Install and Uninstall UTD Engine in SD-WAN with CLI

Contents

Introduction

This document describes the procedure to install and uninstall Unified Threat Defense (UTD) via CLI in SDWAN routers.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Cisco Software-defined Wide Area Network (SD-WAN)
- Cisco IOS® XE Command Line Interface (CLI)

Components Used

This document is based on these software and hardware versions:

- Router ISR4461/K9
- Software Version 17.3.4

- Router in controller mode

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background Information

These steps need to be applied when the cedge is in CLI Mode or there is no control connection between vManage and cedge.

But If you have control plane and your cedge is in vManage mode, then proceed to review this other article .

Concepts

Specific requirements for this document include:

- Cisco vManage Release 20.3 or later.
- Cisco Integrated Services Routers 4431 Release 17.3.4

For more information about supported platforms navigate to [UTD for SDWAN supported platforms and restrictions.]

Configure

Uninstall UTD

Precheck

This is an example of how cedge router looks like prior UTD uninstall.

> * Device is on Controller Mode and no Template is attached but UTD configuration is applied.

```
cedge#show sdwan system Viptela (tm) vEdge Operating System Software Copyright (c) 2013-2022 by
Viptela, Inc. Controller Compatibility: 20.3 Version: 17.03.04a.0.5574 Build: Not applicable
<snipped> Model name: ISR4461/K9 Services: None vManaged: false Commit pending: false
Configuration template: None cedge#show platform software device-mode Device Operating-mode:
Controller-Managed cedge#show run | sec utd utd multi-tenancy utd engine standard multi-tenancy
threat-inspection whitelist profile Sig-white-list generator id 3 signature id 22089 generator
id 3 signature id 36208 threat-inspection profile IPS-POLICY threat detection policy balanced
logging level alert whitelist profile Sig-white-list policy utd-policy-vrf-1 vrf 511 all-
interfaces threat-inspection profile IPS-POLICY app-hosting appid utd app-vnic gateway0
virtualportgroup 0 guest-interface 0 guest-ipaddress 192.168.1.2 netmask 255.255.255.252 app-
vnic gateway1 virtualportgroup 1 guest-interface 1 guest-ipaddress 192.0.2.2 netmask
255.255.255.252 app-resource package-profile urlf-low start cedge# cedge#show running-config |
section VirtualPortGroup0 interface VirtualPortGroup0 description Management interface vrf
forwarding 65529 ip address 192.168.1.1 255.255.255.252 no mop enabled no mop sysid cedge#show
running-config | section VirtualPortGroup1 interface VirtualPortGroup1 description Data
interface ip address 192.0.2.1 255.255.255.252 no mop enabled no mop sysid cedge#
```

Note: UTD configuration needs to be removed first before it can be uninstalled.

Configurations

1. Stop UTD service.

```
cedge#config-transaction
cedge(config)# app-hosting appid utd
cedge(config-app-hosting)# no start
cedge(config-app-hosting)# commit
Commit complete.
```

Note: The UTD status changes from Running to Deployed once **no start** is applied.

```
cedge#show app-hosting list App id State -------------------------------------------------------
-- utd DEPLOYED cedge#
```

