

SY觸發器更改策略計數器的AMBR值[QOS]在RAR中丟失

目錄

[簡介](#)

[必要條件](#)

[需求](#)

[採用元件](#)

[縮寫](#)

[問題](#)

[問題分析](#)

[在CCR-I期間正確載入CRD表](#)

[CCR後的即時SNR](#)

[使用正確的QOS資訊向PGW傳送RAR](#)

[連續接收的SNR](#)

[在QOS資訊中不帶AMBR的情況下傳送RAR](#)

[解決方案](#)

簡介

本文描述如何解決Sy觸發器更改策略計數器的RAR中AMBR值[QOS]缺失問題。

必要條件

需求

思科建議您瞭解以下主題：

- PCRF/CPS
- Diameter協定

採用元件

本文檔中的資訊基於Cisco Policy Suit for PCRF解決方案。

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。

縮寫

PCRF
OCS
PGW

策略和計費規則功能
線上計費系統
封包資料網路閘道器

問題

當您在建立新會話後應用限制（新的策略計數器狀態）時，AMBR值不會應用於傳送到PGW的RAR，只會傳送QCI值。

```
QoS-Information: Default-EPS-Bearer-QoS: QoS-Class-Identifier: 8 Revalidation-Time: -486962116
```

問題分析

當您檢視PCRF跟蹤時，可以看到OCS在SLR/SLA交換後立即傳送SNR。

此SNR具有與SLA相同的策略計數器狀態(**NoThrottle**)值。

處理SNR時，您可以看到PCRF正確載入Unlimited_AMBR表，直到一切正常。

幾分鐘後，一個新的SNR被傳送到PCRF，同時策略計數器狀態改變(應用**Throttle1**)。處理此問題時，PCRF不會載入Unlimited_AMBR表，因此不會獲得**Throttle1**的AMBR值，因此不會傳遞到RAR中的PGW。

以下是來自偵錯日誌的一些片段，用於詳細瞭解上述行為。

在CCR-I期間正確載入CRD表

```
----- Debugging Messages ----- INFO core Tagging message with ID:
GX_TGPP INFO diameter Adding extracted AVP to policy: DiameterMessageAvp [code=QoS-Class-
Identifier, value=8] INFO core Start session triggered INFO TGPP [Rel9] features supported on
session 0001-diamproxy.mod-ggsae01-
gx.epc.mnc099.mcc530.3gppnetwork.org;405022273;510802;5f4efc9a-5202 INFO gx Creating new
diameter session 0001-diamproxy.mod-ggsae01-
gx.epc.mnc099.mcc530.3gppnetwork.org;405022273;510802;5f4efc9a-5202 INFO custrefdata Adding AVP
[APN_TABLE/LOGICAL_APN], value: DATA INFO custrefdata Adding AVP [LOCATION_TABLE/LOCATION_REF],
value: HOME INFO custrefdata Adding AVP [PROFILE_TABLE/PROFILE_ID], value: PROFILE_DATA INFO
custrefdata Adding AVP [QCIREF/QCI], value: 8 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle3_AMBR_DOWN], value: 20000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle2_AMBR_UP], value: 50000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle6_AMBR_UP], value: 600000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle3_AMBR_UP], value: 20000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle4_AMBR_DOWN], value: 50000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle1_AMBR_DOWN], value: 12000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle2_AMBR_DOWN], value: 50000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle5_AMBR_UP], value: 100000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle6_AMBR_DOWN], value: 600000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle1_AMBR_UP], value: 12000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle5_AMBR_DOWN], value: 100000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle4_AMBR_UP], value: 500000000 INFO auth Success ALLOW_ALL authorization
INFO core Switching credential id to 53099204XXXXXX for session INFO core domain: mobile INFO sy
Created new Sy diameter session INFO sy Triggering synchronous SLR Message on sessioniMOD-
PCRF01-gns01-1.cluster-MOD1.-Model;1597873954;1029;6862816375560209413 INFO debug-code The Sy
Policy Counter Status is : NoThrottle
```

