Troubleshooting Oracle linked service with tnsnames.ora configuration file

Last updated by | Anil K B | Feb 8, 2023 at 6:26 AM PST

Scenario

- Many customers use tnsnames.ora configuration file to connect to the Oracle Database. The file contains several parameters for the connection. The basic syntax for the [tnsnames.ora](#) file is:

```
net_service_name=
 (DESCRIPTION=
   (ADDRESS=(protocol_address_information))
   (CONNECT_DATA=
     (SERVICE_NAME=service_name)))
```

- Where **net_service_name** is the network alias that you use to connect to the oracle database. It can be anything, any name. DESCRIPTION contains the connect descriptor, ADDRESS contains the protocol address, and CONNECT_DATA contains the database service identification information OR Database SID. So, a tnsnames.ora file can contain SID or SERVICE_NAME to connect to the database.

  - [ ] We get those values from the database table called V$INSTANCE:

```
SQL> select instance_name from v$instance;

INSTANCE_NAME
----------------
oratest1
```

  - [ ] Or from the V$INSTANCE_NETWORK;

```
  1* select * from v$listener_network

NETWORK   TYPE                VALUE                                              CON_ID
--------- ------------------- -------------------------------------------------- ---------
          LOCAL LISTENER      (ADDRESS=(PROTOCOL=TCP)(HOST=oraclevm)(PORT=1521))         0
          SERVICE NAME        oratest1                                                   0
```

1. There are several **tnsnames.ora** files in the oracle directory product. You should get the file that is located in **.../network/admin** folder, by default or ask the customer what is the the tnsnames.ora file in use :
   - **Linux**:

```
[oracle@oraclevm ~]$ echo $TNS_ADMIN
/u01/app/oracle/product/19.0.0/dbhome_1/network/admin
```

   - **Windows**:

     C:\app\azureuser\product\18.0.0\dbhomeXE\NETWORK\ADMIN\

Review the tnsnames.ora configuration file and see if the service name or SID is correctly configured with the value you have in the V$INSTACE table:

```
[oracle@oraclevm ~]$ cat /u01/app/oracle/product/19.0.0/dbhome_1/network/admin/tnsnames.ora
test =
(DESCRIPTION=
  (RETRY_COUNT=20)
  (ADDRESS_LIST=
    (SOURCE_ROUTE=YES)
    (ADDRESS_LIST=
      (FAILOVER=ON)
      (LOAD_BALANCE=ON)
      (ADDRESS=(PROTOCOL=tcp)(HOST=20.56.21.31)(PORT=1521))
      (ADDRESS=(PROTOCOL=tcp)(HOST=20.56.21.30)(PORT=1650))
    )
    (ADDRESS_LIST=
      (FAILOVER=ON)
      (LOAD_BALANCE=ON)
      (ADDRESS=(PROTOCOL=tcp)(HOST=20.56.21.29)(port=1530))
      (ADDRESS=(PROTOCOL=tcp)(HOST=20.56.21.28)(port=1530))
    )
  )
  (CONNECT_DATA=
    (SERVER=DEDICATED)(SERVICE_NAME=oratest1)
    (FAILOVER_MODE = (TYPE = SELECT)(METHOD = BASIC)(RETRIES = 180)(DELAY = 5))
  )
)
```

- Besides, please check if the **HOST** is the correct one. **Customer might have a FQDN instead of IP address** which also must be resolvable from the subnet where you are testing the connectivity. Verify the port numbers, if they are correct, also. By default is the 1521.

- However, as you can see in this example, there might be other hosts and ports, specially if the customer has a Oracle Real Time Application Cluster or Load Balancing. As initially said, tnsnames.ora contains several configuration parameters.

- Ask the customer to provide tnsping output. The test result should return OK. Please see below:

```
[oracle@oraclevm ~]$ tnsping test

TNS Ping Utility for Linux: Version 19.0.0.0.0 - Production on 03-JAN-2023 09:51:10

Copyright (c) 1997, 2019, Oracle.  All rights reserved.

Used parameter files:


Used TNSNAMES adapter to resolve the alias
Attempting to contact (DESCRIPTION= (RETRY_COUNT=20) (ADDRESS_LIST= (SOURCE_ROUTE=YES) (ADDRESS_LIST= (FAILOVER=ON) (LOAD_BALANCE=ON) (ADDRESS=(PROTOCOL=tcp)(HOST=20.56.21.31)(PORT=1521)) (ADDRESS=(PROTOCOL=tcp)(HOST=20.56.21.30)(PORT=1650))) (ADD
RESS_LIST= (FAILOVER=ON) (LOAD_BALANCE=ON) (ADDRESS=(PROTOCOL=tcp)(HOST=20.56.21.29)(port=1530)) (ADDRESS=(PROTOCOL=tcp)(HOST=20.56.21.28)(port=1530))) (CONNECT_DATA= (SERVER=DEDICATED)(SERVICE_NAME=oratest1) (FAILOVER_MODE = (TYPE = SELECT)(METH
OD = BASIC)(RETRIES = 180)(DELAY = 5))))
OK (60070 msec)
```

