Supporting Legacy Applications over Routing Overlays

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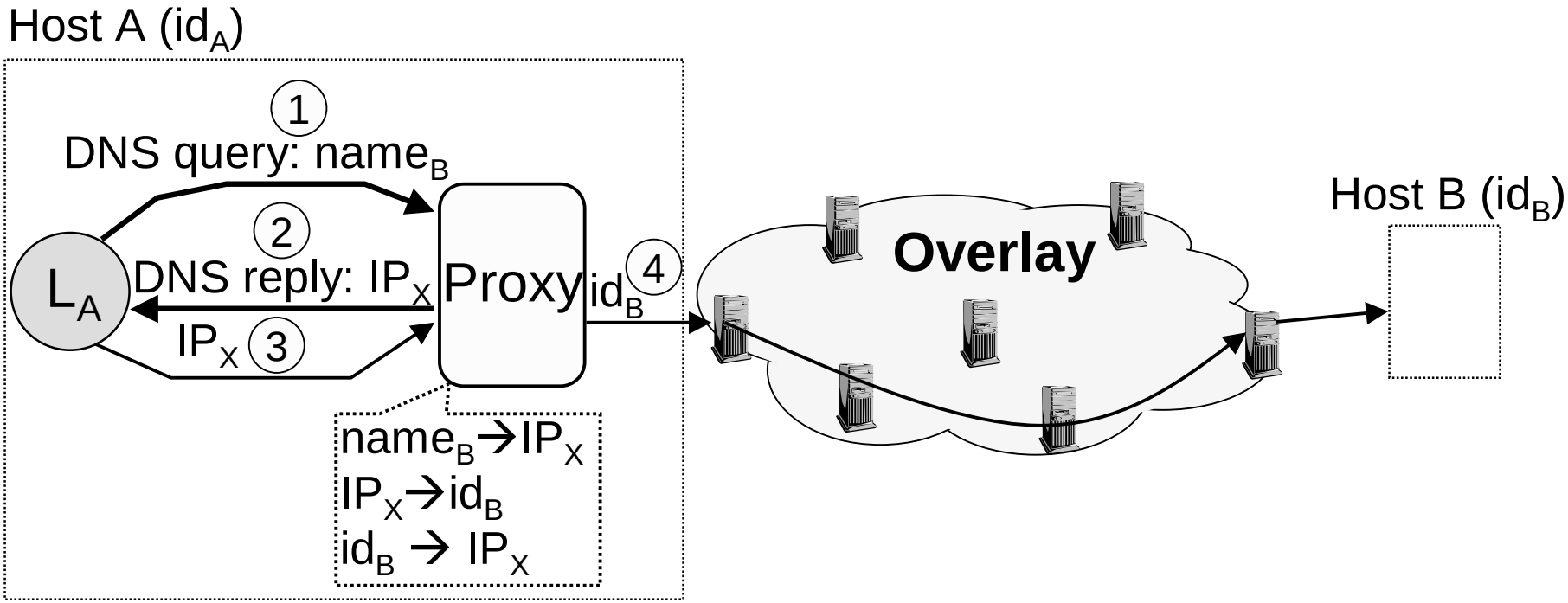
Motivation

- Overlays have received much attention, yet…
  - no common interface
  - not many native applications
  - not many deployments
  - chicken-and-egg problem?
- Our solution
  - interface legacy applications with overlay
- Overlay model
  - routing overlays, e.g. RON, Detour, OverQoS
  - each end-host has an overlay ID

