Configuring IKEv2 Packet of Disconnect

The IKEv2 Remote Access Change of Authorization (CoA)—Packet of Disconnect feature terminates an active crypto IKEv2 session on Cisco supported devices.

Information About IKEv2 Packet of Disconnect

Disconnect Request

The Packet of Disconnect (POD) is a RADIUS disconnect_request packet and is intended to be used in situations where the authenticating agent server wants to disconnect a crypto session.

When the POD is Needed

The Packet of Disconnect is required in the following situations:

- Enforce reauthentication—As a network administrator, you might want to terminate a user on FlexVPN server to forcefully reauthenticate if a session is connected for a very long duration.
- Apply a new policy—As a network administrator, you may want to terminate an active crypto session and apply the new policy on the session when the client reconnects.
- Free resources—A session may need to be terminated to free resources and exit rekey.

IKEv2 Packet of Disconnect

The IKEv2 Remote Access Change of Authorization (CoA)—Packet of Disconnect feature uses the RADIUS Packet of Disconnect (POD) feature to delete a crypto session. The crypto session is deleted to update VPN users to the new user or group policy on the AAA server.

1. AAA passes the attribute key-value pair list, provided by the RADIUS server, to IKEv2.

2. IKEv2 parses the list and locates the Audit-Session-ID, a Cisco AV pair, as a key and validates the pair value.
3. IKEv2 searches the session and deletes the specific session.
4. IKEv2 notifies AAA and AAA notifies the RADIUS server.
5. The session pertaining to the Audit-Session-ID is deleted.

Parameters in IKEv2 Packet of Disconnect

RFC 3576 specifies the following POD codes that are supported for IKEv2 Packet of Disconnect:

- 40 - Disconnect-Request
- 41 - Disconnect-ACK
- 42 - Disconnect-NAK

The Disconnect-ACK code indicates that a session existed for an audit-session-ID and that the session, pertaining to an audit-session-ID was terminated successfully. The Disconnect-NACK code indicates that there are no session corresponding to the audit-session-ID. No reply message is sent to the gateway.

How to Configure IKEv2 Packet of Disconnect

Configuring AAA on the FlexVPN Server

There is no IKEv2-specific configuration required on the FlexVPN server for the IKEv2 Remote Access Change of Authorization (CoA)—Packet of Disconnect feature. You only need to configure authentication, authorization, and accounting (AAA) on the FlexVPN server. For additional information on AAA configuration, see .

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **aaa new-model**
4. **aaa server radius dynamic-author**
5. **client** {*hostname* | *ip-address*} [**server-key** *string* | **vrf** *vrf-id*]
6. **port** *number*
7. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.

	Command or Action	Purpose
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**aaa new-model** **Example:** `Device(config)# aaa new-model`	Enables AAA globally.
Step 4	**aaa server radius dynamic-author** **Example:**	Sets up the local AAA server for the dynamic authorization service and enters dynamic authorization local server configuration mode. • In this mode, the RADIUS application commands are configured.
Step 5	**client** {*hostname* | *ip-address*} [**server-key** *string* | **vrf** *vrf-id*] **Example:** `Device(config-locsvr-da-radius)# client 192.168.0.5 server-key cisco`	Configures the IP address or hostname of the AAA server client. • Use the **server-key** keyword and *string* argument to configure the server key at the client level. **Note** Configuring the server key at the client level overrides the server key configured at the global level.
Step 6	**port** *number* **Example:** `Device(config-locsvr-da-radius)# port 1812`	Configures the UDP port.
Step 7	**end** **Example:** `Device(config-locsvr-da-radius)# end`	Exits dynamic authorization local server configuration mode and returns to privileged EXEC mode.

