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# 3GPP2 MMD Status for IMS Workshop

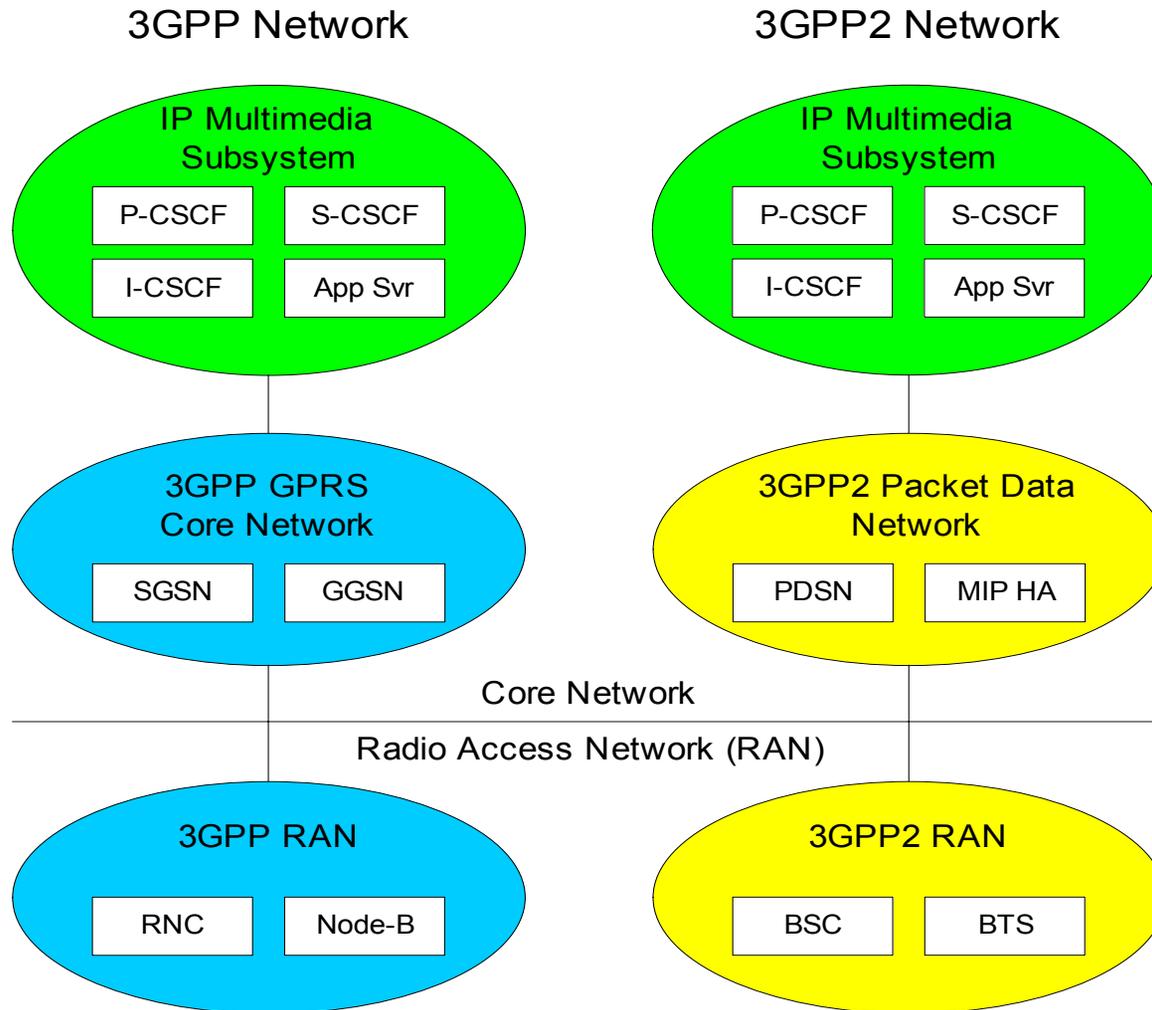
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# Outline

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- **IP Multi-media Subsystem (IMS)/ Multi-Media Domain (MMD)**
  - 3GPP/3GPP2 differences
  - Status of MMD work, current and future
- **N.B. - MMD is IMS + 3GPP2 Packet Data Subsystem**

# IMS in 3GPP/PP2



- Notes:
-  Specific to WCDMA
  -  Specific to cdma2000
  -  Harmonized between 3GPP and 3GPP2

# 3GPP2 MMD Releases

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- 3GPP2 MMD Rev 0, A complete, Rev B, C in progress
- MMD Rev 0
  - Basic IMS as in Rel 5, SIP/SDP procedures, security, offline charging, service architecture
- MMD Rev A
  - Adds Presence, Conferencing
- MMD Rev B
  - Includes Optimized call flows, Service Based Bearer Control (QoS mappings), VoIP/1x call delivery and handoffs, online charging, messaging
- MMD Rev C
  - Roaming, Security, Policy enhancements, other content still open

# 3GPP/3GPP2 differences

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- 3GPP IMS and 3GPP2 MMD are very similar except for some differences noted in the next few slides
- The differences were defined to support deployment of IMS with 3GPP2 systems.
  - Access network specific changes
  - Enhance flexibility
  - Optimizations
- The differences are not intended to affect interoperability between 3GPP and 3GPP2 systems.

