AAA Dead-Server Detection

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AAA dead-server detection

A dead-server detection feature is an AAA capability that

- allows configuration of criteria for marking RADIUS servers as dead
- uses tunable deadtime and dead-criteria values to determine server status, and
- provides faster failover and packet processing by quickly detecting and isolating non-responding servers.

You can configure the deadtime (in minutes) per server group or globally. This defines how long a server marked as DEAD remains in that state.

Deadtime—The period (in minutes) that a server, once marked as DEAD, remains in that state before being re-evaluated. This value can be set per server group or globally.

Dead-criteria—The specific conditions, such as timeout intervals or number of missed responses, that must be met before a server is considered DEAD. To declare a server as DEAD, you need to configure **dead-criteria** and configure the conditions that determine when a RADIUS server is considered unavailable or dead.

Criteria for marking a RADIUS server as dead

AAA dead-server detection uses two main criteria for marking a RADIUS server as unavailable: the minimum time since the last valid response, and the number of consecutive timeouts. When both criteria are met, the server is marked as dead and remains in that state for the configured dead time. After dead time expires, the controller re-evaluates the server's state and updates clients accordingly.

This approach ensures that only unresponsive servers are marked as dead. It minimizes authentication delays and prevents unnecessary switches between dead and alive status due to slow responses.

For configuration details and packet handling rules, see the definitions above.

Additional reference information

- Both time and tries criteria must be met for a server to be marked as dead.
- The detection process helps avoid unnecessary state changes between dead and alive for temporarily slow servers.
- Both authentication and accounting packets are counted when applying the dead-criteria.

Example of AAA dead-server detection

If a controller has multiple RADIUS servers and one stops responding for the configured dead time and number of consecutive timeouts, it is marked as dead. Requests are then redirected to working servers, improving reliability.

Counter-example: Without AAA dead-server detection

Without AAA dead-server detection, a controller may continually attempt to communicate with a non-responsive RADIUS server, increasing authentication delays and denying access to users.

Prerequisites for AAA dead-server detection

- You must have access to a RADIUS server.
- You must be familiar with configuring a RADIUS server.
- You must be familiar with configuring Authentication, Authorization, and Accounting (AAA).
- Before a server can be marked as dead, yo configure **radius-server dead-criteria time** *time-in-seconds* **tries** *number-of-tries* to mark the server as DOWN.

  Also, you must configure the **radius-server deadtime** *time-in-mins* to retain the server in DEAD status.

Restrictions for AAA dead-server detection

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

Configure AAA dead-server detection (CLI)

Enable detection of dead RADIUS servers to maintain network reliability.

This configuration is essential in environments using RADIUS servers for authentication. It ensures you can effectively manage server availability.

Procedure

Step 1 Enter global configuration mode.

Example:

```
Device# configure terminal
```

Step 2 Enable the AAA access control model.

Example:

```
Device(config)# aaa new-model
```

Step 3 Define how long, in minutes, a server marked as DEAD will remain in that state.

Example:

```
Device(config)# radius-server deadtime time-in-mins
```

Example:

```
Device(config)# radius-server deadtime 5
```

When the deadtime expires, the controller marks the server as UP (ALIVE) and notifies registered clients about the state change.

time-in-mins — Valid values range from 1 to 1440 minutes. Default value is zero. To return to the default value, use the **no radius-server deadtime** command.

The **radius-server deadtime** command can be configured globally or per AAA group server level.

You can use the **show aaa dead-criteria** or **show aaa servers** command to check for dead-server detection. If the default value is zero, deadtime is not configured.

Step 4 Declare a server as DEAD and configure the conditions that determine when a RADIUS server is considered unavailable or dead.

Example:

```
Device(config)# radius-server dead-criteria [time time-in-seconds] [tries number-of-tries]
```

Example:

```
Device(config)# radius-server dead-criteria time 5 tries 4
```

time-in-seconds : Time in seconds during which no response is received from the RADIUS server to consider it as dead. Valid values range from 1 to 120 seconds.

Note
The total time to declare the server as dead depends on the configured time in seconds, retries, and pending transactions.

The calculated resulting time may range from ten to sixty seconds based on these criteria.

number-of-tries : Number of transmits to RADIUS server without responses before marking the server as dead. Valid values range from 1 to 100.

Step 5 Exit configuration mode and enter privileged EXEC mode.

Example:

```
Device(config)# end
```

You have now configured the AAA Dead-Server Detection, allowing you to manage RADIUS server availability effectively.

Verify AAA dead-server detection

This topic describes how to verify AAA Dead-Server Detection using various show commands.

To verify dead-criteria, use this command:

```
Device# show run | s dead-criteria
radius-server dead-criteria time 20 tries 20
```

To verify the dead-criteria details, use this command:

```
Device# sh aaa dead-criteria radius <server>
sh aaa dead-criteria radius 192.0.2.55
RADIUS Server Dead Criteria:
Server Details:
Address : 192.0.2.55
Auth Port : 1645
Acct Port : 1646
Server Group : radius
Dead Criteria Details:
Configured Retransmits : 3
Configured Timeout : 5
Estimated Outstanding Access Transactions: 2
Estimated Outstanding Accounting Transactions: 0
Dead Detect Time : 30s
Computed Retransmit Tries: 6
Statistics Gathered Since Last Successful Transaction
Max Computed Outstanding Transactions: 3
Max Computed Dead Detect Time: 90s
Max Computed Retransmits : 18
```

To verify the state of servers, number of requests being processed, and so on, use the command:

```
Device# show aaa servers | s WNCD
Platform State from WNCD (1) : current UP
Platform State from WNCD (2) : current UP
Platform State from WNCD (3) : current UP
Platform State from WNCD (4) : current UP
Platform State from WNCD (5) : current UP, duration 773s, previous duration 0s
Platform Dead: total time 0s, count 0
Quarantined: No
```