- If it is not the correct result , then **tnsnames.ora** file might be wrongly configured and the Database Administrator needs to investigate. For example, a network alias that does not exist:

```
C:\Users\azureuser>tnsping test

TNS Ping Utility for 64-bit Windows: Version 18.0.0.0.0 - Production on 03-JAN-2023 10:30:14

Copyright (c) 1997, 2018, Oracle.  All rights reserved.

Used parameter files:
C:\app\azureuser\product\18.0.0\dbhomeXE\network\admin\sqlnet.ora


Used TNSNAMES adapter to resolve the alias
Attempting to contact (DESCRIPTION = (RETRY_COUNT = 20) (ADDRESS_LIST = (SOURCE_ROUTE = YES) (ADDRESS_LIST = (FAILOVER = ON) (LOAD_BALANCE = ON) (ADDRESS = (PROTOCOL = tcp)(HOST = 20.56.12.82)(PORT = 1521)) (ADDRESS = (PROTOCOL = tcp)(HOST = 20.56.12.81)(PORT = 1650))) (ADD
ESS_LIST = (FAILOVER = ON) (LOAD_BALANCE = ON) (ADDRESS = (PROTOCOL = tcp)(HOST = 20.56.12.29)(port = 1530)) (ADDRESS = (PROTOCOL = tcp)(HOST = 20.56.12.28)(port = 1530))) (CONNECT_DATA= (SERVER=DEDICATED)(SID=xe) (FAILOVER_MODE = (TYPE = SELECT)(METHOD = BASIC)(RETRIES =
80)(DELAY = 5))))
TNS-12535: TNS:operation timed out
```

- Once those verifications and tests are done, you can configure Oracle linked service with tnsnames.ora. You need to create the oracle linked service and then add the entry below in specify dynamic contents in JSON format:

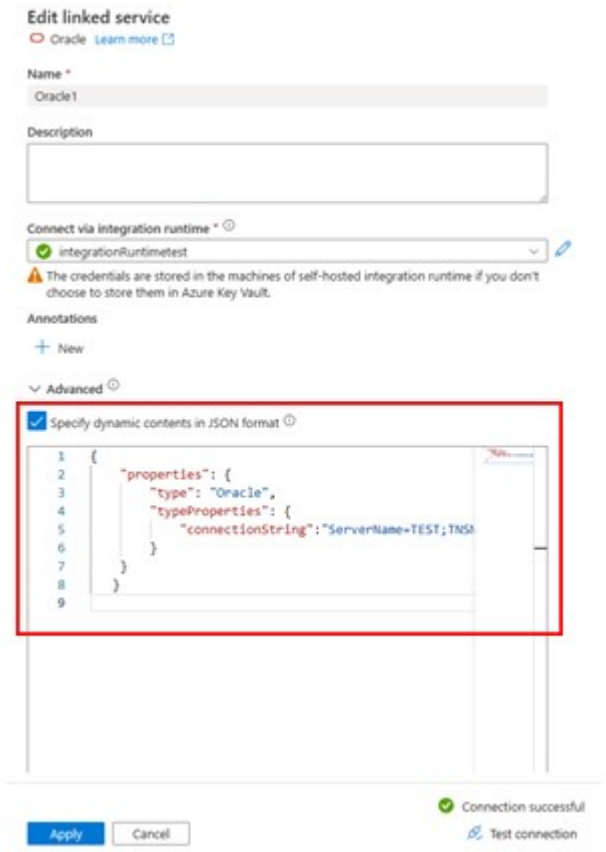
```
{
    "properties": {
        "type": "Oracle",
        "typeProperties": {
            "connectionString":"ServerName=TEST;TNSNamesFile=c:\\tnsnames.ora;User Id=XXXXXX;Password=XXXXX"
        }
    }
}
```

- Where:

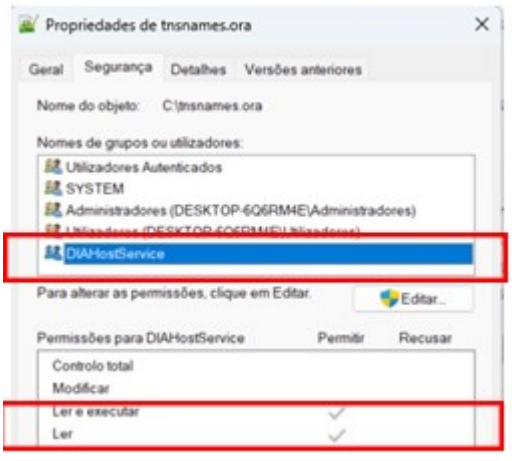
  a) **User ID** = user that connects to the database

  b) **Password** = Password for that user.

