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Attribute List Extension for the Service Location Protocol

Status of this Memo

This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol. Distribution of this memo is unlimited.

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Abstract

The Service Location Protocol, Version 2 (SLPv2) provides a mechanism for a service to be discovered in a single exchange of messages. This exchange of messages does not presently include any of the service's attributes. This document specifies a SLPv2 extension which allows a User Agent (UA) to request a service's attributes be included as an extension to Service Reply messages. This will eliminate the need for multiple round trip messages for a UA to acquire all service information.

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1. Introduction

The Service Location Protocol, Version 2 [3] provides a mechanism for a service to be discovered in a single exchange of messages. The UA sends a Service Request message and the DA or SA (as appropriate) sends a Service Reply message.

It is clearly advantageous to be able to obtain all service information at once. The Service Location Protocol separates messages which obtain different classes of information. This extension enables an optimization to the basic exchange of messages, which currently does not include service attributes in Service Reply messages.

This document specifies a SLPv2 extension which allows a UA to request that a service's attributes be included in Service Reply messages. This will eliminate the need for multiple round trip messages for a UA to acquire all service information.

If the DA or SA does not support the Attrlist extension, it will simply return a Service Reply (without the extension). Support of this extension is OPTIONAL. Existing implementations will ignore the Attrlist extension since it has been assigned a identifying number from the range which indicates that the receiver MUST ignore the extension if it is not recognized. See RFC 2608 [3].

If the UA receives a Service Reply message without an Attrlist Extension it must assume the SA or DA does not support the extension. In this case, the UA must send an Attribute Request for each URL it obtains in the Service Reply message in order to obtain the attributes for these services.

1.1. Terminology

User Agent (UA)
: A process working on the user's behalf to establish contact with some service. The UA retrieves service information from the Service Agents or Directory Agents.

Service Agent (SA)
: A process working on the behalf of one or more services to advertise the services.

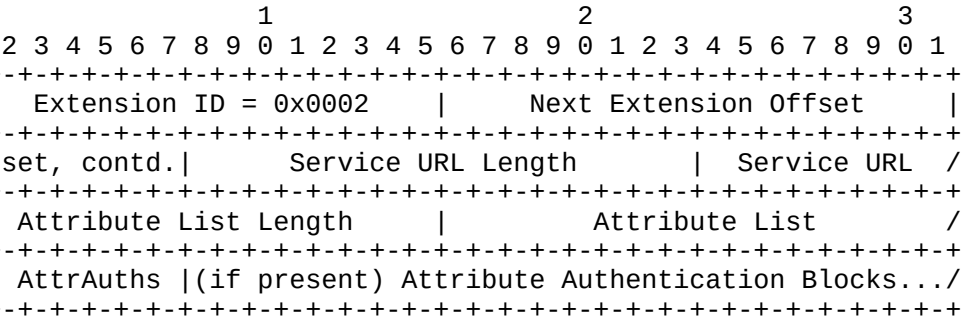
Directory Agent (DA)
: A process which collects service advertisements. There can only be one DA present per given host.

1.2. Notation 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 [2].

2. Attribute List Extension

The format of the Attribute List Extension is as follows:



The Extension ID is 0x0002.

The Next Extension Offset value indicates the position of the next extension as offset from the beginning of the SLP message. If the next extension offset value is 0, there are no more extensions in the message.

A UA sends an Attribute List Extension with a Service Request. The Service URL Length and Attribute List Length are set to 0 and the Service URL and Attribute List fields omitted in this case. The UA thereby requests that the SA or DA include an Attribute List Extension in its Service Reply by including such an ’empty’ Attribute List Extension in the Service Request.

A SA or DA which supports the Attribute List Extension returns one Attribute List extension for every URL Entry in the Service Reply message. The order of the Attribute List Extensions SHOULD be the same as the URL Entries in the Service Reply.

The Service URL [4] identifies the corresponding URL Entry.

The Attribute List field is the entire attribute list of the service. These attributes must be in the same language as that indicated in the Service Request message.

If the Service Request message includes a SLP SPI string, then the attribute list extension MUST include an authentication block. If the SA or DA does not support or is unable to return an authentication block for the SLP SPI included in the Service Request, then the SA or DA MUST NOT return an Attribute List Extension. The format of the authentication block(s) is exactly the same as would be included in an Attribute Reply or Service Registration message.

3. IANA Considerations

IANA has assigned an extension ID number of 0x0002 for the Attribute List Extension.

4. Internationalization Considerations

The Service Location Protocol, version 2 has mechanisms for allowing attributes to be transmitted with explicit language tagging [6]. The same mechanisms are used for this protocol extension.

5. Security Considerations

The Service Location Protocol, version 2 has mechanisms for allowing authenticators to be returned with attribute lists so that UAs are able to verify a digital signature over the attributes they obtain. This same mechanism is used for this protocol extension. The Attribute List Extension used in conjunction with SLPv2 is no less secure than SLPv2 without the extension.

6. Acknowledgments

The author benefited from preliminary conversations about this extension with Charlie Perkins.

References

[1] Bradner, S., "The Internet Standards Process -- Revision 3", BCP 9, RFC 2026, October 1996.

[2] Bradner, S., "Key Words for Use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

[3] Guttman, E., Perkins, C., Veizades, J. and M. Day, "Service Location Protocol, Version 2", RFC 2608, June 1999.

[4] Guttman, E., Perkins, C. and J. Kempf, "Service Templates and service: Schemes", RFC 2609, June 1999.

[5] Narten, T and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", BCP 26, RFC 2434, October 1998.

[6] Alvestrand, H., "Tags for the Identification of Languages", BCP 47, RFC 3066, January 2001.

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