

MetaSwitch

Issues Impacting IMS Standards in Today's SIP-based Networks

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Applying IMS to the PSTN

- Incumbents (IOCs) and challengers (CLECs)
- Network renewal and new network builds
- (Almost) universal adoption of distributed, VoIP-based networks to deliver PSTN services
- IMS appeals in PSTN migration because it:
  - Comprises most comprehensive VoIP standards to date
  - Provides platform for faster deployment of new services
  - Expands scope of services beyond pure telephony
  - Promises convergence of fixed and mobile networks
- Innovation and capital investment is occurring in IMS !

Lessons Learned Applying IMS to the PSTN

- Managing voice quality in the IMS
- Emulating PSTN services in the IMS
- Mastering intelligent endpoints in the IMS

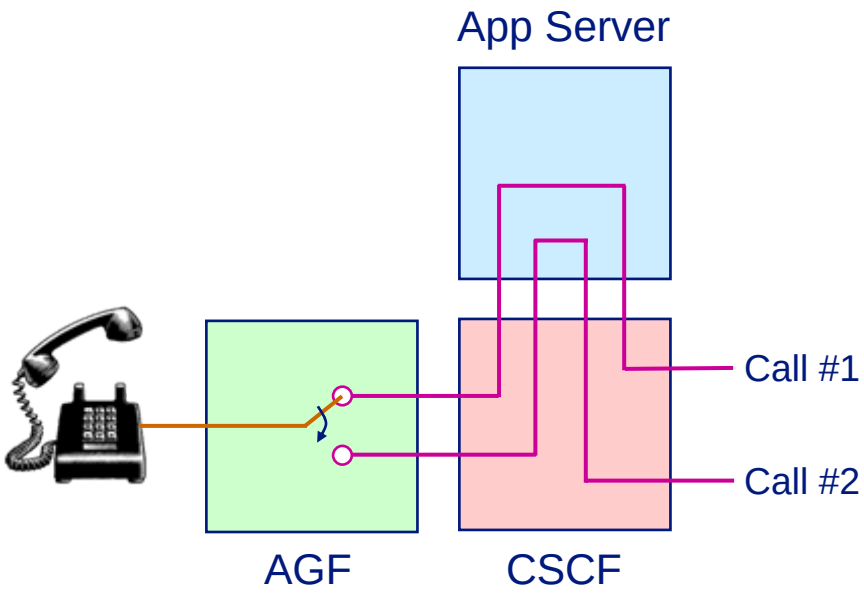
VoIP Just Works – Most of the Time

- Voice quality problems are rare, but can consume a lot of support resource
- Need to collect voice quality data
  - Packet loss, jitter, round-trip delay (RTCP)
  - Burst metrics, signal/noise metrics, MOS (RTCP XR)
  - Border elements and VoIP endpoints are critical collection points
- Summarize statistics by network link
  - Trend analysis, threshold alarm reporting
- Store statistics for every call
  - Trouble-shooting, problem verification
- Bottom line: voice quality needs managing!

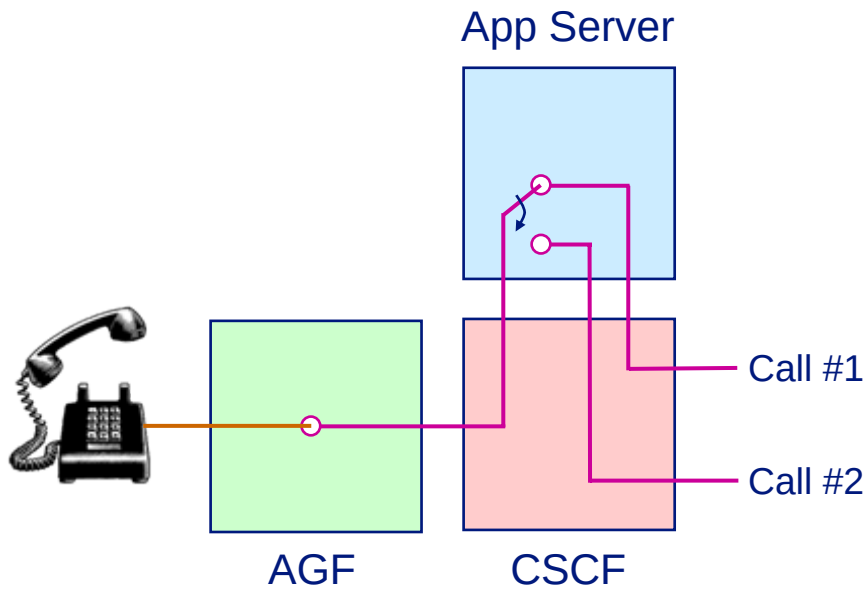
PSTN Services via SIP – Not as Easy as it Looks

- Traditional softswitch architecture addressed legacy by design
  - Maps legacy signaling (SS7 ISUP) to device control (Megaco)
- IMS means mapping everything to SIP
  - Peer-to-peer protocol that assumes intelligent endpoints
- Adaptation Gateway Function performs SIP-POTS mapping
  - Implemented in e.g. Broadband Loop Carriers
- Multi-party call services introduce some challenges:
  - Call Waiting
  - Call Transfer
  - Three-Way Calling

Multi-Party Call Services – SIP Mapping Models



- ✓ Standard SIP signaling
- ✗ AGF needs DSP to do mixing on three-way calls
- ✗ Per-subscriber provisioning needed in AGF



- ✓ AGF doesn't need to do mixing
- ✓ No per-subscriber provisioning needed in AGF
- ✗ Non-standard SIP signaling (hook flash, call waiting info)

Mastering Intelligent Endpoints

- Numerous configuration options
  - Configuration management is challenging
  - Need for a provisioning server to automate
- Service logic varies from one phone to another
  - E.g. Do Not Disturb hard key:
  - Vendor A phone responds to INVITE with 480 Temporarily Unavailable
  - Vendor B phone responds to INVITE with 302 Moved Temporarily and forwarding target per local config

- Each model of phone involves a learning curve for both application vendor and service provider
- Is this really better than network-based service logic?

Lessons We've Learned

- Managing voice quality is essential
  - More a SIP issue than IMS, but can't be neglected
- IMS has great value to PSTN migration
  - But mapping PSTN services to SIP introduces challenges
- Intelligent endpoints are a mixed blessing
  - Potential for fully standards-based hosted business VoIP services
  - But managing configuration and service logic is not easy
- IMS architecture for applications is a breakthrough
  - Applications come out of their silos
  - Potential for greatly enhanced user experience
- But…Standards are still evolving and interpretations by equipment vendors remains a challenge



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Muchas Gracias !

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