Is this a really bad idea?
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 $2^{8*8} = 2048-2$ bytes.

Only allowed in RA.
JSON object:

```json
{
    "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
  - ...