

DHC
Internet-Draft
Intended status: Standards Track
Expires: December 22, 2011

B. Joshi
R. Rao
Infosys Ltd.
M. Stapp
Cisco Systems, Inc.
June 20, 2011

The DHCPv4 Relay Agent Identifier Suboption
draft-ietf-dhc-relay-id-suboption-09.txt

Abstract

This draft defines a new Relay Agent Identifier suboption for the Dynamic Host Configuration Protocol's (DHCP) Relay Agent Information option. The suboption carries a value that uniquely identifies the relay agent device within the administrative domain. The value is normally administratively-configured in the relay agent. The suboption allows a DHCP relay agent to include the identifier in the DHCP messages it sends.

Status of this Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <http://datatracker.ietf.org/drafts/current/>.

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."

This Internet-Draft will expire on December 22, 2011.

Copyright Notice

Copyright (c) 2011 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<http://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect

to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

1.	Introduction	3
2.	Terminology	3
3.	Example Use-Cases	3
3.1.	Bulk Leasequery	3
3.2.	Industrial Ethernet	3
4.	Suboption Format	4
5.	Identifier Stability	4
6.	Security Considerations	5
7.	IANA Considerations	5
8.	Acknowledgments	6
9.	References	6
9.1.	Normative References	6
9.2.	Informative References	6
	Authors' Addresses	6

1. Introduction

The Dynamic Host Configuration Protocol for IPv4 (DHCPv4) [[RFC2131](#)] provides IP addresses and configuration information for IPv4 clients. It includes a relay agent capability, in which network elements receive broadcast messages from clients and forward them to DHCP servers as unicast messages. In many network environments, relay agents add information to the DHCP messages before forwarding them, using the Relay Agent Information option [[RFC3046](#)]. Servers that recognize the relay agent information option echo it back in their replies.

This specification introduces a Relay Agent Identifier suboption for the Relay Agent Information option. The Relay-Id suboption carries a sequence of octets that is intended to uniquely identify the relay agent within the administrative domain.

2. 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 [[RFC2119](#)].

DHCPv4 terminology is defined in [[RFC2131](#)], and the DHCPv4 Relay Agent Information Option in [[RFC3046](#)].

3. Example Use-Cases

3.1. Bulk Leasequery

There has been quite a bit of recent interest in extending the DHCP Leasequery protocol [[RFC4388](#)] to accommodate some additional situations. There is a recent draft ([\[I-D.ietf-dhc-dhcpv4-bulk-leasequery\]](#)) proposing a variety of

enhancements to the existing Leasequery protocol. The draft describes a use-case where a relay agent queries DHCP servers using the Relay Identifier to retrieve all the leases allocated through the relay agent.

3.2. Industrial Ethernet

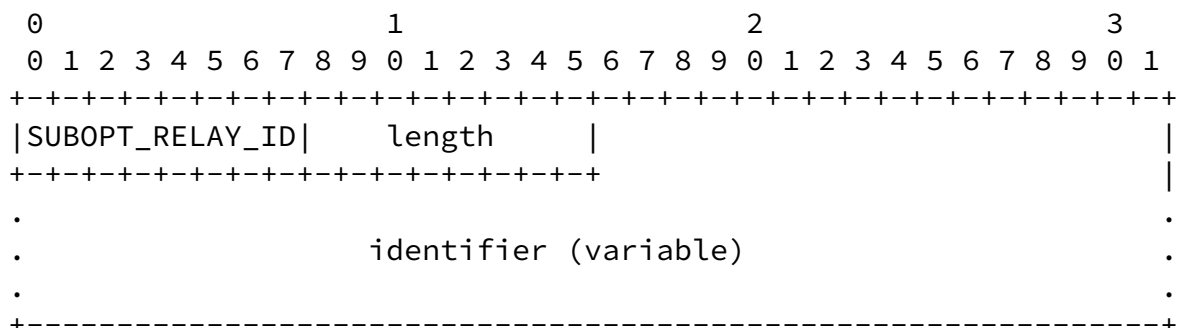
DHCP typically identifies clients based on information in their DHCP messages - such as the Client-Identifier option, or the value of the chaddr field. In some networks, however, the location of a client - its point of attachment to the network - is a more useful identifier. In factory-floor networks (commonly called 'Industrial' networks),

for example, the role a device plays is often fixed and based on its location. Using manual address configuration is possible (and is common) but it would be beneficial if DHCP configuration could be applied to these networks.

