

Source Address Selection Just by Routing Information for IPv6

draft-fujikawa-ipv6-src-addr-selection

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Problem and Question

- Src addr selection Rule. 8 in RFC3484 is sometimes inappropriate as said in RFC3484

Rule 8: Use longest matching prefix.

If $\text{CommonPrefixLen}(\text{SA}, \text{D}) > \text{CommonPrefixLen}(\text{SB}, \text{D})$, then prefer SA.

Similarly, if $\text{CommonPrefixLen}(\text{SB}, \text{D}) > \text{CommonPrefixLen}(\text{SA}, \text{D})$, then prefer SB.

Rule 8 may be superseded if the implementation has other means of choosing among source addresses. For example, if the implementation somehow knows which source address will result in the "best" communications performance.

- Is there a way to select a appropriate source address just using traditional routing information when multihoming?

A Proposed Method(Management 1)

- The downstream interface of R is assigned both side addresses
- This is required even if R has only a single downstream link.

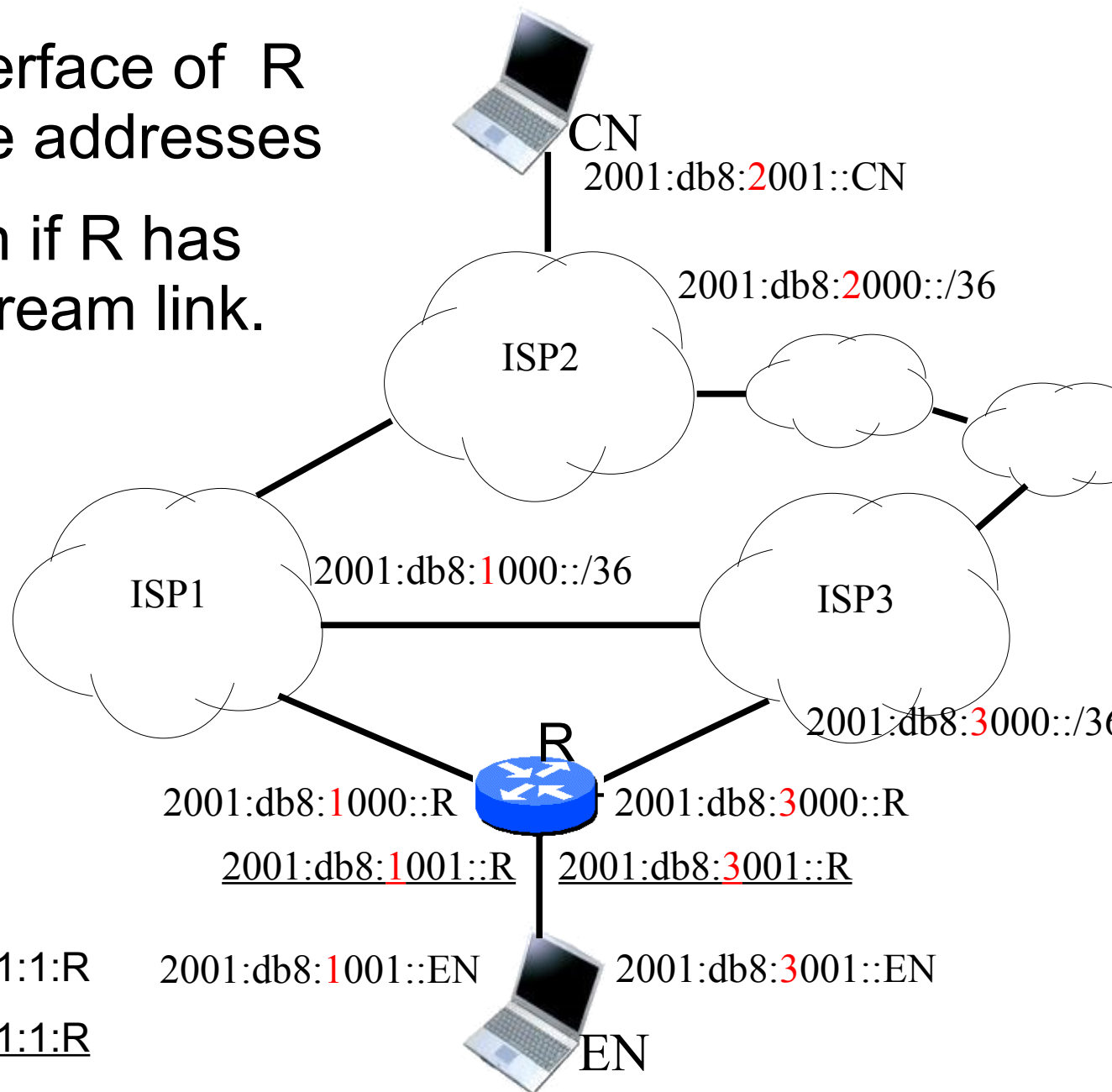
Routing Tables:

R:

