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Cisco WAE 6.4 - 6.4.7 System Requirements

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

Note: These requirements are applicable to WAE 6.4 to WAE 6.4.7.

WAE Live

System Requirements

	~1000 Nodes Network	~2000 Nodes Network
Supported Operating System	CentOS 6.6	CentOS 6.6
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 k	500 k

Performance Sampling

WAE Live performance is dependent on a number of factors. Below is a list of sample elements collected in a network and how long it takes to insert the plan file.

Nodes	Interfaces	Interface Queues	LSPs	Demands	Total	Plan Insertion Time (minutes)
350	48,000	172,000	47,000	0	267,000	1:35
600	10,000	14,000	6,000	0	30,000	0:21
600	0	0	44,000	21,000	65,000	1:11
950	45,000	95,000	35,000	320,000	495,000	2:48
1050	32,000	21,000	10,000	0	63,000	0:29

Kernel Parameters

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

WAE Collector

The following requirements are for individual components installed with WAE Collector.

WAE Live

Supported Operating System	Supported Software	Hardware		
		CPU	Memory	Hard Drive
Linux-x86_64	RHEL/CentOS 6 with latest patches	Intel or AMD 2+ GHz, 8+Core	Min: 32 GB Suggested: 64 GB	Min: 1 TB Suggested: 2 TB

Notes:

- Only English Linux is supported.

- Other Red Hat Linux distributions should work, but are not officially supported.

- Software has been qualified on CentOS 6.6.

WAE Design Archive

Supported Operating System	Supported Software	Hardware		
		CPU	Memory*	Hard Drive

| Linux-x86_64 | RHEL/CentOS 6 with latest patches | Intel or AMD 2+ GHz, 4+ Core Suggested: 8+ Core | Min: 32 GB Suggested: 64 GB | Min: 1 TB Suggested: 2 TB |

* Increase by 2 GB for each additional 5 concurrent users.

Notes:

- Only English Linux is supported.
- Other Red Hat Linux distributions should work, but are not officially supported.
- Software has been qualified on CentOS 6.6.

Flow Collection

Supported Operating System	Supported Software	Hardware		
		CPU	**Memory**	**Hard Drive**
Linux-x86_64	RHEL/CentOS 6 with latest patches	Intel or AMD 2+ GHz, 8+ Core	See the following table for NetFlow applications.	1 TB

NetFlow Collection - (Exclusive) Memory sizes per server

Centralized NetFlow (Server where the snapshot resides)	
Collector Server	32 GB
flow_get	4 GB
TOTAL	**36 GB**

Notes:

- One flow collection server is required per 100 Mbps of flow export bandwidth.

- Only English Linux is supported.

- Qualified on CentOS 6.6.

- 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.

WAE Design

System Requirements

- A stand-alone WAE Design system does not require the use of WAE Collector.

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

- A Perl installation is required for some WAE features. Please refer to the Package section for details.

- A Python installation is required for some WAE features. Please refer to the Package section for details.

Operating System	Software Version	Hardware	
		CPU	**Memory**

Linux-x86_64	RHEL/CentOS 6 with latest patches	Intel or AMD 2+ GHz	8 GB Suggested: 16 GB
Windows (64-bit)	Windows 2008 *, 7.0*	Intel or AMD 2+ GHz	8 GB Suggested: 16 GB
macOS x86_64	10.8.5 - 10.13	Intel or AMD 2+ GHz	8 GB Suggested: 16 GB

* Recommended

Notes:

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

WAE Automation Server

Supported Operating System	Supported Software	Hardware		
		CPU	Memory*	Hard Drive
Linux-x86_64	RHEL/CentOS 6 with latest patches	Intel or AMD 2+ GHz, 8+ Core	32 GB Suggested: 64 GB	1 TB

*Increase 1 GB of memory for each additional core used.

Notes:

- Only English Linux is supported.
- Other Red Hat Linux distributions should work, but are not officially supported.
- Software has been qualified on CentOS 6.6.

