



Cisco ThousandEyes enterprise agent application hosting

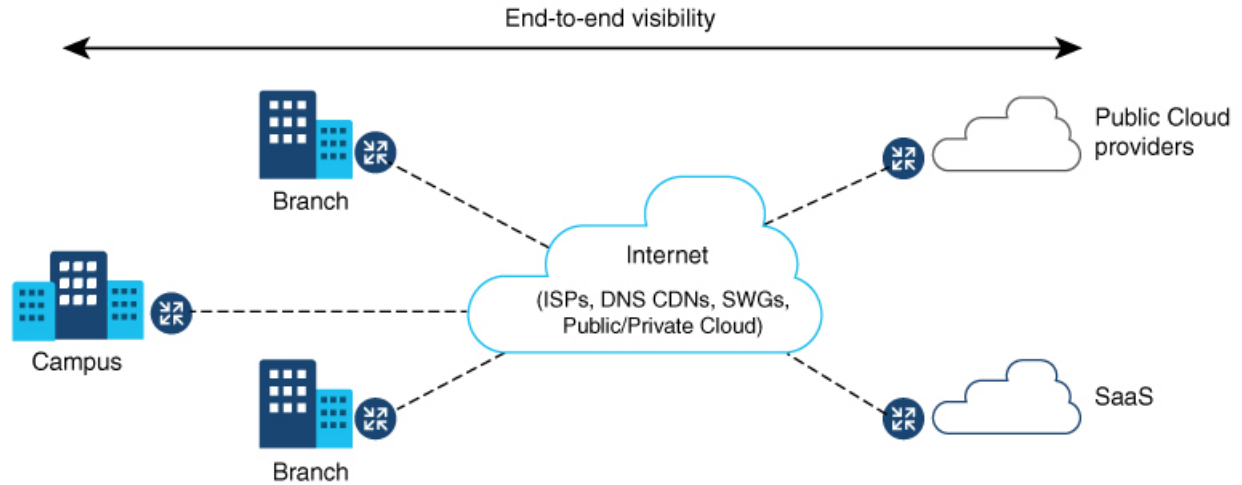
What is Cisco ThousandEyes Enterprise Agent Application Hosting?

Cisco ThousandEyes is a network intelligence platform that

- allows you to use its agents to run a variety of tests to monitor network and application performance,
- enables you to view end-to-end paths across networks and services that impact your business,
- actively monitors network traffic paths across internal, external, and internet networks in real time to analyze network performance, and
- provides application-availability insights enriched with routing and device data for a multidimensional view of digital experience.

From Cisco IOS XE Release 17.6.1, you can use application-hosting capabilities to deploy the Cisco ThousandEyes Enterprise Agent as a container application on Cisco Catalyst 8300 and Catalyst 8200 Series Edge Platforms. This agent application runs as a docker image using Cisco IOx docker-type option. For more information on how to configure Cisco ThousandEyes in controller mode, see [Cisco SD-WAN Systems and Interfaces Configuration Guide](#)

Figure 1: Network View through ThousandEyes Application



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Feature information for Cisco ThousandEyes enterprise agent application hosting

The table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 1: Feature Information for ThousandEyes Enterprise Agent Application Hosting

Feature Name	Releases	Feature Information
Cisco ThousandEyes Enterprise Agent Application Hosting	Cisco IOS XE 17.7.1a	The Cisco ThousandEyes Enterprise Agent Application introduces the functionality to inherit the Domain Name Server (DNS) information from the device. With this enhancement, the DNS field in the vManage ThousandEyes feature template is an optional parameter.

Feature Name	Releases	Feature Information
Cisco ThousandEyes Enterprise Agent Application Hosting	Cisco IOS XE 17.6.1	With the integration of ThousandEyes Agent Application running on routing platforms using the app-hosting capabilities as container, you can have visibility into application experience with deep insights into the Internet, cloud providers, and enterprise networks.

Supported platforms and system requirements

Supported platforms and system requirements are listed.

