velocloud™
by **Broadcom**

VeloCloud™ SD-WAN
Edge Platform Specifications

VeloCloud™ SD-WAN, a fundamental component of 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 provides availability and quality-of-service for modern applications, while delivering security and ubiquity of access for the distributed workforce. VeloCloud SD-WAN and SASE, built on the VeloRAIN robust AI-networking architecture, are ideal for today's distributed enterprises embracing cloud, generative AI, and application transformation.

VeloCloud SD-WAN addresses the distinct needs of AI-based and non-AI-based applications, as it relates to performance, security, and scalability. As a cloud-delivered solution, VeloCloud SD-WAN ensures resilient WAN connectivity and allows users to have flexible WAN choices, such as broadband, MPLS, LTE, and satellite. 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 proven VMware NSX security technology, is built into VeloCloud SD-WAN Edges, providing comprehensive security and eliminating the need for legacy firewalls at branch locations.

VeloCloud SD-WAN Components

VeloCloud SD-WAN Edge
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.

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.

Edge automatically aggregates multiple links and steers traffic over the optimal links based on Dynamic Multipath Optimization (DMPO) and deep application recognition (DAR). Edge supports high-availability (HA) deployment models and can easily integrate into an existing network.

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.

VeloCloud SD-WAN

AT A GLANCE

VeloCloud SASE, secured by Symantec, with 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.

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, VeloCloud SD-WAN and other SASE services are delivered via a global network of 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

VeloCloud SD-WAN Gateways

Gateways optimize data paths to all applications, branches, and data centers, along with the ability to deliver network services to and from the cloud. A distributed, global network of gateways, hosted by Broadcom/service providers or deployed on-premises, provide scalability, redundancy, and on-demand flexibility.

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

VeloCloud Orchestrator

Orchestrator is a cloud-hosted or on-premises central management tool for VeloCloud SD-WAN, VeloCloud SD-Access, and VeloCloud SASE, secured by Symantec. Its web-based user interface provides simplified configuration, provisioning, monitoring, fault management, logging, and reporting functions. Orchestrator enables flexible implementation of business-based policies for application delivery and traffic management.

Software Features

Category	Features
AAA	RADIUS, local authentication and authorization, multitenant 3 Tier RBAC architecture, auditing, roles and privileges
Availability	High availability* for VeloCloud SD-WAN Edge, disaster recovery for VeloCloud 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	VeloCloud SD-WAN Controller, VeloCloud SD-WAN Gateway, VeloCloud Orchestrator
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 (DNS test, ping test, flush active flows, list active flows, paths, VPN tests, packet capture), 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/IaaS	Improved performance for cloud apps, supports well-known IaaS (AWS, Azure, GCP), Security Service Edge (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 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 VeloCloud SASE, secured by Symantec
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 Security Overview screen (VeloCloud Orchestrator UI > Monitor > Security Overview) displays real-time security-related statistics including threats detected/prevented and edge impacted/protected.
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

VeloCloud SD-WAN

Software Subscription Editions

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.

Feature	Standard Edition	Enterprise Edition	Premium Edition
VeloCloud Orchestrator	✓	✓	✓
Dynamic Multipath Optimization (DMPO)	✓	✓	✓
Number of Edges Supported	Unlimited	Unlimited	Unlimited
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 (including IDS/IPS, URL Filtering, Malicious IP Filtering)	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 and Security Policy	✓	✓	✓
Path Visibility	Last-mile	Last-mile plus site-to-site	Last-mile plus site-to-site
Wired/Wireless/LAN/WAN Analytics with Edge Intelligence	Add-on	Includes one node, additional nodes available as add-on	Includes two nodes, additional nodes available as add-on
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	✓	✓	✓