# IMS Technical Differences (1)

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- Access Security
  - 3GPP IMS mandates IPsec between UE and P-CSCF for integrity protection
    - » 3GPP2 allows for P-CSCF and UE to negotiate other security mechanisms using RFC 3329 (like ipsec-ike, tls, digest etc)
  - 3GPP IMS mandates using AKA for authentication between S-CSCF and UE
    - » 3GPP2 allows for alternate authentication mechanisms like Digest, see S.S0086-B
- 3GPP2 has a proposed work item to develop IMS security solutions using 2G R-UIMs (i.e. R-UIMs that only support CAVE based protocol, but not AKA).
  - It is desirable to avoid any conflict with the existing IMS security mechanisms while defining support for 2G R-UIM based IMS security scheme.

# IMS Technical Differences (2)

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- Smart Cards
  - 3GPP IMS terminals have smart cards (SIM/UICC)
  - 3GPP2 IMS does not require a smart card
    - » IMS information can be stored in UE or R-UIM.
    - » 3GPP2 now supports UICC + ISIM for operators that choose that method.
- P-Access-network-Info
  - UE includes CDMA specific information in P-Access-network-info
- HRPD-VoIP to 1X-CS interworking
  - Behavior specific to 3GPP2 systems
  - 3GPP assumed dual-radio UE
  - 3GPP2 allows architectures with both single-RF and dual-RF
    - » Single radio for HRPD/1x
    - » Dual radio for WLAN/1x

# IMS Technical Differences (3)

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- Temporary Public/Private Identifiers
  - 3GPP creates temporary Public/Private IDs to support terminals without ISIM application.
  - MMD Rev 0 (first release of MMD) does not support temporary IDs
  - MMD Rev A supports temporary IDs
    - » The method of generating these ID's is different between 3GPP and 3GPP2
      - E.212 vs MIN based IMSIs.
- Anchored internet access point
  - In 3GPP, the GGSN is anchored for a given session.
  - In 3GPP2, the PDSN may change.

# IMS Technical Differences (4)

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- HSS (Home Subscriber Server) vs AAA
  - In 3GPP2, AAA + subscriber databases represent an HSS.
  - Also in 3GPP2, HSS is used only for PS domain.
  - In 3GPP, HSS is used for both PS & CS domains.
- P-CSCF Discovery procedures
  - 3GPP2 supports static configuration and DHCP for P-CSCF discovery
  - 3GPP Rel-5 supports P-CSCF discovery through DHCP and PDP context activation.
- MMD supports Enhanced-Proxy-SLF in addition to Redirect-SLF defined by 3GPP

# Current Projects in 3GPP2 MMD

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- X.P0013 MMD Rev B
  - Service Based Bearer Control (SBBC)
  - Optimized call flows
    - » Optimize resource reservations to speed session setup
    - » Shows QoS procedures in PDSN and HRPD RAN
      - AT can pre-configure QoS reservations for SIP and RTP flows
  - Online Charging
  - Messaging
- X.P0027 Presence
- X.P0029 Conferencing
- X.P0042 VoIP/1x interworking (voice call continuity)
- X.P0048 SMS over IMS
- X.P0049 MMD Emergency Calling
- WLAN/HRPD VoIP/VoIP handoffs

# New Projects in 3GPP2 MMD

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- Security Enhancements
- Policy Enhancements
- Roaming
- Other MMD Rev C items (under discussion)

# Security Enhancements

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- For both Multi-Media Domain and packet data network security.
- Developing security requirements and the security architecture to support the following:
  - Methods to reuse authentication results to bootstrap keys for SIP and non-SIP applications.
  - Methods to detect security problems in the network
  - Methods to remediate problems, whether in network nodes or end-user devices
  - Ability to update security software on devices when required
  - Ability to distribute security policies throughout the system.
- IETF is developing some of the protocols needed for this.

# Policy Enhancements

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- MMD Rev B defined Service Based Bearer Control (SBBC) which enables an operator apply policy to SIP services, and to provision flow based charging rules at the PDSN.
- SBBC provides the mapping between application layer signaling and resource management in the RAN via the Tx/Ty interfaces. SBBC is somewhat limited however, in that the PDSN is the only policy enforcement point.
- New work item expands the scope of policy
  - to include overall coordination of network resource usage (for SIP and non-SIP applications)
  - to enable policy exchange with other operators for roaming subscribers.

# MMD Roaming

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- Inter-operator roaming architecture and protocols to allow MMD operators to provide services to their customers roaming on other networks.
- Includes IMS and PDS aspects.
- The MMD system will provide home operator control of MMD services. It is expected that all bearer traffic is not required to be routed via the home system. This will allow for low latency of real time traffic in the visited system.

# IMS Alignment and Evolution

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- Continue exchanging CRs via company contributions
- Baseline agreement for VoIP and other features
  - Supplementary service specifications
- Develop tests for IMS core functions
  - such as registration and authentication, XDM, Presence, SIP RFCs etc
  - Ensure interop for IMS clients, internet clients, and legacy PLMN/PSTN devices

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## Links to MMD Documents

- [http://www.3gpp2.org/Public\\_html/specs/index.cfm](http://www.3gpp2.org/Public_html/specs/index.cfm)
- <ftp://ftp.3gpp2.org/TSGX/Projects>