Release Notes for Cisco WAE 7.3.0

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Note

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What's New in Cisco WAE, Release 7.3.0

Cisco is continuously enhancing the product with every release and this section covers a brief description of key features and enhancements. It also includes links to detailed documentation, where available.

Software

SR-TE Bandwidth Optimization Tool Enhancements

The following enhancements are now part of the SR-TE Bandwidth Optimization Tool:

- You can set the Midpoint Optimization Mode and also choose to exclude end nodes while creating new SR LSPs with optimized routing.

- When rerouting demands, you can set the Traffic Steering Mode to Individual Demands or Autoroute.

For more information, see "Segment Routing Optimization" chapter ("SR-TE Bandwidth Optimization" topic) in the *Cisco WAE Design 7.3.0 User Guide*.

Multi IGP Protocol Support

You can now specify an IGP Process ID to each interface.

For more information, see "IGP Simulation" chapter ("OSPF and IS-IS" topic) in the *Cisco WAE Design 7.3.0 User Guide*.

Multi Area Support for Alcatel-Lucent Devices

WAE now supports discovery of multiple OSPF and IS-IS areas for Alcatel-Lucent devices.

Enhancements to DARE workflow

You can now add an exsiting network while configuring collectors using Network Model Composer.

For more information, see "Network Model Configuration—CiscoWAE UI" chapter in the *Cisco WAE 7.3.0 User Guide*.

Caveats

Resolved Caveats

The following are descriptions of the resolved caveats in Cisco WAE Release 7.3.0:

Table 1: Resolved Bugs

Bug ID	Description
CSCvu78341	`nimo_flow_collector_ias_and_dmd.sh` does not generate flows in the plan file.
CSCvu83762	In WAE 7.2.2, traffic statistics for newly added LSP is not collected in XTC workflow.
CSCvv78949	Performance Issue with L3-L1 Links.
CSCvw12049	Simulation Analysis does not work on production setup on WAE Collector version 7.2.2.
CSCvu59941	Error when writing to DB file using OPM API.
CSCvu98273	Rebuild does not send the patch to traffic poller.
CSCvv01563	Segment List Hops does not get aggregated from parse configs run after PCEP LSP.
CSCvv01575	Logs are getting appended to rotated file instead of new log file once `logrotate` is executed.
CSCvv57344	Issue with WAE Design 7.2.2 API python 3 support.
CSCvv94717	WebUI does not show users when user is different from Admin.
CSCvw01223	Invalid demand entries in SaGE network.
CSCvw18078	WAE 7.1.2 - Issue with setting up Layout template.
CSCvw18812	WAE IGP collection for Cisco IOS - XR fails.
CSCvw21253	Map shows some virtual nodes not assigned to site and with wrong type.
CSCvw22630	Logout audit messages from WebUI not generated.
CSCvw68008	HA fails after changing the hostname of the server hosting WAE Collector version 7.2.2.

Using the Cisco Bug Search Tool

You can use the Cisco Bug Search Tool to search for a specific bug or to search for all bugs in a release.

Procedure

Step 1 Go to the http://tools.cisco.com/bugsearch.

Step 2 Enter your registered Cisco.com username and password, and click **Log In**.

The Bug Search page opens.

Note If you do not have a Cisco.com username and password, you can http://tools.cisco.com/RPF/register/register.do.

Step 3 Use any of these options to search for bugs, and then press Enter (Return) to initiate the search:

- To search for a specific bug, enter the bug ID in the Search For field.

- To search for bugs based on specific criteria, enter search criteria, such as a problem description, a feature, or a product name, in the Search For field.

- To search for bugs based on products, enter or select a product from the Product list. For example, if you enter "WAE," you get several options from which to choose.

- To search for bugs based on releases, in the Releases list select whether to search for bugs affecting a specific release, bugs that were fixed in a specific release, or both. Then enter one or more release numbers in the Releases field.

Step 4 When the search results are displayed, use the filter tools to narrow the results. You can filter the bugs by status, severity, and so on.

To export the results to a spreadsheet, click **Export Results to Excel**.

Other Important Information

Upgrade to Cisco WAE 7.3.0

Note A license is required to use all the features in Cisco WAE. Cisco WAE supports both Cisco Smart Licensing and traditional licensing.

If you decide to move back from Smart License to traditional license, disable Smart License from Cisco WAE GUI and manually delete the file `MATE_Smart.lic` file present in `~/.cariden/etc` folder.

For more information, see *Cisco WAE 7.3.0 User Guide*.

Follow the below workflow to install or upgrade to Cisco WAE 7.3.0:

Install and Configure Supervisor

Install and configure supervisor before installing WAE.

