Carrying DHCP Options over RAs

draft-krishnan-intarea-ra-dhcp-00

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Background

- DHCP options, in addition to being used for client specific configuration, are used to convey some forms of network configuration information to hosts.

- When DHCP is not available and the only way of convey configuration information is through RAs.

- Traditionally, these parameters have been independently developed and standardized for DHCP and for IPv6 ND.
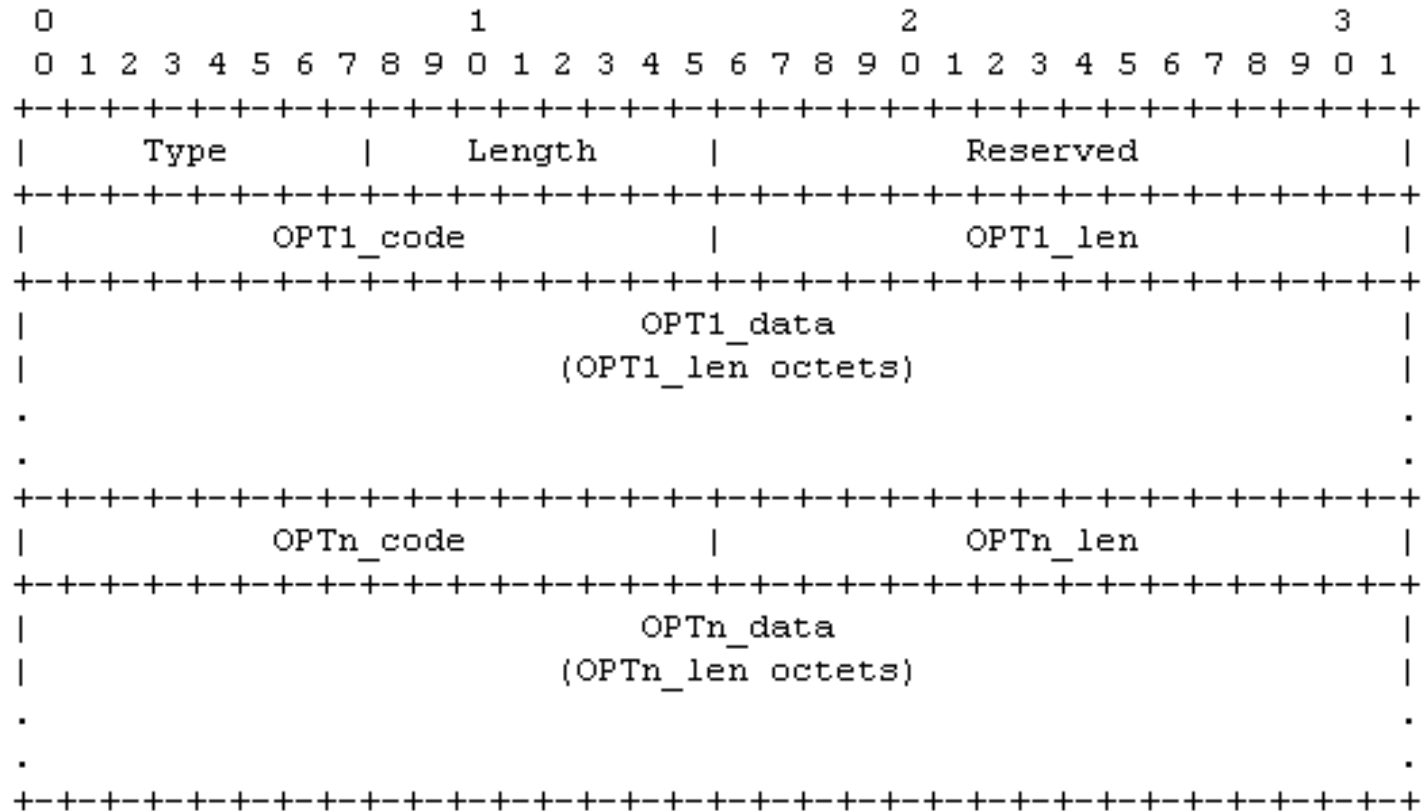
Why?

- **Eliminate duplicate standardization efforts**
  - Since the same parameters need to be distributed using DHCP and IPv6 ND, duplicate standardization efforts in IETF result e.g. DNS server information

- **Reduce implementation complexity on hosts**
  - Since the DHCP and ND options for the same parameter can be of varying formats, two sets of code need to be written to process them on the hosts.

How?

- A Neighbor Discovery option called DHCPC (DHCP Container) that can be used to directly carry any DHCP option that is not client specific.

- Can carry multiple DHCP options in a single DHCPC option

- Client processes the DHCP options as if it had received them from a DHCP server.

- Highly likely that the code for processing these options is shared between the RA based delivery and DHCP based delivery of these options.

Format of the option

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|      Type       |      Length       |           Reserved      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|            OPT1_code               |           OPT1_len        |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                            OPT1_data                          |
|                       (OPT1_len octets)                       |
.                                                               .
.                                                               .
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|            OPTn_code               |           OPTn_len        |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                            OPTn_data                          |
|                       (OPTn_len octets)                       |
.                                                               .
.                                                               .
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Applicability

- Theoretically, it is possible to carry any DHCP option using the DHCPC option.

- This does not always make sense since there are DHCP options that are client specific.

- The DHCPC option SHOULD NOT be used to carry DHCP options that are client specific

Conclusion

- Huge existing set of DHCP options that are potentially useful for RA based delivery

- Questions?

- Adoption as wg item?