了解5GSM原因 REQUEST_REJECTED_UNSPECIFIED

目录

简介

本文档介绍5GSM原因REQUEST_REJECTED_UNSPECIFIED(31)的一般说明，在这种情况下，Cisco 5G SMF（会话管理功能）使用原因代码以及如何进行故障排除。

什么是5GSM原因信息元素

5GSM（5GS会话管理）子层的主要功能是支持UE和SMF（通过AMF传输）中的PDU会话处理。5GSM的示例程序为：

- 建立PDU会话
- PDU会话修改
- PDU会话释放
- PDU会话建立拒绝
- PDU会话修改拒绝
- PDU会话释放拒绝
- PDU会话释放请求
- PDU会话修改命令拒绝

5GSM原因信息元的主要目的是指出5GSM请求被拒绝的原因。这些值在3GPP 24.501规范中定义。

Cause value (octet 2)
Bits

8	7	6	5	4	3	2	1	
0	0	0	0	1	0	0	0	Operator determined barring
0	0	0	1	1	0	1	0	Insufficient resources
0	0	0	1	1	0	1	1	Missing or unknown DNN
0	0	0	1	1	1	0	0	Unknown PDU session type
0	0	0	1	1	1	0	1	User authentication or authorization failed
0	0	0	1	1	1	1	1	Request rejected, unspecified
0	0	1	0	0	0	0	0	Service option not supported
0	0	1	0	0	0	0	1	Requested service option not subscribed
0	0	1	0	0	0	1	0	Service option temporarily out of order
0	0	1	0	0	0	1	1	PTI already in use
0	0	1	0	0	1	0	0	Regular deactivation
0	0	1	0	0	1	1	0	Network failure
0	0	1	0	0	1	1	1	Reactivation requested
0	0	1	0	1	0	1	1	Invalid PDU session identity
0	0	1	0	1	1	0	0	Semantic errors in packet filter(s)
0	0	1	0	1	1	0	1	Syntactical error in packet filter(s)
0	0	1	0	1	1	1	0	Out of LADN service area
0	0	1	0	1	1	1	1	PTI mismatch
0	0	1	1	0	0	1	0	PDU session type IPv4 only allowed
0	0	1	1	0	0	1	1	PDU session type IPv6 only allowed
0	0	1	1	0	1	1	0	PDU session does not exist
0	1	0	0	0	0	1	1	Insufficient resources for specific slice and DNN
0	1	0	0	0	1	0	0	Not supported SSC mode
0	1	0	0	0	1	0	1	Insufficient resources for specific slice
0	1	0	0	0	1	1	0	Missing or unknown DNN in a slice
0	1	0	1	0	0	0	1	Invalid PTI value
0	1	0	1	0	0	1	0	Maximum data rate per UE for user-plane integrity protection is too low
0	1	0	1	0	0	1	1	Semantic error in the QoS operation
0	1	0	1	0	1	0	0	Syntactical error in the QoS operation
0	1	0	1	0	1	0	1	Invalid mapped EPS bearer identity
0	1	0	1	1	1	1	1	Semantically incorrect message
0	1	1	0	0	0	0	0	Invalid mandatory information
0	1	1	0	0	0	0	1	Message type non-existent or not implemented
0	1	1	0	0	0	1	0	Message type not compatible with the protocol state
0	1	1	0	0	0	1	1	Information element non-existent or not implemented
0	1	1	0	0	1	0	0	Conditional IE error
0	1	1	0	0	1	0	1	Message not compatible with the protocol state
0	1	1	0	1	1	1	1	Protocol error, unspecified

Any other value received by the UE shall be treated as 0010 0010, "service option temporarily out of order". Any other value received by the network shall be treated as 0110 1111, "protocol error, unspecified".

"附件B（说明性）：“5GS会话管理”的原因值。

5GSM的原因是什么REQUEST_REJECTED_UNSPECIFIED(31)?

