Avoiding NAT66

draft-troan-multihoming-without-nat66-00

Google IPv6 Implementers Conference
June 2010

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v3

NAT66 Is **Not**

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

NAT66 Is

- Rewriting IPv6 prefixes

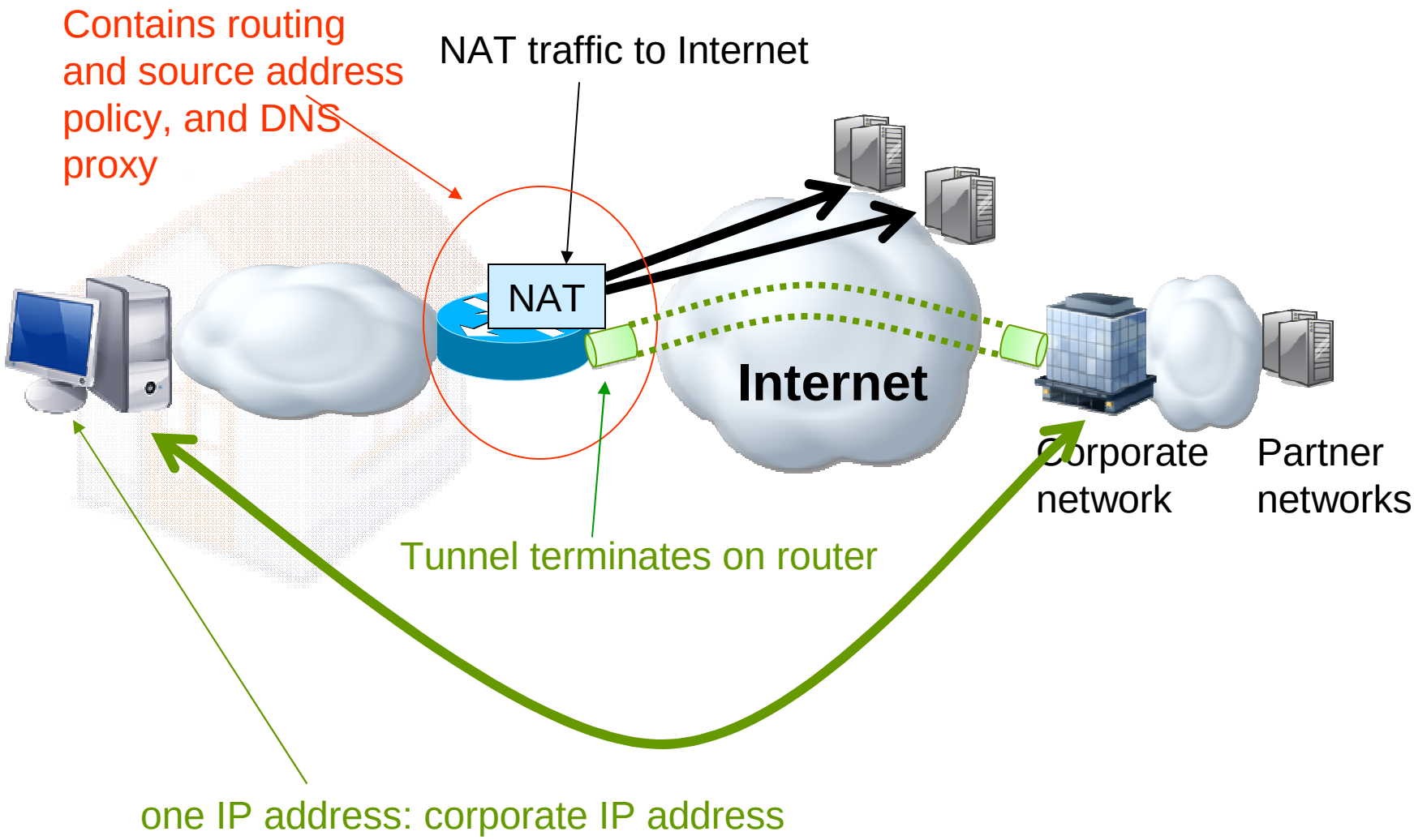
draft-mrw-behave-nat66

Goal

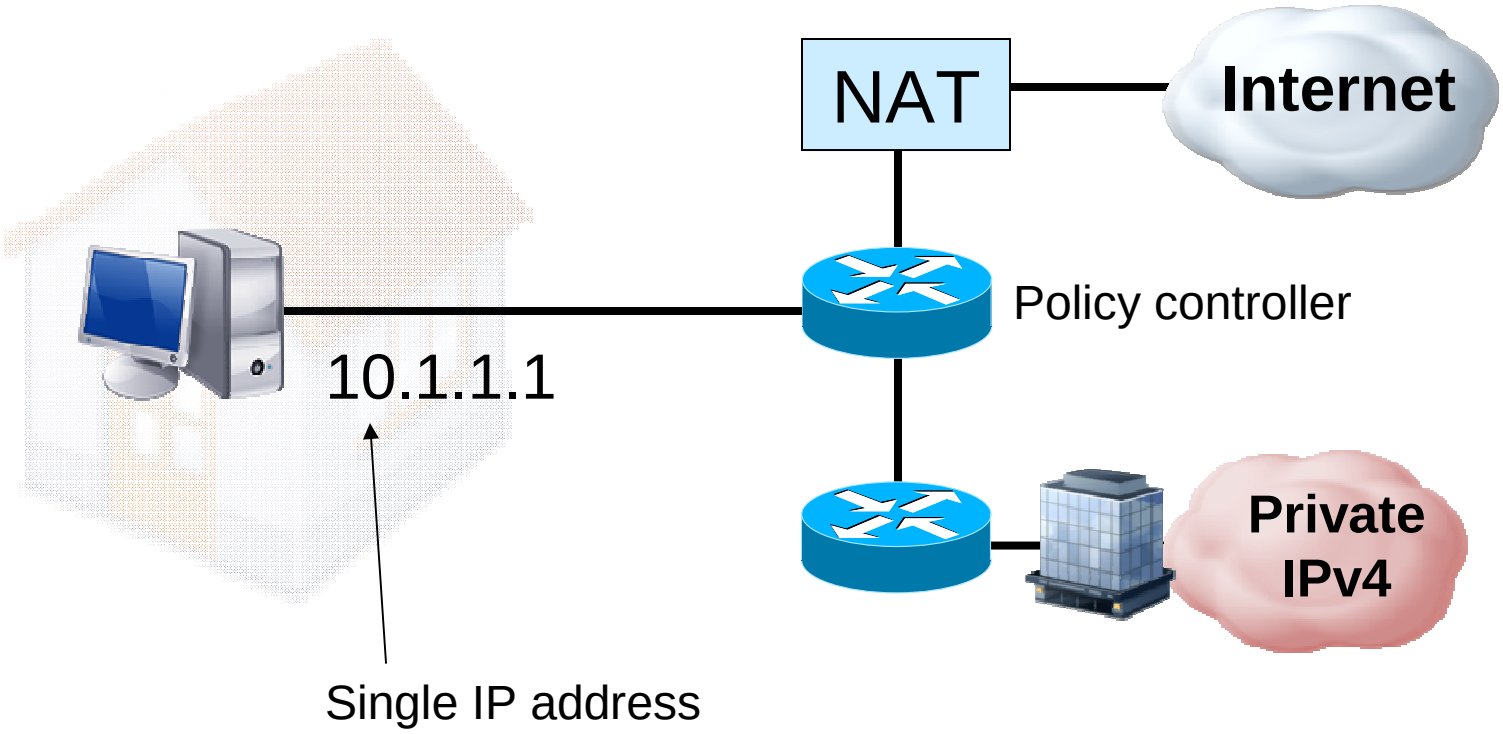
- Give host multiple IPv6 prefixes
  - Belonging to different networks
- Host does “The Right Thing”

