FMC BoF IETF 85
Requirements in Fixed Mobile Convergence
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Motivation for Us #1

- From the service provider perspective **Fixed Mobile Interworking** it is the ability to deliver any service with any device at any time and anywhere.
Motivation for Us #2

Fixed Mobile Interworking in context of Multi Access Connectivity to IP networks and services:

• Ubiquitous consumption of data and efficient resource usage call for integrated access to fixed and mobile networks
• Most smartphones today allow for multiple options to access the network e.g. via WiFi and cellular technology
• Seamless service provisioning via Fixed Mobile Interworking/Integrated infrastructure demands for bunch of new features supporting highly heterogeneous access technologies on potentially different administrative domains with different AAA entities, mobility anchors (such as)
  – Proper access technology selection
  – UE identity handling (user mobility)
  – Subscriber/Group identity handling (service mobility)
  – UE mobility across domains
  – Link quality information for service adaptation and connectivity policy
  – …
Why Standardization is needed?

Current Status of ID Handling:

- Subscriber/Group Identity handling (service mobility) & device handling:
  - Multi-SIM
  - Access Identification in fixed networks for plug & play by using specific ID format
  - ...

- Characteristic
  - focusing on specific problems & networks, not FMC
  - proprietary

- Goal for a standardized subscriber/group ID:
  to achieve network synergies & seamless services
  - low cost
  - independent of access
  - secure
  - useful for various use cases
Network Architecture Evolution

Control protocols and functional modules to support operator and user chosen policies within network and terminal nodes:

- AAA: Authentication Authorization Accounting
- AP: Access Point
- BS: Base Station
- BPCF: Broadband Policy Control Function
- fAAA: AAA in fixed network
- H(e)NB: Home (evolved) NodeB
- mAAA: AAA in mobile network
- PCRF: Policy Charging Rule Function
- RG: Residential Gateway
- UE: User Equipment

Heterogeneous Access
Requirement #1: Group Identification

• The goal of our model is to enforce certain unified policy control for consumer’s service by means of grouping the consumer’s devices for management.
• This group can be configured in the subscription server of the operator.
• Subscriber ID used for unified service management can be constructed based on the requirements of **Subscriber ID**:  
  – is assigned & configured by the ISP or operators  
  – determine which traffic policy such as QoS are enforced by the nodes inside the network  
  – is combined with the subscriber information  
  – may correspond to the device identifiers, such as ISIM, etc.  
  – should be kept unchanged in the Carrier Grade Network Address Translation (CGN) devices  
• The devices of the consumer and the operator must have the consistent ID for the same management group.
• Use of Subscriber ID should enable access to the network and applications including third-party service without additional authentication.
Group Identification: Technical Issues

Two different types of identifiers play an important role in this case:

- **Device Identifier:**
  - the Device Identifier is used to indicate each individual devices for the customer
  - should be kept unchanged in the Carrier Grade Network Address Translation (CGNs)
  - the device identifier should be unchanged or updated in case of roaming among different Access Points or Home Gateways.

- **Subscriber Identifier:**
  - is used to indicate a customer under the same policy, e.g. accounting policy, priority profile, etc.
  - one Subscriber Identifier may correspond to multiple Device Identifiers
Requirement #2:
Requirements for UE Mobility in Fixed IP Network

Mobility Requirement:

- Regarding the requirements for MN (Mobile Node) mobility in fixed IP networks two use cases can be distinguished:
  - mobility between different access technologies e.g. WiFi and 3 GPP
  - mobile node MN mobility in a WiFi scenario
- The following are the requirements for the User Equipment Mobility in Fixed IP Network:
  - Requirement for handover between networks while the session is active according to the network status with the change in the MN attachment.
  - Mechanisms and interfaces between operators or access networks SHOULD be deployed to manage the mobility of the traffic flows of their users.
  - Mobility should be enabled whether or not coverage areas overlap.
  - Differentiated Services (QoS) for the mobile device (MN) should be provided to ensure service guarantee when device is roaming.
  - Connectivity status of the MN should be reported to the fixed IP edge router.
Summary

• Strong requirements on Group/Subscriber Identification.
  – Challenge is to transmit the Group/Subscriber ID to the fixed IP network.

• Strong requirements on support of MN mobility in fixed IP network.
  – Challenge is to transmit MN connectivity status to the fixed IP network.

• Benefit of this solution will be seamless connectivity and service provisioning to the fixed IP network improving resource allocation and QoS provisioning.

• Improve user experience and reduce Capex/Opex for operators.

➢ IETF is strongly encouraged to work on these issues.