```
-(kali⊛kali)-[/home/kali]
 -PS> sudo apt-get install slapd ldap-utils
[sudo] password for kali:
Reading package lists... Done
Building dependency tree ... Done
Reading state information ... Done
ldap-utils is already the newest version (2.5.13+dfsg-5).
ldap-utils set to manually installed.
Suggested packages:
  libsasl2-modules-gssapi-mit | libsasl2-modules-gssapi-heimdal
The following NEW packages will be installed:
0 upgraded, 1 newly installed, 0 to remove and 604 not upgraded.
Need to get 1,435 kB of archives.
After this operation, 4,702 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://http.kali.org/kali kali-rolling/main amd64 slapd amd64 2.5.13+dfsg-5 [1,435 k
Fetched 1,435 kB in 1s (2,511 kB/s)
Preconfiguring packages ...
Selecting previously unselected package slapd.
(Reading database ... 399952 files and directories currently installed.)
Preparing to unpack .../slapd_2.5.13+dfsg-5_amd64.deb ...
Unpacking slapd (2.5.13+dfsg-5) ...
Setting up slapd (2.5.13+dfsg-5) ...
  Creating new user openIdap ... done.
  Creating initial configuration... done.
Creating LDAP directory... done. update-rc.d: We have no instructions for the slapd init script.
update-rc.d: It looks like a network service, we disable it.
Processing triggers for libc-bin (2.36-8) ...
Processing triggers for man-db (2.11.2-1) ...
Processing triggers for kali-menu (2023.1.7) ...
```

installs the LDAP server (slapd) and utilities (ldap-utils) using the 'apt-get' package manager, with administrative privileges granted by 'sudo.'

```
(kali® kali)-[/home/kali]
PS> sudo dpkg-reconfigure slapd
Backing up /etc/ldap/slapd.d in /var/backups/slapd-2.5.13+dfsg-5... done.
Moving old database directory to /var/backups:
- directory unknown ... done.
Creating initial configuration ... done.
Creating LDAP directory ... done.
```

reconfigures the LDAP server (slapd) with administrative privileges granted



Giving a domain name



Giving the organization name

```
(kali⊛kali)-[/home/kali]
 -PS> service slapd status
o slapd.service - LSB: OpenLDAP standalone server (Lightweight Directory Access Protocol)
     Loaded: loaded (/etc/init.d/slapd; generated)
    Drop-In: /usr/lib/systemd/system/slapd.service.d
             Lslapd-remain-after-exit.conf
     Active: inactive (dead)
      Docs: man:systemd-sysv-generator(8)
  -(kali⊛kali)-[/home/kali]
PS> service slapd start
  —(kali⊛kali)-[/home/kali]
PS> service slapd status

    slapd.service - LSB: OpenLDAP standalone server (Lightweight Directory Access Protocol)

     Loaded: loaded (/etc/init.d/slapd; generated)
    Drop-In: /usr/lib/systemd/system/slapd.service.d
             L-slapd-remain-after-exit.conf
     Active: active (running) since Sun 2023-07-23 07:52:35 EDT; 3s ago
      Docs: man:systemd-sysv-generator(8)
    Process: 281469 ExecStart=/etc/init.d/slapd start (code=exited, status=0/SUCCESS)
      Tasks: 3 (limit: 2261)
     Memory: 5.6M
       CPU: 105ms
     CGroup: /system.slice/slapd.service
             └─281482 /usr/sbin/slapd -h "ldap:/// ldapi:///" -g openldap -u openldap -F />
Jul 23 07:52:35 kali systemd[1]: Starting slapd.service - LSB: OpenLDAP standalone server >
Jul 23 07:52:35 kali slapd[281481]: @(#) $OpenLDAP: slapd 2.5.13+dfsg-5 (Feb 8 2023 01:50
                                            Debian OpenLDAP Maintainers <pkg-openldap-deve>
Jul 23 07:52:35 kali slapd[281482]: slapd starting
Jul 23 07:52:35 kali slapd[281469]: Starting OpenLDAP: slapd.
Jul 23 07:52:35 kali systemd[1]: Started slapd.service - LSB: OpenLDAP standalone server (>
```

