

## Configuring User Authentication Using LDAP

Date published: 2020-10-30

Date modified: 2024-05-30



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# Contents

<b>Enabling LDAP authentication.....</b>	<b>4</b>
<b>Using LDAPS.....</b>	<b>7</b>
<b>Complex matching logic for group queries using LDAPGroupQuery().....</b>	<b>8</b>

## Enabling LDAP authentication

Cloudera Data Visualization by default uses local account (basic) authentication where users must be created manually through the UI using the default admin user. This authentication method can be supplemented to also enable LDAP authentication so that corporate credentials can be used to login to ML Data Viz instead.

### Before you begin

Prepare your installation by collecting the values of the following LDAP configuration parameters:

Configuration Item	Description
AUTH_LDAP_SERVER_URI	LDAP server URI for example, ldap://ldap.example.com.
AUTH_LDAP_BIND_DN	Username DN (Distinguished Name) of the bind user account. This needs to be the full DN for the Bind User, not just the bind username.
AUTH_LDAP_BIND_PASSWORD	Password of the bind user account.
AUTH_LDAP_USER_SEARCH	The DN of the subtree that contains users. Often an Organizational Unit (OU).
AUTH_LDAP_GROUP_SEARCH	The DN of the subtree that contains groups. Often an OU.
AUTH_LDAP_REQUIRE_GROUP	The DN of a group to which users must belong to have login privileges.
LDAP Group for Admins	The DN of the Admins group. Users in this group have admin access.

It is possible to configure LDAP for non-public applications, but it may lead to a double-login scenario, so you might want to opt for public applications that can be accessed by unauthenticated users. For more information on public applications in CML, see [Securing Applications](#).

For more information on how you can configure Cloudera Data Visualization security and authentication settings, see [Security and Authentication](#)

### Procedure

1. Click the Gear icon on the main navigation bar to open the Administration menu and select Site Settings.
2. Select Advanced Settings from the left navigation.

Here you have the following two options:

#### Option

**Option 1:** Bind User authentication with LDAP offers more flexibility for users and group lookups, while **Configuring Direct Bind (Option 2)** currently lacks support for group lookups. Group lookups allow you to map users in ML Data Viz to Roles automatically. This means that when these users log in, they are granted access to specific dashboards and datasets based on their assigned roles. Note that additional steps in the ML Data Viz Roles setup section are required to achieve this functionality.

#### LDAP authentication with a bind user

Implementing Bind User authentication requires you to request and maintain a Bind User. While this setup may take a bit more time initially, it offers enhanced flexibility.

With Bind User authentication, you may need to periodically update the Bind User password since it is likely to expire over time.

This is a code snippet illustrating a simple search/bind approach that completes an anonymous bind, searches the OU for an object that matches the UID of the user's name, and attempts to bind using the DN obtained from the search and the user's password. The authentication succeeds only if the search returns exactly one result. If anonymous search is not possible, set the AUTH\_LDAP\_BI

**Option**

ND\_DN to the DN of an authorized user, and AUTH\_LDAP\_BIND\_PASSWORD to the password for authentication.

```
import ldap
from django_auth_ldap.config import LDAPSearch

AUTH_LDAP_BIND_DN = ""
AUTH_LDAP_BIND_PASSWORD = ""
AUTH_LDAP_USER_SEARCH = LDAPSearch("ou=users,dc=example,dc=com",
    ldap.SCOPE_SUBTREE, "(uid=%(user)s)")
```

**Option  
2: Direct  
Bind  
Approach**

Direct Bind with LDAP explicitly passes the user's credentials to authenticate with the LDAP server. The advantage of Direct Bind is that it does not require you to request and manage a Bind User account. However, one limitation of Direct Bind is that it currently does not support group lookups for logged-in users, so you cannot configure automatic User-Role mapping using this method.

This is a code snippet illustrating a simple direct bind approach:

```
AUTH_LDAP_BIND_AS_AUTHENTICATING_USER = True
AUTH_LDAP_USER_DN_TEMPLATE = "uid=%(user)s,ou=users,dc=example,dc=com"
```

3. If you are using a Bind User to authenticate, you can store the LDAP\_DN and LDAP\_PASSWORD environment variables in the Project Settings section under the Engine tab for easier management.

