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DHCP Options for Service Location Protocol
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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. In certain other instances they may need to discover the correct scope to be used in conjunction with the service attributes which are exchanged using the Service Location Protocol.

1. Introduction

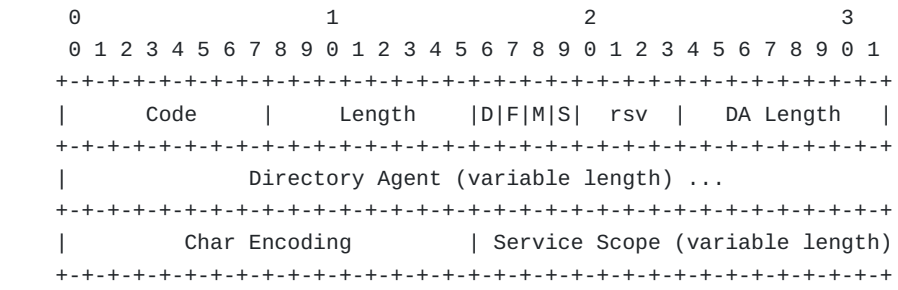
The Dynamic Host Configuration Protocol [2] provides a framework for passing configuration information to hosts on a TCP/IP network. Entities using the Service Location Protocol [3] need to find out the address of Directory Agents in order to transact messages. In certain other instances they may need to discover the correct scope to be used in conjunction with the service attributes which are exchanged using the Service Location Protocol.

The scope MAY be denoted in any standardized character set. Values for character encoding can be found in IANA's database
http://www.isi.edu/in-notes/iana/assignments/character-sets
and have the values referred by the MIBEnum value. Note that in some character sets, each character may require two or more octets of data for its representation.

Note that each option listed below MAY be included multiple times in the same DHCPOFFER or DHCPREQUEST. If so, then the options SHOULD be included in order of decreasing preference.

2. Directory Agent Option

This option requests or specifies a Directory Agent (DA), along with zero or more scopes supported by that DA.



Code 78

Length (variable) The length of the option.

D If the 'D' bit is set, the Directory Agent field is present.

F If the 'F' bit is set, the Directory Agent is indicated by including its variable length host name or Fully Qualified Domain Name (FQDN) instead of its 4 octet IP address.

M If the 'M' bit is set, the Directory Agent address is the only one that may be used, and multicast methods for discovering Directory Agents MUST NOT be used.

S If the 'S' bit is set, the scope is present, encoded in the indicated character set.

rsv reserved; ignored upon reception; MUST be sent as zero

DA Length The length (in octets) of the Directory Agent field.

Directory Agent
The Fully Qualified Domain Name (FQDN), host name, or IP address of the Directory Agent.

Char Encoding
The standardized encoding for the characters denoting the scope.

scope The characters denoting the scope.

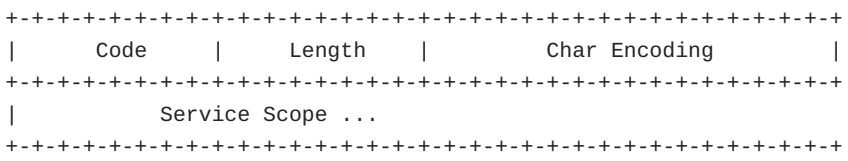
In order to simplify administration of the configuration of Directory Agents for Service Location Protocol clients, the Directory Agent can be indicated by presenting its FQDN or host name instead of its IP address. This allows renumbering to proceed more smoothly [1]. When the FQDN or host name is used, the server sets the 'F' bit. The host name can be distinguished from the FQDN by the presence of a '.' character. In any case, the DA length field is set to be the length of the Directory Agent field. When the 'F' bit is not set, the DA Length MUST be 4.

Note that more than one Directory Agent option may be present in a DHCP message. Each such option may have the same or different scope. The client may request any Directory Agent with a particular scope, by including the Directory Agent option in a DHCP Request message with no Directory Agent address included (the 'D' bit set to zero), and the characters denoting the scope. The length of the scope is only indicated implicitly by the overall length of the option.

3. Service Scope Option

This option indicates a scope that should be used by a Service Agent (SA) [3], when responding to Service Request messages as specified by the Service Location Protocol.

```
 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 (variable) The length of the option.

Char Encoding
The standardized encoding for the characters denoting the scope.

scope the characters denoting the scope.

Note that more than one Service Scope option may be present in a DHCP message. The length of the scope is only indicated implicitly by the overall length of the option.

4. Security Considerations

If a malicious host is able to insert fraudulent information in DHCPOFFER packets sent to a prospective client of the Service Location Protocol, then the client will be unable to obtain service, and vulnerable to disclosing information to unauthorized service agents. Likewise, a service agent would find that it might rely on fraudulent or otherwise malicious directory agents to advertise its services. Many opportunities for denial of service exist.

This difficulty is 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.

5. Acknowledgements

Thanks to Erik Guttman for his helpful suggestions in the creation of this draft.

References

[1] B. Carpenter and Y. Rekhter. Renumbering needs work. RFC 1900, February 1996.

[2] Ralph Droms. Dynamic Host Configuration Protocol. RFC 1541, October 1993.

[3] J. Veizades, E. Guttman, C. Perkins, and S. Kaplan. Service Location Protocol, April 1997. draft-ietf-svrloc-protocol-17.txt (work in progress).

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