Table 2: Supported Platforms and System Requirements

Platforms	Bootflash	FRU Storage	DRAM
Catalyst 8300 Series Edge Platforms			
C8300-1N1S-6T	8 GB	16 GB M.2 USB (Default)	8 GB
C8300-1N1S-4T2X	8 GB	16 GB M.2 USB (Default)	8 GB
C8300-2N2S-6T	8 GB	16 GB M.2 USB (Default)	8 GB
C8300-2N2S-4T2X	8 GB	16 GB M.2 USB (Default)	8 GB
Catalyst 8200 Series Edge Platforms			
C8200-1N-4T	8 GB	16 GB M.2 USB (Default)	8 GB
C8200L-1N-4T	8 GB	16 GB M.2 USB (Recommended)	8 GB



Note The minimum DRAM and storage requirement for running Cisco ThousandEyes Enterprise Agent is 8 GB. If the device does not have enough memory or storage, we recommend that you upgrade DRAM or add an external storage such as M.2 USB. When the available resources are not sufficient to run other applications, Cisco IOx generates an error message.

Workflow to install and run the Cisco ThousandEyes application

To install and run the Cisco ThousandEyes image on a device, perform these steps:

Procedure

Step 1 Create a new account on the Cisco ThousandEyes portal.

- Step 2** Download the Cisco ThousandEyes application package from the [software downloads](#) page and ensure that you use the agent version 4.0.2.
- Step 3** Copy the image on the device.
- Step 4** Install and launch the image.
- Step 5** Connect the agent to the controller.

Note

When you order platforms that support Cisco ThousandEyes application with Cisco IOS XE 17.6.1 software, the Cisco ThousandEyes application package is available in the bootflash of the device.

The Cisco ThousandEyes Enterprise Agent application is successfully installed and running on your device.

Workflow to host the Cisco ThousandEyes application

Use this workflow to install, configure, and launch the Cisco ThousandEyes Enterprise Agent application on your device.

To install and launch the application, perform these steps:

Before you begin

Create a new account on the Cisco ThousandEyes portal and generate the token. The Cisco ThousandEyes agent application uses this token to authenticate and check into the correct Cisco ThousandEyes account. If you receive a message stating that your token is invalid and you want to troubleshoot the issue, see [Troubleshooting the Cisco ThousandEyes Application](#).

**Note**

If you configure the correct token and Domain Name Server (DNS) information, the device is discovered automatically.

Procedure

- Step 1** Enable the Cisco IOx application environment on the device.

- Use these commands for non-SD-WAN (autonomous mode) images:

```
config terminal
iox
end
write
```

- Use these commands for SD-WAN (controller mode) images:

```
config-transaction
iox
commit
```

- Step 2** If the IOx command is accepted, wait for a few seconds and check whether the IOx process is up and running by using the **show iox** command. The output must display that the show IOxman process is running.

```
Device #show iox

IOx Infrastructure Summary:
-----
IOx service (CAF) 192.0.2.8      : Running
IOx service (HA)                : Not Supported
IOx service (IOxman)            : Running
IOx service (Sec storage)       : Not Supported
Libvirtd 1.3.4                  : Running
```

- Step 3** Ensure that the ThousandEyes application LXC tarball is available in the device's *bootflash*:
- Step 4** Create a virtual port group interface to enable the traffic path to the Cisco ThousandEyes application:

```
interface VirtualPortGroup 0
  ip address 192.0.2.22 255.255.255.0
exit
```

- Step 5** Configure the app-hosting application with the generated token:

```
app-hosting appid te
app-vnic gateway1 virtualportgroup 0 guest-interface 0
guest-ipaddress 192.0.2.22 netmask 255.255.255.0
app-default-gateway 192.0.2.22 guest-interface 0
app-resource docker
  prepend-pkg-optsrun-opts 1 "--hostname thousandeyes"
  run-opts 2 "-e TEAGENT_ACCOUNT_TOKEN=<ThousandEyes token>"
  run-opts 3 "-e TEAGENT_PROXY_TYPE=STATIC -e TEAGENT_PROXY_LOCATION=proxy.something.other:80"

name-server0 192.0.2.10end

app-hosting appid te
app-resource docker
  prepend-pkg-opts
  run-opts 2 "--hostname
```

Note

You can use the proxy configuration only if the Cisco ThousandEyes agent does not have an internet access without a proxy. Also, the hostname is optional. If you do not provide the hostname during the installation, the device hostname is used as the Cisco ThousandEyes agent hostname. The device hostname is displayed on the Cisco ThousandEyes portal. The DNS name server information is optional. If the Cisco ThousandEyes agent uses a private IP address, ensure that you establish a connection to the device through NAT.

