# Avoiding NAT66

## draft-troan-multihoming-without-nat66-00

IETF78
July 2010

Dan Wing, dwing@cisco.com

# Purpose

- Accelerate standards and implementations to avoid NAT66
  - Source address selection ← IETF: 6MAN
  - Route selection
  - DNS server selection

  } IETF: MIF
- Add mechanism to identify ‘new’ hosts

draft-fujisaki-dhc-addr-select-opt
draft-dec-dhcpv6-route-option
draft-savolainen-mif-dns-server-selection

# NAT66 Is **Not**

- Sharing IP addresses
- Modifying TCP or modifying UDP ports
- Stateful

# NAT66 Is

- Rewriting IPv6 prefixes

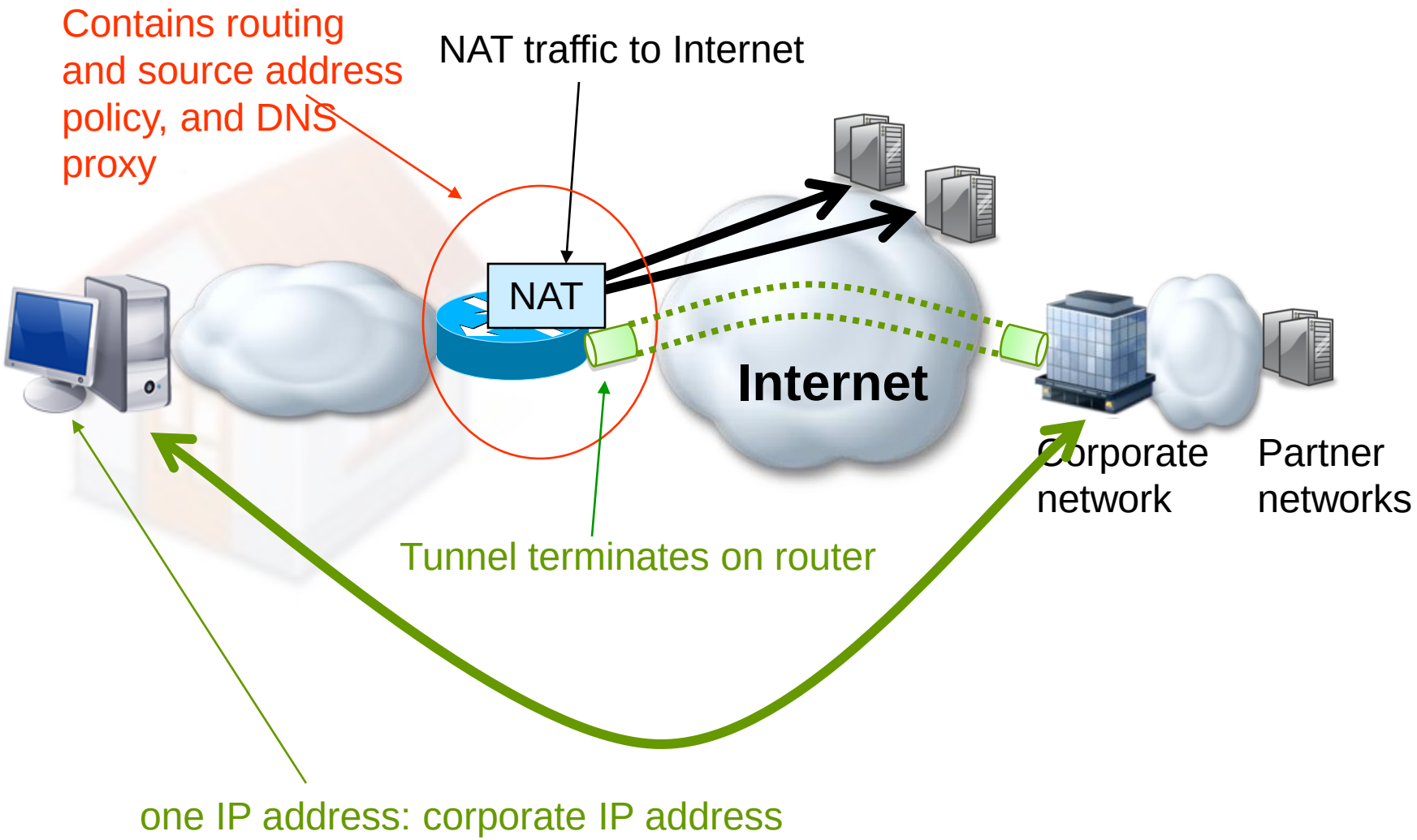
draft-mrw-behave-nat66

# Goal

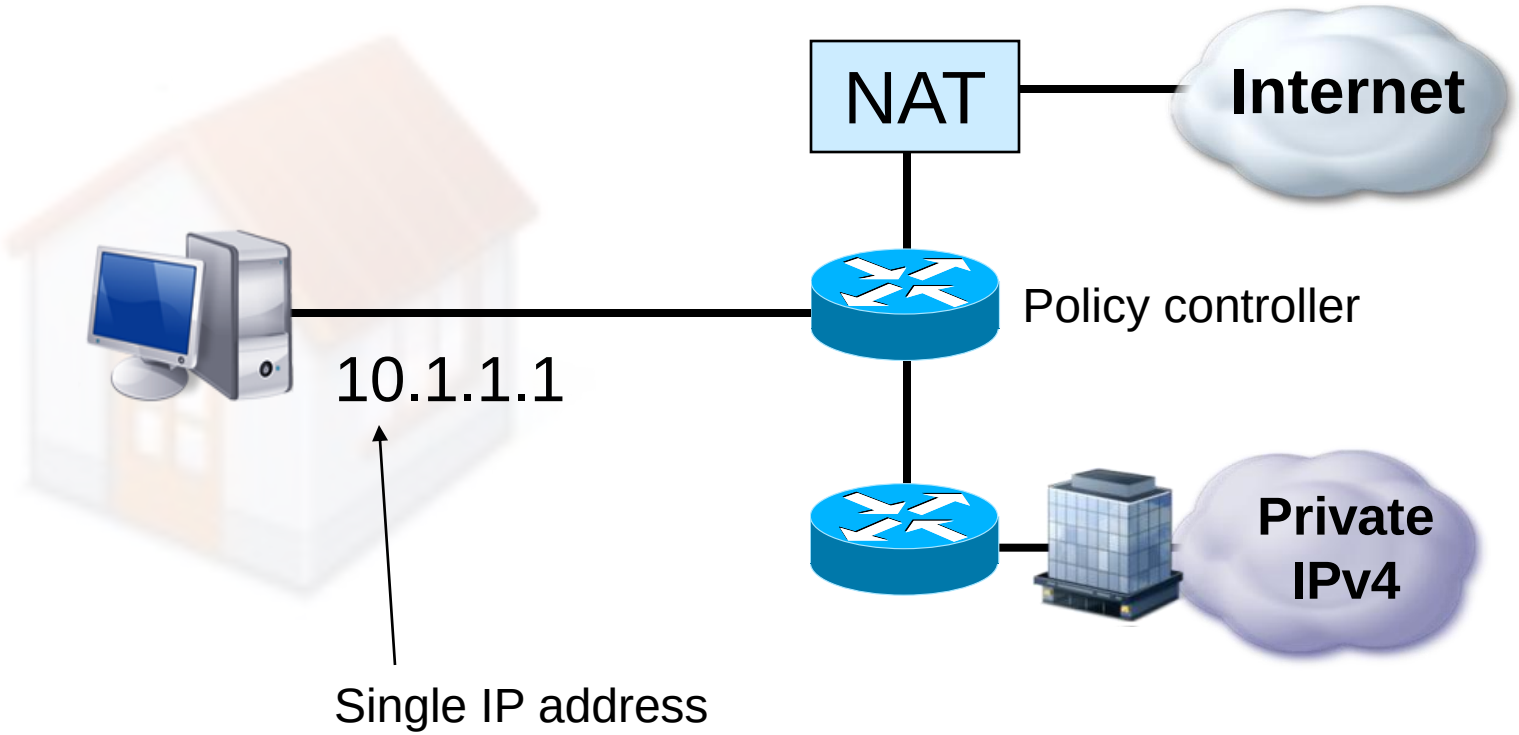
- Give host multiple IPv6 prefixes
  - Belonging to different networks
- Host does “The Right Thing”

