

## IP Multimedia Subsystem (IMS)

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# Agenda

- Introduction / Overview
  - James Rafferty, Cantata
- IMS and Application Development – xxx, Ubiquity
- IMS and Media Control
  - James Rafferty
- IMS Early Deployment Experiences - TBD
- IMS and Connectivity / Security - TBD
- Testing and IMS
  - Keith Byerly, Empirix
- IMS Best Practices for Developers
  - Scott Wieder, Cantata
- Summary / Q & A
  - James Rafferty

## IMS Overview

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# Telecom in Transition

- Global Telecommunications is in a time of dramatic transition
  - Traditional telephone service was just about voice
  - We now live in a voice and data world, where instant communication is the norm
- Carriers and Enterprises have new demands for better applications and services

# Changing Business Models

- Changing Business Models
  - For carriers, wireline voice revenue is in decline
  - Wireless carriers have had explosive growth, but also seek new revenue sources
- Enterprises have moved toward a converged voice and data network
- Traditional circuit switched technology is in decline, being replaced by Voice over IP
  - After years of argument, SIP (Session Initiation Protocol) won the VoIP standards wars

# Standards Free for All

- Telecom standards experts have had a checkered track record
  - Two major innovations crashed and burned
    - ISDN and ATM
  - The IN (Intelligent Network) has never lived up to its promise of encouraging new applications to flourish
- And here comes Voice over IP...

# Lessons Learned

- After some early resistance, telecom companies have embraced VoIP
- The VoIP standards war is over
  - The winner: Session Initiation Protocol (SIP)
- What if?
  - An architecture was designed to support services and multiple networks
  - The media is not just voice, but multi-media
  - SIP signaling used throughout



# Global Telecom Landscape: In Transition

## Shifting Business Models

- Fixed/Mobile Convergence
  - Any to Any Access and Content
- New Competitors, New Tactics
  - Competition from non-traditional “content” service providers
- Service Bundling
  - Voice-driven to multimedia service-driven business model
  - Differentiated portfolio of value-added services
- Service Delivery: Internet Time at Internet Cost
  - Transition from network-centric single services to subscriber-centric offering
  - New service economics (low) & new user expectation (high)

## New Architecture Requirements

- Any to Any Network & Endpoint Access
  - Flexibility, scale, and service intelligence
  - IP/TDM services delivered across networks new & old...fixed or mobile
- Open, distributed service access, integration and delivery
  - Leveraging standards-based technology & web development model for faster time to market
  - Maturity and adoption of standards – SIP, VoiceXML
  - IP Multimedia Subsystem (IMS)

