



Authentication, Authorization, and Accounting Commands

This module describes the commands used to configure authentication, authorization, and accounting (AAA) services.

For detailed information about AAA concepts, configuration tasks, and examples, see the *Configuring AAA Services on Cisco IOS XR Software* configuration module.

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aaa accounting

To create a method list for accounting, use the **aaa accounting** command in global configuration mode. To remove a list name from the system, use the **no** form of this command.

```
aaa accounting {commands| exec| network} {default| list-name} {start-stop| stop-only} {none| method}
no aaa accounting {commands| exec| network} {default| list-name}
```

Syntax Description

commands	Enables accounting for EXEC shell commands.
exec	Enables accounting of an EXEC session.
network	Enables accounting for all network-related service requests, such as Internet Key Exchange (IKE) and Point-to-Point Protocol (PPP).
default	Uses the listed accounting methods that follow this keyword as the default list of methods for accounting services.
<i>list-name</i>	Character string used to name the accounting method list.
start-stop	Sends a “start accounting” notice at the beginning of a process and a “stop accounting” notice at the end of a process. The requested user process begins regardless of whether the “start accounting” notice was received by the accounting server.
stop-only	Sends a “stop accounting” notice at the end of the requested user process.
none	Uses no accounting.
<i>method</i>	Method used to enable AAA system accounting. The value is one of the following options: <ul style="list-style-type: none"> • group tacacs+—Uses the list of all TACACS+ servers for accounting. • group radius—Uses the list of all RADIUS servers for accounting. • group named-group—Uses a named subset of TACACS+ or RADIUS servers for accounting, as defined by the aaa group server tacacs+ or aaa group server radius command.

Command Default

AAA accounting is disabled.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.4.0	The network keyword and <i>method</i> argument were added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **aaa accounting** command to create default or named method lists defining specific accounting methods and that can be used on a per-line or per-interface basis. You can specify up to four methods in the method list. The list name can be applied to a line (console, aux, or vty template) to enable accounting on that particular line.

The Cisco IOS XR software supports both TACACS+ and RADIUS methods for accounting. The router reports user activity to the security server in the form of accounting records, which are stored on the security server.

Method lists for accounting define the way accounting is performed, enabling you to designate a particular security protocol that is used on specific lines or interfaces for particular types of accounting services.

For minimal accounting, include the **stop-only** keyword to send a “stop accounting” notice after the requested user process. For more accounting, you can include the **start-stop** keyword, so that TACACS+ or RADIUS sends a “start accounting” notice at the beginning of the requested process and a “stop accounting” notice after the process. The accounting record is stored only on the TACACS+ or RADIUS server.

The requested user process begins regardless of whether the “start accounting” notice was received by the accounting server.

**Note**

This command cannot be used with TACACS or extended TACACS.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to define a default commands accounting method list, where accounting services are provided by a TACACS+ security server, with a stop-only restriction:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa accounting commands default stop-only group tacacs+
```

Related Commands

Command	Description
aaa authorization, on page 14	Creates a method list for authorization.

aaa accounting system default

To enable authentication, authorization, and accounting (AAA) system accounting, use the **aaa accounting system default** command in global configuration mode. To disable system accounting, use the **no** form of this command.

```
aaa accounting system default {start-stop| stop-only} {none| method}
no aaa accounting system default
```

Syntax Description

start-stop	Sends a “start accounting” notice during system bootup and a “stop accounting” notice during system shutdown or reload.
stop-only	Sends a “stop accounting” notice during system shutdown or reload.
none	Uses no accounting.
<i>method</i>	Method used to enable AAA system accounting. The value is one of the following options: <ul style="list-style-type: none"> • group tacacs+—Uses the list of all TACACS+ servers for accounting. • group radius—Uses the list of all RADIUS servers for accounting. • group named-group—Uses a named subset of TACACS+ or RADIUS servers for accounting, as defined by the aaa group server tacacs+ or aaa group server radius command.

Command Default

AAA accounting is disabled.

Command Modes

Global configuration mode

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The <i>method</i> argument was added to specify either group tacacs+ , group radius , or group named-group options.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

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

The default method list is automatically applied to all interfaces or lines. If no default method list is defined, then no accounting takes place.

You can specify up to four methods in the method list.

Task ID

Task ID	Operations
aaa	read, write

Examples

This example shows how to cause a “start accounting” record to be sent to a TACACS+ server when a router initially boots. A “stop accounting” record is also sent when a router is shut down or reloaded.

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa accounting system default start-stop group tacacs+
```

Related Commands

Command	Description
aaa authentication, on page 11	Creates a method list for authentication.
aaa authorization, on page 14	Creates a method list for authorization.

aaa accounting update

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

```
aaa accounting update {newinfo| periodic minutes}
no aaa accounting update
```

Syntax Description

newinfo	(Optional) Sends an interim accounting record to the accounting server whenever there is new accounting information to report relating to the user in question.
periodic <i>minutes</i>	(Optional) Sends an interim accounting record to the accounting server periodically, as defined by the <i>minutes</i> argument, which is an integer that specifies the number of minutes. The range is from 1 to 35791394 minutes.

Command Default

AAA accounting update is disabled.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.4.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

If the **newinfo** keyword is used, interim accounting records are sent to the accounting server every time there is new accounting information to report. An example of this report would be when IP Control Protocol (IPCP) completes IP address negotiation with the remote peer. The interim accounting record includes the negotiated IP address used by the remote peer.

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

When using both the **newinfo** and **periodic** keywords, interim accounting records are sent to the accounting server every time there is new accounting information to report, and accounting records are sent to the accounting server periodically as defined by the *minutes* argument. For example, if you configure the **aaa accounting update** command with the **newinfo** and **periodic** keywords, all users currently logged in continue to generate periodic interim accounting records while new users generate accounting records based on the newinfo algorithm.

**Caution**

Using the **aaa accounting update** command with the **periodic** keyword can cause heavy congestion when many users are logged into the network.

Both **periodic** and **newinfo** keywords are mutually exclusive; therefore, only one keyword can be configured at a time.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to send periodic interim accounting records to the RADIUS server at 30-minute intervals:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa accounting update periodic 30
```

The following example shows how to send interim accounting records to the RADIUS server when there is new accounting information to report:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa accounting update newinfo
```

Related Commands

Command	Description
aaa accounting, on page 4	Creates a method list for accounting.
aaa authorization, on page 14	Creates a method list for authorization.

aaa authentication

To create a method list for authentication, use the **aaa authentication** command in global configuration mode or administration configuration mode. To disable this authentication method, use the **no** form of this command.

```
aaa authentication {login| ppp} {default| list-name| remote} method-list
```

```
no aaa authentication {login| ppp} {default| list-name| remote} method-list
```

Syntax Description

login	Sets authentication for login.
ppp	Sets authentication for Point-to-Point Protocol.
default	Uses the listed authentication methods that follow this keyword as the default list of methods for authentication.
<i>list-name</i>	Character string used to name the authentication method list.
remote	Uses the listed authentication methods that follow this keyword as the default list of methods for administrative authentication on a remote non-owner secure domain router. The remote keyword is used only with the login keyword and not with the ppp keyword. Note The remote keyword is available only on the administration plane.
<i>method-list</i>	Method used to enable AAA system accounting. The value is one of the following options: <ul style="list-style-type: none"> • group tacacs+—Specifies a method list that uses the list of all configured TACACS+ servers for authentication. • group radius—Specifies a method list that uses the list of all configured RADIUS servers for authentication. • group named-group—Specifies a method list that uses a named subset of TACACS+ or RADIUS servers for authentication, as defined by the aaa group server tacacs+ or aaa group server radius command. • local—Specifies a method list that uses the local username database method for authentication. AAA method rollover happens beyond the local method if username is not defined in the local group. • line—Specifies a method list that uses the line password for authentication.

Command Default

Default behavior applies the local authentication on all ports.

Command Modes

Global configuration
Administration configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The <i>method-list</i> argument was added to specify either group tacacs+ , group radius , group named-group , local , or line options.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **aaa authentication** command to create a series of authentication methods, or method list. You can specify up to four methods in the method list. A *method list* is a named list describing the authentication methods (such as TACACS+ or RADIUS) in sequence. The subsequent methods of authentication are used only if the initial method is not available, not if it fails.

The default method list is applied for all interfaces for authentication, except when a different named method list is explicitly specified—in which case the explicitly specified method list overrides the default list.

For console and vty access, if no authentication is configured, a default of local method is applied.

**Note**

- The **group tacacs+**, **group radius**, and **group group-name** forms of this command refer to a set of previously defined TACACS+ or RADIUS servers.
- Use the **tacacs-server host** or **radius-server host** command to configure the host servers.
- Use the **aaa group server tacacs+** or **aaa group server radius** command to create a named subset of servers.
- The **login** keyword, **remote** keyword, **local** option, and **group** option are available only in administration configuration mode.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to specify the default method list for authentication, and also enable authentication for console in global configuration mode:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa authentication login default group tacacs+
```

The following example shows how to specify the remote method list for authentication, and also enable authentication for console in administration configuration mode:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router (admin)# configure
RP/0/0/CPU0:router (admin-config)# aaa authentication login remote local group tacacs+
```

Related Commands

Command	Description
aaa accounting, on page 4	Creates a method list for accounting.
aaa authorization, on page 14	Creates a method list for authorization.
aaa group server radius, on page 18	Groups different RADIUS server hosts into distinct lists and distinct methods.
aaa group server tacacs+, on page 20	Groups different TACACS+ server hosts into distinct lists and distinct methods.
login authentication, on page 40	Enables AAA authentication for logins.
tacacs-server host, on page 101	Specifies a TACACS+ host.

aaa authorization

To create a method list for authorization, use the **aaa authorization** command in global configuration mode. To disable authorization for a function, use the **no** form of this command.

```
aaa authorization {commands| eventmanager| exec| network} {default| list-name} {none| local| group
{tacacs+| radius| group-name}}
```

```
no aaa authorization {commands| eventmanager| exec| network} {default| list-name}
```

Syntax Description

commands	Configures authorization for all EXEC shell commands.
eventmanager	Applies an authorization method for authorizing an event manager (fault manager).
exec	Configures authorization for an interactive (EXEC) session.
network	Configures authorization for network services, such as PPP or Internet Key Exchange (IKE).
default	Uses the listed authorization methods that follow this keyword as the default list of methods for authorization.
<i>list-name</i>	Character string used to name the list of authorization methods.
none	Uses no authorization. If you specify none , no subsequent authorization methods is attempted. However, the task ID authorization is always required and cannot be disabled.
local	Uses local authorization. This method of authorization is not available for command authorization.
group tacacs+	Uses the list of all configured TACACS+ servers for authorization.
group radius	Uses the list of all configured RADIUS servers for authorization. This method of authorization is not available for command authorization.
group <i>group-name</i>	Uses a named subset of TACACS+ or RADIUS servers for authorization as defined by the aaa group server tacacs+ or aaa group server radius command.

Command Default

Authorization is disabled for all actions (equivalent to the method **none** keyword).

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.6.0	The eventmanager keyword (fault manager) was added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **aaa authorization** command to create method lists defining specific authorization methods that can be used on a per-line or per-interface basis. You can specify up to four methods in the method list.

**Note**

The command authorization mentioned here applies to the one performed by an external AAA server and *not* for task-based authorization.

Method lists for authorization define the ways authorization will be performed and the sequence in which these methods will be performed. A method list is a named list describing the authorization methods (such as TACACS+), in sequence. Method lists enable you to designate one or more security protocols for authorization, thus ensuring a backup system in case the initial method fails. Cisco IOS XR software uses the first method listed to authorize users for specific network services; if that method fails to respond, Cisco IOS XR software selects the next method listed in the method list. This process continues until there is successful communication with a listed authorization method or until all methods defined have been exhausted.

**Note**

Cisco IOS XR software attempts authorization with the next listed method only when there is no response (not a failure) from the previous method. If authorization fails at any point in this cycle—meaning that the security server or local username database responds by denying the user services—the authorization process stops and no other authorization methods are attempted.

The Cisco IOS XR software supports the following methods for authorization:

- **none**—The router does not request authorization information; authorization is not performed over this line or interface.
- **local**—Use the local database for authorization.
- **group tacacs+**—Use the list of all configured TACACS+ servers for authorization.
- **group radius**—Use the list of all configured RADIUS servers for authorization.
- **group group-name**—Uses a named subset of TACACS+ or RADIUS servers for authorization.

Method lists are specific to the type of authorization being requested. Cisco IOS XR software supports four types of AAA authorization:

- **Commands authorization**—Applies to the EXEC mode commands a user issues. Command authorization attempts authorization for all EXEC mode commands.



Note “Command” authorization is distinct from “task-based” authorization, which is based on the task profile established during authentication.

- **EXEC authorization**—Applies authorization for starting an EXEC session.



Note The **exec** keyword is no longer used to authorize the fault manager service. The **eventmanager** keyword (fault manager) is used to authorize the fault manager service. The **exec** keyword is used for EXEC authorization.

- **Network authorization**—Applies authorization for network services, such as IKE.
- **Event manager authorization**—Applies an authorization method for authorizing an event manager (fault manager). RADIUS servers are not allowed to be configured for the event manager (fault manager) authorization. You are allowed to use TACACS+ or locald.



Note The **eventmanager** keyword (fault manager) replaces the **exec** keyword to authorize event managers (fault managers).

When you create a named method list, you are defining a particular list of authorization methods for the indicated authorization type. When defined, method lists must be applied to specific lines or interfaces before any of the defined methods are performed.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to define the network authorization method list named `listname1`, which specifies that TACACS+ authorization is used:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa authorization commands listname1 group tacacs+
```

Related Commands

Command	Description
aaa accounting, on page 4	Creates a method list for accounting.

aaa default-taskgroup

To specify a task group for both remote TACACS+ authentication and RADIUS authentication, use the **aaa default-taskgroup** command in global configuration mode. To remove this default task group, enter the **no** form of this command.

```
aaa default-taskgroup taskgroup-name
no aaa default-taskgroup
```

Syntax Description

<i>taskgroup-name</i>	Name of an existing task group.
-----------------------	---------------------------------

Command Default

No default task group is assigned for remote authentication.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **aaa default-taskgroup** command to specify an existing task group for remote TACACS+ authentication.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to specify taskgroup1 as the default task group for remote TACACS+ authentication:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa default-taskgroup taskgroup1
```

aaa group server radius

To group different RADIUS server hosts into distinct lists, use the **aaa group server radius** command in global configuration mode. To remove a group server from the configuration list, enter the **no** form of this command.

aaa group server radius *group-name*

no aaa group server radius *group-name*

Syntax Description

<i>group-name</i>	Character string used to name the group of servers.
-------------------	---

Command Default

This command is not enabled.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **aaa group server radius** command to group existing server hosts, which allows you to select a subset of the configured server hosts and use them for a particular service. A server group is used in conjunction with a global server-host list. The server group lists the IP addresses or hostnames of the selected server hosts.

Server groups can also include multiple host entries for the same server, as long as each entry has a unique identifier. The combination of an IP address and User Datagram Protocol (UDP) port number creates a unique identifier, allowing different ports to be individually defined as RADIUS hosts providing a specific authentication, authorization, and accounting (AAA) service. In other words, this unique identifier enables RADIUS requests to be sent to different UDP ports on a server at the same IP address. If two different host entries on the same RADIUS server are configured for the same service, for example, accounting, the second host entry acts as an automatic switchover backup to the first host entry. Using this example, if the first host entry fails to provide accounting services, the network access server tries the second host entry on the same device for accounting services. The RADIUS host entries are tried in the order in which they are configured in the server group.

All members of a server group must be the same type, that is, RADIUS.

The server group cannot be named radius or tacacs.

