



Dedicated Bearer Establishment without PCRF

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Feature Summary and Revision History

Summary Data

Applicable Product(s) or Functional Area	P-GW
Applicable Platform(s)	<ul style="list-style-type: none"> • ASR 5500 • VPC-DI • VPC-SI
Feature Default	Disabled - Configuration Required
Related Changes in This Release	Not Applicable
Related Documentation	<i>P-GW Administration Guide</i>

Revision History

Revision Details	Release
First Introduced Important This feature is not fully qualified in this release and is available only for testing purposes. For more information, contact your Cisco Account Representative.	21.16.9

Feature Description

In P-GW, you can create a Dedicated Bearer with the help of local-policy when the Gx connection is down and a specific User Location Information (ULI) set matches during the session in the local-policy along with a configured predefined rule match in the service schema. However, in the StarOS 21.16.9 release, to provide IMS services to the UE that are not VOLTE capable, P-GW uses the deep packet inspection (DPI) functionality to create Dedicated Bearers without interaction with PCRF. This is to maintain high QoS of the voice service although the default bearer gets created with interaction with PCRF for the internet APN.

To detect voice services, SBC IP address (IPv4 or IPv6) and protocol RTP/RTCP is configured in ruledef and a Dedicated Bearer is created when a subscriber traffic matches with the ruledef without interaction with PCRF. If no data flows, then Dedicated Bearer interacts with PCRF over Gx normally and removed after the configured time limit.

How it Works

This section describes call flow and procedure on how the Dedicated Bearer is established without involving PCRF.