**Example**

Example configuration for Bind User with LDAP\_DN and LDAP\_PASSWORD project environmental variables in Cloudera Internal EDH:

```
import ldap
from django_auth_ldap.config import LDAPSearch, NestedActiveDirectoryGroupType, ActiveDirectoryGroupType

# Connection options
#AUTH_LDAP_START_TLS = True # Optional for LDAPS but normally not needed
AUTH_LDAP_SERVER_URI = "ldap://ad-readonly.sjc.cloudera.com:389"

# Bind user setup
AUTH_LDAP_BIND_DN = os.getenv('LDAP_DN')
AUTH_LDAP_BIND_PASSWORD = os.getenv('LDAP_PASSWORD')

# Required Group for all users to access application
#AUTH_LDAP_REQUIRE_GROUP = "CN=All_Staff_WW,OU=Groups,DC=cloudera,DC=local"

# Group for specifying super admins
#AUTH_LDAP_USER_FLAGS_BY_GROUP = {
#    "is_superuser": ["CN=cloud_spend_analysts,OU=Groups,DC=cloudera,DC=local"]
#}

# User and group search objects and types
AUTH_LDAP_USER_SEARCH = LDAPSearch("CN=users,DC=cloudera,DC=local",
    ldap.SCOPE_SUBTREE, "(sAMAccountName=%(user)s)")
```

```

AUTH_LDAP_GROUP_SEARCH = LDAPSearch("OU=Groups,DC=cloudera,DC=local",
    ldap.SCOPE_SUBTREE,"(objectClass=group)")

# Map LDAP attributes to Django
AUTH_LDAP_USER_ATTR_MAP = {
    "first_name": "givenName",
    "last_name": "sn",
    "email": "mail"
}

# Cache settings
# Note this may cause a delay when groups are changed in LDAP
AUTH_LDAP_CACHE_GROUPS = True
AUTH_LDAP_GROUP_CACHE_TIMEOUT = 3600*4 # Cache for 4 hours
REMOTE_GROUP_CACHE_TIMEOUT = 3600*4

# Group Settings
AUTH_LDAP_GROUP_TYPE = ActiveDirectoryGroupType()
AUTH_LDAP_FIND_GROUP_PERMS = True
AUTH_LDAP_MIRROR_GROUPS = False

# Some optional TLS/SSL options when enabling LDAPS

#AUTH_LDAP_GLOBAL_OPTIONS = {
#ldap.OPT_X_TLS_CACERTFILE: "/etc/bla.cert", # Point to CA Cert file
#ldap.OPT_X_TLS_REQUIRE_CERT: ldap.OPT_X_TLS_NEVER, # Disable cert checking
#}

AUTH_LDAP_CONNECTION_OPTIONS = {
    ldap.OPT_DEBUG_LEVEL: 1, # 0 to 255
    ldap.OPT_REFERRALS: 0, # For Active Directory
}

# If there is no Bind User you can use these settings, but it's not the preferred way
#AUTH_LDAP_BIND_AS_AUTHENTICATING_USER = True
#AUTH_LDAP_USER_DN_TEMPLATE = "cloudera\%(user)s"

# The backend needed to make this work.
AUTHENTICATION_BACKENDS = (
    'arcweb.arcwebbase.basebackends.VizBaseLDAPBackend',
    'django.contrib.auth.backends.ModelBackend'
)

```

### Example

Example configuration for Direct Bind in Cloudera Internal EDH:

```

import ldap
from django_auth_ldap.config import LDAPSearch, NestedActiveDirectoryGroupType, ActiveDirectoryGroupType

# Connection options
#AUTH_LDAP_START_TLS = True # Optional for LDAPS but normally not needed
AUTH_LDAP_SERVER_URI = "ldap://ad-readonly.sjc.cloudera.com:389"

# Bind user setup
#AUTH_LDAP_BIND_DN = os.getenv('LDAP_DN')
#AUTH_LDAP_BIND_PASSWORD = os.getenv('LDAP_PASSWORD')

# Required Group for all users to access application

