

IMS Centralized Services - integrating CS voice with IMS - 3 days

CONTENTS:

The IMS Centralized Services course describes the new functionalities defined by 3GPP and GSMA in order to enable and facilitate integration of CS voice service in an IMS environment.

The MSC Server enhancements that enable interworking between the existing mobile Circuit-Switched GERAN/UTRAN accesses and the IMS are presented. SIP signalling exchanges are examined, on an overview level as well as in some depth, analysing the SIP extensions provided for CS - IMS interworking. The SIP traffic cases inspected - for both CS and PS accesses - are the ICS-specific IMS registration, CS call anchoring in IMS, and the SRVCC access transfer that provides interworking of IMS VoIP over LTE and CS voice over 2G and 3G. Impact of ICS on the GERAN/UTRAN/LTE network protocols is studied.

PREREQUISITES:

General knowledge of the VoLTE-compliant IMS network architecture, SIP registration and session setup signalling are necessary. Attending APIS "IMS for VoLTE" course prior to this event, or having the equivalent knowledge, is necessary.

ICS background

- 3GPP mobile access networks defined as possible IPCANs for IMS: GERAN (GSM), UTRAN (UMTS) and E-UTRAN (LTE)
- IMS architecture and functions
- SIP Registration and Session Setup for PS access to IMS
- VoLTE – GSMA recommendations for voice service in E-UTRAN

ICS basics

- What is ICS: benefits and requirements
- GSMA recommendations for ICS solutions
- Overall event sequence defined in an ICS environment: CS/PCAN attach, IMS Registration, IMS voice session setup with call anchoring, SRVCC

CS and IPCAN Attach

- ICS-specific parameters for CS and for PS GERAN/UTRAN attach
- ICS-specific parameters for PDP Context Activation
- ICS-Specific parameters for E-UTRAN attach and PDN connection establishment
- NAS and MAP protocol extensions for ICS support
- The HLR/HSS role in exchanging information between the IPCAN and the IMS nodes
- UDR solution for integrating HLR, HSS and other database functions in the 3GPP core networks

IMS Registration

- Functionalities of SCC AS, T-ADS, ATCF, ATGW
- IMS Registration over PS access with ICS-specific SIP extensions
- IMS Registration for CS access performed by an MSC Server enhanced for ICS
- SIP procedures and extensions for including the ATCF during IMS registration

Anchoring voice sessions in IMS at session setup

- Comparison of anchoring an IMS session in SCC AS vs anchoring in ATCF
- SIP procedures and extensions for IMS voice over PS session setup anchored in ATCF, for both MO and MT cases
- SIP procedures and extensions for IMS voice over CS session setup anchored in ATCF performed by an MSC enhanced for ICS, for both MO and MT cases
- SIP procedures and extensions for IMS voice over CS session setup anchored in ATCF when MSC Server not enhanced for ICS: CAMEL-based solution
- Voice session setup for UA not registered in IMS
- Terminating Access Domain Selection function in the SCC AS: decision for call completion over CS vs over PS access
- Redirecting of incoming CS calls to IMS

SRVCC

- SRVCC-specific identifiers: STN-SR, ATU-STI, C-MSISDN, ATCF-URI
- The Sv interface and GTPc ver. 2 procedures on Sv
- ICS-specific SIP procedures and extensions for PS to CS SRVCC