

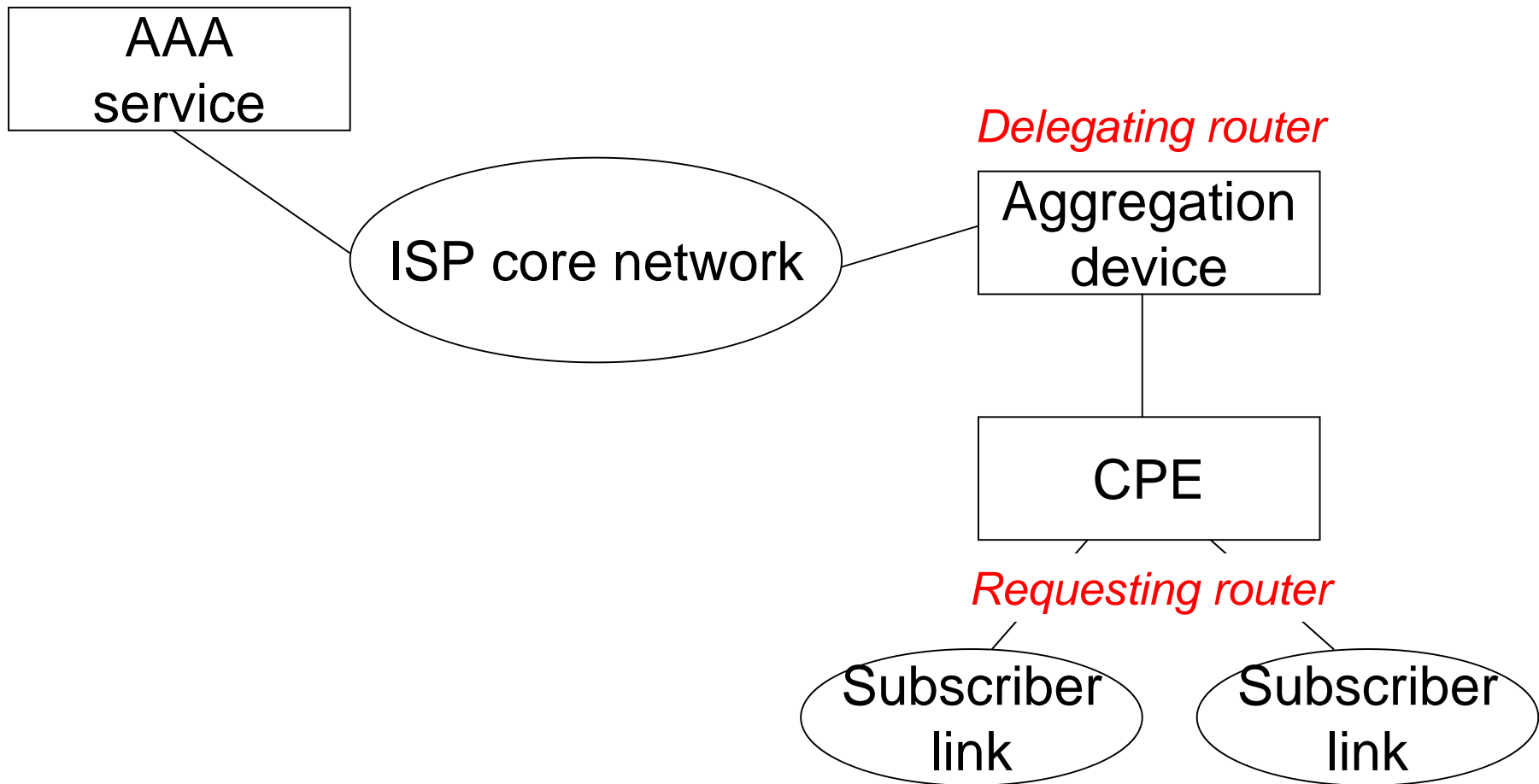
IPv6 Prefix Delegation Options for DHCPv6

