Home Link Operation

MEXT WG, IETF 70

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Use of Mobile IPv6 in SDOs

- A few SDOs are adopting the use of Mobile IPv6 in their next generation architectures
- The architectures are being designed to make it appear to the MN that it is attached to the home link over certain access networks
  - Limited bandwidth
  - Desire to avoid Mobile IPv6 tunneling overhead
- A point-to-point link is typically used between the MN and the HA to create a single hop home link
  - GTP, IPsec, PMIPv6 are used to create the point-to-point links
  - Neighbor discovery is not run on many of these p2p links
- Booting up in the home link needs to be analyzed in more detail for this home link operation
  - Returning home over the p2p links is not considered here

Booting up in the Home Link

- Bootstrapping depends on the IKEv2 exchange and BU/BAck exchange between the MN and the HA
  - Home Address bootstrapped through IKEv2
  - DS-MIPv6 IPv4 HoA and NEMO MNP bootstrapped through BU/BAck exchange
  - MONAMI6 Flow filters are exchanged using BU/BAck
- A RFC 3775-compliant MN does not have to initiate an IKEv2 exchange or send a BU when it discovers it is attached to the home link
  - The IKEv2 exchange is typically done when the BU is about to be sent
  - The MN does not send BU until it discovers it is on the visited link
- We would need a number of parallel mechanisms for MN bootstrapping from the home link
  - Would be nice to avoid this and re-use bootstrapping mechanisms developed so far

Forwarding at the Home Agent

- When a packet for the MN's HoA arrives at the home agent, it needs to forward the packet to the corresponding point-to-point link
- It is not clear how this state is created on the HA
  - Might vary with each type of point-to-point link
- Neighbor discovery is typically not run over these point-to-point links for the HA to create the forwarding state

Service Selection Option

- The Service Selection option may be used by the MN to indicate to the HA which service it wants in the BU
  - draft-korhonen-mip6-service-05 (just completed IETF last call)
- Without the BU sent on the home link, the MN cannot indicate the service it wants
- The Service selection option may be included in the lower layer messages (that are used to set up the p2p links)
  - But the service selection option may not be the same, could be for just getting “access”

One Possible Solution

- The MN sends a binding update when it attaches to the home link over the point-to-point link
- A new flag in the BU to indicate that the BU is being sent from the home link
  - The HA confirms this in the Back
  - Mobile IP tunnel is not created
  - State created on the HA mapping the home address to the appropriate p2p tunnel
    - Packets for the home address would then be routed over the p2p link
  - Any other configuration information like the DS-MIPv6 IPv4 home address, NEMO MNP is obtained in this BU/BAck exchange
- No modifications to RFC 3775
  - This would be an optional extension to be used only by those mobile nodes which attach to home link via p2p links
  - Configurable on the mobile node

Next Steps

- Is this a problem that needs to be addressed in the MEXT WG?
- Develop a new solution (BU with special flag) or describe how it is supposed to be done with existing protocols and bootstrapping mechanisms?