



CHAPTER 1

Cisco TrustSec

Cisco TrustSec provides security improvements to Cisco network devices based on the capability to strongly identify users, hosts, and network devices within a network. TrustSec provides topology independent and scalable access controls by uniquely classifying data traffic for a particular role. TrustSec ensures data confidentiality and integrity by establishing trust among authenticated peers and encrypting links with those peers.

The key component of Cisco TrustSec is the [Cisco Identity Services Engine \(ISE\)](#). Cisco ISE can provision switches with TrustSec Identities and Security Group ACLs (SGACLs), though these may be configured manually on the switch.

To configure Cisco TrustSec on the switch, see the *Cisco TrustSec Switch Configuration Guide* at the following URL:

<http://www.cisco.com/en/US/docs/switches/lan/trustsec/configuration/guide/trustsec.html>

Release notes for Cisco TrustSec General Availability releases are at the following URL:

http://www.cisco.com/en/US/docs/switches/lan/trustsec/release/notes/rn_cts_crossplat.html

Additional information about the Cisco TrustSec solution, including overviews, datasheets, and case studies, is available at:

<http://www.cisco.com/en/US/netsol/ns1051/index.html>

[Table 1](#) lists the TrustSec features to be eventually implemented on TrustSec-enabled Cisco switches. Successive general availability releases of TrustSec will expand the number of switches supported and the number of TrustSec features supported per switch.

See the [“Configuration Guidelines and Limitations”](#) section on [page 1-3](#) for more information about the limitations of TrustSec features on Catalyst 3750-X and Catalyst 3560-X switches.

Table 1 Cisco TrustSec Key Features

Cisco TrustSec Feature	Description
802.1AE Tagging (MACSec)	<p>Protocol for IEEE 802.1AE-based wire-rate hop-to-hop Layer 2 encryption.</p> <p>Between MACSec-capable devices, packets are encrypted on egress from the transmitting device, decrypted on ingress to the receiving device, and in the clear within the devices.</p> <p>This feature is only available between TrustSec hardware-capable devices.</p>
Endpoint Admission Control (EAC)	<p>EAC is an authentication process for an endpoint user or a device connecting to the TrustSec domain. Usually EAC takes place at the access level switch. Successful authentication and authorization in the EAC process results in Security Group Tag assignment for the user or device. Currently EAC can be 802.1X, MAC Authentication Bypass (MAB), and Web Authentication Proxy (WebAuth).</p>
Network Device Admission Control (NDAC)	<p>NDAC is an authentication process where each network device in the TrustSec domain can verify the credentials and trustworthiness of its peer device. NDAC utilizes an authentication framework based on IEEE 802.1X port-based authentication and uses EAP-FAST as its EAP method. Successful authentication and authorization in NDAC process results in Security Association Protocol negotiation for IEEE 802.1AE encryption.</p>
Security Group Access Control List (SGACL)	<p>A Security Group Access Control List (SGACL) associates a Security Group Tag with a policy. The policy is enforced upon SGT-tagged traffic egressing the TrustSec domain.</p>
Security Association Protocol (SAP)	<p>After NDAC authentication, the Security Association Protocol (SAP) automatically negotiates keys and the cipher suite for subsequent MACSec link encryption between TrustSec peers. SAP is defined in IEEE 802.11i.</p>
Security Group Tag (SGT)	<p>An SGT is a 16-bit single label indicating the security classification of a source in the TrustSec domain. It is appended to an Ethernet frame or an IP packet.</p>
SGT Exchange Protocol (SXP)	<p>Security Group Tag Exchange Protocol (SXP). With SXP, devices that are not TrustSec-hardware-capable can receive SGT attributes for authenticated users or devices from the Cisco Secure Access Control System (ACS). The devices can forward the sourceIP-to-SGT binding to a TrustSec-hardware-capable device for tagging and SGACL enforcement.</p>

**Note**

Inline tagging is supported only with service modules on Cisco Catalyst 3750-x Series Switches.

Configuration Guidelines and Limitations

The following guidelines and limitations apply to configuring Cisco TrustSec SGT and SGACL on Catalyst 3750-X and Catalyst 3560-X switches:

- You cannot statically map an IP-subnet to an SGT. You can only map IP addresses to an SGT. When you configure IP address-to-SGT mappings, the IP address prefix must be 32.
- If a port is configured in Multi-Auth mode, all hosts connecting on that port must be assigned the same SGT. When a host tries to authenticate, its assigned SGT must be the same as the SGT assigned to a previously authenticated host. If a host tries to authenticate and its SGT is different from the SGT of a previously authenticated host, the VLAN port (VP) to which these hosts belong is error-disabled.
- Cisco TrustSec enforcement is supported only on up to eight VLANs on a VLAN-trunk link. If there are more than eight VLANs configured on a VLAN-trunk link and Cisco TrustSec enforcement is enabled on those VLANs, the switch ports on those VLAN-trunk links will be error-disabled.
- The switch can assign SGT and apply corresponding SGACL to end-hosts based on SXP listening only if the end-hosts are Layer2 adjacent to the switch.
- Port-to-SGT mapping can be configured only on Cisco TrustSec links (that is, switch-to-switch links). Port-to-SGT mapping cannot be configured on host-to-switch links.

When port-to-SGT mapping is configured on a port, an SGT is assigned to all ingress traffic on that port. There is no SGACL enforcement for egress traffic on the port.

- SGT/SGACL is supported on Cisco Catalyst 3750-X and 3650-X series switches with all network uplink modules: C3KX-NM-1G, C3KX-NM-10G, C3KX-NM-10GT and C3KX-SM-10G. The C3KX-SM-10G is only required for MACsec on the uplinks.
- The ASCII on Catalyst 3750X has a limitation because of which SGACL enforcement works only for directly connected clients to the switch.

