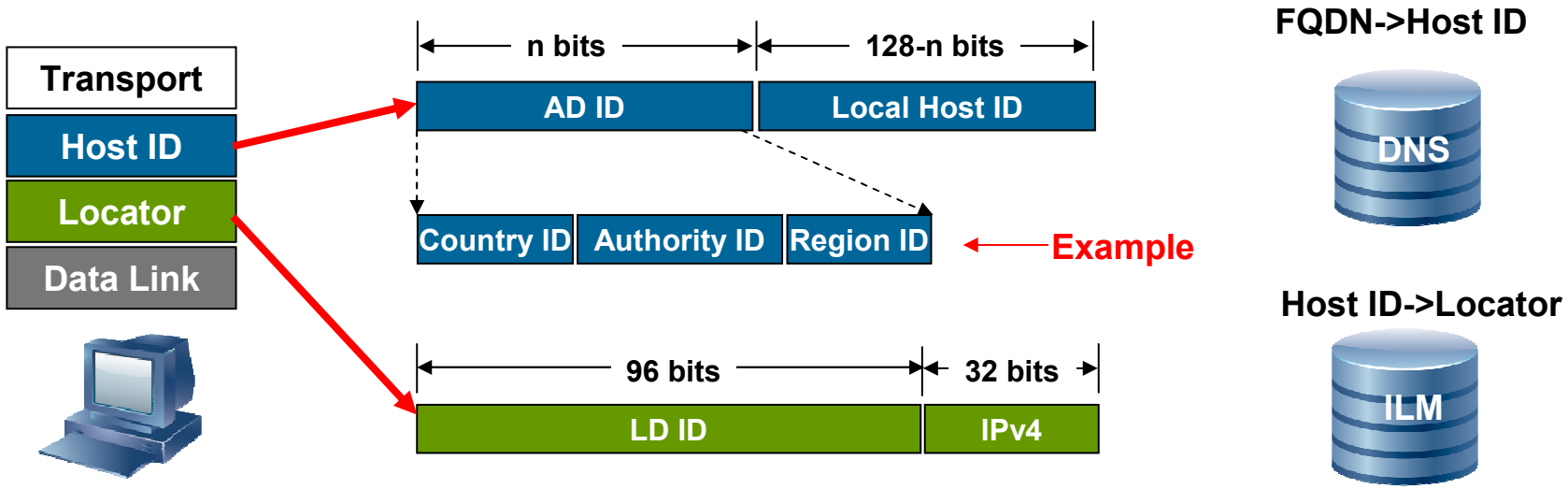
Transition Mechanism for RANGI

draft-xu-rangi-proxy-00.txt

Xiaohu Xu (xuxh@huawei.com)
Raj Jain (jain@cse.wustl.edu)

