

DHCP Options for Service Location Protocol
draft-ietf-dhc-slp-04.txt

Status of This Memo

This document is a submission by the Dynamic Host Configuration Working Group of the Internet Engineering Task Force (IETF). Comments should be submitted to the dhcp-v4@bucknell.edu mailing list.

Distribution of this memo is unlimited.

This document is an Internet-Draft. 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.''

To view the entire list of current Internet-Drafts, please check the ``1id-abstracts.txt'' listing contained in the Internet-Drafts Shadow Directories on ftp.is.co.za (Africa), ftp.nordu.net (Northern Europe), ftp.nis.garr.it (Southern Europe), munnari.oz.au (Pacific Rim), ftp.ietf.org (US East Coast), or ftp.isi.edu (US West Coast).

Abstract

The Dynamic Host Configuration Protocol provides a framework for passing configuration information to hosts on a TCP/IP network. Entities using the Service Location Protocol need to find out the address of Directory Agents in order to transact messages. Another option provides an assignment of scope for configuration of SLP User and Service Agents.

Internet Draft DHCP Options for Service Location 09 October 1998

1. Introduction

The Dynamic Host Configuration Protocol [3] provides a framework for passing configuration information to hosts on a TCP/IP network. Entities using the Service Location Protocol, Version 2 [4] need to obtain the address of Directory Agents and Scope configuration. The Service Location Protocol (SLP) provides a default configuration for Scopes and Directory Agents may be discovered using multicast or broadcast. It is useful in a larger deployment to be able to configure SLP Agents using DHCP, so as to centralize the administration and to deploy SLP in networks where multicast routing is not available.

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].

2. Introduction

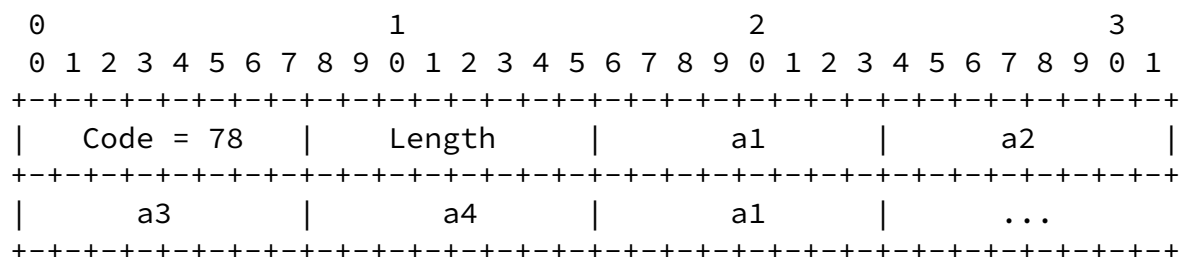
The DHCP options described below are used to configure Agents using the Service Location Protocol, Version 2.

The SLP Directory Agent option is used to configure User Agents and Service Agents with the location of Directory Agents in the network. These Directory Agents are assumed to support all of the scopes supplied by the SLP Scope Option.

If the SLP Scope Option is absent, the scope string "default" is used instead. If there is a scope string configured using local configuration on the host that is used if no SLP Scope Option has been sent. DHCP configuration takes precedence over the local configuration of SLP scope lists. SLP Agents (be they Directory Agents, User Agents or Service Agents) which use the SLP Directory Agent Option MUST be configured with a scope.

3. SLP Directory Agent Option

This option specifies the location of one or more SLP Directory Agents.



The SLP Directory Agent Option specifies a list of IP addresses for Directory Agents. Directory Agents MUST be listed in order of preference, if there is an order of preference.

The address of the Directory Agent is given in network byte order. The length of the option MUST always be divisible by 4 and has a minimum length of 4.

The Directory Agents listed in this option MUST be configured with the a non-empty subset of the scope list that the Agent receiving the Directory Agent Option is configured with. See the notes below.

SLPv2 Service Agents which are configured using the SLP Directory Agent Option MUST send a SrvRqst to the DAs in the DHCP OFFER. This SLPv2 SrvRqst sets the Scope List to the value configured by the SLP Scope Option if one was sent or "DEFAULT" otherwise. The service type for the request is "service:directory-agent" and the predicate is omitted. The reply will include the DA's attributes, scope list.

The SA MUST register all service with the DA which it advertises which are advertised in one or more of the scopes in the DA's scope list. The SA MUST register no faster than the "min-lifetime" and not slower than the "max-lifetime" attributes of the DA. These attributes are obtained in the DAAdvert solicited by the SA after it receives the SLP Directory Agent Option DHCP OFFER.

SLPv2 User Agents which are configured using the SLP Directory Agent Option MUST send their requests to the DAs listed, using the entire list of scopes they are configured with.

