

80<sup>th</sup> IETF, March 2011, Prague, Czech Republic

# PMIPv6 multicasting support using native infrastructure

draft-sijeon-multimob-direct-routing-pmip6-00.txt

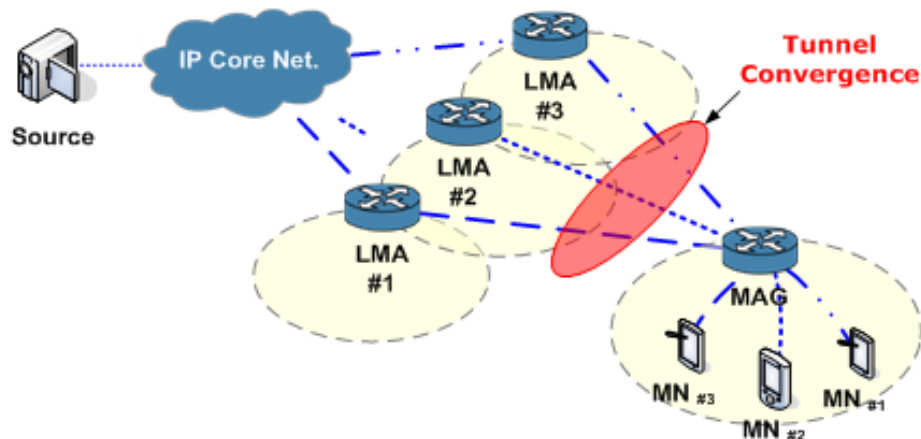
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# Status of the Draft

- This draft has been derived and revised from [I.D.sijeon-multimob-mms-p mip6] as re-chartered MULTIMOB WG description
  - The usage of direct routing architecture is highlighted
  - Simple comparison is also given with base solution and dedicated LMA approach

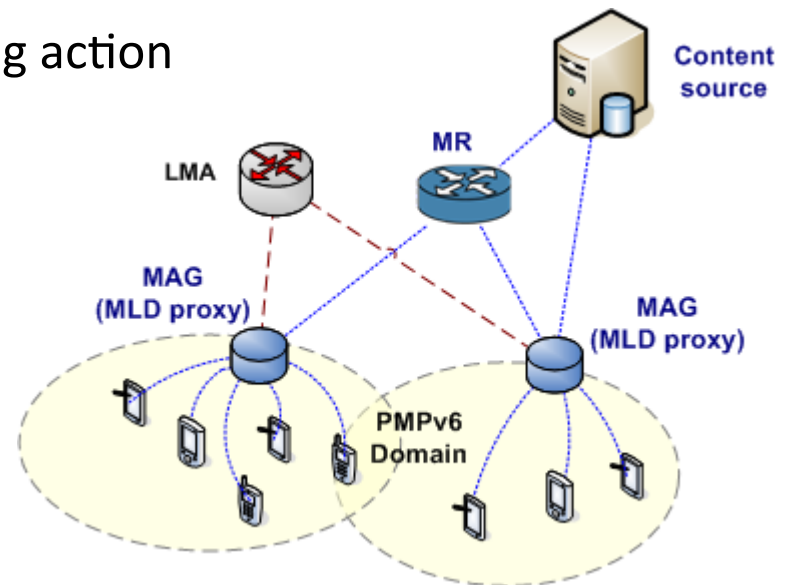
# Problem statement

- To support multicasting in PMIPv6, the base deployment option has been specified [I-D.ietf-multimob-pmipv6-base-solution]
- The base solution introduces a tunnel convergence issue in the case that a MAG receives the same multicast packets from more than one LMA
  - Duplicated multicast packets are converged into one MAG