- And test the connection:



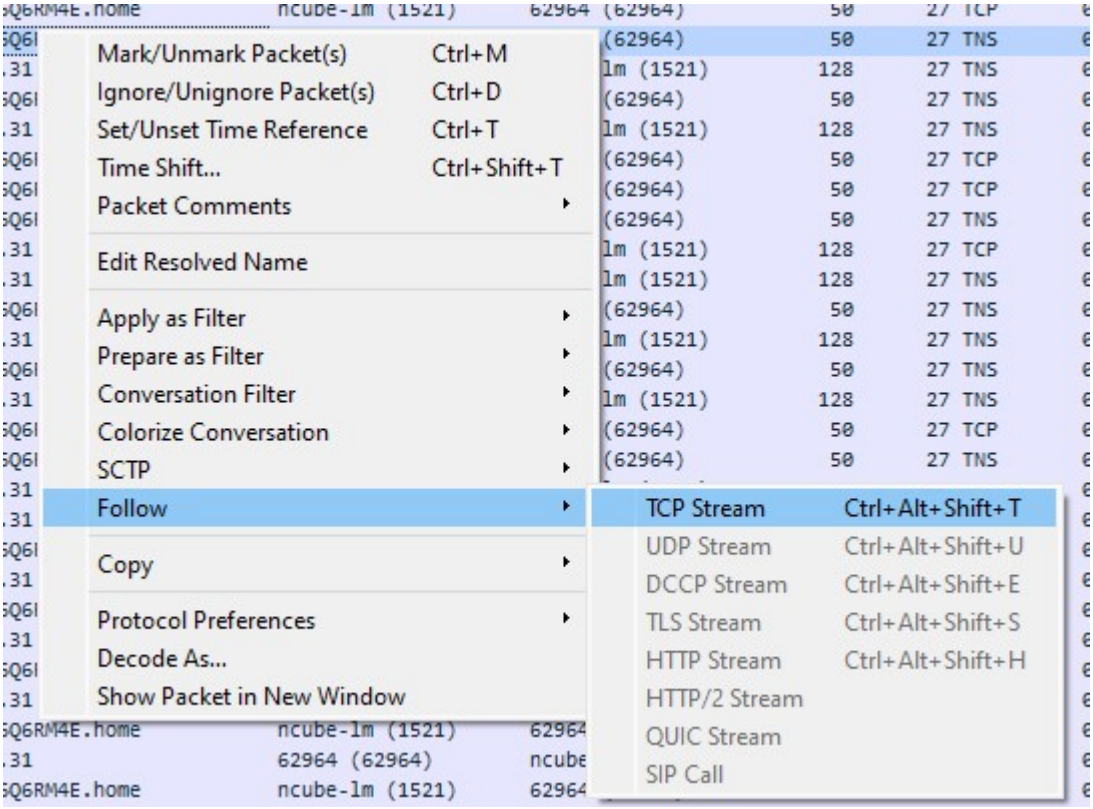
- Please , remember that **DIAHostService** user needs to have access to the drive and to the **tnsnames.ora** file:



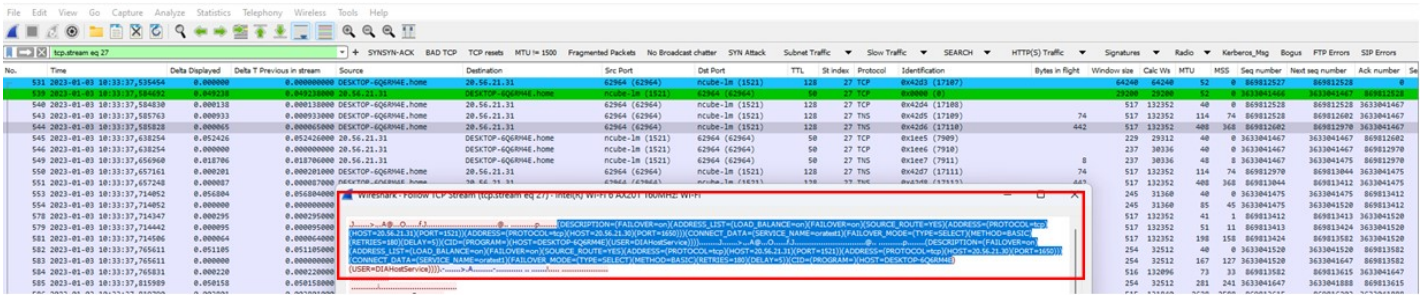
- You can then take a network trace to see if the **TCP payload** is using the **tnsnames.ora** configuration file:

  a) Identify IP Address from the Oracle Database

  b) Press Follow – TCP Stream with your mouse right button:



- If the payload is not encrypted when using **TLS**, you will be able to see the **tnsnames.ora** content:



NOTE: There are several parameters that the customer can use when configuring tnsnames.ora file. If the steps above don't fix the issue, but the customer is able to connect to the database using a different oracle client, then it is advisable to test the connectivity using their oracle client. Normally, customer can use the native oracle client, like oracle sql developer or TOAD. If the connection works with one of those products, then open a case to the Progress team so that they can improve our oracle driver.

Additional Information_

• Author: **jocamilo**

• Reviewer: **kbanil**

How good have you found this content?