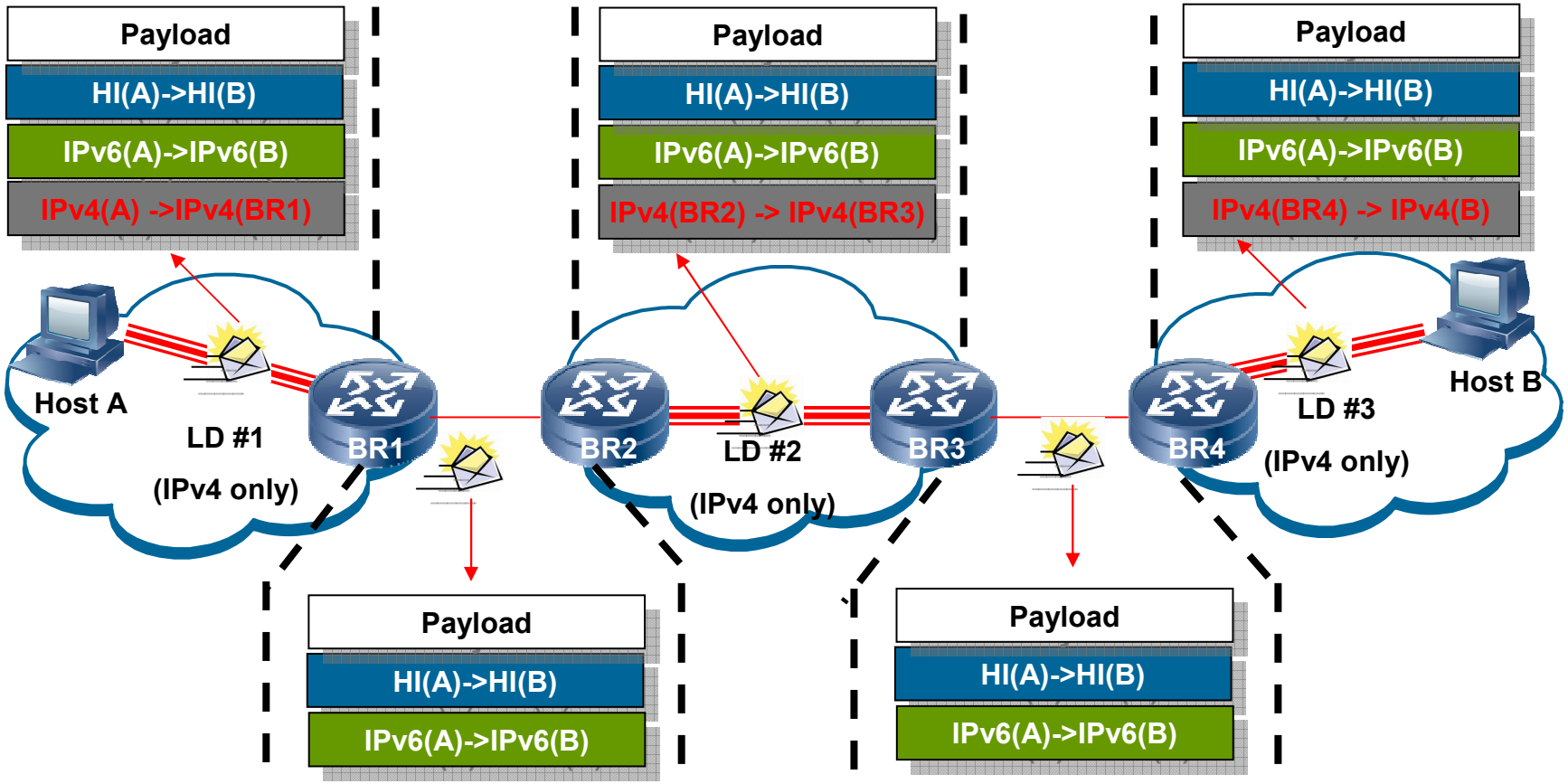
IETF74, San Francisco

RANGI ID/Locator Namespace

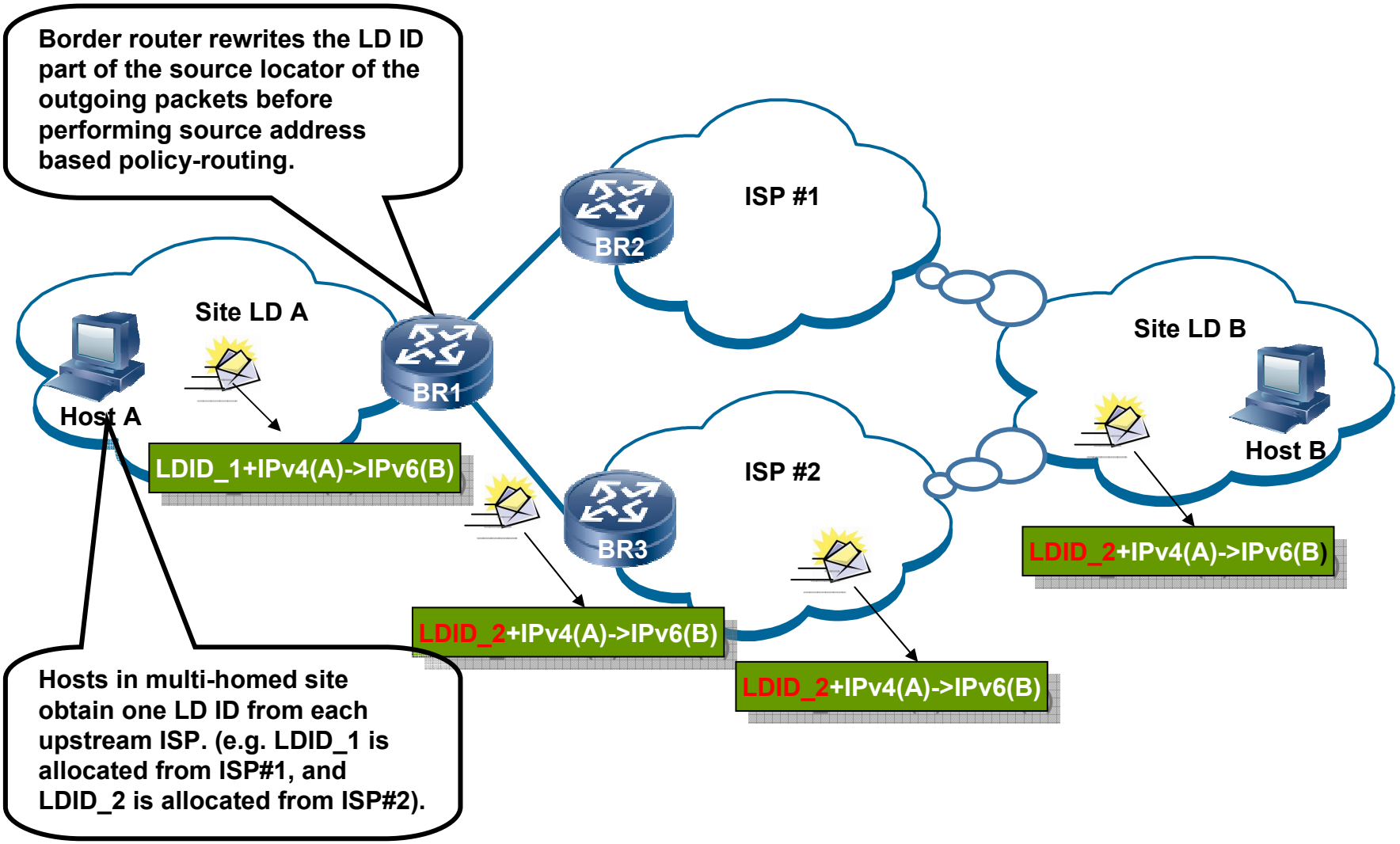


- **Host ID=Administrative Domain (AD) ID + Local host ID**
  - Ease ID allocation and management.
  - Support access control based on administration domain boundary.
  - Local host ID is generated by hashing AD ID and public key.
- **Locator=Locator Domain (LD) ID + Local IPv4**
  - Ease the transition from IPv4 to IPv6.
  - Support site border router controlled traffic-engineering.

