www.goldengatebr.com.br

Oracle GoldenGate Módulo II

Exercícios

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Introdução

Este é o material prático do **Treinamento Oracle GoldenGate Módulo II**, onde você irá aprender sobre os principais conceitos do Oracle GoldenGate Classic, e como utilizá-lo em ambientes com Sistemas Operacionais e Bancos de Dados homogêneos e heterogêneos.

Neste Módulo OGG Classic, que é a continuação do OGG Classic Módulo I, você irá aprender sobre as técnicas e recursos avançados do Oracle GoldenGate Classic 21c, dominando não só os processos de migração, como os de replicação de dados em alto nível, nos formatos unidirecional e bidirecional. Essa configuração será feita entre dois bancos Oracle, com versões 12c (non-cdb) e 19c (cdb), em ambiente Linux. Além disso, também aprenderemos sobre a configuração de processos complexos utilizando MAPPING, FILTER, WHERE, SQLEXEC, FUNCTIONS e TOKENS para processamento de dados como ETL (sim, o GoldenGate também é uma ferramenta completa de ETL – Extract Transform Load).

Ao final do curso, aprenderemos alguns comandos avançados para mapeamento de erros com Logdump e para tratamento de erros em processamentos DML e DDL, em replicação de DDL e em configuração de replicat no modo integrado e no modo coordenado, com criptografia em diversos níveis.

Capítulo 1 / Exercício 1

Ambiente do Banco de Origem

Conectar ao ambiente de Treinamento

Para se conectar no ambiente do treinamento, siga os passos do documento "GGBR_Como_acessar_o_ambiente_de_Treinamentos_GoldenLabs.pdf".

```
Logon Time  :  Sat Jul 27 14:33:13 -03 2024

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

[  GGBR  |  GoldenLabs  ]  -  Replicando conhecimento com o Mundo!

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

  ####    ####   #       #####   ######  #    #   ####     ##     #####  ######
 #    #  #    #  #       #    #  #       ##   #  #    #   #  #      #    #
 #       #    #  #       #    #  #####   # #  #  #       #    #     #    #####
 #  ###  #    #  #       #    #  #       #  # #  #  ###  ######     #    #
 #    #  #    #  #       #    #  #       #   ##  #    #  #    #     #    #
  ####    ####   ######  #####   ######  #    #   ####   #    #     #    ######

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
#
#  ORACLE DATABASE
#
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
#
# HOSTNAME    :  source
# USERNAME    :  oracle
#
#
# ORACLE_SID  :  golden12c
# ORACLE_BASE :  /u01/app/oracle
# ORACLE_HOME :  /u01/app/oracle/product/12.2.0.1/dbhome_1
# OGG_HOME    :  /u01/app/oracle/product/ogg_src
#
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
#
# Digite:  banner           -  carregar banner
#          conn             -  para acessar a conn do banco
#          alert            -  Para abrir o alertlog do DB
#          sql              -  Executar sqlplus as sysdba
#          ogg              -  Para ir do diretório do OGG home
#          ggsci            -  Executar o ggsci
#          alert_ogg        -  Para abrir o alertlog do OGG
#
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
```

Valide se o Banco de Dados está OPEN

```
$ echo $ORACLE_SID
golden12c

$ echo $ORACLE_HOME
/u01/app/oracle/product/12.2.0.1/dbhome_1

$ ps -ef | grep pmon
oracle      1912       1  0 Jan03 ?        00:00:01 ora_pmon_golden12c
oracle      4597    3405  0 01:20 pts/1    00:00:00 grep --color=auto pmon
```

Execute o seguinte script no banco de dados

```
$ sql

SQL> @db_chk
```

Output

```
================================================================================================
==        I N S T A N C E  /  D A T A B A S E   I N F O R M A T I O N
================================================================================================

DB_CREATION__DATE_TIME
-------------------------
18-07-2024 09:37:34


   INST_ID NAME       OPEN_MODE            FORCE_LOGGING  SUPPLEMENTAL_DATE
---------- ---------- -------------------- -------------- ------------------
         1 GOLDEN12   READ WRITE           NO             NO


PROTECTION_MODE      PROTECTION_LEVEL       ROLE             SWITCHOVER_STATUS
-------------------- ---------------------- ---------------- ------------------
MAXIMUM PERFORMANCE  MAXIMUM PERFORMANCE    PRIMARY          NOT ALLOWED


ARCHIVE STATUS         VERSION           INSTANCE_NAME    HOST_NAME
---------------------- ----------------- ---------------- -------------------------
STARTED                12.2.0.1.0        golden12c        ORA12C5502


 STATUS     LOGINS     STARTUP_TIME           SYSDATE
 ---------- ---------- ---------------------- ---------------------
 OPEN       ALLOWED    18-07-2024 10:48:59    18-07-2024 11:06:59
```

Verifique o status do Listener

```
$ lsnrctl status

LSNRCTL for Linux: Version 12.2.0.1.0 - Production on 18-JUL-2024 12:51:50

Copyright (c) 1991, 2016, Oracle.  All rights reserved.

Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=IPC)(KEY=EXTPROC1)))
STATUS of the LISTENER
------------------------
Alias                     LISTENER
Version                   TNSLSNR for Linux: Version 12.2.0.1.0 - Production
Start Date                18-JUL-2024 09:42:16
Uptime                    0 days 3 hr. 9 min. 33 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Listener Parameter File   /u01/app/oracle/product/12.2.0.1/dbhome_1/network/admin/listener.ora
Listener Log File         /u01/app/oracle/diag/tnslsnr/ORA12C5502/listener/alert/log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=0.0.0.0)(PORT=1521)))
Services Summary...
Service "golden12c" has 1 instance(s).
  Instance "golden12c", status READY, has 1 handler(s) for this service...
Service "golden12cXDB" has 1 instance(s).
  Instance "golden12c", status READY, has 1 handler(s) for this service...
The command completed successfully
```

Instalação - Linha de Comando (CUI)

Configure a variável de ambiente OGG_HOME

```
$ mkdir -p /u01/app/oracle/product/ogg_src

$ mkdir -p /u01/bin_ogg/install_ogg21c/

$ export OGG_HOME=/u01/app/oracle/product/ogg_src

$ echo $OGG_HOME
/u01/app/oracle/product/ogg_src
```

Descompacte os binários do OGG em /u01/bin_ogg/install_ogg21c/

```
$ cd /u01/bin_ogg/install_ogg21c/

$ ls -ltr
total 881076
-rw-r--r-- 1 oracle dba 902215680 Nov 14 14:21 213000_fbo_ggs_Linux_x64_Oracle_shiphome.zip

$ unzip -q 213000_fbo_ggs_Linux_x64_Oracle_shiphome.zip

$ ls -ltr
total 338176

drwxr-sr-x 3 oracle dba      4096 Jul 29  2021 fbo_ggs_Linux_x64_Oracle_shiphome
-rw-r--r-- 1 oracle dba    306395 Aug 10  2021 oracle-goldengate-release-notes_21.3.pdf
-rw-r--r-- 1 oracle dba      2409 Aug 10  2021 OGG-21.3.0.0-README.txt
-rw-r--r-- 1 oracle dba 345971438 Aug 13  2021 213000_fbo_ggs_Linux_x64_Oracle_shiphome.zip
```

Valide os arquivos descompactados

```
$ cd /u01/bin_ogg/install_ogg21c/fbo_ggs_Linux_x64_Oracle_shiphome/Disk1

$ ls -l
total 8
drwxr-xr-x  4 oracle dba  187 Jul 29  2021 install
drwxrwxr-x  2 oracle dba   25 Jul 29  2021 response
-rwxr-xr-x  1 oracle dba  918 Jul 29  2021 runInstaller
drwxr-xr-x 12 oracle dba 4096 Jul 29  2021 stage
```


Copie o response file para configurar a instalação

```
$ cd /u01/bin_ogg/install_ogg21c/fbo_ggs_Linux_x64_Oracle_shiphome/Disk1/response

$ ls -l
total 8
-rw-rw-r-- 1 oracle dba 4441 Jul 29  2021 oggcore.rsp


$ cp oggcore.rsp oggcore_INSTALL_OGG21c.rsp


$ ls -ltr
total 16
-rw-rw-r-- 1 oracle dba 4441 Jul 29  2021 oggcore.rsp
-rw-r--r-- 1 oracle dba 4441 Jan  4 02:16 oggcore_INSTALL_OGG21c.rsp
```

Edite o arquivo response file, conforme abaixo:

Exemplo de response file para a versão do OGG 21c:

```
$ vi oggcore_INSTALL_OGG21c.rsp

oracle.install.responseFileVersion=/oracle/install/rspfmt_ogginstall_response_schema_v21_1_0
INSTALL_OPTION=ORA21c
SOFTWARE_LOCATION=/u01/app/oracle/product/ogg_src
START_MANAGER=true
MANAGER_PORT=7809
DATABASE_LOCATION=/u01/app/oracle/product/12.2.0.1/dbhome_1
INVENTORY_LOCATION=/u01/app/oraInventory
UNIX_GROUP_NAME=oinstall
```

⇨ **Confira bem se todos os parâmetros e valores estão configurados corretamente!**

Inicie o runInstaller

```
$ cd /u01/bin_ogg/install_ogg21c/fbo_ggs_Linux_x64_Oracle_shiphome/Disk1

$ ./runInstaller -silent -ignoreSysPrereqs -responseFile <responsefile_path>

Starting Oracle Universal Installer...

Checking Temp space: must be greater than 120 MB.   Actual 24034 MB    Passed
Checking swap space: must be greater than 150 MB.   Actual 7894 MB    Passed

Preparing to launch Oracle Universal Installer from /tmp/OraInstall2023-01-04_02-31-56AM.
Please wait ...
You can find the log of this install session at:
 /u01/app/oraInventory/logs/installActions2023-01-04_02-31-56AM.log

The installation of Oracle GoldenGate Core was successful.
Please check '/u01/app/oraInventory/logs/silentInstall2023-01-04_02-31-56AM.log' for more details.

Successfully Setup Software.
```

Confirme se o OGG foi instalado na versão 21c para Banco de Dados 21c e anteriores

```
$ cd $OGG_HOME

$ ./ggsci -v

Oracle GoldenGate Command Interpreter for Oracle
Version 21.3.0.0.0 OGGCORE_21.3.0.0.0_PLATFORMS_210728.1047_FBO
Oracle Linux 7, x64, 64bit (optimized), Oracle Database 21c and lower supported versions on Jul 29 2021
03:59:23

Copyright (C) 1995, 2021, Oracle and/or its affiliates. All rights reserved.
```

Entre na linha de comando do OGG (GGSCI) e validar o processo Manager

```
$ ./ggsci

OGG> info all

Program     Status      Group       Lag at Chkpt  Time Since Chkpt

MANAGER     RUNNING


OGG> info mgr

Manager is running (IP port TCP:target01.7809, Process ID 4737).


OGG> info manager

Manager is running (IP port TCP:target01.7809, Process ID 4737).


OGG> sh ps -ef | grep 4737

oracle    6740     1  0 18:13 ?        00:00:00 ./mgr PARAMFILE /u01/app/oracle/product/ogg_src/dirprm/mgr.prm
REPORTFILE /u01/app/oracle/product/ogg_src/dirrpt/MGR.rpt PROCESSID MGR
oracle    6908  6851  0 18:15 pts/1    00:00:00 sh -c ps -ef | grep 4737
oracle    6910  6908  0 18:15 pts/1    00:00:00 grep 4737
```

Ambiente do Banco de Destino

```
Logon Time  :  Sat Jul 27 14:33:12 -03 2024

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

[  GGBR  |  GoldenLabs  ]  -  Replicando conhecimento com o Mundo!

Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

  ####    ####   #       #####   ######  #    #   ####     ##     #####  ######
 #    #  #    #  #       #    #  #       ##   #  #    #   #  #      #    #
 #       #    #  #       #    #  #####   # #  #  #       #    #     #    #####
 #  ###  #    #  #       #    #  #       #  # #  #  ###  ######     #    #
 #    #  #    #  #       #    #  #       #   ##  #    #  #    #     #    #
  ####    ####   ######  #####   ######  #    #   ####   #    #     #    ######

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
#
# ORACLE GOLDENGATE CLASSIC ( TARGET )
#
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
#
# HOSTNAME    :  target
# USERNAME    :  oracle
#
#
# ORACLE_SID  :  oradb19c
# ORACLE_BASE :  /u01/app/oracle
# ORACLE_HOME :  /u01/app/oracle/product/19.3.0.0/dbhome_1
# OGG_HOME    :  /u01/app/oracle/product/ogg_trg
#
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
#
# Digite:  banner           -  carregar banner
#          conn             -  para acessar a conn do banco
#          alert            -  Para abrir o alertlog do DB
#          sql              -  Executar sqlplus as sysdba
#          ogg              -  Para ir do diretório do OGG home
#          ggsci            -  Executar o ggsci
#          alert_ogg        -  Para abrir o alertlog do OGG
#
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
```


Valide se o Banco de Dados está OPEN

```
$ echo $ORACLE_SID
oradb19c

$ echo $ORACLE_HOME
/u01/app/oracle/product/19.3.0.0/dbhome_1

$ ps -ef | grep pmon
oracle      3284       1  0 Jan03 ?        00:00:02 ora_pmon_oradb19c
oracle      4207    4138  0 01:49 pts/1    00:00:00 grep -color=auto pmon     --<<< Multitenant
```

Execute o seguinte script no banco de dados

```
$ sql

SQL> @db_chk
```

Output:

```
================================================================================================
==        I N S T A N C E  /  D A T A B A S E   I N F O R M A T I O N
================================================================================================

DB_CREATION__DATE_TIME
-------------------------
18-07-2024 09:44:30


   INST_ID NAME       OPEN_MODE            FORCE_LOGGING  SUPPLEMENTAL_DATE
---------- ---------- -------------------- -------------- ------------------
         1 ORADB19C   READ WRITE           NO             NO

PROTECTION_MODE        PROTECTION_LEVEL       ROLE             SWITCHOVER_STATUS
---------------------- ---------------------- ---------------- -----------------
MAXIMUM PERFORMANCE    UNPROTECTED            PRIMARY          NOT ALLOWED


ARCHIVE STATUS         VERSION           INSTANCE_NAME    HOST_NAME
---------------------- ----------------- ---------------- ------------------------
STOPPED                19.0.0.0.0        oradb19c         ORA19C5503

 STATUS     LOGINS     STARTUP_TIME           SYSDATE
 ---------- ---------- ---------------------- ----------------------
 OPEN       ALLOWED    18-07-2024 10:07:28    18-07-2024 12:38:59
```

Verifique o status do Listener e do Banco de dados

```
$ lsnrctl status

LSNRCTL for Linux: Version 19.0.0.0.0 - Production on 18-JUL-2024 12:49:20

Copyright (c) 1991, 2019, Oracle.  All rights reserved.

Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=IPC)(KEY=EXTPROC1)))
STATUS of the LISTENER
------------------------
Alias                     LISTENER
Version                   TNSLSNR for Linux: Version 19.0.0.0.0 - Production
Start Date                18-JUL-2024 10:07:18
Uptime                    0 days 2 hr. 42 min. 2 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Listener Parameter File   /u01/app/oracle/product/19.3.0.0/dbhome_1/network/admin/listener.ora
Listener Log File         /u01/app/oracle/diag/tnslsnr/ORA19C5503/listener/alert/log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=0.0.0.0)(PORT=1521)))
Services Summary...
Service "1d863e58ccb909d5e063040012ac9a3d" has 1 instance(s).
  Instance "oradb19c", status READY, has 1 handler(s) for this service...
Service "86b637b62fdf7a65e053f706e80a27ca" has 1 instance(s).
  Instance "oradb19c", status READY, has 1 handler(s) for this service...
Service "oradb19c" has 1 instance(s).
  Instance "oradb19c", status READY, has 1 handler(s) for this service...
Service "oradb19cXDB" has 1 instance(s).
  Instance "oradb19c", status READY, has 1 handler(s) for this service...
Service "pdbogg01" has 1 instance(s).
  Instance "oradb19c", status READY, has 1 handler(s) for this service...
The command completed successfully
```


Verifique os PDB's existentes e se conecte ao PDBOGG01

```
$ sql

SQL> show con_name

CON_NAME
--------
CDB$ROOT


SQL> show pdbs

    CON_ID CON_NAME                       OPEN        MODE  RESTRICTED
---------- ------------------------------ ---------- ----------
         2 PDB$SEED                       READ ONLY  NO
         3 PDBOGG01                       READ WRITE NO

SQL> alter session set container=PDBOGG01;


SQL> show con_name

CON_NAME
--------
PDBOGG01

SQL> exit
```

Para conectar no PDBOGG01, utilize o alias "**conn**" para facilitar a conexão

```
$ alias conn
alias conn='sqlplus sys/Oracle4U@PDBOGG01 as sysdba'


$ conn


SQL> show con_name


CON_NAME
------------------------------
PDBOGG01

SQL> exit
```

Instalação - Linha de Comando (CUI)

Configure a variável de ambiente OGG_HOME conforme abaixo

```
$ mkdir -p /u01/app/oracle/product/ogg_trg

$ mkdir -p /u01/bin_ogg/install_ogg21c/

$ export OGG_HOME=/u01/app/oracle/product/ogg_trg

$ echo $OGG_HOME
/u01/app/oracle/product/ogg_trg
```

Descompacte os binários do OGG em /u01/bin_ogg/install_ogg21c/

```
$ cd /u01/bin_ogg/install_ogg21c/


$ ls -ltr
total 881076
-rw-r--r-- 1 oracle dba 902215680 Nov 14 14:21 213000_fbo_ggs_Linux_x64_Oracle_shiphome.zip


$ unzip -q 213000_fbo_ggs_Linux_x64_Oracle_shiphome.zip


$ ls -ltr
drwxr-sr-x 3 oracle dba      4096 Jul 29  2021 fbo_ggs_Linux_x64_Oracle_shiphome
-rw-r--r-- 1 oracle dba    306395 Aug 10  2021 oracle-goldengate-release-notes_21.3.pdf
-rw-r--r-- 1 oracle dba      2409 Aug 10  2021 OGG-21.3.0.0-README.txt
-rw------- 1 oracle dba 345971438 Jul 27 16:00 213000_fbo_ggs_Linux_x64_Oracle_shiphome.zip
```

Valide os arquivos que foram descompactados

```
$ cd /u01/bin_ogg/install_ogg21c/fbo_ggs_Linux_x64_Oracle_shiphome/Disk1

$ ls -l
total 12
drwxr-xr-x  4 oracle dba  187 Oct 18  2019 install
drwxrwxr-x  2 oracle dba   25 Oct 18  2019 response
-rwxr-xr-x  1 oracle dba  918 Oct 18  2019 runInstaller
drwxr-xr-x 12 oracle dba 4096 Oct 18  2019 stage
```

Copie o response file para configurar a instalação

```
$ cd /u01/bin_ogg/install_ogg21c/fbo_ggs_Linux_x64_Oracle_shiphome/Disk1/response

$ ls -l
total 8
-rw-rw-r-- 1 oracle dba 4441 Jul 29  2021 oggcore.rsp

$ cp oggcore.rsp oggcore_INSTALL_OGG21c.rsp

$ ls -ltr
total 16
-rw-rw-r-- 1 oracle dba 4441 Jul 29  2021 oggcore.rsp
-rw-r--r-- 1 oracle dba 4441 Jan  4 02:16 oggcore_INSTALL_OGG21c.rsp
```


Configure o arquivo response file, conforme abaixo:

Exemplo de response file para a versão do OGG 19c:

```
$ vi oggcore_INSTALL_OGG21c.rsp

oracle.install.responseFileVersion=/oracle/install/rspfmt_ogginstall_response_schema_v21_1_0
INSTALL_OPTION=ora21c
SOFTWARE_LOCATION=/u01/app/oracle/product/ogg_trg
START_MANAGER=true
MANAGER_PORT=7809
DATABASE_LOCATION=/u01/app/oracle/product/19.3.0.0/dbhome_1
INVENTORY_LOCATION=/u01/app/oraInventory
UNIX_GROUP_NAME=oinstall
```

⇨ **Confira bem se todos os parâmetros e valores estão configurados corretamente!**

Inicie a instalação (./runInstaller)

```
$ cd /u01/bin_ogg/install_ogg21c/fbo_ggs_Linux_x64_Oracle_shiphome/Disk1

$ ./runInstaller -silent -ignoreSysPrereqs -responseFile <responsefile_path>

Starting Oracle Universal Installer...

Checking Temp space: must be greater than 120 MB.   Actual 24034 MB    Passed
Checking swap space: must be greater than 150 MB.   Actual 7894 MB    Passed

Preparing to launch Oracle Universal Installer from /tmp/OraInstall2023-01-04_02-31-56AM.
Please wait ...
You can find the log of this install session at:
 /u01/app/oraInventory/logs/installActions2023-01-04_02-31-56AM.log

The installation of Oracle GoldenGate Core was successful.
Please check '/u01/app/oraInventory/logs/silentInstall2023-01-04_02-31-56AM.log' for more details.

Successfully Setup Software.
```

Confirme se o OGG foi instalado na versão 21c para Banco de Dados 21c e anteriores

```
$ cd $OGG_HOME

$ ./ggsci -v

Oracle GoldenGate Command Interpreter for Oracle
Version 21.3.0.0.0 OGGCORE_21.3.0.0.0_PLATFORMS_210728.1047_FBO
Oracle Linux 7, x64, 64bit (optimized), Oracle Database 21c and lower supported versions on Jul 29 2021
03:59:23

Copyright (C) 1995, 2021, Oracle and/or its affiliates. All rights reserved.
```

Entre na linha de comando do OGG (GGSCI) e valide o processo Manager

```
$ ./ggsci

OGG> info all

Program     Status      Group       Lag at Chkpt  Time Since Chkpt

MANAGER     RUNNING

OGG> info mgr

Manager is running (IP port TCP:target01.7809, Process ID 4737).

OGG> info manager

Manager is running (IP port TCP:target01.7809, Process ID 4737).

OGG> view params mgr

PORT 7809

OGG> show all

Parameter settings:

SET DEBUG      OFF

Current directory: /u01/app/oracle/product/ogg_trg

Editor:  vi

Reports (.rpt)                /u01/app/oracle/product/ogg_trg/dirrpt
Parameters (.prm)             /u01/app/oracle/product/ogg_trg/dirprm
Replicat Checkpoints (.cpr)   /u01/app/oracle/product/ogg_trg/dirchk
Extract Checkpoints (.cpe)    /u01/app/oracle/product/ogg_trg/dirchk
Process Status (.pcs)         /u01/app/oracle/product/ogg_trg/dirpcs
SQL Scripts ()             /u01/app/oracle/product/ogg_trg/dirsql
Database Definitions (.def)   /u01/app/oracle/product/ogg_trg
Dump files (.dmp)             /u01/app/oracle/product/ogg_trg/dirdmp
Master encryption key wallet files (.wlt) /u01/app/oracle/product/ogg_trg/dirwlt
Credential store files (.crd) /u01/app/oracle/product/ogg_trg/dircrd
```

Capítulo 1 / Exercício 2

Ambiente de Origem

Habilitar o Archive Log Mode

Processo de instalação do OGG no Banco de Dados. É mandatório que o banco tenha o **modo archive** habilitado!

```
$ sql

SQL> archive log list

Database log mode              No Archive Mode
Automatic archival             Disabled
Archive destination            /u01/app/oracle/product/12.2.0.1/dbhome_1/dbs/arch
Oldest online log sequence     3
Current log sequence

$ sql

SQL> @enable_archive_mode
```

Output:

```
SQL> archive log list
Database log mode              No Archive Mode
Automatic archival             Disabled
Archive destination            /u01/app/oracle/product/12.2.0.1/dbhome_1/dbs/arch
Oldest online log sequence     6
Current log sequence           8


SQL> shutdown immediate;
Database closed.
Database dismounted.
ORACLE instance shut down.


SQL> startup mount
ORACLE instance started.

Total System Global Area 3221225472 bytes
Fixed Size                  8625856 bytes
Variable Size             771752256 bytes
Database Buffers         2432696320 bytes
Redo Buffers                8151040 bytes
Database mounted.


SQL> alter database archivelog;

Database altered.
```

```
SQL> archive log list;
Database log mode              Archive Mode
Automatic archival             Enabled
Archive destination            /u01/app/oracle/product/12.2.0.1/dbhome_1/dbs/arch
Oldest online log sequence     6
Next log sequence to archive   8
Current log sequence           8


SQL> alter database open;

Database altered.


SQL> select open_mode from v$database;

OPEN_MODE
--------------------
READ WRITE
```

Adicione o Supplemental Log

```
SQL> col supplemental_log_data_min  format a30
SQL> select supplemental_log_data_min from v$database;

SUPPLEMENTAL_LOG_DATA_MIN
------------------------------
NO


SQL> alter database add supplemental log data;

Database altered.
```

→ 3x switch logfile

```
SQL> alter system switch logfile;

System altered.



SQL> select supplemental_log_data_min from v$database;

SUPPLEMENTAL_LOG_DATA_MIN
------------------------------
YES
```

Habilite o parâmetro enable_goldengate_replication

```
SQL> @enable_goldengate_replication
```

```
SQL> select NAME,  DECODE(TYPE,1,'Boolean',2,'String',3,'Integer',4,'Parameter file',5,'Reserved',6,'Big
integer') as Type , VALUE as OLD_VALUE
FROM V$PARAMETER
WHERE NAME LIKE '%enable_goldengate_replication%';

NAME                                 TYPE                 OLD_VALUE
------------------------------------ -------------------- ----------
enable_goldengate_replication        Boolean              FALSE

SQL> alter system set enable_goldengate_replication=true scope=both;
System altered.

SQL> select NAME,  DECODE(TYPE,1,'Boolean',2,'String',3,'Integer',4,'Parameter file',5,'Reserved',6,'Big
integer') Type , VALUE NEW_VALUE
FROM V$PARAMETER
WHERE NAME LIKE '%enable_goldengate_replication%';

NAME                                 TYPE                 NEW_VALUE
------------------------------------ -------------------- ----------
enable_goldengate_replication        Boolean              TRUE
```

Verifique o Character Set do Banco

```
SQL> @ver_charset
```

Output:

```
SQL> select * from nls_database_parameters where parameter='NLS_CHARACTERSET';

PARAMETER                      VALUE
------------------------------ ------------------------------
NLS_CHARACTERSET               AL32UTF8


SQL> select DECODE(parameter, 'NLS_CHARACTERSET', 'CHARACTER SET','NLS_LANGUAGE', 'LANGUAGE', 'NLS_TERRITORY',
'TERRITORY') name, value from v$nls_parameters where parameter IN ( 'NLS_CHARACTERSET', 'NLS_LANG
UAGE', 'NLS TERRITORY');

NAME                           VALUE
------------------------------ ------------------------------
LANGUAGE                       AMERICAN
TERRITORY                      AMERICA
CHARACTER SET                  AL32UTF8
```

INFO: Parâmetro NLS_LANG

```
$ export NLS LANG=<language> <territory>.<character set>

Exemplo: $ export NLS_LANG=AMERICAN_AMERICA.AL32UTF8
```

Crie a tablespace e usuário para a instalações do OGG no banco

```
SQL> @src_create_user_ogguser
```

Output:

```
SQL> CREATE TABLESPACE TBS_OGG datafile '/u01/app/oracle/oradata/golden12c/tbs_ogg_01.dbf' size 100M autoextend
on ;

SQL> create user OGGUSER identified by ogguser default tablespace TBS_OGG;

SQL> select username,account_status,default_tablespace from dba_users where username='OGGUSER';
USERNAME         ACCOUNT_STATUS   DEFAULT_TABLESPACE
---------------- ---------------- ------------------------------
OGGUSER          OPEN             TBS_OGG

SQL> select tablespace_name,file_name,AUTOEXTENSIBLE from dba_data_files where tablespace_name LIKE 'TBS_OGG';

TABLESPACE_NAME  FILE_NAME                                          AUTOEXTENSIBLE
---------------- -------------------------------------------------- ----------------
TBS_OGG          /u01/app/oracle/oradata/golden12c/tbs_ogg_01.dbf   YES
```

Conceda os devidos privilégios ao OGGUSER

```
SQL> @add_grants_ogguser
```

Output:

```
SQL> grant dba to OGGUSER;
Grant succeeded.

SQL> grant dba to OGGUSER;
Grant succeeded.

SQL> grant create session to OGGUSER;
Grant succeeded.

SQL> grant alter session to OGGUSER;
Grant succeeded.

SQL> grant resource to OGGUSER;
Grant succeeded.

SQL> grant connect to OGGUSER;
Grant succeeded.

SQL> grant select any dictionary to OGGUSER;
Grant succeeded.


SQL> grant flashback any table to OGGUSER;
Grant succeeded.

SQL> grant select any table to OGGUSER;
Grant succeeded.

SQL> grant select on dba_clusters to OGGUSER;
Grant succeeded.

SQL> grant create table to OGGUSER;
Grant succeeded.

SQL> grant execute on dbms_flashback to OGGUSER;
Grant succeeded.

SQL> grant lock any table to OGGUSER;

Grant succeeded.

SQL> grant execute on utl_file to OGGUSER;
Grant succeeded.

SQL> grant select any transaction to OGGUSER;
Grant succeeded.

SQL> grant become user to OGGUSER;
Grant succeeded.

SQL> exec dbms_goldengate_auth.grant_admin_privilege('OGGUSER');
PL/SQL procedure successfully completed.

SQL> exec dbms streams auth.grant admin privilege('OGGUSER');
PL/SQL procedure successfully completed.

SQL> grant insert on system.logmnr_restart_ckpt$ to OGGUSER;
Grant succeeded.

SQL> grant update on sys.streams$_capture_process to OGGUSER;
Grant succeeded.
```

Crie o usuário de aplicação **OGG_SOURCE** e sua respectiva tablespace **TBA_APP_SOURCE**, que serão utilizados na nossa replicação

```
SQL> @src_create_user_ogg_source
```

Output:

```
SQL> CREATE TABLESPACE TBS_APP_SOURCE datafile '/u01/app/oracle/oradata/golden12c/TBS_APP_SOURCE_01.dbf' size
500M autoextend on;


SQL> CREATE USER OGG_SOURCE identified by ora#OGG_SOURCE default tablespace TBS_APP_SOURCE;


SQL> ALTER USER OGG_SOURCE quota unlimited ON TBS_APP_SOURCE;


SQL> select username,account_status,default_tablespace from dba_users where username='OGG_SOURCE';

USERNAME         ACCOUNT_STATUS   DEFAULT_TABLESPACE
---------------- ---------------- -------------------------
OGG_SOURCE       OPEN             TBS_APP_SOURCE
```

Nas próximas etapas teremos alguns comandos para **remover objetos**, e devem ser utilizados APENAS para os casos em que o exercício e/ou LAB estiver sendo refeito.

```
DROP TABLE OGG_SOURCE.TAB_MODULE2;
```

Crie a tabela de aplicação para implementar o primeiro fluxo de replicação

```
SQL> @src_create_tab_module2
```

Output:

```
SQL> CREATE TABLE OGG_SOURCE.TAB_MODULE2 ("ID" NUMBER(5,0) NOT NULL, "VALUE" VARCHAR2(100), "DATE" DATE DEFAULT
sysdate) TABLESPACE TBS_APP_SOURCE;

SQL>ALTER TABLE OGG_SOURCE.TAB_MODULE2 ADD CONSTRAINT "PK_TAB_MODULE2" PRIMARY KEY ("ID") USING INDEX
TABLESPACE TBS_APP_SOURCE;

SQL> select owner,object_name,object_type,status from dba_objects where object_name like '%TAB_MODULE2';

OWNER                OBJECT_NAME          OBJECT_TYPE             STATUS
-------------------- -------------------- ----------------------- -------
OGG_SOURCE           PK_TAB_MODULE2       INDEX                   VALID
OGG_SOURCE           TAB_MODULE2          TABLE                   VALID

SQL>
insert into OGG_SOURCE.TAB_MODULE2 values (1, 'GGBR TRAINING - OGG - Instructor: Gilson Martins', sysdate);
insert into OGG_SOURCE.TAB_MODULE2 values (2, 'GGBR TRAINING - OGG - Instructor: Gilson Martins', sysdate);
insert into OGG_SOURCE.TAB_MODULE2 values (3, 'GGBR TRAINING - OGG - Instructor: Gilson Martins', sysdate);
insert into OGG_SOURCE.TAB_MODULE2 values (4, 'GGBR TRAINING - OGG - Instructor: Gilson Martins', sysdate);
insert into OGG_SOURCE.TAB_MODULE2 values (5, 'GGBR TRAINING - OGG - Instructor: Gilson Martins', sysdate);

SQL> commit;


SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                                DATE
---------- ---------------------------------------------------------------------- -------------------
         1 GGBR TRAINING - OGG - Instructor: Gilson Martins                       01-08-2024 16:12:22
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins                       01-08-2024 16:12:22
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins                       01-08-2024 16:12:22
         4 GGBR TRAINING - OGG - Instructor: Gilson Martins                       01-08-2024 16:12:22
         5 GGBR TRAINING - OGG - Instructor: Gilson Martins                       01-08-2024 16:12:22
```

Verifique os registros inseridos na tabela

```
SQL> @src_ver_tab_module2
```

Output:

```
SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                    DATE
---------- -------------------------------------------------------  -------------------
         1 #GGBR TRAINING - OGG - Instructor: Gilson Martins        10-07-2024 19:00:58
         2 #GGBR TRAINING - OGG - Instructor: Gilson Martins        10-07-2024 19:00:58
         3 #GGBR TRAINING - OGG - Instructor: Gilson Martins        10-07-2024 19:00:58
         4 #GGBR TRAINING - OGG - Instructor: Gilson Martins        10-07-2024 19:00:58
         5 #GGBR TRAINING - OGG - Instructor: Gilson Martins        10-07-2024 19:00:58
```

Ambiente de Destino

Crie a tablespace e usuário para a instalações do OGG no banco

```
$ conn

SQL> @trg_create_user_ogguser
```

Output:

```
SQL> CREATE TABLESPACE TBS_OGG datafile '/u01/app/oracle/oradata/ORADB19C/PDBOGG01/tbs_ogg_01.dbf' size 100M
autoextend on;

Tablespace created.

SQL> CREATE USER OGGUSER identified by ogguser default tablespace TBS_OGG;

User created.

SQL> select username,account_status,default_tablespace from dba_users where username='OGGUSER';

USERNAME         ACCOUNT_STATUS   DEFAULT_TABLESPACE
---------------- ---------------- ------------------------------
OGGUSER          OPEN             TBS_OGG

SQL> select tablespace_name,file_name,AUTOEXTENSIBLE from dba_data_files where tablespace_name LIKE 'TBS_OGG';

TABLESPACE_NAME  FILE_NAME                                          AUTOEXTENSIBLE
---------------- -------------------------------------------------- ----------------
TBS_OGG          /u01/app/oracle/oradata/ORADB19C/PDBOGG01/tbs_ogg_ YES
                 01.dbf
```

Conceda as permissões necessárias

```
SQL> @add_grants_ogguser
```

Output:

```
SQL> grant dba to OGGUSER;
Grant succeeded.

SQL> grant dba to OGGUSER;
Grant succeeded.

SQL> grant create session to OGGUSER;
Grant succeeded.

SQL> grant alter session to OGGUSER;
Grant succeeded.

SQL> grant resource to OGGUSER;
Grant succeeded.

SQL> grant connect to OGGUSER;
Grant succeeded.

SQL> grant select any dictionary to OGGUSER;
Grant succeeded.


SQL> grant flashback any table to OGGUSER;
Grant succeeded.

SQL> grant select any table to OGGUSER;
Grant succeeded.

SQL> grant select on dba_clusters to OGGUSER;
Grant succeeded.

SQL> grant create table to OGGUSER;
Grant succeeded.

SQL> grant execute on dbms_flashback to OGGUSER;
Grant succeeded.

SQL> grant lock any table to OGGUSER;

Grant succeeded.

SQL> grant execute on utl_file to OGGUSER;
Grant succeeded.

SQL> grant select any transaction to OGGUSER;
Grant succeeded.

SQL> grant become user to OGGUSER;
Grant succeeded.

SQL> exec dbms_goldengate_auth.grant_admin_privilege('OGGUSER');
PL/SQL procedure successfully completed.

SQL> exec dbms_streams_auth.grant_admin_privilege('OGGUSER');
PL/SQL procedure successfully completed.

SQL> grant insert on system.logmnr_restart_ckpt$ to OGGUSER;
Grant succeeded.

SQL> grant update on sys.streams$_capture_process to OGGUSER;
Grant succeeded.
```

Crie o usuário utilizado na replicação, a tabela e sua PK

```
drop user OGG_TARGET cascade;
drop tablespace TBS_APP_TARGET including contents and datafiles;
```

```
SQL> @trg_create_user_ogg_target
```

