Selecting the right Dell EMC VEP platform with VeloCloud VNF

DELL EMC

Note: *The information provided in the following slides is based on rigorous testing that used traffic generators to determine the tested capabilities. End-use results will vary from the results shown here as they were gathered in a controlled internal Dell EMC lab.*

DELL EMC

Dell EMC is committed to providing solutions that address your SD-WAN needs and to help you determine the right VEP for your location. To begin, we will compare your location requirements to the data and specifications in this presentation, examine the hardware capabilities, and review the various versions of VeloCloud software for your uCPE.

VEP	Processor	SKU
1425	Intel Atom C3000, 4 Core	210-AREH
1445	Intel Atom C3000, 8 Core	210-ASHR
1485	Intel Atom C3000, 16 Core	210-ASHK
4600	Intel Xeon D2100, 4 Core	210-APGJ
4600	Intel Xeon D2100, 8 Core	210-APGT
4600	Intel Xeon D2100, 16 Core	210-APGV

Select the VEP appliance that provides the necessary performance levels for your business location. The following performance table below covers different throughput tests on the VEP1405 platforms:

Virtual Edge – Performance on VEP1405 series running on ESXi

VEP	VEP1445 Throughput	VEP1445 max CPU utilization w/ ESXi and VeloCloud VM	VEP1485 Throughput	VEP1485 max CPU utilization with ESXi
Maximum Performance RFC2544_L3_UDP (1518 bytes) - in hub-spoke topology*	987 Mbps	For one of the cores 45.3%	2.028 Gbps	For one of the cores 96%
Maximum Performance RFC2544-L3_UDP (IMIX profile) in hub-spoke topology*	489 Mbps	For one of the cores 71.5%	960 Mbps	For one of the cores 96%

**ESXi 6.7 is the base operating system with VeloCloud VCE VNF.*

The following table covers throughput with differing size and packet types packets on the VEP4600 platforms.

Virtual Edge - Performance on VEP4600

VEP4600 Series test	VEP4600 throughput	VEP4600 max CPU utilization with ESXi	VEP4600 throughput	VEP4600 Max CPU utilization with ESXi
Maximum Performance RFC2544_L3_UDP (1518 bytes) - in hub-spoke topology*	3.83 Gbps	For one of the cores 75%	4.25 Gbps	For one of the cores 99%
Maximum Performance RFC2544-L3_UDP (IMIX profile) in hub-spoke topology*	2.08 Gbps	For one of the cores 86%	2.2 Gbps	For one of the cores 90%

**ESXi 6.7 is the base operating system with VeloCloud VCE VNF*

To determine the right VEP appliance for your business, review the Hardware basics table for hardware specifications.

Note: The core count impacts the number of VNFs supported, and the speeds that are capable of supporting those VNFs

Hardware Basics

Edge	VEP1425	VEP1445	VEP1485	VEP4600
Core Information	Intel Atom C3000, 4 core	Intel Atom C3000, 8 core	Intel Atom C3000, 16 core	Intel Xeon D2100, 4, 8, or 16 cores *
System Memory (RAM)	8 GB	16 GB	32 GB	16 to 64 GB *
System Flash	16 GB	16 GB	16 GB	
System Storage	120 GB (SSD)	240 GB (SSD)	240 GB (SSD)	128 GB to 1 TB (SSD)*

Note: The VEP4600 comes in various configurations with different core, memory, and storage options. Contact your Dell EMC account representative for ordering the specifications that fit your needs.

When considering your infrastructure needs, examine the number and types of ports for connectivity using the following connectivity options:

Connectivity

Edge	VEP1425	VEP1445	VEP1485	VEP4600 (all models)
LAN / WAN 1G RJ-45	6 x 1 Gb	6 x 1 Gb	6 x 1 Gb	6 x 1 Gb
LAN / WAN 1G/10G SFP+	2 x 10/1 Gb	2 x 10/1 Gb	2 x 10/1 Gb	4 x 10/1 Gb
Integrated Wi-Fi	Yes	Yes	Yes	No
USB ports (3G/4G LTE)	2 (3.0)	2 (3.0)	2 (3.0)	2 (3.0)

To ensure that the VEP appliance fits within your infrastructure, review the following size and power requirements:

Size and Power Requirements

Edges	VEP1425	VEP1445	VEP1485	VEP4600
Size (W x D x H) in mm		208 x 100 x 52 mm		434 x 381 x 43.7
Weight in lbs.		2.87 lb to 3.11 lb		16.4 lb**
Redundant Power Supply		No		Yes*
Power Load (Typical/Max)	20W/30W	35W/45W	40W / 50W	206.5W / 311W*

VeloCloud Virtual Edge on a standard server platform

Virtual Edge on a standard server is beneficial for various environments. The table below provides throughput and tunnel scale values based on vCPUs allocated, minimum memory, and storage. These factors are critical for allocating resources.

