



Cisco WAE Installation Requirements

Cisco WAE requirements vary depending on which components are installed together. This section provides general guidelines and minimum requirements for individual components installed on a single server, unless otherwise specified.

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Cisco WAE Server Requirements

You can install Cisco WAE on a server that meets the following requirements.

Operating System	Software	CPU	Memory	Hard Drive
Linux-x86_64	Centos/RHEL 8.1 with latest patches	16+ Core	64 GB	Minimum: 500 GB Recommended: 1TB

Important Notes

- Cisco WAE software is qualified on CentOS/RHEL 8.1. Cisco WAE VM is compatible with the ESXi versions which support RHEL 8.1.
- If you use a hard disk with greater than 2048 bytes physical sector size for data store filesystem, you may get the following error on startup:

Failed to initialize the system ..

For the WAE Live database to function as designed, the recommended block size is equal to or less than 2048 bytes for data store filesystem.

- Only Linux distributions available in English are supported.
- Modify the `/etc/security/limits.conf` file by adding or updating the following lines to make sure your hardware supports sufficient number of threads for starting poller:

```
[user] soft stack 8192
[user] soft nproc 257805
```

Where `[user]` is the userid which starts the WAE process.

Set the file descriptor limits:

```
[user]      soft   nofile 1000000
[user]      hard   nofile 1000000
# End of file
```



Note Reboot the server after modifying the `limits.conf` file.

- In case of VM, there is no specific requirement for resource allocation in terms of provisioning or reservation, as this is not an OVA based installation. The provisioning and reservation depend on the customer environment and network.

Required Software Packages

Software	Version
JDK/JRE	OpenJDK 11.0.7 64-bit Note If multiple versions of Java are installed on the setup, set <code>JAVA_HOME/JRE_HOME</code> to Java 11 in Environment section of the <code>wae.ini</code> file.
Perl	5.16.3
fontconfig	2.13.1
Python	3.6.x Note <code>/usr/bin/python3</code> must point to the installed python.
python3-paramiko. noarch	2.7.2
python3-lxml	4.6.2
python3-requests	2.20.0
redhat-lsb	4.1 This is required for the License Server. For more information, see the " WAE Design Floating License Server " chapter in the Cisco WAE Design GUI Installation Guide .

Software	Version
Supervisor	4.2.1
Which	2.21
ncurses-compat-libs	6.1.7



Note `python3-paramiko`, `python3-lxml`, `python3-requests` and `supervisor` must be installed after adding `epel-release` repository.

NetFlow Requirements

NetFlow Collection - (Exclusive, apart from WAE server requirements) Memory size and CPU per server

Centralized NetFlow (Server where snapshot resides)		
	Memory	CPU
<code>pmacct</code>	32 GB	
<code>flow_cluster_broker</code>	2 GB	
<code>flow_cluster_controller</code>	2 GB	
<code>flow_cluster_agent</code>	8 GB	
<code>flow_collector_ias</code> <code>flow_collector_dmd</code>	8 GB	
TOTAL	52 GB	8+ Cores

Distributed NetFlow (Server where the agent resides)		
	Memory	CPU
<code>pmacct</code>	32 GB	
<code>flow_cluster_agent</code>	8 GB	
TOTAL	40 GB	8+ Cores

Distributed NetFlow (Server where the snapshot resides)		
	Memory	CPU
flow_cluster_broker	2 GB	
flow_cluster_controller	2 GB	
flow_cluster_ias flow_cluster_dmd	8 GB	
TOTAL	12 GB	8+ Cores

**Note**

- One flow collection server (pmacct) is required per 100 Mbps of flow export bandwidth.
- Only English Linux is supported.
- Flow collection requires Linux Kernel 2.6.32 or greater.
- The memory requirement listed above per collection server instance is based on the assumption of an approximate figure of 100 Mbit/s of NetFlow traffic.

Optical Collection Agents

Vendor	Supported Node Version	Software
Cisco	Cisco Network Convergence System (NCS) 2000 Series Routers, Releases 11.3	Cisco Evolved Programmable Network Manager 5.1.4
Cisco	Cisco Network Convergence System (NCS) 2000 Series Routers, Releases 12.3	Cisco Evolved Programmable Network Manager 6.0

Collection from Network Service Orchestrator

Software/Driver	Version
IOS NED	6.66.1
IOS-XR NED	7.30.1
Junos NED	4.6.17
Network Service Orchestrator	5.4.2
Traffic Engineering	Contact your Cisco WAE representative.

Scale Support

Parameters	Scale
Total number of Network Devices	3000
Total number of Interfaces	100000
Total number of Demands	100000
Total number of Policies (SR or RSVP or Both)	5000

Cisco WAE Design Requirements

WAE Design is a 64-bit installation on the Linux operating systems.

Operating System	Software	CPU	Memory
Linux-x86_64	RHEL 8.4 with latest patches	Minimum: 8 Cores Recommended: 16+ Cores	Minimum: 16 GB Recommended: 64 GB

Important Notes

- A standalone WAE Design system does not require the use of WAE Collector.
- Only Linux distributions available in English are supported.
- A Perl (5.10+) installation is required for some WAE features. See [Required Software Packages, on page 2](#).
- A Python installation is required for some WAE features. See [Required Software Packages, on page 2](#).
- FlexLM license: For more information, see *Cisco WAE Design GUI Installation Guide*.
- Only English Linux is supported.

WAE Live Requirements



Note WAE Live must be installed on a separate server than the WAE server.

Requirement	~1000 Node Network	~2000 Node Network
Supported operating system	RHEL 8.4	RHEL 8.4

Requirement	~1000 Node Network	~2000 Node Network
CPU	8 cores, 16 threads (or 16 vCPUs)	16 cores, 32 threads (or 32 vCPUs)
Memory	24 GB	48 GB
Disk speed	200 MB/s	320 MB/s
Disk size	3 TB	10 TB
Number of network objects	100,000	500,000



- Note**
- Only English Linux is supported.
 - Other Red Hat Enterprise Linux distributions should work, but are not officially supported.

Kernel Parameters

Kernel Parameters	Value
SHMALL	4294967296
SHMMAX	4398046511104
SHMMNI	4096
SEMMNS	32000
SEMMSL	250
SEMOPM	32
Maximum number of file descriptors	65535

Supported Web Browsers

Browser	Version
Google Chrome	62 or later
Firefox	56 or later

Cisco WAE Ports

Port	Protocol	Type	Description
*:8080	TCP	Listening	Cisco WAE Server
*:8443	TCP	Listening	Cisco WAE Server, Live Server
2022 - 2023	TCP	Listening and outgoing	Cisco WAE Server
*:2024	TCP	Listening	Cisco WAE Server
4569	TCP	Listening and outgoing	Cisco WAE Server
4570	TCP	Listening	Cisco WAE Server HA
8080	TCP	Outgoing	XTC collection
164	UDP	Outgoing	SNMP-based NIMOs
22	TCP	Outgoing	Collection via Telnet
23	TCP	Outgoing	Collection via SSH
*:2181	TCP	Listening	Message broker
*:9092 - 9094	TCP	Listening	Message broker
8443	TCP	Listening and outgoing	Cisco WAE Optical EPNM Agent
8161	TCP	Listening	NetFlow JMS OOB
61616	TCP	Listening	NetFlow JMS IB
9090	TCP	Listening	NetFlow HTTP
2100	UDP	Listening	NetFlow
179	TCP	Listening	NetFlow BGP
*:8843	TCP	Listening	Cisco WAE Coordinated Maintenance (standalone or as part of WAE Server)

