

Cisco ThousandEyes Enterprise Agent Deployment Guide on Catalyst 9000 Switching Platforms



Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

Introduction

Many organizations are heavily dependent on business-critical applications hosted in private and public clouds as Software as a Service (SaaS) over the internet. While SaaS-based productivity and collaboration tools have been game-changing, meeting network SLAs and ensuring consistent performance of business-critical SaaS applications have become a concern for enterprises.

End-to-end visibility into the network is required to understand why SaaS performance is degrading or to troubleshoot the root cause of outages. However, traditional tools such as NetFlow, Simple Network Management Protocol (SNMP), and Packet Capture (PCAP) cannot provide visibility into devices managed by service providers or SaaS providers.

Cisco® ThousandEyes is a digital experience monitoring platform to see, understand, and improve digital experiences over any network. ThousandEyes offers global vantage points from which users can run a variety of tests to gain more insights and to monitor the performance of their business-critical applications or the network itself.

ThousandEyes has three type of agents:

- **Enterprise Agent:** A lightweight software-based agent, easily installed on your own network, that provides visibility within the enterprise campus, data centers, virtual private clouds/virtual networks, and branches. It also supports active monitoring, SNMP-based monitoring, and topological mapping of internal network devices.
- **Cloud Agent:** A globally distributed agent installed and managed by ThousandEyes in 200+ cities to give users access to performance data from local transit providers and last-mile ISPs to simulate end-user performance.
- **Endpoint Agent:** A lightweight service installed on end-user laptops and desktops that provides proactive and real-time monitoring of application experience and network connectivity.

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

Generally, on an enterprise campus, the network operator must deploy ThousandEyes Enterprise Agents across the network, including campus and branch locations, to measure network and application performance between the campus and branches, SaaS, and cloud infrastructure (Figure 1).

The ThousandEyes Enterprise Agent integrated on Cisco Catalyst® 9300 and 9400 Series switches helps the network operator minimize deployment time across multiple locations without requiring any additional hardware, as well as providing ongoing insight into the status of network SLAs.

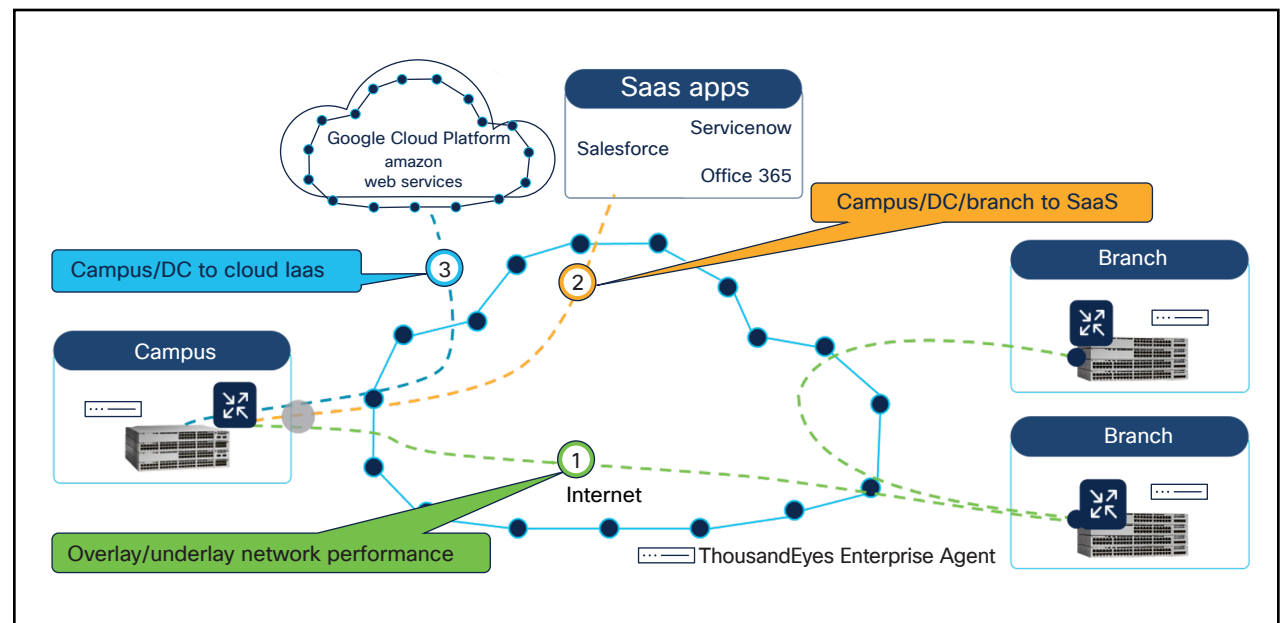


Figure 1. Typical ThousandEyes deployment and use cases in an enterprise campus network

This document describes the installation, configuration, and operation of the ThousandEyes Enterprise Agent on Cisco Catalyst 9300 and 9400 Series platforms using the Cisco application hosting framework.

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

Catalyst 9000 application hosting framework

Application hosting on the Cisco Catalyst 9000 switching platform enables data processing closer to the source in a distributed manner. It is used by enterprises to host a new breed of security, network monitoring/troubleshooting, and data analytics tools while removing the need for expensive compute nodes, as having an application hosted on the switch gives developers easy and efficient access to live network traffic as well as to the rich telemetry supported by the infrastructure.

Figure 2 shows a high-level view of the system architecture of application hosting on Catalyst 9000 switching platforms.

