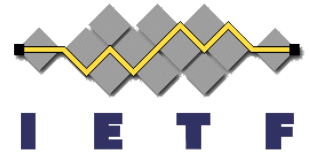


Source/Destination Routing

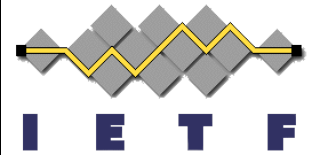
Fred Baker
Cisco Systems



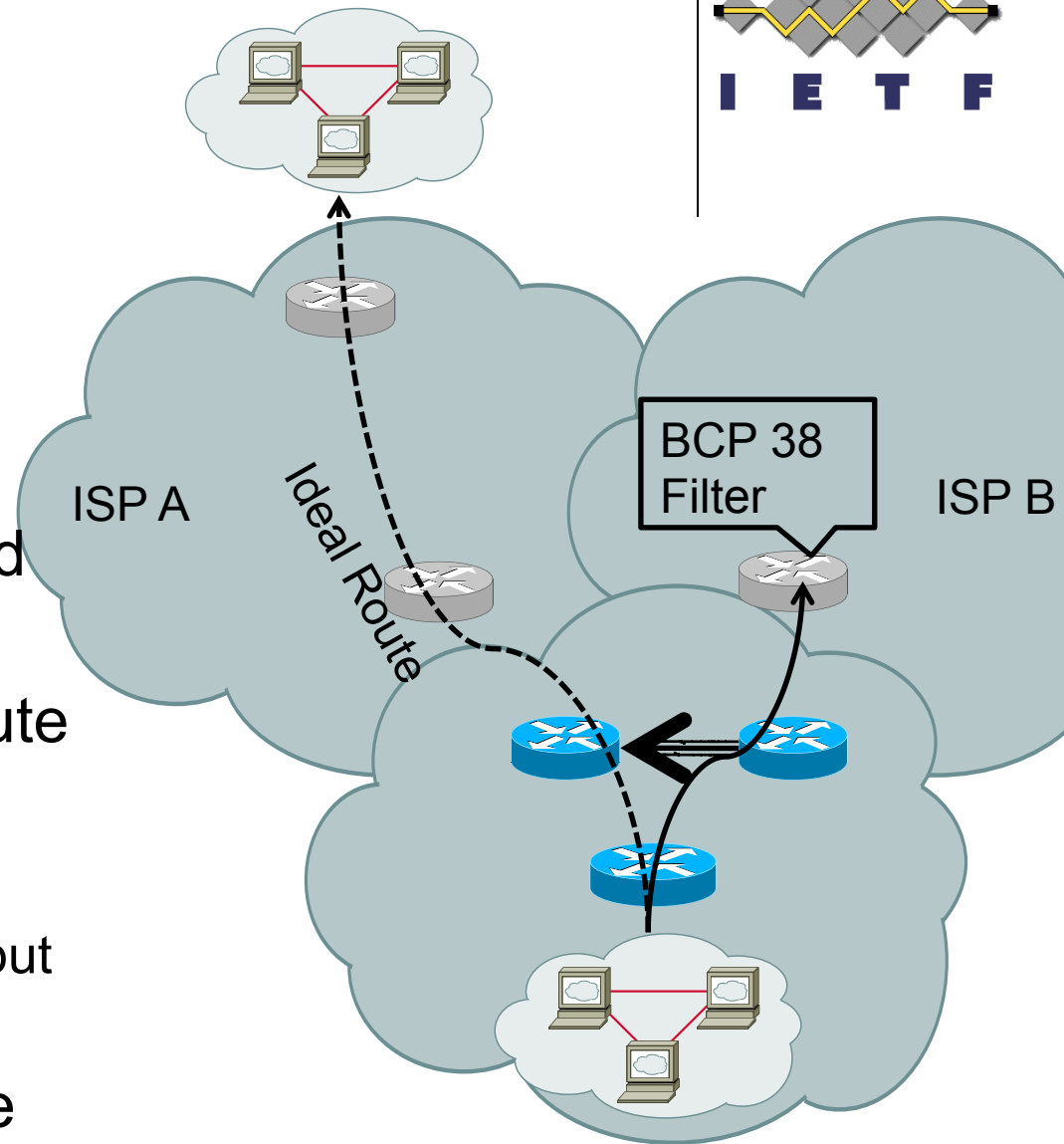
Problem History

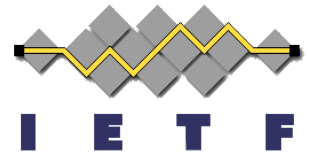
- Identified as a requirement soon after the deployment of BCP 38
 - Discussed as an objective in shim6 context
 - RFC 3704
 - Marcelo Bagnulo research (2003)
- Various efforts centering on homenet requirements
 - Troan & Colitti: draft-troan-homenet-sadr
 - Chroboczek & Boutier: draft-boutier-homenet-source-specific-routing
 - Baker: draft-baker-ipv6-ospf-dst-src-routing and draft-baker-ipv6-isis-dst-src-routing
 - Yang & Xu: draft-xu-homenet-traffic-class, draft-xu-homenet-twod-ip-routing

RFC 3704



- Savola and Baker
- Suppose a session is opened up to a remote location in a multihomed network
- Suppose the default route takes it to the wrong egress
 - ISP A's source address but routed to ISP B
- Wouldn't it be nice if the packet got to the right egress somehow?