- Not yet achievable

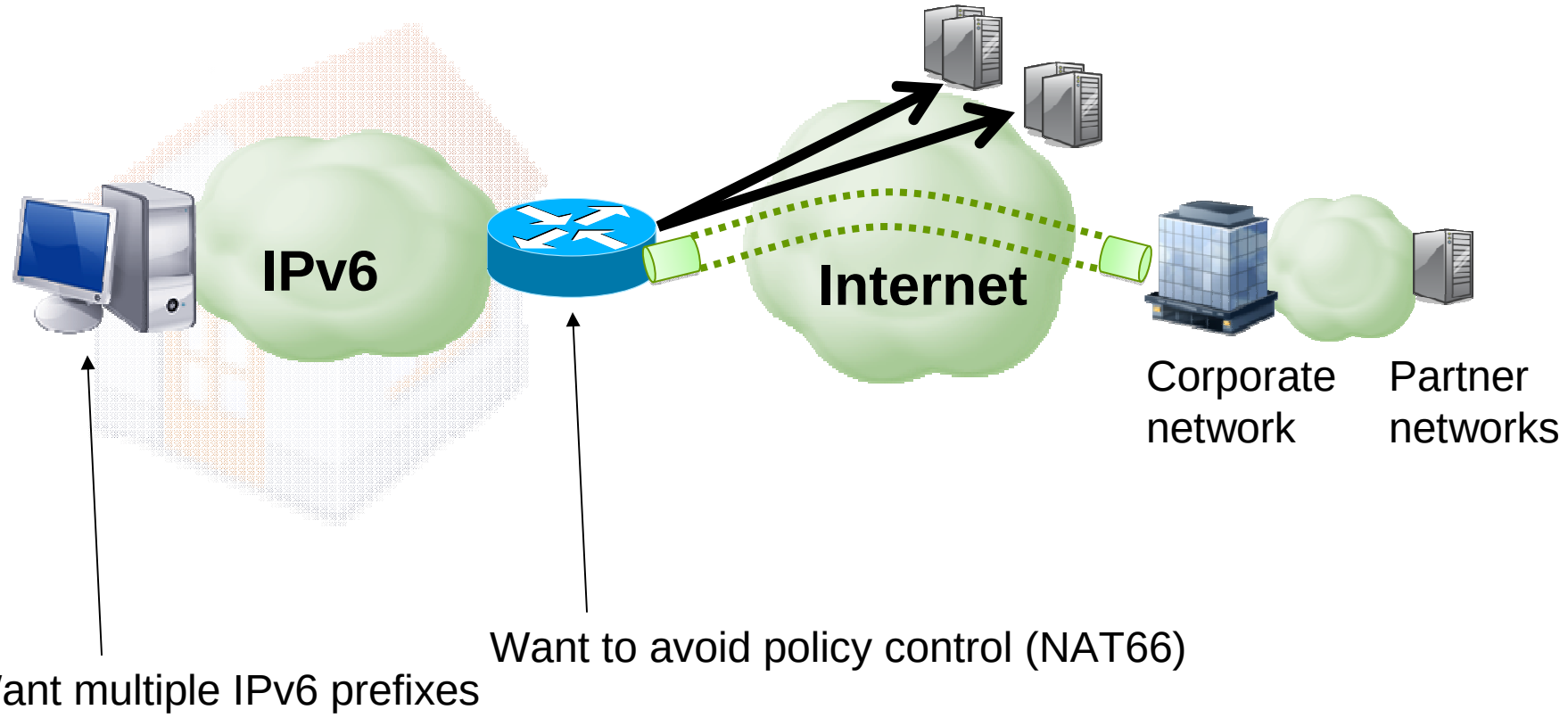
Tunnel to Enterprise, IPv4



Simplified Tunnel Diagram, IPv4

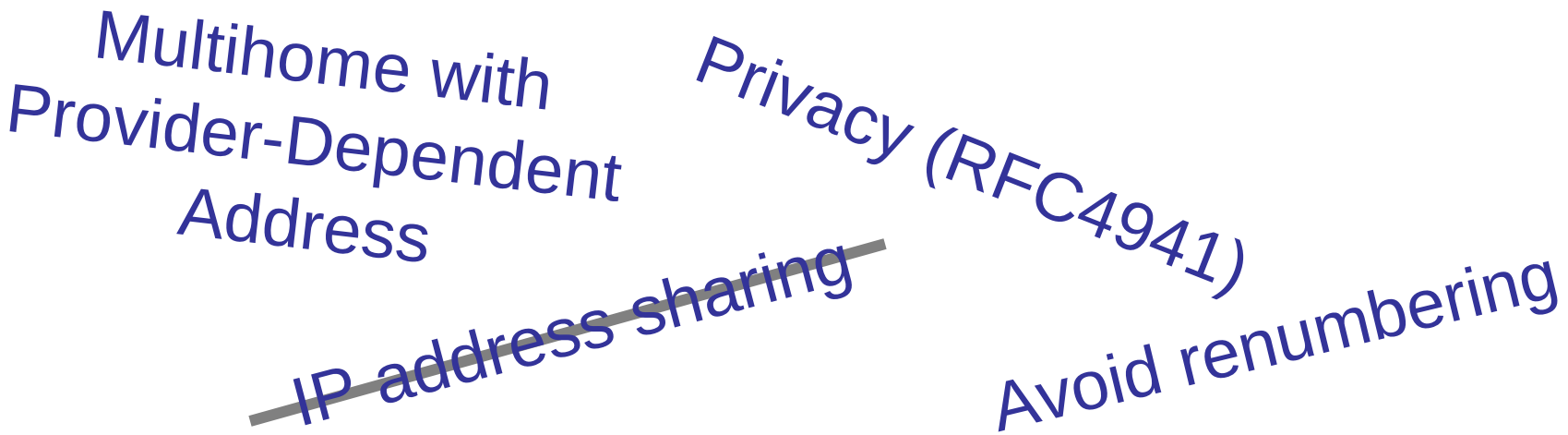


Same Scenario, IPv6



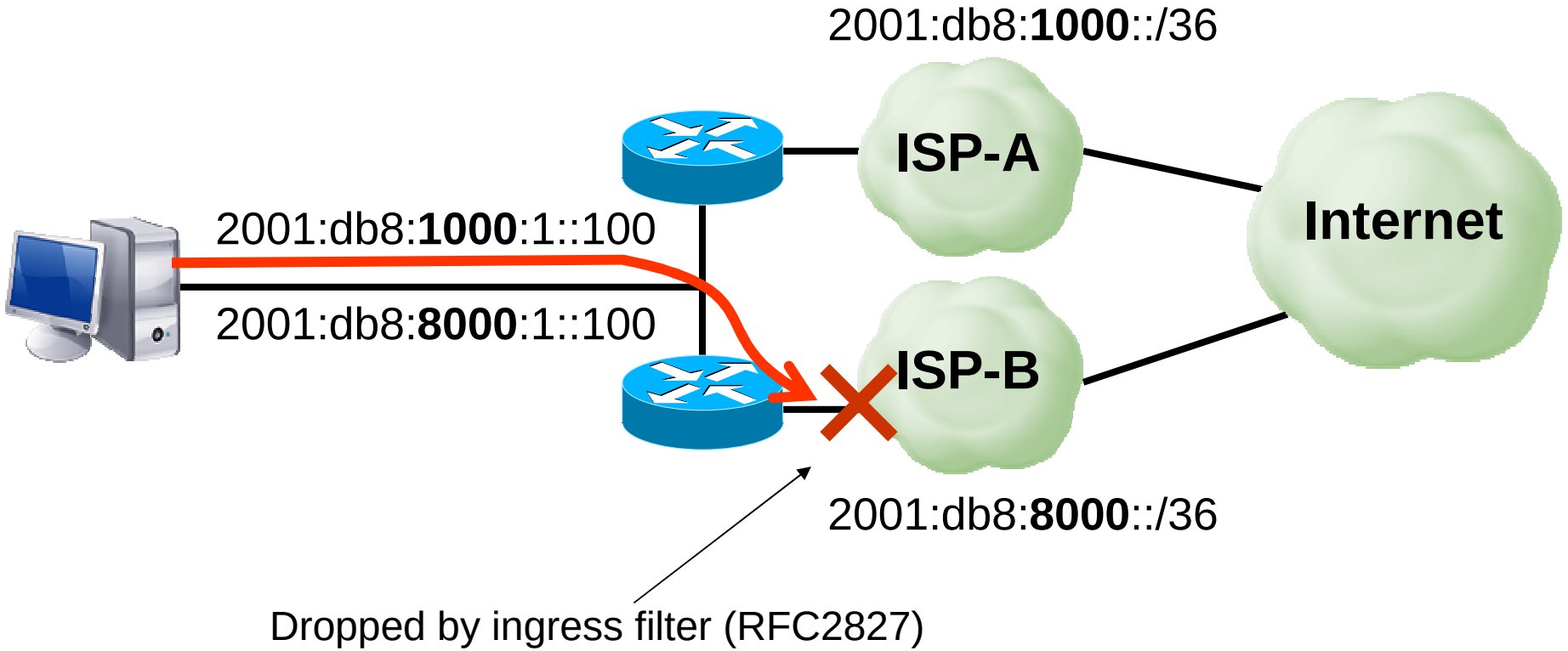
Why Consider NAT66

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



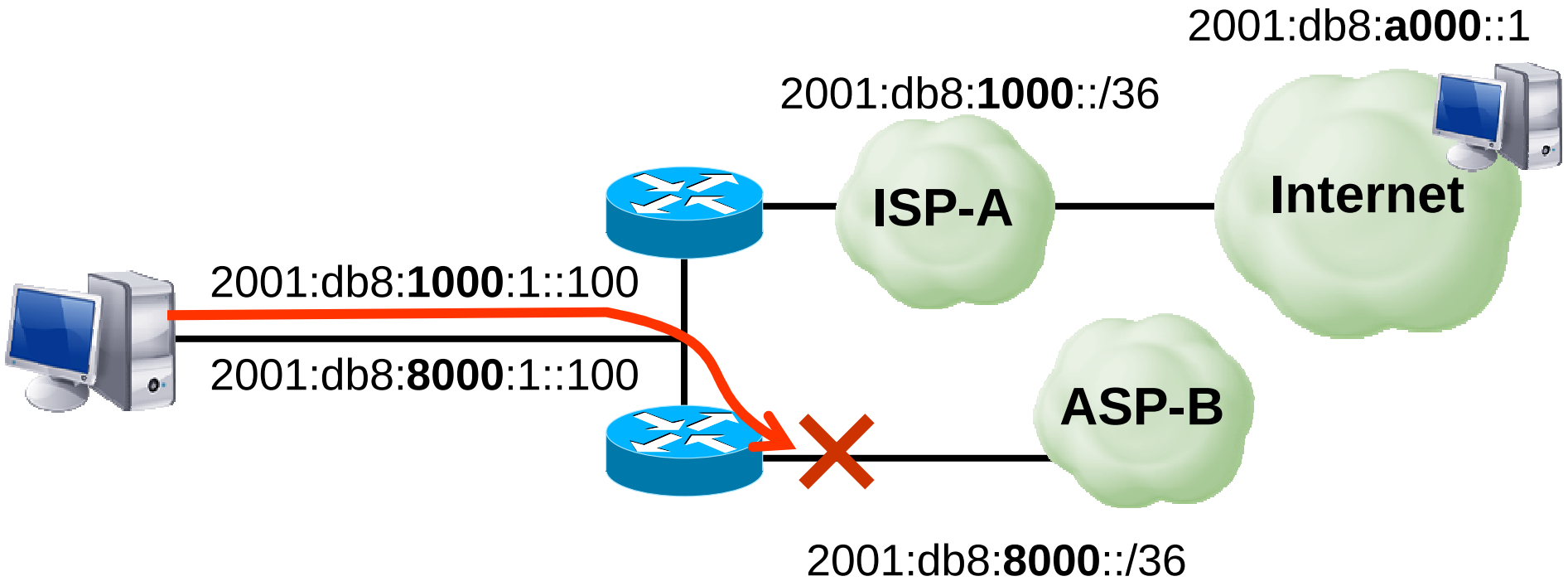
