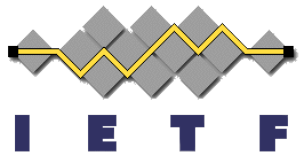
OSPFv3 Auto-Config
IETF 82, Taipei

draft-acee-ospf-ospfv3-autoconfig-00.txt



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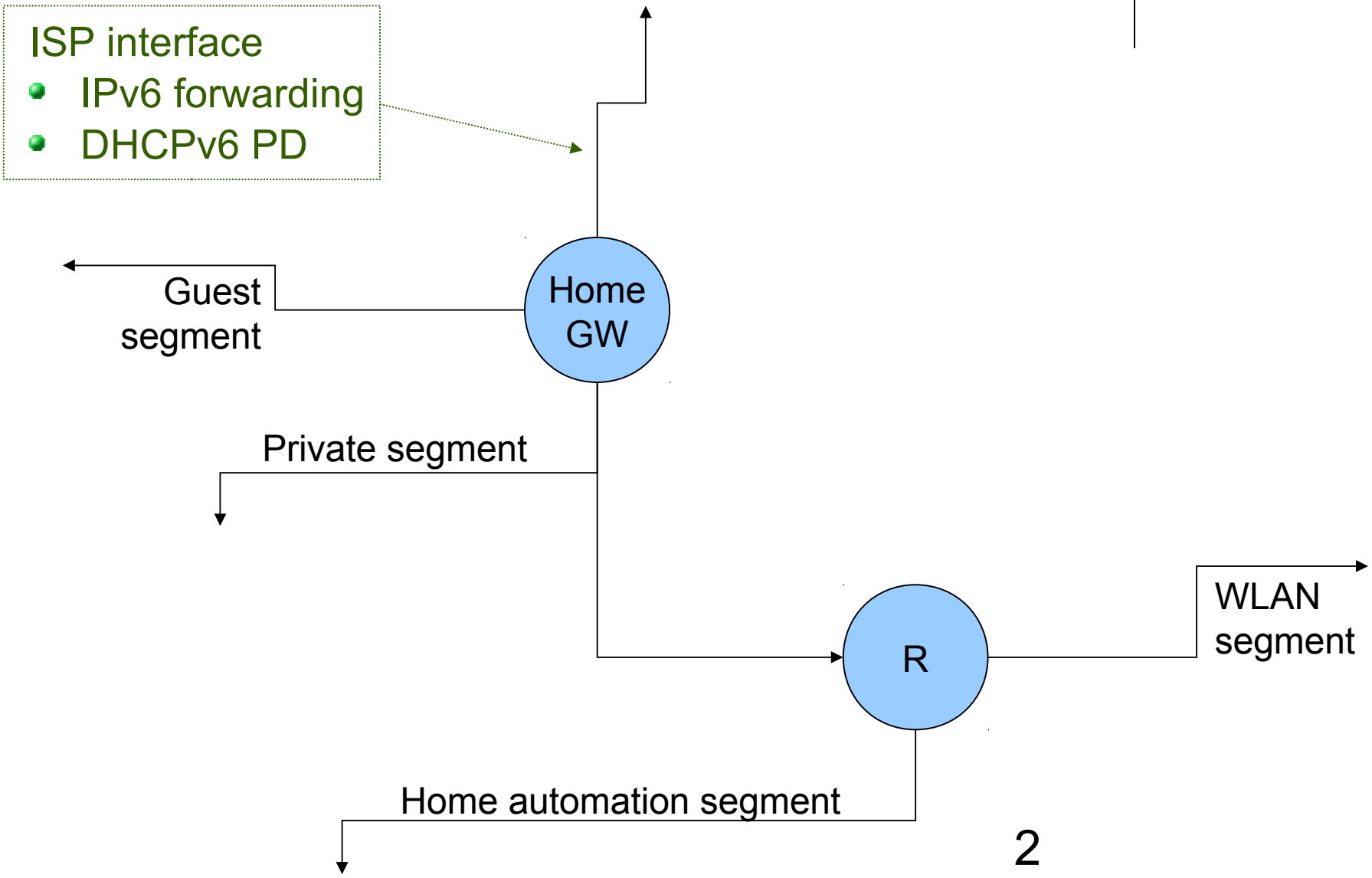
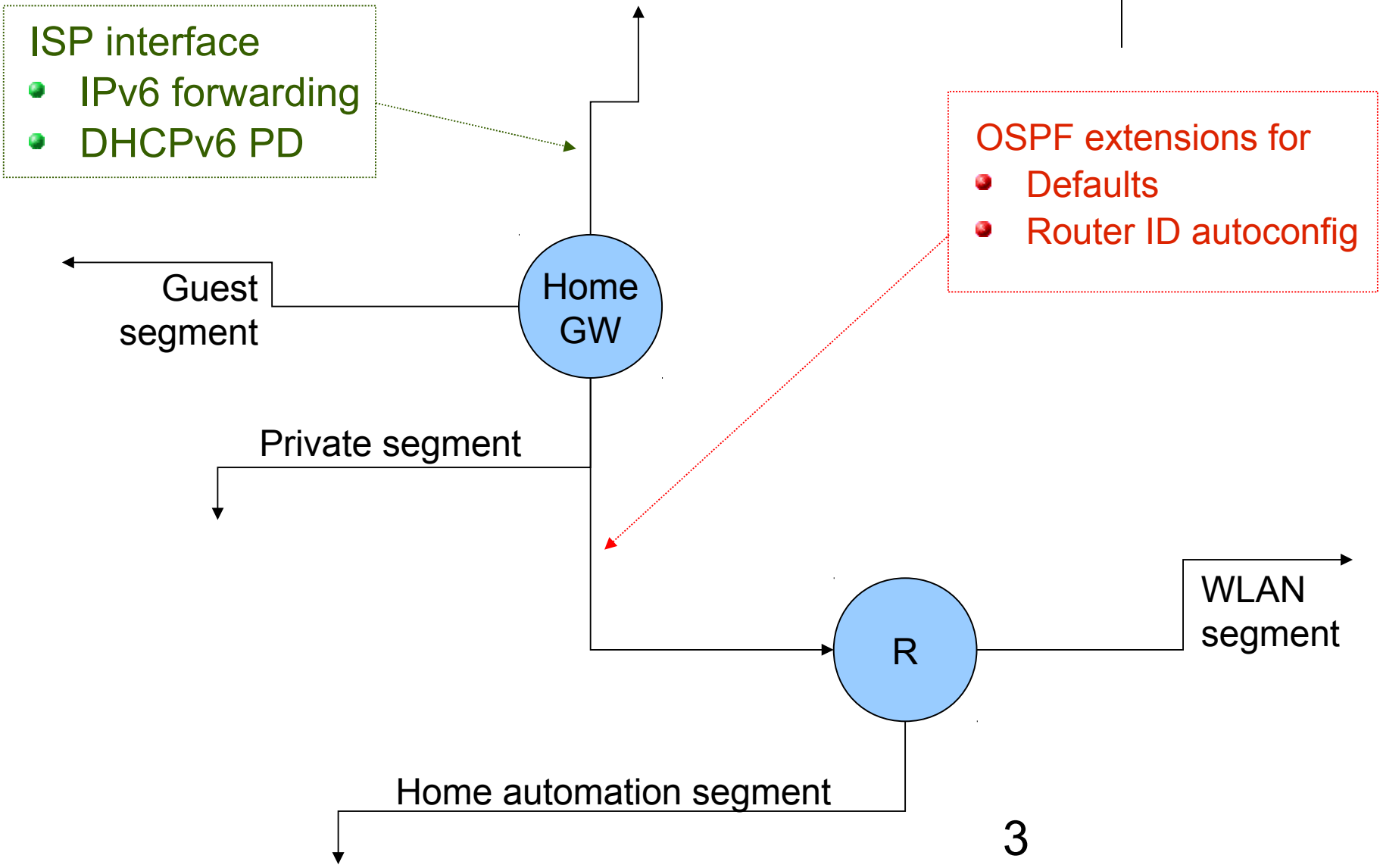
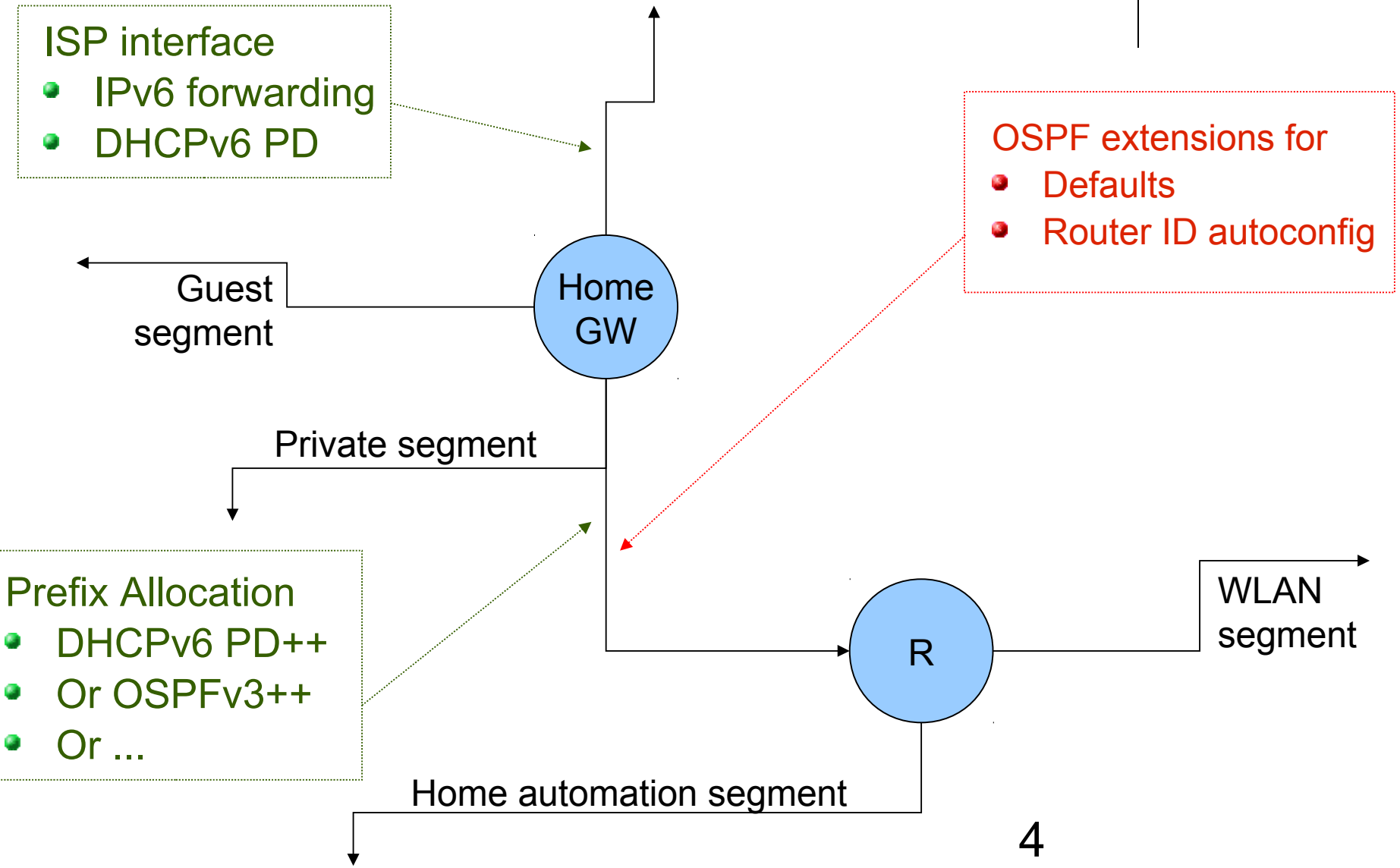
Protocols for Home Networking



