

## Accounting Commands

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This chapter describes the commands used to manage accounting on the network. Accounting management allows you to track individual and group usage of network resources. The AAA accounting feature enables you to track the services users are accessing as well as the amount of network resources they are consuming. When AAA accounting is activated, the network access server reports user activity to the TACACS+ or RADIUS security server (depending on which security method you have implemented) in the form of accounting records. Each accounting record contains accounting attribute-value (AV) pairs and is stored on the security server. This data can then be analyzed for network management, client billing, and/or auditing.

For information on how to configure accounting using AAA, refer to the “Configuring Accounting” chapter in the *Security Configuration Guide*. For configuration examples using the commands in this chapter, refer to the “Accounting Configuration Examples” section located at the end of the “Configuring Accounting” chapter in the *Security Configuration Guide*.

Refer also to the IP accounting feature in the “Configuring IP Services” chapter of the *Network Protocols Configuration Guide, Part 1*.

**(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL****aaa accounting**

To enable AAA accounting of requested services for billing or security purposes when you use RADIUS or TACACS+, use the **aaa accounting** global configuration command. Use the **no** form of this command to disable accounting.

```
aaa accounting {system | network | exec | connection | commands level} {default | list-name} {start-stop | wait-start | stop-only | none} [method1 [method2...]]
```

```
no aaa accounting {system | network | exec | commands level}
```

**Syntax Description**

<b>system</b>	Performs accounting for all system-level events not associated with users, such as reloads.
<b>network</b>	Runs accounting for all network-related service requests, including SLIP, PPP, PPP NCPs, and ARA.
<b>exec</b>	Runs accounting for EXEC session (user shells). This keyword might return user profile information such as <b>autocommand</b> information.
<b>connection</b>	Provides information about all outbound connections made from the network access server, such as Telnet, local-area transport (LAT), TN3270, packet assembler/disassembler (PAD), and rlogin.
<b>commands</b>	Runs accounting for all commands at the specified privilege level.
<i>level</i>	Specific command level to track for accounting. Valid entries are 0 through 15.
<b>default</b>	Uses the listed accounting methods that follow this argument as the default list of methods for accounting services.
<i>list-name</i>	Character string used to name the list of accounting methods.
<b>start-stop</b>	Sends a start accounting notice at the beginning of a process and a stop accounting notice at the end of a process. The start accounting record is sent in the background. The requested user process begins regardless of whether or not the start accounting notice was received by the accounting server.
<b>wait-start</b>	As in <b>start-stop</b> , sends both a start and a stop accounting notice to the accounting server. However, if you use the <b>wait-start</b> keyword, the requested user service does not begin until the start accounting notice is acknowledged. A stop accounting notice is also sent.
<b>stop-only</b>	Sends a stop accounting notice at the end of the requested user process.
<b>none</b>	Disables accounting services on this line or interface.
<i>method1</i> [ <i>method2</i> ...]	At least one of the keywords described in Table 1.

**Defaults**

AAA accounting is disabled. If the **aaa accounting** command for a particular accounting type is issued without a named method list specified, the default method list is automatically applied to all interfaces or lines (where this accounting type applies) except those that have a named method list explicitly defined. (A defined method list overrides the default method list.) If no default method list is defined, then no accounting takes place.

**Command Modes**

Global configuration

**(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL****Command History**

Release	Modification
10.3	This command was introduced.

**Usage Guidelines**

Use the **aaa accounting** command to enable accounting and to create named method lists defining specific accounting methods on a per-line or per-interface basis. Method keywords are described in Table 1.

**Table 1 AAA Accounting Methods**

Keyword	Description
<b>radius</b>	Uses RADIUS to provide accounting service.
<b>tacacs+</b>	Uses TACACS+ to provide accounting services.

Cisco IOS software supports the following two methods for accounting:

- **TACACS+**—The network access server reports user activity to the TACACS+ security server in the form of accounting records. Each accounting record contains accounting attribute-value (AV) pairs and is stored on the security server.
- **RADIUS**—The network access server reports user activity to the RADIUS security server in the form of accounting records. Each accounting record contains accounting attribute-value (AV) pairs and is stored on the security server.