This command enters server group configuration mode. You can use the server command to associate a particular RADIUS server with the defined server group.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows the configuration of an AAA group server named radgroup1, which comprises three member servers:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa group server radius radgroup1
RP/0/0/CPU0:router(config-sg-radius)# server 10.0.0.5 auth-port 1700 acct-port 1701
RP/0/0/CPU0:router(config-sg-radius)# server 10.0.0.10 auth-port 1702 acct-port 1703
RP/0/0/CPU0:router(config-sg-radius)# server 10.0.0.20 auth-port 1705 acct-port 1706
```

**Note**

If the **auth-port** *port-number* and **acct-port** *port-number* keywords and arguments are not specified, the default value of the *port-number* argument for the **auth-port** keyword is 1645 and the default value of the *port-number* argument for the **acct-port** keyword is 1646.

Related Commands

Command	Description
key (RADIUS), on page 36	Specifies the authentication and encryption key that is used between the router and the RADIUS daemon running on the RADIUS server.
radius source-interface , on page 57	Forces RADIUS to use the IP address of a specified interface or subinterface for all outgoing RADIUS packets.
retransmit (RADIUS), on page 59	Specifies the number of times a RADIUS request is resent to a server if the server is not responding or is responding slowly.
server (RADIUS), on page 63	Associates a RADIUS server with a defined server group.
server-private (RADIUS), on page 67	Configures the IP address of the private RADIUS server for the group server.
timeout (RADIUS), on page 114	Specifies the number of seconds the router waits for the RADIUS server to reply before retransmitting.
vrf (RADIUS), on page 128	Configures the Virtual Private Network (VPN) routing and forwarding (VRF) reference of an AAA RADIUS server group.

aaa group server tacacs+

To group different TACACS+ server hosts into distinct lists, use the **aaa group server tacacs+** command in global configuration mode. To remove a server group from the configuration list, enter the **no** form of this command.

aaa group server tacacs+ *group-name*

no aaa group server tacacs+ *group-name*

Syntax Description

<i>group-name</i>	Character string used to name a group of servers.
-------------------	---

Command Default

This command is not enabled.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The AAA server-group feature introduces a way to group existing server hosts. The feature enables you to select a subset of the configured server hosts and use them for a particular service.

The **aaa group server tacacs+** command enters server group configuration mode. The **server** command associates a particular TACACS+ server with the defined server group.

A *server group* is a list of server hosts of a particular type. The supported server host type is TACACS+ server hosts. A server group is used with a global server host list. The server group lists the IP addresses or hostnames of the selected server hosts.

The server group cannot be named radius or tacacs.



Note

Group name methods refer to a set of previously defined TACACS+ servers. Use the **tacacs-server host** command to configure the host servers.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows the configuration of an AAA group server named tacgroup1, which comprises three member servers:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa group server tacacs+ tacgroup1
RP/0/0/CPU0:router(config-sg-tacacs)# server 192.168.200.226
RP/0/0/CPU0:router(config-sg-tacacs)# server 192.168.200.227
RP/0/0/CPU0:router(config-sg-tacacs)# server 192.168.200.228
```

Related Commands

Command	Description
aaa accounting, on page 4	Creates a method list for accounting.
aaa authentication, on page 11	Creates a method list for authentication.
aaa authorization, on page 14	Creates a method list for authorization.
server (TACACS+), on page 65	Specifies the host name or IP address of an external TACACS+ server.
tacacs-server host, on page 101	Specifies a TACACS+ host.

accounting (line)

To enable authentication, authorization, and accounting (AAA) accounting services for a specific line or group of lines, use the **accounting** command in line template configuration mode. To disable AAA accounting services, use the **no** form of this command.

accounting {**commands**| **exec**} {**default**| *list-name*}

no accounting {**commands**| **exec**}

Syntax Description

commands	Enables accounting on the selected lines for all EXEC shell commands.
exec	Enables accounting of an EXEC session.
default	The name of the default method list, created with the aaa accounting command.
<i>list-name</i>	Specifies the name of a list of accounting methods to use. The list is created with the aaa accounting command.

Command Default

Accounting is disabled.

Command Modes

Line template configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

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 to the selected line or group of lines. If a method list is not specified this way, no accounting is applied to the selected line or group of lines.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to enable command accounting services using the accounting method list named *listname2* on a line template named *configure*:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# line template configure
RP/0/0/CPU0:router(config-line)# accounting commands listname2
```

Related Commands

Command	Description
aaa accounting, on page 4	Creates a method list for accounting.

authorization

To enable authentication, authorization, and accounting (AAA) authorization for a specific line or group of lines, use the **authorization** command in line template configuration mode. To disable authorization, use the **no** form of this command.

authorization {**commands**| **exec**} {**default**| *list-name*}

no authorization {**commands**| **exec**}

Syntax Description

commands	Enables authorization on the selected lines for all commands.
exec	Enables authorization for an interactive (EXEC) session.
default	Applies the default method list, created with the aaa authorization command.
<i>list-name</i>	Specifies the name of a list of authorization methods to use. If no list name is specified, the system uses the default. The list is created with the aaa authorization command.

Command Default

Authorization is not enabled.

Command Modes

Line template configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

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

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to enable command authorization using the method list named *listname4* on a line template named *configure*:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# line template configure
RP/0/0/CPU0:router(config-line)# authorization commands listname4
```

Related Commands

Command	Description
aaa authorization, on page 14	Creates a method list for authorization.

deadtime (server-group configuration)

To configure the deadtime value at the RADIUS server group level, use the **deadtime** command in server-group configuration mode. To set deadtime to 0, use the **no** form of this command.

deadtime *minutes*

no deadtime

Syntax Description

<i>minutes</i>	Length of time, in minutes, for which a RADIUS server is skipped over by transaction requests, up to a maximum of 1440 (24 hours). The range is from 1 to 1440.
----------------	---

Command Default

Deadtime is set to 0.

Command Modes

Server-group configuration

Command History

Release	Modification
Release 3.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The value of the deadtime set in the server groups overrides the deadtime that is configured globally. If the deadtime is omitted from the server group configuration, the value is inherited from the master list. If the server group is not configured, the default value of 0 applies to all servers in the group. If the deadtime is set to 0, no servers are marked dead.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example specifies a one-minute deadtime for RADIUS server group group1 when it has failed to respond to authentication requests for the **deadtime** command:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa group server radius group1
RP/0/0/CPU0:router(config-sg-radius)# server 1.1.1.1 auth-port 1645 acct-port 1646
```

```
RP/0/0/CPU0:router(config-sg-radius)# server 2.2.2.2 auth-port 2000 acct-port 2001
RP/0/0/CPU0:router(config-sg-radius)# deadtime 1
```

Related Commands

Command	Description
aaa group server tacacs+, on page 20	Groups different RADIUS server hosts into distinct lists and distinct methods.
radius-server dead-criteria time, on page 44	Forces one or both of the criteria that is used to mark a RADIUS server as dead.
radius-server deadtime , on page 48	Defines the length of time in minutes for a RADIUS server to remain marked dead.

description (AAA)

To create a description of a task group or user group during configuration, use the **description** command in task group configuration or user group configuration mode. To delete a task group description or user group description, use the **no** form of this command.

description *string*

no description

Syntax Description

<i>string</i>	Character string describing the task group or user group.
---------------	---

Command Default

None

Command Modes

Task group configuration

User group configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **description** command inside the task or user group configuration submode to define a description for the task or user group, respectively.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows the creation of a task group description:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# taskgroup alpha
RP/0/0/CPU0:router(config-tg)# description this is a sample taskgroup
```

The following example shows the creation of a user group description:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# usergroup alpha
RP/0/0/CPU0:router(config-ug)# description this is a sample user group
```

Related Commands

Command	Description
taskgroup, on page 112	Accesses task group configuration mode and configures a task group by associating it with a set of task IDs.
usergroup, on page 120	Accesses user group configuration mode and configures a user group by associating it with a set of task groups.

group (AAA)

To add a user to a group, use the **group** command in username configuration mode. To remove the user from a group, use the **no** form of this command.

```
group {root-system| root-lr| netadmin| sysadmin| operator| cisco-support| serviceadmin| group-name} no
group {root-system| root-lr| netadmin| sysadmin| operator| cisco-support| serviceadmin| group-name}
```

Syntax Description

root-system	Adds the user to the predefined root-system group. Only users with root-system authority may use this option.
root-lr	Adds the user to the predefined root-lr group. Only users with root-system authority or root-lr authority may use this option.
netadmin	Adds the user to the predefined network administrators group.
sysadmin	Adds the user to the predefined system administrators group.
operator	Adds the user to the predefined operator group.
cisco-support	Adds the user to the predefined Cisco support personnel group.
serviceadmin	Adds the user to the predefined service administrators group.
group-name	Adds the user to a named user group that has already been defined with the usergroup command.

Command Default

None

Command Modes

Username configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The serviceadmin keyword was added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The predefined group root-system may be specified only by root-system users while configuring administration.

Use the **group** command in username configuration mode. To access username configuration mode, use the [username, on page 122](#) command in global configuration mode.

If the **group** command is used in administration configuration mode, only root-system and cisco-support keywords can be specified.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to assign the user group operator to the user named user1:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# username user1
RP/0/0/CPU0:router(config-un)# group operator
```

Related Commands

Command	Description
password (AAA), on page 42	Creates a login password for a user.
usergroup, on page 120	Configures a user group and associates it with a set of task groups.
username, on page 122	Accesses username configuration mode, configures a new user with a username, and establishes a password and permissions for that user.

inherit taskgroup

To enable a task group to derive permissions from another task group, use the **inherit taskgroup** command in task group configuration mode.

```
inherit taskgroup {taskgroup-name| netadmin| operator| sysadmin| cisco-support| root-lr| root-system| serviceadmin}
```

Syntax Description

<i>taskgroup-name</i>	Name of the task group from which permissions are inherited.
netadmin	Inherits permissions from the network administrator task group.
operator	Inherits permissions from the operator task group.
sysadmin	Inherits permissions from the system administrator task group.
cisco-support	Inherits permissions from the cisco support task group.
root-lr	Inherits permissions from the root-lr task group.
root-system	Inherits permissions from the root system task group.
serviceadmin	Inherits permissions from the service administrators task group.

Command Default

None

Command Modes

Task group configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The serviceadmin keyword was added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **inherit taskgroup** command to inherit the permissions (task IDs) from one task group into another task group. Any changes made to the taskgroup from which they are inherited are reflected immediately in the group from which they are inherited.

Task ID	Task ID	Operations
	aaa	read, write

Examples

In the following example, the permissions of task group tg2 are inherited by task group tg1:

```
RP/0/0/CPU0:router# configure  
RP/0/0/CPU0:router(config)# taskgroup tg1  
RP/0/0/CPU0:router(config-tg)# inherit taskgroup tg2  
RP/0/0/CPU0:router(config-tg)# end
```

inherit usergroup

To enable a user group to derive characteristics of another user group, use the **inherit usergroup** command in user group configuration mode.

inherit usergroup *usergroup-name*

Syntax Description

<i>usergroup-name</i>	Name of the user group from which permissions are to be inherited.
-----------------------	--

Command Default

None

Command Modes

User group configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Each user group is associated with a set of task groups applicable to the users in that group. A task group is defined by a collection of task IDs. Task groups contain task ID lists for each class of action. The task permissions for a user are derived (at the start of the EXEC or XML session) from the task groups associated with the user groups to which that user belongs.

User groups support inheritance from other user groups. Use the **inherit usergroup** command to copy permissions (task ID attributes) from one user group to another user group. The “destination” user group inherits the properties of the inherited group and forms a union of all task IDs specified in those groups. For example, when user group A inherits user group B, the task map of the user group A is a union of that of A and B. Cyclic inclusions are detected and rejected. User groups cannot inherit properties from predefined groups, such as root-system users, root-sdr users, netadmin users, and so on. Any changes made to the usergroup from which it is inherited are reflected immediately in the group from which it is inherited.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to enable the purchasing user group to inherit properties from the sales user group:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# usergroup purchasing
RP/0/0/CPU0:router(config-ug)# inherit usergroup sales
```

Related Commands

Command	Description
description (AAA), on page 28	Creates a description of a task group in task group configuration mode, or creates a description of a user group in user group configuration mode.
taskgroup, on page 112	Configures a task group to be associated with a set of task IDs.
usergroup, on page 120	Configures a user group to be associated with a set of task groups.

key (RADIUS)

To specify the authentication and encryption key that is used between the router and the RADIUS daemon running on the RADIUS server, use the **key (RADIUS)** command in RADIUS server-group private configuration mode.

key {0 *clear-text-key* | 7 *encrypted-key* | *clear-text-key*}

no key {0 *clear-text-key* | 7 *encrypted-key* | *clear-text-key*}

Syntax Description

0 <i>clear-text-key</i>	Specifies an unencrypted (cleartext) shared key.
7 <i>encrypted-key</i>	Specifies an encrypted shared key.
<i>clear-text-key</i>	Specifies an unencrypted (cleartext) user password.

Command Default

For submode **key** commands, the default is to use the **radius-server key** command in global configuration mode, if defined. If the global key is also not defined, the configuration is not complete.

Command Modes

RADIUS server-group private configuration

Command History

Release	Modification
Release 3.4.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to set the encrypted key to anykey:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa group server radius group1
RP/0/0/CPU0:router(config-sg-radius)# server-private 10.1.1.1 auth-port 300
RP/0/0/CPU0:router(config-sg-radius-private)# key anykey
```

Related Commands

Command	Description
aaa group server tacacs+, on page 20	Groups different RADIUS server hosts into distinct lists.
radius-server key , on page 52	Sets the authentication and encryption key for all RADIUS communications between the router and the RADIUS daemon.
retransmit (RADIUS), on page 59	Specifies the number of times a RADIUS request is resent to a server if the server is not responding or is responding slowly.
server-private (RADIUS), on page 67	Configures the IP address of the private RADIUS server for the group server.
timeout (RADIUS), on page 114	Specifies the number of seconds the router waits for the RADIUS server to reply before retransmitting.

key (TACACS+)

To specify an authentication and encryption key shared between the AAA server and the TACACS+ server, use the **key (TACACS+)** command in TACACS host configuration mode. To disable this feature, use the **no** form of this command.

key {0 *clear-text-key* | 7 *encrypted-key* | *auth-key*}

no key {0 *clear-text-key* | 7 *encrypted-key* | *auth-key*}

Syntax Description

0 <i>clear-text-key</i>	Specifies an unencrypted (cleartext) shared key.
7 <i>encrypted-key</i>	Specifies an encrypted shared key.
<i>auth-key</i>	Specifies the unencrypted key between the AAA server and the TACACS+ server.

Command Default

None

Command Modes

TACACS host configuration

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The TACACS+ packets are encrypted using the key, and it must match the key used by the TACACS+ daemon. Specifying this key overrides the key set by the **tacacs-server key** command for this server only.

The key is used to encrypt the packets that are going from TACACS+, and it should match with the key configured on the external TACACS+ server so that the packets are decrypted properly. If a mismatch occurs, the result fails.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to set the encrypted key to anykey

```
RP/0/0/CPU0:router(config)# tacacs-server host 209.165.200.226  
RP/0/0/CPU0:router(config-tacacs-host)# key anykey
```

Related Commands

Command	Description
tacacs-server host, on page 101	Specifies a TACACS+ host.
tacacs-server key, on page 104	Globally sets the authentication encryption key used for all TACACS+ communications between the router and the TACACS+ daemon.

login authentication

To enable authentication, authorization, and accounting (AAA) authentication for logins, use the **login authentication** command in line template configuration mode. To return to the default authentication settings, use the **no** form of this command.

login authentication {**default**| *list-name*}

no login authentication

Syntax Description

default	Default list of AAA authentication methods, as set by the aaa authentication login command.
<i>list-name</i>	Name of the method list used for authenticating. You specify this list with the aaa authentication login command.

Command Default

This command uses the default set with the **aaa authentication login** command.

Command Modes

Line template configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **login authentication** command is a per-line command used with AAA that specifies the name of a list of AAA authentication methods to try at login.



Caution

If you use a *list-name* value that was not configured with the **aaa authentication login** command, the configuration is rejected.

Entering the **no** form of the **login authentication** command has the same effect as entering the command with the **default** keyword.

Before issuing this command, create a list of authentication processes by using the **aaa authentication login** global configuration command.

