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Richard Johnson  
Ralph Droms  
Mark Stapp  
Theyn Palaniappan  
Cisco Systems, Inc.

DHCP Subscriber ID Suboption for the DHCP Relay Agent Option  
<[draft-johnson-dhc-subscriber-id-00.txt](#)>

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Abstract

This memo defines a new DHCP Relay Suboption for passing an arbitrary number of bytes defining what will be called the "Subscriber ID". This value is simply defined as an array of bytes and can be interpreted in any form by the DHCP server. Its intended purpose is to give additional information which the DHCP server can use in address allocation.

## **1.0 Introduction**

The Remote-ID sub-option of the relay agent information option (also called option-82) are calculated based on network resources like ip-address of the NSAP, atm VP, atm VC. As a result, when moving a link to a different port, a different value is calculated. This holds true for every subscriber that is connected with the particular link and the links are connected to different service providers. When the subscriber moves, each Service Provider has to be informed of the change and all the Service Providers have to change their DHCP [2] settings for the affected customers at the same time.

When the service delivered has not changed, every move involves administrative changes in Service Providers environment causing delay in the customer service.

Therefore an additional Relay Suboption for the DHCP Relay Agent option is being introduced, to add a configurable hexadecimal value to provide this information. This unique id will enable the Service Provider to identify a subscriber and to assign/activate subscriber specific actions, e.g. assignment of host IP address, subnet mask, DNS, trigger accounting, etc. This specific field is de-coupled from the NAS-IP, since the users could be able to move from NAS termination points. Thus when a subscriber moves from one NAS to another, this would not result in a configuration change on the side of the DHCP server of the Service Provider.

This memo describes a new DHCP Relay suboption which would carry a "Subscriber ID" value. The value is simply an array of bytes which can be interpreted by the DHCP server in whatever manner wanted. The value can be a character string giving the name of the subscriber, four bytes interpreted as a big endian unsigned integer giving the number of the subscriber, a string of hex digits giving the subscriber ID, or whatever is needed. The precise definition of the bytes is left to the implementation and field use.

## **1.1 Conventions**

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 [RFC-2119](#) [1].



## 1.2 Terminology

VC	Virtual Channel. Logical circuit created to ensure reliable communication between two network devices. A virtual circuit is defined by a VPI/VCI pair, and can be either permanent (PVC) or switched (SVC). Virtual circuits are used in Frame Relay and X.25. In ATM, a virtual circuit is called a virtual channel.
VP	Virtual Path. Logical grouping of virtual circuits that connect two sites.
NAS	Network Access Server. Platform (or collection of platforms) that interfaces between the packet world (for example, the Internet) and the circuit world (for example, the PSTN).
NSAP	Network Service Access Point. Network addresses, as specified by ISO. An NSAP is the point at which OSI network service is made available to a transport layer (Layer 4) entity.
PSTN	Public Switched Telephone Network. General term referring to the variety of telephone networks and services in place worldwide.

## 2.0 DHCP Relay Information Suboption Definition

The Subscriber ID is a DHCP Relay Information Suboption. The exact option code value is TBD. The suboption takes the same form as other Relay Information Suboptions:

```

      Code   Len   Subscribe ID octets
+-----+-----+-----+-----+-----+---
| TBD |  n  |  v1  |  v2  |  v3  | ...
+-----+-----+-----+-----+-----+---
```

The option minimum length (n) is 1.

This option provides the DHCP server additional information upon which to make a determination of address to be assigned. The DHCP server, if it is configured to support this option, should use this information in addition to other options included in the DHCPDISCOVER packet in order to assign an IP address for the DHCP client.

As per [3], the contents of the entire Relay Agent Option SHALL be included in all replies by DHCP servers understanding the Relay Agent Option. There is no special additional processing for this suboption.



### **3.0 Security Considerations**

Message authentication in DHCP for intradomain use where the out-of-band exchange of a shared secret is feasible is defined in [RFC 3118](#) [5]. Potential exposures to attack are discussed in [section 7](#) of the DHCP protocol specification in [RFC 2131](#) [2].

The DHCP Relay Agent option depends on a trusted relationship between the DHCP relay agent and the server, as described in section 5 of [RFC 3046](#). While the introduction of fraudulent relay-agent options can be prevented by a perimeter defense that blocks these options unless the relay agent is trusted, a deeper defense using the authentication option for relay agent options [4] SHOULD be deployed as well.

### **4.0 IANA Considerations**

IANA has assigned a value of TBD for the DHCP Relay Information Suboption code described in this document.

### **5.0 Acknowledgements**

This document is the result of work done within Cisco Systems. Thanks to Ralph Droms, Mark Stapp and Theyn Palaniappan for their work on this option definition and the other related work for which this is necessary. Thanks also to Andy Sudduth for his review comments.

### **References**

- [1] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [RFC 2119](#), [BCP 14](#), March 1997.
- [2] Droms, R. "Dynamic Host Configuration Protocol", [RFC 2131](#), March 1997.
- [3] Patrick, M., "DHCP Relay Agent Information Option", [RFC 3046](#), January 2001
- [4] Stapp, M. "The Authentication Suboption for the DHCP Relay Agent Option", [draft-ietf-dhc-auth-suboption-00.txt](#), June 23, 2002
- [5] Droms, R. "Authentication for DHCP Messages", [RFC 3118](#), June 2001



Author Information:

Richard Johnson  
Theyn Palaniappan  
Cisco Systems  
170 W. Tasman Dr.  
San Jose, CA 95134

Phone: (408) 526-4000

EMail: athenmoz@cisco.com  
raj@cisco.com

Ralph Droms  
Mark Stapp  
Cisco Systems  
250 Apollo Drive  
Chelmsford, MA 01824

Phone: (978) 244-8000

EMail: rdroms@cisco.com  
mjs@cisco.com

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