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Procedure for Defining New DHCP Options
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Abstract

The Dynamic Host Configuration Protocol (DHCP) provides a framework for passing configuration information to hosts on a TCP/IP network. Configuration parameters and other control information are carried in tagged data items that are stored in the 'options' field of the DHCP message. The data items themselves are also called 'options.'

New DHCP options may be defined after the publication of the DHCP specification to accommodate requirements for conveyance of new configuration parameters. This document describes the procedure for defining new DHCP options.

Introduction

The Dynamic Host Configuration Protocol (DHCP) [1] provides a framework for passing configuration information to hosts on a TCP/IP network. Configuration parameters and other control information are carried in tagged data items that are stored in the 'options' field of the DHCP message. The data items themselves are also called "options." [2]

This document describes the procedure for defining new DHCP options. The procedure will guarantee that:

* allocation of new option numbers is coordinated from a single authority,
* new options are reviewed for technical correctness and appropriateness, and
* documentation for new options is complete and published.

As indicated in "Guidelines for Writing an IANA Considerations Section in RFCs" [3], IANA acts as a central authority for assignment of numbers for new DHCP options. The new procedure outlined in this document will provide guidance to IANA in the assignment of new option numbers.

Overview and background

The procedure described in this document modifies and clarifies the procedure for defining new options in RFC 2131 [2]. The primary modification is to the time at which a new DHCP option is assigned an option number. In the procedure described in this document, the option number is not assigned until after the option has been accepted as an Internet Standard and the specification is about to be published as an RFC.

DISCUSSION:

> Since the publication of RFC 2132, the option number space for publically defined DHCP options (1-127) has almost been exhausted. Many of the defined option numbers have not been followed up with Internet Drafts submitted to the DHC WG. There has been a lack of specific guidance to IANA from the DHC WG as to the assignment of DHCP option numbers
>
> The procedure as specified in RFC 2132 does not clearly state that new options are to be reviewed individually for acceptance as Internet Standards and that the specifications for newly accepted Standard options are to be published as separate RFCs. RFC 2132 also does not require that new options are to be submitted to the DHC WG through the WG chair, and that the author of the option specification is responsible for bringing new options to the attention of the WG chair for WG review. Finally, RFC 2132 does not make clear that newly defined options are not to be incorporated into products, included in other specifications or otherwise used until accepted as Internet Standards.

The Internet Standard DHCP options assigned as of March 1997 are defined in RFC 2132. In the future, new DHCP options will be

reviewed individually by the DHC WG and the IETF for acceptance as Internet Standards and the specifications will be published as separate RFCs. Groups of related options may be combined into a single specification and reviewed as a set by the DHC WG. Prior to acceptance as an Internet Standard, it is not appropriate to incorporate new options into products, include the specification in other documents or otherwise make use of the new options.

DISCUSSION:

While the last statement is strong, if it is not included the IETF may be presented with a "fait accompli" in which a new option is defined and shipped prior to review by the WG.

The DHCP option number space (1-254) is split into two parts. The site-specific options (128-254) are defined as "Private Use" and require no review by the DHC WG. The public options (1-127) are defined as "Specification Required" and new options must be reviewed prior to assignment of an option number by IANA. The details of the review process are given in the following section of this document.

Procedure

The author of a new DHCP option will follow these steps to obtain acceptance of the option as a part of the DHCP Internet Standard:

1. The author devises the new option.
2. The author documents the new option, leaving the option code as "To Be Determined" (TBD), as an Internet Draft.

   DISCUSSION:
   The requirement that the new option be documented as an Internet Draft is a matter of expediency. In theory, the new option could be documented on the back of an envelope for submission; as a practical matter, the specification will eventually become an Internet Draft as part of the review process.

3. The author submits the Internet Draft for review through the IETF standards process as defined in "Internet Official Protocol Standards" (STD 1) [4] and "Internet Standards Process" (BCP 9) [6].

   DISCUSSION:
   Note that simply publishing the new option as an Internet Draft does not automatically enter the option into the Standards Track. The author of the new option must explicitly forward a

request for action on the new option to the DHC WG or the IESG.

4. The new option progresses through the IETF standards process. The specification of the new option is reviewed by the DHC WG (if it exists) or by the IETF. The option is considered for acceptance as an Internet Standard. If the option is accepted as a Standard, the specification for the option is published as a separate RFC.

5. At the time of acceptance as an Internet Standard and publication as an RFC, IANA assigns a DHCP option number to the new option.

References

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

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

[3] Narten, T. and H. T. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", (work in progress), May 1998.

[4] Postel, J. (Ed.), "Internet Official Protocol Standards", STD 1, May 1998.

[5] Droms, R. and K. Fong, "NetWare/IP Domain Name and Information", RFC 2142, November 1997.

[6] Bradner, S., "The Internet Standards Process -- Revision 3", BCP 9, October, 1996.

Security Considerations

Information that creates or updates an option number assignment needs to be authenticated.

An analysis of security issues is required for all newly defined DHCP options. The description of security issues in the specification of new options must be as accurate as possible. The specification for a new option may reference the "Security Considerations" section in the DHCP specification [1]; e.g. (from "NetWare/IP Domain Name and Information" [5]):

> DHCP currently provides no authentication or security mechanisms. Potential exposures to attack are discussed in section 7 of the DHCP protocol specification [RFC 2131].

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Expiration

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