Throughput Performance for Release 21.2.1

This article provides throughput performance numbers for Versa Operating System™ (VOS™) Release 21.2.1.

All throughput performance testing was done under the following conditions:

- Routing, forwarding, and Layer 7 application-aware traffic steering were activated.
- Testing was done with UDP traffic, as specified in RFC 2544, with a 0.1 percent acceptable loss rate, using 1024 sessions with application offloading and with CPU isolation enabled.
- The session timeout was set to high value (3600 seconds).
- The encryption was AES128-GCM, which is the default encryption.
- A Spirent tester was used for testing SD-WAN traffic (refer to Layer 1 traffic statistics).
- Performance is the amount of traffic processed by the CPU that is, it is an aggregate of WAN-to-LAN and LAN-to-WAN traffic.
- Performance numbers were captured at 100 percent of the service load under ideal test conditions, so all numbers should be considered as maximum values.

For all testing, the following internet mix (IMIX) distribution was used:

Frame Size (Bytes)	Percentage	Weight
66	45	45
78	8	8
218	8	8
594	2	2
1354	16	16
1418	21	21

Versa Cloud Services Gateways (CSGs)

For items in the table marked with a plus (+), numbers are limited by number of ports used.

Model	Packet Size	UDP Throughput	
		Direct Internet Access (DIA)	SD-WAN Branch to Branch
CSG350	1400	2 Gbps	700 Mbps
	Internet mix	1.25 Gbps	350 Mbps
	100	250 Mbps	70 Mbps
CSG355	1400	2.75 Gbps	700 Mbps
	Internet mix	1.25 Gbps	350 Mbps
	100	250 Mbps	70 Mbps
CSG365	1400	4 Gbps+	1 Gbps
	Internet mix	1.8 Gbps	500 Mbps
	100	375 Mbps	100 Mbps
CSG730	1400	2.2 Gbps	700 Mbps
	Internet mix	1 Gbps	350 Mbps
	100	210 Mbps	70 Mbps
CSG750	1400	4 Gbps+	1.8 Gbps
	Internet mix	2.6 Gbps	900 Mbps
	100	550 Mbps	180 Mbps
CSG770	1400	4 Gbps+	3.5 Gbps
	Internet mix	4 Gbps+	1.7 Gbps
	100	825 Mbps	400 Mbps
CSG1300	1400	18 Gbps	7.6 Gbps
	Internet mix	7.5 Gbps	3.6 Gbps
	100	1.4 Gbps	780 Mbps
CSG1500	1400	40 Gbps+	25 Gbps
	Internet mix	21.5 Gbps	12 Gbps

Model	Packet Size	UDP Throughput	
		Direct Internet Access (DIA)	SD-WAN Branch to Branch
	100	4.1 Gbps	2.3 Gbps

Versa White Boxes

For items in the table marked with a plus (+), numbers are limited by number of ports used.

Model	Packet Size	UDP Throughput	
		Direct Internet Access (DIA)	SD-WAN Branch to Branch
Versa 110/510	1400	4 Gbps+	1.1 Gbps
	Internet mix	1.8 Gbps	500 Mbps
	100	380 Mbps	100 Mbps
Versa 120/520	1400	4 Gbps+	2.7 Gbps
	Internet mix	3.1 Gbps	1.3 Gbps
	100	675 Mbps	310 Mbps
Versa 200	1400	2.2 Gbps	700 Mbps
	Internet mix	1 Gbps	350 Mbps
	100	210 Mbps	70 Mbps
Versa 210	1400	4 Gbps+	1.8 Gbps
	Internet mix	2.6 Gbps	900 Mbps
	100	550 Mbps	180 Mbps
Versa 220	1400	13 Gbps	5.2 Gbps
	Internet mix	6.5 Gbps	2.3 Gbps
	100	1.1 Gbps	465 Mbps
Versa 240	1400	18 Gbps	7.6 Gbps

Model	Packet Size	UDP Throughput	
		Direct Internet Access (DIA)	SD-WAN Branch to Branch
	Internet mix	7.5 Gbps	3.6 Gbps
	100	1.4 Gbps	780 Mbps
Versa 810	1400	34 Gbps	11.2 Gbps
	Internet mix	14.5 Gbps	5.3 Gbps
	100	2.9 Gbps	1.1 Gbps
Versa 1000	1400	40 Gbps+	22.5 Gbps
	Internet mix	27.5 Gbps	10.5 Gbps
	100	4.2 Gbps	2.1 Gbps
Versa 1800	1400	40 Gbps+	37 Gbps
	Internet mix	37 Gbps+	22 Gbps
	100	9.7 Gbps	4.5 Gbps

Versa Dell Appliances

For items in the table marked with a plus (+), numbers are limited by number of ports used.

Model	Packet Size	UDP Throughput	
		Direct Internet Access (DIA)	SD-WAN Branch to Branch
VEP-1425	1400	4 Gbps+	1.8 Gbps
	Internet mix	2.6 Gbps	900 Mbps
	100	550 Mbps	180 Mbps
VEP-1445	1400	13 Gbps	5.2 Gbps
	Internet mix	6.5 Gbps	2.3 Gbps

Model	Packet Size	UDP Throughput	
		Direct Internet Access (DIA)	SD-WAN Branch to Branch
	100	1.1 Gbps	465 Mbps
VEP-1485	1400	18 Gbps	7.6 Gbps
	Internet mix	7.5 Gbps	3.6 Gbps
	100	1.4 Gbps	780 Mbps
VEP-4600-V910	1400	34.5 Gbps	12 Gbps
	Internet mix	15 Gbps	4.7 Gbps
	100	3 Gbps	1.2 Gbps
VEP-4600-V930	1400	40 Gbps+	27 Gbps
	Internet mix	22.5 Gbps	13 Gbps
	100	4.5 Gbps	2.5 Gbps

Versa CPE on AWS Instance

By default, AWS interfaces are SR-IOV capable. It is recommended that you use only SR-IOV capable interfaces.

AWS instances use a network I/O credit mechanism to allocate network bandwidth to instances based on average bandwidth utilization. They accrue credits when their bandwidth is below their baseline bandwidth, and they can use these credits when they perform network data transfers. For more information, open an AWS support case and ask about baseline bandwidth for the specific instance types that you are interested in.

VOS and traffic generator instances are in single virtual private cloud and AWS region.

All numbers need to be considered the maximum as claimed by AWS instance limits.

For items in the table marked with an asterisk (*), testing was limited by the AWS infrastructure or the VOS software.

AWS Instance	Packet Size	UDP Throughput	
		Direct Internet Access (DIA)	SD-WAN Branch to Branch
c5. xlarge	1400	6.9 Gbps*	4 Gbps*

AWS Instance	Packet Size	UDP Throughput	
		Direct Internet Access (DIA)	SD-WAN Branch to Branch
	Internet mix	3 Gbps*	2.2 Gbps*
	100	500 Mbps	450 Mbps
c5.2xlarge	1400	7.7 Gbps*	7.5 Gbps*
	Internet mix	3.3 Gbps*	3 Gbps*
	100	550 Mbps*	650 Mbps
c5.4xlarge	1400	9 Gbps*	7.7 Gbps*
	Internet mix	3 Gbps*	3 Gbps*
	100	550 Mbps*	650 Mbps*

Additional Information

Hardware and Software Requirements for Headend
Versa Analytics Scaling Recommendations
Versa Solution Scalability