

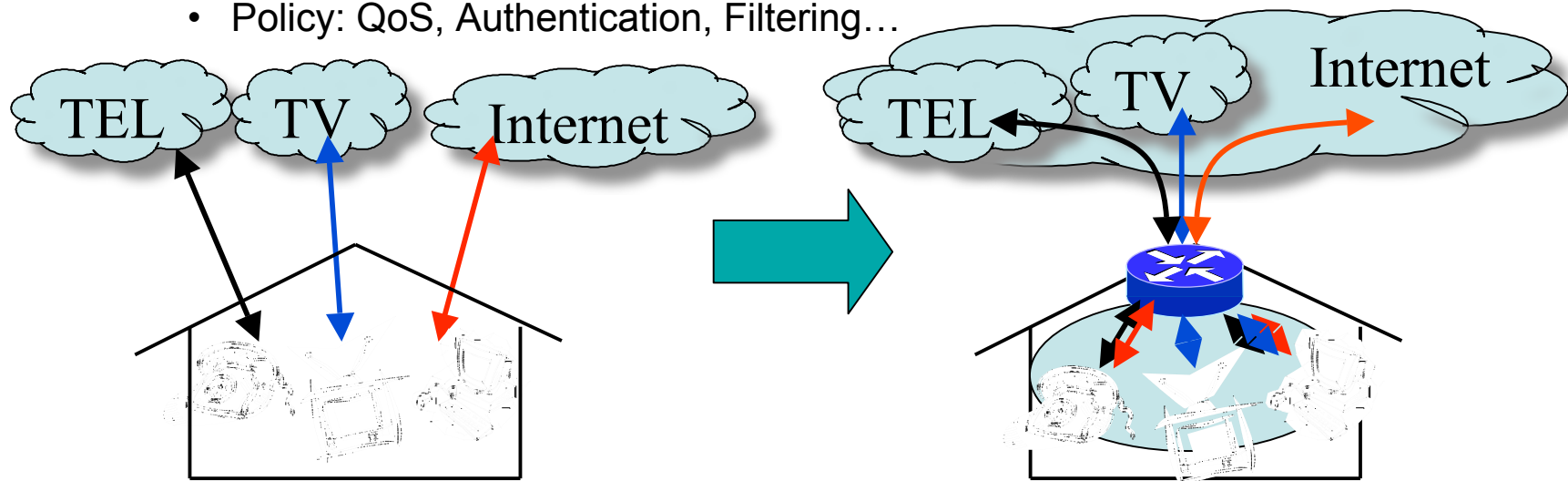
# Source Address Selection in Multi-Prefix Multi-Service Network

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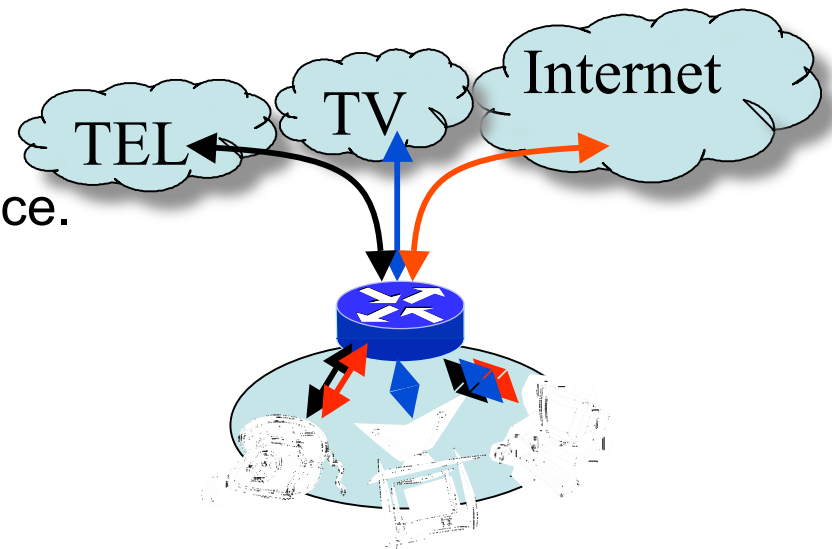
# Background

- An access-line and a device are used to be bounded one-to-one to a service, such as telephone and TV.
- Today, many services are getting on IP. They are coming under a home network.
  - How to let them co-exist in a network happily ?
  - How to associate a device with a up-stream network correctly ?
    - One-to-one / One-to-Many binding is necessary
  - How to apply “network control policies” to a device and a network ?
    - Policy: QoS, Authentication, Filtering...



