Cisco Expo 2006

Fixed Mobile Convergence
Service Provider Track

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Agenda

What is FMC?

Some Application Examples

What Drives FMC?

Next Generation Network and FMC

IMS and FMC

Summary

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What is FMC?

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What is Fixed Mobile Convergence (FMC)?

"The delivery of Telecommunications services to customers through the utilization of the resources and infrastructure of both fixed and mobile operators.

The services delivered can include data, voice, video, and other value-added services as defined and delivered by the operator.

The customer purchases a service and the use of FMC to deliver the service is not a primary concern of the customer."

Consolidated definition
Cisco, META Group, Heavy Reading, and others

True Convergence is the holy grail

For the Subscriber

- "Any service, Anywhere, Anytime"

For the Enterprise

- Consistent and quality user experience
- Single number / single voicemail
- Lower cost

For the Service Provider

- Consistent user experience
- Stronger customer relationship
- Opportunity to optimize network investment based upon customer demand and technological capabilities
- Changes carrier business model
  - Cellular
  - WLAN
  - Roaming on existing 3rd party networks
- Most investment intensive

Combining the best of both Worlds

Fixed

- Lower cost voice tariffs
- Broadband access
- High Bandwid
- High Quality
- Shared by several users

Mobile

- Terminal Mobility
- Intelligent Terminal
- Personalized
  vice
  SIM Card
  Personal Directory
- SMS/MMS

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Analysts see Three Elements of Fixed Mobile Convergence

- **Converged Services**

  Voice, messaging, presence, multimedia, VPN, corporate apps, etc.

  For individuals, households, small business, enterprise (including business, road warriors, students, etc)

- **Converged Devices**

  Phones, smartphones, PDAs, laptops, etc.

- **Converged Networks**

  Access and core

  Incumbent wireline, incumbent wireless, competitive wireline, alternative wireless, virtual network operators, ISPs/BSPs

Source: Fixed-Mobile Convergence Reality Check, Heavy Reading, Dec 2004.

Some Application Examples

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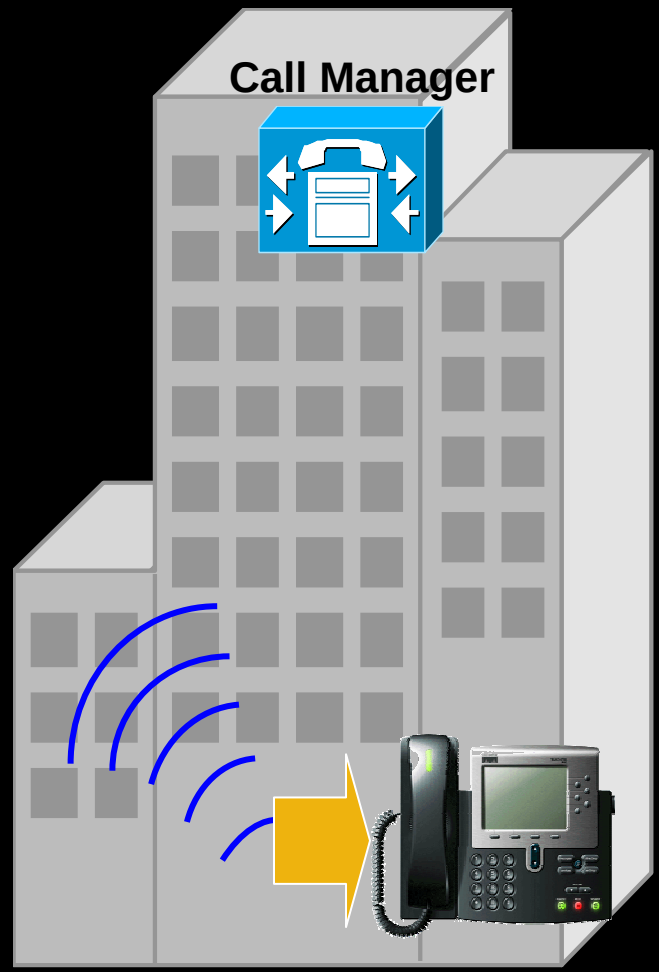
Single Number Reach (SNR)



Both Mobile Phone and IP Phone rings

Mobile is picked up

IP Phone stops ringing

User goes to office .....

