

SRH Reduction for SRv6 End.M.GTP6.E Behavior

draft-kawakami-dmm-srv6-gtp6e-reduced-00

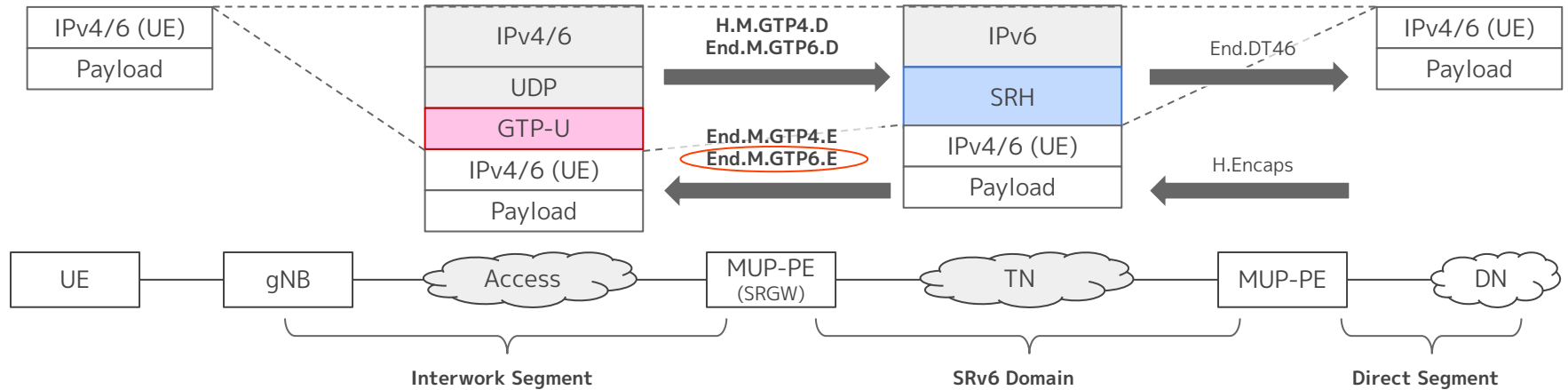
IETF118 Prague, DMM Working Group

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Background: SRv6 Mobile User Plane (SRv6 MUP)

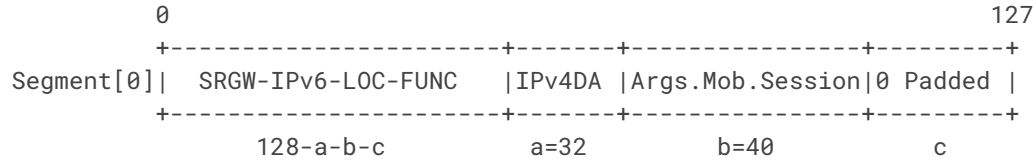
- [RFC9433](#), SRv6 MUP defines interworking between 3GPP 5G User-Plane and SRv6 transport network with required behaviors which translate between GTP-U and SRv6 in a stateless manner
- [I-D.mhkk-dmm-srv6mup-architecture](#) defines MUP Architecture w/ control-plane
- [I-D.mpmz-bess-mup-safi](#) defines BGP SAFI for the control-plane of MUP Architecture



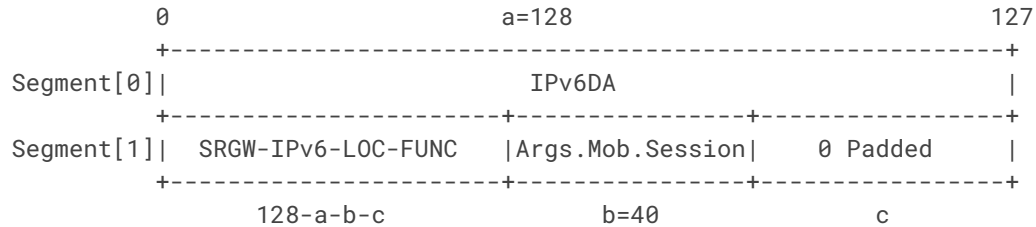
Reference: End.M.GTP4.E vs End.M.GTP6.E

Restores DA of IP header from IPv4/6 DA field and the GTP-U header from Args.Mob.Session field

