Multiple Provisioning Domains

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Define provisioning domain

- A single collection of configuration information...
  - Address and routing information
  - DNS resolver address
  - Other stack configuration
- ...that comes from a single provider
- May be more than one provisioning domain per link
  - Dual stack: two PDs
  - Device behind multihomed router

Illustrative examples

- Turn on VPN, printer goes away
- Turn on VPN, go to Pirate Bay, get fired
- Connect to captive portal hotspot, mobile data connection stops working
- Connect to LTE and Wifi, LTE is faster, Wifi adequate, next LTE bill is… surprising…
- Maastricht hotel, Wifi does port 80 and port 443 really fast, and nothing else, I have to choose
- Wifi and ethernet provide default route, only one works, stack picks the wrong one every time

Three or more related issues

- Sometimes we can get guidance from network
  - If the guidance is right, it can be helpful
- Sometimes guidance is wrong
  - VPN: "send me everything, even your printer traffic!"
  - Captive portal: "send me everything, so that I can pop up a login screen!"
  - Broken network: "send me everything, so that I can dump it in the bit bucket for you"

Related issues cont'd

- Sometimes guidance is helpful but insufficient
  - LTE: I am faster than your WiFi and can handle all your traffic
  - LTE: I am expensive and you shouldn't use me unless you have to, but I can't say when that is

Not a "selection" problem

- The traditional response has been to pick one and stick with it until something changes

- This works if both connections are equivalent, but one is always preferable

- That is frequently not the case

Not a "happy eyeballs" problem

- Happy eyeballs is interface-agnostic
- Sometimes you really do want to select an interface

Common underlying problem

- Everything is mixed together in the same bucket
- No way to say "use this provisioning domain"
- No way to say "try this provisioning domain"

Implications for DHC

- There's a lot to this problem
- Requires changes to stack
- Requires protocol changes
- One protocol that requires changes is DHCPv6

Action items

- Architectural document in MIF

- Modifications/extensions to DHC to support MPD use case

- There will be a long discussion about this in MIF tomorrow

- Please come if you are interested in working on this problem