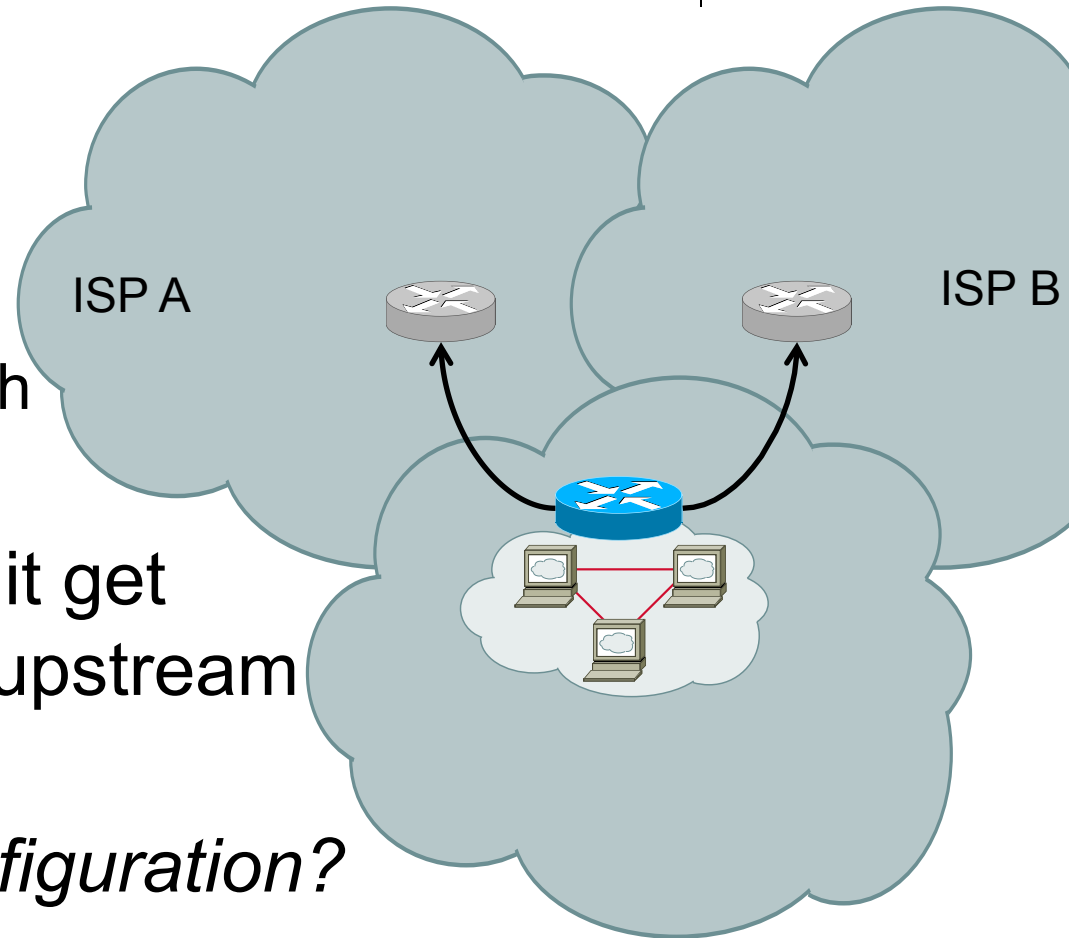




USE CASES

Homenet's first concern

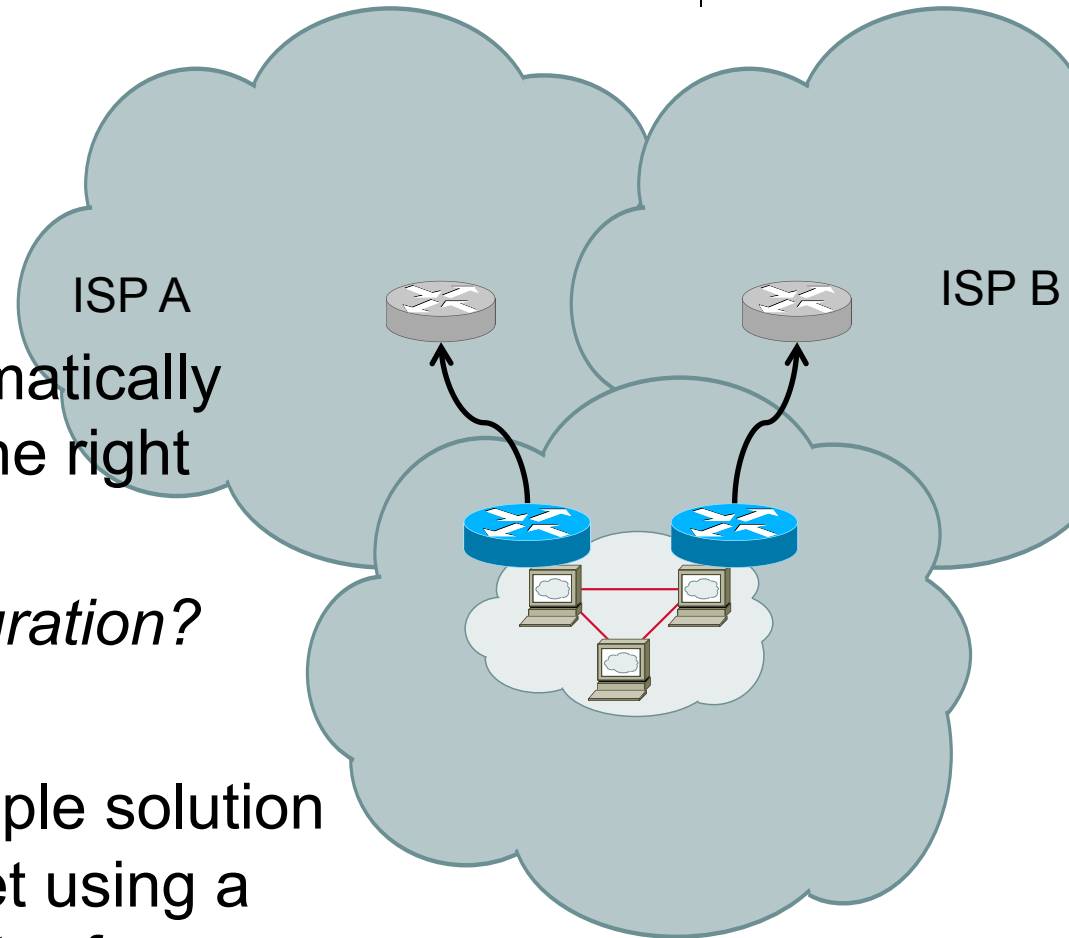
- A home with
 - one router,
 - two upstreams, and
 - a PA Prefix from each
- Is there a way to systematically have it get packets to the right upstream network?
- *Without manual configuration?*
- Might be solved from DHCPv6 IA_PD



But residential routers usually have one upstream...