End.M.GTP4.E

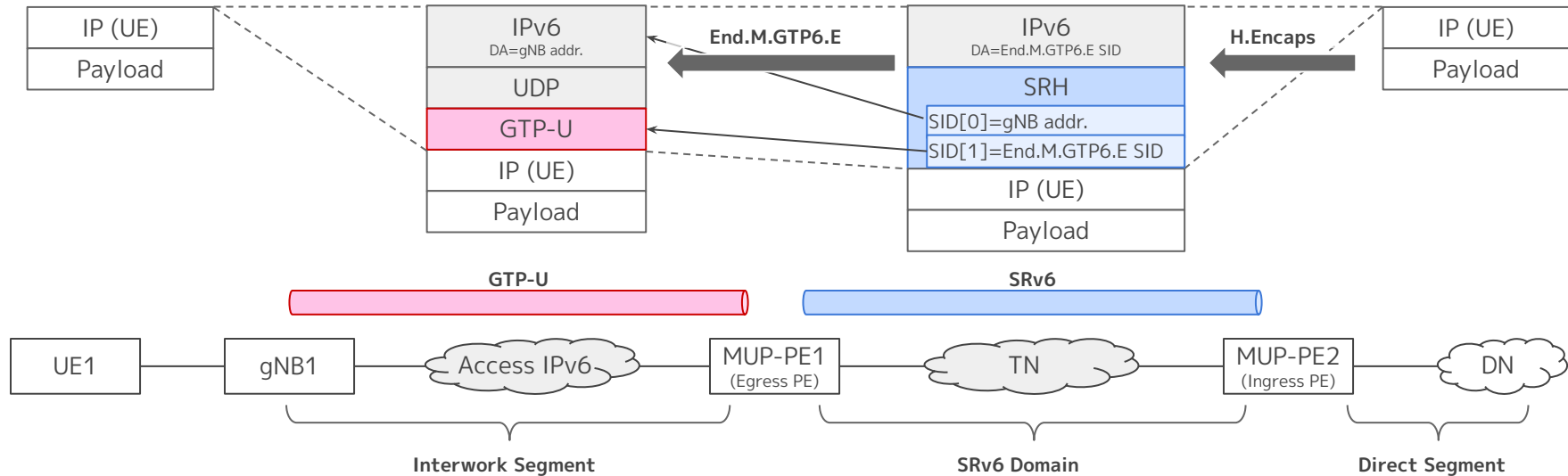


End.M.GTP6.E



Motivation: Make End.M.GTP6.E Hardware-friendly

End.M.GTP6.E Behavior



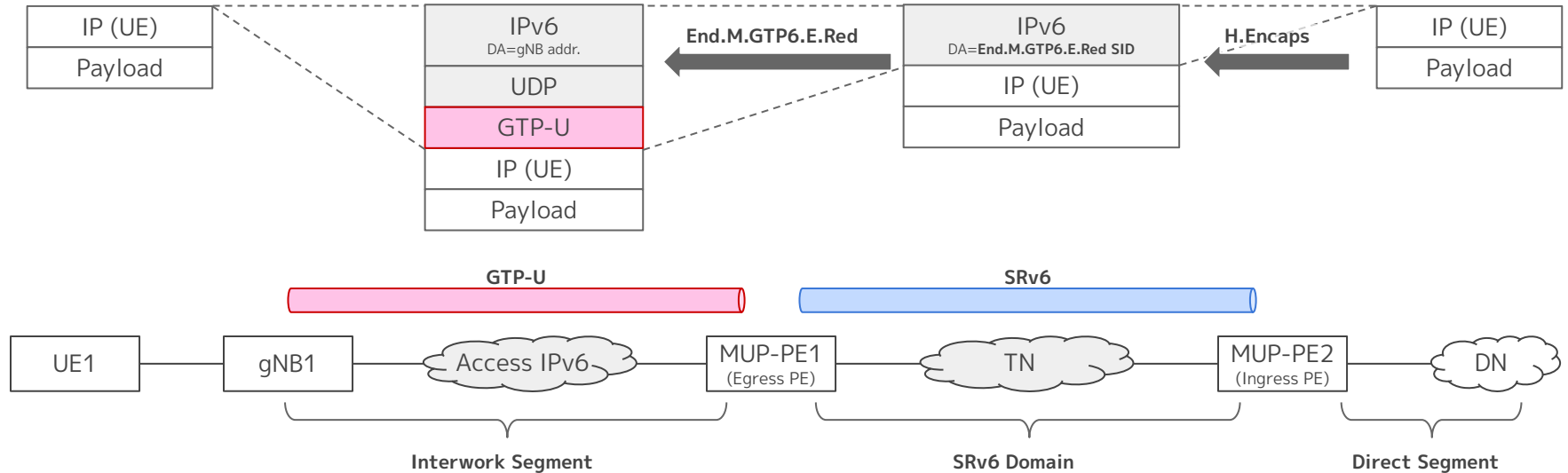
Ingress PE (MUP-PE2) pushes an SRH with 2 SIDs

