



## **Cisco WAE 6.3.12 System Requirements**

**First Published:** November 2017

**Cisco Systems, Inc.**

[www.cisco.com](http://www.cisco.com)

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco website at [www.cisco.com/go/offices](http://www.cisco.com/go/offices).

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: [www.cisco.com/go/trademarks](http://www.cisco.com/go/trademarks). Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1721R)

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

© 2017 Cisco Systems, Inc. All rights reserved.

# Cisco WAE 6.3.12 System Requirements

- WAE Live
  - System Requirements
  - WAE Live Datastore Sizing Example
  - Kernel Parameters
- WAE Planning Server
- WAE Automation Server
- NetFlow Collection
  - NetFlow Collection - (Exclusive) Memory sizes per server
- WAE Design
  - System Requirements
- WAE Web Browsers
- Network Service Orchestration (NSO) Requirements
- Software Packages
  - Perl
  - Python
  - Font Packages
  - RPM Package Dependencies
- Ports
  - Planning Server Ports
  - Automation Server Ports

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.

## WAE Live

### System Requirements

	Hardware			Supported Software
	CPU	Memory	Hard Drive	
Minimum	2+ GHz 4-Core	16 GB	1 TB	CentOS 6.9
Recommended	2+ GHz 8-Core	32 GB	1-2 TB, ssd preferred	CentOS 6.9

Notes:

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

### WAE Live Datastore Sizing Example

	Interfaces	LSPs	Nodes	Demands	
# objects	1512	16081	500	29426	
Properties	20	10	10	10	
Property avg unit size(bytes)	16	16	16	16	
Sample per hour	6	6	6	1	

					Total
GB/day	0.06	0.35	0.01	0.11	<b>0.53</b>
GB/month	1.95	10.35	0.32	3.16	<b>15.78</b>
GB/year	23.36	124.22	3.86	37.88	<b>189.33</b>

## Kernel Parameters

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

## WAE Planning Server

Supported Operating System	Supported Software	Hardware		
		CPU	Memory*	Hard Drive
Linux-x86_64	RHEL/CentOS 6.9	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 CentOS and Red Hat Enterprise 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 6.9	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 CentOS and Red Hat Enterprise Linux distributions should work, but are not officially supported.

## NetFlow Collection

### NetFlow Collection - (Exclusive) Memory sizes per server

Centralized NetFlow (Server where the snapshot resides)	
Collector Server	32 GB
flow_get	4 GB
<b>TOTAL</b>	<b>36 GB</b>

Notes:

- One flow collection server is required per 100 Mbps of flow export bandwidth.
- Only English Linux is supported.
- Qualified on CentOS 6.9.
- 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 standalone 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 6.9	Intel or AMD 2+ GHz	8 GB Suggested: 16 GB

Windows (64-bit)	Windows 2008 *, 7.0*, 10	Intel or AMD 2+ GHz	8 GB Suggested: 16 GB
macOS x86_64	10.8.5 to 10.13	Intel or AMD 2+ GHz	8 GB Suggested: 16 GB

\* Recommended

Notes:

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

## WAE Web Browsers

Web Browser	Version
Google Chrome	62
Firefox	52
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

Operating System	Product	Package
Linux-x86_64	WAE Planning with flow collection	5.10.1
	WAE Planning 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

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
ghostscript-fonts	Ghostscript fonts
libXft	X font library
xorg-x11-fonts-Type1	<a href="#">X.org</a> Type1 fonts

## RPM Package Dependencies

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  wae-dlc
bc 1.06.95	wae-dlc
cyrus-sasl-lib 2.1.23	wae-core  wae-dlc
db4 4.7.25	wae-core  wae-dlc
e2fsprogs-libs 1.41.12	wae-dlc
ed 1.1	wae-dlc
expat 2.0.1	wae-core  wae-dlc
fontconfig 2.8.0	wae-core  wae-dlc

freetype 2.3.11	wae-core wae-dlc
gettext 0.17	wae-ni
ghostscript-fonts 5.50	wae-core wae-dlc
glibc 2.12	wae-core wae-dlc
gzip 1.3.12	wae-dlc
jdk 1.7.0_60	wae-appenginecore wae-core wae-db wae-demo wae-designapiserver wae-dlc wae-messaging wae-ni wae-osc wae-platsvcs
keyutils-libs 14	wae-core wae-dlc
krb5-libs 1.10.3	wae-core wae-dlc
libaio 0.3.107	wae-dlc
libdrm 2.4.65	wae-core wae-dlc
libgcc 4.4.7	wae-dlc
libICE 1.0.6	wae-core wae-dlc
libselinux 2.0.94	wae-core wae-dlc
libselinux-python 2.0.94	wae-platsvcs
libsepol 2.0.41	wae-core wae-dlc



libSM 1.2.1	wae-core wae-dlc
libstdc++ 4.4.7	wae-core, wae-dlc
libX11 1.6.4	wae-core wae-dlc
libXau 1.0.6	wae-core wae-dlc
libXdmcp 1.1.1	wae-core wae-dlc
libXext 1.3.3	wae-core wae-dlc
libXft 2.3.2	wae-core wae-dlc
libXrender 0.9.10	wae-core wae-dlc
libXxf86vm 1.1.3	wae-core wae-dlc
Isol 4.82	wae-platsvcs wae-svcs-server
mesa-libGL 11.0.7	wae-core wae-dlc
ncurses 5.7	wae-dlc
net-snmp 5.5	wae-demo
net-snmp-utils 5.5	wae-demo
ntp 4.2.6	wae-core
openldap 2.4.40	wae-dlc
pam 1.1.1	wae-dlc
python 2.6.6	wae-db wae-demo wae-dlc wae-platsvcs

python-argparse 1.2.1	wae-platsvcs
redhat-lsb 4.0.7	wae-dlc
rsync 3.0.6	wae-platsvcs
screen 4.0.3	wae-dlc
sshpas 1.06	wae-platsvcs
xorg-x11-fonts-Type1 7.2	wae-core wae-dlc
zlib 1.2.3	wae-core wae-dlc

## Ports

### Planning Server Ports

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