4. SLP Service Scope Option

The scope list is a comma delimited list which indicates the scopes that a SLP Agent is configured to use.

```

0                               1                               2                               3
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|  Code = 79  |   Length   | <Typed Scope List> String ...
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
```

The Length indicates the number of bytes which follow. Since the Scope-List String is encoded using UTF8 characters, it may be the case that the Length is not the same as the number of characters in the Scope-List String.

The minimum length is 0, and the maximum length is 256. This imposes a limit on the size of the Scope-List String which can be delivered

which does not exist in SLP. DHCP administrators will therefore have to be careful to not configure very long scope names or very long lists of scopes for any Agents in their network.

The Typed Scope List includes a list of scopes for the SLP Agent. The list may be a list of scopes, such as "north,south,east,west".

The list may also include items which are 'typed scopes.' These items indicate that SAs MUST advertise particular service types in a scope other than that given in the scope list. UAs MUST issue requests for services of these types in the scopes listed, or some subset of the scopes. DAs ignore typed scopes in the SLP Service Scope Option.

For example, "default,(service:printer:lpr=Math Department)" indicates that SAs advertise all services in scope default except for lpr printers, which are advertised in the Math Department scope. UAs will request all services using the "default" scope, except lpr printers, which are advertised in the "Math Department" scope. DAs will simply be configured in the scope "default" since they ignore the typed scope argument.

The grammar for the typed scope list is:

```

ts-list      = ts-item / ts-item `,' ts-list
ts-item     = scope-list / `(' srv-type `=' scope-list `)'
srv-type    = ALPHA *srv-safe [ `.' 1*srv-safe ]
srv-safe    = ALPHA / DIGIT / `+' / `-'
scope-list  = scope-item / scope-item "," scope-list
scope-item  = 1*safe-scope
safe-scope  = ; Any character except rsvd-scope.
             ; Reserved characters must be escaped.
rsvd-scope  = `(' / `)' / `,' / `\' / `!' / `<' / `=' / `>' / `~'
             CTL / `;' / `*' / `+'
escaped     = `\$backslash$' HEXDIGIT HEXDIGIT

```

This grammar follows ABNF rules [2]. Reserved characters used in scope names must be escaped. Reserved characters in <srv-type> names are not allowed. Note that <srv-type> names may include a Naming Authority extension.

[4.1.](#) Zero Length Scope-List String Configuration

A SLP Service Scope Option which indicates a Length of 0 configures the SLP Agent to use "User Selectable Scopes".

If this is done, the SLP Agent MUST NOT be configured using the SLP Directory Agent Option.

Instead, the SLP Agent will discover scopes using Directory Agent discovery (or Service Agent Discovery) as defined in [4].

The SLP Agent will then use the aggregation of all scopes it discovers on the network to configure its own scope list.

Note that this configuration is tantamount to removing all centralized control of the configuration hosts on the network. This makes it possible for every User Agent to see every service. This may not be desirable as users may not be able to or desire to decide which services are appropriate for them.

[5.](#) Security Considerations

If a malicious host is able to insert fraudulent information in DHCPPOFFER packets sent to a prospective SLP Agent then the SLP Agent will be unable to obtain service, or may unwittingly be directed to use the incorrect services.

Many opportunities for denial of service exist. A service agent could find that it might rely on fraudulent or otherwise malicious directory agents to advertise its services. DHCPPOFFERS could prevent the regular SLP framework from functioning by directing clients to not use multicast, to use nonexistent directory agents and so on.

These difficulties are inherited from the much larger and more serious problem, viz. securing or authenticating any information whatsoever from a DHCP server (or client!) is not possible in common DHCP deployments.

References

- [1] S. Bradner. Key Words for Use in RFCs to Indicate Requirement Levels. [RFC 2119](#), March 1997.
- [2] D. Crocker and P. Overell. Augmented BNF for Syntax Specifications: ABNF. [RFC 2234](#), November 1997.

- [3] R. Droms. Dynamic Host Configuration Protocol. [RFC 2131](#), March 1997.
- [4] E. Guttman, C. Perkins, J. Veizades, and M. Day. Service Location Protocol version 2. [draft-ietf-svrloc-protocol-v2-04.txt](#), March 1998. (work in progress).

Author's Address

Questions about this memo can be directed to:

Charles E. Perkins
Technology Development Group
Mail Stop MPK15-214
Sun Microsystems, Inc.
15 Network Circle
Menlo Park, CA 94025
phone: +1 650-786-6464
fax: +1 650-786-6445
email: Charles.Perkins@Sun.Com
Web: <http://www.svrloc.org/~charliep>

Erik Guttman
Technology Development Group
Mail Stop UFRA02
Sun Microsystems, Inc.
Bahnstr. 2
74915 Waibstadt, Germany
phone: +49 7263 911 701
or: +1 650 786 5992
Erik.Guttman@Sun.Com