

StarOS中IDFT特徵的行為

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簡介

本檔案介紹控制與使用者計劃分離(CUPS)和舊版/裸機設定中的間接轉送通道(IDFT)功能的行為。

必要條件

需求

思科建議您瞭解以下主題：

- StarOS
- 與IDFT相關的服務網關(SGW)功能

採用元件

本文檔中的資訊基於SGW - 21.25.9 (舊版和CUPS中) 軟體和硬體版本。

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。

背景資訊

SGW支援IDFT建立和刪除程式，這些程式適用於具有多資料包資料網路(PDN)和多承載的Pure-S和摺疊呼叫。此功能適用於具有或不具有SGW重新定位和衝突情形的IDFT支援。

IDFT功能支援以下功能：

- 為Collapsed、Pure-S、Collapsed和Pure-S多PDN呼叫與多個承載的組合建立IDFT請求。
- 下行鏈路和上行鏈路IDFT承載上的資料傳輸。

- 從移動管理引擎(MME)刪除IDFT請求。此外，如果MME沒有傳送刪除的IDFT請求，則在預設值100秒到期後，基於計時器刪除IDFT承載。
- 當正常PDN關閉時，刪除IDFT PDN，包括從MME/P-GW清除/刪除使用者。
- 在IDFT主用/IDFT時，如果為Pure-S和摺疊呼叫，則使用Sx-Path故障處理，建立Sx-Pending狀態。
- IDFT PDN建立或刪除時的消息互動和衝突與任何其他過程。
- 當IDFT PDN處於活動狀態時，現在支援在非IDFT PDN上進行S11/S5和Sx-Path故障處理。

配置IDFT

本節介紹支援IDFT功能的CLI命令。

在控制平面上，使用這些CLI命令啟用或禁用IDFT功能。

```
configure
  context context_name
    sgw-service service_name
      [ default | no ] egtp idft-support
    end
```

問題

即使功能關閉，SGW也會處理建立IDFT請求。在傳統/裸機節點中可看到此行為。

以下是節點中存在的IDFT配置：

```
sgw-service SGW-SVC
  accounting context EPC gtp group default
  accounting mode gtp
  associate ingress egtp-service S11-SGW
  associate egress-proto gtp egress-context EPC egtp-service S5-S8-SGW
  no egtp idft-support
```

分析

跟蹤和調試日誌通過在實驗室中模擬此場景獲取，並且會看到建立IDFT請求和建立IDFT響應的行為

o

1)MME將建立IDFT請求傳送到SGW。

The screenshot shows a Wireshark packet capture of a GTPv2 message from MME to SGW. The message is a 'Create Indirect Data Forwarding Tunnel Request' (message type 166). The tunnel endpoint identifier is 0x80000005 (2147516421). The sequence number is 0x000002 (2). The bearer context is grouped and includes an IE for Bearer Context (93) with an IE length of 18. The cause is 'Request accepted'. The fully qualified tunnel endpoint identifier is eNodeB GTP-U interface for DL data forwarding, TEID/GRE Key: 0x200111a0, IPv4 192.168.1.106.

2)SGW處理請求並將響應「建立IDFT響應」傳送回MME，原因為「請求已接受」。

The screenshot shows a Wireshark packet capture of a GTPv2 message from SGW to MME. The message is a 'Create Indirect Data Forwarding Tunnel Response' (message type 167). The tunnel endpoint identifier is 0x10010001 (268500993). The sequence number is 0x000002 (2). The cause is 'Request accepted'. The bearer context is grouped and includes an IE for Bearer Context (93) with an IE length of 63. The cause is 'Request accepted'. The fully qualified tunnel endpoint identifier is SGW GTP-U interface for data forwarding, TEID/GRE Key: 0x80010005, IPv4 10.1.4.1.