Output:

```
SQL> CREATE TABLESPACE TBS_APP_TARGET datafile 'u01/app/oracle/oradata/ORADB19C/PDBOGG01/tbs_app_target_01.dbf'
size 500M autoextend on;


SQL> CREATE USER OGG_TARGET identified by ora#OGG_TARGET default tablespace TBS_APP_TARGET;


SQL> ALTER USER OGG_TARGET quota unlimited ON TBS_APP_TARGET;


SQL> select username,account_status,default_tablespace from dba_users where username='OGG_TARGET';

USERNAME         ACCOUNT_STATUS   DEFAULT_TABLESPACE
---------------- ---------------- ------------------------------
OGG_TARGET       OPEN             TBS_APP_TARGET
```

Crie a tabela a ser replicada

```
DROP TABLE "OGG_TARGET"."TAB_MODULE2";
```

```
SQL> @trg_create_tab_module2
```

Output:

```
SQL> CREATE TABLE OGG_TARGET.TAB_MODULE2 ("ID" NUMBER(5,0) NOT NULL, "VALUE" VARCHAR2(100), "DATE" DATE DEFAULT
sysdate) TABLESPACE TBS_APP_TARGET;

SQL> ALTER TABLE OGG_TARGET.TAB_MODULE2 ADD CONSTRAINT "PK_TAB_MODULE2" PRIMARY KEY ("ID") USING INDEX
TABLESPACE TBS_APP_TARGET;

SQL> select owner,object_name,object_type,status from dba_objects where object_name like '%TAB_MODULE2';

OWNER                OBJECT_NAME          OBJECT_TYPE             STATUS
-------------------- -------------------- ----------------------- -------
OGG_TARGET           PK_TAB_MODULE2       INDEX                   VALID
OGG_TARGET           TAB_MODULE2          TABLE                   VALID

SQL>
insert into OGG_TARGET.TAB_MODULE2 values (1, 'GGBR TRAINING - OGG - Instructor: Gilson Martins', sysdate);
insert into OGG_TARGET.TAB_MODULE2 values (2, 'GGBR TRAINING - OGG - Instructor: Gilson Martins', sysdate);
insert into OGG_TARGET.TAB_MODULE2 values (3, 'GGBR TRAINING - OGG - Instructor: Gilson Martins', sysdate);
insert into OGG_TARGET.TAB_MODULE2 values (4, 'GGBR TRAINING - OGG - Instructor: Gilson Martins', sysdate);
insert into OGG_TARGET.TAB_MODULE2 values (5, 'GGBR TRAINING - OGG - Instructor: Gilson Martins', sysdate);
commit;


SQL> select * from OGG_TARGET.TAB_MODULE2 order by 1;

        ID VALUE                                                DATE
---------- ---------------------------------------------------- -------------------
         1 GGBR TRAINING - OGG - Instructor: Gilson Martins    01-08-2024 16:34:14
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins    01-08-2024 16:34:14
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins    01-08-2024 16:34:14
         4 GGBR TRAINING - OGG - Instructor: Gilson Martins    01-08-2024 16:34:14
         5 GGBR TRAINING - OGG - Instructor: Gilson Martins    01-08-2024 16:34:14
```

Ambiente de Origem

Configure o processo EXTRACT - Modo Clássico

```
$ ogg

$ ggsci

OGG> dblogin userid OGGUSER@golden12c PASSWORD ogguser
Successfully logged into database.


OGG> ADD EXTRACT EXT_MOD2, TRANLOG, BEGIN NOW


OGG> ADD EXTTRAIL ./dirdat/m2, EXTRACT EXT_MOD2


OGG> info exttrail ./dirdat/m2


OGG> info all


OGG> edit params EXT_MOD2

EXTRACT EXT_MOD2
USERID OGGUSER@golden12c PASSWORD ogguser
EXTTRAIL ./dirdat/m2
TABLE OGG_SOURCE.TAB_MODULE2;
```

Configure o processo PUMP

```
OGG> ADD EXTRACT PMP_MOD2, EXTTRAILSOURCE ./dirdat/m2

OGG> ADD RMTTRAIL ./dirdat/m2, EXTRACT PMP_MOD2

OGG> info all

Program     Status      Group       Lag at Chkpt  Time Since Chkpt

MANAGER     RUNNING
EXTRACT     STOPPED     EXT_MOD2    00:00:00      00:02:40
EXTRACT     STOPPED     PMP_MOD2    00:00:00      00:00:00


OGG> edit params PMP_MOD2

EXTRACT  PMP_MOD2
USERID OGGUSER@golden12c PASSWORD ogguser
RMTHOST <target_hostname>, MGRPORT 7809
RMTTRAIL ./dirdat/m2
TABLE OGG_SOURCE.TAB_MODULE2;

OGG> info all

OGG> info *

OGG> info EXT_MOD2

OGG> info PMP_MOD2
```

Configure o TRANDATA para a tabela da replicação

```
OGG> dblogin userid OGGUSER@golden12c password ogguser


OGG> INFO TRANDATA OGG_SOURCE.TAB_MODULE2

-->>> OBSERVAR o output do comando INFO TRANDATA!!
   |
   |--> Logging of supplemental redo log data is disabled for table OGG_SOURCE.TAB_MODULE2.


OGG> ADD SCHEMATRANDATA OGG_SOURCE


--->>> ou


OGG> ADD TRANDATA OGG_SOURCE.TAB_MODULE2
  |
  |--> Oracle Goldengate support native capture on table OGG_SOURCE.TAB_MODULE2.
  |--> Oracle Goldengate marked following column as key columns on table OGG_SOURCE.TAB_MODULE2: ID.


OGG> INFO TRANDATA OGG_SOURCE.TAB_MODULE2
  |
  |--> Logging of supplemental redo log data is enabled for table OGG_SOURCE.TAB_MODULE2.
  |
  |--> Columns supplementally logged for table OGG_SOURCE.TAB_MODULE2: "ID".
```

Inicie os processos EXTRACT e PUMP

```
OGG> START EXT_MOD2

OGG> START PMP_MOD2

--ou

OGG> START *MOD2
```

Ocorreu erro?

Por que será??? Vamos analisar os logs

```
OGG> INFO ALL

Program     Status      Group       Lag at Chkpt  Time Since Chkpt

MANAGER     RUNNING
EXTRACT     RUNNING     EXT_MOD2    00:00:00      00:00:00
EXTRACT     RUNNING     PMP_MOD2    00:00:00      00:05:57
```

Ambiente de Destino

Configure o processo REPLICAT

```
$ cd $OGG_HOME

./ggsci

OGG> dblogin USERID OGGUSER@PDBOGG01 password ogguser
```

Valide a tabela de CHECKPOINT

```
OGG> INFO CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE
  |
  |--> INFO CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE
```

SE NÃO EXISTIR a tabela de checkpoint, execute o comando ADD CHECKPOINTTABLE

```
OGG> DELETE CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE


OGG> ADD CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE
  |
  |--> Successfully created checkpoint table OGGUSER.CHECKPOINTTABLE.


OGG> INFO CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE
  |
  |--> Checkpoint table OGGUSER.CHECKPOINTTABLE created 2019-03-09 21:44:44.
```

Configure o processo REPLICAT

```
OGG> ADD REPLICAT REP_MOD2, EXTTRAIL ./dirdat/m2, CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE


GGSIC> edit params REP_MOD2

REPLICAT REP_MOD2
USERID OGGUSER@PDBOGG01 PASSWORD ogguser
MAP OGG_SOURCE.TAB_MODULE2, TARGET OGG_TARGET.TAB_MODULE2;


OGG> info all

OGG> info *

OGG> info REP_MOD2
```

Inicie o REPLICAT

```
OGG> START REP_MOD2
```

ERRO ??? E AGORA ??? ONDE VERIFICAR ???

Valide o processo novamente

```
OGG> INFO ALL

Program     Status      Group       Lag at Chkpt  Time Since Chkpt

MANAGER     RUNNING
REPLICAT    RUNNING     REP_MOD2    00:00:00      00:00:00
```

Ambiente de Origem

Comandos para teste de replicação

```
$ sql

SQL> @src_update01_tab_module2
```

Output:

```
SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                                DATE
---------- ---------------------------------------------------------------------- -------------------
         1 GGBR TRAINING - OGG - Instructor: Gilson Martins          10-07-2024 19:00:58
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins          10-07-2024 19:00:58
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins          10-07-2024 19:00:58
         4 GGBR TRAINING - OGG - Instructor: Gilson Martins          10-07-2024 19:00:58
         5 GGBR TRAINING - OGG - Instructor: Gilson Martins          10-07-2024 19:00:58

SQL> update OGG_SOURCE.TAB_MODULE2 set VALUE='Data replication via GoldenGate 21c' where id=1;
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                                DATE
---------- ---------------------------------------------------------------------- -------------------
         1 Data replication via GoldenGate                                    10-07-2024 19:00:58
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins           10-07-2024 19:00:58
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins           10-07-2024 19:00:58
         4 GGBR TRAINING - OGG - Instructor: Gilson Martins           10-07-2024 19:00:58
```

Ambiente de Destino

Verifique a tabela no destino

```
$ conn

SQL> @trg_ver_tab_module2
```

Output:

```
SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                            DATE
---------- ---------------------------------------------------------------- -------------------
         1 Data replication via GoldenGate                                  10-07-2024 19:00:58
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins                 10-07-2024 19:00:58
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins                 10-07-2024 19:00:58
         4 GGBR TRAINING - OGG - Instructor: Gilson Martins                 10-07-2024 19:00:58
```

Realize alguns testes livres de DML e valide a replicação que você implementou.

Capítulo 3 / Exercício 1

Ambiente de Origem

Criptografe a senha do usuário OGGUSER (ALGORITHM BLOWFISH)

```
$ cd $OGG_HOME

$ ./ggsci

OGG> encrypt password ogguser encryptkey default
Using Blowfish encryption with DEFAULT key.
Encrypted password:  AACAAAAAAAAAAAHAVEMFFBTCODIDNHRD
Algorithm used:  BLOWFISH
```

Faça o login com a senha criptografada:

```
OGG> dblogin USERID OGGUSER@golden12c PASSWORD AACAAAAAAAAAAAHAVEMFFBTCODIDNHRD, BLOWFISH, encryptkey default
```

Criptografe a senha do usuário OGGUSER (ALGORITHM AES256)

1. Gere as chaves com o utilitário >> keygen

```
$ ogg

$ ./keygen 256 2

0x77C53F6FD03DAC33857DBC60C32D5044967B7B3B6E66BC321086BC4CF1C5177F

0x29204C524D6C8A46A5F1FE62300B1150140434637012A056CF7E0E4E91CA8541
```

Foram geradas duas chaves, escolha apenas uma delas para os passos seguintes.

```
0x20647E5701F42D28F47CBF42F8E2CD389B7A3270EA295D6C3EA5E81397F69F14
```

2. Crie o arquivo ENCKEYS para armazenar a chave e o nome da chave. O nome da chave pode ser qualquer um, neste exemplo é 'superkey1':

```
$ cd $OGG_HOME

$ vi ENCKEYS

## Key name      Key value
superkey1        0x20647E5701F42D28F47CBF42F8E2CD389B7A3270EA295D6C3EA5E81397F69F14
```

3. Crie a senha utilizando a chave criada.

Comando para fazer a criptografia:

```
ENCRYPT PASSWORD <senha_da_credencial> ENCRYPTKEY <key_name>
```

```
OGG> encrypt password ogguser AES256 encryptkey superkey1
Encrypted password:
AADAAAAAAAAAAAHARBIFZIAHNGKFOJEBYIDIWAACDHGBIAVDAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Algorithm used:  AES256
```


4. Altere os processos EXTRACT e PUMP com o novo login

Extract

DE...:

```
USERID OGGUSER@GOLDEN12C PASSWORD ogguser
```

Para.:

```
USERID OGGUSER@GOLDEN12C PASSWORD
AADAAAAAAAAAAAHALJUDCHWFHFPFIBZECAOHVBQBDDGJJHMGAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
A, AES256, encryptkey superkey
```

-->>> ** Porém a senha mesmo criptografada ainda fica exposta em um arquivo texto!!

Exemplo de dblogin

```
OGG> dblogin USERID OGGUSER@GOLDEN12C PASSWORD
AADAAAAAAAAAAAAHALJUDCHWFHFPFIBZECAOHVBQBDDGJJHMGAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
A, AES256, encryptkey superkey1
```

5. Stop/start dos processos

```
OGG> STOP EXT*
OGG> STOP PMP*

OGG> START EXT*
OGG> START PMP *
```

Ocorreu erro?

E agora??? Qual é o problema e como resolver ???

```
Invalid value for USERID: Error (-12) Error (-11) retrieving key for superkey1 in file ENCKEYS: An error
occurred when implementing encryption. AES128.
PROCESS ABENDING.
```

Capítulo 3 / Exercício 2

Criptografia de trailfile – ENCRYPTTRAIL

Crie uma nova chave com o "key name" --> Sup3r#k31 (./keygen | ENCKEYS)

Gere uma nova chave criptografada de 256 its

```
$ ./keygen 256 1
0xF82C8F0B4DF77126781FF64AF2444042FB229E78F38ED65AC8BE2846C5B57B69
```

Adicione essa chave no arquivo ENCKEYS com o alias --> Sup3r#k31

```
$ ogg

$ vi ENCKEYS

## Key name     Key value
superkey1       0x77C53F6FD03DAC33857DBC60C32D5044967B7B3B6E66BC321086BC4CF1C5177F
Sup3r#k31       0xF82C8F0B4DF77126781FF64AF2444042FB229E78F38ED65AC8BE2846C5B57B69
```

E adicione o parâmetro ENCRYPTTRAIL ANTES do EXTTRAIL (EXTRACT):

```
$ ggsci

OGG> edit params EXT_MOD2
  |
  |--> ENCRYPTTRAIL AES256 KEYNAME Sup3r#k31
```

Faça STOP/START dos processos

```
OGG> STOP EXT_MOD2
OGG> STOP PMP_MOD2

OGG> START EXT_MOD2
OGG> START PMP_MOD2
```

Ambiente de Destino

Faça STOP/START do REPLICAT:

```
$ ogg

$ ggsci

OGG> STOP REP_MOD2

OGG> START REP_MOD2
```

Tudo funcionando até aqui, certo?

Mas será que não deveria ter dado erro no **REPLICAT**?

Ambiente de Origem

Comandos para teste de replicação:

```
SQL> @src_update02_tab_module2
```

Output:

```
SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                           DATE
---------- ------------------------------------------------------------- -------------------
         1 Data replication via GoldenGate                               22-07-2024 17:50:54
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins              22-07-2024 17:50:54
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins              22-07-2024 17:50:54
         4 GGBR TRAINING - OGG - Instructor: Gilson Martins              22-07-2024 17:50:54
         5 GGBR TRAINING - OGG - Instructor: Gilson Martins              22-07-2024 17:50:54

SQL> update OGG_SOURCE.TAB_MODULE2 set VALUE='OGG ENCRYPT: ENCRYPTED REGISTER' where id=4;
SQL> update OGG_SOURCE.TAB_MODULE2 set VALUE='OGG ENCRYPT: ENCRYPTED REGISTER' where id=5;
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                           DATE
---------- ------------------------------------------------------------- -------------------
         1 Data replication via GoldenGate                               22-07-2024 17:50:54
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins              22-07-2024 17:50:54
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins              22-07-2024 17:50:54
         4 OGG ENCRYPT: ENCRYPTED REGISTER                               22-07-2024 17:50:54
         5 OGG ENCRYPT: ENCRYPTED REGISTER                               22-07-2024 17:50:54
```


Ocorreu erro?

Verificar o que ocorreu com o processo PUMP.
E agora o que fazer?

--> Faça START no PUMP caso der esse erro...

```
Error reading LCR from data source. Status 524, data source type TrailDataSource.
Decryption key found in source trail after switching trail sequence.
PROCESS ABENDING.

ERROR   OGG-02268  Decryption key found in source trail after switching trail sequence.
```

Ambiente de Destino

Verifique o que ocorreu com o processo REPLICAT

O que está faltando no processo de DESTINO da replicação ?

```
Error reading LCR from data source. Status 524, data source type 0.
Decryption key found in source trail after switching trail sequence.
PROCESS ABENDING.
```

Ou

```
Input trail file encryption: AES256.
Passthru MAP (TABLE) resolved (entry OGG_SOURCE.TAB_MODULE2): TABLE "OGG_SOURCE"."TAB_MODULE2".
Cannot encrypt a trail file twice. Encryption algorithm found in parameter file: AES256. Encryption
algorithm found in input trail file AES256.
PROCESS ABENDING.

Trail file /u01/app/oracle/product/ogg2/dirdat/m2xxxxxxxxxx is encrypted but no decryption key was
found.
```

Ou

```
Error reading LCR from data source. Status 509, data source type TrailDataSource.
Incompatible record 101 in /u01/app/oracle/product/ogg_trg/dirdat/m2000000002, rba 1,584 when getting trail
header.
Reading /u01/app/oracle/product/ogg_trg/dirdat/m2000000002, current RBA 1,584, 0 records, m_file_seqno = 2,
m_file_rba = 1,584.
PROCESS ABENDING.
```

Verifique as informações dentro do trailfile:

```
$ ./logdump

Logdump> open /u01/app/oracle/product/ogg_src/dirdat/m2000000004
Logdump> n
Logdump> n
Logdump> n
```

O que está faltando no processo de DESTINO da replicação ?

DICA:

BAD RECORD encontrado nos trails (logdump) ?! >>> Busque os mesmos registros no trail da origem

O que foi encontrado ?!

Qual a melhor solução para esse caso ?? Imagine um fluxo replicação do mundo real.

Configure o arquivo ENCKEYS no DESTINO, assim como configurado na origem

```
$ cd ogg

$ vi ENCKEYS

## Key name      Key value
superkey1        0x85C15730AA972D142A9E817015E2F475206BE32CC6BD4E57E5102E1796D6C934
Sup3r#k31        0xFD73C70D7BC53C0F6CE8B31337615E72B3D70B54CFB28F3042E95A42FA042704
```

Adicione o parâmetro **DECRYPTTRAIL** no REPLICAT ANTES do MAP, e depois inicie o REPLICAT:

```
$ ogg

$ ggsci

OGG> edit params REP_MOD2

DECRYPTTRAIL AES256, KEYNAME Sup3r#k31


OGG> start REP_MOD2
```

Ambiente de Origem

Comandos para teste de replicação:

```
$ sqlplus / as sysdba

SQL> @src_insert01_tab_module2
```

Output:

```
SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                                    DATE
---------- -------------------------------------------------------------------------- -------------------
         1 Data replication via GoldenGate                                          22-07-2024 17:50:54
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins                         22-07-2024 17:50:54
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins                         22-07-2024 17:50:54
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                          22-07-2024 17:50:54
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                          22-07-2024 17:50:54

SQL>
insert into OGG_SOURCE.TAB_MODULE2 values (6, 'OGG ENCRYPT: Replicating encrypted data(trailfile)!!!',sysdate);
insert into OGG_SOURCE.TAB_MODULE2 values (7, 'OGG ENCRYPT: Replicating encrypted data(trailfile)!!!',sysdate);
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                                    DATE
---------- -------------------------------------------------------------------------- -------------------
         1 Data replication via GoldenGate                                          22-07-2024 17:50:54
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins                         22-07-2024 17:50:54
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins                         22-07-2024 17:50:54
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                          22-07-2024 17:50:54
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                          22-07-2024 17:50:54
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                   23-07-2024 10:38:22
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                   23-07-2024 10:38:22
```

Ambiente de Destino

```
$ conn

SQL> @trg_ver_tab_module2
```

Output:

```
SQL> select * from OGG_TARGET.TAB_MODULE2 order by 1;

        ID VALUE                                                                                    DATE
---------- ---------------------------------------------------------------------------------------- --------------------
         1 Data replication via GoldenGate                                                        22-07-2024 17:51:19
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins                                       22-07-2024 17:51:19
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins                                       22-07-2024 17:51:19
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                                        22-07-2024 17:51:19
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                                        22-07-2024 17:51:19
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                                 23-07-2024 10:38:22
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                                 23-07-2024 10:38:22
```

Verifique os dados no trail

```
$ ./logdump

Logdump> open <trail>
Logdump> n
Logdump> n
Logdump> n
Logdump> n
Logdump> n
```

Ambiente de Origem

Configure a criptografia também nas mensagens TCP/IP (pacotes) entre a **ORIGEM e DESTINO**.

Edite e configure o processo Pump

```
$ ogg

$ ggsci

OGG> STOP PMP_MOD2


OGG> edit params PMP_MOD2


-->> Alterar de:
RMTHOST <host-destino>, MGRPORT 7809

-->> Para:
RMTHOST <host-destino>, MGRPORT 7809, COMPRESS, ENCRYPT AES256, KEYNAME Sup3r#k31;
```

Observe que além da criptografia, já estamos colocando a compressão de dados (parâmetro COMPRESS) e também na transferência TCP/IP.

Inicie o PUMP

```
OGG> START PMP_MOD2
```

Comandos para teste de replicação:

```
SQL> @src_insert01_tab_module2_02
```

Output:

```
SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                                    DATE
---------- -------------------------------------------------------------------------- -------------------
         1 Data replication via GoldenGate                                          22-07-2024 17:50:54
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins                         22-07-2024 17:50:54
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins                         22-07-2024 17:50:54
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                          22-07-2024 17:50:54
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                          22-07-2024 17:50:54
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                   23-07-2024 10:38:22
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                   23-07-2024 10:38:22


SQL>
insert into OGG_SOURCE.TAB_MODULE2 values (8, 'OGG ENCRYPT: Replicating with encrypted data in TCP/IP
messages!!!',sysdate);

insert into OGG_SOURCE.TAB_MODULE2 values (9, 'OGG ENCRYPT: Replicating with encrypted data in TCP/IP
messages!!!',sysdate);

SQL> commit;

SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                                    DATE
---------- -------------------------------------------------------------------------- -------------------
         1 Data replication via GoldenGate                                          22-07-2024 17:50:54
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins                         22-07-2024 17:50:54
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins                         22-07-2024 17:50:54
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                          22-07-2024 17:50:54
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                          22-07-2024 17:50:54
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                   23-07-2024 10:38:22
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                   23-07-2024 10:38:22
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!       23-07-2024 11:10:20
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!       23-07-2024 11:10:20
```

Ambiente de Destino

Valide a tabela no destino

```
SQL> @trg_ver_tab_module2
```

Output:

```
SQL> select * from OGG_TARGET.TAB_MODULE2 order by 1;

        ID VALUE                                                                                    DATE
---------- ---------------------------------------------------------------------------------------- -------------------
         1 Data replication via GoldenGate                                                          22-07-2024 17:51:19
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins                                         22-07-2024 17:51:19
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins                                         22-07-2024 17:51:19
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                                          22-07-2024 17:51:19
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                                          22-07-2024 17:51:19
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                                   23-07-2024 10:38:22
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                                   23-07-2024 10:38:22
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                       23-07-2024 11:10:20
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                       23-07-2024 11:10:20
```

Capítulo 3 / Exercício 3

Ambiente de Origem

Configure a CREDENTIALSTORE

```
cd $OGG_HOME

$ ./ggsci

OGG> INFO CREDENTIALSTORE

Reading from credential store:

ERROR: Unable to open credential store.


OGG> ADD CREDENTIALSTORE

Credential store created.


OGG> INFO CREDENTIALSTORE

Reading from credential store:

No information found in credential store.


--# CREDENTIAL: ADD USER
OGG> ALTER CREDENTIALSTORE ADD USER OGGUSER@golden12c PASSWORD ogguser ALIAS VAI_CURINTIAS

Credential store altered.


OGG> INFO CREDENTIALSTORE

Reading from credential store:

Default domain: OracleGoldenGate

  Alias: VAI_CURINTIAS
  Userid: OGGUSER


OGG> dblogin useridalias VAI_CURINTIAS
Successfully logged into database.
```

```
--# CREDENTIAL: ADD USER
OGG> ALTER CREDENTIALSTORE ADD USER OGGUSER@golden12c PASSWORD ogguser ALIAS ogg_connect

Credential store altered.



OGG> INFO CREDENTIALSTORE

Reading from credential store:

Default domain: OracleGoldenGate

  Alias: VAI_CURINTIAS
  Userid: OGGUSER

  Alias: ogg_connect
  Userid: OGGUSER



--# CREDENTIAL: DELETE USER
OGG> ALTER CREDENTIALSTORE DELETE USER OGGUSER@golden12c ALIAS VAI_CURINTIAS

Credential store altered.



OGG> INFO CREDENTIALSTORE

Reading from credential store:

Default domain: OracleGoldenGate

  Alias: ogg_connect
  Userid: OGGUSER



OGG> dblogin USERIDALIAS ogg_connect
Successfully logged into database.
```


OBS.: O ALIAS É CASE-SENSITIVE!

Agora vamos mudar a conexão com o banco de dados alterando de **Chave Criptografada** para **Credentialstore**.

De:

```
USERID OGGUSER PASSWORD
AADAAAAAAAAAAAAKACHHJAHKFPECCSJJIVACFGEQHZACGIGPAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
A, AES256, encryptkey superkey1
```

Para:

```
USERIDALIAS <O_SEU_ALIAS>
```

Utilize o comando VIEW REPORT para confirmar que os processos estão utilizando a nova configuração de senha com CREDENTIALSTORE.

Para verificar o arquivo físico da CREDENTIALSTORE, execute o comando abaixo:

```
$ ls -l $OGG_HOME/dircrd

-rw-r----- 1 oracle oinstall 605 Aug 21 17:36 cwallet.sso  <<<==============
```

Crie e configure a WALLET

```
$ ogg

$ ggsci

OGG> create wallet

Created wallet.

Opened wallet.


OGG> add masterkey
2019-03-14T17:58:15Z  INFO    OGG-06142  Created version 1 of master key 'OGG_DEFAULT_MASTERKEY' in Oracle
Wallet.


OGG> open wallet

Opened wallet.



OGG> info masterkey
Masterkey Name: OGG_DEFAULT_MASTERKEY

Version         Creation Date                   Status
1               2019-03-14T14:58:15.000-03:00   Current


OGG> renew masterkey
2019-03-14T18:04:05Z  INFO    OGG-06142  Created version 2 of master key 'OGG_DEFAULT_MASTERKEY' in Oracle
Wallet.


OGG> info masterkey
Masterkey Name: OGG_DEFAULT_MASTERKEY

Version         Creation Date                   Status
1               2019-03-14T14:58:15.000-03:00   Available
2               2019-03-14T15:04:05.000-03:00   Current



OGG> info masterkey version 2
Masterkey Name: OGG_DEFAULT_MASTERKEY

Version         Creation Date                   Status
2               2019-03-14T15:04:05.000-03:00   Current




OGG> sh ls -l $OGG_HOME/dirwlt

total 4
-rw-r-----. 1 oracle oinstall 971 Mar 14 15:09 cwallet.sso
```

--> ENCKEYS (KEYNAME Sup3r#k31)

```
ENCRYPTTRAIL AES256 KEYNAME Sup3r#k31
```

--> WALLET (Automaticamente pega chave da Wallet)

```
ENCRYPTTRAIL AES256
```

Ambiente de Origem

Configure a chave com a WALLET

Crie uma tabela dedicada para este exercício !!!

Efetue o dblogin no OGG

```
$ cd $OGG_HOME

./ggsci

OGG> dblogin userid OGGUSER@golden12c password ogguser
Successfully logged into database.
```

Crie e configure o processo de extração

```
DELETE EXTRACT EXT_WALT
```

```
OGG> ADD EXTRACT EXT_WALT, TRANLOG, BEGIN NOW

OGG> ADD EXTTRAIL ./dirdat/wa, EXTRACT EXT_WALT


OGG> edit params EXT_WALT

EXTRACT EXT_WALT
USERIDALIAS ogg_connect

--# CRIPTOGRAFAR TRAIL COM WALLET
ENCRYPTTRAIL AES256

EXTTRAIL ./dirdat/wa
TABLE OGG_SOURCE.TAB_MODULE2;


OGG> REGISTER EXTRACT EXT_WALT DATABASE
```

Crie e configure o processo PUMP

```
DELETE EXTRACT PMP_WALT
```

```
OGG> ADD EXTRACT PMP_WALT, EXTTRAILSOURCE ./dirdat/wa

OGG> ADD RMTTRAIL ./dirdat/wa, EXTRACT PMP_WALT

OGG> edit params PMP_WALT

EXTRACT   PMP_WALT
USERIDALIAS ogg_connect
RMTHOST <host-destino>, MGRPORT 7809
RMTTRAIL ./dirdat/wa
TABLE OGG_SOURCE.TAB_MODULE2;
~
```

Inicie os processos e consulte o log do OGG (ggserr.log)

```


OGG> START EXT_WALT
OGG> START PMP_WALT


OGG> sh tail -40f ggserr.log


EXTRACT EXT_WALT started.
...
...
Retrieved masterkey OGG_DEFAULT_MASTERKEY version 2 with state Active.
...
...
```

```
OGG> info masterkey
Masterkey Name: OGG_DEFAULT_MASTERKEY

Version         Creation Date                   Status
1               2021-08-21T17:41:47.000+00:00   Available
2               2021-08-21T17:43:05.000+00:00   Current
```

Ambiente de Destino

Configure o processo REPLICAT

```
$ cd $OGG_HOME

$ ./ggsci


OGG> dblogin USERID OGGUSER@PDBOGG01 password ogguser
Successfully logged into database.


OGG> ADD REPLICAT REP_WALT, EXTTRAIL ./dirdat/wa, CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE


OGG> edit params REP_WALT

REPLICAT REP_WALT
USERID OGGUSER@PDBOGG01 PASSWORD ogguser
MAP OGG_SOURCE.TAB_MODULE2, TARGET OGG_TARGET.TAB_MODULE2;
```

Inicie o processo de replicação

```
OGG> START REP_WALT
```

Ambiente de Origem

Comandos para teste de replicação:

```
$ sqlplus / as sysdba

SQL> @src_update03_tab_module2
```

Output:

```
SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                                                DATE
---------- ---------------------------------------------------------------------------------- -------------------
         1 Data replication via GoldenGate                                                    10-07-2024 19:00:58
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins                                   10-07-2024 19:00:58
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins                                   10-07-2024 19:00:58
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                                    10-07-2024 19:00:58
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                                    10-07-2024 19:00:58
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                             10-07-2024 20:42:24
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                             10-07-2024 20:42:24
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                 10-07-2024 20:42:24
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                 10-07-2024 20:42:24

SQL> update OGG_SOURCE.TAB_MODULE2 set VALUE='TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<' where
id <= 3;
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                                                DATE
---------- ---------------------------------------------------------------------------------- -------------------
         1 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<                           10-07-2024 19:00:58
         2 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<                           10-07-2024 19:00:58
         3 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<                           10-07-2024 19:00:58
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                                    10-07-2024 19:00:58
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                                    10-07-2024 19:00:58
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                             10-07-2024 20:42:24
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                             10-07-2024 20:42:24
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                 10-07-2024 20:42:24
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                 10-07-2024 20:42:24
```

Ambiente de Destino

```
$ conn

SQL> @trg_ver_tab_module2
```

Output:

```
SQL> select * from OGG_TARGET.TAB_MODULE2 order by 1;

        ID VALUE                                                                                    DATE
---------- ---------------------------------------------------------------------------------------- -------------------
         1 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<                               10-07-2024 19:21:59
         2 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<                               10-07-2024 19:21:59
         3 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<                               10-07-2024 19:21:59
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                                          10-07-2024 19:21:59
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                                          10-07-2024 19:21:59
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                                   10-07-2024 20:42:24
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                                   10-07-2024 20:42:24
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                       10-07-2024 20:42:24
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                       10-07-2024 20:42:24
```

Olhar no log ggserr.log

```
$ ogg

$ ggsci

OGG> sh tail -40f ggserr.log

REPLICAT REP_WALT started.
...
...
Retrieved masterkey OGG_DEFAULT_MASTERKEY version 2 with state Active.
Input trail file encryption: AES256.
```

PARABÉNS !!!

Você concluir a revisão do OGG e aprendeu as features de Criptografia do Oracle GoldenGate!

Capítulo 4 / Exercício 1

Ambiente de Origem

Crie a tabela OGG_SOURCE.TAB_MAPPING_COLUMN

```
DROP TABLE "OGG_SOURCE"."TAB_MAPPING_COLUMN";
```

```
SQL> @src_create_tab_mapping_column
```

Output:

```
SQL> CREATE TABLE "OGG_SOURCE"."TAB_MAPPING_COLUMN"
  2  (   "ID" NUMBER(5,0) NOT NULL,
  3          "VALUE" VARCHAR2(100),
  4          "COL_A" VARCHAR2(100),
  5          "COL_B" VARCHAR2(100),
  6          "COL_C" VARCHAR2(100),
  7          "DATE" DATE DEFAULT sysdate
  8  )
  9  TABLESPACE TBS_APP_SOURCE;


SQL> ALTER TABLE "OGG_SOURCE"."TAB_MAPPING_COLUMN" ADD CONSTRAINT "PK_TAB_MAPPING_COLUMN" PRIMARY KEY ("ID")
  2  USING INDEX TABLESPACE TBS_APP_SOURCE;

SQL> desc OGG_SOURCE.TAB_MAPPING_COLUMN
 Name                                                      Null?    Type
 ----------------------------------------------------------------- -------- ------------------------------------
 ID                                                        NOT NULL NUMBER(5)
 VALUE                                                              VARCHAR2(100)
 COL_A                                                              VARCHAR2(100)
 COL_B                                                              VARCHAR2(100)
 COL_C                                                              VARCHAR2(100)
 DATE                                                               DATE
```

Ambiente de Destino

Crie a tabela OGG_TARGET.TAB_MAPPING_COLUMN

```
DROP TABLE "OGG_TARGET"."TAB_MAPPING_COLUMN";
```

```
$ conn

SQL> @trg_create_tab_mapping_column
```

Output:

```
SQL> CREATE TABLE "OGG_TARGET"."TAB_MAPPING_COLUMN"
  2  ( "ID" NUMBER(5,0) NOT NULL,
  3    "VALUE" VARCHAR2(100),
  4    "PASSWORD" VARCHAR2(100),
  5    "EMAIL" VARCHAR2(100),
  6    "PHONE" VARCHAR2(100),
  7    "DATE" DATE DEFAULT sysdate
  8  ) TABLESPACE TBS_APP_TARGET;


SQL> ALTER TABLE "OGG_TARGET"."TAB_MAPPING_COLUMN" ADD CONSTRAINT "PK_TAB_MAPPING_COLUMN" PRIMARY KEY ("ID")
USING INDEX TABLESPACE TBS_APP_TARGET;


SQL> desc OGG_TARGET.TAB_MAPPING_COLUMN
 Name                                                                    Null?    Type
 ----------------------------------------------------------------------- -------- ------------------------------------
 ID                                                                      NOT NULL NUMBER(5)
 VALUE                                                                            VARCHAR2(100)
 PASSWORD                                                                         VARCHAR2(100)
 EMAIL                                                                            VARCHAR2(100)
 PHONE                                                                            VARCHAR2(100)
 DATE                                                                             DATE
```

Note que as tabelas foram criadas com o mesmo nome, porém com colunas diferentes!

Você já consegue criar os processos sem estarem prontos? **Vamos tentar**?

1. Adicionar TRANDATA
2. Configurar o processo EXTRACT
3. Configurar o processo PUMP

Sugestão de nome:

```
* EXTRACT: EXT_MAP1
* EXTRACT: PMP_MAP1
* TRAIL..: p1
```

Será que você já está bom mesmo em OGG?

Lembre-se, o segredo é praticar, não tem jeito!!

Enquanto isso, vou pegar um café e já volto...

