

**The Universal IPv6 Router Advertisement Option (experiment)
draft-troan-6man-universal-ra-option-00**

Abstract

The intentions for the IPv6 host configuration design, was to configure the core network layer parameters with IPv6 ND, and use service discovery for other configuration parameters. Unfortunately that hasn't panned out as planned, and we are in a situation where all kinds of configuration options are requested in RAs and in DHCP. This document proposes an a new universal option, formatted in JSON. The list of elements are maintained in an IANA registry, with greatly relaxed rules for registration.

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1. Introduction

The intentions for the IPv6 host configuration design, was to configure the core network layer parameters with IPv6 ND, and use service discovery for other configuration parameters. Unfortunately that hasn't panned out as planned, and we are in a situation where all kinds of configuration options are requested in RAs and in DHCP. This document proposes an a new universal option, formatted in JSON. The list of elements are maintained in an IANA registry, with greatly relaxed rules for registration.

DHCP is suited to give per-client configuration information, while the RA mechanism advertises configuration information to all hosts on the link. There is a long running history of "conflict" between the two. The arguments go; there is less fate-sharing in DHCP, DHCP doesn't deal with multiple sources of information, or make it more difficult to change information independent of the lifetimes, RA cannot be used to configure different information to different clients and son on. And of course some options are only available in RAs and some options are only available in DHCP.

While this proposal does not resolve the DHCP vs RA debate, it proposes an experimental solution to the problem of a very slow process of standardizing new options, and the IETF spending an inordinate amount of time arguing over new configuration options.

2. The Experiment

This document specifies a new "self-describing" universal RA option. Currently any new configuration option requires "standards action". The experiment is to find out what happens when change control is relaxed. The proposal is that no document is required. The configuration option is described directly in the universal RA IANA registry.

Duration of experiment: 2 years.

How to evaluate success? How many new options have been defined. Did expert review suffice to stop "harmful" options? Was any of the options implemented and deployed? On a successful experiment, the time limit of the registry will be removed and it's experimental status will be removed. If the experiment is deamed a failure, then the registry will be removed.

Troan

Expires June 20, 2019

[Page 2]

3. The Universal RA option

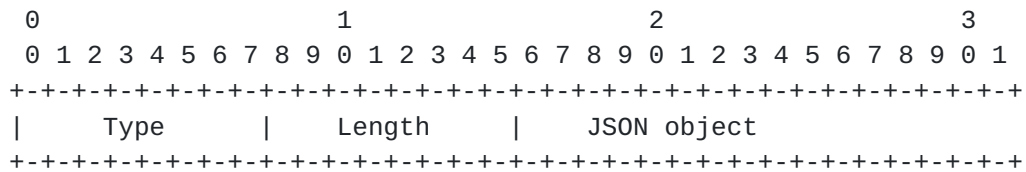


Figure 1: Universal RA Option Format

Fields:

Type 42 for Universal RA Option

Length The length of the option (including the type and length fields) in units of 8 octets.

JSON object JSON [RFC8259] in ASCII space padded to nearest 8 octet boundary. A JSON object with each option as JSON objects under the main key "ietf".

Example:

```

{
  "ietf": {
    "dns": {
      "dnss1": [
        "example.com"
      ],
      "lifetime": 86400,
      "rdnss": [
        "2001:db8::1",
        "2001:db8::2"
      ]
    },
    "nat64": {
      "lifetime": 86400,
      "prefix": "64:ff9b::/96"
    }
  }
}

```

Figure 2

Troan

Expires June 20, 2019

[Page 3]

4. IANA Considerations

IANA is requested to add a new registry for the Universal RA option. The registry should be named "IPv6 ND RA Universal option (experimental)". Changes and additions to the registry require expert review.

The schema field follows the JSON schema definition in [\[I-D.handrews-json-schema\]](#).

The IANA is requested to add the universal option to the "IPv6 Neighbor Discovery Option Formats" registry with the value of 42.

4.1. Initial objects in the registry

JSON key	Description	Reference
dns	<pre> "dns": { "dnssl": { "items": { "type": "domain-name" }, "type": "array" }, "lifetime": { "type": "integer" }, "rdnss": { "items": { "type": "ipv6-address" }, "type": "array" } } </pre>	[RFC8106]
nat64	<pre> "nat64": { "lifetime": { "type": "integer" }, "prefix": { "type": "ipv6-prefix" } } </pre>	[RFC7050]

Figure 3

Troan

Expires June 20, 2019

[Page 4]

5. References

- [I-D.handrews-json-schema]
Wright, A. and H. Andrews, "JSON Schema: A Media Type for Describing JSON Documents", [draft-handrews-json-schema-01](#) (work in progress), March 2018.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.
- [RFC4861] Narten, T., Nordmark, E., Simpson, W., and H. Soliman, "Neighbor Discovery for IP version 6 (IPv6)", [RFC 4861](#), DOI 10.17487/RFC4861, September 2007, <<https://www.rfc-editor.org/info/rfc4861>>.
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- [RFC8126] Cotton, M., Leiba, B., and T. Narten, "Guidelines for Writing an IANA Considerations Section in RFCs", [BCP 26](#), [RFC 8126](#), DOI 10.17487/RFC8126, June 2017, <<https://www.rfc-editor.org/info/rfc8126>>.
- [RFC8259] Bray, T., Ed., "The JavaScript Object Notation (JSON) Data Interchange Format", STD 90, [RFC 8259](#), DOI 10.17487/RFC8259, December 2017, <<https://www.rfc-editor.org/info/rfc8259>>.

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