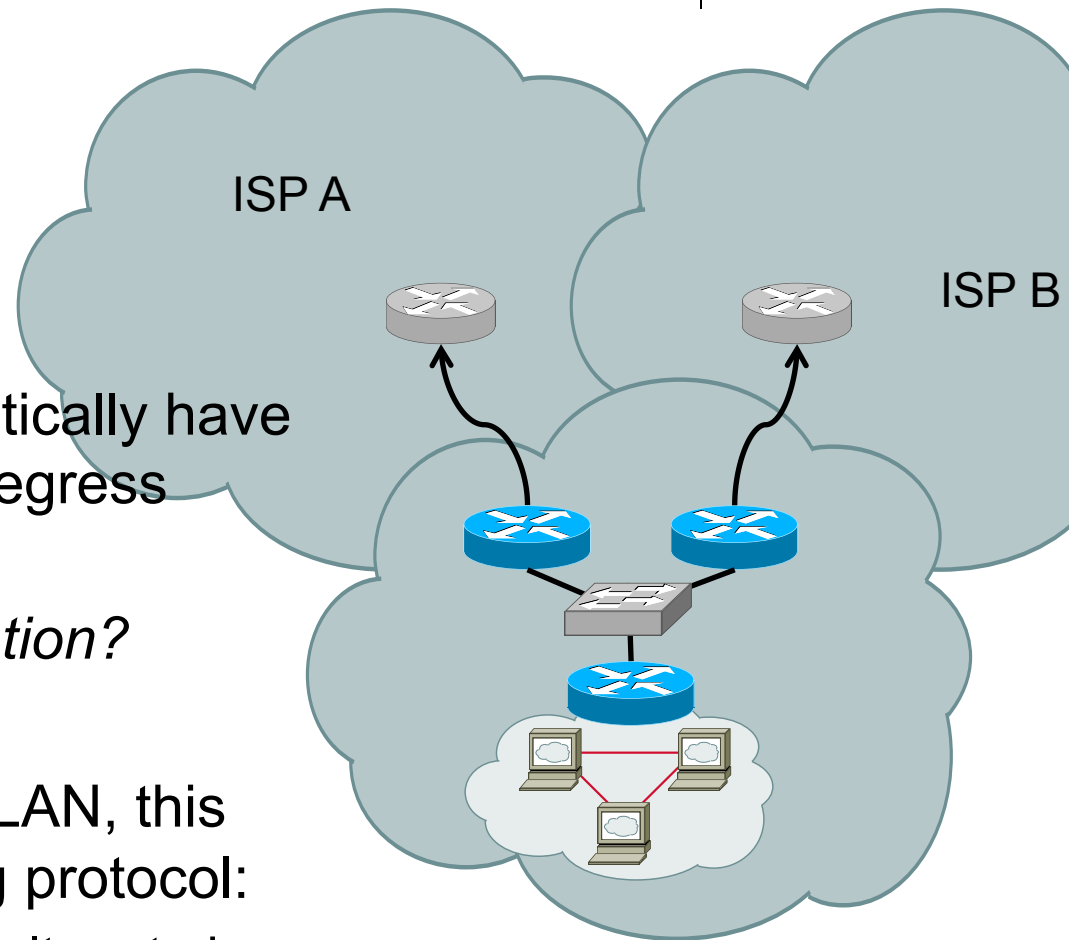


- A home with
 - multiple routers,
 - two upstreams, and
 - a PA Prefix from each
- Is there a way to systematically have it get packets to the right egress router?
- *Without manual configuration?*
- If there is one LAN, simple solution is for host to give packet using a source prefix to the router from which it learned a prefix