Problem: Source Address Selection

- Multiple prefixes on one physical interface
- Wrong ISP

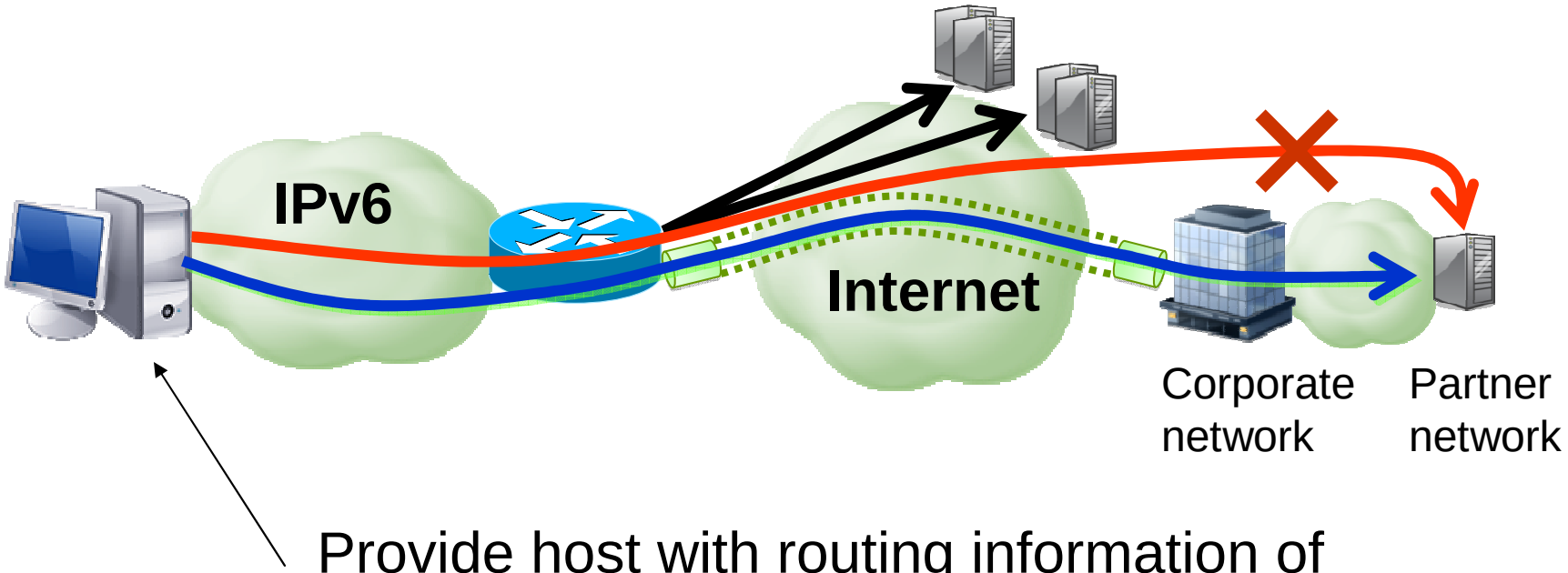


Problem: Source Address Selection

- Multiple prefixes on one physical interface
- Disconnected network



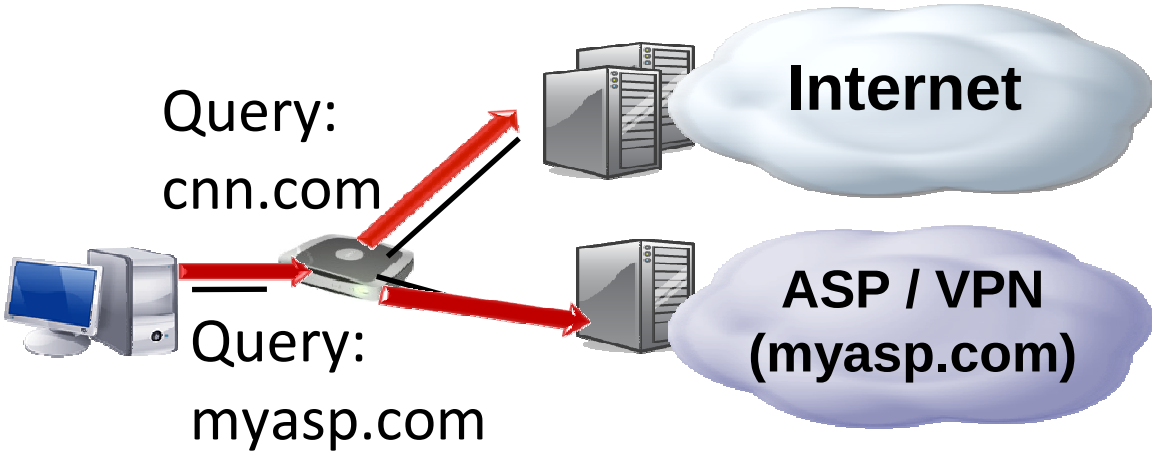
Problem: Next-Hop Route Selection



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: Split-Zone DNS

- Split-Zone DNS
  - 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 split-zone DNS

- Network would like to determine:
  - If ‘supporting host’, give it two prefixes
  - If ‘non-supporting host’, give it one prefix and NAT66 its traffic

Scope of New Work

	Multiple physical interfaces	**Multiple prefixes**
Source Address Selection	√ RFC3484	Revise standard
Next-Hop Route	√ (RFC4191)	√ (RFC4191)
Split-Zone DNS	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
  - Split-zone DNS

  } 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?

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