

Configuring SGACL Monitor Mode and SGACL Logging

SGACL Monitor Mode and SGACL Logging are supported on IE 4000, IE 4010, and IE 5000 Series Switches in Cisco IOS Release 15.2(8)E and later.

Security group-based access control is a component of the Cisco TrustSec security architecture, which builds secure networks by establishing domains of trusted network devices. For comprehensive information about TrustSec, including TrustSec prerequisites, guidelines and limitations, and configuration procedures, see [Cisco TrustSec Switch Configuration Guide](#). For information about Configuring SGT Exchange Protocol over TCP (SXP) and Layer 3 Transport, see [Configuring SGT Exchange Protocol over TCP \(SXP\) and Layer 3 Transport, page 281](#).

Restrictions for Configuring SGACL Policies

The following restrictions apply to the Cisco IE 4000, IE 4010, and IE 5000 Series Switches when configuring SGACL policies:

- Cisco TrustSec can be configured only on physical interfaces, not on logical interfaces.
- When SXP is configured between a Cisco IE 4000, IE 4010, or IE 5000 switch and another switch, SGACL policies are not enforced on Cisco IE 4000, IE 4010, or IE 5000 series switches. SGACL policies are downloaded for the destination SGT, but policy statements are not applied to the traffic that is initiated from the source SGT.

IP device tracking must be enabled on both switches and these switches should have Layer2 adjacency configured between them so that a Cisco IE 4000, IE 4010, or IE 5000 can tag packets with the corresponding SGT learned via the SXP protocol.

You can enable IP device tracking on Cisco IE 4000, IE 4010, or IE 5000 series switches by using the **ip device tracking maximum < number >** command. Based on your topology, configure the number of IP clients using the number argument. We do not recommend configuring a high number of IP clients on ports/interfaces.

IP device tracking is enabled by default on all ports in Cisco IOS Release 15.2(1)E, and in Cisco IE 4000, IE 4010, and IE 5000 switches using this release image, SGACL policies are enforced.

- CTS SGACLs cannot be enforced for punt (CPU bound) traffic due to hardware limitations.

The following restrictions apply to IPv6 SGACL enforcement:

- SGACL enforcement is bypassed for IPv6 multicast traffic.
- SGACL enforcement is bypassed for IPv6 packets with Link-Local IPv6 source/destination addresses.

SGACL Monitor Mode

During the pre-deployment phase of Cisco TrustSec, you can use monitor mode to test security policies without enforcing them to make sure that the policies function as intended. If the security policies do not function as intended, monitor mode identifies that and allows you to correct the policy before enabling security group access control list (SGACL) enforcement. Seeing the outcome of the policy actions before enforcing them lets you confirm that the subject policy meets the security requirements (access is denied to resources if users are not authorized).

The monitoring capability is provided at the SGT-DGT pair level. When you enable the SGACL monitoring mode feature, the deny action is implemented as an ACL permit on the line cards. This allows the SGACL counters and logging to display how connections are handled by the SGACL policy. Since all the monitored traffic is permitted, there is no disruption of service due to SGACLs while in the SGACL monitor mode.

SGACL Monitor Mode

The IPServices license is required to enable SGACL Monitor Mode.

Configuring SGACL Monitor Mode - CLI

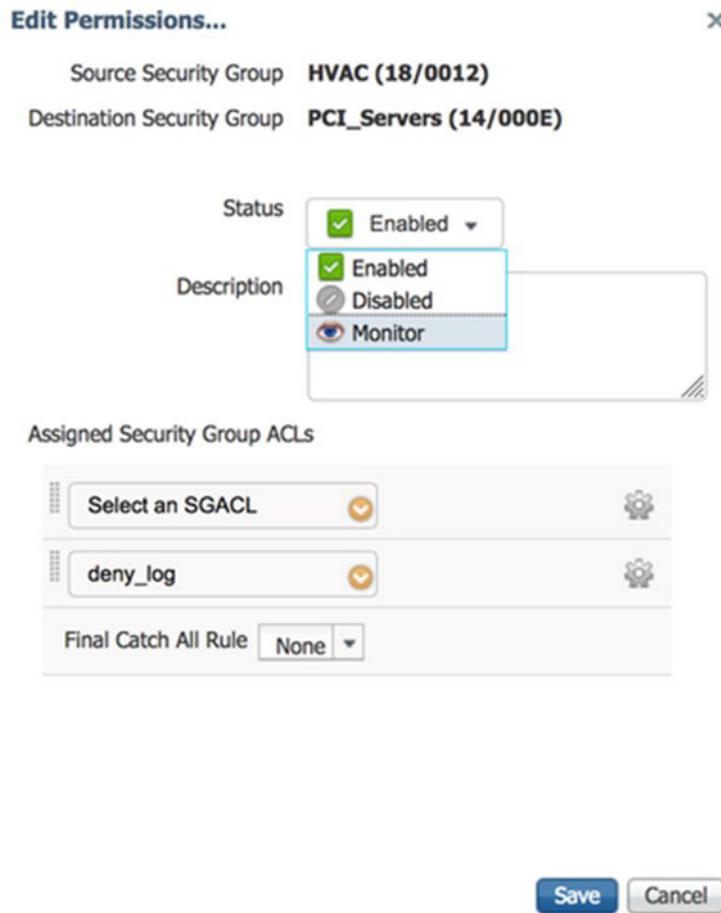
To configure SGACL Monitor Mode through the CLI, follow these steps:

