MHAP

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ipv6mh
http://arneill-py.sacramento.ca.us/ipv6mh/

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MHAP

Multi Homing Aliasing Protocol

• Router-based solution. Zero change to hosts.
• Dual-space protocol.
• One identifier: PI address (either MHAP or GAPI).
• Multiple locators: PA addresses.
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- The identifier and the locators are part of the same name space: IPv6 unicast addresses.
- The main innovation is that the identifier has limited routability and is used in the identifier-to-locator process.
- The scalability comes from the fact that the identifiers are not in the defaultless table.
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Similarities with multiaddress host-based solutions:

• A host has $n$ PA addresses associated to it.
• The address space used for transit is aggregated PA space.
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Differences with multiaddress host-based solutions:

- The multiple addresses are not bound to the host itself. The host has only one address, the PI identifier.
- There is no source address selection.
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Differences with multiaddress host-based solutions:

• The destination address selection uses BGP.
• Binding updates are router-based, not host-based.
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PA-a > PI-b Initial packet
PA-a > PI-b Initial packet
The MHAP requests are triggered by the initial packet.
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PA-3 > PI-b  MHAP Request 1
PA-4 > PI-b  MHAP Request 2
PA-a > PI-b  Initial packet
PA-a > PA-b2 Initial packet
PA-3 > PA-1 MHAP Request 1
PA-4 > PA-2 MHAP Request 2

The RV point has aliased all the packets on behalf of the client.
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PA-a > PA-b2  Initial packet
PA-a > PA-2   MHAP Request
PA-3 > PA-1   MHAP Request 1
PA-3 > PA-1  MHAP Request 1
PA-a > PA-2  MHAP Request
PA-a > PA-b2  Initial packet
MHAP

The endpoint has de-aliased the packet.
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PA-a < PI-b  Return traffic
Return traffic

PA-3 < PA1  MHAP Reply1
PA-4 < PA2  MHAP Reply2
PA-a < PI-b  Return traffic

The MHAP replies are not triggered by the return traffic.
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PA-a < PI-b
PA-3 < PA1  MHAP Reply1
PA-4 < PA2  MHAP Reply2
PA-a < PI-b  Return traffic
MHAP

PA-3 < PA1    MHAP Reply1
PA-4 < PA2    MHAP Reply2
PA-a < PI-b   Return traffic
The client builds aliasing entry.

PA-3 < PA1  MHAP Reply1
PA-4 < PA2  MHAP Reply2
PA-a < PI-b  Return traffic
MHAP

PA-a < PI-b  Return traffic
MHAP

PA-a < PI-b  Return traffic
MHAP

PA-a > PI-b  Packet #2
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PA-a > PI-b   Packet #2
Packet is now aliased by the client, RV point not needed anymore.
PA-a > PA-b2  Packet #2
PA-a > PA-b2  Packet #2
MHAP

PA-a > PA-b2 Packet #2
The endpoint has dealiased the packet.