Note   The following configuration steps work only when supervisor is installed using yum. If supervisor is installed using any other method, it has to be configured to run **supervisorctl** as a non root user.

Procedure

Step 1   Install supervisor and verify.

```
sudo yum install -y epel-release
sudo yum install -y supervisor
supervisord -version
3.1.4
```

Step 2   Create directories with write permissions for the OS user running WAE.

```
sudo mkdir -p /opt/supervisor/run
sudo mkdir -p /opt/supervisor/log
sudo chown -R [USER-NAME]:[GROUP-NAME] /opt/supervisor
```

Step 3   Update supervisor configuration to not run as a root user.

Point the pid file to /opt/supervisor/run/supervisor.pid and user as the OS user running WAE.

Open /etc/supervisord.conf as root and edit.

- In the [unix_http_server] section:

  - Change ;file=/var/run/supervisor/supervisor.sock to
  file=/opt/supervisor/run/supervisor.sock

  - Change ;chown=nobody:nogroup to chown=[USER-NAME]:[GROUP-NAME]

- In the [supervisord] section:

  - Change ;logfile=/var/log/supervisor/supervisord.log to
  logfile=/opt/supervisor/log/supervisord.log.

  - Change ;pidfile=/var/run/supervisord.pid to pidfile=/opt/supervisor/run/supervisord.pid

  - Change ;minfds=1024 to minfds=1000000

  - Change ;minprocs=200 to minprocs=257805

  Note   Do not set the user under the [supervisord] section.

- In the [supervisorctl] section:

  - Change ;serverurl=unix:///var/run/supervisor/supervisor.sock to
  serverurl=unix:///opt/supervisor/run/supervisor.sock

Step 4   Start Supervisor.

```
sudo systemctl start supervisord
sudo supervisorctl status all
```

Step 5   Enable supervisor to start during system startup.

```
sudo systemctl enable supervisord
sudo systemctl status supervisord
```

Verify WAE Image

Procedure

Step 1   Download the Cisco WAE 7.3.0 software package from Cisco Download Software site.

Step 2   The certificate and digital signature are both embedded in the downloaded file - `wae-linux-v7.3.0.signed.bin`.

Step 3   Run the self-extracting signed binary. This extracts the Release Binary and validates using the signature file.

Verification of signed image

```
[admin@wae-vm-21 workspace.signed]$ ./wae-linux-v7.3.0.signed.bin
Unpacking...
Verifying signature...
Downloading CA certificate from http://www.cisco.com/security/pki/certs/crcam2.cer ...
Successfully downloaded and verified crcam2.cer.
Downloading SubCA certificate from http://www.cisco.com/security/pki/certs/innerspace.cer
...
Successfully downloaded and verified innerspace.cer.
Successfully verified root, subca and end-entity certificate chain.
Successfully fetched a public key from WAE-CCO_RELEASE.cer.
Successfully verified the signature of wae-linux-v7.3.0.bin using WAE-CCO_RELEASE.cer
```

Step 4   The generated `wae-linux-v7.3.0.bin` is the Linux installer for WAE.

Install Cisco WAE

Before you begin

- If one does not yet exist, create a UNIX user (assigned to a group). You must be this UNIX user to run installation.

- Make sure Java 11 and Python 3 are installed on the system and `JAVA_HOME` environment variable is pointing to jdk-11.0.

- Make sure supervisor is installed and configured. See Install and Configure Supervisor, on page 3.

- Download and verify the digitally signed Cisco WAE 7.3.0 image. See Verify WAE Image, on page 5.

- Make sure that `requests.auth` python package is installed for the BW-OPT application to function in WAE.

Procedure

Step 1   Stop WAE if running.

Step 2   Change permission of the install file using the command:

```
chmod +x wae-linux-v7.3.0.bin
```

Step 3   Run the installer specifying the target directory.

```
./wae-linux-v7.3.0.bin <wae-dir>
```

Step 4   Navigate to installation directory to source `waerc`. Setup environment and create a runtime directory specifying the path.

```
cd  <wae-dir>
source waerc
wae-setup --dest <target-runtime-dir>
```

Step 5   You are prompted to set the Cisco WAE admin password.

```
WAE admin password:
Confirm password:
```

Step 6   After installing and setting up wae (i.e. after running wae-setup), create a soft link to the `wae.ini` file from inside `/etc/supervisord.d/` and add WAE config to supervisor.

```
sudo ln -sf <target-runtime-dir>/wae.ini /etc/supervisord.d/
```