Ambiente de Origem

Confirme a estrutura da tabela de origem

```
SQL> desc OGG_SOURCE.TAB_MAPPING_COLUMN
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 ID                                        NOT NULL NUMBER(5)
 VALOR                                              VARCHAR2(100)
 COL_A                                              VARCHAR2(100)
 COL_B                                              VARCHAR2(100)
 COL_C                                              VARCHAR2(100)
 DATA                                               DATE
```

Ambiente de Destino

Confirme a estrutura da tabela de destino

```
SQL> desc OGG_TARGET.TAB_MAPPING_COLUMN
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 ID                                        NOT NULL NUMBER(5)
 VALOR                                              VARCHAR2(100)
 PASSWORD                                           VARCHAR2(100)
 EMAIL                                              VARCHAR2(100)
 PHONE                                              VARCHAR2(100)
 DATA                                               DATE
```


Mapeie as colunas entre ORIGEM e DESTINO usando o parâmetro COLMAP:

```
COLMAP (
            USEDEFAULTS,
                PASSWORD     = COL_A,
                EMAIL        = COL_B,
                PHONE        = COL_C
          );
```

Siga a configuração do REPLICAT abaixo

```
$ ogg

$ ggsci

OGG> edit params REP_MAP1

REPLICAT REP_MAP1
USERIDALIAS ogg_connect_pegadinha
MAP OGG_SOURCE.TAB_MAPPING_COLUMN, TARGET OGG_TARGET.TAB_MAPPING_COLUMN, COLMAP (USEDEFAULTS, PASSWORD=COL_A,
EMAIL=COL_B, PHONE=COL_C);

OGG> ADD REPLICAT REP_MAP1, EXTTRAIL ./dirdat/p1, CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE

OGG> INFO REP_MAP1

OGG> START REPLICAT REP_MAP1
```

REPLICAT STOPPED? O que será esse erro?

```
Invalid value for USERIDALIAS: Unable to open credential store. Error code 28,761.
```

- Crie a credentialstore também no destino

Ambiente de Origem

Dispare a seguinte transação

```
$ sqlplus / as sysdba

SQL> @src_insert_update_tab_mapping_column
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_MAPPING_COLUMN values (1, 'OGG - Cp.04 Ex.01', 'A', 'B', 'C', sysdate);
SQL> insert into OGG_SOURCE.TAB_MAPPING_COLUMN values (2, 'OGG - Cp.04 Ex.01', 'A', 'B', 'C', sysdate);
SQL> insert into OGG_SOURCE.TAB_MAPPING_COLUMN values (3, 'OGG - Cp.04 Ex.01', 'A', 'B', 'C', sysdate);
SQL> insert into OGG_SOURCE.TAB_MAPPING_COLUMN values (4, 'OGG - Cp.04 Ex.01', 'A', 'B', 'C', sysdate);
SQL> insert into OGG_SOURCE.TAB_MAPPING_COLUMN values (5, 'OGG - Cp.04 Ex.01', 'A', 'B', 'C', sysdate);
SQL> commit;


SQL> select * from OGG_SOURCE.TAB_MAPPING_COLUMN order by 1;

        ID VALUE                          COL_A           COL_B           COL_C           DATE
---------- ------------------------------ --------------- --------------- --------------- --------------------
         1 OGG - Cp.04 Ex.01              A               B               C               11-07-2024 12:54:08
         2 OGG - Cp.04 Ex.01              A               B               C               11-07-2024 12:54:09
         3 OGG - Cp.04 Ex.01              A               B               C               11-07-2024 12:54:09
         4 OGG - Cp.04 Ex.01              A               B               C               11-07-2024 12:54:09
         5 OGG - Cp.04 Ex.01              A               B               C               11-07-2024 12:54:09

SQL> update OGG_SOURCE.TAB_MAPPING_COLUMN set col_a = 'COLUNA A' where id = 1;
SQL> update OGG_SOURCE.TAB_MAPPING_COLUMN set col_b = 'COLUNA B' where id = 2;
SQL> update OGG_SOURCE.TAB_MAPPING_COLUMN set col_c = 'COLUNA C' where id = 3;
SQL> commit;


SQL> select * from OGG_SOURCE.TAB_MAPPING_COLUMN order by 1;

        ID VALUE                          COL_A           COL_B           COL_C           DATE
---------- ------------------------------ --------------- --------------- --------------- --------------------
         1 OGG - Cp.04 Ex.01              COLUNA A        B               C               11-07-2024 12:54:08
         2 OGG - Cp.04 Ex.01              A               COLUNA B        C               11-07-2024 12:54:09
         3 OGG - Cp.04 Ex.01              A               B               COLUNA C        11-07-2024 12:54:09
         4 OGG - Cp.04 Ex.01              A               B               C               11-07-2024 12:54:09
         5 OGG - Cp.04 Ex.01              A               B               C               11-07-2024 12:54:09
```

Vamos rastrear se todos os processos capturaram esses comandos?

```
$ ogg

$ ggsci

OGG> send EXT_MAP1 stats

OGG> send PMP_MAP1 stats
```

Ambiente de Destino

Verifique também o processo de replicação

```
OGG> send REP_MAP1 stats

OGG> exit
```

Verifique se os dados foram carregados e atualizados no ambiente de DESTINO

```
$ conn

SQL> @trg_ver_tab_mapping_column
```

Output:

```
SQL> select * from OGG_TARGET.TAB_MAPPING_COLUMN order by 1;

        ID VALUE                          PASSWORD        EMAIL           PHONE           DATE
---------- ------------------------------ --------------- --------------- --------------- -------------------
         1 OGG      - Cp.04 Ex.01         COLUNA A         B               C               11-07-2024 14:32:52
         2 OGG      - Cp.04 Ex.01         A                COLUNA B        C               11-07-2024 14:32:52
         3 OGG      - Cp.04 Ex.01         A                B               COLUNA C        11-07-2024 14:32:52
         4 OGG      - Cp.04 Ex.01         A                B               C               11-07-2024 14:32:52
         5 OGG      - Cp.04 Ex.01         A                B               C               11-07-2024 14:32:52
```

Faça mais alguns testes livres à vontade. Aproveite também para tirar as suas dúvidas!

Ambiente de Origem

Utilizando o parâmetro: **COLS, COLSEXCEPT**

Crie a tabela OGG_SOURCE.TAB_COLS

```
DROP TABLE "OGG_SOURCE"."TAB_COLS";
```

```
SQL> @src_create_tab_cols
```

Output:

```
SQL> CREATE TABLE "OGG_SOURCE"."TAB_COLS"
  2  (    "ID" NUMBER(5,0) NOT NULL,
  3           "VALUE" VARCHAR2(100),
  4           "COL_1" VARCHAR2(100),
  5           "COL_2" VARCHAR2(100),
  6           "COL_3" NUMBER,
  7           "DATE" DATE DEFAULT sysdate
  8   ) TABLESPACE TBS_APP_SOURCE;


SQL> ALTER TABLE "OGG_SOURCE"."TAB_COLS" ADD CONSTRAINT "PK_TAB_COLS" PRIMARY KEY ("ID")
  2  USING INDEX TABLESPACE TBS_APP_SOURCE;


SQL> DESC OGG_SOURCE.TAB_COLS
 Name                                                                    Null?    Type
 ----------------------------------------------------------------------- -------- ------------------
 ID                                                                      NOT NULL NUMBER(5)
 VALUE                                                                            VARCHAR2(100)
 COL_1                                                                            VARCHAR2(100)
 COL_2                                                                            VARCHAR2(100)
 COL_3                                                                            NUMBER
 DATE                                                                             DATE
```

Configure o TRANDATA dessa nova tabela

```
$ ogg

$ ggsci

OGG> dblogin useridalias ogg_connect

OGG> ADD TRANDATA OGG_SOURCE.TAB_COLS

OGG> INFO TRANDATA OGG_SOURCE.TAB_COLS
```

Importante: Siga a ordem das etapas abaixo para realizar as configurações de MAPPING

1. STOP dos processos EXT_MAP1, PMP_MAP1 e REP_MAP1
2. Configurar a tabela conforme abaixo no EXTRACT e REPLICAT
3. START dos processos EXT_MAP1, PMP_MAP1 e REP_MAP1


```
--# EXT_MAP1
TABLE OGG_SOURCE.TAB_COLS, COLS (ID, COL_1,COL_3,DATE);

--# PMP_MAP1
TABLE OGG_TARGET.TAB_COLS;
```

→ Não faça start do processo ainda.

Gere os seguintes comandos DML:


```
$ sql

SQL> @src_insert_tab_cols
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_COLS values (1, 'OGG: VALUE', 'OGG: COL_1', 'OGG: COL_2', 3, sysdate);

SQL> insert into OGG_SOURCE.TAB_COLS values (2, 'OGG: VALUE', 'OGG: COL_1', 'OGG: COL_2', 3, sysdate);

SQL> commit;
```

Verifique o resultado da alteração

```
SQL> @src_ver_tab_cols
```

Output:

```
SQL> select * from OGG_SOURCE.TAB_COLS order by 1;

        ID VALUE           COL_1           COL_2           COL_3 DATE
---------- --------------- --------------- --------------- ----- -------------------
         1 OGG: VALUE      OGG: COL_1      OGG: COL_2          3 11-07-2024 14:41:32
         2 OGG: VALUE      OGG: COL_1      OGG: COL_2          3 11-07-2024 14:41:32
```

Ambiente de Destino

Crie a tabela "OGG_TARGET"."TAB_COLS" no destino

```
SQL> @trg_create_tab_cols
```

Output:

```
SQL> CREATE TABLE "OGG_TARGET"."TAB_COLS"
  2  (   "ID" NUMBER(5,0) NOT NULL,
  3          "VALUE" VARCHAR2(100),
  4          "COL_1" VARCHAR2(100),
  5          "COL_2" VARCHAR2(100),
  6          "COL_3" NUMBER,
  7          "DATE" DATE DEFAULT sysdate
  8  )
  9  TABLESPACE TBS_APP_TARGET;


SQL> ALTER TABLE "OGG_TARGET"."TAB_COLS" ADD CONSTRAINT "PK_TAB_COLS" PRIMARY KEY ("ID") USING INDEX TABLESPACE
TBS_APP_TARGET;


SQL> DESC OGG_TARGET.TAB_COLS
 Name                                                                    Null?    Type
 ----------------------------------------------------------------------- -------- ------------------------------------
 ID                                                                      NOT NULL NUMBER(5)
 VALUE                                                                            VARCHAR2(100)
 COL_1                                                                            VARCHAR2(100)
 COL_2                                                                            VARCHAR2(100)
 COL_3                                                                            NUMBER
 DATE
```

Adicione a tabela no REP_MAP1

```
--# REP_MAP1
MAP OGG_SOURCE.TAB_COLS, TARGET OGG_TARGET.TAB_COLS;
```

Ambiente de Origem

Inicie os processos EXTRACT

```
OGG> START EXT_MAP1
OGG> START PMP_MAP1
```

Ambiente de Destino

Inicie o REPLICAT

```
$ ogg

$ ggsci

OGG> START REP_MAP1
```

Valide a replicação por meio da tabela de destino

```
SQL> @trg_ver_tab_cols
```

Output:

```
SQL> select * from OGG_TARGET.TAB_COLS order by 1;
```

Faça mais alguns testes livres à vontade.

Ambiente de Origem

Utilizando o parâmetro: **COLSEXCEPT**

Crie a tabela TAB_COLSEXCEPT

```
SQL> @src_create_tab_colsexcept
```

Output:

```
SQL> CREATE TABLE "OGG_SOURCE"."TAB_COLSEXCEPT"
  2   ("ID" NUMBER(5,0) NOT NULL,
  3           "VALUE" VARCHAR2(100),
  4           "COL_1" VARCHAR2(100),
  5           "COL_2" VARCHAR2(100),
  6           "COL_3" NUMBER,
  7           "DATE" DATE DEFAULT sysdate)
  8   TABLESPACE TBS_APP_SOURCE;


SQL> ALTER TABLE "OGG_SOURCE"."TAB_COLSEXCEPT" ADD CONSTRAINT "PK_TAB_COLSEXCEPT" PRIMARY KEY ("ID")
  2   USING INDEX TABLESPACE TBS_APP_SOURCE;


SQL> desc OGG_SOURCE.TAB_COLSEXCEPT
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------
 ID                                        NOT NULL NUMBER(5)
 VALUE                                              VARCHAR2(100)
 COL_1                                              VARCHAR2(100)
 COL_2                                              VARCHAR2(100)
 COL_3                                              NUMBER
 DATE                                               DATE
```

Configure o TRANDATA para a tabela nova

```
$ ogg

$ ggsci

OGG> dblogin useridalias ogg_connect

OGG> ADD TRANDATA OGG_SOURCE.TAB_COLSEXCEPT

OGG> INFO TRANDATA OGG_SOURCE.TAB_COLSEXCEPT
```

Importante: Siga a ordem das etapas abaixo para realizar as configurações de MAPPING

1. STOP dos processos EXT_MAP1, PMP_MAP1 e REP_MAP1
2. Configurar a tabela conforme abaixo no EXTRACT e REPLICAT
3. START dos processos EXT_MAP1, PMP_MAP1 e REP_MAP1

```
--# EXT_MAP1
TABLE OGG_SOURCE.TAB_COLSEXCEPT, COLSEXCEPT (VALUE, COL_1, COL_3);

--# PMP_MAP1
TABLE OGG_SOURCE.TAB_COLSEXCEPT;
```

→ Não faça start do processo ainda.

Ambiente de Destino

```
SQL> @trg_create_tab_colsexcept
```

Output:

```
SQL> CREATE TABLE "OGG_TARGET"."TAB_COLSEXCEPT"
  2  (   "ID" NUMBER(5,0) NOT NULL,
  3          "COL_2" VARCHAR2(100),
  4          "DATE" DATE DEFAULT sysdate
  5  )
  6  TABLESPACE TBS_APP_TARGET;


SQL> ALTER TABLE "OGG_TARGET"."TAB_COLSEXCEPT" ADD CONSTRAINT "PK_TAB_COLSEXCEPT" PRIMARY KEY ("ID")
  2  USING INDEX TABLESPACE TBS_APP_TARGET;


SQL> desc OGG_TARGET.TAB_COLSEXCEPT
 Name    Null?    Type
 ------- -------- ----------------
 ID      NOT NULL NUMBER(5)
 COL_2            VARCHAR2(100)
 DATE             DATE
```

Configure a tabela para o REP_MAP1

```
--# REP_MAP1
MAP OGG_SOURCE.TAB_COLSEXCEPT, TARGET OGG_TARGET.TAB_COLSEXCEPT;
```

Ambiente de Origem

Inicie os processos

```
$ ogg

$ ggsci

OGG> START EXT_MAP1

OGG> START PMP_MAP1
```


Ambiente de Destino

Inicie o processo REP_MAP1

```
OGG> START REP_MAP1
```

Ambiente de Origem

Dispare os seguintes comandos DML

```
SQL> @src_insert01_tab_colsexcept
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_COLSEXCEPT values (1, 'COL VALUE', 'COLSEXCEPT_1', 'COLSEXCEPT_2', 3, sysdate);
SQL> insert into OGG_SOURCE.TAB_COLSEXCEPT values (2, 'COL VALUE', 'COLSEXCEPT_1', 'COLSEXCEPT_2', 3, sysdate);
SQL> insert into OGG_SOURCE.TAB_COLSEXCEPT values (3, 'COL VALUE', 'COLSEXCEPT_1', 'COLSEXCEPT_2', 3, sysdate);
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_COLSEXCEPT order by 1;

        ID VALUE           COL_1               COL_2               COL_3 DATE
---------- --------------- ------------------- ------------------- ----- -------------------
         1 COL VALUE       COLSEXCEPT_1        COLSEXCEPT_2            3 11-07-2024 14:57:03
         2 COL VALUE       COLSEXCEPT_1        COLSEXCEPT_2            3 11-07-2024 14:57:03
         3 COL VALUE       COLSEXCEPT_1        COLSEXCEPT_2            3 11-07-2024 14:57:03
```

Ambiente de Destino

Valide o conteúdo da tabela

```
SQL> @trg_ver_tab_colsexcept
```

Output:

```
SQL> select * from OGG_TARGET.TAB_COLSEXCEPT order by 1;

        ID COL_2                DATE
---------- -------------------- -------------------
         1 COLSEXCEPT 2         11-07-2024 15:05:33
         2 COLSEXCEPT_2         11-07-2024 15:05:33
         3 COLSEXCEPT_2         11-07-2024 15:05:33
```

KEYCOLS: usado para definir manualmente uma coluna como PK

```
TABLE OGG_SOURCE.TAB, KEYCOLS ( ID );
```

Capítulo 4 / Exercício 2

Ambiente de Origem

Crie a tabela OGG_SOURCE.TAB_FILTER

```
DROP TABLE "OGG_SOURCE"."TAB_FILTER";
```

```
SQL> @src_create_tab_filter
```

Output:

```
SQL> CREATE TABLE "OGG_SOURCE"."TAB_FILTER"
  2  (    "ID" NUMBER(5,0) NOT NULL,
  3           "VALUE" VARCHAR2(100),
  4           "COL_FILTER_1" VARCHAR2(100),
  5           "COL_FILTER_2" VARCHAR2(100),
  6           "COL_FILTER_3" NUMBER,
  7           "DATE" DATE DEFAULT sysdate)
  8  TABLESPACE TBS_APP_SOURCE;


SQL> ALTER TABLE "OGG_SOURCE"."TAB_FILTER" ADD CONSTRAINT "PK_TAB_FILTER" PRIMARY KEY ("ID") USING INDEX
TABLESPACE TBS_APP_SOURCE;


SQL> desc OGG_SOURCE.TAB_FILTER
 Name                 Null?    Type
 -------------------- -------- --------------------
 ID                   NOT NULL NUMBER(5)
 VALUE                         VARCHAR2(100)
 COL_FILTER_1                  VARCHAR2(100)
 COL_FILTER_2                  VARCHAR2(100)
 COL_FILTER_3                  NUMBER
 DATE                          DATE
```

Ambiente de Destino

Crie a tabela OGG_TARGET.TAB_FILTER.

```
DROP TABLE "OGG_TARGET"."TAB_FILTER";
```

```
SQL> @trg_create_tab_filter
```

Output:

```
SQL> CREATE TABLE "OGG_TARGET"."TAB_FILTER"
  2  ( "ID" NUMBER(5,0) NOT NULL,
  3          "VALUE" VARCHAR2(100),
  4          "COL_FILTER_1" VARCHAR2(100),
  5          "COL_FILTER_2" VARCHAR2(100),
  6          "COL_FILTER_3" NUMBER,
  7          "DATE" DATE DEFAULT sysdate)
  8  TABLESPACE TBS_APP_TARGET;

SQL> ALTER TABLE "OGG_TARGET"."TAB_FILTER" ADD CONSTRAINT "PK_TAB_FILTER" PRIMARY KEY ("ID") USING INDEX
TABLESPACE TBS_APP_TARGET;


SQL> desc OGG_TARGET.TAB_FILTER
Name                            Null?    Type
------------------------------- -------- ----------------
 ID                              NOT NULL NUMBER(5)
 VALUE                                    VARCHAR2(100)
 COL_FILTER_1                             VARCHAR2(100)
 COL_FILTER_2                             VARCHAR2(100)
 COL_FILTER_3                             NUMBER
 DATE                                     DATE
```

Ambiente de Origem

Importante: **Siga a ordem** das etapas abaixo para realizar as configurações de MAPPING

1. Adicionar o TRANDATA na tabela OGG_SOURCE.TAB_FILTER

2. Parar o processo EXT_MAP1, PMP_MAP1 e adicionar a tabela OGG_SOURCE.TAB_FILTER
   Parar o processo REP_MAP1 e adicionar a tabela OGG_TARGET.TAB_FILTER;

3. START de todos os processos;

4. Fazer um teste de replicação simples:

```
SQL> @src_insert01_tab_filter
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_FILTER values (1, 'OGG  - Cp.04 Ex.02', 'F1', 'F2', 0, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (2, 'OGG  - Cp.04 Ex.02', 'F1', 'F2', 0, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (3, 'OGG  - Cp.04 Ex.02', 'F1', 'F2', 0, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (4, 'OGG  - Cp.04 Ex.02', 'F1', 'F2', 0, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (5, 'OGG  - Cp.04 Ex.02', 'F1', 'F2', 0, sysdate);
SQL> commit;


SQL> select * from OGG_SOURCE.TAB_FILTER order by 1;

        ID VALUE                          COL_FILTER_1                   COL_FILTER COL_FILTER_3  DATE
---------- ------------------------------ ------------------------------ ---------- ------------  -------------
         1 OGG  - Cp.04 Ex.02             F1                             F2                    0  11-07-2024
         2 OGG  - Cp.04 Ex.02             F1                             F2                    0  11-07-2024
         3 OGG  - Cp.04 Ex.02             F1                             F2                    0  11-07-2024
         4 OGG  - Cp.04 Ex.02             F1                             F2                    0  11-07-2024
         5 OGG  - Cp.04 Ex.02             F1                             F2                    0  11-07-2024
```

Ambiente de Destino

Valide o conteúdo da tabela no destino

```
SQL> @trg_ver_tab_filter
```

Output:

```
SQL> select * from OGG_TARGET.TAB_FILTER order by 1;

        ID VALUE                          COL_FILTER_1                  COL_FILTER COL_FILTER_3  DATE
---------- ------------------------------ ----------------------------- ---------- ------------  -------------
         1 OGG  - Cp.04 Ex.02             F1                            F2                    0 11-07-2024
         2 OGG  - Cp.04 Ex.02             F1                            F2                    0 11-07-2024
         3 OGG  - Cp.04 Ex.02             F1                            F2                    0 11-07-2024
         4 OGG  - Cp.04 Ex.02             F1                            F2                    0 11-07-2024
         5 OGG  - Cp.04 Ex.02             F1                            F2                    0 11-07-2024
```

Utilizando o parâmetro: FILTER

- REPLICAR LINHAS COM FILTER (QUANDO VALUE = "INTERNACIONAL OR GREMIO?")
- FILTER + @STREQ

Ambiente de Origem

Importante: Siga a ordem das etapas abaixo para realizar as configurações de MAPPING

1. STOP do processo EXT_MAP1
2. Configurar a tabela conforme abaixo
3. START do processo EXT_MAP1

Configure os processos

```
$ ogg

$ ggsci

OGG> edit params EXT_MAP1
…
--TABLE OGG_SOURCE.TAB_FILTER;
TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING'));
```

Gere os seguintes comandos DML

```
SQL> @src_insert02_tab_filter
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_FILTER values (10, 'OGG    - Cp.04 Ex.02', 'F1', 'F2', 0, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (11, 'OGG    - Cp.04 Ex.02', 'OGGUSER TRAINING', 'F2', 0,
sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (21, 'OGG    - Cp.04 Ex.02', 'GREMIO', 'F2', 0, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (31, 'OGG    - Cp.04 Ex.02', 'Gremio', 'F2', 0, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (32, 'OGG    - Cp.04 Ex.02', 'GREMIO', 'F2', 0, sysdate);
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_FILTER order by 1;

        ID VALUE                          COL_FILTER_1                   COL_FILTER COL_FILTER_3 DATE
---------- ------------------------------ ------------------------------ ---------- ------------ --------------
         1 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         2 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         3 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         4 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         5 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
        10 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
        11 OGG    - Cp.04 Ex.02          OGGUSER TRAINING               F2                    0 11-07-2024
        21 OGG    - Cp.04 Ex.02          GREMIO                         F2                    0 11-07-2024
        31 OGG    - Cp.04 Ex.02          Gremio                         F2                    0 11-07-2024
        32 OGG    - Cp.04 Ex.02          GREMIO                         F2                    0 11-07-2024
```

Veja o que foi replicado no destino, faça alguns testes

Ambiente de Destino

Valide o resultado da replicação

```
SQL> @trg_ver_tab_filter
```

Output:

```
SQL> select * from OGG_TARGET.TAB_FILTER order by 1;

        ID VALUE                          COL_FILTER_1                   COL_FILTER COL_FILTER_3 DATE
---------- ------------------------------ ------------------------------ ---------- ------------ ----------
         1 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         2 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         3 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         4 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         5 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
        11 OGG    - Cp.04 Ex.02          OGGUSER TRAINING               F2                    0 11-07-2024
```

FILTRO 1: @STREQ

1. STOP do processo EXT_MAP1
2. Configurar a tabela conforme abaixo
3. START do processo EXT_MAP1

Regras que CAEM NA CERTIFICACAO:

--> 1 (true) if the strings are equal.

--> 0 (false) if the strings are not equal.

Ambiente de Origem

Configure o filtro no EXT_MAP1

```
--TABLE OGG_SOURCE.TAB_FILTER;
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING'));
TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') > 0);
```

Dispare os seguintes comandos DML

```
SQL> @src_insert02_tab_filter
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_FILTER values (10, 'OGG    - Cp.04 Ex.02', 'F1', 'F2', 0, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (11, 'OGG    - Cp.04 Ex.02', 'OGGUSER TRAINING', 'F2', 0, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (21, 'OGG    - Cp.04 Ex.02', 'GREMIO', 'F2', 0, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (31, 'OGG    - Cp.04 Ex.02', 'Gremio', 'F2', 0, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (32, 'OGG    - Cp.04 Ex.02', 'GREMIO', 'F2', 0, sysdate);
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_FILTER order by 1;

        ID VALUE                          COL_FILTER_1                   COL_FILTER COL_FILTER_3 DATE
---------- ------------------------------ ------------------------------ ---------- ------------ --------------
         1 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         2 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         3 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         4 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         5 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
        10 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
        11 OGG    - Cp.04 Ex.02          OGGUSER TRAINING               F2                    0 11-07-2024
        21 OGG    - Cp.04 Ex.02          GREMIO                         F2                    0 11-07-2024
        31 OGG    - Cp.04 Ex.02          Gremio                         F2                    0 11-07-2024
        32 OGG    - Cp.04 Ex.02          GREMIO                         F2                    0 11-07-2024
```


Veja o que foi replicado no destino, faça alguns testes

Ambiente de Destino

```
SQL> @trg_ver_tab_filter
```

Output:

```
SQL> select * from OGG_TARGET.TAB_FILTER order by 1;

        ID VALUE                          COL_FILTER_1                   COL_FILTER COL_FILTER_3 DATE
---------- ------------------------------ ------------------------------ ---------- ------------ ----------
         1 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         2 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         3 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         4 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         5 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
        11 OGG    - Cp.04 Ex.02          OGGUSER TRAINING               F2                    0 11-07-2024
```

Ambiente de Origem

FILTRO 2: @STREQ

1. STOP do processo EXT_MAP1
2. Configurar a tabela conforme abaixo
3. START do processo EXT_MAP1

Faça a seguinte alterção nos parâmetros do EXTRACT EXT_MAP1

```
--TABLE OGG_SOURCE.TAB_FILTER;
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING'));
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') > 0);
TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') = 0);
```

Ambiente de Origem

Gere os seguintes comandos DML

```
SQL> @src_insert04_tab_filter
```

Output:

```
SQL>
insert into OGG_SOURCE.TAB_FILTER values (123, 'OGG    - Cp.04 Ex.02', 'OGGUSER Training', 'F2', 0, sysdate);
insert into OGG_SOURCE.TAB_FILTER values (124, 'OGG    - Cp.04 Ex.02', 'OGGUSER TRAINING', 'F2', 0, sysdate);
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_FILTER order by 1;

        ID VALUE                          COL_FILTER_1                   COL_FILTER COL_FILTER_3 DATE
---------- ------------------------ ------------------------------ ---------- ------------ ----------
         1 OGG    - Cp.04 Ex.02    F1                             F2                    0 11-07-2024
         2 OGG    - Cp.04 Ex.02    F1                             F2                    0 11-07-2024
         3 OGG    - Cp.04 Ex.02    F1                             F2                    0 11-07-2024
         4 OGG    - Cp.04 Ex.02    F1                             F2                    0 11-07-2024
         5 OGG    - Cp.04 Ex.02    F1                             F2                    0 11-07-2024
        10 OGG    - Cp.04 Ex.02    F1                             F2                    0 11-07-2024
        11 OGG    - Cp.04 Ex.02    OGGUSER TRAINING               F2                    0 11-07-2024
        21 OGG    - Cp.04 Ex.02    GREMIO                         F2                    0 11-07-2024
        22 OGG    - Cp.04 Ex.02    OGGUSER Training               F2                    0 11-07-2024
        31 OGG    - Cp.04 Ex.02    Gremio                         F2                    0 11-07-2024
        32 OGG    - Cp.04 Ex.02    GREMIO                         F2                    0 11-07-2024
        67 OGG    - Cp.04 Ex.02    OGGUSER TRAINING               F2                    0 11-07-2024
       123 OGG    - Cp.04 Ex.02    OGGUSER Training               F2                    0 11-07-2024
       124 OGG    - Cp.04 Ex.02    OGGUSER TRAINING               F2                    0 11-07-2024
```

Ambiente de Destino

Valide a tabela de destino da replicação

```
SQL> @trg_ver_tab_filter
```

Output:

```
SQL> select * from OGG_TARGET.TAB_FILTER order by 1;

        ID VALUE                          COL_FILTER_1        COL_FILTER COL_FILTER_3 DATE
---------- ------------------------------ ------------------- ---------- ------------ ----------
         1 OGG    - Cp.04 Ex.02          F1                  F2                    0 11-07-2024
         2 OGG    - Cp.04 Ex.02          F1                  F2                    0 11-07-2024
         3 OGG    - Cp.04 Ex.02          F1                  F2                    0 11-07-2024
         4 OGG    - Cp.04 Ex.02          F1                  F2                    0 11-07-2024
         5 OGG    - Cp.04 Ex.02          F1                  F2                    0 11-07-2024
        11 OGG    - Cp.04 Ex.02          OGGUSER TRAINING    F2                    0 11-07-2024
        67 OGG    - Cp.04 Ex.02          OGGUSER TRAINING    F2                    0 11-07-2024
       123 OGG    - Cp.04 Ex.02          OGGUSER Training    F2                    0 11-07-2024
```

Ambiente de Origem

FILTRO 3: @STREQ

1. STOP do processo EXT_MAP1
2. Configurar a tabela conforme abaixo
3. START do processo EXT_MAP1

```
--TABLE OGG_SOURCE.TAB_FILTER;
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING'));
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') > 0);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') = 0);
TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') = 1);
```

Dispare os seguintes comandos DML.

```
SQL> @src_insert05_tab_filter
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_FILTER values (41, 'Cp.04 Ex.02', 'OGGUSER TRAINING', 'F2', 0, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (42, 'Cp.04 Ex.02', 'OGGUSER Training', 'F2', 0, sysdate);
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_FILTER order by 1;

        ID VALUE                          COL_FILTER_1           COL_FILTER COL_FILTER_3 DATE
---------- ------------------------------ ---------------------- ---------- ------------ -----------
         1 OGG    - Cp.04 Ex.02          F1                     F2                    0 11-07-2024
         2 OGG    - Cp.04 Ex.02          F1                     F2                    0 11-07-2024
         3 OGG    - Cp.04 Ex.02          F1                     F2                    0 11-07-2024
         4 OGG    - Cp.04 Ex.02          F1                     F2                    0 11-07-2024
         5 OGG    - Cp.04 Ex.02          F1                     F2                    0 11-07-2024
        10 OGG    - Cp.04 Ex.02          F1                     F2                    0 11-07-2024
        11 OGG    - Cp.04 Ex.02          OGGUSER TRAINING       F2                    0 11-07-2024
        21 OGG    - Cp.04 Ex.02          GREMIO                 F2                    0 11-07-2024
        22 OGG    - Cp.04 Ex.02          OGGUSER Training       F2                    0 11-07-2024
        31 OGG    - Cp.04 Ex.02          Gremio                 F2                    0 11-07-2024
        32 OGG    - Cp.04 Ex.02          GREMIO                 F2                    0 11-07-2024
        41 Cp.04 Ex.02                   OGGUSER TRAINING       F2                    0 11-07-2024
        42 Cp.04 Ex.02                   OGGUSER Training       F2                    0 11-07-2024
        67 OGG    - Cp.04 Ex.02          OGGUSER TRAINING       F2                    0 11-07-2024
       123 OGG    - Cp.04 Ex.02          OGGUSER Training       F2                    0 11-07-2024
       124 OGG    - Cp.04 Ex.02          OGGUSER TRAINING       F2                    0 11-07-2024
```

Ambiente de Destino

Valide o destino da replicação

```
SQL> @trg_ver_tab_filter
```

Output:

```
SQL> select * from OGG_TARGET.TAB_FILTER order by 1;

  ID VALUE                    COL_FILTER_1     COL_FILTER COL_FILTER_3 DATE
---- -------------------- ---------------- ---------- ------------ -------------------
   1 OGG  - Cp.04 Ex.02    F1               F2                    0 03-08-2024 16:03:00
   2 OGG  - Cp.04 Ex.02    F1               F2                    0 03-08-2024 16:03:01
   3 OGG  - Cp.04 Ex.02    F1               F2                    0 03-08-2024 16:03:01
   4 OGG  - Cp.04 Ex.02    F1               F2                    0 03-08-2024 16:03:01
   5 OGG  - Cp.04 Ex.02    F1               F2                    0 03-08-2024 16:03:01
  11 OGG  - Cp.04 Ex.02    OGGUSER TRAINING F2                    0 03-08-2024 16:25:13
  41 Cp.04 Ex.02           OGGUSER TRAINING F2                    0 03-08-2024 16:35:11
 123 OGG    - Cp.04 Ex.02  OGGUSER Training F2                    0 03-08-2024 16:38:23

8 rows selected.
```

Ambiente de Origem

FILTRO 4: FILTER + @StrFind (Quando a coluna “x” contém a palavra “xpto”)

1. STOP do processo EXT_MAP1
2. Configurar a tabela conforme abaixo
3. START do processo EXT_MAP1

```
--TABLE OGG_SOURCE.TAB_FILTER;
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING'));
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') > 0);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') = 0);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') = 1);
TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STRFIND (COL_FILTER_1, 'WANNA MOVE TO LUXEMBURGO') > 0);
```

Ambiente de Origem

Gere os seguintes comandos DML

```
SQL> @src_insert06_tab_filter
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_FILTER values
  2  (6661, 'Cp.04 Ex.02', 'WANNA MOVE TO LUXEMBURGO! 123 TESTES ', 'F2', 0, sysdate);

SQL> insert into OGG_SOURCE.TAB_FILTER values
  2  (6662, 'Cp.04 Ex.02', 'WANNA MOVE TO LUXEMBURGO!', 'F2', 0, sysdate);

SQL> insert into OGG_SOURCE.TAB_FILTER values
  2  (6663, 'Cp.04 Ex.02', 'I AM FRIEND OF OTALBA AND I WANNA MOVE TO LUXEMBURGO!', 'F2', 0, sysdate);

SQL> insert into OGG_SOURCE.TAB_FILTER values
  2  (6664, 'Cp.04 Ex.02', 'WANNA MOVE TO LUX!', 'F2', 0, sysdate);

SQL> commit;

SQL> select * from OGG_SOURCE.TAB_FILTER order by 1;

    ID VALUE                     COL_FILTER_1                       COL_FILTER COL_FILTER_3 DATE
------ ------------------------- ---------------------------------- ---------- ------------ -----------
     1 OGG    - Cp.04 Ex.02     F1                                 F2                    0 11-07-2024
     2 OGG    - Cp.04 Ex.02     F1                                 F2                    0 11-07-2024
     3 OGG    - Cp.04 Ex.02     F1                                 F2                    0 11-07-2024
     4 OGG    - Cp.04 Ex.02     F1                                 F2                    0 11-07-2024
     5 OGG    - Cp.04 Ex.02     F1                                 F2                    0 11-07-2024
    10 OGG    - Cp.04 Ex.02     F1                                 F2                    0 11-07-2024
    11 OGG    - Cp.04 Ex.02     OGGUSER TRAINING                   F2                    0 11-07-2024
    21 OGG    - Cp.04 Ex.02     GREMIO                             F2                    0 11-07-2024
    22 OGG    - Cp.04 Ex.02     OGGUSER Training                   F2                    0 11-07-2024
    31 OGG    - Cp.04 Ex.02     Gremio                             F2                    0 11-07-2024
    32 OGG    - Cp.04 Ex.02     GREMIO                             F2                    0 11-07-2024
    41 Cp.04 Ex.02              OGGUSER TRAINING                   F2                    0 11-07-2024
    42 Cp.04 Ex.02              OGGUSER Training                   F2                    0 11-07-2024
    67 OGG    - Cp.04 Ex.02     OGGUSER TRAINING                   F2                    0 11-07-2024
   123 OGG    - Cp.04 Ex.02     OGGUSER Training                   F2                    0 11-07-2024
   124 OGG    - Cp.04 Ex.02     OGGUSER TRAINING                   F2                    0 11-07-2024
  6661 Cp.04 Ex.02              WANNA MOVE TO LUXEMBURGO! 123 TESTES F2                  0 11-07-2024
  6662 Cp.04 Ex.02              WANNA MOVE TO LUXEMBURGO!          F2                    0 11-07-2024
  6663 Cp.04 Ex.02              I AM FRIEND OF ONTALBA AND I WANNA F2                    0 11-07-2024
                                     MOVE TO LUXEMBURGO!
  6664 Cp.04 Ex.02              WANNA MOVE TO LUX!                 F2                    0 11-07-2024
```

Ambiente de Destino

Valide o destino da replicação

```
SQL> @trg_ver_tab_filter
```

Output:

```
SQL> select * from OGG_TARGET.TAB_FILTER order by 1;

        ID VALUE                          COL_FILTER_1                  COL_FILTER COL_FILTER_3 DATE
---------- ------------------------------ ----------------------------- ---------- ------------ -----------
         1 OGG    - Cp.04 Ex.02          F1                            F2                    0 11-07-2024
         2 OGG    - Cp.04 Ex.02          F1                            F2                    0 11-07-2024
         3 OGG    - Cp.04 Ex.02          F1                            F2                    0 11-07-2024
         4 OGG    - Cp.04 Ex.02          F1                            F2                    0 11-07-2024
         5 OGG    - Cp.04 Ex.02          F1                            F2                    0 11-07-2024
        11 OGG    - Cp.04 Ex.02          OGGUSER TRAINING              F2                    0 11-07-2024
        41 Cp.04 Ex.02                    OGGUSER TRAINING              F2                    0 11-07-2024
        67 OGG    - Cp.04 Ex.02          OGGUSER TRAINING              F2                    0 11-07-2024
       123 OGG    - Cp.04 Ex.02          OGGUSER Training              F2                    0 11-07-2024
      6661 Cp.04 Ex.02                    WANNA MOVE TO LUXEMBURGO! 123 F2                    0 11-07-2024
                                          TESTES

      6662 Cp.04 Ex.02                    WANNA MOVE TO LUXEMBURGO!     F2                    0 11-07-2024
      6663 Cp.04 Ex.02                    I AM ONTALBA FRIENDS AND I WAN F2                    0 11-07-2024
                                          NA MOVE TO LUXEMBURGO!
```

Ambiente de Origem

FILTRO 5: FILTER ON INSERT, ON UPDATE, ON DELETE

1. STOP do processo EXT_MAP1
2. Configurar a tabela conforme abaixo
3. START do processo EXT_MAP1

```
--TABLE OGG_SOURCE.TAB_FILTER;
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING'));
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') > 0);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') = 0);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') = 1);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STRFIND (COL_FILTER_1, 'VAI MENGAO E BORA BAAAEEEA!') > 0);
TABLE OGG_SOURCE.TAB_FILTER, FILTER (ON UPDATE, ON DELETE, ID <= 30);
```

Ambiente de Origem

Gere os seguintes comandos DML

```
SQL> @src_insert_update_tab_filter
```

Output:

```
SQL> update OGG_SOURCE.TAB_FILTER set COL_FILTER_1='FILTERED REPLICATION' where ID <=100;
SQL> insert into OGG_SOURCE.TAB_FILTER values (50,  'Cp.04 Ex.02', 'ORACLE GOLDENGATE', 'F2', 0, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (51,  'Cp.04 Ex.02', 'ORACLE GOLDENGATE', 'F2', 0, sysdate);
SQL> commit;


SQL> select * from OGG_SOURCE.TAB_FILTER order by 1;

  ID VALUE                     COL_FILTER_1                               COL_FILTER COL_FILTER_3 DATE
---- ------------------------- ------------------------------------------ ---------- ------------ -----------
   1 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                       F2                    0 11-07-2024
   2 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                       F2                    0 11-07-2024
   3 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                       F2                    0 11-07-2024
   4 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                       F2                    0 11-07-2024
   5 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                       F2                    0 11-07-2024
  10 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                       F2                    0 11-07-2024
  11 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                       F2                    0 11-07-2024
  21 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                       F2                    0 11-07-2024
  22 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                       F2                    0 11-07-2024
  31 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                       F2                    0 11-07-2024
  32 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                       F2                    0 11-07-2024
  41 Cp.04 Ex.02               FILTERED REPLICATION                       F2                    0 11-07-2024
  42 Cp.04 Ex.02               FILTERED REPLICATION                       F2                    0 11-07-2024
  50 Cp.04 Ex.02               ORACLE GOLDENGATE                          F2                    0 11-07-2024
  51 Cp.04 Ex.02               ORACLE GOLDENGATE                          F2                    0 11-07-2024
  67 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                       F2                    0 11-07-2024
 123 OGG    - Cp.04 Ex.02      OGGUSER Training                           F2                    0 11-07-2024
 124 OGG    - Cp.04 Ex.02      OGGUSER TRAINING                           F2                    0 11-07-2024
6661 Cp.04 Ex.02               WANNA MOVE TO LUXEMBURGO! 123 TESTES       F2                    0 11-07-2024
6662 Cp.04 Ex.02               WANNA MOVE TO LUXEMBURGO!                  F2                    0 11-07-2024
6663 Cp.04 Ex.02               I AM ONTALBA FRIENDS AND I WANNA MOVE      F2                    0 11-07-2024
                               TO LUXEMBURGO!
6664 Cp.04 Ex.02               WANNA MOVE TO LUX!                         F2                    0 11-07-2024
```

Ambiente de Destino

Valide o destino da replicação

```
SQL> @trg_ver_tab_filter
```

Output:

```
SQL> select * from OGG_TARGET.TAB_FILTER order by 1;

        ID VALUE                          COL_FILTER_1                   COL_FILTER COL_FILTER_3 DATE
---------- ------------------------------ ------------------------------ ---------- ------------ -----------
         1 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         2 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         3 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         4 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
         5 OGG    - Cp.04 Ex.02          F1                             F2                    0 11-07-2024
        11 OGG    - Cp.04 Ex.02          OGGUSER TRAINING               F2                    0 11-07-2024
        41 Cp.04 Ex.02                   OGGUSER TRAINING               F2                    0 11-07-2024
        67 OGG    - Cp.04 Ex.02          OGGUSER TRAINING               F2                    0 11-07-2024
       123 OGG    - Cp.04 Ex.02          OGGUSER Training               F2                    0 11-07-2024
      6661 Cp.04 Ex.02                   WANNA MOVE TO LUXEMBURGO! 123  F2                    0 11-07-2024
                                         TESTES

      6662 Cp.04 Ex.02                   WANNA MOVE TO LUXEMBURGO!      F2                    0 11-07-2024
      6663 Cp.04 Ex.02                   I AM ONTALBA FRIENDS AND I WAN F2                    0 11-07-2024
                                         NA MOVE TO LUXEMBURGO!
```

Deu Erro ?