..... and transfers call to IP Phone

Single Voice Mail Box

Mobile Phone is part of PBX number plan

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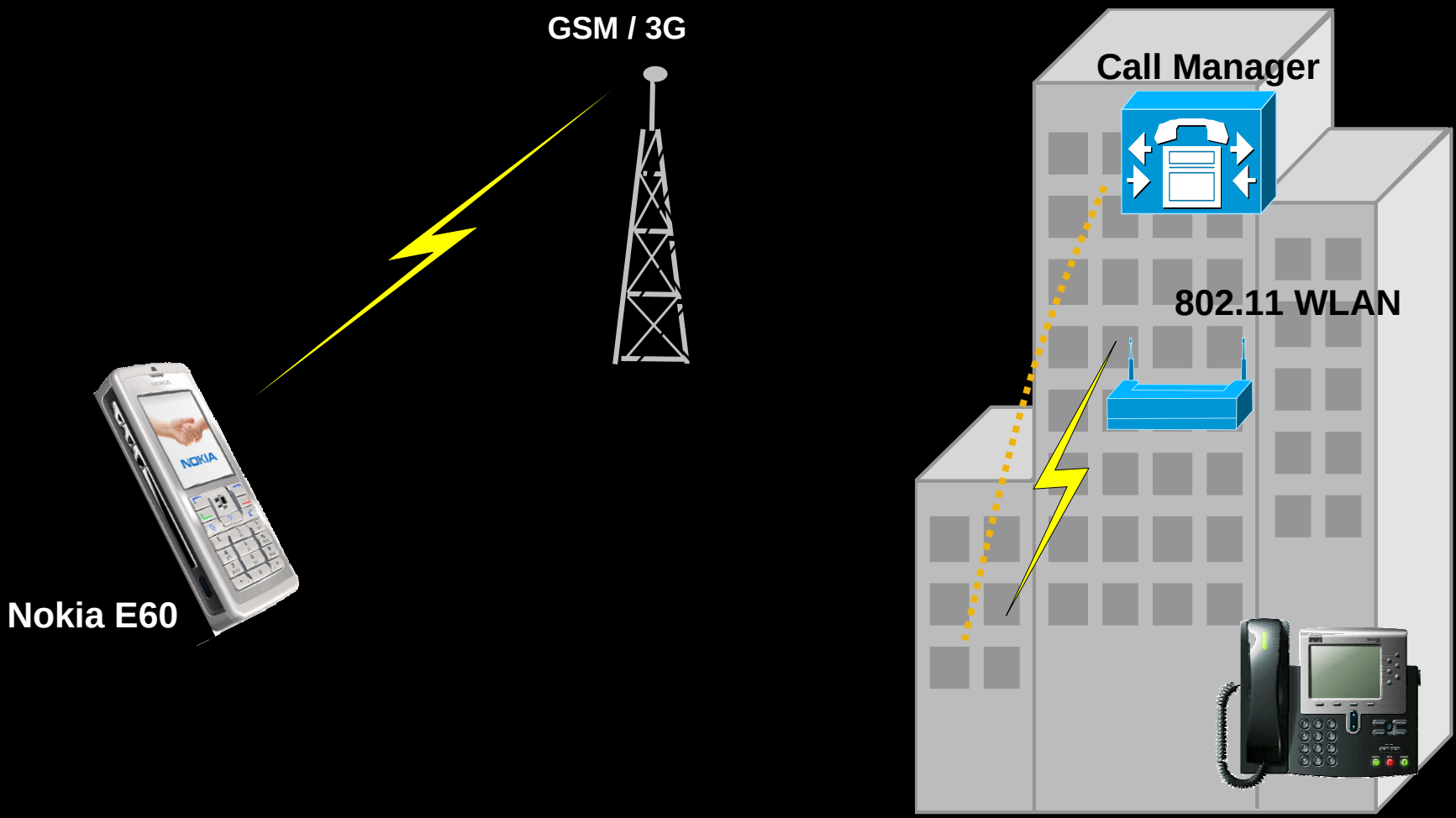
Dual Mode Phone



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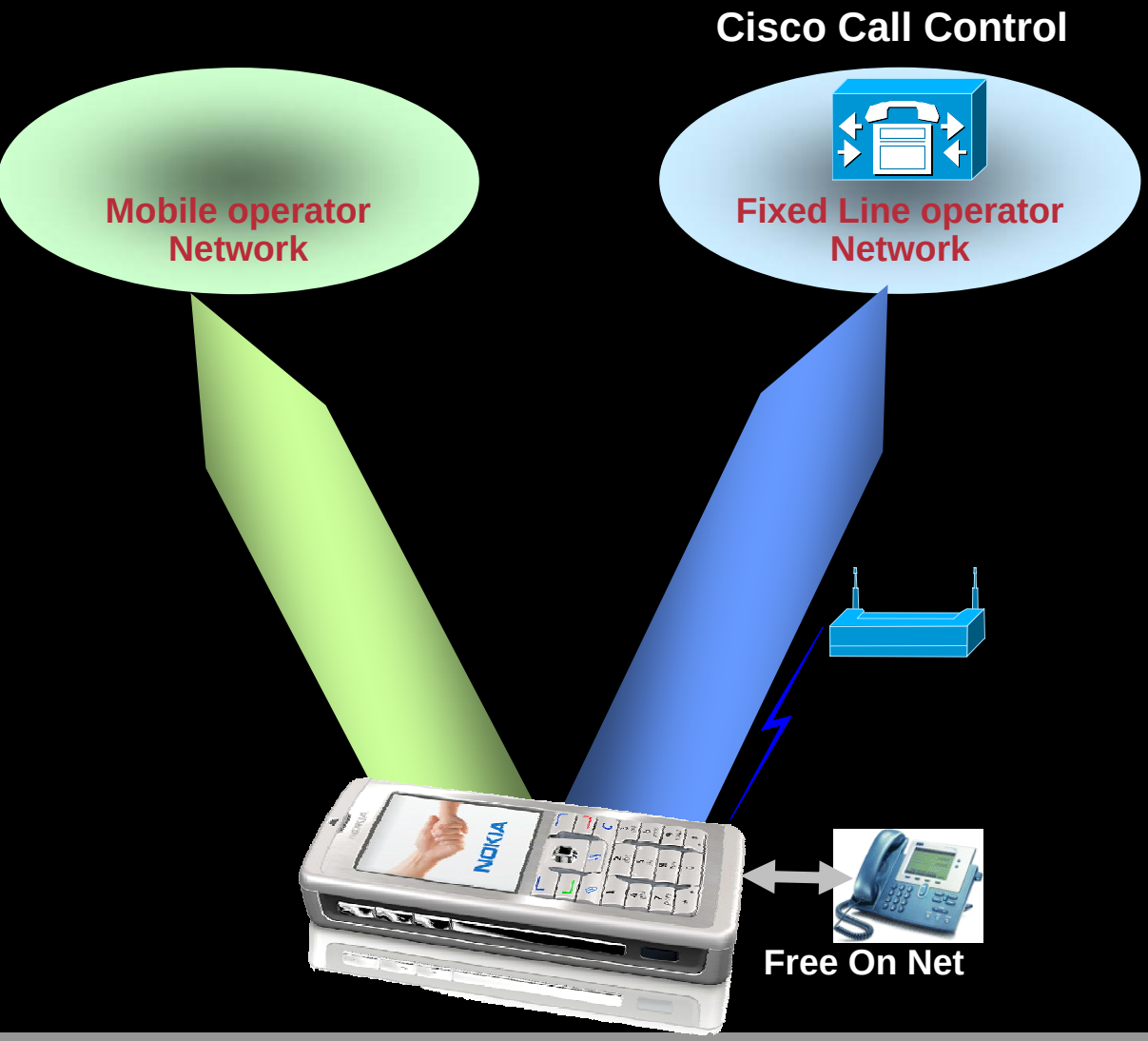
Nokia E60 Dual Mode (GSM - 3G – CDMA - WiFi) Call Manager features on a Cell Phone !



