Recommended Computing Resources for Cisco Catalyst SD-WAN Control Components Release 20.6.x (On-Prem Deployment)

Single Tenant

The supported hardware specifications for the Cisco SD-WAN Validator, Cisco SD-WAN Manager, and the Cisco SD-WAN Controller are as follows:

Note For cloud deployments, the Cisco operation teams actively monitor the customer deployment and add resource in collaboration with the customer. This topic does not include recommendations for Cisco cloud deployments.

Note The controller and the device version should be the same, to achieve the below scale.

Table 1: Cisco SD-WAN Manager Recommended Computing Resources

Devices	Aggregated Statistics from Edge Devices	Nodes and Deployment Models	vCPUs *	RAM*	Storage Size*	Deployment Type
On-Prem						
**** Cisco Catalyst SD-WAN Application Intelligence Engine (SAIE) Disabled**						
<250	Disabled	One Node Cisco Catalyst SD-WAN Manager (All Services)	16 vCPUs	32 GB RAM	500 GB	UCS
250-1000	Disabled	One Node Cisco Catalyst SD-WAN Manager (All Services)	32 vCPUs	64 GB RAM	1 TB	UCS

Devices	Aggregated Statistics from Edge Devices	Nodes and Deployment Models	vCPUs *	RAM*	Storage Size*	Deployment Type
1000-1500	Disabled	One Node Cisco Catalyst SD-WAN Manager (All Services)	32 vCPUs	128 GB RAM	1 TB	UCS
1500-2000	Disabled	Three Node Cisco Catalyst SD-WAN Manager Cluster (All Services)	32 vCPUs	64 GB RAM	1 TB	UCS
2000-5000	Disabled	Three Node Cisco Catalyst SD-WAN Manager Cluster (All Services)	32 vCPUs	128 GB RAM	1 TB	UCS
5000-7000	Disabled	Six Node Cisco Catalyst SD-WAN Manager Cluster (3 Node with ConfigDB) and all nodes messaging server,Stats, and AppServer	32 vCPUs	128 GB RAM	1 TB	UCS
0-2000	Disabled	Three Node Cisco Catalyst SD-WAN Manager Cluster (All Services)	32 vCPUs	64 GB RAM	1 TB	HX
2000-5000	Disabled	Three Node Cisco Catalyst SD-WAN Manager Cluster (All Services)	32 vCPUs	128 GB RAM	1 TB	HX
**** Cisco Catalyst SD-WAN Application Intelligence Engine (SAIE) Enabled**						
<500	50 GB/Day	One Node Cisco Catalyst SD-WAN Manager (All Services)	32 vCPUs	128 GB RAM	10 TB	UCS
500-2000	100 GB/Day	Three Node Cisco Catalyst SD-WAN Manager Cluster (All Services)	32 vCPUs	128 GB RAM	10 TB	UCS
2000-7000	2.0 TB/Day**	Six Node Cisco Catalyst SD-WAN Manager Cluster (3 Node with ConfigDB) and all nodes messaging server,Stats, and AppServer	32 vCPUs	128 GB RAM	10 TB	UCS

Note

- *For a larger dataset per day, run Stats on all the servers.
- ** Along with the SAIE, the Approute statistics are also considered in the recommendations.
- * vCPU, RAM, and Storage Size numbers are on per Cisco Catalyst SD-WAN Manager basis. The Storage Size numbers are the maximum tested values by Cisco, you can allocate smaller storage sizes.

To achieve scale beyond the above mentioned numbers, deploy multiple overlays.

Note In Cisco vManage Release 20.5.1 and earlier releases, You can modify the **DPI** size to the desired value to achieve the above mentioned storage size numbers.

Note Starting from Cisco vManage Release 20.6.1, you can achieve the above mentioned storage size numbers by modifying the aggregated DPI size. The aggregated DPI size is unidimensional and varies when the deployment includes edge devices that run on a mix of releases (Cisco SD-WAN Release 20.6.x and earlier releases). The aggregated DPI also varies when on-demand troubleshooting is enabled for the devices.

Ensure that both the DPI and aggregated DPI index sizes are configured to enable on-demand troubleshooting.

To modify the aggregated DPI value,

1. From the **Cisco Catalyst SD-WAN Manager** menu, choose **Administration** > **Settings**.
2. Click **Edit** next to **Statistics Database Configuration**.
3. Modify the **Aggregated DPI** size to the desired value based on your DPI traffic, the default disk size allocation is 5 GB.

Note When DPI is enabled, you must set the Statistics Collection timer to 30 minutes or higher.

To set the Statistics Collection timer,

1. From the **Cisco Catalyst SD-WAN Manager** menu, choose **Administration** > **Settings**.
2. Click **Edit** next to **Statistics Configuration**.
3. Modify the **Collection Interval** minutes to the desired value based on your DPI traffic, the default collection interval is 30 minutes.
4. Click **Save**.

Table 2: Cisco Catalyst SD-WAN Validator Recommended Computing Resources for HX/UCS

Devices	vCPUs	RAM	OS Volume	vNICs

1-50	2	4 GB	10 GB	2 (one for tunnel interface, one for management)
51-250	2	4 GB	10 GB	2 (one for tunnel interface, one for management)
251-1000	2	4 GB	10 GB	2 (one for tunnel interface, one for management)
1001 or more	4	8 GB	10 GB	2 (one for tunnel interface, one for management)

Note The tested and recommended limit of supported Cisco SD-WAN Validator instances in a single Cisco Catalyst SD-WAN overlay is eight.