Ole Troan, Ralph Droms

PD Options for DHCPv6

- New options for DHCPv6 for delegation of prefixes
 - Prefix Request option: Requesting Router indicates interest in obtaining prefixes
 - Prefix Delegation option: Delegating Router assigns prefixes to Requesting Router

Delegation from ISP to subscriber



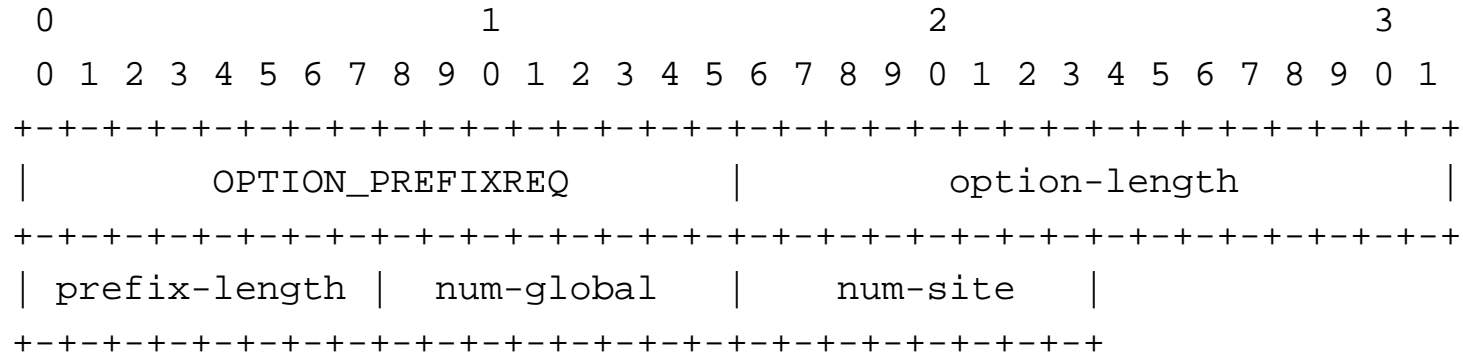
Initial delegation

- Requesting router indicates interest in prefix delegation by including Prefix Request in Solicit message
- Delegating router indicates availability of prefix(es) by including Prefix option in Advertise message
- Requesting router asks for prefix(es) in Request message
- Delegating router delegates prefixes by including Prefix option in Reply message

Delegation extension

- Requesting router requests extension of lease on prefix(es) in Rebind/Renew message
- Delegating router extends lease in Reply message

Prefix Request option format



num-global – number of global prefixes requested

num-site – number of site-scoped prefixes requested

Collateral damage from DHCPv6

- Clearly defined rules for use of DHCP messages when requesting router restarts, reconnects to link, etc.
- DUID from DHCP allows delegating router to identify requesting router – for example, for lease renewal or static prefix assignment
- Relay function and use of multicast allows for centralized service implementation
- DHCP can carry other configuration information; spec includes process for defining additional options
- Reconfigure message allows forced renumbering

Status of DHCPv6 specification

- Specification has passed WG last call
- Internet AD has responded with editorial comments
- Authors will rev spec and publish new draft
- Next rev of spec will be ready for IETF last call