IP PBX Features

- Log in and out of VoIP system can be automatic or manual.
- Unattended transfer…to person with an ongoing call without waiting for an answer
- Indicator for new message in VoIP voice mailbox
- Indication when WLAN signal is weak and VoIP is ready
- “Do Not Disturb” profile

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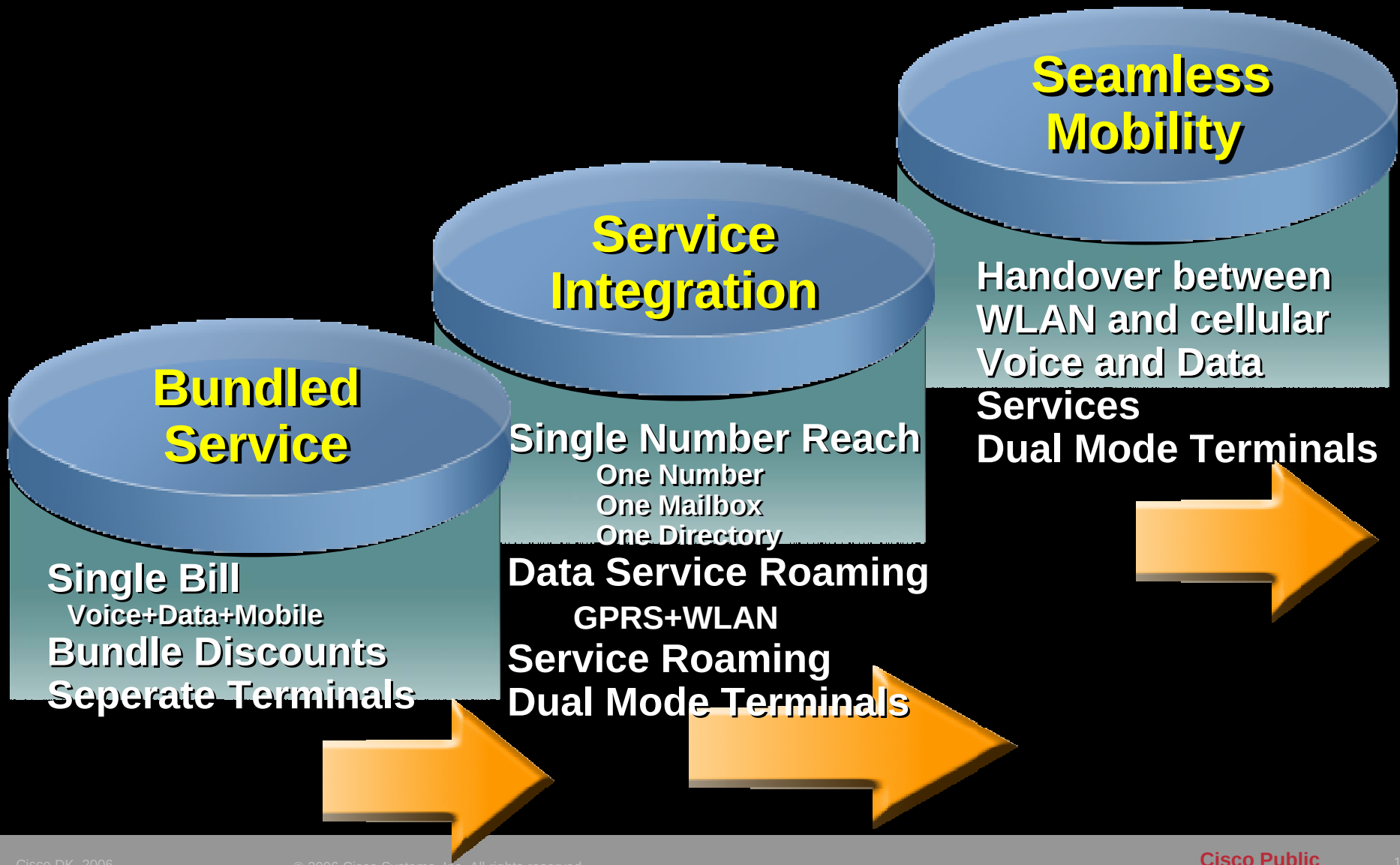
Service Convergence



