ID / LOC Split - Basic Approach
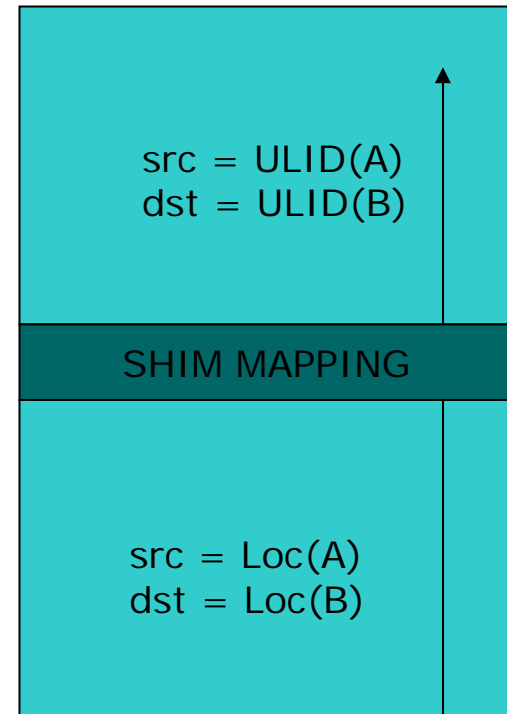
Sender A

Receiver B

Identity

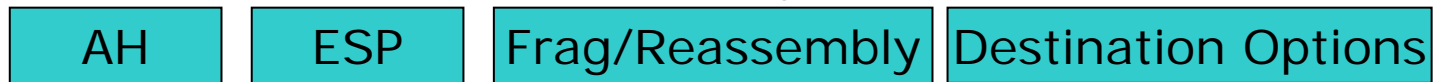src = ULID(A)
dst = ULID(B)

SHIM MAPPING

src = Loc(A)
dst = Loc(B)

Locator

src = ULID(A)
dst = ULID(B)

SHIM MAPPING
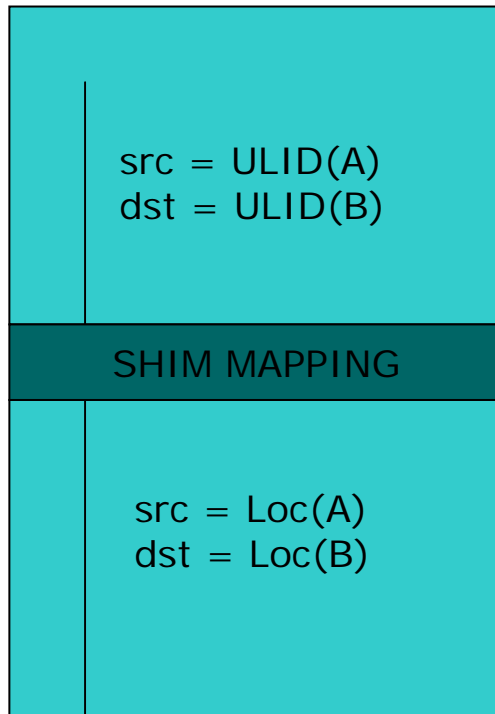
src = Loc(A)
dst = Loc(B)

Where is the SHIM?

Transport Protocols

TCP	UDP	DCCP	...

IP Endpoint Sublayer

AH	ESP	Frag/Reassembly	Destination Options

Multi6 SHIM

IP Routing

Whats a "ULID"?

- Upper Layer IDentifier
  - A selection from the set of locators associated with an endpoint
    - It's (probably) a viable locator
    - It's drawn from a structured space (reverse mappable)
    - Its better if it were a unique (deterministic) selection for each host
    - Its useable in a referral context within and between hosts
    - Its semi-persistent

Turning on SHIM6

- The initial SHIM6 state for a ULID pair is the null map function
- Subsequent capability negotiation to determine SHIM6 capability
- Exchange of Locator Sets
- SHIM mapping installed
    - ULID pair to current Locator pair

Maintaining State

- Locator failure triggers
  - More work needed here.
    - Possible triggers include failure of upper level keepalive signal to the SHIM layer, explicit trigger from upper level, ICMP error, explicit SHIM level reachability failure
  - Re-Homing may involve exhaustive pair exploration to establish a new viable locator pair (More work needed here)
  - Signal upper level protocol of path state change (More work needed here)

Removing State

- No explicit upper level protocol trigger
  - Use state timeout to remove stale SHIM mapping information

(The entire area of vertical signalling in the host protocol stack requires further consideration)

Some Open Issues

- Integration of use of HBAs and CGAs with SHIM6
  - In particular dynamic vs static locator set management
- SHIM6 capability negotiation and locator set exchange
  - Protocol analysis required
- Explicit packet signals for triggering SHIM mapping on incoming packets
  - How should you tell an incoming SHIM packet vs a non-SHIM packet?
- Interaction with site exit routers
  - Not defined as yet
- ULID selection
  - How deterministic should this be?
- DNS interaction
- Adds and Wdls from locator pool
- Per-transport locator failure triggers
  - i.e. per transport vs per ULID pair SHIM state?