- Not yet achievable

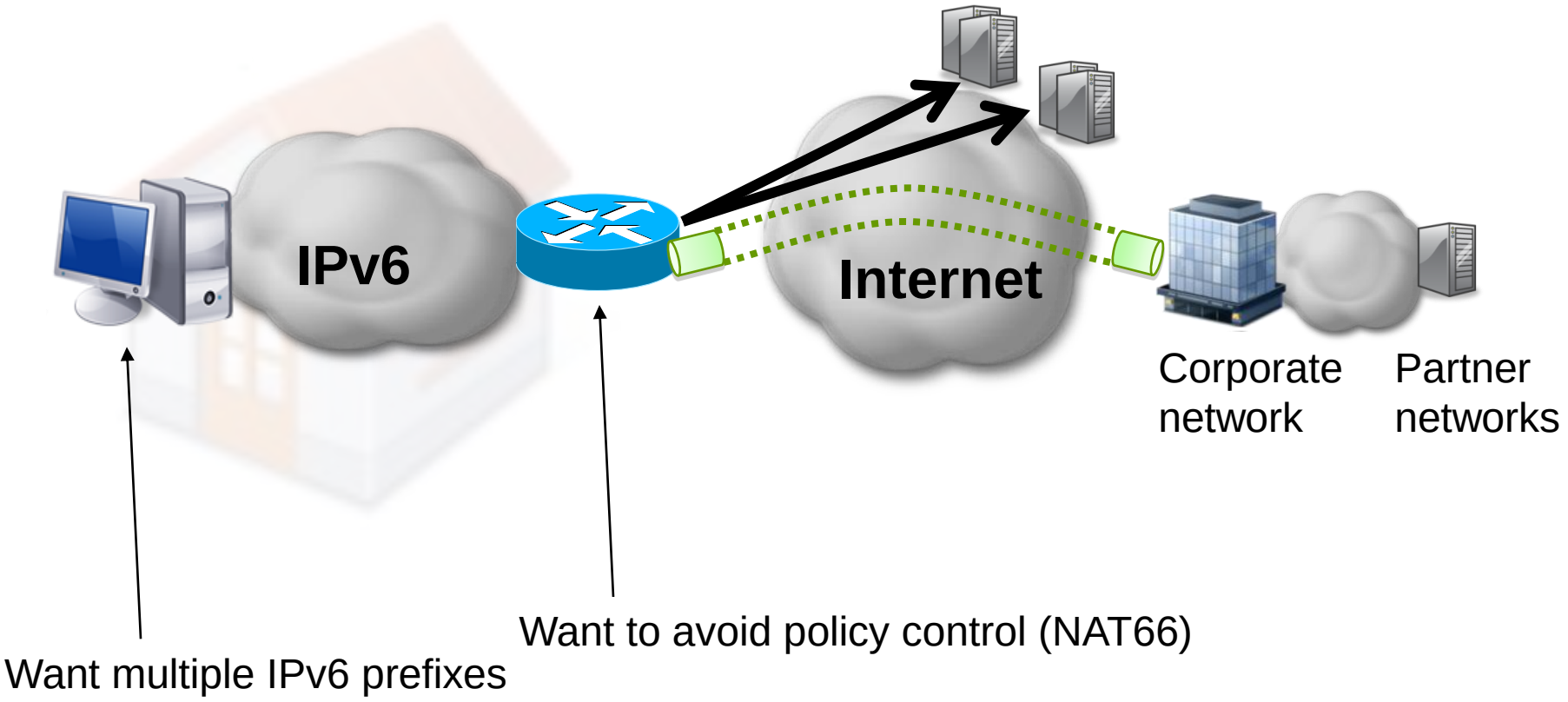
# Tunnel to Enterprise, IPv4



# Simplified Tunnel Diagram, IPv4

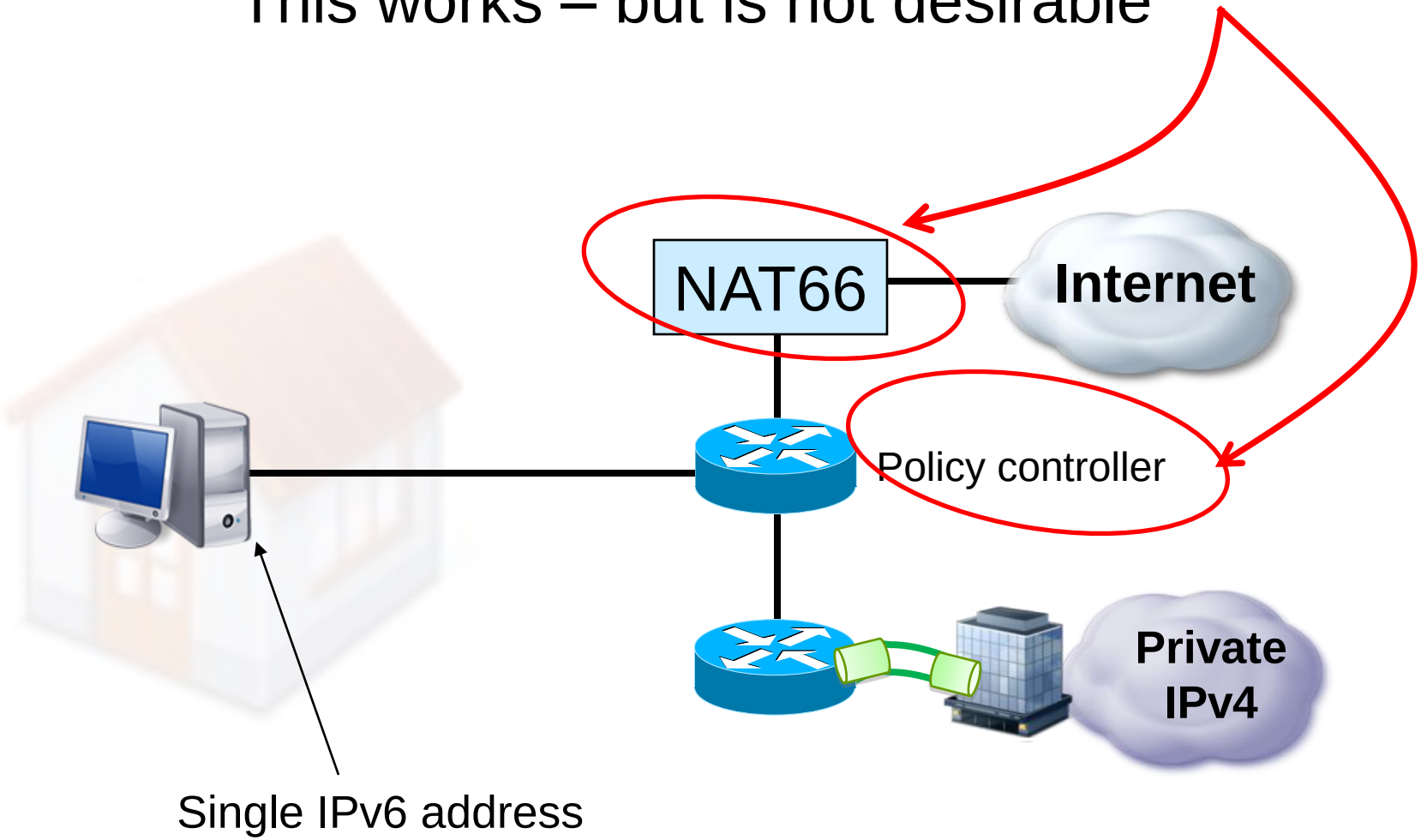


