




Transition mechanisms
for unmanaged scope networks

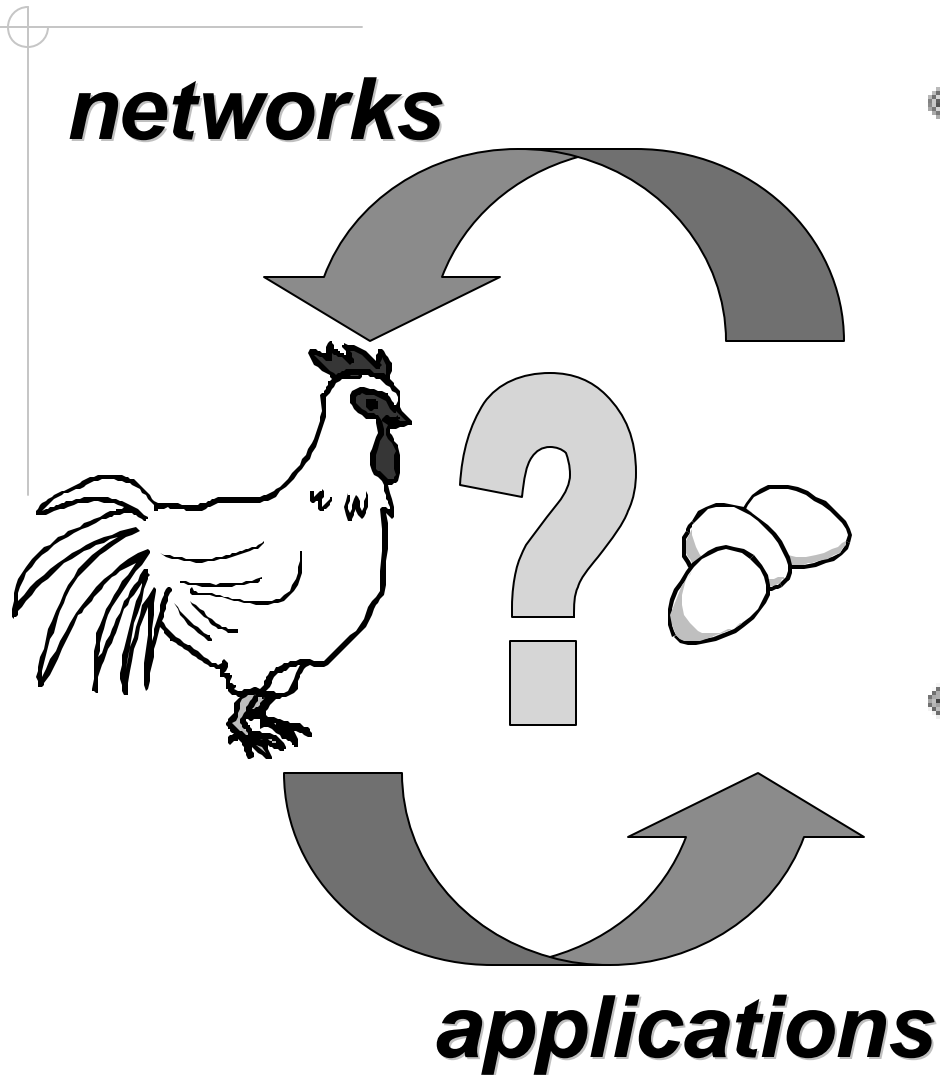
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How come IPv6 is not there yet?



◆ Applications

- Need upfront investment, stacks, etc.
- Similar to Y2K, 32 bit vs. “clean address type”