WAE Web Browsers

Web Browser	Version
Google Chrome	51
Firefox	45
Internet Explorer	11

Network Service Orchestration (NSO) Requirements

Software / Driver	Version
IOS-XR NED	ncs-3.4-cisco-iosxr-3.9.0.7_ee8d73f
JunOS NED	ncs-3.4-juniper-junos-3.0.16
Network Services Orchestrator	3.4
Traffic-Eng	Contact your Cisco representative

Software Packages

Perl Packages

Operating System	Product	Package
Linux-x86_64	WAE Collector with flow collection	5.10.1
	WAE Collector with WAE Design Archive	
	Stand-alone WAE Design	
Windows (64-bit)	Stand-alone WAE Design	5.12.3
macOS x86_64	Stand-alone WAE Design	5.12.3 - 5.18.2

Python Packages

Operating System	Product	Package
Linux-x86_64	WAE	2.6.x
Windows (64-bit)	Stand-alone WAE Design	2.7.x
macOS x86_64	Stand-alone WAE Design	2.6.x

Font Packages

Package	Description
bitstream-vera-fonts	Bitstream Vera fonts
ghostscripts-fonts	Ghostscript fonts
libXft	X font library
xorg-x11-fonts-Type1	X.org Type1 fonts

Red Hat Linux-x86_64 Packages

Package	WAE Service
ansible1.9 (ansible1.9-1.9.6-2.el6.1.noarch.rpm) Note: If Ansible 2.0+ exists on the system, it must be uninstalled prior to installation.	wae-platsvcs
bc	wae-dlc

cyrus-sasl-lib	wae-core
	wae-dlc
db4	wae-core
	wae-dlc
e2fsprogs-libs	wae-dlc
ed	wae-dlc
expat	wae-core
	wae-dlc
fontconfig	wae-core
	wae-dlc
freetype	wae-core
	wae-dlc
gettext	wae-ni
ghostscript-fonts	wae-core
	wae-dlc
glibc	wae-core
	wae-dlc
gzip	wae-dlc
jdk >= 1.7	wae-appenginecore
	wae-core
	wae-db
	wae-demo
	wae-designapiserver
	wae-messaging
	wae-ni
	wae-osc
	wae-platsvcs
	wae-smart-licensing
keyutils-libs	wae-core
	wae-dlc
krb5-libs	wae-core
	wae-dlc
libaio	wae-dlc

libdrm	wae-core
	wae-dlc
libgcc >= 4.0	wae-dlc
libICE	wae-core
	wae-dlc
libselinux	wae-core
	wae-dlc
libselinux-python	wae-platsvcs
libsepol	wae-core
	wae-dlc
libSM	wae-core
	wae-dlc
libstdc++ >= 4.0	wae-core,
	wae-dlc
libX11	wae-core
	wae-dlc
libXau	wae-core
	wae-dlc
libXdmcp	wae-core
	wae-dlc
libXext	wae-core
	wae-dlc
libXft	wae-core
	wae-dlc
libXrender	wae-core
	wae-dlc
libXxf86vm	wae-core
	wae-dlc
lsof	wae-platsvcs
	wae-svcs-server

mesa-libGL	wae-core
	wae-dlc
ncurses >= 5.0	wae-dlc
net-snmp	wae-demo
net-snmp-utils	wae-demo
ntp	wae-core
openldap	wae-dlc
pam	wae-dlc
python >= 2.6	wae-db
	wae-demo
	wae-dlc
	wae-platsvcs
	wae-smart-licensing
python >= 2.6	wae-smart-licensing
python-argparse	wae-platsvcs
redhat-lsb	wae-dlc
rsync	wae-platsvcs
screen	wae-dlc
sshpass	wae-platsvcs
wae-dlc	wae-ni
xorg-x11-fonts-Type1	wae-core
	wae-dlc
yum-utils	wae-platsvcs
zlib	wae-core
	wae-dlc

Ports

Planning Server Ports

Port	Protocol	Description	Use by Service
9088	TCP/UDP	MLD SQL Interface	wae-mld
9089	TCP/UDP	MLD SQL Interface (Encrypted)	wae-mld
123	UDP	Network Time Protocol	wae-ni
1199	TCP	Remote Method Invocation (RMI) registry port	wae-ni

