Implementing LTE with IMS

Rebecca Copeland
Head of Strategic Solutions
European Core Networks

ETSI IMS Implementation Deployment and Testing
Sophia Antipolis France, 24/25 November 2010
Implementing LTE with IMS

Content

► Role of IMS in LTE
► Handover SRVCC and ICS
► QoS Evolution
► Migration to a Universal User Database
► Interoperating IM with SMS

Rebecca Copeland
Head of Strategic Solutions
European Core Networks
Huawei is Leading in LTE/EPC Deployments

- World’s 1st LTE World’s 1st LTE-EPC Commercial Launch
- World’s 1st EPC World’s 1st EPC commercial site with end to end QoS
- Major partnership from 2G/3G to LTE EPC
- 18+ commercial contracts
- 60 trials ongoing
- T-Mobile: major Migration Partner from 2/3G to LTE/EPC
- China Mobile: World’s 1st end to end QoS EPC
- Cox: 1st Commercial PCC deployment in EPC
- TeliaSonera: World’s 1st commercial launched EPC
Huawei IMS is now rolling

- Hungary - the earliest large-scale commercial deployment of IMS
- Commercial TAS for DT Germany
- Large IMS PSTN Migration in Asia, within 4M subscribers
- North America, large VoCable network with PC2.0 architecture compliant
- An overwhelming market share in China, more than 12M IMS subscribers
Evolution from GPRS/CS to LTE

LTE separates the signalling path from the media path
LTE allows one MME to be paired with any available S-GW

The Role of IMS – Provide Common Core for LTE as Another Access Network
OneVoice to VoLTE – IMS is Now Mandatory

The Role of IMS – Voice Session Control and service environment

- IMS AS: Common TAS for 2G/3G/LTE/PES/PSS
- IMS AS: RCS service experience
- SDB: HLR/HSS convergence data synchronization
- CS: Enhanced MSS for SRVCC & ICS
- PS: EPC for E2E QoS and SRVCC collaboration
- Terminals: Unified Soft Client for MMTel and RCS
SR-VCC: Single Radio Voice Call Continuity

**Attributes**
- Based on LTE/IMS Voice & IMS services MMTel
- Uses IMS AS (the SCC) for transition solution
- Parallel handover of signalling and media for faster call set-up
- Low cost terminals that save battery life (Single Radio)
- Can start to retire GPRS as both Voice & Data move to LTE

**Impact**
- Requires IMS handover service from day 1
- Needs handover client
- Has impact on OSS/BSS.

---

The Role of IMS – Provide Seamless & Efficient Anchor for Handover
IMS Centralized Services – Not Just Voice

- Efficient anchor mechanism
- Ensures consistent service
- Ready for user migration
- Centralizes user’s services to save OPEX

Implementation options:
- SRVCC IWF can be integrated in MSC-Server or enhanced MSS
- Centralized (in a separate NE) for several MSC servers.

The Role of IMS – Provide IMS Centralised Services for a Range of Applications
Consistent Convergent Policy from the Core

Policy Control Server

Applications

Session Control

Uniform Policy Control

xDSL/LAN
IMS
2G/3G
CDMA 1X Evdo-Rev
LTE/SAE

BRAS
SBC
GGSN
PDSN
UGW

The Role of IMS – Access Agnostic Policy and QoS
Session Based QoS for Fine Tuning

**Connection Based QoS**
- Absolute bandwidth as requested by devices
- Inefficient Input and Output
- Expensive and not scalable

**Flow Based QoS**
- Controlled by edge devices
- Relative Priority Policy only
- Cannot avoid congestion
- Low precision control

**Session Based QoS**
- Controlled by Core server
- Differentiated Policy with CAC
- Per session, user and service
- Best network resource usage

---

The Role of IMS – Finely Tuned User/Session based Policy
E2E QoS Functions Distribution

**QoS Functions**

- **Radio bearer QoS**
  - EPS bearer setup
  - PCEF functions
  - VQE functions
  - QoS mapping
  - IP filtering, traffic shaping, etc

- **SAE bearer QoS**
  - Radio resource allocation, packet scheduling, filtering…
  - Radio optimization for VoIP

- **Transport bearer QoS**
  - PCC QoS policy/rules control
  - Retrieve user QoS profile for Policy
  - IP transport QoS control and guarantee

**The Role of IMS – Provide open standard QoS E2E**

- VQE functions, e.g. jitter buffer, etc
- Radio optimization tech for VoIP
- Service QoS request initiation

- EPS bearer setup
- PCEF functions
- VQE functions
- QoS mapping
- IP filtering, traffic shaping, etc

HUAWEI TECHNOLOGIES CO., LTD.
Challenges of Subscriber Data Management

- **High OPEX**
  - Many separate Databases
  - Complex IMSI/MSISDN segment management

- **Complex Provisioning**
  - Mesh provision connections
  - Complex provisioning procedures
  - Long Time-To-Market
  - Inconsistent data, duplications

- **Information Silo**
  - Isolated 'silo' data, not open
  - Hard to deploy new services and facilitate service innovation
  - Difficult to share with other applications

The Role of IMS – Create Network Based Data Repository
Unified Subscriber DB - Reliable, Unified and Open User DB

Create a 360° user profile

The Role of IMS – Enable all-round user knowledge for context based applications
Versatile Application Server for All Domains

Challenges
- Need to support CS-SMS, IP-SMS and web IM

Challenges
- Too many AS, many similar services for different domains

The Role of IMS – Supports common AS for Mobile/Fixed, PES/PSS
Using IMS for Seamless Messaging over LTE

Issues
• Need to support SMS on SGs (CSFB), IP-SMS and web IM, plus interworking

Solution
• IP-SM-GW functionality is mainly responsible for IM/SMS interworking
• Fully compliant with 3GPP (TS23.204) and OMA standards

The Role of IMS – Supports handover and session control for IP Messaging & SMS
Using IMS Functions for non-Voice

The Role of IMS – IMS based enablers supporting non-Voice services
VoLTE /IMS are Complex? – Make it Simpler

- Converged Data
- Converged Fix/Mobile
- Converged Session
- Converged Services
- Converged Provisioning
- Converged QoS & Policy
- Converged Charging
- Converged platform
- Converged Management
- Converged Gateways
- Converged Core
Voice for LTE technical issues have been essentially resolved
IMS plays a major role for session control, QoS/Policy and User Data
IMS functions can support non-IMS LTE services too

The key is to Simplify
Thank You!

This way!