I E T F®

Extension of the MLD proxy functionality to support multiple upstream interfaces

## <draft-contreras-multimob-multiple-upstreams-00.txt>

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Problem statement

- General application:
  - sharing of a common network access infrastructure among different multicast content providers
- Advantages
  - Subscribers can get their preferred contents from different multicast content providers without network constraints and without requiring PIM routing on the access / aggregation device
  - Redundancy
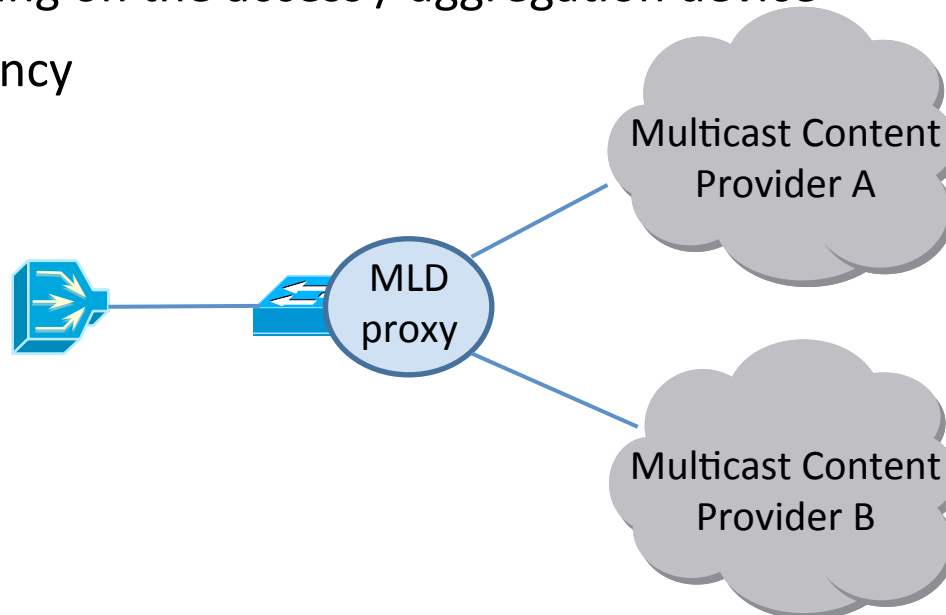
Other potential benefits

- Specific application to PMIPv6:
  - The support of multiple upstream interfaces on an MLD proxy has been identified as an opportunity for system optimization

- Advantages:
  - Traffic routing optimization within the PMIPv6 domain
  - Simultaneous support of remote and local multicast subscription
  - Avoidance of multiple MLD proxy instances on MAG

Draft Motivation

- Solution Complexity
  - Handling of control messages for/from multiple upstreams
  - Efficient handling of data traffic for/from multiple upstreams

- Purpose
  - Focus on multicast distribution within PMIPv6
    - However general applicability can be expected
  - Requirements identification for supporting multiple upstreams
  - Specification of the needed MLD proxy extensions

Scenarios of applicability for MULTIMOB

- Listener mobility
  - ✓ Single MLD proxy instance on MAG
  - ✓ Remote and local multicast subscription
  - ✓ Dual subscription to multicast groups during handover

- Source mobility
  - ✓ Support of remote and direct subscription in basic source mobility
  - ✓ Direct communication between source and listener associated with distinct LMAs but on the same MAG
  - ✓ Route optimization support in source mobility for remote subscribers

Summary of needed functionality per scenario

Functionality	Multicast Listener			Multicast Source		
	Single MLD proxy (4.1.1)	Remote & Local Subscr. (4.1.2)	Dual Subscr. during HO (4.1.3)	Direct & Remote Subs. (4.2.1)	Listener & Source on MAG (4.2.2)	Route Optimiz. (4.2.3)
Upstream Control Delivery	✘	✘	✘	✘	✘	✘
Downstream Control Delivery	✘	✘	✘		✘	
Upstream Data Delivery				✘		✘
Downstream Data Delivery	✘	✘	✘		✘	
1:1 MN to Upstream Association	✘					
1:N MN to Upstream Association		✘	✘	✘	✘	✘
Upstream i/f selection per mcast group		✘				
Upstream i/f selection for all groups			✘			
Upstream traffic replication				✘		✘

