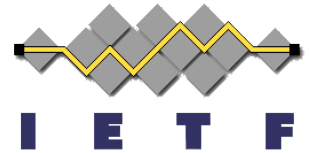


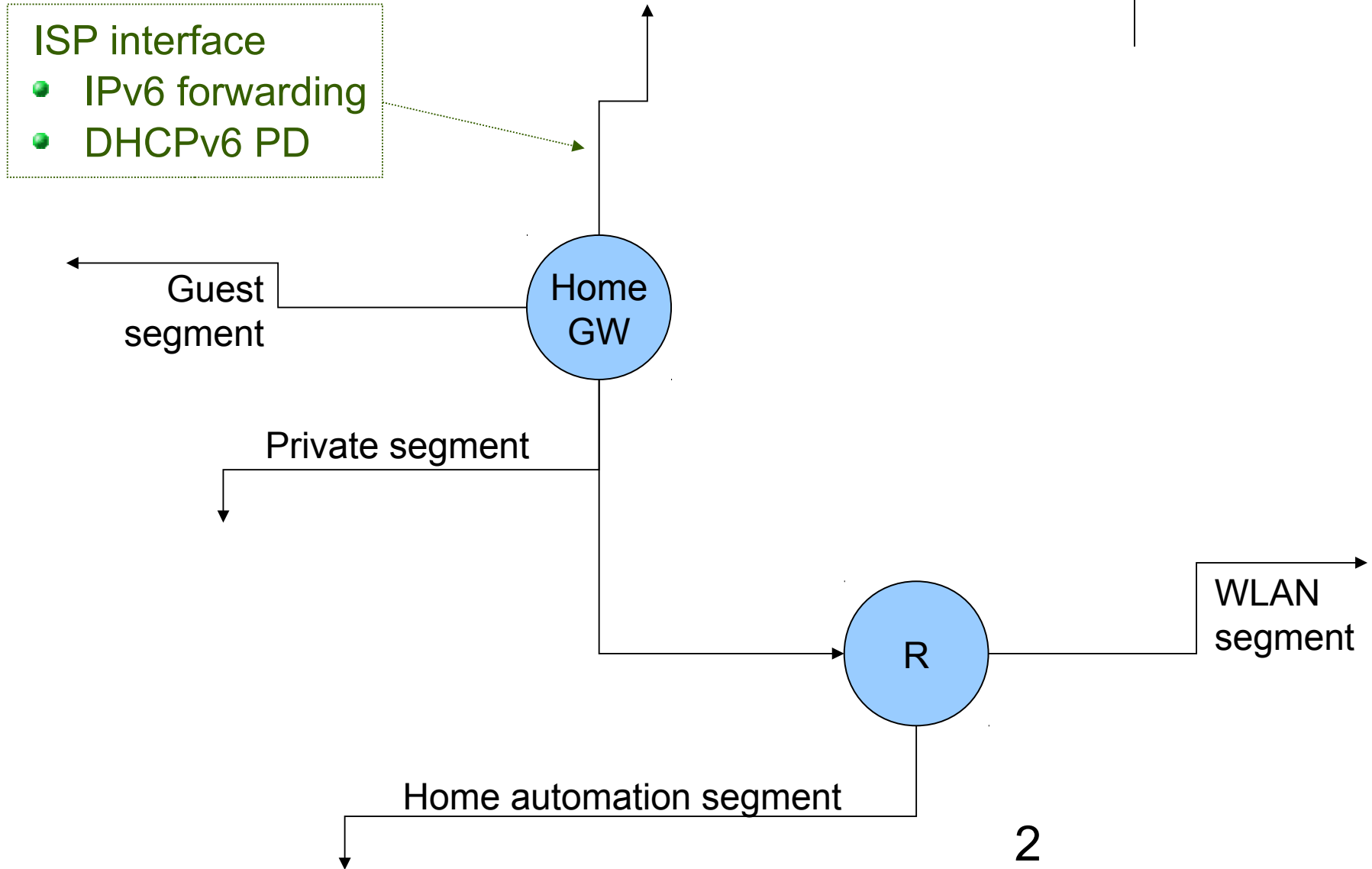
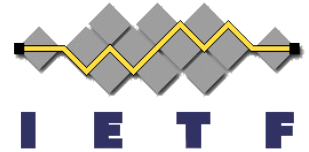
OSPFv3 IPv6 Prefix Assignment IETF 82, Taipei