Qual o motivo ?

Como resolver ?

FILTRO 6: FILTER "ON INSERT, ID > 100"

1. STOP do processo EXT_MAP1
2. Configurar a tabela conforme abaixo
3. START do processo EXT_MAP1

```
--TABLE OGG_SOURCE.TAB_FILTER;
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING'));
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') > 0);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') = 0);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') = 1);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STRFIND (COL_FILTER_1, 'VAI MENGAO E BORA BAAAEEEA!') > 0);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (ON UPDATE, ON DELETE, ID <= 30);
TABLE OGG_SOURCE.TAB_FILTER, FILTER (ON INSERT, ID > 100);
```

Ambiente de Origem

Gere os seguintes comandos DML

```
SQL> @src_insert_update_2_tab_filter
```

Output:

```
SQL>
insert into OGG_SOURCE.TAB_FILTER values (98,  'Cp.04 Ex.02', 'ORACLE GOLDENGATE   ', 'F2', 0, sysdate);
insert into OGG_SOURCE.TAB_FILTER values (99,  'Cp.04 Ex.02', 'ORACLE GOLDENGATE   ', 'F2', 0, sysdate);
insert into OGG_SOURCE.TAB_FILTER values (100, 'Cp.04 Ex.02', 'ORACLE GOLDENGATE   ', 'F2', 0, sysdate);
insert into OGG_SOURCE.TAB_FILTER values (101, 'Cp.04 Ex.02', 'ORACLE GOLDENGATE   ', 'F2', 0, sysdate);

SQL> commit;


SQL>
update OGG_SOURCE.TAB_FILTER set COL_FILTER_1='I am learning new skills through training at GGBR' where ID=2;
update OGG_SOURCE.TAB_FILTER set COL_FILTER_1='I am learning new skills through training at GGBR' where ID=101;

SQL> commit;

SQL> select * from OGG_SOURCE.TAB_FILTER order by 1;

        ID VALUE                     COL_FILTER_1                                        COL_FILTER COL_FILTER_3 DATE
---------- ------------------------- --------------------------------------------------- ---------- ------------ -----------
         1 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                                F2                  0         11-07-2024
         2 OGG    - Cp.04 Ex.02      I am learning new skills through training at GGBR   F2                  0         11-07-2024
         3 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                                F2                  0         11-07-2024
         4 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                                F2                  0         11-07-2024
         5 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                                F2                  0         11-07-2024
        10 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                                F2                  0         11-07-2024
        11 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                                F2                  0         11-07-2024
        21 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                                F2                  0         11-07-2024
        22 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                                F2                  0         11-07-2024
        31 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                                F2                  0         11-07-2024
        32 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                                F2                  0         11-07-2024
        41 Cp.04 Ex.02               FILTERED REPLICATION                                F2                  0         11-07-2024
        42 Cp.04 Ex.02               FILTERED REPLICATION                                F2                  0         11-07-2024
        50 Cp.04 Ex.02               ORACLE GOLDENGATE                                   F2                  0         11-07-2024
        51 Cp.04 Ex.02               ORACLE GOLDENGATE                                   F2                  0         11-07-2024
        67 OGG    - Cp.04 Ex.02      FILTERED REPLICATION                                F2                  0         11-07-2024
        98 Cp.04 Ex.02               ORACLE GOLDENGATE                                   F2                  0         11-07-2024
        99 Cp.04 Ex.02               ORACLE GOLDENGATE                                   F2                  0         11-07-2024
       100 Cp.04 Ex.02               ORACLE GOLDENGATE                                   F2                  0         11-07-2024
       101 Cp.04 Ex.02               I am learning new skills through training at GGBR   F2                  0         11-07-2024
       123 OGG    - Cp.04 Ex.02      OGGUSER Training                                    F2                  0         11-07-2024
       124 OGG    - Cp.04 Ex.02      OGGUSER TRAINING                                    F2                  0         11-07-2024
      6661 Cp.04 Ex.02               WANNA MOVE TO LUXEMBURGO! 123 TESTES                F2                  0         11-07-2024
      6662 Cp.04 Ex.02               WANNA MOVE TO LUXEMBURGO!                           F2                  0         11-07-2024
      6663 Cp.04 Ex.02               I AM ONTALBA FRIENDS AND I WANNA MOVE TO LUXEMBURGO! F2                  0         11-07-2024
      6664 Cp.04 Ex.02               WANNA MOVE TO LUX!                                  F2                  0         11-07-2024
```

Ambiente de Destino

Valide o destino da replicação

```
SQL> @trg_ver_tab_filter
```

Output:

```
SQL> select * from OGG_TARGET.TAB_FILTER order by 1;

   ID VALUE                    COL_FILTER_1                COL_FILTER  COL_FILTER_3 DATE
----- ------------------------ --------------------------  ----------- ------------ -------------------
    1 OGG  - Cp.04 Ex.02       F1                          F2                     0  03-08-2024 16:03:00
    2 OGG  - Cp.04 Ex.02       I am learning new skills     F2                     0  03-08-2024 16:03:01
                               through training at GGBR
                               R

    3 OGG  - Cp.04 Ex.02       F1                          F2                     0  03-08-2024 16:03:01
    4 OGG  - Cp.04 Ex.02       F1                          F2                     0  03-08-2024 16:03:01
    5 OGG  - Cp.04 Ex.02       F1                          F2                     0  03-08-2024 16:03:01
   11 OGG  - Cp.04 Ex.02       OGGUSER TRAINING            F2                     0  03-08-2024 16:25:13
   41 Cp.04 Ex.02              OGGUSER TRAINING            F2                     0  03-08-2024 16:35:11
   50 Cp.04 Ex.02              ORACLE GOLDENGATE           F2                     0  05-08-2024 08:06:32
   51 Cp.04 Ex.02              ORACLE GOLDENGATE           F2                     0  05-08-2024 08:06:32
  101 Cp.04 Ex.02              I am learning new skills     F2                     0  05-08-2024 09:31:28
                               through training at GGB
                               R

  123 OGG    - Cp.04 Ex.02     OGGUSER Training            F2                     0  03-08-2024 16:38:23
 6661 Cp.04 Ex.02              WANNA MOVE TO LUXEMBURGO     F2                     0  05-08-2024 07:47:51
                               ! 123 TESTES

 6662 Cp.04 Ex.02              WANNA MOVE TO LUXEMBURGO     F2                     0  05-08-2024 07:47:51
                               !

 6663 Cp.04 Ex.02              I AM FRIEND OF OTALBA AND    F2                     0  05-08-2024 07:52:00
                               I WANNA MOVE TO LUXEMB URGO!
```

FILTRO 7: FILTER + @COMPUTE

1. STOP do processo EXT_MAP1
2. Configurar a tabela conforme abaixo

Vamos aplicar filtros no processo de replicação (DESTINO)

Ambiente de Origem

Primeiramente, configure o EXTRACT para não aplicar filtros na tabela OGG_SOURCE.TAB_FILTER

```
TABLE OGG_SOURCE.TAB_FILTER;
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING'));
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') > 0);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') = 0);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STREQ (COL_FILTER_1, 'OGGUSER TRAINING') = 1);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STRFIND (COL_FILTER_1, 'VAI MENGAO E BORA BAAAEEEA!') > 0);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (ON UPDATE, ON DELETE, ID <= 30);
--TABLE OGG_SOURCE.TAB_FILTER, FILTER (ON INSERT, ID > 100);
```

Ambiente de Destino

FILTRO 7: FILTER + @COMPUTE

1. STOP do processo REP_MAP1
2. Configurar a tabela conforme abaixo
3. START do processo REP_MAP1
4. START do processo EXT_MAP1 (ORIGEM)

Faça a seguinte alteração no parâmetro do REPLICAT

```
--MAP OGG_SOURCE.TAB_FILTER, TARGET OGG_TARGET.TAB_FILTER;
MAP OGG_SOURCE.TAB_FILTER, TARGET OGG_TARGET.TAB_FILTER, FILTER (@COMPUTE (ID * COL_FILTER_3) > 100);
```

Ambiente de Origem

Dispare a seguinte transação no banco de dados

```
SQL> @src_insert_update_3_tab_filter
```

Output:

```
SQL>
update OGG_SOURCE.TAB_FILTER set COL_FILTER_3=10 where ID<=50;
insert into OGG_SOURCE.TAB_FILTER values (6,  'Cp.04 Ex.02', '* ORACLE GOLDENGATE *', 'F2', 10, sysdate);
insert into OGG_SOURCE.TAB_FILTER values (7,  'Cp.04 Ex.02', '* ORACLE GOLDENGATE *', 'F2', 10, sysdate);
insert into OGG_SOURCE.TAB_FILTER values (8,  'Cp.04 Ex.02', '* ORACLE GOLDENGATE *', 'F2', 10, sysdate);
insert into OGG_SOURCE.TAB_FILTER values (60, 'Cp.04 Ex.02', '* ORACLE GOLDENGATE *', 'F2', 10, sysdate);
insert into OGG_SOURCE.TAB_FILTER values (70, 'Cp.04 Ex.02', '* ORACLE GOLDENGATE *', 'F2', 10, sysdate);
insert into OGG_SOURCE.TAB_FILTER values (80, 'Cp.04 Ex.02', '* ORACLE GOLDENGATE *', 'F2', 10, sysdate);

SQL> commit;


SQL> select * from OGG_SOURCE.TAB_FILTER order by 1;

  ID VALUE                COL_FILTER_1                                        COL_FILTER COL_FILTER_3 DATE
---- -------------------- --------------------------------------------------- ---------- ------------ ----------
   1 OGG    - Cp.04 Ex.02 FILTERED REPLICATION                                F2         10           11-07-2024
   2 OGG    - Cp.04 Ex.02 I am learning new skills through                    F2         10           11-07-2024
                          training at GGBR
   3 OGG    - Cp.04 Ex.02 FILTERED REPLICATION                                F2         10           11-07-2024
   4 OGG    - Cp.04 Ex.02 FILTERED REPLICATION                                F2         10           11-07-2024
   5 OGG    - Cp.04 Ex.02 FILTERED REPLICATION                                F2         10           11-07-2024
   6 Cp.04 Ex.02          * ORACLE GOLDENGATE *                               F2         10           22-07-2024
   7 Cp.04 Ex.02          * ORACLE GOLDENGATE *                               F2         10           22-07-2024
   8 Cp.04 Ex.02          * ORACLE GOLDENGATE *                               F2         10           22-07-2024
  10 OGG    - Cp.04 Ex.02 FILTERED REPLICATION                                F2         10           11-07-2024
  11 OGG    - Cp.04 Ex.02 FILTERED REPLICATION                                F2         10           11-07-2024
  21 OGG    - Cp.04 Ex.02 FILTERED REPLICATION                                F2         10           11-07-2024
  22 OGG    - Cp.04 Ex.02 FILTERED REPLICATION                                F2         10           11-07-2024
  31 OGG    - Cp.04 Ex.02 FILTERED REPLICATION                                F2         10           11-07-2024
  32 OGG    - Cp.04 Ex.02 FILTERED REPLICATION                                F2         10           11-07-2024
  41 Cp.04 Ex.02          FILTERED REPLICATION                                F2         10           11-07-2024
  42 Cp.04 Ex.02          FILTERED REPLICATION                                F2         10           11-07-2024
  50 Cp.04 Ex.02          FILTERED REPLICATION                                F2         10           11-07-2024
  51 Cp.04 Ex.02          ORACLE GOLDENGATE                                   F2          0           11-07-2024
  60 Cp.04 Ex.02          * ORACLE GOLDENGATE *                               F2         10           22-07-2024
  70 Cp.04 Ex.02          * ORACLE GOLDENGATE *                               F2         10           22-07-2024
  80 Cp.04 Ex.02          * ORACLE GOLDENGATE *                               F2         10           22-07-2024
  98 Cp.04 Ex.02          ORACLE GOLDENGATE                                   F2          0           11-07-2024
  99 Cp.04 Ex.02          ORACLE GOLDENGATE                                   F2          0           11-07-2024
 100 Cp.04 Ex.02          ORACLE GOLDENGATE                                   F2          0           11-07-2024
 101 Cp.04 Ex.02          I am learning new skills through                    F2          0           11-07-2024
                          training at GGBR
 123 OGG    - Cp.04 Ex.02 OGGUSER Training                                    F2          0           11-07-2024
 124 OGG    - Cp.04 Ex.02 OGGUSER TRAINING                                    F2          0           11-07-2024
6661 Cp.04 Ex.02          WANNA MOVE TO LUXEMBURGO! 123 TESTES                F2          0           11-07-2024
6662 Cp.04 Ex.02          WANNA MOVE TO LUXEMBURGO!                           F2          0           11-07-2024
6663 Cp.04 Ex.02          I AM ONTALBA FRIENDS AND I WANNA MOVE               F2          0           11-07-2024
                          TO LUXEMBURGO!
6664 Cp.04 Ex.02          WANNA MOVE TO LUX!                                  F2          0           11-07-2024
```

ABENDED REPLICAT ?!

Qual foi o erro encontrado ?? Onde olhar ??

Esse é um exemplo de que os filtros podem causar inconsistências quando não utilizados com cautela.
Para prosseguir:

1. Contorne o erro por meio do parâmetro REPERROR(1403,DISCARD);

2. Remova-o assim que o processo enviar os registros problemáticos para DISCARD, então reinicie o processo.

Ambiente de Destino

Validar o destino da replicação

```
SQL> @trg_ver_tab_filter
```

Output:

```
SQL> select * from OGG_TARGET.TAB_FILTER order by 1;

        ID VALUE                 COL_FILTER_1             COL_FILTER COL_FILTER_3 DATE
---------- --------------------- ------------------------ ---------- ------------ -------------------
         1 OGG  - Cp.04 Ex.02    F1                       F2                    0 03-08-2024 16:03:00
         2 OGG  - Cp.04 Ex.02    I am learning new skills F2                    0 03-08-2024 16:03:01
                                  through training at GGB
                                 R

         3 OGG  - Cp.04 Ex.02    F1                       F2                    0 03-08-2024 16:03:01
         4 OGG  - Cp.04 Ex.02    F1                       F2                    0 03-08-2024 16:03:01
         5 OGG  - Cp.04 Ex.02    F1                       F2                    0 03-08-2024 16:03:01
        11 OGG  - Cp.04 Ex.02    OGGUSER TRAINING         F2                   10 03-08-2024 16:25:13
        41 Cp.04 Ex.02           OGGUSER TRAINING         F2                   10 03-08-2024 16:35:11
        50 Cp.04 Ex.02           ORACLE GOLDENGATE        F2                   10 05-08-2024 08:06:32
        51 Cp.04 Ex.02           ORACLE GOLDENGATE        F2                    0 05-08-2024 08:06:32
        60 Cp.04 Ex.02           * ORACLE GOLDENGATE *    F2                   10 05-08-2024 09:53:39
        70 Cp.04 Ex.02           * ORACLE GOLDENGATE *    F2                   10 05-08-2024 09:53:39
        80 Cp.04 Ex.02           * ORACLE GOLDENGATE *    F2                   10 05-08-2024 09:53:39
       101 Cp.04 Ex.02           I am learning new skills F2                    0 05-08-2024 09:31:28
                                  through training at GGB
                                 R

       123 OGG    - Cp.04 Ex.02  OGGUSER Training         F2                    0 03-08-2024 16:38:23
      6661 Cp.04 Ex.02           WANNA MOVE TO LUXEMBURGO F2                    0 05-08-2024 07:47:51
                                 ! 123 TESTES

      6662 Cp.04 Ex.02           WANNA MOVE TO LUXEMBURGO F2                    0 05-08-2024 07:47:51
                                 !

      6663 Cp.04 Ex.02           I AM FRIEND OF OTALBA AN F2                    0 05-08-2024 07:52:00
                                 D I WANNA MOVE TO LUXEMB
                                 URGO!
```

Parâmetro WHERE

Utilizando o parâmetro/condição WHERE do OGG

IMPORTANTE: é case-sensitive.

Ambiente de Origem

Efetue as alterações necessárias para aplicação do WHERE abaixo

```
--# REPLICAR LINHAS COM WHERE (REGISTROS COM ID >= 100 )
TABLE OGG_SOURCE.TAB_FILTER, WHERE (ID >= 100);
```

Teste a nova configuração por meio da transação abaixo

```
SQL> @src_insert_update_4_tab_filter
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_FILTER values (91, 'OGG    - Cp.04 Ex.02', 'GO CURINTIASS', 'F2', 10, sysdate);
SQL> commit;

SQL> update OGG_SOURCE.TAB_FILTER set COL_FILTER_1 = '***********' where id=100;
SQL> insert into OGG_SOURCE.TAB_FILTER values (200, 'OGG    - Cp.04 Ex.02', 'GO CURINTIASS', 'F2', 10,
sysdate);
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_FILTER order by 1;

  ID VALUE                    COL_FILTER_1                                COL_FILTER COL_FILTER_3 DATE
---- ------------------------ ------------------------------------------- ---------- ------------ ---------
   1 OGG  - Cp.04 Ex.02       FILTERED REPLICATION                        F2                   10 03-AUG-24
   2 OGG  - Cp.04 Ex.02       I am learning new skills through training   F2                   10 03-AUG-24
                               at GGBR
   3 OGG  - Cp.04 Ex.02       FILTERED REPLICATION                        F2                   10 03-AUG-24
   4 OGG  - Cp.04 Ex.02       FILTERED REPLICATION                        F2                   10 03-AUG-24
   5 OGG  - Cp.04 Ex.02       FILTERED REPLICATION                        F2                   10 03-AUG-24
   6 Cp.04 Ex.02              * ORACLE GOLDENGATE *                       F2                   10 05-AUG-24
   7 Cp.04 Ex.02              * ORACLE GOLDENGATE *                       F2                   10 05-AUG-24
   8 Cp.04 Ex.02              * ORACLE GOLDENGATE *                       F2                   10 05-AUG-24
  10 OGG  - Cp.04 Ex.02       FILTERED REPLICATION                        F2                   10 03-AUG-24
  11 OGG  - Cp.04 Ex.02       FILTERED REPLICATION                        F2                   10 03-AUG-24
  21 OGG  - Cp.04 Ex.02       FILTERED REPLICATION                        F2                   10 03-AUG-24
  31 OGG  - Cp.04 Ex.02       FILTERED REPLICATION                        F2                   10 03-AUG-24
  32 OGG  - Cp.04 Ex.02       FILTERED REPLICATION                        F2                   10 03-AUG-24
  41 Cp.04 Ex.02              FILTERED REPLICATION                        F2                   10 03-AUG-24
  42 Cp.04 Ex.02              FILTERED REPLICATION                        F2                   10 03-AUG-24
  50 Cp.04 Ex.02              FILTERED REPLICATION                        F2                   10 05-AUG-24
  51 Cp.04 Ex.02              ORACLE GOLDENGATE                           F2                    0 05-AUG-24
  60 Cp.04 Ex.02              * ORACLE GOLDENGATE *                       F2                   10 05-AUG-24
  70 Cp.04 Ex.02              * ORACLE GOLDENGATE *                       F2                   10 05-AUG-24
  80 Cp.04 Ex.02              * ORACLE GOLDENGATE *                       F2                   10 05-AUG-24
  91 OGG  - Cp.04 Ex.02       GO CURINTIASS                               F2                   10 05-AUG-24
  98 Cp.04 Ex.02              ORACLE GOLDENGATE                           F2                    0 05-AUG-24
  99 Cp.04 Ex.02              ORACLE GOLDENGATE                           F2                    0 05-AUG-24
 100 Cp.04 Ex.02              ***********                                 F2                    0 05-AUG-24
```

```
101 Cp.04 Ex.02              I am learning new skills through training  F2                   0 05-AUG-24
                              at GGBR
 123 OGG  - Cp.04 Ex.02      OGGUSER Training                           F2                   0 03-AUG-24
 124 OGG  - Cp.04 Ex.02      OGGUSER TRAINING                           F2                   0 03-AUG-24
 200 OGG  - Cp.04 Ex.02      GO CURINTIASS                              F2                  10 05-AUG-24
6661 Cp.04 Ex.02             WANNA MOVE TO LUXEMBURGO! 123 TESTES       F2                   0 05-AUG-24
6662 Cp.04 Ex.02             WANNA MOVE TO LUXEMBURGO!                  F2                   0 05-AUG-24
6663 Cp.04 Ex.02             I AM FRIEND OF OTALBA AND I WANNA MOVE TO  F2                   0 05-AUG-24
                              LUXEMBURGO!
6664 Cp.04 Ex.02             WANNA MOVE TO LUX!                         F2                   0 05-AUG-24
```

Ambiente de Destino

Valide o resultado

```
SQL> @trg_ver_tab_filter
```

Output:

```
SQL> select * from OGG_TARGET.TAB_FILTER order by 1;

        ID VALUE                COL_FILTER_1             COL_FILTER COL_FILTER_3 DATE
---------- -------------------- ------------------------ ---------- ------------ -------------------
         1 OGG  - Cp.04 Ex.02   F1                       F2                    0 03-08-2024 16:03:00
         2 OGG  - Cp.04 Ex.02   I am learning new skills F2                    0 03-08-2024 16:03:01
                                 through training at GGBR
         3 OGG  - Cp.04 Ex.02   F1                       F2                    0 03-08-2024 16:03:01
         4 OGG  - Cp.04 Ex.02   F1                       F2                    0 03-08-2024 16:03:01
         5 OGG  - Cp.04 Ex.02   F1                       F2                    0 03-08-2024 16:03:01
        11 OGG  - Cp.04 Ex.02   OGGUSER TRAINING         F2                   10 03-08-2024 16:25:13
        41 Cp.04 Ex.02          OGGUSER TRAINING         F2                   10 03-08-2024 16:35:11
        50 Cp.04 Ex.02          ORACLE GOLDENGATE        F2                   10 05-08-2024 08:06:32
        51 Cp.04 Ex.02          ORACLE GOLDENGATE        F2                    0 05-08-2024 08:06:32
        60 Cp.04 Ex.02          * ORACLE GOLDENGATE *    F2                   10 05-08-2024 09:53:39
        70 Cp.04 Ex.02          * ORACLE GOLDENGATE *    F2                   10 05-08-2024 09:53:39
        80 Cp.04 Ex.02          * ORACLE GOLDENGATE *    F2                   10 05-08-2024 09:53:39
       101 Cp.04 Ex.02          I am learning new skills F2                    0 05-08-2024 09:31:28
                                through training at GGBR

       123 OGG    - Cp.04 Ex.02 OGGUSER Training         F2                    0 03-08-2024 16:38:23
       200 OGG  - Cp.04 Ex.02   GO CURINTIASS            F2                   10 05-08-2024 09:53:39
      6661 Cp.04 Ex.02          WANNA MOVE TO LUXEMBURGO F2                    0 05-08-2024 07:47:51
                                ! 123 TESTES

      6662 Cp.04 Ex.02          WANNA MOVE TO LUXEMBURGO F2                    0 05-08-2024 07:47:51
                                !

      6663 Cp.04 Ex.02          I AM FRIEND OF OTALBA AN F2                    0 05-08-2024 07:52:00
                                D I WANNA MOVE TO LUXEMB
                                URGO!
```

Configure o OGG para REPLICAR REGISTROS COM A COLUNA “VALUE = GGBR”

```
TABLE OGG_SOURCE.TAB_FILTER, WHERE (COL_FILTER_1 = 'Treinamento na GGBR');

TABLE OGG_SOURCE.TAB_FILTER, FILTER (@STRFIND (COL_FILTER_1, 'GGBR') > 0);
```

Ambiente de Destino

Parâmetro COLMAP + Função

1. STOP do processo REP_MAP1
2. Configurar a tabela conforme abaixo
3. START do processo REP_MAP1

```
MAP OGG_SOURCE.TAB_FILTER, TARGET OGG_TARGET.TAB_FILTER, COLMAP ( USEDEFAULTS, &
        COL_FILTER_1 = @STREXT (VALUE, 1, 2), &
        COL_FILTER_2 = @STREXT (VALUE, 3, 6), &
        COL_FILTER_3 = @NUMSTR (@STREXT (VALUE, 7, 10)));
```

Ambiente de Origem

Dispare os seguintes comandos DML

```
SQL> @src_insert07_filter
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_FILTER values (500, '1199835541', '* ORACLE GOLDENGATE *', 'F2', 10, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (501, '1185534521', '* ORACLE GOLDENGATE *', 'F2', 10, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (502, '1199775123', '* ORACLE GOLDENGATE *', 'F2', 10, sysdate);

SQL> commit;


SQL> select * from OGG_SOURCE.TAB_FILTER order by 1;

  ID VALUE                COL_FILTER_1                            COL_FILTER COL_FILTER_3 DATE
---- -------------------- --------------------------------------- ---------- ------------ -------------------
   1 OGG  - Cp.04 Ex.02   FILTERED REPLICATION                    F2         10           03-08-2024 16:03:00
   2 OGG  - Cp.04 Ex.02   I am learning new skills through        F2         10           03-08-2024 16:03:01
                          training at GGBR
   3 OGG  - Cp.04 Ex.02   FILTERED REPLICATION                    F2         10           03-08-2024 16:03:01
   4 OGG  - Cp.04 Ex.02   FILTERED REPLICATION                    F2         10           03-08-2024 16:03:01
   5 OGG  - Cp.04 Ex.02   FILTERED REPLICATION                    F2         10           03-08-2024 16:03:01
   6 Cp.04 Ex.02          * ORACLE GOLDENGATE *                   F2         10           05-08-2024 09:53:39
   7 Cp.04 Ex.02          * ORACLE GOLDENGATE *                   F2         10           05-08-2024 09:53:39
   8 Cp.04 Ex.02          * ORACLE GOLDENGATE *                   F2         10           05-08-2024 09:53:39
  10 OGG  - Cp.04 Ex.02   FILTERED REPLICATION                    F2         10           03-08-2024 16:25:13
  11 OGG  - Cp.04 Ex.02   FILTERED REPLICATION                    F2         10           03-08-2024 16:25:13
  21 OGG  - Cp.04 Ex.02   FILTERED REPLICATION                    F2         10           03-08-2024 16:25:13
  31 OGG  - Cp.04 Ex.02   FILTERED REPLICATION                    F2         10           03-08-2024 16:25:13
  32 OGG  - Cp.04 Ex.02   FILTERED REPLICATION                    F2         10           03-08-2024 16:25:13
  41 Cp.04 Ex.02          FILTERED REPLICATION                    F2         10           03-08-2024 16:35:11
  42 Cp.04 Ex.02          FILTERED REPLICATION                    F2         10           03-08-2024 16:35:11
  50 Cp.04 Ex.02          FILTERED REPLICATION                    F2         10           05-08-2024 08:06:32
  51 Cp.04 Ex.02          ORACLE GOLDENGATE                       F2          0           05-08-2024 08:06:32
  60 Cp.04 Ex.02          * ORACLE GOLDENGATE *                   F2         10           05-08-2024 09:53:39
  70 Cp.04 Ex.02          * ORACLE GOLDENGATE *                   F2         10           05-08-2024 09:53:39
  80 Cp.04 Ex.02          * ORACLE GOLDENGATE *                   F2         10           05-08-2024 09:53:39
  91 OGG  - Cp.04 Ex.02   GO CURINTIASS                          F2         10           05-08-2024 11:03:02
  98 Cp.04 Ex.02          ORACLE GOLDENGATE                       F2          0           05-08-2024 09:31:28
  99 Cp.04 Ex.02          ORACLE GOLDENGATE                       F2          0           05-08-2024 09:31:28
 100 Cp.04 Ex.02          ***********                             F2          0           05-08-2024 09:31:28
 101 Cp.04 Ex.02          I am learning new skills through        F2          0           05-08-2024 09:31:28
                          training at GGBR
 123 OGG  - Cp.04 Ex.02   OGGUSER Training                       F2          0           03-08-2024 16:32:31
 124 OGG  - Cp.04 Ex.02   OGGUSER TRAINING                       F2          0           03-08-2024 16:32:31
 200 OGG  - Cp.04 Ex.02   GO CURINTIASS                          F2         10           05-08-2024 11:03:02
 500 1199835541           * ORACLE GOLDENGATE *                   F2         10           05-08-2024 14:39:32
 501 1185534521           * ORACLE GOLDENGATE *                   F2         10           05-08-2024 14:39:32
 502 1199775123           * ORACLE GOLDENGATE *                   F2         10           05-08-2024 14:39:32
6661 Cp.04 Ex.02          WANNA MOVE TO LUXEMBURGO! 123 TESTES    F2          0           05-08-2024 07:47:51
6662 Cp.04 Ex.02          WANNA MOVE TO LUXEMBURGO!               F2          0           05-08-2024 07:47:51
6663 Cp.04 Ex.02          I AM FRIEND OF OTALBA AND I WANNA MOVE  F2          0           05-08-2024 07:52:00
                          TO LUXEMBURGO!
6664 Cp.04 Ex.02          WANNA MOVE TO LUX!                      F2          0           05-08-2024 07:47:51
```

Ambiente de Destino

Valide o resultado da replicação

```
SQL> @trg_ver_tab_filter
```

Output:

```
SQL> select * from OGG_TARGET.TAB_FILTER order by 1;

        ID VALUE                COL_FILTER_1             COL_FILTER COL_FILTER_3 DATE
---------- -------------------- ------------------------ ---------- ------------ --------------------
         1 OGG  - Cp.04 Ex.02   F1                       F2                    0 03-08-2024 16:03:00
         2 OGG  - Cp.04 Ex.02   I am learning new skills F2                    0 03-08-2024 16:03:01
                                 through training at GGB
                                R

         3 OGG  - Cp.04 Ex.02   F1                       F2                    0 03-08-2024 16:03:01
         4 OGG  - Cp.04 Ex.02   F1                       F2                    0 03-08-2024 16:03:01
         5 OGG  - Cp.04 Ex.02   F1                       F2                    0 03-08-2024 16:03:01
        11 OGG  - Cp.04 Ex.02   OGGUSER TRAINING         F2                   10 03-08-2024 16:25:13
        41 Cp.04 Ex.02          OGGUSER TRAINING         F2                   10 03-08-2024 16:35:11
        50 Cp.04 Ex.02          ORACLE GOLDENGATE        F2                   10 05-08-2024 08:06:32
        51 Cp.04 Ex.02          ORACLE GOLDENGATE        F2                    0 05-08-2024 08:06:32
        60 Cp.04 Ex.02          * ORACLE GOLDENGATE *    F2                   10 05-08-2024 09:53:39
        70 Cp.04 Ex.02          * ORACLE GOLDENGATE *    F2                   10 05-08-2024 09:53:39
        80 Cp.04 Ex.02          * ORACLE GOLDENGATE *    F2                   10 05-08-2024 09:53:39
       101 Cp.04 Ex.02          I am learning new skills F2                    0 05-08-2024 09:31:28
                                 through training at GGB
                                R

       123 OGG    - Cp.04 Ex.02 OGGUSER Training         F2                    0 03-08-2024 16:38:23
       200 OGG    - Cp.04 Ex.02 GO CURINTIASS            F2                   10 05-08-2024 12:24:28
       500 1199835541           11                       9983               5541 05-08-2024 14:39:32
       501 1185534521           11                       8553               4521 05-08-2024 14:39:32
       502 1199775123           11                       9977               5123 05-08-2024 14:39:32
      6661 Cp.04 Ex.02          WANNA MOVE TO LUXEMBURGO F2                    0 05-08-2024 07:47:51
                                ! 123 TESTES

      6662 Cp.04 Ex.02          WANNA MOVE TO LUXEMBURGO F2                    0 05-08-2024 07:47:51
                                !

      6663 Cp.04 Ex.02          I AM FRIEND OF OTALBA AN F2                    0 05-08-2024 07:52:00
                                D I WANNA MOVE TO LUXEMB
                                URGO!
```

Capítulo 4 / Exercício 3

TOKENS & USER TOKENS

Ambiente de Origem

TOKENS & USER TOKENS

1. STOP do processo EXT_MAP1
2. Configurar a tabela conforme abaixo
3. START do processo EXT_MAP1

```
TABLE OGG_SOURCE.TAB_FILTER, TOKENS ( TK-HOST    = @GETENV ('GGENVIRONMENT' , 'HOSTNAME'), &
TK-TABLE   = @GETENV ('GGHEADER'      , 'TABLENAME'), &
TK-OPTYPE  = @GETENV ('GGHEADER'      , 'OPTYPE'), &
TK-USER-TK = 'User Token Example: Gremio is the best team in the league!');
```

Ambiente de Destino

Adicionar novas colunas na tabela de destino:

```
SQL> @trg_add_column_tab_filter
```

Output:

```
SQL> desc OGG_TARGET.TAB_FILTER
 Name                              Null?    Type
 --------------------------------- -------- --------------
 ID                                NOT NULL NUMBER(5)
 VALUE                                      VARCHAR2(100)
 COL_FILTER_1                               VARCHAR2(100)
 COL_FILTER_2                               VARCHAR2(100)
 COL_FILTER_3                               NUMBER
 DATE                                       DATE


SQL> ALTER TABLE OGG_TARGET.TAB_FILTER ADD (COL_A varchar2(100));
SQL> ALTER TABLE OGG_TARGET.TAB_FILTER ADD (COL_B varchar2(100));
SQL> ALTER TABLE OGG_TARGET.TAB_FILTER ADD (COL_C varchar2(100));
SQL> ALTER TABLE OGG_TARGET.TAB_FILTER ADD (COL_D varchar2(100));


SQL> desc OGG_TARGET.TAB_FILTER
 Name                              Null?    Type
 --------------------------------- -------- --------------
 ID                                NOT NULL NUMBER(5)
 VALUE                                      VARCHAR2(100)
 COL_FILTER_1                               VARCHAR2(100)
 COL_FILTER_2                               VARCHAR2(100)
 COL_FILTER_3                               NUMBER
 DATE                                       DATE
 COL_A                                      VARCHAR2(100)
 COL_B                                      VARCHAR2(100)
 COL_C                                      VARCHAR2(100)
 COL_D                                      VARCHAR2(100)
```

Configurar o REPLICAT com o COLMAP para receber os TOKENS nos novos campos.

