620C, 620N	640, 640C, 640N	680, 680C, 680N	840	2000	3400, 3400C	3800, 3800C	3810
Max throughput (IMIX) across EHA Link	700 Mbps	1 Gbps	2 Gbps	1 Gbps	4 Gbps	2.5 Gbps	5 Gbps	5 Gbps

Note: HA interface (GE1) is ~800 Mbps for 510, 610, and 620 models. Starting in release 5.2, any interface (including the 10G interface) can be used for HA

Maximum Edge throughput with firewall service chained

Edge	620, 620C, 620N	640, 640C, 640N	680, 680C, 680N	840	3400, 3400C	3800, 3800C	3810
Max throughput (IMIX) with Firewall VNF chained	300 Mbps	600 Mbps	1 Gbps	1 Gbps	2 Gbps	3 Gbps	3 Gbps

Connectivity

Edge	510, 510N	510-LTE	520	520V	540	610, 610C, 610N	610-LTE	710-W
LAN / WAN 1G RJ-45	4	4	2	2	2	6	6	4
LAN / WAN 1G SFP			2	2	2	2	2	1
Integrated Wi-Fi	Yes (except 510N)	Yes	Yes	Yes	Yes	Yes (except 610N)	Yes	Yes
Integrated LTE		Yes ²					Yes ²	No
USB ports (3G/4G LTE)	2 ⁴	2 ⁴	2 ³ + 2 ⁴	2 ³ + 2 ⁴	2 ³ + 2 ⁴	2 ³	2 ³	1

Edge	620, 620C, 620N	640, 640C, 640N	680, 680C, 680N	840	2000	3400, 3400C	3800, 3800C	3810
LAN / WAN 1G RJ-45	6	6	6	6	6	6	6	6
LAN / WAN 1G/10G SFP+	2 ¹	2	2	2	2	4	4	8
Integrated Wi-Fi	Yes (except 620N)	Yes (except 640N)	Yes (except 680N)	No	No	No	No	No
Integrated LTE	No	No	No	No	No	No	No	No
USB ports (3G/4G LTE)	2 ³	2 ³	2 ³	2 ⁴	2 ³ + 2 ⁴	2 ³	2 ³	2 ³

1. 620, 620C, and 620N support SFP+ 1/10GE modules

2. 510-LTE supports additional 2 LTE interfaces through USB for 3 concurrent active interfaces

3. USB 3.0 ports

4. USB 2.0 ports

Memory, storage, and third-party VNFs

Edge	510, 510N	510-LTE	520	520V	540	610, 610C, 610N	610-LTE	710-W
System memory (RAM)	4 GB	4 GB	4 GB	8 GB	8 GB	4 GB	4 GB	4 GB
System flash	8 GB	8 GB	8 GB	8 GB	8 GB	16 GB	16 GB	16 GB
System storage				64 GB (SSD)				NA
VNF capable (initial release)	No	No	No	Yes (3.2.0)	No	No	No	No

Edge	620, 620C, 620N	640, 640C, 640N	680, 680C, 680N	840	2000	3400, 3400C	3800, 3800C	3810
System memory (RAM)	8 GB	32 GB	32 GB	32 GB	32 GB	32 GB	32 GB	32 GB
System flash	16 GB	16 GB	16 GB	n/a	n/a	n/a	n/a	n/a
System storage	120 GB (SSD)	120 GB (SSD)	120 GB (SSD)	100 GB (SSD)	100 GB (SSD)	256 GB (SSD)	256 GB (SSD)	256 GB (SSD)
VNF capable (initial release)	Yes (3.4.3)	Yes (3.4.3)	Yes (3.4.3)	Yes (3.2.0)	No	Yes (4.3.0)	Yes (4.3.0)	Yes (4.3.0)

Dimension, power, environment, and reliability

Edge	510, 510N	510-LTE	520	520V	540	610, 610C, 610N, 610-LTE	710-W
Cooling	Fan-less			With fan		Fan-less	
Mounting	Desktop / Wall-mount / 19-inch rackmount						
Size (W x D x H) in mm	206 x 180 x 39.7 mm		206 x 180 x 51 mm			206 x 179.5 x 35 mm	
Unit Weight	2.0 lbs.		2.6 lbs.			2.9 lbs.	2 lbs.
Gross Weight ¹	5 lbs.		6 lbs.			6 lbs.	5 lbs.
Power Supply	External: AC						
AC input	Voltage: 100 V to 240 V auto-ranging, Frequency: 50 Hz to 60 Hz						
Power Load (Typical / Max)	15W/40W		25W/45W	30W/45W	30W/50W	16W/26W	15W/20W
Operating conditions	Temperature (0 °C to 40 °C), Humidity (5% to 85%), Altitude (5,000 m)						
Non-operating conditions	Temperature (-40 °C to 70 °C), Humidity (5% to 95%), Altitude (5,000 m)						
MTBF (25 °C ambient temperature) ²	40.6 yrs.	40.6 yrs.	22.9 yrs.	22.8 yrs.	22.8 yrs.	22.8 yrs.	11.7 yrs.