Task ID

Task ID	Operations
aaa	read, write
tty-access	read, write

Examples

The following example shows that the default AAA authentication is used for the line template *template1*:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# line template template1
RP/0/0/CPU0:router(config-line)# login authentication default
```

The following example shows that the AAA authentication list called *list1* is used for the line template *template2*:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# line template template2
RP/0/0/CPU0:router(config-line)# login authentication list1
```

Related Commands

Command	Description
aaa authentication, on page 11	Creates a method list for authentication.

password (AAA)

To create a login password for a user, use the **password** command in username configuration mode or line template configuration mode. To remove the password, use the **no** form of this command.

password {[0] 7 *password*}

no password {0| 7 *password*}

Syntax Description

0	(Optional) Specifies that an unencrypted clear-text password follows.
7	Specifies that an encrypted password follows.
<i>password</i>	Specifies the unencrypted password text to be entered by the user to log in, for example, "lab". If encryption is configured, the password is not visible to the user. Can be up to 253 characters in length.

Command Default

The password is in unencrypted clear text.

Command Modes

Username configuration
Line template configuration

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

You can specify one of two types of passwords: encrypted or clear text.

When an EXEC process is started on a line that has password protection, the process prompts for the password. If the user enters the correct password, the process issues the prompt. The user can try three times to enter a password before the process exits and returns the terminal to the idle state.

Passwords are two-way encrypted and should be used for applications such as PPP that need decryptable passwords that can be decrypted.



Note The **show running-config** command always displays the clear-text login password in encrypted form when the **0** option is used.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to establish the unencrypted password *pwd1* for user. The output from the **show** command displays the password in its encrypted form.

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# username user1
RP/0/0/CPU0:router(config-un)# password 0 pwd1
RP/0/0/CPU0:router(config-un)# commit
RP/0/0/CPU0:router(config-un)# show running-config
Building configuration...
username user1
password 7 141B1309
```

Related Commands

Command	Description
group (AAA), on page 30	Adds a user to a group.
usergroup, on page 120	Accesses user group configuration mode and configures a user group, associating it with a set of task groups.
username, on page 122	Accesses username configuration mode and configures a new user with a username, establishing a password and granting permissions for that user.
line	Enters line template configuration mode for the specified line template. For more information, see the <i>Cisco IOS XR System Management Command Reference</i> .

radius-server dead-criteria time

To specify the minimum amount of time, in seconds, that must elapse from the time that the router last received a valid packet from the RADIUS server to the time the server is marked as dead, use the **radius-server dead-criteria time** command in global configuration mode. To disable the criteria that were set, use the **no** form of this command.

radius-server dead-criteria time *seconds*

no radius-server dead-criteria time *seconds*

Syntax Description

seconds Length of time, in seconds. The range is from 1 to 120 seconds. If the *seconds* argument is not configured, the number of seconds ranges from 10 to 60, depending on the transaction rate of the server.

Note The time criterion must be met for the server to be marked as dead.

Command Default

If the *seconds* argument is not configured, the number of seconds ranges from 10 to 60 seconds, depending on the transaction rate of the server.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note

If you configure the **radius-server dead-criteria time** command before the **radius-server deadtime** command, the **radius-server dead-criteria time** command may not be enforced.

If a packet has not been received since the router booted and there is a timeout, the time criterion is treated as though it were met.

If the *seconds* argument is not indicated, the time is set to the defaults.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to establish the time for the dead-criteria conditions for a RADIUS server to be marked as dead for the **radius-server dead-criteria time** command:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# radius-server dead-criteria time 5
```

Related Commands

Command	Description
radius-server dead-criteria tries, on page 46	Specifies the number of consecutive timeouts that must occur on the router before the RADIUS server is marked as dead.
radius-server deadtime , on page 48	Defines the length of time, in minutes, for a RADIUS server to remain marked dead.
show radius dead-criteria, on page 86	Displays information for the dead-server detection criteria.

radius-server dead-criteria tries

To specify the number of consecutive timeouts that must occur on the router before the RADIUS server is marked as dead, use the **radius-server dead-criteria tries** command in global configuration mode. To disable the criteria that were set, use the **no** form of this command.

radius-server dead-criteria *tries*

no radius-server dead-criteria *tries*

Syntax Description

<i>tries</i>	Number of timeouts from 1 to 100. If the <i>tries</i> argument is not configured, the number of consecutive timeouts ranges from 10 to 100, depending on the transaction rate of the server and the number of configured retransmissions.
Note	The <i>tries</i> criterion must be met for the server to be marked as dead.

Command Default

If the *tries* argument is not configured, the number of consecutive timeouts ranges from 10 to 100, depending on the transaction rate of the server and the number of configured retransmissions.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

If the server performs both authentication and accounting, both types of packet are included in the number. Improperly constructed packets are counted as though they were timeouts. All transmissions, including the initial transmit and all retransmits, are counted.



Note

If you configure the **radius-server dead-criteria tries** command before the **radius-server deadtime** command, the **radius-server dead-criteria tries** command may not be enforced.

If the *tries* argument is not indicated, the number of tries is set to the default.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to establish the number of tries for the dead-criteria conditions for a RADIUS server to be marked as dead for the **radius-server dead-criteria tries** command:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# radius-server dead-criteria tries 4
```

Related Commands

Command	Description
radius-server dead-criteria time, on page 44	Defines the length of time in seconds that must elapse from the time that the router last received a valid packet from the RADIUS server to the time the server is marked as dead.
radius-server deadtime , on page 48	Defines the length of time, in minutes, for a RADIUS server to remain marked dead.
show radius dead-criteria, on page 86	Displays information for the dead-server detection criteria.

radius-server deadtime

To improve RADIUS response times when some servers are unavailable and cause the unavailable servers to be skipped immediately, use the **radius-server deadtime** command in global configuration mode. To set deadtime to 0, use the **no** form of this command.

radius-server deadtime *value*

no radius-server deadtime *value*

Syntax Description

<i>value</i>	Length of time, in minutes, for which a RADIUS server is skipped over by transaction requests, up to a maximum of 1440 (24 hours). The range is from 1 to 1440. The default value is 0.
--------------	---

Command Default

Dead time is set to 0.

Command Modes

Global configuration mode

Command History

Release	Modification
Release 3.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

A RADIUS server marked as dead is skipped by additional requests for the duration of minutes unless all other servers are marked dead and there is no rollover method.

Task ID

Task ID	Operations
aaa	read, write

Examples

This example specifies five minutes of deadtime for RADIUS servers that fail to respond to authentication requests for the **radius-server deadtime** command:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# radius-server deadtime 5
```


radius-server host

To specify a RADIUS server host, use the **radius-server host** command in global configuration mode. To delete the specified RADIUS host, use the **no** form of this command.

radius-server host *ip-address* [**auth-port** *port-number*] [**acct-port** *port-number*] [**timeout** *seconds*] [**retransmit** *retries*] [**key** *string*]

no radius-server host *ip-address* [**auth-port** *port-number*] [**acct-port** *port-number*]

Syntax Description

<i>ip-address</i>	IP address of the RADIUS server host.
auth-port <i>port-number</i>	(Optional) Specifies the User Datagram Protocol (UDP) destination port for authentication requests; the host is not used for authentication if set to 0. If unspecified, the port number defaults to 1645.
acct-port <i>port-number</i>	(Optional) Specifies the UDP destination port for accounting requests; the host is not used for accounting if set to 0. If unspecified, the port number defaults to 1646.
timeout <i>seconds</i>	(Optional) The time interval (in seconds) that the router waits for the RADIUS server to reply before retransmitting. This setting overrides the global value of the radius-server timeout command. If no timeout value is specified, the global value is used. Enter a value in the range from 1 to 1000. Default is 5.
retransmit <i>retries</i>	(Optional) The number of times a RADIUS request is re-sent to a server, if that server is not responding or is responding slowly. This setting overrides the global setting of the radius-server retransmit command. If no retransmit value is specified, the global value is used. Enter a value in the range from 1 to 100. Default is 3.
key <i>string</i>	(Optional) Specifies the authentication and encryption key used between the router and the RADIUS server. This key overrides the global setting of the radius-server key command. If no key string is specified, the global value is used. The key is a text string that must match the encryption key used on the RADIUS server. Always configure the key as the last item in the radius-server host command syntax. This is because the leading spaces are ignored, but spaces within and at the end of the key are used. If you use spaces in the key, do not enclose the key in quotation marks unless the quotation marks themselves are part of the key.

Command Default

No RADIUS host is specified; use global **radius-server** command values.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

You can use multiple **radius-server host** commands to specify multiple hosts. The Cisco IOS XR software searches for hosts in the order in which you specify them.

If no host-specific timeout, retransmit, or key values are specified, the global values apply to each host.

Task ID

Task ID	Operations
aaa	read, write

Examples

This example shows how to establish the host with IP address 172.29.39.46 as the RADIUS server, use ports 1612 and 1616 as the authorization and accounting ports, set the timeout value to 6, set the retransmit value to 5, and set “rad123” as the encryption key, matching the key on the RADIUS server:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# radius-server host 172.29.39.46 auth-port 1612 acct-port 1616
timeout 6 retransmit 5 key rad123
```

To use separate servers for accounting and authentication, use the zero port value as appropriate.

Related Commands

Command	Description
aaa accounting subscriber	Creates a method list for accounting.
aaa authentication subscriber	Creates a method list for authentication.
aaa authorization subscriber	Creates a method list for authorization.
radius-server key , on page 52	Sets the authentication and encryption key for all RADIUS communications between the router and the RADIUS daemon.
radius-server retransmit , on page 54	Specifies how many times Cisco IOS XR software retransmits packets to a server before giving up.
radius-server timeout , on page 56	Sets the interval a router waits for a server host to reply.

radius-server key

To set the authentication and encryption key for all RADIUS communications between the router and the RADIUS daemon, use the **radius-server key** command in global configuration mode. To disable the key, use the **no** form of this command.

radius-server key {0 *clear-text-key* | 7 *encrypted-key* | *clear-text-key*}

no radius-server key

Syntax Description

0 <i>clear-text-key</i>	Specifies an unencrypted (cleartext) shared key.
7 <i>encrypted-key</i>	Specifies a encrypted shared key.
<i>clear-text-key</i>	Specifies an unencrypted (cleartext) shared key.

Command Default

The authentication and encryption key is disabled.

Command Modes

Global configuration mode

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The key entered must match the key used on the RADIUS server. All leading spaces are ignored, but spaces within and at the end of the key are used. If you use spaces in your key, do not enclose the key in quotation marks unless the quotation marks themselves are part of the key.

Task ID

Task ID	Operations
aaa	read, write

Examples

This example shows how to set the cleartext key to “samplekey:”

```
RP/0/0/CPU0:router# configure  
RP/0/0/CPU0:router(config)# radius-server key 0 samplekey  
This example shows how to set the encrypted shared key to “anykey:”
```

```
RP/0/0/CPU0:router# configure  
RP/0/0/CPU0:router(config)# radius-server key 7 anykey
```

radius-server retransmit

To specify the number of times the Cisco IOS XR software retransmits a packet to a server before giving up, use the **radius-server retransmit** command in global configuration mode. To disable retransmission, use the **no** form of this command.

radius-server retransmit *retries*

no radius-server retransmit

Syntax Description

<i>retries</i>	Maximum number of retransmission attempts. The range is from 1 to 100. Default is 3.
----------------	--

Command Default

The RADIUS servers are retried three times, or until a response is received.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The RADIUS client tries all servers, allowing each one to time out before increasing the retransmit count.

Task ID

Task ID	Operations
aaa	read, write

Examples

This example shows how to specify a retransmit counter value of five times:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# radius-server retransmit 5
```

Related Commands

Command	Description
radius-server key , on page 52	Sets the authentication and encryption key for all RADIUS communications between the router and the RADIUS daemon.

radius-server timeout

To set the interval for which a router waits for a server host to reply before timing out, use the **radius-server timeout** command in global configuration mode. To restore the default, use the **no** form of this command.

radius-server timeout *seconds*

no radius-server timeout

Syntax Description

<i>seconds</i>	Number that specifies the timeout interval, in seconds. Range is from 1 to 1000.
----------------	--

Command Default

The default radius-server timeout value is 5 seconds.

Command Modes

Global configuration mode

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **radius-server timeout** command to set the number of seconds a router waits for a server host to reply before timing out.

Task ID

Task ID	Operations
aaa	read, write

Examples

This example shows how to change the interval timer to 10 seconds:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# radius-server timeout 10
```


radius source-interface

To force RADIUS to use the IP address of a specified interface or subinterface for all outgoing RADIUS packets, use the **radius source-interface** command in global configuration mode. To prevent only the specified interface from being the default and not from being used for all outgoing RADIUS packets, use the **no** form of this command.

radius source-interface *interface* [**vrf** *vrf_name*]

no radius source-interface *interface*

Syntax Description

<i>interface-name</i>	Name of the interface that RADIUS uses for all of its outgoing packets.
vrf <i>vrf-id</i>	Specifies the name of the assigned VRF.

Command Default

If a specific source interface is not configured, or the interface is down or does not have an IP address configured, the system selects an IP address.

Command Modes

Global configuration mode

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.4.0	The vrf keyword was added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **radius source-interface** command to set the IP address of the specified interface or subinterface for all outgoing RADIUS packets. This address is used as long as the interface or subinterface is in the up state. In this way, the RADIUS server can use one IP address entry for every network access client instead of maintaining a list of IP addresses.

The specified interface or subinterface must have an IP address associated with it. If the specified interface or subinterface does not have an IP address or is in the down state, then RADIUS reverts to the default. To avoid this, add an IP address to the interface or subinterface or bring the interface to the up state.

The **radius source-interface** command is especially useful in cases in which the router has many interfaces or subinterfaces and you want to ensure that all RADIUS packets from a particular router have the same IP address.

Task ID

Task ID	Operations
aaa	read, write

Examples

This example shows how to make RADIUS use the IP address of subinterface s2 for all outgoing RADIUS packets:

```
RP/0/0/CPU0:router# configure  
RP/0/0/CPU0:router(config)# radius source-interface Loopback 10 vrf wal-mart
```

retransmit (RADIUS)

To specify the number of times a RADIUS request is resent to a server if the server is not responding or is responding slowly, use the **retransmit** command in RADIUS server-group private configuration mode.

retransmit *retries*

no retransmit *retries*

Syntax Description	<i>retries</i>	The <i>retries</i> argument specifies the retransmit value. The range is from 1 to 100. If no retransmit value is specified, the global value is used.
---------------------------	----------------	--

Command Default The default value is 3.

Command Modes RADIUS server-group private configuration

Command History	Release	Modification
	Release 3.4.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	aaa	read, write

Examples The following example shows how to set the retransmit value:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa group server radius group1
RP/0/0/CPU0:router(config-sg-radius)# server-private 10.1.1.1 auth-port 300
RP/0/0/CPU0:router(config-sg-radius-private)# retransmit 100
```

Related Commands

Command	Description
aaa group server tacacs+ , on page 20	Groups different RADIUS server hosts into distinct lists.
server-private (RADIUS) , on page 67	Configures the IP address of the private RADIUS server for the group server.
timeout (RADIUS) , on page 114	Specifies the number of seconds the router waits for the RADIUS server to reply before retransmitting.

secret

To configure an MD5-encrypted secret to be associated with an encrypted username, use the **secret** command in username configuration mode or line template configuration mode. To remove the secure secret, use the **no** form of this command.

```
secret {[0] secret-login| 5 secret-login}
no secret {0| 5} secret-login
```

Syntax Description

0	(Optional) Specifies that an unencrypted (clear-text) password follows. The password will be encrypted for storage in the configuration using an MD5 encryption algorithm. Otherwise, the password is not encrypted.
5	Specifies that an encrypted MD5 password (secret) follows.
<i>secret-login</i>	Text string in alphanumeric characters that is stored as the MD5-encrypted password entered by the user in association with the user's login ID. Can be up to 253 characters in length. Note The characters entered must conform to MD5 encryption standards.

