IP Tunneling Optimization in a Mobile Environment

draft-haddad-mip6-tunneling-optimization-01

Problems...

- MIPv6 BT mode requires adding an IPv6 header, i.e., 40 bytes, per each data packet.
- MIPv6 RO mode requires sending the MN's HoA in each data packet, i.e., at least 128 bits per data packet.
- HMIPv6 requires a tunnel between the MN and the MAP, i.e., 40 bytes per data packet.
- PMIPv6 requires a tunnel between the MAG and the LMA.
- Privacy issues due to disclosing HoA.
- Battery power consumption
- DSMIPv6 requires an additional header...

TO Objectives

- Removes IP tunnel in MIPv6, HMIPv6, PMIPv6,...
- Provides unlinkability feature.
- Reduces battery power consumption.
- Works in DSMIPv6 environment.
- Adapted to mobility protocols.

TO Operations: MIPv6 BT Mode

MN exchanges data packets with the CN through its HA:

extra_header = {MN's CoA, MN's HA}

real_header = {MN's HoA, CN}

Eliminate 40 octets by dropping the "real_header".

TO Operations: MIPv6 BT Mode

To apply TO, the MN and the HA generate a Pad Translator:

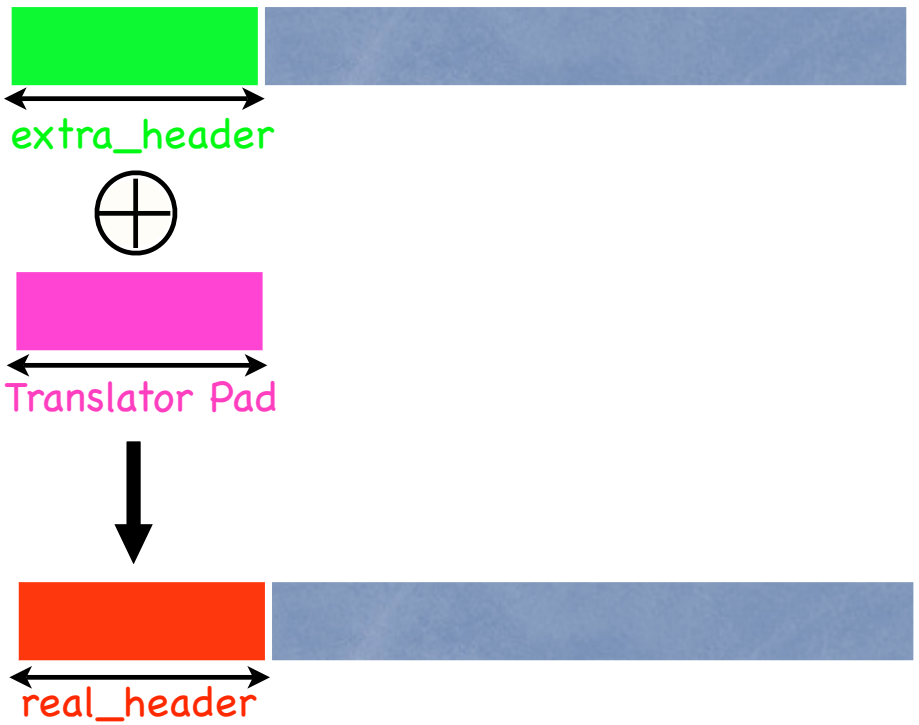
Pad = "extra_header" XOR "real_Header"

The MN uses ONLY the "extra_header" to send packets to its HA.

Note: Same Approach is used with the MAP.

TO Operations: MIPv6 BT Mode

HA applies Pad translator to "extra_header" and generates "real_header":



TO Operations: MIPv6 BT Mode

- Pad translator is updated by the MN each time it configures a new CoA.
- Pad translator is updated by the HA upon receiving a valid BU message from the MN.
- Same approach is used in HMIPv6 where the MAP updates the MN's corresponding pad translator upon receiving a valid LBU message from the MN.
- The MN and the HA/MAP don't exchange any tunneled data packet at any moment during the ongoing session.

Questions?
Thank You!