

Network Working Group
Internet-Draft
Updates: [2251](#) (if approved)
Expires: December 30, 2004

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July 2004

Subordinate Subtree Search Scope for LDAP
draft-sermersheim-ldap-subordinate-scope-00.txt

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Abstract

The Lightweight Directory Application Protocol (LDAP) specification supports three scope values for the search operation -- namely: baseObject, singleLevel, and wholeSubtree. This document introduces a subordinateSubtree scope which constrains the search scope to all subordinates of the named base object.

Discussion Forum

Technical discussion of this document will take place on the IETF LDAP Extensions mailing list <ldapext@ietf.org>. Please send editorial comments directly to the author.

1. Overview

There are a number of reasons which have surfaced for introducing a Lightweight Directory Application Protocol (LDAP) [[RFC3377](#)] SearchRequest.scope [[RFC2251](#)] which constrains the search scope to all subordinates of the named base object, and does not include the base object (as wholeSubtree does). These reasons range from the obvious utility of allowing an LDAP client application the ability to exclude the base object from a wholeSubtree search scope, to distributed operation applications which require this scope for progressing search sub-operations resulting from an nssr DSE type reference.

To meet these needs, the subordinateSubtree scope value is introduced.

The subordinateSubtrees cope is applied to the SearchRequest.scope field, the <scope> type and alternately the <extension> type of the LDAP URL [[RFC2255](#)] and may be applied to other specifications which include an LDAP search scope. A mechanism is also given which allows LDAP Directory Server Agents (DSA)s to advertise support of this search scope.

2. Application to SearchRequest.scope

A new item is added to this ENUMERATED type. The identifier is subordinateSubtree and the number is 4.

A DSA which receives and supports the subordinateSubtree SearchRequest.scope constrains the search scope to all subordinate objects.

A DSA which receives but does not support the subordinateSubtree SearchRequest.scope returns a protocolError resultCode in the SearchResultDone.

3. LDAP URL applications

The LDAP URL [[RFC2255](#)] specification allows the conveyance of a search scope. This section introduces two ways in which the subordinateScope search scope may be conveyed in an LDAP URL. One way is by allowing a new "subord" scope in the <scope> part. Another way is through the introduction of an LDAP URL extension. The LDAP URL extension method is preferred for its criticality semantics.

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3.1 Application to LDAP URL <scope>

A new <scope> value of "subord" is added. Using the <scope> type from LDAP URL [[RFC2255](#)], the ABNF is as follows:

```
scope /= "subord"
```

Implementations processing but which do not understand or support the "subord" <scope> of an LDAP URL raise an appropriate error.

3.2 Application to LDAP URL <extension>

An LDAP URL <extension> mechanism is introduced here. The <extype> is IANA-ASSIGNED-OID.1 or the descriptor 'subordScope', and the exvalue is omitted. The extension may be marked as either critical or non-critical.

If supported, the subordScope extension overrides any value set in the <scope> field.

4. DSA Advertisement of support

A DSA may advertise its support of the subordinateSubtree item in the SearchRequest.scope by inclusion of IANA-ASSIGNED-OID.2 in the 'supportedFeatures' attribute of the root DSE.

5. Security Considerations

This specification introduces no security concerns above any associated with the existing wholeSubtree search scope value.

As with the wholeSubtree search scope, this scope specifies that a search be applied to an entire subtree hierarchy. Implementations should be aware of the relative cost of using or allowing this scope.

6 Normative References

- [RFC2251] Wahl, M., Howes, T. and S. Kille, "Lightweight Directory Access Protocol (v3)", [RFC 2251](#), December 1997.
- [RFC2255] Howes, T. and M. Smith, "The LDAP URL Format", [RFC 2255](#), December 1997.
- [RFC3377] Hodges, J. and R. Morgan, "Lightweight Directory Access Protocol (v3): Technical Specification", [RFC 3377](#), September 2002.
- [RFC3383] Zeilenga, K., "Internet Assigned Numbers Authority (IANA)

Considerations for the Lightweight Directory Access
Protocol (LDAP)", [BCP 64](#), [RFC 3383](#), September 2002.

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[Appendix A.](#) **IANA Considerations**

Registration of the following values is requested [[RFC3383](#)].

[A.1](#) **LDAP Object Identifier Registrations**

It is requested that IANA register upon Standards Action an LDAP Object Identifier in identifying the protocol elements defined in this technical specification. The following registration template is provided:

Subject: Request for LDAP OID Registration
Person & email address to contact for further information:
 Jim Sermersheim
 jimse@novell.com
Specification: RFCXXXX
Author/Change Controller: IESG
Comments:
 2 delegations will be made under the assigned OID:
 IANA-ASSIGNED-OID.1 subordScope LDAP URL extension
 IANA-ASSIGNED-OID.2 subordinateScope Supported Feature

[A.2](#) **LDAP Protocol Mechanism Registrations**

It is requested that IANA register upon Standards Action the LDAP protocol mechanism described in this document. The following registration templates are given:

Subject: Request for LDAP Protocol Mechanism Registration
Object Identifier: IANA-ASSIGNED-OID.1
Description: subordScope LDAP URL extension
Person & email address to contact for further information:

Jim Sermersheim
jimse@novell.com
Usage: Extension
Specification: RFCXXXX
Author/Change Controller: IESG
Comments: none

[A.3](#) LDAP Descriptor Registrations

It is requested that IANA register upon Standards Action the LDAP descriptors described in this document. The following registration templates are given:

Subject: Request for LDAP Descriptor Registration
Descriptor (short name): subordScope
Object Identifier: IANA-ASSIGNED-OID.1
Person & email address to contact for further information:
Jim Sermersheim
jimse@novell.com
Usage: URL Extension
Specification: RFCXXXX
Author/Change Controller: IESG
Comments: none

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Acknowledgment

Funding for the RFC Editor function is currently provided by the Internet Society.