Design Goals

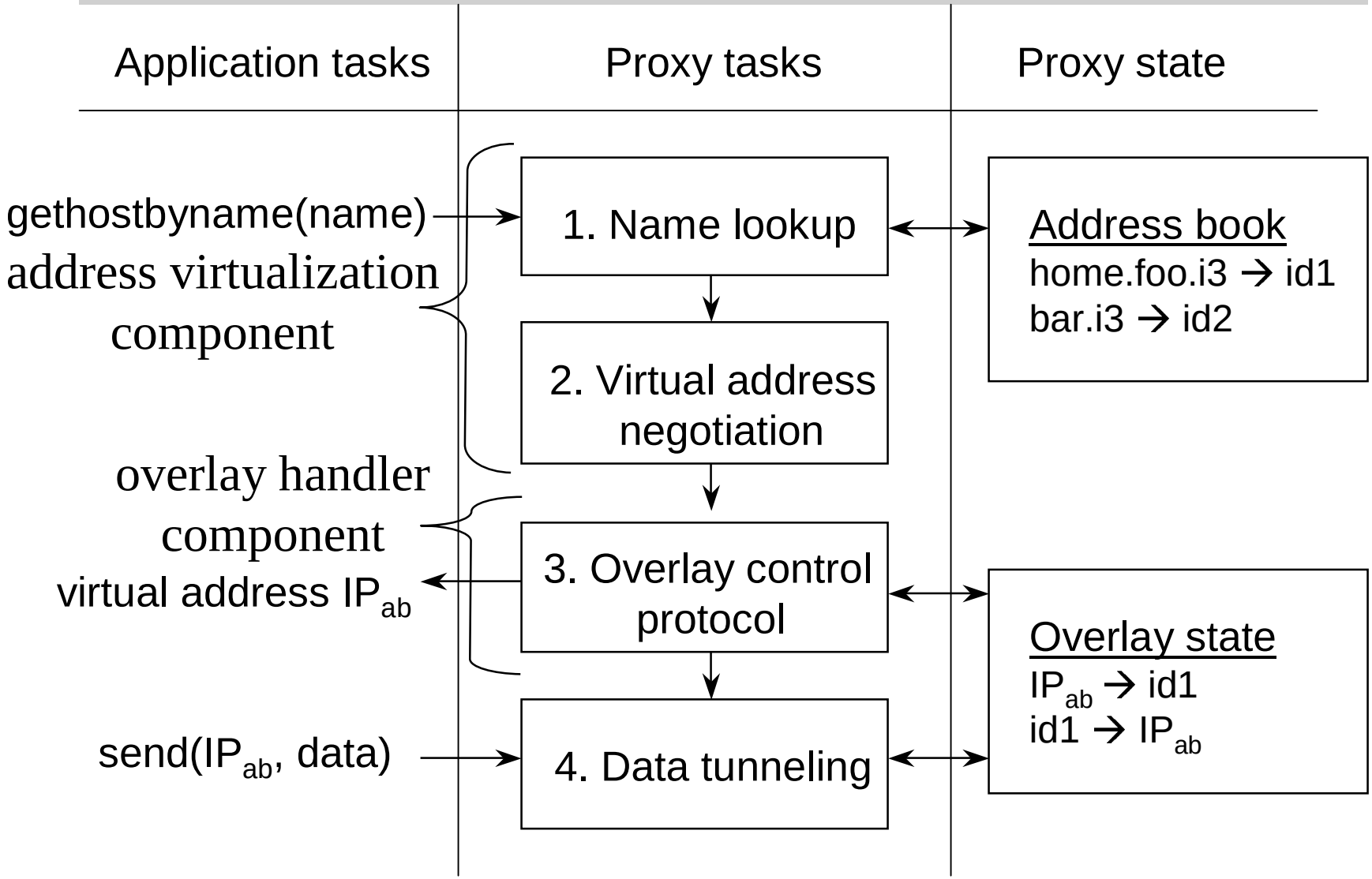
- Allow users to express preferences
  - which overlay should be used for the flow
  - preferences specific to overlays, e.g. middleboxes to be used
- Transparency to legacy applications
  - oblivious to legacy applications
- Provide flexible deployment options
  - co-located with applications
  - run on a remote host

Address Virtualization



- Capture packets and tunnel over the overlay
- DNS names to express preferences flexibly

