

Interoperation Between DHCP and BOOTP

Status of this Memo

This RFC specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" for the standardization state and status of this protocol. Distribution of this memo is unlimited.

Abstract

DHCP provides a superset of the functions provided by BOOTP. This document describes the interactions between DHCP and BOOTP network participants.

1. Introduction

The Dynamic Host Configuration Protocol (DHCP) provides a mechanism for transmitting configuration parameters to hosts using the TCP/IP protocol suite. The format of DHCP messages is based on the format of BOOTP messages, so that, in certain circumstances, DHCP and BOOTP participants may exchange messages. This document specifies the ways in which DHCP and BOOTP participants may interoperate.

DHCP introduces a small change in terminology intended to clarify the meaning of one of the fields. What was the "vendor extensions" field in BOOTP has been re-named the "options" field in DHCP. Similarly, the tagged data items that were used inside the BOOTP "vendor extensions" field, which were formerly referred to as "vendor extensions", are now termed simply "options". This document will refer to BOOTP vendor extensions and DHCP options uniformly as "options".

Throughout this document, DHCP messages that include a 'DHCP message type' option will be referred to by the type of the message; e.g., a DHCP message with 'DHCP message type' option type 1 will be referred to as a "DHCPDISCOVER" message.

2. BOOTP clients and DHCP servers

The format of DHCP messages is defined to be compatible with the format of BOOTP messages, so that existing BOOTP clients can interoperate with DHCP servers. Any message received by a DHCP server that includes a 'DHCP message type' (51) option is assumed to have been sent by a DHCP client. Messages without the DHCP Message Type option are assumed to have been sent by a BOOTP client. Support of BOOTP clients by a DHCP server is optional at the discretion of the local system administrator. If a DHCP server that is not configured to support BOOTP clients receives a BOOTREQUEST message from a BOOTP client, that server silently discards the BOOTREQUEST message.

If a DHCP server is configured to support BOOTP clients, it may be configured to supply static addresses, automatic addresses or both. Static addresses are those that have been previously assigned by a system administrator and are stored in a database available to the DHCP server. Automatic addresses are those selected by the DHCP server from its pool of unassigned addresses.

Since BOOTP clients may not be prepared to receive automatic addresses, the decision to allow a DHCP server to return automatic addresses must be under the control of the system administrator. If a DHCP server supports supplying automatic addresses to BOOTP clients, this feature must be configurable, and the feature must default off. Enabling of the feature must be the result of an active decision by the system administrator.

If a DHCP server returns a automatic address, the BOOTP client will not be aware of the DHCP lease mechanism for network address assignment. Thus the DHCP server must assign an infinite lease duration to for automatic addresses assigned to BOOTP clients. Such network addresses cannot be automatically reassigned by the server. The local system administrator may choose to manually release network addresses assigned to BOOTP clients.

A DHCP server that supports BOOTP clients MUST interact with BOOTP clients according to the BOOTP protocol. The server MUST formulate a BOOTP BOOTREPLY message rather than a DHCP DHCPOFFER message (i.e., the server MUST NOT include the 'DHCP message type' option and MUST NOT exceed the size limit for BOOTREPLY messages). The server marks a binding for a BOOTP client as BOUND after sending the BOOTP BOOTREPLY, as a non-DHCP client will not send a DHCPREQUEST message nor will that client expect a DHCPACK message.

DHCP servers MAY send any DHCP Options to a BOOTP client as allowed by the "DHCP Options and BOOTP Vendor Extensions" RFC [2].

In summary, a DHCP server:

- o MAY support BOOTP clients,
- o May return automatic addresses to BOOTP clients,
- o MUST provide a configuration switch if returning automatic addresses to BOOTP clients,
- o MUST default this optional configuration to OFF,
- o MUST abide by the BOOTP specification when interacting with BOOTP clients, and
- o MAY send DHCP options (those options defined in the DHCP options document but not in the BOOTP vendor extensions documents) to a BOOTP client.

3. DHCP clients and BOOTP servers

A DHCP client MAY use a reply from a BOOTP server if the configuration returned from the BOOTP server is acceptable to the DHCP client. A DHCP client MUST assume that an IP address returned in a message from a BOOTP server has an infinite lease. A DHCP client SHOULD choose to use a reply from a DHCP server in preference to a reply from a BOOTP server.

4. References

- [1] Wimer, W., "Clarifications and Extensions for the Bootstrap Protocol", RFC 1532, Carnegie Mellon University, October 1993.
- [2] Alexander, S., and R. Droms, "DHCP Options and BOOTP Vendor Extensions", RFC 1533, Lachman Technology, Inc., Bucknell University, October 1993.
- [3] Droms, R., "Dynamic Host Configuration Protocol", RFC 1531, Bucknell University, October 1993.

5. Security Considerations

Security issues are not discussed in this memo.

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