# Same Scenario, IPv6



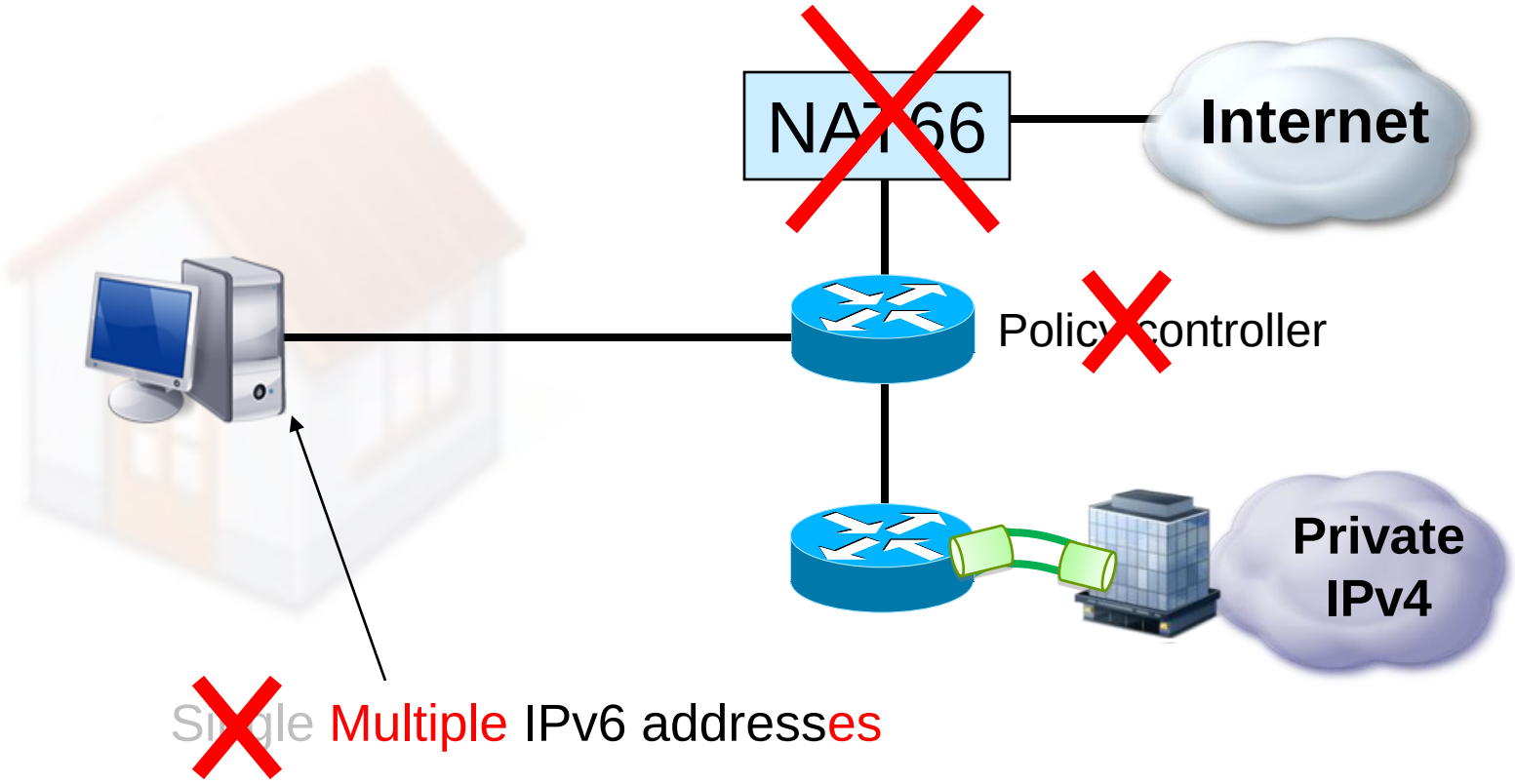
# Simplified Tunnel Diagram, IPv6

This works – but is not desirable