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The Value for the Enterprise, SNR & Dual Mode

Convenience Productivity	• Single Number, Single Mailbox, Single Directory • Integrated Device for Voice and Enterprise Applications • Web based Service Control
Quality	• Better Voice Quality through Fixed Network • No in Building Coverage Issues • High Bandwidth Mobile Data through WLAN
Cost	• Better Voice Quality through Fixed Network • No in Building Coverage Issues • High Bandwidth Mobile Date through WLAN

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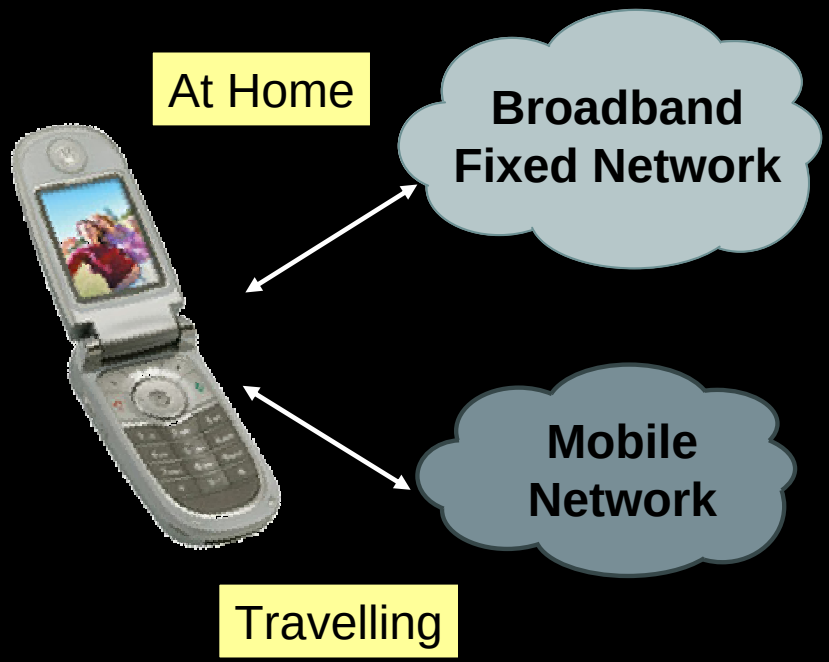
End User Perspective, SNR & Dual Mode
Consumer

Value Proposition to Consumer

Broadband for the Home
Wireless Internet at Home
Save on Mobile Calls!
One Phone for all calls



Service

Required Components

- Dual Mode Handset
- Home WLAN Router and Broadband connection

How it works

- One Number for fixed and Mobile
- VoIP Calls when at home
- Bundle for Broadband, Mobile service
- One Mailbox, one Directory for all calls

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Mobile Phone as ”Remote Control” Access to BB SP portal

- Triple Play Fixed Mobile Convergence
- Use mobile phone to access BB SP Portal
  - Content optimized for mobile phone
- Order movies from anywhere
- Pay via mobile phone
- Choose ”download to set-top box”
- Or choose download to phone and watch the movie on the phone