Configuration Examples for IKEv2 Packet of Disconnect

Example: Terminating an IKEv2 Session

The following is a sample output from the **show aaa sessions** command. This command must be executed to identify the IKEv2 session that needs to be terminated.

```
Device# show aaa sessions

Total sessions since last reload: 32
Session Id: 3
   Unique Id: 14
   User Name: *not available*
```

```
   IP Address: 0.0.0.0
   Idle Time: 0
   CT Call Handle: 0
Session Id: 30
   Unique Id: 41
   User Name: pskuser2.g1.engdt.com
   IP Address: 0.0.0.0
   Idle Time: 0
   CT Call Handle: 0
Session Id: 32
   Unique Id: 43
   User Name: pskuser4.g2.engdt.com
   IP Address: 0.0.0.0
   Idle Time: 0
   CT Call Handle: 0
```

In the above output, ID 41 and 43 pertain to IKEv2 sessions. Optionally, you can run the **show aaa user** command to view detailed information about the session.

```
Device# show aaa user 41

Unique id 41 is currently in use.
  No data for type 0
  No data for type EXEC
  No data for type CONN
  NET: Username=(n/a)
    Session Id=0000001E Unique Id=00000029
    Start Sent=0 Stop Only=N
    stop_has_been_sent=N
    Method List=0
    Attribute list:
      7FBD9783CCF0 0 00000001 session-id(408) 4 30(1E)
      7FBD9783CD30 0 00000001 start_time(418) 4 Nov 04 2014 00:20:23
--------
  No data for type CMD
  No data for type SYSTEM
  No data for type VRRS
  No data for type RM CALL
  No data for type RM VPDN
  No data for type AUTH PROXY
  No data for type DOT1X
  No data for type CALL
  No data for type VPDN-TUNNEL
  No data for type VPDN-TUNNEL-LINK
  IPSEC-TUNNEL: Username=pskuser2.g1.engdt.com
    Session Id=0000001E Unique Id=00000029
    Start Sent=1 Stop Only=N
    stop_has_been_sent=N
    Method List=7FBDA6E05A68 : Name = accnt_prof
    Attribute list:
      7FBD9783CCF0 0 00000001 session-id(408) 4 30(1E)
      7FBD9783CD30 0 00000001 start_time(418) 4 Nov 04 2014 00:20:23
      7FBD9783CD70 0 00000082 formatted-clid(37) 13 192.168.202.2
     7FBD9783CDB0 0 0000008A audit-session-id(819) 37 L2L433010101ZO2L4C0A8CA02ZH119404ZP37

      7FBD9783CDF0 0 00000081 isakmp-phase1-id(737) 21 pskuser2.g1.engdt.com
      7FBD9783BF80 0 00000002 isakmp-initator-ip(738) 4 192.168.202.2
--------
  No data for type MCAST
  No data for type RESOURCE
  No data for type SSG
  No data for type IDENTITY
  No data for type ConnectedApps
```

```
Accounting:
  log=0x400018041
  Events recorded :
    CALL START
    ATTR REPLACE
    INTERIM START
    INTERIM STOP
    IPSEC TNL UP
  update method(s) :
    NONE
  update interval = 0
  Outstanding Stop Records : 0
  Dynamic attribute list:
    7FBD9783BF80 0 00000001 connect-progress(75) 4 No Progress
    7FBD9783BFC0 0 00000001 pre-session-time(334) 4 0(0)
    7FBD9783C000 0 00000001 elapsed_time(414) 4 341(155)
    7FBD9783C040 0 00000001 bytes_in(146) 4 0(0)
    7FBD9783C080 0 00000001 bytes_out(311) 4 0(0)
    7FBD9783CCF0 0 00000001 pre-bytes-in(330) 4 0(0)
    7FBD9783CD30 0 00000001 pre-bytes-out(331) 4 0(0)
    7FBD9783CD70 0 00000001 paks_in(147) 4 0(0)
    7FBD9783CDB0 0 00000001 paks_out(312) 4 0(0)
    7FBD9783CDF0 0 00000001 pre-paks-in(332) 4 0(0)
    7FBD9783BA20 0 00000001 pre-paks-out(333) 4 0(0)
Debg: No data available
Radi: No data available
Interface:
  TTY Num = -1
  Stop Received = 0
  Byte/Packet Counts till Call Start:
    Start Bytes In = 0             Start Bytes Out = 0
    Start Paks  In = 0             Start Paks  Out = 0
  Byte/Packet Counts till Service Up:
    Pre Bytes In = 0             Pre Bytes Out = 0
    Pre Paks  In = 0             Pre Paks  Out = 0
  Cumulative Byte/Packet Counts :
    Bytes In = 0             Bytes Out = 0
    Paks  In = 0             Paks  Out = 0
  StartTime = 00:20:23 IST Nov 4 2014
  AuthenTime = 00:20:23 IST Nov 4 2014
  Component = VPN IPSEC
Authen: service=NONE type=NONE method=NONE
Kerb: No data available
Meth: No data available
Preauth: No Preauth data.
General:
  Unique Id = 00000029
  Session Id = 0000001E
  Session Server Key = 1771D693
  Attribute List:
PerU: No data available
Service Profile: No Service Profile data.
Unkn: No data available
Unkn: No data available
```