在此建立IDFT響應中，預期SGW必須傳送建立IDFT響應，原因為「不支援資料轉發」，因為配置中已禁用此功能。

在CUPS設定中使用相同的配置：

1)MME將建立IDFT請求傳送到SGW。

```

4 0.113_2022-07-15 08:05:09.154000 192.168.1.100 10.1.10.1 GTPv2 nooby bearer request
5 0.020_2022-07-15 08:05:09.174000 10.1.10.1 192.168.1.100 GTPv2 Request accepted,Request accepted Modify Bearer Response
6 0.345_2022-07-15 08:05:09.519000 192.168.1.108 10.1.20.3 GTP Echo request
7 0.000_2022-07-15 08:05:09.519000 10.1.20.3 192.168.1.108 GTP Echo response
8 26.20_2022-07-15 08:05:35.726000 192.168.1.100 10.1.10.1 GTPv2 Create Indirect Data Forwarding Tunnel...
9 0.000_2022-07-15 08:05:35.726000 10.1.10.1 192.168.1.100 GTPv2 Data forwarding not supported Create Indirect Data Forwarding Tunnel...
10 3.792_2022-07-15 08:05:39.518000 192.168.1.108 10.1.20.3 GTP Echo request
11 0.000_2022-07-15 08:05:39.518000 10.1.20.3 192.168.1.108 GTP Echo response
12 0.074_2022-07-15 08:05:39.592000 10.1.20.3 192.168.1.108 GTP Echo request
13 0.001_2022-07-15 08:05:39.593000 192.168.1.108 10.1.20.3 GTP Echo response
14 29.92_2022-07-15 08:06:09.517000 192.168.1.108 10.1.20.3 GTP Echo request
15 0.000_2022-07-15 08:06:09.517000 10.1.20.3 192.168.1.108 GTP Echo response
16 2.002_2022-07-15 08:06:11.519000 10.1.10.1 192.168.1.100 GTPv2 Echo Request
17 0.610_2022-07-15 08:06:12.129000 192.168.1.100 10.1.10.1 GTPv2 Modify Bearer Request
18 0.002_2022-07-15 08:06:12.131000 10.1.10.1 192.168.1.100 GTPv2 Request accepted,Request accepted Modify Bearer Response

```

```

> Frame 8: 76 bytes on wire (608 bits), 76 bytes captured (608 bits) on interface 0
> Ethernet II, Src: 00:00:00:00:00:00 (00:00:00:00:00:00), Dst: 00:00:00:00:00:00 (00:00:00:00:00:00)
> Internet Protocol Version 4, Src: 192.168.1.100, Dst: 10.1.10.1
> User Datagram Protocol, Src Port: 10000, Dst Port: 2123
  GPRS Tunneling Protocol V2
    Flags: 0x48
    Message Type: Create Indirect Data Forwarding Tunnel Request (166)
    Message Length: 30
    Tunnel Endpoint Identifier: 0x80000006 (2147483654)
    Sequence Number: 0x000002 (2)
    Spare: 0
    Bearer Context : [Grouped IE]
      IE Type: Bearer Context (93)
      IE Length: 18
      0000 .... = CR flag: 0
      .... 0000 = Instance: 0
    > EPS Bearer ID (EBI) : 5
    > Fully Qualified Tunnel Endpoint Identifier (F-TEID) : eNodeB GTP-U interface for DL data forwarding, TEID/GRE Key: 0x20010089, IPv4 192.168.1.106

```

2)SGW處理該請求並將響應「建立IDFT響應」傳送回MME，原因為「不支援資料轉發」。

```

7 0.000_2022-07-15 08:05:09.519000 10.1.20.3 192.168.1.108 GTP Echo response
8 26.20_2022-07-15 08:05:35.726000 192.168.1.100 10.1.10.1 GTPv2 Create Indirect Data Forwarding Tunnel...
9 0.000_2022-07-15 08:05:35.726000 10.1.10.1 192.168.1.100 GTPv2 Data forwarding not supported Create Indirect Data Forwarding Tunnel...
10 3.792_2022-07-15 08:05:39.518000 192.168.1.108 10.1.20.3 GTP Echo request
11 0.000_2022-07-15 08:05:39.518000 10.1.20.3 192.168.1.108 GTP Echo response
12 0.074_2022-07-15 08:05:39.592000 10.1.20.3 192.168.1.108 GTP Echo request
13 0.001_2022-07-15 08:05:39.593000 192.168.1.108 10.1.20.3 GTP Echo response
14 29.92_2022-07-15 08:06:09.517000 192.168.1.108 10.1.20.3 GTP Echo request
15 0.000_2022-07-15 08:06:09.517000 10.1.20.3 192.168.1.108 GTP Echo response
16 2.002_2022-07-15 08:06:11.519000 10.1.10.1 192.168.1.100 GTPv2 Echo Request
17 0.610_2022-07-15 08:06:12.129000 192.168.1.100 10.1.10.1 GTPv2 Modify Bearer Request
18 0.002_2022-07-15 08:06:12.131000 10.1.10.1 192.168.1.100 GTPv2 Request accepted,Request accepted Modify Bearer Response