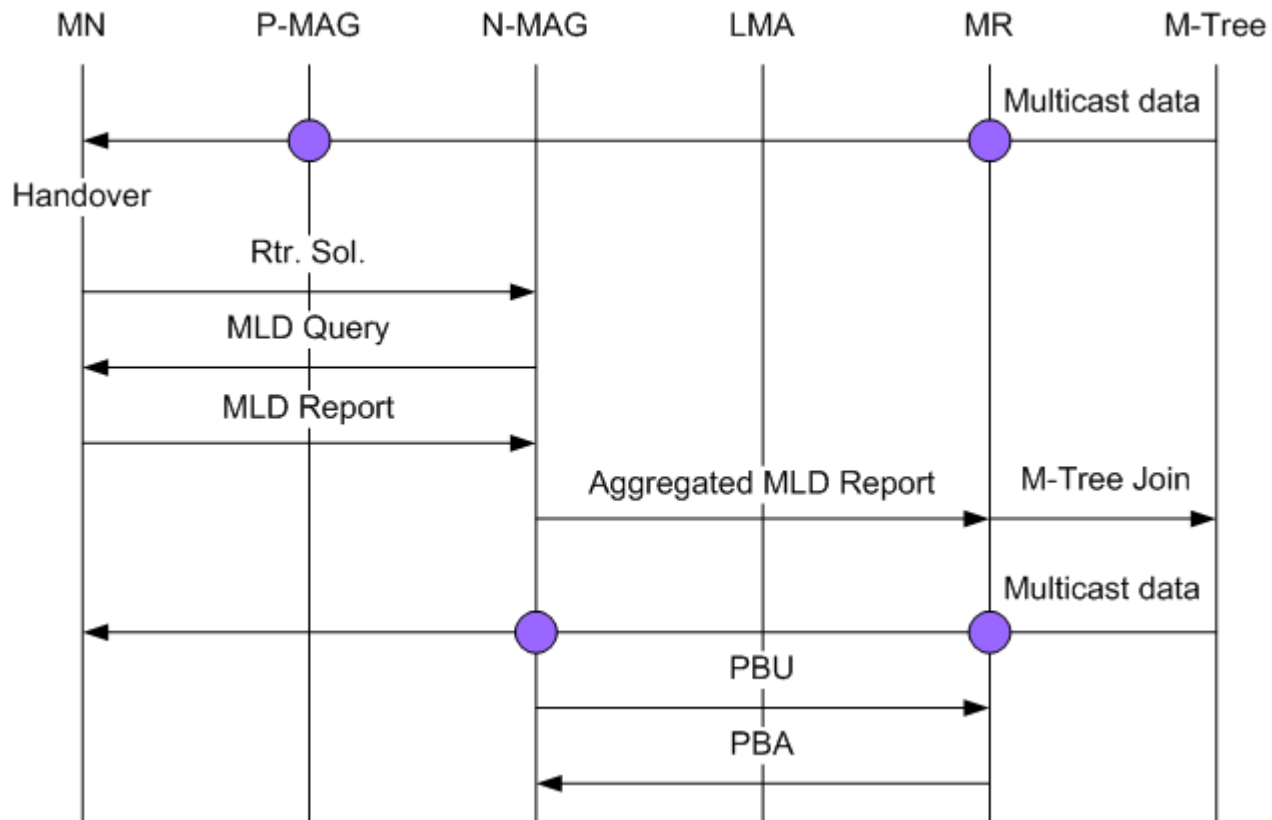
# Proposed direct routing (local routing) solution

- We propose a direct routing solution that a MAG receives multicast packets from a multicast router or a content source directly without tunnel
  - A MAG receives multicast packet from MR or source directly
- The key idea is to separate the multicasting function from LMA, however the MLD proxy is required to be placed on MAGs
  - An LMA is not involved in multicasting action
- It is simple and easy to deploy



# Handover procedure

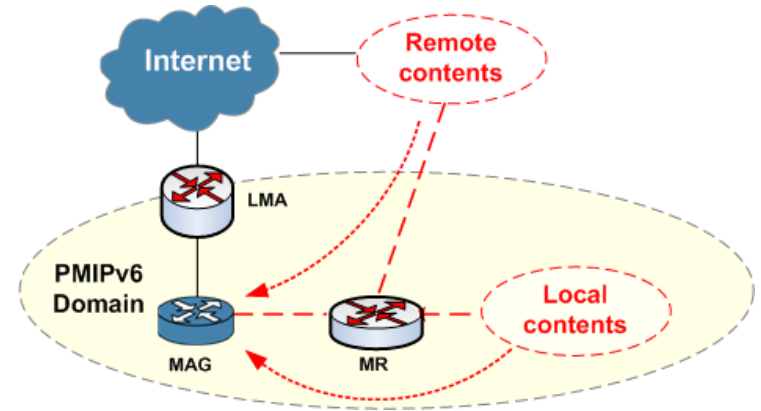
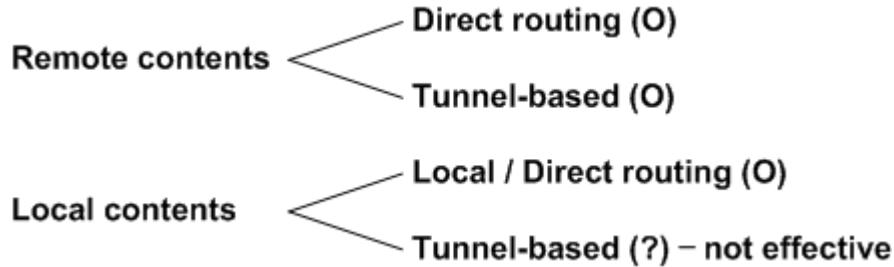
- Direct routing solution follows standard PMIPv6 operation
- PBU/PBA procedure occurs with MLD query/report at the same time