VeloCloud SD-WAN

VeloCloud SD-WAN Bandwidth Tiers

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

VeloCloud SD-WAN Edge Models	10M	30M	50M	100M	200M	500M	1G	2G	10G	40G	100G
Edge 510, 510N, 510-LTE	●	●	●	●	●	●	—	—	—	—	—
Edge 520, 520V	●	●	●	●	●	●	—	—	—	—	—
Edge 540	—	—	—	●	●	●	●	—	—	—	—
Edge 610, 610C, 610N, 610-LTE	●	●	●	●	●	●	—	—	—	—	—
Edge 710-W, 710-5G	●	●	●	●	●	●	—	—	—	—	—
Edge 620, 620C, 620N	●	●	●	●	●	●	●	—	—	—	—
Edge 640, 640C, 640N	—	—	—	●	●	●	●	●	●	—	—
Edge 680, 680C, 680N	—	—	—	●	●	●	●	●	●	—	—
Edge 720	●	●	●	●	●	●	●	●	●	—	—
Edge 740	—	—	—	●	●	●	●	●	●	—	—
Edge 840	—	—	—	●	●	●	●	●	—	—	—
Edge 2000	—	—	—	—	—	●	●	●	●	—	—
Edge 3400, 3400C	—	—	—	—	●	●	●	●	●	—	—
Edge 3800, 3800C, 3810	—	—	—	—	—	—	●	●	●	—	—
Edge 4100	—	—	—	—	—	—	—	●	●	●	—
Edge 5100	—	—	—	—	—	—	—	—	●	●	●

For a complete list of end-of-sale Edge models, refer to the Product Lifecycle Updates.

Software Support Levels

Support Add-On	Broadcom Software Maintenance NOTE: Support Account Manager (SAM) is optional	Advanced Support NOTE: SAM and Designated Support Engineer (DSE) are required
First Response	Severity 1: within 30 minutes; 24x7 Severity 2: within 2 business hours Severity 3: within 4 business hours Severity 4: within 8 business hours	Severity 1: within 15 minutes; 24x7 Severity 2: within 1 hour; 24x7 Severity 3: within 4 business hours Severity 4: within 8 business hours
Restoration	—	Severity 1: within 4 hours Severity 2: within 8 hours
Root Cause Analysis	—	Severity 1: within 5 business days Severity 2: within 20 business days

Hardware Replacement Services

• Hardware warranty is required at initial purchase

• No separate hardware support SKU. Hardware support is tied to the parent hardware SKU.

Hardware RMA Support Plans	Description
Standard	10-day return to factory for replacement
Standard Plus	Same-day shipment of replacement Edge
Advanced (Onsite Optional)	Replacement Edge delivered to customer site by next business day (for qualified locations)
Premium (Onsite Optional)	Four-hour arrival, seven days a week (for qualified locations)

Physical Edge Models

VeloCloud SD-WAN Edge appliance models available for sale include the 510, 6x0, 7x0, 3xx0, and 4100 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: 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)

NOTE: Software release 6.1 offers optimized performance and improved efficiency. Edges must be on software code R6.1+ to achieve similar performance below.

VeloCloud SD-WAN Edge Models								
Parameters	510, 510N, 510-LTE	520*, 520V*	540*	610*, 610C, 610N*, 610-LTE	620, 620C, 620N*	640*, 640C, 640N	680*, 680C, 680N*	710-W, 710-5G
Maximum throughput per Edge with Routed-Mode Ports (1300B)[1]	850 Mb/s	850 Mb/s	1.5 Gb/s	850 Mb/s	1.55 Gb/s	5.5 Gb/s	8.5 Gb/s	950 Mb/s
Maximum Throughput per Edge with Routed-Mode Ports (IMIX)[2]	300 Mb/s	300 Mb/s	650 Mb/s	300 Mb/s	950 Mb/s	2.2 Gb/s	3.2 Gb/s	395 Mb/s 350 Mb/s[5]
Maximum Throughput per Edge with Enhanced Firewall Services (App Mix)[3]	150 Mb/s	150 Mb/s	350 Mb/s	175 Mb/s	600 Mb/s	800 Mb/s	1.5 Gb/s	280 Mb/s
Maximum Throughput per Edge with Edge Intelligence Enabled (IMIX)[4]	200 Mb/s	200 Mb/s	500 Mb/s	200 Mb/s	700 Mb/s	1.0 Gb/s	2.0 Gb/s	265 Mb/s
Maximum Tunnel Scale	50	50	100	50	100	400	800	50
Flow per Second	2400	2400	4800	2400	4800	19,200	19,200	4000
Flow per Second with Edge Intelligence Enabled	1200	1200	1200	1200	2400	9600	9600	3200
Maximum Concurrent Flows	225,000	225,000	225,000	225,000	460,000	1.15 million	1.9 million	225,000
Maximum Concurrent Flows with Enhanced Firewall Services Enabled	110,000	110,000	110,000	110,000	230,000	460,000	960,000	110,000
Maximum Concurrent Flows with Edge Intelligence Enabled	110,000	110,000	110,000	110,000	230,000	460,000	960,000	110,000
Maximum Number of BGP Routes	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Maximum Segments	32	32	32	32	128	128	128	32
Maximum NAT Entries	225,000	225,000	225,000	225,000	460,000	960,000	960,000	225,000

