Using IMS as a platform for introducing Telephony over DO Rev A

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Agenda

- **Market update**
- IMS and Telephony
- Voice Capacity
- Conclusion
Why IP Multimedia Subsystem (IMS)?

User view

- New, exciting services and enhancements of existing services
  - Unique services in flexible combinations of voice, text, images, video, games etc.
  - During call being able to share pictures, video and other media
- Same services available regardless of terminal and access type
  - Services presented to fit terminal and access situation and capabilities
- Ease of use
  - See in advance who you can contact and how

IMS offers a richer user experience
Why IP Multimedia Subsystem (IMS)?
Operator view

• Common foundation for fixed mobile and enterprise services
  – Cost effective and quick introduction of new innovative services
• Secure service interoperability
  – Critical for mass-market, person-to-person services
  – Multi-vendor integration through standard architecture
• Keeps charging and QoS relation with user
  – Adds flexible charging possibilities; off and online, volume, time, per event etc.

IMS - a cornerstone for convergence
A New Experience

- Experience includes telephony, video, push-to-talk, messaging, presence, user and group list management functionality

- Allows a set of users to be informed about the availability and communication means of other users

- A paradigm shift in communications:
  - Extend the ‘IM’ experience
  - Group concepts
  - See before connecting
    - Find alternative (voice, MMS, PTT, SMS)
    - Session completion
  - Alert when friends are available
  - And very much more …
Market Status

• Technology leading Tier 1 operators are currently in early phase of investing in IMS
• There is interest in Fixed-Mobile Convergence (FMC) and Telephony over IP.
  – Wireline / broadband market shift to SIP
  – Service convergence of enterprise and consumer
  – Rich Voice with added value thru interactive multi media
  – New revenue opportunities
• 3GPP R6 IMS Frozen
  – 3GPP2 Ongoing work: X.S0013 Rev. A is based on 3GPP Rel 6 IMS
• There is strong drive from the wireline operators to standardize a SIP Telephony solution

The 3GPP IMS specifications adopted by ETSI Tispan NGN for their SIP based IP multimedia system!
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Network evolution - IMS centric

IP Telephony as a future application

IP Multi Media (IMS)
- Advanced Multimedia Services
- IP Telephony
- Early IMS services (e.g. PoC)
- High Speed RAN
- 3G RAN
- Layered Architecture (Mobile softswitch)
- Video Telephony
- Combinational Services

Layered Architecture (Telephony softswitch)
- DSL evolution
- Public Ethernet
- Wireless (PS)
- Wireless (CS)
- BB wireline
- NB wireline
- Service Migration
- EV-DO Rev A
- IS-2000 Rev A
- IS-2000 Rel 0
- RAN evolution
- Wireless (CS)
Key initial applications with voice

IMS

IMS Phone
- VoBB, 2nd line telephony
- Video call
- Presence
- Messaging

IP Centrex
- Personal & Group services
- Audio & Video conf.
- Presence / IM
- Personal mobility

OMA-POC
- walkie talkie model
- Presence / Group Mgm /IM

Combinational
- Enhanced phone call by instant sharing of other media

... and more to come
Ericsson Solution Overview

- IPMM is a horizontal architecture for offering IP Multimedia Applications
- IPMM is based on the 3GPP IMS / 3GPP2 MMD standard
- IPMM supports different accesses (FMC), such as:
  - WCDMA, GPRS,
  - CDMA2000,
  - Wire-line Broadband
  - WLAN.
IMS session QoS

Control Plane

Bearer Plane

QoS-Access

QoS-CORE

E2E QoS

SIP

Media

P-CSCF

SIP

Signalling Plane

Gq

PDF

BS

ANC

PDSN

Backbone Network

A11

ANC

PDSN

A11

P-CSCF

BS

Gq

Go

PDF

BS
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CDMA2000 IP Telephony

Efficiency

- Todays CS Voice
- Current IP Telephony solutions

DO Rev A
IP Telephony solutions enable richer communication

-15%
+200%

DO vs 1X

Flexibility
EV-DO Rev A Assumptions for voice capacity simulations

- The simulations use the 3GPP2 Strawman specifications for VOIP (C30-20040719-018)
- Monte Carlo simulation to find number of users that can be supported under constraints
  - Per user FER variance no greater than CDMA voice
  - Delayed Packets result in a frame error
- Add users until constraints are violated to determine capacity
- The principal trade-off is capacity vs latency (max 280)
Technology Improvements for DO Rev. A Capacity Enhancement

- DO Rev. A offers the opportunity to roll out a new generation of mobiles from the start, i.e. no phase in of capacity improvements
  - Vocoder changes to eliminate 1/8 rate frames for comfort noise (~20% increase for forward link VoIP capacity)
  - Introduction of diversity reception and equalizer at the mobile (~150% increase for forward link VoIP capacity)
- Simulation suggests that the capacity may be improved to ~40 users for Strawman mix
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Next steps

- Finalizing X.S-0013.A (IMS R6)
- Alignments between IOS and IS-835
- Regulatory telephony features for VOIP only operators
- Handoffs from VOIP to Circuit switched calls
- IETF and 3GPP/3GPP2 alignments

- Validate DO Rev A capacity in the field
- Terminal IMS capabilities for VOIP and beyond
Summary

- DO Rev A provides an efficient base for IP Telephony

- IMS is here today for Broadband Telephony Over IP
  - And ready for DO Rev A

- IMS will provide a new generation services
  - Service enablers
  - Applications

- DO Rev A + IMS provides CDMA operators a great opportunity