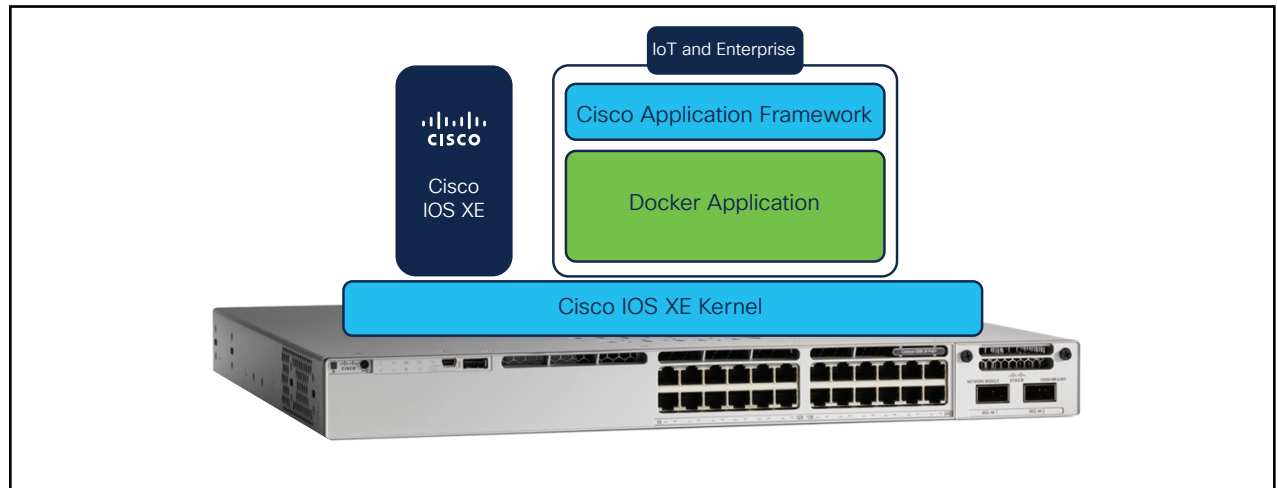


Figure 2. Cisco Catalyst 9000 application hosting framework

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

- One or more Cisco Catalyst 9300 or 9400 Series switches
- Cisco IOS® XE 17.3.3 (on the Catalyst 9300) or 17.5.1 (on the Catalyst 9400) or later
- Cisco Catalyst and Cisco DNA Advantage licenses
- ThousandEyes account
- IP reachability to ThousandEyes (direct, Network Address Translation [NAT], or proxy)
- Cisco Catalyst Center (version 2.2.2.x and above) (optional)
- SSD (optional)*

* An SSD is not required starting with Cisco IOS XE 17.3.3 (on the Catalyst 9300) and Cisco IOS XE 17.5.1 (on the Catalyst 9400) for non-browser tests.

Installation and configuration procedure

The ThousandEyes Enterprise Agent can be downloaded from your ThousandEyes account (Figure 3). There are two Catalyst 9000 Docker versions: Embed Docker version (approximately > 200 MB file size), which doesn't currently have browser tests (page load and transaction), and Full Docker version (approximately > 1.2 GB file size). The Embed Docker version can be used on the Catalyst 9300 and 9400 Series switches without an SSD drive.

To download the ThousandEyes Enterprise Agent Docker application, log in to your ThousandEyes account and follow the path below:

Cloud and Enterprise Agents -> Agent Settings -> Enterprise Agents ->

Add New Enterprise Agent -> Cisco Application Hosting

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

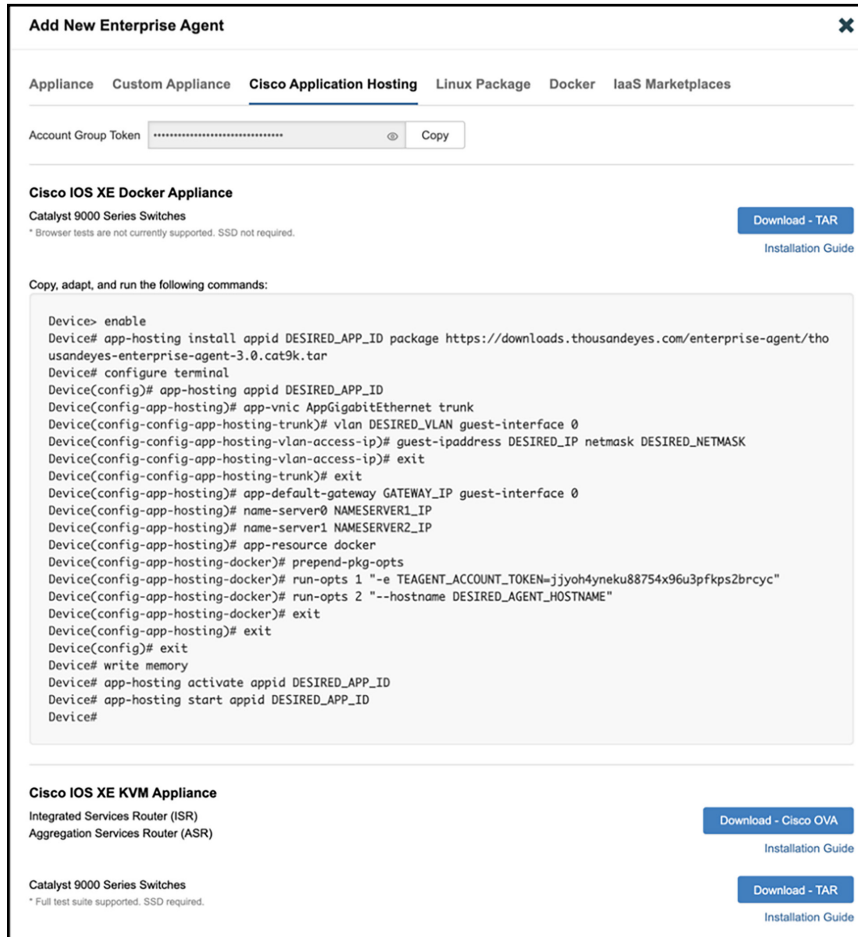
YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references