draft-arkko-homenet-prefix-assignment

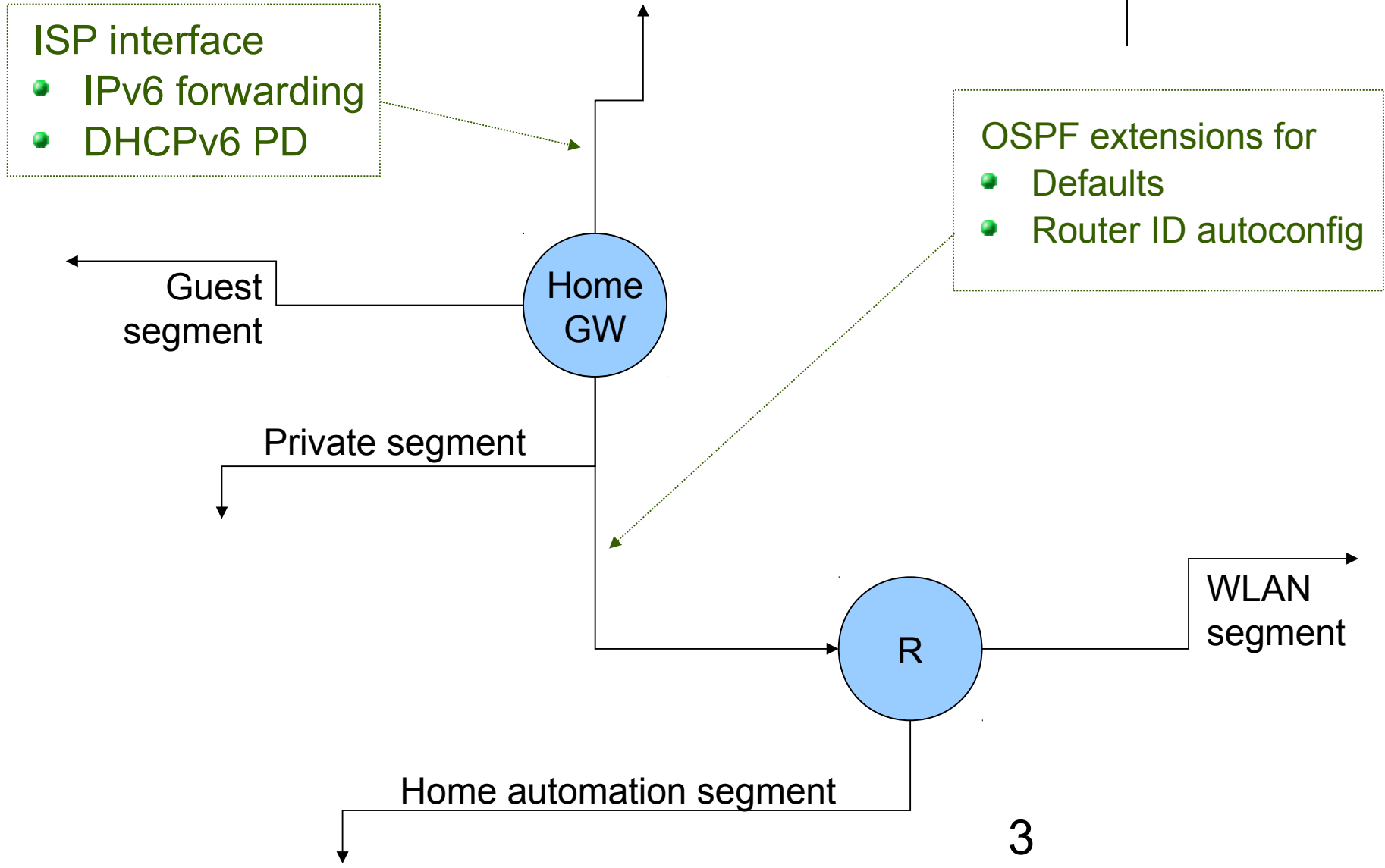
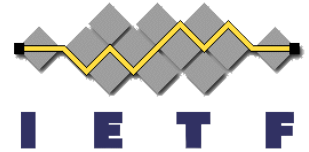
Jari Arkko, Ericsson
Acee Lindem, Ericsson