VeloCloud SD-WAN Edge Models								
Parameters	720	740	840*	2000*	3400, 3400C	3800, 3800C, 3810	4100	5100
Maximum throughput per Edge with Routed-Mode Ports (1300B)[1]	5.2 Gb/s	7.2 Gb/s	6.5 Gb/s	15.5 Gb/s	11 Gb/s	16 Gb/s	30 Gb/s	100 Gb/s
Maximum Throughput per Edge with Routed-Mode Ports (IMIX)	2.3 Gb/s	3.5 Gb/s	2.2 Gb/s	6.2 Gb/s	3.6 Gb/s	6.5 Gb/s	12 Gb/s	40 Gb/s
Maximum Throughput per Edge with Enhanced Firewall Services (App Mix)[3]	1.2 Gb/s	2.0 Gb/s	1.0 Gb/s	4.0 Gb/s	2.3 Gb/s	5.0 Gb/s	9.6 Gb/s	—
Maximum Throughput per Edge with Edge Intelligence Enabled (IMIX)[4]	Not supported	Not supported	1.5 Gb/s	5.0 Gb/s	3.0 Gb/s	5.0 Gb/s	Not supported	Not supported
Maximum Tunnel Scale	400	800	400	6000	4000	6000	12,000	16,000
Flow per Second	18,000	26,000	19,200	50,000	38,400	50,000	50,000	180,000
Flow per Second with Edge Intelligence Enabled	Not supported	Not supported	9600	25,000	19,200	25,000	Not supported	Not supported
Maximum Concurrent Flows	440,000	900,000	1.9 million	1.9 million	1.9 million	3.8 million	3.8 million	7.5 million
Maximum Concurrent Flows with Enhanced Firewall Services Enabled	220,000	450,000	460,000	1.9 million	960,000	1.9 million	—	—
Maximum Concurrent Flows with Edge Intelligence Enabled	Not supported	Not supported	460,000	1 million	960,000	960,000	Not supported	Not supported
Maximum Number of BGP Routes	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Maximum Segments	128	128	128	128	128	128	128	128
Maximum NAT Entries	440,000	900,000	960,000	1.9 million	960,000	1.9 million	1.9 million	1.9 million

*Edge marked with an asterisk has reached end-of-sale.
[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.
[3]Performance numbers with Enhanced Firewall Services measured using TREX setup based on enterprise application mix of TCP and UDP traffic profiles.
[4]Performance numbers with VeloCloud Edge Intelligence are measured using a 400-byte payload.
[5]IMIX performance using AES-256 encryption.
NOTE: VeloCloud SD-WAN Edges also support clustering deployments for multi-gigabit performance.

