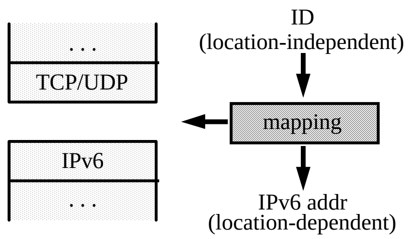
Mobility Support in IPv6
Based on the VIP Mechanism

Fumio Teraoka
Sony Computer Science Lab. Inc.
tera@csl.sony.co.jp

Mapping Approach

- separation of IDs and addresses
  - both have the same format.
  - ID can be used as default address.
- TCP/UDP uses IDs to specify nodes.
- IDs are mapped to addresses in the sublayer between TCP/UDP and IPv6.
- routing based on addresses

Layering



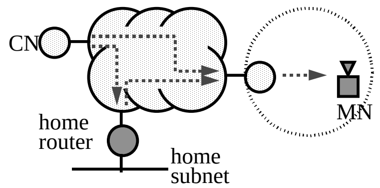
AMT: Address Mapping Table

- 1 entry per mobile node
- created/updated by received packets

Status	reserved
Address Version	
Timestamp	
Holding Time	
ID (16 octets)	
Address (16 octets)	

Mapping Approach

- ID: addr on the home subnet.
- addr: assigned at the current net.
- Home Router maintains mapping.



IPv6 Packet for User Data

IPv6 Header
Hop-by-Hop Options Header
Authentication Header
Destination Options Header
Transport layer header and user data

Hop-by-Hop Option

- Destination ID option
  - not included in integrity computation

	Opt Type | Len = 20
Destination Address Version	
Destination ID	

Destination Option

- Source ID option
  - included in integrity computation

	Opt Type | Len = 28
Source Address Version	
Timestamp	
Holding Time	
Source ID	

Authentication Header

- End-to-End authentication
  - src ID and addr → authentic AMT entry
  - e.g. keyed MD5 (auth data len = 16)

Next Hdr	Auth len	reserved
Security Association ID		
Authentication Data		

Registration

- Anycast to the home subnet
- Hop-by-Hop option
  - authentic AMT entry on intermediate routers
  - fault tolerance and shortcut routing
- Destination option
  - end-to-end control information

Registration Packet

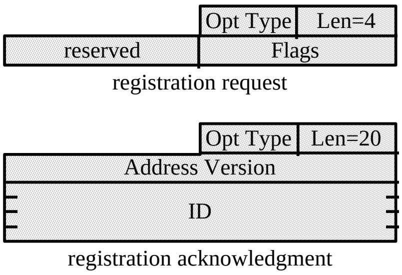
IPv6 Header
Hop-by-Hop Options Header
Destination Options Header

Hop-by-Hop Option

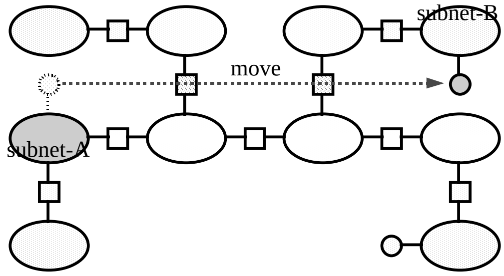
- Mapping Information Option

	Opt Type | Len=108
Address Version	
Timestamp	
Holding Time	
ID (16 octets)	
Address (16 octets)	
RSA digital signature (64 octets)	

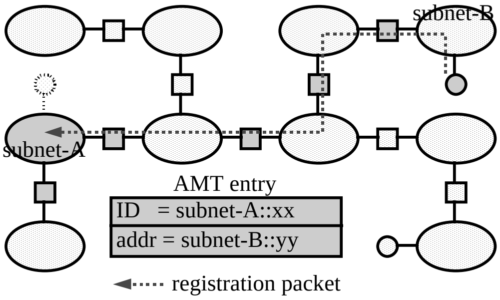
Destination Option



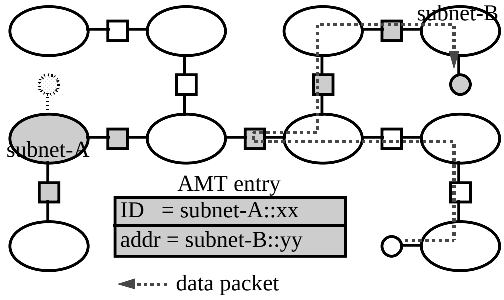
Example



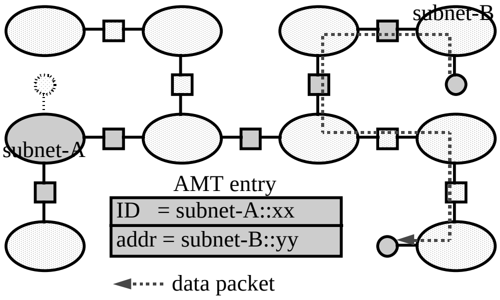
Example



Example



Example



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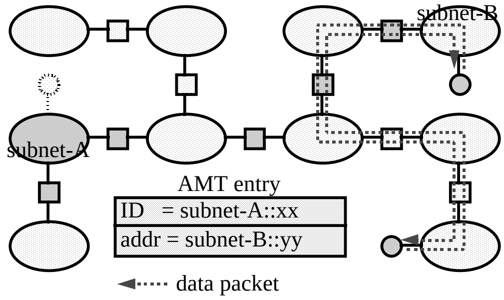

Summary

- Mobility support based on mapping
  - ID and address
- Destination option for user data
  - end-to-end authentication
- Hop-by-hop option for registration
  - authentic AMT entry on intermediate routers
- No problem in src addr spoofing