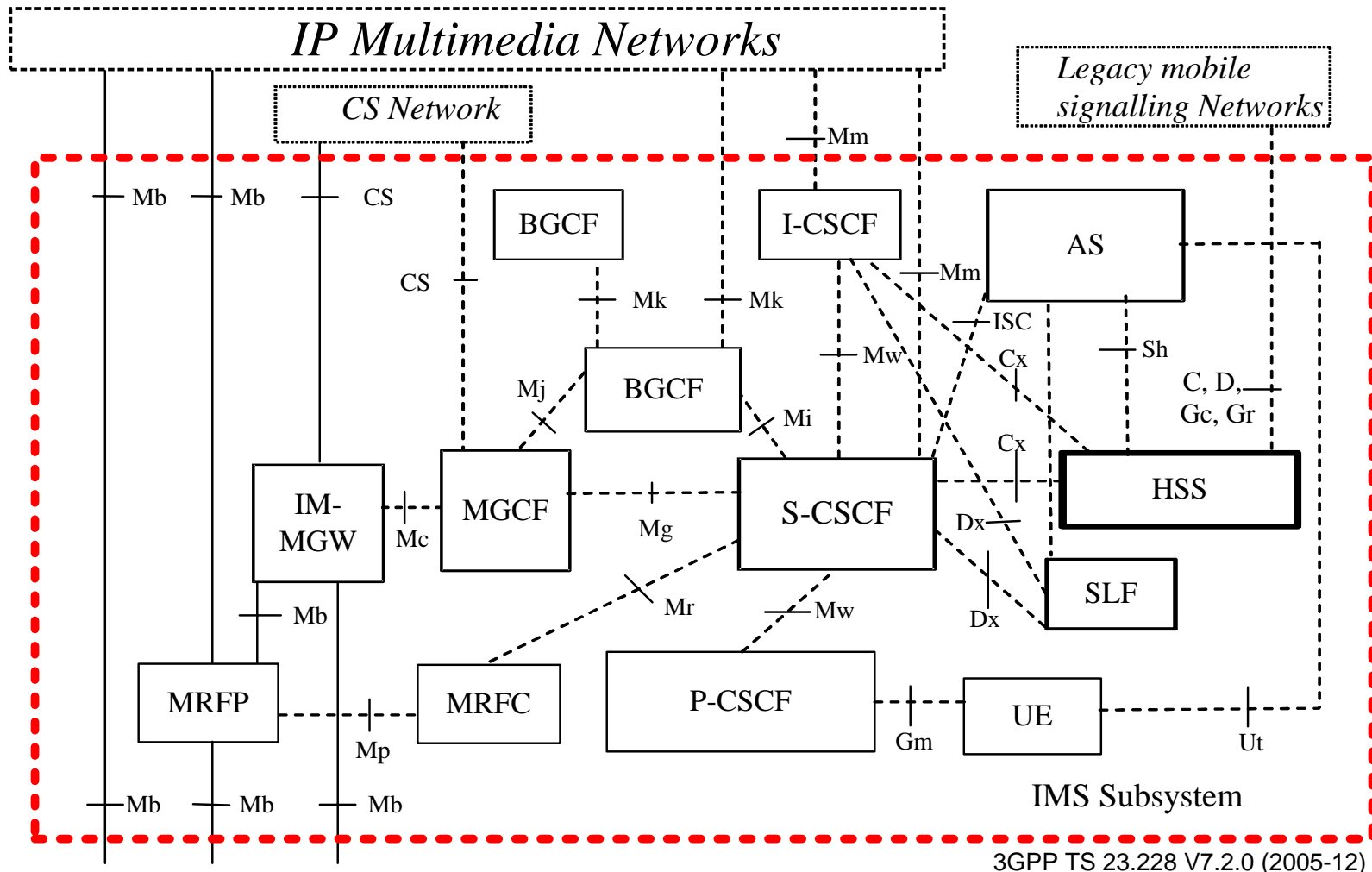
# Introducing IMS

- Standards experts sought to solve these issues and move to VoIP for services
  - Resulting architecture is called IP Multimedia Subsystem or IMS
  - IMS began in the wireless community (3GPP/3GPP2), but is now being accepted by a variety of carriers and industry organizations
    - The IETF, ETSI/TISPAN, CableLabs, ITU-T support it as a framework for IP multimedia applications and services

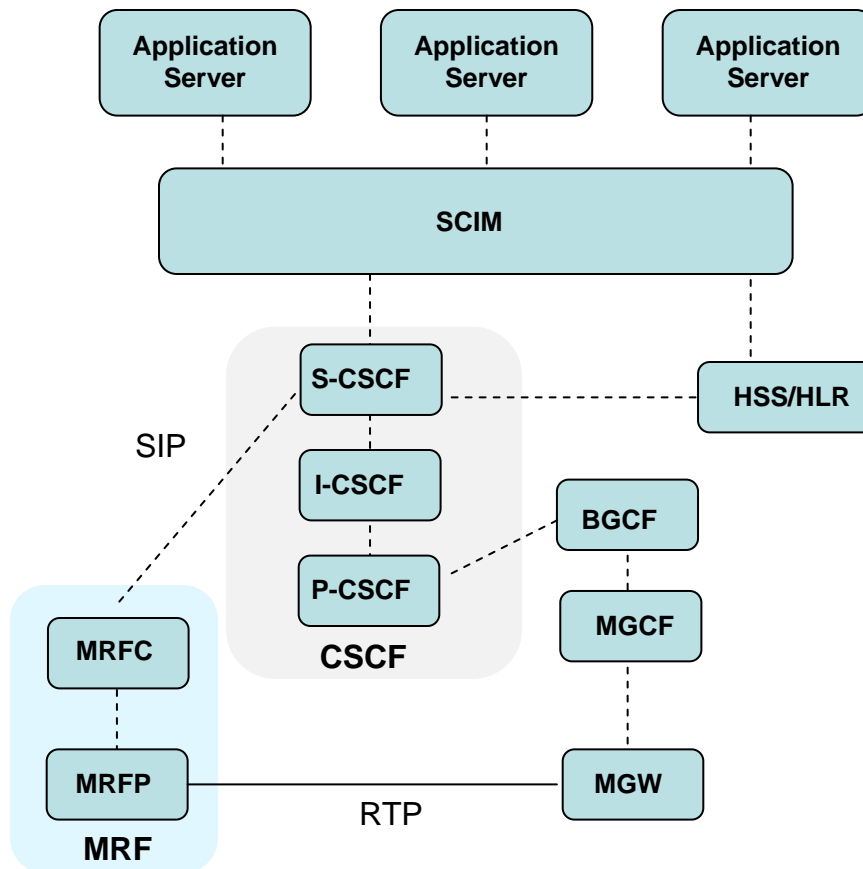
# What is IMS...

