Identifiers and Locators

In the lower layers

A short survey of history, motivation, and Current practices

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What are these

- **Identifier:**
  - Who is the communicating party

- **Locator:**
  - Where in the network is the communicating party

- Analogy – the difference between your name and your street address

- IP Addresses provide both these functions
Some History

- First noticed when the first ARPANET site was multi-connected
  - It didn't work
- Debated during the definition of the split between TCP and IP
- Served as an important idea in the NIMROD routing work
- The basis of the Name Space Research Group in the IRTF
- Worked on by the Routing Research Group
Why Does it Matter?

- From an architecture perspective, overload leads to complexity.
- Naming is restricted.
  - As Yakov side, either addressing follows the topology or the topology follows the addressing.
- If every multihomed medium enterprise has to appear in the Internet core, we are looking at 10s of Millions of entries.
  - Or, NPT66 (aka NAT)
Many Protocols in this Space

- Mobile-IP
  - Not designed with this goal, but does the separation
- Shim6
  - Designed to solve multi-homing
  - Uses initial IP addresses as Identifiers
- HIP
  - Create a cryptographic Identifier for Transport
LISP

- Designed to use identifier / locator separation to address core internet scaling
- Built around a mapping system to resolve identifiers to aggregatable core locators (addresses)
- Can be used for many other purposes
  - VPNs
  - Data Center overlays
ILNP

- Split the IPv6 address into two 64 bit portions
  - The upper portion is for routing, using aggretable locators
  - The lower portion is the identifier for the upper portion of the stack
- DNS is used to get identifiers and locators