Fixed Mobile Convergence

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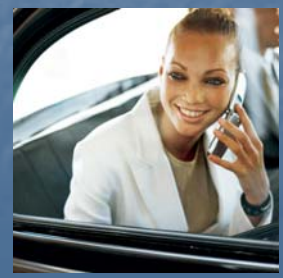
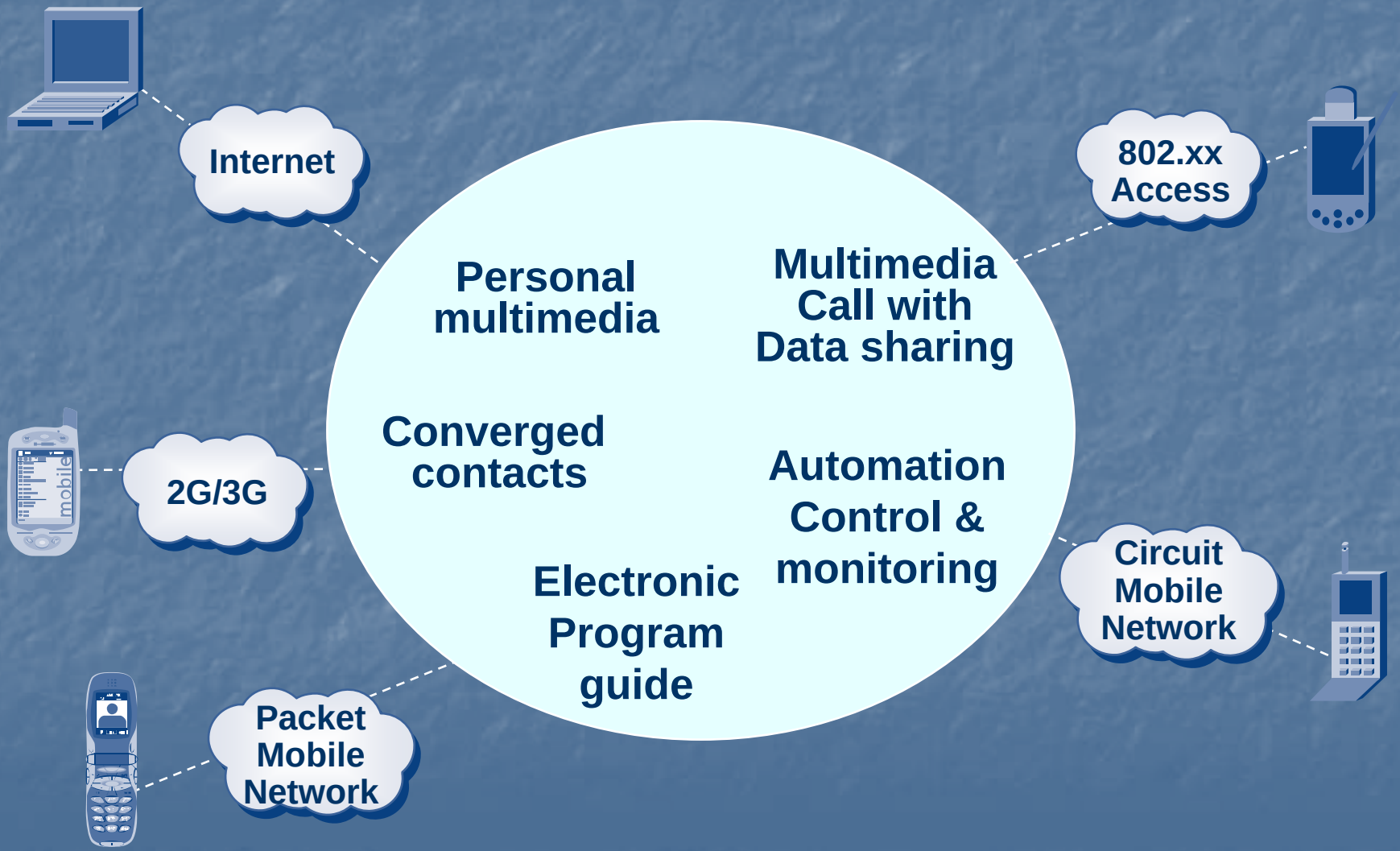
Fixed Mobile Convergence

- Fixed Mobile Convergence (FMC) provides common and seamless services across fixed, mobile, and internet environments for enterprise and residential consumers

- FMC is achieved through network convergence, service convergence, and bundling



Fixed Mobile Convergence Applications



Fixed Mobile Convergence Benefits

- Residential Consumer - Lower cost and better communications experience
- Enterprise – Control over mobile workers, cost savings, and productivity improvements
- Wireline Provider – Ability to offer a differentiated service and address Fixed Mobile Substitution
- Mobile Provider – Increase Fixed Mobile Substitution and increase revenue from enhanced in-building coverage