Enhanced HA Link Performance

VeloCloud SD-WAN Edge Models								
Parameter	510, 510N, 510-LTE	520, 520V	540	610, 610C, 610N, 610-LTE	710-W, 710-5G	620, 620C, 620N	640, 640C, 640N	680, 680C, 680N
Maximum Throughput (IMIX) Across EHA Link	220 Mb/s	220 Mb/s	480 Mb/s	220 Mb/s	260 Mb/s	700 Mb/s	1 Gb/s	2 Gb/s

VeloCloud SD-WAN Edge Models								
Parameter	720	740	840	2000	3400, 3400C	3800, 3800C, 3810	4100	5100
Maximum Throughput (IMIX) Across EHA Link	1 Gb/s	2 Gb/s	1 Gb/s	4 Gb/s	2.5 Gb/s	5 Gb/s	—	—

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

VeloCloud SD-WAN

Connectivity

VeloCloud SD-WAN Edge Models							
Parameters	**510, 510N, 510-LTE**	**520, 520V, 540**	**610, 610C, 610N, 610-LTE**	**620, 620C, 620N**	**640, 640C, 640N**	**680, 680C, 680N**	**710-W, 710-5G**
LAN/WAN 1G RJ-45	4	10	6	6	6	6	4
LAN/WAN 1G SFP	No	2	2	No	No	No	1
LAN/WAN 1G/10G SFP+	No	No	No	2^1	2^1	2^1	No
Integrated Wi-Fi	Yes, except 510N	Yes	Yes, except 610N	Yes, except 620N	Yes, except 640N	Yes, except 680N	Yes
Integrated LTE	Yes, only 510-LTE^2	No	Yes, only 610-LTE	No	No	No	Yes, only 710-5G
USB Ports (3G/4G LTE)	2^4	2^4	2^3	2^3	2^3	2^3	1^3

VeloCloud SD-WAN Edge Models							
Parameters	**720, 740**	**840**	**2000**	**3400, 3400C, 3800, 3800C**	**3810**	**4100**	**5100**
LAN/WAN 1G RJ-45	No	6	6	6	6	10	2
LAN/WAN 2.5G RJ-45	6	No	No	No	No	No	No
LAN/WAN 1G SFP	No	No	No	No	No	No	No
LAN/WAN 1G/10G SFP+	2	2	2	4	8	8	8
LAN/WAN 25G SFP28	No	No	No	No	No	No	4
LAN/WAN 40G QSFP	No	No	No	No	No	No	2
Integrated Wi-Fi	No	No	No	No	No	No	No
Integrated L5G/LTE	No	No	No	No	No	No	No
USB Ports (3G/4G LTE)	2^4	2^4	$2^3 + 2^4$	2^3	2^3	2^3	2^3

[1]Supports SFP+ 1/10GE modules.
[2]510-LTE supports an additional two LTE interfaces through USB for three concurrent active interfaces.
[3]USB 3.0 ports.
[4]USB 2.0 ports.

Memory, Storage, and Third-Party VNFs

VeloCloud SD-WAN Edge Models								
Parameters	**510, 510N, 510-LTE**	**520**	**520V**	**540**	**610, 610C, 610N, 610-LTE**	**620, 620C, 620N**	**640, 640C, 640N**	**680, 680C, 680N**
System Memory (RAM)	4 GB	4 GB	8 GB	8 GB	4 GB	8 GB	32 GB	32 GB
System Flash	8 GB	8 GB	8 GB	8 GB	16 GB	16 GB	16 GB	16 GB
System Storage	—	—	64 GB (SSD)	—	—	120 GB (SSD)	120 GB (SSD)	120 GB (SSD)
VNF Capable (Initial Release)	No	No	Yes (3.2.0)	No	No	Yes (3.4.3)	Yes (3.4.3)	Yes (3.4.3)

VeloCloud SD-WAN Edge Models								
Parameters	**710-W, 710-5G**	**720**	**740**	**840**	**2000**	**3400, 3400C**	**3800, 3810, 3800C**	**4100**	**5100**
System Memory (RAM)	4 GB	8 GB	16 GB	32 GB	32 GB	32 GB	32 GB	64 GB	128 GB
System Flash	16 GB	16 GB	16 GB	—	—	—	—	—	32 GB
System Storage	—	64 GB	64 GB	100 GB (SSD)	100 GB (SSD)	256 GB (SSD)	256 GB (SSD)	960 GB (SSD)	960 GB (SSD)
VNF Capable (Initial Release)	No	No	No	Yes (3.2.0)	No	Yes (4.3.0)	Yes (4.3.0)	No	No