Virtual Edge size and scale on standard server

Virtual Core Count	2 vCPU	4 vCPU	8 vCPU	10 vCPU
Maximum Performance (1518 bytes)	250 Mbps	1 Gbps	4 Gbps	4 Gbps
Maximum Tunnel Scale	50	400	800	2000
Minimum Memory (RAM)	4 GB	8 GB	8 GB	8 GB
Minimum Storage	8 GB	8 GB	8 GB	8 GB

Scaling consideration points

Key considerations for scaling

- To avoid congestion, consider the assigned throughput license per edge device before adding more links.
- Examine the total number of tunnels at each data center:
  - Consider the supported tunnel count per edge specification as not to overutilize the VCE. Overutilization leads to unstable performance.

Hub Tunnel Size =	Total number of tunnels x number of Spokes
Number of Public Tunnels =	Number of unique public links at the hub multiplied by the number of unique public links at the spoke
Number of Private Tunnels =	Number of unique private links at Hub

- Consider hub redundancy – either high availability or hub clustering
- Consider the number of routes in the SD-WAN overlay when adding legacy MPLS routes that lead to route duplication
  - For example, a 3-node cluster that receives 1,000 routes from MPLS results in 10,000 additional routes.

VEP SKUs for appliances and software

The following table provides platform SKU information for the various Dell EMC SD-WAN Edge models that are available for you to order through your Dell EMC account team:

Virtual Edge performance and scale on VEP1405

VEP Model	VEP1425 4 core, Intel Atom C3000	VEP1445 8 core, Intel Atom C3000	VEP1485 16 core, Intel Atom C3000	VEP4600 4 Core, Intel Xeon D2100	VEP4600 8 Core, Intel Xeon D2100	VEP4600 16 Core, Intel Xeon D2100
SKU	210-AREH	210-ASHR	210-ASHK	210-APGJ	210-APGT	210-APGV

The following slides provide information about subscription editions and their capabilities.

Three subscription editions are available that accommodate different deployment scenarios. Select the capabilities that are key to your location.

Feature	Standard Subscription	Enterprise Subscription	Premium Subscription
Edge appliance	✓	✓	✓
VMware SD-WAN Orchestrator	✓	✓	✓
Dynamic Multi-Path Optimization (DMPO)	✓	✓	✓
Maximum number of data segments	1	16	16
Maximum number of edges supported	50	Unlimited	Unlimited
Partner gateway support (SP Only; SaaS access only in Premium)	✓	✓	✓
Advance features: multicast and dynamic routing (OSPF/BGP), dynamic B2B VPN/mesh topology, resource aware hub clustering, customizable business policy	X	✓	✓
Virtual service orchestration included for next generation firewall	X	✓	✓
Separate lower-bandwidth tier of 10, 30, 50, and 100 Mbps	X	✓	✓
SD-WAN gateway services – SaaS and IaaS application optimization – Hubless VPN: using gateway as VPN concentrator	X	X	✓
PCI certified service	X	Add-on	Add-on
Software upgrade	✓	✓	✓
Upgradeable to a higher edition	✓	✓	X
Mixed editions	X	✓	✓

Based on the previous edition capabilities information, see the following table for the applicable SKU information to share with your Dell EMC account team.

Base subscription for alternate editions

SKU	Base SKU Description with Edition
210-ATXJ	VMware SD-WAN Standard Edition New Service Subscription, Prepaid, Hosted VCO, 60 Day activation
210-AUGN	VMware SD-WAN Standard Edition Renewal Service Subscription, Prepaid, Hosted VCO
210-ATXK	VMware SD-WAN Enterprise Edition New Service Subscription, Prepaid, Hosted VCO, 60 Day Activation
210-AUGP	VMware SD-WAN Enterprise Edition Renewal Service Subscription, Prepaid, Hosted VCO
210-ATXM	VMware SD-WAN Premium Edition New Service Subscription, Prepaid, Hosted VCO, 60 Day Activation
210-AUGO	VMware SD-WAN Premium Edition Renewal Service Subscription, Prepaid, Hosted VCO

Note: The bandwidth and term are determined during the ordering process.
Note: The New Service subscription has a 60-day activation period. The renewal SKU is only available for one year and does not have a 60-day activation period.


DELL EMC