GRE Key Option for Proxy Mobile IPv6

draft-muhanna-netlmm-grekey-option-00.txt

Netlmm WG, IETF 69

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Overview

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- GRE Key Use Cases
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  - GRE over IPv4-UDP
- GRE Key Option Format
- GRE Keys Exchange & Negotiation
  - Bi-directional GRE Keys
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GRE Key negotiation in PMIPv6

- PMIPv6 is required to support IPv4 transport and IPv4 addressing
- Support for overlapping private IPv4 home addresses is important in many use cases
- MAG and LMA need unique identifier to differentiate flows that use overlapped private IPv4 addresses
- GRE Key Identifier option is used by MAG and LMA to negotiate and exchange GRE Keys
- RFC-2890 defines a GRE key field which can be used to tag data traffic for Mobile Nodes with overlapped IPv4 private home addresses

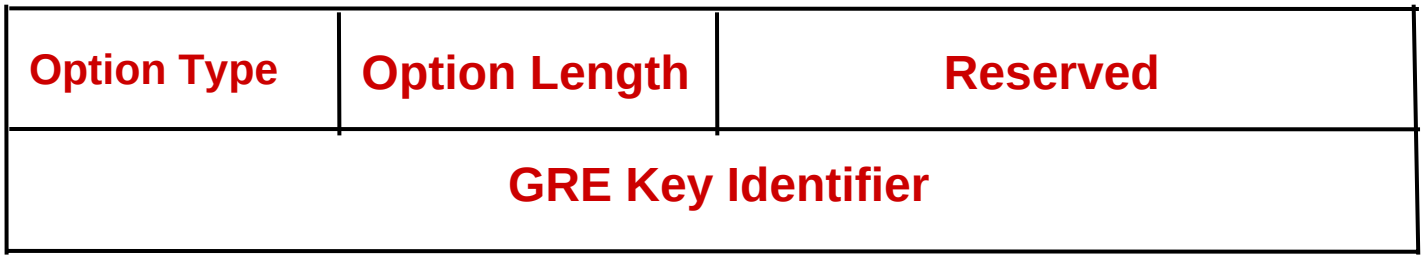
GRE Key Use Cases (1)

- Private IPv4 address overlapping
  - LMA1 may support different VPN (enterprises with Private IPv4 addresses)
  - User1 of VPN1 and User2 of VPN2 may roam at MAG1 access network while both are served by LMA1.
  - User1 and User2 may be assigned the same private IP address by their VPN home network.
  - MAG1 needs another identifier to differentiate traffic for both users.
  - MAG1 and LMA1 negotiate GRE keys for uplink and downlink traffics for both users

GRE Key Use Cases (2)

- PMIPv6 supports IPv4, IPv6, and IPv4-UDP transport.
- In case MAG requires GRE encapsulation over IPv4-UDP, MAG will negotiate TLV as per DS-MIPv6 and GRE keys as per this draft.

GRE Key Option Format



Option Type:	GRE Key Identifier Option (TBD)
Option Length:	6 or 10 bytes.
Reserved:	Set to 0 by sender and ignored by receiver
GRE Key Identifier:	GRE Key

GRE Keys Exchange & Negotiation (Bi-Directional)

- MAG includes GRE Option with a GRE Key Identifier of a value of ZERO in the initial BU.
- LMA Process BU successfully and include GRE option with GRE Key Identifier is set to the GRE bidirectional key.
- When MAG receive BA, MAG saves GRE Key as part of the user binding.
- MAG and LMA use GRE encapsulation with the bi-directional GRE Key to identify user flow.

GRE Keys Exchange & Negotiation (Un-directional)

- MAG includes GRE option with GRE Key Identifier field is set to the key MAG expects in forward link traffic, G-Key-forward, in initial BU.
- LMA process BU successfully and include GRE option with GRE Key Identifier field is set to the reverse link GRE key, G-Key-reverse, and saves both keys as part of user binding.
- When MAG receive successful BA, MAG saves both GRE Keys as part of the user binding.
- MAG and LMA use GRE keys to properly differentiate between user forward and reverse traffic/flows.

Next Steps

- Adopting draft-muhanna-netlmm-grekey-option-00.txt as a Netlmm WG document.