



DHCPv6 for RIOT @ IETF 101 hackathon

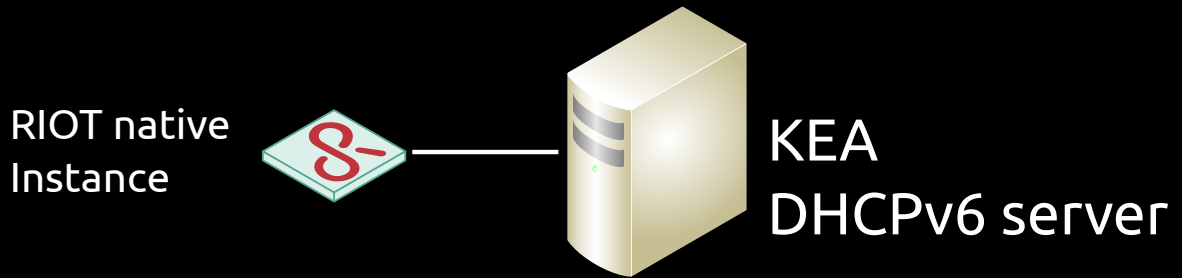
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Goals

- Provide minimal implementation for prefix delegation for RIOT (IoT OS)
- Basis: [draft-ietf-dhc-rfc3315bis-12](#)
- Motivation:
 - prefix configuration on 6Lo border router (currently implemented as quick-fix hack "UHCP")
- Required client behavior for:
 - SOLICIT, ADVERTISE, REQUEST, REPLY, RENEW

Set-up

Very simple set-up:



(RIOT native == Run RIOT as a Linux process)

What did we manage to do?

- SOLICIT ✓, ADVERTISE ✓, REQUEST ✓

Capturing from tapbr0

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/> Expression... +

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|-------------|---------------------------|------------------------|----------|--------|---|
| 1 | 0.000000... | fe80::7cc3:b2ff:fe60:cfcf | ff02::1:2 | DHCPv6 | 108 | Solicit XID: 0xab9185 CID: 000300017ec3b26 |
| 2 | 0.001305... | fe80::18fa:2bff:fe65:2c01 | fe80::7cc3:b2ff:fe6... | DHCPv6 | 143 | Advertise XID: 0xab9185 CID: 000300017ec3b |
| 3 | 0.664375... | fe80::18fa:2bff:fe65:2c01 | ff02::1:6 | ICMPv6 | 150 | Multicast Listener Report Message v2 |
| 4 | 0.994325... | fe80::7cc3:b2ff:fe60:cfcf | ff02::1:2 | DHCPv6 | 108 | Solicit XID: 0xab9185 CID: 000300017ec3b26 |
| 5 | 0.995512... | fe80::18fa:2bff:fe65:2c01 | fe80::7cc3:b2ff:fe6... | DHCPv6 | 143 | Advertise XID: 0xab9185 CID: 000300017ec3b |
| 6 | 0.996076... | fe80::7cc3:b2ff:fe60:cfcf | ff02::1:2 | DHCPv6 | 112 | Request XID: 0xecc927 CID: 000300017ec3b26 |
| 7 | 0.996751... | fe80::18fa:2bff:fe65:2c01 | fe80::7cc3:b2ff:fe6... | DHCPv6 | 98 | Reply XID: 0xecc927 CID: 000300017ec3b260c |
| 8 | 1.068454... | fe80::18fa:2bff:fe65:2c01 | ff02::1:6 | ICMPv6 | 150 | Multicast Listener Report Message v2 |
| 9 | 5.196462... | fe80::18fa:2bff:fe65:2c01 | fe80::7cc3:b2ff:fe6... | ICMPv6 | 86 | Neighbor Solicitation for fe80::7cc3:b2ff:fe6 |
| 10 | 5.197197... | fe80::7cc3:b2ff:fe60:cfcf | fe80::18fa:2bff:fe6... | ICMPv6 | 78 | Neighbor Advertisement fe80::7cc3:b2ff:fe6 |
| 11 | 10.19767... | fe80::7cc3:b2ff:fe60:cfcf | fe80::18fa:2bff:fe6... | ICMPv6 | 86 | Neighbor Solicitation for fe80::18fa:2bff:fe6 |
| 12 | 10.19776... | fe80::18fa:2bff:fe65:2c01 | fe80::7cc3:b2ff:fe6... | ICMPv6 | 78 | Neighbor Advertisement fe80::18fa:2bff:fe6 |
| 13 | 10.90006... | fe80::18fa:2bff:fe65:2c01 | ff02::fb | MDNS | 102 | Standard query 0x0000 PTR _pgpkey-hkp._tcp |

Frame 1: 108 bytes on wire (864 bits), 108 bytes captured (864 bits) on interface 0

Ethernet II, Src: 7e:c3:b2:60:cf:cf (7e:c3:b2:60:cf:cf), Dst: IPv6mcast_01:00:02 (33:33:00:01:00:02)

Internet Protocol Version 6, Src: fe80::7cc3:b2ff:fe60:cfcf, Dst: ff02::1:2

User Datagram Protocol, Src Port: 546, Dst Port: 547

DHCPv6

0000 33 33 00 01 00 02 7e c3 b2 60 cf cf 86 dd 60 00 33.....
 0010 00 00 00 36 11 40 fe 80 00 00 00 00 00 00 7c c3 ...6.0...
 0020 b2 ff fe 60 cf cf ff 02 00 00 00 00 00 00 00 00
 0030 00 00 00 01 00 02 02 22 02 23 00 36 6a e7 01 ab".#.6j...

Frame (frame), 108 bytes Packets: 13 · Displayed: 13 (100.0%) Profile: Default

Lessons learned

- Don't get lost in details
- When in doubt: ask the draft's authors ;-) (thanks Tomek for all the help)

Further steps

- Clean-up implementation
- Finish implementation of prefix delegation
- Provide support for further DHCPv6 features
- Current code already PR'd to RIOT:
<https://github.com/RIOT-OS/RIOT/pull/8796/>