



# Configuring ISG Accounting

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The Intelligent Services Gateway (ISG) is a Cisco software feature set that provides a structured framework to edge devices that can deliver flexible and scalable services to subscribers. This module describes how to configure ISG accounting, including per-session accounting or per-flow accounting, broadcast accounting, and postpaid tariff switching.

- [Finding Feature Information, page 1](#)
- [Restrictions for ISG Accounting, page 1](#)
- [Information About ISG Accounting, page 2](#)
- [How to Configure ISG Accounting, page 4](#)
- [Configuration Examples for ISG Accounting, page 15](#)
- [Additional References, page 16](#)
- [Feature Information for ISG Accounting, page 17](#)

## Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table at the end of this module.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

## Restrictions for ISG Accounting

- Intelligent Services Gateway (ISG) accounting supports only the RADIUS protocol.
- If authentication, authorization, and accounting (AAA) broadcast accounting is used with periodic accounting, you cannot configure different accounting periods for different accounting groups.



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# Information About ISG Accounting

- [Overview of ISG Accounting, page 2](#)
- [ISG Accounting Records, page 3](#)
- [Interim ISG Accounting Updates, page 3](#)
- [Broadcast ISG Accounting, page 3](#)
- [ISG Postpaid Tariff Switching, page 4](#)

## Overview of ISG Accounting

ISG supports both per-session and per-flow accounting. Per-session accounting is the aggregate of all the flow traffic for a session. Per-session accounting can be enabled in a user profile or in a service profile or service policy map.

Per-flow accounting, which accounts for a subset of session traffic as defined by a traffic class, is enabled in a service profile or service policy map. When per-flow accounting is configured, the Parent-Session-ID vendor-specific attribute (VSA) is included in accounting records so that per-session and per-flow accounting records can be correlated in the RADIUS server.

When accounting is configured in a user profile, the service name attribute is not included in accounting records.

Session accounting is enabled if the **aaa accounting network default** command is configured and a AAA method list is specified. (It is recommended that you use a named method list rather than the default method list.) Flow accounting is disabled by default and will take place only if a AAA method list is specified in the service profile or service policy map. ISG accounting sends Accounting-Start, interim, and Accounting-Stop records to the specified AAA method list.

- [ISG Accounting Messages on ANCP Ports, page 2](#)

## ISG Accounting Messages on ANCP Ports

Accounting messages sent by Intelligent Services Gateway (ISG) for sessions on an Access Node Control Protocol (ANCP) port contain the following authentication, authorization, and accounting (AAA) attributes:

- nas-rx-speed
- nas-rx-speed-bps
- nas-tx-speed
- nas-tx-speed-bps

ISG retrieves the values for these attributes from the Digital Subscriber Line Access Multiplexer (DSLAM) ANCP notification sent to ISG or from the quality of service (QoS) policy configured on the interface.

When an ANCP port is in an up state, the attribute values are taken from the DSLAM ANCP notification sent to ISG. If the ANCP port state changes to a down state, the ANCP accounting messages will continue to contain the AAA attributes sent in the DSLAM notification.

If the ANCP port state has never been set to up, ISG can retrieve the nas-tx-speed, nas-tx-speed-bps, nas-rx-speed, and nas-rx-speed-bps AAA attributes from the QoS policy on that interface.

To retrieve the AAA attributes from the QoS policy, the policy must be configured before the configuration of the ANCP neighbor; otherwise, ISG uses the previous values (if any) for the AAA attributes when a session is established.

If the QoS policy values are changed, ISG continues to use the previous values until the ANCP neighbor is removed and reconfigured.

## ISG Accounting Records

Intelligent Services Gateway (ISG) accounting uses the RADIUS protocol to facilitate interaction between ISG and an external RADIUS-based authentication, authorization, and accounting (AAA) server or a mediation server. ISG sends accounting records with the associated attributes to the AAA accounting method list when the following events occur—account logon, account logoff, service logon, and service logoff. The accounting server can be configured to interpret the accounting records to generate bills for postpaid sessions.

### Account Logon and Logoff

ISG sends a RADIUS Accounting-Request record to the specified AAA method list when a subscriber logs on to or out of ISG. The Acct-Status-Type attribute included in the Accounting-Request record indicates if the record marks the start (commencement) of the subscriber session or the stop (termination) of the session.

When the **aaa accounting** command is enabled with the **system**, **default**, **start-stop**, and **group** keywords, accounting records are sent to the AAA server. When a subscriber logs on, ISG sends an Accounting-Start record to the AAA server. When a subscriber logs off, ISG sends an Accounting-Stop record to the AAA server.

### Service Logon and Logoff

ISG sends a RADIUS Accounting-Start record to the AAA server when a service is activated for a subscriber, and it sends an Accounting-Stop record when a service is deactivated. The record contains an accounting session ID that is different from the accounting session ID of the parent session.

The Acct-Status-Type attribute included in the Accounting-Request record indicates whether the record marks the start or the end of the service. The name of the service is included in accounting records for service logon and logoff.

Accounting records may be sent for events other than account and service logon and logoff. See the *Securing User Services Configuration Guide Library* for more information.

## Interim ISG Accounting Updates

Intelligent Services Gateway (ISG) supports interim (intermittent) RADIUS accounting updates that work the same way as “watchdog” RADIUS accounting. Accounting updates are sent between the time that ISG sends Accounting-Start and Accounting-Stop records.

ISG supports two types of interim accounting—accounting updates for new information (such as a new IP address) and periodic accounting, in which accounting records are sent at a configurable interval.

Interim accounting can be enabled or disabled globally for new information. Periodic accounting can be enabled for specific contexts, such as globally, in user profiles, and in services.

## Broadcast ISG Accounting

ISG supports AAA broadcast accounting, which is the ability to send user accounting records to multiple RADIUS servers. AAA broadcast accounting provides service providers with geographical redundancy for RADIUS servers, and provides accounting records to partners in wholesale models. For information about

configuring AAA broadcast accounting, see the "Configuring Accounting" chapter in the "Authentication, Authorization, and Accounting" part of the *Cisco IOS Security Configuration Guide*.

## ISG Postpaid Tariff Switching

The Intelligent Services Gateway (ISG) Postpaid Tariff Switching feature allows changes in tariffs during the lifetime of a connection. This feature applies to time-based or volume-based postpaid sessions in which the tariff changes at certain times of the day.

Typically, a service provider would use postpaid tariff switching to offer different tariffs to a subscriber while the subscriber is still connected. For example, changing a subscriber to a less expensive tariff during off-peak hours.

To handle tariff switches for postpaid connections, accounting packets log the usage information during the various tariff-switch intervals. The service profile contains a weekly tariff-switch plan detailing the times of day during which tariff changes occur. ISG monitors the usage at every tariff-switch point and records this information in interim accounting records. The billing server monitors all the interim accounting updates and obtains the information about the traffic sent at each tariff rate.

**Note**

Tariff switching is not required for time-based billing services. Because the billing server knows the service logon and logoff time stamps, it can calculate the various tariffs that apply during that time.

## How to Configure ISG Accounting

- [Enabling ISG Per-Session Accounting, page 4](#)
- [Enabling ISG per-Flow Accounting, page 8](#)
- [Configuring ISG Postpaid Tariff Switching, page 10](#)
- [Verifying ISG Accounting and Postpaid Tariff Switching, page 11](#)

## Enabling ISG Per-Session Accounting

Per-session accounting can be configured in the following configuration sources:

- User profile on a AAA server
- Service profile on a AAA server
- Service policy map on the ISG device

This procedure contains the following sections:

- [Prerequisites, page 5](#)
- [Enabling ISG per-Session Accounting in a User Profile on a AAA Server, page 5](#)
- [Enabling Per-Session Accounting in a Service Profile on a AAA Server, page 5](#)
- [Enabling Per-Session Accounting in a Service Policy Map on the Router, page 6](#)
- [What to Do Next, page 7](#)
- [Troubleshooting ISG Accounting, page 7](#)

## Prerequisites

- AAA method list must be configured by using the **aaa accounting** command. ISG sends accounting records to the authentication, authorization, and accounting (AAA) method list specified in the user profile, service profile, or service policy map. See the *Cisco IOS Security Command Reference* for more information.
- AAA servers must be configured to support ISG accounting.

## Enabling ISG per-Session Accounting in a User Profile on a AAA Server

Use the attributes given in this procedure to enable per-session accounting in a user profile on an authentication, authorization, and accounting (AAA) server.

**Note**

You must configure a service for an accounting list before enabling a per-session accounting in a user profile. A per-session accounting list cannot be applied on a session in Intelligent Services Gateway (ISG) if a service is not configured; that is, you must have a dummy service configured under the accounting list when there is no service configured.

### SUMMARY STEPS

1. Cisco-Attribute-Value pair (AVpair)="accounting-list=*accounting-mlist-name*"
2. IETF RADIUS attribute Acct-Interim-Interval (attribute 85)

### DETAILED STEPS

- 
- Step 1** Cisco-Attribute-Value pair (AVpair)="accounting-list=*accounting-mlist-name*"  
Adds the Accounting attribute to the user profile. This attribute enables accounting and specifies the AAA method list to which accounting updates will be sent.
- Step 2** IETF RADIUS attribute Acct-Interim-Interval (attribute 85)  
(Optional) Adds the Acct-Interim-Interval (attribute 85) to the user profile. This attribute specifies the number of seconds between interim updates.
- 

## Enabling Per-Session Accounting in a Service Profile on a AAA Server

Use the attributes in this procedure to enable per-session accounting in a service profile on a AAA server. Note that for per-session accounting the traffic class attribute should not be included in the service profile.

### SUMMARY STEPS

1. Cisco-Avpair="accounting-list=*accounting-mlist-name* "
2. IETF RADIUS attribute Acct-Interim-Interval (attribute 85)

## DETAILED STEPS

- 
- Step 1** Cisco-Avpair="accounting-list=*accounting-mlist-name* "  
Add the Accounting attribute to the service profile. This attribute enables accounting and specifies the AAA method list to which accounting updates will be sent.
- Step 2** IETF RADIUS attribute Acct-Interim-Interval (attribute 85)  
(Optional) Add the Acct-Interim-Interval (attribute 85) to the service profile. This attribute specifies the number of seconds between interim updates.
- 

## Enabling Per-Session Accounting in a Service Policy Map on the Router

To configure per-session accounting in a service policy map on the router, you must configure an empty traffic class map (a traffic class map that does not specify an access list) and enable accounting within the empty traffic class in a service policy map. Perform this task to enable per-session accounting in a service policy map.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **class-map type traffic match-any** *class-map-name*
4. **exit**
5. **policy-map type service** *policy-map-name*
6. [*priority*] **class type traffic** *class-map-name*
7. **accounting aaa list** *AAA-method-list*

### DETAILED STEPS

Command or Action	Purpose
<p><b>Step 1</b> <b>enable</b></p> <p><b>Example:</b></p> <pre>Router&gt; enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<p><b>Step 2</b> <b>configure terminal</b></p> <p><b>Example:</b></p> <pre>Router# configure terminal</pre>	<p>Enters global configuration mode.</p>

Command or Action	Purpose
<p><b>Step 3</b> <code>class-map type traffic match-any class-map-name</code></p> <p><b>Example:</b></p> <pre>Router(config)# class-map type traffic match-any empty-class</pre>	<p>Creates or modifies a traffic class map, which is used for matching packets to a specified ISG traffic class, and enters traffic class-map configuration mode.</p> <ul style="list-style-type: none"> <li>For per-session accounting, create an empty traffic class map; that is, a traffic class map that does not specify an access list for matching traffic.</li> </ul>
<p><b>Step 4</b> <code>exit</code></p> <p><b>Example:</b></p> <pre>Router(config-traffic-classmap)# exit</pre>	<p>Exits traffic class-map configuration mode.</p>
<p><b>Step 5</b> <code>policy-map type service policy-map-name</code></p> <p><b>Example:</b></p> <pre>Router(config)# policy-map type service service1</pre>	<p>Creates or defines a service policy map, which is used to define an ISG service, and enters service policy-map configuration mode.</p>
<p><b>Step 6</b> <code>[priority] class type traffic class-map-name</code></p> <p><b>Example:</b></p> <pre>Router(config-service-policymap)# class type traffic empty-class</pre>	<p>Specifies a named traffic class whose policy you want to create or change, and enters service policy traffic class configuration mode.</p> <ul style="list-style-type: none"> <li>In this step, reference the empty traffic class map that you created in Step 3.</li> </ul>
<p><b>Step 7</b> <code>accounting aaa list AAA-method-list</code></p> <p><b>Example:</b></p> <pre>Router(config-service-policymap-class- traffic)# accounting aaa list list1</pre>	<p>Enables accounting and specifies the AAA method list to which accounting updates will be sent.</p>

## What to Do Next

You may want to configure a method of activating the service policy map or service profile; for example, control policies can be used to activate services. For more information about methods of service activation, see the module "Configuring ISG Subscriber Services".

## Troubleshooting ISG Accounting

Use the following commands to troubleshoot ISG accounting:

- `debug aaa accounting`
- `debug radius [brief]`
- `debug subscriber feature name accounting {event | error | detail}`

## Enabling ISG per-Flow Accounting

Intelligent Services Gateway (ISG) per-flow accounting can be configured in the following configuration sources:

- Service profile on a AAA server
- Service policy map on the ISG device

This procedure contains the following sections:

- [Prerequisites, page 8](#)
- [Enabling ISG per-Flow Accounting in a Service Profile on the AAA Server, page 8](#)
- [Enabling ISG per-Flow Accounting in a Service Policy Map, page 9](#)
- [Troubleshooting Tips, page 10](#)
- [What to Do Next, page 10](#)

### Prerequisites

- AAA method list must be configured by using the **aaa accounting** command. ISG sends accounting records to the authentication, authorization, and accounting (AAA) method list specified in the user profile, service profile, or service policy map. See the *Cisco IOS Security Command Reference* for more information.
- AAA servers must be configured to support ISG accounting.

### Enabling ISG per-Flow Accounting in a Service Profile on the AAA Server

Perform this task to configure a per-flow accounting in a service profile on the authentication, authorization, and accounting (AAA) server.

This task assumes that you have defined IP access lists for specifying the traffic.

#### SUMMARY STEPS

1. Cisco-AVpair="ip:traffic-class={in | out} access-group [*acl-number* | name *acl-name*] [priority *n*]"
2. Cisco-AVpair="accounting-list=*accounting-mlist-name*"
3. IETF RADIUS attribute Acct-Interim-Interval (attribute 85)

#### DETAILED STEPS

- 
- Step 1** Cisco-AVpair="ip:traffic-class={in | out} access-group [*acl-number* | name *acl-name*] [priority *n*]"  
Adds the Intelligent Services Gateway (ISG) traffic class attribute to the service profile. This attribute specifies the input and output traffic to which the service will apply. Both an input and output traffic classifier can be added to a service profile.
- Step 2** Cisco-AVpair="accounting-list=*accounting-mlist-name*"  
Adds the accounting attribute to the service profile on the AAA server. This attribute enables accounting and specifies the AAA method list to which accounting updates will be sent. The AAA method list must be configured.

**Note** If this attribute is configured in a service profile that does not include a traffic class, accounting is performed on the session rather than on the flow.

- Step 3** IETF RADIUS attribute Acct-Interim-Interval (attribute 85)  
(Optional) Adds the IETF RADIUS attribute Acct-Interim-Interval (attribute 85) to the service profile on the AAA server. This attribute specifies the number of seconds between interim updates.

## Enabling ISG per-Flow Accounting in a Service Policy Map

Perform this task to enable accounting in a local service policy map for the device for a specific flow.

This task assumes that you have defined a traffic class map and associated IP access lists. See the module “Configuring ISG Subscriber Services” for more information about configuring traffic classes.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **policy-map type service** *policy-map-name*
4. **class type traffic** *class-map-name*
5. **accounting aaa list** *AAA-method-list*
6. **end**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b>  <b>Example:</b>  Device> enable	Enables privileged EXEC mode.  <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>configure terminal</b>  <b>Example:</b>  Device# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>policy-map type service</b> <i>policy-map-name</i>  <b>Example:</b>  Device(config)# policy-map type service service1	Creates or defines a service policy map, which is used to define an Intelligent Services Gateway (ISG) service and enters service policy-map configuration mode.

Command or Action	Purpose
<p><b>Step 4</b> <code>class type traffic class-map-name</code></p> <p><b>Example:</b></p> <pre>Device(config-service-policy-map)# class type traffic firstclass</pre>	<p>Associates a previously configured traffic class with the policy map and enters control policy-map traffic class configuration.</p>
<p><b>Step 5</b> <code>accounting aaa list AAA-method-list</code></p> <p><b>Example:</b></p> <pre>Device(config-control-policy-map-class-traffic)# accounting aaa list list1</pre>	<p>Enables accounting and specifies the authentication, authorization, and accounting (AAA) method list to which accounting updates will be sent.</p> <ul style="list-style-type: none"> <li>The AAA method list must be configured.</li> </ul>
<p><b>Step 6</b> <code>end</code></p> <p><b>Example:</b></p> <pre>Device(config-control-policy-map-class-traffic)# end</pre>	<p>Returns to privileged EXEC mode.</p>

## Troubleshooting Tips

The following commands can be used to troubleshoot ISG accounting:

- `debug aaa accounting`
- `debug radius [brief]`
- `debug subscriber feature name accounting {event | error | detail}`

## What to Do Next

You may want to configure a method of activating the service policy map or service profile; for example, control policies can be used to activate services. For more information about methods of service activation, see the module "Configuring ISG Subscriber Services".

## Configuring ISG Postpaid Tariff Switching

ISG postpaid tariff switching can be configured in the service profile on a authentication, authorization, and accounting (AAA) server.

If you include a traffic class in the service profile, postpaid tariff switching will apply to the specified flow. If you do not configure a traffic class, postpaid tariff switching will apply to the session. Perform this task to configure per-session or per-flow postpaid tariff switching.

Intelligent Services Gateway (ISG) per-session or per-flow accounting must be configured for postpaid tariff switching to work.

**SUMMARY STEPS**

1. Cisco-AVpair = “PPWhh:mm:ss:d”
2. Cisco-AVpair = “ip:traffic-class={in | out} access-group [acl-number | name acl-name ] [priority n ]”

**DETAILED STEPS****Step 1**

Cisco-AVpair = “PPWhh:mm:ss:d”

Adds the postpaid VSA to the service profile. This attribute specifies the weekly tariff-switch points for postpaid tariff switching. The syntax description is as follows:

*hh :mm:ss:d*—Weekly tariff-switch time.

- hh = hour of day <0-23>
- mm = minutes <0-59>
- ss = seconds <0-59>
- d = bitmap format for the days of week. Each weekday is represented by one bit, as follows:
  - 00000001 = Monday
  - 00000010 = Tuesday
  - 00000100 = Wednesday
  - 00001000 = Thursday
  - 00010000 = Friday
  - 00100000 = Saturday
  - 01000000 = Sunday

**Step 2**

Cisco-AVpair = “ip:traffic-class={in | out} access-group [acl-number | name acl-name ] [priority n ]”

Adds the ISG traffic class attribute to the service profile. This attribute specifies input and output traffic to which the service will apply. Both an input and output traffic classifier can be added to a service profile.

- [What to Do Next, page 11](#)

**What to Do Next**

You may want to configure a method of activating the service policy map or service profile. For example, control policies can be used to activate services. For more information about methods of service activation, see the “Configuring ISG Subscriber Services” module.

**Verifying ISG Accounting and Postpaid Tariff Switching**

- Use the **show subscriber session** command to verify ISG accounting and postpaid tariff switching configuration.
- Use the **show aaa sessions** command to display information about AAA subscriber sessions.
- Use the **show aaa user** command to display information about AAA subscribers.
- [Examples, page 12](#)

## Examples

This section contains the examples of output from the commands used for verification.

### show subscriber session Output When ISG Accounting Is Applied to a Flow

In the following example, ISG accounting is configured in a service profile that specifies a traffic class, which means that accounting will be performed on the flow and not the parent session. In this example, 157 is the unique ID of the traffic class.

```
Router# show subscriber session detailed uid 157
Subscriber session handle: E5000092, state: connected, service: Ltm Internal
Unique Session ID: 157
Identifier:
SIP subscriber access type(s): Traffic-Class
Root SIP Handle: 2B000011, PID: 76
Current SIP options: Req Fwding/Req Fwded
Session Up-time: 3 minutes, 45 seconds, Last Changed: 3 minutes, 45 seconds
AAA unique ID: 0
Switch handle: F300015F
Session inbound features:
Feature: Service accounting
  Service: video1
  Method List: remote-local
  Outbound direction:
```

Packets = 84, Bytes = 33600

```
Feature: Policing
  Upstream Params:
Average rate = 8000, Normal burst = 1500, Excess burst = 3000
Config level = Service
Session outbound features:
Feature: Service accounting
  Service: video1
  Method List: remote-local
  Outbound direction:
    Packets = 84, Bytes = 33600
Feature: Policing
  Dnstream Params:
Average rate = 64000, Normal burst = 12000, Excess burst = 24000
Config level = Service
Configuration sources associated with this session:
Service: video1, Active Time = 3 minutes, 46 seconds
```

### show subscriber session Output When ISG Accounting Is Applied to a Session

The following example shows sample output from the **show subscriber session** command for a session rather than a flow:

```
Router# show subscriber session detailed uid 730
Subscriber session handle: 3800009A, state: connected, service: Local Term
Unique Session ID: 730
Identifier: igq2acct
SIP subscriber access type(s): IP-Interface/Account-Logon-CH
Root SIP Handle: A600000E, PID: 75
Child SIP Handle: F9000018, PID: 73
Current SIP options: Req Fwding/Req Fwded
Session Up-time: 3 minutes, 57 seconds, Last Changed: 2 minutes, 59 seconds
AAA unique ID: 81
Switch handle: 890003A0
Interface: ATM6/0.1
Policy information:
  Authentication status: authen
  Config downloaded for session policy:
```

```

From Access-Type: Account-Logon-CH, Client: SM, Event: Got More Keys
  Profile name: apply-config-only, 2 references
    ssg-account-info      "SAfoo"
Rules, actions and conditions executed:
  subscriber rule-map rule1
    condition always event any-event
      action 1 authenticate
Session inbound features:
Feature: Session accounting
Method List: foo
Outbound direction:
  Packets = 10, Bytes = 1000
Session outbound features:
Feature: Session accounting
Method List: foo
Outbound direction:
  Packets = 10, Bytes = 1000
Configuration sources associated with this session:

Interface: ATM6/0.1, Active Time = 3 minutes, 58 seconds

```

This example shows the output from the **show aaa sessions** command:

```

Router# show aaa sessions
Total sessions since last reload: 141
Session Id: 167
  Unique Id: 151
  User Name: *not available*
  IP Address: 192.168.0.1
  Idle Time: 0
  CT Call Handle: 0

```

The following examples show the output from the **show aaa user** command:

### Output for a Specific User

```

Unique id 151 is currently in use.
Accounting:
  log=0x20C201
  Events recorded :
    CALL START
    NET UP
    IPCP_PASS
    INTERIM START
    VPDN NET UP
  update method(s) :
    PERIODIC
  update interval = 60
Outstanding Stop Records : 0

```

### Dynamic attribute list:

```

1A1CABE8 0 00000001 connect-progress(68) 4 Call Up
  1A1CABF8 0 00000001 pre-session-time(294) 4 0(0)
  1A1CAC08 0 00000001 nas-tx-speed(421) 4 423630024(194014C8)
  1A1CAC18 0 00000001 nas-rx-speed(71) 4 139317740(84DD1EC)
  1A1CAC28 0 00000001 elapsed_time(364) 4 46122(B42A)
  1A1CAC50 0 00000001 bytes_in(135) 4 11434660(AE7AA4)
  1A1CAC60 0 00000001 bytes_out(274) 4 0(0)
  1A1CAC70 0 00000001 pre-bytes-in(290) 4 0(0)
  1A1CAC80 0 00000001 pre-bytes-out(291) 4 0(0)
  1A1CAC90 0 00000001 paks_in(136) 4 92215(16837)
  1A1CADF0 0 00000001 paks_out(275) 4 0(0)
  1A1CAE00 0 00000001 pre-paks-in(292) 4 0(0)
  1A1CAE10 0 00000001 pre-paks-out(293) 4 0(0)
No data for type EXEC
No data for type CONN
NET: Username=(n/a)
  Session Id=000000A7 Unique Id=00000097
  Start Sent=1 Stop Only=N

```

```

stop_has_been_sent=N
Method List=189F046C : Name = CAR_mlist
Attribute list:
  1A1CADF0 0 00000001 session-id(361) 4 167(A7)
1A1CAE00 0 00000001 protocol(297) 4 ip
  1A1CAE10 0 00000001 addr(8) 4 192.168.0.1
  1A1CAE20 0 00000001 Framed-Protocol(101) 4 PPP
  1A1CAE30 0 00000009 clid-mac-addr(37) 6 00 00 04 00 00 2A
-----
No data for type CMD
No data for type SYSTEM
No data for type RM CALL
No data for type RM VPDN
No data for type AUTH PROXY
No data for type 8
No data for type CALL
No data for type VPDN-TUNNEL
No data for type VPDN-TUNNEL-LINK
No data for type 12
No data for type IPSEC-TUNNEL
No data for type RESOURCE
No data for type 15
Dbg: No data available
Radi: No data available
Interface:
  TTY Num = -1
  Stop Received = 0
  Byte/Packet Counts till Call Start:
Start Bytes In = 0          Start Bytes Out = 0
  Start Paks In = 0          Start Paks Out = 0
  Byte/Packet Counts till Service Up:
  Pre Bytes In = 0          Pre Bytes Out = 0
  Pre Paks In = 0          Pre Paks Out = 0
  Cumulative Byte/Packet Counts :
  Bytes In = 11434660      Bytes Out = 0
  Paks In = 92215         Paks Out = 0
  StartTime = 12:02:40 IST Oct 16 2007
  AuthenTime = 12:02:40 IST Oct 16 2007
  Component = IEDGE_ACCOUNTING
Authen: service=NONE type=NONE method=RADIUS
Kerb: No data available
Meth: No data available
Preauth: No Preauth data.
General:
  Unique Id = 00000097
  Session Id = 000000A7
  Attribute List:
    1A1CADF0 0 00000001 port-type(198) 4 PPPoE over VLAN
    1A1CAE00 0 00000009 interface(194) 7 4/0/0/2
PerU: No data available