2. Remove UTD configuration.

```
cedge#config-transaction
cedge(config)# utd engine standard multi-tenancy
cedge(config-utd-multi-tenancy)# no policy utd-policy-vrf-1
cedge(config-utd-multi-tenancy)# commit
Commit complete.
cedge(config-utd-multi-tenancy)#
cedge#config-transaction
cedge(config)# utd multi-tenancy
cedge(config)# utd engine standard multi-tenancy
cedge(config-utd-multi-tenancy)# no threat-inspection whitelist profile Sig-white-list
cedge(config-utd-multi-tenancy)# no threat-inspection profile IPS-POLICY
cedge(config-utd-multi-tenancy)# exit
cedge(config)# commit
Commit complete.
cedge(config)# no utd engine standard multi-tenancy
cedge(config)# commit
Commit complete.
cedge(config)#
cedge#config-transaction
cedge(config)# no utd multi-tenancy
cedge(config)# commit
Commit complete.
cedge(config)#
cedge(config)# app-hosting appid utd
cedge(config-app-hosting)# no app-vnic gateway0 virtualportgroup 0 guest-interface 0
cedge(config-app-hosting)# no app-vnic gateway1 virtualportgroup 1 guest-interface 1
cedge(config-app-hosting)# no app-resource package-profile urlf-low
cedge(config-app-hosting)# commit
Commit complete.
cedge(config-app-hosting)#exit
cedge(config)# no app-hosting appid utd
cedge(config)# commit
Commit complete.
cedge(config)#
cedge(config)# no interface VirtualPortGroup0
cedge(config)# no interface VirtualPortGroup1
cedge(config)# commit
Commit complete.
cedge(config)#
cedge(config)# no iox
cedge(config)# commit
Commit complete.
cedge(config)#
```

3. Validation.

This is an example of how cedge router looks after UTD configuration is removed.

```
cedge#show running-config | section iox
cedge#show running-config | section VirtualPortGroup0
cedge#show running-config | section VirtualPortGroup1
cedge#show running-config | section utd
cedge#
cedge#show platform software utd global
UTD Global state
=========================
Engine : Standard
Global Inspection : Disabled
Operational Mode : Intrusion Detection
Fail Policy : Fail-open
Container technology : LXC
Redirect interface : Not specified
UTD interfaces
No interfaces are protected by UTD
<snipped>
```

> **Note**: Even though the configuration was removed, the UTD shows installed. This is expected.

```
cedge#show utd engine standard version
UTD Virtual-service Name: utd
IOS-XE Recommended UTD Version: 1.0.16_SV2.9.16.1_XE17.3
IOS-XE Supported UTD Regex: ^1\.0\.([0-9]+)_SV(.*)_XE17.3$
UTD Installed Version: 1.0.16_SV2.9.16.1_XE17.3

cedge#show virtual-service
Virtual Service Global State and Virtualization Limits:
Infrastructure version : 1.7
Total virtual services installed : 1
Total virtual services activated : 0
<snipped>

cedge#show app-hosting list
The process for the command is not responding or is otherwise unavailable >>>> Expected because
UTD config was removed but UTD engine remains installed

** Before to remove Configuration **
cedge#show virtual-service version name utd running
Virtual service utd running version:
Name : UTD-Snort-Feature
Version : 1.0.16_SV2.9.16.1_XE17.3

** After configuration is removed **
cedge#
cedge#show virtual-service version name utd running
Virtual service utd running version:
Name : UTD-Snort-Feature
Version : None
```

4. Remove UTD engine.

Tip: You need to have **iox** and **app-hosting appid utd** activated to uninstall UTD engine.

Here is an example of what occurs if UTD is deleted without iox and app-hosting activation.

```
cedge#app-hosting uninstall appid utd    >>>> No action is taken.
cedge#
```

This is an example to uninstall UTD succesfully.

```
cedge#config-transaction
cedge(config)# iox
cedge(config)# app-hosting appid utd
cedge(config-app-hosting)# commit
Commit complete.
cedge(config-app-hosting)#
*Mar 3 20:25:24.889: %UICFGEXP-6-SERVER_NOTIFIED_START: R0/0: psd: Server iox has been notified
to start
*Mar 3 20:25:50.268: %IM-6-IOX_RECONCILE_INFO: R0/0: ioxman: App-hosting application reconcile
process start
*Mar 3 20:25:51.956: %IM-6-IOX_ENABLEMENT: R0/0: ioxman: IOX is ready.
cedge#
cedge#app-hosting uninstall appid utd
Uninstalling 'utd'. Use 'show app-hosting list' for progress.

cedge#
*Mar 3 20:26:31.653: %VIRT_SERVICE-5-INSTALL_STATE: Successfully uninstalled virtual service utd
*Mar 3 20:26:32.706: %IM-6-INSTALL_MSG: R0/0: ioxman: app-hosting: Uninstall succeeded: utd
uninstalled successfully
cedge#
```

