



# 3GPP2 All-IP Wireless Network

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# Outline



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PROJECT 2  
"3GPP2"

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- Quick 3GPP2 All-IP History
  - Mobile IP and AAA
  - Status - Project Phases
  - Draft High Level Feature List
  - Architecture
    - Basic Architecture Diagram
    - IP Multimedia SIP Services
    - IP Multimedia Services Architecture
  - Convergence with 3GPP All-IP Core Network
  - The Future

# Quick All-IP History



- Ad Hoc formed to perform initial feasibility study - November 1999.
- Ad Hoc results submitted to the 3GPP2 Steering Committee (SC) at the November 2000 SC meeting in Tokyo - original Ad Hoc was formally dissolved.
- New Ad Hoc was formed under TSG-S in December, 2000.
- Leadership team established:
  - Mark Lipford (Sprint PCS) was appointed Chair.
  - Mike Dolan (Lucent) was appointed as Vice Chair.
- Operates with some level of autonomy as instructed by the 3GPP2 SC, and reports regularly to TSG-S – meets with other TSGs
- AdHoc charter includes Requirements, Architecture, and Project Management.



- The 3GPP2 All-IP architecture is based on the use of Mobile IP, SIP, and AAA protocols.
- IPv4 (and Mobile IP v4) support is necessary for migration of existing networks. IPv6 (and Mobile IP v6) is a very high priority.
- AAA (Authentication, Authorization, and Accounting) protocol will likely be Diameter.
- Mobility across different access networks is a requirement for All IP releases beyond 2001; e.g., CDMA2000 ↔ IEEE 802.11b.

# Status - Project Phases



- The following standard development phases have been defined.
  - Phase 0 - Encompasses standards that are already complete and have been balloted by the SDOs.
  - Phase 1 - Encompasses technical specifications that are currently being completed in 3GPP2 including the initial release of the Legacy MS Domain.
  - Phase 2 - Includes specification development work that began in mid-2001. This will include support for the IP Multimedia Domain. The work will likely be done across more than one release, the first being in 2002.
  - Phase 3 - Includes specification development work that will add more functionalities to the IP Core Network. This work will complete after 2002.
- An Evolution Plan document that defines operator deployment options is in development.

# High Level Feature List



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- Partial list of All-IP high level features:
  1. IP Multimedia Domain
  2. Legacy Mobile Station (MS) Domain
  3. IP Transport
  4. IPv6 Support
  5. IP-based Service Architecture
  6. End to End QoS Support for Both Domains
  7. Security
  8. OAM&P (Operations, Administration, Maintenance, and Provisioning)
  9. Authentication, Authorization, and Accounting
  10. Mobility based on Mobile-IP
  11. Voice over IP based on SIP signaling.

# Status - Architecture Document (NAM)

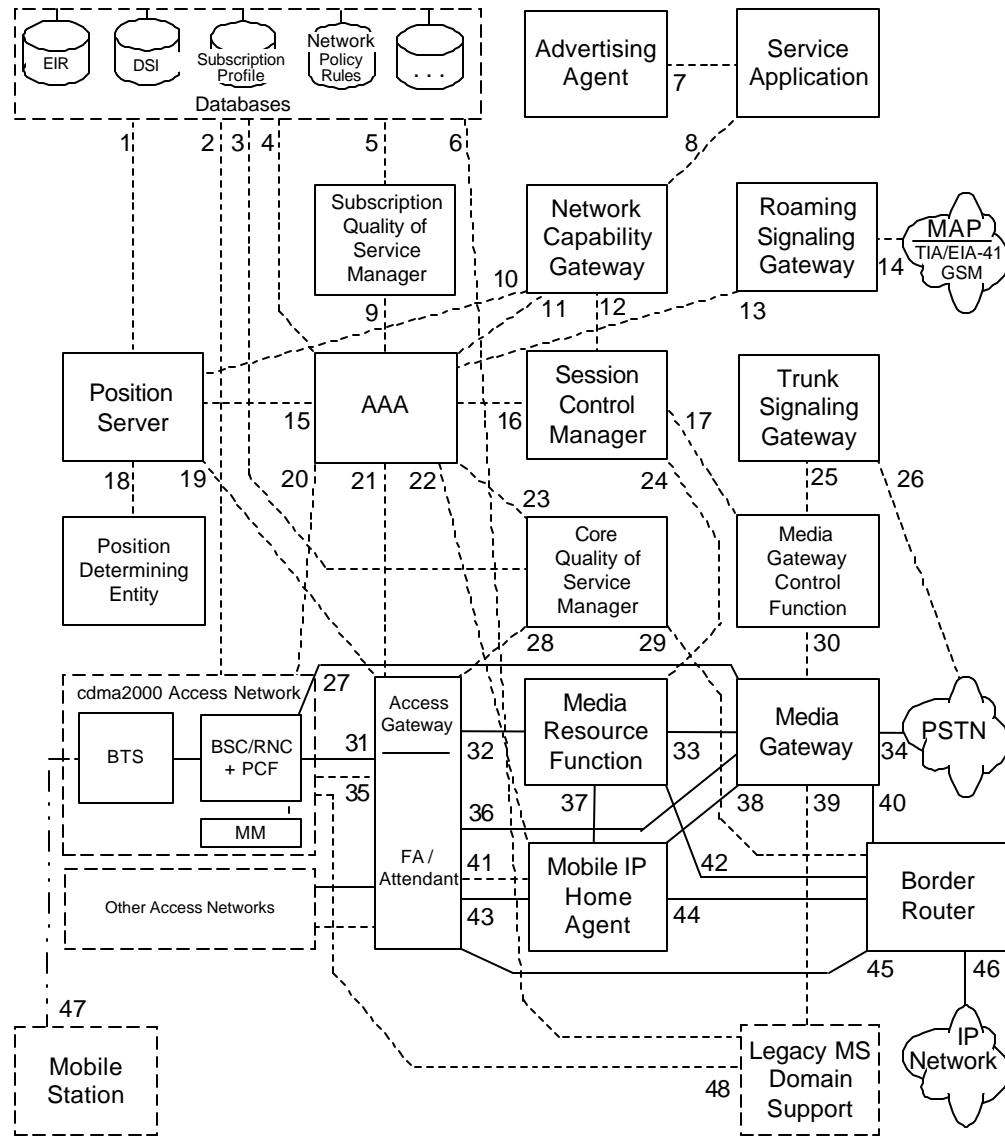
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- The Network Architecture Model (NAM) document contains:
  - The general network entity view with descriptions of all entities and reference points.
  - A set of different “detailed” views providing perspectives on various architectural aspects.
- The NAM version is being updated at present as the various 3GPP2 TSGs determine architectural improvements to be made.