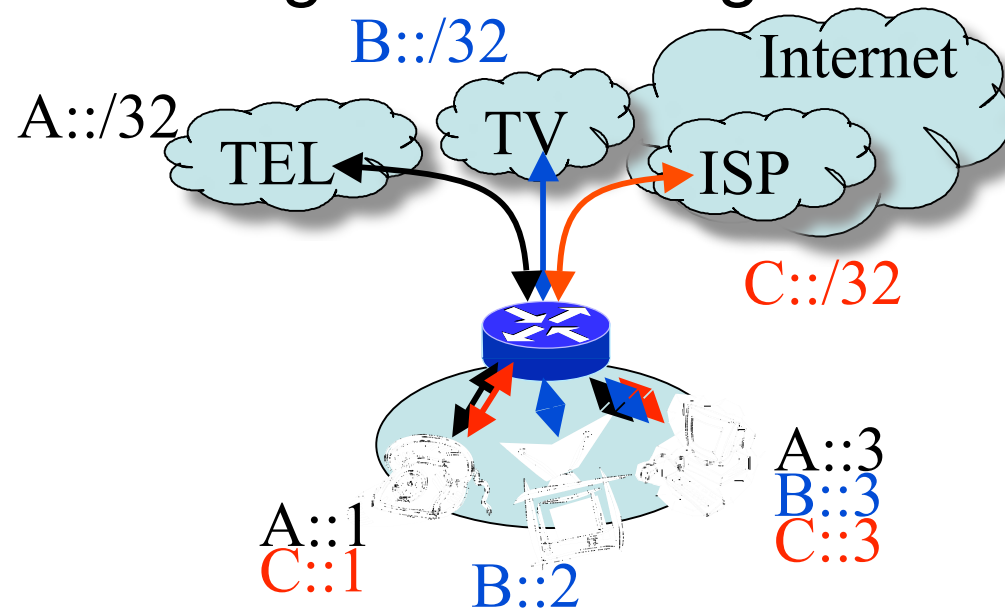
# One Service One Prefix Model

- This model has been proposed in IETF and in papers
- Address/Prefix based service separation
  - A Service Provider assigns an IPv6 prefix (/48,/64) to each customer.
  - In IPv6, a network I/F can have multiple addresses. So, a host can use multiple services at the same time.
  - Network policy control(QoS, Filtering,...) can be implemented to each prefix separately.
  - By address assignment control, a service provider can control which appliance can use its service.
- Drawback: it consumes a lot of address blocks



# Example Address Assignment

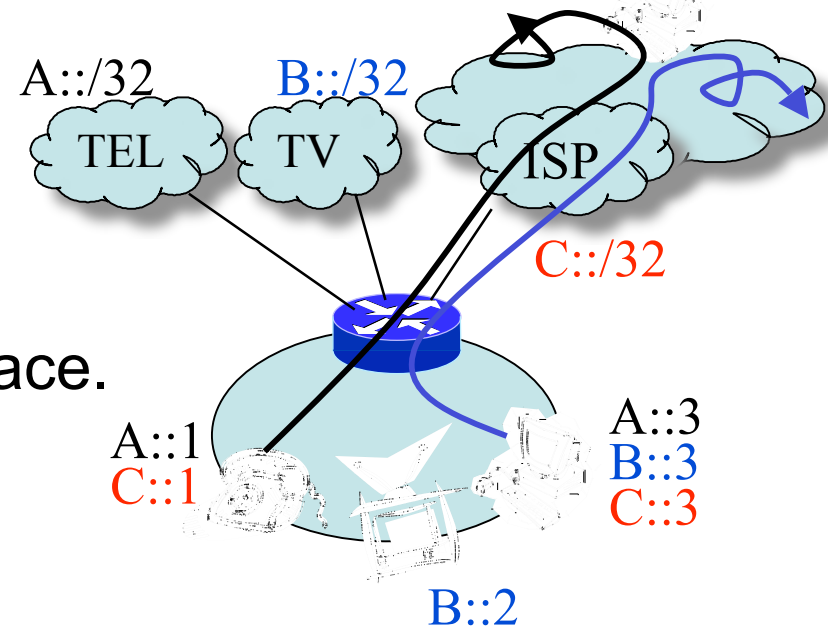
- A home that uses Internet, TV and phone over IP will be assigned following addresses.



