AAA Dead-Server Detection

The AAA Dead-Server Detection feature allows you to configure the criteria to be used to mark a RADIUS server as dead. If no criteria are explicitly configured, the criteria are computed dynamically on the basis of the number of outstanding transactions. Using this feature will result in less deadtime and quicker packet processing.

- Finding Feature Information, on page 1
- Prerequisites for AAA Dead-Server Detection, on page 1
- Restrictions for AAA Dead-Server Detection, on page 2
- Information About AAA Dead-Server Detection, on page 2
- How to Configure AAA Dead-Server Detection, on page 2
- Configuration Examples for AAA Dead-Server Detection, on page 4
- Additional References, on page 5
- Feature Information for AAA Dead-Server Detection, on page 6

Finding Feature Information

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

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.

Prerequisites for AAA Dead-Server Detection

- You must have access to a RADIUS server.
- You should be familiar with configuring a RADIUS server.
- You should be familiar with configuring authentication, authorization, and accounting (AAA).
- Before a server can be marked as dead, you must first configure the **radius-server deadtime** command. If this command is not configured, even if the criteria are met for the server to be marked as dead, the server state will be the “up” state.

Restrictions for AAA Dead-Server Detection

- Original transmissions are not counted in the number of consecutive timeouts that must occur on the router before the server is marked as dead--only the number of retransmissions are counted.

Information About AAA Dead-Server Detection

Criteria for Marking a RADIUS Server As Dead

The AAA Dead-Server Detection feature allows you to determine the criteria that are used to mark a RADIUS server as dead. That is, you can configure 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. If a packet has not been received since the router booted, and there is a timeout, the time criterion will be treated as though it has been met.

In addition, you can configure the number of consecutive timeouts that must occur on the router before the RADIUS server is marked as dead. If the server performs both authentication and accounting, both types of packets are included in the number. Improperly constructed packets are counted as though they are timeouts. Only retransmissions are counted, not the initial transmission. (Each timeout causes one retransmission to be sent.)

Note Both the time criterion and the tries criterion must be met for the server to be marked as dead.

The RADIUS dead-server detection configuration will result in the prompt detection of RADIUS servers that have stopped responding. This configuration will also result in the avoidance of servers being improperly marked as dead when they are “swamped” (responding slowly) and the avoidance of the state of servers being rapidly changed from dead to live to dead again. This prompt detection of nonresponding RADIUS servers and the avoidance of swamped and dead-to-live-to-dead-again servers will result in less deadtime and quicker packet processing.

How to Configure AAA Dead-Server Detection

Configuring AAA Dead-Server Detection

To configure AAA Dead-Server Detection, perform the following steps.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **aaa new-model**
4. **radius-server deadtime** *minutes*

5. **radius-server dead-criteria** [**time** *seconds*] [**tries** *number-of-tries*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**aaa new-model** **Example:** `Router (config)# aaa new-model`	Enables the AAA access control model.
Step 4	**radius-server deadtime** *minutes* **Example:** `Router (config)# radius-server deadtime 5`	Improves RADIUS response times when some servers might be unavailable and causes the unavailable servers to be skipped immediately.
Step 5	**radius-server dead-criteria** [**time** *seconds*] [**tries** *number-of-tries*] **Example:** `Router (config)# radius-server dead-criteria time 5 tries 4`	Forces one or both of the criteria--used to mark a RADIUS server as dead--to be the indicated constant.

Troubleshooting Tips

After you have configured AAA Dead-Server Detection, you should verify your configuration using the **show running-config** command. This verification is especially important if you have used the **no** form of the **radius-server dead-criteria** command. The output of the **show running-config** command must show the same values in the “Dead Criteria Details” field that you configured using the **radius-server dead-criteria** command.

Verifying AAA Dead-Server Detection

To verify your AAA Dead-Server Detection configuration, perform the following steps. The **show** and **debug** commands may be used in any order.

SUMMARY STEPS

1. **enable**
2. **debug aaa dead-criteria transactions**

3. **show aaa dead-criteria**
4. **show aaa servers [private | public]**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**debug aaa dead-criteria transactions** **Example:** `Router# debug aaa dead-criteria transactions`	Displays AAA dead-criteria transaction values.
Step 3	**show aaa dead-criteria** **Example:** `Router# show aaa dead-criteria`	Displays dead-criteria information for a AAA server.
Step 4	**show aaa servers [private | public]** **Example:** `Router# show aaa server private`	Displays the status and number of packets that are sent to and received from all public and private authentication, authorization, and accounting (AAA) RADIUS servers. • The **private** keyword optionally displays the AAA servers only. • The **public** keyword optionally displays the AAA servers only.

Configuration Examples for AAA Dead-Server Detection

Configuring AAA Dead-Server Detection Example

The following example shows that the router will be considered dead after 5 seconds and four tries:

```
Router (config)# aaa new-model
Router (config)# radius-server deadtime 5
Router (config)# radius-server dead-criteria time 5 tries 4
```

debug aaa dead-criteria transactions Command Example

The following output example shows dead-criteria transaction information for a particular server group:

```
Router# debug aaa dead-criteria transactions
AAA Transaction debugs debugging is on
```

```
*Nov 14 23:44:17.403: AAA/SG/TRANSAC: Computed Retransmit Tries: 22, Current Max Tries: 22
*Nov 14 23:44:17.403: AAA/SG/TRANSAC: Computed Dead Detect Interval: 25s, Current Max
Interval: 25s
*Nov 14 23:44:17.403: AAA/SG/TRANSAC: Estimated Outstanding Transactions: 6, Current Max
Transactions: 6
```

show aaa dead-criteria Command Example

The following output example shows that dead-server-detection information has been requested for a RADIUS server at the IP address 172.19.192.80:

```
Router# show aaa dead-criteria radius 172.19.192.80 radius
RADIUS Server Dead Criteria:
============================
Server Details:
    Address : 172.19.192.80
    Auth Port : 1645
    Acct Port : 1646
Server Group : radius
Dead Criteria Details:
    Configured Retransmits : 62
    Configured Timeout : 27
    Estimated Outstanding Transactions: 5
    Dead Detect Time : 25s
    Computed Retransmit Tries: 22
    Statistics Gathered Since Last Successful Transaction
=====================================================
Max Computed Outstanding Transactions: 5
Max Computed Dead Detect Time: 25s
Max Computed Retransmits : 22
```

Additional References

The following sections provide references related to the AAA Dead-Server Detection feature.

Related Documents

Related Topic	Document Title
Configuring RADIUS	Configuring RADIUS feature module.
Configuring AAA	Configuring Authentication
	Configuring Authorization
	Configuring Accounting
Security commands	*Cisco IOS Security Command Reference*

Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	--

MIBs

MIBs	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	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

RFCs	Title
RFC 2865	*Remote Authentication Dial In User Service (RADIUS)*

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 AAA Dead-Server Detection

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 AAA Dead-Server Detection

Feature Name	Releases	Feature Information
AAA Dead-Server Detection	Cisco IOS XE Release 3.9S	Allows you to configure the criteria to be used to mark a RADIUS server as dead. The following commands were introduced or modified: **debug aaa dead-criteria transactions**, **radius-server dead-criteria**, **show aaa dead-criteria**, **show aaa servers**.