

RADIUS Separate Retransmit Counter for Accounting

The RADIUS: Separate Retransmit Counter for Accounting feature allows users to configure an exponential backoff retransmit. That is, after the normally configured retransmission retries have been used, the router continues trying with an interval that doubles on each retransmission failure until a configured maximum interval is reached. This functionality allows users to retransmit accounting requests for many hours without overloading the RADIUS server when it does come back up.

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Restrictions for RADIUS Separate Retransmit Counter for Accounting

The following tasks result in excessive memory consumption on the router:

- Configuring this feature on a router with a high call rate.
- Configuring the **aaa accounting send stop-record authentication failure** command: an accounting record and a RADIUS packet is generated for each user that fails to authenticate while the RADIUS server is down.
- Configuring interim accounting: new accounting records are generated and stored on the router.

Information About RADIUS Separate Retransmit Counter for Accounting

In many environments, a single RADIUS server is used for authentication and accounting. Whenever this server is down for approximately 24 hours, the accounting records of users already on the router are lost after

authentication, authorization, and accounting (AAA) does all the retransmissions. Before the introduction of this feature, the retransmissions could be configured for a maximum of 100 retries and the timeout could be configured for 1,000 seconds. Although these configurations keep the accounting records on the router for 24 hours, a timeout of 1,000 seconds is unreasonable, causing problems when the RADIUS server cannot be reached due to network congestion.

The RADIUS: Separate Retransmit Counter for Accounting feature allows users to configure an exponential backoff retransmit. That is, after the normally configured retransmission retries have been used, the router continues trying with an interval that doubles on each retransmission failure until a configured maximum interval is reached. This functionality allows users to retransmit accounting requests for many hours without overloading the RADIUS server when it does come back up.

This feature can be configured globally (through the **radius-server backoff exponential** command), per server (through the **radius-server host** command), or per group (through the **backoff exponential**command).

Benefits

With this feature, users can extend the time in which the RADIUS client (the router) sends accounting requests to the RADIUS server in the event that the RADIUS server or the connection to the server is down and there is no accounting response confirmation. This functionality enables accounting records to remain on the router for up to 24 hours.

How to Configure RADIUS Separate Retransmit Counter for Accounting

Configuring a Retransmit Counter for Accounting Globally or per RADIUS Host

To configure exponential backoffs of RADIUS retransmits over an extended period of time on a global basis and per RADIUS host, perform the following steps:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. Router(config)# **radius-server backoff exponential** [**max-delay** *minutes*] [**backoff-retry** *retransmits*
4. Router(config)# **radius-server host** {*hostname* | *ip-address*} [**test username** *user-name*] [**auth-port** *port-number*] [**ignore-auth-port**] [**acct-port** *port-number*] [**ignore-acct-port**] [**timeout** *seconds*] [**retransmit** *retries*] [**key** *string*] [**alias** {*hostname* | *ip-address*}] [**idle-time** *seconds*] [**backoff exponential** {**backoff-retry** *number-of-retransmits* | **key** *encryption-key* | **max-delay** *minutes*}]

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable**	Enters privileged EXEC mode.

	Command or Action	Purpose
	Example: `Router> enable`	Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	Router(config)# **radius-server backoff exponential** [**max-delay** *minutes*] [**backoff-retry** *retransmits* **Example:** `Router (config)# radius-server backoff exponential max-delay 60 backoff-retry 32`	Configures the router for exponential backoff retransmit of accounting requests.
Step 4	Router(config)# **radius-server host** {*hostname* | *ip-address*} [**test username** *user-name*] [**auth-port** *port-number*] [**ignore-auth-port**] [**acct-port** *port-number*] [**ignore-acct-port**] [**timeout** *seconds*] [**retransmit** *retries*] [**key** *string*] [**alias** {*hostname* | *ip-address*}] [**idle-time** *seconds*] [**backoff exponential** {**backoff-retry** *number-of-retransmits* | **key** *encryption-key* | **max-delay** *minutes*}] **Example:** `Router (config)# radius-server host 192.0.2.1 test username test1 auth-port 1645 acct-port 1646`	Specifies a RADIUS server host and configures that RADIUS server host for exponential backoff retransmit of accounting requests.

Configuring a Retransmit Counter for Accounting per RADIUS Server Group

To configure exponential backoffs of RADIUS retransmits over an extended period of time per RADIUS server group, perform the following steps:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. Router(config)# **aaa group server radius** *group-name*
4. Router(config -sg-radius)# **backoff exponential max-delay** *minutes*] [**backoff-retry** *retransmits*

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable**	Enters privileged EXEC mode.