Method lists for accounting define the way accounting will be performed. Named accounting method lists enable you to designate a particular security protocol to be used on specific lines or interfaces for particular types of accounting services. Create a list by entering the *list-name* and the *method*, where *list-name* is any character string used to name this list (excluding the names of methods, such as radius or tacacs+) and *method* identifies the method(s) tried in the given sequence.

Named accounting method lists are specific to the indicated type of accounting. To create a method list to provide accounting information for ARA (network) sessions, use the **arap** keyword. To create a method list to provide accounting records about user EXEC terminal sessions on the network access server, including username, date, start and stop times, use the **exec** keyword. To create a method list to provide accounting information about specific, individual EXEC commands associated with a specific privilege level, use the **commands** keyword. To create a method list to provide accounting information about all outbound connections made from the network access server, use the **connection** keyword.

**Note**

System accounting does not use named accounting lists; you can only define the default list for system accounting.

For minimal accounting, include the **stop-only** keyword to send a stop record accounting notice at the end of the requested user process. For more accounting, you can include the **start-stop** keyword, so that RADIUS or TACACS+ sends a start accounting notice at the beginning of the requested process and a stop accounting notice at the end of the process. For even more accounting control, you can include the **wait-start** keyword, which ensures that the start notice is received by the RADIUS or TACACS+ server before granting the user's process request. Accounting only stored on the RADIUS or TACACS+ server. The **none** keyword disables accounting services for the specified line or interface.

When **aaa accounting** is activated, the network access server monitors either RADIUS accounting attributes or TACACS+ AV pairs pertinent to the connection, depending on the security method you have implemented. The network access server reports these attributes as accounting records, which are then stored in an accounting log on the security server. For a list of supported RADIUS accounting attributes, refer to the "RADIUS Attributes" appendix in the *Security Configuration Guide*. For a list of supported TACACS+ accounting AV pairs, refer to the "TACACS+ Attribute-Value Pairs" appendix in the *Security Configuration Guide*.

**(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL****Note**

This command cannot be used with TACACS or extended TACACS.

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**Examples**

The following example defines a default commands accounting method list, where commands accounting services are provided by a TACACS+ security server, set for privilege level 15 commands with a stop-only restriction.

```
aaa accounting commands 15 default stop-only tacacs+
```

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**Related Commands**

Command	Description
<b>aaa authentication ppp</b>	Specifies one or more AAA authentication method for use on serial interfaces running PPP.
<b>aaa authorization</b>	Sets parameters that restrict network access to a user.
<b>aaa new-model</b>	Enables the AAA access control model.

**(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL****aaa accounting suppress null-username**

To prevent the Cisco IOS software from sending accounting records for users whose username string is NULL, use the **aaa accounting suppress null-username** global configuration command. Use the **no** form of this command to allow sending records for users with a NULL username.

**aaa accounting suppress null-username**

**no aaa accounting suppress null-username**

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

Disabled

**Command Modes**

Global configuration

**Command History**

Release	Modification
11.2	This command was introduced.

**Usage Guidelines**

When **aaa accounting** is activated, the Cisco IOS software issues accounting records for all users on the system, including users whose username string, because of protocol translation, is NULL. This command prevents accounting records from being generated for those users who do not have usernames associated with them.

**Examples**

The following example suppresses accounting records for users who do not have usernames associated with them:

```
aaa accounting suppress null-username
```

**Related Commands**

Command	Description
<b>aaa accounting</b>	Enables AAA accounting of requested services for billing or security purposes.

**(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL****aaa accounting update**

To enable periodic interim accounting records to be sent to the accounting server, use the **aaa accounting update** global configuration command. Use the **no** form of this command to disable interim accounting updates.

**aaa accounting update** { **newinfo** | **periodic** *number* }

**no aaa accounting update**

**Syntax Description**

<b>newinfo</b>	Causes an interim accounting record to be sent to the accounting server whenever there is new accounting information to report relating to the user in question.
<b>periodic</b>	Causes an interim accounting record to be sent to the accounting server periodically, as defined by the argument <i>number</i> .
<i>number</i>	Integer specifying number of minutes.

**Defaults**

Disabled

**Command Modes**

Global configuration

**Command History**

Release	Modification
11.3	This command was introduced.