The Big Picture



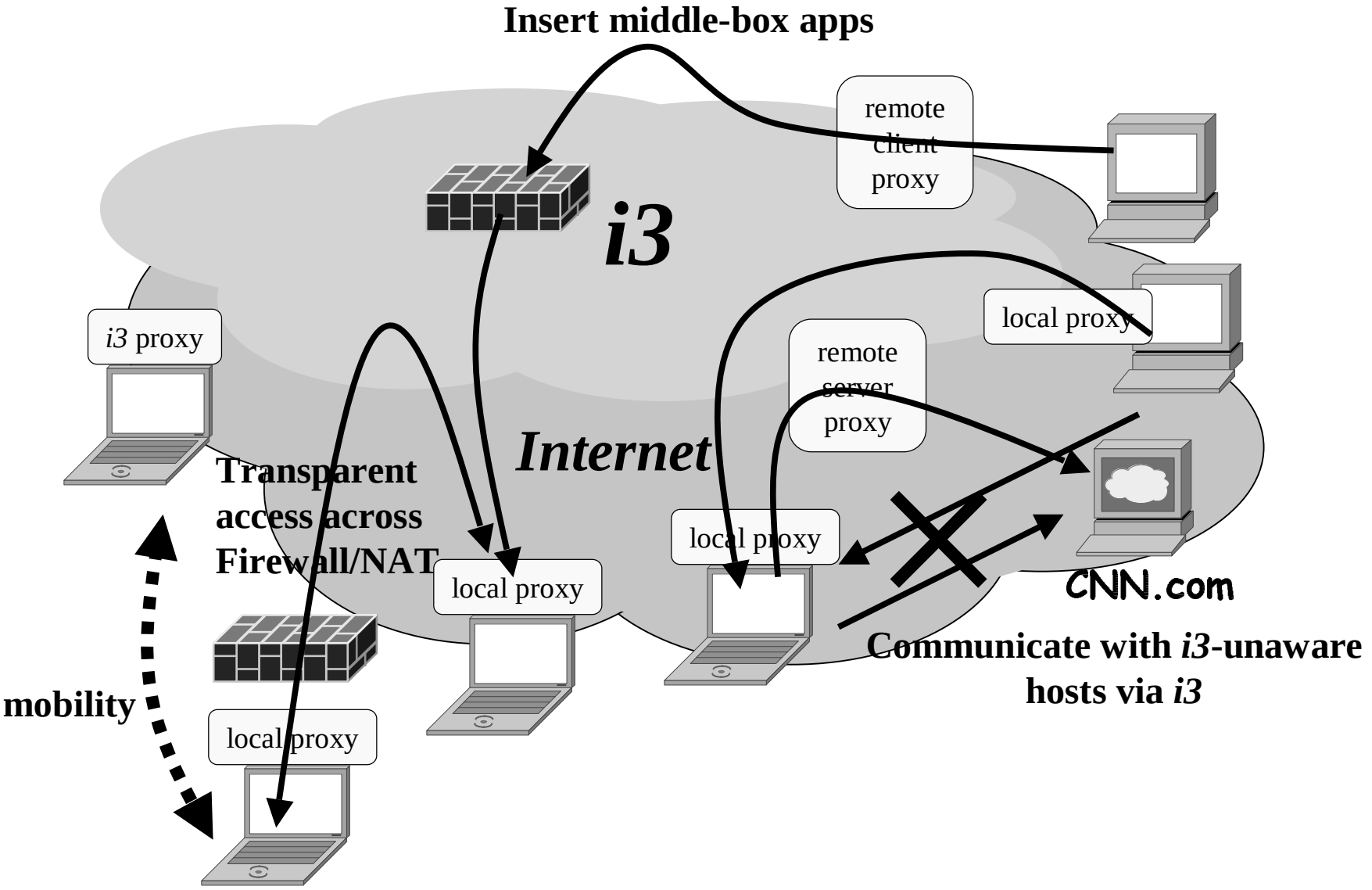
Transparency

- Goal: oblivious to legacy applications
- IP addresses are global
  - SIP-based applications
- IP addresses are permanent
  - apps cache address
- IP addresses in packet headers are unmodified end-to-end
  - ftp, H.323

Flexible Deployment Options

- Local proxy at both ends
  - IP ➟ IP communication over overlay
- Remote server proxy
  - useful for legacy servers
  - proxy inserts triggers, performs flow setup on behalf on legacy servers
- Remote client proxy
  - useful for legacy clients
  - DNS server returns address of remote client proxy which performs flow setup

Application Scenarios



Limitations

- Incorrect DNS caching by apps
  - caching despite zero TTL
- Semantics of addresses not completely preserved
  - virtual addresses cannot be shared between hosts
  - applications based on SIP might not work
- Not all routing overlays can be supported

Resources

- Implemented for Linux and Windows platforms
- http://i3.cs.berkeley.edu/