



The Cisco SCE-Sniffer DHCP Login Event Generator

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Introduction

This chapter describes the Service Control Subscriber Manager Cisco SCE-Sniffer DHCP Login Event Generator (LEG) software module.

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Information About the Cisco SCE-Sniffer DHCP LEG

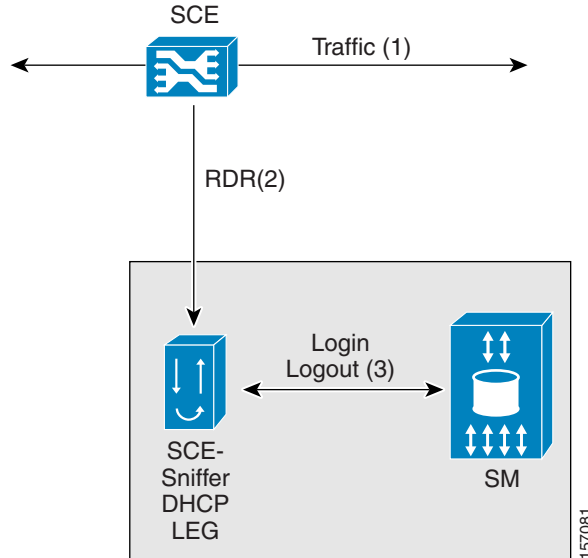
The Cisco Service Control Subscriber Manager Cisco SCE-Sniffer DHCP LEG is a software module that receives Raw Data Record (RDR) messages containing DHCP information from Service Control Engine (SCE) devices configured with a DHCP sniffer service. The Cisco SCE-Sniffer DHCP LEG is an extension of the Cisco Service Control Subscriber Manager software and runs as part of the Cisco Service Control Subscriber Manager.

Cisco SCE-Sniffer DHCP LEG Operation

The Cisco SCE device analyzes DHCP traffic and reports the DHCP transactions to the Subscriber Manager device using the RDR protocol. The Cisco Service Control Subscriber Manager extracts the modem MAC address, the CPE IP address, and optionally, the subscriber package information from the RDR, and triggers a logon or logout operation to the Cisco Service Control Subscriber Manager.

[Figure 14-1](#) represents the operation of the Cisco SCE-Sniffer DHCP LEG:

Figure 14-1 Cisco SCE-Sniffer DHCP LEG Operation



Information About Cisco SCE-Sniffer DHCP LEG Functionality

The Cisco SCE devices analyze the DHCP ACK packets of DHCP transactions and send the information to the Cisco SCE-Sniffer DHCP LEG that resides on the Subscriber Manager. The LEG performs login and logout operations to the Subscriber Manager using the information sent from the SCE devices. The DHCP transactions that are relevant for the operation of the LEG are initial logon, lease extension, and release.

- [DHCP Initial Logon Transaction, page 14-2](#)
- [DHCP Lease Extension Transaction, page 14-3](#)
- [DHCP Release Transaction, page 14-3](#)

DHCP Initial Logon Transaction

The following is a detailed description of the attributes extracted from the DHCP initial logon transaction:

- Subscriber ID

For cable environments—The subscriber ID is the modem MAC address, which you extract from option 82 (Remote-ID sub-option of the DHCP Relay Agent Information Option). Therefore, for a successful logon operation, it is required that option 82 contains the modem MAC address in the DHCP initial logon transaction. If option 82 is missing, it is not possible to perform a logon operation. Furthermore, the value of option 82 is compared with the **haddr** field to identify modem transactions and not login the modem IP address to the Subscriber Manager.

For non-cable DHCP environments—The LEG supports using other DHCP options for the subscriber ID. If the DHCP option does not exist in the packet, it is possible to use the IP address as a fallback. In this case, the subscriber ID is in the format IP_a.b.c.d.

The chain of decisions regarding the subscriber-ID is as follows:

- a. Use the configured DHCP option as the subscriber-ID if it exists.
 - b. Otherwise, if the fallback to IP is enabled, use the IP address.
 - c. Otherwise, attempt to extend the lease based solely on the IP address. (This will only work if the IP address is in the database).
- IP address

Each subscriber might have multiple IP addresses, depending on the number of CPE devices connected to the modem. A logon operation is triggered for each *assigned IP address* in the DHCP message.

If the transaction correlates to a CPE device, the assigned IP address for that CPE device is added to the Subscriber Manager database. The IP address of the modem is not added to the Subscriber Manager database. If the transaction correlates to a modem device, no IP mappings are added to the Subscriber Manager database, but a logon operation is performed anyway to update package information.

- Lease time

If the transaction correlates to a CPE device, the assigned IP is added to the Subscriber Manager database with a lease time taken from option 51 (lease time option).

Note that option 51 must contain the lease time; otherwise, no logon operation is performed.

- Policy

The policy information is assigned according to configurable options in the DHCP message. The LEG includes a component that converts the package information data from the DHCP packet to a subscriber package ID. If the packet does not contain package information, it is possible to log in the subscriber with a default package, or log in the subscriber with no package information at all.

After extracting the above information, the LEG performs a logon operation to the Subscriber Manager.

DHCP Lease Extension Transaction

The same attributes are extracted from the DHCP lease extension transaction as for the DHCP initial logon transaction, but the existence of option 82 is not required. If the modem MAC address cannot be retrieved from option 82, the Subscriber Manager database is queried for this information.

DHCP Release Transaction

The DHCP release transaction is handled differently to the other DHCP transactions. If the transaction correlates to a CPE device, the LEG performs an Subscriber Manager logout operation with the IP address of the CPE, which appears as a released IP address in the packet itself.



Note

A logout operation is also performed when the lease time of the subscriber is expired, and the Subscriber Manager is configured to perform auto logouts. Release transactions also trigger logout operations, but do not replace the auto logout mechanism of the Subscriber Manager.

Cisco SCE-Sniffer DHCP LEG and SNMP-BG

Effective with Cisco SCE Release 4.1.0, the Cisco SCE-Sniffer DHCP LEG can work with SNMP-BG wherein the Cisco SCE-Sniffer DHCP LEG introduces subscribers to the Cisco Service Control Subscriber Manager and the SNMP-BG process associates the subscriber to a Vlink ID.

This is achieved by having the subscriber giaddr to be the same as the IP address of the CMTS device so that the SNMP-BG process places the subscriber in the primary queue of the respective CMTS to retrieve the Vlink ID.

To associate the subscriber giaddr value as the CMTS IP address, configure the giaddr_ip parameter.

For more details on configuring the Cisco SCE-Sniffer LEG, see the [“Configuring the General Settings” section on page 15-1](#).