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.

This section contains the following topics:

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 and RHEL 7.7 with latest patches	16+ Core	64 GB	Minimum: 500 GB Recommended: 1TB

Important Notes

- Cisco WAE software is qualified on CentOS 7.7 and Red Hat Enterprise Linux 7.7.

- Other CentOS Red Hat Enterprise Linux versions should work, but has not been tested.

- 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
[user] soft nofile 1000000
```

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

Set the file descriptor limits:

```
wae       soft      nofile   1000000
wae       hard      nofile   1000000
# End of file
```

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

Required Software Packages

Software	Version
JDK/JRE	OpenJDK 11.0.7 64-bit **Note** Java environment variables must be configured correctly and JRE_HOME must point to a valid JRE/JDK installation. Download the JRE package from the Oracle distribution site. For example: • Linux: Enter the following command: `admin@system1 ~ # export JRE_HOME=<JDK/JRE_installation_path>`
Perl	5.16.3
fontconfig	2.10.95
Python	3.6.x **Note** `/usr/bin/python3` must point to the installed python.
python-paramiko. noarch	2.7.1
python-lxml	3.7.3
python-requests	2.23.0
redhat-lsb	4.0.7 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.
Supervisor	3.1.4 and above

NetFlow Requirements

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

Centralized NetFlow (Server where snapshot resides)		
	Memory	CPU
pmacct	32 GB	
fow_cluster_broker	2 GB	
flow_cluster_master	2 GB	
flow_cluster_agent	8 GB	
flow_collector_ias flow_collector_dmd	8GB	
TOTAL	**52 GB**	**8+ Cores**

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

Distributed NetFlow (Server where the snapshot resides)		
	Memory	**CPU**
flow_cluster_broker	2 GB	
flow_cluster_master	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.
- Qualified on CentOS 7.8.
- 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 10.7, 10.9, 11.0, 11.1	Cisco Evolved Programmable Network Manager 4.0

Collection from Network Service Orchestrator

Software/Driver	Version
IOS NED	6.47
IOS-XR NED	7.23
Junos NED	4.5.23
Network Service Orchestrator	5.3.1
Traffic Engineering	Contact your Cisco WAE representative.

Scale Support

Parameters	Scale
Total number of Network Devices	3000
Total number of Interfaces	30000
Total number of Demands	100000
Total number of Policies (SR or RSVP or Both)	2000

Cisco WAE Design Requirements

WAE Design is a 64-bit installation on all supported operating systems.

Operating System	Software	CPU	Memory
Linux-x86_64	CentOS and RHEL 7.7 with latest patches	Intel or AMD 2+ GHz	Minimum: 8 GB Recommended: 16 GB
Windows (64-bit)	Windows 2008 Windows 10	Intel or AMD 2+ GHz	Minimum: 8 GB Recommended: 16 GB
macOS x86_64	10.8.5 to 10.13.4	Intel or AMD 2+ GHz	Minimum: 8 GB Recommended: 16 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 "" chapter in the *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	CentOS 7.5	CentOS 7.5
CPU	8 cores, 16 threads	16 cores, 32 threads
Memory	24 GB	48 GB
Disk speed	200 MBs	320 MBs
Disk size	3 TB	10 TB
Number of network objects	100,000	500,000

Note
- Only English Linux is supported.
- Other CentOS and 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
*:4000	UDP	Listening	Cisco WAE Server
*: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

Port	Protocol	Type	Description
4570	TCP	Listening	Cisco WAE Server HA
8080	TCP	Outgoing	XTC collection
127.0.0.1:9901 - 9902	TCP	Listening	SNMP polling
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
*:9000	TCP	Listening	Optical plug-in
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)