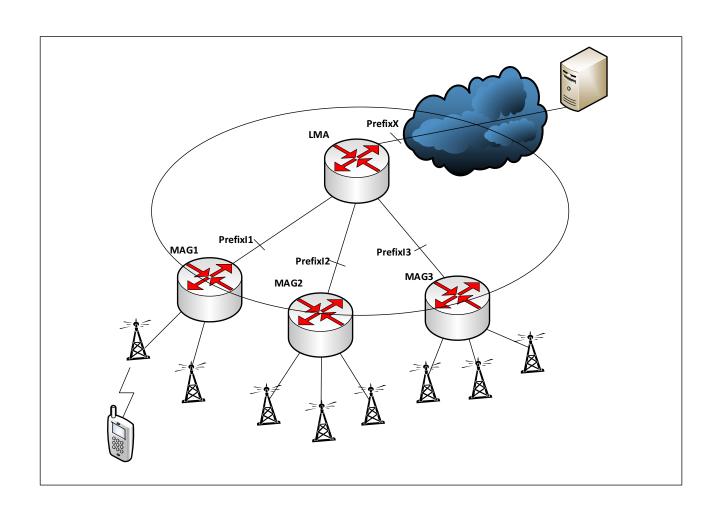# OnDemand Extensions to DHCPv6 for IP Session Continuity Requests

draft-moses-dmm-dhcp-ondemand-mobility-06
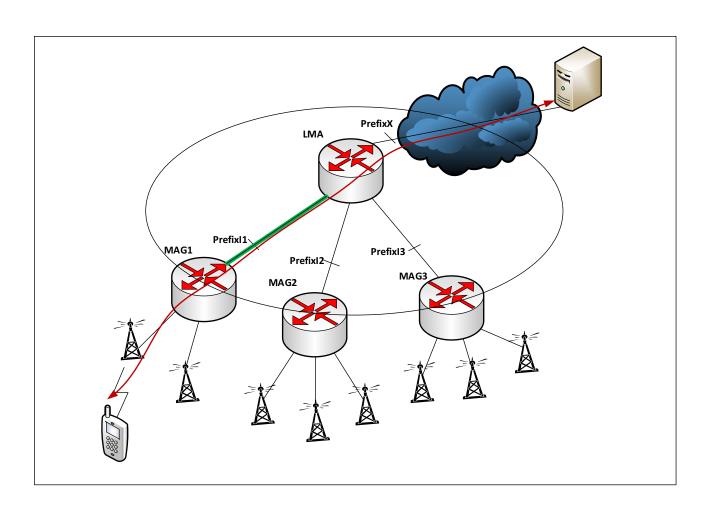
Danny Moses

Topics

1. Maintaining IP session continuity
2. The DMM enhancements
3. IP session continuity types
4. Required DHCPv6 extensions
5. Asking for dhc review