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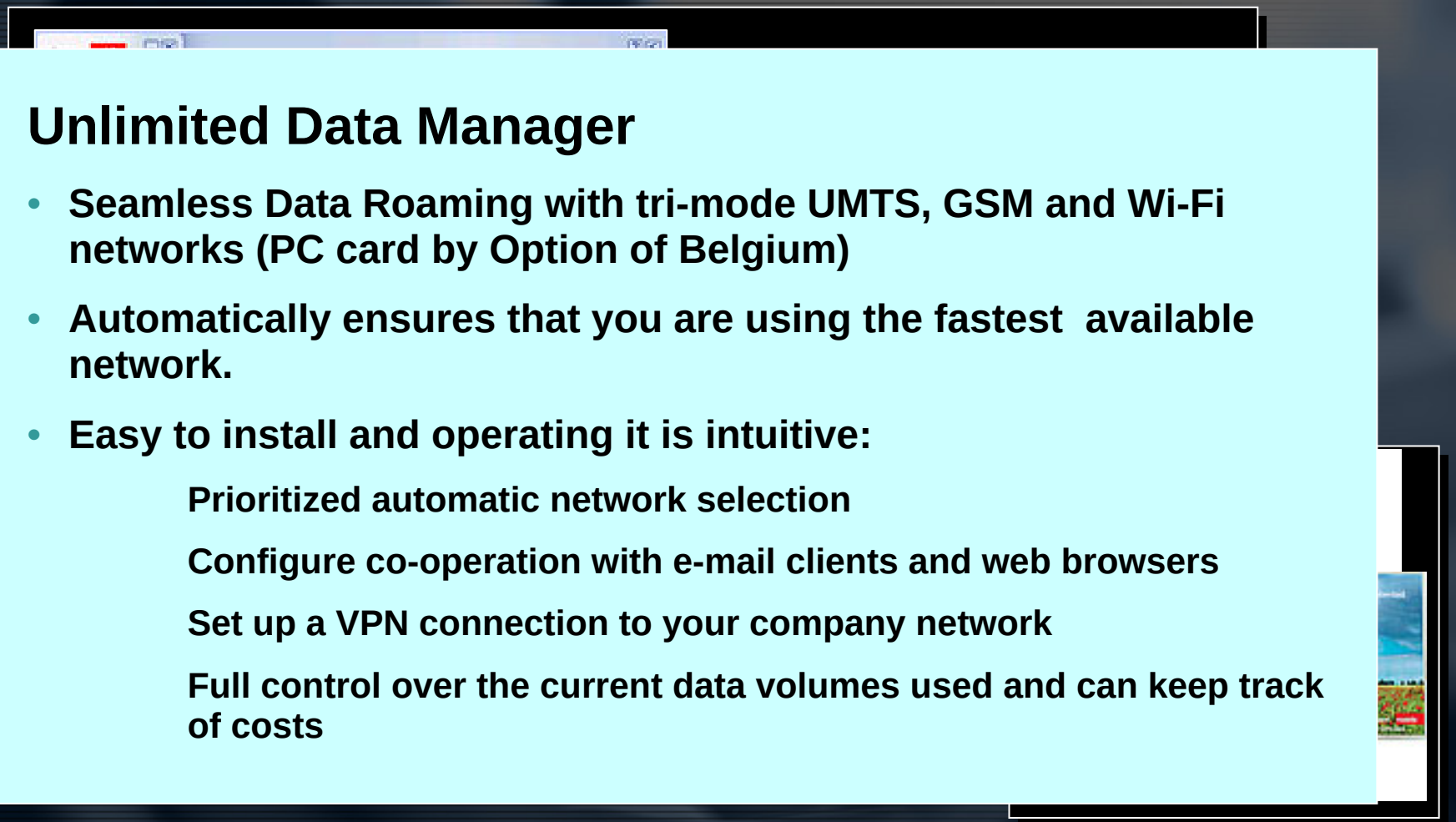
Seamless Internet Convergence SwissCom Mobile Unlimited



Unlimited Data Manager

- **Seamless Data Roaming with tri-mode UMTS, GSM and Wi-Fi networks (PC card by Option of Belgium)**
- **Automatically ensures that you are using the fastest available network.**
- **Easy to install and operating it is intuitive:**
  - **Prioritized automatic network selection**
  - **Configure co-operation with e-mail clients and web browsers**
  - **Set up a VPN connection to your company network**
  - **Full control over the current data volumes used and can keep track of costs**

Technology: Cisco Mobile Exchange (CMX)
Cisco Mobile IP and EAP SIM

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Users Really Need a Mobile Solution!

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What Drives FMC?

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Drivers of FMC

HANDSETS

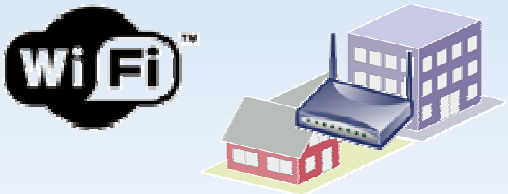
Multimode devices becoming reality

Open OS changes the ownership model

Transformation of Operators Business

Service Convergence

Technology



Standards

ETSI

3GPP

ITU

CableLabs
...Revolutionizing Cable Technology

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FMC Drivers
Technology Deployment

- IP, Internet, WWW
- Broadband technologies; DSL, Cable, FTTH/ETTH
- WiFi available in Enterprises, Homes and Hotspots
- VoIP and IM usage is expanding
- SIP / IMS technology
- UMTS / 3G Mobile