Fixed Mobile Convergence Approaches

- Unlicensed Mobile Access (UMA)
- PBX Extensions
- SIP/Wi-Fi
- Network-based Solutions (IMS/VCC)

Alternative Approaches

Approach	Pros	Cons
UMA	•Transparent to MSC – only access is different •Standards based •Solutions & Handsets available now •Handoff is inherent •Improves in-building coverage for a Mobile Op.	•Specific to GSM/GPRS, not UMTS, CDMA •Does not enable new applications •Mobile operator maintains call control •Adds load to GSM core, requiring 2G investment •Not specifically developed for enterprise use
PBX Extension	•Full control of solution •Enterprise-focused solution	•Limited to enterprise segment mobile workers •Higher CAPEX/OPEX than operator hosted

Alternative Approaches

Approach	Pros	Cons
SIP/ Pre-IMS	•Solutions available now – Fast Time to Market •Low initial cost (Purchase or Hosted) •Can be migrated to IMS •Suitable for small Providers (MVNOs, ISPs) •MVNOs do not require a strong link to MNOs	•Handoff can require additional call legs •Not Standards Based
IMS-VCC	•Standards Based: TR23.806, TS23.206, TS24.206 •Low longer term cost (use IMS infrastructure) •Can be blended with other IMS applications •Suitable for Fixed & Mobile operators •Access independent	•Higher initial cost -- requires IMS infrastructure •Handsets only now becoming available

FMC In The Enterprise

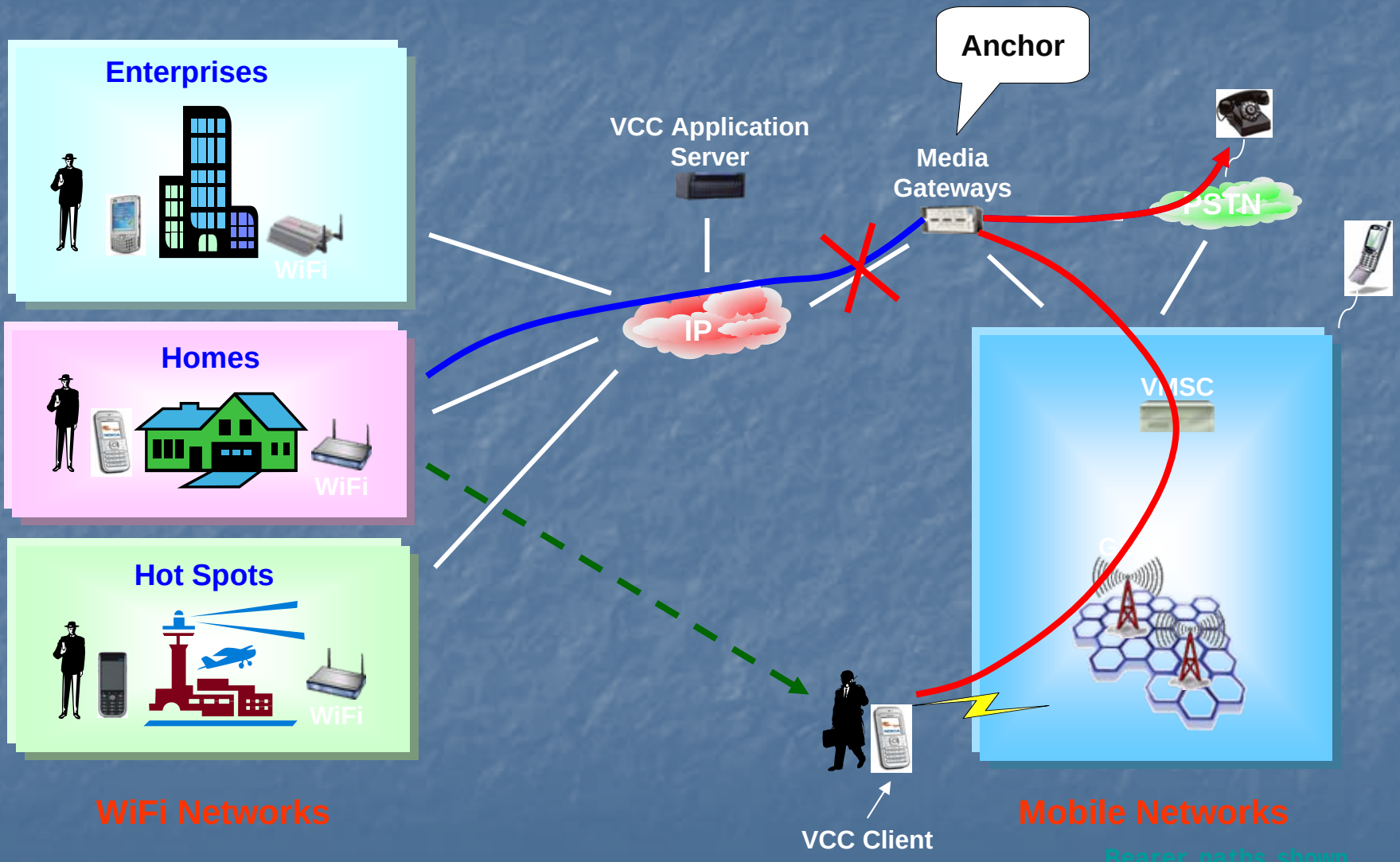
- Enterprise FMC assumes VoWLAN capability in the office and across any hotspot – service alignment with existing PBX
- Deployment of new user equipment (phones)
- Security policies & procedures that will cover the new environment
- WLAN/SIP to extend VoIP, presence, messaging, and other applications