Mobile networks

IP traffic through a tunnel between the MAG and LMA

After handoff…

When multiple nodes are being served

More nodes…

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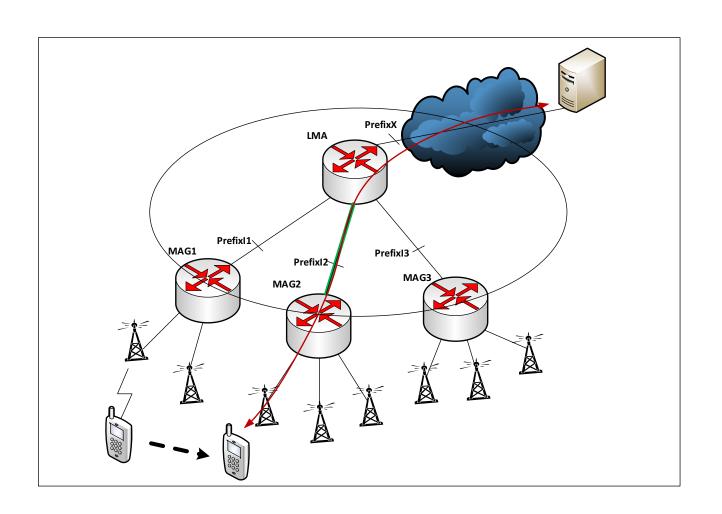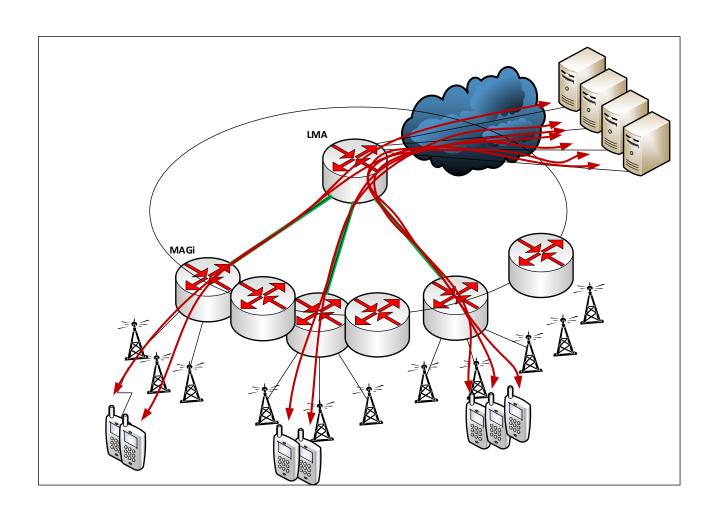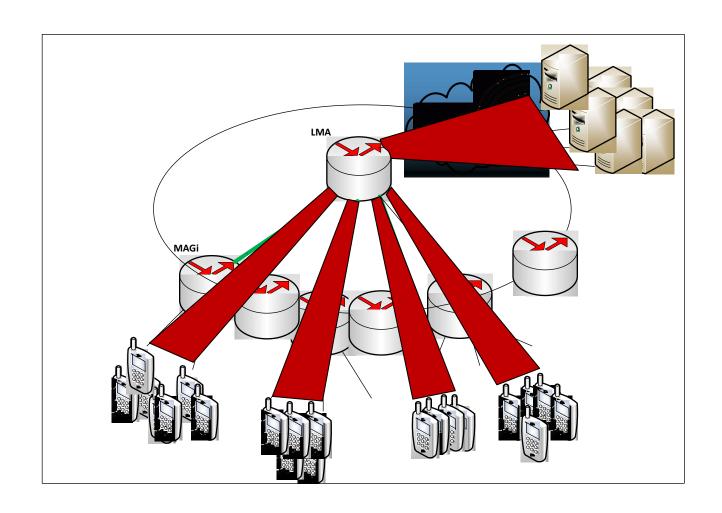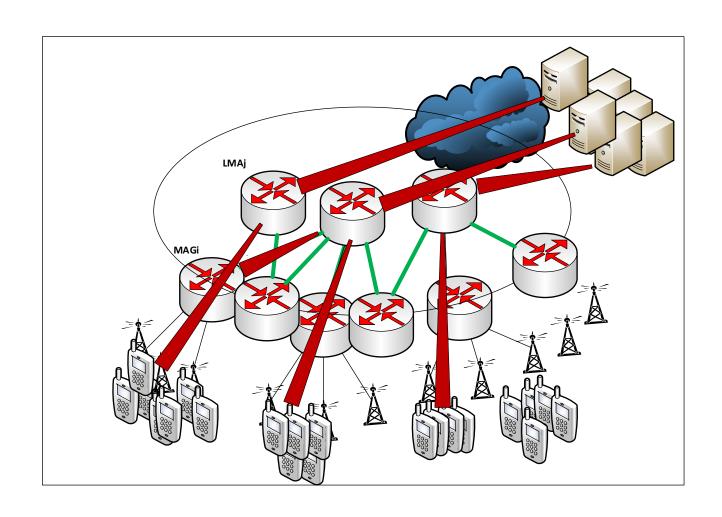# Distributed LMAs

Not all applications require this IP session continuity service

- Maintaining IP session continuity comes with a price
- Some applications do not really need this service
    - Web browsers that fetch web pages
    - Email clients
    - Skype
- When the source address is gone, they will detect an error and open a new socket
    - The new socket will be associated with a new source IP address that was assigned after the handoff
    - The time delay does not dramatically affect the user's experience

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IP session continuity types

- **Fixed** – the network guarantees the same IP prefix to a node for a very long time (until the business relationship ends), regardless if the node is connected to the network or not

- **Session-lasting** – the network guarantees the same IP prefix to a node as long as the IP session is up

- **Graceful-replacement** – the network might obsolete an IP prefix but will provide a graceful period of time for the node to switch to the new prefix. During this time, the node may use both old and new prefixes.