Checking the status of slapd then starting it to be able to start the service

```
-(kali⊛kali)-[/home/kali]
 -PS> sudo ldapsearch -Q -L -Y EXTERNAL -H ldapi:/// -b dc=kabbara.dc=com
version: 1
# LDAPv3
# base <dc=kabbara,dc=com> with scope subtree
# filter: (objectclass=*)
# requesting: ALL
# kabbara.com
dn: dc=kabbara,dc=com
objectClass: top
objectClass: dcObject
objectClass: organization
o: epita
dc: kabbara
# search result
# numResponses: 2
# numEntries: 1
```

performs an LDAP search using 'Idapsearch' with external authentication (no credentials required), accessing the local LDAP server through the Unix domain socket ('Idapi:///'), and searching for entries under the base domain name (kabbara.com)

```
(kali® kali)-[/home/kali]
PS> sudo slapcat
dn: dc=kabbara,dc=com
objectClass: top
objectClass: dcObject
objectClass: organization
o: epita
dc: kabbara
structuralObjectClass: organization
entryUUID: 95b8c4f2-bd9a-103d-823e-2351d1b17c9a
creatorsName: cn=admin,dc=kabbara,dc=com
createTimestamp: 20230723114828Z
entryCSN: 20230723114828.887606Z#000000#000#000000
modifiersName: cn=admin,dc=kabbara,dc=com
modifyTimestamp: 20230723114828Z
```

# Printing the directories

displays the directory tree structure of the '/etc/ldap/slapd.d/' showing the configuration files and subdirectories related to the LDAP server (slapd).

```
(kali@kali)=[/home/kali]
    PS> sudo ldapsearch -Q -LLL -Y EXTERNAL -H ldapi:/// -b cn=config dn
dn: cn=config

dn: cn=module{0}, cn=config

dn: cn=schema, cn=config

dn: cn={0}core, cn=schema, cn=config

dn: cn={1}cosine, cn=schema, cn=config

dn: cn={2}nis, cn=schema, cn=config

dn: cn={3}inetorgperson, cn=schema, cn=config

dn: olcDatabase={-1}frontend, cn=config

dn: olcDatabase={0}config, cn=config

dn: olcDatabase={1}mdb, cn=config
```

performs an LDAP search using 'Idapsearch' with external authentication (no credentials required), accessing the local LDAP server through the Unix domain socket ('Idapi:///'), and searching for the distinguished name (DN) entries under the 'cn=config' base domain name displaying the results in a machine-readable format without attributes (only d information).

```
# LDAP Defaults
# See Idap.conf(5) for details
# This file should be world readable but not world writable.

#BASE dc=kabbara,dc=com
#URI Idap://ldap.kabbara.com Idap://ldap-provider.kabbara.com:666

#SIZELIMIT 12
#TIMELIMIT 15
#DEREF never

# TLS certificates (needed for GnuTLS)
TLS_CACERT /etc/ssl/certs/ca-certificates.crt
```

opens the 'ldap.conf' file located in the '/etc/ldap/' directory using the Vim text editor allowing configuration settings for the LDAP client.

performs an LDAP search using 'Idapsearch' with external authentication (no credentials required), accessing the local LDAP server through the Unix domain socket ('Idapi:///'), and searching for the attribute 'olcLogLevel' in the 'cn=config' entry with the search scope set to 'base' displaying the log level value of the OpenLDAP configuration.

opens the file named "logEnable.ldif" using the Vim text editor, allowing the user to view and edit its

```
(kali@kali)-[/home/kali]
PS> sudo ldapmodify -Q -Y EXTERNAL -H ldapi:/// -f logEnable.ldif
modifying entry "cn = config "
```

contents.