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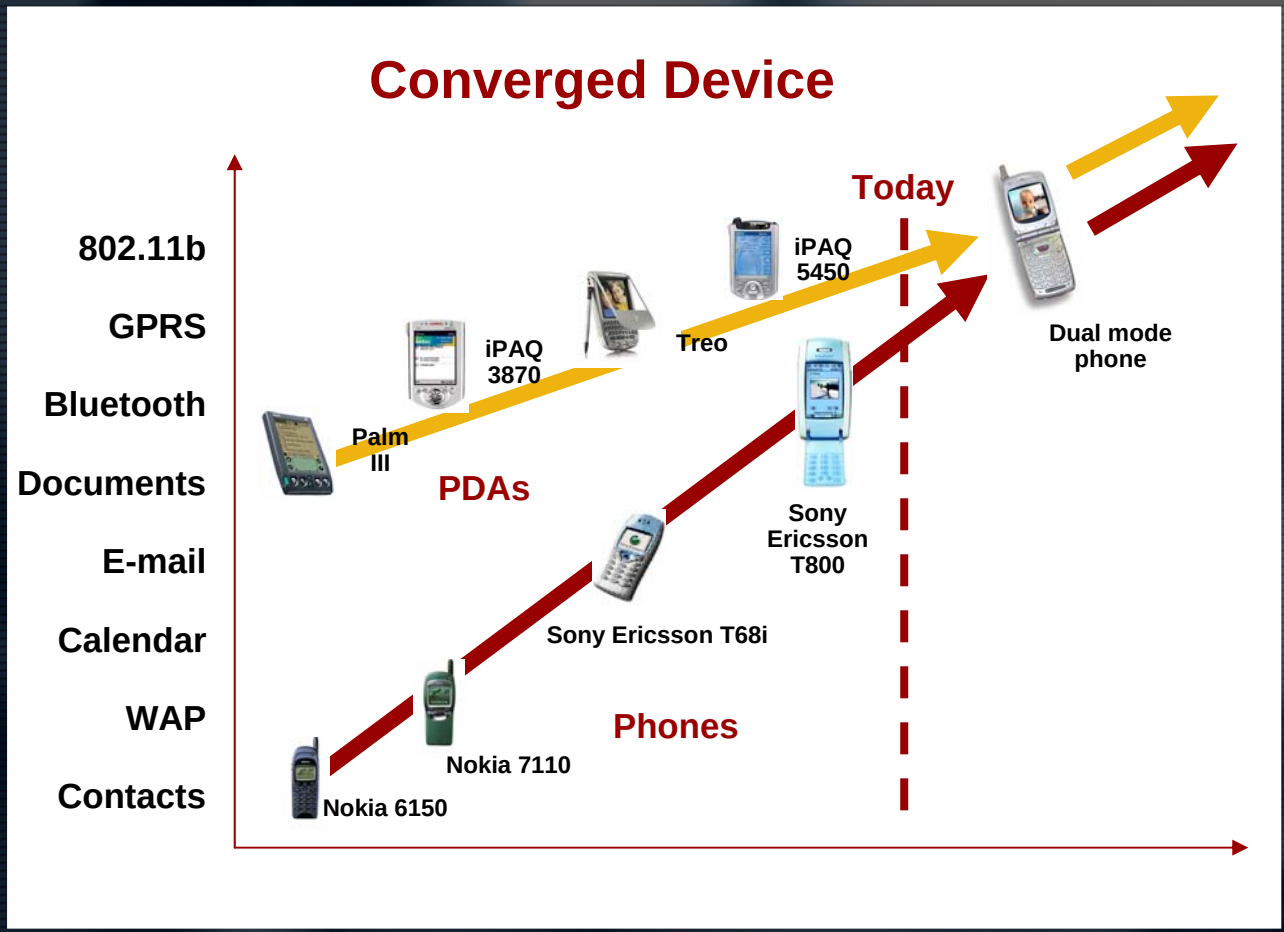
FMC Drivers
Converged Device

A single endpoint device that uses multiple radio networks



Source: Cisco IBSG Presentations

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FMC Drivers; SP's are challenged Transformation of Service Provider Business

- Fixed line operators experiences declining revenue from traditional services
  - Minutes continue to move away from fixed networks and on to broadband and mobile networks
  - Price pressure on flat rate BB lines
- Mobile operators experience price pressure on voice minutes, slow adoption of data services, growth rates slowing down and churn
- Challengers (New SP's, ISP's, Utilities) expanding their service portefolio (triple play) to grow customer base
- Content Providers deliver service over BB (Skype, Yahoo, MSN, Google.....)
- Disruption!

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Convergence is driven by the operator's need to Maintain the Customer Relationship

- Mitigate revenue erosion of wireline public telephone operator (PTO) and attempt to slow revenue loss and customer churn
- Maintain billing relationship by providing multiple voice (and data) products in a single customer invoice
- Delivery of new services on the converged product
- Potentially increase average revenue per customer
- If regulation (eventually) requires unbundling;

  Convergence becomes an opportunity to sell feature rich wholesale products at a premium

Source: MetaGroup UK, 2004.

FMC Drivers
Standards

- Fixed / Mobile Convergence is part of the ITU Definition of Next Generation Networks (NGN)
- 3GPP specifies the 3G Mobile Network, which also will be an enabler for FMC
- TISPAN (Telecommunication and Internet converged Services and Protocols for Advanced Networking) is an ETSI group which standardizes the converged NGN for fixed networks
  - Has adopted the IMS architecture from 3GPP
- CableLabs specifies NGN for the Cable Industry in the PacketCable MultiMedia specifications and the PacketCable 2.0 specifications
  - Also CableLabs has adopted the IMS architecture

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Fixed-Mobile Convergence:
Marriage or Transformation

Source: Economist, Sep 23, 2004.

Marriage

…of necessity?

…of equals?

…of convenience?

Transformation

…of the telecoms industry

…of basic business models

…of the competitive environment

…of service delivery

…of customer expectations

Next Generation Network (NGN)