	Command	Purpose
1.	Switch# configure terminal	Enters global configuration mode.
2.	Switch(config)# cts role-based monitor enable	Enables monitor mode.
3.	Switch(config)# cts role-based monitor permissions from { sgt_num } to { dgt_num } ipv4	Enables monitor mode for IPv4 RBACL (SGT-DGT pair).
4.	Switch(config)# exit	Exits configuration mode.
5.	Switch# show cts role-based permissions from { sgt_num } to { dgt_num } ipv4 [details]	(Optional) Displays the SGACL policies and details about the monitor mode feature for each pair. The command output displays “monitored” if per cell monitor mode is enabled for the <SGT-DGT> pair.

Configuring SGACL Monitor Mode - Radius (ISE)

To enable SGACL Monitor Mode using the Cisco Identity Services Engine (ISE) GUI, select Monitor as shown below:

SGACL Monitor Mode



An eye icon indicates that Monitor mode is enabled.



The policy matrix change needs to be pushed to network devices by using the Deploy function at the top of the matrix. This utilizes RADIUS CoA to inform the devices that a change has been made.

After the update is downloaded to the switch, use the **show cts role-based permissions** command to verify the configuration. The policy permissions show the specific policy in Monitor Mode by appending the term “monitored”.

Verifying Configuration

The following examples are output from the **show cts role-based permissions** and **show cts role-based counters** commands, which you can use to display SGACL Monitor Mode status.

```
Switch#show cts role-based permissions
IPv4 Role-based permissions default:
    Permit IP-00
IPv4 Role-based permissions from group 18:HVAC to group 14:PCI_Servers (monitored):
    deny_log-10
RBACL Monitor All for Dynamic Policies : FALSE
RBACL Monitor All for Configured Policies : FALSE
```

The HW-Monitor column of **show cts role-based counters** displays the count of enforcement events that are being monitored in hardware and not actually enforced.

```
Switch#show cts role-based counters
Role-based IPv4 counters
From    To      SW-Denied  HW-Denied  SW-Permitt  HW-Permitt  SW-Monitor  HW-Monitor
*       *       0          0          5378613    6291011    0           0
18      14     0          0          0          0          0           84
```

SGACL Logging

The **log** option in **cts** applies to individual ACEs and causes packets that match the ACE to be logged. The first packet logged by the **log** keyword generates a syslog message.

SGACL Logging is only triggered when the Cisco ACE Application Control Engine has the **logging** keyword.

When logging is enabled in SGACL, the switch logs the following information:

- The source security group tag (SGT) and destination SGT
- The SGACL policy name
- The packet protocol type
- The action performed on the packet

To enable Cisco TrustSec role-based (security group) access control enforcement, use the **cts role-based enforcement** command in global configuration mode. To configure a logging interval for an SGACL, enter:

```
cts role-based enforcement [logging-interval interval ]
```

The valid values for the *interval* argument are from 5 to 86400 seconds. The default is 300 seconds.

To enable logging, use the **log** keyword before the ACE definition in the SGACL configuration. For example, **permit ip log**.

The following is a sample log, displaying source and destination SGTs, ACE matches for deny action). The **logging rate-limit** command can be used to limit the rate of messages logged per second.

```
Switch(config)# cts role-based enforcement logging-interval 90
Switch(config)# logging rate-limit

May 27 10:19:21.509: %RBM-6-SGACLHIT:
ingress_interface='GigabitEthernet1/0/2' sgacl_name='sgacl2' action='Deny'
protocol='icmp' src-ip='16.16.1.3' src-port='8' dest-ip='17.17.1.2' dest-port='0'
sgt='101' dgt='202' logging_interval_hits='5'
```