VeloCloud SD-WAN

Dimension, Power, Environment, and Reliability

VeloCloud SD-WAN Edge Models								
Parameters	**510, 510N, 510-LTE**	**520**	**520V**	**540**	**610, 610C, 610N, 610-LTE**	**710-W, 710-5G**	**720**	**740**
Cooling	*Fanless*		*Fan*		*Fanless*		*Fan*	
Mounting	*Desktop, wall mount, 19-in. rack mount*							
Size (W x D x H)	*206 mm × 180 mm × 39.7 mm*	*206 mm × 180 mm × 51 mm*			*206 mm × 179.5 mm × 35 mm*		*44 mm × 206 mm × 230 mm*	
Unit Weight	*2.0 lb*	*2.6 lb*			*2.9 lb*	*2.0 lb*	*2.6 lb*	
Gross Weight[1]	*5 lb*	*6 lb*			*6 lb*	*5 lb*	*6 lb*	
Power Supply	*External: AC*							
AC Input	*Voltage: 100V to 240V auto-ranging, Frequency: 50 Hz to 60 Hz*							
Power Load (Typical/Max)	*15W/40W*	*25W/45W*	*30W/45W*	*30W/50W*	*16W/26W*	*15W/20W*	*20W/48W*	*20W/53W*
Operating Conditions	*Temperature: 0°C to 40°C, Humidity: 5% to 85%, Altitude: 5000m*							
Non-operating Conditions	*Temperature: −40°C to 70°C, Humidity: 5% to 95%, Altitude: 5000m*							
MTBF[2]	*40.6 years*	*22.8 years*			*28 years*		*44 years*	

VeloCloud SD-WAN Edge Models								
Parameters	**620, 620C, 620N**	**640, 640C, 640N**	**680, 680C, 680N**	**840**	**2000**	**3400, 3400C**	**3800, 3810, 3800C**	**4100**	**5100**
Cooling	*Fan*								
Mounting	*Desktop, wall mount, 19-in. rack mount*			*1U rack mount*					
Size (W x D x H)	*206 mm × 200 mm × 52 mm*			*437 mm × 249 mm × 43 mm*	*437 mm × 650 mm × 43 mm*	*434 mm × 381 mm × 44 mm*		*438 mm × 420 mm × 44 mm*	*438 mm x 43.7 mm x 600 mm*
Unit Weight	*3.1 lb*	*3.3 lb*		*12 lb*	*23.5 lb*	*13.8 lb*	*15.7 lb*	*17 lb*	*26 lb*
Gross Weight[1]	*6 lb*			*16 lb*	*30 lb*	*25 lb*		*28 lb*	*37.5 lb*
Power Supply	*External: AC*			*Internal: AC*					
Redundant Power Supply	*No*			*Yes (1 + 1)*					
AC Input	*Voltage: 100V to 240V 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*	*195W/ 270W*	*300W/ 500W*
Operating Temperature	*10°C to 40°C*			*10°C to 35°C*		*0°C to 45°C*		*0°C to 40°C*	
Operating Humidity	*5% to 85%*								
Operating Altitude	*5000m*					*3048m*		*5000m*	
Non-operating Temperature	*−40°C to 70°C*								
Non-operating Humidity	*5% to 95%*								
Non-operating Altitude	*5000m*					*10,688m*		*5000m*	
MTBF[2]	*22.8 years*			*11.5 years*	*7.0 years*	*17.1 years*			*12.5 years*

[1]Gross weight is the total weight of the shipment package including the unit, power adapter, AC cord, wall mount brackets, and packaging.
[2]MTBF is based on Telcordia SR-332 methodology; system fans are excluded in the calculation (25°C ambient temperature).

