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The Name Service Search Option for DHCP

Status of this Memo

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Abstract

This document defines a new Dynamic Host Configuration Protocol (DHCP) option which is passed from the DHCP Server to the DHCP Client to specify the order in which name services should be consulted when resolving hostnames and other information.

Introduction

The Dynamic Host Configuration Protocol (DHCP)[1] provides a framework for passing configuration information to hosts on a TCP/IP network. RFC 2132 [2] allows DHCP servers to specify configuration information for various kinds of name services to be passed to DHCP clients. Many clients use multiple name services and have crafted their own conventions that allow an individual host to express the order among the various name services with which lookups are done. However, no search order can be specified via DHCP. The purpose of this document is to allow DHCP servers to specify the search order to be used by DHCP clients. To avoid the need for inventing and maintaining a separate name space for this option, we rely on the existence of previously-defined DHCP options that specify the IP address(es) of servers which provide name services whose order we wish to express.

Definitions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY" and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [3]. This document also uses the following terms:

"DHCP client"

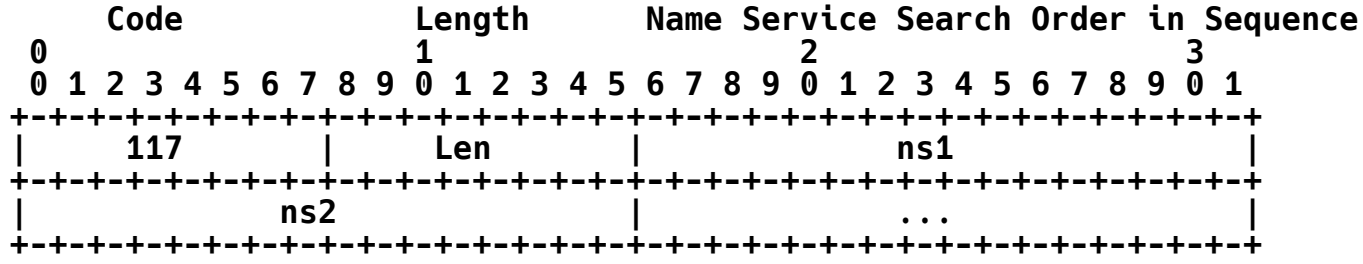
DHCP client or "client" is an Internet host using DHCP to obtain configuration parameters such as a network address.

"DHCP server"

A DHCP server or "server" is an Internet host that returns configuration parameters to DHCP clients.

Name Service Search Option Format

The code for this option is 117, and its minimum length is 2 bytes. A DHCP server SHOULD return, in its preferred order, the 16-bit, network byte order (big-endian [4]) integer option code for the name services (the earlier in the list, the more preferred the name service).

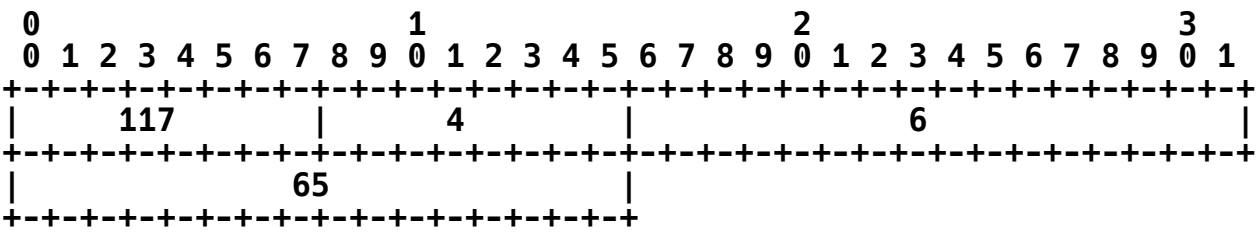


In the above diagram, ns1 and ns2 are 16-bit integers corresponding to two DHCP options which specify the IP addresses of two different types of name server. The current list of name services and their DHCP option codes, taken from RFC 2132, includes

Name Service	Value
Domain Name Server Option	6
Network Information Servers Option	41
NetBIOS over TCP/IP Name Server Option	44
Network Information Service+ Servers Option	65

A name service option code of 0 is used to indicate that the client should refer to local naming information (e.g., an /etc/hosts file on a UNIX machine).

A DHCP server wishing to express that a client should first search DNS, then NIS+, would send



DHCP Client Behavior

The DHCP client will use this option to create a search list for name resolution. The client may receive name services in this option that it does not support or has not been configured to access. Likewise, a client may receive an option that lists name services for which no corresponding DHCP option was supplied. Clients will interpret this option in a system-specific manner whose specification is outside the scope of this document.

Security Considerations

DHCP currently provides no authentication or security mechanisms. Potential exposures to attack are discussed in section 7 of the DHCP protocol specification [1].

IANA Considerations

IANA has assigned a value of 117 for the DHCP option code described in this document.

References

[1] Droms, R., "Dynamic Host Configuration Protocol", RFC 2131, March 1997.

[2] Alexander, S. and R. Droms, "DHCP Options and BOOTP Vendor Extensions", RFC 2132, March 1997.

[3] Bradner, S., "Key words for use in RFCs to indicate requirement levels", BCP 14, RFC 2119, March 1997.

[4] Cohen, D., "On Holy Wars and a Plea for Peace", Computer, IEEE, October 1981.

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