Destination	Next Hop
2001:db8:1000::/36	ISP1's_router
2001:db8:2000::/36	ISP1's_router
2001:db8:3000::/36	ISP3's_router

EN:

Destination	Next Hop
2001:db8:1000::/36	2001:db8:1001:1:R
<u>2001:db8:2000::/36</u>	<u>2001:db8:1001:1:R</u>
2001:db8:3000::/36	2001:db8:3001:1:R



A Proposed Method(Management 2)

- The next hop becomes different according to a destination address, even when a single upstream router in EN

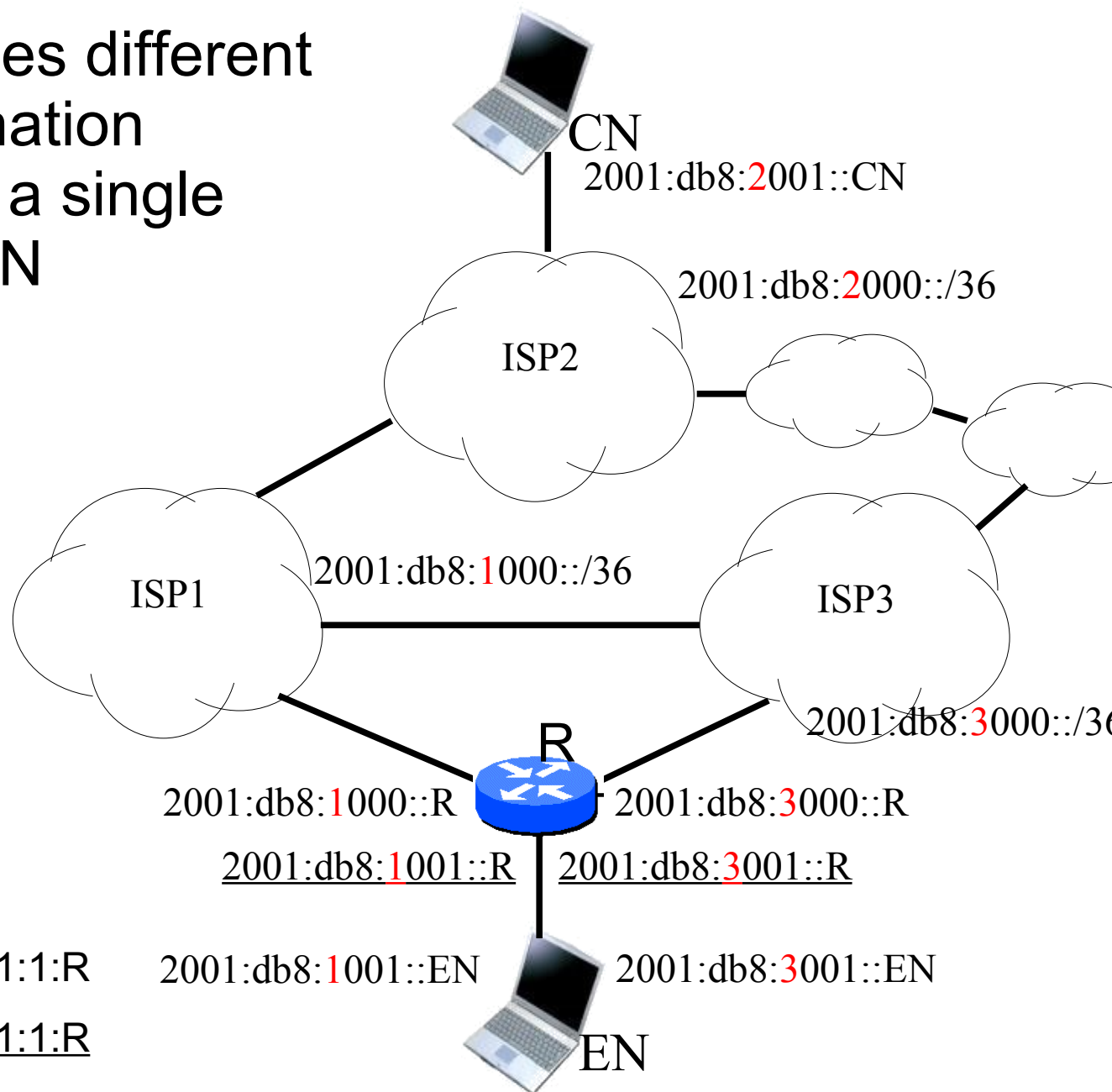
Routing Tables:

R:

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2001:db8:2000::/36	ISP1's_router
2001:db8:3000::/36	ISP3's_router

EN:

Destination	Next Hop
2001:db8:1000::/36	2001:db8:1001:1:R
<u>2001:db8:2000::/36</u>	<u>2001:db8:1001:1:R</u>
2001:db8:3000::/36	2001:db8:3001:1:R



A Proposed Method (Implement.)

