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# Addressing Model for Router Interfaces in Ad Hoc Networks

draft-bernardos-autoconf-addressing-model-01

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# Motivation and scope (I)

- Describe a practical IP addressing model for ad hoc routers' interfaces
- “non-MANET” interfaces out of the scope
- Model should not cause problems to ad hoc unaware parts of the system
  - Such as standard applications running on an ad hoc router (if supported), or
  - Internet nodes attached to an ad hoc router
- IP addresses may also be configured by non-autoconf mechanisms

# Motivation and scope (II)

What are autoconfigured addresses used for, anyway?

1. Source address of routing protocol packets (Hello's etc.)
2. Carried inside these packets, for neighbourhood discovery and *routing*
3. Host routes and next-hop addresses in routing table, used for next-hop L2 address resolution while *forwarding* user data
4. TBD: application source / destination addresses?

# Terminology

- Wireless link
- MANET interface
- MANET domain
- Attached MANET domain
- Non-overlapping prefix

# IPv4/IPv6 addressing model (I)

- If exposed outside MANET domain, MANET interfaces of attached MANETs SHOULD be configured with global IP addresses
- MANET interfaces of non-attached MANETs SHOULD be configured with ULAs or global addresses
- MANET interfaces MUST be configured with non-overlapping prefixes (sufficient condition)
  - This does not assume any prefix length (e.g., /32 or /128)

# IPv4/IPv6 addressing model (II)

MANET interfaces MUST also have IPv6 Link-local (LL) addresses

- LLs are mandated by IPv6 specs (RFCs 4861 and 4291)
  - In practice, they may be hard to get rid of
- Routing protocols and applications running on ad hoc routers may or may not assume their existence and use them
  - But what if your OS decides, e.g. ND? (RFC3484)
- There are issues related to the use of LLs in MANETs
  - But not all exclusive of LLs, but also appear with globals and ULAs

Configuration and use of IPv4 Link-locals not forbidden

- However RFC 3927 does not recommend the simultaneous use of an IPv4 global and an IPv4 local on the same interface

# Proposed next steps

- Merge draft-bernardos and draft-baccelli
  - Basic understanding is pretty similar in both
  - In our humble opinion (others in the ML have also the same view) there are some issues in draft-baccelli that need to be extended/fixed
- Take resulting document as baseline for the practical addressing model work item

# Specifically:

- Add paragraph on scope of addressing model
  - Not just *routing* but also *forwarding*
  - At least state whether applications on MANET i/f are allowed or not
- Even if LLs are 'discouraged' for use in routing protocols, recognise that they have other uses, e.g. ND
- 'Non-overlapping prefixes' constitute a sufficient condition, don't prescribe /128 (/32)
  - Consider: what's the prefix length of a ULA?
  - RFC 4291 compliance

# Backup slides

# IPv4/IPv6 addressing model (III)

## DAD considerations

The document assumes DAD is disabled for the IP addresses configured on MANET interfaces

Globals & ULAs: the use of non-overlapping prefixes guarantees addresses are unique

LLs: depending on the scenario, MAC address uniqueness may be assumed or the use of collision free allocation mechanisms can be used

If this is not enough, MANET tailored DAD mechanisms could be used (e.g., passive DAD, etc.)