

Manual:IPv6/DHCP Client

From MikroTik Wiki

< Manual:IPv6

Contents

- 1 Summary
- 2 Quick setup example
- 3 Properties
- 4 Script
- 5 Status
- 6 Menu specific commands
- 7 Application Examples
 - 7.1 Use received prefix for local RA

Applies
to
RouterOS: v5.9 +



Summary

DHCP-client in RouterOS is capable of being a DHCPv6-client and DHCP-PD client. So it is able to get a prefix from DHCP-PD server as well as DHCPv6 stateful address from DHCPv6 server.

Quick setup example

This simple example demonstrates how to enable dhcp client to receive IPv6 prefix and add it to the pool.

```
/ipv6 dhcp-client add request=prefix pool-name=test-ipv6 pool-prefix-length=64 interface=ether13
```

Detailed print should show status of the client and we can verify if prefix is received

```
[admin@x86-test] /ipv6 dhcp-client> print detail  
Flags: D - dynamic, X - disabled, I - invalid
```

```
0 interface=bypass pool-name="test-ipv6" pool-prefix-length=64 status=bound
  prefix=2001:db8:7501:ff04::/62 expires-after=2d23h11m53s request=prefix
```

Notice that server gave us prefix 2a02:610:7501:ff04::/62 . And it should be also added to ipv6 pools

```
[admin@MikroTik] /ipv6 pool> print
Flags: D - dynamic
#  NAME                PREFIX                REQUEST                PREFIX-LENGTH
0  D test-ipv6          2001:db8:7501:ff04::/62 prefix                  64
```

It works! Now you can use this pool, for example, for pppoe clients.

Properties

Sub-menu: /ipv6 dhcp-client

| Property | Description |
|---|--|
| add-default-route (<i>yes no</i> ; Default: no) | Whether to add default IPv6 route after client connects. |
| comment (<i>string</i> ; Default:) | Short description of the client |
| disabled (<i>yes no</i> ; Default: no) | |
| interface (<i>string</i> ; Default:) | Interface on which DHCPv6 client will be running. |
| pool-name (<i>string</i> ; Default:) | Name of the IPv6 pool in which received IPv6 prefix will be added |
| pool-prefix-length (<i>string</i> ; Default:) | Prefix length parameter that will be set for IPv6 pool in which received IPv6 prefix is added. Prefix length must be greater than the length of received prefix, otherwise prefix-length will be set to received prefix length + 8 bits. |
| prefix-hint (<i>string</i> ; Default:) | Include a preferred prefix length. |
| request (<i>prefix, address</i> ; Default:) | to choose if the DHCPv6 request will ask for the address or the IPv6 prefix, or both. |
| script (<i>string</i> ; Default:) | Run this script on the dhcp-client status change. Available variables: <ul style="list-style-type: none"> ▪ pd-valid - if the prefix is acquired by the client; |

- **pd-prefix** - the prefix acquired by the client if any;
- **na-valid** - if the address is acquired by the client;
- **na-address** - the address acquired by the client if any.
- **options** - array of received options (only ROSv7)

use-peer-dns (*yes* | *no*; Default: **yes**)

Whether to accept the DNS settings advertised by the IPv6 DHCP Server.

Script

It is possible to add a script that will be executed when a prefix or an address is acquired and applied or expires and is removed using DHCP client. There are separated sets of variables that will have the value set by the client depending on prefix or address status change as the client can acquire both and each of them can have a different effect on the router configuration.

Available variables for dhcp-client

- **pd-valid** - value - 1 or 0 - if prefix is acquired and it is applied or not
- **pd-prefix** - value ipv6/num (ipv6 prefix with mask) - the prefix itself
- **na-valid** - value - 1 or 0 - if address is acquired and it is applied or not
- **na-address** - value - ipv6 address - the address

Status

Command `/ipv6 dhcp-client print detail` will show current status of dhcp client and **read-only** properties listed in table below:

| Property | Description |
|---|---|
| duid (<i>string</i>) | Auto generated DUID that is sent to the server. DUID is generated using one of the MAC addresses available on the router. |
| request (<i>list</i>) | specifies what was requested - prefix, address or both. |
| dynamic (<i>yes</i> <i>no</i>) | |
| expires-after (<i>time</i>) | Time when the IPv6 prefix expires (specified by the DHCPv6 server). |
| invalid (<i>yes</i> <i>no</i>) | Shows whether configuration is invalid. |
| prefix (<i>IPv6 prefix</i>) | Shows received IPv6 prefix from DHCPv6-PD server |

status (*stopped* | *searching* | *requesting...* | *bound* | *renewing* | *rebinding* | *error* | *stopping*) Shows the status of DHCPv6 Client:

- **stopped** - dhcpv6 client is stopped
- **searching** - sending "solicit" and trying to get "advertise"
- **requesting** - sent "request" waiting for "reply"
- **bound** - received "reply". Prefix assigned.
- **renewing** - sent "renew", waiting for "reply"
- **rebinding** - sent "rebind", waiting for "reply"
- **error** - reply was not received in time or some other error occurred.
- **stopping** - sent "release"

To determine what IAID will be used, convert internal ID of an interface on which DHCP client is running from hex to decimal.

