

INTERNET-DRAFT
Dynamic Host Control Working Group
Expires April 2002

D. Jones
YAS Corporation
R. Woundy
Cisco
October 2001

Addition of Device Class to Agent Options
<[draft-ietf-dhc-agentoptions-device-class-03.txt](#)>

Status of this Memo

This document is an Internet-Draft and is in full conformance with all provisions of [Section 10 of RFC2026](#).

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>.

Copyright Notice

Copyright (C) The Internet Society (2001). All Rights Reserved.

Abstract

This document proposes a new sub-option to the DHCP Relay Information Agent Option. This new sub-option is for use with DOCSIS cable modems and describes a "device class" to which the cable modem belongs. The cable modem signals its device class information to the Relay Agent using DOCSIS signalling, and the Relay Agent forwards the device class information to the DHCP Server which can then make a policy decision based on it.

Internet Draft Addition of Device Class to Agent Options October 2001

1. Introduction

DHCP Agent Options is described in [1] and includes several Relay Agent Information sub-options. This I-D proposes an additional sub-option for use with DOCSIS cable modems. This sub-option is added by DHCP relay agents which terminate cable modems. The sub-option encodes an identifier of the device class to which the cable modem belongs. It is intended for use by DHCP servers to make policy decisions based on the device class of the host.

The motivation for using a Relay Agent Information sub-option, rather than a new or existing DHCP option, is the introduction of CPE Controlled Cable Modems (CCCMs) [2]. In an implementation of a CCCM, the modem firmware controls DOCSIS signalling, but the attached computer (CPE) manages other protocol activities -- particularly DHCP client message handling. The assumption of this document is that it is better to trust the operation of the CCCM firmware, than to trust the operation of CCCM software running on the attached computer (e.g. a standard PC).

The key words "MUST", "MUST NOT", "SHOULD", "SHOULD NOT" and "MAY" in this document are to be interpreted as described in [RFC 2119](#) [4].

2. Device Class Sub-option

The DOCSIS RFI specification [3] specifies the Device Class encoding within the payload of the Device Class Identification Request (DCI-REQ) message. The relay agent MUST pass the Device Class value unchanged to the DHCP server. Possible uses of this field include:

- o host endpoint information
- o host hardware capabilities
- o host software capabilities
- o host options information

DOCSIS defines the Device Class to be a 32-bit field where individual bits represent individual attributes of the CM. Bit #0 is the least significant bit of the field. Bits are set to 1 to select the attributes defined below.

bit #0 - CPE Controlled Cable Modem (CCCM)

bits #1-31 - Reserved and set to zero

The device class sub-option is coded as follows:

SubOpt	Len	Device Class			
TBD	4	d1	d2	d3	d4

The DHCP server needs to understand the meaning of this sub-option in order to offer different policy options in its reply to the host. DHCP servers MAY use the device class for IP and other parameter assignment policies for cable modems.

3. Security Considerations

Operation of the DHCP Relay Agent Information Option relies on an implied trusted relationship between the DHCP relay agent and the DHCP server.

Operation of the device class sub-option also relies on an implied trusted relationship between the DHCP client (i.e. the cable modem) and the DHCP relay agent, through DOCSIS signalling. According to DOCSIS specifications, the cable modem firmware always controls DOCSIS signalling, but cannot control DHCP client message handling (e.g. CCCMs). This document assumes that the cable modem firmware is trustworthy for DOCSIS signalling information.

This document introduces a new identifier, the device class sub-option, that is provided by the relay agent device and is assumed to be trusted. Cryptographic or other techniques to authenticate the device class are beyond the scope of this document.

4. IANA Considerations

IANA has assigned a value of TBD from the DHCP Relay Agent Sub-

options space [[RFC 3046](#)] for the device class sub-option defined in [section 2](#).

[5](#). References

- [1] Patrick, M., "DHCP Relay Agent Information Option", [RFC 3046](#), January 2001.
- [2] "Data-Over-Cable Service Interface Specifications: Cable Modem to Customer Premise Equipment Interface Specification SP-CMCI-I06-

Doug Jones, Rich Woundy Expires April 2002

[Page 3]

Internet Draft Addition of Device Class to Agent Options October 2001

010829", DOCSIS, August 2001, <http://www.cablemodem.com>.

- [3] "Data-Over-Cable Service Interface Specifications: Cable Modem Radio Frequency Interface Specification SP-RFIV1.1-I07-010829", DOCSIS, August 2001, <http://www.cablemodem.com>.
- [4] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.

[6](#). Authors' Addresses

Doug Jones
YAS Corporation
300 Brickstone Square
Andover, MA 01810
Phone: (303) 661-3823
EMail: doug@yas.com

Rich Woundy
Cisco Systems
250 Apollo Drive
Chelmsford, MA 01824
Phone: (978) 244-8000
EMail: rwoundy@cisco.com

7. Full Copyright Statement

Copyright (C) The Internet Society (2001). All Rights Reserved.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this paragraph are included on all such copies and derivative works. However, this document itself may not be modified in any way, such as by removing the copyright notice or references to the Internet Society or other Internet organizations, except as needed for the purpose of developing Internet standards in which case the procedures for copyrights defined in the Internet Standards process must be followed, or as required to translate it into languages other than English.

The limited permissions granted above are perpetual and will not be revoked by the Internet Society or its successors or assigns.

Doug Jones, Rich Woundy

Expires April 2002

[Page 4]

Internet Draft Addition of Device Class to Agent Options

October 2001

This document and the information contained herein is provided on an "AS IS" basis and THE INTERNET SOCIETY AND THE INTERNET ENGINEERING TASK FORCE DISCLAIMS 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.

Doug Jones, Rich Woundy Expires April 2002

[Page 5]