While deploying DHCPv6 at CERN…

MAC and DHCPv6 :: Overview

- **DHCPv4 had natural IPv4:MAC address mapping**
- **DHCPv6 is based on DUID (DHCP Unique ID) concept**
  - Generated once, stored => more stable
  - 4 types: link-local+time, link-local, entreprise, uuid
- **DUID solves some issues...**
  - Change NICs => new DHCPv4 client
  - Some devices don't have fixed MACs
- **DUID introduces new ones...**
  - Dual boot: Linux and Windows use different DUIDs
  - Reinstall OS: => new DUID
  - VM cloning => the same DUIDs
- **MAC is not used directly in DHCPv6**
  - Client MACs are not stored when relay agents forward the DHCP requests

Tomek Mrugalski: https://ripe66.ripe.net/presentations/158-latest-development-in-dhcpv6.pdf

DHCPv6 service at CERN

- **Static IPv6 address assignment**
  - We bind static ipv6 addresses to MAC addresses
  - **It works**, but it shouldn't according to RFC3315
    - ISC extended the hardware parameter to extract the MAC from the DUID when possible
- **Dynamic IPv6 address assignment**
  - We provide random IPv6 addresses to mobile users
  - Only registered devices can get a lease
  - All DHCP knows about these devices is their MACs
  - **Host filtering doesn't work***

    *deny unknown-clients is not implemented for IPv6
  - **We have to make it work…**

DHCPv6 service at CERN

- **DHCPv6, MAC addresses and host filtering**
  - Contacted ISC developers
  - Well known problem **solved** by RFC6939
    - ✓ Relay agents will introduce the MAC address as an option on the client requests
    - ✖ Slow adoption: dhcp implementers and router manufacturers
    - On ISC's roadmap ~ 2014 for Kea (BIND10 DHCP). No plans for DHCP4.x. Flexibility, nothing is carved in stone

  … and in the meantime?

    - Kea is pointed as the way to go for future developments and faster feature implementations
    - ISC is studying options with the DHCP4.x code
    - Last resort, dive in DHCP4.x and try an interim patch until RFC6939 is adopted.
    - Without RFC6939, even if we get a patch for DHCP4.x, some cases might not work!