Note the audit-session-id in the above output, which is L2L433010101ZO2L4C0A8CA02ZH119404ZP37. The following sample output is displayed on the FlexVPN server on starting an accounting session starts with a RADIUS server.

```
Nov  4 00:26:49.908 IST: RADIUS/ENCODE: Best Local IP-Address 192.168.202.1 for Radius-Server
 9.45.15.144
Nov  4 00:26:49.908 IST: RADIUS(0000002C): Send Accounting-Request to 9.45.15.144:1813 id
1646/231, len 288
```

```
Nov  4 00:26:49.908 IST: RADIUS:  authenticator 29 63 0C 79 C1 5E F2 0E - F3 CA 36 DD A3
55 C1 DE
Nov  4 00:26:49.908 IST: RADIUS:  Acct-Session-Id     [44]  10  "00000021"
Nov  4 00:26:49.908 IST: RADIUS:  Calling-Station-Id  [31]  15  "192.168.202.2"
Nov  4 00:26:49.908 IST: RADIUS:  Vendor, Cisco       [26]  64
Nov  4 00:26:49.908 IST: RADIUS:   Cisco AVpair       [1]   58
"audit-session-id=L2L433010101ZO2L4C0A8CA02ZH11941194ZN3A"
Nov  4 00:26:49.908 IST: RADIUS:  Vendor, Cisco       [26]  46
Nov  4 00:26:49.908 IST: RADIUS:   Cisco AVpair       [1]   40
"isakmp-phase1-id=pskuser1.g1.engdt.com"
Nov  4 00:26:49.908 IST: RADIUS:  Vendor, Cisco       [26]  40
Nov  4 00:26:49.908 IST: RADIUS:   Cisco AVpair       [1]   34
"isakmp-initator-ip=192.168.202.2"
Nov  4 00:26:49.908 IST: RADIUS:  User-Name           [1]   23  "pskuser1.g1.engdt.com"
Nov  4 00:26:49.908 IST: RADIUS:  Vendor, Cisco       [26]  36
Nov  4 00:26:49.908 IST: RADIUS:   Cisco AVpair       [1]   30  "connect-progress=No Progress"
Nov  4 00:26:49.908 IST: RADIUS:  Acct-Authentic      [45]  6   Local
[2]
Nov  4 00:26:49.908 IST: RADIUS:  Acct-Status-Type    [40]  6   Start
[1]
Nov  4 00:26:49.908 IST: RADIUS:  NAS-IP-Address      [4]   6   192.168.202.1
Nov  4 00:26:49.908 IST: RADIUS:  home-hl-prefix      [151] 10  "D33648D8"
Nov  4 00:26:49.908 IST: RADIUS:  Acct-Delay-Time     [41]  6   0
Nov  4 00:26:49.908 IST: RADIUS(0000002C): Sending a IPv4 Radius Packet
```

