

# Challenges in Management of IP Multimedia Subsystem (IMS)



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# Overview

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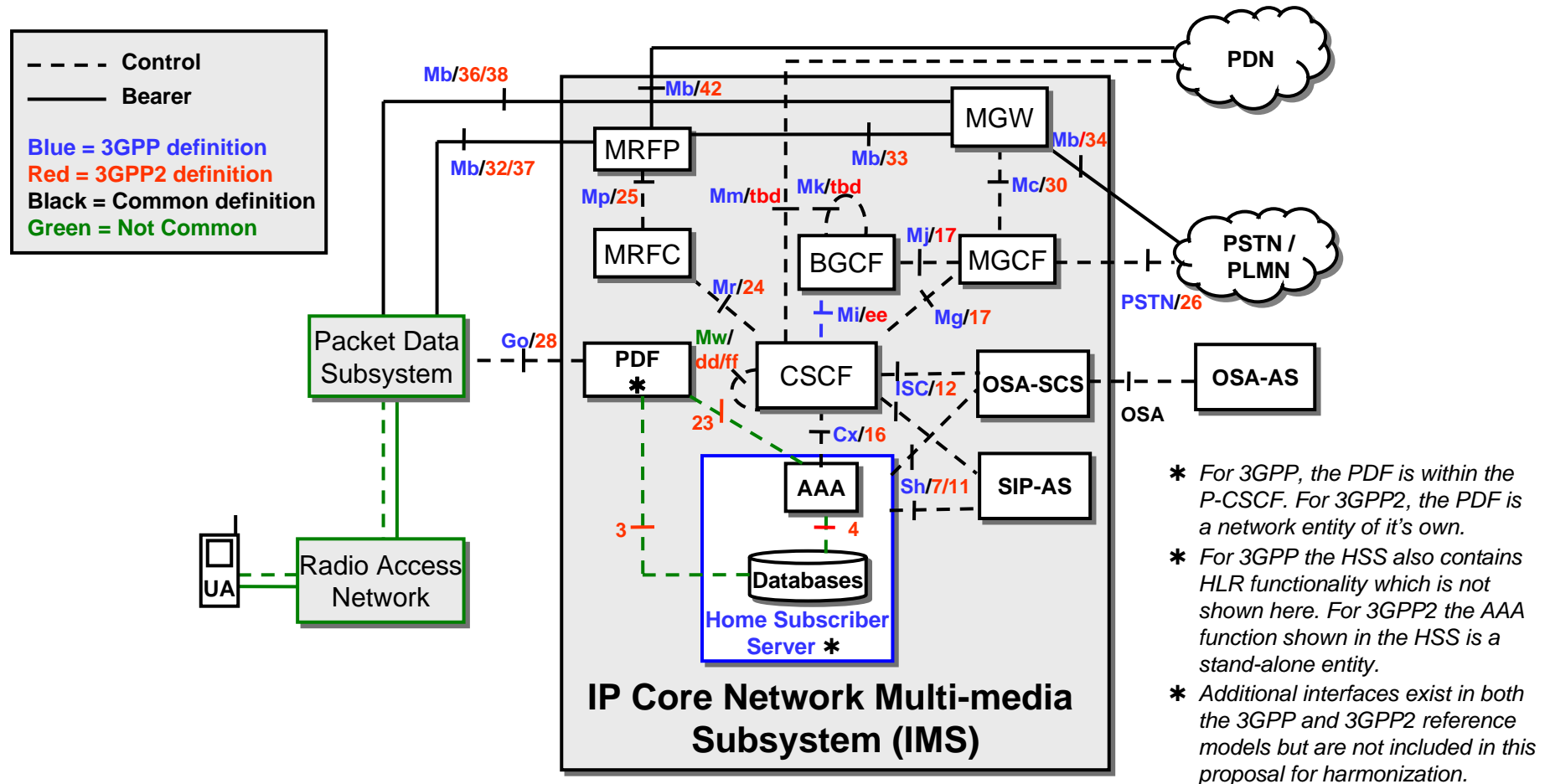
## IMS Overview

