

Wireless ND

Stateful Address Identification and Location

draft-thubert-6man-wind-sail

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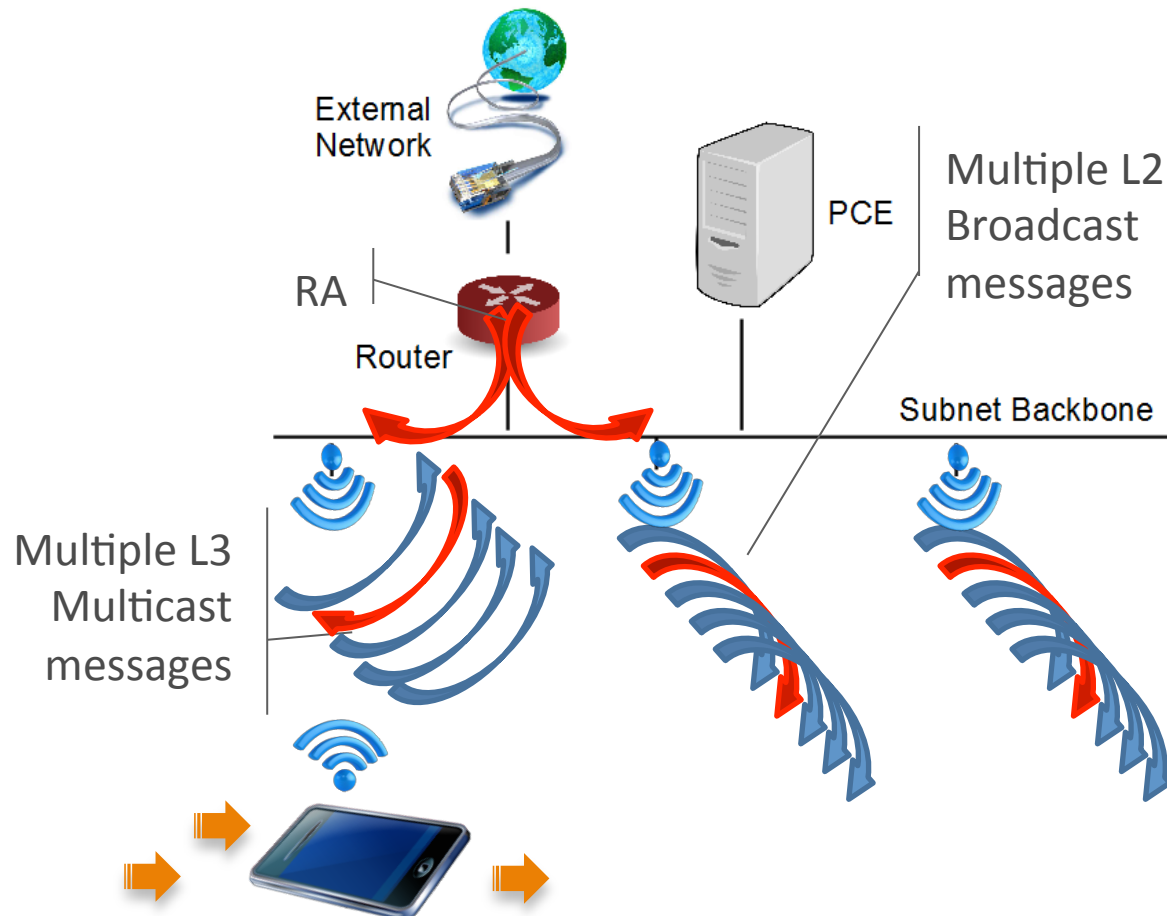


Draft status: -00 just published

- Extends RFC 6775, companion to
 - [draft-chakrabarti-nordmark-6man-efficient-nd](#)
 - [draft-thubert-6lowpan-backbone-router](#)
- Defines SAIL Binding
 - (location, owner, MAC@, ...) to IPv6 address
 - Available for lookup, pub/sub, syslog, source address validation
- Defines SAIL Mapping System
 - based on distributed registrar
 - Registrar hierarchy for lookups and policy enforcement

The problem: mcast flooding hinders wireless ops

VM, NFV, Wireless or IoT device moves:



1. MAC address reachability flooded over L2 switch fabric
2. Device sends multiple multicasts for IPv6 ND
3. L2 fabric handles as broadcast (to all nodes)
4. Broadcast clogs the wireless access at low access speed
5. Broadcast self interferes on attached wireless mesh and drains the batteries