The following output is displayed on the FlexVPN server when disconnecting a session for a specific audit-session-id. The terminate session request is sent to the RADIUS server via a RADIUS client. In this example, the session for the audit-session-ID, which is L2L433010101ZO2L4C0A8CA02ZH119404ZP37 is terminated and, hence, not visible in the output.

```
Nov  4 00:32:29.004 IST: RADIUS: POD  received from id 216 9.45.15.144:50567, POD Request,
 len 84
Nov  4 00:32:29.004 IST: POD: 9.45.15.144 request queued
Nov  4 00:32:29.004 IST:  ++++++ POD Attribute List ++++++
Nov  4 00:32:29.004 IST: 7FBD9783D3A8 0 00000089 audit-session-id(819) 39
L2L433010101ZO2L4C0A8CA02ZH11941194ZN3B
Nov  4 00:32:29.004 IST:
Nov  4 00:32:29.004 IST: POD: Sending ACK from port 1812 to 9.45.15.144/50567

Nov  4 00:32:29.005 IST: IKEv2:(SESSION ID = 59,SA ID = 2):Check for existing active SA
Nov  4 00:32:29.006 IST: IKEv2:in_octets 0, out_octets 0
Nov  4 00:32:29.006 IST: IKEv2:in_packets 0, out_packets 0
Nov  4 00:32:29.006 IST: IKEv2:(SA ID = 2):[IKEv2 -> AAA] Accounting stop request sent
successfully
Nov  4 00:32:29.006 IST: IKEv2:(SESSION ID = 59,SA ID = 2):Delete all IKE SAs
Nov  4 00:32:29.010 IST: RADIUS/ENCODE(0000002D):Orig. component type = VPN IPSEC
Nov  4 00:32:29.010 IST: RADIUS(0000002D): Config NAS IP: 0.0.0.0
Nov  4 00:32:29.010 IST: RADIUS(0000002D): Config NAS IPv6: ::
Nov  4 00:32:29.010 IST: RADIUS(0000002D): sending
Nov  4 00:32:29.011 IST: RADIUS/ENCODE: Best Local IP-Address 192.168.202.1 for Radius-Server
 9.45.15.144
Nov  4 00:32:29.011 IST: RADIUS(0000002D): Send Accounting-Request to 9.45.15.144:1813 id
1646/246, len 356
Nov  4 00:32:29.011 IST: RADIUS:  authenticator 52 88 5E CB 8B FA 1E C1 - CC EF 73 75 89
73 CA 95
Nov  4 00:32:29.011 IST: RADIUS:  Acct-Session-Id     [44]  10  "00000022"
Nov  4 00:32:29.011 IST: RADIUS:  Calling-Station-Id  [31]  15  "192.168.202.2"
Nov  4 00:32:29.011 IST: RADIUS:  Vendor, Cisco       [26]  64
Nov  4 00:32:29.011 IST: RADIUS:   Cisco AVpair       [1]   58
"audit-session-id=L2L433010101ZO2L4C0A8CA02ZH11941194ZN3B"
Nov  4 00:32:29.011 IST: RADIUS:  Vendor, Cisco       [26]  46
Nov  4 00:32:29.011 IST: RADIUS:   Cisco AVpair       [1]   40
"isakmp-phase1-id=pskuser1.g1.engdt.com"
```

```
Nov  4 00:32:29.011 IST: RADIUS:  Vendor, Cisco       [26]  40
Nov  4 00:32:29.011 IST: RADIUS:   Cisco AVpair       [1]   34
"isakmp-initator-ip=192.168.202.2"
Nov  4 00:32:29.011 IST: RADIUS:  User-Name           [1]   23  "pskuser1.g1.engdt.com"
Nov  4 00:32:29.011 IST: RADIUS:  Acct-Authentic      [45]  6   Local
[2]
Nov  4 00:32:29.011 IST: RADIUS:  Vendor, Cisco       [26]  36
Nov  4 00:32:29.011 IST: RADIUS:   Cisco AVpair      [1]   30  "connect-progress=No Progress"
Nov  4 00:32:29.011 IST: RADIUS:  Acct-Session-Time   [46]  6   56
Nov  4 00:32:29.011 IST: RADIUS:  Acct-Input-Octets   [42]  6   0
Nov  4 00:32:29.011 IST: RADIUS:  Acct-Output-Octets  [43]  6   0
Nov  4 00:32:29.011 IST: RADIUS:  Acct-Input-Packets  [47]  6   0
Nov  4 00:32:29.011 IST: RADIUS:  Acct-Output-Packets [48]  6   0
Nov  4 00:32:29.011 IST: RADIUS:  Acct-Terminate-Cause[49]  6   none
[0]
Nov  4 00:32:29.011 IST: RADIUS:  Vendor, Cisco       [26]  32
Nov  4 00:32:29.011 IST: RADIUS:   Cisco AVpair       [1]   26  "disc-cause-ext=No Reason"
Nov  4 00:32:29.011 IST: RADIUS:  Acct-Status-Type    [40]  6   Stop
[2]
Nov  4 00:32:29.011 IST: RADIUS:  NAS-IP-Address      [4]   6   192.168.202.1
Nov  4 00:32:29.011 IST: RADIUS:  home-hl-prefix      [151] 10  "E2F80C34"
Nov  4 00:32:29.011 IST: RADIUS:  Acct-Delay-Time     [41]  6   0
Nov  4 00:32:29.011 IST: RADIUS(0000002D): Sending a IPv4 Radius Packet
Nov  4 00:32:29.011 IST: RADIUS(0000002D): Started 5 sec timeout
```