> **Note**   • Execute this step only after supervisor is installed and configured.
>
> • If you want to use an external-executable-nimo based network which needs `JAVA_HOME`/`JRE_HOME` to be set, edit the section `[program:waectl]` inside `target-runtime-dir/wae.ini` file to include `JAVA_HOME="valid_jdk_path"` inside environment.
>
> For example, under `[program:waectl]` edit to add:
>
> ```
> JAVA_HOME:environment=HOME="/home/wae", NCS_JAVA_VM_OPTIONS="-Xmx32G -Xms16G
> -XX:+UseG1GC -XX:+HeapDumpOnOutOfMemoryError
> -XX:HeapDumpPath=/home/wae/test/run/logs/
> -Djava.io.tmpdir=/home/wae/test/run/work/", TMPDIR="/home/wae/test/run/work/",
>  JAVA_HOME="/usr/"
> ```

Step 7   Update supervisor configuration.

```
sudo supervisorctl update
```

Step 8   Start WAE process

```
sudo supervisorctl start wae:*
wae:zookeeper: started
wae:waectl: started
wae:kafka: started
wae:wae-monitor: started
```

> **Note**   • `wae:waectl` is the WAE program.
>
> • `wae:kafka` and `wae:zookeeper` are required for traffic collection.
>
> • `wae:wae-monitor` is the monitoring service.
>
> • `wae:logrotate` is for log rotation.

Step 9   Check status of WAE process

```
sudo supervisorctl status
wae:kafka RUNNING pid 1540, uptime 28 days, 14:03:40
wae:logrotate RUNNING pid 1178, uptime 28 days, 15:10:11
wae:wae-monitor RUNNING pid 11520, uptime 0:00:12
wae:waectl RUNNING pid 1177, uptime 28 days, 15:10:11
wae:zookeeper RUNNING pid 1736, uptime 28 days, 14:03:39
```

Note   To stop all WAE process, use the command:

```
sudo supervisorctl stop wae:*
```

Step 10   To migrate configurations from a WAE 7.x.x release to WAE 7.3.0 release, use the Cisco WAE upgrade script from Cisco Download Software site.

Note   • If you plan to use Cisco WAE Design from windows, generate ssh-rsa keys by running the following command from the run directory after sourcing `waerc`:

```
$ generate-ssh_rsa-keys
```

• If the server/VM is restarted, all the WAE services are not restarted automatically and they will be in the stopped state. They can be started using the command mentioned in Step 8.

Supported Node Versions

The following table lists the supported node versions for Cisco WAE 7.3.0

Table 2: Supported Node Versions for Cisco WAE 7.3.0

Feature	Product	Tested with version	Notes
SRTM	IOS-XR	6.6.3	
Netconf LSP	IOS-XR	6.6.3	NED Version: ncs-5.3.1-cisco-iosxr-7.23
	IOS	15.3	NED Version: ncs-5.3.1-cisco-ios-6.47
	Juniper Junos Mx960	18.1R1.9	NED Version: ncs-5.3.1-juniper-junos-4.5.23
RT Apps, Multi XTC, Reactive polling.	IOS-XR	6.6.3	
Multilayer	NCS2K	11.0, 11.1	
	EPNM	4.1, 5.0	

Known Limitations

This section describes known limitations and restrictions for Cisco WAE:

License Check Failures on Newer Linux Distributions

Some newer Linux distributions use a new way (using biosdevname) of naming hardware devices, including network interfaces. This causes some software that depends on the traditional naming (for example, eth0 , eth1) to fail on license checks.

The workaround is to append biosdevname=0 to the kernel line of the grub configuration file and reboot. (Syntax varies among distributions.)

After reboot, you should be able to use ifconfig to verify that the NICs are named eth0 (or eth1 , ...) instead of the biosdevname names (such as p34p1).

NIMO Consolidation

The aggregator uses DARE to consolidate NIMOs into one network model. If you update the topo-igp-nimo node-filter configuration, or if a node goes down after running the initial DARE configuration, you must do the following:

1. Update the topo-igp-nimo exclusion or inclusion list.

2. Run collection on the topo-igp-nimo.

3. Run the WAE CLI tool to resync DARE with the updated NIMO node information:

```
wae@wae# wae components aggregators aggregator <aggregator_network_name> resync aggregator
net
```

WAE Collection

- LDP data collection can only be performed by executing CLI tools using the external-executable-nimo.

- NetFlow collection is not supported on Alcatel-Lucent devices.

- Due to vendor MIB limitations, WAE cannot represent QoS traffic on interfaces that have more than one VLAN configured. If a network contains such interfaces, their queue traffic statistics are omitted from the collection. The total traffic on these interfaces is still measured. As a result, demands for every class of service estimated through Demand Deduction are less accurate. Estimates of traffic totals over all classes of services, however, are not affected.