**Usage Guidelines**

When **aaa accounting update** is activated, the Cisco IOS software issues interim accounting records for all users on the system. If the keyword **newinfo** is used, interim accounting records will be sent to the accounting server every time there is new accounting information to report. An example of this would be when IPCP completes IP address negotiation with the remote peer. The interim accounting record will include the negotiated IP address used by the remote peer.

When used with the keyword **periodic**, interim accounting records are sent periodically as defined by the argument *number*. The interim accounting record contains all of the accounting information recorded for that user up to the time the accounting record is sent.

Both of these keywords are mutually exclusive, meaning that whichever keyword is configured last takes precedence over the previous configuration. For example, if you configure **aaa accounting update periodic**, and then configure **aaa accounting update newinfo**, all users currently logged in will continue to generate periodic interim accounting records. All new users will generate accounting records based on the **newinfo** algorithm.

**Caution**

Using the **aaa accounting update periodic** command can cause heavy congestion when many users are logged in to the network.

**Examples**

The following example sends PPP accounting records to a remote RADIUS server and, when IPCP completes negotiation, sends an interim accounting record to the RADIUS server that includes the negotiated IP address for this user:

```
aaa accounting network start-stop radius
aaa accounting update newinfo
```

***(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL*****Related Commands**

<b>Command</b>	<b>Description</b>
<b>aaa accounting</b>	Enables AAA accounting of requested services for billing or security purposes.

**(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL****accounting**

To enable AAA accounting services to a specific line or group of lines, use the **accounting** line configuration command. Use the **no** form of this command to disable AAA accounting services.

**accounting** { **arap** | **commands** *level* | **connection** | **exec** } [**default** | *list-name*]

**no accounting** { **arap** | **commands** *level* | **connection** | **exec** } [**default** | *list-name*]

**Syntax Description**

<b>arap</b>	Enables accounting on line(s) configured for AppleTalk Remote Access (ARA) protocol.
<b>commands</b>	Enables accounting on the selected line(s) for all commands at the specified privilege level.
<i>level</i>	Specifies the command level to track for accounting. Valid entries are 0 through 15.
<b>connection</b>	Enables both CHAP and PAP, and performs PAP authentication before CHAP.
<b>exec</b>	Enables accounting for all system-level events not associated with users, such as reloads on the selected line(s).
<b>default</b>	(Optional) The name of the default method list, created with the <b>aaa accounting</b> command.
<i>list-name</i>	(Optional) Specifies the name of a list of accounting methods to use. If no list name is specified, the system uses the default. The list is created with the <b>aaa accounting</b> command.

**Defaults**

Accounting is disabled.

**Command Modes**

Line configuration

**Command History**

Release	Modification
11.3T	This command was introduced.

**Usage Guidelines**

After you enable the **aaa accounting** command and define a named accounting method list (or use the default method list) for a particular type of accounting, you must apply the defined lists to the appropriate lines for accounting services to take place. Use the **accounting** command to apply the specified method lists (or if none is specified, the default method list) to the selected line or group of lines.

**Examples**

The following example enables command accounting services (for level 15) using the accounting method list named charlie on line 10:

```
line 10
  accounting commands 15 charlie
```

**Related Commands**

Command	Description
<b>aaa accounting</b>	Enables AAA accounting of requested services for billing or security purposes.

**(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL****ppp accounting**

To enable AAA accounting services on the selected interface, use the **ppp accounting** interface configuration command. Use the **no** form of this command to disable AAA accounting services.

**ppp accounting** [**default** | *list-name*]

**no ppp accounting**

**Syntax Description**

**default** (Optional) The name of the method list is created with the **aaa accounting** command.

*list-name* (Optional) Specifies the name of a list of accounting methods to use. If no list name is specified, the system uses the default. The list is created with the **aaa accounting** command.

**Defaults**

Accounting is disabled.

**Command Modes**

Interface configuration

**Command History**

Release	Modification
11.3T	This command was introduced.

**Usage Guidelines**

After you enable the **aaa accounting** command and define a named accounting method list (or use the default method list), you must apply the defined lists to the appropriate interfaces for accounting services to take place. Use the **ppp accounting** command to apply the specified method lists (or if none is specified, the default method list) to the selected interface.

