

DHC  
Internet-Draft  
Intended status: Standards Track  
Expires: September 16, 2007

S. Zeng  
B. Volz  
K. Kinnear  
Cisco Systems, Inc.  
J. Brzozowski  
Comcast Cable  
March 15, 2007

DHCPv6 Relay Agent Echo Request Option  
draft-ietf-dhc-dhcpv6-ero-01

Status of this Memo

By submitting this Internet-Draft, each author represents that any applicable patent or other IPR claims of which he or she is aware have been or will be disclosed, and any of which he or she becomes aware will be disclosed, in accordance with [Section 6 of BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF), its areas, and its working groups. Note that other groups may also distribute working documents as Internet-Drafts.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

The list of current Internet-Drafts can be accessed at <http://www.ietf.org/ietf/lid-abstracts.txt>.

The list of Internet-Draft Shadow Directories can be accessed at <http://www.ietf.org/shadow.html>.

This Internet-Draft will expire on September 16, 2007.

Copyright Notice

Copyright (C) The IETF Trust (2007).

Abstract

This memo defines a Relay Agent Echo Request option for the Dynamic Host Configuration Protocol for IPv6 (DHCPv6). The option allows a DHCPv6 relay agent to request a list of relay agent options that the server echoes back to the relay agent.

Internet-Draft

Relay Agent ERO

March 2007

Table of Contents

- [1. Introduction . . . . .](#) [3](#)
- [2. Requirements Terminology . . . . .](#) [3](#)
- [3. The Relay Agent Echo Request Option . . . . .](#) [3](#)
- [4. DHCPv6 Relay Agent Behavior . . . . .](#) [4](#)
- [5. DHCPv6 Server Behavior . . . . .](#) [4](#)
- [6. Security Considerations . . . . .](#) [5](#)
- [7. IANA Considerations . . . . .](#) [5](#)
- [8. Acknowledgements . . . . .](#) [5](#)
- [9. References . . . . .](#) [5](#)
  - [9.1. Normative References . . . . .](#) [5](#)
  - [9.2. Informative References . . . . .](#) [5](#)
- [Authors' Addresses . . . . .](#) [6](#)
- [Intellectual Property and Copyright Statements . . . . .](#) [7](#)

## 1. Introduction

DHCPv6 [2] provides a framework for configuring IPv6 clients with addresses and other network parameters. It includes a relay agent capability. A relay agent is an intermediary node that delivers DHCP messages between clients and servers. The relay agent and the server exchange information using options in relay agent messages. The relay agent may add relay agent options to the client DHCP message before forwarding it.

The information that relay agents supply can be used in the server's decision making about the addresses, delegated prefixes, and configuration parameters that the client is to receive. Likewise, the relay may need some of the information to efficiently return replies to clients.

In DHCPv4, the server generally echoes the relay agent option back verbatim to the relay agent in server-to-client replies [3]. However, DHCPv6 [2] does not require the server to do so. As a matter of fact, for certain relay agent options, the server is required to echo back the options only if it recognizes them (e.g., [4], [5]). This could be problematic, as the relay agent may need to use some relay options even if the server does not recognize them.

This memo defines a relay agent echo request option that the relay agent uses to explicitly request a list of options that the server echoes back to the relay agent.

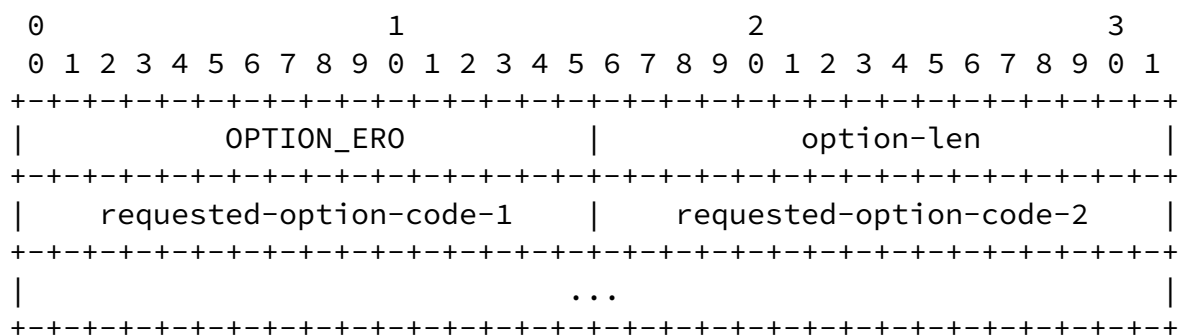
## 2. Requirements Terminology

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 [1].

### 3. The Relay Agent Echo Request Option

The relay agent adds options in the Relay Forward message that the server uses to guide its decision making with regard to address assignment, prefix delegation, and configuration parameters. The relay agent also knows which of these options that it will need to efficiently return replies to the client. It uses the relay agent Echo Request option to inform the server the list of relay agent options that the server must echo back.

The format of the DHCPv6 Relay Agent Echo Request option is shown below:



option-code           OPTION\_ERO (TBD).  
option-len            2 \* number of requested options.  
requested-option-code-n The option code for an option requested by the relay agent.