1. STOP do processo REP_MAP1
2. Configurar a tabela conforme abaixo
3. START do processo REP_MAP1

```
MAP OGG_SOURCE.TAB_FILTER, TARGET OGG_TARGET.TAB_FILTER, &
COLMAP ( USEDEFAULTS, &
         COL_A = @token ('tk-host'), &
         COL_B = @token ('tk-table'), &
         COL_C = @token ('tk-optype'), &
         COL_D = @token ('tk-user-tk'));
```

Ambiente de Origem

Dispare uma nova transação

```
SQL> @src_insert08_tab_filter
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_FILTER values (50000, 'OGG: USING USER TOKENS','F1','F2',2000, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (50001, 'OGG: USING USER TOKENS','F1','F2',2001, sysdate);
SQL> insert into OGG_SOURCE.TAB_FILTER values (50002, 'OGGUSER - Cp.04 Ex.02', 'F1', 'F2', 0, sysdate);

SQL> commit;


SQL> select * from OGG_SOURCE.TAB_FILTER order by 1;

   ID VALUE                 COL_FILTER_1                         COL_FILTER COL_FILTER_3 DATE
----- --------------------- ------------------------------------ ---------- ----------- -------------------
    1 OGG  - Cp.04 Ex.02    FILTERED REPLICATION                 F2                  10 03-08-2024 16:03:00
    2 OGG  - Cp.04 Ex.02    I am learning new skills through     F2                  10 03-08-2024 16:03:01
                            training at GGBR
    3 OGG  - Cp.04 Ex.02    FILTERED REPLICATION                 F2                  10 03-08-2024 16:03:01
    4 OGG  - Cp.04 Ex.02    FILTERED REPLICATION                 F2                  10 03-08-2024 16:03:01
    5 OGG  - Cp.04 Ex.02    FILTERED REPLICATION                 F2                  10 03-08-2024 16:03:01
    6 Cp.04 Ex.02           * ORACLE GOLDENGATE *                F2                  10 05-08-2024 09:53:39
    7 Cp.04 Ex.02           * ORACLE GOLDENGATE *                F2                  10 05-08-2024 09:53:39
    8 Cp.04 Ex.02           * ORACLE GOLDENGATE *                F2                  10 05-08-2024 09:53:39
   10 OGG  - Cp.04 Ex.02    FILTERED REPLICATION                 F2                  10 03-08-2024 16:25:13
   11 OGG  - Cp.04 Ex.02    FILTERED REPLICATION                 F2                  10 03-08-2024 16:25:13
   21 OGG  - Cp.04 Ex.02    FILTERED REPLICATION                 F2                  10 03-08-2024 16:25:13
   31 OGG  - Cp.04 Ex.02    FILTERED REPLICATION                 F2                  10 03-08-2024 16:25:13
   32 OGG  - Cp.04 Ex.02    FILTERED REPLICATION                 F2                  10 03-08-2024 16:25:13
   41 Cp.04 Ex.02           FILTERED REPLICATION                 F2                  10 03-08-2024 16:35:11
   42 Cp.04 Ex.02           FILTERED REPLICATION                 F2                  10 03-08-2024 16:35:11
   50 Cp.04 Ex.02           FILTERED REPLICATION                 F2                  10 05-08-2024 08:06:32
   51 Cp.04 Ex.02           ORACLE GOLDENGATE                    F2                   0 05-08-2024 08:06:32
   60 Cp.04 Ex.02           * ORACLE GOLDENGATE *                F2                  10 05-08-2024 09:53:39
   70 Cp.04 Ex.02           * ORACLE GOLDENGATE *                F2                  10 05-08-2024 09:53:39
   80 Cp.04 Ex.02           * ORACLE GOLDENGATE *                F2                  10 05-08-2024 09:53:39
   91 OGG  - Cp.04 Ex.02    GO CURINTIASS                        F2                  10 05-08-2024 11:03:02
   98 Cp.04 Ex.02           ORACLE GOLDENGATE                    F2                   0 05-08-2024 09:31:28
   99 Cp.04 Ex.02           ORACLE GOLDENGATE                    F2                   0 05-08-2024 09:31:28
  100 Cp.04 Ex.02           **********                           F2                   0 05-08-2024 09:31:28
  101 Cp.04 Ex.02           I am learning new skills through     F2                   0 05-08-2024 09:31:28
                            training at GGBR
  123 OGG  - Cp.04 Ex.02    OGGUSER Training                     F2                   0 03-08-2024 16:32:31
  124 OGG  - Cp.04 Ex.02    OGGUSER TRAINING                     F2                   0 03-08-2024 16:32:31
  200 OGG  - Cp.04 Ex.02    GO CURINTIASS                        F2                  10 05-08-2024 11:03:02
  500 1199835541            * ORACLE GOLDENGATE *                F2                  10 05-08-2024 14:39:32
  501 1185534521            * ORACLE GOLDENGATE *                F2                  10 05-08-2024 14:39:32
  502 1199775123            * ORACLE GOLDENGATE *                F2                  10 05-08-2024 14:39:32
 6661 Cp.04 Ex.02           WANNA MOVE TO LUXEMBURGO! 123 TESTES F2                   0 05-08-2024 07:47:51
 6662 Cp.04 Ex.02           WANNA MOVE TO LUXEMBURGO!            F2                   0 05-08-2024 07:47:51
 6663 Cp.04 Ex.02           I AM FRIEND OF OTALBA AND I WANNA    F2                   0 05-08-2024 07:52:00
                            MOVE TO LUXEMBURGO!
 6664 Cp.04 Ex.02           WANNA MOVE TO LUX!                   F2                   0 05-08-2024 07:47:51
50000 OGG: USING USER TOKENS F1                                 F2                2000 05-08-2024 15:09:37
50001 OGG: USING USER TOKENS F1                                 F2                2001 05-08-2024 15:09:37
50002 OGGUSER - Cp.04 Ex.02  F1                                 F2                   0 05-08-2024 15:09:37
```

Ambiente de Destino

Valide o resultado no destino

```
SQL> @trg_ver_columns_tab_filter
```

Output:

```
SQL> select ID,COL_A,COL_B,COL_C,COL_D from OGG_TARGET.TAB_FILTER order by 1;

        ID COL_A     COL_B        COL_C    COL_D
---------- --------- ------------ -------- ------------
         1
         2
         3
         4
         5
[...]
      6661
      6662
      6663
     50000 ORA12C701 OGG_SOURCE.T INSERT   User Token E
                     AB_FILTER             xample: Grem
                                           io is the be
                                           st team in t
                                           he league!

     50001 ORA12C701 OGG_SOURCE.T INSERT   User Token E
                     AB_FILTER             xample: Grem
                                           io is the be
                                           st team in t
                                           he league!

     50002 ORA12C701 OGG_SOURCE.T INSERT   User Token E
                     AB_FILTER             xample: Grem
                                           io is the be
                                           st team in t
                                           he league!


SQL> select * from OGG_TARGET.TAB_FILTER order by 1;

   ID VALUE        COL_FILTER_1 COL_FILTER_2 COL_FILTER_3 DATE      COL_A     COL_B        COL_C  COL_D
----- ---------- -------------- ------------ ------------ --------- --------- ------------ ------ ------------
    1 OGG  - Cp.04 F1           F2                      0 03-AUG-24
       Ex.02

    2 OGG  - Cp.04 I am learnin F2                      0 03-AUG-24
       Ex.02       g new skills
                    through tra
                   ining at GGB
                   R

    3 OGG  - Cp.04 F1           F2                      0 03-AUG-24
       Ex.02

    4 OGG  - Cp.04 F1           F2                      0 03-AUG-24
       Ex.02

    5 OGG  - Cp.04 F1           F2                      0 03-AUG-24
       Ex.02
```

```
[...]

 6661 Cp.04 Ex.02  WANNA MOVE T F2                    0 05-AUG-24
                   O LUXEMBURGO
                   ! 123 TESTES


 6662 Cp.04 Ex.02  WANNA MOVE T F2                    0 05-AUG-24
                   O LUXEMBURGO
                   !

 6663 Cp.04 Ex.02  I AM FRIEND  F2                    0 05-AUG-24
                   OF OTALBA AN
                   D I WANNA MO
                   VE TO LUXEMB
                   URGO!

50000 OGG: USING U F1           F2                 2000 05-AUG-24 ORA12C701 OGG_SOURCE.T INSERT User Token E
      SER TOKENS                                                  AB_FILTER           xample: Grem
                                                                                      io is the be
                                                                                      st team in t
                                                                                      he league!

50001 OGG: USING U F1           F2                 2001 05-AUG-24 ORA12C701 OGG_SOURCE.T INSERT User Token E
      SER TOKENS                                                  AB_FILTER           xample: Grem
                                                                                      io is the be
                                                                                      st team in t
                                                                                      he league!

50002 OGGUSER - Cp F1           F2                    0 05-AUG-24 ORA12C701 OGG_SOURCE.T INSERT User Token E
      .04 Ex.02                                                   AB_FILTER           xample: Grem
                                                                                      io is the be
                                                                                      st team in t
                                                                                      he league!
```

Capítulo 4 / Exercício 4

Utilizando o comando SQLEXEC

Ambiente de Origem

→ Tabela: TAB_OGG

```
DROP TABLE "OGG_SOURCE"."TAB_OGG";
```

```
SQL> @src_create_tab_ogg
```

Output:

```
SQL> CREATE TABLE "OGG_SOURCE"."TAB_OGG"
  2  (    "CODE_COL"      NUMBER NOT NULL,
  3       "DESC_COL"      VARCHAR2(100),
  4       "CODE"          NUMBER
  5  )
  6  TABLESPACE TBS_APP_SOURCE;


SQL> ALTER TABLE "OGG_SOURCE"."TAB_OGG" ADD CONSTRAINT "PK_TAB_OGG" PRIMARY KEY ("CODE_COL")
  2  USING INDEX TABLESPACE TBS_APP_SOURCE;


SQL> DESC OGG_SOURCE.TAB_OGG
 Name                                                  Null?    Type
 ----------------------------------------------------- -------- ------------------------------------
 CODE_COL                                              NOT NULL NUMBER
 DESC_COL                                                       VARCHAR2(100)
 CODE                                                           NUMBER


SQL> select * from OGG_SOURCE.TAB_OGG order by 1;
```

Ambiente de Destino

→ Tabela: TAB_OGG_NEW

```
DROP TABLE "OGG_TARGET"."TAB_OGG_NEW";
```

```
SQL> @trg_create_tab_ogg_new
```

Output:

```
SQL> CREATE TABLE "OGG_TARGET"."TAB_OGG_NEW"
  2  ( "ID"          NUMBER NOT NULL,
  3    "DESC_COL"    VARCHAR2(100),
  4    "DESCRIPTION" VARCHAR2(100)
  5  )
  6  TABLESPACE TBS_APP_TARGET;


SQL> ALTER TABLE "OGG_TARGET"."TAB_OGG_NEW" ADD CONSTRAINT "PK_TAB_OGG_NEW" PRIMARY KEY ("ID")
  2  USING INDEX TABLESPACE TBS_APP_TARGET;


SQL> desc OGG_TARGET.TAB_OGG_NEW
 Name                                                  Null?    Type
 ----------------------------------------------------- -------- ------------------------------------
 ID                                                    NOT NULL NUMBER
 DESC_COL                                                       VARCHAR2(100)
 DESCRIPTION                                                    VARCHAR2(100)


SQL> select * from OGG_TARGET.TAB_OGG_NEW order by 1;
```

→ Tabela: TAB_SQLEXEC

```
DROP TABLE "OGG_TARGET"."TAB_SQLEXEC";
```

```
SQL> @trg_create_tab_sql_exec
```

Output:

```
CREATE TABLE "OGG_TARGET"."TAB_SQLEXEC"
( "CODE"     NUMBER(5,0) NOT NULL,
  "NEW_VALUE" VARCHAR2(100)
)
TABLESPACE TBS_APP_TARGET;


ALTER TABLE "OGG_TARGET"."TAB_SQLEXEC" ADD CONSTRAINT "PK_TAB_SQLEXEC" PRIMARY KEY ("CODE") USING INDEX
TABLESPACE TBS_APP_TARGET;

desc OGG_TARGET.TAB_SQLEXEC

insert into OGG_TARGET.TAB_SQLEXEC values (1, 'SUN');
insert into OGG_TARGET.TAB_SQLEXEC values (2, 'EARTH');
insert into OGG_TARGET.TAB_SQLEXEC values (3, 'SEA');
insert into OGG_TARGET.TAB_SQLEXEC values (4, 'WATER');
insert into OGG_TARGET.TAB_SQLEXEC values (5, 'FIRE');
commit;


SQL>
set lines 200 pages 100
column CODE_COL format 99
column DESC_COL format a20

select * from OGG_TARGET.TAB_SQLEXEC order by 1;

  CODE NEW_VALUE
------ ----------
 1     SUN
 2     EARTH
 3     SEA
 4     WATER
 5     FIRE
```

Utilize o script abaixo para cirar a procedure LOOKUP

```
SQL> @trg_create_procedure_lookup
```

Output:

```
SQL> CREATE OR REPLACE PROCEDURE OGG_TARGET.LOOKUP
  2  (CODE_PARAM IN VARCHAR2, DESC_PARAM OUT VARCHAR2) IS
  3  BEGIN
  4      SELECT NEW_VALUE
  5      INTO DESC_PARAM
  6      FROM OGG_TARGET.TAB_SQLEXEC
  7      WHERE ID = CODE_PARAM;
  8  END;
  9  /


SQL> select owner,object_name,object_type from dba_objects where object_name='LOOKUP';

OWNER          OBJECT_NAME          OBJECT_TYPE
-------------- -------------------- -----------------------
OGG_TARGET     LOOKUP               PROCEDURE
```

Ambiente de Destino

Configure o processo EXTACT com a tabela “TAB_OGG”:

```
>>>> ORIGEM (EXT_MAP1 e PMP_MAP1)
```

```
TABLE OGG_SOURCE.TAB_OGG;
```

Configure o processo REPLICAT com a tabela “REP_MAP1”

```
>>>> DESTINO (REP_MAP1)
```

```
MAP OGG_SOURCE.TAB_OGG, TARGET OGG_TARGET.TAB_OGG_NEW, &
SQLEXEC ( SPNAME OGG_TARGET.LOOKUP, ID LOOKUP_ID, PARAMS (CODE_PARAM = CODE)), &
COLMAP (USEDEFAULTS, ID = CODE_COL, "DESCRIPTION" = LOOKUP_ID.DESC_PARAM);
```

Ambiente de Origem

Insira alguns dados na ORIGEM

```
SQL> @src_insert_tab_ogg
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_OGG values (1,'--- Using SQLEXEC!!',3);
SQL> insert into OGG_SOURCE.TAB_OGG values (2,'--- Using SQLEXEC!!',5);

SQL> commit;


SQL> select * from OGG_SOURCE.TAB_OGG;

  CODE_COL DESC_COL                       SQLEXEC_ID
---------- ------------------------------ ----------
         1 --- Using SQLEXEC!!                     3
         2 --- Using SQLEXEC!!                     5

SQL> insert into OGG_SOURCE.TAB_OGG values (4,'--- Using SQLEXEC!!',1);
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_OGG;

  CODE_COL DESC_COL                       SQLEXEC_ID
---------- ------------------------------ ----------
         1 --- Using SQLEXEC!!                     3
         2 --- Using SQLEXEC!!                     5
         4 --- Using SQLEXEC!!                     1
```

Ambiente de Destino

Verifique como ficou no DESTINO:

```
SQL> @trg_ver_tab_ogg_new_sqlexec
```

Output:

```
SQL> select * from OGG_TARGET.TAB_OGG_NEW;

        ID DESC_COL                       DESCRIPTION
---------- ------------------------------ -------------
         1 --- Using SQLEXEC!!            SEA
         2 --- Using SQLEXEC!!            FIRE
         4 --- Using SQLEXEC!!            SUN


SQL> select * from OGG_TARGET.TAB_SQLEXEC;

      CODE NEW_VALUE
---------- --------------------------------------------
         1 SUN
         2 EARTH
         3 SEA
         4 WATER
         5 FIRE
```

Capítulo 5 / Exercício 1

Ambiente de Origem

Event Marker System

* EVENT ACTIONS
* EVENT RECORDS

Condição: Abortar a replicação caso o registro tenha ID >= 1000

→ Reconfigurar o EXTRACT (EXT_MOD2)

```
TABLE OGG_SOURCE.TAB_MODULE2, WHERE (ID >= 1000), EventActions (DISCARD, ABORT);
```

Ambiente de Origem

Teste a nova configuração disparando a transação abaixo

```
SQL> @src_insert02_tab_module2
```

Output:

```
SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                            DATE
---------- ---------------------------------------------------------------- -----------------
         1 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<      01-08-2024 16:12:22
         2 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<      01-08-2024 16:12:22
         3 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<      01-08-2024 16:12:22
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                  01-08-2024 16:12:22
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                  01-08-2024 16:12:22
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!           02-08-2024 13:55:26
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!           02-08-2024 13:55:26
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!! 02-08-2024 14:04:12
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!! 02-08-2024 14:04:12



SQL> insert into OGG_SOURCE.TAB_MODULE2 values (904,  'EVENT_ACTIONS: INSERT 904', sysdate);
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (905,  'EVENT_ACTIONS: INSERT 905', sysdate);
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (906,  'EVENT_ACTIONS: INSERT 906', sysdate);
SQL> commit;


SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

 ID VALUE                                                            DATE
--- ---------------------------------------------------------------- -----------------
  1 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<      01-08-2024 16:12:22
  2 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<      01-08-2024 16:12:22
  3 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<      01-08-2024 16:12:22
  4 OGG ENCRYPT: ENCRYPTED REGISTER                                  01-08-2024 16:12:22
  5 OGG ENCRYPT: ENCRYPTED REGISTER                                  01-08-2024 16:12:22
  6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!           02-08-2024 13:55:26
  7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!           02-08-2024 13:55:26
  8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!! 02-08-2024 14:04:12
  9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!! 02-08-2024 14:04:12
904 EVENT_ACTIONS: INSERT 904                                        06-08-2024 10:18:13
905 EVENT_ACTIONS: INSERT 905                                        06-08-2024 10:18:13
906 EVENT_ACTIONS: INSERT 906                                        06-08-2024 10:18:13
```

Ambiente de Destino

Valide o resultado da replicação

```
SQL> @trg_ver_tab_module2
```

Output:

```
SQL> select * from OGG_TARGET.TAB_MODULE2 order by 1;

        ID VALUE                                                                                DATE
---------- ---------------------------------------------------------------------------------- -------------------
         1 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<                         01-08-2024 16:34:14
         2 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<                         01-08-2024 16:34:14
         3 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<                         01-08-2024 16:34:14
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                                    01-08-2024 16:34:14
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                                    01-08-2024 16:34:14
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                             02-08-2024 13:55:26
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                             02-08-2024 13:55:26
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                 02-08-2024 14:04:12
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                 02-08-2024 14:04:12
```

Não Replicou?????????? Qual o motivo????

Ambiente de Origem- Database

Faça um INSERT que irá forçar o ABEND

```
SQL> @src_insert03_tab_module2
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (1010, 'EVENT_ACTIONS: INSERT 1010', sysdate);
SQL> commit;
```

DICA: Olhar as mensagens ggserr.log

```
 > Aborting process due to ABORT event for source table OGG_SOURCE.TAB_MODULE2 at redo sequence 148, RBA
9547792

 > 2019-06-21T14:29:21.806-0300  ERROR   OGG-01668  Oracle GoldenGate Capture for Oracle, EXT_MOD2.prm:
PROCESS ABENDING.
```

Observe também a abordagem abaixo para se programar o ABEND do processo sempre que a coluna VALUE receber o valor 'STOP':

```
>>>>  TABLE OGG_SOURCE.TAB_MODULE2, FILTER (@STREQ(VALUE,'STOP')), EventActions (DISCARD, ABORT);
```

EventActions + SHELL

1. STOP do processo EXT_MOD2
2. Configurar a tabela conforme abaixo
3. START do processo EXT_MOD2

```
OGG> edit params EXT_MOD2

TABLE OGG_SOURCE.TAB_MODULE2 EventActions (SHELL 'echo MODIFIED TABLE: [ OGG_SOURCE.TAB_MODULE2 ] >>
$OGG_HOME/output_file.txt' );

OGG> START EXT_MOD2
```

Ambiente de Origem

Dispare os seguintes comandos DML

```
SQL> @src_insert04_tab_module2
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (90004,  'EVENT_ACTIONS: SHELL >> output.txt ', sysdate);
SQL> insert into OGG SOURCE.TAB MODULE2 values (90005,  'EVENT ACTIONS: SHELL >> output.txt ', sysdate);

SQL> commit;


SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                                    DATE
---------- ------------------------------------------------------------------------ -------------------
         1 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<             01-08-2024 16:12:22
         2 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<             01-08-2024 16:12:22
         3 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<             01-08-2024 16:12:22
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                        01-08-2024 16:12:22
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                        01-08-2024 16:12:22
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                 02-08-2024 13:55:26
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                 02-08-2024 13:55:26
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!     02-08-2024 14:04:12
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!     02-08-2024 14:04:12
       904 EVENT_ACTIONS: INSERT 904                                              06-08-2024 10:18:13
       905 EVENT_ACTIONS: INSERT 905                                              06-08-2024 10:18:13
       906 EVENT_ACTIONS: INSERT 906                                              06-08-2024 10:18:13
      1010 EVENT_ACTIONS: INSERT 1010                                             06-08-2024 10:21:42
     90004 EVENT_ACTIONS: SHELL >> output.txt                                     06-08-2024 11:29:51
     90005 EVENT ACTIONS: SHELL >> output.txt                                     06-08-2024 11:29:51
```

Verifique o arquivo output.txt no SO

```
OGG> sh cat $OGG_HOME/output_file.txt

MODIFIED TABLE: [ OGG_SOURCE.TAB_MODULE2 ]
MODIFIED TABLE: [ OGG_SOURCE.TAB_MODULE2 ]
MODIFIED TABLE: [ OGG_SOURCE.TAB_MODULE2 ]
```

EventActions + SHELL + @StrSub

1. STOP do processo EXT_MOD2
2. Configurar a tabela conforme abaixo
3. START do processo EXT_MOD2

Identifique um valor específico da coluna VALUE e substitua

```
TABLE OGG_SOURCE.TAB_MODULE2 EventActions (SHELL ('echo [** PALMEIRAS **] Identified and replaced: $1 >>
output_file.txt', &
VAR $1 = @STRSUB(VALUE, 'PALMEIRAS', 'PALMEIRAS DOESNT HAVE A WORLD WORLD !!!')),LOG INFO);
```

Dispare os seguintes comandos DML

```
SQL> @src_insert05_tab_module2
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (6006,  'SAO PAULO'    , sysdate);
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (6007,  'FORTALEZA'    , sysdate);
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (6008,  'PALMEIRAS'    , sysdate);
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (6009,  'ATLETICO'     , sysdate);
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (7009,  'LISBOA'       , sysdate);
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (7008,  'PORTO'        , sysdate);

SQL> commit;


SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;
   ID VALUE                                                            DATE
----- ---------------------------------------------------------------- -------------------
    1 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<<<     01-08-2024 16:12:22
    2 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<<<     01-08-2024 16:12:22
    3 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<<<     01-08-2024 16:12:22
    4 OGG ENCRYPT: ENCRYPTED REGISTER                                  01-08-2024 16:12:22
    5 OGG ENCRYPT: ENCRYPTED REGISTER                                  01-08-2024 16:12:22
    6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!           02-08-2024 13:55:26
    7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!           02-08-2024 13:55:26
    8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!! 02-08-2024 14:04:12
    9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!! 02-08-2024 14:04:12
  904 EVENT_ACTIONS: INSERT 904                                        06-08-2024 10:18:13
  905 EVENT_ACTIONS: INSERT 905                                        06-08-2024 10:18:13
  906 EVENT_ACTIONS: INSERT 906                                        06-08-2024 10:18:13
 1010 EVENT_ACTIONS: INSERT 1010                                       06-08-2024 10:21:42
 6006 SAO PAULO                                                        06-08-2024 16:07:42
 6007 FORTALEZA                                                        06-08-2024 16:07:42
 6008 PALMEIRAS                                                        06-08-2024 16:07:42
 6009 ATLETICO                                                         06-08-2024 16:07:42
 7008 PORTO                                                            06-08-2024 16:07:42
 7009 LISBOA                                                           06-08-2024 16:07:42
90004 EVENT_ACTIONS: SHELL >> output.txt                               06-08-2024 11:38:39
90005 EVENT_ACTIONS: SHELL >> output.txt                               06-08-2024 11:38:39
```

→ Verificar arquivo no SO:

```
$ ogg

$ cat $OGG_HOME/output_file.txt

MODIFIED TABLE: [ OGG_SOURCE.TAB_MODULE2 ]
MODIFIED TABLE: [ OGG_SOURCE.TAB_MODULE2 ]
MODIFIED TABLE: [ OGG_SOURCE.TAB_MODULE2 ]
[** PALMEIRAS **] Identified and replaced: ATLETICO
[** PALMEIRAS **] Identified and replaced: LISBOA
[** PALMEIRAS **] Identified and replaced: PORTO
[** PALMEIRAS **] Identified and replaced: SAO PAULO
[** PALMEIRAS **] Identified and replaced: FORTALEZA
[** PALMEIRAS **] Identified and replaced: PALMEIRAS DOESNT HAVE A WORLD WORLD !!!
```

Verifique também no ggserr.log

```
OGG> sh tail -40f ggserr.log
 |
 |-->> Processed LOG event for source table OGG_SOURCE.TAB_MODULE2 at redo sequence 148, RBA 10899984.
 |-->> Executing shell command 'echo [** PALMEIRAS **] IDENTIFIED AND REPLACED:  PALMEIRAS DOESN'T HAVE A WORLD
WORLD > output_file.txt' due to SHELL event for source table OGG_SOURCE.TAB_MODULE2 at redo sequence 148, RBA
10899984.
 |-->> Successfully executed shell command 'echo [** PALMEIRAS **] IDENTIFIED AND REPLACED:  PALMEIRAS DOESN'T
HAVE A WORLD WORLD !!! > output_file.txt'.
```

Ambiente de Destino

```
SQL> @trg_ver_tab_module2
```

Output:

```
SQL> select * from OGG_TARGET.TAB_MODULE2 order by 1;

        ID VALUE                                                                                DATE
---------- ---------------------------------------------------------------------------------- -------------------
         1 Data replication via GoldenGate                                                    22-07-2024 17:50:54
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins                                   22-07-2024 17:50:54
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins                                   22-07-2024 17:50:54
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                                    22-07-2024 17:50:54
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                                    22-07-2024 17:50:54
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                             23-07-2024 10:38:22
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                             23-07-2024 10:38:22
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                 23-07-2024 11:10:20
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                 23-07-2024 11:10:20
      6006 SAO PAULO                                                                          24-07-2024 17:46:36
      6007 FORTALEZA                                                                          24-07-2024 17:46:36
      6008 PALMEIRAS                                                                          24-07-2024 17:46:36
      6009 ATLETICO                                                                           24-07-2024 17:46:36
      7008 PORTO                                                                              24-07-2024 17:46:36
      7009 LISBOA                                                                             24-07-2024 17:46:36
     90004 EVENT_ACTIONS: SHELL >> output.txt                                                 24-07-2024 17:44:30
     90005 EVENT_ACTIONS: SHELL >> output.txt                                                 24-07-2024 17:44:30
```

Ambiente de Origem

→ Registrar tipo de OPERACAO (OPTYPE) no arquivo do SO:

```
OGG> EDIT PARAMS EXT_MOD2

TABLE OGG_SOURCE.TAB_MODULE2, &
      EventActions (SHELL ('echo MODIFIED TABLE: [ OGG_SOURCE.TAB_MODULE2 ]  --  $1 >> output_file.txt' , VAR
$1 = @GETENV ('GGHEADER', 'OPTYPE')), LOG INFO);
```

Ambiente de Origem

```
SQL> @src_insert_update_tab_module2
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (7010,  'SAO PAULO'    , sysdate);
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (7011,  'PALEMIRAS'  , sysdate);
SQL> update OGG_SOURCE.TAB_MODULE2 set VALUE = 'It is too cold today.' where id = 7011;
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                                           DATE
---------- ------------------------------------------------------------------------------- -------------------
         1 Data replication via GoldenGate                                                 22-07-2024 17:50:54
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins                                22-07-2024 17:50:54
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins                                22-07-2024 17:50:54
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                                 22-07-2024 17:50:54
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                                 22-07-2024 17:50:54
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                          23-07-2024 10:38:22
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                          23-07-2024 10:38:22
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!              23-07-2024 11:10:20
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!              23-07-2024 11:10:20
       904 EVENT_ACTIONS: INSERT 904                                                       23-07-2024 16:05:15
       905 EVENT_ACTIONS: INSERT 905                                                       23-07-2024 16:05:15
       906 EVENT_ACTIONS: INSERT 906                                                       23-07-2024 16:05:15
      1010 EVENT_ACTIONS: INSERT 1010                                                      24-07-2024 17:41:36
      6006 SAO PAULO                                                                       24-07-2024 17:46:36
      6007 FORTALEZA                                                                       24-07-2024 17:46:36
      6008 PALMEIRAS                                                                       24-07-2024 17:46:36
      6009 ATLETICO                                                                        24-07-2024 17:46:36
      7008 PORTO                                                                           24-07-2024 17:46:36
      7009 LISBOA                                                                          24-07-2024 17:46:36
      7010 SAO PAULO                                                                       24-07-2024 18:10:18
      7011 It is too cold today.                                                           24-07-2024 18:10:18
     90004 EVENT_ACTIONS: SHELL >> output.txt                                              24-07-2024 17:44:30
     90005 EVENT_ACTIONS: SHELL >> output.txt                                              24-07-2024 17:44:30
```

Valide o arquivo texto

```
$ ogg

$ cat output_file.txt

MODIFIED TABLE: [ OGG_SOURCE.TAB_MODULE2 ]
MODIFIED TABLE: [ OGG_SOURCE.TAB_MODULE2 ]
MODIFIED TABLE: [ OGG_SOURCE.TAB_MODULE2 ]
[** PALMEIRAS **] Identified and replaced: ATLETICO
[** PALMEIRAS **] Identified and replaced: LISBOA
[** PALMEIRAS **] Identified and replaced: PORTO
[** PALMEIRAS **] Identified and replaced: SAO PAULO
[** PALMEIRAS **] Identified and replaced: FORTALEZA
[** PALMEIRAS **] Identified and replaced: PALMEIRAS DOESNT HAVE A WORLD WORLD !!!
MODIFIED TABLE: [ OGG_SOURCE.TAB_MODULE2 ] -- INSERT
MODIFIED TABLE: [ OGG_SOURCE.TAB_MODULE2 ] -- INSERT
MODIFIED TABLE: [ OGG_SOURCE.TAB_MODULE2 ] -- SQL COMPUPDATE
```

EventActions + WHERE (Exemplo 01)

1. STOP do processo EXT_MOD2
2. Configurar a tabela conforme abaixo
3. START do processo EXT_MOD2

```
TABLE OGG_SOURCE.TAB_MODULE2, &
      WHERE (ID >= 100), &
      EventActions (LOG INFO);
```

Dispare os seguintes comandos DML

```
SQL> @src_insert06_tab_module2
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (50,  'EVENT_ACTIONS: WHERE ID >= 50', sysdate);
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (500, 'EVENT_ACTIONS: WHERE ID >= 500', sysdate);
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (501, 'EVENT_ACTIONS: WHERE ID >= 501', sysdate);
SQL> commit;


SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                                            DATE
---------- ---------------------------------------------------------------------------- --------------------
         1 Data replication via GoldenGate                                             22-07-2024 17:50:54
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins                          22-07-2024 17:50:54
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins                          22-07-2024 17:50:54
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                                22-07-2024 17:50:54
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                                22-07-2024 17:50:54
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                         23-07-2024 10:38:22
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                         23-07-2024 10:38:22
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!             23-07-2024 11:10:20
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!             23-07-2024 11:10:20
        50 EVENT_ACTIONS: WHERE ID >= 50                                                  24-07-2024 18:11:57
       500 EVENT_ACTIONS: WHERE ID >= 500                                                 24-07-2024 18:11:57
       501 EVENT_ACTIONS: WHERE ID >= 501                                                 24-07-2024 18:11:57
       904 EVENT_ACTIONS: INSERT 904                                                      23-07-2024 16:05:15
       905 EVENT_ACTIONS: INSERT 905                                                      23-07-2024 16:05:15
       906 EVENT_ACTIONS: INSERT 906                                                      23-07-2024 16:05:15
      1010 EVENT_ACTIONS: INSERT 1010                                                     24-07-2024 17:41:36
      6006 SAO PAULO                                                                      24-07-2024 17:46:36
      6007 FORTALEZA                                                                      24-07-2024 17:46:36
      6008 PALMEIRAS                                                                      24-07-2024 17:46:36
      6009 ATLETICO                                                                       24-07-2024 17:46:36
      7008 PORTO                                                                          24-07-2024 17:46:36
      7009 LISBOA                                                                         24-07-2024 17:46:36
      7010 SAO PAULO                                                                      24-07-2024 18:10:18
      7011 It is too cold today.                                                          24-07-2024 18:10:18
     90004 EVENT_ACTIONS: SHELL >> output.txt                                             24-07-2024 17:44:30
     90005 EVENT_ACTIONS: SHELL >> output.txt                                             24-07-2024 17:44:30
```

Ambiente de Origem

Verificando no ggserr.log

```
$ alert_ogg
...

2021-08-22T13:30:15.455+0000  INFO    OGG-06117  Oracle GoldenGate Capture for Oracle, ext_mod2.prm:  Processed
LOG event for source table OGG_SOURCE.TAB_MODULE2 at redo sequence 13, RBA 136339984.
2021-08-22T13:30:15.455+0000  INFO    OGG-06117  Oracle GoldenGate Capture for Oracle, ext_mod2.prm:  Processed
LOG event for source table OGG_SOURCE.TAB_MODULE2 at redo sequence 13, RBA 136341520.
```

Você pode encontrar os registros dentro do trail na posição informada:

```
Processed LOG event for source table OGG_SOURCE.TAB_MODULE2 at redo sequence 13, RBA 136339984.
Processed LOG event for source table OGG_SOURCE.TAB_MODULE2 at redo sequence 13, RBA 136341520.
```

