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## 简介

本文描述延长的比特率参数由服务的GPRS支持节点的一个特定方案(SGSN)抑制。此问题在思科Aggregated服务路由器(ASR) 5x00报告。

## 问题

漫游的用户无法设立信息包数据协议(PDP)上下文，当特别是漫游圆环时，因为SGSN拒绝与有的原因代码字段的PDP不足的资源，由于漫游呼叫的哪些3G没有适当地设置。漫游位置记录器(HLR)发送0在最大值比特率下行(DL)的kbps值并且添加延长的Quality of Service(QoS)不考虑无线电访问类型(RATS)类型。但是SGSN忽略延长的QoS和发送创建PDP Request信息对网关GPRS支持节点(GGSN)与0 Kbps，造成无线电访问Bearer(RAB)分配失败。

## 方案

根据第3个生成合伙企业项目(3GPP)技术规范(TS) 24.008规格，其清楚地声明那的：

下行的最大比特率，八位位组9 (请参阅3GPP TS 23.107 [81])

编码与那是相同的上行链路的最大比特率。

如果发送的实体要指示下行高于8640 Kbps的一个最大比特率，将设置八位位组9到"11111110"，即8640 Kbps和编码最大比特率的值在八位位组15。

在介绍文件指定的协议，为了消息的此版本中，发送的实体同时不会请求0最大比特率下行的和最大比特率的Kbps上行链路的。接收一个要求0在最大比特率下行的和最大比特率的Kbps的所有实体上行链路的把一个语法错误视为(请参阅条款8)。

### 方案1。

HLR发送8640 Kbps，并且SGSN行为根据RATS类型。

2G：

3G :

## 方案2。

HLR发送8640 Kbps。

```
Thursday October 02 2014INBOUND>>>>> 23:43:34:993 Eventid:87113(0)===> GSM Mobile Application
(MAP) (0x94) (148 bytes)MAP Insert Subscriber Data RequestParameter Sequence TagExt-QoS
SubscribedTag : 0x80Length : 9 (0x09)Value : 0x01 6b 96 eb fe 74 01 00 00Allocation/Retention
Priority : 1 (0x01)011. .... Traffic Class : Interactive Class (0x3)...0 1... Delivery Order :
With delivery order ('yes') (0x1)... .011 Delivery of Erroneous SDUs : Erroneous SDUs are not
delivered ('no') (0x3)Maximum SDU Size : 1500 octets (0x96)Max. bit rate for Uplink : 7424 kbps
(0xeb)Max. bit rate for Downlink : 8640 kbps (0xfe)0111 .... Residual BER : 1*10-5 (0x7)...
0100 SDU Error Ratio : 1*10-4 (0x4)0000 00.. Transfer Delay : Reserved (0x0)... ..01 Traffic
Handling Priority : Priority Level 1 (0x1)Guaranteed bit rate for Uplink : Reserved
(0x00)Guaranteed bit rate for Downlink : Reserved (0x00)Ext2-QoS SubscribedTag : 0x82Length : 3
(0x03)Value : 0x00 50 00000. .... Spare : 0...0 .... Signalling Indication : Not optimised for
signalling traffic.... 0000 Source Statistics Descriptor : Unknown (0x0)Maximum bit rate for
Downlink (Extended) : 22 mbps (0x50)Guaranteed bit rate for Downlink (Extended) : Use the value
indicated by the Guaranteed bit rate for downlink (0x00)Thursday October 02 2014<<<<OUTBOUND
23:43:41:388 Eventid:116004(3)GTPC Tx PDU, from 223.224.40.249:19001 to 223.224.40.1:2123
(168)TEID: 0x00000000, Message type: GTP_CREATE_PDP_CONTEXT_REQ_MSG (0x10)Sequence Number::
0x217C (8572)CHARGING CHARACTERISTIC ENDS.END USER ADDRESS FOLLOWS:PDP Type Organisation:
IETF PDP Type Number: IPv4Address: EmptyEND USER ADDRESS ENDS.Access Point Name:
airtelgprs.comMax bit rate for uplink: 0xEB (7424 kbps)Max bit rate for downlink: 0xFE (8640
kbps)Residual BER: 0x7 (1/100 000 = 1x10-5)SDU error ratio: 0x4 (1/10 000 = 1x10-4)Source
Statistics Descr: 0x0 (Unknown)Ext Max bit rate (DL): 0x50 (22000 kbps) <<<<<< Included in the
message.Ext Guaranteed bit rate (DL): 0x00 (Reserved)QOS PROFILE ENDS.COMMON FLAGS END.Radio
Access Technology: UTRAN
```

