

# SLAAC with prefixes of arbitrary length in PIO (Variable SLAAC)

draft-mishra-6man-variable-slaac-02

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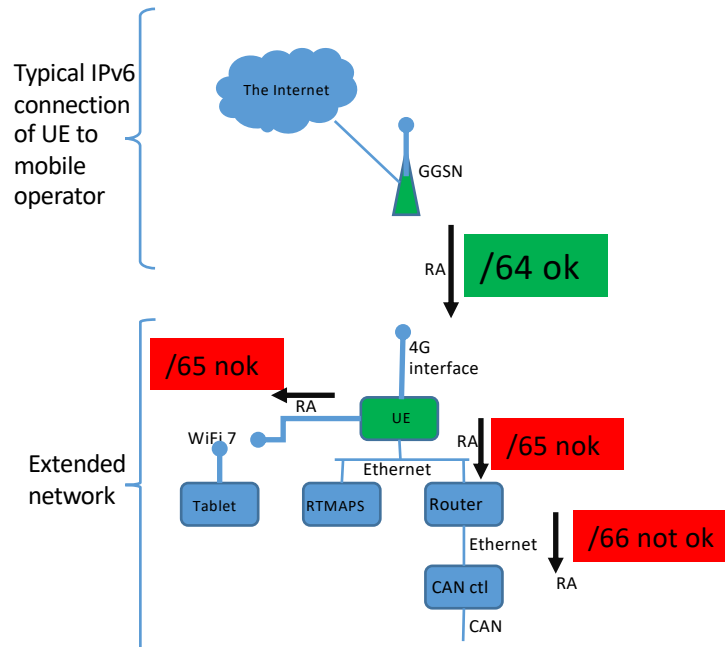
# Contents

- Problem statement for VSLAAC
- VSLAAC Implementation

Further reading in the draft:

- The History behind the 64 bit fixed boundary
- Identifier and Subnet Length Statements
- Recommendations for implementation of variable SLAAC
- Recommended use cases where 64 bit prefix (not VSLAAC) should be utilized
- Reasons for longer than 64 bit prefix length
- Greater than 64 bit prefix usage by ISPs is strictly prohibited
- Comparison of Static, SLAAC, DHCPv6 and Variable SLAAC
- Variable SLAAC Use Cases

# Problem statement for VSLAAC



- RFC 4291 “IPv6 Addr Arch”: 2000::/3 addresses can’t have other than 64bit IIDs.
- All mobile operators allocate one /64 per one connection to one UE.
- DHCPv6-Prefix Delegation is blocked by modems of mobile equipment
- Impossible to use SLAAC with a /65 plen in RA

➔ Impossible to extend the network to multiple subnets beyond the UE.

See [draft-mishra-v6ops-variable-slaac-problem-stmt-01](#)

# VSLAAC Implementation

- In **linux**, a parameter that can be controlled in the command line (a sysctl):
  - Default value is 0: behavior of SLAAC is as before, use 64bit IIDs and plens.
  - The value of 1 makes that prefixes of lengths other than 64 are accepted for the SLAAC mechanism of forming addresses.
    - For example: a **Host that receives a /63 prefix in RA will form an IID of length 65, and subsequently an address of length 128bit.**
  - The VSLAAC implementation is a patch freely available at <https://github.com/dmytroshytyi/variable-slaac>
- In **OpenBSD**: the implementation of RFC 7217 works ok with variable length plens in SLAAC
- In **FreeBSD**: a bug report was submitted, complaining about the 64bit limit in SLAAC.

# Next steps? (potentially for discussion)

- perform liaison between IETF and 3GPP in which it is requested to advertise a shorter-than-64 prefix in RA sent by PGW?
- Link the VSLAAC concept to the GTP concept, as an update to 3GPP IPv6 profile, an RFC7849bis?
- ask IANA for a subrange of the 1fff::/3 space, which is not subject to RFC4291 64bit IID restriction ('For all unicast addresses, except those that start with the binary value 000, Interface IDs are required to be 64 bits'). For EXPERIMENTAL purposes, for more than just VSLAAC?
- make VSLAAC draft on EXPERIMENTAL status?
- submit a true I-D with the contents of Cameron's proposal '64share v2' which is currently at <https://pastebin.com/duyYRkzG> ?
- make a 'lightweight' Prefix Delegation mechanism for ND (an 'ND-PD')?
- use a method like in `draft-naveen-slaac-prefix-management-00` where a Host puts a specific request in RS to request for multiple /64 prefixes or a non-64 prefix?
- couple the VSLAAC concept to the IP-over-Wireless concept promoted by Pascal?
- couple the VSLAAC concept to a Next Generation SLAAC concept promoted by Eduard?
- another way?