CHAPTER 1

Lawful Intercept Overview

This chapter provides information about Lawful Intercept and contains the following sections:

Caution This guide does not address legal obligations for the implementation of lawful intercept. As a service provider, you are responsible to ensure that your network complies with applicable lawful intercept statutes and regulations. We recommend that you seek legal advice to determine your obligations.

Information About Lawful Intercept

Lawful intercept is a process that enables a Law Enforcement Agency (LEA) to perform electronic surveillance on an individual (a target) as authorized by a judicial or administrative order. To facilitate the lawful intercept process, certain legislation and regulations require service providers (SPs) and Internet service providers (ISPs) to implement their networks to explicitly support authorized electronic surveillance.

The surveillance is performed through the use of wiretaps on traditional telecommunications and Internet services in voice, data, and multiservice networks. The LEA delivers a request for a wiretap to the target's service provider, who is responsible for intercepting data communication to and from the individual. The service provider uses the target's IP address or session to determine which of its edge routers handles the target's traffic (data communication). The service provider then intercepts the target's traffic as it passes through the router, and sends a copy of the intercepted traffic to the LEA without the target's knowledge.

The Lawful Intercept feature supports the Communications Assistance for Law Enforcement Act (CALEA), which describes how service providers in the United States must support lawful intercept. Currently, lawful intercept is defined by the following standards:

- Telephone Industry Association (TIA) specification J-STD-025
- Packet Cable Electronic Surveillance Specification (PKT-SP-ESP-101-991229)

For information about the Cisco lawful intercept solution, contact your Cisco account representative.

Benefits of Lawful Intercept

Lawful intercept has the following benefits:

- Allows multiple LEAs to run a lawful intercept on the same target without each other's knowledge.
- Does not affect subscriber services on the router.
- Supports wiretaps in both the input and output direction.
- Supports wiretaps of Layer 3 and Layer 2 traffic.
- Supports wiretaps of individual subscribers that share a single physical interface.
- Cannot be detected by the target. Neither the network administrator nor the calling parties is aware that packets are being copied or that the call is being tapped.
- Uses Simple Network Management Protocol Version 3 (SNMPv3) and security features such as the View-based Access Control Model (SNMP-VACM-MIB) and User-based Security Model (SNMP-USM-MIB) to restrict access to lawful intercept information and components.
- Hides information about lawful intercepts from all but the most privileged users. An administrator must set up access rights to enable privileged users to access lawful intercept information.
- Provides two secure interfaces for performing an intercept: one for setting up the wiretap and one for sending the intercepted traffic to the LEA.

CALEA for Voice

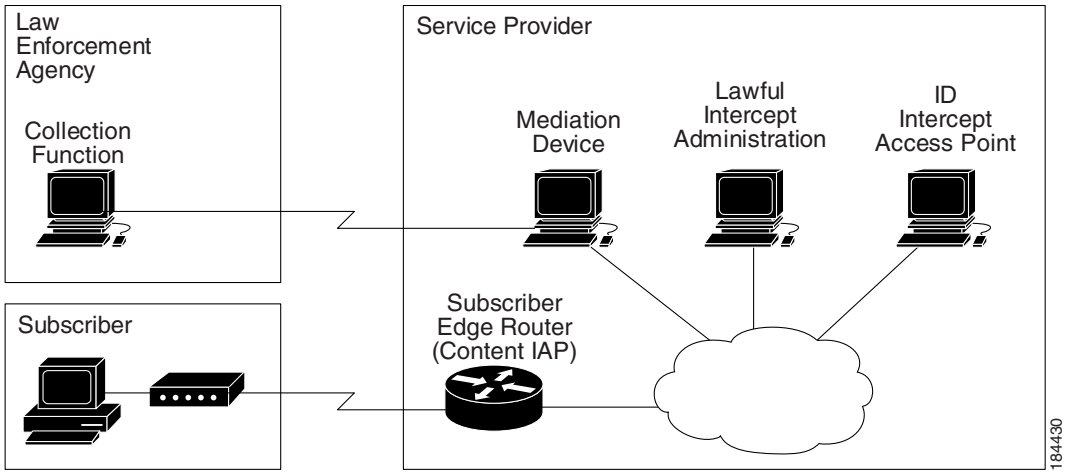
The Communications Assistance for Law Enforcement Act (CALEA) for Voice feature allows the lawful interception of voice conversations that are running on Voice over IP (VoIP). Although Cisco 7600 series routers are not voice gateway devices, VoIP packets traverse the routers at the edge of the service provider network.