Wireless ND Multicast Avoidance

Registration based

Extending RFC 6775: ARO option, DAR and DAC messages

Generalized abstraction of MIPv6 registration, RPL DAO, SAVI

SAIL Binding

(location, owner, MAC@) to IPv6 address

SAIL state maintenance and conflict resolution

Available for lookup, pub/sub, syslog, source address validation

SAIL Mapping System

Registrar hierarchy for lookups and policy enforcement

Next generation Backbone

Authoritative Registrar(s)

- MIPv6 HA, 6LBR,
- interface to external services

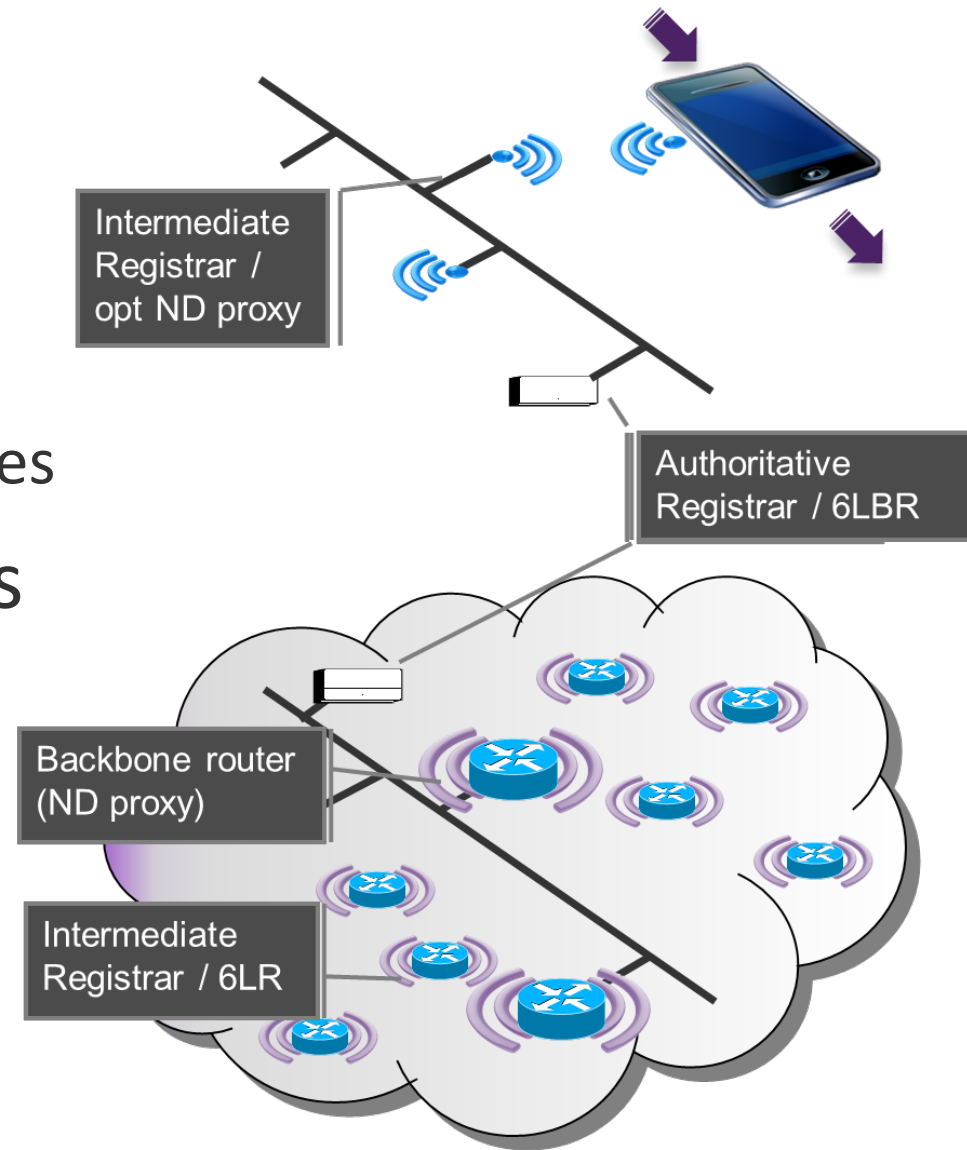
Intermediate Registrars

- 6LR, NEAR,
- Optionally ND proxy

Backbone Routers

- RPL root, ND proxy

Legacy IPv6 devices





Wireless ND operation

L2 routing (IS-IS) + proxy-ND in the backbone
Optional MAC address proxy avoiding MAC@ floods