- IP Multimedia Subsystem (IMS) is an architecture that enables wireline, wireless and cable operators to offer a new generation of rich multimedia services
  - Across both circuit switched and packet switched networking infrastructures
- IMS defines a architecture of logical elements using SIP for call signaling between network elements
  - Provides a layered approach with defined service, control, and transport planes

# The IMS Architecture



# IMS – Simplified View



## Key Elements:

- AS – Application Server
- SCIM - Service Capability Interaction Manager
- MRFC - Multimedia Resource Function Controller
- MRFP - Multimedia Resource Function Processor
- MRF – Media Resource Function
- CSCF- Call Session Control Function
- BGCF - Breakout Gateway Control Function
- MGCF - Media Gateway Control Function
- MGW - Media Gateway
- HSS - Home Subscription Server
- HLR - Home Location Register

# Other Key IMS Concepts

- Multiple Plane Architecture
  - Makes use of separate planes:
    - Application, Transport and Session Control
- Common Security and Login functions
  - Makes use of Diameter protocol and HSS (Home Subscriber Server) to validate users
- Applications and Services are independent of Access Method
  - Enables support for 3G mobile, WiFi, DSL, etc.

# IMS Benefits

## Converged Applications

- Across Networks
- Reduced development costs and time
- Voice, Video and data services
- Write once / use many

## Shared Resources

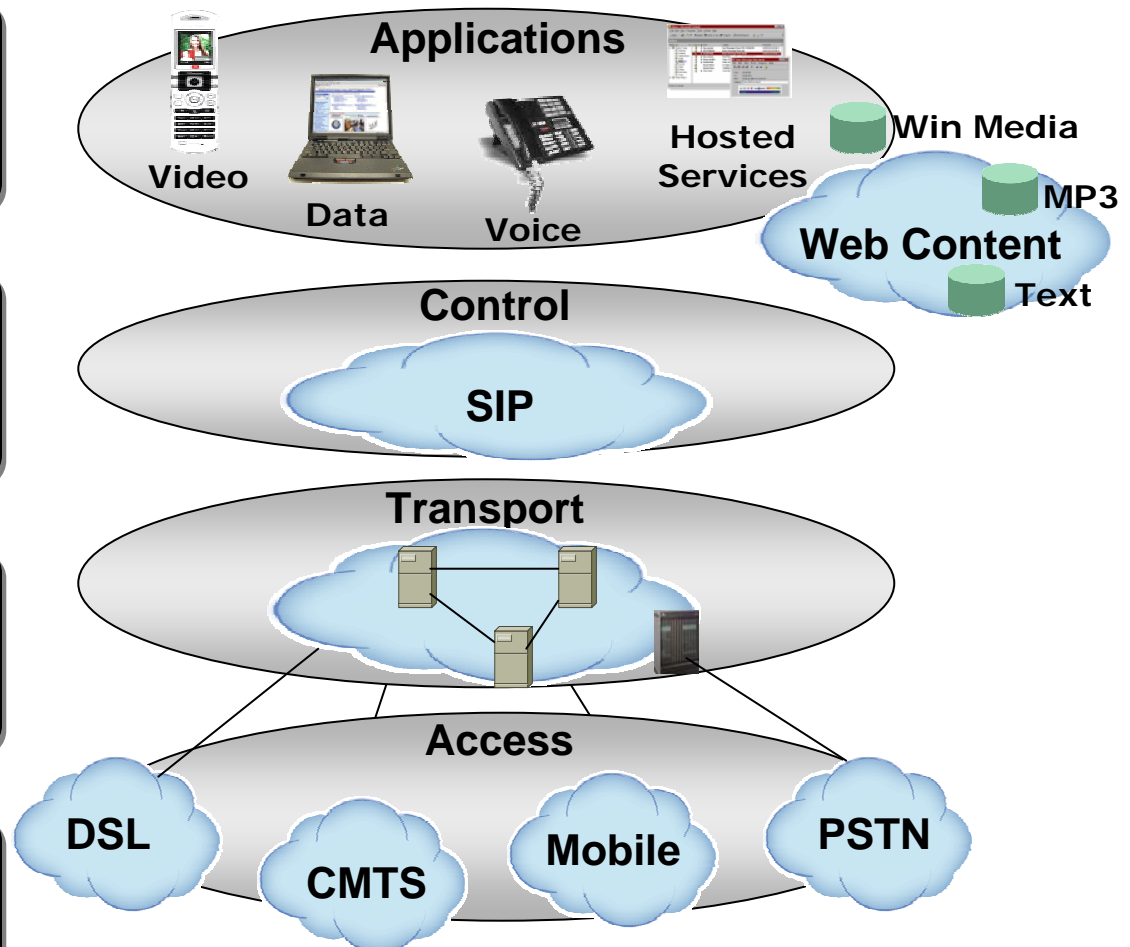
- Media server resources
- Common user data
- Single user profile across applications
- Integrated applications

