



EUS, Kerberos, SSL and OUD a guideline

Demo Scripts, Examples and Exercises

2018 November 01, Version 0.9

*Trivadis AG
Sägereistrasse 29
8152 Glattbrugg
info@trivadis.com
+41 58 459 55 55*



Contents

1	Demos EUS, Kerberos, SSL and OUD a guideline	3
1.1	Password Verifier	3
1.2	Setup Kerberos	6
1.2.1	Requirements	8
1.2.2	Environment Variable	8
1.2.3	Create the container	9
1.3	Setup EUS	10



1 Demos EUS, Kerberos, SSL and OUD a guideline

A couple of demo's for the TechEvent presentation *EUS, Kerberos, SSL and OUD a guideline*. Be aware, that the code can not be used copy/past in all environments due to limitations on the line breaks.

Demos are shown on an Oracle 18c Docker based database.

```
docker run --detach --name te2018_eusdb \  
  --volume /data/docker/volumes/te2018_eusdb:/u01 \  
  -e ORACLE_SID=TE18EUS \  
  -p 1521:1521 -p 5500:5500 \  
  --hostname te2018_eusdb.postgasse.org \  
  --dns 192.168.56.70 \  
  --dns-search postgasse.org \  
  oracle/database:18.3.0.0
```

Create user and roles

```
CREATE ROLE tvd_connect;  
GRANT CREATE SESSION TO tvd_connect;  
GRANT select ON v_$session TO tvd_connect;  
CREATE USER SOE_KERBEROS IDENTIFIED EXTERNALLY AS 'soe@POSTGASSE.ORG';  
GRANT tvd_connect TO SOE_KERBEROS;
```

ID	Test	Comment
1	wieso	halt text
2	wieso	halt text
3	wieso	halt text
4	wieso	halt text
5	wieso	halt text

1.1 Password Verifier

Clean up and remove the old users.



```
DROP USER user_10g;  
DROP USER user_11g;  
DROP USER user_12c;  
DROP USER user_all;
```

Create 4 dedicated test user and grant them *CREATE SESSION*.

```
GRANT CREATE SESSION TO user_10g IDENTIFIED BY manager;  
GRANT CREATE SESSION TO user_11g IDENTIFIED BY manager;  
GRANT CREATE SESSION TO user_12c IDENTIFIED BY manager;  
GRANT CREATE SESSION TO user_all IDENTIFIED BY manager;
```

Reset all passwords using *IDENTIFIED BY VALUES* to explicitly set a particular password verifier.

```
ALTER USER user_10g IDENTIFIED BY VALUES '808E79166793CFD1';  
ALTER USER user_11g IDENTIFIED BY VALUES 'S:22  
D8239017006EBDE054108BF367F225B5E731D12C91A3BEB31FA28D4A38';  
ALTER USER user_12c IDENTIFIED BY VALUES 'T:  
C6CE7A88CC5D0E048F32A564D2B6A7BDC78A2092184F28D13A90FC071F80  
4  
E5EA09D4D2A3749AA79BFD0A90D18DEC5788D2B8754AE20EE5C309DBA87550E8AA15EAF2746ED431BF4  
';
```

See what we do have in *dba_users*.

```
set linesize 160 pagesize 200  
col username for a25  
SELECT username,password_versions FROM dba_users WHERE username LIKE '  
USER_%' ORDER BY 1;
```

USERNAME	PASSWORD_VERSIONS
USER_10G	10G
USER_11G	11G
USER_12C	12C
USER_ALL	10G 11G 12C



See what we do have in *user\$*.

```
set linesize 160 pagesize 200
col name for a20
col password for a20
col spare4 for a65
SELECT name,password,spare4 FROM user$ WHERE name LIKE 'USER_%' ORDER BY
1;
```