Command Default

No password is specified.

Command Modes

Username configuration
Line template configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The <i>password</i> argument was replaced with the <i>secret-login</i> argument.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Cisco IOS XR software allows you to configure Message Digest 5 (MD5) encryption for username logins and passwords. MD5 encryption is a one-way hash function that makes reversal of an encrypted password impossible, providing strong encryption protection. Using MD5 encryption, you cannot retrieve clear-text

passwords. Therefore, MD5 encrypted passwords cannot be used with protocols that require the clear-text password to be retrievable, such as Challenge Handshake Authentication Protocol (CHAP).

You can specify one of two types of secure secret IDs: encrypted (5) or clear text (0). If you do not select either 0 or 5, the clear-text password you enter is not be encrypted.

When an EXEC process is started on a line that has password protection, the process prompts for the secret. If the user enters the correct secret, the process issues the prompt. The user can try entering the secret thrice before the terminal returns to the idle state.

Secrets are one-way encrypted and should be used for login activities that do not require a decryptable secret.

To verify that MD5 password encryption has been enabled, use the **show running-config** command. If the “username name secret 5” line appears in the command output, enhanced password security is enabled.

**Note**

The **show running-config** command does not display the login password in clear text when the 0 option is used to specify an unencrypted password. See the “Examples” section.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to establish the clear-text secret “lab” for the user *user2*:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# username user2
RP/0/0/CPU0:router(config-un)# secret 0 lab
RP/0/0/CPU0:router(config-un)# commit
RP/0/0/CPU0:router(config-un)# show running-config
Building configuration...
username user2
  secret 5 $1$DTmd$q7C6fhzje7Cc7Xzmu2Fr1
!
end
```

Related Commands

Command	Description
group (AAA), on page 30	Adds a user to a group.
password (AAA), on page 42	Creates a login password for a user.
usergroup, on page 120	Accesses user group configuration mode and configures a user group, associating it with a set of task groups.
username, on page 122	Accesses username configuration mode and configures a new user with a username, establishing a password and granting permissions for that user.

server (RADIUS)

To associate a particular RADIUS server with a defined server group, use the **server** command in RADIUS server-group configuration mode. To remove the associated server from the server group, use the **no** form of this command.

```
server ip-address [auth-port port-number] [acct-port port-number]
```

```
no server ip-address [auth-port port-number] [acct-port port-number]
```

Syntax Description

<i>ip-address</i>	IP address of the RADIUS server host.
auth-port <i>port-number</i>	(Optional) Specifies the User Datagram Protocol (UDP) destination port for authentication requests. The <i>port-number</i> argument specifies the port number for authentication requests. The host is not used for authentication if this value is set to 0. Default is 1645.
acct-port <i>port-number</i>	(Optional) Specifies the UDP destination port for accounting requests. The <i>port-number</i> argument specifies the port number for accounting requests. The host is not used for accounting services if this value is set to 0. Default is 1646.

Command Default

If no port attributes are defined, the defaults are as follows:

- Authentication port: 1645
- Accounting port: 1646

Command Modes

RADIUS server-group configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **server** command to associate a particular RADIUS server with a defined server group.

There are two different ways in which you can identify a server, depending on the way you want to offer AAA services. You can identify the server simply by using its IP address, or you can identify multiple host instances or entries using the optional **auth-port** and **acct-port** keywords.

When you use the optional keywords, the network access server identifies RADIUS security servers and host instances associated with a group server based on their IP address and specific UDP port numbers. The combination of the IP address and UDP port number creates a unique identifier, allowing different ports to be individually defined as RADIUS host entries providing a specific AAA service. If two different host entries on the same RADIUS server are configured for the same service, for example, accounting, the second host entry configured acts as an automatic switchover backup to the first one. Using this example, if the first host entry fails to provide accounting services, the network access server tries the second host entry configured on the same device for accounting services. (The RADIUS host entries are tried in the order they are configured.)

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to use two different host entries on the same RADIUS server that are configured for the same services—authentication and accounting. The second host entry configured acts as switchover backup to the first one.

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa group server radius group1
RP/0/0/CPU0:router(config-sg-radius)# server 1.1.1.1 auth-port 1645 acct-port 1646
RP/0/0/CPU0:router(config-sg-radius)# server 2.2.2.2 auth-port 2000 acct-port 2001
```

Related Commands

Command	Description
aaa group server radius, on page 18	Groups different RADIUS server hosts into distinct lists and distinct methods.
deadtime (server-group configuration), on page 26	Configures the deadtime value at the RADIUS server group level.
server-private (RADIUS), on page 67	Configures the IP address of the private RADIUS server for the group server.

server (TACACS+)

To associate a particular TACACS+ server with a defined server group, use the **server** command in TACACS+ server-group configuration mode. To remove the associated server from the server group, use the **no** form of this command.

```
server {hostname| ip-address}
```

```
no server {hostname| ip-address}
```

Syntax Description

<i>hostname</i>	Character string used to name the server host.
<i>ip-address</i>	IP address of the server host.

Command Default

None

Command Modes

TACACS+ server-group configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The server need not be accessible during configuration. Later, you can reference the configured server group from the method lists used to configure authentication, authorization, and accounting (AAA).

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to associate the TACACS+ server with the IP address 192.168.60.15 with the server group tac1:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa group server tacacs+ tac1
RP/0/0/CPU0:router(config-sg-tacacs+)# server 192.168.60.15
```

Related Commands

Command	Description
aaa group server tacacs+ , on page 20	Groups different TACACS+ server hosts into distinct lists.

server-private (RADIUS)

To configure the IP address of the private RADIUS server for the group server, use the **server-private** command in RADIUS server-group configuration mode. To remove the associated private server from the AAA group server, use the **no** form of this command .

server-private *ip-address* [**auth-port** *port-number*] [**acct-port** *port-number*] [**timeout** *seconds*] [**retransmit** *retries*] [**key** *string*]

no server-private *ip-address* [**auth-port** *port-number*] [**acct-port** *port-number*]

Syntax Description

<i>ip-address</i>	IP address of the RADIUS server host.
auth-port <i>port-number</i>	(Optional) Specifies the User Datagram Protocol (UDP) destination port for authentication requests. The <i>port-number</i> argument specifies the port number for authentication requests. The host is not used for authentication if this value is set to 0. The default value is 1645.
acct-port <i>port-number</i>	(Optional) Specifies the UDP destination port for accounting requests. The <i>port-number</i> argument specifies the port number for accounting requests. The host is not used for accounting services if this value is set to 0. The default value is 1646.
timeout <i>seconds</i>	(Optional) Specifies the number of seconds the router waits for the RADIUS server to reply before retransmitting. The setting overrides the global value of the radius-server timeout command. If no timeout is specified, the global value is used. The <i>seconds</i> argument specifies the timeout value in seconds. The range is from 1 to 1000. If no timeout is specified, the global value is used.
retransmit <i>retries</i>	(Optional) Specifies the number of times a RADIUS request is resent to a server if the server is not responding or is responding slowly. The setting overrides the global setting of the radius-server transmit command. The <i>retries</i> argument specifies the retransmit value. The range is from 1 to 100. If no retransmit value is specified, the global value is used.
key <i>string</i>	(Optional) Specifies the authentication and encryption key that is used between the router and the RADIUS daemon running on the RADIUS server. This key overrides the global setting of the radius-server key command. If no key string is specified, the global value is used.

Command Default

If no port attributes are defined, the defaults are as follows:

- Authentication port: 1645
- Accounting port: 1646

Command Modes RADIUS server-group configuration

Command History

Release	Modification
Release 3.4.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **server-private** command to associate a particular private server with a defined server group. Possible overlapping of IP addresses between VRF instances are permitted. Private servers (servers with private addresses) can be defined within the server group and remain hidden from other groups, while the servers in the global pool (for example, default radius server group) can still be referred to by IP addresses and port numbers. Thus, the list of servers in server groups includes references to the hosts in the global configuration and the definitions of private servers.

Both the **auth-port** and **acct-port** keywords enter RADIUS server-group private configuration mode.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to define the group1 RADIUS group server, to associate private servers with it, and to enter RADIUS server-group private configuration mode:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa group server radius group1
RP/0/0/CPU0:router(config-sg-radius)# server-private 10.1.1.1 timeout 5
RP/0/0/CPU0:router(config-sg-radius)# server-private 10.1.1.1 retransmit 3
RP/0/0/CPU0:router(config-sg-radius)# server-private 10.1.1.1 key coke
RP/0/0/CPU0:router(config-sg-radius)# server-private 10.1.1.1 auth-port 300
RP/0/0/CPU0:router(config-sg-radius-private)# exit
RP/0/0/CPU0:router(config-sg-radius)# server-private 10.2.2.2 timeout 5
RP/0/0/CPU0:router(config-sg-radius)# server-private 10.2.2.2 retransmit 3
RP/0/0/CPU0:router(config-sg-radius)# server-private 10.2.2.2 key coke
RP/0/0/CPU0:router(config-sg-radius)# server-private 10.2.2.2 auth-port 300
RP/0/0/CPU0:router(config-sg-radius-private)#
```

Related Commands

Command	Description
aaa group server tacacs+, on page 20	Groups different RADIUS server hosts into distinct lists and distinct methods.

Command	Description
radius-server key , on page 52	Sets the authentication and encryption key for all RADIUS communication between the router and the RADIUS daemon.
radius-server retransmit , on page 54	Specifies the number of times the Cisco IOS XR software retransmits a packet to a server before giving up.
radius-server timeout , on page 56	Sets the interval for which a router waits for a server host to reply before timing out.
key (RADIUS) , on page 36	Specifies the authentication and encryption key that is used between the router and the RADIUS daemon running on the RADIUS server.
retransmit (RADIUS) , on page 59	Specifies the number of times a RADIUS request is resent to a server if the server is not responding or is responding slowly.
timeout (RADIUS) , on page 114	Specifies the number of seconds the router waits for the RADIUS server to reply before retransmitting.
vrf (RADIUS) , on page 128	Configures the Virtual Private Network (VPN) routing and forwarding (VRF) reference of an AAA RADIUS server group.

server-private (TACACS+)

To configure the IP address of the private TACACS+ server for the group server, use the **server-private** command in TACACS+ server-group configuration mode. To remove the associated private server from the AAA group server, use the **no** form of this command.

server-private {*hostname*|*ip-address*} [**port** *port-number*] [**timeout** *seconds*] [**key** *string*]

no server-private {*hostname*|*ip-address*}

Syntax Description

<i>hostname</i>	Character string used to name the server host.
<i>ip-address</i>	IP address of the TACACS+ server host.
port <i>port-number</i>	(Optional) Specifies a server port number. This option overrides the default, which is port 49. Valid port numbers range from 1 to 65535.
timeout <i>seconds</i>	(Optional) Specifies, in seconds, a timeout value that sets the length of time the authentication, authorization, and accounting (AAA) server waits to receive a response from the TACACS+ server. This option overrides the global timeout value set with the tacacs-server timeout command for only this server. The range is from 1 to 1000. The default is 5.
key <i>string</i>	(Optional) Specifies the authentication and encryption key that is used between the router and the TACACS+ daemon running on the TACACS+ server. This key overrides the global setting of the tacacs-server key command. If no key string is specified, the global value is used.

Command Default

The *port-name* argument, if not specified, defaults to the standard port 49.

The *seconds* argument, if not specified, defaults to 5 seconds.

Command Modes

TACACS+ server-group configuration

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **server-private** command to associate a particular private server with a defined server group. Possible overlapping of IP addresses between VRF instances are permitted. Private servers (servers with private addresses) can be defined within the server group and remain hidden from other groups, while the servers in the global pool (for example, default tacacs+ server group) can still be referred by IP addresses and port numbers. Therefore, the list of servers in server groups includes references to the hosts in the global configuration and the definitions of private servers.

Task ID

Task ID	Operations
aaa	read, write

Examples

This example shows how to define the myserver TACACS+ group server, to associate private servers with it, and to enter TACACS+ server-group private configuration mode:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa group server tacacs+ myserver
RP/0/0/CPU0:router(config-sg-tacacs+)# server-private 10.1.1.1 timeout 5
RP/0/0/CPU0:router(config-sg-tacacs+)# server-private 10.1.1.1 key a_secret
RP/0/0/CPU0:router(config-sg-tacacs+)# server-private 10.1.1.1 port 51
RP/0/0/CPU0:router(config-sg-tacacs-private)# exit
RP/0/0/CPU0:router(config-sg-tacacs+)# server-private 10.2.2.2 timeout 5
RP/0/0/CPU0:router(config-sg-tacacs+)# server-private 10.2.2.2 key coke
RP/0/0/CPU0:router(config-sg-tacacs+)# server-private 10.2.2.2 port 300
RP/0/0/CPU0:router(config-sg-tacacs-private)#
```

Related Commands

Command	Description
aaa group server tacacs+, on page 20	Groups different TACACS+ server hosts into distinct lists and distinct methods.
tacacs-server key, on page 104	Sets the authentication encryption key used for all TACACS+ communications between the router and the TACACS+ daemon.
tacacs-server timeout, on page 106	Sets the interval for which a router waits for a server host to reply before timing out.
key (TACACS+), on page 38	Specifies an authentication and encryption key shared between the AAA server and the TACACS+ server.
timeout (TACACS+), on page 116	Specifies a timeout value that sets the length of time the authentication, authorization, and accounting (AAA) server waits to receive a response from the TACACS+ server.
vrf (TACACS+), on page 130	Configures the Virtual Private Network (VPN) routing and forwarding (VRF) reference of an AAA TACACS+ server group.

show aaa

To display information about an Internet Key Exchange (IKE) Security Protocol group, user group, local user, login traces, or task group; to list all task IDs associated with all IKE groups, user groups, local users, or task groups in the system; or to list all task IDs for a specified IKE group, user group, local user, or task group, use the **show aaa** command in EXEC mode.