# 3GPP2 All-IP Architecture



Legend:

Dashed lines indicate signaling paths.

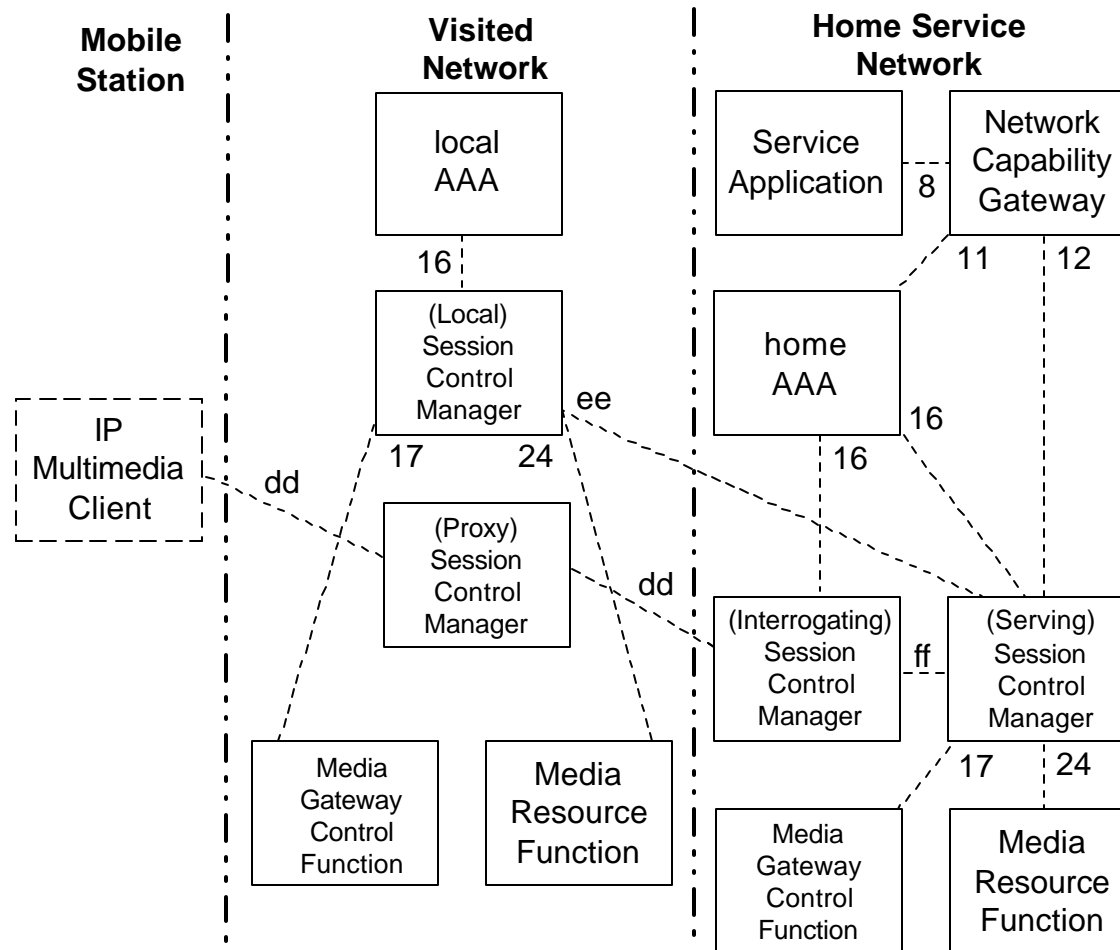
Solid lines indicate bearer paths.