Table 3: Cisco Catalyst SD-WAN Controller Recommended Computing Resources for HX/UCS

Devices	vCPUs	RAM	OS Volume	vNICs
1-50	2	4 GB	16 GB	2 (one for tunnel interface, one for management)
51-250	4	8 GB	16 GB	2 (one for tunnel interface, one for management)
251-1000	4	16 GB	16 GB	2 (one for tunnel interface, one for management)
1001 or more	8	16 GB	16 GB	2 (one for tunnel interface, one for management)

Testbed Specifications

Table 4: Testbed specifications for UCS Platforms

Hardware SKU	Specifications
UCSC-C240-M5SX	UCS C240 M5 24 SFF + 2 rear drives without CPU, memory cards, hard disk, PCIe, PS
UCS-MR-X16G1RT-H	16GB DDR4-2933-MHz RDIMM/1Rx4/1.2v
UCS-CPU-I6248R	Intel 6248R 3GHz/205W 24C/35.75MB DDR4 2933MHz
UCS-SD16T123X-EP	1.6TB 2.5in Enterprise Performance 12G SAS SSD (3X endurance)

Note Any UCS Platform (Fifth Generation and above) with the same or higher hardware specifications mentioned in the above table supports Cisco SD-WAN Control Components with similar scale numbers mentioned in this document.

Drive specifications:

- Interface Speed— 12.0 Gbit per second
- Read speed (64KB) —1800 MB per second
- Write speed (64KB)—850 MB per second

Note

- The recommended numbers are based on the test setup specifications. Systems below these requirements may have challenges processing high volume of statistics data like SAIE.
- Tested with 10 TB Volume (8 X 1.6 TB SSD Drives Raid 0).
- Default hyperthreading is enabled.
- Slower disks can impact processing speed.

Table 5: Testbed specifications for HX Platforms

Hardware SKU	Specifications
HXAF240-M5SX	Cisco HyperFlex HX240c M5 All Flash Node
HX-MR-X32G2RT-H	32GB DDR4-2933-MHz RDIMM/2Rx4/1.2v
HX-CPU-I6248	Intel 6248 2.5GHz/150W 20C/24.75MB 3DX DDR4 2933 MHz
HX-SD38T61X-EV	3.8TB 2.5 inch Enterprise Value 6G SATA SSD
HX-NVMEXPB-I375	375GB 2.5 inch Intel Optane NVMe Extreme Performance SSD

Drive specifications:

- The tested replication factor is 3.
- The default compression on the HX system is applicable to all cases. This compression is automatically determined by the system and cannot be configured.

Multitenant

The supported hardware specifications for the Cisco SD-WAN Validator, Cisco SD-WAN Manager, and the Cisco SD-WAN Controller are as follows:

Table 6: Hardware Specifications to Support 50 Tenants and 1000 Devices

Server	Cisco SD-WAN Manager	Cisco SD-WAN Validator	Cisco SD-WAN Controller
Deployment Model	On-premises Cluster	On-premises deployment	On-premises deployment
Number of Instances	3 Compute+Data nodes	2 instances	2 instances per 24 tenants To support 50 tenants and 1000 devices across all tenants, deploy 6 Cisco vSmart Controller instances.
CPU **DRAM** **Hard Disk**	32 vCPU 128 GB Minimum: 1 TB; Recommended: 10 TB	4 vCPU 4 GB 10 GB	8 vCPU 16 GB 10 GB
Bandwidth	1 Gbps	10 Mbps	100 Mbps

Table 7: Hardware Specifications to Support 100 Tenants and 5000 Devices

Server	Cisco SD-WAN Manager	Cisco SD-WAN Validator	Cisco SD-WAN Controller
Deployment Model	On-premises Cluster	On-premises deployment	On-premises deployment
Number of Instances	6 nodes: 3 Compute+Data nodes and 3 Data nodes	2 instances	2 instances per 24 tenants To support 100 tenants and 5000 devices across all tenants, deploy 10 Cisco vSmart Controllers.
CPU **DRAM** **Hard Disk**	64 vCPU 128 GB Minimum: 2 TB; Recommended: 10 TB	4 vCPU 4 GB 10 GB	8 vCPU 16 GB 10 GB
Bandwidth	1 Gbps	10 Mbps	100 Mbps

Table 8: Hardware Specifications to Support 150 Tenants and 7500 Devices

Server	Cisco SD-WAN Manager	Cisco SD-WAN Validator	Cisco SD-WAN Controller

Deployment Model	On-premises cluster	On-premises deployment	On-premises deployment
Number of Instances	6 nodes: 3 Compute+Data nodes and 3 Data nodes	4 instances	2 instances per 24 tenants/1000 devices To support 150 tenants and 7500 devices across all tenants, deploy 16 Cisco SD-WAN Controller.
CPU	64 vCPU	4 vCPU	8 vCPU
DRAM	128 GB	4 GB	16 GB
Hard Disk	Minimum: 2 TB; Recommended: 10 TB	10 GB	10 GB
Bandwidth	1 Gbps	10 Mbps	100 Mbps

Note

- A deployment with up to 150 tenants and 7500 devices across tenants is supported from Cisco IOS XE Catalyst SD-WAN Release 17.6.3a, Cisco SD-WAN Release 20.6.3, and Cisco vManage Release 20.6.3.
- If DPI is enabled, we recommend that the aggregated DPI data (across all Cisco Catalyst SD-WAN Manager nodes and all tenants in the multitenant system) does not exceed 350 GB per day.
- A pair of Cisco SD-WAN Controller supports 24 tenants and 1000 devices across all tenants.
- A tenant can add a maximum of 1000 devices.
- The tested and recommended limit of supported Cisco SD-WAN Validator instances in a single Cisco Catalyst SD-WAN overlay is eight.