L3 Routing in attached networks
e.g. RPL/6TISCH Multi-link subnet

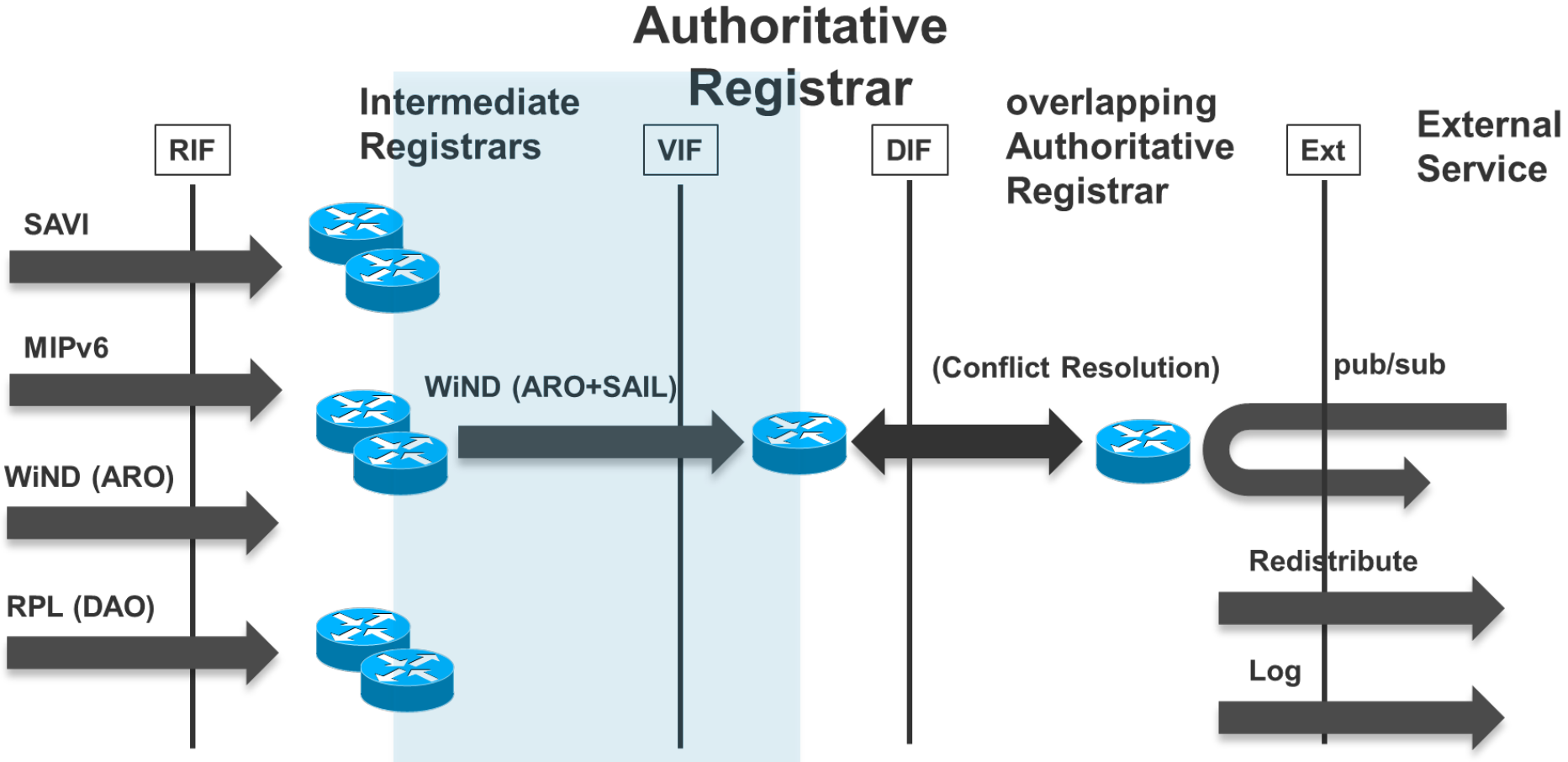
New ND methods and interfaces

between nodes and intermediate registrars (RIF)

between intermediate registrars and authoritative registrars (VIF)

between authoritative registrars and other services (DIF)

Interface definition



Stateful Address Identification and Location Option

Used in complement to the ARO option to propagate a registration to AR

Provides additional data about SAIL state
e.g. trust level and age of the last update