EventActions + WHERE (Exemplo 02)

1. STOP do processo EXT_MOD2
2. Configurar a tabela conforme abaixo
3. START do processo EXT_MOD2

```
TABLE OGG_SOURCE.TAB_MODULE2, WHERE (ID >= 1000), &
      EventActions (REPORT, LOG INFO);
```

Dispare os seguintes comandos DML

```
SQL> @src_insert07_tab_module2
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (10000,  'EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02',
sysdate);
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (10001,  'EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02',
sysdate);
SQL> insert into OGG_SOURCE.TAB_MODULE2 values (10002,  'EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02',
sysdate);

SQL> commit;


SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                                    DATE
---------- -------------------------------------------------------------------------- -------------------
         1 Data replication via GoldenGate                                         22-07-2024 17:50:54
         2 GGBR TRAINING - OGG - Instructor: Gilson Martins                 22-07-2024 17:50:54
         3 GGBR TRAINING - OGG - Instructor: Gilson Martins                 22-07-2024 17:50:54
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                  22-07-2024 17:50:54
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                  22-07-2024 17:50:54
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!           23-07-2024 10:38:22
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!           23-07-2024 10:38:22
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!  23-07-2024 11:10:20
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!  23-07-2024 11:10:20
        50 EVENT_ACTIONS: WHERE ID >= 50                                        24-07-2024 18:11:57
       500 EVENT_ACTIONS: WHERE ID >= 500                                       24-07-2024 18:11:57
       501 EVENT_ACTIONS: WHERE ID >= 501                                       24-07-2024 18:11:57
       904 EVENT_ACTIONS: INSERT 904                                            23-07-2024 16:05:15
       905 EVENT_ACTIONS: INSERT 905                                            23-07-2024 16:05:15
       906 EVENT_ACTIONS: INSERT 906                                            23-07-2024 16:05:15
      1010 EVENT_ACTIONS: INSERT 1010                                           24-07-2024 17:41:36
      6006 SAO PAULO                                                            24-07-2024 17:46:36
      6007 FORTALEZA                                                            24-07-2024 17:46:36
      6008 PALMEIRAS                                                            24-07-2024 17:46:36
      6009 ATLETICO                                                             24-07-2024 17:46:36
      7008 PORTO                                                                24-07-2024 17:46:36
      7009 LISBOA                                                               24-07-2024 17:46:36
      7010 SAO PAULO                                                            24-07-2024 18:10:18
      7011 It is too cold today.                                                24-07-2024 18:10:18
     10000 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                    24-07-2024 18:17:23
     10001 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                    24-07-2024 18:17:23
     10002 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                    24-07-2024 18:17:23
     90004 EVENT_ACTIONS: SHELL >> output.txt                                   24-07-2024 17:44:30
     90005 EVENT_ACTIONS: SHELL >> output.txt                                   24-07-2024 17:44:30
```

Verifique as atualizações do arquivo de log do OGG e de report do processo

```
$ ogg

$ tail -40f ggserr.log

$ ggsci

OGG > view report EXT_MOD2
```

Ambiente de Destino

Valide o destino da replicação

```
SQL> @trg_ver_tab_module2
```

Output:

```
SQL> select * from OGG_TARGET.TAB_MODULE2 order by 1;

   ID VALUE                                                                DATE
----- ---------------------------------------------------------------- -------------------
    1 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<<<     01-08-2024 16:34:14
    2 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<<<     01-08-2024 16:34:14
    3 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<<<     01-08-2024 16:34:14
    4 OGG ENCRYPT: ENCRYPTED REGISTER                                   01-08-2024 16:34:14
    5 OGG ENCRYPT: ENCRYPTED REGISTER                                   01-08-2024 16:34:14
    6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!            02-08-2024 13:55:26
    7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!            02-08-2024 13:55:26
    8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!  02-08-2024 14:04:12
    9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!  02-08-2024 14:04:12
  500 EVENT_ACTIONS: WHERE ID >= 500                                    06-08-2024 17:17:37
  501 EVENT_ACTIONS: WHERE ID >= 501                                    06-08-2024 17:17:37
 6006 SAO PAULO                                                         06-08-2024 16:34:06
 6007 FORTALEZA                                                         06-08-2024 16:34:06
 6008 PALMEIRAS                                                         06-08-2024 16:34:06
 6009 ATLETICO                                                          06-08-2024 16:34:06
 7008 PORTO                                                             06-08-2024 16:34:06
 7009 LISBOA                                                            06-08-2024 16:34:06
 7010 SAO PAULO                                                         06-08-2024 16:54:25
 7011 It is too cold today.                                             06-08-2024 16:54:25
10000 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                 06-08-2024 17:24:33
10001 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                 06-08-2024 17:24:33
10002 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                 06-08-2024 17:24:33
90004 EVENT_ACTIONS: SHELL >> output.txt                                06-08-2024 16:42:59
90005 EVENT_ACTIONS: SHELL >> output.txt                                06-08-2024 16:43:12
```

Outros exemplos de EventActions

```
The following causes the process to issue a checkpoint, log an informational message,
and ignore the entire transaction (without processing any of it), plus generate a report.

EVENTACTIONS (CP BEFORE, REPORT, LOG, IGNORE TRANSACTION)
```

```
The following writes the event record to the discard file and ignores the entire transaction.

EVENTACTIONS (DISCARD, IGNORE TRANS)
```

```
The following logs an informational message and gracefully stop the process.

EVENTACTIONS (LOG INFO, STOP)
```

```
The following rolls over the trail file and does not write the event record to the new file.

EVENTACTIONS (ROLLOVER, IGNORE)
```

Capítulo 6 / Exercício 1

Oracle GoldenGate Parameters

1. Oracle GoldenGate Parameters – 21c
2. Oracle GoldenGate Parameters – 19c
3. Oracle GoldenGate Parameters - 18c
4. Summary of Oracle GoldenGate Parameters

Parâmetros do MANAGER

GoldenGate Manager Parameter File (mgr.prm)

```
PORT 7809

USERIDALIAS ogg_connect

DYNAMICPORTLIST 7840-7860

PURGEOLDEXTRACTS ./dirdat/ * , UseCheckPoints, MinKeepDays 7
PURGEOLDEXTRACTS ./dirdat/ * , UseCheckPoints, MinKeepHours 48
PURGEOLDEXTRACTS ./dirdat/ * , NoCheckPoints, MinKeepFiles 10


PURGEDDLHISTORY MINKEEPHOURS 48, MAXKEEPHOURS 72, FREQUENCYMINUTES 60
PURGEMARKERHISTORY MINKEEPDAYS 1, MAXKEEPDAYS 2, FREQUENCYMINUTES 30



start manager | start mgr

AUTOSTART EXTRACT EXT_MAP1
AUTOSTART EXTRACT EXT_MOD2
AUTOSTART EXTRACT *
AUTOSTART REPLICAT *
AUTOSTART *



AUTORESTART EXTRACT EXT_MAP1, RETRIES 10, WAITMINUTES 1
AUTORESTART EXTRACT EXT_MOD2, RETRIES 20, WAITMINUTES 2

AUTORESTART REPLICAT REP_MAP1, RETRIES 5, WAITMINUTES 5
AUTORESTART REPLICAT REP_MOD2, RETRIES 10, WAITMINUTES 1

AUTORESTART EXTRACT *, RETRIES 10, WAITMINUTES 1
AUTORESTART REPLICAT *, RETRIES 10, WAITMINUTES 1


LAGCRITICALSECONDS 60     --->> Específica um threshold para ocorrência de LAG, e quando atingido, grava no
                                ggserr.log como CRITICO

LAGINFOMINUTES 60         --->> Específica um threshold para ocorrência de LAG, e quando atingido, grava no
                                ggserr.log como INFORMATIVO.

LAGREPORTMINUTES 10       --->> Específica de quanto em quanto tempo o Manager irá verificar se existe LAG.

--# END OF FILE
```

DICA:

```
OGG> refresh manager | refresh mgr
```

LAGREPORT

```
--> Válido para o Manager

Use o parâmetro LAGREPORTMINUTES ou LAGREPORTHOURS para especificar o intervalo no qual o Manager verifica o
lag do EXTRACT e REPLICAT.

--> LAGREPORTMINUTES
--> LAGREPORTHOURS
```

LAGINFO

```
---> Válido para o Manager

Use o parâmetro LAGINFOSECONDS, LAGINFOMINUTES ou LAGINFOHOURS para especificar um limite de atraso, se um
atraso exceder o valor especificado, o Oracle GoldenGate relatará informações de atraso para o log de erros. Se
o atraso exceder o valor especificado com o parâmetro LAGCRITICAL, o Manager relatará o atraso como crítico;
caso contrário, ele relata o atraso como uma mensagem informativa.

--> LAGINFOSECONDS
--> LAGINFOMINUTES
--> LAGINFOHOURS
```

LAGCRITICAL

```
---> Válido para o Manager

Use o parâmetro LAGCRITICALSECONDS, LAGCRITICALMINUTES ou LAGCRITICALHOURS para especificar um limite de lag,
considerado crítico, e para forçar uma mensagem de aviso para o log de erros quando esse limite for atingido.
Esse parâmetro afeta os processos EXTRACT e REPLICAT.

--> LAGCRITICALSECONDS
--> LAGCRITICALMINUTES
--> LAGCRITICALHOURS
```

PURGEDDLHISTORY | PURGEDDLHISTORYALT

```
---> Válido para o REPLICAT

Use os parâmetros PURGEDDLHISTORY e PURGEDDLHISTORYALT para controlar o tamanho das tabelas de histórico de DDL
que dão suporte à captura de DDL. Essas tabelas são criadas em um banco de dados Oracle para dar suporte à
captura DDL baseada em trigger.
```

ALLOWOUTPUTDIR

```
---> Válido para o GLOBALS


Use ALLOWOUTPUTDIR para especificar o diretório de trilha de saída permitido (incluindo seus subdiretórios). O
caminho especificado deve existir. Os links simbólicos são resolvidos antes da análise e comparação.

ALLOWOUTPUTDIR /ogg/trails/source01
```

Parâmetros avançados EXTRACT e REPLICAT

```
BR BRINTERVAL 1H   <<<<<< EXTRACT APENAS

IGNOREUPDATES
IGNOREDELETES
IGNOREINSERTS

GETUPDATES
GETDELETES
GETINSERTS
```

Exemplo (ODI):

```
MAP TAB_STAGE, TARGET TAB_STAGE;

IGNOREDELETES
IGNOREINSERTS
-- REGRA PARA UPDATE
MAP TAB_JOURNALIZING, TARGET TAB_JOURNALIZING, COLMAP (TOKEN_OPTYPE (UPDATE));


IGNOREUPDATES
IGNOREINSERTS
GETDELETES
-- REGRA PARA DELETE
MAP TAB_JOURNALIZING, TARGET TAB_JOURNALIZING, COLMAP (TOKEN_OPTYPE (DELETE));;


IGNOREDELETES
IGNOREUPDATES
GETINSERTS
-- REGRA PARA INSERT
MAP TAB_JOURNALIZING, TARGET TAB_JOURNALIZING, COLMAP (TOKEN_OPTYPE (INSERT));;


UPDATEDELETES | NOUPDATEDELETES
```

Lista de parâmetros para avaliar:

BATCHSQL

```
---> Válido para o REPLICAT (Non-Integrated) --> REPLICAT PARALLEL

Parâmetro para aumentar o desempenho do Replicat, organizar instruções SQL semelhantes em arrays e aplicá-las
em uma taxa acelerada.


--# Exemplo:

BATCHSQL BATCHESPERQUEUE 100, OPSPERBATCH 2000
```

GETTRUNCATES | IGNORETRUNCATES

```
---> Válido para EXTRACT e REPLICAT

Use os parâmetros GETTRUNCATES e IGNORETRUNCATES para controlar se o Oracle GoldenGate processa ou não
operações de truncate.

Por padrão, as operações truncadas não são capturadas da origem ou replicadas para o destino.
```

CHECKPARAMS

```
---> Válido para EXTRACT e REPLICAT

Use o parâmetro CHECKPARAMS para testar a sintaxe de um arquivo de parâmetro.

Inicie o processo. Sem processar dados, o Oracle GoldenGate audita a sintaxe. O Oracle GoldenGate se conecta ao
banco de dados para verificar se as tabelas especificadas com TABLE ou MAP existem.

Se houver uma falha de sintaxe, o processo será encerrado com o erro 190. Se a sintaxe for bem-sucedida, o
processo será interrompido e gravará uma mensagem no arquivo de relatório informando que os parâmetros foram
processados com êxito.
```

WARNLONGTRANS

```
---> Válido para o EXTRACT

Use o parâmetro WARNLONGTRANS para especificar um período de tempo em que uma transação pode ser aberta antes
que Extract gere uma mensagem de aviso de que a transação é de longa execução.

Use também WARNLONGTRANS para controlar a frequência com que o Oracle GoldenGate verifica transações de longa
execução.
```

INSERTMISSINGUPDATES | NOINSERTMISSINGUPDATES

```
---> Válido para o REPLICAT

Use os parâmetros INSERTMISSINGUPDATES e NOINSERTMISSINGUPDATES para controlar se o Oracle GoldenGate insere ou
não um registro com base na origem quando o registro de destino não existe.

INSERTMISSINGUPDATES insere todos os "missing updates", mas só deve ser usado quando o banco de dados de origem
registra todos os valores de coluna, independentemente de terem sido alterados ou não. Ele pode funcionar com
um banco de dados que usa uma forma compactada de atualizações (em que apenas os valores alterados são
registrados) se o banco de dados de destino permitir que NULL seja usado para os valores de coluna ausentes.

Quando o padrão de NOINSERTMISSINGUPDATES está em vigor, um registro ausente causa um erro e a transação pode
ser encerrada de forma anormal dependendo das configurações de REPERR.

Os parâmetros INSERTMISSINGUPDATES e NOINSERTMISSINGUPDATES são específicos da tabela.
Um parâmetro permanece em vigor para todas as instruções MAP subsequentes, até que o outro parâmetro seja
encontrado.
```

TRANLOGOPTIONS ASMBUFSIZE

```
Usado para controlar o tamanho do buffer que contém dados extraídos de uma instância do ASM.
```

TRANLOGOPTIONS BUFSIZE

```
Controla o tamanho máximo, em bytes, dos buffers alocados para conter os dados lidos do log de transações.
```

MAXTRANSOPS

```
---> Válido para o REPLICAT (Não suportado para integrated mode)

Use o parâmetro MAXTRANSOPS para dividir transações de origem em menores no sistema de destino. Esse parâmetro
pode ser usado quando o banco de dados de destino não está configurado para acomodar grandes transações.

Por exemplo, se os segmentos de rollback do Oracle não forem grandes o suficiente no destino para reproduzir
uma transação de origem que executa um milhão de exclusões, você poderá especificar MAXTRANSOPS 10000, que
força REPLICAT a emitir uma confirmação após cada grupo de 10.000 exclusões.

Usar o MAXTRANSOPS é alterar os limites transacionais impostos pela aplicação de origem, mesmo que o Replicat
aplique as operações na ordem correta. Isso pode causar erros se Extract falhar durante essa transação.

Extract reescreve a transação até o final do trail, em vez de substituir a antiga. Como a trilha é sequencial,
o Replicat começa a processar a transação antiga e deve revertê-la quando recebe o marcador de recuperação e a
nova transação e, em seguida, começa a aplicar a nova transação.

Se o MAXTRANSOPS fez com que o Replicat dividisse a transação original em várias transações menores, o Replicat
só poderá reverter a parte que não foi confirmada no destino. Quando o Replicat processar as operações
confirmadas novamente, elas resultarão em erros de linha duplicada ou erros de linha ausente, dependendo do
tipo de operação SQL.
```

DYNAMICRESOLUTION | NODYNAMICRESOLUTION

```
---> Válido para EXTRACT e REPLICAT

DYNAMICRESOLUTION, o padrão, permite a inicialização rápida do processo quando há várias tabelas especificadas
em instruções TABLE ou MAP. Para obter metadados para registros de transações que ele precisa processar, o
Oracle GoldenGate consulta o banco de dados e, em seguida, cria um registro das tabelas envolvidas.

DYNAMICRESOLUTION faz com que o registro seja criado uma tabela por vez, em vez de todos de uma vez.
Os metadados de qualquer tabela são adicionados quando o Extract encontra pela primeira vez o ID do objeto no
log de transações,
enquanto a construção de registros para outras tabelas é adiada até que seus IDs de objeto sejam encontrados.

DYNAMICRESOLUTION é o mesmo que WILDCARDRESOLVE DYNAMIC.

NODYNAMICRESOLUTION faz com que todo o registro do objeto (para todas as tabelas) seja construído na
inicialização,o que pode ser demorado se o banco de dados for grande.
```

REPORTCOUNT

```
---> Válido para EXTRACT e REPLICAT

REPORTCOUNT EVERY 10 MINUTES, RATE


Use o parâmetro REPORTCOUNT para relatar uma contagem de registros de transação que os processos EXTRACT ou
REPLICAT processaram desde a inicialização.

Cada registro de transação representa uma operação de banco de dados lógica que foi executada em uma transação
capturada pelo Oracle GoldenGate. A contagem de registros é impressa no arquivo de relatório e na tela.
```

EOFDELAY

```
---> Válido para EXTRACT e REPLICAT

EOFDELAY 2

Use o parâmetro EOFDELAY ou EOFDELAYCSECS para controlar a frequência com que Extract, PUMP ou Replicat
verifica se há novos dados depois de atingir o final dos dados atuais em sua fonte de dados.

Você pode reduzir a sobrecarga de I/O do sistema dessas leituras aumentando o valor desse parâmetro.
```

Integrated Params

1. Optional Parameters for Integrated Modes - 21c
2. Optional Parameters for Integrated Modes -19c
3. Optional Parameters for Integrated Modes – 18c
4. Optional Parameters for Integrated Modes

Parâmetros opcionais para EXTRACT Integrado

```
GETCTASDML
DOWNSTREAM_REAL_TIME_MINE
MAX_SGA_SIZE
PARALLELISM
TRACE_LEVEL
WRITE_ALERT_LOG
```

Parâmetros opcionais para REPLICAT Integrado

```
BATCHSQL_MODE
EAGER_SIZE
GROUPTRANSOPS
MAX_PARALLELISM
MAX_SGA_SIZE
PARALLELISM
TRACE_LEVEL
WRITE_ALERT_LOG
```

Capítulo 7 / Exercício 1

Ambiente de Origem

Utilizando MACROS

```
$ cd $OGG_HOME

$ mkdir dirmac

$ cd dirmac
```

Crie o arquivo de MACRO setlogin.mac e configure-o como indicado abaixo

```
$ vi setlogin.mac

--#================================================
--#  MACROS LIBRARY "setlogin.mac"
--#================================================
MACRO #dblogin
BEGIN
   useridalias ogg_connect
END;
```

Crie o arquivo de MACRO setdb.mac e configure-o como indicado abaixo

```
$ vi setdb.mac

--#================================================
--#  MACROS LIBRARY "setdb.mac"
--#================================================
MACRO #setdb
BEGIN
   SETENV (ORACLE_SID ="golden12c")
   SETENV (ORACLE_HOME="/u01/app/oracle/product/12.2.0.1/dbhome_1")
END;
```

Crie o arquivo de MACRO settings_src.mac e configure-o como indicado abaixo

```
$ vi settings_src.mac

--#=============================================
--#  MACROS LIBRARY "settings_src.mac"
--#=============================================
--# 1. MACRO #setenv()
--#=============================================
MACRO #setenv
BEGIN

-- Bounded Recovery
BR BRINTERVAL 1H

END;

--#=============================================
--# 2. MACRO #ddl_rep()
--#=============================================
MACRO #ddl_rep
BEGIN

-- DDL Configuration, exclude "CREATE INDEX"
DDL INCLUDE MAPPED EXCLUDE INSTR 'CREATE INDEX'

END;

--#=============================================
--# 3. MACRO #rmthost()
--#=============================================
MACRO #rmthost
PARAMS (#xx, #yy)
BEGIN

-- Compress and encrypt Messages
DECRYPTTRAIL AES256, KEYNAME Sup3r#k31
RMTHOST #xx, MGRPORT #yy, COMPRESS, ENCRYPT AES256, KEYNAME Sup3r#k31;
ENCRYPTTRAIL AES256, KEYNAME Sup3r#k31

END;

--#=============================================
--# 4. MACRO #encrypttrail()
--#=============================================
MACRO #encrypttrail
BEGIN

-- Encrypt Trail files format
ENCRYPTTRAIL AES256 KEYNAME Sup3r#k31

END;

--#=============================================
--# 5. MACRO #initial_load()
--#=============================================
MACRO #initial_load
PARAMS (#host,#port,#replicat)
BEGIN

RMTHOST #host, MGRPORT #port
RMTTASK REPLICAT, GROUP #replicat

END;
```

```
--#==========================================
--# END OF MACRO
--#==========================================
```

Validar os arquivos de Macro que foram criados:

```
$ ls -ltr *.mac
total 12
-rw-r--r-- 1 oracle dba  191 Aug  7 07:42 setlogin.mac
-rw-r--r-- 1 oracle dba  262 Aug  7 07:45 setdb.mac
-rw-r--r-- 1 oracle dba 1495 Aug  7 07:46 settings_src.mac
```

Ambiente de Destino

```
$ cd $OGG_HOME

$ mkdir dirmac

$ cd dirmac
```

Crie o arquivo de MACRO settings_trg.mac e configure-o como indicado abaixo

```
$ vi settings_trg.mac

--#=============================================
--#  MACROS LIBRARY "settings_trg.mac"
--#=============================================
--# 1. MACRO #reperror()
--#=============================================
--#MACRO #reperror
--#BEGIN
--#
--#END;

--#=============================================
--# 2. MACRO #gettruncates()
--#=============================================
MACRO #gettruncates
BEGIN

GETTRUNCATES

END;

--#=============================================
--# 3. MACRO #setenv()
--#=============================================
MACRO #setenv
BEGIN

--# Parameter to increase the performance of Replicat,
--# organize similar SQL statements into arrays and apply them at an accelerated rate
BATCHSQL BATCHESPERQUEUE 100, OPSPERBATCH 2000

END;

--#=============================================
--# 4. MACRO #decrypttrail()
--#=============================================

MACRO #decrypttrail
BEGIN

decrypttrail AES256, keyname Sup3r#k31

END;

--#=============================================
--# END OF MACRO
--#=============================================
```

Ambiente de Origem

Implemente as macros no processo EXTRACT

```
$ cd $OGG_HOME; ./ggsci

OGG> edit params EXT_MOD2

--#================================================================
--# FQA ==> EXT_MOD2   .   PMP_MOD2    >   REP_MOD2   |   ./dirdat/m2
--#================================================================
--#          vm-src08   (golden12c)    >   vm-trg08   (oradb19c)
--#================================================================

EXTRACT EXT_MOD2

--#================================================
--# MACRO (Default Includes)
--#================================================
nolist
include ./dirmac/setlogin.mac
include ./dirmac/setdb.mac
include ./dirmac/settings_src.mac
list
--#================================================
--# DB environment settings
--#================================================
#setdb()

--#================================================
--# Database login
--#================================================
#dblogin()

--#================================================
--# Environment Configuration
--#================================================
#setenv()

--#================================================
--# Local trail info
--#================================================
#encrypttrail()
exttrail ./dirdat/m2

--#================================================
--# Error Handling
--#================================================

--#================================================
--# DDL Replication
--#================================================
#ddl_rep()

--#================================================
--# List of mapped tables for capture and replication
--#================================================
--# ** OGG INTERNAL TABLE **
TABLE OGG_SOURCE.TAB_OGG_INTERNAL;

TABLE OGG_SOURCE.TAB_MODULE2;

--# END FILE
```

Implemente também no EXTRACT secundário (PUMP)

```
OGG> edit params PMP_MOD2

--#================================================================
--# FQA ==> EXT_MOD2   .   PMP_MOD2    >   REP_MOD2   |   ./dirdat/m2
--#================================================================
--#         vm-src08   (golden12c)    >   vm-trg08   (oradb19c)
--#================================================================

EXTRACT PMP_MOD2

--#================================================
--# MACRO (Default Includes)
--#================================================
nolist
include ./dirmac/setlogin.mac
include ./dirmac/setdb.mac
include ./dirmac/settings_src.mac
list
--#================================================
--# DB environment settings
--#================================================
#setdb()

--#================================================
--# Database login
--#================================================
#dblogin()

--#================================================
--# Remote host info
--#================================================
#rmthost(<target_hostname>,7809)

--#================================================
--# Remote trail info
--#================================================
RMTTRAIL ./dirdat/m2

--#================================================
--# Error Handling
--#================================================


--#================================================
--# List of mapped tables for capture and replication
--#================================================
--# ** OGG INTERNAL TABLE **
TABLE OGG_SOURCE.TAB_OGG_INTERNAL;
TABLE OGG_SOURCE.TAB_MODULE2;

--# END FILE
```

Ambiente de Destino

Implemente as macros do destino no processo REPLICAT

```
$ ogg

$ ggsci

OGG> edit params REP_MOD2

--#================================================================
--# FQA ==> EXT_MOD2   .   PMP_MOD2    >   REP_MOD2   |   ./dirdat/m2
--#================================================================
--#          vm-src01   (golden12c)    >   vm-trg01   (oradb19c)
--#================================================================

REPLICAT REP_MOD2

--#================================================
--# MACRO (Default Includes)
--#================================================
nolist
include ./dirmac/setlogin.mac
include ./dirmac/setdb.mac
include ./dirmac/settings_trg.mac
list
--#================================================
--# DB environment settings
--#================================================
#setdb()

--#================================================
--# Database login
--#================================================
#dblogin()

--#================================================
--# Environment Configuration
--#================================================
#gettruncates()
#setenv()
#decrypttrail()

--#================================================
--# Error Handling
--#================================================


--#================================================
--# List of mapped tables for capture and replication
--#================================================
--# ** OGG INTERNAL TABLE **
MAP OGG_SOURCE.TAB_OGG_INTERNAL, TARGET OGG_TARGET.TAB_OGG_INTERNAL;

MAP OGG_SOURCE.TAB_MODULE2, TARGET OGG_TARGET.TAB_MODULE2;

--# END FILE
```

Valide as macros

1. Reinicie os processos (efetivar alterações).
2. Verificar as alterações nos arquivo de report.

Ambiente de Origem- Database

```
SQL> @src_insert08_tab_module2
```

Output:

```
SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

   ID VALUE                                                           DATE
----- ---------------------------------------------------------------- -------------------
    1 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<     01-08-2024 16:12:22
    2 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<     01-08-2024 16:12:22
    3 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<     01-08-2024 16:12:22
    4 OGG ENCRYPT: ENCRYPTED REGISTER                                01-08-2024 16:12:22
    5 OGG ENCRYPT: ENCRYPTED REGISTER                                01-08-2024 16:12:22
    6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!         02-08-2024 13:55:26
    7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!         02-08-2024 13:55:26
    8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!! 02-08-2024 14:04:12
    9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!! 02-08-2024 14:04:12
   50 EVENT_ACTIONS: WHERE ID >= 50                                  06-08-2024 17:17:37
  500 EVENT_ACTIONS: WHERE ID >= 500                                 06-08-2024 17:17:37
  501 EVENT_ACTIONS: WHERE ID >= 501                                 06-08-2024 17:17:37
  904 EVENT_ACTIONS: INSERT 904                                      06-08-2024 10:18:13
  905 EVENT_ACTIONS: INSERT 905                                      06-08-2024 10:18:13
  906 EVENT_ACTIONS: INSERT 906                                      06-08-2024 10:18:13
 1010 EVENT_ACTIONS: INSERT 1010                                     06-08-2024 10:21:42
 6006 SAO PAULO                                                      06-08-2024 16:34:06
 6007 FORTALEZA                                                      06-08-2024 16:34:06
 6008 PALMEIRAS                                                      06-08-2024 16:34:06
 6009 ATLETICO                                                       06-08-2024 16:34:06
 7008 PORTO                                                          06-08-2024 16:34:06
 7009 LISBOA                                                         06-08-2024 16:34:06
 7010 SAO PAULO                                                      06-08-2024 16:54:25
 7011 It is too cold today.                                          06-08-2024 16:54:25
10000 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02              06-08-2024 17:24:33
10001 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02              06-08-2024 17:24:33
10002 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02              06-08-2024 17:24:33
90004 EVENT_ACTIONS: SHELL >> output.txt                             06-08-2024 11:38:39
90005 EVENT_ACTIONS: SHELL >> output.txt                             06-08-2024 11:38:39
90010 Implementado MACRO no OGG com sucesso!!                        07-08-2024 10:08:47
90011 Implementado MACRO no OGG com sucesso!!                        07-08-2024 10:08:47
90012 Implementado MACRO no OGG com sucesso!!                        07-08-2024 10:08:47
```

Ambiente de Destino

Valide a tabela de destino

```
SQL> @trg_ver_tab_module2
```

Output:

```
SQL> select * from OGG_TARGET.TAB_MODULE2 order by 1;

        ID VALUE                                                                                DATE
---------- ---------------------------------------------------------------------------------- -------------------
         1 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<                          01-08-2024 16:34:14
         2 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<                          01-08-2024 16:34:14
         3 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<                          01-08-2024 16:34:14
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                                    01-08-2024 16:34:14
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                                    01-08-2024 16:34:14
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                             02-08-2024 13:55:26
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                             02-08-2024 13:55:26
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                 02-08-2024 14:04:12
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                 02-08-2024 14:04:12
       500 EVENT_ACTIONS: WHERE ID >= 500                                                     06-08-2024 17:17:37
       501 EVENT_ACTIONS: WHERE ID >= 501                                                     06-08-2024 17:17:37
      6006 SAO PAULO                                                                          06-08-2024 16:34:06
      6007 FORTALEZA                                                                          06-08-2024 16:34:06
      6008 PALMEIRAS                                                                          06-08-2024 16:34:06
      6009 ATLETICO                                                                           06-08-2024 16:34:06
      7008 PORTO                                                                              06-08-2024 16:34:06
      7009 LISBOA                                                                             06-08-2024 16:34:06
      7010 SAO PAULO                                                                          06-08-2024 16:54:25
      7011 It is too cold today.                                                              06-08-2024 16:54:25
     10000 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                                  06-08-2024 17:24:33
     10001 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                                  06-08-2024 17:24:33
     10002 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                                  06-08-2024 17:24:33
     90004 EVENT_ACTIONS: SHELL >> output.txt                                                 06-08-2024 16:42:59
     90005 EVENT_ACTIONS: SHELL >> output.txt                                                 06-08-2024 16:43:12
     90010 Implementado MACRO no OGG com sucesso!!                                           07-08-2024 10:08:47
     90011 Implementado MACRO no OGG com sucesso!!                                           07-08-2024 10:08:47
     90012 Implementado MACRO no OGG com sucesso!!                                           07-08-2024 10:08:47
```

Capítulo 7 / Exercício 2 - Desafio

DESAFIO OGG

Criar uma replicação utilizando:

1. As melhores práticas de configuração de parâmetros;
2. EXTRACT em modo integrado;
3. CREDENTIALSTORE;
4. Criptografia de trail e de mensagem TCP/IP;
5. Mapping (COLS e/ou COLSEXCEPT)
6. Em cada update realizado alterar o valor da coluna PROFESSION de "DBA ORACLE" para "DBA ORACLE GOLDENGATE"
7. Configurar o PUMP para parar no caso de receber algum registro com valor maior que 1 milhão.

** Melhorias -->> Criar algum step para tokens e usertokens.
(exemplo: salvar detalhes da sessão em um arquivo externo quando ocorrer um update)

** Mais Exercícios de COLMAP.

Preparação dos ambientes

Ambiente de Origem

Crie a tabela de origem CHALLENGE_OGGM2

```
SQL> @src_create_tab_challenge_oggm2
```

Output:

```
SQL> CREATE TABLE "OGG_SOURCE"."CHALLENGE_OGGM2"
  2  (    "CODE"    NUMBER NOT NULL,
  3       "PASS"         VARCHAR2(100),
  4       "COL_B"        VARCHAR2(100),
  5       "COL_C"        VARCHAR2(100),
  6       "COL_D"        DATE DEFAULT sysdate
  7  );
```

Gere uma carga genérica

```
SQL> @src_populate_challenge_oggm2
PL/SQL procedure successfully completed.
```

Obs.: o script pode levar alguns instantes para ser concluído devido a criação de um milhão de registros.

