TrustSec SGT Handling: L2 SGT Imposition and Forwarding

This feature allows the interfaces in a router to be manually enabled for Cisco TrustSec so that the router can insert the Security Group Tag (SGT) in the packet to be carried throughout the network in the Cisco TrustSec header.

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Prerequisites for TrustSec SGT Handling: L2 SGT Imposition and Forwarding

The Cisco Trustsec network needs to be established with the following prerequisites before implementing the Cisco TrustSec SGT Handling: L2 SGT Imposition and Forwarding feature:

- Connectivity exists between all network devices
- Cisco Secure Access Control System (ACS) 5.1 operates with a Cisco TrustSec -SXP license
- Directory, DHCP, DNS, certificate authority, and NTP servers function within the network
- Configure the **retry open timer** command to a different value on different routers.

Information about TrustSec SGT Handling: L2 SGT Imposition and Forwarding

Cisco TrustSec (CTS) builds secure networks by establishing domains of trusted network devices. Each device in the domain is authenticated by its peers. Communication on the links between devices in the domain is secured with a combination of encryption, message integrity check, and data-path replay protection mechanisms.

The TrustSec SGT Handling: L2 SGT Imposition and Forwarding feature allows the interfaces in a router to be manually enabled for CTS so that the router can insert the Security Group Tag (SGT) in the packet to be carried throughout the network in the CTS header.

Security Groups and SGTs

A security group is a grouping of users, endpoint devices, and resources that share access control policies. Security groups are defined by the administrator in the ACS. As new users and devices are added to the Cisco TrustSec (CTS) domain, the authentication server assigns these new entities to appropriate security groups. CTS assigns to each security group a unique 16-bit security group number whose scope is global within a CTS domain. The number of security groups in the router is limited to the number of authenticated network entities. Security group numbers do not need to be manually configured.

Once a device is authenticated, CTS tags any packet that originates from that device with an SGT that contains the security group number of the device. The packet carries this SGT throughout the network within the CTS header. The SGT is a single label that determines the privileges of the source within the entire CTS domain. The SGT is identified as the source because it contains the security group of the source. The destination device is assigned a destination group tag (DGT).

Note The CTS packet tag does not contain the security group number of the destination device.

How to Configure TrustSec SGT Handling: L2 SGT Imposition and Forwarding

Manually Enabling TrustSec SGT Handling: L2 SGT Imposition and Forwarding on an Interface

Perform the following steps to manually enable an interface on the device for Cisco TrustSec (CTS) so that the device can add Security Group Tag (SGT) in the packet to be propagated throughout the network and to implement a static authorization policy.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** {**GigabitEthernet** *port* | **Vlan** *number*}
4. **cts manual**
5. **policy static sgt** *tag* [trusted]
6. **end**
7. **show cts interface** [**GigabitEthernet** *port* | **Vlan** *number* | **brief** | **summary**]

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**interface** {**GigabitEthernet** *port* | **Vlan** *number*} **Example:** `Device(config)# interface gigabitethernet 0`	Enters the interface on which CTS SGT authorization and forwarding is enabled
Step 4	**cts manual** **Example:** `Device(config-if)# cts manual`	Enables the interface for CTS SGT authorization and forwarding, and enters CTS manual interface configuration mode. **Note** To enable the **cts manual** command on a subinterface, you must increase the IP MTU size to accommodate the additional bytes for the Dot1Q tag. This is applicable only for releases earlier than Cisco IOS XE Release 3.17.
Step 5	**policy static sgt** *tag* [trusted] **Example:** `Device(config-if-cts-manual)# policy static sgt 100 trusted`	Configures a static authorization policy for a CTS security group with a tagged packet that defines the trustworthiness of the SGT.
Step 6	**end** **Example:** `Device(config-if-cts-manual)# end`	Exits CTS manual interface configuration mode and enters privileged EXEC mode.
Step 7	**show cts interface** [**GigabitEthernet** *port* | **Vlan** *number* | **brief** | **summary**] **Example:** `Device# show cts interface brief`	Displays CTS configuration statistics for the interface.

