



**eldap**

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**October 19, 2021**

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# 1 Eldap User's Guide

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The **Eldap** application provides an api for accessing an LDAP server.

The original code was developed by Torbjörn Törnkvist.

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## 2 Reference Manual

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# eldap

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Erlang module

This module provides a client api to the Lightweight Directory Access Protocol (LDAP).

References:

- RFC 4510 - RFC 4519
- RFC 2830

The above publications can be found at **IETF**.

## DATA TYPES

Type definitions that are used more than once in this module:

`handle()`

Connection handle

`attribute() =`

`{Type = string(), Values=[string()]}`

`modify_op()`

See *mod\_add/2*, *mod\_delete/2*, *mod\_replace/2*

`scope()`

See *baseObject/0*, *singleLevel/0*, *wholeSubtree/0*

`dereference()`

See *neverDerefAliases/0*, *derefInSearching/0*, *derefFindingBaseObj/0*, *derefAlways/0*

`filter()`

See *present/1*, *substrings/2*, *equalityMatch/2*, *greaterOrEqual/2*, *lessOrEqual/2*, *approxMatch/2*, *extensibleMatch/2*, *and/1*, *or/1*, *not/1*

`return_value() =`

`ok | {ok, {referral, referrals()}} | {error, Error}`

`referrals() =`

`[Address = string()]` The contents of Address is server dependent.

## Exports

`open([Host]) -> {ok, Handle} | {error, Reason}`

Types:

**Handle = handle()**

Setup a connection to an LDAP server, the HOST's are tried in order.

`open([Host], [Option]) -> {ok, Handle} | {error, Reason}`

Types:

**Handle = handle()**

```
Option = {port, integer()} | {log, function()} | {timeout, integer()} |
         {ssl, boolean()} | {sslopts, list()} | {tcptopts, list()}
```

Setup a connection to an LDAP server, the HOST's are tried in order.

The log function takes three arguments, `fun(Level, FormatString, [FormatArg])` end.

Timeout set the maximum time in milliseconds that each server request may take.

All TCP socket options are accepted except `active`, `binary`, `deliver`, `list`, `mode` and `packet`

```
close(Handle) -> ok
```

Types:

```
Handle = handle()
```

Shutdown the connection after sending an `unbindRequest` to the server. If the connection is `tls` the connection will be closed with `ssl:close/1`, otherwise with `gen_tcp:close/1`.

```
start_tls(Handle, Options) -> return_value()
```

Same as `start_tls(Handle, Options, infinity)`

```
start_tls(Handle, Options, Timeout) -> return_value()
```

Types:

```
Handle = handle()
```

```
Options = ssl:ssl_options()
```

```
Timeout = infinity | positive_integer()
```

Upgrade the connection associated with `Handle` to a `tls` connection if possible.

The upgrade is done in two phases: first the server is asked for permission to upgrade. Second, if the request is acknowledged, the upgrade to `tls` is performed.

Error responses from phase one will not affect the current encryption state of the connection. Those responses are:

```
tls_already_started
```

The connection is already encrypted. The connection is not affected.

```
{response, ResponseFromServer}
```

The upgrade was refused by the LDAP server. The `ResponseFromServer` is an atom delivered by the LDAP server explained in section 2.3 of rfc 2830. The connection is not affected, so it is still un-encrypted.

Errors in the second phase will however end the connection:

```
Error
```

Any error responded from `ssl:connect/3`

The `Timeout` parameter is for the actual `tls` upgrade (phase 2) while the timeout in `eldap:open/2` is used for the initial negotiation about upgrade (phase 1).

```
simple_bind(Handle, Dn, Password) -> return_value()
```

Types:

```
Handle = handle()
```

```
Dn = string()
```

```
Password = string()
```

Authenticate the connection using simple authentication.

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`add(Handle, Dn, [Attribute]) -> return_value()`

Types:

```
Handle = handle()
Dn = string()
Attribute = attribute()
```

Add an entry. The entry must not exist.

```
add(Handle,
    "cn=Bill Valentine, ou=people, o=Example Org, dc=example, dc=com",
    [{"objectclass", ["person"]},
     {"cn", ["Bill Valentine"]},
     {"sn", ["Valentine"]},
     {"telephoneNumber", ["545 555 00"]}])
```

`delete(Handle, Dn) -> return_value()`

Types:

```
Dn = string()
```

Delete an entry.

```
delete(Handle, "cn=Bill Valentine, ou=people, o=Example Org, dc=example, dc=com")
```

`mod_add(Type, [Value]) -> modify_op()`

Types:

```
Type = string()
Value = string()
```

Create an add modification operation.

`mod_delete(Type, [Value]) -> modify_op()`

Types:

```
Type = string()
Value = string()
```

Create a delete modification operation.

`mod_replace(Type, [Value]) -> modify_op()`

Types:

```
Type = string()
Value = string()
```

Create a replace modification operation.