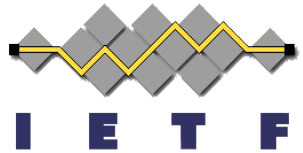
Protocols for Home Networking



Protocols for Home Networking

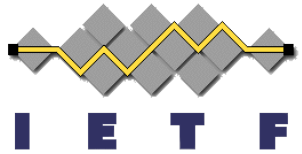


History/Requirements



- Motivated by HOMENET Routing Requirement for auto-configuration.
- Similar to past work – e.g., expired draft draft-dimitri-zospf-00.txt draft.
- Differences
  - Decouples IPv6 prefix assignment (there are may be multiple ways of doing this)
  - Handles duplicate Router-ID resolution for all routers in OSPFv3 routing domain
  - Provides extendible framework for other types of auto-configuration information

OSPFv3 Defaults

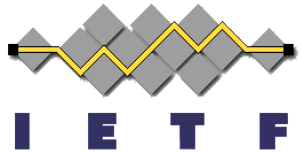


- OSPFv3 uses IPv6 link-local addresses for all protocol exchanges (except on virtual links which is not applicable).
- Unique OSPFv3 Router ID Selected (to be covered)
- All IPv6 capable interfaces run OSPFv3 in Area 0:
  - Interface type corresponds to physical interface (usually broadcast corresponding to Ethernet)
  - Interface Instance ID set to known value to prevent inadvertent adjacencies with OSPFv3 routers that aren't auto=configured.
  - Interface may be excluded from running OSPFv3 if it is know that it is not necessary (e.g., ISP interface)

OSPFv3 Router-ID

- Selection initially based on MAC address
- Router Hardware Fingerprint introduced for unique router identification
  - 32 octet minimum bit string uniquely identifying the router
  - Should contain MAC address(es) and other persistent identifiers (e.g., device serial number)
- Duplicate detection with neighbors dependent on protocol packet reception with same router-id but different router hardware fingerprint.
- Remote duplicate detection dependent on OSPFv3 Auto-Configuration (AC) LSA containing same router-id but different Router Hardware Fingerprint.

OSPFv3 Auto-Configuration (AC) LSA



- New Link-State Advertisement (LSA) type (TBD) used to advertise all types of OSPFv3 and potentially other auto-configuration information.
- Uses same Type-Length-Value (TLV) format as the OSPFv3 Traffic Engineering (TE) LSAs.
- Initially used for duplicate OSPFv3 Router-ID detection for OSPFv3 routers that are not directly connected.
- Defined TLV will advertise the Router Hardware Fingerprint which will be used for duplicate Router-ID detection and resolution.