Enterprise Concerns With FMC

- PBX Integration
  - e.g. PBX SIP Gateway
- WiFi-to-WiFi Handoff
  - e.g. Access Point Controller
- IP Centrex Features
  - e.g. Common features after handoff
- Far-End Break-out
  - PBX, PSTN
- Near-End Break-in
  - PSTN

- **Security**
- **Network Integration**
- **Handsets**
- **Handset Clients**
- **QoS**
- **Voicemail…**

Basic Voice Call Continuity Concepts



VCC Challenges

- Handsets
  - Availability
  - Battery Life
  - Cost
- Numbering
  - Fixed (VoIP) or Mobile numbers
  - Single or Multiple numbers
  - Number Portability
- Charging & Accounting
  - VCC online charging should be performed in the IMS
  - The CCCF should record all call events related to:
    - Call Establishment, and
    - Domain Transfer events
  - This complete call continuity history is used to create cohesive charging records, for the whole call duration

VCC Challenges

- Supplementary Services
  - They should be ubiquitous between domains – they will typically be implemented on an IMS AS and will not be provided by the HLR.
  - These should transfer seamlessly during domain transfer
  - With no VCC, no transfer (GSM features in GSM, VoIP features in IMS)
  - Control can be via USSD or SIP/GPRS or SIP/WiFi
- Emergency calls
  - In CS, they will not be rerouted for IMS anchoring – they will be handled as normal CS calls.
  - There will be no handover of Emergency calls
- Messaging
  - SMS, EMS, MMS
  - Over GSM, WiFi

FMC Fits Into Many Strategies

Mobile operators

- See FMC as a way of improving indoor access for customers and thereby increasing mobile minutes used; accelerating FMS - Being used now
- Early adopters of IMS for their networks – will migrate FMC strategy to IMS Solution

FMC Fits Into Many Strategies

Fixed-line operators

- See FMC as a way to slow the fixed mobile substitution (FMS) taking place in enterprises by extending PBX functionality to mobile users – Being used now
- Working to develop their IMS strategy - 2007/2008
- Concerned with disintermediation (ISP's)

Organizations

- The Fixed-Mobile Convergence Alliance (FMCA) App. 2 years old - 25 members with over 900 million customers – global operator organization producing product requirements for technologies such as Bluetooth CTP, Wi-Fi GAN/UMA and Wi-Fi Session Initiated Protocol (SIP) – Release 2.0 of FMC Product Requirements Definitions in May 2006 – Release 3.0 planned for December 2006

Organizations

- Mobile Integrated Go-To-Market Network IP Telephony Experience (MobileIGNITE) – 39 members – accelerate time to market by sponsoring collaboration among vendors - supports FMC solutions built on open standards such as GSM/UMTS-WCDMA (3GPP), CDMA (3GPP), SIP (IETF), IMS and 802.11/16 (IEEE)

Standards For FMC Development

- 802.1x – AAA for wired/wireless users – allow automated logon to WLAN access points
- 802.11a/b/g – Based on the 802.11 standard – 802.11g is 54Mbit/s
- 802.11n standard for higher throughput - approved in March 2006 BUT final ratification not expected until 2007
- 802.16 – Baseline WiMax standard – short-haul fixed wireless applications
- 802.20 – Also known as Flash OFDM – rival to 3G and WiMax 802.16e
- SIP – IETF standard to enable interactive applications to work in an IP packet environment
- IMS – 3GPP specification for multimedia IP applications to work in an IMT-2000 environment