HLR发送0 Kbps

```
Tag : 0x94 Length : 9 (0x09) Value : internet Ext-QoS Subscribed Tag : 0x80 Length : 9 (0x09)
Value : 0x01 71 96 fe ff 74 f9 ff ff Allocation/Retention Priority : 1 (0x01) 011. .... Traffic
Class : Interactive Class (0x3) ...1 0... Delivery Order : Without delivery order ('no') (0x2)
.... .001 Delivery of Erroneous SDUs : No detect ('-') (0x1) Maximum SDU Size : 1500 octets
(0x96) Max. bit rate for Uplink : 8640 kbps (0xfe) Max. bit rate for Downlink : 0 kbps (0xff)
>>>> Here sending entity is requesting 0kbps which is less than 8640 kbps and that is why SGSN
ignores the Extended QoS and does not forward it to GGSN 0111 ....
Residual BER : 1*10-5 (0x7) .... 0100 SDU Error Ratio : 1*10-4 (0x4)
1111 10.. Transfer Delay : 4000 ms (0x3e) .... ..01 Traffic Handling
Priority : Priority Level 1 (0x1) Guaranteed bit rate for Uplink : 0
kbps (0xff) Guaranteed bit rate for Downlink : 0 kbps (0xff)
Ext2-QoS Subscribed Tag : 0x82 Length : 3
(0x03) Value : 0x00 4f 00 000. .... Spare :
0 ....0 .... Signalling Indication : Not optimised for signalling
traffic .... 0000 Source Statistics Descriptor : Unknown (0x0)
Maximum bit rate for Downlink (Extended) : 21 mbps (0x4f) Guaranteed
bit rate for Downlink (Extended) : Use the value indicated by the Guaranteed bit rate for
downlink (0x00)
```

```
<<<<<OUTBOUND 16:01:37:890 Eventid:116004(3)
GTPC Tx PDU, from 223.224.40.249:19134 to 112.110.244.80:2123 (169)
TEID: 0x00000000, Message type: GTP_CREATE_PDP_CONTEXT_REQ_MSG (0x10)
Sequence Number:: 0x07AC (1964)
MSISDN ENDS.
QOS PROFILE FOLLOWS (Length = 13)
Alloc./Retention priority: 0x01 (1)
Spare Octet1: 0x0 (0)
Delay class: 0x4 (Delay class 4 (best effort))
```

Reliability class: 0x3 (Unack. GTP/LLC, Ack. RLC, Protected data)  
Peak throughput: 0x09 (Up to 256 000 octets/s)  
Spare Octet2: 0x0 (0)  
Precedence class: 0x2 (Normal priority)  
Spare Octet3: 0x0 (0)  
Mean throughput: 0x1F (Best effort)  
Traffic class: 0x3 (Interactive class)  
Delivery order: 0x2 (Without delivery order ('no'))  
Delivery of erroneous SDU: 0x1 (No detect ('-'))  
Maximum SDU size: 0x96 (1500 octets)  
Max bit rate for uplink: 0xFE (8640 kbps)  
Max bit rate for downlink: 0xFF (0 kbps)  
Residual BER: 0x7 (1/100 000 = 1x10<sup>-5</sup>)  
SDU error ratio: 0x4 (1/10 000 = 1x10<sup>-4</sup>)  
Transfer delay: 0x3E (4000 ms)  
Traffic handling priority: 0x1 (Priority level 1)  
Guaranteed bit rate (UL): 0xFF (0 kbps)  
Guaranteed bit rate (DL): 0xFF (0 kbps)  
Spare Octet4: 0x0 (0)  
Signalling Indication: 0x0 (No)  
Source Statistics Descr: 0x0 (Unknown)

QOS PROFILE ENDS.