The following output is displayed when there is no valid session for the specific audit-session-ID. This happens if there is no session pertaining to the specific audit-session-id when the session is terminated already. Note the NACK message that is sent back to the FlexVPN server

```
Nov  4 00:30:31.905 IST: RADIUS: POD  received from id 131 9.45.15.144:52986, POD Request,
 len 84
Nov  4 00:30:31.905 IST: POD: 9.45.15.144 request queued
Nov  4 00:30:31.905 IST:  ++++++ POD Attribute List ++++++
Nov  4 00:30:31.905 IST: 7FBD9783BA20 0 00000089 audit-session-id(819) 39
L2L433010101ZO2L4C0A8CA02ZH11941194ZN3A
Nov  4 00:30:31.905 IST:
Nov  4 00:30:31.906 IST: POD: 9.45.15.144 Unsupported attribute type 26 for component
Nov  4 00:30:31.906 IST: POD: 9.45.15.144 user  0.0.0.0i sessid 0x0 key 0x0 DROPPED
Nov  4 00:30:31.906 IST: POD: Added Reply Message: No Matching Session
Nov  4 00:30:31.906 IST: POD: Added NACK Error Cause: Invalid Request
Nov  4 00:30:31.906 IST: POD: Sending NAK from port 1812 to 9.45.15.144/52986
Nov  4 00:30:31.906 IST: RADIUS:  18  21  4E6F204D61746368696E672053657373696F6E
Nov  4 00:30:31.906 IST: RADIUS:  101 6   00000194
```

Additional References for IKEv2 Packet of Disconnect

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Command List, All Releases

Related Topic	Document Title
Security commands	• Cisco IOS Security Command Reference Commands A to C • Cisco IOS Security Command Reference Commands D to L • Cisco IOS Security Command Reference Commands M to R • Cisco IOS Security Command Reference Commands S to Z
RADIUS Packet of Disconnect	RADIUS Packet of Disconnect RADIUS Packet of Disconnect

Standards and RFCs

Standard/RFC	Title
RFC 3576	*Dynamic Authorization Extensions to Remote Authentication Dial In User Service (RADIUS)*
RFC 5176	*Dynamic Authorization Extensions to Remote Authentication Dial In User Service (RADIUS)*

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for IKEv2 Packet of Disconnect

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 IKEv2 Packet of Disconnect

Feature Name	Releases	Feature Information
IKEv2 Remote Access Change of Authorization (CoA)—Packet of Disconnect		The IKEv2 Remote Access Change of Authorization (CoA)—Packet of Disconnect feature terminates an active crypto IKEv2 session on Cisco supported devices. No commands were introduced by this feature.