PGW PROTOTYPE IMPLEMENTATION

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LTE

UE

eNodeB

MME

HSS

AS

PCRF

OCS

OFCS

Internet

SGW

PGW

GTPU
Questions / Motivation

- Can we apply SDN concepts in the EPC Core?
  - Separate Control/Data Plane
  - Proof of concept: Use ForCES on the PGW

- Motivation:
  - Scale PGW
  - Ability to add functionality as LFBs wherever possible.
    - Chain LFBs to perform new services.
  - E.g. Firewall/DPI LFBs to the PGW
Simplified PGW viewpoint

- Separate PGW control/datapath
- Current focus:
  - Create tunneling endpoints for connection with Internet
    - Both for SGW & PGW
  - Collect usage statistics
PGW Prototype Implementation

PGW - C

ForCES

Port LFB

GTP-U LFB

Port LFB

PGW - D
Use case - 1

PGW - C

ForCES

PGW - D

P : Initial Packet
P’ : GTP-U encapsulated packet
Use case - 2

PGW - C

ForCES

PGW - D

P : Initial Packet
P’ : GTP-U encapsulated packet
Demo prototype architecture

App creating tunnels/collect stats

SGW - C

PGW - C

ForCES

GTPvU
In/Out
(SGW)

GTPvU
In/Out
(PGW)

Host 1
(UE)

IP

GTPv1-U

IP

Host 2
(Internet)
Demo Sequence

1. VM start-up
2. Initialize PGW/SGW
3. Create Tunnel Endpoints for Hosts
4. See traffic flow
5. Collect statistics
   - Per UE
   - Per UE/Flow