



IMS-Enterprise networking

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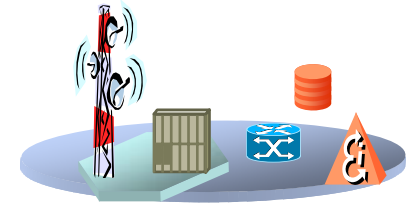
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Agenda

1. Motivation and requirements
2. Alternative architectures
3. Selected architecture
4. Conclusions / outlook

Motivation: status of the art

- We have enterprise mobility...
 - within the enterprise or using “bit-pipes” through the PLMN
- We have IMS based PLMN...
 - Centrex solutions also IP based
- ... but we still have two just interconnected networks behind the many terminals we use!



**we need a solution for the medium to large PBX segment,
fullfilling the customer need for integration into their business**

Requirements

- **All-IP networks**
 - Both PLMN and PBX (at least up to the PLMN interface)
 - Limited changes/requirements to the PBX itself
- **3GPP Rel.6/7, IMS based PLMN**
 - Limited standard enhancements
- **One published identity**
 - The same SIP URL to reach the user via PBX or PLMN on any device
- **Functional integration of PLMN services in IP-PBX**
 - IMS services: presence, IM...
 - Non IMS services: location, messaging, email...

connectivity

subscriptions

feature
interworking

The goal

Real Time Mobility with Enterprise-Fixed Mobile Convergence

using any device (3G mobile, PDA, laptop...)

Mobile Presence Information

Streaming video with IMS enabled QoS

Location Information integrated

PTT conferencing with a workgroup

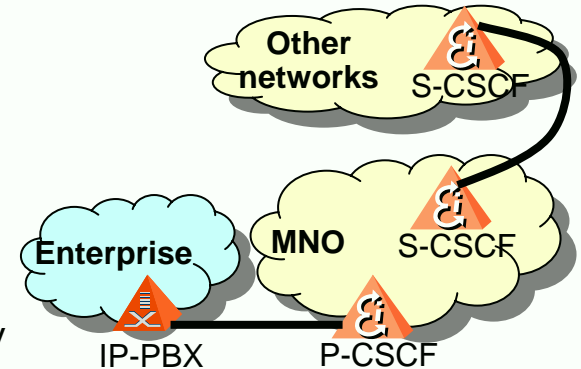
Push to Talk from desktop to device and vice versa

Ability to receive IM's from IMS enabled mobiles

Connectivity models

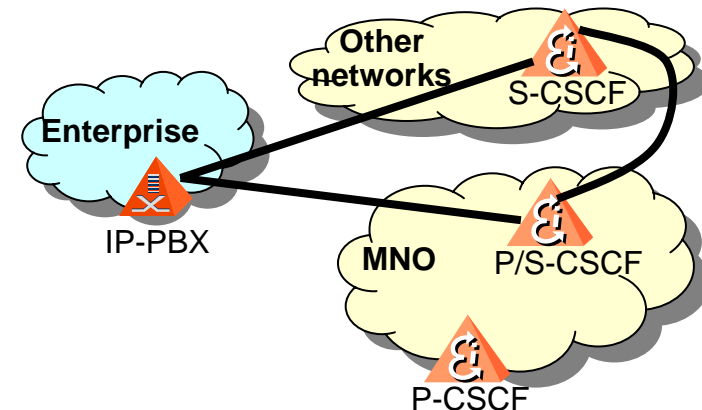
■ User-2-Network interface ✓

- The PBX operator is a large customer of an MNO
- Pros:
 - Simpler interface and feature interworking
 - PBX gets 3GPP user secured access and mobility
- Cons (from PBX operator point of view):
 - PBX operator is bound to a MNO



■ Network-2-Network interface

- The PBX operator plays the role of a MNO
- Pros:
 - Enterprise gets an own domain name
- Cons (from PBX operator point of view):
 - Not a core business for an Enterprise



Feature interworking models

■ Full PBX control



- Standard user protocol interfaces to PLMN features and services make solutions based on “IMS Gateway” viable
- The PBX application is handled as a PLMN user

■ Full IMS control

- Feature and application alignment to PBX specifics requires high development and customization effort