◆ Network

- Need to ramp-up investment
- No “push-button” transition

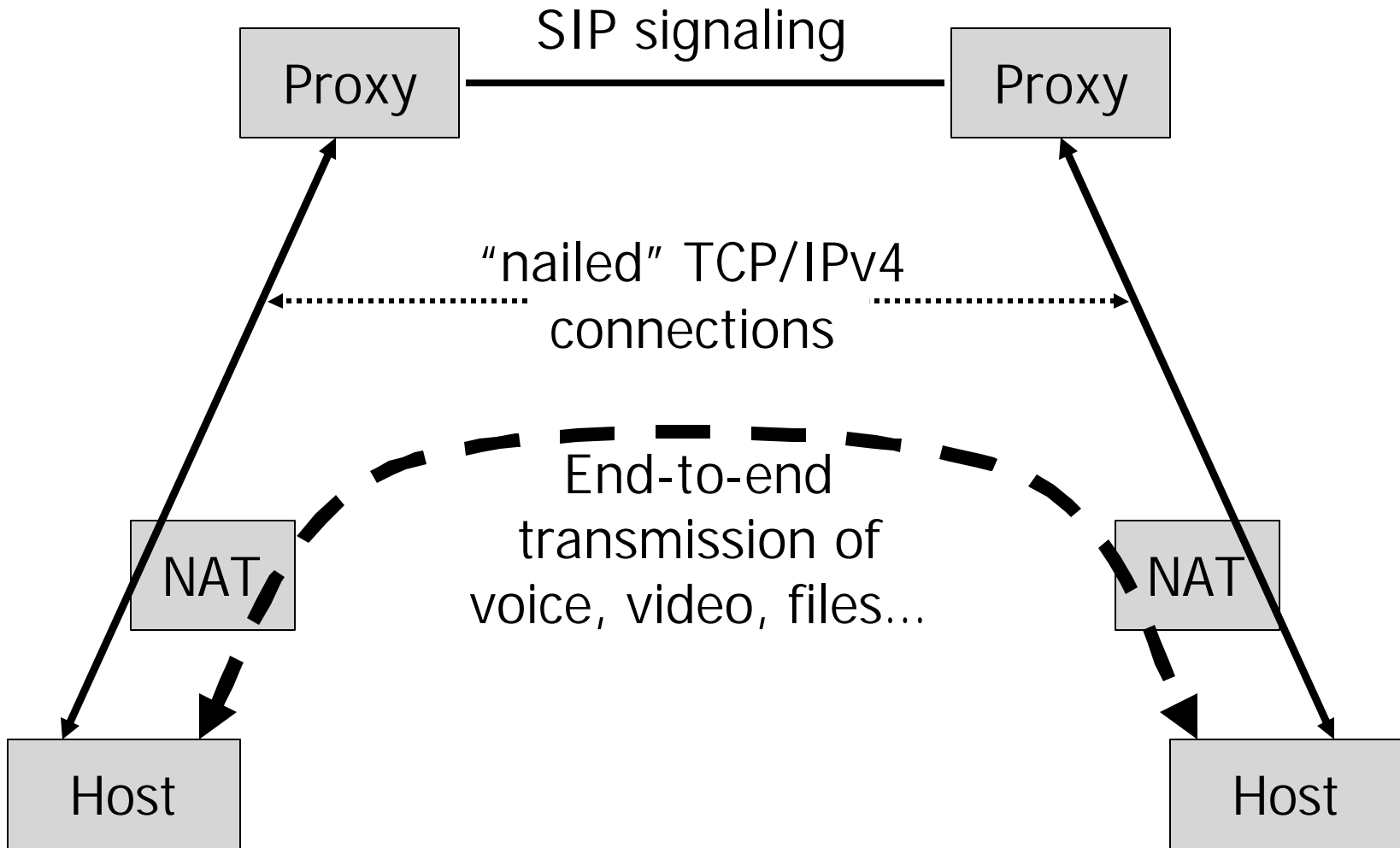
Restated: how do we get IPv6 deployed?

- ◆ We need a flagship application
 - If possible, something IPv4 cannot do
 - For example, it relies on global addresses
- ◆ We need to convince developers
 - Don't try to do NAT traversal, we will do it for you...
- ◆ And for that we need IPv6 everywhere
 - Or at least in all unmanaged networks

What will be the flagship application?

- ◆ Local applications (file & print sharing)
 - Work OK in current home networks
 - Moderate IPv6 advantage (local addresses)
- ◆ Client applications (web & mail)
 - Work just fine today
- ◆ Peer to peer applications
 - Require connectivity, global addresses
 - ➔ First priority
- ◆ Server applications
 - Require connectivity, publishing in the DNS
 - ➔ Second priority

Example of "hybrid" P2P, using SIP



Getting IPv6 connectivity for P2P

- ◆ Step 1: host based, Teredo (with fix)
 - Deploy IPv6 “despite the NAT”
 - Engineer Teredo for direct transmission
 - ◆ Don’t want to proxy voice, video...
- ◆ Step 2: improved NAT with 6to4
 - NAT also becomes an IPv6 router
 - May be “phase 1” if host has global IPv4
- ◆ Step 3: improved ISP, dual stack
 - NAT receives prefix from ISP, relay it
 - ◆ Example: RA proxy
- ◆ Single stack IPv6 appears “much later”
 - IPv6 based P2P applications still work.

Beside Connectivity... Security

- ◆ Make the router a “site boundary”
 - Ensures isolation of “local” applications
- ◆ Use privacy addresses
 - Provide NAT-equivalent privacy
 - Make the inside addresses “hard to guess”
- ◆ Use “personal firewall”
 - Don't seat naked on the Internet

And then, naming.

- ◆ For the “client” applications
 - Need to discover a “resolver”
 - Need a “reverse lookup” option
 - ◆ Wildcard PTR records ?
 - ◆ Automatic generation of PTR & AAAA ?
 - ◆ Some solution for 6to4 addresses ?
- ◆ For the “server” applications
 - Need to publish the address
 - ◆ Requires stable address, or dynamic updates