- However, this model has a serious problem in source address selection at each appliance.

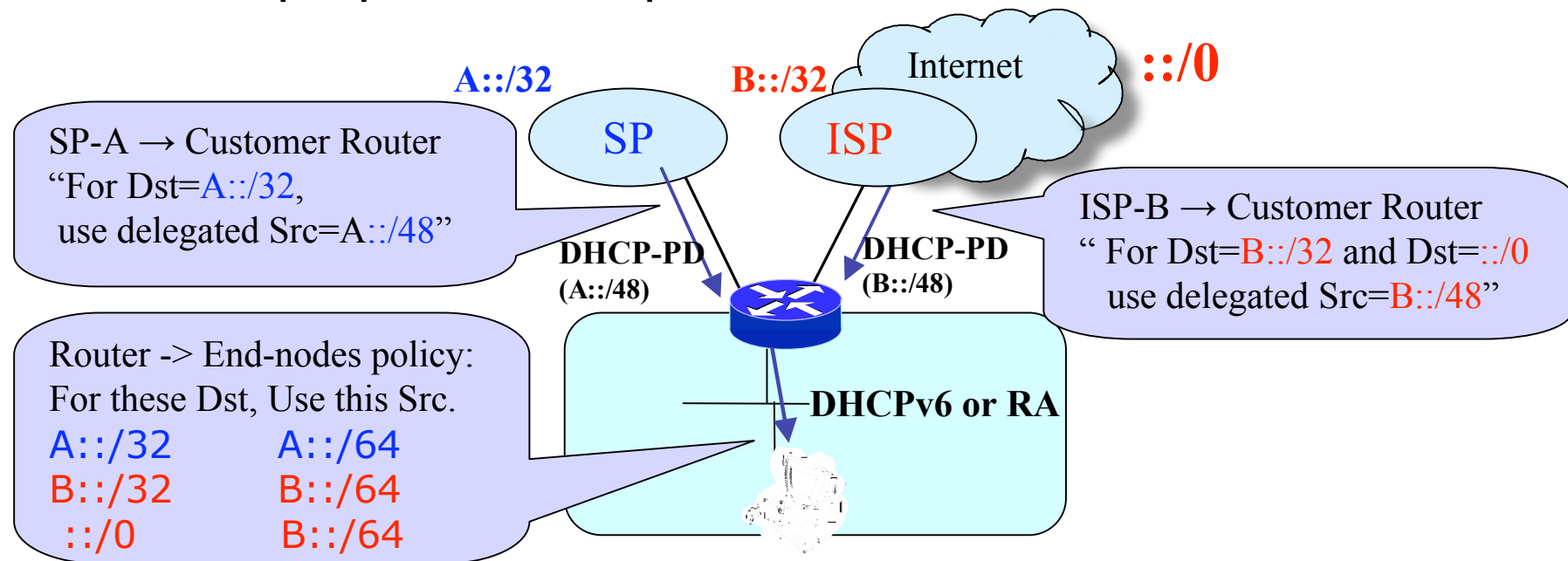
# Source Address Selection Problem

- Source Address Selection Algorithm(RFC3484) may choose a wrong source address
  - Service Provider doesn't provide transit to the Internet
  - If an appliance has 2 or more addresses including ISP's one
- Even if ISP isn't involved, this problem happens
  - when a SP acquires another IPv6 address space other than address delegation space.



# Our Solution

- A service provider distributes "Source Address Selection Policy" to its customer networks.
  - Received policy is stored in a "policy table", defined in RFC3484, at service subscribing hosts.
  - We propose new options for DHCPv6 and RA.



# Status

- Now we are standardizing this mechanism in dhc and ipv6 wg in IETF.
- We have Implemented
  - DHCPv6 : FreeBSD and Windows(client only)
  - RA : FreeBSD
- Questions or Comments ?
  - about “One Service One Prefix” model ?
  - about our protocol for source address selection ?