Line 47 from the Mobile Station represents all bearer and signaling to/from the network.

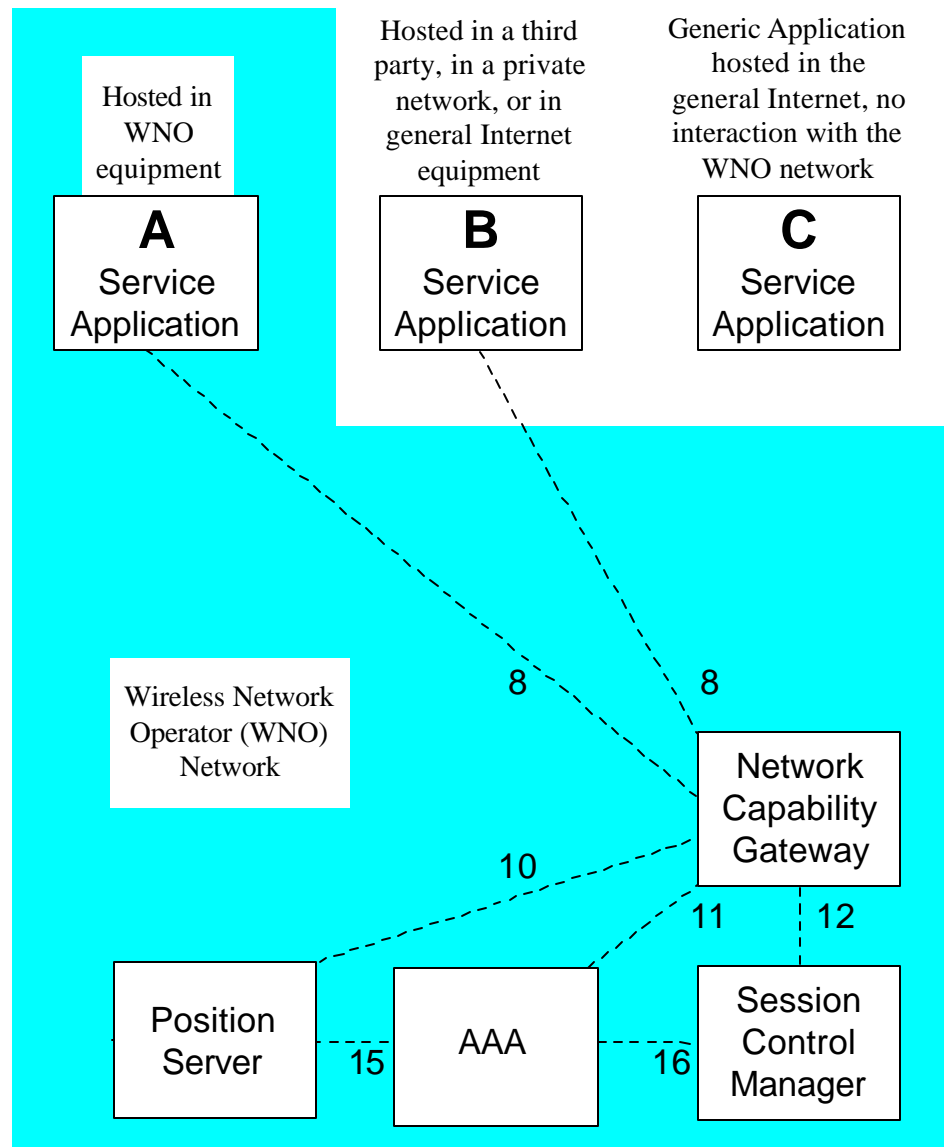
Dashed line boxes around groups of entities indicates a collective entity consisting of multiple functions.



# IP Multimedia SIP Services - Control Plane View



# IP Multimedia Services Architecture - Control Plane View





- Efforts are underway from all major manufacturers to ensure convergence of the 3GPP and 3GPP2 IP-based core networks.
- Variations in the core architectures are being addressed and unified, where possible.
- Message Flow work done in 3GPP is being adopted into the 3GPP2 work to ensure compatibility in SIP based wireless telephony.
- Diameter is being considered for accounting functions by 3GPP.



- Convergence toward an IP-based core network that is independent of the access network.
- Use of multiple access networks: CDMA2000, W-CDMA, 802.11b, Ethernet, ... over a single core network.
- Integrated access technologies in terminals that allow the user to move from a cellular environment, to a campus wireless environment, to a wired environment - seamlessly.