COMMON FLAGS FOLLOW:

Prohibit Payload Compression: no  
MBMS Service Type: Multicast Service  
RAN Procedures Ready: no  
MBMS Counting Information: no  
No QoS negotiation: no  
NRSN: no  
Upgrade QoS Supported: no  
Dual Address Bearer Flag: no

COMMON FLAGS END.

Radio Access Technology: UTRAN

USER LOCATION INFORMATION FOLLOWS:

LOCATION TYPE: SAI  
MCC: 404  
MNC: 70  
LAC: 39012  
CI/SAC/RAC: 23017

USER LOCATION INFORMATION ENDS.

MS Time Zone: +5:30

Daylight Saving Time: +0 hour

IMEI(SV): 3565340544016110

INFORMATION ELEMENTS END.

SGSN根据规格正常运行，根据访问类型，并且最大数量QOS支持。SGSN包括延长的最大值比特率DL。

根据规格，八位字节15包括，只有当用户设备(UE) /radio网络控制器(RNC)支持超过8640 Kbps。

在2G的情况下，基站控制器(BSC)不支持更加高的QOS，延长的比特率没有包括。

在漫游方案中，HLR发送0 Kbps，并且根据3GPP规格HLR不能发送0 Kbps作为DL比特率。

## 无线电访问持票人(RAB)分配为什么发生故障？

Tag : 0x94 Length : 9 (0x09) Value : internet Ext-QoS Subscribed Tag : 0x80 Length : 9 (0x09)

Value : 0x01 71 96 fe ff 74 f9 ff ff Allocation/Retention Priority : 1 (0x01) 011. .... Traffic Class : Interactive Class (0x3) ...1 0... Delivery Order : Without delivery order ('no') (0x2) .... .001 Delivery of Erroneous SDUs : No detect ('-') (0x1) Maximum SDU Size : 1500 octets (0x96) Max. bit rate for Uplink : 8640 kbps (0xfe) **Max. bit rate for Downlink : 0 kbps (0xff)**  
>>>> Here sending entity is requesting 0kbps which is less than 8640 kbps and that is why SGSN ignores the Extended QoS and does not forward it to GGSN 0111 ....  
Residual BER : 1\*10-5 (0x7) .... 0100 SDU Error Ratio : 1\*10-4 (0x4)  
1111 10.. Transfer Delay : 4000 ms (0x3e) .... ..01 Traffic Handling Priority : Priority Level 1 (0x1) Guaranteed bit rate for Uplink : 0 kbps (0xff) Guaranteed bit rate for Downlink : 0 kbps (0xff)  
Ext2-QoS Subscribed Tag : 0x82 Length : 3 (0x03) Value : 0x00 4f 00 000. .... Spare : 0 ...0 .... Signalling Indication : Not optimised for signalling traffic .... 0000 Source Statistics Descriptor : Unknown (0x0)  
Maximum bit rate for Downlink (Extended) : 21 mbps (0x4f) Guaranteed bit rate for Downlink (Extended) : Use the value indicated by the Guaranteed bit rate for downlink (0x00)

<<<<OUTBOUND 16:01:37:890 Eventid:116004(3)  
GTPC Tx PDU, from 223.224.40.249:19134 to 112.110.244.80:2123 (169)  
TEID: 0x00000000, Message type: GTP\_CREATE\_PDP\_CONTEXT\_REQ\_MSG (0x10)  
Sequence Number:: 0x07AC (1964)  
MSISDN ENDS.

