

# Architecture and Framework for IPv6 over Non-Broadcast Access

**draft-ietf-6man-ipv6-over-wireless**

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# What happened since London?

## Conditional Adoption

- Redesigned as an Architecture document, new author (MCR)
- Really 4 docs in one (problem, Architecture, framework, applicability)

6MAN P. Thubert, Ed.  
Internet-Draft Cisco Systems  
Intended status: Informational 11 October 2022  
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IPv6 Neighbor Discovery on Wireless Networks  
draft-thubert-6man-ipv6-over-wireless-12

### Abstract

This document describes how the original IPv6 Neighbor Discovery and Wireless ND (WiND) can be applied on various abstractions of wireless media.

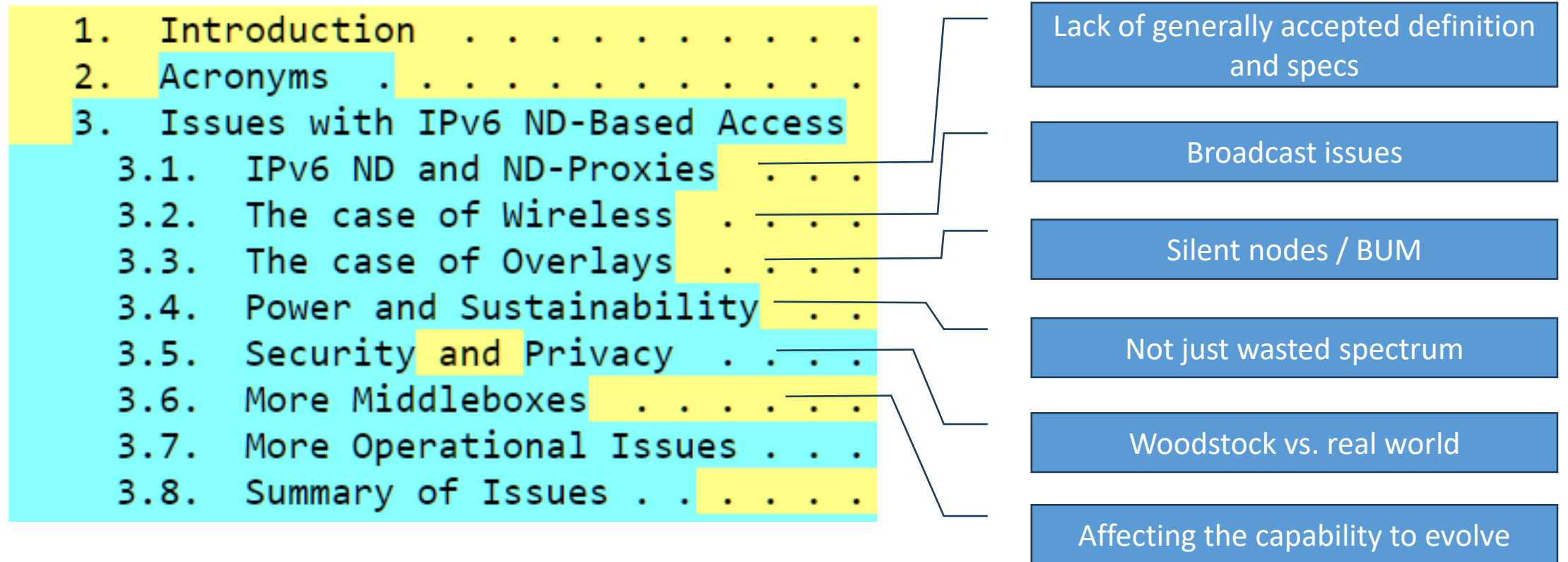
6MAN P. Thubert, Ed.  
Internet-Draft Cisco Systems  
Intended status: Informational M. Richardson  
Expires: 29 December 2023 Sandelman  
27 June 2023

Architecture and Framework for IPv6 over Non-Broadcast Access  
draft-ietf-6man-ipv6-over-wireless-04

### Abstract

This document presents an architecture for IPv6 access networks that decouples the network-layer concepts of Links, Interface, and Subnets from the link-layer concepts of links, ports, and broadcast domains, and limits the reliance on link-layer broadcasts. This architecture is suitable for IPv6 over any network, including non-broadcast networks, which is typically the case for intangible media such as wireless and overlays. A study of the issues with IPv6 ND over intangible media is presented, and a framework to solve those issues within the new architecture is proposed.

# Part 1) Problem statement (pervasive)



## Part 2) Architecture (decoupling L2 and L3)

- Decoupling is the core need and value
- Need to redefine and reposition L3 concepts vs. IPv4-based intuition
- Splitting the broadcast domain => routing inside the subnet
- Concept of SGP also central, proxy a limited alternative
- Thus, the new name “SND”

4.	IPv6 over Non-Broadcast Networks Architecture	
4.1.	Basic Concepts	. . . . .
4.2.	Terminology	. . . . .
4.2.1.	IP Links	. . . . .
4.2.2.	IP Interfaces	. . . . .
4.2.3.	IP Subnets	. . . . .
4.2.4.	ND Proxies	. . . . .
4.2.5.	Subnet Gateway Protocols	. . . . .
4.3.	IP Models	. . . . .
4.3.1.	Physical Broadcast Domain	. . . . .
4.3.2.	Link-layer Broadcast Emulations	. . . . .
4.3.3.	Mapping the IP Link Abstraction	. . . . .
4.3.4.	Mapping the IPv6 Subnet Abstraction	. . . . .
4.4.	Subnet Neighbor Discovery and Routing	. . . . .

# Part 3) Framework (leveraging WiND Design and RFCs)

## Leveraging original WiND text in adopted document

- Which RFC does what
- GAP analysis?

5.	A Framework for Stateful address Autoconfiguration and Subnet Routing . . . . .
5.1.	Implementing Stateful address Autoconfiguration . . . . .
5.2.	Links and Link-Local Addresses . . . . .
5.3.	Subnets and Global Addresses . . . . .
5.4.	Anycast and Multicast Addresses . . . . .
5.5.	P2MP Networks . . . . .
5.6.	Advertising Prefixes . . . . .



# Part 4) Applicability statement (also pervasive)

6.	SND Applicability . . . . .	LPWANs generally do not do any ND at all
6.1.	Case of LPWANs . . . . .	IEEE 802.11 defines a proxy ARP fct
6.2.	Case of Infrastructure IEEE std 802.11 BSS and ESS	
6.3.	Case of Mesh Under Technologies . . . . .	Inefficient flooding
6.4.	Case of DMB radios . . . . .	
6.4.1.	Using IPv6 ND only . . . . .	Works / works not
6.4.2.	Using Subnet ND . . . . .	
6.4.3.	Example: BLE and BLE Mesh . . . . .	
6.4.4.	Example: 6TiSCH . . . . .	
7.	Coexistence with IPv6 ND . . . . .	RFC 8929 defines an ND proxy

# Discussion

Please review (carefully) the terminology (IP Link, Subnet...)

4 parts: too much for one document? If so what split?

Other proposed changes / missing pieces?

# Backup