MIF DHCPv6 Route Options
Post WGLC Summary
draft-ietf-mif-dhcppv6-route-option-03

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Recent (-03) changes

- IA_RD option removed (was just a container)
- Route lifetime added
  - Does not govern renewal, this is done in the usual DHCPv6 way (info-refresh time option)
    info-refresh time option < route lifetime
  - Up to $2^{32}-2$ seconds, 0xffffffff means infinity
- Clarified about default route configuration
  - NEXT_HOP (addr) + RTOPTION (prefix, len, route lifetime, metric)
  - NEXT_HOP (addr) – this is for bandwidth limited networks only
- SHOULD NOT be used in dynamic routing environment
  - Resolves Routing Directorate concerns
WGLC in MIF

- WGLC in MIF completed
- Also requested for review in 6MAN and DHC
- Questions/comments received:
  - RA vs DHCP preference
  - Separate option for default route?
  - Source routing?
  - Implementations?
  - Prefix format
DHCPv6 vs RA: Preference?

- In case of conflict what should node choose?
- Proposal: choose DHCPv6 over RA, choose secure

<table>
<thead>
<tr>
<th>DHCP</th>
<th>RA</th>
<th>DHCP</th>
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<tbody>
<tr>
<td>DHCP</td>
<td>RA(SEND)</td>
<td>RA</td>
</tr>
<tr>
<td>Secure DHCP</td>
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Reasons:
- RA specify info for all hosts, DHCP is per host basis
- “Default” configuration (RA) can be overridden (DHCPv6) for selected hosts (or a class of hosts)
- DHCPv6 offers security (somewhat weak argument as it is not frequently used yet, but this will change)
- Similar to DNS servers problem, adapting the same approach (but favor secure DHCP)
Questions/Comments

- Why not provide source routing information?
  - That's a different problem. May define option for that later if needed.
- Separate option for default route?
  - No, one option type for all routes is enough.
  - Please don't ask again.
- Separate option for default route?
- MAC/link-layer address info?
  - No, not needed (redundant with ND), even harmful (operational concerns).
- Prefix format changed:
  - Fixed length (16) => variable length
Next steps

• WGLC seems to be passed
  – The last outstanding issue: RA vs DHCP
• Presenting results in MIF and DHC WGs
• Will publish -04 with small changes
• Authors believe -04 draft will be ready for IESG
Implementations

- “rough consensus and working code”
- Two independent implementations available
- ISC DHCP 4.2.3 (open source, BSD)
  http://www.isc.org/community/blog/201111/routing-configuration-over-dhcpv6
- Dibbler 0.8.1RC1 (open source, GPL)
- Nominum
  - Ted Lemon confirmed that custom options can be configured
- ISC and Dibbler tested and are *interoperable*. 
Thank you

draft-ietf-mif-route-option-03
**NEXT_HOP Option**

- One or more **NEXT_HOP** options (address)
  - One or more RTPREFIX (prefix-len, metric, prefix, lifetime)

```
+---------------------------------------------+
| OPTION_NEXT_HOP | option-len |
+---------------------------------------------+
| IPv6 Next Hop Address                          |
| (16 octets)                                    |
+---------------------------------------------+
| NEXT_HOP options                               |
+---------------------------------------------+
```
RTPREFIX Option

One or more NEXT_HOP options (address)

- One or more RTPREFIX (prefix-len, metric, prefix,lifetime)

```
+-----------------------------+-----------------------------+
| OPTION_RT_PREFIX            | option-len                  |
+-----------------------------+-----------------------------+
| Route lifetime              |                             |
+-----------------------------+-----------------------------+
| Prefix-Length               | Metric                      |
+-----------------------------+-----------------------------+
| Prefix                       |                             |
| (16 octets)                 |                             |
|                             |                             |
| RT_PREFIX options           |                             |
+-----------------------------+-----------------------------+
```