When an approved government agency determines that a telephone conversation is interesting, CALEA for Voice copies the IP packets comprising the conversation and sends the duplicate packets to the appropriate monitoring device for further analysis.

Network Topology for Lawful Intercept

Figure 1-1 provides the functional depiction of a generic IP network that supports LI of voice or data traffic.

Figure 1-1 Network Topology



Network Components Used for Lawful Intercept

The following network components are used for lawful intercepts:

- Mediation Device
- Lawful Intercept Administration
- Intercept Access Point
- Collection Function

For information about lawful intercept processing, see the "Lawful Intercept Processing" section on page 1-5.

Mediation Device

A mediation device (supplied by a third-party vendor) handles most of the processing for the lawful intercept. The mediation device:

- Provides the interface used to set up and provision the lawful intercept.
- Generates requests to other network devices to set up and run the lawful intercept.
- Converts the intercepted traffic into the format required by the LEA (which can vary from country to country) and sends a copy of the intercepted traffic to the LEA without the target's knowledge.

Note If multiple LEAs are performing intercepts on the same target, the mediation device must make a copy of the intercepted traffic for each LEA. The mediation device is also responsible for restarting any lawful intercepts that are disrupted due to a failure.

Lawful Intercept Administration

Lawful intercept administration (LIA) provides the authentication interface for lawful intercept or wiretap requests and administration.

The SP and ISP use the LI administration function to provision intercepts by interface with the other components in the network.

The LI administration function is responsible for the following:

- Provisioning components in the network
- Administering intercept orders
- Tracking and maintaining intercept information

The LI administration function also supervises the security and integrity of the LI process. The function continuously audits activity logs to ensure that only authorized intercepts are provisioned and that authorized intercepts are not disrupted.

Note Provisioning intercepts is defined as accessing a device and changing the operational parameters of the device to activate a desired function on that device.

Intercept Access Point

An intercept access point (IAP) is a device that provides information for the lawful intercept. There are two types of IAPs:

- Identification (ID) IAP—A device, such as an authentication, authorization, and accounting (AAA) server, that provides intercept-related information (IRI) for the intercept (for example, the target's username and system IP address). The IRI helps the service provider determine which content IAP (router) the target's traffic passes through.
- Content IAP—A device, such as a Cisco 7600 series router, that the target's traffic passes through. The content IAP:
  - Intercepts traffic to and from the target for the length of time specified in the court order. The router continues to forward traffic to its destination to ensure that the wiretap is undetected.
  - Creates a copy of the intercepted traffic, encapsulates it in User Datagram Protocol (UDP) packets, and forwards the packets to the mediation device without the target's knowledge.

Note The content IAP sends a single copy of intercepted traffic to the mediation device. If multiple LEAs are performing intercepts on the same target, the mediation device must make a copy of the intercepted traffic for each LEA.

Collection Function

The collection function is a program that stores and processes traffic intercepted by the service provider. The program runs on equipment at the LEA.

Lawful Intercept Processing

After acquiring a court order or warrant to perform surveillance, the LEA delivers a surveillance request to the target's service provider. Service provider personnel use an admin function that runs on the mediation device to configure a lawful intercept to monitor the target's electronic traffic for a specific period of time (as defined in the court order).

After the intercept is configured, user intervention is no longer required. The admin function communicates with other network devices to set up and execute the lawful intercept. The following sequence of events occurs during a lawful intercept:

1. The admin function contacts the ID IAP for intercept-related information (IRI), such as the target's username and the IP address of the system, to determine which content IAP (router) the target's traffic passes through.
2. After identifying the router that handles the target's traffic, the admin function sends SNMPv3 **get** and **set** requests to the router's MIBs to set up and activate the lawful intercept. The lawful intercept MIBs include the CISCO-TAP2-MIB, CISCO-IP-TAP-MIB, CISCO-802-TAP-MIB, and CISCO-USER-CONNECTION-TAP-MIB (if per-subscriber intercepts are supported).
3. During the lawful intercept, the router:
   a. Examines incoming and outgoing traffic and intercepts any traffic that matches the specifications of the lawful intercept request.
   b. Creates a copy of the intercepted traffic and forwards the original traffic to its destination so the target does not suspect anything.
   c. Encapsulates the intercepted traffic in UDP packets and forwards the packets to the mediation device without the target's knowledge.