### 4. DHCPv6 Relay Agent Behavior

A relay agent MAY include an Echo Request option in a Relay Forward message to inform the server about options the relay agent wants the server to echo back to the relay agent. If the relay agent takes

different actions based on whether an option is echoed back or not, then the relay agent SHOULD NOT include such an option in the Echo Request option. Note that the relay uses the OPTION\_ORO [2] to request the server to return options (e.g., [6]) other than relay agent options in the Relay Forward message.

## 5. DHCPv6 Server Behavior

When a server creates a Relay-Reply, it SHOULD perform ERO processing after processing the ORO and other options processing. For each option in the ERO:

- a. If the option is already in the Relay-Reply, the server MUST ignore that option and continue to process any remaining options in the ERO.
- b. If the option was not in the received Relay-Forward, the server MUST ignore that option and continue to process any remaining options in the ERO.

Zeng, et al.

Expires September 16, 2007

[Page 4]

---

Internet-Draft

Relay Agent ERO

March 2007

- c. Otherwise, the server MUST copy the option, verbatim, from the received Relay-Forward to the Relay-Reply, even if the server does not otherwise recognize that option.

## 6. Security Considerations

As the Echo Request option is only exchanged between relay agents and DHCPv6 servers, [2] [section 21.1](#), provides details on securing DHCPv6 messages sent between servers and relay agents. And, [2] [section 23](#), provides general DHCPv6 security considerations.

## 7. IANA Considerations

IANA is requested to assign a DHCPv6 option code for the OPTION\_ERO (Relay Agent Echo Request) Option.

## 8. Acknowledgements

Thanks to Ralph Droms, Josh Littlefield, Richard Johnson, and Hemant

Singh for their consistent input, ideas and review during the production of this document.

## 9. References

### 9.1. Normative References

- [1] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [2] Droms, R., Bound, J., Volz, B., Lemon, T., Perkins, C., and M. Carney, "Dynamic Host Configuration Protocol for IPv6 (DHCPv6)", [RFC 3315](#), July 2003.
- [3] Patrick, M., "DHCP Relay Agent Information Option", [RFC 3046](#), January 2001.

### 9.2. Informative References

- [4] Volz, B., "Dynamic Host Configuration Protocol for IPv6 (DHCPv6) Relay Agent Subscriber-ID Option", [RFC 4580](#), June 2006.
- [5] Volz, B., "Dynamic Host Configuration Protocol for IPv6 (DHCPv6) Relay Agent Remote-ID Option", [RFC 4649](#), August 2006.

Zeng, et al.

Expires September 16, 2007

[Page 5]

---

Internet-Draft

Relay Agent ERO

March 2007

- [6] Droms, R., "DHCPv6 Relay Agent Assignment Notification (RAAN) Option", [draft-ietf-dhc-dhcpv6-agentopt-delegate-02](#) (work in progress), November 2006.

### Authors' Addresses

Shengyou Zeng  
Cisco Systems, Inc.  
1414 Massachusetts Ave.  
Boxborough, MA 01719  
USA

Phone: +1 978 936 0000  
Email: [szeng@cisco.com](mailto:szeng@cisco.com)

Bernard Volz  
Cisco Systems, Inc.  
1414 Massachusetts Ave.  
Boxborough, MA 01719  
USA

Phone: +1 978 936 0000  
Email: volz@cisco.com

Kim Kinnear  
Cisco Systems, Inc.  
1414 Massachusetts Ave.  
Boxborough, MA 01719  
USA

Phone: +1 978 936 0000  
Email: kkinnear@cisco.com

John Jason Brzozowski  
Comcast Cable  
1800 Bishops Gate Boulevard  
Mt. Laurel, NJ 08054  
USA

Phone: +1 856 324 2671  
Email: john\_brzozowski@cable.comcast.com

Zeng, et al.

Expires September 16, 2007

[Page 6]

---

Internet-Draft

Relay Agent ERO

March 2007

Full Copyright Statement

Copyright (C) The IETF Trust (2007).

This document is subject to the rights, licenses and restrictions contained in [BCP 78](#), and except as set forth therein, the authors retain all their rights.

This document and the information contained herein are provided on an "AS IS" basis and THE CONTRIBUTOR, THE ORGANIZATION HE/SHE REPRESENTS OR IS SPONSORED BY (IF ANY), THE INTERNET SOCIETY, THE IETF TRUST AND THE INTERNET ENGINEERING TASK FORCE DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

## Intellectual Property

The IETF takes no position regarding the validity or scope of any Intellectual Property Rights or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; nor does it represent that it has made any independent effort to identify any such rights. Information on the procedures with respect to rights in RFC documents can be found in [BCP 78](#) and [BCP 79](#).

Copies of IPR disclosures made to the IETF Secretariat and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementers or users of this specification can be obtained from the IETF on-line IPR repository at <http://www.ietf.org/ipr>.

The IETF invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights that may cover technology that may be required to implement this standard. Please address the information to the IETF at [ietf-ipr@ietf.org](mailto:ietf-ipr@ietf.org).

## Acknowledgment

Funding for the RFC Editor function is provided by the IETF Administrative Support Activity (IASA).