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Backup slides
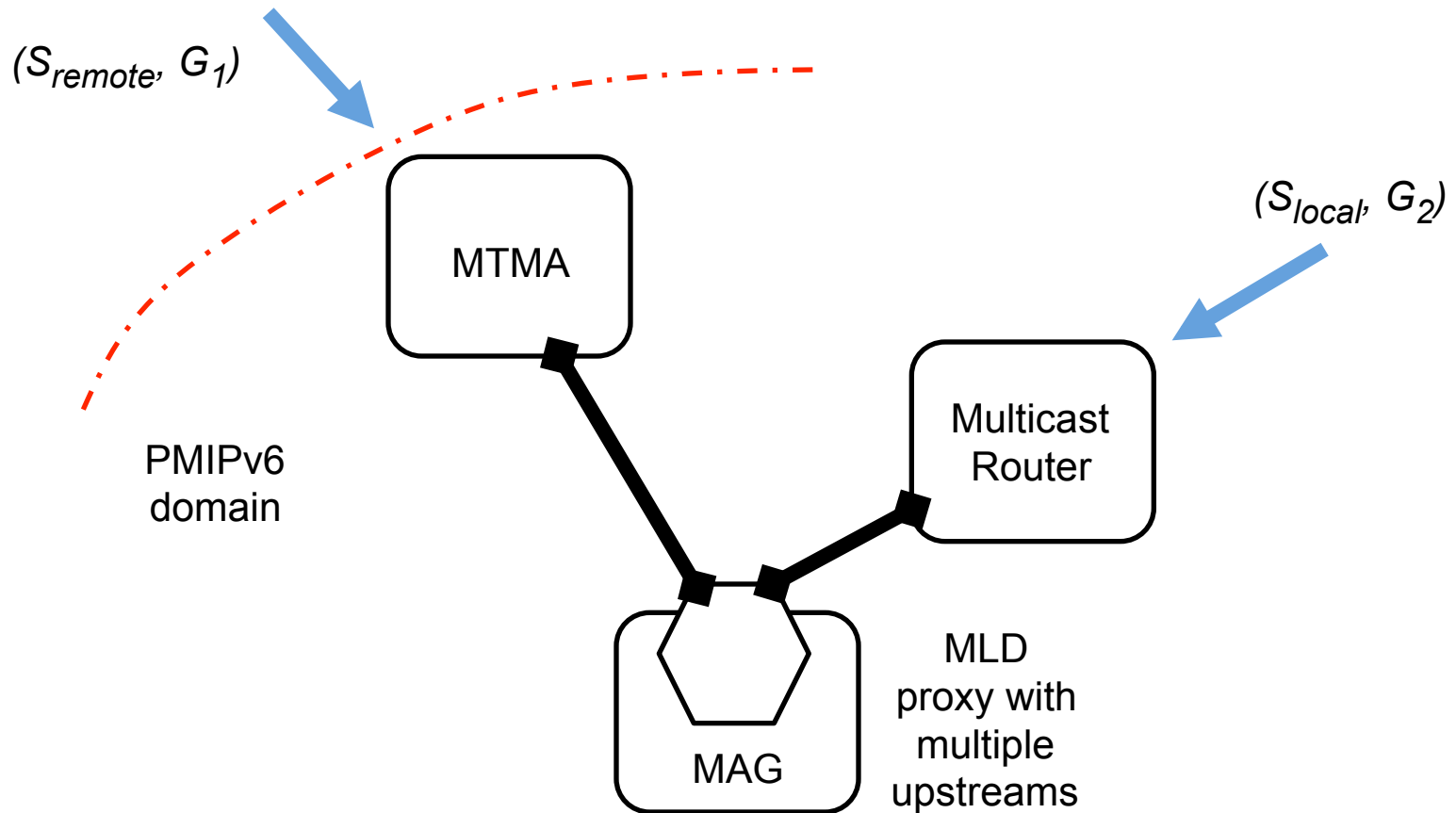
Applicability Scenarios for MULTIMOB