### Management Considerations for IMS

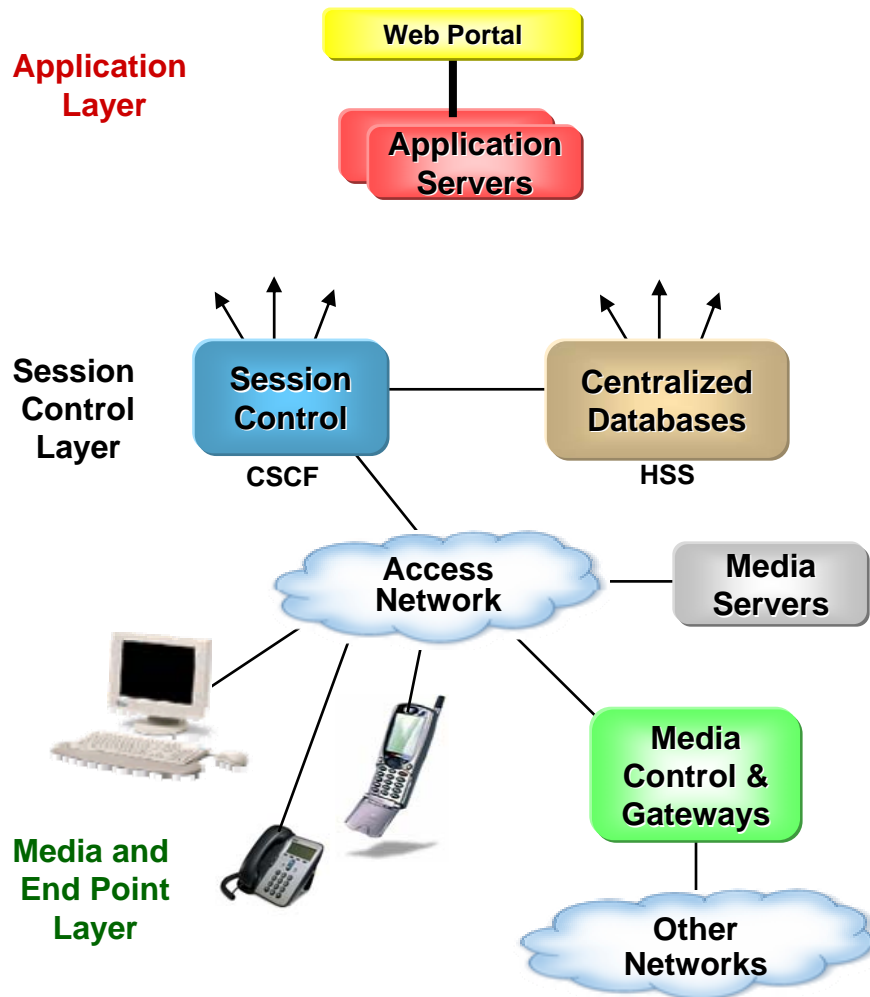
- Fault Management
- Configuration Management
- Accounting Management
- Performance Management

## Summary

# 3GPP/3GPP2 IMS Network Architecture



# IMS Functional Architecture



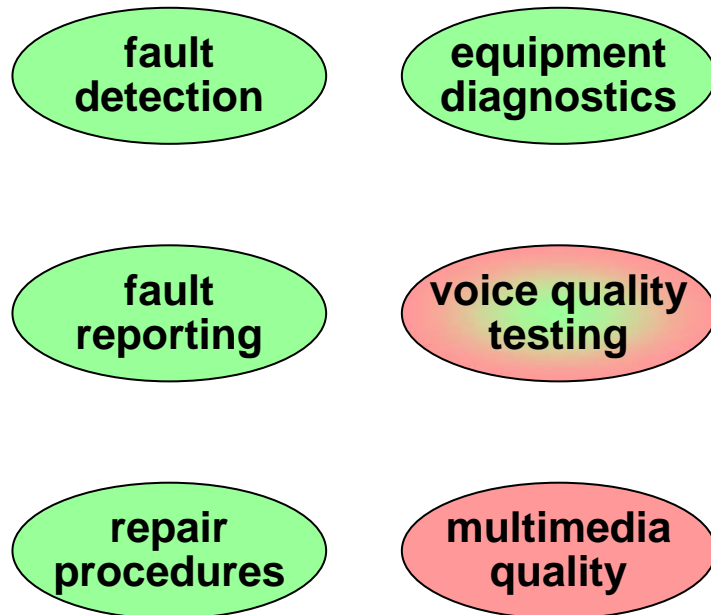
## IMS IS:

- A VoIP Telephony and Multimedia Services Architecture
- Defined with Open Standard Interfaces -> 3GPP and 3GPP2
- Based on IETF Protocols (SIP, RTP, ..)
- Designed for Both Wireless and Wireline Networks
- A Solution for Service Transparency
- Capable of Interworking with PSTN and Legacy IN Based Services

CSCF – Call Session Control Function  
HSS – Home Subscriber Server

# Fault Management

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Legend:

- no significant changes
- some changes or minor issues
- major changes or issues

## Voice Quality Testing

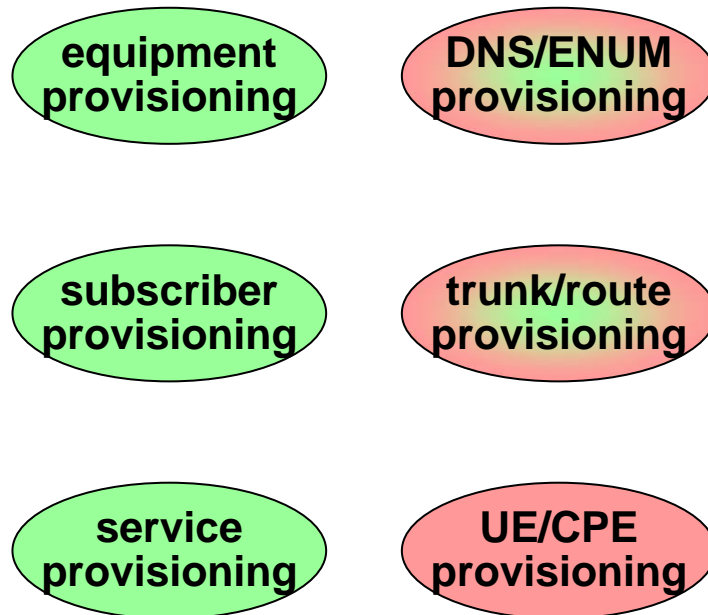
- Some standards exist
- Approval not universal
- Issues in differentiating between network and CPE contribution to voice quality

## Multimedia Quality Verification

- Few standards exists for services involving multiple media
- Not a current issue, but will become one as complexity increases

# Configuration Management

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Legend:

- no significant changes
- some changes or minor issues
- major changes or issues

## DNS/ENUM provisioning

- Problem space well-defined
- Standards well-defined
- Key impact lies in extending existing processes and procedures

## Trunk/Route provisioning

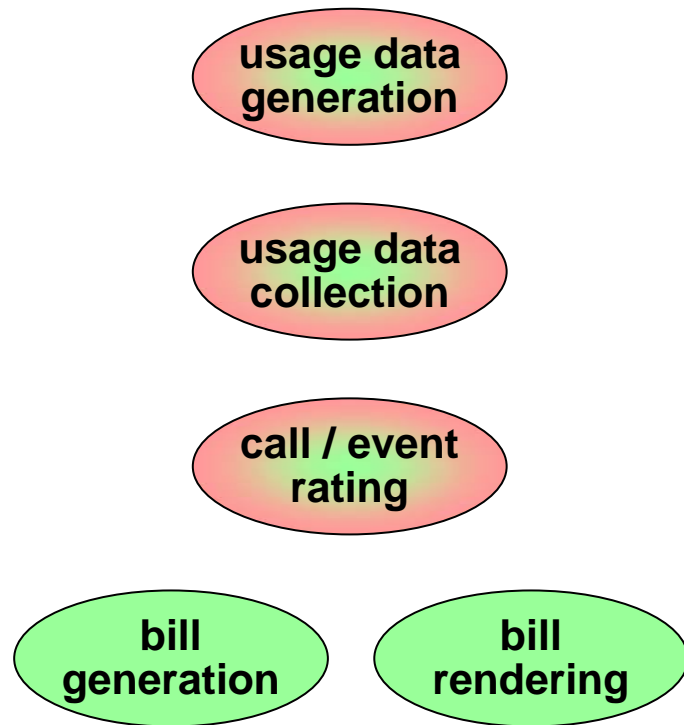
- Similar to mapping of trunk groups and members to DS1 facilities
- Opportunity to greatly simplify traditional trunk paradigms