and FMC

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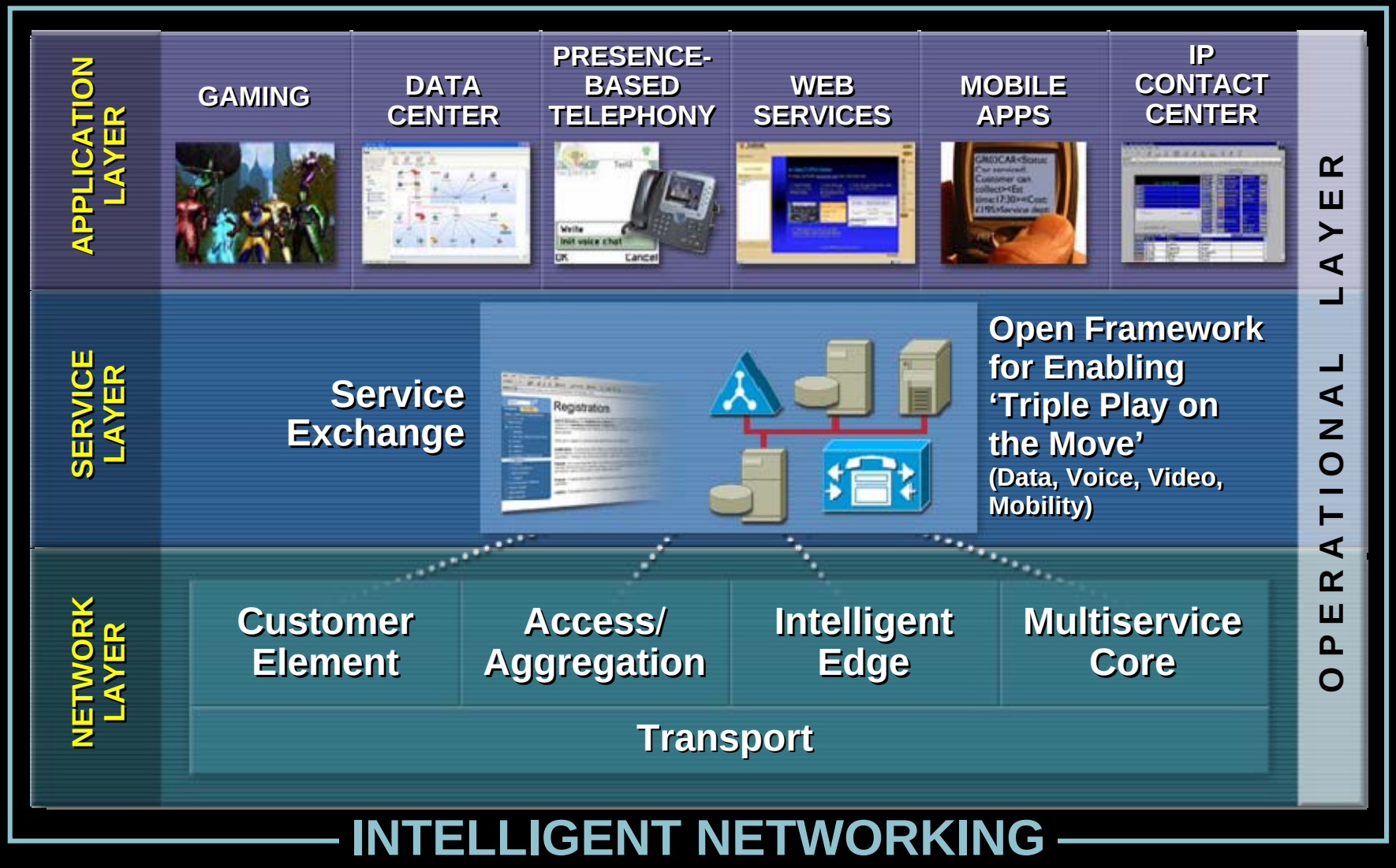
Cisco IP NGN Architecture

Achieving a Whole Greater Than the Sum of the Parts



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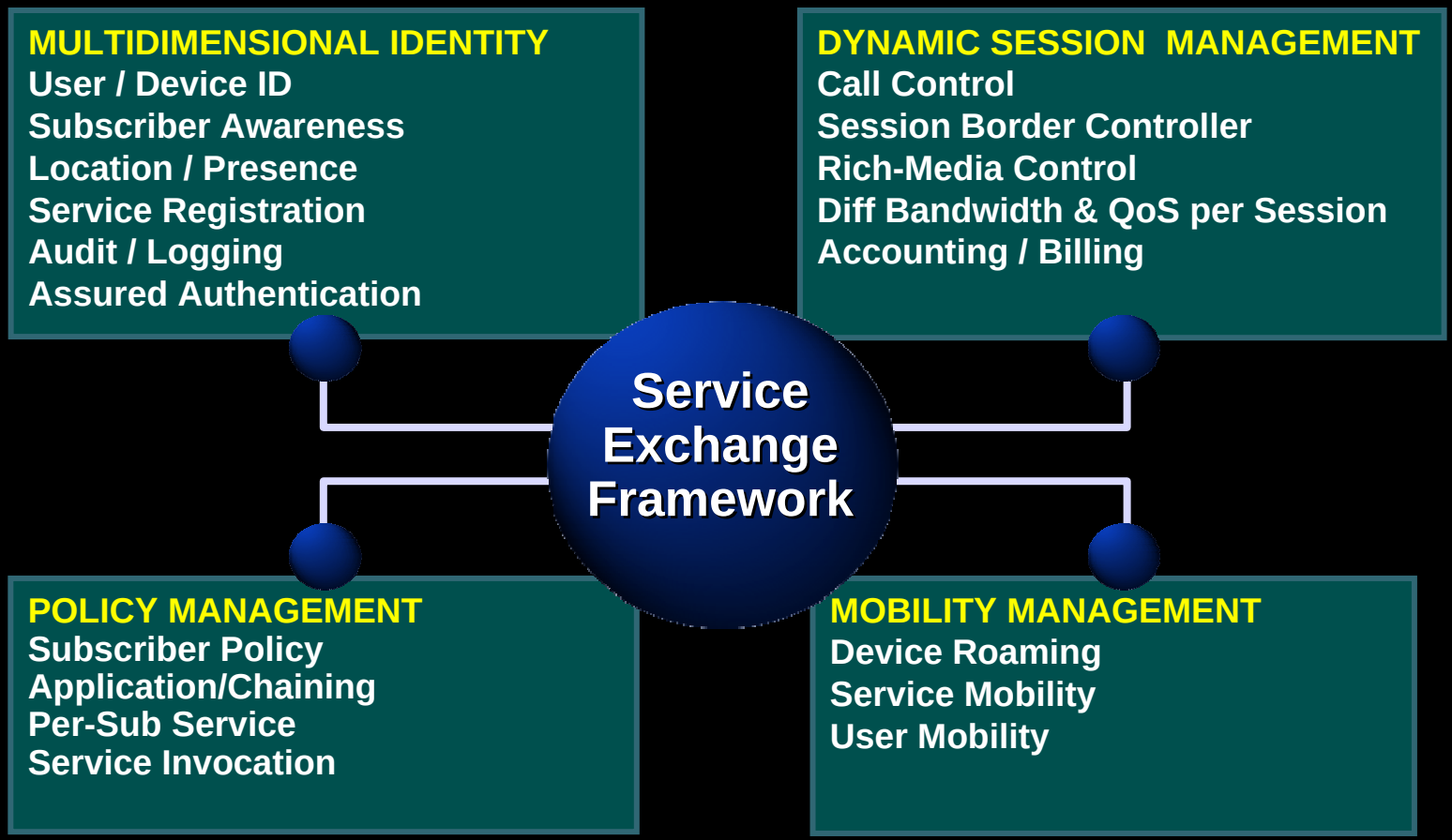
Service Exchange Framework
Making 'Triple Play on the Move' Real