Single MLD proxy instance on MAG

Remote and local multicast subscription

(S_{remote}, G_1)

(S_{local}, G_2)

MTMA

Multicast Router

PMIPv6 domain

MAG

MLD proxy with multiple upstreams
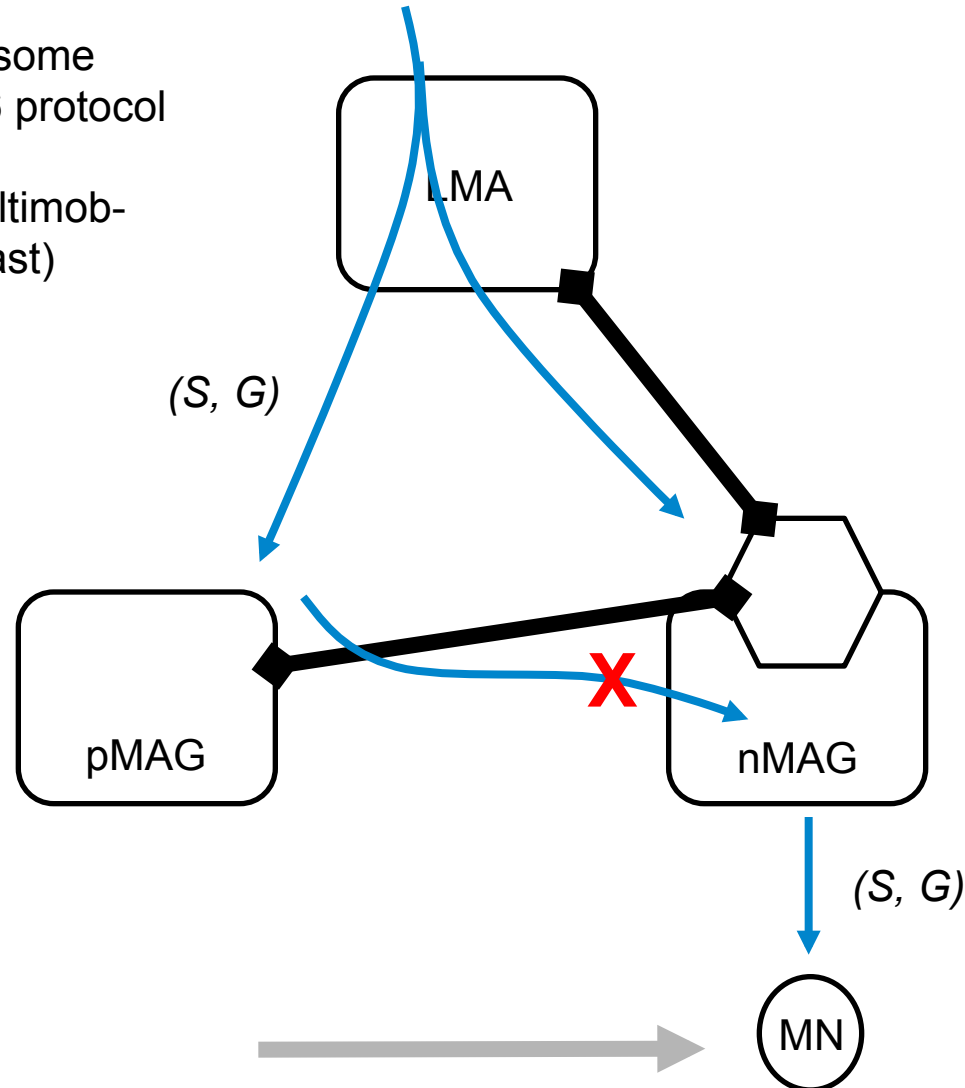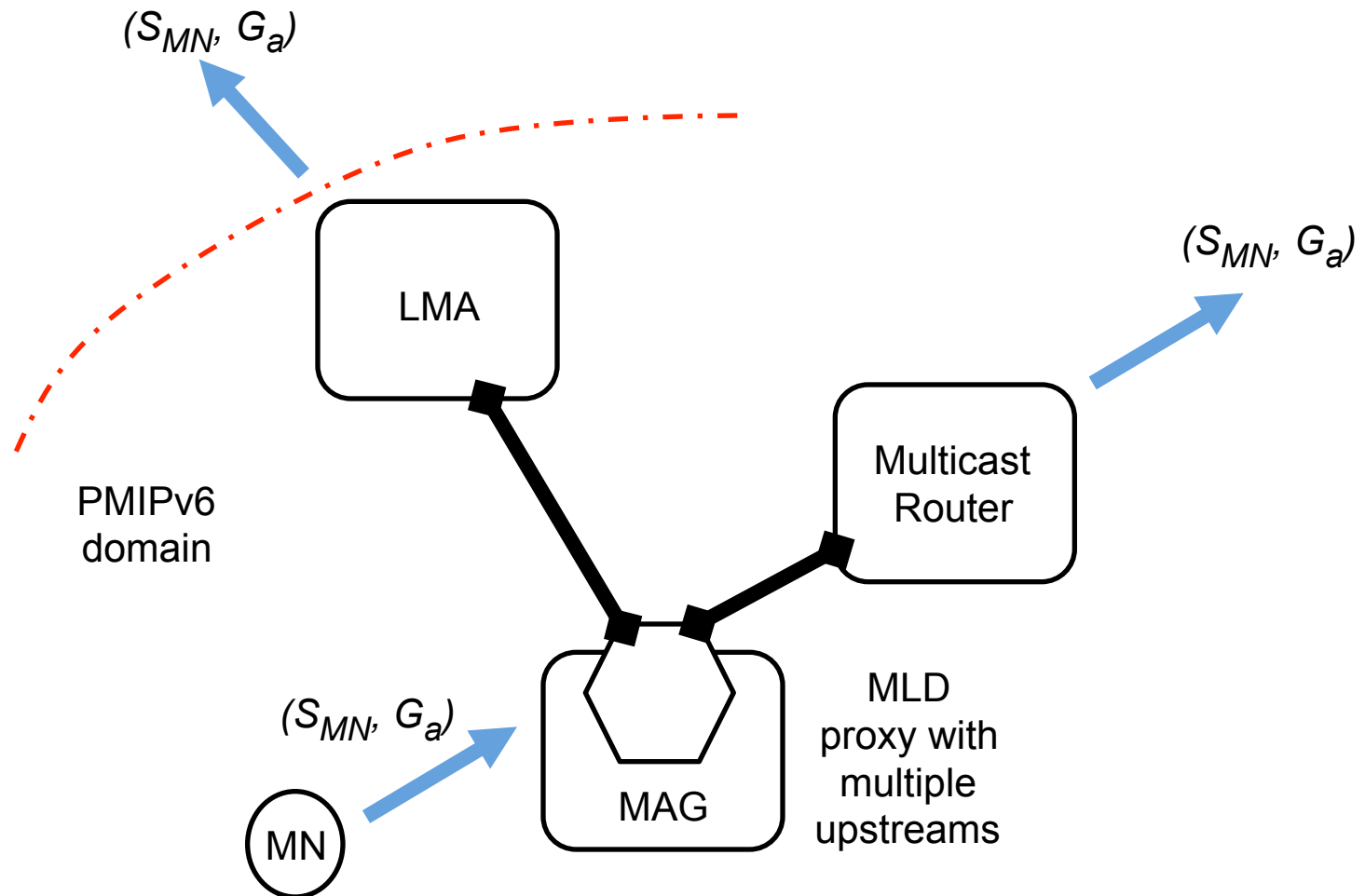
Listener mobility
Dual subscription to multicast groups during handover