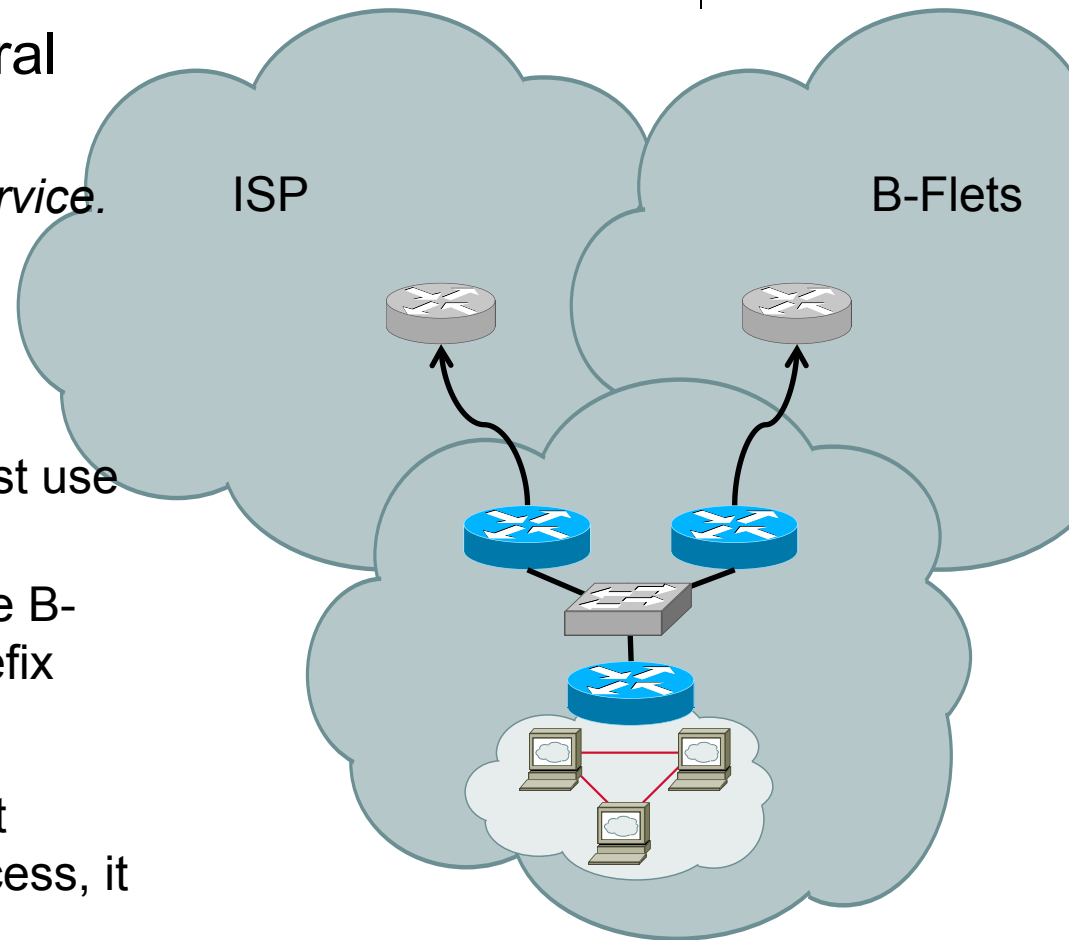
Multi-LAN case

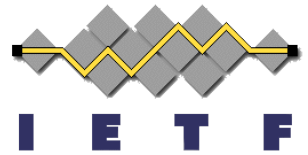
- A home with
 - Multiple routers,
 - Multiple LANs
 - Two upstreams, and
 - A PA Prefix from each
- Is there a way to systematically have it get packets to the right egress router?
- *Without manual configuration?*
- If there is more than one LAN, this begins to call for a routing protocol:
 - Separate routing for default route by source prefix



NTT B-FLETS Case

- What if they are not general use ISPs?
 - *NTT B-FLETS is a video service.*
 - *It doesn't offer general ISP services*
- Source Prefix:
 - Traffic to consumer ISP must use ISP's source prefix
 - Traffic to B-FLETS must use B-FLETS-assigned source prefix
- Routing:
 - Although B-FLETS does not provide general Internet access, it advertises a default route
 - Ideally, that changes to advertising a route to B-FLETS





Generalizing

- We need the ability to advertise and use a route
 - To a destination prefix (could be $::/0$)
 - From a source prefix (could be $::/0$)
- Ambiguity issues
 - There are a number of potentially ambiguous cases
 - Resolution similar to longest-match rule
 - *Use the FIB entry with the longest destination match that also matches the source*