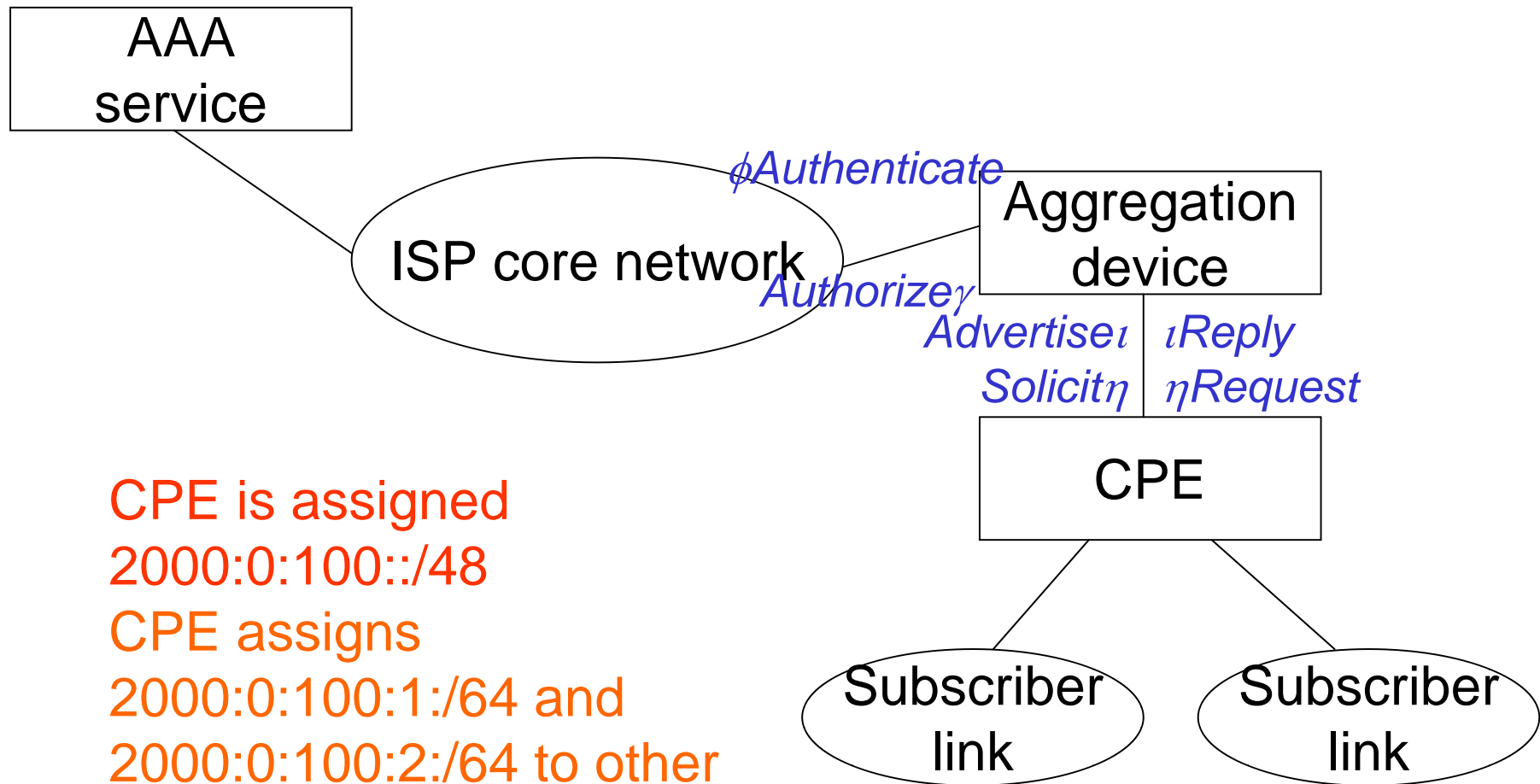
Simplifying DHCP

- Requesting and delegating routers can implement prefix delegation function without address assignment or “identity associations”
- IPsec with link-local addresses (may) eliminate need for DHCP authentication
- Only a subset of messages and protocol specification required for prefix delegation and configuration
- Guidelines for prefix delegation and configuration requirements to be published as Internet Draft

Open Issues

- Two message exchange (Information-request/Reply) for prefix delegation
- Use of IPsec for authentication if requesting router has address of appropriate scope
- Use of anycast (e.g., for NBMA networks)
- Name: Dynamic *Host* Configuration Protocol
 - Dynamic *Node* Configuration Protocol?
 - Dynamic Configuration Protocol?
 - *Simple* Configuration Protocol?
 - Droms-Haberman Configuration Protocol?

Delegation from ISP to subscriber



CPE is assigned
2000:0:100::/48
CPE assigns
2000:0:100:1:/64 and
2000:0:100:2:/64 to other
“downstream” interfaces

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