For example, DHCP client is running on interface pppoe-out1. To get internal ID use following command

```
[admin@t36] /interface> :put [find name="pppoe-out1"]
*15
```

Now convert hex value 15 to decimal and you get IAID=21

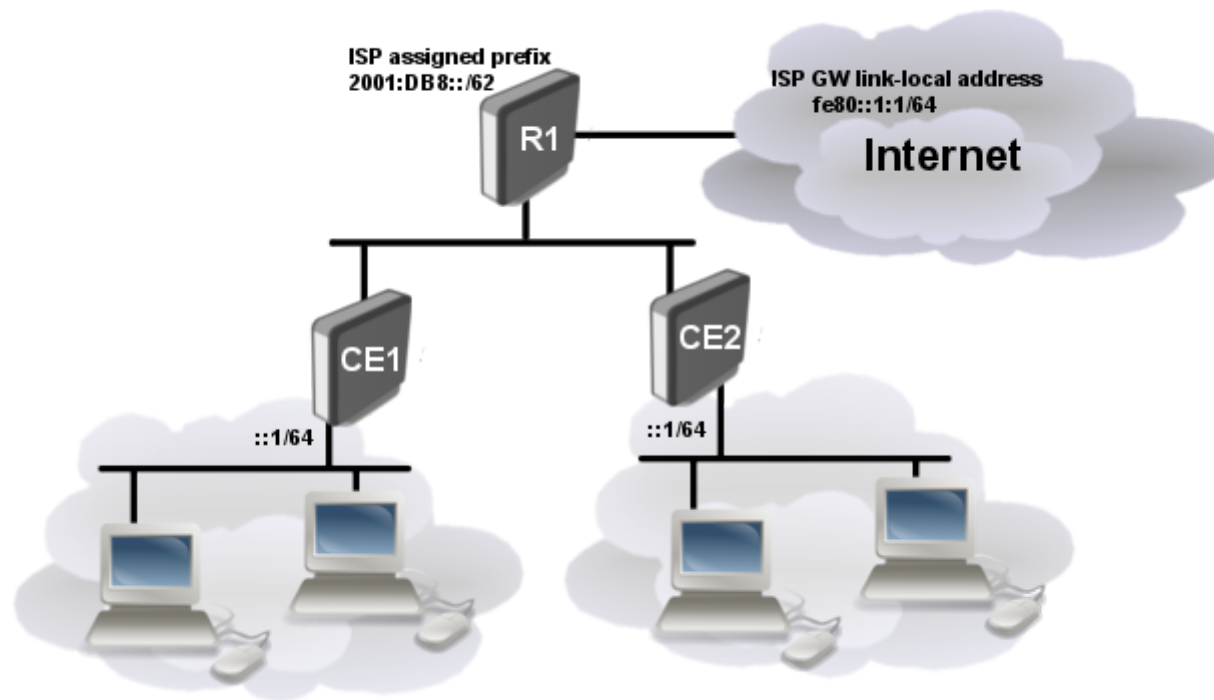
Menu specific commands

| Property | Description |
|-----------------------------------|---|
| release (<i>numbers</i>) | Release current binding and restart DHCPv6 client |
| renew (<i>numbers</i>) | Renew current leases. If the renew operation was not successful, client tries to reinitialize lease (i.e. it starts lease request procedure (rebind) as if it had not received an IP address yet) |

Application Examples

Use received prefix for local RA

Consider following setup:



- ISP is routing prefix 2001:DB8::/62 to the router R1
- Router R1 runs DHCPv6 server to delegate /64 prefixes to the customer routers CE1 CE2
- DHCP client on routers CE1 and CE2 receives delegated /64 prefix from the DHCP server (R1).
- Client routers use received prefix to set up RA on the local interface

Configuration

R1

```
/ipv6 route
add gateway=fe80::1:1%to-ISP
```

```
/ipv6 pool
add name=myPool prefix=2001:db8::/62 prefix-length=64

/ipv6 dhcp-server
add address-pool=myPool disabled=no interface=to-CE-routers lease-time=3m name=server1
```

CE1

```
/ipv6 dhcp-client
add interface=to-R1 request=prefix pool-name=my-ipv6

/ipv6 address
add address=::1/64 from-pool=my-ipv6 interface=to-clients advertise=yes
```

CE2

```
/ipv6 dhcp-client
add interface=to-R1 request=prefix pool-name=my-ipv6

/ipv6 address
add address=::1/64 from-pool=my-ipv6 interface=to-clients advertise=yes
```

Check the status

After configuration is complete we can verify that each CE router received its own prefix

On server:

```
[admin@R1] /ipv6 dhcp-server binding> print
Flags: X - disabled, D - dynamic
#   ADDRESS                               DUID                IAID SERVER        STATUS
1 D 2001:db8:1::/64                       0019d1393536        566 server1         bound
2 D 2001:db8:2::/64                       0019d1393535        565 server1         bound
```

On client:

```
[admin@CE1] /ipv6 dhcp-client> print
Flags: D - dynamic, X - disabled, I - invalid
#   INTERFACE      STATUS      REQUEST      PREFIX
0   to-R1          bound      prefix      2001:db8:1::/64

[admin@CE1] /ipv6 dhcp-client> /ipv6 pool print
Flags: D - dynamic
#   NAME            PREFIX            PREFIX-LENGTH
0 D my-ipv6         2001:db8:1::/64   64
```

We can also see that IPv6 address was automatically added from the prefix pool:

```
[admin@CE1] /ipv6 address> print
Flags: X - disabled, I - invalid, D - dynamic, G - global, L - link-local
#   ADDRESS          FROM-POOL INTERFACE  ADVERTISE
0   G 2001:db8:1::1/64          to-clients      yes
..
```

And pool usage shows that 'Address' is allocating the pool

```
[admin@CE1] /ipv6 pool used> print
POOL      PREFIX            OWNER      INFO
my-ipv6    2001:db8:1::/64   Address    to-clients
```

[Top | Back to Content]

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Categories: Manual | DHCP | IPv6

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