Add New Enterprise Agent

Appliance Custom Appliance **Cisco Application Hosting** Linux Package Docker IaaS Marketplaces

Account Group Token: [REDACTED] Copy

Cisco IOS XE Docker Appliance
Catalyst 9000 Series Switches
* Browser tests are not currently supported. SSD not required. [Download - TAR](#)
[Installation Guide](#)

Copy, adapt, and run the following commands:

```
Device> enable
Device# app-hosting install appid DESIRED_APP_ID package https://downloads.thousandeyes.com/enterprise-agent/thousandeyes-enterprise-agent-3.0.cat9k.tar
Device# configure terminal
Device(config)# app-hosting appid DESIRED_APP_ID
Device(config-app-hosting)# app-vnic AppGigabitEthernet trunk
Device(config-config-app-hosting-trunk)# vlan DESIRED_VLAN guest-interface 0
Device(config-config-app-hosting-vlan-access-ip)# guest-ipaddress DESIRED_IP netmask DESIRED_NETMASK
Device(config-config-app-hosting-vlan-access-ip)# exit
Device(config-config-app-hosting-trunk)# exit
Device(config-app-hosting)# app-default-gateway GATEWAY_IP guest-interface 0
Device(config-app-hosting)# name-server0 NAMESERVER1_IP
Device(config-app-hosting)# name-server1 NAMESERVER2_IP
Device(config-app-hosting)# app-resource docker
Device(config-app-hosting-docker)# prepend-pkg-opts
Device(config-app-hosting-docker)# run-opts 1 "-e TEAGENT_ACCOUNT_TOKEN=jjyoh4yneku88754x96u3pfkps2brcyc"
Device(config-app-hosting-docker)# run-opts 2 "--hostname DESIRED_AGENT_HOSTNAME"
Device(config-app-hosting-docker)# exit
Device(config-app-hosting)# exit
Device(config)# exit
Device# write memory
Device# app-hosting activate appid DESIRED_APP_ID
Device# app-hosting start appid DESIRED_APP_ID
Device#
```

Cisco IOS XE KVM Appliance
Integrated Services Router (ISR)
Aggregation Services Router (ASR) [Download - Cisco OVA](#)
[Installation Guide](#)

Catalyst 9000 Series Switches
* Full test suite supported. SSD required. [Download - TAR](#)
[Installation Guide](#)

Figure 3. ThousandEyes Enterprise Agent images and account group token

Note: The Cisco signed Embed ThousandEyes Enterprise Agent can be hosted in the flash memory of the switch starting with Cisco IOS XE Release 17.3.3 on the Catalyst 9300 Series and with Cisco IOS XE Release 17.5.1 on the Catalyst 9400 Series.

Catalyst 9300 and 9400 Series switches shipping after April 2021 will have the ThousandEyes Enterprise Agent (Embed version) already preloaded in the flash: Apps folder.

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

There are multiple options for deploying the ThousandEyes Enterprise Agent on the Catalyst 9000 platform.

- Cisco Catalyst Center
- Web User Interface (WebUI)
- Cisco IOS XE Command-Line Interface (CLI)
- YANG model

Cisco Catalyst Center

Beginning with Cisco Catalyst Center Release 1.3.1.2, Cisco is providing a centralized user interface for deploying and managing the entire lifecycle of the applications, in addition to the CLI and WebUI management. Cisco Catalyst Center provides consistent workflows for managing multiple Catalyst 9000 switches through the “Application Hosting” workflow.

Cisco Catalyst Center is the preferred automation platform for enterprise, since it can minimize the time taken to deploy these agents across multiple locations, helps ensure consistency in deployment, and helps ensure the security of the compute resources throughout the easy-to-use workflow.

With its intuitive user interface, Cisco Catalyst Center (Release 2.2.2.x) makes it easy to deploy the ThousandEyes Enterprise Agent. The network operator can upload the Enterprise Agent to Cisco Catalyst Center and add required IP configurations and Docker run options (ThousandEyes account token, proxy info, etc.), as shown in Figures 4 and 5.