`modify(Handle, Dn, [ModifyOp]) -> return_value()`

Types:

```
Dn = string()
ModifyOp = modify_op()
```

Modify an entry.

```
modify(Handle, "cn=Bill Valentine, ou=people, o=Example Org, dc=example, dc=com",
  [ldap:mod_replace("telephoneNumber", ["555 555 00"]),
  ldap:mod_add("description", ["LDAP Hacker"]) ])
```

`modify_password(Handle, Dn, NewPasswd) -> return_value() | {ok, GenPasswd}`

Types:

```
Dn = string()
NewPasswd = string()
```

Modify the password of a user. See *modify\_password/4*.

`modify_password(Handle, Dn, NewPasswd, OldPasswd) -> return_value() | {ok, GenPasswd}`

Types:

```
Dn = string()
NewPasswd = string()
OldPasswd = string()
GenPasswd = string()
```

Modify the password of a user.

- `Dn`. The user to modify. Should be "" if the modify request is for the user of the LDAP session.
- `NewPasswd`. The new password to set. Should be "" if the server is to generate the password. In this case, the result will be `{ok, GenPasswd}`.
- `OldPasswd`. Sometimes required by server policy for a user to change their password. If not required, use *modify\_password/3*.

`modify_dn(Handle, Dn, NewRDN, DeleteOldRDN, NewSupDN) -> return_value()`

Types:

```
Dn = string()
NewRDN = string()
DeleteOldRDN = boolean()
NewSupDN = string()
```

Modify the DN of an entry. `DeleteOldRDN` indicates whether the current RDN should be removed from the attribute list after the after operation. `NewSupDN` is the new parent that the RDN shall be moved to. If the old parent should remain as parent, `NewSupDN` shall be "".

```
modify_dn(Handle, "cn=Bill Valentine, ou=people, o=Example Org, dc=example, dc=com ",
  "cn=Bill Jr Valentine", true, "")
```

`search(Handle, SearchOptions) -> {ok, #ldap_search_result{}} | {ok, {referral, referrals()}} | {error, Reason}`

Types:

```
SearchOptions = #ldap_search{} | [SearchOption]
SearchOption = {base, string()} | {filter, filter()} | {scope, scope()}
| {attributes, [string()]} | {deref, dereference()} | | {types_only,
boolean()} | {timeout, integer()}
```



Search the directory with the supplied the SearchOptions. The base and filter options must be supplied. Default values: scope is `wholeSubtree()`, deref is `derefAlways()`, `types_only` is `false` and `timeout` is 0 (meaning infinity).

```
Filter = eldap:substrings("cn", [{any,"V"}]),
search(Handle, [{base, "dc=example, dc=com"}, {filter, Filter}, {attributes, ["cn"]}]),
```

The `timeout` option in the SearchOptions is for the ldap server, while the `timeout` in `eldap:open/2` is used for each individual request in the search operation.

`baseObject()` -> `scope()`

Search baseobject only.

`singleLevel()` -> `scope()`

Search the specified level only, i.e. do not recurse.

`wholeSubtree()` -> `scope()`

Search the entire subtree.

`neverDerefAliases()` -> `dereference()`

Never dereference aliases, treat aliases as entries.

`derefAlways()` -> `dereference()`

Always dereference aliases.

`derefInSearching()` -> `dereference()`

Dereference aliases only when searching.

`derefFindingBaseObj()` -> `dereference()`

Dereference aliases only in finding the base.

`present(Type)` -> `filter()`

Types:

```
Type = string()
```

Create a filter which filters on attribute type presence.

`substrings(Type, [SubString])` -> `filter()`

Types:

```
Type = string()
```

```
SubString = {StringPart, string() }
```

```
StringPart = initial | any | final
```

Create a filter which filters on substrings.

`equalityMatch(Type, Value)` -> `filter()`

Types:

```
Type = string()
```

**Value = string()**

Create a equality filter.

**greaterOrEqual(Type, Value) -> filter()**

Types:

**Type = string()**

**Value = string()**

Create a greater or equal filter.

**lessOrEqual(Type, Value) -> filter()**

Types:

**Type = string()**

**Value = string()**

Create a less or equal filter.

**approxMatch(Type, Value) -> filter()**

Types:

**Type = string()**

**Value = string()**

Create a approximation match filter.

**extensibleMatch(MatchValue, OptionalAttrs) -> filter()**

Types:

**MatchValue = string()**

**OptionalAttrs = [Attr]**

**Attr = {matchingRule,string()} | {type,string()} |**

**{dnAttributes,boolean() }**

Creates an extensible match filter. For example,

```
ldap:extensibleMatch("Bar", [{type,"sn"}, {matchingRule,"caseExactMatch"}])
```

creates a filter which performs a `caseExactMatch` on the attribute `sn` and matches with the value "Bar". The default value of `dnAttributes` is `false`.

**'and'([Filter]) -> filter()**

Types:

**Filter = filter()**

Creates a filter where all `Filter` must be true.

**'or'([Filter]) -> filter()**

Types:

**Filter = filter()**

Create a filter where at least one of the `Filter` must be true.

'not'(Filter) -> filter()

Types:

**Filter = filter()**

Negate a filter.