RANGI Packet Forwarding Process



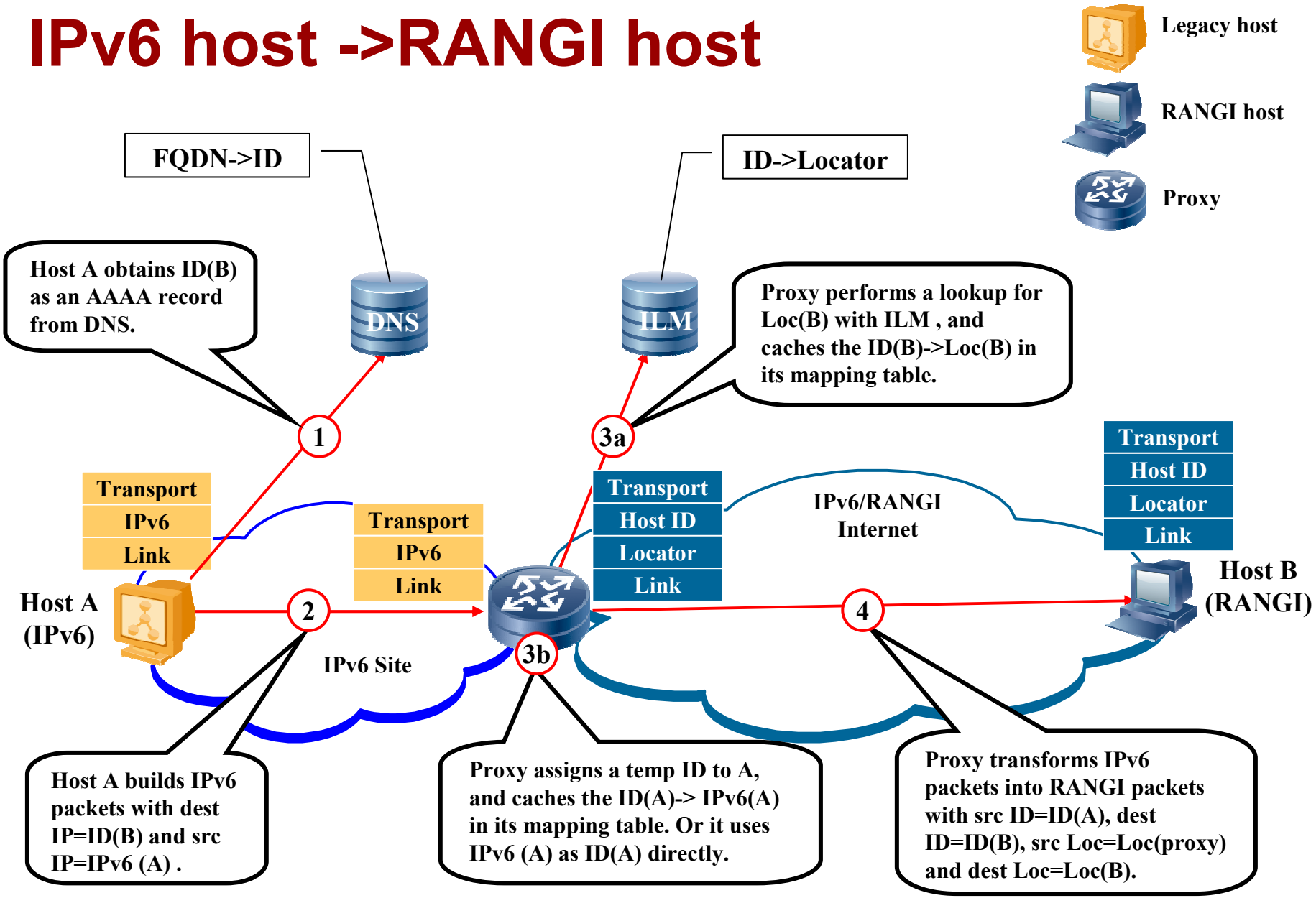
Multi-homing and Traffic-engineering



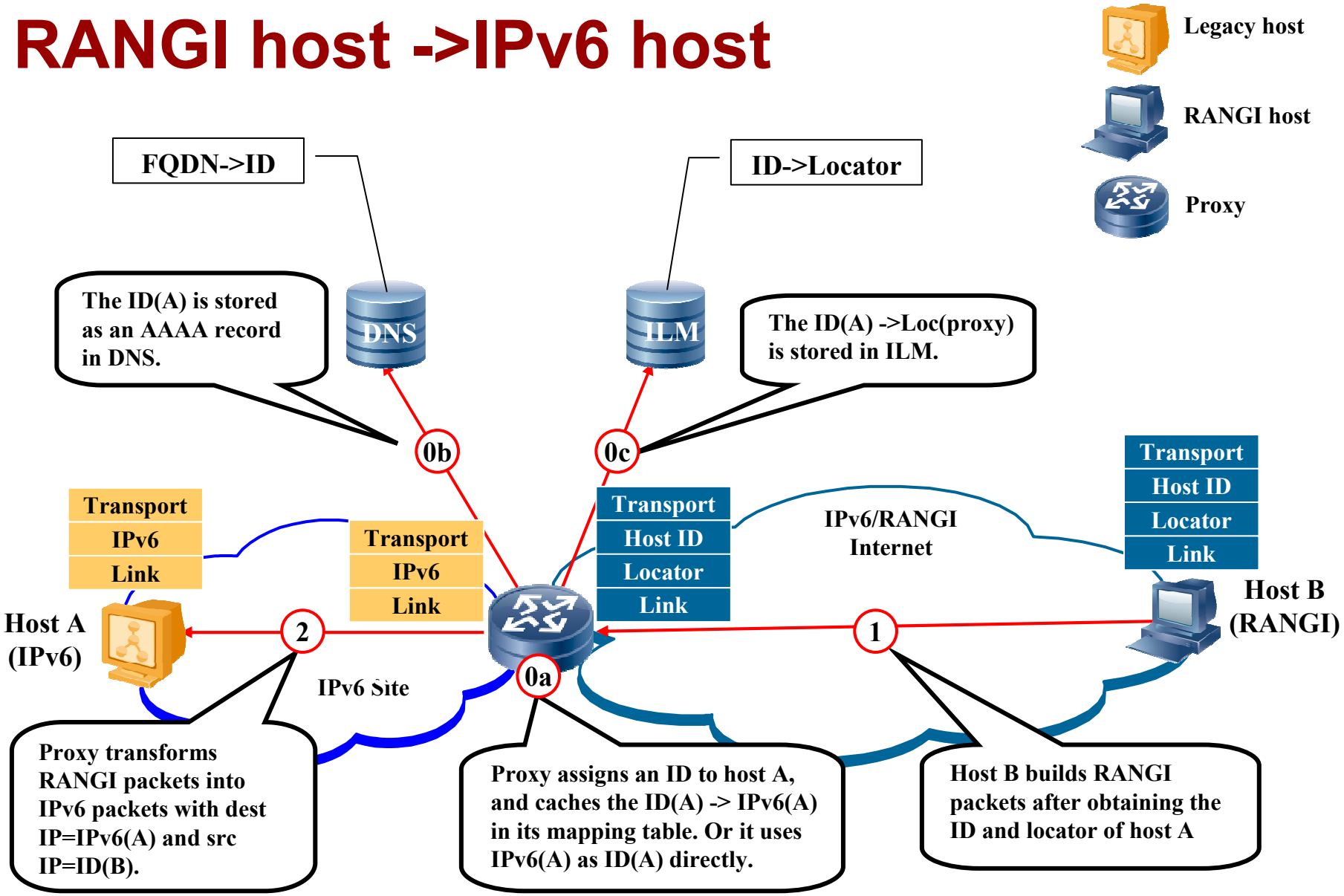
Basic idea of the proxy mechanism

- **Some ideas from the Map&Encap approach are borrowed to realize the proxy function for the host-based id/locator split approach**
  - Communication between IPv6 and RANGI hosts
    - The identifiers (ID) of RANGI hosts are stored in DNS as AAAA records, which are taken as IPv6 addresses by legacy IPv6 hosts.
    - The proxy assigns IDs to legacy IPv6 hosts, or uses their IPv6 addresses as IDs directly.
  - Communication between IPv4 and RANGI hosts
    - The proxy transforms the IDs of RANGI hosts in AAAA records to temporary IPv4 addresses in A records.
    - The proxy assigns IDs to legacy IPv4 hosts, or uses their synthetical IPv6 addresses (Prefix::/96+ IPv4 address) as IDs directly.