Figure 1: Call Flow

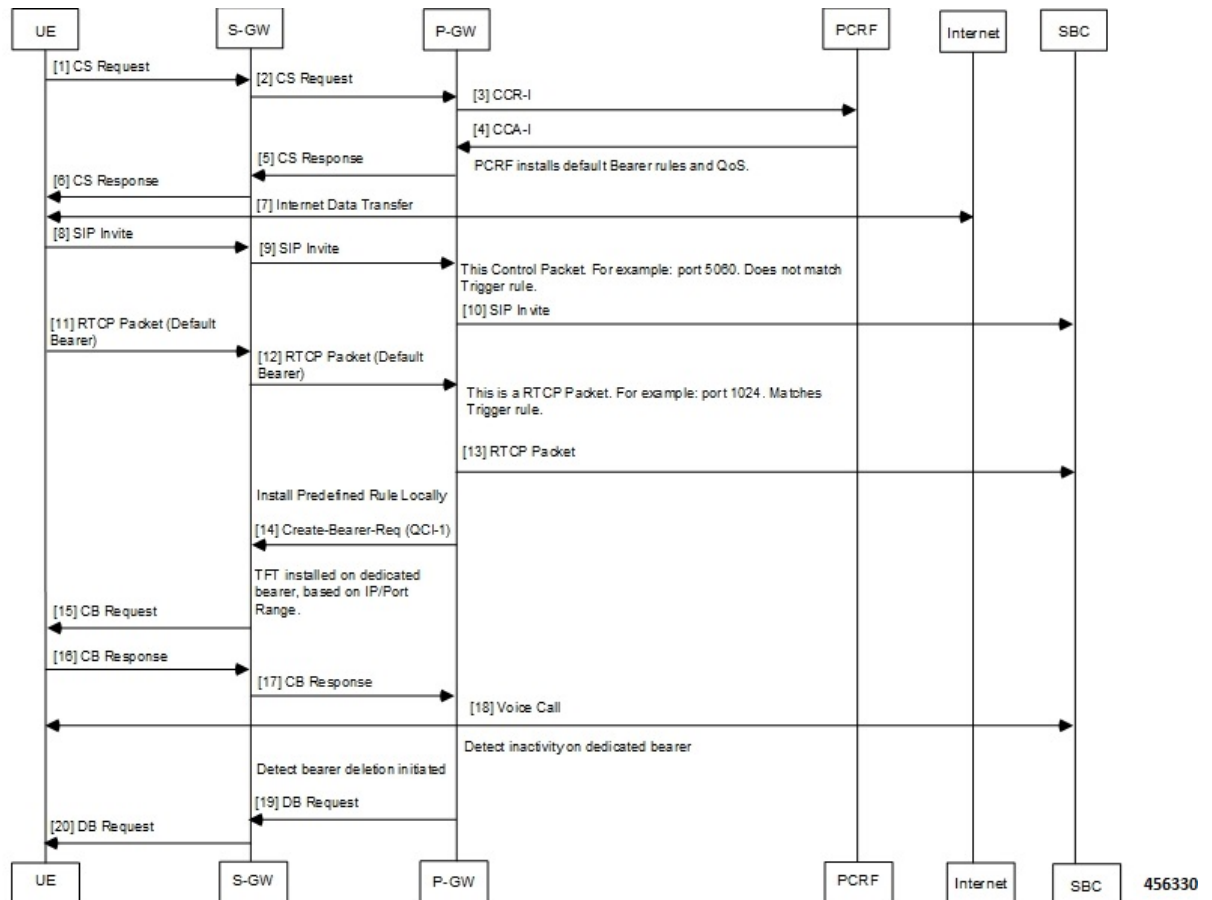


Table 1: Procedure

Step	Description
1	Establish Default Bearer with internet APN with PCRF.
2	Default Bearer receives a SIP invite and forwards to SBC. Note SIP invite will be received on port 5060/5061, which is outside the port range for dedicated bearer.
3	An RTCP packet is received matching the SBC address and port-range that matches to the trigger rule.
4	A dedicated bearer is created with predefined Audio_dedicated_rule and TFT with multiple ranges of port as defined by packet-filters tft1 and tft2. Note The charging-action for such rule should have billing-action egcdr and content-id configured.
5	UE pushes any packets for the specified port ranges to the dedicated bearer and matches with the Audio_dedicated_rule .
6	After 300 seconds, or configured timeout value of inactivity, and according to the threshold configuration, the Bearer is deleted and P-GWCDR gets generated for a Bearer with corresponding data counts. <ul style="list-style-type: none">• You can adjust the threshold based on the keep-alive/watchdog messages.• The SIP control messages after voice call flows on the ports that are outside the port-range defined for Dedicated Bearer TFT. Note As SIP control messages are sent by UE on the Default Bearer, it will not be considered under Dedicated Bearer activity.

Configuring active-charging-services

Use the following example configuration to establish a dedicated bearer without interaction with PCRF.

```
configure
  active-charging service acs
    ruledef Audio_dedicated_rule
      ip dst-address = 1.1.1.1/32
    #exit
    ruledef trigger_rule
      ip dst-address = 1.1.1.1/32
      udp either-port range 1024 to 5059
      udp either-port range 5062 to 43672
    #exit
  packet-filter tft1
    ip remote-port range 1024 to 5059
    ip remote-address = 1.1.1.1/32
  #exit
  packet-filter tft2
```

```

    ip remote-port range 5062 to 43672
    ip remote-address = 1.1.1.1/32
#exit
charging-action no_charge
#exit
charging-action ca_audio
    content-id 2
    billing-action egcdr
    qos-class-identifier 1
    flow limit-for-bandwidth direction downlink peak-data-rate 256000 peak-burst-size
32000 violate-action discard
    flow limit-for-bandwidth direction uplink peak-data-rate 256000 peak-burst-size 300000
violate-action discard
    allocation-retention-priority 4 pvi 1 pci 1
    tft packet-filter tft1
    tft packet-filter tft2
#exit
rulebase prepaid
    billing-records egcdr
#Install Audio_dedicated_rule on dedicated bearer to cater to VoLTE traffic
    action priority 1 dynamic-only ruledef Audio_dedicated_rule charging-action ca_audio
#Use traffic matching to trigger_rule on default bearer as trigger condition
    action priority 2 ruledef trigger_rule charging-action no_charge
#exit
trigger-action TA1
    activate-predef-rule Audio_dedicated_rule
#exit
trigger-condition TC1
    rule-name = trigger_rule
#exit
trigger-condition tc
    rulebase = prepaid
#exit
service-scheme SS
    trigger flow-create
        priority 1 trigger-condition TC1 trigger-action TA1
#exit
subs-class SC1
    rulebase = prepaid
#exit
subscriber-base sb
    priority 1 subs-class SC1 bind service-scheme SS
#exit
#exit
context egress
    apn internet
#Remove dedicated bearer after 300 seconds of inactivity
    timeout bearer-inactivity gbr 300 volume-threshold total 1
active-charging rulebase prepaid
    exit
    exit
end

```