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

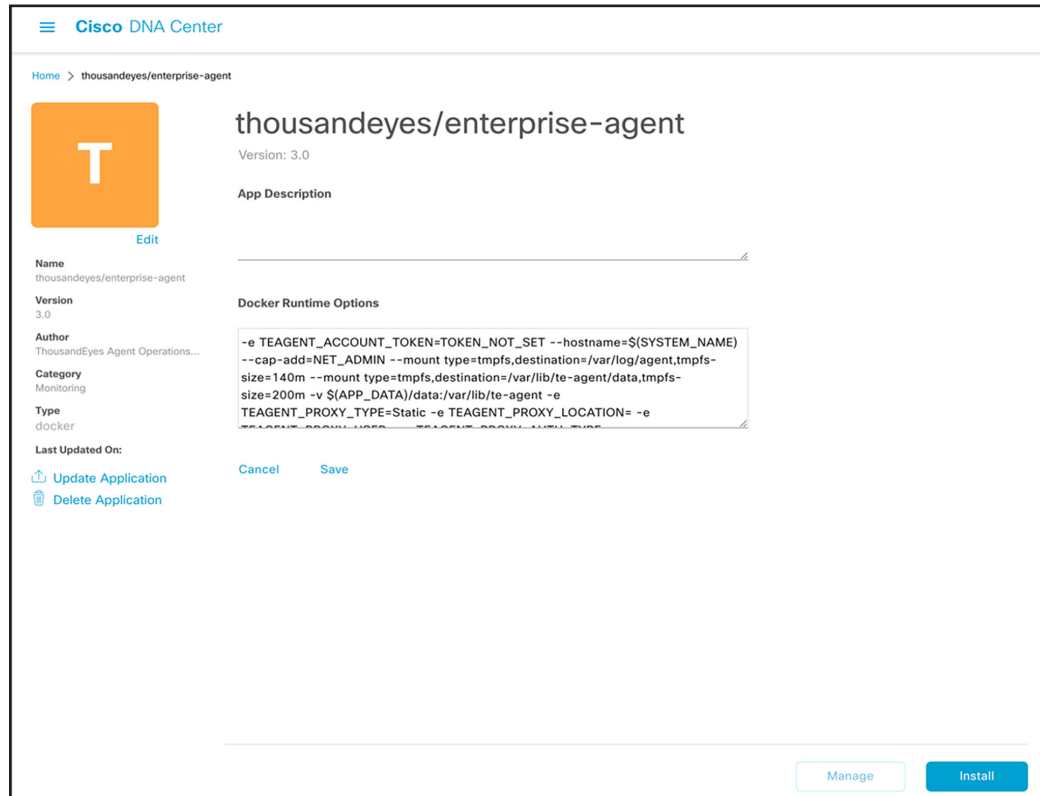


Figure 4. Cisco Catalyst Center application hosting workflow

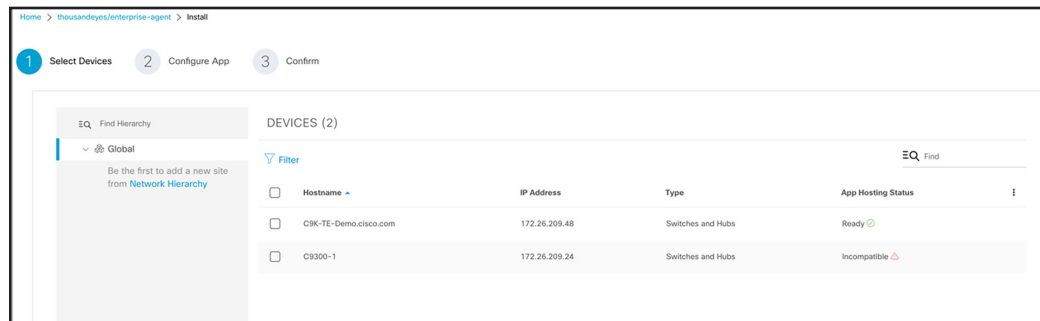


Figure 5. Cisco Catalyst Center application hosting device selection

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

Cisco Catalyst Center can manage the entire application lifecycle on multiple Catalyst 9000 switches at the same time with one click (Figure 6).

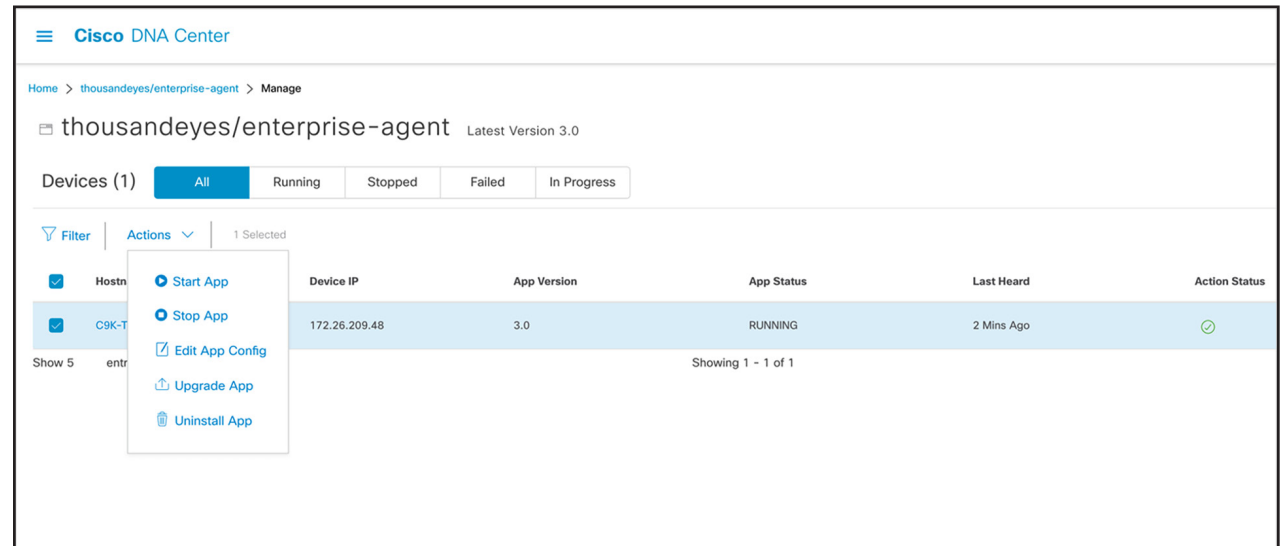


Figure 6. Cisco Catalyst Center application hosting lifecycle management

Cisco IOS XE CLI

Step 1: Copy the application to the flash or SSD drive.

```
C9K#dir flash: | i .tar
```

```
253960 -rw-          178872320 Mar 27 2021 00:03:32 +00:00 thousandeyes-
enterprise-agent-3.0.cat9k.tar
```

Step 2: Enable “iox” for the application hosting feature.