```

```

> Frame 9: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0
> Ethernet II, Src: 00:00:00:00:00:00 (00:00:00:00:00:00), Dst: 00:00:00:00:00:00 (00:00:00:00:00:00)
> Internet Protocol Version 4, Src: 10.1.10.1, Dst: 192.168.1.100
> User Datagram Protocol, Src Port: 2123, Dst Port: 10000
  GPRS Tunneling Protocol V2
    Flags: 0x48
    Message Type: Create Indirect Data Forwarding Tunnel Response (167)
    Message Length: 14
    Tunnel Endpoint Identifier: 0x10010001 (268500993)
    Sequence Number: 0x000002 (2)
    Spare: 0
    Cause : Data forwarding not supported (106)
      IE Type: Cause (2)
      IE Length: 2
      0000 .... = CR flag: 0
      .... 0000 = Instance: 0
      Cause: Data forwarding not supported (106)
      0000 0... = Spare bit(s): 0
      .... 0... = PCE (PDU Connection IE Error): False
      .... ..0. = BCE (Bearer Context IE Error): False
      .... ...0 = CS (Cause Source): Originated by node sending the message

```

在管理指南中，要啟用此功能，您需要執行以下步驟：
 在控制平面上，使用這些CLI命令啟用或禁用IDFT功能。

configure

```

context context_name
  sgw-service service_name
    [ default | no ] egtp idft-support
end

```

如果您按照舊版中的這些步驟啟用/禁用該服務，則看不到任何切換該服務的選項。

[sgw]TITAN-ULTRA-001(config-sgw-service)# egtp

cause-code - Configuration to related to handling failure response from peer
change-notification-req - Configuration related to handling change notification request
modify-bearer-req - Configuration related to handling Modify Bearer Request

[sgw]TITAN-ULTRA-001(config-sgw-service)# no egtp

cause-code - Configuration to related to handling failure response from peer
change-notification-req - Configuration related to handling change notification request
modify-bearer-req - Configuration related to handling Modify Bearer Request

當您嘗試在CUPS設定中啟用/禁用它時，它會顯示切換它的選項。

[SAEGW]saegw-cp1(config-sgw-service)# egtp

cause-code - Configuration to related to handling failure response from peer
change-notification-req - Configuration related to handling change notification request
idft-support - Enable/Disable the IDFT Feature for CUPS. By default, it is disabled
modify-bearer-req - Configuration related to handling Modify Bearer Request

[SAEGW]saegw-cp1(config-sgw-service)# egtp

cause-code - Configuration to related to handling failure response from peer
change-notification-req - Configuration related to handling change notification request
idft-support - Enable/Disable the IDFT Feature for CUPS. By default, it is disabled
modify-bearer-req - Configuration related to handling Modify Bearer Request

解決方案

此行為的原因如下所述：

舊行為：

- 舊版中沒有CLI來控制IDFT行為。
- 舊版代碼始終支援IDFT。

```
[local]ESC-CP# show license information
Tuesday July 12 02:30:39 UTC 2022
Session Limits:
      Sessions  Session Type
-----
      120000   HA
      100000   GGSN
      120000   ECS
      100000   Integrated Content Filtering Service
      100000   Application Detection and Control
      100000   PGW
      100000   SGW
      100000   SAE GW Bundle
[saegw]ESC-CP(config-sgw-service)# egtp
cause-code          - Configuration to related to handling failure response from peer
change-notification-req - Configuration related to handling change notification request
modify-bearer-req   - Configuration related to handling Modify Bearer Request
```

CUPS行為：

- CLI由許可證控制，也就是說，它只能通過CUPS許可證使用。
- 可以在CUPS中啟用/禁用它。

```
[local]ESC-CP# show license information
Tuesday July 12 02:36:59 UTC 2022
Session Limits:
      Sessions  Session Type
-----
      10000    HA
      100000   GGSN
      2000     ECS
      1000     Integrated Content Filtering Service
      1000     Application Detection and Control
      1000     PGW
      1000     SGW
      1000     SAE GW Bundle
      1000     CUPS SAEGW CP Bundle 1K/10k Sessions for ASR5k/QVPC
[saegw]ESC-CP(config-sgw-service)# egtp
cause-code          - Configuration to related to handling failure response from peer
change-notification-req - Configuration related to handling change notification request
idft-support        - Enable/Disable the IDFT Feature for CUPS. By default it is disabled
modify-bearer-req   - Configuration related to handling Modify Bearer Request
```

關於此翻譯

思科已使用電腦和人工技術翻譯本文件，讓全世界的使用者能夠以自己的語言理解支援內容。請注意，即使是最佳機器翻譯，也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準確度概不負責，並建議一律查看原始英文文件（提供連結）。