

Is this a  
really bad  
idea?



# Universal RA

draft-trøan-6man-universal-ra-option-01

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IETF 104, 6man WG

<https://github.com/ietf-6man/universal-ra>

# Router Advertisement as a general carrier

- A general mechanism to publish information objects from network (routers) to hosts. Without requiring specific RA sending and processing implementation changes for new objects. (e.g. userland application registers for interest in a "key" and gets notified by RA processing.)
- Useful for 1:N communication, but can be modified with 1:1 with unicast RA / RS Option request option.
- Uses a self-describing encoding format (CBOR) modelled in CDDL (Concise Data Definition language)

# Universal RA format

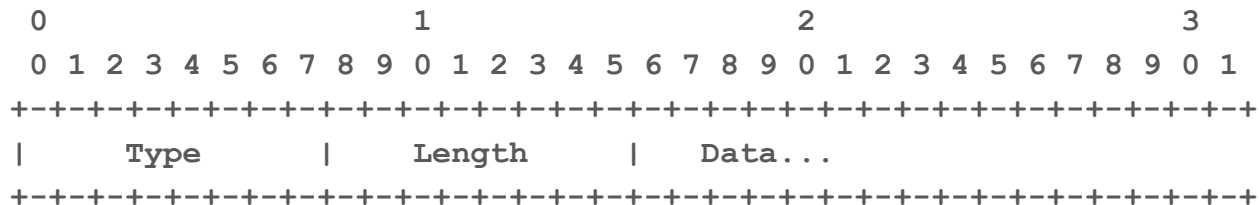


Figure 1: Universal RA Option Format

## Fields:

- Type 42 for Universal RA Option
- Length The length of the option (including the type and length fields) in units of 8 octets.
- Data CBOR encoded JSON padded to the nearest 8 octet boundary.

Can be distributed across multiple packets. Single option size is limited to  $2^8 \times 8 = 2048 - 2$  bytes.

Only allowed in RA.

# JSON object:

```
{
  "ietf": {
    "dns": {
      "dnssl": ["example.com"],
      "rdnss": ["2001:db8::1", "2001:db8::2"]
    },
    "nat64": {
      "prefix": "64:ff9b::/96"
    }
  }
}
```

```
ietf = {
  ? dns : dns
  ? nat64: nat64
  ? ipv6-only: bool
  ? pvd : pvd
  ? mtu : uint .size 4
  ? rio : rio
}
pio = {
  prefix : tstr
  ? preferred-lifetime : uint
  ? valid-lifetime : uint
  ? a-flag : bool
  ? l-flag : bool
}
rio_route = {
  prefix : tstr
  ? preference : (0..3)
  ? lifetime : uint
  ? mtu : uint .size 4
}
```

# Problem

- Working group spends an inordinate amount of time arguing over proposed new RA options. Some arguments go "since I don't need it, let's not standardize it."
- Does the working group add value to the set of problems where an RA is used as a general carrier?
- Every new option requires implementation changes both in router OS / management system and in host's RA processing engine

# IANA

- New IANA registry for the universal RA option.
- CDDL described objects
- Self contained in IANA registry or a stable reference
- Expert review



# Experiment along 2-axis

- **Technical:** What's effects of using a self-describing "universal" extension option format?
- **Process:** What's the effect of the WG letting go? Not involving the working group in defining a new object.

# Experiment parameters

- Duration: 2 years
- Code point in RA options (proposed type 42)
  - Why not experimental?
    - What if it was successful?
    - Not conflict with experiments
- What is success?
  - No use vs massive use?
  - Can the experiment ever be shut down?

# Discussion

- Process track: What's the consequences of "letting go"?
  - Experiment improvements
  - IANA considerations
- Technical track:
  - Encoding improvements
  - Modelling language
  - Add support in RS
- Next steps:
  - Adopt?

# Implementations / Candidates

- Implementations
  - VPP
  - Tomek's hackathon work
- Candidate RA options
  - PvDs
  - Network boot option: draft-qin-6man-nb-option
  - Pref64
  - ...