VeloCloud SD-WAN

Hardware Accessories

Mounting Brackets and Rails

VeloCloud SD-WAN Edge Models	Included	Additional Options	Part Number
520, 520v, 540	—	*2U rack-mount shelf*	*VC-AC-RMB*
510/510-LTE	*Wall-mount bracket*	*2U rack-mount shelf*	*VC-AC-RMB*
6x0	*Wall-mount bracket*	*2U rack-mount shelf*	*VC-AC-RMB*
710-W, 710-5G, 720, 740	*Wall-mount bracket*	*2U rack-mount shelf*	*VC-AC-RMB*
840	*Rack-mount bracket*	—	—
2000	*4-post rail kit*	—	—
3xx0	*2-post rail kit*	*4-post rail kit*	*Dell P/N: 770-BCGP*
4100	*4-post rail kit*	—	—
5100	*4-post rail kit*	—	—

Power Adapters, Cables, and Guides

VeloCloud SD-WAN Edge Models	Power Adapter[1] and Cable	Ethernet Cable	Quick Start Guide
510, 510N	●	●	●
510-LTE	●	●	●
520, 520V	●	●	●
540	●	●	●
610, 610C, 610N	●	—	●
610-LTE	●	—	●
710-W, 710-5G, 720, 740	●	●	●
620, 620C, 620N	●	●	●
640, 640C, 640N	●	●	●
680, 680C, 680N	●	●	●
840	*Integrated power adapter and 1 cable*	—	●
2000	*Hot swappable 1+1 integrated power adapter and 2 cables*	—	●
3400, 3400C	*Hot swappable 1+1 integrated power adapter and 2 cables*	—	●
3800, 3800C, 3810	*Hot swappable 1+1 integrated power adapter and 2 cables*	—	●
4100	*Hot swappable 1+1 integrated power adapter and 2 cables*	—	●
5100	*Hot swappable 1+1 integrated power adapter and 2 cables*	—	●

[1]Every Edge comes with a PSU, separate or integrated.

VeloCloud SD-WAN

Wireless Specifications

Wireless LAN (Wi-Fi) Specifications

VeloCloud SD-WAN Edge Models			
Wi-Fi Capabilities	510, 510-LTE, 610, 610C, 610-LTE, 620, 620C, 640, 640C, 680, 680C	520, 520v, 540	710-W, 710-5G
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 (Maximum Data Rate)	2x2 MIMO	3x3 MIMO	2x2 MIMO
Maximum Simultaneous SSIDs	4	4	4
Maximum 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 the unit is activated.

Wireless WAN (3G/4G/LTE/5G) Specifications

VeloCloud SD-WAN Edge Models					
3G/4G/LTE Capabilities	510-LTE-AE	510-LTE-AP	610-LTE-AM	610-LTE-RW	710-5G
Modem	Sierra Wireless EM7455	Sierra Wireless EM7430	Sierra Wireless EM7511	Sierra Wireless EM7565	Telit FN990A28
Geography	North America and Europe	ASIA, ANZ, LATAM	North America	Rest of world	Global
LTE Category	Cat-6	Cat-6	Cat-12	Cat-12	Cat-19
Carrier Aggregation	Yes	Yes	Yes	Yes	Yes
3G Fallback	HSPA+	HSPA+	HSPA+	HSPA+	HSPA+
SIM Slots	2 (only 1 active)	2 (only 1 active)	Dual SIM single standby	Dual SIM single standby	Dual Physical SIM + single eSIM (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	B1, B2(B25), B3, B4(B66), B26(B5, B18, B19), B7, B8, B12(B17), B13, B14, B20, B28, B29(DL), B30, B32(DL), B34, B38, B39, B40, B41, B42, B43, B46(LAA), B48(CBRS), B66, B71
5G Bands	—	—	—	—	5G FR1 bands, n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n29, n30, n38, n40, n41, n48, n66, n71, n75, n76, n77, n78, n79
Antennas	Main and AUX (via SMA connectors)				

Virtual Edge Specifications

Private Cloud (Hypervisors)

