

DNS Server Selection on Multi-Homed Hosts

draft-savolainen-mif-dns-server-selection-03

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Advanced multi-homed hosts

- Are connected and using multiple networks at the same time (over WLAN, cellular, VPN..)
- Some of the configured DNS servers may serve non-global information, e.g.
 - Private names for intranet use (e.g. VPN interface)
 - DNS64 synthesized addresses which are only locally valid (e.g. cellular interface)
- Hosts should be able to do forward and reverse DNS queries efficiently

(Note: Microsoft's Name Resolution Policy Table implements this kind of approach (<http://technet.microsoft.com/en-us/library/ee649207%28WS.10%29.aspx>))

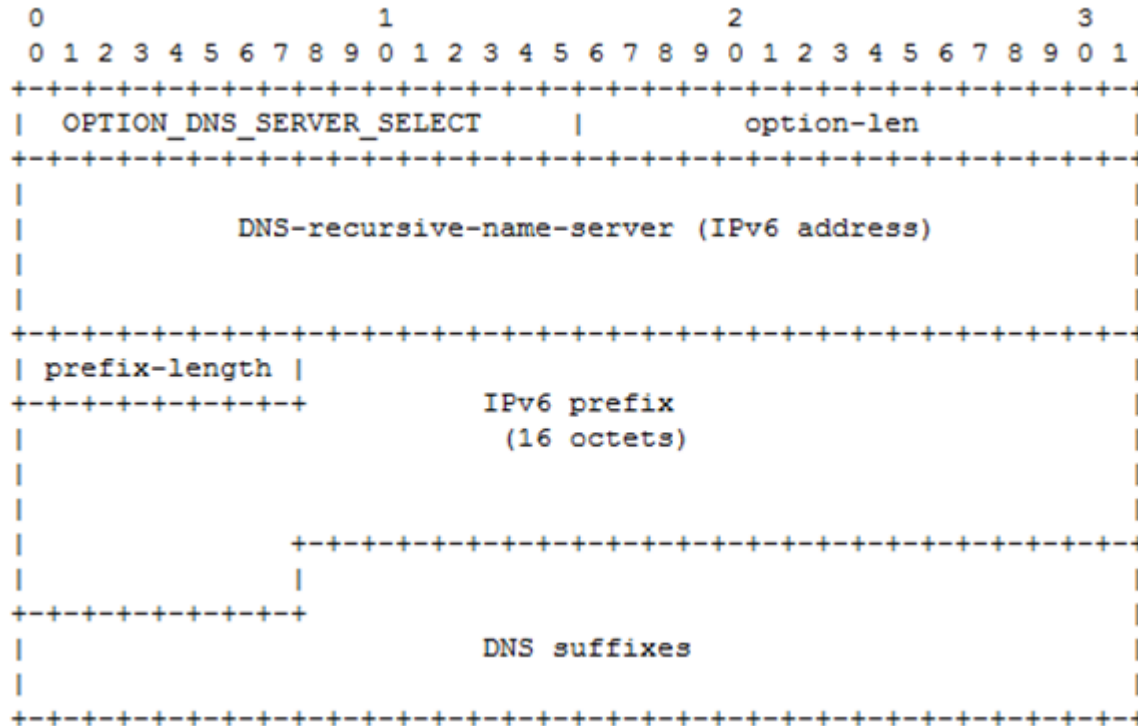
Broadband Forum liaison statement

- <https://datatracker.ietf.org/liaison/922/> (2010-07-08)
- Quote: "Some IETF efforts that are of special interest to us include:
 - IPv6 multi-homed premises (where the CE router or host is connected to more than one IPv6 service provider); for example, as described in <http://tools.ietf.org/html/draft-troan-multihoming-without-nat66-00>. Individual technical issues are source address selection policy distribution, route information distribution, and [DNS selection policy distribution](#).
- In BBF's case different services may be offered on shared IP-connection, e.g. Internet access and sensor networks utilizing private names.
- Sometimes DNS servers may have **only private information**

The solution proposal in short

- A new DHCPv6 option to inform nodes (hosts or CPEs) about non-global information a DNS server knows about
- Node shall check for each DNS query if some DNS server is known to have special information regarding the query (matching suffix or prefix)
 - E.g. for resolving "server.example.com" use the DNS server known to have non-global information about "example.com"
- *Note: one implementation alternative is to use indirect hints like information from Domain Search List Options (RFC3646) and from "more specific routes" (RFC4191)*

New DHCPv6 option for information delivery



A **DNS server address** with information it has particular knowledge about:

- **DNS suffix(es) (namespace(s))**
- **IPv6 prefix for reverse lookups**

To be added: two bits for preference (like in RFC4191):

- 01 High
- 00 Medium (default)
- 11 Low

- Is similar option for IPv4 needed?
- Preference for selecting the default DNS server?

This version has been implemented by NTT

Feedback from DNSOP WG

- It is OK for MIF WG to work on this topic
- No need to change DNS itself were detected
- DNSOP is happy to follow the work, and comment and review MIF WG document later on
- Some concerns:
 - Consideration whether the solution is enough to solve the whole problem
 - DHCPv4 option should be essentially the same (if defined)
 - Scalability concern(?)
 - Concern on how many prefixes/suffixes for one DHCPv6 option instance
 - Should there be a suffix for "*all information*" (e.g. ". ", or "*", or something)
 - How about APIs?

*(I may have missed some feedback –
will check from the audio recordings)*

Proposal for MIF WG

- DNS resolution issues are being described in MIF WG document (@IESG):
 - <http://tools.ietf.org/html/draft-ietf-mif-problem-statement-04#page-7>
 - Also in draft-ca0-mif-analysis-01
- Proposal for new charter:
 - Advanced DNS server selection solution: a specification for describing a way for a network to communicate to nodes **information required to perform advanced DNS server selection** needed for multi-homing and split-DNS scenarios. The specification shall describe the information to be delivered and the protocol for delivering.
 - Nov 2010: Initial WG draft on DNS server selection solution
 - Nov 2011: Submit DNS server selection solution to IESG for publication as a Proposed Standard RFC
- Request to adopt this document as a WG document (once charter allows)