```
show aaa {ikegroup ikegroup-name| login trace| usergroup [ usergroup-name ]| trace| userdb [ username ]|
task supported| taskgroup [root-lr| netadmin| operator| sysadmin| root-system| service-admin|
cisco-support| t taskgroup-name]}
```

Syntax Description

ikegroup	Displays details for all IKE groups.
<i>ikegroup-name</i>	(Optional) IKE group whose details are to be displayed.
login trace	Displays trace data for login subsystem.
usergroup	Displays details for all user groups.
root-lr	(Optional) Usergroup name.
netadmin	(Optional) Usergroup name.
operator	(Optional) Usergroup name.
sysadmin	(Optional) Usergroup name.
root-system	(Optional) Usergroup name.
cisco-support	(Optional) Usergroup name.
<i>usergroup-name</i>	(Optional) Usergroup name.
trace	Displays trace data for AAA subsystem.
userdb	Displays details for all local users and the usergroups to which each user belongs.
<i>username</i>	(Optional) User whose details are to be displayed.
task supported	Displays all AAA task IDs available.
taskgroup	Displays details for all task groups.
	Note For taskgroup keywords, see optional usergroup name keyword list.
<i>taskgroup-name</i>	(Optional) Task group whose details are to be displayed.

Command Default Details for all user groups, or all local users, or all task groups are listed if no argument is entered.

Command Modes EXEC

Release	Modification
Release 3.2	This command was introduced.
Release 3.4.0	The ikegroup keyword was added.
Release 3.5.0	The show task supported command was removed and its topic was added as a keyword for the show aaa command.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **show aaa** command to list details for all IKE groups, user groups, local users, AAA task IDs, or task groups in the system. Use the optional *ikegroup-name*, *usergroup-name*, *username*, or *taskgroup-name* argument to display the details for a specified IKE group, user group, user, or task group, respectively.

Task ID	Operations
aaa	read

Examples The following sample output is from the **show aaa** command, using the **ikegroup** keyword:

```
RP/0/0/CPU0:router# show aaa ikegroup
IKE Group ike-group
    Max-Users = 50
IKE Group ikeuser
    Group-Key = test-password
    Default Domain = cisco.com
IKE Group ike-user
```

The following sample output is from the **show aaa** command, using the **usergroup** command:

```
RP/0/0/CPU0:router# show aaa usergroup operator
User group 'operator'
  Inherits from task group 'operator'
User group 'operator' has the following combined set
of task IDs (including all inherited groups):
Task:      basic-services  : READ    WRITE    EXECUTE  DEBUG
Task:      cdp             : READ
Task:      diag            : READ
```

show aaa

```
Task:          ext-access  : READ          EXECUTE
Task:          logging    : READ
```

The following sample output is from the **show aaa** command, using the **taskgroup** keyword for a task group named **netadmin**:

```
RP/0/0/CPU0:router# show aaa taskgroup netadmin
```

```
Task group 'netadmin'
```

```
Task group 'netadmin' has the following combined set
of task IDs (including all inherited groups):
```

```
Task:          aaa      : READ
Task:          acl      : READ      WRITE      EXECUTE      DEBUG
Task:          admin    : READ
Task:          ancp     : READ      WRITE      EXECUTE      DEBUG
Task:          atm      : READ      WRITE      EXECUTE      DEBUG
Task:          basic-services : READ      WRITE      EXECUTE      DEBUG
Task:          bcdl     : READ
Task:          bfd      : READ      WRITE      EXECUTE      DEBUG
Task:          bgp      : READ      WRITE      EXECUTE      DEBUG
Task:          boot     : READ      WRITE      EXECUTE      DEBUG
Task:          bundle   : READ      WRITE      EXECUTE      DEBUG
Task:          cdp      : READ      WRITE      EXECUTE      DEBUG
Task:          cef      : READ      WRITE      EXECUTE      DEBUG
Task:          cgn      : READ      WRITE      EXECUTE      DEBUG
Task:          config-mgmt : READ      WRITE      EXECUTE      DEBUG
Task:          config-services : READ      WRITE      EXECUTE      DEBUG
Task:          crypto   : READ      WRITE      EXECUTE      DEBUG
Task:          diag     : READ      WRITE      EXECUTE      DEBUG
Task:          drivers  : READ
Task:          dwdm     : READ      WRITE      EXECUTE      DEBUG
Task:          eem      : READ      WRITE      EXECUTE      DEBUG
Task:          eigrp    : READ      WRITE      EXECUTE      DEBUG
Task:          ethernet-services : READ
Task:          ext-access : READ      WRITE      EXECUTE      DEBUG
Task:          fabric   : READ      WRITE      EXECUTE      DEBUG
Task:          fault-mgr : READ      WRITE      EXECUTE      DEBUG
Task:          filesystem : READ      WRITE      EXECUTE      DEBUG
Task:          firewall : READ      WRITE      EXECUTE      DEBUG
Task:          fr        : READ      WRITE      EXECUTE      DEBUG
Task:          hdlc     : READ      WRITE      EXECUTE      DEBUG
Task:          host-services : READ      WRITE      EXECUTE      DEBUG
Task:          hsrp     : READ      WRITE      EXECUTE      DEBUG
Task:          interface : READ      WRITE      EXECUTE      DEBUG
Task:          inventory : READ
Task:          ip-services : READ      WRITE      EXECUTE      DEBUG
Task:          ipv4     : READ      WRITE      EXECUTE      DEBUG
Task:          ipv6     : READ      WRITE      EXECUTE      DEBUG
Task:          isis     : READ      WRITE      EXECUTE      DEBUG
Task:          l2vpn    : READ      WRITE      EXECUTE      DEBUG
Task:          li       : READ      WRITE      EXECUTE      DEBUG
Task:          logging  : READ      WRITE      EXECUTE      DEBUG
Task:          lpts     : READ      WRITE      EXECUTE      DEBUG
Task:          monitor  : READ
Task:          mpls-ldp : READ      WRITE      EXECUTE      DEBUG
Task:          mpls-static : READ      WRITE      EXECUTE      DEBUG
Task:          mpls-te   : READ      WRITE      EXECUTE      DEBUG
Task:          multicast : READ      WRITE      EXECUTE      DEBUG
Task:          netflow  : READ      WRITE      EXECUTE      DEBUG
Task:          network  : READ      WRITE      EXECUTE      DEBUG
Task:          ospf     : READ      WRITE      EXECUTE      DEBUG
Task:          ouni     : READ      WRITE      EXECUTE      DEBUG
Task:          pkg-mgmt : READ
Task:          pos-dpt  : READ      WRITE      EXECUTE      DEBUG
Task:          ppp      : READ      WRITE      EXECUTE      DEBUG
Task:          qos      : READ      WRITE      EXECUTE      DEBUG
Task:          rib      : READ      WRITE      EXECUTE      DEBUG
Task:          rip      : READ      WRITE      EXECUTE      DEBUG
Task:          root-lr   : READ          (reserved)
Task:          route-map : READ      WRITE      EXECUTE      DEBUG
```

```

Task:      route-policy : READ   WRITE   EXECUTE  DEBUG
Task:      sbc           : READ   WRITE   EXECUTE  DEBUG
Task:      snmp          : READ   WRITE   EXECUTE  DEBUG
Task:      sonet-sdh     : READ   WRITE   EXECUTE  DEBUG
Task:      static        : READ   WRITE   EXECUTE  DEBUG
Task:      sysmgr        : READ
Task:      system        : READ   WRITE   EXECUTE  DEBUG
Task:      transport     : READ   WRITE   EXECUTE  DEBUG
Task:      tty-access    : READ   WRITE   EXECUTE  DEBUG
Task:      tunnel        : READ   WRITE   EXECUTE  DEBUG
Task:      universal     : READ                                     (reserved)
Task:      vlan          : READ   WRITE   EXECUTE  DEBUG
Task:      vrrp          : READ   WRITE   EXECUTE  DEBUG

```

The following sample output is from the **show aaa** command, using the **taskgroup** keyword for an operator. The task group operator has the following combined set of task IDs, which includes all inherited groups:

```

Task:      basic-services : READ   WRITE   EXECUTE  DEBUG
Task:      cdp            : READ
Task:      diag           : READ
Task:      ext-access     : READ           EXECUTE
Task:      logging        : READ

```

The following sample output is from the **show aaa** command, using the **taskgroup** keyword for a root system. The task-group root system has the following combined set of task IDs, which includes all inherited groups:

```

Task:      aaa           : READ   WRITE   EXECUTE  DEBUG
Task:      acl            : READ   WRITE   EXECUTE  DEBUG
Task:      admin          : READ   WRITE   EXECUTE  DEBUG
Task:      atm            : READ   WRITE   EXECUTE  DEBUG
Task:      basic-services : READ   WRITE   EXECUTE  DEBUG
Task:      bcdl           : READ   WRITE   EXECUTE  DEBUG
Task:      bfd            : READ   WRITE   EXECUTE  DEBUG
Task:      bgp            : READ   WRITE   EXECUTE  DEBUG
Task:      boot           : READ   WRITE   EXECUTE  DEBUG
Task:      bundle         : READ   WRITE   EXECUTE  DEBUG
Task:      cdp            : READ   WRITE   EXECUTE  DEBUG
Task:      cef            : READ   WRITE   EXECUTE  DEBUG
Task:      config-mgmt    : READ   WRITE   EXECUTE  DEBUG
Task:      config-services : READ   WRITE   EXECUTE  DEBUG
Task:      crypto         : READ   WRITE   EXECUTE  DEBUG
Task:      diag           : READ   WRITE   EXECUTE  DEBUG
Task:      drivers         : READ   WRITE   EXECUTE  DEBUG
Task:      ext-access     : READ   WRITE   EXECUTE  DEBUG
Task:      fabric         : READ   WRITE   EXECUTE  DEBUG
Task:      fault-mgr      : READ   WRITE   EXECUTE  DEBUG
Task:      filesystem      : READ   WRITE   EXECUTE  DEBUG
Task:      fr              : READ   WRITE   EXECUTE  DEBUG
Task:      hdlc            : READ   WRITE   EXECUTE  DEBUG
Task:      host-services  : READ   WRITE   EXECUTE  DEBUG
Task:      hsrp           : READ   WRITE   EXECUTE  DEBUG
Task:      interface      : READ   WRITE   EXECUTE  DEBUG
Task:      inventory      : READ   WRITE   EXECUTE  DEBUG
Task:      ip-services    : READ   WRITE   EXECUTE  DEBUG
Task:      ipv4           : READ   WRITE   EXECUTE  DEBUG
Task:      ipv6           : READ   WRITE   EXECUTE  DEBUG
Task:      isis           : READ   WRITE   EXECUTE  DEBUG
Task:      logging        : READ   WRITE   EXECUTE  DEBUG
Task:      lpts            : READ   WRITE   EXECUTE  DEBUG
Task:      monitor        : READ   WRITE   EXECUTE  DEBUG
Task:      mpls-ldp       : READ   WRITE   EXECUTE  DEBUG
Task:      mpls-static    : READ   WRITE   EXECUTE  DEBUG
Task:      mpls-te        : READ   WRITE   EXECUTE  DEBUG
Task:      multicast      : READ   WRITE   EXECUTE  DEBUG
Task:      netflow        : READ   WRITE   EXECUTE  DEBUG
Task:      network        : READ   WRITE   EXECUTE  DEBUG
Task:      ospf            : READ   WRITE   EXECUTE  DEBUG
Task:      ouni            : READ   WRITE   EXECUTE  DEBUG
Task:      pkg-mgmt       : READ   WRITE   EXECUTE  DEBUG
Task:      pos-dpt        : READ   WRITE   EXECUTE  DEBUG
Task:      ppp            : READ   WRITE   EXECUTE  DEBUG
Task:      qos             : READ   WRITE   EXECUTE  DEBUG

```

show aaa

```

Task:          rib      : READ      WRITE      EXECUTE    DEBUG
Task:          rip      : READ      WRITE      EXECUTE    DEBUG
Task:          root-lr   : READ      WRITE      EXECUTE    DEBUG
Task:          root-system : READ      WRITE      EXECUTE    DEBUG
Task:          route-map : READ      WRITE      EXECUTE    DEBUG
Task:          route-policy : READ      WRITE      EXECUTE    DEBUG
Task:          snmp      : READ      WRITE      EXECUTE    DEBUG
Task:          sonet-sdh  : READ      WRITE      EXECUTE    DEBUG
Task:          static    : READ      WRITE      EXECUTE    DEBUG
Task:          sysmgr    : READ      WRITE      EXECUTE    DEBUG
Task:          system    : READ      WRITE      EXECUTE    DEBUG
Task:          transport : READ      WRITE      EXECUTE    DEBUG
Task:          tty-access : READ      WRITE      EXECUTE    DEBUG
Task:          tunnel    : READ      WRITE      EXECUTE    DEBUG
Task:          universal  : READ      WRITE      EXECUTE    DEBUG
Task:          vlan      : READ      WRITE      EXECUTE    DEBUG
Task:          vrrp      : READ      WRITE      EXECUTE    DEBUG

```

The following sample output is from **show aaa** command with the **userdb** keyword:

```
RP/0/0/CPU0:router# show aaa userdb
```

```

Username lab (admin plane)
User group root-system
User group cisco-support
Username acme
User group root-system

```

The following sample output is from the **show aaa** command, using the **task supported** keywords. Task IDs are displayed in alphabetic order.

```
RP/0/RP0/CPU0:router# show aaa task supported
```

```

aaa
acl
admin
atm
basic-services
bcdl
bfd
bgp
boot
bundle
cdp
cef
cisco-support
config-mgmt
config-services
crypto
diag
disallowed
drivers
eigrp
ext-access
fabric
fault-mgr
filesystem
firewall
fr
hdlc
host-services
hsrp
interface
inventory
ip-services
ipv4
ipv6
isis
logging
lpts
monitor
mpls-ldp

```

mpls-static
mpls-te
multicast
netflow
network
ospf
ouni
pkg-mgmt
pos-dpt
ppp
qos
rib
rip
root-lr
root-system
route-map
route-policy
sbc
snmp
sonet-sdh
static
sysmgr
system
transport
tty-access
tunnel
universal
vlan
vrrp

Related Commands

Command	Description
show user, on page 95	Displays task IDs enabled for the currently logged-in user.

show radius

To display information about the RADIUS servers that are configured in the system, use the **show radius** command in EXEC mode.

show radius

Syntax Description

This command has no keywords or arguments.

Command Default

If no radius servers are configured, no output is displayed.

Command Modes

EXEC

Command History

Release	Modification
Release 3.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **show radius** command to display statistics for each configured RADIUS server.

Task ID

Task ID	Operations
aaa	read

Examples

The following sample output is for the **show radius** command:

```
RP/0/0/CPU0:router# show radius
Global dead time: 0 minute(s)
Server: 1.1.1.1/1645/1646 is UP
  Timeout: 5 sec, Retransmit limit: 3
  Authentication:
    0 requests, 0 pending, 0 retransmits
    0 accepts, 0 rejects, 0 challenges
    0 timeouts, 0 bad responses, 0 bad authenticators
    0 unknown types, 0 dropped, 0 ms latest rtt
  Accounting:
    0 requests, 0 pending, 0 retransmits
    0 responses, 0 timeouts, 0 bad responses
    0 bad authenticators, 0 unknown types, 0 dropped
    0 ms latest rtt
```

```

Server: 2.2.2.2/1645/1646 is UP
Timeout: 10 sec, Retransmit limit: 3
Authentication:
  0 requests, 0 pending, 0 retransmits
  0 accepts, 0 rejects, 0 challenges
  0 timeouts, 0 bad responses, 0 bad authenticators
  0 unknown types, 0 dropped, 0 ms latest rtt
Accounting:
  0 requests, 0 pending, 0 retransmits
  0 responses, 0 timeouts, 0 bad responses
  0 bad authenticators, 0 unknown types, 0 dropped
  0 ms latest rtt

```

This table describes the significant fields shown in the display.

Table 1: show radius Field Descriptions

Field	Description
Server	Server IP address/UDP destination port for authentication requests/UDP destination port for accounting requests.
Timeout	Number of seconds the router waits for a server host to reply before timing out.
Retransmit limit	Number of times the Cisco IOS XR software searches the list of RADIUS server hosts before giving up.

Related Commands

Command	Description
vrf (RADIUS), on page 128	Configures the Virtual Private Network (VPN) routing and forwarding (VRF) reference of an AAA RADIUS server group.
radius-server retransmit , on page 54	Specifies how many times Cisco IOS XR software searches the list of RADIUS server hosts before giving up.
radius-server timeout , on page 56	Sets the interval for which a router waits for a server host to reply.

show radius accounting

To obtain information and detailed statistics for the RADIUS accounting server and port, use the **show radius accounting** command in EXEC mode.

show radius accounting

Syntax Description This command has no keywords or arguments.

Command Default If no RADIUS servers are configured on the router, the output is empty. If the default values are for the counter (for example, request and pending), the values are all zero because the RADIUS server was just defined and not used yet.

Command Modes EXEC

Command History	Release	Modification
	Release 3.3.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	aaa	read

Examples The following sample output is displayed on a per-server basis for the **show radius accounting** command:

```
RP/0/0/CPU0:router# show radius accounting

Server: 12.26.25.61, port: 1813
0 requests, 0 pending, 0 retransmits
0 responses, 0 timeouts, 0 bad responses
0 bad authenticators, 0 unknown types, 0 dropped
0 ms latest rtt

Server: 12.26.49.12, port: 1813
0 requests, 0 pending, 0 retransmits
0 responses, 0 timeouts, 0 bad responses
0 bad authenticators, 0 unknown types, 0 dropped
0 ms latest rtt