   Note The process of intercepting and duplicating the target's traffic adds no detectable latency in the traffic stream.

4. The mediation device converts the intercepted traffic into the required format and sends it to a collection function running at the LEA. Here, the intercepted traffic is stored and processed.

   Note If the router intercepts traffic that is not allowed by the judicial order, the mediation device filters out the excess traffic and sends the LEA only the traffic allowed by the judicial order.

5. When the lawful intercept expires, the router stops intercepting the target's traffic.

Note For c7600 routers, the lawful intercept feature is only available in new crypto images with the suffix 'li' as in 'k9_li' images, from Release 15.3(3)S. These k9_li images are available at Cisco Connection Online (CCO).

Lawful Intercept MIBs

To perform lawful intercept, the router uses these MIBs, which are described in the following sections:

- CISCO-TAP2-MIB—Used for lawful intercept processing.
- CISCO-IP-TAP-MIB—Used for intercepting Layer 3 (IPv4) traffic.

- CISCO-802-TAP-MIB—Used for intercepting Layer 2 traffic.
- CISCO-USER-CONNECTION-TAP-MIB—Used for intercepting traffic for individual subscribers.

CISCO-TAP2-MIB

The CISCO-TAP2-MIB contains SNMP management objects that control lawful intercepts on the router. The mediation device uses the MIB to configure and run lawful intercepts on targets whose traffic passes through the router. The MIB is bundled with Cisco software images that support lawful intercept.

The CISCO-TAP2-MIB contains several tables that provide information for lawful intercepts that are running on the router:

- cTap2MediationTable—Contains information about each mediation device that is currently running a lawful intercept on the router. Each table entry provides information that the router uses to communicate with the mediation device (for example, the device's address, the interfaces to send intercepted traffic over, and the protocol to use to transmit the intercepted traffic).
- cTap2StreamTable—Contains information used to identify the traffic to intercept. Each table entry contains a pointer to a filter that is used to identify the traffic stream associated with the target of a lawful intercept. Traffic that matches the filter is intercepted, copied, and sent to the corresponding mediation device application (cTap2MediationContentId).

  The table also contains counts of the number of packets that were intercepted, and counts of dropped packets that should have been intercepted, but were not.
- cTap2DebugTable—Contains debug information for troubleshooting lawful intercept errors.

The CISCO-TAP2-MIB also contains several SNMP notifications for lawful intercept events. For detailed descriptions of MIB objects, see the MIB itself.

CISCO-TAP2-MIB Processing

The admin function (running on the mediation device) issues SNMPv3 **set** and **get** requests to the router's CISCO-TAP2-MIB to set up and initiate a lawful intercept. To do this, the admin function performs the following actions:

1. Creates a cTap2MediationTable entry to define how the router is to communicate with the mediation device executing the intercept.

   Note The cTap2MediationNewIndex object provides a unique index for the mediation table entry.

2. Creates an entry in the cTap2StreamTable to identify the traffic stream to intercept.
3. Sets cTap2StreamInterceptEnable to true(1) to start the intercept. The router intercepts traffic in the stream until the intercept expires (cTap2MediationTimeout).

CISCO-IP-TAP-MIB

The CISCO-IP-TAP-MIB contains the SNMP management objects to configure and execute lawful intercepts on IPv4 traffic streams that flow through the router. This MIB is an extension to the CISCO-TAP2-MIB.

CISCO-802-TAP-MIB

The CISCO-802-TAP-MIB contains the SNMP management objects to configure and execute lawful intercepts on IEEE 802 data streams that flow through the router.

CISCO-USER-CONNECTION-TAP-MIB

The CISCO-USER-CONNECTION-TAP-MIB contains the SNMP management objects to configure and execute wiretaps on individual user connections (sessions) on the router. This MIB contains information about the user connections, each of which is identified by a unique session ID.