I在CCR後的最近SNR

在這裡，CRD表載入也是正確的，並且基於從SNR接收的策略計數器來選擇期望的QOS。

```
----- Debugging Messages ----- INFO core Tagging message with ID:
SY_V11 INFO core Successful load by key: diameterSessionKey:iMOD-PCRF01-qns01-1.cluster-MOD1.-
Model%3B1597873954%3B1029%3B6862816375560209413 INFO custrefdata Adding AVP
[APN_TABLE/LOGICAL_APN], value: DATA INFO custrefdata Adding AVP [LOCATION_TABLE/LOCATION_REF],
value: HOME INFO custrefdata Adding AVP [PROFILE_TABLE/PROFILE_ID], value: PROFILE_DATA INFO
custrefdata Adding AVP [QCIREF/QCI], value: 8 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle3_AMBR_DOWN], value: 20000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle2_AMBR_UP], value: 5000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle6_AMBR_UP], value: 600000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle3_AMBR_UP], value: 20000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle4_AMBR_DOWN], value: 50000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle1_AMBR_DOWN], value: 1200000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle2_AMBR_DOWN], value: 5000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle5_AMBR_UP], value: 100000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle6_AMBR_DOWN], value: 600000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle1_AMBR_UP], value: 1200000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle5_AMBR_DOWN], value: 100000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle4_AMBR_UP], value: 50000000 INFO core domain: mobile INFO Sy client
Sending SNA Message on session iMOD-PCRF01-qns01-1.cluster-MOD1.-
Model;1597873954;1029;6862816375560209413 INFO debug-code The Sy Policy Counter Status is :
NoThrottle INFO debug-code The Sy Policy Counter Status is : NoThrottle
```

使用正確的QOS資訊向PGW傳送RAR

```
Message: com.broadhop.diameter2.messages.DiameterRequestMessage Application Id: Gx (16777238)
Command Code: Gx_RAR (258) Dest host: 0001-diamproxy.mod-ggsae01-
gx.epc.mnc099.mcc530.3gppnetwork.org Dest realm: epc.mnc099.mcc530.3gppnetwork.org Device
protocol: GX_TGPP End to end id: 0 (0x00000000) Hop by hop id: 0 (0x00000000) Origin state: 0
Stack name: null Session-Id: 0001-diamproxy.mod-ggsae01-
gx.epc.mnc099.mcc530.3gppnetwork.org;405022273;510802;5f4efc9a-5202 Auth-Application-Id:
16777238 Re-Auth-Request-Type: 0 QoS-Information: APN-Aggregate-Max-Bitrate-UL: 600000000 APN-
Aggregate-Max-Bitrate-DL: 600000000 Default-EPS-Bearer-QoS: QoS-Class-Identifier: 8
Revalidation-Time: -486962716 =====
```

連續接收的SNR

這裡沒有為Unlimited_AMBR載入CRD表。

```
----- Debugging Messages ----- INFO core Tagging message with ID:
SY_V11 INFO core Successful load by key: diameterSessionKey:iMOD-PCRF01-qns02-1.cluster-MOD1.-
Model%3B1597874000%3B1089%3B6862816573128705089 INFO custrefdata Adding AVP
[APN_TABLE/LOGICAL_APN], value: DATA INFO custrefdata Adding AVP [LOCATION_TABLE/LOCATION_REF],
value: HOME INFO custrefdata Adding AVP [PROFILE_TABLE/PROFILE_ID], value: PROFILE_DATA INFO
custrefdata Adding AVP [QCIREF/QCI], value: 8 INFO core domain: mobile INFO Sy client Sending
SNA Message on session iMOD-PCRF01-qns02-1.cluster-MOD1.Spark-
Model;1597874000;1089;6862816573128705089 INFO debug-code The Sy Policy Counter Status is :
Throttle1 INFO debug-code The Sy Policy Counter Status is : Throttle1 INFO debug-code ECGI :
530992xxxxxx INFO debug-code IMSI : 530992041xxxxxx INFO debug-code CGI : INFO debug-code Next
Eval Time: 2020-09-02T10:03:05Z INFO core domain: mobile INFO rt Added revalidation time Wed Sep
02 03:13:00 UTC 2020 INFO gx Sending RAR Message on session 0001-diamproxy.mod-ggsae01-
gx.epc.mnc099.mcc530.3gppnetwork.org;405022275;511314;5f4efd58-5202
```