```

```
#AUTH_LDAP_REQUIRE_GROUP = "CN=All_Staff_WW,OU=Groups,DC=cloudera,DC=local"

# Group for specifying super admins
#AUTH_LDAP_USER_FLAGS_BY_GROUP = {
#   "is_superuser": ["CN=cloud_spend_analysts,OU=Groups,DC=cloudera,DC=local"]
#}

# User and group search objects and types
#AUTH_LDAP_USER_SEARCH = LDAPSearch("CN=users,DC=cloudera,DC=local",
ldap.SCOPE_SUBTREE,"(sAMAccountName=%(user)s)")

AUTH_LDAP_GROUP_SEARCH = LDAPSearch("OU=Groups,DC=cloudera,DC=local", ldap
.SCOPE_SUBTREE,"(objectClass=group)")

# Map LDAP attributes to Django
AUTH_LDAP_USER_ATTR_MAP = {
"first_name": "givenName",
"last_name": "sn",
"email": "mail"
}

# Cache settings
# Note this may cause a delay when groups are changed in LDAP
AUTH_LDAP_CACHE_GROUPS = True
AUTH_LDAP_GROUP_CACHE_TIMEOUT = 3600*4 # Cache for 4 hours
REMOTE_GROUP_CACHE_TIMEOUT = 3600*4

# Group Settings
AUTH_LDAP_GROUP_TYPE = ActiveDirectoryGroupType()
AUTH_LDAP_FIND_GROUP_PERMS = True
AUTH_LDAP_MIRROR_GROUPS = False

# Some optional TLS/SSL options when enabling LDAPS

#AUTH_LDAP_GLOBAL_OPTIONS = {
#ldap.OPT_X_TLS_CACERTFILE: "/etc/bla.cert", # Point to CA Cert file
#ldap.OPT_X_TLS_REQUIRE_CERT: ldap.OPT_X_TLS_NEVER, # Disable cert checking
#}

AUTH_LDAP_CONNECTION_OPTIONS = {
ldap.OPT_DEBUG_LEVEL: 1, # 0 to 255
ldap.OPT_REFERRALS: 0, # For Active Directory
}

# If there is no Bind User you can use these settings, but it's not the p
referred way

AUTH_LDAP_BIND_AS_AUTHENTICATING_USER = True
AUTH_LDAP_USER_DN_TEMPLATE = "cloudera\%(user)s"

# The backend needed to make this work.
AUTHENTICATION_BACKENDS = (
'arcweb.arcwebbase.basebackends.VizBaseLDAPBackend',
'django.contrib.auth.backends.ModelBackend'
)
```

## Using LDAPS

### About this task

If you plan to configure authentication using LDAPS instead of LDAP there are 3 extra steps in the configuration that need to be considered.

### Procedure

1. Update the LDAP Server URI and port to use LDAPS protocol.

```
.cloudera.com:636" AUTH_LDAP_SERVER_URI = "ldaps://ad-readonly.sjc
```

2. Uncomment this section and add a valid path to a SSL certificate file.

```
Point to CA Cert file AUTH_LDAP_GLOBAL_OPTIONS = {
    ldap.OPT_X_TLS_CACERTFILE: "/path/to/bla.cert", #
    ldap.OPT_X_TLS_REQUIRE_CERT: ldap.OPT_X_TLS_NEVER,
    # Disable cert checking
}
```

3. [Optional] Enable TLS if not already running



**Note:** Test setting up LDAPS with Steps 1 and 2 and restart ML Data Viz without this turned on first to avoid unnecessary debugging.

## Complex matching logic for group queries using LDAPGroupQuery()

You can use LDAP to restrict user access to Data Visualization resources by using multiple require groups.

### About this task



**Note:** This feature depends on the LDAPGroupQuery() class, which is available starting with the django\_auth\_ldap release 1.2.12.

### Procedure

To use a complex group query, implement the LDAP authorization requirement group, as we demonstrate in the following code snippet:

```
AUTH_LDAP_REQUIRE_GROUP = (
    LDAPGroupQuery("cn=enabled,ou=groups,dc=example,dc=com") |
    LDAPGroupQuery("cn=also_enabled,ou=groups,dc=example,dc=com")) &
~LDAPGroupQuery("cn=disabled,ou=groups,dc=example,dc=com")
)
```

### What to do next

For more information, see the [django-auth-ldap reference documentation](#).