ITU Workshop on "Protocol Enhancements for IMS to be used in LTE/IMT-2020 Networks and Beyond"
5 July 2021

Key takeaways

Key challenges (1/3)

- Roaming decreased by 73% in 2020 due to COVID-19 pandemic

- Among roaming-related technical challenges, operators highlight:

  - 5G and VoLTE roaming as the key challenges

  - The roaming analytics and intelligence are required (e.g. traffic forecast models, traffic and revenue expectations, etc.)

  - Signalling and signalling security are the key operators' investments in 2021

  - There is a need to secure, a robust and comprehensive interconnect solution to support different roaming services

  - Some services implemented in existing networks can not be provided on IMS-based networks (e.g. CRBT)

  - The header of SIP protocol contains different format of location information (e.g. P-Access-Network-Identity)

Key challenges (2/3)

- The traffic is growing at an exponential rate, especially within 5G networks

- In such high traffic growth, operators need to know the budget they would like to invest in IMS in order to provide all services they intend to deploy. In this regard:

    - Operators need solutions for performance and scalability testing of IMS platforms to be deployed on existing and 5G-based networks – to assess the performance of IMS announced by vendors through simulating different type of traffic patterns and users behaviour.

- OTT Voice and Video utilization keep growing up at a rapid rate.

- IMS/VoLTE call service needs to be improved in more diverse user experiences (VoLTE/ViLTE services are not attractive for customers).

- IMS/VoLTE call service has a tight coupling with network and the service evolution is limited

Key challenges (3/3)

- End-devices block unknown VoLTE networks and roaming ("OEM blocking")

- Lack of industry VoLTE interoperability experience

- VoLTE rollout is slow and VoLTE roaming agreements are even slower (e.g. 30 VoLTE roaming S8HR-based for 226 VoLTE launches all over the world)

- Key issues on VoLTE/ViLTE deployment include:

    - different options for roaming scenarios (most operators deploy S8HR);
    - numbering/addressing (e.g. ENUM resolution, ITU-T E.164 SIP-URI conversion);
    - Registration for two separate IMS core (MMTEL and RCS)
    - SMSoIP
    - Lawful interception
    - Emergency call
    - Testing
    - Regulatory issues

Solutions in place

- IMS interconnection requirements (ITU-T Q.3640, ITU-T Q.3953, ITU-T Q.3940; ETSI TS 101 585-1)

- Infrastructure ENUM (ITU-T Q.3643, ITU-T Q.3645)

- Emergency calls (ITU-T Q Suppl.69, 70, 72; GSMA TS 23.167)

- Registration issues (GSMA PRD NG.102 "Converged IP Comms")

- Enhancement of ENUM for separate IMS core networks (GSMA PRD NG.105, GSMA PRD NG.125, GSMA IR.67)

- Data Channel Enhanced IMS network is under study

- IMS performance test systems, based on ITU and ETSI standards (e.g. ITU-T Q.3900-series and ETSI TR 101577)

- VoLTE/ViLTE interoperability testing (ETSI TS 103 653-2)

- IMS Profile for Voice, Video and Messaging over 5GS (GSMA NG.113, NG.114 and NG.115)

Potential areas for future standardization (1/2)

- Framework of autonomic functions (AI and analytics) on IMS to make it more intelligent (e.g. self protecting, self optimizing and self defending)

- AI and autonomics algorithms on IMS signalling

- Interactive calling use cases on data channel enhanced IMS-based networks

- Framework of virtual/distributed IMS on 5G-based networks (IMS as a macro-service)

- Testing of end-devices to reduce blocking of VoLTE networks (mandatory testing needs to be put in place on national/regional or even on international level)

Potential areas for future standardization (2/2)

- Test specifications of virtual environment including virtual/distributed IMS

- AI to be used in testing and benchmarking platforms (performance and scalability testing)

- IMS testing specifications, including e.g. TSS& TP for CUG using IP Multimedia (IM) at the AGCF connecting legacy access

- Conformance Test Specifications for the SCC-AS Services

- Network Interoperability Test Description for emergency services over VoLTE and 5G work item

- Testbed Federations for IMS testing