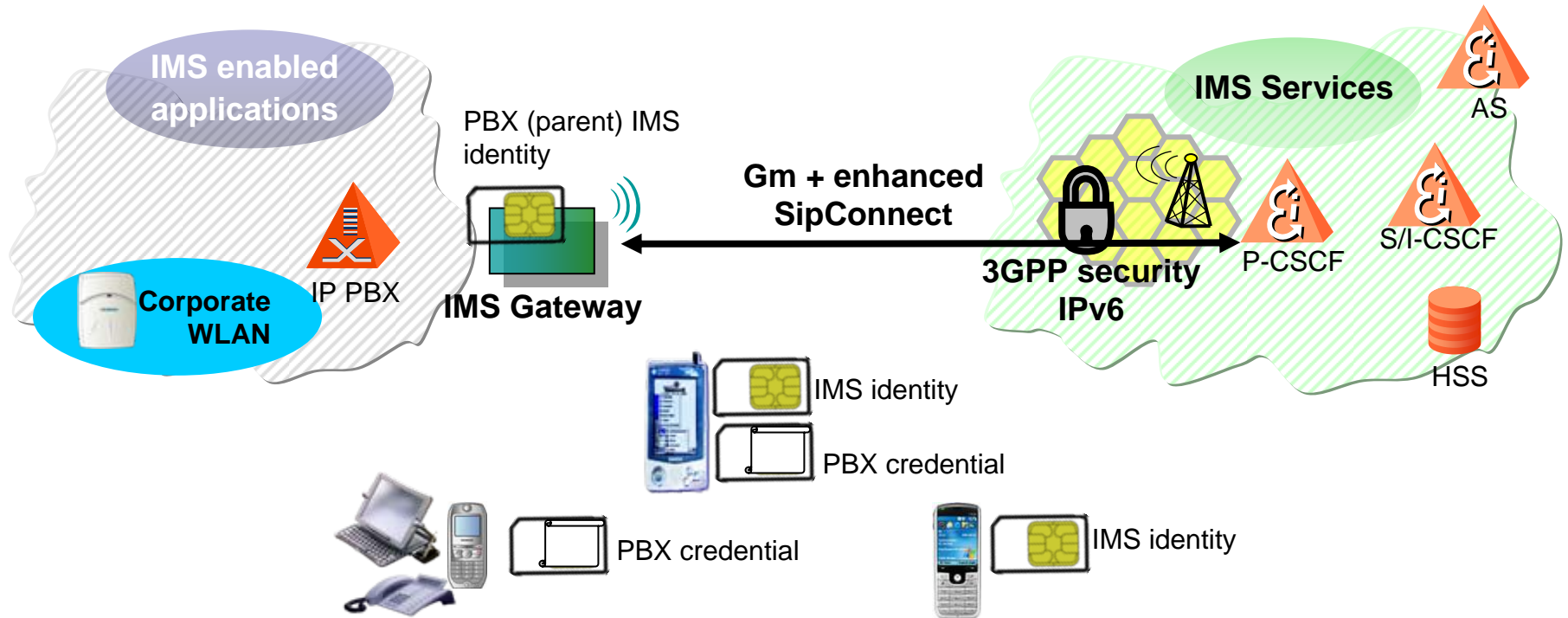
■ Service Provider control

- Questionable need of operating an own PBX within the enterprise if client control from 3rd party would be acceptable

Published identity models

- **IMS identity only**
 - MNO in the URL domain part, enterprise name could be embedded in user part
 - Worldwide routable
- **PBX identity only**
 - It could be used among PBX subscribers, but it needs a function to perform mapping to IMS identity and manipulate SIP signaling accordingly
 - Non PBX users (especially from foreign networks) must use the IMS identity to address PBX users
- **In both cases PLMN and PBX must know where to route INVITEs, for example based on the registration information**

Architecture



- **IMS Gateway connects the SIP based PBX via User-to-Network interface based on SIP-Forum (SIPConnect) to a 3GPP network**
- **PBX applications are enriched by IMS value added services and are provided to the 3GPP subscriber too**
- **IMS Application Server for Service Interaction Rules**
- **SIP Dual Mode Handset and/or 3G mobiles + PBX SIP clients**

Conclusions

- **There is a market gap in Enterprise Fixed-Mobile convergence to be filled**
- **There is a business opportunity for**
 - MNO, through additional IMS subscriptions and traffic
 - Enterprise, through integration of (already widely used) mobile terminals in the PBX applications
- **In all-IP network environment a technical solution is feasible**
 - U2N interface based on Gm interface + SIPConnect enhanced recommendation
 - Feature integration in PBX application
 - PBX Call control also for PBX clients while registered in IMS and for the originating and terminating half call

Outlook

■ Protocol enhancements

- SIPConnect recommendation doesn't cover mobility and doesn't assume 3GPP PLMN
- User access from PBX to PLMN services has to be detailed
- Mobility

■ User plane handling

- User plane related quality issues (transcoding, delay etc.)
- User plane security

■ Experimental work and simulation

- Experimental system based on Asterisk and KPhone, showing "one identity service" and connectivity, is available. Feature interworking has to be added
- Dual mode (UMTS/WLAN) devices are on the market, as for example the Fujitsu-Siemens Pocket Loox)

backup

Main concepts: identities usage

- Registration at PBX using PBX identity and procedures
- Registration at IMS using IMS identity and procedures