Verify

Run the next commands to verify if UTD was removed.

```
cedge#show app-hosting list
No App found

cedge#show virtual-service version name utd running
% Error: Virtual-service utd is not found

cedge#show utd engine standard version
IOS-XE Recommended UTD Version: 1.0.16_SV2.9.16.1_XE17.3
IOS-XE Supported UTD Regex: ^1\.0\.([0-9]+)_SV(.*)_XE17.3$

cedge#show virtual-service
Virtual Service Global State and Virtualization Limits:
Infrastructure version : 1.7
Total virtual services installed : 0
Total virtual services activated : 0
<snipped>
```

Configure

Install UTD

Precheck

Review UTD supported version and download it into bootflash.

```
cedge#
cedge#show utd engine standard version
IOS-XE Recommended UTD Version: 1.0.16_SV2.9.16.1_XE17.3
IOS-XE Supported UTD Regex: ^1\.0\.([0-9]+)_SV(.*)_XE17.3$

cedge#
cedge#dir bootflash: | i utd
36 -rw- 55050240 Mar 1 2022 01:08:29 +00:00 secapp-
utd.17.03.04a.1.0.16_SV2.9.16.1_XE17.3.x86_64.tar
cedge#
```

Configurations

1. Activate iox and app-hosting.

```
cedge#config-transaction
cedge(config)# iox
cedge(config)# app-hosting appid utd
cedge(config-app-hosting)# commit
Commit complete.
cedge(config-app-hosting)#
*Mar 3 20:25:24.889: %UICFGEXP-6-SERVER_NOTIFIED_START: R0/0: psd: Server iox has been notified
to start
*Mar 3 20:25:50.268: %IM-6-IOX_RECONCILE_INFO: R0/0: ioxman: App-hosting application reconcile
process start
*Mar 3 20:25:51.956: %IM-6-IOX_ENABLEMENT: R0/0: ioxman: IOX is ready.
cedge#
```

2. Install UTD engine.

```
cedge#app-hosting install appid utd package bootflash:secapp-
utd.17.03.04a.1.0.16_SV2.9.16.1_XE17.3.x86_64.tar
Installing package 'bootflash:secapp-utd.17.03.04a.1.0.16_SV2.9.16.1_XE17.3.x86_64.tar' for
'utd'. Use 'show app-hosting list' for progress.
cedge#
*Mar 3 21:07:43.529: %VMAN-5-PACKAGE_SIGNING_LEVEL_ON_INSTALL: R0/0: vman: Package 'secapp-
utd.17.03.04a.1.0.16_SV2.9.16.1_XE17.3.x86_64.tar' for service container 'utd' is 'Cisco
signed', signing level cached on original install is 'Cisco signed'
*Mar 3 21:07:56.332: %VIRT_SERVICE-5-INSTALL_STATE: Successfully installed virtual service utd
*Mar 3 21:07:56.922: %IM-6-INSTALL_MSG: R0/0: ioxman: app-hosting: Install succeeded: utd
installed successfully Current state is deployed
cedge#
```

3. Ensure UTD engine is installed. Run next commands.

> **Note**: *DEPLOYED* state means *UTD installed but not configured*. *RUNNING* state means *UTD Installed and configured*.

```
cedge#show app-hosting list App id State --------------------------------------------------------
-- utd DEPLOYED cedge#show virtual-service version name utd running Virtual service utd running
version: Name : UTD-Snort-Feature Version : None >>>> "None", it is expected due to the fact
that no config yet cedge#show utd engine standard version UTD Virtual-service Name: utd IOS-XE
Recommended UTD Version: 1.0.16_SV2.9.16.1_XE17.3 IOS-XE Supported UTD Regex: ^1\.0\.([0-
9]+)_SV(.*)_XE17.3$ UTD Installed Version: 1.0.16_SV2.9.16.1_XE17.3 >>>> UTD Package installed
cedge# cedge#show virtual-service Virtual Service Global State and Virtualization Limits:
Infrastructure version : 1.7 Total virtual services installed : 1 >>>> Installed 1 but Activated
0 as expected Total virtual services activated : 0
```