REQUEST_REJECTED_UNSPECIFIED的示例数据包就是此数据包。

根据规范，它定义为：

```
Cause #31 – Request rejected, unspecified
This 5GSM cause is used by the network or by the UE to indicate that the requested service or
operation or the request for a resource was rejected due to unspecified reasons.
```
因此，当发生某些意外或未处理的情况，并且定义的其他原因代码不适用时，会使用此原因代码。

当SMF使用REQUEST_REJECTED_UNSPECIFIED时？

如上所述，当发生某些意外或未处理的情况时，SMF使用
REQUEST_REJECTED_UNSPECIFIED，而定义的其他原因代码不适用。此示例来自事务日志
，它表示PDU Session Establishment is rejected with REQUEST_REJECTED_UNSPECIFIED。此
消息本身表明SMF中出现了问题，并且没有提供拒绝请求的确切原因。

```
[ERROR] [smf-service.smf-app.event-trace] nasEncodePduSessionEstbReject(Cause-
REQUEST_REJECTED_UNSPECIFIED) - EVENT TRACE - SessionKeys[[imsi-<OMIT> (pk)]]
```
进一步查看事务日志，请注意还存在另一个错误：

```
[ERROR] [smf-service.smf-app.amf] AMF Assign Ebi Failure [BackgroundIpcTimedOut] Background ipc
timedout
```
因此，向AMF分配Ebi请求超时，导致REQUEST_REJECTED_UNSPECIFIED。现在，需要调查的
是分配EBI请求超时的原因。

此事务日志是另一个示例，在这种情况下，SMF无法从CHF接收ChargingDataCreateRes，并导致
REQUEST_REJECTED_UNSPECIFIED。

```
[ERROR] [rest_ep.app.n40] Received Charging Data Response error with timediff 1999995051 -
response Post http://192.168.20.101:8086/nchf-convergedcharging/v2/chargingdata: net/http:
request canceled
[ERROR] [smf-service.smf-app.event-trace] nasEncodePduSessionEstbReject(Cause-
REQUEST_REJECTED_UNSPECIFIED) - EVENT TRACE - SessionKeys[[imsi-<OMIT> (pk)]]
```
解释的2个示例可视为REQUEST_REJECTED_UNSPECIFIED的正常使用。同时，可能会出现其他
原因代码更合适的情况，但SMF只是处理不当，而使用REQUEST_REJECTED_UNSPECIFIED。

此事务日志再次是REQUEST_REJECTED_UNSPECIFIED的示例，但此之前的错误不是决定性的
。

```
[ERROR] [smf-service.smf-app.resource] Resource Manager Response Failure
[ERROR] [smf-service.smf-app.event-trace] nasEncodePduSessionEstbReject(Cause-
REQUEST_REJECTED_UNSPECIFIED) - EVENT TRACE - SessionKeys[[imsi-<OMIT> (pk)]]
```

查看PDU Session Establishment请求时，PDU Session Type（PDU会话类型）为IPv4，但SMF上
未配置IPv4池。

```
FIVEG_PDU_SESSION_ESTABLISHMENT_REQUEST (0xC1)
'PDU_SESSION_TYPE': 'IPV4 (0x1)',

ipam
source local
address-pool pool1
vrf-name ISP
tags
dnn test
exit
ipv6
prefix-ranges
split-size
per-cache 8192
per-dp 8192
exit
prefix-range FE80:db0:: length 48
exit
exit
exit
exit
```

对于此场景，"仅允许PDU会话类型IPv6"(51)更适合，因此它被更改为使用
PDU_SESSION_TYPE_IPV6_ONLY_ALLOWED(通过Cisco Bug ID CSCvy44631)。

结论

5GSM原因REQUEST_REJECTED_UNSPECIFIED本身不提供拒绝的决定性信息，需要进一步调
查才能了解拒绝的原因。如果存在更正确的原因代码，则最好修复软件。