## UE/CPE provisioning

- UE/CPE have significant intelligence
- Subscriber, service, and security data must be provisioned in CPE/UE
- Few standards exists

# Accounting Management

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Legend:

- no significant changes
- some changes or minor issues
- major changes or issues

## Usage Data Generation

- Different types of usage
- Event-based billing
- Different data formats
- Necessitates mediation functions

## Usage Data Collection

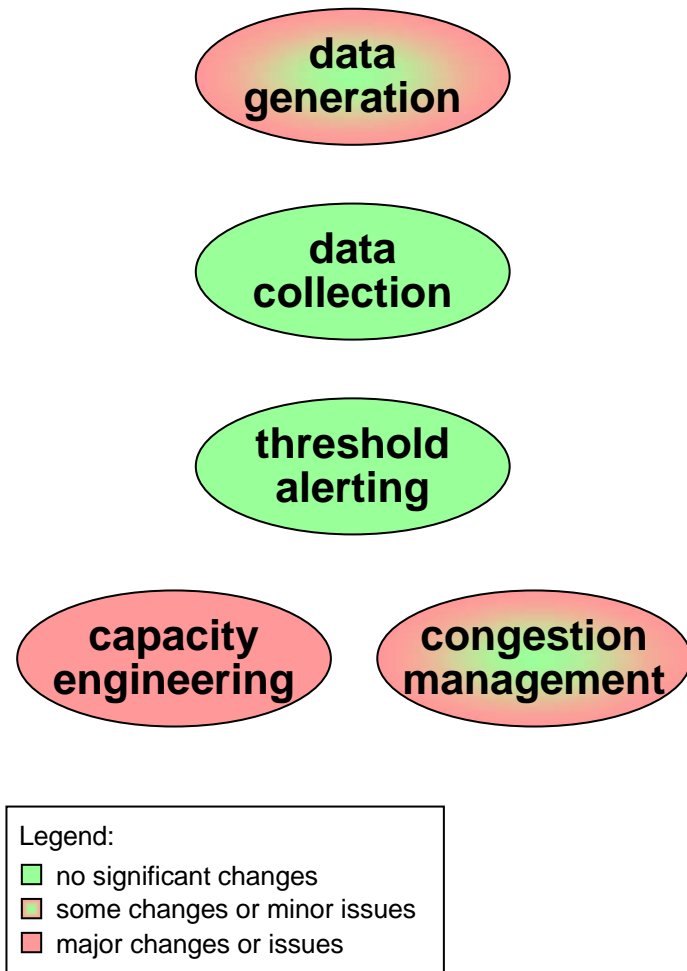
- Different collection mechanisms
- Generally utilizing file transfer
- Somewhat akin to AMADNS

## Call / Event Rating

- Affected by new types of usage
- May occur at different points in the billing flow (including within the network)

# Performance Management

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## Data Generation

- Numerous new measures
  - Delay, lost packets, etc
- Traditional trunk measures

## Capacity Engineering

- Based on similar principles
- Data is significantly different
- Opportunity to size facilities based on coarser granularity than with traditional trunk paradigms

## Congestion Management

- Need a completely different paradigm
- Based on resource allocation
- RACF / RACS models provide the means; implementations commencing

# Summary

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**Most aspects of IMS and IP-based network management are *evolutionary*, rather than *revolutionary***

**Traditional solutions can be easily extended to address many of the management problems**

***However*, introduction of IP technology in the core network introduces new management issues never encountered before**

**The most significant of these deal with**

- (a) the new role of UE/CPE, with greater intelligence
- (b) new trunk paradigms
- (c) congestion management, addressed via RACF / RACS solutions

**Security plays a far more prevalent role in IMS and IP-based networks**