



# IKEv2 Error Codes and Notifications

This appendix lists the IKEv2 error codes and notifications supported by the ePDG (evolved Packet Data Gateway).

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## IKEv2 Error Codes

The following table lists the IKEv2 error codes generated by the ePDG.

**Table 1: IKEv2 Error Codes Generated by the ePDG**

| Value | Error Code                   | ePDG Support   |
|-------|------------------------------|--|
| 1     | UNSUPPORTED_CRITICAL_PAYLOAD | The ePDG sends this code if the Critical Bit exists in the received message and the Payload Type is unrecognized.  |
| 4     | INVALID_IKE_SPI              | The ePDG does not send this code. The ePDG ignores messages with an unrecognized SPI in order to minimize the impact of DoS attacks.   |
| 5     | INVALID_MAJOR_VERSION        | The ePDG sends this code in response to messages with an invalid Major Version. The ePDG supports a CLI command to suppress sending this error notification in response to IKE_SA_INIT Request messages. This is done in order to avoid DoS attacks. |

| Value | Error Code               | ePDG Support  |
|-------|--------------------------|---|
| 7     | INVALID_SYNTAX           | The ePDG sends this code upon receiving messages with an inappropriate format, or when necessary payloads are missing. The ePDG does not send this code during IKE_SA_INIT exchanges for an unknown IKE SA. The ePDG sends this code for non-IKEv2 INIT exchanges only (such as IKE_AUTH, CREATE_CHILD_SA, or INFORMATIONAL exchanges). The ePDG also supports a CLI command to suppress sending this error notification. This is done in order to avoid DoS attacks. |
| 9     | INVALID_MESSAGE_ID       | The ePDG sends this code in INFORMATIONAL Request messages only. The ePDG also supports a CLI command to suppress sending this error notification in response to IKE_SA_INIT Request messages. This is done in order to avoid DoS attacks.  |
| 11    | INVALID_SPI              | The ePDG does not send this code. The ePDG ignores ESP packets with an unrecognized SPI in order to minimize the impact by DoS attacks.   |
| 14    | NO_PROPOSAL_CHOSEN       | The ePDG sends this code when it cannot not choose a proposal from the UE. The ePDG supports a CLI command to suppress sending this code.   |
| 17    | INVALID_KE_PAYLOAD       | The ePDG sends this code when the IKE payload from the UE is invalid.   |
| 24    | AUTHENTICATION_FAILED    | The ePDG sends this code during the EAP authentication when EAP authentication fails.   |
| 35    | NO_ADDITIONAL_SAS        | The ePDG sends this code when a CREATE_CHILD_SA Request message is unacceptable because the ePDG is unwilling to accept any more CHILD SAs on the IKE_SA.   |
| 36    | INTERNAL_ADDRESS_FAILURE | The ePDG sends this code when the ePDG experiences a failure in address assignment.   |
| 37    | FAILED_CP_REQUIRED       | The ePDG sends this code when the CP payload (CFG_REQUEST) was expected but not received.   |
| 38    | TS_UNACCEPTABLE          | The ePDG sends this code when the TS <sub>i</sub> and/or TS <sub>r</sub> parameters contain IP protocol values other than 0.  |

| Value | Error Code         | ePDG Support   |
|-------|--------------------|--|
| 39    | INVALID_SELECTORS  | The ePDG does not send this code because the selector range is not checked and ingress filtering is applied instead. |
| 40    | TEMPORARY_FAILURE  | when it is under collision scenarios as specified in RFC 5996.   |
| 41    | CHILD_SA_NOT_FOUND | when it is under collision scenarios as specified in RFC 5996.   |

The following table lists the IKEv2 error codes expected by the ePDG from the WLAN UEs.

**Table 2: IKEv2 Error Codes Expected by the ePDG**

| Value | Error Code                   | ePDG Behavior Upon Receipt   |
|-------|------------------------------|--|
| 1     | UNSUPPORTED_CRITICAL_PAYLOAD | The ePDG sends an INFORMATIONAL (Delete) message and deletes the session information.  |
| 4     | INVALID_IKE_SPI              | The ePDG ignores the error message and maintain the state of existing SAs.   |
| 7     | INVALID_SYNTAX               | The ePDG sends an INFORMATIONAL (Delete) message and deletes the session information.  |
| 9     | INVALID_MESSAGE_ID           | The ePDG deletes the session information without sending an INFORMATIONAL (Delete) message.  |
| 11    | INVALID_SPI                  | When notified in an IKE_SA message, the ePDG sends an INFORMATIONAL (Delete) message and deletes the session information. When notified outside an IKE_SA message, the ePDG ignores the error message and maintain the state for any existing SAs. |
| 39    | INVALID_SELECTORS            | The ePDG sends an INFORMATIONAL (Delete) message for the IKE SA and deletes the session information.   |
| 40    | TEMPORARY_FAILURE            | On receipt of temporary_failure - If ePDG receives this for a rekey initiated by ePDG, ePDG shall retry rekey after some time.   |
| 41    | CHILD_SA_NOT_FOUND           | On receipt of CHILD_SA_NOT_FOUND - Epdg deletes the CHILDSA existing in ePDG, based on SPI.  |

The following table lists the notify status types defined in RFCs 4306 and 4739 that are supported by the ePDG.

*Table 3: Notify Status Types Supported by the ePDG*

| <b>Value</b> | <b>Notify Status Type</b>    |
|--------------|------------------------------|
| 16388        | NAT_DETECTION_SOURCE_IP      |
| 16389        | NAT_DETECTION_DESTINATION_IP |
| 16390        | COOKIE                       |
| 16393        | REKEY_SA                     |