Devices	Maximum Throughput	Maximum Number of Tunnels*	Flows per Second	Maximum Concurrent Flows	Maximum Routes	Maximum Segments*
ESXi Virtual Edge (2-core, VMXNET3)	1.5 Gb/s (1300B) 900 Mb/s (IMIX)	50	2400	240,000	35,000	128
KVM Virtual Edge (2-core, Linux Bridge)	800 Mb/s (1300B) 250 Mb/s (IMIX)	50	2400	240,000	35,000	128
KVM Virtual Edge (2-core, SR-IOV)	1.5 Gb/s (1300B) 900 Mb/s (IMIX)	50	2400	240,000	35,000	128
ESXi Virtual Edge (4-core, VMXNET3)	4 Gb/s (1300B) 1.5 Gb/s (IMIX)	400	4800	480,000	35,000	128
ESXi Virtual Edge (4-core, SR-IOV)	5 Gb/s (1300B) 2 Gb/s (IMIX)	400	4800	480,000	35,000	128
KVM Virtual Edge (4-core, Linux Bridge)	1 Gb/s (1300B) 350 Mb/s (IMIX)	400	4800	480,000	35,000	128
KVM Virtual Edge (4-core, SR-IOV)	4 Gb/s (1300B) 1.5 Gb/s (IMIX)	400	4800	480,000	35,000	128
ESXi Virtual Edge (8-core, VMXNET3)	6 Gb/s (1300B) 2 Gb/s (IMIX)	800	28,800	1.9 million	35,000	128
ESXi Virtual Edge (8-core, SR-IOV)	6 Gb/s (1300B) 3 Gb/s (IMIX)	800	28,800	1.9 million	35,000	128
KVM Virtual Edge (8-core, SR-IOV)	6.5 Gb/s (1300B) 3.2 Gb/s (IMIX)	800	28,800	1.9 million	35,000	128

Edge Configuration

Parameters	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	CPUs at 2.0 GHz or higher CPU configuration: • 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: • 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).

VeloCloud SD-WAN

Public Cloud Specifications

Amazon Web Services (AWS)

Parameters	c5.large	c5.xlarge	c5.2xlarge	C5.4xlarge
Maximum Throughput	100 Mb/s (1300B) 50 Mb/s (IMIX)	200 Mb/s (1300B) 100 Mb/s (IMIX)	1.5 Gb/s (1300B) 450 Mb/s (IMIX)	3 Gb/s (1300B) 1 Gb/s (IMIX)
Maximum Tunnels	50	400	800	2000
Flows per Second	1200	2400	4800	9600
Maximum Concurrent Flows	125,000	250,000	550,000	1.9 million
Maximum 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)

Parameters	D2d v4	D4d v4	D8d v4	D16d v4
Maximum Throughput	100 Mb/s (1300B) 50 Mb/s (IMIX)	200 Mb/s (1300B) 100 Mb/s (IMIX)	1 Gb/s (1300B) 450 Mb/s (IMIX)	1 Gb/s (1300B) 450 Mb/s (IMIX)
Maximum Tunnels	50	400	800	2000
Flows per Second	1200	2400	4800	4800
Maximum Concurrent Flows	125,000	250,000	550,000	550,000
Maximum Routes	35,000	35,000	35,000	35,000
Maximum Segments	128	128	128	128

Microsoft Azure (Accelerated Networking)

Parameters	Ds3_v2	Ds4_v2	Ds5_v2	D4d_v5	D8d_v5	D16d_v5
Maximum Throughput	2.5 Gb/s (1300B) 1.5 Gb/s (IMIX)	5.3 Gb/s (1300B) 2.7 Gb/s (IMIX)	6.5 Gb/s (1300B) 3.1 Gb/s (IMIX)	4.5Gb/s (1300B) 1.3 Gb/s (IMIX)	6.3 Gb/s (1300B) 2.7 Gb/s (IMIX)	6.4 Gb/s (1300B) 2.9 Gb/s (IMIX)
Maximum Tunnels	400	800	2000	400	800	2000
Flows per Second	2400	4800	4800	2400	4800	4800
Maximum Concurrent Flows	250,000	550,000	550,000	250,000	550,000	550,000
Maximum Routes	35,000	35,000	35,000	35,000	35,000	35,000
Maximum Segments	128	128	128	128	128	128

NOTE: Azure Accelerated Networking is supported only from release 5.4.02.
Accelerated Networking is supported only on Connect-X4 and Connect-X5 NICs.