Server: 12.38.28.18, port: 29199
```



```

0 requests, 0 pending, 0 retransmits
0 responses, 0 timeouts, 0 bad responses
0 bad authenticators, 0 unknown types, 0 dropped
0 ms latest rtt

```

This table describes the significant fields shown in the display.

Table 2: show radius accounting Field Descriptions

Field	Description
Server	Server IP address/UDP destination port for authentication requests; UDP destination port for accounting requests.

Related Commands

Command	Description
aaa accounting, on page 4	Creates a method list for accounting.
aaa authentication, on page 11	Creates a method list for authentication.
show radius authentication, on page 82	Obtains information and detailed statistics for the RADIUS authentication server and port.

show radius authentication

To obtain information and detailed statistics for the RADIUS authentication server and port, use the **show radius authentication** command in EXEC mode.

show radius authentication

Syntax Description This command has no keywords or arguments.

Command Default If no RADIUS servers are configured on the router, the output is empty. If the default values are for the counter (for example, request and pending), the values are all zero because the RADIUS server was just defined and not used yet.

Command Modes EXEC

Command History	Release	Modification
	Release 3.3.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	aaa	read

Examples The following sample output is for the **show radius authentication** command:

```
RP/0/0/CPU0:router# show radius authentication

Server: 12.26.25.61, port: 1812
0 requests, 0 pending, 0 retransmits
0 accepts, 0 rejects, 0 challenges
0 timeouts, 0 bad responses, 0 bad authenticators
0 unknown types, 0 dropped, 0 ms latest rtt

Server: 12.26.49.12, port: 1812
0 requests, 0 pending, 0 retransmits
0 accepts, 0 rejects, 0 challenges
0 timeouts, 0 bad responses, 0 bad authenticators
0 unknown types, 0 dropped, 0 ms latest rtt

Server: 12.38.28.18, port: 21099
```

```

0 requests, 0 pending, 0 retransmits
0 accepts, 0 rejects, 0 challenges
0 timeouts, 0 bad responses, 0 bad authenticators
0 unknown types, 0 dropped, 0 ms latest rtt

```

This table describes the significant fields shown in the display.

Table 3: show radius authentication Field Descriptions

Field	Description
Server	Server IP address/UDP destination port for authentication requests; UDP destination port for accounting requests.

Related Commands

Command	Description
aaa accounting, on page 4	Creates a method list for accounting.
aaa authentication, on page 11	Creates a method list for authentication.
show radius accounting, on page 80	Obtains information and detailed statistics for the RADIUS accounting server and port.

show radius client

To obtain general information about the RADIUS client on Cisco IOS XR software, use the **show radius client** command in EXEC mode.

show radius client

Syntax Description

This command has no keywords or arguments.

Command Default

The default value for the counters (for example, an invalid address) is 0. The network access server (NAS) identifier is the hostname that is defined on the router.

Command Modes

EXEC

Command History

Release	Modification
Release 3.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show radius client** command displays the authentication and accounting responses that are received from the invalid RADIUS servers, for example, unknown to the NAS. In addition, the **show radius client** command displays the hostname or NAS identifier for the RADIUS authentication client, accounting client, or both.

Task ID

Task ID	Operations
aaa	read

Examples

The following sample output is for the **show radius client** command:

```
RP/0/0/CPU0:router# show radius client

Client NAS identifier:                miniq
Authentication responses from invalid addresses: 0
Accounting responses from invalid addresses:    0
This table describes the significant fields shown in the display.
```

Table 4: show radius client Field Descriptions

Field	Description
Client NAS identifier	Identifies the NAS-identifier of the RADIUS authentication client.

Related Commands

Command	Description
server (RADIUS), on page 63	Associates a particular RADIUS server with a defined server group.
show radius, on page 78	Displays information about the RADIUS servers that are configured in the system.

show radius dead-criteria

To obtain information about the dead server detection criteria, use the **show radius dead-criteria** command in EXEC mode.

show radius dead-criteria *host ip-addr* [**auth-port** *auth-port*] [**acct-port** *acct-port*]

Syntax Description

host <i>ip-addr</i>	Specifies the name or IP address of the configured RADIUS server.
auth-port <i>auth-port</i>	(Optional) Specifies the authentication port for the RADIUS server. The default value is 1645.
acct-port <i>acct-port</i>	(Optional) Specifies the accounting port for the RADIUS server. The default value is 1646.

Command Default

The default values for time and tries are not fixed to a single value; therefore, they are calculated and fall within a range of 10 to 60 seconds for time and 10 to 100 for tries.

Command Modes

EXEC

Command History

Release	Modification
Release 3.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
aaa	read

Examples

The following sample output is for the **show radius dead-criteria** command:

```
RP/0/0/CPU0:router# show radius dead-criteria host 12.26.49.12 auth-port 11000 acct-port 11001
```

```
Server: 12.26.49.12/11000/11001
Dead criteria time: 10 sec (computed) tries: 10 (computed)
```

This table describes the significant fields shown in the display.

Table 5: show radius dead-criteria Field Descriptions

Field	Description
Server	Server IP address/UDP destination port for authentication requests/UDP destination port for accounting requests.
Timeout	Number of seconds the router waits for a server host to reply before timing out.
Retransmits	Number of times Cisco IOS XR software searches the list of RADIUS server hosts before giving up.

Related Commands

Command	Description
radius-server dead-criteria time, on page 44	Forces one or both of the criteria that is used to mark a RADIUS server as dead.
radius-server deadtime , on page 48	Defines the length of time in minutes for a RADIUS server to remain marked dead.

show radius server-groups

To display information about the RADIUS server groups that are configured in the system, use the **show radius server-groups** command in EXEC mode.

show radius server-groups [*group-name* [**detail**]]

Syntax Description

<i>group-name</i>	(Optional) Name of the server group. The properties are displayed.
detail	(Optional) Displays properties for all the server groups.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.4.0	Support was added for the <i>group-name</i> argument and detail keyword.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **show radius server-groups** command to display information about each configured RADIUS server group, including the group name, numbers of servers in the group, and a list of servers in the named server group. A global list of all configured RADIUS servers, along with authentication and accounting port numbers, is also displayed.

Task ID

Task ID	Operations
aaa	read

Examples

The inherited global message is displayed if no group level deadtime is defined for this group; otherwise, the group level deadtime value is displayed and this message is omitted. The following sample output is for the **show radius server-groups** command:

```
RP/0/0/CPU0:router# show radius server-groups

Global list of servers
  Contains 2 server(s)
    Server 1.1.1.1/1645/1646
    Server 2.2.2.2/1645/1646

Server group 'radgrp1' has 2 server(s)
  Dead time: 0 minute(s) (inherited from global)
  Contains 2 server(s)
    Server 1.1.1.1/1645/1646
    Server 2.2.2.2/1645/1646
```

```
Server group 'radgrp-priv' has 1 server(s)
  Dead time: 0 minute(s) (inherited from global)
  Contains 1 server(s)
    Server 3.3.3.3/1645/1646 [private]
```

The following sample output shows the properties for all the server groups in group “radgrp1.”

```
RP/0/0/CPU0:router# show radius server-groups radgrp1 detail

Server group 'radgrp1' has 2 server(s)
  VRF default (id 0x60000000)
  Dead time: 0 minute(s) (inherited from global)
  Contains 2 server(s)
    Server 1.1.1.1/1645/1646
  Authentication:
    0 requests, 0 pending, 0 retransmits
    0 accepts, 0 rejects, 0 challenges
    0 timeouts, 0 bad responses, 0 bad authenticators
    0 unknown types, 0 dropped, 0 ms latest rtt
  Accounting:
    0 requests, 0 pending, 0 retransmits
    0 responses, 0 timeouts, 0 bad responses
    0 bad authenticators, 0 unknown types, 0 dropped
    0 ms latest rtt
    Server 2.2.2.2/1645/1646
  Authentication:
    0 requests, 0 pending, 0 retransmits
    0 accepts, 0 rejects, 0 challenges
    0 timeouts, 0 bad responses, 0 bad authenticators
    0 unknown types, 0 dropped, 0 ms latest rtt
  Accounting:
    0 requests, 0 pending, 0 retransmits
    0 responses, 0 timeouts, 0 bad responses
    0 bad authenticators, 0 unknown types, 0 dropped
    0 ms latest rtt
```

The following sample output shows the properties for all the server groups in detail in the group “radgrp-priv.”

```
RP/0/0/CPU0:router# show radius server-groups radgrp-priv detail

Server group 'radgrp-priv' has 1 server(s)
  VRF default (id 0x60000000)
  Dead time: 0 minute(s) (inherited from global)
  Contains 1 server(s)
    Server 3.3.3.3/1645/1646 [private]
  Authentication:
    0 requests, 0 pending, 0 retransmits
    0 accepts, 0 rejects, 0 challenges
    0 timeouts, 0 bad responses, 0 bad authenticators
    0 unknown types, 0 dropped, 0 ms latest rtt
  Accounting:
```

show radius server-groups

```

0 requests, 0 pending, 0 retransmits
0 responses, 0 timeouts, 0 bad responses
0 bad authenticators, 0 unknown types, 0 dropped
0 ms latest rtt

```

This table describes the significant fields shown in the display.

Table 6: show radius server-groups Field Descriptions

Field	Description
Server	Server IP address/UDP destination port for authentication requests/UDP destination port for accounting requests.

Related Commands

Command	Description
vrf (RADIUS), on page 128	Configures the Virtual Private Network (VPN) routing and forwarding (VRF) reference of an AAA RADIUS server group.

show tacacs

To display information about the TACACS+ servers that are configured in the system, use the **show tacacs** command in EXEC mode.

show tacacs

Syntax Description This command has no keywords or arguments.

Command Default None

Command Modes EXEC

Command History	Release	Modification
	Release 3.2	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **show tacacs** command to display statistics for each configured TACACS+ server.

Task ID	Task ID	Operations
	aaa	read

Examples The following is sample output from the **show tacacs** command:

```
RP/0/0/CPU0:router# show tacacs
Server:1.1.1.1/21212 opens=0 closes=0 aborts=0 errors=0
      packets in=0 packets out=0
      status=up single-connect=false
Server:2.2.2.2/21232 opens=0 closes=0 aborts=0 errors=0
      packets in=0 packets out=0
      status=up single-connect=false
```

This table describes the significant fields shown in the display.

Table 7: show tacacs Field Descriptions

Field	Description
Server	Server IP address.
opens	Number of socket opens to the external server.
closes	Number of socket closes to the external server.
aborts	Number of tacacs requests that have been aborted midway.
errors	Number of error replies from the external server.
packets in	Number of TCP packets that have been received from the external server.
packets out	Number of TCP packets that have been sent to the external server.

show tacacs server-groups

To display information about the TACACS+ server groups that are configured in the system, use the **show tacacs server-groups** command in EXEC mode.

show tacacs server-groups

Syntax Description This command has no keywords or arguments.

Command Default None

Command Modes EXEC

Command History	Release	Modification
	Release 3.2	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **show tacacs server-groups** command to display information about each configured TACACS+ server group, including the group name, numbers of servers in the group, and a list of servers in the named server group. A global list of all configured TACACS+ servers is also displayed.

Task ID	Task ID	Operations
	aaa	read

Examples The following is sample output from the **show tacacs server-groups** command:

```
RP/0/0/CPU0:router# show tacacs server-groups
```

```
Global list of servers
  Server 12.26.25.61/23456
  Server 12.26.49.12/12345
  Server 12.26.49.12/9000
  Server 12.26.25.61/23432
  Server 5.5.5.5/23456
  Server 1.1.1.1/49
Server group 'tac100' has 1 servers
Server 12.26.49.12
```

This table describes the significant fields shown in the display.

Table 8: show tacacs server-groups Field Descriptions

Field	Description
Server	Server IP address.

Related Commands

Command	Description
tacacs-server host, on page 101	Specifies a TACACS+ host.

show user

To display all user groups and task IDs associated with the currently logged-in user, use the **show user** command in EXEC mode.

show user [**all**| **authentication**| **group**| **tasks**]

Syntax Description

all	(Optional) Displays all user groups and task IDs for the currently logged-in user.
authentication	(Optional) Displays authentication method parameters for the currently logged-in user.
group	(Optional) Displays the user groups associated with the currently logged-in user.
tasks	(Optional) Displays task IDs associated with the currently logged-in user. The tasks keyword indicates which task is reserved in the sample output.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The following enhancements are added: <ul style="list-style-type: none"> • An example was added to display all the group and tasks. • The authentication keyword was added. • The sample output for the group keyword was updated. • The sample output to display whether or not a task is reserved for the tasks keyword was updated.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **show user** command to display all user groups and task IDs associated with the currently logged-in user.

Task ID

Task ID	Operations
none	—

Examples

The following sample output displays the authentication method parameters from the **show user** command:

```
RP/0/0/CPU0:router# show user authentication method
```

```
local
```

The following sample output displays the groups from the **show user** command:

```
RP/0/0/CPU0:router# show user group
```

```
root-system
```

The following sample output displays all the information for the groups and tasks from the **show user** command:

```
RP/0/0/CPU0:router# show user all
```

```
Username: lab
```

```
Groups: root-system
```

```
Authenticated using method local
```

```
User lab has the following Task ID(s):
```

```
Task:          aaa : READ    WRITE    EXECUTE  DEBUG
Task:          acl : READ    WRITE    EXECUTE  DEBUG
Task:          admin : READ    WRITE    EXECUTE  DEBUG
Task:          atm : READ    WRITE    EXECUTE  DEBUG
Task:    basic-services : READ    WRITE    EXECUTE  DEBUG
Task:          bcctl : READ    WRITE    EXECUTE  DEBUG
Task:          bfd : READ    WRITE    EXECUTE  DEBUG
Task:          bgp : READ    WRITE    EXECUTE  DEBUG
Task:          boot : READ    WRITE    EXECUTE  DEBUG
Task:          bundle : READ    WRITE    EXECUTE  DEBUG
Task:          cdp : READ    WRITE    EXECUTE  DEBUG
Task:          cef : READ    WRITE    EXECUTE  DEBUG
Task:    config-mgmt : READ    WRITE    EXECUTE  DEBUG
Task:    config-services : READ    WRITE    EXECUTE  DEBUG
Task:          crypto : READ    WRITE    EXECUTE  DEBUG
Task:          diag : READ    WRITE    EXECUTE  DEBUG
Task:          drivers : READ    WRITE    EXECUTE  DEBUG
Task:          eigrp : READ    WRITE    EXECUTE  DEBUG
Task:    ext-access : READ    WRITE    EXECUTE  DEBUG
Task:          fabric : READ    WRITE    EXECUTE  DEBUG
Task:          fault-mgr : READ    WRITE    EXECUTE  DEBUG
Task:    filesystem : READ    WRITE    EXECUTE  DEBUG
Task:          firewall : READ    WRITE    EXECUTE  DEBUG
Task:          fr : READ    WRITE    EXECUTE  DEBUG
Task:          hdlc : READ    WRITE    EXECUTE  DEBUG
Task:    host-services : READ    WRITE    EXECUTE  DEBUG
Task:          hsrp : READ    WRITE    EXECUTE  DEBUG
Task:          interface : READ    WRITE    EXECUTE  DEBUG
Task:          inventory : READ    WRITE    EXECUTE  DEBUG
Task:    ip-services : READ    WRITE    EXECUTE  DEBUG
Task:          ipv4 : READ    WRITE    EXECUTE  DEBUG
Task:          ipv6 : READ    WRITE    EXECUTE  DEBUG
Task:          isis : READ    WRITE    EXECUTE  DEBUG
Task:          logging : READ    WRITE    EXECUTE  DEBUG
Task:          lpts : READ    WRITE    EXECUTE  DEBUG
Task:          monitor : READ    WRITE    EXECUTE  DEBUG
Task:          mpls-ldp : READ    WRITE    EXECUTE  DEBUG
Task:          mpls-static : READ    WRITE    EXECUTE  DEBUG
Task:          mpls-te : READ    WRITE    EXECUTE  DEBUG
Task:          multicast : READ    WRITE    EXECUTE  DEBUG
```



