Quality of Service Option for Proxy Mobile IPv6

draft-liebsch-netext-pmip6-qos-01.txt

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NetExt WG
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Motivation and Scope

• Mobile operator systems enable QoS differentiation to serve mobile access through cellular radio
  – QoS policy control for 3G radio access from Policy and Charging Control (PCC) system

• Connectivity through non-cellular access supported for offload and/or handover (WiFi, WiMax)

• IP network QoS accomplished by DiffServ mechanisms

• No QoS interworking so far between cellular and non-cellular radio access
  – Standardization started interfacing PCC to MAG for non-cellular radio access

• Demand for a PCC-independent solution
  – For networks, which do not deploy a PCC system
  – For all networks until PCC support is available for non-cellular access
Status

• Initial version of this draft presented at IETF82 in Taipei
• Received valuable comments and indication of interest in this work
• Updated draft tries to clarify comments
• Updated draft comprises details about
  – Use cases
  – Protocol operation
  – QoS option format and proposed list of attributes
  – Implementation and deployment example with WiFi & BNG (Broadband Network Gateway)
Exemplary architecture

- **MAG**
  - PCEF
  - IP connectivity
  - Convey new IP session info from MAG to LMA with PMIPv6 signaling
- **LMA**
  - PCEF
  - Convey available QoS info from LMA to MAG with PMIPv6 signaling
  - QoS rules for downlink traffic mapping to transport network QoS
- **QoS rules for downlink traffic mapping to transport network QoS**
- **Policy Control**

**Cellular access**
- Access bearer

**Non-cellular access**
- AP
- WLANC

**QoS**
- DiffServ for Transport Network Layer QoS
- e.g., 11e QoS support
- IP-based transport network QoS support
Scope of this work

• Support enabling QoS differentiation of traffic between MAG and LMA for any non-cellular access
  – Mainly enforcement and validation of uplink QoS at the MAG

• Support mapping of QoS policies between radio-specific QoS classes and IP network
  – Transport of Flow Information and QoS Class indexes
  – Interpretation of QoS Class indexes is deployment specific, hence out of scope

• Focus on the signaling between MAG and LMA
Main Use Cases

• Handover of established QoS rules to non-cellular radio access
  – Apply same QoS differentiation on the path between LMA and MAG, which serves the MN’s non-cellular technology
  – Enable mapping of admitted QoS classes to QoS differentiation techniques of non-cellular access, e.g. .11e

• Establishment of QoS rules while MN is attached to non-cellular radio access (i.e. QoS rules negotiation)
  – MAG may propose QoS rules to LMA for approval
    • Priority class indicated in uplink
    • MAG may assess QoS according to flow information
    • MN may utilize access-specific control plane (e.g. WMM) to indicate demand for QoS differentiation
  – LMA authorizes proposed QoS or assesses QoS according to flow information
Operation: Handover of QoS rules

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Operation: Establishment of QoS rules

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| MN  | +-----+ +-----+ +-----+
| AP  | | MAG | | LMA |
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[QoS rules]

new session (F)

data

---data[QC]---
data[DSCPa]---
data[DSCPb]---

(PBU[update, QoS option]) (C)

Validate and add QoS rule

-----PBA[QoS option]------

<-INFO[QoS rules]-

[QoS rules']

Apply adapted QoS rules

Establish MN's uplink DSCP rules

data

<-data[QC]-----<-data[DSCP]-----<-data[DSCP]-----<-data[DSCP]

<-----data[DSCP]-----<-----data[DSCP]-----<-----data[DSCP]-----<-----
Next

• Is this work and document going into the right direction?

• Interest indicated at last IETF: Adopt as Working Group item?