在QOS資訊中不帶AMBR的情況下傳送RAR

預期使用降低QOS值傳送。

```
Message: com.broadhop.diameter2.messages.DiameterRequestMessage Application Id: Gx (16777238)
Command Code: Gx_RAR (258) Dest host: 0001-diamproxy.mod-ggsae01-
gx.epc.mnc099.mcc530.3gppnetwork.org Dest realm: epc.mnc099.mcc530.3gppnetwork.org Device
protocol: GX_TGPP End to end id: 0 (0x00000000) Hop by hop id: 0 (0x00000000) Origin state: 0
Stack name: null Session-Id: 0001-diamproxy.mod-ggsae01-
gx.epc.mnc099.mcc530.3gppnetwork.org;405022275;511314;5f4efd58-5202 Auth-Application-Id:
16777238 Re-Auth-Request-Type: 0 QoS-Information: Default-EPS-Bearer-QoS: QoS-Class-Identifier:
8 Revalidation-Time: -486962116 =====
```

此外，還檢查了debug qns日誌，發現由於條件為false CCR，跳過了表

```
MOD-PCRF01-qns02 MOD-PCRF01-qns02 2020-09-02 02:13:00,740 [pool-108-thread-1] DEBUG
c.b.policy.impl.RulesPolicyService - Policy event: Message:
com.broadhop.diameter2.messages.DiameterRequestMessage Application Id: Sy (16777302) Command
Code: Sy_SNR (8388636) Dest host: mod-pcrf01-lb Dest realm: epc.mnc099.mcc530.3gppnetwork.org
Device protocol: SY_V11 End to end id: 1874920025 (0x6fc10259) Hop by hop id: 30806209
(0x01d610c1) Origin state: 0 Stack name: null Origin host: sy01.mod02.bumblebee.co.nz Origin
realm: mod02.bumblebee.co.nz Session-Id: iMOD-PCRF01-qns01-1.cluster-MOD1.Spark-
Model;1597873954;1029;6862816375560209413 Auth-Application-Id: 16777238 Policy-Counter-Status-
Report: Policy-Counter-Identifier: THROTTLE Policy-Counter-Status: Throttle1 Route-Record:
sy01.mod02.bumblebee.co.nz QPS-Internal-Route-Record-Host: mod-
dsc02.epc.mnc099.mcc530.3gppnetwork.org QPS-Internal-Route-Record-Realm:
epc.mnc099.mcc530.3gppnetwork.org, no return address MOD-PCRF01-qns01 MOD-PCRF01-qns01 2020-09-
02 02:13:00,742 [pool-109-thread-1] DEBUG c.b.c.i.CustomerReferenceDataManager - Skipping table
Unlimited_AMBR since condition is false CCR
```