Configure Cisco IOx in the Catalyst 9000 switch to enable the application hosting framework.

```
C9K#conf t
```

```
C9K(config)#iox
```

```
C9K(config)#exit
```

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

Verify that the switch is configured to run Cisco IOx with the following show command:

```
C9K#show iox
```

```
IOx Infrastructure Summary:
```

```
-----  
IOx service (CAF) 1.11.0.5 : Running  
IOx service (HA) : Running  
IOx service (IOxman) : Running  
IOx service (Sec storage) : Not Running  
Libvirtd 1.3.4 : Running  
Dockerd 18.03.0 : Running  
Application DB Sync Info : Available  
Sync Status : Disabled
```

Step 3: Configure the AppGigabitEthernet port

```
interface AppGigabitEthernet1/0/1  
    switchport trunk allowed vlan <vlan-id>  
    switchport mode trunk
```

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

AppGigabitEthernet is an internal hardware data port that is hardware-switched to the front-panel data ports. The AppGigabitEthernet port can be configured as a trunk port and allow a specific VLAN for application traffic. In the application hosting infrastructure, the user can define multiple virtual networks (eth0, eth1,...) based on application requirements (Figure 7).

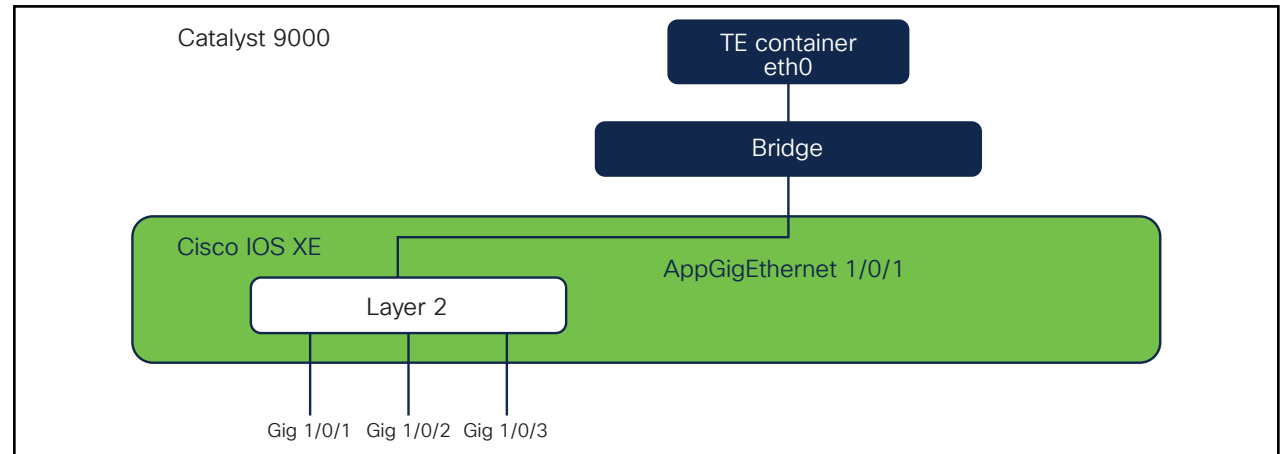


Figure 7. Cisco Catalyst 9000 application hosting architecture

Step 4: Configure applications based on the deployment models

The application's network configuration and Docker run-option requirements are covered in this step. The ThousandEyes account token is available in your ThousandEyes account, as shown in Figure 3.

4.1. Assign a static IP address for the Enterprise Agent

Set up a static IP address in the application's configuration:

Configuration snippet:

```
C9K#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
C9K(config)#app-hosting appid <app-name>
```

```
C9K(config-app-hosting)# app-vnic AppGigabitEthernet trunk
```

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

```
C9K(config-config-app-hosting-trunk)# vlan <vlan-id> guest-interface 0
C9K(config-config-app-hosting-vlan-access-ip)# guest-ipaddress x.x.x.x netmask
x.x.x.x
C9K(config-config-app-hosting-vlan-access-ip)# app-default-gateway x.x.x.x
guest-interface 0
C9K(config-app-hosting)# app-resource docker
C9K(config-app-hosting-docker)# prepend-pkg-opts
C9K(config-app-hosting-docker)# run-opts 1 "-e
TEAGENT _ACCOUNT _TOKEN=xxxxxxxxxx"
C9K(config-app-hosting-docker)# name-server0 x.x.x
C9K(config-app-hosting)# start
C9K(config-app-hosting)#end

Configuration Example:

app-hosting appid teyes

  app-vnic AppGigabitEthernet trunk

  vlan 14 guest-interface 0

    guest-ipaddress 14.0.0.113 netmask 255.255.255.0

  app-default-gateway 14.0.0.1 guest-interface 0

  app-resource docker

  prepend-pkg-opts

  run-opts 1 "-e TEAGENT _ACCOUNT _TOKEN=xxxxxxxxxx"

name-server0 14.0.0.1

start
```

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

4.2. Assign a dynamic IP address assignment for the Enterprise Agent

For networks that use Dynamic Host Configuration Protocol (DHCP), configure an IP address in the application's configuration:

Configuration snippet:

```
C9K#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
C9K(config)#app-hosting appid <app-name>
```

```
C9K(config-app-hosting)# app-vnic AppGigabitEthernet trunk
```

```
C9K(config-config-app-hosting-trunk)# vlan <vlan-id> guest-interface 0
```

```
C9K(config-app-hosting)# app-resource docker
```

```
C9K(config-app-hosting-docker)# prepend-pkg-opts
```

```
C9K(config-app-hosting-docker)# run-opts 1 "-e
```

```
TEAGENT _ACCOUNT _TOKEN=xxxxxxxxxxx"
```

```
C9K(config-app-hosting-docker)# name-server0 x.x.x
```

```
C9K(config-app-hosting)# start
```

```
C9K(config-app-hosting)#end
```

Configuration Example:

```
app-hosting appid teyes
```

```
    app-vnic AppGigabitEthernet trunk
```

```
        vlan 14 guest-interface 0
```

```
app-resource docker
```

```
    prepend-pkg-opts
```


Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

```
run-opts 1 "-e TEAGENT _ACCOUNT _TOKEN=xxxxxxxxxx"
name-server0 14.0.0.1
start
```

4.3. Using a proxy setting in the Enterprise Agent

This section shows how to add proxy information in an application's configuration. Proxy information is required for networks that don't have direct IP reachability to ThousandEyes. The proxy setting can be used in both the static and DHCP configurations mentioned in sections 4.1 and 4.2.