	Command or Action	Purpose
	Example: `Router> enable`	• Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router (config)# configure terminal`	Enters global configuration mode.
Step 3	Router(config)# **aaa group server radius** *group-name*	Groups different RADIUS server hosts into distinct lists and distinct methods and enters server-group RADIUS configuration mode.
Step 4	Router(config -sg-radius)# **backoff exponential max-delay** *minutes*] [**backoff-retry** *retransmits*	Configures the router for exponential backoff retransmit of accounting requests per RADIUS server group.

Verifying Retransmit Configurations

To verify feature functionality, use any of the following EXEC commands:

SUMMARY STEPS

1. **enable**
2. **debug radius**
3. **show accounting**
4. **show radius statistics**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enters privileged EXEC mode. • Enter your password if prompted.
Step 2	**debug radius** **Example:** `Router# debug radius`	Displays information associated with RADIUS.
Step 3	**show accounting** **Example:** `Router# show accounting`	Displays all active sessions and prints all the accounting records for actively accounted functions.

	Command or Action	Purpose
Step 4	**show radius statistics** **Example:** `Router# show radius statistics`	Displays the RADIUS statistics for accounting packets.

Configuration Examples for RADIUS Separate Retransmit Counter for Accounting

Retransmit Counter for Accounting Comprehensive Configuration Example

The following example shows how to configure your router for exponential backoff retransmit of accounting requests. In this example, an exponential backoff is configured globally (through the **radius-server backoff exponential** command) and for the RADIUS server host "172.107.164.206" (through the **radius-server host** command).

```
aaa new-model
aaa authentication login default group radius
aaa authentication ppp default group radius
aaa authorization exec default group radius
aaa authorization network default group radius
aaa accounting send stop-record authentication failure
aaa accounting update periodic 1
aaa accounting network default start-stop group radius
!
interface BRI1/0
 ip address 10.0.0.2 255.0.0.0
 encapsulation ppp
 no ip mroute-cache
 dialer idle-timeout 0
 dialer-group 1
 isdn switch-type basic-5ess
!
radius-server host 172.107.164.206 auth-port 1645 acct-port 1646 backoff exponential max-delay
 60 backoff-retry 32
radius-server backoff exponential max-delay 60 backoff-retry 32
radius-server retransmit 3
radius-server key rad123
end
```

Per-Server Configuration Example

The following example shows how to enable exponential backoff retransmits on a per-server basis. In this example, assume that the retransmit is configured for 3 retries and the timeout is configured for 5 seconds; that is, the RADIUS request is transmitted 3 times with a delay of 5 seconds. Thereafter, the router continues to retransmit RADIUS requests with a delayed interval that doubles each time until 32 retries have been achieved. The router stops doubling the retransmit intervals after the interval surpasses the configured 60 minutes; it transmits every 60 minutes.

```
radius-server host foo.xyz.com backoff exponential max-delay 60 backoff-retry 32
```

After enabling this command, the retransmits are sent as follows (“t” equals seconds):

```
t = 0 req sent
t = 5 retrans 1
t = 10 retrans 2
t = 15 retrans 3
t = 25 retrans 4
t = 45 retrans 5
t = 85 retrans 6
t = 165 retrans 7
t = 325 retrans 8
t = 645 retrans 9
t = 1285 retrans 10
t= 2565 retrans 11
t = 5125 retrans 12
t = 8725 retrans 13 (The interval has stabilized to 60 minutes here).
t = 12325 retrans 14 till retransmit 35
```

After all the retransmits are sent, the RADIUS request follows the same path that it would when all the normal retransmits are done.

Additional References

The following sections provide references related to the RADIUS: Separate Retransmit Counter for Accounting.

Related Documents

Related Topic	Document Title
RADIUS and AAA accounting configuration tasks and commands	• “ Configuring RADIUS ” and “ Configuring Accounting ” feature modules. • *CiscoOS Security Command Reference*

Standards

Standard	Title
None	--

MIBs

MIB	MIBs Link
None	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
No new or modified RFCs are supported by this feature.	--

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/techsupport

Feature Information for RADIUS Separate Retransmit Counter for Accounting

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

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

Table 1: Feature Information for RADIUS: Separate Retransmit Counter for Accounting

Feature Name	Releases	Feature Information
RADIUS: Separate Retransmit Counter for Accounting	12.2(15)B 12.2(33)SRC	The RADIUS: Separate Retransmit Counter for Accounting feature allows users to configure an exponential backoff retransmit. That is, after the normally configured retransmission retries have been used, the router continues trying with an interval that doubles on each retransmission failure until a configured maximum interval is reached. This functionality allows users to retransmit accounting requests for many hours without overloading the RADIUS server when it does come back up. The following commands were introduced or modified: **backoff exponential**, **radius-server host**, **radius-server backoff exponential**.