進一步研究PB以理解CRD表負載的行為。

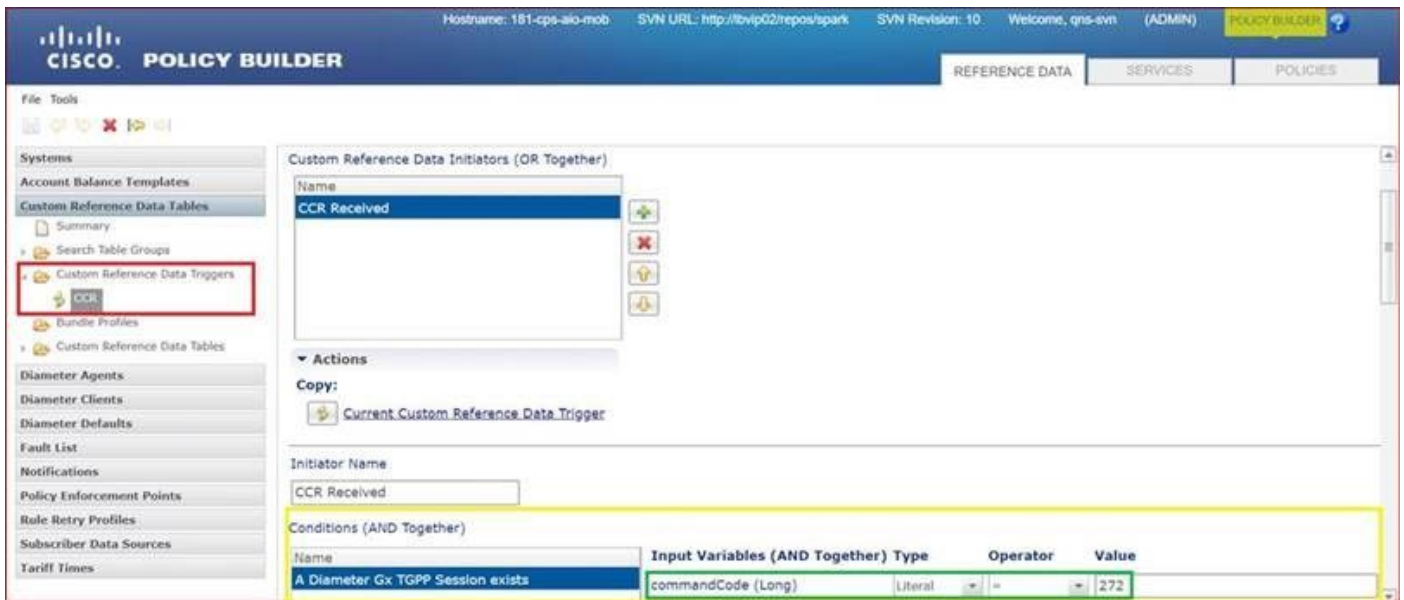
瀏覽提供的SVN轉儲後，可找到此表的此配置：**Unlimited_AMBR**

The screenshot shows the Cisco Policy Builder interface. The main window displays the configuration for a Custom Reference Data Table named 'Unlimited_AMBR'. The table has a display name of 'Unlimited AMBR' and is set to 'Cache Results'. The activation condition is set to 'CCR'. The table columns are listed below:

*Name	Display Name	*Use In Condit*	Type	Key	Required
APN	APN	<input checked="" type="checkbox"/>	Text	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Throttle1_AMBR_UP	Throttle1_AMBR_UP	<input checked="" type="checkbox"/>	Text	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Throttle1_AMBR_DOWN	Throttle1_AMBR_DOWN	<input checked="" type="checkbox"/>	Text	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Throttle2_AMBR_UP	Throttle2_AMBR_UP	<input checked="" type="checkbox"/>	Text	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Throttle2_AMBR_DOWN	Throttle2_AMBR_DOWN	<input checked="" type="checkbox"/>	Text	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Throttle3_AMBR_UP	Throttle3_AMBR_UP	<input checked="" type="checkbox"/>	Text	<input type="checkbox"/>	<input checked="" type="checkbox"/>

此表的啟用條件基於CCR觸發器。

因此，如果您看到此CCR觸發器的內容，則條件為：存在一個Gx直徑會話，命令代碼為272。即，CCR。



因此，如果沒有與CCR對應的表，則不會載入表。即。SNR無權在沒有初始CCR的情況下載入CRD [I或U]

解決方案

為SY會話新增CRD啟用觸發器，並執行新配置的發佈。

Name

CCR

Custom Reference Data Initiators (OR Together)

Name

CCR Received

Sy Session Exists

Actions

Copy:

Current Custom Reference Data Trigger

Initiator Name

Sy Session Exists

Conditions (AND Together)

Name

A Diameter Sy v11 Session exists

Input Variables (AND Together)

Condition Outputs

DiameterSyV11Session (DiameterSyV11Session)

發佈此新更改後，進行了多次資料呼叫嘗試，所有嘗試均成功。所有連續的SNR都能夠載入CRD表

, 並且根據來自Sy的傳入策略計數器更改在RAR中傳送正確的QOS。