Configuration snippet:

```
C9K#conf t
Enter configuration commands, one per line. End with CNTL/Z.
C9K(config)#app-hosting appid <app-name>
C9K(config-app-hosting)# app-vnic AppGigabitEthernet trunk
C9K(config-config-app-hosting-trunk)# vlan <vlan-id> guest-interface 0
C9K(config-app-hosting)# app-resource docker
C9K(config-app-hosting-docker)# prepend-pkg-opts
C9K(config-app-hosting-docker)# run-opts 1 "-e
TEAGENT _ACCOUNT _TOKEN=xxxxxxxxxx"
run-opts 2 "-e TEAGENT _PROXY _TYPE=STATIC"
run-opts 3 "-e TEAGENT _PROXY _LOCATION='proxy-info.xyz.com:80'"
C9K(config-app-hosting-docker)# name-server0 x.x.x.x
C9K(config-app-hosting)# start
C9K(config-app-hosting)#end
```

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

Configuration Example:

```
app-hosting appid teyes

app-vnic AppGigabitEthernet trunk

vlan 14 guest-interface 0

app-resource docker

prepend-pkg-opts

run-opts 1 "-e TEAGENT _ ACCOUNT _ TOKEN=xxxxxxxxxx"

run-opts 2 "-e TEAGENT _ PROXY _ TYPE=STATIC"

run-opts 3 "-e TEAGENT _ PROXY _ LOCATION='proxy-info.xyz.com:80'"

name-server0 14.0.0.1

start
```

Step 5: Install and start the ThousandEyes Enterprise Agent

The application is now ready to be deployed. The command below is required to deploy the Enterprise Agent on the Catalyst 9300 or 9400 Series switching platforms.

```
C9K#app-hosting install appid teyes package flash:
```

```
thousandeyes-enterprise-agent-3.0.cat9k.tar
```

Installing package 'flash:thousandeyes-enterprise-agent-3.0.cat9k.tar' for 'teyes'. Use 'show app-hosting list' for progress.

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

```
C9K#show app-hosting list
```

App id	State

teyes	RUNNING

```
C9K#show app-hosting detail appid teyes
```

```
App id           : teyes
Owner            : iox
State            : RUNNING

Application

  Type           : docker
  Name           : thousandeyes/enterprise-agent
  Version        : 3.0
  Description    :
  Path           : flash:thousandeyes-enterprise-agent-3.0.cat9k.tar
  URL Path       :

Activated profile name : custom

Resource reservation

  Memory         : 500 MB
  Disk           : 1 MB
  CPU            : 1850 units
  VCPU           : 1
```

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

Attached devices

Type	Name	Alias
serial/shell	iox_console_shell	serial0
serial/aux	iox_console_aux	serial1
serial/syslog	iox_syslog	serial2
serial/trace	iox_trace	serial3

Network interfaces

eth0:

```

MAC address      : 52:54:dd:e3:db:15
Network name     : mgmt-bridge-v14

```

WebUI

The network operator can use the Catalyst 9300 or 9400 Series WebUI to deploy the ThousandEyes Enterprise Agent on the switch. The operator can upload the ThousandEyes Docker app as shown in Figure 8. This is an alternative way to deploy the Enterprise Agent on a single switch and then repeat the steps on every switch on which you plan to deploy the Enterprise Agent.

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

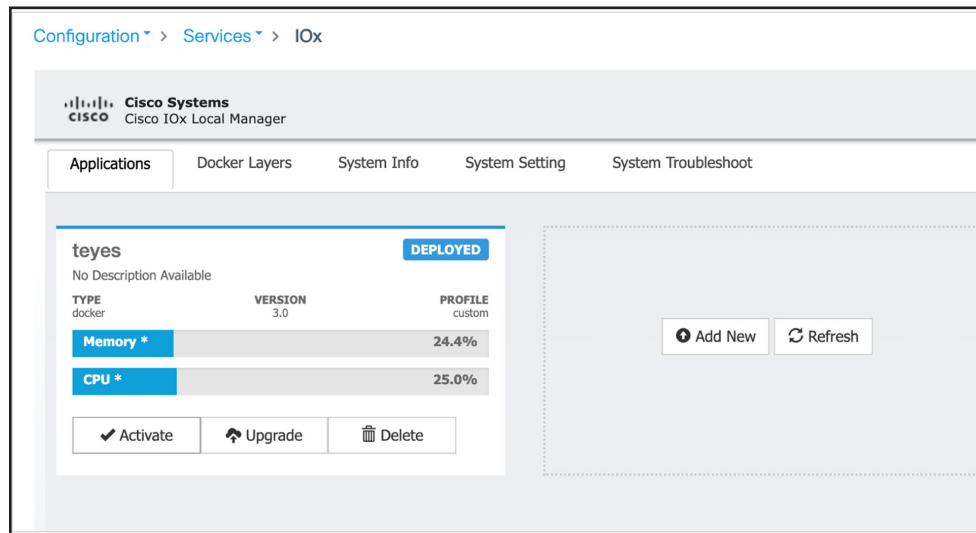


Figure 8. Cisco IOx Local Manager on WebUI

The network operator can also select the IP configuration of the app as well as specifying Docker run options (account token, proxy information, etc.), as shown in Figure 9. Then activate the application to reserve CPU, memory, and disk space for it.