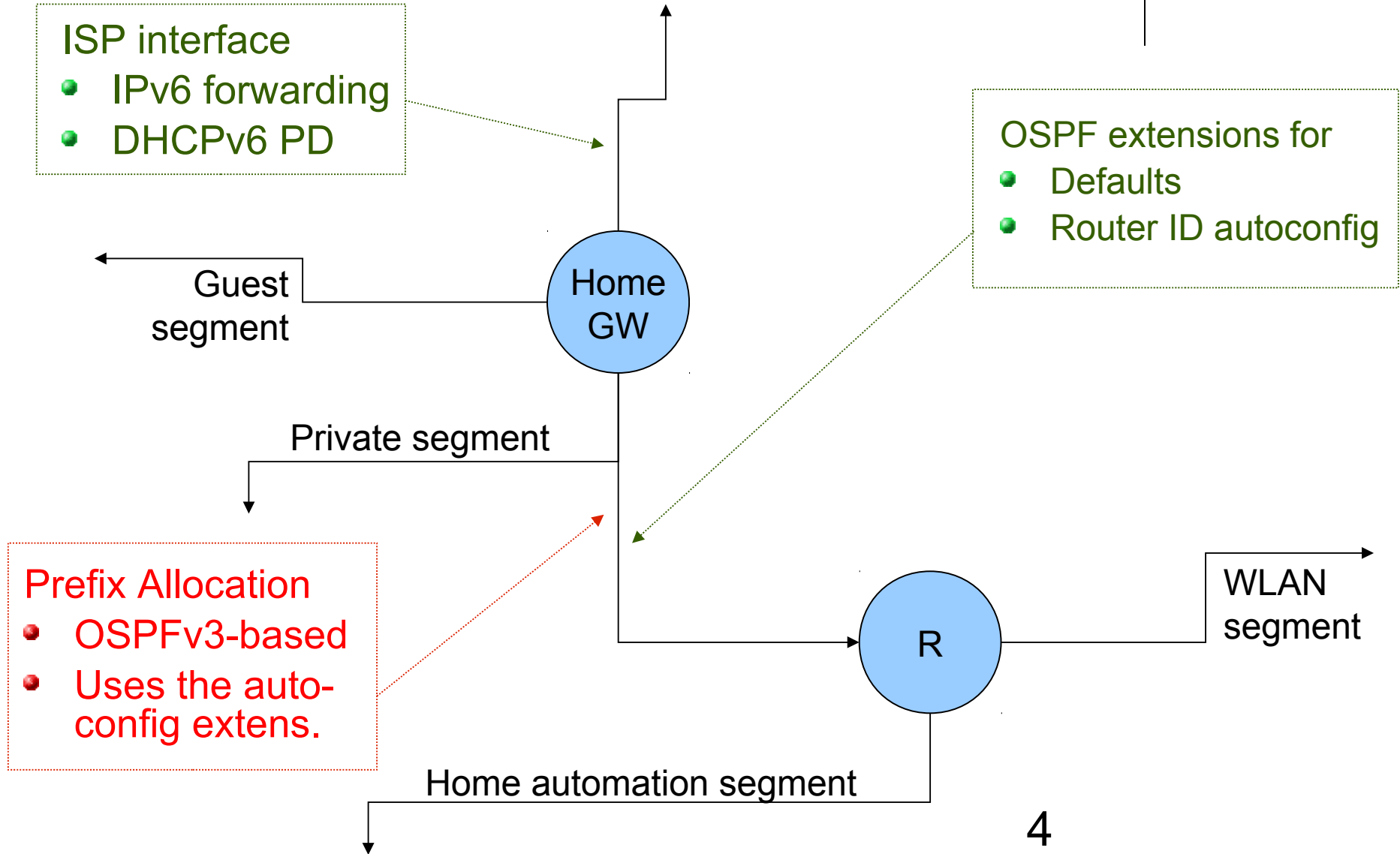
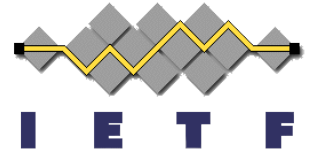
Protocols for Home Networking