4. In order to have UTD in RUNNING state, proceed to configure IPS/URL. This is an example from lab.

```
cedge#config-transaction
cedge(config)# interface VirtualPortGroup0
cedge(config-if)# description Management interface
cedge(config-if)# vrf forwarding 65529
cedge(config-if)# ip address 192.168.1.1 255.255.255.252
cedge(config-if)# exit
cedge(config)# commit
Commit complete.
cedge(config)#
cedge(config)# interface VirtualPortGroup1
cedge(config-if)# description Data interface
cedge(config-if)# ip address 192.168.2.1 255.255.255.252
cedge(config-if)# exit
cedge(config)# commit
Commit complete.
cedge(config)#
cedge(config)# app-hosting appid utd
cedge(config-app-hosting)# app-vnic gateway0 virtualportgroup 0 guest-interface 0
cedge(config-app-hosting-gateway)# guest-ipaddress 192.168.1.2 netmask 255.255.255.252
cedge(config-app-hosting-gateway)# exit
cedge(config-app-hosting)# app-vnic gateway1 virtualportgroup 1 guest-interface 1
cedge(config-app-hosting-gateway)# guest-ipaddress 192.168.2.2 netmask 255.255.255.252
cedge(config-app-hosting-gateway)# exit
cedge(config-app-hosting)# app-resource package-profile urlf-low
cedge(config-app-hosting)# start
cedge(config-app-hosting)# commit
Commit complete.
cedge(config-app-hosting)#
cedge(config-app-hosting)# exit
cedge(config)# utd multi-tenancy
cedge(config)# utd engine standard multi-tenancy
cedge(config-utd-multi-tenancy)# threat-inspection whitelist profile Sig-white-list
cedge(config-utd-mt-whitelist)# generator id 3 signature id 22089
cedge(config-utd-mt-whitelist)# generator id 3 signature id 36208
cedge(config-utd-mt-whitelist)# exit
cedge(config-utd-multi-tenancy)# threat-inspection profile IPS-POLICY
cedge(config-utd-mt-threat)# threat detection
cedge(config-utd-mt-threat)# policy balanced
cedge(config-utd-mt-threat)# whitelist profile Sig-white-list
cedge(config-utd-mt-threat)# logging level alert
cedge(config-utd-mt-threat)# exit
cedge(config-utd-multi-tenancy)# commit
Commit complete.
cedge(config-utd-multi-tenancy)#
cedge(config-utd-multi-tenancy)# policy utd-policy-vrf-1
cedge(config-utd-mt-policy)# vrf 511
cedge(config-utd-mt-policy)# all-interfaces
cedge(config-utd-mt-policy)# fail close
cedge(config-utd-mt-policy)# threat-inspection profile IPS-POLICY
cedge(config-utd-mt-policy)# exit
cedge(config-utd-multi-tenancy)# commit
Commit complete.
cedge(config-utd-multi-tenancy)#
cedge(config-utd-multi-tenancy)# end
cedge#
```

5. Ensure configuration is done.

```
cedge#show run | section utd
utd multi-tenancy
utd engine standard multi-tenancy
threat-inspection whitelist profile Sig-white-list
generator id 3 signature id 22089
generator id 3 signature id 36208
threat-inspection profile IPS-POLICY
threat detection
policy balanced
logging level alert
whitelist profile Sig-white-list
policy utd-policy-vrf-1
vrf 511
all-interfaces
threat-inspection profile IPS-POLICY
fail close
app-hosting appid utd
app-vnic gateway0 virtualportgroup 0 guest-interface 0
guest-ipaddress 192.168.1.2 netmask 255.255.255.252
app-vnic gateway1 virtualportgroup 1 guest-interface 1
guest-ipaddress 192.168.2.2 netmask 255.255.255.252
app-resource package-profile urlf-low
start
cedge#
```