Output:

```
SQL> select count(*) from OGG_SOURCE.CHALLENGE_OGGM2;

  COUNT(*)
----------
   1000000
```

Ambiente de Destino- Database

Configure a tabela no destino

```
SQL> @trg_create_tab_challenge_oggm2
```

Output:

```
@trg_create_tab_challenge_oggm2
SQL> CREATE TABLE "OGG_TARGET"."CHALLENGE_OGGM2"
  2  (   "ID"          NUMBER NOT NULL,
  3      "COL_C"       VARCHAR2(100),
  4      "PASSWORD"       VARCHAR2(100),
  5      "COL_A"       VARCHAR2(100),
  6      "PROFESSION"   VARCHAR2(100),
  7      "COL_D"       DATE DEFAULT sysdate,
  8      "COL_E"       VARCHAR2(100)
  9  )
 10  ;
```

Efetue o seguinte mapeamento

```
  Origem        |    DESTINO
  ------------  |    ------------
  CODE          -->   ID
  PASS          -->   PASSWORD
  COL_B         -->   PROFESSION
  COL_C         -->   COL_C
  COL_D         -->   COL_D
```

Capítulo 8 / Exercício 1

Realizando Configuração e Troubleshooting com o parâmetro REPERROR

Ambiente de Origem

Crie a tabela OGG_SOURCE.TAB_REPERROR

```
DROP TABLE "OGG_SOURCE"."TAB_REPERROR";
```

```
SQL> @src_create_insert_tab_reperror
```

Output:

```
SQL> CREATE TABLE "OGG_SOURCE"."TAB_REPERROR"
  2  (   "ID"      NUMBER NOT NULL,
  3      "VALUE"   VARCHAR2(100),
  4      "DATE"    DATE
  5  )
  6  TABLESPACE TBS_APP_SOURCE;

SQL> ALTER TABLE "OGG_SOURCE"."TAB_REPERROR" ADD CONSTRAINT "PK_TAB_REPERROR" PRIMARY KEY ("ID") USING INDEX
TABLESPACE TBS_APP_SOURCE;


SQL> desc OGG_SOURCE.TAB_REPERROR

 Name        Null?    Type
 ----------- -------- ----------------
 ID          NOT NULL NUMBER
 VALUE                VARCHAR2(100)
 DATE                 DATE


SQL> insert into OGG_SOURCE.TAB_REPERROR values (1, 'OGG   : Using  ##  REPERROR  ##', sysdate);
SQL> insert into OGG_SOURCE.TAB_REPERROR values (2, 'OGG   : Using  ##  REPERROR  ##', sysdate);
SQL> insert into OGG_SOURCE.TAB_REPERROR values (3, 'OGG   : Using  ##  REPERROR  ##', sysdate);
SQL> insert into OGG_SOURCE.TAB_REPERROR values (4, 'OGG   : Using  ##  REPERROR  ##', sysdate);
SQL> insert into OGG_SOURCE.TAB_REPERROR values (5, 'OGG   : Using  ##  REPERROR  ##', sysdate);
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_REPERROR order by 1;

        ID VALUE                                                            DATE
---------- ---------------------------------------------------------------- -------------------
         1 OGG   : Using  ##  REPERROR  ##                                  24-07-2024 18:37:48
         2 OGG   : Using  ##  REPERROR  ##                                  24-07-2024 18:37:48
         3 OGG   : Using  ##  REPERROR  ##                                  24-07-2024 18:37:48
         4 OGG   : Using  ##  REPERROR  ##                                  24-07-2024 18:37:48
         5 OGG   : Using  ##  REPERROR  ##                                  24-07-2024 18:37:48
```

Ambiente de Destino- Database

```
DROP TABLE "OGG_TARGET"."TAB_REPERROR";
```

```
SQL> @trg_create_insert_tab_reperror
```

Output:

```
SQL> CREATE TABLE "OGG_TARGET"."TAB_REPERROR"
  2  (    "ID"      NUMBER NOT NULL,
  3       "VALUE"   VARCHAR2(100),
  4       "DATE"    DATE)
  5  TABLESPACE TBS_APP_TARGET;


SQL> ALTER TABLE "OGG_TARGET"."TAB_REPERROR" ADD CONSTRAINT "PK_TAB_REPERROR" PRIMARY KEY ("ID") USING INDEX
TABLESPACE TBS_APP_TARGET;


SQL> desc OGG_TARGET.TAB_REPERROR

 Name      Null?    Type
 --------- -------- ---------------
 ID        NOT NULL NUMBER
 VALUE              VARCHAR2(100)
 DATE               DATE


SQL> insert into OGG_TARGET.TAB_REPERROR values (1, 'OGG   : Using  ##  REPERROR  ##', sysdate);
SQL> insert into OGG_TARGET.TAB_REPERROR values (2, 'OGG   : Using  ##  REPERROR  ##', sysdate);
SQL> insert into OGG_TARGET.TAB_REPERROR values (3, 'OGG   : Using  ##  REPERROR  ##', sysdate);
SQL> insert into OGG_TARGET.TAB_REPERROR values (4, 'OGG   : Using  ##  REPERROR  ##', sysdate);
SQL> insert into OGG_TARGET.TAB_REPERROR values (5, 'OGG   : Using  ##  REPERROR  ##', sysdate);

SQL> commit;


SQL> select * from OGG_TARGET.TAB_REPERROR order by 1;

        ID VALUE                                                                DATE
---------- ------------------------------------------------------------------- -------------------
         1 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
         2 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
         3 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
         4 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
         5 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
```

Configurar a tabela no fluxo de replicação:

EXT_MOD2 > PMP_MOD2 > REP_MOD2

Ambiente de origem

Implemente a nova tabela nos processos da Origem, naqueles com final *_MOD2

```
…
TABLE OGG_SOURCE.TAB_REPERROR;
```

Configure o TRANDATA para a tabela

```
OGG> dblogin useridalias ogg_connect

OGG> ADD TRANDATA OGG_SOURCE.TAB_REPERROR

OGG> INFO TRANDATA OGG_SOURCE.TAB_REPERROR
```


Ambiente de Destino

Implemente a nova tabela no destino da replicação

```
OGG> EDIT PARAMS REP_MOD2
…
MAP OGG_SOURCE.TAB_REPERROR, TARGET OGG_TARGET.TAB_REPERROR;

OGG> START REP_MOD2
```

Ambiente de Origem- Database

Fazer um teste simples de replicação para validar que está funcionando

```
SQL> @src_insert_tab_reperror
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_REPERROR values (10, '# REPLICATION TEST #', sysdate);
SQL> commit;


SQL> select * from OGG_SOURCE.TAB_REPERROR order by 1;

        ID VALUE                                                                DATE
---------- ---------------------------------------------------------------------- --------------------
         1 OGG   : Using  ##  REPERROR  ##                                       24-07-2024 18:37:48
         2 OGG   : Using  ##  REPERROR  ##                                       24-07-2024 18:37:48
         3 OGG   : Using  ##  REPERROR  ##                                       24-07-2024 18:37:48
         4 OGG   : Using  ##  REPERROR  ##                                       24-07-2024 18:37:48
         5 OGG   : Using  ##  REPERROR  ##                                       24-07-2024 18:37:48
        10 # REPLICATION TEST #                                                  24-07-2024 18:43:29
```

Ambiente de Destino

```
SQL> @trg_ver_tab_reperror
```

Output:

```
SQL> select * from OGG_TARGET.TAB_REPERROR order by 1;

        ID VALUE                                                                DATE
---------- ------------------------------------------------------------------- -------------------
         1 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
         2 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
         3 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
         4 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
         5 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
```

Após validar a replicação, executar o script abaixo **NO DESTINO** da replicação

```
SQL> @trg_insert_tab_reperror
```

Output:

```
SQL> insert into OGG_TARGET.TAB_REPERROR values (23, '# TEST WITH REPERROR # IN THE TARGET ENVIRONMENT',
sysdate);


SQL> commit;


SQL> select * from OGG_TARGET.TAB_REPERROR order by 1;

        ID VALUE                                                                DATE
---------- ------------------------------------------------------------------- -------------------
         1 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
         2 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
         3 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
         4 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
         5 OGG   : Using  ##  REPERROR  ##                                     24-07-2024 18:38:50
        23 # TEST WITH REPERROR # IN THE TARGET ENVIRONMENT                     24-07-2024 18:44:26
```

Ambiente de Origem

Executar na ORIGEM o mesmo INSERT:

```
SQL> @src_insert02_tab_reperror
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_REPERROR values (23, '# TEST WITH REPERROR # IN THE SOURCE ENVIRONMENT',
sysdate);
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_REPERROR order by 1;

        ID VALUE                                                                DATE
---------- ---------------------------------------------------------------- --------------------
         1 OGG   : Using  ##  REPERROR  ##                                   24-07-2024 18:37:48
         2 OGG   : Using  ##  REPERROR  ##                                   24-07-2024 18:37:48
         3 OGG   : Using  ##  REPERROR  ##                                   24-07-2024 18:37:48
         4 OGG   : Using  ##  REPERROR  ##                                   24-07-2024 18:37:48
         5 OGG   : Using  ##  REPERROR  ##                                   24-07-2024 18:37:48
        10 # REPLICATION TEST #                                               24-07-2024 18:43:29
        23 # TEST WITH REPERROR # IN THE SOURCE ENVIRONMENT                   24-07-2024 18:45:00
```

Verifique o processo EXTRACT

```
$ ogg

$ ggsci

OGG> send EXT_MOD2 stats
```

Ambiente de Destino

Verifique todos os processos com o "SEND <process> STATS".

```
$ ogg

$ ggsci

OGG> send REP_MOD2 stats
Sending STATS request to REPLICAT REP_MOD2 ...

ERROR   OGG-15148  REPLICAT REP_MOD2 not currently running.


OGG> sh tail -40f ggserr.log


WARNING OGG-01004 rep_mod2.prm:  Aborted grouped transaction on OGG_TARGET.TAB_REPERROR, Database error 1 (OCI
Error ORA-00001: unique constraint (OGG_TARGET.PK_TAB_REPERROR) violated (status = 1), SQL <INSERT INTO
"TAB_REPERROR"."TAB_REPERROR" ("ID","VALUE","DATA") VALUES (:a0,:a1,:a2)>).
WARNING OGG-01003 rep_mod2.prm:  Repositioning to rba 2125 in seqno 15.
WARNING OGG-01154 rep_mod2.prm:  SQL error 1 mapping OGG_SOURCE.TAB_REPERROR to OGG_TARGET.TAB_REPERROR OCI
Error ORA-00001: unique constraint (OGG_TARGET.PK_TAB_REPERROR) violated (status = 1), SQL <INSERT INTO
"TAB_REPERROR"."TAB_REPERROR" ("ID","VALUE","DATA") VALUES (:a0,:a1,:a2)>.
ERROR   OGG-01296 rep_mod2.prm:  Error mapping from OGG_SOURCE.TAB_REPERROR to OGG_TARGET.OGG_TARGET.
ERROR   OGG-01668 rep_mod2.prm:  PROCESS ABENDING.

Error ORA-00001: unique constraint (OGG_TARGET.PK_TAB_REPERROR) violated (status = 1), SQL <INSERT INTO
"TAB_REPERROR"."TAB_REPERROR" ("ID","VALUE","DATA") VALUES (:a0,:a1,:a2)>)
```

REPERROR: Utilizado para realizar o tratamento de erros no GoldenGate, o default é abendar caso encontre qualquer erro.

Sintaxe do parâmetro abaixo

```
REPERROR {
 (
 {DEFAULT | DEFAULT2 | SQL_error | user_defined_error},
 {ABEND |
 DISCARD |
 EXCEPTION |
 IGNORE |
 RETRYOP [MAXRETRIES n] |
 TRANSABORT [, MAXRETRIES] [, DELAYSECS n | DELAYCSECS n] |
 TRANSDISCARD |
 TRANSEXCEPTION

 }
 ) |
 RESET }
```

É possível combinar vários tipos de REPERRORs

Adicione a seguinte entrada no REPLICAT REP_MOD2 para ele "tratar" o erro gerado

```
REPERROR (-1,IGNORE)
MAP OGG_SOURCE.TAB_REPERROR, TARGET OGG_TARGET.TAB_REPERROR;



REPERROR RESET
MAP OGG_SOURCE.TAB_MODULE2, TARGET OGG_TARGET.TAB_MODULE2;
```

Verifique no OGG que o registro foi ignorado

```
OGG> send REP_MOD2 stats

*** Latest statistics since 2019-06-21 22:29:01 ***
        Total inserts                                      0.00
        Total updates                                      0.00
        Total deletes                                      0.00
        Total discards                                     0.00
        Total ignores                                      1.00
        Total operations                                   0.00
```


Faça mais alguns testes à vontade, utilizando a tabela OGG_TARGET.TAB_MODULE2 para violar a chave da daquela no destino da replicação.
Por fim, verifique se o OGG vai tratar ou não via REPERROR.

Utilize o script abaixo para inserir na tabela de destino

```
SQL> @trg_insert_tab_module02
```

Output:

```
SQL> insert into OGG_TARGET.TAB_MODULE2  values (9998,'----- REPERROR TEST ------ INSERT ON TARGET',sysdate);
SQL> insert into OGG_TARGET.TAB_MODULE2  values (9999,'----- REPERROR TEST ------ INSERT ON TARGET',sysdate);

SQL> commit;


SQL> select * from OGG_TARGET.TAB_MODULE2 order by 1;

        ID VALUE                                                                DATE
---------- ---------------------------------------------------------------- -------------------
         1 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<         01-08-2024 16:34:14
         2 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<         01-08-2024 16:34:14
         3 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<         01-08-2024 16:34:14
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                    01-08-2024 16:34:14
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                    01-08-2024 16:34:14
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!             02-08-2024 13:55:26
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!             02-08-2024 13:55:26
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!! 02-08-2024 14:04:12
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!! 02-08-2024 14:04:12
       500 EVENT_ACTIONS: WHERE ID >= 500                                     06-08-2024 17:17:37
       501 EVENT_ACTIONS: WHERE ID >= 501                                     06-08-2024 17:17:37
      6006 SAO PAULO                                                          06-08-2024 16:34:06
      6007 FORTALEZA                                                          06-08-2024 16:34:06
      6008 PALMEIRAS                                                          06-08-2024 16:34:06
      6009 ATLETICO                                                           06-08-2024 16:34:06
      7008 PORTO                                                              06-08-2024 16:34:06
      7009 LISBOA                                                             06-08-2024 16:34:06
      7010 SAO PAULO                                                          07-08-2024 10:24:34
      7011 It is too cold today.                                              06-08-2024 16:54:25
      9998 ----- REPERROR TEST ------ INSERT ON TARGET                        07-08-2024 15:01:35
      9999 ----- REPERROR TEST ------ INSERT ON TARGET                        07-08-2024 15:01:35
     10000 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                  06-08-2024 17:24:33
     10001 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                  06-08-2024 17:24:33
     10002 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                  06-08-2024 17:24:33
     90004 EVENT_ACTIONS: SHELL >> output.txt                                 06-08-2024 16:42:59
     90005 EVENT_ACTIONS: SHELL >> output.txt                                 06-08-2024 16:43:12
     90010 Implementado MACRO no OGG com sucesso!!                           07-08-2024 10:08:47
     90011 Implementado MACRO no OGG com sucesso!!                           07-08-2024 10:08:47
     90012 Implementado MACRO no OGG com sucesso!!                           07-08-2024 10:08:47
```

Ambiente de Origem

Execute o script abaixo para disparar uma nova transação

```
SQL> @src_insert09_tab_module2
```

Output:

```
SQL> insert into OGG_SOURCE.TAB_MODULE2  values (9998,'----- REPERROR TEST ------ INSERT ON SOURCE',sysdate);
SQL> insert into OGG_SOURCE.TAB_MODULE2  values (9999,'----- REPERROR TEST ------ INSERT ON SOURCE',sysdate);

SQL> commit;


SQL> select * from OGG_SOURCE.TAB_MODULE2 order by 1;

        ID VALUE                                                                DATE
---------- ---------------------------------------------------------------------------
         1 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<           01-08-2024 16:12:22
         2 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<           01-08-2024 16:12:22
         3 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<           01-08-2024 16:12:22
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                      01-08-2024 16:12:22
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                      01-08-2024 16:12:22
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!               02-08-2024 13:55:26
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!               02-08-2024 13:55:26
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!    02-08-2024 14:04:12
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!    02-08-2024 14:04:12
        50 EVENT_ACTIONS: WHERE ID >= 50                                        06-08-2024 17:17:37
       500 EVENT_ACTIONS: WHERE ID >= 500                                       06-08-2024 17:17:37
       501 EVENT_ACTIONS: WHERE ID >= 501                                       06-08-2024 17:17:37
       904 EVENT_ACTIONS: INSERT 904                                            06-08-2024 10:18:13
       905 EVENT_ACTIONS: INSERT 905                                            06-08-2024 10:18:13
       906 EVENT_ACTIONS: INSERT 906                                            06-08-2024 10:18:13
      1010 EVENT_ACTIONS: INSERT 1010                                           06-08-2024 10:21:42
      6006 SAO PAULO                                                            06-08-2024 16:34:06
      6007 FORTALEZA                                                            06-08-2024 16:34:06
      6008 PALMEIRAS                                                            06-08-2024 16:34:06
      6009 ATLETICO                                                             06-08-2024 16:34:06
      7008 PORTO                                                                06-08-2024 16:34:06
      7009 LISBOA                                                               06-08-2024 16:34:06
      7010 SAO PAULO                                                            06-08-2024 16:54:25
      7011 It is too cold today.                                                06-08-2024 16:54:25
      9998 ----- REPERROR TEST ------ INSERT ON SOURCE                         07-08-2024 15:03:48
      9999 ----- REPERROR TEST ------ INSERT ON SOURCE                         07-08-2024 15:03:48
     10000 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                    06-08-2024 17:24:33
     10001 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                    06-08-2024 17:24:33
     10002 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                    06-08-2024 17:24:33
     90004 EVENT_ACTIONS: SHELL >> output.txt                                   06-08-2024 11:38:39
     90005 EVENT_ACTIONS: SHELL >> output.txt                                   06-08-2024 11:38:39
     90010 Implementado MACRO no OGG com sucesso!!                              07-08-2024 10:08:47
     90011 Implementado MACRO no OGG com sucesso!!                              07-08-2024 10:08:47
     90012 Implementado MACRO no OGG com sucesso!!                              07-08-2024 10:08:47
```

Ambiente de Destino

Valide o destino

```
OGG> @trg_ver_tab_module2
```

Output:

```
SQL> select * from OGG_TARGET.TAB_MODULE2 order by 1;

        ID VALUE                                                                                DATE
---------- ---------------------------------------------------------------------------------- --------------------
         1 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<                          01-08-2024 16:34:14
         2 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<                          01-08-2024 16:34:14
         3 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<                          01-08-2024 16:34:14
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                                    01-08-2024 16:34:14
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                                    01-08-2024 16:34:14
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                             02-08-2024 13:55:26
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                             02-08-2024 13:55:26
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                 02-08-2024 14:04:12
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                 02-08-2024 14:04:12
       500 EVENT_ACTIONS: WHERE ID >= 500                                                     06-08-2024 17:17:37
       501 EVENT_ACTIONS: WHERE ID >= 501                                                     06-08-2024 17:17:37
      6006 SAO PAULO                                                                          06-08-2024 16:34:06
      6007 FORTALEZA                                                                          06-08-2024 16:34:06
      6008 PALMEIRAS                                                                          06-08-2024 16:34:06
      6009 ATLETICO                                                                           06-08-2024 16:34:06
      7008 PORTO                                                                              06-08-2024 16:34:06
      7009 LISBOA                                                                             06-08-2024 16:34:06
      7010 SAO PAULO                                                                          07-08-2024 10:24:34
      7011 It is too cold today.                                                              06-08-2024 16:54:25
      9998 ----- REPERROR TEST ------ INSERT ON TARGET                                       07-08-2024 15:01:35
      9999 ----- REPERROR TEST ------ INSERT ON TARGET                                       07-08-2024 15:01:35
     10000 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                                  06-08-2024 17:24:33
     10001 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                                  06-08-2024 17:24:33
     10002 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                                  06-08-2024 17:24:33
     90004 EVENT_ACTIONS: SHELL >> output.txt                                                 06-08-2024 16:42:59
     90005 EVENT_ACTIONS: SHELL >> output.txt                                                 06-08-2024 16:43:12
     90010 Implementado MACRO no OGG com sucesso!!                                           07-08-2024 10:08:47
     90011 Implementado MACRO no OGG com sucesso!!                                           07-08-2024 10:08:47
     90012 Implementado MACRO no OGG com sucesso!!                                           07-08-2024 10:08:47
```


O que aconteceu?

Ambiente de Origem

Verifique o processo por meio do comando send stats e a variação: "SEND <process> STATS TABLE <table_name >"

```
$ ogg

$ ggsci

OGG> SEND EXT_MOD2 STATS

OGG> send EXT_MOD2 stats TABLE OGG_SOURCE.TAB_REPERROR

OGG> send EXT_MOD2 stats TABLE OGG_SOURCE.TAB_MODULE2
```

Ambiente de Destino

Verificar todos os processos com o "SEND <process> STATS TABLE <table_name >"

```
$ ogg

$ ggsci

OGG> send REP_MOD2 stats

OGG> send REP_MOD2 stats TABLE OGG_SOURCE.TAB_REPERROR

OGG> send REP_MOD2 stats TABLE OGG_SOURCE.TAB_MODULE2
```


Reproduzir os mesmos testes com UPDATE e DELETE nas tabelas:

OGG_SOURCE.TAB_REPERROR

OGG_TARGET.TAB_MODULE2

Exemplo com RESET, REPERROR (-1,IGNORE) para tabelas 'PRODUCT' e 'VENDOR', e 'REPERROR' padrão para tabela 'account':

```
REPERROR (-1, IGNORE)
MAP sales.product, TARGET sales.product;
MAP sales.vendor,  TARGET sales.vendor;


REPERROR RESET
MAP sales.account, TARGET sales.account;



>> RESET
           |> Use a instrução REPERROR RESET para remover as regras de tratamento de erros
           |> especificadas nos parâmetros REPERROR anteriores e aplicar o tratamento de
           |> erros padrão a todas as instruções MAP a seguir.
```

Exemplo com REPERROR GLOBAL e no MAP:

```
REPERROR DEFAULT ABEND
REPERROR 1403 TRANSDISCARD
MAP sales.product   , TARGET sales.product;
MAP sales.vendor    , TARGET sales.vendor;
MAP source.src      , TARGET target.tgt, REPERROR(-1 TRANSDISCARD);
```

Capítulo 9 / Exercício 1

Logdump Comands

→ Link documentação: [Using the Logdump Utility]

```
$ cd $OGG_HOME

$ ./logdump

logdump> ghdr on                    <<<<<<--- Ative o GHDR para que o header dos registros fique visível

logdump> ggstoken detail            <<<<<<--- Ativa a visualização dos OGG Token

logdump> usertoken detail           <<<<<<--- Ativa a visualização dos User Token

logdump> log to step1.txt           <<<<<<--- Registra o output do logdump em um arquivo texto chamado
step1.txt

logdump> open ./dirdat/tf000000     <<<<<<--- Vamos supor que esse trail seja o mais recente que o REPLICAT
está lendo

logdump> pos eof                    !!!!!!! <<<<< Use o pos eof para posicionar a leitura do logdump no final
do trail

logdump> pos 507672243              <<<<<<--- Exmplo de posicionamento em RBA específico

logdump> pos rev                    <<<<<<--- Ativa a leitura de trás para frente

logdump> pos for                    <<<<<<--- Se necessário, ativa a leitura no sentido crescente de RBA

logdump> filter inc transind 0      <<<<<<--- Busca pelo começo das transações Multi-IO

logdump> filter filename <table>    <<<<<<--- Busca por tabelas específicas no trail

logdump> n                          <<<<<<--- next, salva o RBA do começo da última transação Multi-IO que foi
iniciada no trail.
                                        --- Essa pode ou não ser uma evidência de ter chegado ao final do
                                            trail.


logdump> n                          <<<<<<--- next de novo, salva o RBA do começo da of the next-to-last multi-
io transaction started in the trail,
                                        --- Essa pode ou não ser uma evidência de ter chegado ao final do
                                            trail.


logdump> exit

logdump> log to logdump_output.txt  <<<<<<---

logdump> count                      <<<<<<--- Número de registros no trail

logdump> fileheader detail
```

```
logdump> env
Version              : Linux, x64, 64bit (optimized) on Oct 10 2019 15:09:04

Current Directory    : /u01/app/oracle/product/ogg_trg
LogTrail             : /u01/app/oracle/product/ogg_trg/dirdat/r2000000000
Trail Format         : New
Trail Format Version: RELEASE 19.1
Objectdefs Included : Yes
End of File          : 28113
Current Position     : 4771    Forward
Next Position        : 5022
Last Modtime         : 2020/09/12 18:29:36.000.000
Display RecLen       : 140
Logtrail Filter      : On
Trans History        : 10 Transactions, Records 100, Bytes 100000
LargeBlock I/O       : On, Blocksize 57344
Local System         : LittleEndian
Metadata Byte Order : LittleEndian
Logtrail Data        : BigEndian/ASCII
Logtrail Headers     : ASCII
Dump                 : ASCII
Savefile comments    : Off
Timeoffset           : LOCAL
Scan Notify Interval: 10000 records, Scrolling On

logdump> help
```

DECRYPT

```
$ ./logdump

logdump> open ./dirdat/xxxxx

logdump> decrypt on KEYNAME superkey
```

Scanning Transaction

```
logdump> SCANFORENDTRANS   <<<<<<--- Para bucar pelo final da transação
```

FILTER TABLE

```
$ ./logdump

logdump> decrypt on keyname superkey

logdump> ghdr on

logdump> detail on

logdump> detail data

logdump> open ./dirdat/ui000000000

...
...

logdump> filter include filename owner.table_name;


logdump> filter usertoken scn >= xxxxx

logdump> filter reset
```

Documentos de referência – Comandos do Logdump

1. Logdump Reference for Oracle GoldenGate -21c
2. Logdump Reference for Oracle GoldenGate -19c
3. Logdump Reference for Oracle GoldenGate -18c
4. Logdump Commands

Capítulo 10 / Exercício 1

Ambiente de Origem

REPLICAT INTEGRATED

Vamos converter um REPLICAT para o modo REPLICAT INTEGRATED

Execute o script abaixo para testar a replicação

```
SQL> @src_update04_tab_module2
```

Output:

```
SQL> select * from OGG_SOURCE.TAB_MODULE2 where id = 1;

        ID VALUE                                                           DATE
---------- ------------------------------------------------------------- -------------------
         1 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<<<  01-08-2024 16:34:14


SQL> update OGG_SOURCE.TAB_MODULE2 set VALUE='I am replicating data with the Oracle GoldenGate' where id=1;
SQL> commit;


SQL> select * from OGG_SOURCE.TAB_MODULE2 where id = 1;

        ID VALUE                                                           DATE
---------- ------------------------------------------------------------- -------------------
         1 I am replicating data with the Oracle GoldenGate                22-07-2024 17:50:54
```

Ambiente de Destino

Valide o conteúdo da tabela no destino

```
$ conn

SQL> @trg_ver_tab_module2
```

Output:

```
SQL> select * from OGG_TARGET.TAB_MODULE2 order by 1;

        ID VALUE                                                                                DATE
---------- ---------------------------------------------------------------------------------- -----------------
         1 I am replicating data with the Oracle GoldenGate                                   01-08-2024 16:34:14
         2 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<                         01-08-2024 16:34:14
         3 TESTING OGG REPLICATION WITH WALLET !!! <<<<<<<<<<<<<<<<<<                         01-08-2024 16:34:14
         4 OGG ENCRYPT: ENCRYPTED REGISTER                                                    01-08-2024 16:34:14
         5 OGG ENCRYPT: ENCRYPTED REGISTER                                                    01-08-2024 16:34:14
         6 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                             02-08-2024 13:55:26
         7 OGG ENCRYPT: Replicating encrypted data (trailfile)!!!                             02-08-2024 13:55:26
         8 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                 02-08-2024 14:04:12
         9 OGG ENCRYPT: Replicating with encrypted data in TCP/IP messages!!!                 02-08-2024 14:04:12
       500 EVENT_ACTIONS: WHERE ID >= 500                                                     06-08-2024 17:17:37
       501 EVENT_ACTIONS: WHERE ID >= 501                                                     06-08-2024 17:17:37
      6006 SAO PAULO                                                                          06-08-2024 16:34:06
      6007 FORTALEZA                                                                          06-08-2024 16:34:06
      6008 PALMEIRAS                                                                          06-08-2024 16:34:06
      6009 ATLETICO                                                                           06-08-2024 16:34:06
      7008 PORTO                                                                              06-08-2024 16:34:06
      7009 LISBOA                                                                             06-08-2024 16:34:06
      7010 SAO PAULO                                                                          07-08-2024 10:24:34
      7011 It is too cold today.                                                              06-08-2024 16:54:25
      9998 ----- REPERROR TEST ------ INSERT ON TARGET                                       07-08-2024 15:01:35
      9999 ----- REPERROR TEST ------ INSERT ON TARGET                                       07-08-2024 15:01:35
     10000 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                                  06-08-2024 17:24:33
     10001 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                                  06-08-2024 17:24:33
     10002 EVENT_ACTIONS: WHERE ID >= 1001  -->>  Exemplo 02                                  06-08-2024 17:24:33
     90004 EVENT_ACTIONS: SHELL >> output.txt                                                 06-08-2024 16:42:59
     90005 EVENT_ACTIONS: SHELL >> output.txt                                                 06-08-2024 16:43:12
     90010 Implementado MACRO no OGG com sucesso!!                                           07-08-2024 10:08:47
     90011 Implementado MACRO no OGG com sucesso!!                                           07-08-2024 10:08:47
     90012 Implementado MACRO no OGG com sucesso!!                                           07-08-2024 10:08:47
```

Interrompa o REP_MOD2 e verifique o ponto de parada

```
$ ogg

$ ggsci

OGG> stop REP_MOD2

OGG> info REP_MOD2

Replicat   REP_MOD2  Last Started 2024-08-07 01:18   Status STOPPED
Checkpoint Lag       00:00:00 (updated 00:00:03 ago)
Log Read Checkpoint  File ./dirdat/m2000000000
                     2024-05-17 22:45:32.000255  RBA 4634
```

```
--->> SEQNO (EXTSEQNO): 0
--->> RBA   (EXTRBA)..: 4634
```

Crie o novo processo chamado REP01 (INTEGRATED)

```
OGG> ADD REPLICAT REP01, INTEGRATED, EXTTRAIL ./dirdat/m2


OGG> info REP01

REPLICAT   REP01     Initialized   2024-08-07 19:41   Status STOPPED
INTEGRATED
Checkpoint Lag       00:00:00 (updated 00:00:03 ago)
Log Read Checkpoint  File ./dirdat/m2000000000
                     First Record  RBA 0
```

Posicione o novo processo no mesmo ponto de parada do antigo

```
OGG> ALTER REPLICAT REP01 EXTSEQNO xxx EXTRBA xxx

GGSCI> info r*

REPLICAT   REP01     Initialized   2021-08-28 14:04   Status STOPPED
INTEGRATED
Checkpoint Lag       00:00:00 (updated 00:00:03 ago)
Log Read Checkpoint  File ./dirdat/m2000000000    <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
                     First Record  RBA 2407       <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<


REPLICAT   REP_MOD2  Last Started 2021-08-28 13:54   Status STOPPED
Checkpoint Lag       00:00:00 (updated 00:00:00 ago)
Process ID           9159
Log Read Checkpoint  File /u01/app/oracle/product/ogg_trg/dirdat/m2000000000    <<<<<<<<<<<<<<<<<<<<<<<<
                     2021-08-28 14:00:52.002908  RBA 2407                        <<<<<<<<<<<<<<<<<<<<<<<<

[...]
```

Ajuste o parâmetro **streams_pool_size** no banco (Container CDB$ROOT):

Lembra o motivo de precisamos alterar esse parâmetro?

```
$ sql

SQL> alter system set streams_pool_size=512M;
```

Configure os parâmetros do processo

```
OGG> edit params REP01

REPLICAT REP01

SETENV(ORACLE_SID='oradb19c')
USERIDALIAS ogg_connect

--# Integrated Params
DBOPTIONS INTEGRATEDPARAMS(parallelism 2)

--# List of mapped tables
MAP OGG_SOURCE.*, TARGET OGG_TARGET.*;


--# END FILE
```

Inicie o REPLICAT INTEGRATED REP01

```
OGG> start REP01
```

Faça alguns testes livres à vontade. Aproveite também para tirar as suas dúvidas!

REPLICAT COORDINATED

Vamos converter um REPLICAT para o modo ** **REPLICAT COORDINATED** **

** Oracle e Non-Oracle Support

```
OGG> stop REP01


OGG> info REP01

REPLICAT   REP_MOD2  Last Started 2020-09-19 14:30   Status STOPPED
Checkpoint Lag       00:00:00 (updated 04:08:35 ago)
Log Read Checkpoint  m2
                     2020-09-19 15:16:25.999910  RBA 4486

>> SEQNO: 7
>> RBA: 4486
```

```
--->> SEQNO (EXTSEQNO): 0
--->> RBA   (EXTRBA)..: 4634
```

Adicione o novo REPLICAT COORDINATED, e reposicione no ponto de parada do REPLICAT REP01

```
OGG> ADD REPLICAT REP03, COORDINATED, EXTTRAIL ./dirdat/m2, CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE


OGG> ALTER REPLICAT REP03 EXTSEQNO XX EXTRBA XX


OGG> info REP03

REPLICAT   REP03     Initialized   2020-09-19 20:07   Status STOPPED
COORDINATED          Coordinator                      MAXTHREADS 25
Checkpoint Lag       00:00:00 (updated 00:00:04 ago)
Log Read Checkpoint  File ./dirdat/m2000000007
                     First Record  RBA 4486
```

Valide o posicionamento feito

```
OGG> info REP03

REPLICAT   REP03     Initialized   2020-09-19 20:07   Status STOPPED
COORDINATED          Coordinator                      MAXTHREADS 25
Checkpoint Lag       00:00:00 (updated 00:00:04 ago)
Log Read Checkpoint  File ./dirdat/m2000000007
                     First Record  RBA 4486
```

Configure o processo

```
OGG> edit params REP03

REPLICAT REP03

userid ogguser@PDBOGG01 password ogguser

DECRYPTTRAIL AES256, KEYNAME Sup3r#k31

--# List of mapped tables
MAP OGG_SOURCE.TAB_REPERROR, TARGET OGG_TARGET.TAB_REPERROR, THREAD (1);
MAP OGG_SOURCE.TAB_MODULE2 , TARGET OGG_TARGET.TAB_MODULE2 , THREADRANGE (3-6);


--# END FILE
```

Inicie o processo e valide o com “info <process> detail”

```
OGG> start REP03

OGG> info REP03 detail

REPLICAT   REP03     Last Started 2020-09-19 20:08   Status RUNNING
COORDINATED          Coordinator                      MAXTHREADS 25
Checkpoint Lag       00:00:00 (updated 00:00:07 ago)
Process ID           28503
Log Read Checkpoint  File /u01/app/oracle/product/ogg_trg/dirdat/m2000000008
                     2020-09-19 20:12:46.321975  RBA 3010

Lowest Log BSN value: 3144015

Lowest Last Committed Transaction CSN value: 3433913

Active Threads:
ID  Group Name PID     Status   Lag at Chkpt  Time Since Chkpt
1   REP03001   28512   RUNNING  00:00:09      00:01:30
3   REP03003   28513   RUNNING  00:00:09      00:01:30
4   REP03004   28514   RUNNING  00:00:09      00:01:30
5   REP03005   28515   RUNNING  00:00:09      00:01:30
6   REP03006   28516   RUNNING  00:00:09      00:01:30

Current directory    /u01/app/oracle/product/ogg_trg

Report file          /u01/app/oracle/product/ogg_trg/dirrpt/REP03.rpt
Parameter file       /u01/app/oracle/product/ogg_trg/dirprm/rep03.prm
Checkpoint file      /u01/app/oracle/product/ogg_trg/dirchk/REP03.cpr
Checkpoint table     OGGUSER.CHECKPOINTTABLE
Process file
Error log            /u01/app/oracle/product/ogg_trg/ggserr.log
```

Faça mais alguns testes livres à vontade. Aproveite também para tirar as suas dúvidas!

REPLICAT PARALLEL

Vamos converter um replicat para o modo ** **REPLICAT PARALLEL** **

(ORACLE e NON-ORACLE)

```
OGG> stop REP03

OGG> info REP03

REPLICAT   REP03     Last Started 2020-09-19 20:08   Status STOPPED
COORDINATED          Coordinator                      MAXTHREADS 25
Checkpoint Lag       00:00:00 (updated 00:00:02 ago)
Log Read Checkpoint  File /u01/app/oracle/product/ogg_trg/dirdat/m2000000008
                     2020-09-19 20:19:37.497433  RBA 3010
```

Adicione o novo REPLICAT no modo COORDINATED e reposicione no mesmo ponto que o REPLICAT REP03.

```
OGG> ADD REPLICAT REP05 PARALLEL, EXTTRAIL ./dirdat/m2, CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE


OGG> ALTER REPLICAT REP05 EXTSEQNO xxx EXTRBA xxx


OGG> info REP05

REPLICAT   REP05     Initialized   2020-09-19 20:27   Status STOPPED
Parallel
Checkpoint Lag       00:00:00 (updated 00:00:04 ago)
Log Read Checkpoint  File ./dirdat/m2000000008
                     First Record  RBA 3010
```

Configure o processo

```
OGG> edit params REP05

REPLICAT REP05

SETENV(ORACLE_SID='oradb19c')

USERIDALIAS ogg_connect

--# Parallel Replicat Params
MAP_PARALLELISM 3
MIN_APPLY_PARALLELISM 2
MAX_APPLY_PARALLELISM 6
SPLIT_TRANS_RECS 1000

DECRYPTTRAIL AES256, KEYNAME Sup3r#k31

--# List of mapped tables
MAP OGG_SOURCE.TAB_REPERROR, TARGET OGG_TARGET.TAB_REPERROR;
MAP OGG_SOURCE.TAB_MODULE2 , TARGET OGG_TARGET.TAB_MODULE2 ;


--# END FILE

OGG> start REP05
```

Faça mais alguns testes à vontade. Aproveite também para tirar as suas dúvidas!