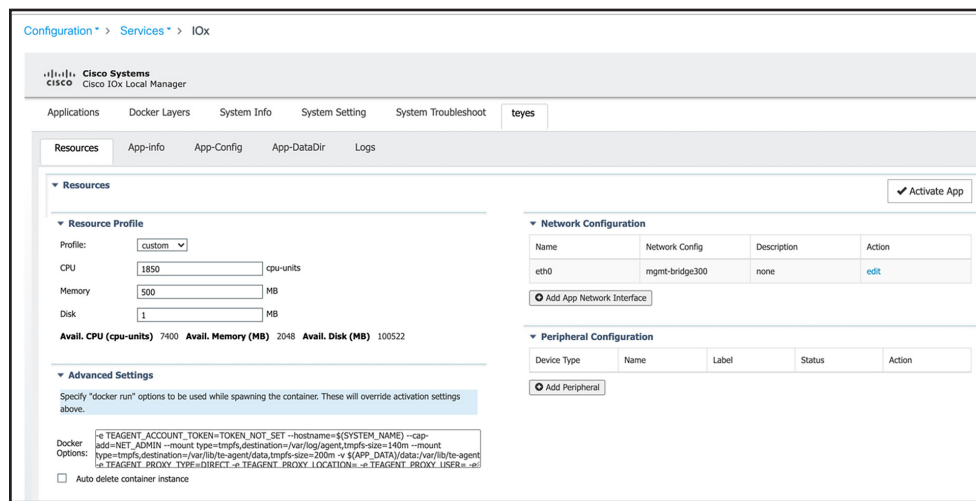


Figure 9. Cisco IOx Local Manager application configuration

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

The application is now successfully deployed and running, as shown in Figure 10. The network operator can manage the entire lifecycle of the application using the WebUI.

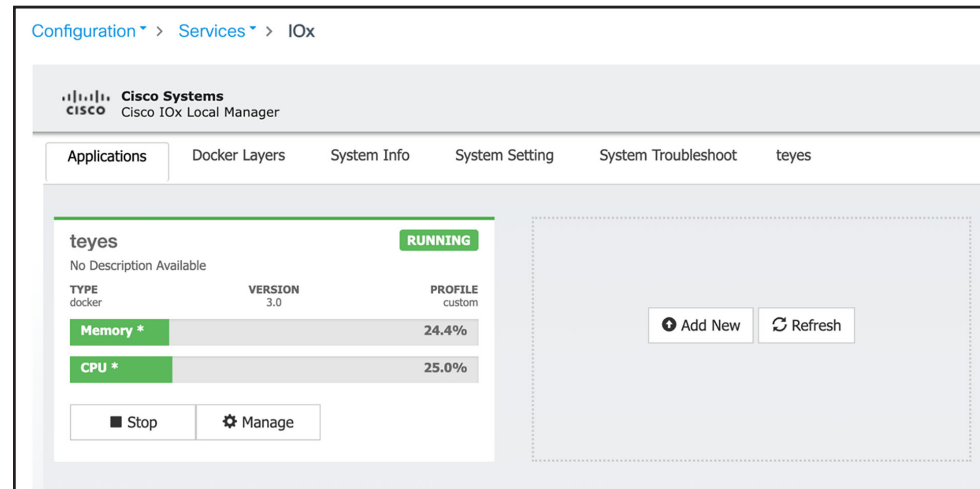


Figure 10. Cisco IOx Local Manager application management

YANG models

Starting with Cisco IOS XE Release 16.12.1, Cisco is also offering YANG models for hosting applications on Catalyst 9000 switching platforms, in addition to Cisco Catalyst Center automation for application deployment. With the configuration below and operational YANG models, the network operator can use customized automation for Enterprise Agent deployment.

- [Cisco-IOX-XE-app-hosting-cfg.yang](#)
- [Cisco-IOX-XE-app-hosting-oper.yang](#)

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

Performing tests from the ThousandEyes account

Once the ThousandEyes Enterprise Agent is successfully deployed, the network operator can log in to the ThousandEyes dashboard and perform required network and application performance testing to discover the root causes of network and application outages (Figure 11).