**Examples**

The following example enables accounting on asynchronous interface 4 and uses the accounting method list named charlie:

```
interface async 4
 encapsulation ppp
 ppp accounting charlie
```

**Related Commands**

Command	Description
<b>aaa accounting</b>	Enables AAA accounting of requested services for billing or security purposes.

**(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL****show accounting**

Use the **show accounting** privileged EXEC command to step through all active sessions and to print all the accounting records for actively accounted functions. Use the **no** form of this command to disable viewing and printing accounting records.

```
show accounting {system | network | exec | command level} {start-stop | wait-start | stop-only}
tacacs+
```

```
no show accounting {system | network | exec | command level}
```

Syntax Description		
<b>system</b>		Displays accounting for all system-level events not associated with users, such as reloads.
<b>network</b>		Displays accounting for all network-related service requests, including SLIP, PPP, PPP NCPs, and ARA.
<b>exec</b>		Displays accounting for EXEC session (user shells). This keyword might return user profile information such as <b>autocommand</b> information.
<b>command</b>		Displays accounting for all commands at the specified privilege level.
<i>level</i>		Specifies the command level to display. Valid entries are 0 through 15.
<b>start-stop</b>		Displays a start record accounting notice at the beginning of a process and a stop record at the end of a process. The start accounting record is sent in the background. The requested user process begins regardless of whether or not the start accounting record was received by the accounting server.
<b>wait-start</b>		Displays both a start and a stop accounting notice to the accounting server.
<b>stop-only</b>		Displays a stop record accounting notice at the end of the requested user process.
<b>tacacs+</b>		Displays the TACACS-style accounting.

Defaults	
	Disabled

Command Modes	
	EXEC

Command History	Release	Modification
	11.1	This command was introduced.

**Usage Guidelines**

The **show accounting** command allows you to display the active accountable events on the network. It provides system administrators with a quick look at what is going on, and it also can help collect information in the event of a data loss on the accounting server.

The **show accounting** command displays additional data on the internal state of AAA if **debug aaa accounting** is activated.

**(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL****Examples**

The following is sample output from the **show accounting** command, showing accounting records for an EXEC login and an outgoing Telnet session:

```
router# show accounting

Active Accounted actions on tty0, User (not logged in) Priv 1
Task ID 1, EXEC Accounting record, 00:22:14 Elapsed
task_id=1 service=shell
Task ID 10, Connection Accounting record, 00:00:03 Elapsed
task_id=10 service=connection protocol=telnet addr=172.16.57.11 cmd=connect tom-ss20

Active Accounted actions on tty66, User tom Priv 1
Task ID 9, EXEC Accounting record, 00:02:14 Elapsed
task_id=9 service=shell
```

The following is sample output from the **show accounting** command, showing accounting records for a network connection:

```
router# show accounting

Active Accounted actions on tty33, User tom Priv 1
Task ID 13, Network Accounting record, 00:00:10 Elapsed
task_id=13 service=ppp protocol=ip addr=10.0.0.1
```

The following is sample output from the **show accounting** command, showing accounting records for a PPP session started from an EXEC prompt:

```
router# show accounting

Active Accounted actions on tty0, User (not logged in) Priv 1
Task ID 1, EXEC Accounting record, 00:35:16 Elapsed
task_id=1 service=shell

Active Accounted actions on tty33, User ellie Priv 1
Task ID 16, EXEC Accounting record, 00:00:17 Elapsed
task_id=16 service=shell

Active Accounted actions on Interface Async33, User tom Priv 1
Task ID 17, Network Accounting record, 00:00:13 Elapsed
task_id=17 service=ppp protocol=ip addr=10.0.0.1
```

Table 2 describes the fields contained in this example.

**Table 2 Show Accounting Field Descriptions**

Field	Description
Active Accounted actions on	Terminal line or interface name user with which the user logged in.
User	User's ID
Priv	User's privilege level.
Task ID	Unique identifier for each accounting session.
Accounting Record	Type of accounting session.
Elapsed	Length of time (hh:mm:ss) for this session type.
attribute=value	AV pairs associated with this accounting session.

***(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL***

Related Commands	Command	Description
	<b>aaa accounting</b>	Enables AAA accounting of requested services for billing or security purposes.
	<b>show line</b>	Displays the parameters of a terminal line.
	<b>show users</b>	Displays information about the active lines on the router.