## Session Control

- Common Session Control (SIP)
- Provides common service policies
- Leverages investments across multiple applications

## Access Network Agnostic

- Eliminates multiple service solutions
- Network transparency
- Consistent services across networks



# Why IMS?

- Need a better environment for creating and deploying high value multimedia services
  - Transform business models from voice-driven to service-driven businesses
  - Fixed-Mobile Convergence on a common IP application and service delivery architecture
- Grow and protect subscriber base, increase ARPU (Average Revenue Per User)
  - Deliver a differentiated portfolio of value-added services
  - Provide more subscriber focused offerings
- Controlling CAPEX and OPEX
  - Maturity and adoption of SIP and XML
  - Web model development model shortens the required investment of a programmer to develop new applications
  - Enables best-of-breed solutions with focus on new IP application services
- Faster time to market with new services
  - Develop on standards-based technology
  - Reduce time to market for new applications with web development model



# Applications deliver new and enhanced Services...

Ubiquitous Services

Personalized content

Blended Services



**Audio and Video Conferencing**



**Video Messaging**



**Hosted Services**

**IP Centrex**



**Gaming**

**Pre-Paid**



**Voicemail**

**...and many more**

# *IMS and the Enterprise*

## *How will IMS affect the Enterprise?*

1. IMS will be the preferred hosted services environment for carriers
2. Enterprises can borrow “best practices” from IMS for its own services
  - Common elements such as SIP protocol, SIP endpoints, SIP Servers, Media Gateways and Media Servers will be in both IMS and Enterprise CPE based services
3. Service orientation of IMS echoes and complements Enterprise driven approaches such as SOA (Service Oriented Architecture)

# IMS and IT Managers

- IT Managers need to be IMS-Aware
- Carriers will provide hosted services using IMS
- Key application companies such as Oracle, Microsoft and BEA will use IMS
- IMS offers ways to migrate over time from existing circuit switched CPE equipment or Centrex solutions

# IMS and Application Developers

- IMS is the new carrier service platform
  - Over time, it will fully replace existing Class 5 service approaches
- Well suited for applications which use multimedia and communications
- Application developers can focus on the application or service
  - IMS provides the infrastructure with tools like the MRF for rich media and Diameter for accounting

# IMS Standards Status

- Current Standard version of IMS is 3GPP Release 6
  - Completed in April, 2005
  - Provides most high level IMS interfaces
  - Available for use on wireless and Wi-Fi networks
- Updated version will be Release 7
  - Targeted for completion in H1, 2007
  - Many more interfaces will be specified with additional details
  - Additional progress is also expected in connecting to a variety of networks

# Other IMS Standards Activities

- ETSI TISPAN is working on the application of IMS for wireline networks
  - First IMS release with wireline support is Rel 7
- 3GPP2 has agreed to align its MMD (MultiMedia Domain) work with IMS
- Cablelabs is a 3GPP member and plans to use IMS for its SIP-based Multimedia over Cable services
- IETF (Internet Engineering Task Force) has developed SIP and many 3GPP requested extensions

# Workshop Questions

1. What does IMS stand for?
2. What are some networks that could be used with IMS?
3. What are the IMS planes?
4. Who are some of the standards groups that are working on IMS?

# Summary

- IMS is an application driven architecture – focused on service creation and deployment
- Likely Vehicle for “combined services”
  - Voice/video messaging and conferencing, presence, multiplayer gaming, ...
- IMS is a reference architecture whose details are still being filled in
  - Carriers and leading vendors driving standards development and interoperability
- Expected that commercial trials will begin this year with deployment in following years
  - `Pre-IMS deployments are already in progress



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*Thank You*