Edge	620, 620C, 620N	640, 640C, 640N	680, 680C, 680N	840	2000	3400, 3400C	3800, 3800C	3810
Cooling	With fan							
Mounting	Desktop/Wall-mount/RMK			1RU Rack Mounts				
Size (W x D x H) in mm	206 x 200 x 52			437 x 249 x 43	437 x 650 x 43	434 x 381 x 44		
Unit Weight	3.1 lbs.	3.3 lbs.		12 lbs.	23.5 lbs.	13.8 lbs.	15.7 lbs.	
Gross Weight ¹	6.0 lbs.			16 lbs.	30 lbs.	25 lbs.		
Power supply	External: AC				Internal: AC			
Redundant power supply	No				Yes (1+1)	Yes (1+1)		
AC input	Voltage: 100 V to 240 V auto-ranging, Frequency: 50 Hz to 60 Hz							
Power load (Typical / Max)	20W / 30W	35W / 120W	40W / 120W	40W/ 70W	150W/ 200W	165W/ 400W	200W/400W	
Operating temperature	10 °C to 40 °C				10 °C to 35 °C		0 °C to 45 °C	
Operating humidity	5% to 85%							
Operating altitude	5,000 m					3,048 m		
Non-operating conditions	-40 °C to 70 °C							
Non-operating humidity	5% to 95%							
Non-operating altitude	5,000 m					10,688 m		
MTBF (25 °C ambient temperature) ²	22.8 years			11.5 years	7.0 years	17.1 years		

1. Gross weight is total weight of shipment package including unit, power adaptor, AC cord, wall mount brackets, packaging

2. MTBF based on Telcordia SR-332 methodology; excludes system fans in the calculation

Hardware accessories

Mounting brackets and rails

Edge Model	Included in box	Additional Options	Part Number
520, 520v, 540		2RU rack mount shelf	VC-EDG-RMB-P
510/510-LTE,	Wall mount bracket	2RU rack mount shelf	VC-EDG-RMB-P
6x0	Wall mount bracket	2RU rack mount shelf	VC-EDG-RMB-P
710-W	Wall mount bracket	2RU rack mount shelf	VC-EDG-RMB-P
840	Bracket rack mounts		
2000	4-post rail kit		
3x00	2-post rail kit	4-post rail kit	Dell P/N: 770-BCGP

Hardware accessories

Edge	Power Adapter* + Cable	Ethernet Cable	Quick Start Guide
Edge 510, 510N	•	•	•
Edge 510-LTE	•	•	•
Edge 520, 520V	•	•	•
Edge 540	•	•	•
Edge 610, 610C, 610N	•		•
Edge 610-LTE	•		•
Edge 710-W	•	•	•
Edge 620, 620C, 620N	•	•	•
Edge 640, 640C, 640N	•	•	•
Edge 680, 680C, 680N	•	•	•
Edge 840	Integrated power adapter + 1 cable		•
Edge 2000	Hot swappable 1+1 integrated power adaptor + 2x cables		•
Edge 3400, 3400C	Hot swappable 1+1 integrated power adaptor + 2x cables		•
Edge 3800, 3800C	Hot swappable 1+1 integrated power adaptor + 2x cables		•
Edge 3810	Hot swappable 1+1 integrated power adaptor + 2x cables		•

* Every Edge comes with PSU, separate or integrated.

Wireless specifications

Wireless LAN (Wi-Fi) specifications

Wi-Fi Capabilities	510, 510-LTE, 610, 610C, 610-LTE, 620, 620C, 640, 640C, 680, 680C	520, 520v, 540	710-W
Wi-Fi standards	802.11 a/b/g/n/ac	802.11 a/b/g/n/ac	802.11 a/b/g/n/ac/ax (Wi-Fi 6)
Frequency bands (GHz) ¹	2.412-2.472, 5.150-5.825	2.400-2.4835, 5.150-5.250, 5.725-5.850	2.412-2.452, 5.180-5.230, 5.745-5.795
Antenna (max data rate)	2x2 MIMO	3x3 MIMO	2x2 MIMO
Max simultaneous SSIDs	4	4	4
Max transmit power ¹	21 dBm for 2.4 GHz 20 dBm for 5 GHz	20 dBm for 2.4 GHz and 5 GHz	21 dBm for 2.4 GHz 20 dBm for 5 GHz