```

Task:          netflow  : READ   WRITE   EXECUTE  DEBUG
Task:          network : READ   WRITE   EXECUTE  DEBUG
Task:          ospf    : READ   WRITE   EXECUTE  DEBUG
Task:          ouni    : READ   WRITE   EXECUTE  DEBUG
Task:          pkg-mgmt : READ   WRITE   EXECUTE  DEBUG
Task:          pos-dpt : READ   WRITE   EXECUTE  DEBUG
Task:          ppp     : READ   WRITE   EXECUTE  DEBUG
Task:          qos     : READ   WRITE   EXECUTE  DEBUG
Task:          rib     : READ   WRITE   EXECUTE  DEBUG
Task:          rip     : READ   WRITE   EXECUTE  DEBUG
Task:          root-lr  : READ   WRITE   EXECUTE  DEBUG (reserved)
Task:          root-system : READ  WRITE   EXECUTE  DEBUG (reserved)
Task:          route-map : READ  WRITE   EXECUTE  DEBUG
Task:          route-policy : READ  WRITE   EXECUTE  DEBUG
Task:          sbc     : READ   WRITE   EXECUTE  DEBUG
Task:          snmp    : READ   WRITE   EXECUTE  DEBUG
Task:          sonet-sdh : READ  WRITE   EXECUTE  DEBUG
Task:          static  : READ   WRITE   EXECUTE  DEBUG
Task:          sysmgr  : READ   WRITE   EXECUTE  DEBUG
Task:          system  : READ   WRITE   EXECUTE  DEBUG
Task:          transport : READ  WRITE   EXECUTE  DEBUG
Task:          tty-access : READ  WRITE   EXECUTE  DEBUG
Task:          tunnel  : READ   WRITE   EXECUTE  DEBUG
Task:          universal : READ  WRITE   EXECUTE  DEBUG (reserved)
Task:          vlan   : READ   WRITE   EXECUTE  DEBUG
Task:          vrrp    : READ   WRITE   EXECUTE  DEBUG

```

The following sample output displays the tasks and indicates which tasks are reserved from the **show user** command:

```

RP/0/0/CPU0:router# show user tasks

Task:          aaa      : READ   WRITE   EXECUTE  DEBUG
Task:          acl      : READ   WRITE   EXECUTE  DEBUG
Task:          admin    : READ   WRITE   EXECUTE  DEBUG
Task:          atm      : READ   WRITE   EXECUTE  DEBUG
Task:          basic-services : READ  WRITE   EXECUTE  DEBUG
Task:          bcdl     : READ   WRITE   EXECUTE  DEBUG
Task:          bfd      : READ   WRITE   EXECUTE  DEBUG
Task:          bgp      : READ   WRITE   EXECUTE  DEBUG
Task:          boot     : READ   WRITE   EXECUTE  DEBUG
Task:          bundle   : READ   WRITE   EXECUTE  DEBUG
Task:          cdp      : READ   WRITE   EXECUTE  DEBUG
Task:          cef      : READ   WRITE   EXECUTE  DEBUG
Task:          config-mgmt : READ  WRITE   EXECUTE  DEBUG
Task:          config-services : READ  WRITE   EXECUTE  DEBUG
Task:          crypto   : READ   WRITE   EXECUTE  DEBUG
Task:          diag     : READ   WRITE   EXECUTE  DEBUG
Task:          drivers   : READ   WRITE   EXECUTE  DEBUG
Task:          eigrp    : READ   WRITE   EXECUTE  DEBUG
Task:          ext-access : READ  WRITE   EXECUTE  DEBUG
Task:          fabric   : READ   WRITE   EXECUTE  DEBUG
Task:          fault-mgr : READ   WRITE   EXECUTE  DEBUG
Task:          filesystem : READ  WRITE   EXECUTE  DEBUG
Task:          firewall  : READ  WRITE   EXECUTE  DEBUG
Task:          fr       : READ   WRITE   EXECUTE  DEBUG
Task:          hdlc     : READ   WRITE   EXECUTE  DEBUG
Task:          host-services : READ  WRITE   EXECUTE  DEBUG
Task:          hsrp     : READ   WRITE   EXECUTE  DEBUG
Task:          interface : READ  WRITE   EXECUTE  DEBUG
Task:          inventory : READ  WRITE   EXECUTE  DEBUG
Task:          ip-services : READ  WRITE   EXECUTE  DEBUG
Task:          ipv4     : READ   WRITE   EXECUTE  DEBUG
Task:          ipv6     : READ   WRITE   EXECUTE  DEBUG
Task:          isis     : READ   WRITE   EXECUTE  DEBUG
Task:          logging   : READ   WRITE   EXECUTE  DEBUG
Task:          lpts     : READ   WRITE   EXECUTE  DEBUG
Task:          monitor   : READ  WRITE   EXECUTE  DEBUG
Task:          mpls-ldp  : READ  WRITE   EXECUTE  DEBUG
Task:          mpls-static : READ  WRITE   EXECUTE  DEBUG
Task:          mpls-te   : READ  WRITE   EXECUTE  DEBUG
Task:          multicast : READ  WRITE   EXECUTE  DEBUG

```

show user

```

Task:          netflow : READ    WRITE    EXECUTE  DEBUG
Task:          network : READ    WRITE    EXECUTE  DEBUG
Task:          ospf    : READ    WRITE    EXECUTE  DEBUG
Task:          ouni    : READ    WRITE    EXECUTE  DEBUG
Task:          pkg-mgmt : READ    WRITE    EXECUTE  DEBUG
Task:          pos-dpt : READ    WRITE    EXECUTE  DEBUG
Task:          ppp     : READ    WRITE    EXECUTE  DEBUG
Task:          qos     : READ    WRITE    EXECUTE  DEBUG
Task:          rib     : READ    WRITE    EXECUTE  DEBUG
Task:          rip     : READ    WRITE    EXECUTE  DEBUG
Task:          root-lr : READ    WRITE    EXECUTE  DEBUG (reserved)
Task:          root-system : READ  WRITE    EXECUTE  DEBUG (reserved)
Task:          route-map : READ  WRITE    EXECUTE  DEBUG
Task:          route-policy : READ  WRITE    EXECUTE  DEBUG
Task:          sbc     : READ    WRITE    EXECUTE  DEBUG
Task:          snmp    : READ    WRITE    EXECUTE  DEBUG
Task:          sonet-sdh : READ  WRITE    EXECUTE  DEBUG
Task:          static  : READ    WRITE    EXECUTE  DEBUG
Task:          sysmgr  : READ    WRITE    EXECUTE  DEBUG
Task:          system  : READ    WRITE    EXECUTE  DEBUG
Task:          transport : READ  WRITE    EXECUTE  DEBUG
Task:          tty-access : READ  WRITE    EXECUTE  DEBUG
Task:          tunnel  : READ    WRITE    EXECUTE  DEBUG
Task:          universal : READ  WRITE    EXECUTE  DEBUG (reserved)
Task:          vlan    : READ    WRITE    EXECUTE  DEBUG
Task:          vrrp    : READ    WRITE    EXECUTE  DEBUG

```

Related Commands

Command	Description
show aaa, on page 72	Displays the task maps for selected user groups, local users, or task groups.

single-connection

To multiplex all TACACS+ requests to this server over a single TCP connection, use the **single-connection** command in TACACS host configuration mode. To disable the single TCP connection for all new sessions that use a separate connection, use the **no** form of this command.

single-connection

no single-connection

Syntax Description This command has no keywords or arguments.

Command Default By default, a separate connection is used for each session.

Command Modes TACACS host configuration

Command History	Release	Modification
	Release 3.6.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **single-connection** command allows the TACACS+ server to handle a greater number of TACACS operations than would be possible if multiple TCP connections were used to send requests to a server.

The TACACS+ server that is being used must support single-connection mode for this to be effective; otherwise, the connection between the network access server and the TACACS+ server locks up or you can receive unauthentic errors.

Task ID	Task ID	Operations
	aaa	read, write

Examples The following example shows how to configure a single TCP connection to be made with the TACACS+ server (IP address 209.165.200.226) and all authentication, authorization, accounting requests to use this TCP connection. This works only if the TACACS+ server is also configured in single-connection mode. To configure the TACACS+ server in single connection mode, refer to the respective server manual.

```
RP/0/0/CPU0:router(config)# tacacs-server host 209.165.200.226
RP/0/0/CPU0:router(config-tacacs-host)# single-connection
```

Related Commands

Command	Description
tacacs-server host , on page 101	Specifies a TACACS+ host.

tacacs-server host

To specify a TACACS+ host server, use the **tacacs-server host** command in global configuration mode. To delete the specified name or address, use the **no** form of this command.

tacacs-server host *host-name* [**port** *port-number*] [**timeout** *seconds*] [**key** [**0** | **7**] *auth-key*]
[single-connection]

no tacacs-server host *host-name* [*port port-number*]

Syntax Description

<i>host-name</i>	Host or domain name or IP address of the TACACS+ server.
port <i>port-number</i>	(Optional) Specifies a server port number. This option overrides the default, which is port 49. Valid port numbers range from 1 to 65535.
timeout <i>seconds</i>	(Optional) Specifies a timeout value that sets the length of time the authentication, authorization, and accounting (AAA) server waits to receive a response from the TACACS+ server. This option overrides the global timeout value set with the tacacs-server timeout command for this server only. The valid timeout range is from 1 to 1000 seconds. Default is 5.
key [0 7] <i>auth-key</i>	(Optional) Specifies an authentication and encryption key shared between the AAA server and the TACACS+ server. The TACACS+ packets are encrypted using this key. This key must match the key used by the TACACS+ daemon. Specifying this key overrides the key set by the tacacs-server key command for this server only. (Optional) Entering 0 specifies that an unencrypted (clear-text) key follows. (Optional) Entering 7 specifies that an encrypted key follows. The <i>auth-key</i> argument specifies the unencrypted key between the AAA server and the TACACS+ server.
single-connection	(Optional) Multiplexes all TACACS+ requests to this server over a single TCP connection. By default, a separate connection is used for each session.

Command Default

No TACACS+ host is specified.

The *port-name* argument, if not specified, defaults to the standard port 49.

The *seconds* argument, if not specified, defaults to 5 seconds.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Release	Modification
Release 3.3.0	The show run command was modified to display the default values for both the port keyword and the timeout keyword, if values are not specified.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **key** keyword must be entered last because it uses a line (text with breaks) rather than a string (text only, with no breaks). Any text and line breaks up to the time the user presses Enter can be used as part of the key.

You can use multiple **tacacs-server host** commands to specify additional hosts. Cisco IOS XR software searches for hosts in the order in which you specify them.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to specify a TACACS+ host with the IP address 209.165.200.226:

```
RP/0/0/CPU0:router(config)# tacacs-server host 209.165.200.226
RP/0/0/CPU0:router(config-tacacs-host)#
```

The following example shows that the default values from the **tacacs-server host** command are displayed from the **show run** command:

```
RP/0/0/CPU0:router# show run

Building configuration...
!! Last configuration change at 13:51:56 UTC Mon Nov 14 2005 by lab
!
tacacs-server host 209.165.200.226 port 49
  timeout 5
!
```

The following example shows how to specify that the router consult the TACACS+ server host named host1 on port number 51. The timeout value for requests on this connection is 30 seconds; the encryption key is a_secret.

```
RP/0/0/CPU0:router(config)# tacacs-server host host1 port 51 timeout 30 key a_secret
```

Related Commands

Command	Description
key (TACACS+), on page 38	Specifies an authentication and encryption key shared between the AAA server and the TACACS+ server.
single-connection, on page 99	Multiplexes all TACACS+ requests to this server over a single TCP connection.

Command	Description
tacacs-server key , on page 104	Globally sets the authentication encryption key used for all TACACS+ communications between the router and the TACACS+ daemon.
tacacs-server timeout , on page 106	Globally sets the interval that the router waits for a server host to reply.
timeout (TACACS+) , on page 116	Specifies a timeout value that sets the length of time the authentication, authorization, and accounting (AAA) server waits to receive a response from the TACACS+ server.

tacacs-server key

To set the authentication encryption key used for all TACACS+ communications between the router and the TACACS+ daemon, use the **tacacs-server key** command in global configuration mode. To disable the key, use the **no** form of this command.

```
tacacs-server key {0 clear-text-key| 7 encrypted-key| auth-key}
```

```
no tacacs-server key {0 clear-text-key| 7 encrypted-key| auth-key}
```

Syntax Description

0 <i>clear-text-key</i>	Specifies an unencrypted (cleartext) shared key.
7 <i>encrypted-key</i>	Specifies an encrypted shared key.
<i>auth-key</i>	Specifies the unencrypted key between the AAA server and the TACACS+ server.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.6.0	The following keywords were added: <ul style="list-style-type: none"> • 0 • 7 • auth-key

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The key name entered must match the key used on the TACACS+ daemon. The key name applies to all servers that have no individual keys specified. All leading spaces are ignored; spaces within and after the key are not. If you use spaces in your key, do not enclose the key in quotation marks unless the quotation marks themselves are part of the key.

The key name is valid only when the following guidelines are followed:

- The *clear-text-key* argument must be followed by the **0** keyword.
- The *encrypted-key* argument must be followed by the **7** keyword.

The TACACS server key is used only if no key is configured for an individual TACACS server. Keys configured for an individual TACACS server always override this global key configuration.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example sets the authentication and encryption key to key1:

```
RP/0/0/CPU0:router(config)# tacacs-server key key1
```

Related Commands

Command	Description
key (TACACS+), on page 38	Specifies an authentication and encryption key shared between the AAA server and the TACACS+ server.
tacacs-server host, on page 101	Specifies a TACACS+ host.

tacacs-server timeout

To set the interval that the server waits for a server host to reply, use the **tacacs-server timeout** command in global configuration mode. To restore the default, use the **no** form of this command.

tacacs-server timeout *seconds*

no tacacs-server timeout *seconds*

Syntax Description

<i>seconds</i>	Integer that specifies the timeout interval (in seconds) from 1 to 1000.
----------------	--

Command Default

5 seconds

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The TACACS+ server timeout is used only if no timeout is configured for an individual TACACS+ server. Timeout intervals configured for an individual TACACS+ server always override this global timeout configuration.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows the interval timer being changed to 10 seconds:

```
RP/0/0/CPU0:router(config)# tacacs-server timeout 10
```

Related Commands

Command	Description
tacacs-server host , on page 101	Specifies a TACACS+ host.

tacacs source-interface

To specify the source IP address of a selected interface for all outgoing TACACS+ packets, use the **tacacs source-interface** command in global configuration mode. To disable use of the specified interface IP address, use the **no** form of this command.

tacacs source-interface *type path-id* [**vrf** *vrf-id*]

no tacacs source-interface *type path-id*

Syntax Description

<i>type</i>	Interface type. For more information, use the question mark (?) online help function.
<i>path-id</i>	Physical interface or virtual interface. Note Use the show interfaces command in EXEC mode to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (?) online help function.
vrf <i>vrf-id</i>	Specifies the name of the assigned VRF.

Command Default

If a specific source interface is not configured, or the interface is down or does not have an IP address configured, the system selects an IP address.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 4.1.0	The vrf keyword was added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **tacacs source-interface** command to set the IP address of the specified interface for all outgoing TACACS+ packets. This address is used as long as the interface is in the *up* state. In this way, the TACACS+ server can use one IP address entry associated with the network access client instead of maintaining a list of all IP addresses.

This command is especially useful in cases where the router has many interfaces and you want to ensure that all TACACS+ packets from a particular router have the same IP address.

When the specified interface does not have an IP address or is in a *down* state, TACACS+ behaves as if no source interface configuration is used.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to set the IP address of the specified interface for all outgoing TACACS+ packets:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# tacacs source-interface GigabitEthernet 0/0/0/29 vrf abc
```

Related Commands

Command	Description
aaa group server tacacs+, on page 20	Groups different server hosts into distinct lists and distinct methods.

task

To add a task ID to a task group, use the **task** command in task group configuration mode. To remove a task ID from a task group, use the **no** form of this command.

task {**read**|**write**|**execute**|**debug**} *taskid-name*

no task {**read**|**write**|**execute**|**debug**} *taskid-name*

Syntax Description

read	Enables read-only privileges for the named task ID.
write	Enables write privileges for the named task ID. The term “write” implies read also.
execute	Enables execute privileges for the named task ID.
debug	Enables debug privileges for the named task ID.
<i>taskid-name</i>	Name of the task ID.

