DHCP Unique Identifier

The DHCP Unique Identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a minimum length of 12 bytes (96 bits) and a maximum length of 20 bytes (160 bits). Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client. The first 16 bits of a DUID contain the DUID type, of which there are three types. The meaning of the remaining 96 bits depend on the DUID type.

Example

In this example, the server's link-local address is `fe80::0011:22ff:fe33:5566` and the client's link-local address is `fe80::aabb:ccff:fedd:eeff`.

- DHCPv6 client sends a **Solicit** from `[fe80::aabb:ccff:fedd:eeff]:546` for `[ff02::1:2]:547`.
- DHCPv6 server replies with an **Advertise** from `[fe80::0011:22ff:fe33:5566]:547` for `[fe80::aabb:ccff:fedd:eeff]:546`.
- DHCPv6 client replies with a **Request** from `[fe80::aabb:ccff:fedd:eeff]:546` for `[ff02::1:2]:547`. (Client messages are sent to the multicast address, per section 13 of RFC 3315.)
- DHCPv6 server finishes with a **Reply** from `[fe80::0011:22ff:fe33:5566]:547` for `[fe80::aabb:ccff:fedd:eeff]:546`.

Host identifiers in IPv6 – meet the DUID

DHCP in IPv4 is based on the MAC address. The assumption was that one host in most cases only had one network interface. The world has changed since then and a host frequently has many IP capable interfaces. A Mac laptop can run IP over Bluetooth, WLAN, Firewire and Ethernet at the same time – plus an USB attached 3g dongle…

DHCPv6 has a host identifier, named DUID – Device UID – and a set of interface identifiers. The RFC defines a DUID this way:

```
DUID                        A DHCP Unique IDentifier for a DHCP
                                 participant; each DHCP client and server
                                 has exactly one DUID.
```

Each interface has an ID, called IAID – Interface Association Identifier – that is a binding between the interface and one or several IP addresses. Each allocation in the DHCPv6 server is identified by a DUID and a IAID. The question is how these are created. It's not the same as the mac address, but can be based on it.

RFC 4361 describes a migration solution by adding DUID device identifiers to DHCP for IPv4. Microsoft already supports this.