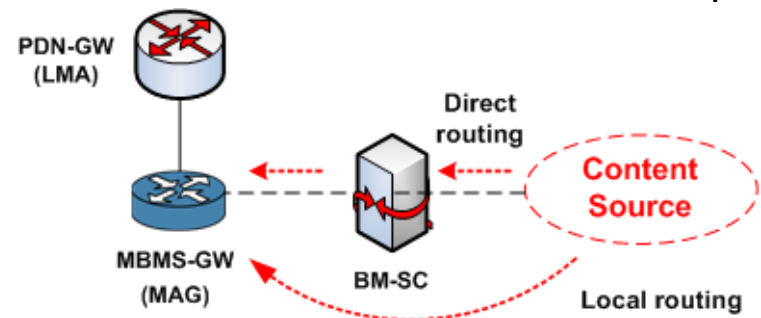
# Benefits of the direct routing

- No tunnel convergence problem!
- No packet tunneling overhead!
- No complexity on LMA!
- No extensions on PMIPv6 entities!

# Applicability



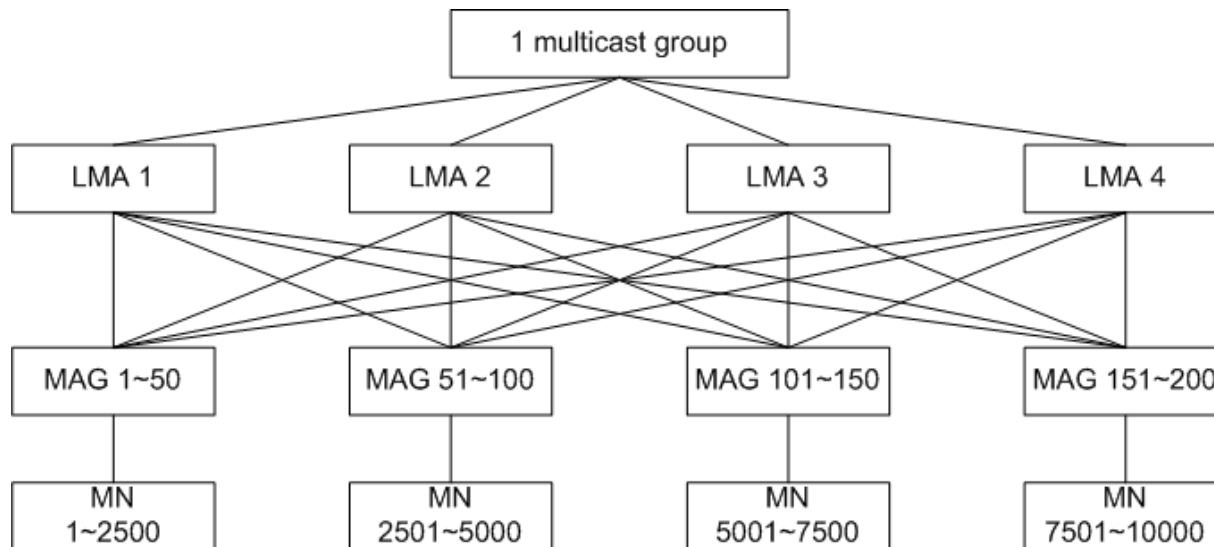
- Regardless of the location of contents, the direct/local routing is well applied in supporting multicast service
- Direct/local routing concept is reflected in MBMS architecture of 3GPP SAE
  - Multicast traffic are delivered from content source to MBMS-GW without passing LMA (PDN-GW)



\* 3GPP TS 23.246, "Multimedia Broadcast/Multicast Service (MBMS); Architecture and functional description (Release 9)," 2010-06

# Comparison

- Performance comparison of three kinds of PMIPv6 multicasting approaches
  - Base deployment, dedicated LMA, and direct routing
- All MNs subscribed to same multicast group
- # of LMAs and MAGs : 4 and 200, respectively
- # of mobile nodes : 10,000





# Comparison

- If the number of received packets at MAG is approximately to be 1000 during 1s (500 Kbps)
- Tunnel header is 40 bytes and 1 hour is assumed for multicast delivery
  - Packet overhead : (tunnel\_header size X # of packets X # of tunnels X time(s))

PMIP Multicast Scheme	Redundant streams at MAG	Simultaneous streams at LMA/ D-LMA(MR)	Simultaneous streams btw. MAGs and LMAs(MR)	# of tunnels	Packet overhead btw. MAGs and LMAs(MR)
Base solution multicast LMA	3	200	800	800	107 Gbytes
Dedicated multicast LMA	0	200	200	200	26.8 GBytes
Direct routing	0	200	200	0	0

# Q & A