QOS PROFILE FOLLOWS (Length = 13)  
Alloc./Retention priority: 0x01 (1)  
Spare Octet1: 0x0 (0)  
Delay class: 0x4 (Delay class 4 (best effort))  
Reliability class: 0x3 (Unack. GTP/LLC, Ack. RLC, Protected data)  
Peak throughput: 0x09 (Up to 256 000 octets/s)  
Spare Octet2: 0x0 (0)  
Precedence class: 0x2 (Normal priority)  
Spare Octet3: 0x0 (0)  
Mean throughput: 0x1F (Best effort)  
Traffic class: 0x3 (Interactive class)  
Delivery order: 0x2 (Without delivery order ('no'))  
Delivery of erroneous SDU: 0x1 (No detect ('-'))  
Maximum SDU size: 0x96 (1500 octets)  
Max bit rate for uplink: 0xFE (8640 kbps)  
Max bit rate for downlink: 0xFF (0 kbps)  
Residual BER: 0x7 (1/100 000 = 1x10^-5)  
SDU error ratio: 0x4 (1/10 000 = 1x10^-4)  
Transfer delay: 0x3E (4000 ms)  
Traffic handling priority: 0x1 (Priority level 1)  
Guaranteed bit rate (UL): 0xFF (0 kbps)  
Guaranteed bit rate (DL): 0xFF (0 kbps)  
Spare Octet4: 0x0 (0)  
Signalling Indication: 0x0 (No)  
Source Statistics Descr: 0x0 (Unknown)

QOS PROFILE ENDS.

COMMON FLAGS FOLLOW:

Prohibit Payload Compression: no  
MBMS Service Type: Multicast Service  
RAN Procedures Ready: no  
MBMS Counting Information: no  
No QoS negotiation: no  
NRSN: no  
Upgrade QoS Supported: no  
Dual Address Bearer Flag: no

COMMON FLAGS END.

Radio Access Technology: UTRAN  
USER LOCATION INFORMATION FOLLOWS:  
LOCATION TYPE: SAI  
MCC: 404

MNC: 70  
LAC: 39012  
CI/SAC/RAC: 23017  
USER LOCATION INFORMATION ENDS.  
MS Time Zone: +5:30  
Daylight Saving Time: +0 hour  
IMEI(SV): 3565340544016110  
INFORMATION ELEMENTS END.

根据24.008，八位字节15或延长的最大值比特率DL包括创建PDP上下文请求，只有当最大值比特率DL是超过8640 Kbps时(八位字节9)。在

使用最大值比特率(MBR)下行/上行链路的分机信息单元(IE)，如果SGSN请求超过8700 Kbps下行/上行链路。因为正常message大小不允许发送超过8640 kbps值，延长的MBR IE用于发送另外的值。如果扩展的MBR不是满足的那么您能均等使用MBR Ext-2。

在前一个示例中，正常MBR使用一个八位位组发送0xFE (翻译对8640 Kbps)，但是，一旦MBR ext八位位组0x50倍增与原始MBR八位位组，变为22000 Kbps。

在漫游方案的情况下，HLR提供0 Kbps作为其最大比特率DL。

根据Spec 23.107，最大比特率(Kbps)：位最大传送由Universal Mobile Telecommunication System (UMTS)和对UMTS在一服务接入点(SAP)在时期，分开在期限的持续时间之前。流量是conformant与，只要跟随令牌桶算法令牌的速率等于最大比特率和桶大小等于最大服务数据部件(SDU)大小的最大比特率。

不应该解释一致性定义作为一种需要的实施算法。令牌桶算法在附录B描述。

最大比特率是上限每用户或应用程序能接受或提供。所有RAB属性可以为流量执行至最大比特率根据网络状况。

目的：

- 1) 对应用程序或外部网络限制已交付比特率与这样限制
- 2) 要允许最大数量希望RAB比特率为能的应用程序定义运行用不同的速率(例如与适应编码的应用程序。)

如果HLR给0 kbps上限漫游的用户，则SGSN不根据被提及的限制包括延长的比特率在24.008规格。

## [解决方法](#)

您能选择通过默认接入点名称的映射提供默认QOS (APN)，万一在HLR上的进行的变化不可行。

如此示例所显示，为漫游用户完成的配置示例配置更改有一默认QoS。默认情况下在2G的情况下，SGSN发送硬编码的472kbps和其：

Tag : 0x94 Length : 9 (0x09) Value : internet Ext-QoS Subscribed Tag : 0x80 Length : 9 (0x09)  
Value : 0x01 71 96 fe ff 74 f9 ff ff Allocation/Retention Priority : 1 (0x01) 011. .... Traffic

