

Cisco Thousand Eyes Enterprise Agent Application Hosting

This chapter provides information on Cisco Thousand Eyes Enterprise Agent Application Hosting. The following sections are included in this chapter:

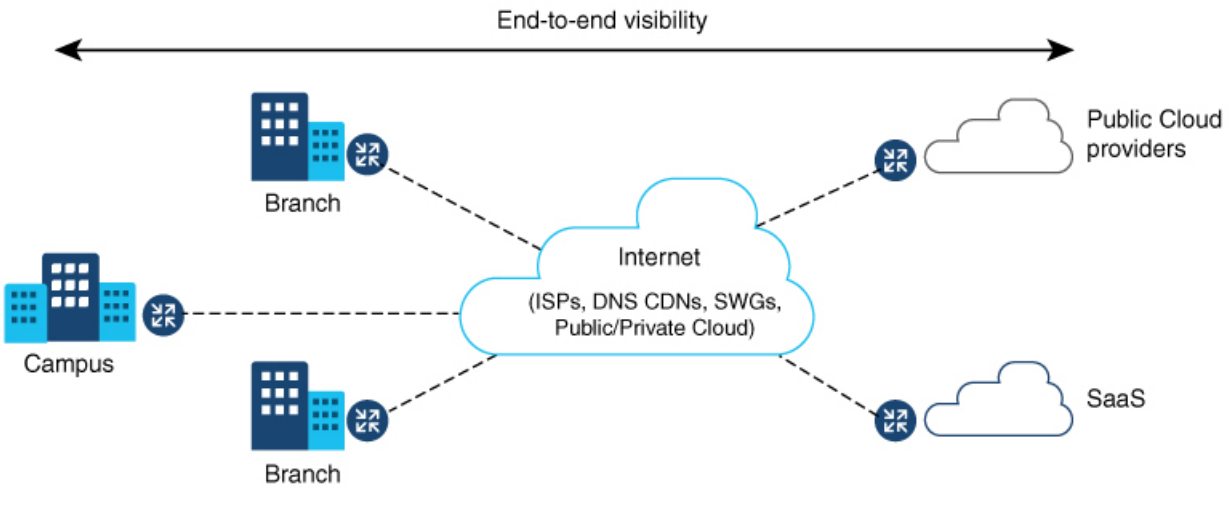
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Cisco ThousandEyes Enterprise Agent Application Hosting

Cisco ThousandEyes is a network intelligence platform that allows you to use its agents to run a variety of tests from its agents to monitor the network and application performance. This application enables you to view end-to-end paths across networks and services that impact your business. Cisco ThousandEyes application actively monitors the network traffic paths across internal, external, and internet networks in real time, and helps to analyse the network performance. Also, Cisco ThousandEyes application provides application-availability insights that are enriched with routing and device data for a multidimensional view of digital experience.

From Cisco IOS XE Release 17.15.3a, you can use application-hosting capabilities to deploy the Cisco ThousandEyes Enterprise Agent as a container application on Cisco 8300 Series Secure Routers. 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



Feature Information for Cisco ThousandEyes Enterprise Agent Application Hosting

The following 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 17.15.3a	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.
Cisco ThousandEyes Enterprise Agent Application Hosting	Cisco IOS XE 17.15.3a	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

The following table lists the supported platforms and system requirements.

Table 2: Supported Platforms and System Requirements

Platforms	Bootflash	FRU Storage	DRAM
Cisco 8300 Series Secure Routers			
C8375-E-G2	16 GB	32 GB M.2 USB (Default)	16 GB
C8355-G2	16 GB	32 GB M.2 USB (Default)	16 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 17.15.3a software, the Cisco ThousandEyes application package is available in the bootflash of the device.

Workflow to Host the Cisco ThousandEyes Application

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 see a message stating that your token is invalid and you want to troubleshoot the issue, see Troubleshooting the Cisco ThousandEyes Application, on page 8.

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

Procedure

Step 1 Enable Cisco IOx application environment on the device.

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

```
config terminal
 iox
end
write
```

- Use the following 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-opts □ Required to get the default run-time options from package.yaml
             run-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 192.0.2.10  ISP's DNS server
         end

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:

```
Device# app-hosting install appid te package ?
           bootflash:  Package path  ISR4K case if image is locally available in bootflash:
           harddisk:   Package path  Cat8K case if image is locally available in M.2 USB
           https:      Package path  Download over the internet if image is not locally present in
 router. URL to ThousandEyes site hosting agent image to be provided here
```

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.

Downloading and Copying the Image to the Device

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 te1000 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 'te1000'.

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: te1000
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: te1000 started
 successfully Current state is RUNNING

Device#show app-hosting detail appid te1000  ( Details of Application)
App id                 : te1000
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>
```

Connecting the Cisco ThousandEyes Agent with the Controller

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*).

Modifying the Agent Parameters

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.

Uninstalling the Application

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.

Troubleshooting the Cisco ThousandEyes Application

To troubleshoot the Cisco ThousandEyes application, perform these steps:

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

Checking the ThousandEyes Application Status

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.

```
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  [e1f03700] [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 sc1.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
Note :
```

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