Handover assisted by some
adaptation of FPMIPv6 protocol
for multicast traffic
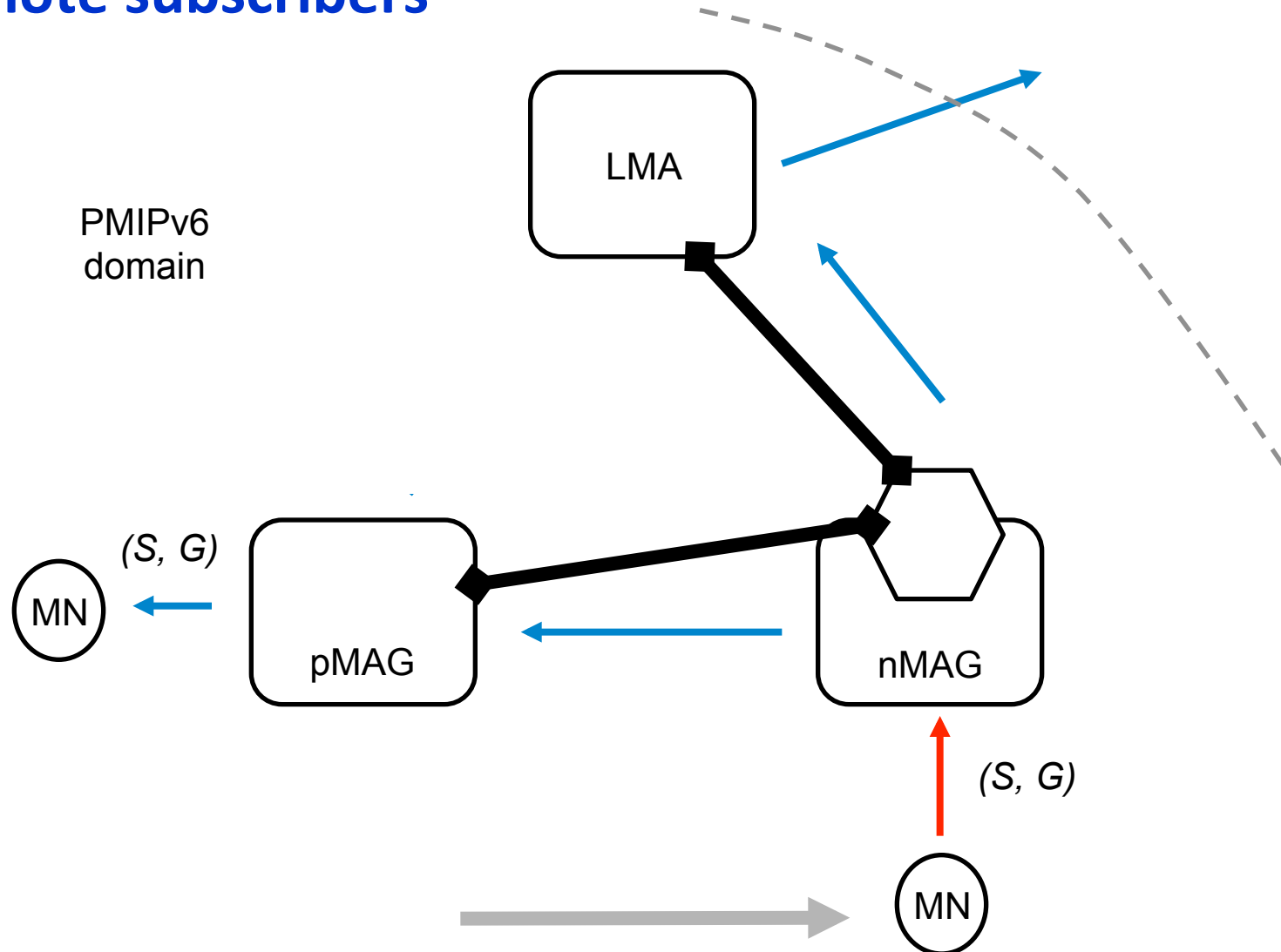(e.g., draft-schmidt-multimob-
fmipv6-pfmipv6-multicast)

LMA

(S, G)

pMAG

nMAG

X

(S, G)

MN

Support of remote and direct subscription in basic source mobility

Route optimization support in source mobility for remote subscribers

Direct communication between source and listener associated with distinct LMAs but on the same MAG

(S_{MN}, G_a)

Orange LMA

Green LMA

MLD proxy with multiple upstreams

(S_{MN}, G_a)

MN

MAG

(S_{MN}, G_a)

MN