1. Country-dependent; frequency and power limits are set once unit is activated

Wireless WAN (3G / 4G / LTE) specifications

3G / 4G / LTE Capabilities	510-LTE-AE	510-LTE-AP	610-LTE-AM	610-LTE-RW
Modem	Sierra Wireless EM7455	Sierra Wireless EM7430	Sierra Wireless EM7511	Sierra Wireless EM7565
Geography	North America & Europe	ASIA, ANZ, LATAM	North America	Rest of world
LTE category	Cat-6	Cat-6	Cat-12	Cat-12
Carrier aggregation	Yes	Yes	Yes	Yes
3G fallback	HSPA+	HSPA+	HSPA+	HSPA+
SIM slots	2 (only 1 active)	2 (only 1 active)	Dual SIM single standby	Dual SIM single standby
LTE bands	1, 2, 3, 4, 5, 7, 8, 12, 13, 20, 25, 26, 29, 30, 41	1, 3, 5, 7, 8, 11, 18, 19, 21, 28, 38, 39, 40, 41	B1, B2, B3, B4, B5, B7, B8, B9, B12, B13, B14, B18, B19, B20, B26, B29, B30, B32, B41, B42, B43, B46, B48, B66	B1, B2, B3, B4, B5, B7, B8, B9, B12, B13, B18, B19, B20, B26, B28, B29, B30, B32, B41, B42, B43, B46, B48, B66
Antennas	Main and AUX (via SMA connectors)			

Virtual Edge specifications

Private cloud (hypervisors)

Device	Max. Throughput	Max. Number of Tunnels*	Flows/sec	Max. Concurrent Flows	Max. Number of Routes	Max. Number of Segments*
ESXi Virtual Edge (2-core, VMXNET3)	1.5 Gbps (1,300-byte) 900 Mbps (IMIX)	50	2400	240K	35K	128
KVM Virtual Edge (2-core, Linux Bridge)	800 Mbps (1,300-byte) 250 Mbps (IMIX)	50	2400	240K	35K	128
KVM Virtual Edge (2-core, SR-IOV)	1.5 Gbps (1,300-byte) 900 Mbps (IMIX)	50	2400	240K	35K	128
ESXi Virtual Edge (4-core, VMXNET3)	4 Gbps (1,300-byte) 1.5 Gbps (IMIX)	400	4800	480K	35K	128
ESXi Virtual Edge (4-core, SR-IOV)	5 Gbps (1,300-byte) 2 Gbps (IMIX)	400	4800	480K	35K	128
KVM Virtual Edge (4-core, Linux Bridge)	1 Gbps (1,300-byte) 350 Mbps (IMIX)	400	4800	480K	35K	128
KVM Virtual Edge (4-core, SR-IOV)	4 Gbps (1,300-byte) 1.5 Gbps (IMIX)	400	4800	480K	35K	128
ESXi Virtual Edge (8-core, VMXNET3)	6 Gbps (1,300-byte) 2 Gbps (IMIX)	800	28800	1.9M	35K	128
ESXi Virtual Edge (8-core, SR-IOV)	6 Gbps (1300-byte) 3 Gbps (IMIX)	800	28800	1.9M	35K	128
KVM Virtual Edge (8-core, SR-IOV)	6.5 Gbps (1300-byte) 3.2 Gbps (IMIX)	800	28800	1.9M	35K	128

Edge configuration

	2 vCPU	4 vCPU	8 vCPU	10 vCPU
Minimum memory (DRAM)	8 GB	16 GB	32 GB	32 GB
Minimum storage	8 GB	8 GB	16 GB	16 GB
Supported hypervisors	Software version 4.0 and above: ESXi 6.5U1, 6.7U1, 7.0 KVM Ubuntu 16.04 and 18.04			
Supported public clouds	AWS, Azure, GCP, Alibaba			
Support network I/O	SR-IOV, VirtIO, VMXNET3			
Required host settings	<ul style="list-style-type: none"> • CPUs at 2.0 GHz or higher • CPU configuration: <ul style="list-style-type: none"> – AES-NI enabled – Power savings disabled – CPU turbo enabled – Hyper-threading disabled – Minimum instruction sets SSE3, SSE4, and RDTSC instructions – Recommended instruction sets AVX2 or AVX512 • VMware ESXi required settings: <ul style="list-style-type: none"> – CPU reservation – Maximum – CPU shares – High – Memory reservation – Maximum – Latency sensitivity – High 			

Note: Performance was obtained using an Intel® Xeon® CPU E5-2683 v4 @ 2.10 GHz (AES-NI)

Public cloud

Amazon Web Services (AWS)