Google Cloud Platform

Parameters	n2-highcpu-4	n2-highcpu-8	N2-highcpu-16
Maximum Throughput	1.5 Gb/s (1300B) 750 Mb/s (IMIX)	4.4 Gb/s (1300B) 1.5 Gb/s (IMIX)	6.5 Gb/s (1300B) 1.9 Gb/s (IMIX)
Maximum Tunnels	50	400	800
Flows per Second	1200	2400	4800
Maximum Concurrent Flows	125,000	250,000	550,000
Maximum Routes	35,000	35,000	35,000
Maximum Segments	128	128	128

Edge Platform and Software Release Matrix

VeloCloud SD-WAN Edge Models	4.5.x	5.0.x	5.1.x	5.2.x	5.4.x	6.0	6.1	6.2
510, 510N, 510-LTE	●	●	●	●	●	●	●	●
520, 520V	●	●	●	●	●	●	●	●
540	●	●	●	●	●	●	●	●
610, 610N, 610-LTE	●	●	●	●	●	●	●	●
710-W	—	—	—	● 5.2.2+	—	●	●	●
710-5G	—	—	—	● 5.2.4+	—	●	●	●
720	—	—	—	● 5.2.4+	—	●	●	●
740	—	—	—	● 5.2.4+	—	●	●	●
620, 620N	●	●	●	●	●	●	●	●
640, 640N	●	●	●	●	●	●	●	●
680, 680N	●	●	●	●	●	●	●	●
840	●	●	●	●	●	●	●	●
1000, 2000	●	●	●	●	●	●	●	●
3400, 3800, 3800C, 3810	●	●	●	●	●	●	●	●
4100	—	—	—	—	—	—	●	●
5100	—	—	—	—	—	—	—	●

VeloCloud Hardware Edge SKUs

Model	Orderable SKU	Hardware Reference	Description
E42W	VC-610	610	Edge 610 appliance
E42W	VC-610-NWF	610	Edge 610 non-Wi-Fi appliance
E42W	VC-620	620	Edge 620 appliance
E42W	VC-620-NWF	620	Edge 620 non-Wi-Fi appliance
E42W	VC-640	640	Edge 640 appliance
E42W	VC-640-NWF	640	Edge 640 non-Wi-Fi appliance
E42W	VC-680	680	Edge 680 appliance
E42W	VC-680-NWF	680	Edge 680 non-Wi-Fi appliance
E42W	VC-610-CH	610	SD-WAN Edge 610 China appliance
E42W	VC-620-CH	620	SD-WAN Edge 620 China appliance
E42W	VC-640-CH	640	SD-WAN Edge 640 China appliance
E42W	VC-680-CH	680	SD-WAN Edge 680 China appliance
E25W	VC-3400	3400	Edge 3400 appliance
E25W	VC-3800	3800	Edge 3800 appliance
E25W	VC-3810	3810	Edge 3810 appliance
E25W	VC-3400-CH	3400	SD-WAN Edge 3400 China appliance
E25W	VC-3800-CH	3800	SD-WAN Edge 3800 China appliance
Edge 510	VC-510LTE-AP	510	Edge 510LTE APAC appliance
Edge 510	VC-510LTE-NAEU	510	Edge 510LTE AMER/EMEA appliance
Edge 510	VC-510	510	Edge 510 appliance
Edge 510	VC-510-NWF	510	Edge 510 non-Wi-Fi appliance
Edge 710	SDE-EDG-710W	710	Edge 710 appliance
Edge 710-5G	SDE-EDG-710-5G	710	Edge 710-5G appliance
Edge 724S	SDE-EDG-720	720	Edge 720 appliance
Edge 724S	SDE-EDG-740	740	Edge 740 appliance
Edge 4100	SDE-EDG-4100	4100	Edge 4100 appliance
Edge 5100	SDE-EDG-5100	5100	Edge 5100 appliance

VeloCloud SD-WAN

Regulatory and Compliance Certifications

Parameters	Certifications
EMC	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)
Safety	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)
RoHS	Compliant