- Collection of interface egress shaping rate for Alcatel-Lucent devices does not support LAG interfaces.

- Juniper MIBs do not support P2MP LSPs.

- WAE cannot associate a GRE tunnel with the physical interface it uses to reach the tunnel destination because the IP-Tunnel MIB lacks this information.

- For Juniper routers, the signaled standby LSP option is not available from the standard MPLS-TE MIB. Only the active path option name is collected.

- For Cisco IOS XR routers:

  - IGP topology collected through topo-igp-nimo module:

    - IS-IS link-state database with TE extensions contains incorrect interface "admin-weights" (TE metric) on Intel-based routers.

    - IPv6 IS-IS link-state database does not contain IPv6 interface addresses or parallel interfaces. This information is only available when Cisco IOS XR supports IS-IS IPv6 TE extensions.

  - MAC accounting is not supported (although you can collect MAC traffic through an external NIMO).

  - The lsp-snmp-nimo module does not set the Standby value in the <LSPPaths> table for signaled backup paths or collect named affinities configured with affinity-maps.

- BGP peers:

  - The topo-bgp-nimo module does not build BGP pseudo-nodes among internal ASNs.

  - The topo-bgp-nimo module does not collect BGP peers under PE-CE VRFs.

- TE Extended Admin Groups (EAGs), also known as extended affinities, are only supported from Juniper and parse_configs.

- There is no support for building port circuits for LAG members that are not within the same IGP (inter-AS circuits).

- It is not possible to distinguish between physically connected and unconnected LAG ports that are down for LAG port matching.

- With segment routing, concurrent RSVP-TE and SR-TE paths are not supported on the same LSP.

High Availability

Cisco WAE does not support netflow workflow, layout-nimo, and RT apps under HA.

WAE Multilayer Collection

- Multilayer collection for Cisco devices is supported only on the following platforms:

  - Cisco Network Convergence System (NCS) 2000 platforms running versions 11.0, and 11.1 are supported when using the Cisco Evolved Programmable Network Manager optical agent (EPN-M optical agent).

  - Cisco Aggregation Services Routers (ASR) 9000, Cisco Carrier Routing System (CRS), and Cisco NCS 5500 platforms running IOS-XR for L3 devices.

- Multilayer collection is limited to the collection of unprotected circuits.

- Collection of WSON and SSON circuits are supported.

- Collection of non-WSON circuits is only supported when using the EPN-M optical agent.

- L3-L1 mapping by LMP is supported only if the controller interface name is the same as the actual L3 interface name or of the form "dwdmx/x/x/x" where the "x/x/x/x" subscript matches that of the corresponding L3 interface.

- Central Frequency ID mapping is currently supported only for circuit paths but not for path hops.

FlexLM License Server

You cannot run the floating license server on a setup (Linux VM or actual host) that uses bonded virtual interfaces (that is, a setup with multiple interfaces that have the same MAC address but different IP addresses within a VM). If the WAE Design client tries to check out a license from a setup that uses bonded virtual interfaces, the license checkout fails with the error "No license found."

As a workaround, run the floating license server in a standard Linux VM or host.

EPNM Notification

The configured constraints are not modelled during notification. Run collection must be used to collect/delete the configured constraints.

EPNM Multi Agent Notification

Cisco WAE does not support simultaneous notification events in case of dual agents. It is recommended to schedule full collection in case of dual agents.

Python API

When using WAE OPM python API and WAE Design API for python, the following warning might be seen:

```
warning: unknown property: `Ice.Default.Timeout'
```

This warning does not have any impact on the functionality and can be ignored.

Multiple OSPF and ISIS Instance Collection

The following collections have not beeen verified:

- Multiple OSPF instances collection from ALU router.

- Multiple ISIS instances collection from ALU router

- ISIS process ID collection from ALU router.

Filing a Cisco WAE Bug

While filing CDETS for Cisco WAE, make sure the following information is captured:

- WAE configuration: supervisord configuration, aggregator configuration and the nimo configuration of concerned network and its source-network, if any.

- `<run-dir>/logs/ directory`

- Plan file(s) for the network(s) of concern

- `<run-dir>/data/stats/` for system stability and resource usage related issues

- `<run-dir>/work/dare/` for aggregation related issues.

- `<run-dir>/data/networks/*.db` for issues related to networks configured as 'native' and the corresponding aggregator (final-network).

- CDB dump of the networks of concern for networks of 'yang' format.

- Configuration corresponding to the component of concern. Eg: WMD, archive etc.

- For collection issues, record file(s) if the nimo supports record-playback.

- `~/.cariden/logs/` for designapid related issues.

- Log files from Cisco WAE Diagnotics Tool. For more information, see *Cisco WAE User Guide*.