NAME	PASSWORD	SPARE4
------	----------	--------

USER_10G	808E79166793CFD1	
----------	------------------	--

USER_11G		S:22
----------	--	------

	D8239017006EBDE054108BF367F225B5E731D12C91A3BEB31FA28D4A38	
--	--	--

USER_12C		T:
----------	--	----

	C6CE7A88CC5D0E048F32A564D2B6A7BDC78A2092184F28D13A90FC071F804E5	
--	---	--

	EA09D4D2A3749AA79BFD0A90D18DEC5788D2B8754AE20EE5C309DBA875	
--	--	--

	5EAF2746ED431BF4543D2ABE33E22678	
--	----------------------------------	--

USER_ALL	BFD595809B6149CB	S:804
----------	------------------	-------

	A87EA761505458FDED9B057A77FCF53DA3DDBD6EDB168501EDF5C0B10;T:	
--	--	--

	7950	
--	------	--

	DF0D54DEA24F1764EBC34A262D784E18F4292510B8A2E0D0F7ADFE	
--	--	--

	22	
--	----	--

	D841A9D91BAF0B9B05632F6D4898C6F4AE1EEF1509339EBCE261A1	
--	--	--

	E2DD9F1E772AB2D6413CCAB5EB0B23	
--	--------------------------------	--

Check what we do have in *sqlnet.ora*.

```
host grep -i ALLOWED /u00/app/oracle/network/admin/sqlnet.ora
#SQLNET.ALLOWED_LOGON_VERSION_CLIENT=12a
SQLNET.ALLOWED_LOGON_VERSION_SERVER=11
```

```
host sed -i "s|^SQLNET.ALLOWED_LOGON_VERSION_SERVER.*|SQLNET.
ALLOWED_LOGON_VERSION_SERVER=11|" \
/u00/app/oracle/network/admin/sqlnet.ora
```



```
host sed -i "s|^SQLNET.ALLOWED_LOGON_VERSION_SERVER.*|SQLNET.  
    ALLOWED_LOGON_VERSION_SERVER=12|" \  
    /u00/app/oracle/network/admin/sqlnet.ora  
host sed -i "s|^SQLNET.ALLOWED_LOGON_VERSION_SERVER.*|SQLNET.  
    ALLOWED_LOGON_VERSION_SERVER=12a|" \  
    /u00/app/oracle/network/admin/sqlnet.ora
```

Do some login tests

```
SQL> connect user_10g/manager  
ERROR:  
ORA-01017: invalid username/password; logon denied  
  
Warning: You are no longer connected to ORACLE.  
  
connect user_11g/manager
```

1.2 Setup Kerberos

Check the configuration scripts in *sqlnet.ora*.

```
grep -i -A 11 -B 2 "Kerberos Configuration" $TNS_ADMIN/sqlnet.ora  
  
#####  
# Kerberos Configuration  
#####  
SQLNET.AUTHENTICATION_SERVICES = (BEQ,KERBEROS5)  
#SQLNET.AUTHENTICATION_SERVICES = (ALL)  
SQLNET.FALLBACK_AUTHENTICATION = TRUE  
SQLNET.KERBEROS5_KEYTAB = /u00/app/oracle/network/admin/urania.keytab  
SQLNET.KERBEROS5_REALMS = /u00/app/oracle/network/admin/krb.realms  
SQLNET.KERBEROS5_CC_NAME = /u00/app/oracle/network/admin/krb5ccache  
SQLNET.KERBEROS5_CONF = /u00/app/oracle/network/admin/krb5.conf  
SQLNET.KERBEROS5_CONF_MIT=TRUE  
SQLNET.AUTHENTICATION_KERBEROS5_SERVICE = oracle
```