One way to provide connection-based identifiers for industrial networks is to have the network elements acting as DHCP relay agents supply information that a DHCP server could use as a client identifier. A straightforward way to form identifier information is to combine something that is unique within the scope of the network element, such as a port/slot value, with something that uniquely identifies that network element, such as a Relay Agent Identifier.

4. Suboption Format

Format of the Relay Agent Identifier suboption:



Where:

SUBOPT_RELAY_ID [TBA]

length the number of octets in the suboption (excluding the suboption ID and length fields); the minimum length is one.

identifier the identifying data.

5. Identifier Stability

If the relay identifier is to be meaningful it has to be stable. A relay agent SHOULD use a single identifier value consistently. The identifier used by a relay device SHOULD be committed to stable storage, unless the relay device can regenerate the value upon reboot.

Joshi, et al.

Expires December 22, 2011

[Page 4]

Internet-Draft

The Relay Agent Id Suboption

June 2011

Administrators MUST make sure that the relay-id configured in a relay agent is unique within their administrative domain. To aid this, relay agents SHOULD make their relay identifiers visible to their administrators via their user interface, through a log entry, or through some other mechanism.

Implementors should note that the identifier needs to be present in all DHCP message types where its value is being used by the DHCP server. The relay agent may not be able to add the Relay Agent Information option to all messages - such as RENEW messages sent as IP unicasts. In some deployments that might mean that the server has to be willing to continue to associate the relay identifier it has last seen with a lease that is being RENEWed. Other deployments may prefer to use the Server Identifier Override suboption [[RFC5107](#)] to permit the relay device to insert the Relay Agent Information option into all relayed messages.

Handling situations where a relay agent device is replaced is another aspect of "stability". One of the use-cases for the relay identifier is to permit a server to associate clients' lease bindings with the relay device connected to the clients. If the relay device is replaced, because it has failed or been upgraded, it may be desirable

for the new device to continue to provide the same relay identifier as the old device. Implementors should be aware of this possibility, and consider making it possible for administrators to configure the identifier.

6. Security Considerations

Security issues with the Relay Agent Information option and its use by servers in address assignment are discussed in [[RFC3046](#)] and [[RFC4030](#)]. Relay agents who send the Relay Agent Identifier suboption SHOULD use the Relay Agent Authentication suboption [[RFC4030](#)] to provide integrity protection and to avoid duplication of relay identifiers by malicious entities.

7. IANA Considerations

We request that IANA assign a new suboption code from the registry of DHCP Agent Sub-Option Codes maintained in <http://www.iana.org/assignments/bootp-dhcp-parameters>.

Relay Agent Identifier Suboption [TBA]

Joshi, et al.

Expires December 22, 2011

[Page 5]

Internet-Draft

The Relay Agent Id Suboption

June 2011

8. Acknowledgments

Thanks to Bernie Volz, David W. Hankins, Pavan Kurapati and Ted Lemon for providing valuable suggestions.

9. References

9.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.

[RFC2131] Droms, R., "Dynamic Host Configuration Protocol", [RFC 2131](#), March 1997.

- [RFC3046] Patrick, M., "DHCP Relay Agent Information Option", [RFC 3046](#), January 2001.
- [RFC4030] Stapp, M. and T. Lemon, "The Authentication Suboption for the Dynamic Host Configuration Protocol (DHCP) Relay Agent Option", [RFC 4030](#), March 2005.

9.2. Informative References

- [RFC4388] Woundy, R. and K. Kinnear, "Dynamic Host Configuration Protocol (DHCP) Leasequery", [RFC 4388](#), February 2006.
- [RFC5107] Johnson, R., Kumarasamy, J., Kinnear, K., and M. Stapp, "DHCP Server Identifier Override Suboption", [RFC 5107](#), February 2008.
- [I-D.ietf-dhc-dhcpv4-bulk-leasequery]
Kinnear, K., Volz, B., Russell, N., Stapp, M., Rao, D.,
Joshi, B., and P. Kurapati, "Bulk DHCPv4 Lease Query",
[draft-ietf-dhc-dhcpv4-bulk-leasequery-04](#) (work in
progress), May 2011.

Authors' Addresses

Bharat Joshi
Infosys Ltd.
44 Electronics City, Hosur Road
Bangalore 560 100
India

Email: bharat_joshi@infosys.com
URI: <http://www.infosys.com/>

D.T.V Ramakrishna Rao
Infosys Ltd.
44 Electronics City, Hosur Road
Bangalore 560 100
India

Email: ramakrishnadt@infosys.com
URI: <http://www.infosys.com/>

Mark Stapp
Cisco Systems, Inc.
1414 Massachusetts Ave.
Boxborough, MA 01719
USA

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