

Network Working Group
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An option for FQDNs in DHCP options
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Abstract

DHCP [[DHCP](#)] can be used to automate the process of configuring TCP/IP host computers. However, some of the DHCP options carry IP addresses rather than Fully Qualified Domain Names (FQDN). Use of IP addresses constrains the DHCP client to use the addresses that were in use at the time the client received its configuration information; these addresses may change over time, (e.g., a server may be assigned a new IP address), so that the IP addresses used by the client may become invalid.

An alternative to passing IP addresses is to pass FQDNs instead of (numeric) IP addresses. Doing this allows to defer binding between a particular network entity (e.g., a server) and its IP address until run time. As stated in [[Carpenter:95](#)], "Deferring the binding avoids the risk of changed mapping between IP addresses and specific network entities (due to changing addressing information). Moreover, reliance on FQDNs (rather than IP addresses) also localizes to the DNS the changes needed to deal with changing addressing information due to renumbering."

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This document defines a new DHCP option that allows the use of FQDNs instead of IP addresses in DHCP options.

Definitions

The following defines the format of the FQDN option.

```

+-----+-----+
| Code   | Length |
+-----+-----+-----+-----+-----+
| Subcode | Sublength |           FQDN
+-----+-----+-----+-----+-----+

.....

+-----+-----+-----+-----+-----+
| Subcode | Sublength |           FQDN
+-----+-----+-----+-----+-----+

```

The option consists of a Code and Length fields followed by a variable number of <subcode, sublength, FQDN> triples.

The code, length, subcode, and sublength fields are all one octet long. The FQDN field is of variable length.

The code value for this option is TBD.

The length field specifies the total length (in octets) of all the triples carried in the option.

For each subcode carried in the FQDN option, the IP address in the option represented by the subcode is replaced by a FQDN.

The sublength field shall be set to the length (in octets) of the FQDN carried in the option. The FQDN field carries the FQDN itself.

More than one triple with a given subcode may appear within a single FQDN option. Options that can carry a list of IP addresses should be

coded as multiple subcodes in the FQDN option, to differentiate among the variable-length FQDNs.

This option only allows the use of FQDNs for options that have been elsewhere defined to carry IP addresses.

Example

The following illustrates how the FQDN option could be used to carry FQDNs for 2 LPR Servers with FQDNs `lpr1.xxx.org` and `lpr2.yy.org`, and one Network Information Server with FQDN `nis.zzzz.org`.

```
+----+----+
|xx |41 |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|41 |12 | n | i | s | . | z | z | z | z | . | o | r | g |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| 9 |12 | l | p | r | 1 | . | x | x | x | . | o | r | g |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| 9 |11 | l | p | r | 2 | . | y | y | . | o | r | g |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
```

Security Considerations

Security issues are not discussed in this document.

References

[Carpenter:95] Carpenter, B., Rekhter, Y., "Renumbering considered unavoidable", Internet Draft

[DHCP] Droms, R., "Dynamic Host Configuration Protocol", [RFC1541](#), October 1993

Acknowledgements

To be supplied.

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