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Service Exchange Framework
Making 'Triple Play on the Move' Real

WHO?

- Who is the user?
  - Devices
  - Profile
  - Location
  - Presence

HOW?

- How can I dynamically control resources?
  - Interwork & provide rich media control
  - Monitor & charge on a per service/per user basis
  - Enable application awareness

WHAT?

- What can the user do?
  - Within what timeframe
  - To what extent
  - Under what rules

WHERE?

- Where can the user roam?
  - Track/recognize user devices across carriers
  - Maintain user sessions across multiple networks
  - Offer all services in all locations

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Fixed / Mobile Convergence is part of the ITU Definition of Next Generation Networks (NGN)

A Next Generation Network (NGN) is a packet-based network able to provide services including Telecommunication Services and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies.

It offers unrestricted access by users to different service providers. It supports generalized mobility which will allow consistent and ubiquitous provision of services to users.

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Fixed / Mobile Convergence is part of the ITU Definition of Next Generation Networks (NGN)

The NGN is characterized by the following fundamental aspects:

- **Packet-based transfer**
- **Separation of control functions among bearer capabilities, call/session, and application/ service**
- **Decoupling of service provision from network, and provision of open interfaces**
- **Support for a wide range of services, applications and mechanisms based on service building blocks (including real time/ streaming/ non-real time services and multi-media)**
- **Broadband capabilities with end-to-end QoS and transparency**
- **Interworking with legacy networks via open interfaces**
- **Generalized mobility**

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Fixed / Mobile Convergence is part of the ITU Definition of Next Generation Networks (NGN)

The NGN is characterized by the following fundamental aspects:

- **Unrestricted access by users to different service providers**
- A variety of identification schemes which can be resolved to IP addresses for the purposes of routing in IP networks
- Unified service characteristics for the same service as perceived by the user
- **Converged services between Fixed/Mobile**
- **Independence of service-related functions from underlying transport technologies**
- Compliant with all Regulatory requirements, for example concerning emergency communications and security/privacy, etc.

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IP Multi-media Subsystem (IMS)

and FMC

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IMS? What is it?

- IMS originates from 3GPP, where it is an application platform in an all-IP 3G network (3GPP release 5 and 6 and going forward)
- Wireline community has adopted the IMS concept as a platform for delivering services to all accesses in an all-IP NGN
- TISPAN is the ETSI body that standardizes IMS for wireline and adds necessary extensions
- IMS is based on SIP
- IMS in it-self offers no applications
- IMS is part of the service exchange framework that offers generic capabilities for offering applications over an IP NGN

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What Applications??

- VoIP and Videophones on a multitude of terminals
- Presence
- Instant Messaging (IM) Integration (chat, voice, video)
- Push-to-Talk
- Buddy Lists
- Unified Messaging (email, voice-mail, video-mail)
- Ad-hoc conferencing
- Mobility, Fixed Mobile Convergence

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Why all this fuss about IMS?
Why are Service Providers hooked on IMS?

- Voice commoditising
- ISP model not profitable enough
- Want flexible charging model
  - Charge per transaction or flow
- Can charge more for providing services, but what services?
- Operators think IMS will let them create new services on a shared infrastructure more cheaply & rapidly which they can charge for on a transaction basis thereby increasing ARPU
- They want a standards based IMS to guarantee:
  - Rapid Service Creation from IMS infrastructure really works
  - Terminal Interoperability – roaming key to their business
  - The Network Effect – need services to work across networks

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Cisco Realization of IMS

Applications

Generic Platform for Applications

Roaming & Internetworking

Accesses (DSL, Cable, FTTH, LL, GPRS, 3G) & Terminals

Summary

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FMC Summary

- FMC is happening, services available today
- FMC is being driven by the entire industry
  - Technology, Terminals, Service Providers, Standard Bodies
- SP's needs to transform their business towards FMC
- Both consumers and enterprises will benefit from FMC
- Next Generation IP based Networks is a pre-requisite for true FMC
- The Industry agrees on IMS as **the** Multi-Media Service Platform and an ultimate platform for FMC

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