### Modify the cn

```
(kali@ kali)-[/home/kali]
ps> nano treeCompany.ldif

(kali@ kali)-[/home/kali]
ps> sudo ldapadd -x -W -D "cn=admin,dc=kabbara,dc=com" -H ldap://localhost -f treeCompany.ldif
Enter LDAP Password:
adding new entry "ou=administration,dc=kabbara,dc=com"
adding new entry "ou=technical,dc=kabbara,dc=com"
adding new entry "cn=Alice Joe,ou=administration,dc=kabbara,dc=com"
adding new entry "cn=Foo Bar,ou=administration,dc=kabbara,dc=com"
```

Creating Idif file and changing the dc to kabbara

```
kali⊕kali)-[/home/kali]
 -PS> sudo ldapsearch -Y EXTERNAL -H ldapi:/// -b cn=config dn
SASL/EXTERNAL authentication started
SASL username: gidNumber=0+uidNumber=0,cn=peercred,cn=external,cn=auth
SASL SSF: 0
# extended LDIF
# LDAPv3
# base <cn=config> with scope subtree
# filter: (objectclass=*)
# requesting: dn
# config
dn: cn=config
# module{0}, config
dn: cn=module{0},cn=config
# schema, config
dn: cn=schema,cn=config
# {0}core, schema, config
dn: cn={0}core,cn=schema,cn=config
# {1}cosine, schema, config
dn: cn={1}cosine,cn=schema,cn=config
# {2}nis, schema, config
dn: cn={2}nis,cn=schema,cn=config
# {3}inetorgperson, schema, config
dn: cn={3}inetorgperson,cn=schema,cn=config
# {-1}frontend, config
dn: olcDatabase={-1}frontend,cn=config
# {0}config, config
dn: olcDatabase={0}config,cn=config
                                                                           # search result
# {1}mdb, config
                                                                           search: 2
dn: olcDatabase={1}mdb,cn=config
                                                                           result: 0 Success
# search result
                                                                           # numResponses: 11
search: 2
                                                                           # numEntries: 10
result: 0 Success
```

performs an LDAP search with external authentication (no credentials required), accessing the local LDAP server through the Unix domain socket ('Idapi:///'), and retrieves the distinguished name (DN) of the 'cn=config' entry

```
ali@kali)-[/home/kali]
 PS> sudo ldapsearch
                        Y EXTERNAL -H ldapi:/// -b cn=config 'olcDatabase={1}mdb'
SASL/EXTERNAL authentication started
SASL username: gidNumber=0+uidNumber=0,cn=peercred,cn=external,cn=auth
SASL SSF: 0
# extended LDIF
# LDAPv3
 base <cn=config> with scope subtree
 filter: olcDatabase={1}mdb
# requesting: ALL
# {1}mdb, config
dn: olcDatabase={1}mdb,cn=config
objectClass: olcDatabaseConfig
objectClass: olcMdbConfig
olcDatabase: {1}mdb
olcDbDirectory: /var/lib/ldap
olcSuffix: dc=kabbara,dc=com
olcAccess: {0}to attrs=userPassword by self write by anonymous auth by * none
olcAccess: {1}to attrs=shadowLastChange by self write by * read
olcAccess: {2}to * by * read
olcLastMod: TRUE
olcRootDN: cn=admin,dc=kabbara,dc=com
olcRootPW: {SSHA}PTxDRjoMeLROn2rRjxQbfAiRRlhBaMK/
olcDbCheckpoint: 512 30
olcDbIndex: objectClass eq
olcDbIndex: cn,uid eq
olcDbIndex: uidNumber,gidNumber eq
olcDbIndex: member, memberUid eq
olcDbMaxSize: 1073741824
# search result
search: 2
result: 0 Success
# numResponses: 2
 numEntries: 1
```

performs an LDAP search with external authentication (no credentials required), accessing the local LDAP server through the Unix domain socket ('Idapi:///'), and retrieves the configuration information for the 'mdb' database in the 'cn=config' entry

```
dn: olcDatabase={1}mdb,cn=config changetype: modify_new add: olcAccess olcAccess: {0}to attrs=userPassword by self write by anonymous auth by * none
```

Creating Idif file (ACLtree) and adding the dn and type and olcAccess to it

modifies the LDAP server's access control configuration using the 'ldapmodify' tool with external authentication (no credentials required), connecting to the local LDAP server through the Unix domain socket ('ldapi:///'), and applying the changes specified in the 'ACLtree.ldif' file

```
—(kali�kali)-[/home/kali]
-PS> sudo ldapsearch -Y EXTERNAL -H ldapi:/// -b cn=config 'olcDatabase={1}mdb'
SASL/EXTERNAL authentication started
SASL username: gidNumber=0+uidNumber=0,cn=peercred,cn=external,cn=auth
SASL SSF: 0
# extended LDIF
# LDAPv3
# base <cn=config> with scope subtree
# filter: olcDatabase={1}mdb
# requesting: ALL
# {1}mdb, config
dn: olcDatabase={1}mdb,cn=config
objectClass: olcDatabaseConfig
objectClass: olcMdbConfig
olcDatabase: {1}mdb
olcDbDirectory: /var/lib/ldap
olcSuffix: dc=kabbara,dc=com
olcAccess: {0}to attrs=userPassword by self write by anonymous auth by * none
olcAccess: {1}to attrs=shadowLastChange by self write by * read
olcAccess: {2}to * by * read
olcLastMod: TRUE
olcRootDN: cn=admin,dc=kabbara,dc=com
olcRootPW: {SSHA}PTxDRjoMeLROn2rRjxQbfAiRRlhBaMK/
olcDbCheckpoint: 512 30
olcDbIndex: objectClass eq
olcDbIndex: cn,uid eq
olcDbIndex: uidNumber,gidNumber eq
olcDbIndex: member, memberUid eq
olcDbMaxSize: 1073741824
# search result
search: 2
result: 0 Success
# numResponses: 2
# numEntries: 1
```

performs an LDAP search with external authentication (no credentials required), accessing the local LDAP server through the Unix domain socket ('Idapi:///'), and searches for the configuration of the 'mdb' database backend under the 'cn=config' entry

```
/home/kali
PS> sudo apt-get install phpldapadmin
Reading package lists... Done
Building dependency tree ... Done
Reading state information... Done
The following additional packages will be installed:
libapache2-mod-php8.2 php-ldap php-xml php8.2 php8.2-cli php8.2-common php8.2-ldap
php8.2-mysql php8.2-opcache php8.2-readline php8.2-xml
Suggested packages:
php-pear
The following NEW packages will be installed:
    php-ldap php-xml php8.2-ldap php8.2-xml phpldapadmin
The following packages will be upgraded:
    libapache2-mod-php8.2 php8.2 php8.2-cli php8.2-common php8.2-mysql php8.2-opcache
    php8.2-readline
phpB.2-readline
7 upgraded, 5 newly installed, 0 to remove and 597 not upgraded.
Need to get 5,418 kB of archives.
After this operation, 3,715 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive-4.kali.org/kali kali-rolling/main amd64 php8.2-readline amd64 8.2.5-2
 Get:2 http://archive-4.kali.org/kali kali-rolling/main amd64 php8.2-opcache amd64 8.2.5-2 [
344 kB1
Get:3 http://archive-4.kali.org/kali kali-rolling/main amd64 php8.2-mysql amd64 8.2.5-2 [11
 7 kB]
Get:4 http://archive-4.kali.org/kali kali-rolling/main amd64 libapache2-mod-php8.2 amd64 8.
2.5-2 [1,673 kB]
Get:5 http://archive-4.kali.org/kali kali-rolling/main amd64 php8.2-cli amd64 8.2.5-2 [1,73
Get:6 http://archive-4.kali.org/kali kali-rolling/main amd64 php8.2-common amd64 8.2.5-2 [6
66 kB1
           http://archive-4.kali.org/kali kali-rolling/main amd64 php8.2-ldap amd64 8.2.5-2 [31.
2 kB]
Get:8 http://http.kali.org/kali kali-rolling/main amd64 php-ldap all 2:8.2+93 [3,652 B]
Get:9 http://archive-4.kali.org/kali kali-rolling/main amd64 php8.2-xml amd64 8.2.5-2 [108
kB1
Get:10 http://http.kali.org/kali kali-rolling/main amd64 php-xml all 2:8.2+93 [3,672 B]
Get:11 http://archive-4.kali.org/kali kali-rolling/main amd64 php8.2 all 8.2.5-2 [26.5 kB]
Get:12 http://archive-4.kali.org/kali kali-rolling/main amd64 phpldapadmin all 1.2.6.3-0.3
[702 kB]
Fetched 5,418 kB in 2s (3,272 kB/s)
Fetched 5,418 kB in 2s (3,272 kB/s)
Preconfiguring packages ...
(Reading database ... 400308 files and directories currently installed.)
Preparing to unpack ... /00-php8.2-readline_8.2.5-2_amd64.deb ...
Unpacking php8.2-readline (8.2.5-2) over (8.2.2-3) ...
Preparing to unpack ... /01-php8.2-opcache_8.2.5-2_amd64.deb ...
Unpacking php8.2-opcache (8.2.5-2) over (8.2.2-3) ...
Preparing to unpack ... /02-php8.2-mysql_8.2.5-2_amd64.deb ...
     Jnpacking php8.2-xml (8.2.5-2) ...
  Unpacking php8.2-xml (8.2.5-2) ...

Selecting previously unselected package php-xml.

Preparing to unpack .../09-php-xml_2%3a8.2+93_all.deb ...

Unpacking php-xml (2:8.2+93) ...

Preparing to unpack .../10-php8.2_8.2.5-2_all.deb ...

Unpacking php8.2 (8.2.5-2) over (8.2.2-3) ...

Selecting previously unselected package phpldapadmin.

Preparing to unpack .../11-phpldapadmin_1.2.6.3-0.3_all.deb ...

Unpacking phpldapadmin (1.2.6.3-0.3) ...

Setting up php8.2-common (8.2.5-2) ...

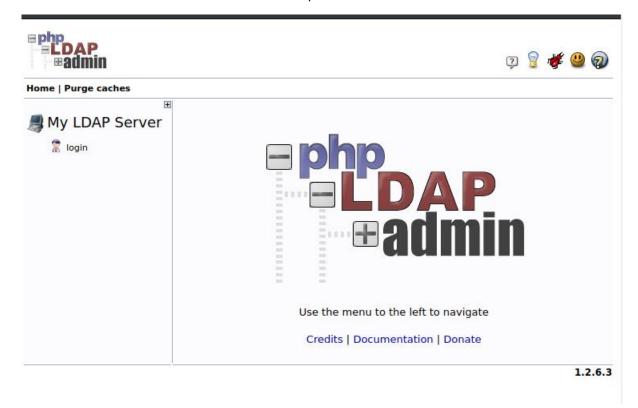
Setting up nbn8.2-ldan (8.2.5-2) ...
   Setting up php8.2-ldap (8.2.5-2)
    Creating config file /etc/php/8.2/mods-available/ldap.ini with new version
    Setting up php8.2-mysql (8.2.5-2) ...
Setting up php8.2-opcache (8.2.5-2)
    Setting up php8.2-readline (8.2.5-2)
Setting up php-ldap (2:8.2+93) ...
    Setting up php8.2-xml (8.2.5-2)
   Creating config file /etc/php/8.2/mods-available/dom.ini with new version
   Creating config file /etc/php/8.2/mods-available/simplexml.ini with new version
   Creating config file /etc/php/8.2/mods-available/xml.ini with new version
   Creating config file /etc/php/8.2/mods-available/xmlreader.ini with new version
   Creating config file /etc/php/8.2/mods-available/xmlwriter.ini with new version
   Creating config file /etc/php/8.2/mods-available/xsl.ini with new version Setting up php8.2-cli (8.2.5-2) ...
Replacing config file /etc/php/8.2/cli/php.ini with new version Setting up php-xml (2:8.2+93) ...
Setting up phpldapadmin (1.2.6.3-0.3) ...
    Creating config file /etc/phpldapadmin/config.php with new version
    apache2_invoke: Enable configuration phpldapadmin.conf
Setting up libapache2-mod-php8.2 (8.2.5-2) ...
   Replacing config file /etc/php/8.2/apache2/php.ini with new version libapache2-mod-php8.2: not switching MPM - already enabled Setting up php8.2 (8.2.5-2) ...
  Processing triggers for man-db (2.11.2-1) ...
Processing triggers for kali-menu (2023.1.7) ...
Processing triggers for php8.2-cli (8.2.5-2) ...
Processing triggers for libapache2-mod-php8.2 (8.2.5-2) ...
```

```
(kali® kali)-[/home/kali]
PS> sudo nano /etc/phpldapadmin/config.php
```

# Changing in the configuration file of phpldapadmin

```
(kali@ kali)-[/home/kali]
PS> systemctl restart apache2.service
```

## Restart apache service



# localhost/phpldapadmin/

```
(kali® kali)-[/home/kali]
PS> sudo slapcat -b dc=kabbara,dc=com -l kabbara_backup.ldif
```

#### Creating backup

```
(kali⊗ kali)-[/home/kali]
PS> sudo systemctl stop slapd
```

Stop the slapd

```
-(kali⊛kali)-[/home/kali]
PS> sudo slapadd -c -b dc=kabbara,dc=com -F /etc/ldap/slapd.d -l kabbara_backup.ldif
mdb_id2entry_put: mdb_put failed: MDB_KEYEXIST: Key/data pair already exists(-30799) "dc=ka
bbara,dc=com'
⇒ mdb_tool_entry_put: id2entry_add failed: err=-30799
⇒ mdb_tool_entry_put: txn_aborted! MDB_KEYEXIST: Key/data pair already exists (-30799)
slapadd: could not add entry dn="dc=kabbara,dc=com" (line=1): txn_aborted! MDB_KEYEXIST: Ke
y/data pair already exists (-30799)
mdb_id2entry_put: mdb_put failed: MDB_KEYEXIST: Key/data pair already exists(-30799) "ou=ad
ministration, dc=kabbara, dc=com"
⇒ mdb_tool_entry_put: id2entry_add failed: err=-30799
⇒ mdb_tool_entry_put: txn_aborted! MDB_KEYEXIST: Key/data pair already exists (-30799)
slapadd: could not add entry dn="ou=administration,dc=kabbara,dc=com" (line=15): txn_aborte
d! MDB_KEYEXIST: Key/data pair already exists (-30799)
mdb_id2entry_put: mdb_put failed: MDB_KEYEXIST: Key/data pair already exists(-30799) "ou=te
chnical, dc=kabbara, dc=com"
⇒ mdb_tool_entry_put: id2entry_add failed: err=-30799
⇒ mdb_tool_entry_put: txn_aborted! MDB_KEYEXIST: Key/data pair already exists (-30799)
slapadd: could not add entry dn="ou=technical,dc=kabbara,dc=com" (line=27): txn_aborted! MD
B_KEYEXIST: Key/data pair already exists (-30799)
mdb_id2entry_put: mdb_put failed: MDB_KEYEXIST: Key/data pair already exists(-30799) "cn=al
ice joe,ou=administration,dc=kabbara,dc=com"
⇒ mdb_tool_entry_put: id2entry_add failed: err=-30799
⇒ mdb_tool_entry_put: txn_aborted! MDB_KEYEXIST: Key/data pair already exists (-30799)
slapadd: could not add entry dn="cn=Alice Joe,ou=administration,dc=kabbara,dc=com" (line=39
): txn_aborted! MDB_KEYEXIST: Key/data pair already exists (-30799)
mdb_id2entry_put: mdb_put failed: MDB_KEYEXIST: Key/data pair already exists(-30799) "cn=fo
o bar,ou=administration,dc=kabbara,dc=com"
⇒ mdb_tool_entry_put: id2entry_add failed: err=-30799
⇒ mdb_tool_entry_put: txn_aborted! MDB_KEYEXIST: Key/data pair already exists (-30799)
slapadd: could not add entry dn="cn=Foo Bar,ou=administration,dc=kabbara,dc=com" (line=54):
txn_aborted! MDB_KEYEXIST: Key/data pair already exists (-30799)
Closing DB ...
```

Restore the backup