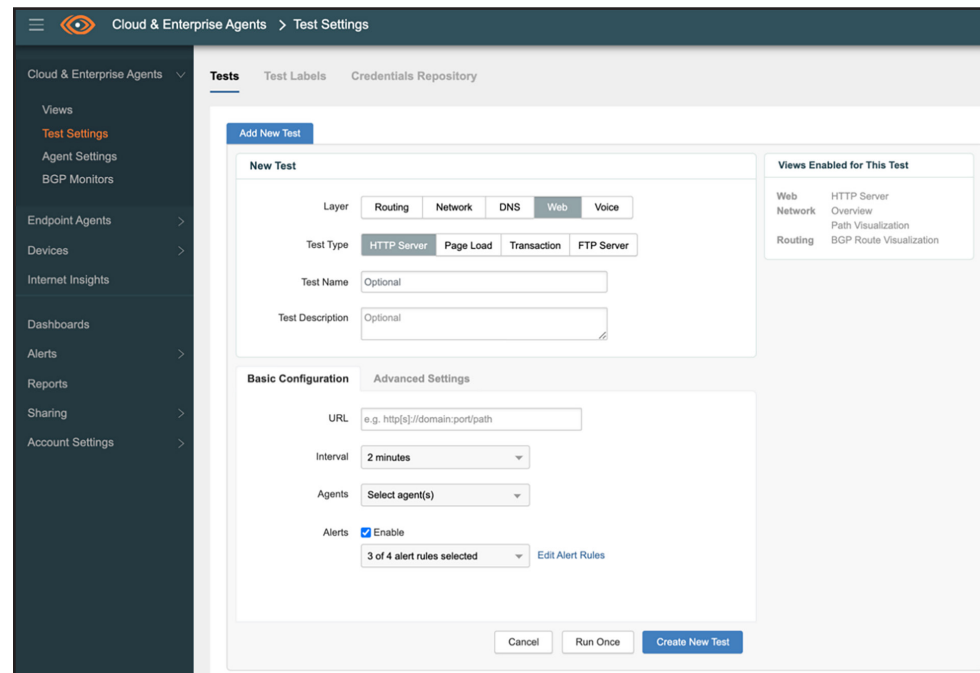


Figure 11. ThousandEyes Cloud and Enterprise Agent test settings

Troubleshooting

The network operator may log in to the application console to collect a required application log for troubleshooting. The commands below show how to access the log via the Cisco IOS XE CLI. For WebUI and Cisco Catalyst Center, the network operator can get the logs easily within the application hosting user interface.

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

```
C9K#app-hosting connect appid <app-name> session
#
# cd /var/log/agent
# ls
te-agent.log te-agent-sanity.log
# cat te-agent.log
2021-03-28 19:46:30.683 DEBUG [cdc90a40] [te.agent.AptPackageInterface] {}
Initialized APT package interface
2021-03-28 19:46:30.683 INFO [cdc90a40] [te.agent.main] {} Agent version 1.103.0
starting. Max core size is 0 and max open files is 1024
2021-03-28 19:46:30.683 DEBUG [cdc90a40] [te.agent.db] {} Vacuuming database
2021-03-28 19:46:30.685 INFO [cdc90a40] [te.agent.db] {} Found version 0, expected
version 50
2021-03-28 19:46:30.720 INFO [cdc62700] [te.probe.ServerTaskExecutor] {}
ProbeTaskExecutor started with 2 threads.
2021-03-28 19:46:30.721 INFO [c7fff700] [te.probe.ProbeTaskExecutor.bandwidth] {}
ProbeTaskExecutor started with 1 threads.
2021-03-28 19:46:30.721 INFO [c77fe700] [te.probe.ProbeTaskExecutor.realtime] {}
ProbeTaskExecutor started with 1 threads.
2021-03-28 19:46:30.721 INFO [c6ffd700] [te.probe.ProbeTaskExecutor.throughput] {}
ProbeTaskExecutor started with 1 threads.
2021-03-28 19:46:30.722 DEBUG [cdc90a40] [te.agent.DnssecTaskProcessor] {} Agent
is not running bind
2021-03-28 19:46:30.722 DEBUG [cdc90a40] [te.snmp.RequestDispatcher] {} Initialised
SNMP++ session
```

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

```
2021-03-28 19:46:30.722 DEBUG [cdc90a40] [te.snmp.RequestDispatcher] {} Initialised
SNMP++ session
```

```
2021-03-28 19:46:30.722 DEBUG [cdc90a40] [te.snmp.RequestDispatcher] {} Initialised
SNMP++ session
```

```
2021-03-28 19:46:30.722 INFO [cdc90a40] [te.agent.main] {} Agent starting up
```

```
2021-03-28 19:46:30.723 INFO [cdc90a40] [te.agent.main] {} No agent id found,
attempting to obtain one
```

```
2021-03-28 19:46:30.723 INFO [cdc90a40] [te.agent.ClusterMasterAdapter] {}
Attempting to get agent id from scl.thousandeyes.com
```

```
2021-03-28 19:46:31.058 INFO [cdc90a40] [te.agent.main] {} Found id 231626
```

```
2021-03-28 19:46:31.059 INFO [cdc90a40] [te.agent.ClusterMasterAdapter] {}
Attempting to get controller assignment from scl.thousandeyes.com
```

```
2021-03-28 19:46:31.087 INFO [cdc90a40] [te.agent.ClusterMasterAdapter] {} scl.
thousandeyes.com told us we should talk to controller cl.thousandeyes.com
```

```
# exit
```

The network operator can also export the log file to the flash of the switch as follows:

```
C9K#app-hosting move system techsupport to flash:
```

```
Successfully moved tech support to flash:/tech_support_2021-03-28_19.55.24.tar.gz
```

Contents

Introduction

Catalyst 9000 application hosting framework

Requirements for the ThousandEyes Enterprise Agent on the Catalyst 9000 platform

Installation and configuration procedure

Cisco Catalyst Center

Cisco IOS XE CLI

WebUI

YANG models

Performing tests from the ThousandEyes account

Troubleshooting

Conclusion

Useful references

Conclusion

Enterprises with SLAs for their network can now deploy the Cisco signed version of the ThousandEyes Enterprise Agent on Catalyst 9300 and 9400 Series switching platforms without using additional hardware for compute resources. Network operators can easily install the Enterprise Agents through the different methods described in this guide with minimal time and effort across different campus locations. Moreover, Cisco is providing a certain number of ThousandEyes units per Cisco Catalyst and Cisco DNA Advantage licenses for Catalyst 9300 and 9400 Series switches. These ThousandEyes units can be used toward network and application tests to gain visibility into applications, visualize paths, and detect anomalies in the network.

Useful references

Catalyst 9000 Application Hosting white paper:

<https://www.cisco.com/c/dam/en/us/products/collateral/switches/catalyst-9300-series-switches/white-paper-c87-742415.pdf>.

General information about application hosting on Catalyst 9000 switching platforms:

<https://developer.cisco.com/docs/app-hosting/#!application-hosting-in-the-enterprise>.

ThousandEyes Enterprise Docker Agent Networking:

<https://docs.thousandeyes.com/product-documentation/global-vantage-points/enterprise-agents/configuring/enterprise-agent-on-docker-advanced-networking>.