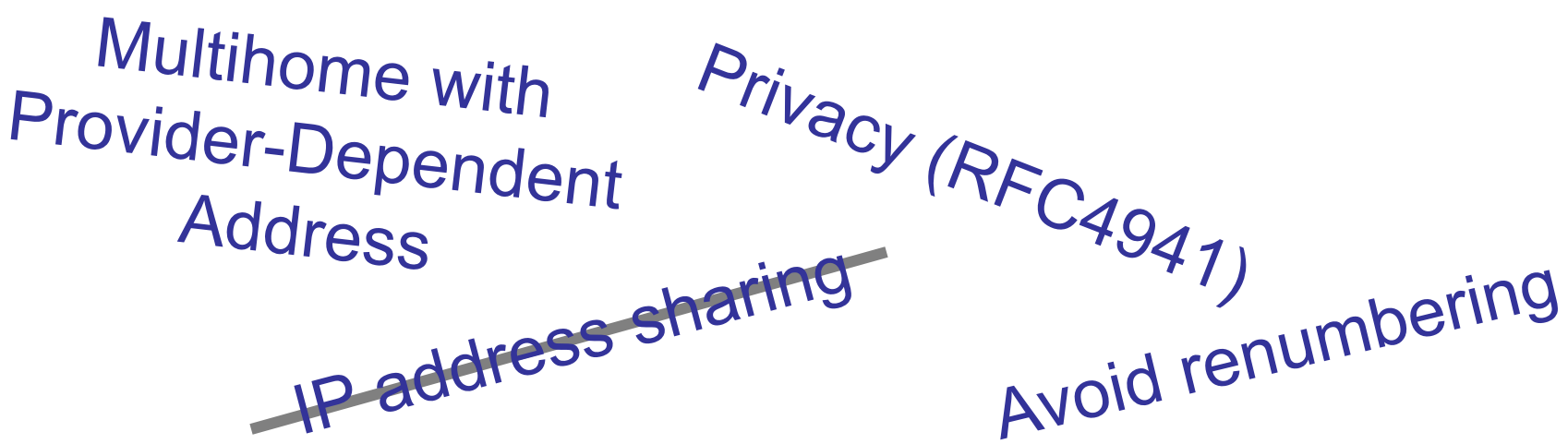
# Simplified Tunnel Diagram, IPv6

Desired



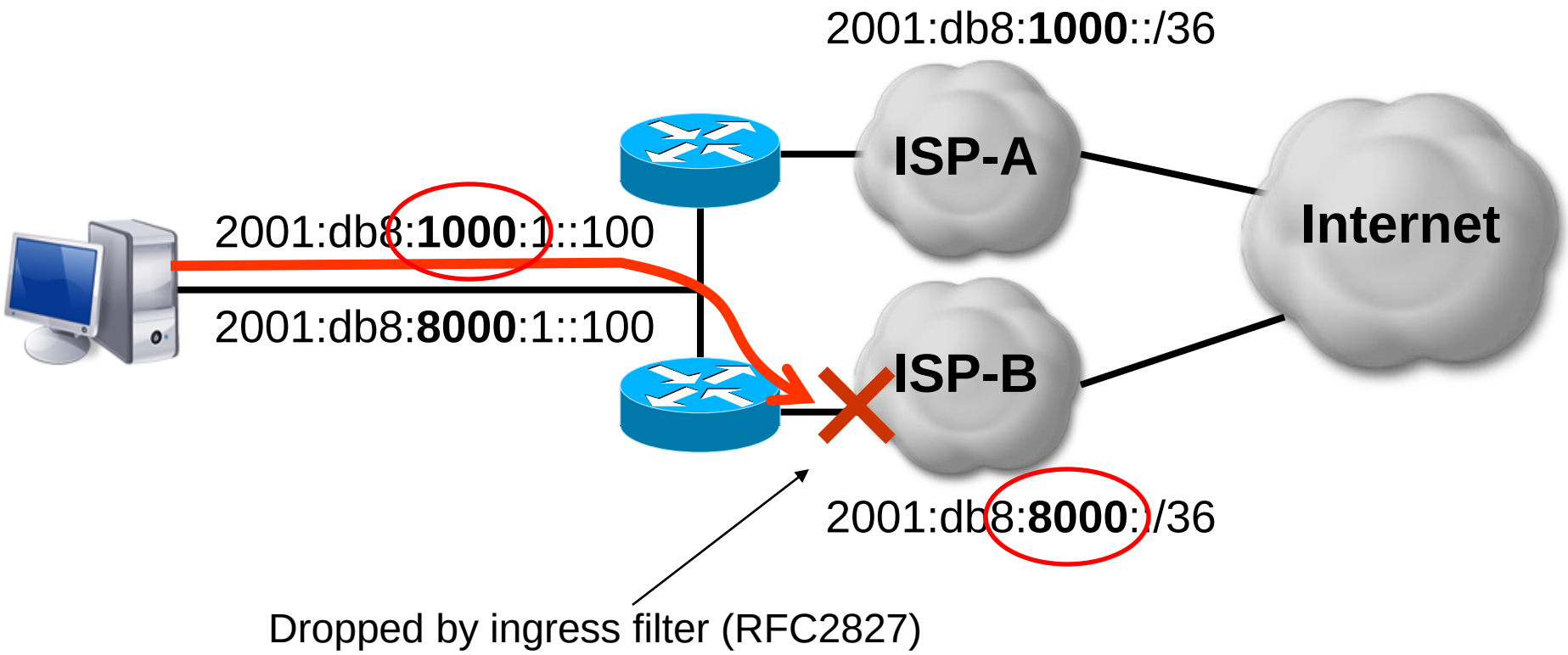
# Why Consider NAT66

- Host and standards deficiencies:
  1. Source Address Selection
  2. Next-Hop Route Selection
  3. DNS Server Selection
  4. (Identifying Supporting Hosts)