Egress PE (MUP-PE1) restores the DA of IPv6 header (gNB IPv6 address) from SID[0] and GTP-U header (TEID & QFI) from SID[1]

➡ **current hardware pipelines may be unfamiliar or insufficient to implement this**

End.M.GTP6.E.Red

End.M.GTP6.E Behavior with reduced SRH



Ingress PE (MUP-PE2) pushes just an IPv6 header (if there is no SR Policy)

Egress PE (MUP-PE1) restores the DA of IPv6 header (gNB IPv6 address) and GTP-U header (TEID & QFI) **from the single SID utilizing the control-plane of the MUP Architecture**

End.M.GTP6.E.Red - Basic Idea

The IPv6 DA is split into two parts and embedded in each of the control plane and data plane

- first $b+40$ bits: in a mapping table associated to LOC-FUNC (C-Plane)
- last $128-40-b$ bits: in the 0-padded field (remainder bits) of the SID (D-Plane)

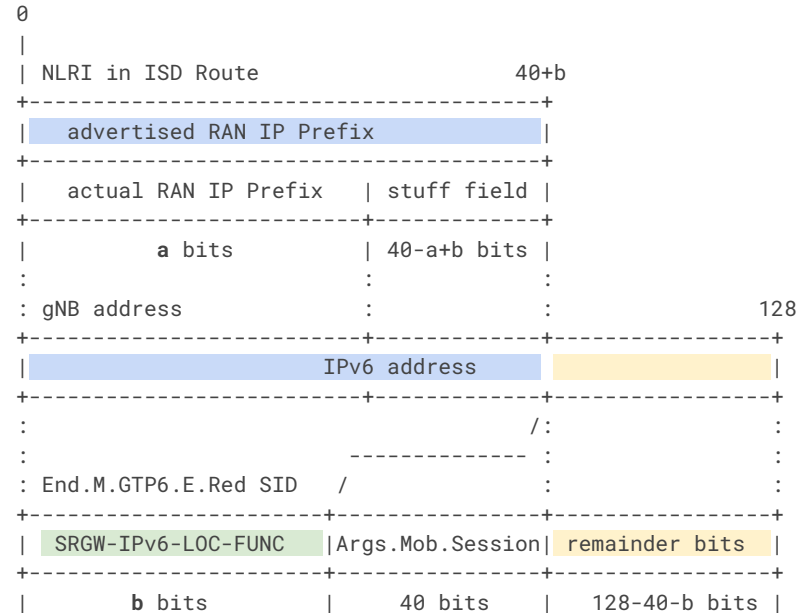
Design Parameters:

a = Prefix length of gNB

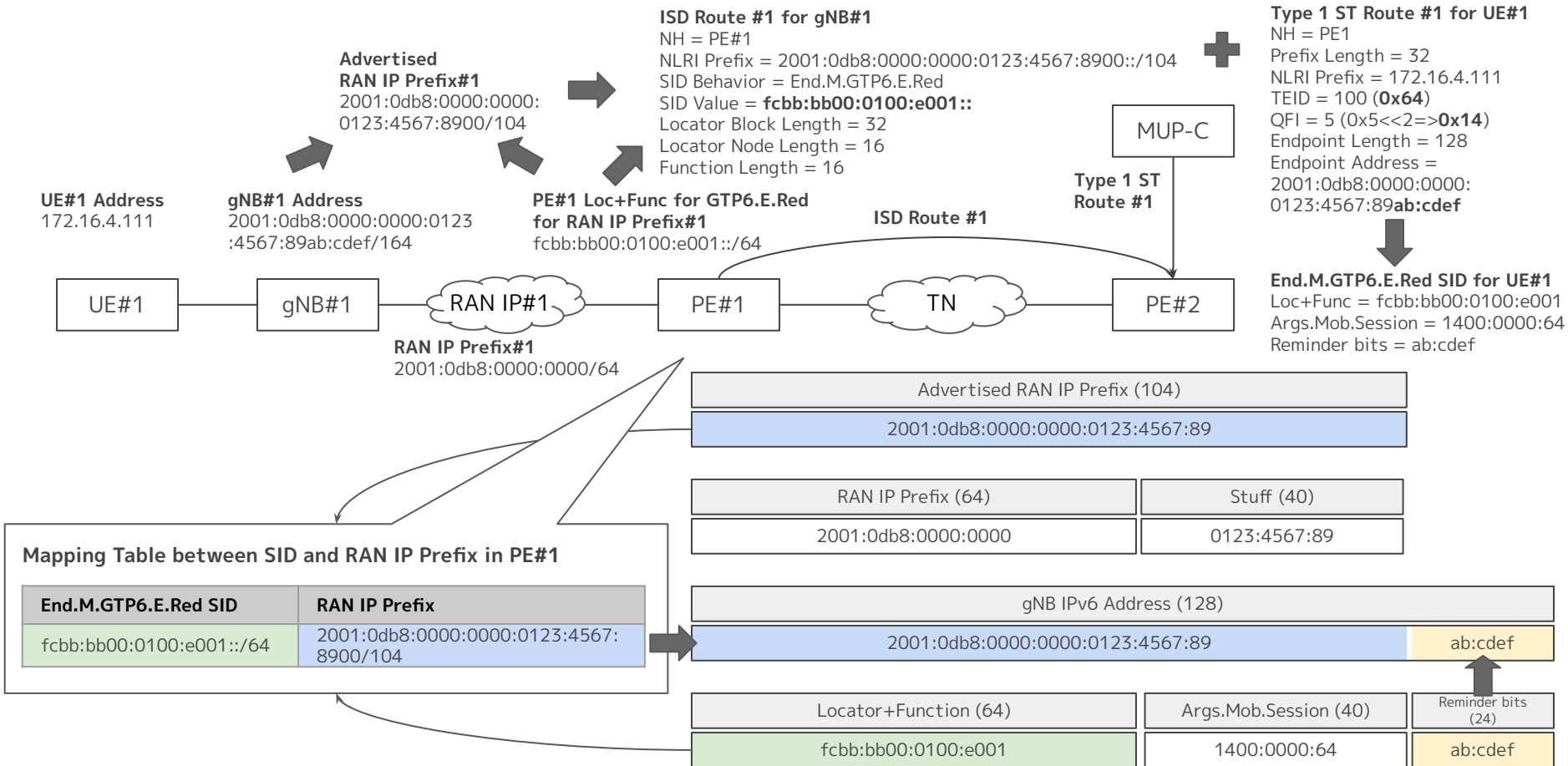
b = Length of LOC-FUNC

Mapping Table:

b bits LOC-FUNC \leftrightarrow $b+40$ bits DA prefix



End.M.GTP6.E.Red - Example (a=64, b=64)



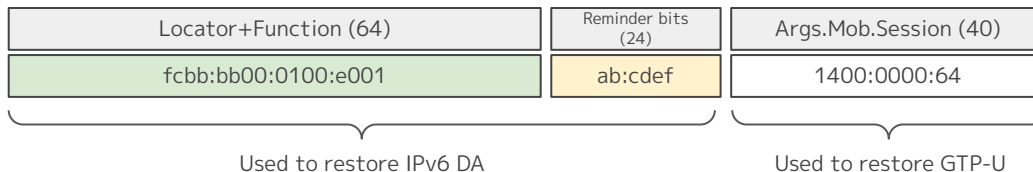
Feedbacks

- The order of bit field in End.M.GTP6.E.Red SID
 - make SID processing more hardware pipeline friendly
 - End.M.GTP4.E has the same order (IPv4 DA then Args.Mob.Session)
 - will be discussed and reflected to -01 draft if reasonable

Current design (derives from End.GTP.6.E)



Suggested design (End.M.GTP4.E-like)



Implementation of VPP(stable/2306-based) is available at
<https://github.com/yuyarin/vpp/tree/draft-kawakami-dmm-srv6-gtp6e-reduced-00>