- Step 6** Configure the **start** command to run the application automatically when the application is installed on the device using the **install** command:

```
app-hosting appid te
start
```

- Step 7** Install the ThousandEyes application:

```
app-hosting install appid <appid> package [bootflash: | harddisk: | https:]
```

Select a location to install the ThousandEyes application from these options:

Download and copy the image to the device

```
Device# app-hosting install appid te package ?
bootflash: Package pathharddisk: Package pathhttps: Package path
```

Step 8 Check if the application is up and running:

```
Device#show app-hosting list
App id                               State
-----
te                                   RUNNING
```

Note

If any of these steps fail, use the **show logging** command and check the IOx error message. If the error message is about insufficient disk space, clean the storage media (bootflash or hard disk) to free up the space. Use the **show app-hosting resource** command to check the CPU and disk memory.

The Cisco ThousandEyes application is successfully hosted and running on your device.

Download and copy the image to the device

Use this task to ensure the Cisco ThousandEyes application image is correctly placed on your device for installation.

To download and copy the image to bootflash, perform these steps:

Procedure

Step 1 Check if the Cisco ThousandEyes image is precopied to *bootflash:/<directory name>*.

Step 2 If the image is not available in the device directory, perform these steps:

- a) If the device has a direct access to internet, use the *https:* option in the **application install** command. This option downloads the image from the Cisco ThousandEyes software downloads page into *bootflash:/apps* and installs the application.

```
Device# app-hosting install appid <appid string> package [bootflash: | flash | http | https://
| ftp | ] URL to image location hosted on ThousandEyes portal
```

```
Device#app-hosting install appid tel000 package
https://downloads.thousandeyes.com/enterprise-agent/thousandeyes-enterprise-agent-4.0.2.cisco.tar
```

```
Installing package
'https://downloads.thousandeyes.com/enterprise-agent/thousandeyes-enterprise-agent-4.0.2.cisco.tar'
for 'tel000'.
```

```
Use 'show app-hosting list' for progress.
*Jun 29 23:43:29.244: %IOSXE-6-PLATFORM: R0/0: IOx: App verification
successful
*Jun 29 23:45:00.449: %IM-6-INSTALL_MSG: R0/0: ioxman: app-hosting:
Install succeeded: tel000 installed successfully Current state is DEPLOYED
*Jun 29 23:45:01.801: %IOSXE-6-PLATFORM: R0/0: IOx: App verification
successful
*Jun 29 23:45:51.054: %IM-6-START_MSG: R0/0: ioxman: app-hosting:
Start succeeded: tel000 started successfully Current state is RUNNING
```

```

Device#show app-hosting detail appid tel000( Details of Application)

App id           : tel000
Owner            : iox
State            : RUNNING
Application
Type             : docker
Name             : ThousandEyes Enterprise Agent
Version          : 4.0
Author           : ThousandEyes <support@thousandeyes.com>
Path             :
bootflash:thousandeyes-enterprise-agent-4.0-22.cisco.tar
Resource reservation
Memory           : 500 MB
Disk             : 1 MB
CPU              : 1500 units
CPU-percent      : 70 %

```

- b) If the device has a proxy server, copy the image manually to *bootflash:/apps*.
- c) Download the Cisco ThousandEyes application package from the [software downloads](#) page and ensure that you use the agent version 4.0.2.
- d) Create an application directory in the *bootflash:* to copy the image:

```

Device#mkdir bootflash:apps
Create directory filename [apps]?
Created dir bootflash:/apps

```

- e) Copy the Cisco ThousandEyes image to the *bootflash:apps* directory.
- f) Validate the image using the **verify** command:

```
verify /md5 bootflash:apps/<file name>
```

The Cisco ThousandEyes image is successfully downloaded and copied to the device's bootflash.

Connect the Cisco ThousandEyes Agent with the controller

This task explains the process of the Cisco ThousandEyes agent connecting to its controller in the cloud environment.

To connect the Cisco ThousandEyes agent with the controller, perform these steps:

Before you begin

Ensure that you have an Internet connection before you connect the agent with the controller.

Procedure

After the Cisco ThousandEyes application is up and running, the agent (ThousandEyes-agent) process connects to the controller that is running on the cloud environment.

Note

If you have issues related to connectivity, the application logs the relevant error messages in the application-specific logs (/var/logs).

The Cisco ThousandEyes agent is successfully connected to the controller.

Modify the agent parameters

Use this task to update the configuration settings of an application agent, which requires stopping and restarting the application.