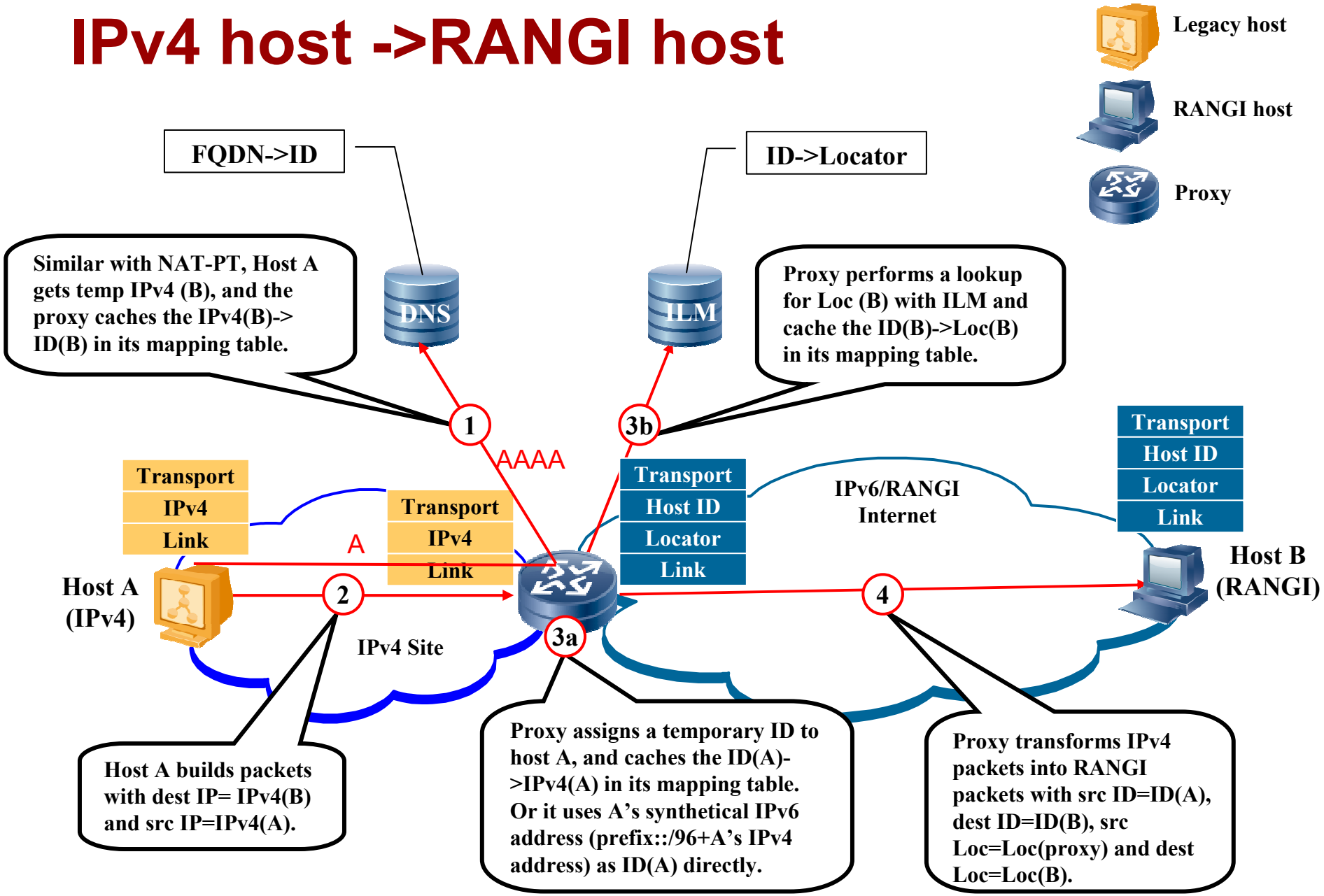
IPv6 host ->RANGI host



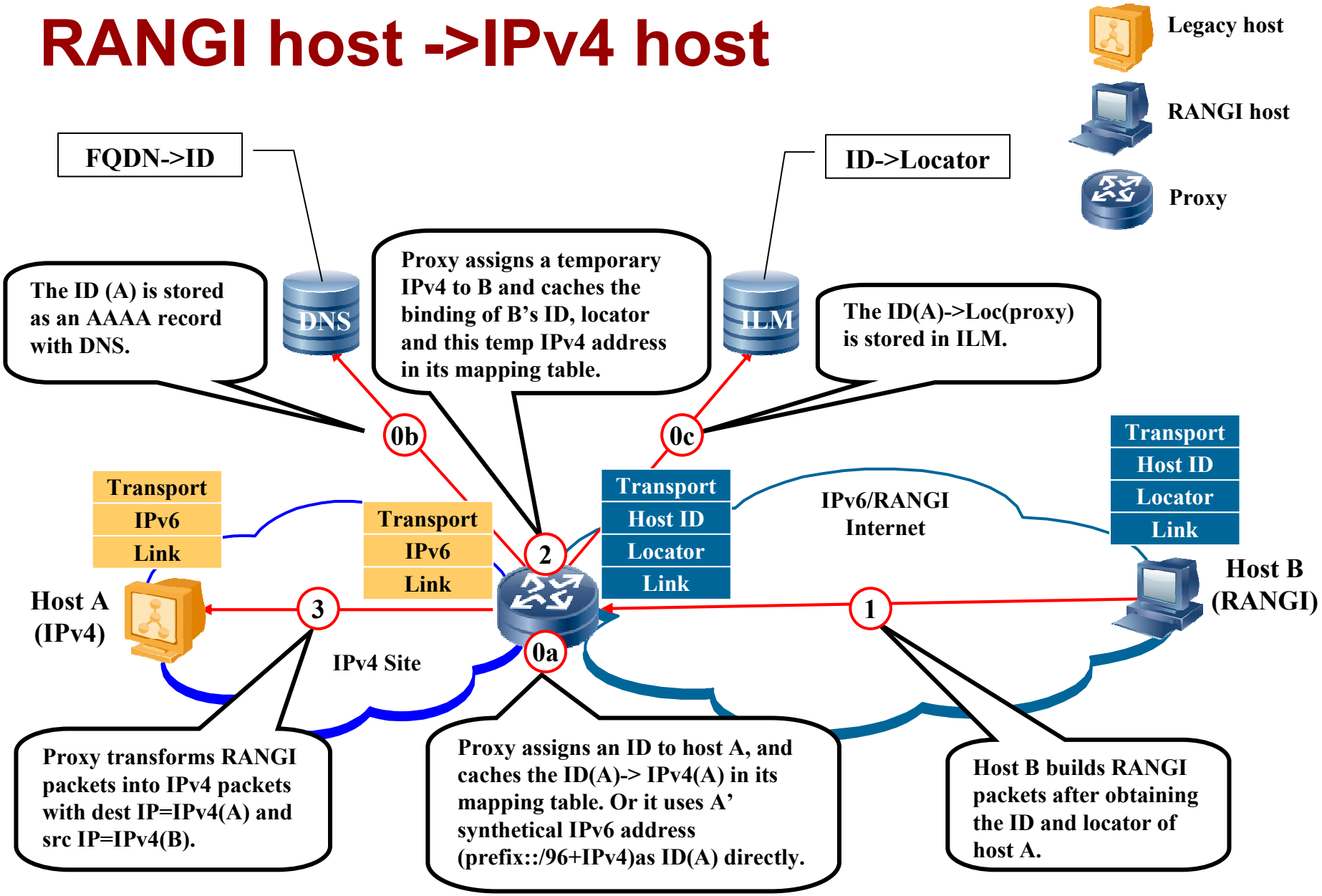
RANGI host ->IPv6 host



IPv4 host ->RANGI host



RANGI host ->IPv4 host



Next steps

- **Optimize this mechanism according to feedbacks.**
- **Implement the code for this mechanism.**
  - Funded by China National “863” Hi-Tech Program.
- **Any collaboration in research or experiment is welcomed.**