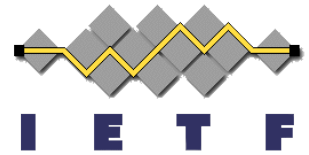


Protocols for Home Networking



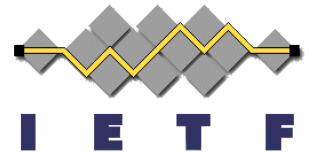
Protocols for Home Networking





Definitions

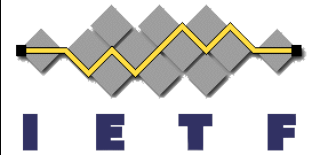
- Usable Prefix – Global IPv6 prefix delegated by an the entity owning the IPv6 Prefix (usually but not limited to DHCPv6 Prefix Delegation)
- Assigned Prefix – A subnet (i.e., more specific) global IPv6 prefix automatically assigned to given physical network.
- Home Gateway (HGW) – Home Router connecting to a service provider and receiving Usable Prefix delegations.



Requirements

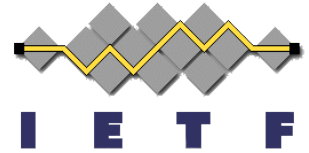
- One Assigned Prefix per from each Usable Prefix per physical network
- Assigned prefixes only assigned to single physical network
- Prefix Assignment Collisions detected quickly and resolved:
 - Dual Prefix Assignment Collision – Two routers designate an assigned prefix for the same network
 - Duplicate Prefix Assignment Collision – The same prefix is assigned to two physical networks
- Prefix Assignments should be stable across reboots, power cycles, software updates, and, preferably, simple network changes

OSPFv3 Prefix Assignment Extensions



- Extends OSPFv3 Auto-configuration (AC) LSA defined in the OSPFv3 Auto-configuration Draft
- TLVs defined for both Usable Prefixes and Assigned Prefixes (with the latter including an OSPFv3 Interface ID)
- OSPFv3 Home Gateways (HGW) – Will advertise usable prefixes by originating OSPFv3 AC LSAs containing the Usable-Prefix TLV.
- Upon receiving a unique Usable-Prefix LSAs, OSPFv3 routers will perform a distributed assignment heuristic with each OSPFv3 router examining its IPv6 interfaces and potentially assigning an Assigned-Prefix from the Usable-Prefix.

OSPFv3 Distributed Prefix Assignment Heuristic



- Initiated by discovery of new Usable Prefix.
- OSPFv3 Router determines if they should assign an Assigned Prefix from the Usable Prefix for each IPv6 interface.
 - Router with highest Router-ID assigns prefix.
 - Prefix already assigned and advertised in Assigned-Prefix TLV by examining OSPFv3 AC LSAs from other OSPFv3 Routers.
- If OSPFv3 Router should assign a prefix to interface, assignments in non-volatile storage are re-used (if possible).
- Collisions are always resolved in favor of the router with the highest OSPFv3 Router-ID.