Disabling CTS SGT Propagation on an Interface

Follow these steps to disable CTS SGT Propagation on an interface in an instance when a peer device is not capable of receiving an SGT.

SUMMARY STEPS

1. **enable**
2. **configure terminal**

3. **interface** {**GigabitEthernet***port* | **Vlan** *number*}
4. **cts manual**
5. **no propagate sgt**
6. **end**
7. **show cts interface** [**GigabitEthernet***port* | **Vlan** *number* | **brief** | **summary**]

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**interface** {**GigabitEthernet***port*	**Vlan** *number*} **Example:** `Device(config)# interface gigabitethernet 0`	Enters the interface on which CTS SGT authorization and forwarding is enabled
Step 4	**cts manual** **Example:** `Device(config-if)# cts manual`	Enables the interface for CTS SGT authorization and forwarding. CTS manual interface configuration mode is entered where CTS parameters can be configured.
Step 5	**no propagate sgt** **Example:** `Device(config-if-cts-manual)# no propagate sgt`	Disables CTS SGT propagation on an interface in situations where a peer device is not capable of receiving an SGT. **Note** CTS SGT propagation is enabled by default. The **propagate sgt** command can be used if CTS SGT propagation needs to be turned on again for a peer device. Once the **no propagate sgt** command is entered, the SGT tag is not added in the L2 header.
Step 6	**end** **Example:** `Device(config-if-cts-manual)# end`	Exits CTS manual interface configuration mode and enters privileged EXEC mode.

Step 7	**show cts interface** [**GigabitEthernet***port*	**Vlan** *number*	**brief**	**summary**]
				Example:
				`Device# show cts interface brief`
				`Global Dot1x feature is Disabled`
				`Interface GigabitEthernet0:`
				`CTS is enabled, mode: MANUAL`
					Displays CTS configuration statistics to verify that CTS SGT propagation was disabled on interface.

	Command or Action	Purpose
	IFC state: OPEN Authentication Status: NOT APPLICABLE Peer identity: "unknown" Peer's advertised capabilities: "" Authorization Status: NOT APPLICABLE SAP Status: NOT APPLICABLE Propagate SGT: Disabled Cache Info: Cache applied to link : NONE	

Configuration Examples for TrustSec SGT Handling: L2 SGT Imposition and Forwarding

Example: Manually Enabling TrustSec SGT Handling: L2 SGT Imposition and Forwarding on an Interface

Example:

The following is sample output for the **show cts interface brief**command.

Cisco ASR 1000 Series Aggregation Services Routers and Cisco Cloud Services Router 1000V Series

```
Device# show cts interface brief

Global Dot1x feature is Disabled
 Interface GigabitEthernet0/1/0:
     CTS is enabled, mode:    MANUAL
     IFC state:               OPEN
     Interface Active for 00:00:40.386
     Authentication Status:   NOT APPLICABLE
         Peer identity:       "unknown"
         Peer's advertised capabilities: ""
     Authorization Status:    NOT APPLICABLE
     SAP Status:              NOT APPLICABLE
     Propagate SGT:           Enabled
     Cache Info:
         Cache applied to link : NONE
```

Cisco 4400 Series Integrated Services Routers

```
Device# show cts interface brief

Interface GigabitEthernet0/1/0
    CTS is enabled, mode:     MANUAL
      Propagate SGT:          Enabled
      Static Ingress SGT Policy:
        Peer SGT:             100
        Peer SGT assignment:  Trusted
```

Feature History for TrustSec SGT Handling: L2 SGT Imposition and Forwarding

This table provides release and related information for features explained in this module.

These features are available on all releases subsequent to the one they were introduced in, unless noted otherwise.

Release	Feature	Feature Information
Cisco IOS XE Fuji 16.9.2	TrustSec SGT Handling: L2 SGT Imposition and Forwarding	This feature allows the interfaces in a router to be manually enabled for Cisco TrustSec so that the router can insert the SGT in the packet to be carried throughout the network in the Cisco TrustSec header.

Use Cisco Feature Navigator to find information about platform and software image support. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn.