


This article contains the following procedures:

- [Configuring the Duration and Time Periods of Call Statistics on the Gateway](#) (required)
- [Configuring the Gateway to Collect Signaling Statistics](#) (required)
- [Configuring the Gateway to Collect VoIP AAA Accounting Statistics](#) (required)
- [Configuring the FTP Server to Enable Archiving of Statistics from the Gateway](#) (optional)

 **Note:** If you need to obtain statistical information since reboot, the configuration should be stored in NVRAM before you restart the gateway.

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## Summary of Configuration Tasks

There are two general areas of configuration—one for the collection of signaling statistics and one for the collection of accounting statistics. The tasks required will depend on whether you configure the gateway to collect signaling statistics only, accounting statistics only, or both signaling and accounting statistics.

### Required Task for Collection of All Call Statistics

Configure the duration or time period for when call statistics are collected on the gateway. See the [Configuring the Duration and Time Periods of Call Statistics on the Gateway](#).

**Required Task for Signaling Statistics**

Configure the gateway to support the collection of signaling statistics. See the [Enabling the Gateway to Collect Signaling Statistics](#).

**Optional Task for Signaling Statistics**


Configure the call statistics record signaling parameters, changing the default values as needed. See the [Configuring the Minimum Call Duration and Signaling Thresholds](#)

**Required Tasks for Accounting Statistics (Configured in This Order)**

1. Configure the gateway to support the collection of accounting statistics. See the [Enabling the Collection of VoIP AAA Accounting Statistics on the Gateway](#).
2. Configure accounting on the gateway. Refer to the **gw-accounting aaa** command configuration in the [Voice Configuration Library](#).
3. Specify that the accounting update is new information. Refer to the **aaa accounting update new-info** command configuration in the [Cisco IOS Security Configuration Guide](#), and the [Cisco IOS Security Command Reference](#).
4. Define the AAA RADIUS server group. Refer to the **aaa group server radius** command configuration in the [Cisco IOS Security Configuration Guide](#), and the [Cisco IOS Security Command Reference](#).
5. Define a designated broadcast accounting server group (**accounting acknowledge broadcast** command). See the [Configuring a Designated Server Group for a Broadcast Method List](#).
6. Define the RADIUS server host, port, key, and vendor specific attributes (VSAs). Refer to the [Cisco IOS Security Configuration Guide](#), and the [Cisco IOS Security Command Reference](#).


**Optional Tasks for Both Signaling and Accounting Statistics (Configured in Any Order)**

Configure the FTP server or syslog server download. See the [Configuring the Gateway to Archive Statistics to an FTP Server](#) and the [Configuring the Gateway to Archive Statistics to a Syslog Server](#).

 **Note:** Before configuring the gateway to archive statistics to an FTP server, you must first configure the FTP server to support the archiving process. See the [Configuring the FTP Server to Enable Archiving of Statistics from the Gateway](#).

**Configuring the Duration and Time Periods of Call Statistics on the Gateway**

Before you configure the gateway to collect call signaling statistics, VoIP AAA accounting statistics, or Cisco VoIP internal error codes (IECs), you must first configure the duration and time periods for when the call statistics are collected. There are three methods for collecting call statistics: periodic, since the last reset, and for specific times.

 **Note:** These interval methods are mutually exclusive, meaning that the gateway can be configured for only one collection interval at a time. The collection interval configured applies to all call statistics collected. For example, if you configure the collection interval for a periodic interval, and you configure the gateway to collect both signaling and VoIP AAA accounting statistics, then both types of statistics will be collected on the periodic basis.

To configure the duration and time period of when call statistics will be collected on the gateway, see one of the following sections:

- [Configuring the Gateway to Collect Call Statistics on a Periodic Basis](#)
- [Configuring the Gateway to Collect Call Statistics Since the Last Reset](#)
- [Configuring the Gateway to Collect Call Statistics for a Specific Time Interval](#)

## Configuring the Gateway to Collect Call Statistics on a Periodic Basis

This task configures the gateway to collect call statistics on a periodic basis.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **voice statistics time-range periodic interval *hh:mm* {days-of-week {Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday | daily | weekdays | weekend}} [end *hh:mm* {days-of-week {Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday}}]**
4. **exit**

### DETAILED STEPS

	Command or Action	Purpose
1.	<p><b>enable</b></p> <p>Example:</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>
2.	<p><b>configure terminal</b></p> <p>Example:</p> <pre>Router# configure terminal</pre>	<p>Enters global configuration mode.</p>
3.	<p><b>voice statistics time-range periodic interval <i>hh:mm</i> {days-of-week {Monday   Tuesday   Wednesday   Thursday   Friday   Saturday   Sunday   daily   weekdays   weekend}} [end <i>hh:mm</i> {days-of-week {Monday   Tuesday   Wednesday   Thursday   Friday   Saturday   Sunday}}]</b></p> <p>Example:</p> <pre>Router(config)# voice statistics time-range periodic 60minutes start 12:00 days-of-week Monday end 12:00 days-of-week Friday</pre>	<p>Configures the gateway to collect call statistics on a periodic basis.</p>
4.	<p><b>exit</b></p> <p>Example:</p> <pre>Router(config)# exit</pre>	<p>Exits global configuration mode.</p>

### Configuring the Gateway to Collect Call Statistics Since the Last Reset

This task configures the gateway to collect call statistics since the last time the **clear voice statistics** command was entered, or since the last time the gateway was rebooted.

**SUMMARY STEPS**

1. **enable**
2. **configure** terminal
3. **voice statistics time-range since-reset**
4. **exit**

**DETAILED STEPS**

	<b>Command or Action</b>	<b>Purpose</b>
1.	<b>enable</b> Example: <pre>Router&gt; enable</pre>	Enables privileged EXEC mode.  • Enter your password if prompted.
2.	<b>configure</b> terminal Example: <pre>Router# configure terminal</pre>	Enters global configuration mode.
3.	<b>voice statistics time-range since-reset</b> Example: <pre>Router(config)# voice statistics time-range <b>since-reset</b></pre>	Configures the gateway to collect call statistics since the last reset or since the last time the gateway was rebooted.
4.	<b>exit</b> Example: <pre>Router(config)# exit</pre>	Exits global configuration mode.

**Configuring the Gateway to Collect Call Statistics for a Specific Time Interval**

This task configures the gateway to collect call statistics for a specific time interval.

**SUMMARY STEPS**

1. **enable**
2. **configure** terminal
3. **voice statistics time-range specific start** *hh:mm day month year* **end** *hh:mm day month year*
4. **exit**

**DETAILED STEPS**

	<b>Command or Action</b>	<b>Purpose</b>
1.	<b>enable</b> Example: <pre>Router&gt; enable</pre>	Enables privileged EXEC mode.  • Enter your password if prompted.
2.	<b>configure</b> terminal Example:	Enters global configuration mode.

**SUMMARY STEPS**

	<code>Router# configure terminal</code>	
3.	<p><b>voice statistics time-range</b> <i>specific start hh:mm day month year</i>  <b>end</b> <i>hh:mm day month year</i></p> <p>Example:</p> <pre>Router(config)# voice statistics time-range specific start 10:00 1 January 2004 end 12:00 2 January 2004</pre>	Configures the gateway to collect call statistics for a specific configured time period.
4.	<p><b>exit</b></p> <p>Example:</p> <pre>Router(config)# exit</pre>	Exits global configuration mode.

## Configuring the Gateway to Collect Signaling Statistics

This section describes how to configure the gateway to collect signaling statistics. This section documents the following tasks:

- [Enabling the Gateway to Collect Signaling Statistics](#)
- [Configuring the Minimum Call Duration and Signaling Thresholds](#)
- [Disabling the Collection of Signaling Statistics](#)
- [Displaying the Signaling Statistics for Each Aggregation Level](#)
- [Clearing Signaling Statistics](#)

### Enabling the Gateway to Collect Signaling Statistics

This task describes to how to enable the gateway to collect signaling statistics.



#### SUMMARY STEPS

1. **enable**
2. **configure** terminal
3. **voice statistics type csr signaling**
4. **voice statistics max-storage-duration** {day | hour *value* | minute *value*}
5. **voice statistics display-format separator** {space | tab | new-line | *char char*}
6. **exit**

#### DETAILED STEPS

	Command or Action	Purpose
1.	<p><b>enable</b></p> <p>Example:</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>
2.	<p><b>configure</b> terminal Example:</p> <pre>Router# configure terminal</pre>	Enters global configuration mode.
3.	<p><b>voice statistics type csr signaling</b></p> <p>Example:</p>	Enables the collection of signaling statistics.

#### DETAILED STEPS

	<pre>Router(config)# voice statistics type   csr signaling</pre>	 <b>Note:</b> To enable the collection of both signaling and VoIP AAA accounting statistics on the gateway, enter the command without the <b>signaling</b> keyword as follows: <b>voice statistics type csr.</b>
4.	<p><b>voice statistics max-storage-duration</b> { <b>day</b> <i>value</i>   hour <i>value</i>   minute <i>value</i> } Example:</p> <pre>Router(config)# voice statistics max-storage-duration   minute 60</pre>	<p>(Optional) Configures the maximum storage time in system memory of the gateway. The keywords and argument are as follows:</p> <ul style="list-style-type: none"> <li>• <b>day</b>-Number of days. The <i>value</i> argument has a valid range from 0 to 365.</li> <li>• <b>hour</b>-Number of hours. The value argument has a valid range from 0 to 720.</li> <li>• <b>minute</b>-Number of minutes. The <i>value</i> argument has a valid range from 0 to 1440.</li> </ul> <p> <b>Note:</b> This command also applies to the collection of VoIP internal error codes (IECs).</p>
5.	<p><b>voice statistics display-format separator</b> { <b>space</b>   <b>tab</b>   <b>new-line</b>   <i>char char</i> } Example:</p> <pre>Router(config)# voice statistics display-format   separator new-line</pre>	<p>(Optional) Specifies the way that displayed information is separated. The default is a comma (.).</p>
6.	<p><b>exit</b></p> <p>Example:</p> <pre>Router(config)# exit</pre>	<p>Exits global configuration mode.</p>

## Configuring the Minimum Call Duration and Signaling Thresholds

The signaling parameters include minimum call duration, as well as thresholds for lost packet information, packet latency information, and packet jitter information. These parameters have default values so no configuration is required. However, you can customize any or all of these parameters as needed for your network configuration.

### SUMMARY STEPS

1. **enable**
2. **configure** terminal
3. **voice statistics field-params mcd** *value*
4. **voice statistics field-params lost-packet** *value*

### DETAILED STEPS

5. **voice statistics field-params packet-latency** *value*
6. **voice statistics field-params packet-jitter** *value*
7. **exit**

## DETAILED STEPS

	Command or Action	Purpose
1.	<b>enable</b> Example: <pre>Router&gt; enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"><li>• Enter your password if prompted.</li></ul>
2.	<b>configure terminal</b> Example: <pre>Router# configure terminal</pre>	Enters global configuration mode.
3.	<b>voice statistics field-params mcd</b> <i>value</i> Example: <pre>Router(config)# voice statistics field-params mcd 10</pre>	Configures the minimum call duration (MCD) for collecting voice call statistics in milliseconds. Valid values are from 0 to 30 milliseconds. The default is 2 milliseconds. This value applies to both IP and PSTN statistics.
4.	<b>voice statistics field-params lost-packet</b> <i>value</i> Example: <pre>Router(config)# voice statistics field-params lost-packet 5000</pre>	Configures the lost voice packet threshold for collecting voice call statistics in milliseconds. Valid values are from 0 to 65535 milliseconds. The default is 1000 milliseconds. This value applies to IP statistics only.
5.	<b>voice statistics field-params packet-latency</b> <i>value</i> Example: <pre>Router(config)# voice statistics field-params packet-latency 200</pre>	Configures the voice packet-latency threshold parameter for voice call statistics in milliseconds. Valid values are from 0 to 500 milliseconds. The default is 250 milliseconds. This value applies to IP statistics only.
6.	<b>voice statistics field-params packet-jitter</b> <i>value</i> Example: <pre>Router(config)# voice statistics field-params packet-jitter 500</pre>	Configures the voice packet-jitter threshold parameter for voice call statistics in milliseconds. Valid values are from 0 to 1000 milliseconds. The default is 250 milliseconds. This value applies to IP statistics only.
7.	<b>exit</b> Example: <pre>Router(config)# exit</pre>	Exits global configuration mode.

## Disabling the Collection of Signaling Statistics

This task disables the collection of signaling statistics.


## SUMMARY STEPS



**SUMMARY STEPS**

1. **enable**
2. **configure** terminal
3. **no voice statistics type csr signaling**
4. **exit**

**DETAILED STEPS**

	Command or Action	Purpose
1.	<b>enable</b> Example:  Router> enable	Enables privileged EXEC mode.  • Enter your password if prompted.
2.	<b>configure</b> terminal Example:  Router# configure terminal	Enters global configuration mode.
3.	<b>no voice statistics type csr signaling</b> Example:  Router(config)# no voice statistics type csr signaling	Disables the collection of signaling statistics.   <b>Note:</b> If the gateway is configured to collect both signaling and VoIP AAA accounting statistics, the accounting statistics will continue to be collected after the signaling statistics collection is disabled.
4.	<b>exit</b> Example:  Router(config)# exit	Exits global configuration mode.

**Displaying the Signaling Statistics for Each Aggregation Level**

Signaling statistics can be collected and displayed for all aggregation levels. To display signaling statistics for the different aggregation levels, see the following sections:

- [Displaying Signaling Statistics for All Aggregation Levels](#)
- [Displaying Gateway-Level Signaling Statistics](#)
- [Displaying VoIP-Level Signaling Statistics](#)
- [Displaying PSTN-Level Signaling Statistics](#)
- [Displaying Trunk-Group Level Signaling Statistics](#)
- [Displaying Voice-Port Level Signaling Statistics](#)

All commands in this section are entered in privileged EXEC mode. The statistics displayed are based on the time range configured using the **voice statistics time-range** command. For example, if you set the time range to specify that the gateway collects statistics only since the last reset, then these displays show only the

statistics since the gateway was last reset or rebooted.

With these commands, you can specify that the display shows either verbose or concise information. The verbose display shows all fields contained in the call statistics records, while the concise display shows only output that contains total calls, answered calls, and answered call duration. The verbose display mode is enabled by default.

In addition, you can specify that the gateway push the statistics display from the console to an FTP or syslog server. To configure the gateway to support pushing statistics to an FTP or syslog server, see the [Managing the Collection of Voice Statistics](#).



## Displaying Signaling Statistics for All Aggregation Levels

This task displays signaling statistics for all aggregation levels.

### SUMMARY STEPS

1. **enable**
2. **show voice statistics interval-tag**
3. **show voice statistics csr interval tag-number aggregation all**[mode {concise | verbose}] [push {all | ftp | syslog}]
4. **show voice statistics csr since-reset aggregation-level all** [mode {concise | verbose}] [push {all | ftp | syslog}]

### DETAILED STEPS

	Command or Action	Purpose
1.	<b>enable</b> Example: <pre>Router&gt; enable</pre>	Enables privileged EXEC mode.  • Enter your password if prompted.
2.	<b>show voice statistics interval-tag</b> Example: <pre>Router# show voice statistics interval-tag</pre>	Displays the configured interval numbers. This command is necessary to obtain the tag number required in the next step.
3.	<b>show voice statistics csr intervaltag-number aggregation all</b> [mode {concise   verbose}] [push {all   ftp   syslog}] Example: <pre>Router# show voice statistics csr interval 102 aggregation all</pre>	Displays signaling statistics for all aggregation levels for a given interval.   <b>Note:</b> This command is valid only if the <b>voice statistics time-range</b> command is configured to support either periodic statistics collection or statistics collection for a specific time period.
4.	<b>show voice statistics csr since-reset aggregation-level all</b> [mode {concise   verbose}] [push {all   ftp   syslog}] Example: <pre>Router# show voice statistics csr since-reset</pre>	Displays signaling statistics for all aggregation levels since the last reset or reboot of the gateway.   <b>Note:</b>

```
aggregation-level all
```

This command is valid only if the **voice statistics time-range** command is configured to the **since-reset** value.


## Displaying Gateway-Level Signaling Statistics

This task displays gateway-level signaling statistics.

### SUMMARY STEPS

1. **enable**
2. **show voice statistics interval-tag**
3. **show voice statistics csr interval tag-number aggregation gateway [mode {concise | verbose}] [push {all | ftp | syslog}]**
4. **show voice statistics csr since-reset aggregation-level gateway [mode {concise | verbose}] [push {all | ftp | syslog}]**


### DETAILED STEPS

	Command or Action	Purpose
1.	<p><b>enable</b></p> <p>Example:</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>
2.	<p><b>show voice statistics interval-tag</b></p> <p>Example:</p> <pre>Router# show voice statistics interval-tag</pre>	<p>Displays the configured interval numbers. This command is necessary to obtain the tag number required in the next step.</p>
3.	<p><b>show voice statistics csr interval tag-number aggregation gateway [mode {concise   verbose}] [push {all   ftp   syslog}]</b></p> <p>Example:</p> <pre>Router# show voice statistics csr interval 102 aggregation gateway</pre>	<p>Displays the gateway-wide level statistics for a given interval.</p> <p> <b>Note:</b> This command is valid only if the <b>voice statistics time-range</b> command is configured to support either periodic statistics collection or statistics collection for a specific time period.</p>
4.	<p><b>show voice statistics csr since-reset aggregation-level gateway [mode {concise   verbose}] [push {all   ftp   syslog}]</b> Example:</p>	<p>Displays the gateway-wide level statistics since the last reset or reboot of the</p>

### DETAILED STEPS

```
Router# show voice statistics csr since-reset
aggregation-level gateway
```

gateway.

 **Note:** This command is valid only if the **voice statistics time-range** command is configured to the **since-reset** value.


## Displaying VoIP-Level Signaling Statistics

This task displays VoIP-level signaling statistics.


### SUMMARY STEPS

1. **enable**
2. **show voice statistics interval-tag**
3. **show voice statistics csr interval tag-number aggregation ip [mode {concise | verbose}] [push {all | ftp | syslog}]**
4. **show voice statistics csr since-reset aggregation-level ip [mode {concise | verbose}] [push {all | tp | syslog}]**

### DETAILED STEPS

	Command or Action	Purpose
1.	<p><b>enable</b></p> <p>Example:</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>
2.	<p><b>show voice statistics interval-tag</b></p> <p>Example:</p> <pre>Router# show voice statistics interval-tag</pre>	<p>Displays the configured interval numbers. This command is necessary to obtain the tag number required in the next step.</p>
3.	<p><b>show voice statistics csr interval tag-number aggregation ip [mode {concise   verbose}] [push '{all   ftp   syslog}]</b></p> <p>Example:</p> <pre>Router# show voice statistics csr interval 102 aggregation ip</pre>	<p>Displays the VoIP interface-level statistics for a given interval.</p> <p> <b>Note:</b> This command is valid only if the <b>voice statistics time-range</b> command is configured</p>

### DETAILED STEPS

		to support either periodic statistics collection or statistics collection for a specific time period.
4.	<p><b>show voice statistics csr since-reset aggregation-level ip [mode {concise   verbose}] [push {all   ftp   syslog}]</b></p> <p>Example:</p> <pre>Router#show voice statistics csr since-reset aggregation-level ip</pre>	<p>Displays the VoIP-level statistics since the last reset or reboot of the gateway.</p> <p> <b>Note:</b> This command is valid only if the <b>voice statistics time-range</b> command is configured to the <b>since-reset</b> value.</p>

### Displaying PSTN-Level Signaling Statistics

This task displays PSTN-level signaling statistics.



#### SUMMARY STEPS

1. **enable**
2. **show voice statistics interval-tag**
3. **show voice statistics csr interval tag-number aggregation pstn [mode {concise | verbose}] [push {all | ftp | syslog}]**
4. **show voice statistics csr since-reset aggregation-level pstn [mode {concise | verbose}] [push {all | ftp | syslog}]**

#### DETAILED STEPS

	Command or Action	Purpose
1.	<p><b>enable</b> Example:</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>
2.	<p><b>show voice statistics interval-tag</b> Example:</p> <pre>Router# show voice statistics interval-tag</pre>	<p>Displays the configured interval numbers.</p>

#### DETAILED STEPS

		<ul style="list-style-type: none"> <li>• This command is necessary to obtain the tag number required in the next step.</li> </ul>
3.	<p><b>show voice statistics csr interval tag-number aggregation pstn [mode {concise   verbose}] [push {all   ftp   syslog}]</b></p> <p>Example:</p> <pre>Router#show voice statistics csr interval 102 aggregation pstn</pre>	<p>Displays the telephone interface level statistics for a given interval.</p> <p> <b>Note:</b> This command is valid only if the <b>voice statistics time-range</b> command is configured to support either periodic statistics collection or statistics collection for a specific time period.</p>
4.	<p><b>show voice statistics csr since-reset aggregation-level all pstn [mode {concise   verbose}] [push {all   ftp   syslog}]</b></p> <p>Example:</p> <pre>Router# show voice statistics csr since-reset aggregation-level pstn</pre>	<p>Displays the PSTN-level statistics since the last reset or reboot of the gateway.</p> <p> <b>Note:</b> This command is valid only if the <b>voice statistics time-range</b> command is configured to the <b>since-reset</b> value.</p>



### Displaying Trunk-Group Level Signaling Statistics

This task displays trunk-group level signaling statistics.

## SUMMARY STEPS

1. **enable**
2. **show voice statistics interval-tag**
3. **show voice statistics csr interval tag-number aggregation trunk-group** {all | trunk-group-label} [mode {concise | verbose}] [push {all | ftp | syslog}]
4. **show voice statistics csr since-reset aggregation-level trunk-group** {all | trunk-group-label} [mode {concise | verbose}] [push {all | ftp | syslog}]

## DETAILED STEPS

	Command or Action	Purpose
1.	<p><b>enable</b></p> <p>Example:</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>
2.	<p><b>show voice statistics interval-tag</b></p> <p>Example:</p> <pre>Router# show voice statistics interval-tag</pre>	<p>Displays the configured interval numbers. This command is necessary to obtain the tag number required in the next step.</p>
3.	<p><b>show voice statistics csr interval tag-number aggregation group</b> {all   trunk-group-label} [mode {concise   verbose}] [push {all   ftp   syslog}]</p> <p>Example:</p> <pre>Router# show voice statistics csr interval 102 aggregation trunk-group 20</pre>	<p>Displays the trunk-group level statistics for a given interval. Display statistics can be specified for a single trunk group or for all trunk groups.</p> <p> <b>Note:</b> This command is valid only if the <b>voice statistics time-range</b> command is configured to support either periodic statistics collection or statistics collection for a specific time period.</p>
4.	<p><b>show voice statistics csr since-reset aggregation-level trunk-group</b> {all   trunk-group-label} [mode {concise   verbose}] [push {all   ftp   syslog}]</p> <p>Example:</p> <pre>Router# show voice statistics csr since-reset aggregation-level trunk-group all</pre>	<p>Displays the trunk-group level statistics since the last reset or reboot of the gateway. You can display statistics for a specific trunk group or for all trunk groups.</p> <p> <b>Note:</b> This command is valid only if the <b>voice statistics time-range</b> command is configured to the <b>since-reset</b> value.</p>



## Displaying Voice-Port Level Signaling Statistics

This task displays voice-port level signaling statistics.

## SUMMARY STEPS

1. **enable**
2. **show voice statistics interval-tag**
3. **show voice statistics csr interval tag-number aggregation voice-port** {*voice-port-label* | **all**}  
[**mode** {**concise** | **verbose**}] [**push** {**all** | **ftp** | **syslog**}]
4. **show voice statistics csr since-reset aggregation-level voice-port** {**all** | *voice-port-label*} [**mode**  
{**concise** | **verbose**}] [**push** {**all** | **ftp** | **syslog**}]

## DETAILED STEPS

	Command or Action	Purpose
1.	<b>enable</b> Example: <pre>Router&gt; enable</pre>	Enables privileged EXEC mode.  • Enter your password if prompted.
2.	<b>show voice statistics interval-tag</b> Example: <pre>Router# show voice statistics interval-tag</pre>	Displays the configured interval numbers. This command is necessary to obtain the tag number required in the next step.
3.	<b>show voice statistics csr interval tag-number aggregation voice-port</b> { <i>voice-port-label</i>   <b>all</b> } [ <b>mode</b> { <b>concise</b>   <b>verbose</b> }] [ <b>push</b> { <b>all</b>   <b>ftp</b>   <b>syslog</b> }] Example: <pre>Router# show voice statistics csr interval 102 aggregation voice-port all</pre>	Displays voice-port level statistics for a given interval. You can display statistics for a specific voice port or for all voice ports.   <b>Note:</b> This command is valid only if the <b>voice statistics time-range</b> command is configured to support either periodic statistics collection or statistics collection for a specific time period.
4.	<b>show voice statistics csr since-reset aggregation-level voice-port</b> { <b>all</b>   <i>voice-port-label</i> } [ <b>mode</b> { <b>concise</b>   <b>verbose</b> }] [ <b>push</b> { <b>all</b>   <b>ftp</b>   <b>syslog</b> }] Example: <pre>Router# show voice statistics csr since-reset aggregation-level voice-port all</pre>	Displays the voice-port level statistics since the last reset or reboot of the gateway. You can display statistics for a specific voice port or for all voice ports.   <b>Note:</b> This command is valid only if the <b>voice statistics time-range</b> command is configured to the <b>since-reset</b> value.

## Clearing Signaling Statistics

This task clears signaling statistics from the gateway.



**SUMMARY STEPS**

1. **enable**
2. **clear voice statistics csr signaling**

**DETAILED STEPS**

	<b>Command or Action</b>	<b>Purpose</b>
1.	<b>enable</b> Example: <pre>Router&gt; enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
2.	<b>clear voice statistics csr signaling</b> Example: <pre>Router# clear voice statistics csr signaling</pre>	Clears all signaling statistics.

**Configuring the Gateway to Collect VoIP AAA Accounting Statistics**

Using this feature, statistics can be collected to tally accounting records on billing servers (RADIUS) and on voice gateways based on call legs (both inbound and outbound). The statistics collected track whether calls were successfully accounted for based on the acknowledgement messages from designated billing or accounting servers.

This section shows you how to configure the collection of accounting statistics on the gateway. This section documents the following tasks:

- [Enabling the Collection of VoIP AAA Accounting Statistics on the Gateway](#)
- [Configuring a Designated Server Group for a Broadcast Method List](#)
- [Disabling the Collection of VoIP AAA Accounting Statistics](#)
- [Displaying the VoIP AAA Accounting Statistics](#)
- [Clearing the VoIP AAA Accounting Statistics](#)

**Prerequisites**

The definition of the AAA method list for accounting, the server groups, and the RADIUS servers should be configured. For more information, refer to [Configuring AAA for Cisco Voice Gateways](#).

**Restrictions**

You can define "pass" criteria for calls on the basis of method lists but not on the basis of server groups. For broadcast method lists, if the gateway attempts to access multiple server groups simultaneously, additional configuration is needed. See the [Configuring a Designated Server Group for a Broadcast Method List](#).



**Enabling the Collection of VoIP AAA Accounting Statistics on the Gateway**


This task enables the collection of accounting statistics on the gateway.

## SUMMARY STEPS

1. **enable**
2. **configure** terminal
3. **voice statistics type csr accounting**
4. **voice statistics accounting method** *method-list-name* **pass start-interim-stop | start-stop | stop-only** }
5. **voice statistics max-storage-duration** { **day** *value* | **hour** *value* | **minute** *value* }
6. **voice statistics display-format separator** { **space** | **tab** | **new-line** | *char char* }
7. **exit**

## DETAILED STEPS

	Command or Action	Purpose
1.	<b>enable</b> Example: <pre>Router&gt; enable</pre>	Enables privileged EXEC mode.  • Enter your password if prompted.
2.	<b>configure</b> terminal Example: <pre>Router# configure terminal</pre>	Enters global configuration mode.
3.	<b>voice statistics type csr accounting</b> Example: <pre>Router(config)# voice statistics type csr accounting</pre>	Enables the collection of VoIP AAA accounting statistics.   <b>Note:</b> To enable the collection of both accounting and signaling statistics on the gateway, enter the command without the <b>accounting</b> keyword, as follows: <b>voice statistics type csr</b> .
4.	<b>voice statistics accounting method</b> <i>method-list-name</i> <b>pass</b> { <b>start-interim-stop</b>   <b>start-stop</b>   <b>stop-only</b> } Example: <pre>Router(config)# voice statistics accounting method h323 pass stop-only</pre>	Configures the method-list pass criteria.   <b>Note:</b> The <i>method-list-name</i> argument is the same as that configured using the <b>method</b> command in gateway-accounting AAA configuration mode. You can have multiple method lists configured on a gateway at one time.
5.	<b>voice statistics max-storage-duration</b> { <b>day</b> <i>value</i>   <b>hour</b> <i>value</i>   <b>minute</b> <i>value</i> } Example:	(Optional) Configures the maximum storage time in system memory of the gateway. The keywords and argument are as

	<pre>Router(config)# voice statistics max-storage-duration minute 60</pre>	<p>follows:</p> <ul style="list-style-type: none"> <li>• <b>day</b>-Number of days. The <i>value</i> argument has a valid range from 0 to 365.</li> <li>• <b>hour</b>-Number of hours. The <i>value</i> argument has a valid range from 0 to 720.</li> <li>• <b>minute</b>-Number of minutes. The <i>value</i> argument has a valid range from 0 to 1440.</li> </ul> <p> <b>Note:</b> This command also applies to the collection of VoIP internal error codes (IECs).</p>
6.	<p><b>voice statistics display-format separator {space   tab   new-line   char char}</b></p> <p>Example:</p> <pre>Router(config)# voice statistics display-format separator new-line</pre>	<p>(Optional) Specifies the way in which displayed information is separated. The default is a comma (.).</p>
7.	<p><b>exit</b></p> <p>Example:</p> <pre>Router(config)# exit</pre>	<p>Exits global configuration mode.</p>

## Configuring a Designated Server Group for a Broadcast Method List

This task is required if accounting CSRs need to be collected for a gateway that is configured for a broadcast method list. See [Configuring the Gateway to Collect VoIP AAA Accounting Statistics](#). It is possible to set all the server groups in a method list for monitoring acknowledgements.

### Prerequisites

The collection of accounting statistics should be enabled on the gateway. The pass criteria for the method list must already be defined.

### SUMMARY STEPS

1. **enable**
2. **configure** terminal
3. **aaa group server radius** *name*
4. **accounting acknowledge broadcast**
5. **end**
6. **show voice statistics | begin aaa group server**

### DETAILED STEPS

Command or Action	Purpose
-------------------	---------

### DETAILED STEPS

1.	<b>enable</b> Example: <pre>Router&gt; enable</pre>	Enables privileged EXEC mode.  • Enter your password if prompted.
2.	<b>configure terminal</b> Example: <pre>Router# configure terminal</pre>	Enters global configuration mode.
3.	<b>aaa group server radius <i>name</i></b> Example: <pre>Router(config)# aaa group server radius billing-grp</pre>	Groups different RADIUS server hosts into distinct lists and distinct methods and enters server group RADIUS configuration mode.
4.	<b>accounting acknowledge broadcast</b> Example: <pre>Router(config-sg-radius)# accounting acknowledge broadcast</pre>	Enables the accounting broadcast functionality for the server groups configured in Step 3.
5.	<b>end</b> Example: <pre>Router(config-sg-radius)# end</pre>	Ends the current configuration session and returns to privileged EXEC mode.
6.	<b>show voice statistics   begin aaa group server</b> Example: <pre>Router# show voice statistics   begin aaa group server</pre>	Displays the AAA group server and its configuration.

### Troubleshooting Tips

Acknowledgements of only designated server groups are considered when deciding whether the accounting for a given call leg is successful. If more than one server group is configured as designated, the gateway considers the response from all server groups in deciding whether the call leg accounting is successful.

### Disabling the Collection of VoIP AAA Accounting Statistics


This task disables the collection of VoIP AAA accounting statistics.

#### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **no voice statistics type csr accounting**
4. **exit**

#### DETAILED STEPS

**DETAILED STEPS**

	<b>Command or Action</b>	<b>Purpose</b>
1.	<b>enable</b> Example: <pre>Router&gt; enable</pre>	Enables privileged EXEC mode.  • Enter your password if prompted.
2.	<b>configure terminal</b> Example: <pre>Router# configure terminal</pre>	Enters global configuration mode.
3.	<b>no voice statistics type csr accounting</b> Example: <pre>Router(config)# no voice statistics type csr accounting</pre>	Disables the collection of accounting statistics.   <b>Note:</b> If the gateway is configured to collect both VoIP AAA accounting statistics and signaling statistics, the signaling statistics will continue to be collected after the accounting statistics collection is disabled.
4.	<b>exit</b> Example: <pre>Router(config)# exit</pre>	Exits global configuration mode.

**Displaying the VoIP AAA Accounting Statistics**

After the gateway has been configured to collect VoIP AAA accounting statistics, you can display all accounting statistics or accounting statistics for a specific method list.

All commands in this section are entered in privileged EXEC mode. The statistics displayed are based on the time range configured using the **voice statistics time-range** command. For example, if you set the time range to specify that the gateway to collect statistics only since the last reset, then these displays will show only the statistics since the gateway was last reset or rebooted.

With these commands, you can specify that the gateway push the statistics display from the console to an FTP or syslog server. To configure the gateway to support pushing statistics to an FTP or syslog server, see the [Managing the Collection of Voice Statistics](#).

**SUMMARY STEPS**

1. **enable**
2. **show voice accounting method** [method-list-name]
3. **show voice statistics csr interval tag-number accounting** {all | method-list *method-list-name*}  
[push {all | ftp | syslog}]

4. **show voice statistics csr since-reset accounting** {all | method-list *method-list-name*} [push {all | ftp | syslog}]

## DETAILED STEPS

	Command or Action	Purpose
1.	<p><b>enable</b></p> <p>Example:</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>
2.	<p><b>show voice accounting method</b> {<i>method-list-name</i>}</p> <p>Example:</p> <pre>Router# show voice accounting method m11</pre>	<p>Displays connectivity status information for accounting method lists.</p>
3.	<p><b>show voice statistics csr interval tag-number accounting</b> {all   method-list <i>method-list-name</i>} [push {all   ftp   syslog}]</p> <p>Example:</p> <pre>Router# show voice statistics csr interval 10 accounting all</pre>	<p>Displays the VoIP AAA accounting statistics for the specified interval. You can display all accounting statistics or accounting statistics for a specific method list.</p>
4.	<p><b>show voice statistics csr since-reset accounting</b> {all   method-list <i>method-list-name</i>} [push {all   ftp   syslog}]</p> <p>Example:</p> <pre>Router# show voice statistics csr since-reset accounting method-list h323</pre>	<p>Displays all VoIP AAA accounting statistics since the last reset or reboot of the gateway. You can display all accounting statistics or accounting statistics for a specific</p>

## SUMMARY STEPS

		method list.
5. Example:	<p><b>show voice accounting response pending</b></p> <pre>Router# show voice accounting response pending</pre>	Displays information regarding pending VoIP AAA accounting responses.

## Clearing the VoIP AAA Accounting Statistics

This task describes how to clear the VoIP AAA accounting statistics.

### SUMMARY STEPS

1. **enable**
2. **clear voice statistics csr accounting**
3. **clear voice accounting method** method-list-name

### DETAILED STEPS

	Command or Action	Purpose
1. Example:	<p><b>enable</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>
2. Example:	<p><b>clear voice statistics csr accounting</b></p> <pre>Router# clear voice statistics csr accounting</pre>	Clears all accounting statistics.
3. Example:	<p><b>clear voice accounting method</b> <i>method-list-name</i></p> <pre>Router# clear voice accounting method h323</pre>	Clears accounting statistics for a specific accounting method.

## Troubleshooting Tips for VoIP AAA Accounting Statistics

If any of the following messages is displayed, proceed with the solution shown.

- Message: "Either specific or periodic time-range has existed."

Solution: Delete any previously configured specific or periodic time range.

- Message: "Ending time must be greater than starting time."

Solution: Make sure that the configured end time is later than the start time for the time range configured.

- Message: "Starting time must be future time."

Solution: Make sure that the configured start time is in the future.

### DETAILED STEPS

If accounting statistics are not being collected properly, the best place to start troubleshooting is by verifying your configurations as follows:

```
Router# show running-config | include voice statistics
voice statistics type csr
voice statistics accounting method h323 pass stop-only
! Specifies the pass criteria.
voice statistics time-range since-reset
Router# show running-config | include aaa
aaa new-model
aaa accounting connection h323 start-stop group radius
! Specifies the method list.
aaa session-id common
gw-accounting aaa
! Enables accounting on the gateway.
radius-server host 1.6.10.203 auth-port 1645 acct-port 1646
! Specifies RADIUS server IP address.
```

If your configurations are correct, turn on debugging with the following **debug** commands and check the output. You must turn on all three commands:

- **debug isdn q931**
- **debug radius accounting**
- **debug voip-aaa**

As long as accounting and signaling statistics are being collected, the output from these three debug commands will display on the console.

The following sample output shows that the accounting statistics are not being properly collected by the RADIUS server:

```
*Nov 22 14:54:49.350: ISDN Se6/0:15 Q931: RX <- SETUP pd = 8  callref = 0x125E
  Bearer Capability i = 0x8090A3
    Standard = CCITT
    Transfer Capability = Speech
    Transfer Mode = Circuit
    Transfer Rate = 64 kbit/s
  Channel ID i = 0xA98381
    Exclusive, Channel 1
  Called Party Number i = 0x80, '11'
  Plan:Unknown, Type:Unknown
!
Router#55:02.366: RADIUS: acct-delay-time for 4067CADC (at 4067CDF6) now 10
*Nov 22 14:55:04.366: RADIUS: Retransmit to (10.6.10.203:1645,1646) for id 21669/117
*Nov 22 14:55:04.366: RADIUS(0000053B): Retransmit id 21669/117
*Nov 22 14:55:04.366: RADIUS: acct-delay-time for 40278B3C (at 40278D04) now 15
*Nov 22 14:55:07.366: RADIUS: Retransmit to (10.6.10.203:1645,1646) for id 21669/118
*Nov 22 14:55:07.366: RADIUS(0000053B): Retransmit id 21669/118
*Nov 22 14:55:07.366: RADIUS: acct-delay-time for 4067CADC (at 4067CDF6) now 15
*Nov 22 14:55:09.366: RADIUS: Tried all servers.
*Nov 22 14:55:09.366: RADIUS: No valid server found. Trying any viable server.
```

The line above indicates that the RADIUS server is unreachable.

```
*Nov 22 14:55:09.366: RADIUS: Tried all servers.
*Nov 22 14:55:09.366: RADIUS: No response from (10.6.10.203:1645,1646) for id 21669/119
*Nov 22 14:55:09.366: RADIUS/DECODE: parse response no app start; FAIL
*Nov 22 14:55:09.366: RADIUS/DECODE: parse response; FAIL
*Nov 22 14:55:12.366: RADIUS: Tried all servers.
*Nov 22 14:55:12.366: RADIUS: No valid server found. Trying any viable server.
```



The line above indicates that the RADIUS server is not found.

```
*Nov 22 14:55:12.366: RADIUS: Tried all servers.
*Nov 22 14:55:12.366: RADIUS: No response from (10.6.10.203:1645,1646) for id 21669/120
*Nov 22 14:55:12.366: RADIUS/DECODE: parse response no app start; FAIL
*Nov 22 14:55:12.366: RADIUS/DECODE: parse response; FAIL
*Nov 22 14:55:12.366: voip_process_acct_reply(1339):
*Nov 22 14:55:12.366: voip_process_acct_reply(1339): event_message->type=0x210, msg_t=2, rsp=2
*Nov 22 14:55:12.366: voip_process_acct_reply: acct notification call back for method=h323
*Nov 22 14:55:12.366: acct_notif_cleanup:
*Nov 22 14:55:12.366: acct_ntf_deregistration:
*Nov 22 14:55:12.366: acct_ntf_deregistration: deregister with AAA EM, rsp_t=0x4, ev_t=0x210
*Nov 22 14:55:12.366: acct_notif_cleanup: unlock adb
*Nov 22 14:55:12.366: voip_aaa_unlock_adb: uid(1339) count=0
*Nov 22 14:55:12.366: voip_aaa_cleanup_adb: dealloc uid (1339)
*Nov 22 14:55:12.366: voip_aaa_acct_get_dynamic_attrs: No cdb found from cdb tree
```

The following sample output shows that the RADIUS server was authenticated:

```
*Nov 22 14:56:46.006: ISDN Se6/0:15 Q931: RX <- SETUP pd = 8  callref = 0x125F
  Bearer Capability i = 0x8090A3
    Standard = CCITT
    Transfer Capability = Speech
    Transfer Mode = Circuit
    Transfer Rate = 64 kbit/s
  Channel ID i = 0xA98381
    Exclusive, Channel 1
  Called Party Number i = 0x80, '11'
    Plan:Unknown, Type:Unknown
*Nov 22 14:56:46.010: voip_start_ccapi_accounting(784):
*Nov 22 14:56:46.010: voip_start_accounting_internal:
*Nov 22 14:56:46.010: voip_start_accounting_internal(784): peer_tag=100
*Nov 22 14:56:46.010: get_acct_params: suppressed=0
*Nov 22 14:56:46.010: get_acct_params(784): Use method "h323" set by global config.
*Nov 22 14:56:46.014:   method:
*Nov 22 14:56:46.014:   cdrtag:
*Nov 22 14:56:46.014: voip_start_accounting_internal: Getting new uid
*Nov 22 14:56:46.014: voip_alloc_aaa_uid
*Nov 22 14:56:46.014: voip_aaa_acct_get_retrieved_attrs
*Nov 22 14:56:46.014: voip_aaa_acct_get_nas_port_details:
*Nov 22 14:56:46.014: get_nas_port: avail=1 type=4 nas-port=ISDN 6/0:D:1
*Nov 22 14:56:46.014: voip_aaa_lock_adb: uid(1341) count=1
*Nov 22 14:56:46.014: voip_start_accounting_internal: UID=1341
*Nov 22 14:56:46.014: voip_start_accounting_internal: Telephony Leg
*Nov 22 14:56:46.014: voip_start_accounting_internal(784):
*Nov 22 14:56:46.014:   calling num      :
*Nov 22 14:56:46.014:   called num       : 11
*Nov 22 14:56:46.014:   account num      :
*Nov 22 14:56:46.014:   setup time       : *14:56:46.014 PST Fri
*Nov 22 14:56:46.014:   gateway id       : Router.cisco2.com
*Nov 22 14:56:46.014:   connection id    : 82831163 FDA411D6 8660B639 91DC0E5F
*Nov 22 14:56:46.014:   call origin      : answer
*Nov 22 14:56:46.014:   call type        : Telephony
*Nov 22 14:56:46.014:   incoming conn id: 82831163 FDA411D6 8660B639 91DC0E5F
*Nov 22 14:56:46.018: RADIUS(0000053D): sending
*Nov 22 14:56:46.018: RADIUS(0000053D): Send Accounting-Request to 10.6.10.203:1646 id 121, len 4
*Nov 22 14:56:46.018: RADIUS:  authenticator C7 53 14 06 45 F2 49 DF - 53 D8 90 B3 1C D1 74 03
*Nov 22 14:56:46.018: RADIUS:  Acct-Session-Id  [44] 10 "0000084C"
*Nov 22 14:56:46.018: RADIUS:  Vendor, Cisco    [26] 57
*Nov 22 14:56:46.018: RADIUS:  h323-setup-time  [25] 51 "h323-setup-time=*14:56:46.014 PST
*Nov 22 14:56:46.018: RADIUS:  Vendor, Cisco    [26] 36
*Nov 22 14:56:46.018: RADIUS:  h323-gw-id       [33] 30 "h323-gw-id=Router.cisco2.com"
*Nov 22 14:56:46.018: RADIUS:  Vendor, Cisco    [26] 56
```

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```
*Nov 22 14:56:46.018: RADIUS:   Conf-Id           [24]  50 "h323-conf-id=82831163 FDA411D6 8660B63
*Nov 22 14:56:46.018: RADIUS:   Vendor, Cisco       [26]  31
*Nov 22 14:56:46.018: RADIUS:   h323-call-origin   [26]  25 "h323-call-origin=answer"
*Nov 22 14:56:46.018: RADIUS:   Vendor, Cisco       [26]  32
*Nov 22 14:56:46.018: RADIUS:   h323-call-type     [27]  26 "h323-call-type=Telephony"
Accounting-response, len 20
!
```

Router received response from RADIUS server.

```
!
**Nov 22 14:56:49.022: RADIUS:   authenticated 08 C6 FC 0F 31 1D FA EA - 68 A7 5D 48 6F 47 96 FA
*Nov 22 14:56:49.022: voip_process_acct_reply(1341):
*Nov 22 14:56:49.022: voip_process_acct_reply(1341): event_message->type=0x210, msg_t=2, rsp=1
*Nov 22 14:56:49.022: voip_process_acct_reply: acct notification call back for method=h323
*Nov 22 14:56:49.022: acct_notif_cleanup:
*Nov 22 14:56:49.022: acct_ntf_deregistration:
*Nov 22 14:56:49.022: acct_ntf_deregistration: deregister with AAA EM, rsp_t=0x4, ev_t=0x210
*Nov 22 14:56:49.022: acct_notif_cleanup: unlock adb
*Nov 22 14:56:49.022: voip_aaa_unlock_adb: uid(1341) count=0
*Nov 22 14:56:49.022: voip_aaa_cleanup_adb: dealloc uid (1341)
*Nov 22 14:56:49.022: voip_aaa_acct_get_dynamic_attrs: No cdb found from cdb tree
```