Check the configuration scripts in *krb5.conf*.



```
cat $TNS_ADMIN/krb5.conf

####krb5.conf DB Server
[logging]
default = FILE:/u00/app/oracle/network/log/krb5lib.log
kdc=FILE:/u00/app/oracle/network/log/krb5kdc.log
admin_server=FILE:/u00/app/oracle/network/log/kadmind.log

[libdefaults]
default_realm = POSTGASSE.ORG
clockskew=300
ticket_lifetime = 24h
renew_lifetime = 7d
forwardable = true

[realms]
POSTGASSE.ORG = {
    kdc = mneme.postgasse.org
    admin_server = mneme.postgasse.org
}

[domain_realm]
.postgasse.org = POSTGASSE.ORG
postgasse.org = POSTGASSE.ORG
```

lookup hostname's and check DNS configuration

```
cat /etc/resolv.conf
# Generated by NetworkManager
search aux.lan postgasse.org
nameserver 192.168.56.70
nameserver 10.154.0.1
```

```
nslookup mneme.postgasse.org
Server:      192.168.56.70
Address:     192.168.56.70#53

Name:   mneme.postgasse.org
Address: 192.168.56.70
```



```
Name:   mneme.postgasse.org
Address: 10.0.2.19
```

```
nslookup te2018_eusdb.postgasse.org
Server:      192.168.56.70
Address:     192.168.56.70#53

Name:   urania.postgasse.org
Address: 192.168.56.90
```

Create a service principle in MS AD

Create the keytab file

```
ktpass.exe -princ oracle/te2018_eusdb.postgasse.org@POSTGASSE.ORG \
  -mapuser te2018_eusdb.postgasse.org -pass manager \
  -crypto ALL -ptype KRB5_NT_PRINCIPAL \
  -out C:\u00\app\oracle\network\te2018_eusdb.keytab
```

Connect as kerberos User ## Setup OUD AD Proxy

1.2.1 Requirements

Before you can start you may need a few things.

- Docker environment (eg. Docker community edition)
- OUD Docker Images in particular one for OUD 12.2.1.3 with the latest OUD base see oehrlis/-docker soon you may also get the Dockerfiles from the Oracle Repository see pull request 911
- An MS AD Directory server or at least a few credential to access one

1.2.2 Environment Variable

To type less you just have to define a few environment variables. Basically you will define the local Docker volume path, container name, container hostname and the OUD instance name.

```
export MY_CONTAINER="te2018_oud"
export MY_VOLUME_PATH="/data/docker/volumes/$MY_CONTAINER"
```




```
export MY_HOST="$MY_CONTAINER.postgasse.org"
export MY_OUD_INSTANCE="oud_adproxy"
```

1.2.3 Create the container

Just create a container without starting it. Adjust ports, base DN etc.

```
docker container create --name $MY_CONTAINER \
  --volume $MY_VOLUME_PATH:/u01 \
  -p 1389:1389 -p 1636:1636 -p 4444:4444 \
  -e OUD_CUSTOM=TRUE \
  -e BASEDN="dc=postgasse,dc=org" \
  -e OUD_INSTANCE=$MY_OUD_INSTANCE \
  --hostname $MY_HOST \
  --dns 192.168.56.70 \
  --dns-search postgasse.org \
  oracle/oud:12.2.1.3.180626
```

Get and configure your create scripts out of the container from the OUD base. Alternatively you may also get it directly from GitHub [oeherlis/oudbase](https://github.com/oeherlis/oudbase).

Get the OUD EUS AD templates from the Docker container created before.

```
mkdir -p $MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE
docker cp \
  $(docker ps -aqf "name=$MY_CONTAINER"):/u00/app/oracle/local/oudbase/
  templates/create/oud12c_eus_ad_proxy \
  $MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE
mv $MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE/oud12c_eus_ad_proxy
  $MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE/create
mkdir -p $MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE/etc
echo "manager" >$MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE/etc/${
MY_OUD_INSTANCE}_pwd.txt
```