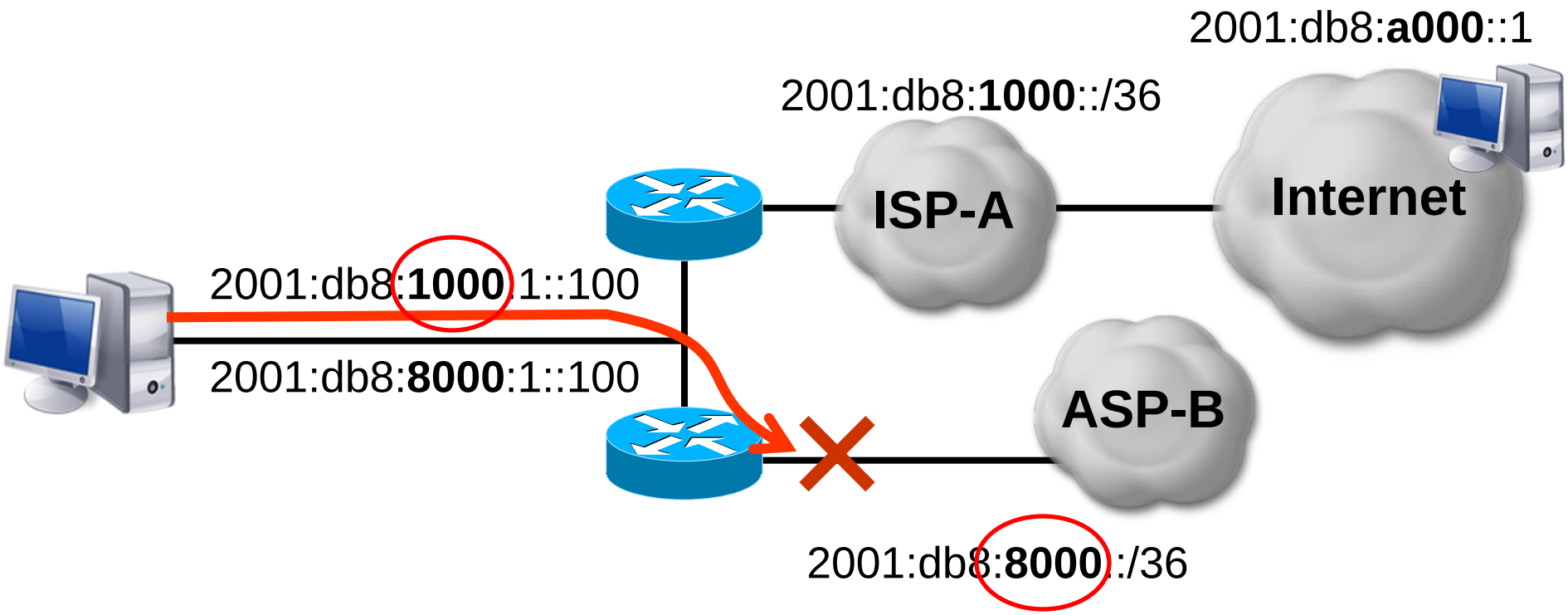
# Problem: Source Address Selection

- Multiple prefixes on one physical interface
- Wrong ISP

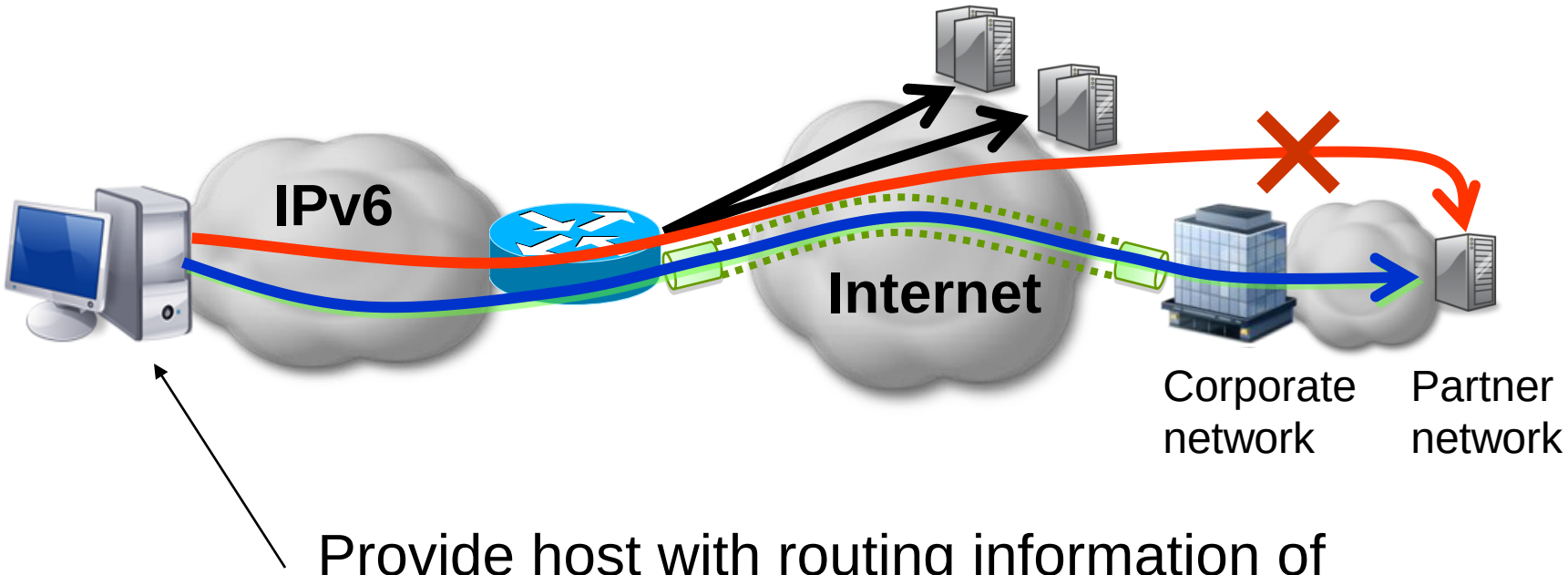


# Problem: Source Address Selection

- Multiple prefixes on one physical interface
- Disconnected network



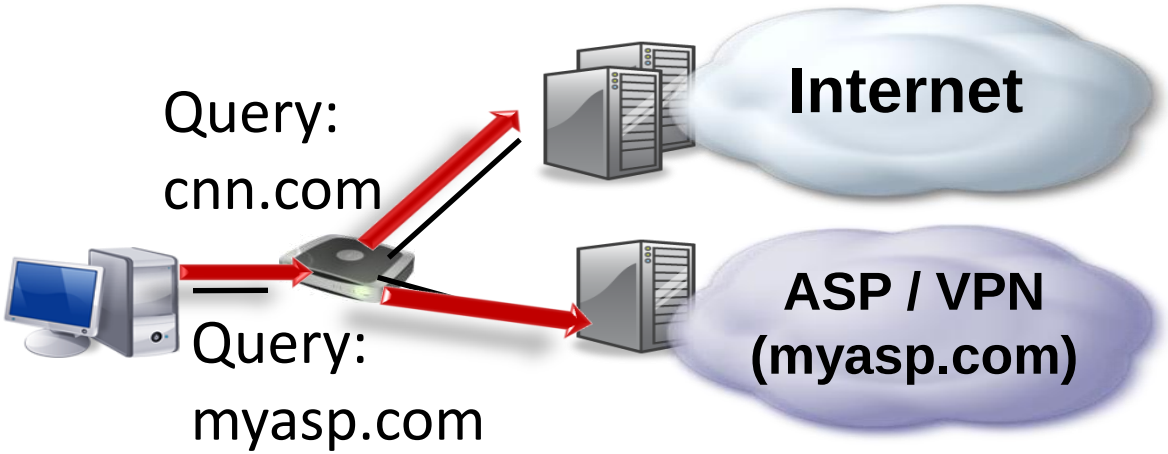
# Problem: Next-Hop Route Selection




Provide host with routing information of Partner network – so that Address Selection (RFC3484) can choose correct source address. **RFC4191 does that** (but there is a problem..)

# Problem: DNS Server Selection

- Different Answers
  - Public DNS returns empty answer
  - Private DNS returns IP address
- Solution: host queries proper DNS server
- long-existing industry practice



# Problem: Identifying Supporting Hosts

- Supporting Host:
  - Chooses proper source address
  - Accepts next-hop route information
  - Supports DNS server selection
- Network would like to determine:
  - If ‘supporting host’, give it two prefixes
  - If ‘non-supporting host’, give it one prefix and NAT66 its traffic

will be described in draft-troan-multihoming-without-nat66-**01**

# Scope of New Work

| | **Multiple physical interfaces** | **Multiple prefixes** |
|---|---|---|
| Source Address Selection | √ RFC3484 | Revise standard |
| Next-Hop Route | √ (RFC4191) | √ (RFC4191) |
| DNS Server Selection | new standard | new standard |
| Identify supporting hosts | new standard | new standard |

# Actions

- Accelerate standards and implementations to avoid NAT66
  - Source address selection ← IETF: 6MAN
  - Route selection
  - DNS server selection

  } IETF: MIF
- Add mechanism to identify ‘new’ hosts

draft-fujisaki-dhc-addr-select-opt
draft-dec-dhcpv6-route-option
draft-savolainen-mif-dns-server-selection

# Questions?

Avoiding NAT66

Dan Wing, dwing@cisco.com

# Bar-BOF

- Including prototype demonstration

Day: Wednesday, 20:00-21:30

Place:  TBD

http://trac.tools.ietf.org/bof/trac/wiki/BarBofsIETF78

- Please come and join us!