```

## Output for All Users

```
Router# show aaa user all
```

```

-----
Unique id 151 is currently in use.
Accounting:
  log=0x20C201
  Events recorded :
    CALL START
    NET UP
    IPCP_PASS
    INTERIM START
    VPDN NET UP
  update method(s) :
    PERIODIC
  update interval = 60
Outstanding Stop Records : 0
Dynamic attribute list:
  1A1CABE8 0 00000001 connect-progress(68) 4 Call Up
  1A1CABF8 0 00000001 pre-session-time(294) 4 0(0)

```

```

1A1CAC08 0 00000001 nas-tx-speed(421) 4 423630024(194014C8)
1A1CAC18 0 00000001 nas-rx-speed(71) 4 139317740(84DD1EC)
1A1CAC28 0 00000001 elapsed_time(364) 4 46122(B42A)
1A1CAC50 0 00000001 bytes_in(135) 4 11434660(AE7AA4)
1A1CAC60 0 00000001 bytes_out(274) 4 0(0)
1A1CAC70 0 00000001 pre-bytes-in(290) 4 0(0)
1A1CAC80 0 00000001 pre-bytes-out(291) 4 0(0)
1A1CAC90 0 00000001 paks_in(136) 4 92215(16837)
1A1CADF0 0 00000001 paks_out(275) 4 0(0)
1A1CAE00 0 00000001 pre-paks-in(292) 4 0(0)
1A1CAE10 0 00000001 pre-paks-out(293) 4 0(0)
No data for type EXEC
No data for type CONN
NET: Username=(n/a)
Session Id=000000A7 Unique Id=00000097
Start Sent=1 Stop Only=N
stop_has_been_sent=N
Method List=189F046C : Name = CAR_mlist
Attribute list:
  1A1CADF0 0 00000001 session-id(361) 4 167(A7)
1A1CAE00 0 00000001 protocol(297) 4 ip
  1A1CAE10 0 00000001 addr(8) 4 192.168.0.1
  1A1CAE20 0 00000001 Framed-Protocol(101) 4 PPP
  1A1CAE30 0 00000009 clid-mac-addr(37) 6 00 00 04 00 00 2A
-----
No data for type CMD
No data for type SYSTEM
No data for type RM CALL
No data for type RM VPDN
No data for type AUTH PROXY
No data for type 8
No data for type CALL
No data for type VPDN-TUNNEL
No data for type VPDN-TUNNEL-LINK
No data for type 12
No data for type IPSEC-TUNNEL
No data for type RESOURCE
No data for type 15
Debug: No data available
Radi: No data available
Interface:
  TTY Num = -1
  Stop Received = 0
  Byte/Packet Counts till Call Start:
Start Bytes In = 0           Start Bytes Out = 0
Start Paks In = 0           Start Paks Out = 0
  Byte/Packet Counts till Service Up:
Pre Bytes In = 0           Pre Bytes Out = 0
Pre Paks In = 0           Pre Paks Out = 0
  Cumulative Byte/Packet Counts :
Bytes In = 11434660       Bytes Out = 0
Paks In = 92215           Paks Out = 0
StartTime = 12:02:40 IST Oct 16 2007
AuthenTime = 12:02:40 IST Oct 16 2007
Component = IEDGE_ACCOUNTING
Authen: service=NONE type=NONE method=RADIUS
Kerb: No data available
Meth: No data available
Preauth: No Preauth data.
General:
  Unique Id = 00000097
  Session Id = 000000A7
  Attribute List:
    1A1CADF0 0 00000001 port-type(198) 4 PPPoE over VLAN
    1A1CAE00 0 00000009 interface(194) 7 4/0/0/2
PerU: No data available