- **Non-persistent** – no guarantee

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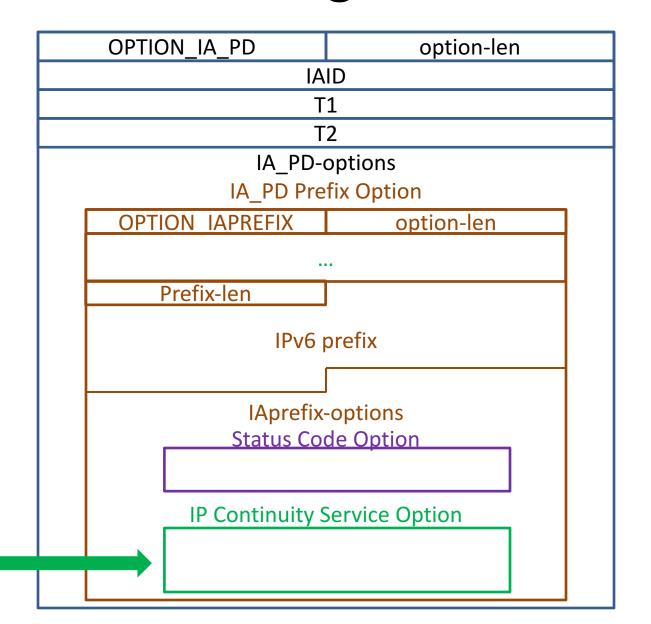5. Asking for dhc review

DHCPv6 requirements

- Need a way for the mobile node (its DHCPv6 client) to:
  - Request an IP prefix with a specific IP session continuity service type
  - Request a specific IP prefix
- Need a way for the network (through the DHCPv6 server) to:
  - Inform the mobile node with the IP prefix, the IP session continuity service type it provided

Defined enhancements

- Two new options are defined:
  - IP Continuity Service Option
  - Anchor Preference Option*
- Goals:
  - No impact on DHCP message or flow
  - No modification to the existing DHCP message format

* We think we can use the existing IA_PD Prefix option for Anchor preference indication and we do not require a new option…

Usage:

OPTION_IA_PD	option-len
IAID	
T1	
T2	

IA_PD-options

IA_PD Prefix Option

OPTION_IAPREFIX	option-len
...	
Prefix-len	

IPv6 prefix

IAprefix-options

Status Code Option

IP Continuity Service Option

Option fields

- The IP Continuity Service option comprises the following fields:
  - Option-code: OPTION_IPv6_CONTINUITY_SERVICE
  - Option-len: 1
  - Service type: one of the following values:
    - Non-Persistent
    - Session-Lasting
    - Fixed
    - Graceful-replacement
    - Anytype
- When requesting an anchor, the IAanchor_preference-options field of the Anchor Preference option must include an IP Continuity Service option with the desired service (Fixed, Session-lasting or Graceful-Replacement)
- If alternatively we will decide to use the IA_PD Prefix option to request an anchor, its IAprefix-options must include an IP Continuity Service option with the desired service

Usage rules

- The server MUST never encapsulate an IPv6 Continuity Service Option in an IA_PD Prefix Option if the client had not used it first

- Once the IPv6 Continuity Service Option was encapsulated in an IA_PD Prefix Option, in both requests and replies, it MUST be used in all subsequent usages of that specific IA_PD Prefix in any message with the same Service Type value that was initially used by the server

Backwards compatibility

- If a client uses the IPv6 Continuity Service Option in an IA_PD Prefix option but receives no reply from the server after the specified retry attempts:
  - It SHOULD assume that the server does not support the IPv6 Continuity Service Option and retry without it
  - It MAY record this knowledge about the server and avoid using the IPv6 Continuity Service Option in subsequent communication with that server
  - If stopping the usage of the IPv6 Continuity Service Option when communicating with a specific server, the client SHOULD try again after a period of time (in case the server was upgraded at some point of time)
- Both DHCPv6 clients and servers MUST support the legacy IA_PD Prefix Option (with no encapsulated IPv6 Continuity Service Option)

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Next steps

- Review and guidance from the dhc group for consistency and conformance with the DHCPv6 specification
- dhc group approval
- Continue work in the dmm group