Command Default

No task IDs are assigned to a newly created task group.

Command Modes

Task group configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **task** command in task group configuration mode. To access task group configuration mode, use the **taskgroup** command in global configuration mode.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to enable execute privileges for the config-services task ID and associate that task ID with the task group named taskgroup1:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# taskgroup taskgroup1
RP/0/0/CPU0:router(config-tg)# task execute config-services
```

Related Commands

Command	Description
taskgroup, on page 112	Configures a task group to be associated with a set of task IDs.

taskgroup

To configure a task group to be associated with a set of task IDs, and to enter task group configuration mode, use the **taskgroup** command in global configuration mode. To delete a task group, use the **no** form of this command.

taskgroup *taskgroup-name* [**description** *string*] **task** {**read**|**write**|**execute**|**debug**} *taskid-name* **inherit**
taskgroup *taskgroup-name*]

no taskgroup *taskgroup-name*

Syntax Description

<i>taskgroup-name</i>	Name of a particular task group.
description	(Optional) Enables you to create a description for the named task group.
<i>string</i>	(Optional) Character string used for the task group description.
task	(Optional) Specifies that a task ID is to be associated with the named task group.
read	(Optional) Specifies that the named task ID permits read access only.
write	(Optional) Specifies that the named task ID permits read and write access only.
execute	(Optional) Specifies that the named task ID permits execute access.
debug	(Optional) Specifies that the named task ID permits debug access only.
<i>taskid-name</i>	(Optional) Name of a task: the task ID.
inherit taskgroup	(Optional) Copies permissions from the named task group.
<i>taskgroup-name</i>	(Optional) Name of the task group from which permissions are to be inherited.

Command Default

Five predefined user groups are available by default.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	Support was added to display all task groups in global configuration mode.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task groups are configured with a set of task IDs for each action type. Deleting a task group that is still referenced in the system results in a warning and rejection of the deletion.

From global configuration mode, you can display all the configured task groups. However, you cannot display all the configured task groups in taskgroup configuration mode.

Entering the **taskgroup** command with no keywords or arguments enters task group configuration mode, in which you can use the **description**, **inherit**, **show**, and **task** commands.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example assigns read bgp permission to the task group named alpha:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# taskgroup alpha
RP/0/0/CPU0:router(config-tg)# task read bgp
```

Related Commands

Command	Description
description (AAA), on page 28	Creates a task group description in task configuration mode.
task, on page 110	Adds a task ID to a task group.

timeout (RADIUS)

To specify the number of seconds the router waits for the RADIUS server to reply before retransmitting, use the **timeout** command in RADIUS server-group private configuration mode. To disable this command and return to the default timeout value of 5 seconds, use the **no** form of this command.

timeout *seconds*

no timeout *seconds*

Syntax Description

<i>seconds</i>	Timeout value (in seconds). The range is from 1 to 1000. If no timeout is specified, the global value is used.
----------------	--

Command Default

seconds: 5

Command Modes

RADIUS server-group private configuration

Command History

Release	Modification
Release 3.4.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to set the number of seconds for the timeout value:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa group server radius group1
RP/0/0/CPU0:router(config-sg-radius)# server-private 10.1.1.1 auth-port 300
RP/0/0/CPU0:router(config-sg-radius-private)# timeout 500
```

Related Commands

Command	Description
aaa group server tacacs+ , on page 20	Groups different RADIUS server hosts into distinct lists.
key (RADIUS) , on page 36	Specifies the authentication and encryption key that is used between the router and the RADIUS daemon running on the RADIUS server.
radius-server timeout , on page 56	Sets the interval for which a router waits for a server host to reply before timing out.
retransmit (RADIUS) , on page 59	Specifies the number of times a RADIUS request is resent to a server if the server is not responding or is responding slowly.
server-private (RADIUS) , on page 67	Configures the IP address of the private RADIUS server for the group server.

timeout (TACACS+)

To specify a timeout value that sets the length of time the authentication, authorization, and accounting (AAA) server waits to receive a response from the TACACS+ server, use the **timeout** (TACACS+) command in TACACS host configuration mode. To disable this command and return to the default timeout value of 5 seconds, use the **no** form of this command.

timeout *seconds*

no timeout *seconds*

Syntax Description

<i>seconds</i>	Timeout value (in seconds). The range is from 1 to 1000. If no timeout is specified, the global value is used.
----------------	--

Command Default

seconds: 5

Command Modes

TACACS host configuration

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **timeout** (TACACS+) command overrides the global timeout value set with the **tacacs-server timeout** command for this server only.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to set the number of seconds for the timeout value:

```
RP/0/0/CPU0:router(config)# tacacs-server host 209.165.200.226
RP/0/0/CPU0:router(config-tacacs-host)# timeout 500
```

Related Commands

Command	Description
tacacs-server host , on page 101	Specifies a TACACS+ host.

timeout login response

To set the interval that the server waits for a reply to a login, use the **timeout login response** command in line template configuration mode. To restore the default, use the **no** form of this command.

timeout login response *seconds*

no timeout login response *seconds*

Syntax Description

<i>seconds</i>	Integer that specifies the timeout interval (in seconds) from 0 to 300.
----------------	---

Command Default

seconds: 30

Command Modes

Line template configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **timeout login response** command in line template configuration mode to set the timeout value. This timeout value applies to all terminal lines to which the entered line template is applied. This timeout value can also be applied to line console. After the timeout value has expired, the user is prompted again. The retry is allowed three times.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to change the interval timer to 20 seconds:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# line template alpha
RP/0/0/CPU0:router(config-line)# timeout login response 20
```

Related Commands

Command	Description
login authentication, on page 40	Enables AAA authentication for logging in.

usergroup

To configure a user group and associate it with a set of task groups, and to enter user group configuration mode, use the **usergroup** command in global configuration mode. To delete a user group, or to delete a task-group association with the specified user group, use the **no** form of this command.

usergroup *usergroup-name*

no usergroup *usergroup-name*

Syntax Description

<i>usergroup-name</i>	Name of the user group. The <i>usergroup-name</i> argument can be only one word. Spaces and quotation marks are not allowed.
-----------------------	--

Command Default

Five predefined user groups are available by default.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	Support was added to display all user groups in global configuration mode.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

User groups are configured with the command parameters for a set of users, such as task groups. You can remove specific user groups by using the **no** form of the **usergroup** command. You can remove the user group itself by using the **no** form of the command without giving any parameters. Deleting a user group that is still referenced in the system results in a warning and a rejection of the deletion.

Use the [inherit usergroup](#), on page 34 command to copy permissions from other user groups. The user group is inherited by the parent group and forms a union of all task IDs specified in those groups. Circular inclusions are detected and rejected. User groups cannot inherit properties from predefined groups, such as root-system and owner-sdr.

From global configuration mode, you can display all the configured user groups. However, you cannot display all the configured user groups in usergroup configuration mode.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to add permissions from the user group beta to the user group alpha:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# usergroup alpha
RP/0/0/CPU0:router(config-ug)# inherit usergroup beta
```

Related Commands

Command	Description
description (AAA), on page 28	Creates a description of a task group during configuration.
inherit usergroup, on page 34	Enables a user group to derive permissions from another user group.
taskgroup, on page 112	Configures a task group to be associated with a set of task IDs.

username

To configure a new user with a username, establish a password, grant permissions for the user, and to enter username configuration mode, use the **username** command in either global configuration or administration configuration mode. To delete a user from the database, use the **no** form of this command.

username *user-name* [**password** {[0]| 7} *password*] **secret** {[0]| 5} *password*] **group** *usergroup-name*]

no username *user-name* [**password** {0| 7} *password*] **secret** {0| 5} *password*] **group** *usergroup-name*]

Syntax Description

<i>user-name</i>	Name of the user. The <i>user-name</i> argument can be only one word. Spaces and quotation marks are not allowed.
password	(Optional) Enables a password to be created for the named user.
0	(Optional) Specifies that an unencrypted (clear-text) password follows. The password will be encrypted for storage in the configuration using a Cisco proprietary encryption algorithm.
7	(Optional) Specifies that an encrypted password follows.
<i>password</i>	(Optional) Specifies the unencrypted password text to be entered by the user to log in, for example, <i>lab</i> . If encryption is configured, the password is not visible to the user. Can be up to 253 characters in length.
secret	(Optional) Enables an MD5-secured password to be created for the named user.
0	(Optional) Specifies that an unencrypted (clear-text) password follows. The password will be encrypted for storage in the configuration using an MD5 encryption algorithm.
5	(Optional) Specifies that an encrypted password follows.
group	(Optional) Enables a named user to be associated with a user group.
<i>usergroup-name</i>	(Optional) Name of a user group as defined with the usergroup command.

Command Default

No usernames are defined in the system.

Command Modes

Global configuration

Administration configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	Support was added to display all user names in global configuration mode.
Release 3.6.0	Having cisco-support privileges as the only group was disallowed.
Release 3.7.0	The command syntax descriptions, usage information, and examples were corrected or enhanced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

**Note**

A user is never allowed to have cisco-support privileges as the only group.

Use the **username** command to identify the user and enter username configuration mode. Password and user group assignments can be made from either global configuration mode or username configuration submode. Permissions (task IDs) are assigned by associating the user with one or more defined user groups.

From global configuration mode, you can display all the configured usernames. However, you cannot display all the configured usernames in username configuration mode.

Each user is identified by a username that is unique across the administrative domain. Each user should be made a member of at least one user group. Deleting a user group may orphan the users associated with that group. The AAA server authenticates orphaned users, but most commands are not authorized.

The **username** command is associated with a particular user for local login authentication by default. Alternatively, a user and password can be configured in the database of the RADIUS server for RADIUS login authentication, or a user and password can be configured in the database of the TACACS+ server for TACACS+ login authentication. For more information, see the description of the [aaa authentication, on page 11](#) command.

The predefined group root-system may be specified only by root-system users while administration is configured.

**Note**

To enable the local networking device to respond to remote Challenge Handshake Authentication Protocol (CHAP) challenges, one **username** command entry must be the same as the hostname entry that has already been assigned to the other networking device.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows the commands available after executing the **username** command in global configuration mode:

```
RP/0/0/CPU0:router# config
RP/0/0/CPU0:router(config)# username user1
RP/0/0/CPU0:router(config-un)# ?
```

clear	Clear the uncommitted configuration
commit	Commit the configuration changes to running
describe	Describe a command without taking real actions
do	Run an exec command
exit	Exit from this submode
group	User group in which this user will be a member of
no	Negate a command or set its defaults
password	Specify the password for the user
pwd	Commands used to reach current submode
root	Exit to the global configuration mode
secret	Specify the secure password for the user
show	Show contents of configuration

```
RP/0/0/CPU0:router(config-un)#
```

The following example shows how to establish the clear-text password *password1* for the user name *user1* in global configuration mode:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# username user1
RP/0/0/CPU0:router(config-un)# password 0 password1
```

The following example shows how to establish an MD5-secured secret for the user *user1* in administration configuration mode:

```
RP/0/0/CPU0:P1(admin-config)# username user1
RP/0/0/CPU0:P1(admin-config-un)# secret 0 lab
RP/0/0/CPU0:P1(admin-config-un)# commit
RP/0/0/CPU0:May 6 13:06:43.205 : config[65723]: %MGBL-CONFIG-6-DB_COMMIT_ADMIN :
Configuration committed by user 'cisco'. Use 'show configuration commit changes 2000000005'
to view the changes.
RP/0/0/CPU0:P1(admin-config-un)# exit
RP/0/0/CPU0:P1(admin-config)# show run username
username user1 secret 5 $1$QB03$3H29k3ZT.0PMQ8GQKXCF0
!
```

Related Commands

Command	Description
aaa authentication, on page 11	Defines a method list for authentication.

Command	Description
group (AAA), on page 30	Adds a user to a group.
password (AAA), on page 42	Creates a login password for a user.
secret, on page 61	Creates a secure login secret for a user.

users group

To associate a user group and its privileges with a line, use the **users group** command in line template configuration mode. To delete a user group association with a line, use the **no** form of this command.

users group {*usergroup-name*| **cisco-support**| **netadmin**| **operator**| **root-lr**| **root-system**| **sysadmin**}

no users group {*usergroup-name*| **cisco-support**| **netadmin**| **operator**| **root-lr**| **root-system**| **serviceadmin**| **sysadmin**}

Syntax Description

<i>usergroup-name</i>	Name of the user group. The <i>usergroup-name</i> argument can be only one word. Spaces and quotation marks are not allowed.
cisco-support	Specifies that users logging in through the line are given Cisco support personnel privileges.
netadmin	Specifies that users logging in through the line are given network administrator privileges.
operator	Specifies that users logging in through the line are given operator privileges.
root-lr	Specifies that users logging in through the line are given root logical router (LR) privileges.
root-system	Specifies that users logging in through the line are given root system privileges.
serviceadmin	Specifies that users logging in through the line are given service administrator group privileges.
sysadmin	Specifies that users logging in through the line are given system administrator privileges.

Command Default

None

Command Modes

Line template configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The serviceadmin keyword was added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **users group** command to enable a user group and its privileges to be associated with a line, meaning that users logging in through the line are given the privileges of the particular user group.

Task ID

Task ID	Operations
aaa	read, write

Examples

In the following example, if a vty-pool is created with line template *vtty*, users logging in through vty are given operator privileges:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa authen login vty-authen line
RP/0/0/CPU0:router(config)# commit
RP/0/0/CPU0:router(config)# line template vty
RP/0/0/CPU0:router(config-line)# users group operator
RP/0/0/CPU0:router(config-line)# login authentication
```

vrf (RADIUS)

To configure the Virtual Private Network (VPN) routing and forwarding (VRF) reference of an AAA RADIUS server group, use the **vrf** command in RADIUS server-group configuration mode. To enable server groups to use the global (default) routing table, use the **no** form of this command.

vrf *vrf-name*

no vrf *vrf-name*

Syntax Description

<i>vrf-name</i>	Name assigned to a VRF.
-----------------	-------------------------

Command Default

The default VRF is used.

Command Modes

RADIUS server-group configuration

Command History

Release	Modification
Release 3.4.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **vrf** command to specify a VRF for an AAA RADIUS server group and enable dial-up users to use AAA servers in different routing domains.

Task ID

Task ID	Operations
aaa	read, write

Examples

The following example shows how to use the **vrf** command:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa group server radius group1
RP/0/0/CPU0:router(config-sg-radius)# vrf wal-mart
```


Related Commands

Command	Description
aaa group server tacacs+ , on page 20	Groups different RADIUS server hosts into distinct lists and distinct methods.
radius source-interface , on page 57	Forces RADIUS to use the IP address of a specified interface or subinterface for all outgoing RADIUS packets.
server-private (RADIUS) , on page 67	Configures the IP address of the private RADIUS server for the group server.

vrf (TACACS+)

To configure the Virtual Private Network (VPN) routing and forwarding (VRF) reference of an AAA TACACS+ server group, use the **vrf** command in TACACS+ server-group configuration mode. To enable server groups to use the global (default) routing table, use the **no** form of this command.

vrf *vrf-name*

no vrf *vrf-name*

Syntax Description

<i>vrf-name</i>	Name assigned to a VRF.
-----------------	-------------------------

Command Default

The default VRF is used.

Command Modes

TACACS+ server-group configuration

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **vrf** command to specify a VRF for an AAA TACACS+ server group and enable dial-up users to use AAA servers in different routing domains.

Task ID

Task ID	Operations
aaa	read, write

Examples

This example shows how to use the **vrf** command:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# aaa group server tacacs+ myserver
RP/0/0/CPU0:router(config-sg-tacacs)# server 9.27.10.6
RP/0/0/CPU0:router(config-sg-tacacs)# vrf abc
```

Related Commands

Command	Description
aaa group server tacacs+ , on page 20	Groups different TACACS+ server hosts into distinct lists and distinct methods.
server (TACACS+) , on page 65	Specifies the source IP address of a selected interface for all outgoing TACACS+ packets.
server-private (TACACS+) , on page 70	Configures the IP address of the private TACACS+ server for the group server.