- When an entry of a routing table is hit, a source address is selected which **longest-matches to the next hop** in the entry (not to the destination)

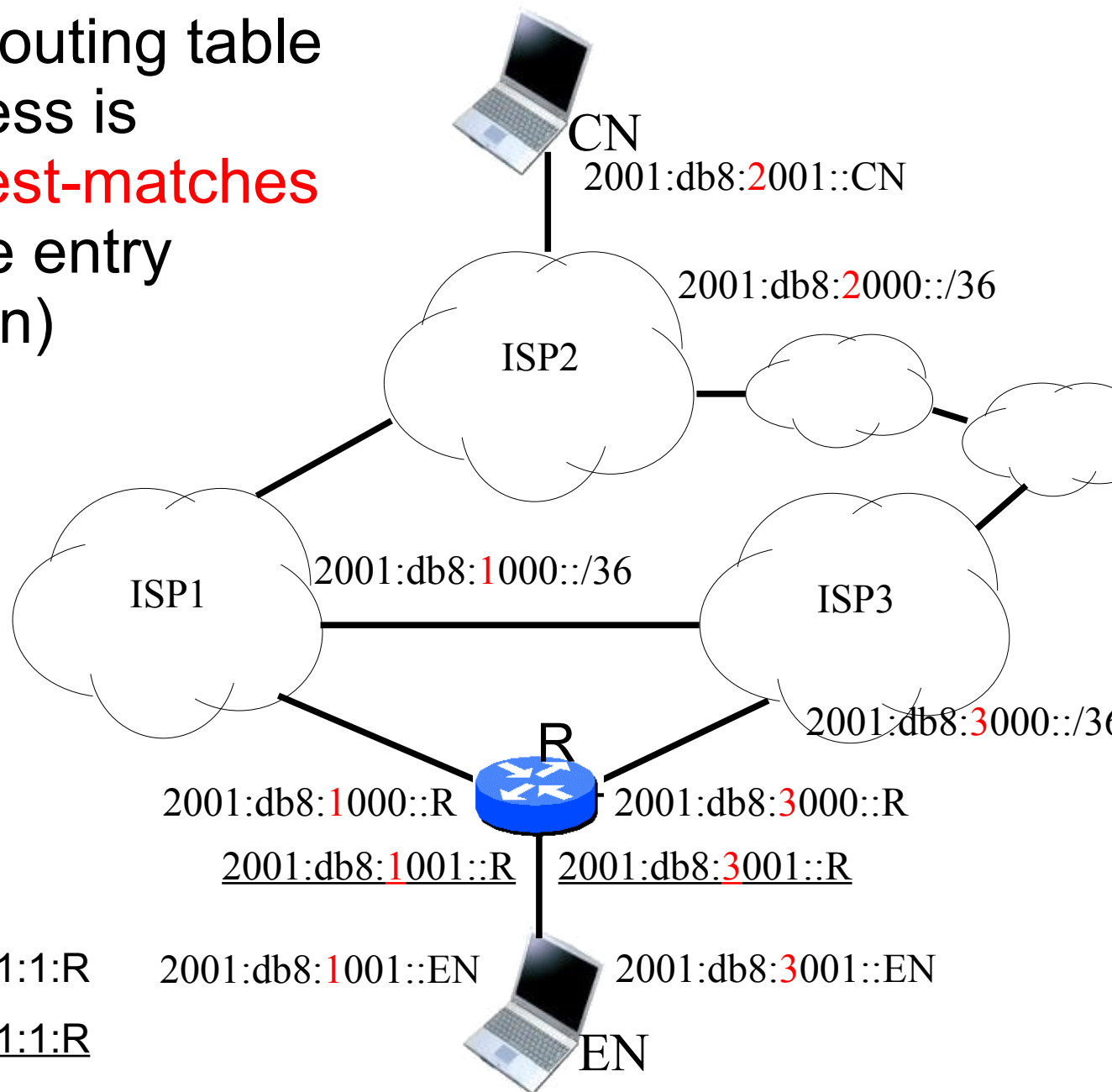
Routing Tables:

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2001:db8:3000::/36	ISP3's_router

EN:

Destination	Next Hop
2001:db8:1000::/36	2001:db8:1001:1:R
<u>2001:db8:2000::/36</u>	<u>2001:db8:1001:1:R</u>
2001:db8:3000::/36	2001:db8:3001:1:R



Summary of Proposed Method

- Management Issues
 - The downstream interface of a router is assigned both side addresses. This is required even if a router has only a single downstream link
 - The next hop becomes different according to a destination address, even when there is a single upstream router
- An Implementation Issue
 - When an entry of a routing table is hit, a source address is selected which **longest-matches to the next hop** in the entry (not to the destination)
- Suggest this rule should be added before Rule.8

Discussions

- This contradicts ICMPv6 autoconfiguration, how to deliver next hop information?
 - Some routing protocol should be employed
- Given the current size and churn of the routing tables, is this at all practical?
 - If an upstream router has a default route, the routing table of hosts does not become so large.
 - In any proactive approach, the same problem occurs. Lack of information occurs errors. To prevent this, must know all the information