Class : Interactive Class (0x3) ...1 0... Delivery Order : Without delivery order ('no') (0x2)  
.... .001 Delivery of Erroneous SDUs : No detect ('-') (0x1) Maximum SDU Size : 1500 octets  
(0x96) Max. bit rate for Uplink : 8640 kbps (0xfe) **Max. bit rate for Downlink : 0 kbps (0xff)**  
>>>> Here sending entity is requesting 0kbps which is less than 8640 kbps and that is why SGSN  
ignores the Extended QoS and does not forward it to GGSN 0111 ....  
Residual BER : 1\*10-5 (0x7) .... 0100 SDU Error Ratio : 1\*10-4 (0x4)  
1111 10.. Transfer Delay : 4000 ms (0x3e) .... ..01 Traffic Handling  
Priority : Priority Level 1 (0x1) Guaranteed bit rate for Uplink : 0  
kbps (0xff) Guaranteed bit rate for Downlink : 0 kbps (0xff)  
Ext2-QoS Subscribed Tag : 0x82 Length : 3  
(0x03) Value : 0x00 4f 00 000. .... Spare :  
0 ...0 .... Signalling Indication : Not optimised for signalling  
traffic .... 0000 Source Statistics Descriptor : Unknown (0x0)  
Maximum bit rate for Downlink (Extended) : 21 mbps (0x4f) Guaranteed  
bit rate for Downlink (Extended) : Use the value indicated by the Guaranteed bit rate for  
downlink (0x00)

<<<<OUTBOUND 16:01:37:890 Eventid:116004(3)  
GTPC Tx PDU, from 223.224.40.249:19134 to 112.110.244.80:2123 (169)  
TEID: 0x00000000, Message type: GTP\_CREATE\_PDP\_CONTEXT\_REQ\_MSG (0x10)  
Sequence Number:: 0x07AC (1964)  
MSISDN ENDS.

QOS PROFILE FOLLOWS (Length = 13)  
Alloc./Retention priority: 0x01 (1)  
Spare Octet1: 0x0 (0)  
Delay class: 0x4 (Delay class 4 (best effort))  
Reliability class: 0x3 (Unack. GTP/LLC, Ack. RLC, Protected data)  
Peak throughput: 0x09 (Up to 256 000 octets/s)  
Spare Octet2: 0x0 (0)  
Precedence class: 0x2 (Normal priority)  
Spare Octet3: 0x0 (0)  
Mean throughput: 0x1F (Best effort)  
Traffic class: 0x3 (Interactive class)  
Delivery order: 0x2 (Without delivery order ('no'))  
Delivery of erroneous SDU: 0x1 (No detect ('-'))  
Maximum SDU size: 0x96 (1500 octets)  
Max bit rate for uplink: 0xFE (8640 kbps)  
Max bit rate for downlink: 0xFF (0 kbps)  
Residual BER: 0x7 (1/100 000 = 1x10^-5)  
SDU error ratio: 0x4 (1/10 000 = 1x10^-4)  
Transfer delay: 0x3E (4000 ms)  
Traffic handling priority: 0x1 (Priority level 1)  
Guaranteed bit rate (UL): 0xFF (0 kbps)  
Guaranteed bit rate (DL): 0xFF (0 kbps)  
Spare Octet4: 0x0 (0)  
Signalling Indication: 0x0 (No)  
Source Statistics Descr: 0x0 (Unknown)

QOS PROFILE ENDS.

COMMON FLAGS FOLLOW:

Prohibit Payload Compression: no  
MBMS Service Type: Multicast Service  
RAN Procedures Ready: no  
MBMS Counting Information: no  
No QoS negotiation: no  
NRSN: no  
Upgrade QoS Supported: no  
Dual Address Bearer Flag: no

COMMON FLAGS END.

Radio Access Technology: UTRAN  
USER LOCATION INFORMATION FOLLOWS:  
LOCATION TYPE: SAI  
MCC: 404  
MNC: 70

LAC: 39012

CI/SAC/RAC: 23017

USER LOCATION INFORMATION ENDS.

MS Time Zone: +5:30

Daylight Saving Time: +0 hour

IMEI(SV): 3565340544016110

INFORMATION ELEMENTS END.