AWS Instance types	c5.large	c5.xlarge	c5.2xlarge	C5.4xlarge
Maximum throughput	100 Mbps (1300-byte) 50 Mbps (IMIX)	200 Mbps (1300-byte) 100 Mbps (IMIX)	1.5 Gbps (1300-byte) 450 Mbps (IMIX)	3 Gbps (1300-byte) 1 Gbps (IMIX)
Maximum tunnels	50	400	800	2,000
Flows per second	1,200	2,400	4,800	9,600
Max. concurrent flows	125,000	250,000	550,000	1.9M
Max number of routes	35,000	35,000	35,000	35,000
Maximum segments	128	128	128	128

Note: c5.2xlarge and c5.4xlarge performance and scale numbers are based on AWS Enhanced Networking (ENA SR-IOV drivers) 'enabled'

Microsoft Azure (Without Accelerated Networking)

Azure VM Series	D2d v4	D4d v4	D8d v4	D16d v4
Maximum throughput	100 Mbps (1,300-byte) 50 Mbps (IMIX)	200 Mbps (1,300-byte) 100 Mbps (IMIX)	1 Gbps (1,300-byte) 450 Mbps (IMIX)	1 Gbps (1,300-byte) 450 Mbps (IMIX)
Maximum tunnels	50	400	800	2,000
Flows per second	1,200	2,400	4,800	4,800
Max. concurrent flows	125,000	250,000	550,000	550,000
Max number of routes	35,000	35,000	35,000	35,000
Maximum segments	128	128	128	128

Microsoft Azure (Accelerated Networking)

Azure VM Series	Ds3_v2	Ds4_v2	Ds5_v2	D4d_v5	D8d_v5	D16d_v5
Maximum throughput	2.5 Gbps (1,300-byte) 1.5 Gbps (IMIX)	5.3 Gbps (1,300-byte) 2.7 Gbps (IMIX)	6.5 Gbps (1,300-byte) 3.1 Gbps (IMIX)	4.5Gbps (1,300-byte) 1.3 Gbps (IMIX)	6.3 Gbps (1300 byte) 2.7 Gbps (IMIX)	6.4 Gbps (1300 byte) 2.9 Gbps (IMIX)
Maximum tunnels	400	800	2000	400	800	2000
Flows per second	2400	4800	4,800	2400	4800	4800
Max. concurrent flows	250000	550,000	550,000	250,000	550,000	550,000
Max number of routes	35,000	35,000	35,000	35,000	35,000	35,000
Maximum segments	128	128	128	128	128	128

Notes:

1. Azure Accelerated Networking is supported only from release 5.4.0
2. Accelerated Networking is supported only on Connect-X4 and Connect-X5 NICs

Google Cloud Platform

GCP Instance Type	n2-highcpu-4	n2-highcpu-8	N2-highcpu-16
Maximum throughput	1.5 Gbps (1,300-byte) 750 Mbps (IMIX)	4.4 Gbps (1,300-byte) 1.5 Gbps (IMIX)	6.5 Gbps (1,300-byte) 1.9 Gbps (IMIX)
Maximum tunnels	50	400	800
Flows per second	1,200	2,400	4,800
Max. concurrent flows	125,000	250,000	550,000
Max number of routes	35,000	35,000	35,000
Maximum segments	128	128	128

Edge platform and software release matrix

Edge / Software Version	4.5.x	5.0.x	5.1.x	5.2.x	5.4.x	6.0
510	•	•	•	•	•	•
510-LTE	•	•	•	•	•	•
520	•	•	•	•	•	•
520V	•	•	•	•	•	•
540	•	•	•	•	•	•
610	•	•	•	•	•	•
710-W				• (5.2.2+)		•
620	•	•	•	•	•	•
640	•	•	•	•	•	•
680	•	•	•	•	•	•
840	•	•	•	•	•	•
1000	•	•	•	•	•	•
2000	•	•	•	•	•	•
3400	•	•	•	•	•	•
3800	•	•	•	•	•	•
3810	•	•	•	•	•	•
510N, 610N, 620N, 640N, 680N	•	•	•	•	•	•

Regulatory and compliance certifications

EMC	<p>FCC (US) CE (Europe) R-Mark (Japan) SRRC (China) KCC (Korea) NCC (Taiwan) ICES-003 EN 55022 CISPR 22 AS/NZS 3548 VCCI CNS 13438 EN 300-386 EN 61000 (Immunity) EN 55024 CISPR 24 EN 50082-1 CISPR 35 (Edge 510/510-LTE/6x0/3x00 Only) EN 55035 (Edge 510/510-LTE/6x0/3x00 Only)</p>
Safety	<p>UL 60950-1 UL 62368-1 CAN/CSA C22.2 EN 60950-1 EN 62368-1 AS/NZS 60950-1 AS/NZS-62368-1 IEC 60950-1 IEC 62368-1 GB-4943 (CCC)</p>
RoHS	Compliant