To modify the agent parameters, perform these actions:

Procedure

- Step 1** Stop the application using the **app-hosting stop appid appid** command.
 - Step 2** Deactivate the application using the **app-hosting deactivate appid appid** command.
 - Step 3** Make the required changes to the app-hosting configuration.
 - Step 4** Activate the application using the **app-hosting activate appid appid** command.
 - Step 5** Start the application using the **app-hosting start appid appid** command.
-

The agent parameters have been successfully modified and the application is running with the new configuration.

Uninstall the application

Use this task to completely remove a previously installed application from your device.

To uninstall the application, perform these steps:

Procedure

- Step 1** Stop the application using the **app-hosting stop appid te** command.
 - Step 2** Check if the application is in active state using the **show app-hosting list** command.
 - Step 3** Deactivate the application using the **app-hosting deactivate appid te** command.
 - Step 4** Ensure that the application is not in active state. Use the **show app-hosting list** command to check status of the application.
 - Step 5** Uninstall the application using the **app-hosting uninstall appid te** command.
 - Step 6** After the uninstallation process is complete, use the **show app-hosting list** command to check if the application is uninstalled successfully.
-

The application has been successfully uninstalled from the device.

Troubleshoot the Cisco ThousandEyes application

To troubleshoot the Cisco ThousandEyes application, perform these steps.

- Connect to Cisco ThousandEyes agent application using the **app-hosting connect appid appid session /bin/bash** command.
- Verify the configuration applied to the application `/etc/te-agent.cfg`.
- View the logs in `/var/log/agent/te-agent.log`. You can use these logs to troubleshoot the configuration.

When the Cisco ThousandEyes application is in running state, it is registered on the ThousandEyes portal. If the application does not show up in a few minutes after the agent is in running state, check using the **app-hosting connect appid thousandeyes_enterprise_agent session** command.



Note Check the DNS server connection. If the Cisco ThousandEyes agent is assigned to a private IP address, check the NAT configuration.

```
Device#app-hosting connect appid thousandeyes_enterprise_agent session
Device#cat /var/log/agent/te-agent.log
2021-02-04 08:59:29.642 DEBUG [e4736a40] [te.agent.AptPackageInterface] {} Initialized APT
package interface
2021-02-04 08:59:29.642 INFO [e4736a40] [te.agent.main] {} Agent version 1.103.0 starting.
Max core size is 0 and max open files is 1024
2021-02-04 08:59:29.642 DEBUG [e4736a40] [te.agent.db] {} Vacuuming database
2021-02-04 08:59:29.643 INFO [e4736a40] [te.agent.db] {} Found version 0, expected version
50
2021-02-04 08:59:29.672 INFO [e4708700] [te.probe.ServerTaskExecutor] {} ProbeTaskExecutor
started with 2 threads.
2021-02-04 08:59:29.673 INFO [e2f05700] [te.probe.ProbeTaskExecutor.bandwidth] {}
ProbeTaskExecutor started with 1 threads.
2021-02-04 08:59:29.673 INFO [e2704700] [te.probe.ProbeTaskExecutor.realtime] {}
ProbeTaskExecutor started with 1 threads.
2021-02-04 08:59:29.673 INFO [elf03700] [te.probe.ProbeTaskExecutor.throughput] {}
ProbeTaskExecutor started with 1 threads.
2021-02-04 08:59:29.674 DEBUG [e4736a40] [te.agent.DnssecTaskProceessor] {} Agent is not
running bind
2021-02-04 08:59:29.674 DEBUG [e4736a40] [te.snmp.RequestDispatcher] {} Initialised SNMP++
session
2021-02-04 08:59:29.674 DEBUG [e4736a40] [te.snmp.RequestDispatcher] {} Initialised SNMP++
session
2021-02-04 08:59:29.674 DEBUG [e4736a40] [te.snmp.RequestDispatcher] {} Initialised SNMP++
session
2021-02-04 08:59:29.674 INFO [e4736a40] [te.agent.main] {} Agent starting up
2021-02-04 08:59:29.675 INFO [e4736a40] [te.agent.main] {} No agent id found, attempting
to obtain one
2021-02-04 08:59:29.675 INFO [e4736a40] [te.agent.ClusterMasterAdapter] {} Attempting to
get agent id from scl.thousandeyes.com
2021-02-04 08:59:29.679 ERROR [e4736a40] [te.agent.main] {} Error calling create_agent:
Curl error - Couldn't resolve host name
2021-02-04 08:59:29.680 INFO [e4736a40] [te.agent.main] {} Sleeping for 30 seconds
```