```

## Configuration Examples for ISG Accounting

- [Example: Enabling ISG per-Flow Accounting, page 16](#)
- [Example: Configuring Postpaid Tariff Switching, page 16](#)

## Example: Enabling ISG per-Flow Accounting

### Example: Enabling ISG per-Flow Accounting in a Service Profile on the AAA Server

The following example shows Intelligent Services Gateway (ISG) per-flow accounting configured in a remote service profile for a service called “video1”:

```
video1      Password = "cisco"
Cisco-AVpair = "traffic-class=input access-group 101 priority 20",
Cisco-AVpair = "traffic-class=output access-group 112 priority 20",
Cisco-Avpair = "accounting-list=remote-local",
Service-Info = "QU;8000",
Service-Info = "QD;64000"
```

### Example: Enabling ISG per-Flow Accounting in a Service Policy Map

The following example shows ISG per-flow accounting configured in a service policy map for a service called “video1”:

```
class-map type traffic match-any video1
  match access-group output 101
  match access-group input 100
!
policy-map type service video1
  class type traffic video1
    accounting aaa list mlist1
```

## Example: Configuring Postpaid Tariff Switching

The following example shows the configuration of a postpaid tariff switch each day of the week at midnight:

```
Cisco-AVpair = "PPW00:00:00:127"
```

The following example shows the configuration of a postpaid tariff switch Monday through Friday at 8:00 p.m.:

```
Cisco-AVpair = "PPW20:00:00:31"
```

The following example shows the configuration of a postpaid tariff switch Monday through Friday at 6:00 a.m.:

```
Cisco-AVpair = "PPW06:00:00:31"
```

## Additional References

**Related Documents**

<b>Related Topic</b>	<b>Document Title</b>
Cisco IOS commands	<i>Cisco IOS Master Command List, All Releases</i>
ISG commands	<i>Cisco IOS Intelligent Services Gateway Command Reference</i>
AAA configuration tasks	<i>Authentication, Authorization, and Accounting Configuration Guide</i>
AAA commands	<i>Cisco IOS Security Command Reference: Commands A to C</i>
Configuring ISG subscriber services	“Configuring ISG Subscriber Services” section in the <i>Intelligent Services Gateway Configuration Guide</i>
HA commands	<i>Cisco IOS High Availability Command Reference</i>
HA configuration	<i>Cisco IOS XE High Availability Configuration Guide</i>

**Technical Assistance**

<b>Description</b>	<b>Link</b>
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

## Feature Information for ISG Accounting

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

**Table 1**      **Feature Information for ISG Accounting**

Feature Name	Releases	Feature Configuration Information
ISG: Accounting: Per Session, Service, and Flow	12.2(28)SB 12.2(33)SRC 12.2(33)XNE 15.0(1)S	<p>ISG accounting provides the means to bill for account or service use. ISG accounting uses the RADIUS protocol to facilitate interaction between ISG and an external RADIUS-based AAA or mediation server.</p> <p>In Cisco IOS Release 12.2(33)SRC, support was added for the Cisco 7600 router.</p> <p><b>Note</b> Per-flow accounting based on traffic class and per-service accounting are not supported on the Cisco 7600 router.</p>
ISG: Accounting: Postpaid	12.2(28)SB 12.2(33)SRC 12.2(33)XNE	<p>ISG accounting provides the means to bill for account or service use. ISG sends accounting start and stop records for sessions and services to an accounting server for postpaid billing. The accounting server interprets the records to generate bills.</p> <p>In 12.2(28)SB, this feature was introduced.</p> <p>This feature was integrated into Cisco IOS Release 12.2(33)SRC.</p>

Feature Name	Releases	Feature Configuration Information
ISG: Accounting: Tariff Switching	12.2(28)SB 12.2(33)SRC 12.2(33)XNE	<p data-bbox="1154 289 1520 695">ISG accounting provides the means to bill for account or service usage. Where billing rates change at fixed times and sessions are active across the boundary at which the rates change, ISG will provide accounting data to the billing server indicating the boundary. Tariff switching can also be used between accounting methods, such as switching from prepaid billing to postpaid billing.</p> <p data-bbox="1154 716 1520 770">In 12.2(28)SB, this feature was introduced.</p> <p data-bbox="1154 791 1520 846">This feature was integrated into Cisco IOS Release 12.2(33)SRC.</p> <p data-bbox="1154 867 1520 989"><b>Note</b> Per-flow accounting based on traffic class cannot be configured on the Cisco 7600 router.</p>

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