Verify

1. Run **show logging** and ensure you got similar logs as shown next.

```
*Mar 3 23:17:17.573: %LINK-3-UPDOWN: Interface VirtualPortGroup0, changed state to up *Mar 3
23:17:18.094: %LINK-3-UPDOWN: Interface VirtualPortGroup1, changed state to up *Mar 3
23:17:18.572: %LINEPROTO-5-UPDOWN: Line protocol on Interface VirtualPortGroup0, changed state
to up *Mar 3 23:17:19.095: %LINEPROTO-5-UPDOWN: Line protocol on Interface VirtualPortGroup1,
changed state to up *Mar 3 23:17:25.630: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Tunnel2000000001, changed state to up *Mar 3 23:19:36.863: %VIRT_SERVICE-5-ACTIVATION_STATE:
Successfully activated virtual service utd *Mar 3 23:19:37.577: %IM-6-START_MSG: R0/0: ioxman:
app-hosting: Start succeeded: utd started successfully Current state is running *Mar 3
23:19:38.318: %ONEP_BASE-6-CONNECT: [Element]: ONEP session Application:utd_snort Host:cedge
ID:6633 User: has connected. *Mar 3 23:19:50.428: %IOSXE_UTD-4-MT_CONFIG_DOWNLOAD: UTD MT
configuration download has started *Mar 3 23:20:06.460: %IOSXE_UTD-4-MT_CONFIG_DOWNLOAD: UTD MT
configuration download has completed *Mar 3 23:20:08.389: %IOSXE-5-PLATFORM: R0/0: cpp_cp:
QFP:0.0 Thread:011 TS:00000780131568867961 %SDVT-5-SDVT_HEALTH_UP: Service node is up for
channel Threat Defense. Current Health: Green, Previous Health: Down
```

> **Note**: Current Health changes from **Down** to **Green** if configuration was done succesfully.

2. Run these commands to verify UTD Installation.

```
cedge#show app-hosting list App id State -------------------------------------------------------
-- utd RUNNING >>> State change from Deployed to Running cedge#show utd engine standard version
UTD Virtual-service Name: utd IOS-XE Recommended UTD Version: 1.0.16_SV2.9.16.1_XE17.3 IOS-XE
Supported UTD Regex: ^1\.0\.([0-9]+)_SV(.*)_XE17.3$ UTD Installed Version:
1.0.16_SV2.9.16.1_XE17.3 cedge#show virtual-service version name utd running Virtual service utd
running version: Name : UTD-Snort-Feature Version : 1.0.16_SV2.9.16.1_XE17.3 >>>> Changed from
NONE to "1.0.16_SV2.9.16.1_XE17.3" after config. cedge# cedge#show virtual-service Virtual
```

```
Service Global State and Virtualization Limits: Infrastructure version : 1.7 Total virtual
services installed : 1 Total virtual services activated : 1 >>>>>>>>> Now it is activated
<snipped> cedge#show virtual-service version name utd running Virtual service utd running
version: Name : UTD-Snort-Feature Version : 1.0.16_SV2.9.16.1_XE17.3
```

Troubleshoot

This section provides information you can use to troubleshoot your configuration.

Useful commands

```
show platform software device-mode
show app-hosting list
show virtual-service version name utd running
show utd engine standard version
show utd engine standard status
show virtual-service
```

Related Information

- Security Configuration Guide: Unified Threat Defense, Cisco IOS XE 17
- Security Configuration Guide: Unified Threat Defense, Cisco IOS XE 16
- UTD for SDWAN supported platforms and restrictions.
- Install UTD with vManage.