Update the *00_init_environment* according to your environment. In particular the variables AD_PDC_HOST, AD_PDC_PORT, AD_PDC_USER, AD_PDC_PASSWORD and BASEDN, GROUP_DN, USER_DN



```
vi $MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE/create/00_init_environment

sed -i -e "s|<PDC_HOSTNAME>|mneme.postgasse.org|g" \
    $MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE/create/00_init_environment
sed -i -e 's|<USER_DN>|CN=OUD\\ Admin,CN=Users,dc=postgasse,dc=org|g' \
    $MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE/create/00_init_environment
sed -i -e "s|<PASSWORD>|manager|g" \
    $MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE/create/00_init_environment

sed -i -e 's|^export BASEDN.*|export BASEDN="dc=postgasse,dc=org"|g' \
    $MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE/create/00_init_environment
sed -i -e 's|^export GROUP_OU.*|export GROUP_OU="ou=Groups,dc=postgasse,dc=org"|g' \
    $MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE/create/00_init_environment
sed -i -e 's|^export USER_OU.*|export USER_OU="ou=People,dc=postgasse,dc=org"|g' \
    $MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE/create/00_init_environment
sed -i -e "s|dc=example,dc=com|dc=postgasse,dc=org|g" \
    $MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE/create/00_init_environment

cat $MY_VOLUME_PATH/admin/$MY_OUD_INSTANCE/create/00_init_environment
```

Lets go. Start the container and let the scripts create the OUD instance.

```
docker start $MY_CONTAINER
```

Enjoy the log and see how your OUD EUS AD proxy is created

```
docker logs -f $MY_CONTAINER
```

1.3 Setup EUS

```
dbca -configureDatabase -sourceDB $ORACLE_SID -registerWithDirService true \
    -dirServiceUserName "cn=eusadmin" -dirServicePassword manager \
    -walletPassword TVD04manager -silent
```

Create a global DB User



```
DROP USER eus_users;  
CREATE USER eus_users IDENTIFIED GLOBALLY;  
GRANT tvd_connect TO eus_users;
```

Define a EUS mapping to the shared schema created before

```
eusm createMapping database_name="$ORACLE_SID" \  
    realm_dn="dc=postgasse,dc=org" map_type=SUBTREE \  
    map_dn="ou=People,dc=postgasse,dc=org" schema=EUS_USERS \  
    ldap_host="te2018_oud.postgasse.org" ldap_port=1389 ldap_user_dn="cn=  
        eusadmin" \  
    ldap_user_password="manager"
```

```
eusm listMappings database_name="$ORACLE_SID" \  
    realm_dn="dc=postgasse,dc=org" \  
    ldap_host="te2018_oud.postgasse.org" ldap_port=1389 ldap_user_dn="cn=  
        eusadmin" \  
    ldap_user_password="manager"
```

Passwords are in docker logs or in the password files in *MY_VOLUME_PATH/admin/MY_OUD_INSTANCE/etc*
check EUS connection

```
SQL> conn dinu/manager  
Connected.  
SQL> @sousrinf  
Database Information  
-----  
- DB_NAME           : TDB122A  
- DB_DOMAIN         :  
- INSTANCE          : 1  
- INSTANCE_NAME     : TDB122A  
- SERVER_HOST       : urania  
-  
Authentication Information  
-----  
- SESSION_USER      : EUS_USERS
```



```
- PROXY_USER          :  
- AUTHENTICATION_METHOD : PASSWORD  
- IDENTIFICATION_TYPE  : GLOBAL SHARED  
- NETWORK_PROTOCOL    :  
- OS_USER              : oracle  
- AUTHENTICATED_IDENTITY: DINU  
- ENTERPRISE_IDENTITY  : cn=Martin Berger,ou=People,dc=postgasse,dc=org  
-
```

Other Information

```
-----  
- ISDBA              : FALSE  
- CLIENT_INFO        :  
- PROGRAM            : sqlplus@urania (TNS V1-V3)  
- MODULE             : SQL*Plus  
- IP_ADDRESS         :  
- SID                : 33  
- SERIAL#            : 17568  
- SERVER             : DEDICATED  
- TERMINAL           : pts/1
```

PL/SQL procedure successfully completed.