Port	Protocol	Description	Use by Service
2181	TCP	Centralized service for configuration management	wae-ni
5006	TCP	Debug	wae-ni
8086	TCP	Representational State Transfer (ReST) interface (Port for accessing northbound WAE NI server)	wae-ni
8102	TCP	Console SSH port	wae-ni
8182	TCP	Web console	wae-ni
8185	TCP	RESTCONF port	wae-ni
9092 - 9094	TCP	Message broker	wae-ni
44445	TCP	Remote Method Invocation (RMI) server port	wae-ni
61617	TCP	Java Message Service (JMS) (Port that WAE NI server uses to receive plan files)	wae-ni
1790	TCP	Border Gateway Protocol	wae-ni
2812	TCP	Service monitoring communication port	wae-svcs-client
7070	TCP	Log agent communication port	wae-svcs-client
5601	TCP	Analytics and search dashboard communication port	wae-svcs-server
8843	TCP	Hypertext Transfer Protocol Secure	wae-svcs-server
9200 9300	TCP	Search server communication port	wae-svcs-server
25826	TCP	Log manager communication port	wae-svcs-server
8005	TCP	Collector sever shutdown port	wae-web-server
8009	TCP	AJP connector for Collector server	wae-web-server
8080	TCP	Hypertext Transfer Protocol	wae-web-server
8443	TCP	Hypertext Transfer Protocol Secure	wae-web-server
9090	TCP	Java Management Extension (JMX) monitoring port	wae-web-server
8282	TCP	Hypertext Transfer Protocol	wae-system-server
8243	TCP	Hypertext Transfer Protocol Secure	wae-system-server
8020	TCP	AJP connector	wae-system-server
8006	TCP	Server shutdown port	wae-system-server

Automation Server Ports

Port	Protocol	Description	Use by Service
1499	TCP	Remote Method Invocation (RMI) registry port	wae-appenginecore

8104	TCP	Console SSH port	wae-appenginecore
8186	TCP	Web console	wae-appenginecore
44447	TCP	Remote Method Invocation (RMI) server port	wae-appenginecore
123	UDP	Network Time Protocol	wae-core
1299	TCP	Remote Method Invocation (RMI) registry port	wae-core
2022	TCP	Network Configuration Protocol (NETCONF)	wae-core
5007	TCP	Debug	wae-core
5701-5720	TCP	Communication between memory cache member and client	wae-core
7776	TCP	Jetty engine port	wae-core
7777	TCP	Representational State Transfer (ReST) interface	wae-core
8103	TCP	Console SSH port	wae-core
8183	TCP	Web console	wae-core
9898	TCP	Thrift interface	wae-core
44446	TCP	Remote Method Invocation (RMI) server port	wae-core
56017	TCP	Communication between memory cache members	wae-core
7000	TCP	Intra-node port non-TLS port	wae-db
7001	TCP	Intra-node TLS port	wae-db
7199	TCP	Java Management Extension (JMX) monitoring port	wae-db
9042	TCP	Query Language Native Transport port	wae-db
9160	TCP	Thrift interface	wae-db
8008	TCP	Web console	wae-demo
27017	TCP	Database web status	wae-demo
28017	TCP	Database daemon and database shard	wae-demo
1599	TCP	Remote Method Invocation (RMI) registry port	wae-designapiserver
8105	TCP	Console SSH port	wae-designapiserver
8187	TCP	Web console	wae-designapiserver
44448	TCP	Remote Method Invocation (RMI) server port	wae-designapiserver
8161	TCP	Web console	wae-messaging
11099	TCP	Java Management Extension (JMX) monitoring port	wae-messaging

61610	TCP	Java Message Service (JMS) New I/O (NIO)	wae-messaging
61614	TCP	Java Message Service (JMS) web socket	wae-messaging
61615	TCP	Java Message Service (JMS) message queue transport	wae-messaging
61616	TCP	Java Message Service (JMS) openwire transport	wae-messaging
1790	TCP	Border Gateway Protocol	wae-osc
4189	TCP	Path Computation Element Communication Protocol (PCEP)	wae-osc
8101	TCP	Console SSH port	wae-osc
8181	TCP	Web console	wae-osc
44444	TCP	Remote Method Invocation (RMI) server port	wae-osc
2812	TCP	Service monitoring communication port	wae-svcs-client
7070	TCP	Log agent communication port	wae-svcs-client