Capítulo 11 / Exercício 1

Ambiente de Origem

Crie a tabela OGG_SOURCE.TAB_BID_SOURCE

```
DROP TABLE "OGG_SOURCE"."TAB_BID_SOURCE";
```

```
SQL> @src_create_insert_tab_bid_source
```

Output:

```
SQL> CREATE TABLE "OGG_SOURCE"."TAB_BID_SOURCE"
  2  (   "ID"     NUMBER NOT NULL,
  3      "VALUE"  VARCHAR2(100),
  4      "DATE"   DATE DEFAULT sysdate)
  5  TABLESPACE TBS_APP_SOURCE;

SQL> ALTER TABLE "OGG_SOURCE"."TAB_BID_SOURCE" ADD CONSTRAINT "PK_TAB_BID_SOURCE" PRIMARY KEY ("ID")
  2  USING INDEX TABLESPACE TBS_APP_SOURCE;

SQL> insert into OGG_SOURCE.TAB_BID_SOURCE values (1, '# BID: SOURCE --> TARGET', sysdate);
SQL> insert into OGG_SOURCE.TAB_BID_SOURCE values (2, '# BID: SOURCE --> TARGET', sysdate);
SQL> insert into OGG_SOURCE.TAB_BID_SOURCE values (3, '# BID: SOURCE --> TARGET', sysdate);
SQL> insert into OGG_SOURCE.TAB_BID_SOURCE values (4, '# BID: SOURCE --> TARGET', sysdate);
SQL> insert into OGG_SOURCE.TAB_BID_SOURCE values (5, '# BID: SOURCE --> TARGET', sysdate);
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_BID_SOURCE order by 1;

        ID VALUE                                                            DATE
---------- ---------------------------------------------------------------- -------------------
         1 # BID: SOURCE --> TARGET                                         25-07-2024 09:37:32
         2 # BID: SOURCE --> TARGET                                         25-07-2024 09:37:32
         3 # BID: SOURCE --> TARGET                                         25-07-2024 09:37:32
         4 # BID: SOURCE --> TARGET                                         25-07-2024 09:37:32
         5 # BID: SOURCE --> TARGET                                         25-07-2024 09:37:32
```

Ambiente de Destino

Crie a tabela OGG_TARGET.TAB_BID_DESTINO

```
DROP TABLE "OGG_TARGET"."TAB_BID_TARGET";
```

```
SQL> @trg_create_insert_tab_bid_target
```

Output:

```
SQL> CREATE TABLE "OGG_TARGET"."TAB_BID_TARGET"
    ( "ID"     NUMBER NOT NULL,
      "VALUE"  VARCHAR2(100),
      "DATE"   DATE DEFAULT sysdate)
    TABLESPACE TBS_APP_TARGET;

SQL> ALTER TABLE "OGG_TARGET"."TAB_BID_TARGET" ADD CONSTRAINT "PK_TAB_TAB_BID_TARGET" PRIMARY KEY ("ID") USING
INDEX TABLESPACE TBS_APP_TARGET;


SQL>
insert into OGG_TARGET.TAB_BID_TARGET values (1, '# BID: SOURCE --> TARGET', sysdate);
insert into OGG_TARGET.TAB_BID_TARGET values (2, '# BID: SOURCE --> TARGET', sysdate);
insert into OGG_TARGET.TAB_BID_TARGET values (3, '# BID: SOURCE --> TARGET', sysdate);
insert into OGG_TARGET.TAB_BID_TARGET values (4, '# BID: SOURCE --> TARGET', sysdate);
insert into OGG_TARGET.TAB_BID_TARGET values (5, '# BID: SOURCE --> TARGET', sysdate);

SQL> commit;


SQL> select * from OGG_TARGET.TAB_BID_TARGET order by 1;

        ID VALUE                                                            DATE
---------- ---------------------------------------------------------------- -------------------
         1 # BID: SOURCE --> TARGET                                         25-07-2024 09:41:27
         2 # BID: SOURCE --> TARGET                                         25-07-2024 09:41:27
         3 # BID: SOURCE --> TARGET                                         25-07-2024 09:41:27
         4 # BID: SOURCE --> TARGET                                         25-07-2024 09:41:27
         5 # BID: SOURCE --> TARGET                                         25-07-2024 09:41:27
```

Ambiente de origem

Efetue o dblogin

```
$ cd $OGG_HOME

./ggsci

OGG> dblogin USERIDALIAS ogg_connect
```

Crie e configure o EXTRACT

```
OGG> ADD EXTRACT EXT_BID1, TRANLOG, BEGIN NOW

OGG> ADD EXTTRAIL ./dirdat/aa, EXTRACT EXT_BID1

OGG> REGISTER EXTRACT EXT_BID1 DATABASE

OGG> info exttrail ./dirdat/aa

OGG> info all

OGG> edit params EXT_BID1

EXTRACT EXT_BID1
USERIDALIAS ogg_connect
EXTTRAIL ./dirdat/aa
TABLE OGG_SOURCE.TAB_BID_SOURCE;
```


Crie e configure o processo PUMP

```
OGG> ADD EXTRACT PMP_BID1, EXTTRAILSOURCE ./dirdat/aa

OGG> ADD RMTTRAIL ./dirdat/aa, EXTRACT PMP_BID1

OGG> edit params PMP_BID1
EXTRACT  PMP_BID1
USERIDALIAS ogg_connect
RMTHOST <host-target>, MGRPORT 7809
RMTTRAIL ./dirdat/aa
TABLE OGG_SOURCE.TAB_BID_SOURCE;
```

Valide os processos criados

```
OGG> info all

OGG> info *

OGG> info *BID1

OGG> info EXT_BID1

OGG> info PMP_BID1
```

Configure o TRANDATA para a nova tabela

```
$ ogg

$ ggsci

OGG> dblogin USERIDALIAS ogg_connect

OGG> INFO TRANDATA OGG_SOURCE.TAB_BID_SOURCE

OGG> ADD TRANDATA OGG_SOURCE.TAB_BID_SOURCE

OGG> INFO TRANDATA OGG_SOURCE.TAB_BID_SOURCE
```

Inicie os processos EXTRACT e PUMP

```
OGG> START EXT_BID1

OGG> START PMP_BID1


--------------- OU


OGG> START *BID1


---------------

OGG> INFO ALL

OGG> INFO *BID1
```

Ambiente de Destino

Crie e configure o REPLICAT

```
$ ogg

$ ggsci

OGG> dblogin USERIDALIAS ogg_connect

OGG> ADD REPLICAT REP_BID1, EXTTRAIL ./dirdat/aa, CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE

OGG> edit params REP_BID1
REPLICAT REP_BID1
USERIDALIAS ogg_connect_pegadinha
MAP OGG_SOURCE.TAB_BID_SOURCE, TARGET OGG_TARGET.TAB_BID_TARGET;


OGG> info all

OGG> info *

OGG> info REP_BID1
```

Inicie o processo REPLICAT

```
OGG> START REP_BID1

OGG> INFO REP_BID1

OGG> INFO ALL
```

Ambiente de Origem

Comandos para teste de replicação

```
$ sql

SQL> @src_update_tab_bid_target
```

Output:

```
SQL> select * from OGG_SOURCE.TAB_BID_SOURCE order by 1;

        ID VALUE                                                                DATE
---------- ---------------------------------------------------------------------- -------------------
         1 # BID: SOURCE --> TARGET                                               25-07-2024 09:37:32
         2 # BID: SOURCE --> TARGET                                               25-07-2024 09:37:32
         3 # BID: SOURCE --> TARGET                                               25-07-2024 09:37:32
         4 # BID: SOURCE --> TARGET                                               25-07-2024 09:37:32
         5 # BID: SOURCE --> TARGET                                               25-07-2024 09:37:32

SQL> update OGG_SOURCE.TAB_BID_SOURCE set VALUE='********** BIDIRECTIONAL REPLICATION **********' where id=1;
SQL> commit;

SQL> select * from OGG_SOURCE.TAB_BID_SOURCE order by 1;

        ID VALUE                                                                DATE
---------- ---------------------------------------------------------------------- -------------------
         1 ********** BIDIRECTIONAL REPLICATION **********                       25-07-2024 09:37:32
         2 # BID: SOURCE --> TARGET                                               25-07-2024 09:37:32
         3 # BID: SOURCE --> TARGET                                               25-07-2024 09:37:32
         4 # BID: SOURCE --> TARGET                                               25-07-2024 09:37:32
         5 # BID: SOURCE --> TARGET                                               25-07-2024 09:37:32
```

Ambiente de Destino

Valide a tabela no destino

```
$ conn

SQL> @trg_ver_tab_bid_target
```

Output:

```
SQL> select * from OGG_TARGET.TAB_BID_TARGET order by 1;

        ID VALUE                                                                          DATE
---------- ------------------------------------------------------------------------------ -------------------
         1 ********** BIDIRECTIONAL REPLICATION **********                                25-07-2024 09:41:27
         2 # BID: ORIGIN --> DESTINATION                                                  25-07-2024 09:41:27
         3 # BID: ORIGIN --> DESTINATION                                                  25-07-2024 09:41:27
         4 # BID: ORIGIN --> DESTINATION                                                  25-07-2024 09:41:27
         5 # BID: ORIGIN --> DESTINATION                                                  25-07-2024 09:41:27
```

Parâmetros para Replicação Bidirecional

Resumo dos pontos de Atenção:

```
        * DDL Replication
        * METADADOS
        * EXCLUDE USER
        * SEQUENCE
        * TRIGGERS
        * Conflict Detection and Resolution  ( CDR )
```

Parâmetros do EXTACT

```
-- Evita que as alterações do REPLICAT sejam "recapturadas" (loopback)
TRANLOGOPTIONS EXCLUDEUSER OGGUSER


-- Capture alterações de DDL para que o REPLICAT de destino possa atualizar METADATA.
DDL INCLUDE MAPPED
DDLOPTIONS GETREPLICATES
GETTRUNCATES
```

Parâmetros do REPLICAT

```
-- Atualiza o METADATA depois das alterações de DDL serem aplicadas na origem
DDLOPTIONS UPDATEMETADATA


-- TRUNCATE não é permitido na replicação bidirecional! Mas você pode configurar essas operações para serem
replicadas em uma direção.


-- No sistema em que TRUNCATE será permitido, configure os arquivos de parâmetros EXTRACT e REPLICAT para
conter o parâmetro GETTRUNCATES.


-- No outro sistema, configure os arquivos de parâmetro Extract e Replicat para conter o parâmetro abaixo:
IGNORETRUNCATES
```

Vamos configurar esses parâmetros no SETUP do ambiente de "DESTINO".

Ambiente de Destino

Crie os processos com o 'fluxo de replicação invertido, mas antes disso, configure o Banco de Dados

```
$ sqlplus / as sysdba


SQL> show con_name

CON_NAME
----------
CDB$ROOT


SQL> archive log list
Database log mode              No Archive Mode   --<<<<<<<<<<<<<<<<<<<<<< PRECISA CONFIGURAR O BANCO DE DESTINO
EM MODO ARCHIVE.
Automatic archival             Disabled
Archive destination            USE_DB_RECOVERY_FILE_DEST
Oldest online log sequence     13
Current log sequence           15
```

BOAS PRÁTICAS!!

Parar os processos do GOLDENGATE antes de realizar o shutdown no banco.

Habilite o Archive Mode disparando o script abaixo

```
SQL> @enable_archive_mode
```

Output:

```
SQL> archive log list
Database log mode              No Archive Mode
Automatic archival             Disabled
Archive destination            /u01/app/oracle/product/19.3.0.0/dbhome_1/dbs/arch
Oldest online log sequence     115
Current log sequence           117


SQL> shutdown immediate;
Database closed.
Database dismounted.
ORACLE instance shut down.


SQL> startup mount
ORACLE instance started.

Total System Global Area 3221223152 bytes
Fixed Size                  9139952 bytes
Variable Size            2902458368 bytes
Database Buffers          301989888 bytes
Redo Buffers                7634944 bytes
Database mounted.


SQL> alter database archivelog;


SQL> archive log list;
Database log mode              Archive Mode
Automatic archival             Enabled
Archive destination            /u01/app/oracle/product/19.3.0.0/dbhome_1/dbs/arch
Oldest online log sequence     115
Next log sequence to archive   117
Current log sequence           117


SQL> alter database open;


SQL> select open_mode from v$database;

OPEN_MODE
----------
READ WRITE
```

Habilite o supplemental logging

```
SQL>
col supplemental_log_data_min  format a30
select supplemental_log_data_min from v$database;

SUPPLEMENTAL_LOG_DATA_MIN
------------------------------
NO

SQL> alter database add supplemental log data;
```

→ 3x switch logfile

```
SQL> alter system switch logfile;

SQL> select supplemental_log_data_min from v$database;

SUPPLEMENTAL_LOG_DATA_MIN
------------------------------
YES
```

Configure o processo EXTRACT

```
Regras para Multitenant Container Databases:

* Se o banco de dados de origem for um banco de dados multitenant container, o usuário de extração deverá ser
  um COMMON USER e deverá fazer logon no contêiner raiz.

* Extract deve estar em modo de captura integrada.
* Extract precisa se conectar ao usuário root (cdb$root) como um common user para que possa interagir com o
  logmining server.
* dbms_goldengate_auth.grant_admin_privilege('C##GGADMIN', container=>'all')
```

Acesse o banco via container raiz: CDB$ROOT

```
$ sqlplus / as sysdba

SQL> show con_name

CON_NAME
------------------------------
CDB$ROOT
```

Crie o usuário do OGG no container raiz

```
$ sqlplus / as sysdba

SQL> @trg_create_user_c##ogguser
```

Output:

```
SQL> create user C##OGGUSER IDENTIFIED BY ogguser CONTAINER=ALL;


SQL> select username,account_status,default_tablespace from dba_users where username = 'C##OGGUSER';

USERNAME     ACCOUNT_STATUS       DEFAULT_TABLESPACE
------------ -------------------- -------------------
C##OGGUSER   OPEN                 USERS
```

Atribua as permissões necessárias ao C##OGGUSER

```
SQL> @trg_grant_user_c##ogguser
```

Output:

```
SQL> GRANT CONNECT TO C##OGGUSER CONTAINER=ALL;
SQL> GRANT DBA TO C##OGGUSER CONTAINER=ALL;
SQL> GRANT UNLIMITED TABLESPACE TO C##OGGUSER CONTAINER=ALL;
SQL> GRANT CREATE SESSION TO C##OGGUSER CONTAINER=ALL;
SQL> GRANT ALTER SESSION TO C##OGGUSER CONTAINER=ALL;
SQL> GRANT SELECT ANY DICTIONARY TO C##OGGUSER CONTAINER=ALL;
SQL> EXEC DBMS_GOLDENGATE_AUTH.GRANT_ADMIN_PRIVILEGE('C##OGGUSER',CONTAINER=>'ALL');
```

Adicione um novo usuário (COMMON USER) na CREDENTIALSTORE:

```
$ ogg

$ ggsci


OGG> alter credentialstore add user C##OGGUSER@ORADB19C password ogguser alias ogg_connect_cdb

OGG> info credentialstore

  Alias: ogg_connect
  Userid: OGGUSER@PDBOGG01

  Alias: ogg_connect_cdb        <<<<<<<<<<<<<<<<<<<<<<<<<<<<<
  Userid: C##OGGUSER@ORADB19C   <<<<<<<<<<<<<<<<<<<<<<<<<<<<<
```

Faça um teste de conexão

```
OGG> dblogin useridalias ogg_connect_cdb
```

Adicione o SCHEMATRANDATA para os objetos de PDBOGG01.OGG_TARGET

```
OGG> add schematrandata PDBOGG01.OGG_TARGET

OGG> INFO SCHEMATRANDATA PDBOGG01.OGG_TARGET
```

Crie o EXTRACT e observe o comando REGISTER EXTRACT abaixo

```
OGG> dblogin USERIDALIAS ogg_connect_cdb

OGG> REGISTER EXTRACT EXT_BID2 DATABASE CONTAINER(PDBOGG01)


OGG> ADD EXTRACT EXT_BID2, INTEGRATED TRANLOG, BEGIN NOW

OGG> ADD EXTTRAIL ./dirdat/bb, EXTRACT EXT_BID2


OGG> info exttrail ./dirdat/bb

OGG> info all
```

Configure o processo

```
OGG> edit params EXT_BID2

EXTRACT EXT_BID2
USERIDALIAS ogg_connect_cdb

--# BID PARAMETERS
--TRANLOGOPTIONS EXCLUDEUSER OGGUSER
TRANLOGOPTIONS EXCLUDETAG 00

DDL INCLUDE MAPPED
GETTRUNCATES

SOURCECATALOG PDBOGG01

EXTTRAIL ./dirdat/bb

TABLE OGG_TARGET.TAB_BID_TARGET;
```

Configure o processo PUMP

```
OGG> ADD EXTRACT PMP_BID2, EXTTRAILSOURCE ./dirdat/bb

OGG> ADD RMTTRAIL ./dirdat/bb, EXTRACT PMP_BID2

OGG> info all

OGG> edit params PMP_BID2

EXTRACT  PMP_BID2
USERIDALIAS ogg_connect_cdb

SOURCECATALOG PDBOGG01

RMTHOST <host-source>, MGRPORT 7809

RMTTRAIL ./dirdat/bb
TABLE OGG_TARGET.TAB_BID_TARGET;



OGG> info all

OGG> info *

OGG> info EXT_BID2

OGG> info PMP_BID2
```

Inicie os processos EXTRACT e PUMP.

```
OGG> START EXT_BID2

OGG> START PMP_BID2


------------------ OU


OGG> START *bid2



OGG> info all



OGG> info *bid2

Extract    EXT_BID2  Initialized  2024-08-08 11:53   Status RUNNING
Checkpoint Lag       00:00:00 (updated 00:13:51 ago)
Process ID           887456
Log Read Checkpoint  Oracle Integrated Redo Logs
                     2024-08-08 11:53:21
                     SCN 0.0 (0)

Extract    PMP_BID2  Last Started 2024-08-08 12:07   Status RUNNING
Checkpoint Lag       00:00:00 (updated 00:00:50 ago)
Process ID           887457
Log Read Checkpoint  File ./dirdat/bb000000000
                     First Record  RBA 0
```


Ambiente de Origem

Configure o processo REPLICAT na **origem**

```
$ ogg

$ ggsci

OGG> dblogin USERIDALIAS ogg_connect
```

Adicione a tabela de checkpoint, que ainda não existe nesse ambiente

```
OGG> INFO CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE
     |
     |-->> Checkpoint table OGG18C.CHECKPOINTTABLE does not exist.

OGG> ADD CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE

OGG> INFO CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE
```

Crie e configure o REPLICAT

```
OGG> ADD REPLICAT REP_BID2, EXTTRAIL ./dirdat/bb, CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE

OGG> edit params REP_BID2

REPLICAT REP_BID2

USERIDALIAS ogg_connect

--# BID PARAMETERS
DDLOPTIONS UPDATEMETADATA
IGNORETRUNCATES

MAP PDBOGG01.OGG_TARGET.TAB_BID_TARGET, TARGET OGG_SOURCE.TAB_BID_SOURCE;



OGG> info all

OGG> info *

OGG> info REP_BID2
```

Inicie o processo REPLICAT

```
OGG> START REP_BID2

OGG> INFO ALL
```

Comandos para teste de replicação

```
SQL> @src_update_tab_bid_source
```

Output:

```
SQL> update OGG_SOURCE.TAB_BID_SOURCE set VALUE='BIDIRECTIONAL REPLICATION: SOURCE (source-host) --->> TARGET
(target-host)';

SQL> commit;


SQL> select * from OGG_SOURCE.TAB_BID_SOURCE order by 1;
        ID VALUE                                                                                 DATE
---------- ------------------------------------------------------------------------------------ -------------------
         1 BIDIRECTIONAL REPLICATION: SOURCE (source-host) --->> TARGET (target-host)  25-07-2024 09:37:32
         2 BIDIRECTIONAL REPLICATION: SOURCE (source-host) --->> TARGET (target-host)  25-07-2024 09:37:32
         3 BIDIRECTIONAL REPLICATION: SOURCE (source-host) --->> TARGET (target-host)  25-07-2024 09:37:32
         4 BIDIRECTIONAL REPLICATION: SOURCE (source-host) --->> TARGET (target-host)  25-07-2024 09:37:32
         5 BIDIRECTIONAL REPLICATION: SOURCE (source-host) --->> TARGET (target-host)  25-07-2024 09:37:32
```


Ambiente de Destino --> BID2 Destino – Database

Valide se a transação foi capturada pelos processos EXTRACT

```
$ ogg

$ ggsci

OGG> send EXT_BID2 stats

OGG> send PMP_BID2 stats
```

Valide se o update foi capturado e aplicado pelo REPLICAT

```
$ conn

SQL> @trg_ver_tab_bid_target
```

Output:

```
SQL> select * from OGG_TARGET.TAB_BID_TARGET order by 1;

ID VALUE                                                                          DATE
--- ------------------------------------------------------------------------  -------------------
  1 BIDIRECTIONAL REPLICATION: SOURCE (source-host) --->> TARGET (target-host) 08-08-2024 10:13:57
  2 BIDIRECTIONAL REPLICATION: SOURCE (source-host) --->> TARGET (target-host) 08-08-2024 10:13:57
  3 BIDIRECTIONAL REPLICATION: SOURCE (source-host) --->> TARGET (target-host) 08-08-2024 10:13:57
  4 BIDIRECTIONAL REPLICATION: SOURCE (source-host) --->> TARGET (target-host) 08-08-2024 10:13:57
  5 BIDIRECTIONAL REPLICATION: SOURCE (source-host) --->> TARGET (target-host) 08-08-2024 10:13:57
```

Teste com update no DESTINO

```
$ conn

SQL> @trg_update02_tab_bid_target
```

Output:

```
SQL> update OGG_TARGET.TAB_BID_TARGET set VALUE='BIDIRECTIONAL REPLICATION: *******(target-
host)******************(source-host)*******' where id=3;
SQL> update OGG_TARGET.TAB_BID_TARGET set VALUE='BIDIRECTIONAL REPLICATION: *******(target-
host)******************(source-host)*******' where id=5;

SQL> commit;


SQL> select * from OGG_TARGET.TAB_BID_TARGET order by 1;

        ID VALUE                                                                    DATE
---------- ------------------------------------------------------------------------ -------------------
         1 BIDIRECTIONAL REPLICATION: SOURCE (source-host) --->> TARGET (target-host)   08-08-2024 10:13:57
           get-host)

         2 BIDIRECTIONAL REPLICATION: SOURCE( source-host) --->> TARGET (target-host)   08-08-2024 10:13:57
           get-host)

         3 BIDIRECTIONAL REPLICATION: *******(target-host)******************(source-h  08-08-2024 10:13:57
           ost)*******

         4 BIDIRECTIONAL REPLICATION: SOURCE( source-host) --->> TARGET (target-host)   08-08-2024 10:13:57


         5 BIDIRECTIONAL REPLICATION: *******(target-host)******************(source-h  08-08-2024 10:13:57
           ost)*******
```

Valide se o update foi capturado pelo EXTRACT

```
OGG> send EXT_BID2 stats

OGG> send PMP_BID2 stats
```

Ambiente de Origem

Valide se o update foi capturado e aplicado pelo REPLICAT

```
OGG> send REP_BID2 stats
```

Valide se o update foi aplicado no banco

```
SQL> @src_ver_tab_bid_source
```

Output:

```
SQL> select * from OGG_SOURCE.TAB_BID_SOURCE order by 1;

        ID VALUE                                                                                DATE
---------- ---------------------------------------------------------------------------------- ----------
         1 BIDIRECTIONAL REPLICATION: ORIGIN (source-host) --->> DESTINATION (target-host)       25-07-2024
09:37:32
         2 BIDIRECTIONAL REPLICATION: ORIGIN (source-host) --->> DESTINATION (target-host)       25-07-2024
09:37:32
         3 BIDIRECTIONAL REPLICATION: *******(target-host)******************(source-host)****** 25-07-2024
09:37:32
           *

         4 BIDIRECTIONAL REPLICATION: ORIGIN (source-host) --->> DESTINATION (target-host)       25-07-2024
09:37:32
         5 BIDIRECTIONAL REPLICATION: *******(target-host)******************(source-host)****** 25-07-2024
09:37:32
           *
```

Faça mais alguns testes à vontade. Aproveite também para tirar as suas dúvidas!

Capítulo 12 / Exercício 1

Ambiente de Origem

Migração de Dados

Crie a tabela OGG_SOURCE.CHALLENGE_M2

```
DROP TABLE "OGG_SOURCE"."CHALLENGE_M2";
```

```
$ sql

SQL> @src_create_tab_challenge_m2
```

Output:

```
SQL> CREATE TABLE "OGG_SOURCE"."CHALLENGE_M2"
  2  (   "ID"    NUMBER NOT NULL,
  3      "PASS"        VARCHAR2(100),
  4      "COL_B"       VARCHAR2(100),
  5      "COL_C"       VARCHAR2(100),
  6      "COL_D"       DATE DEFAULT sysdate);


SQL> ALTER TABLE "OGG_SOURCE"."CHALLENGE_M2" ADD CONSTRAINT "PK_CHALLENGE_M2" PRIMARY KEY ("ID")
  2  USING INDEX TABLESPACE TBS_APP_SOURCE;
```

Gere uma carga genérica

```
SQL> @src_populate_tab_challenge_m2
```

A execução do script acima levará alguns instantes. Um milhão de registros estão sendo gerados.

Output:

```
SQL> select count(*) from OGG_SOURCE.CHALLENGE_M2;

  COUNT(*)
----------
   1000000
Elapsed: 00:00:00.04


SQL> insert into OGG_SOURCE.CHALLENGE_M2 values (1000001, '--> 01) INSERT ANTES DE CRIAR O EXTRACT',
'COL_B','COL_C',sysdate);
Elapsed: 00:00:00.00


SQL> commit;
Elapsed: 00:00:00.02


SQL> select * from OGG_SOURCE.CHALLENGE_M2 where ID >= 1000001 order by 1;

  REGISTER PASS                                                          COL_B    COL_C  COL_D
---------- ------------------------------------------------------------ -------- -------- --------------------
   1000001 --> 01) INSERT BEFORE CREATING THE EXTRACT                    COL_B    COL_C  25-07-2024
```

Abra outra janela para iniciar uma transação e deixá-la aberta

```
SQL> @src_open_transactions_tab_challenge_m2
```

Output:

```
SQL> insert into OGG_SOURCE.CHALLENGE_M2 values (1000002, '--> 02) INSERT BEFORE CREATING THE EXTRACT... BUT
WITHOUT COMMIT', 'COL_B','COL_C',sysdate);

SQL> select * from OGG_SOURCE.CHALLENGE_M2 where ID >= 1000001 order by 1;

  ID       PASS                                                                COL_B    COL_C    COL_D
---------- ------------------------------------------------------------------- -------- -------- --------------------
   1000001 --> 01) INSERT BEFORE CREATING THE EXTRACT                          COL_B    COL_C    25-07-2024
   1000002 --> 02) INSERT BEFORE CREATING THE EXTRACT... BUT WITHOUT COMMIT    COL_B    COL_C    25-07-2024
```

INFO: Nesta sessão, não saia da interface do sqlplus (exit)

Volte para sessão principal....

Efetue o dblogin

```
$ ogg

$ ggsci

OGG> dblogin useridalias ogg_connect
```

Crie o EXTRACT

```
DELETE EXTRACT EXTMIGRA
```

```
OGG> ADD EXTRACT EXTMIGRA, TRANLOG, BEGIN NOW

OGG> REGISTER EXTRACT EXTMIGRA DATABASE

OGG> ADD EXTTRAIL ./dirdat/mi, EXTRACT EXTMIGRA

OGG> info exttrail ./dirdat/mi

OGG> info all
```

Configure o Trandata

```
OGG> INFO SCHEMATRANDATA OGG_SOURCE

OGG> ADD SCHEMATRANDATA OGG_SOURCE

OGG> INFO SCHEMATRANDATA OGG_SOURCE
```

Configure o processo EXTRACT

```
OGG> edit params EXTMIGRA

EXTRACT EXTMIGRA
USERIDALIAS ogg_connect
EXTTRAIL ./dirdat/mi
TABLE OGG_SOURCE.*;
```

Inicie o processo

```
OGG> start EXTMIGRA

OGG> info all

OGG> send EXTMIGRA showtrans
```

Nenhuma transação foi identificada por este processo EXTRACT...

```
Sending SHOWTRANS request to EXTRACT EXTMIGRA ...
No transactions found.
```

Maaaaaaasss... sabemos que existe uma transação aberta porque ainda não commitamos.

Configure o processo PUMP

```
OGG> ADD EXTRACT PMPMIGRA, EXTTRAILSOURCE ./dirdat/mi

OGG> ADD RMTTRAIL ./dirdat/mi, EXTRACT PMPMIGRA

OGG> info all

OGG> edit params PMPMIGRA

EXTRACT  PMPMIGRA
USERIDALIAS ogg_connect
RMTHOST <target-host>, MGRPORT 7809
RMTTRAIL ./dirdat/mi
TABLE OGG_SOURCE.*;


OGG> start PMPMIGRA
```

Faça um INSERT e COMMIT na sessão principal

```
$ sql

SQL> @src_insert_tab_challenge_m2
```

Output:

```
SQL> insert into OGG_SOURCE.CHALLENGE_M2 values (1000003, '--> 03) INSERT AFTER CREATING AND STARTING THE
EXTRACT', 'COL_B','COL_C',sysdate);

SQL> commit;

SQL> select * from OGG_SOURCE.CHALLENGE_M2 where ID  >= 1000001 order by 1;

       ID  PASS                                                                 COL_B    COL_C    COL_D
---------- -------------------------------------------------------------------- -------- -------- -----------------
   1000001 --> 01) INSERT BEFORE CREATING THE EXTRACT                           COL_B    COL_C    25-07-2024
   1000003 --> 03) INSERT AFTER CREATING AND STARTING THE EXTRACT               COL_B    COL_C    25-07-2024
```

1. Liste o conteúdo da tabela OGG_SOURCE.CHALLENGE_M2 na sessão atual (INSERT sem commit)

```
SQL> @src_ver02_tab_challenge_m2.sql
```

Output:

```
SQL> select * from OGG_SOURCE.CHALLENGE_M2 where ID >= 1000001 order by 1;

  ID       PASS                                                                 COL_B    COL_C    COL_D
---------- -------------------------------------------------------------------- -------- -------- -----------------
   1000001 --> 01) INSERT BEFORE CREATING THE EXTRACT                           COL_B    COL_C    25-07-2024
   1000002 --> 02) INSERT BEFORE CREATING THE EXTRACT... BUT WITHOUT COMMIT     COL_B    COL_C    25-07-2024
   1000003 --> 03) INSERT AFTER CREATING AND STARTING THE EXTRACT               COL_B    COL_C    25-07-2024
```

2. Liste o conteúdo da tabela OGG_SOURCE.CHALLENGE_M2 na sessão aberta com o INSERT SEM COMMIT

```
SQL> @src_ver02_tab_challenge_m2
```

Outout:

```
SQL> select * from OGG_SOURCE.CHALLENGE_M2 where ID  >= 1000001 order by 1;

        ID PASS                                                                 COL_B    COL_C    COL_D
---------- ---------------------------------------------------------------------- -------- -------- ----------------
   1000001 --> 01) INSERT BEFORE CREATING THE EXTRACT                           COL_B    COL_C    25-07-2024
   1000002 --> 02) INSERT BEFORE CREATING THE EXTRACT... BUT WITHOUT COMMIT     COL_B    COL_C    25-07-2024
   1000003 --> 03) INSERT AFTER CREATING AND STARTING THE EXTRACT               COL_B    COL_C    25-07-2024
```

Verifique se existem transações abertas.

ABRA MAIS OUTRA JANELA !!

```
SQL> @src_update_tab_challenge_m2
```

Output:

```
SQL> update OGG_SOURCE.CHALLENGE_M2 set pass = 'OPEN TRANSACTION' where ID >= 1000001;

SQL> select * from OGG_SOURCE.CHALLENGE_M2 where ID >= 1000001;

  ID       PASS                                                                 COL_B    COL_C    COL_D
---------- ---------------------------------------------------------------------- -------- -------- ----------------
   1000001 OPEN TRANSACTION                                                     COL_B    COL_C    25-07-2024
   1000003 OPEN TRANSACTION                                                     COL_B    COL_C    25-07-2024
```

NÃO FAÇA COMMIT AINDA...

Na sessão principal execute o script abaixo

```
SQL> @locked_sessions
```

Output:

```
SQL> select t.start_time,
s.sid,
s.serial#,
s.username,
s.status,
s.osuser,
s.machine,
--s.program,
--s.module,
to_char(s.logon_time,'DD/MON/YY HH24:MI:SS') logon_time
fr  Gv$transaction t, Gv$session s
where  s.saddr = t.ses_addr
and    s.inst_id = t.inst_id
order by start_time;


START_TIME            SID    SERIAL# USERNAME  STATUS   OSUSER   MACHINE     LOGON_TIME
------------------- ----- ---------- --------- -------- -------  ----------- -----------------
08/08/24 16:10:27     281      16654 SYS       INACTIVE oracle   ORA12C701   08/AUG/24 16:10:23
08/08/24 16:10:27     259      13697 SYS       INACTIVE oracle   ORA12C701   08/AUG/24 16:15:23
```

O que isso significa ???

FAÇA O ROLLBACK

```
SQL> ROLLBACK;

SQL> @src_ver02_tab_challenge_m2
```

```
SQL> select * from OGG_SOURCE.CHALLENGE_M2 where ID  >= 1000001 order by 1;

  ID       PASS                                                              COL_B    COL_C    COL_D
---------- ----------------------------------------------------------------- -------- -------- ----------------
   1000001 --> 01) INSERT BEFORE CREATING THE EXTRACT                        COL_B    COL_C    25-07-2024
   1000003 --> 03) INSERT AFTER CREATING AND STARTING THE EXTRACT            COL_B    COL_C    25-07-2024
```

Execute novamente a consulta abaixo

```
SQL> @locked_sessions
```

Output:

```
SQL>
select t.start_time,
s.sid,
s.serial#,
s.username,
s.status,
s.osuser,
s.machine,
to_char(s.logon_time,'DD/MON/YY HH24:MI:SS') logon_time
from   Gv$transaction t, Gv$session s
where  s.saddr = t.ses_addr
and    s.inst_id = t.inst_id
order by start_time;

START_TIME            SID    SERIAL# USERNAME  STATUS   OSUSER   MACHINE     LOGON_TIME
------------------- ----- ---------- --------- -------- -------  ----------- -------------------
08/08/24 16:10:27     281      16654 SYS       INACTIVE oracle   ORA12C701   08/AUG/24 16:10:23
```

AGUARDE O INSTRUTOR QUANDO CHEGAR NESTA ETAPA.

→ O que identificamos até aqui pelo Banco de Dados???

→ O que identificamos até aqui pelo OGG???

NÃO DEVEM EXISTIR TRANSAÇÕES ABERTAS EM TABELAS QUE ESTÃO CONFIGURADAS NO GOLDENGATE!!!

Quer Testar se a replicação vai ocorrer? Siga em frente ^^ sem commit.

Colete o valor atual do SCN

```
SQL> @query_scn
```

Output:

```
SQL> SELECT name, current_scn, TO_CHAR(SYSTIMESTAMP, 'YYYY-MM-DD HH24:MI:SS') as "TIMESTAMP" FROM v$database;

NAME                   CURRENT_SCN TIMESTAMP
--------- ----------------------- --------------------
GOLDEN12                   3538294 2024-07-25 11:54:48
```

Crie o diretório para o EXPORT:

```
$ mkdir -p /u01/export_dump
```

Realize o Export (expdp) → Criar o diretorio do dump

```
SQL> @config_dir_ogg_dump /u01/export_dump
```

Certifique-se de que o diretório a ser criado está correto:

```
$ ls -l /u01/export_dump
```

Output:

```
SQL> CREATE directory OGG_DUMP AS '&1';
old   1: CREATE directory OGG_DUMP AS '&1'
new   1: CREATE directory OGG_DUMP AS '/u01/export_dump'


SQL> select * from dba_directories where directory_name like 'OGG_DUMP';

OWNER                DIRECTORY_NAME         DIRECTORY_PATH                                             ORIGIN_CON_ID
-------------------- ---------------------- ---------------------------------------------------------- -------------
SYS                  OGG_DUMP               /u01/export_dump                                           0


SQL> SELECT current_scn, TO_CHAR(SYSTIMESTAMP, 'YYYY-MM-DD HH24:MI:SS') as timestamp FROM v$database;

             CURRENT_SCN TIMESTAMP
----------------------- --------------------
                 4718872 2024-08-08 16:45:38
```

Crie o arquivo parfile

```
$ cd /u01/export_dump/

$ vi /u01/export_dump/expdp_SCHEMA_OGG_SOURCE.par
userid="/ as sysdba"
directory=OGG_DUMP
dumpfile=expdp_SCHEMA_OGG_SOURCE_%u
logfile=expdp_SCHEMA_OGG_SOURCE.log
flashback_scn=4718872
job_name=expdp_SCHEMA_OGG_SOURCE
SCHEMAS='OGG_SOURCE'
```

Execute o export em segundo

```
$ nohup expdp parfile=expdp_SCHEMA_OGG_SOURCE.par > expdp_SCHEMA_OGG_SOURCE_nohup.out &
```

Em PARALELO prossiga com a carga abaixo:

Gere uma carga genérica em paralelo ao export (NA SESSÃO EM QUE FOI FEITO ROLLBACK DO UPDATE)

```
SQL> @src_populate2_tab_challenge_m2
PL/SQL procedure successfully completed.
```

O script levará alguns instantes para ser concluído. Está sendo feito mais de um milhão de INSERTs

Output:

```
SQL> select count(*) from OGG_SOURCE.CHALLENGE_M2;

  COUNT(*)
----------
   1500003
```

Veja quantas linhas foram exportadas:

```
$ cd /u01/export_dump

$ cat expdp_SCHEMA_OGG_SOURCE_nohup.out | grep exported

. . exported "OGG_SOURCE"."CHALLENGE_OGGM2"                55.19 MB 1000002 rows
```

Execute um novo INSERT

```
SQL> @src_insert2_tab_challenge_m2
```

Output:

```
SQL> insert into OGG_SOURCE.CHALLENGE_M2 values (1000004, '--> 04) INSERT AFTER RUNNING EXPORT',
'COL_B','COL_C',sysdate);

SQL> commit;


SQL> select * from OGG_SOURCE.CHALLENGE_M2 where ID in (1000001,1000002,1000003,1000004) order by 1;

        ID PASS                                                              COL_B    COL_C    COL_D
---------- ---------------------------------------------------------------- -------- -------- -----------------
   1000001 --> 01) INSERT BEFORE CREATING THE EXTRACT                       COL_B    COL_C    08-08-2024
   1000003 --> 03) INSERT AFTER CREATING AND STARTING THE EXTRACT           COL_B    COL_C    08-08-2024
   1000004 --> 04) INSERT AFTER RUNNING EXPORT                              COL_B    COL_C    09-08-2024
```

Ambiente de Destino

Crie o diretório para receber o EXPORT

```
$ mkdir -p /u01/export_dump/
```

Configure o Diretório do DUMP no Banco de Dados

```
SQL> show con_name

CON_NAME
----------
PDBOGG01

SQL> @config_dir_ogg_dump /u01/export_dump/
```

Output:

```
SQL> CREATE directory OGG_DUMP AS '&1';
old   1: CREATE directory OGG_DUMP AS '&1'
new   1: CREATE directory OGG_DUMP AS '/u01/export_dump/'

SQL> select * from dba_directories where directory_name like 'OGG_DUMP';

OWNER                DIRECTORY_NAME  DIRECTORY_PATH                                                  ORIGIN_CON_ID
-----------------    --------------  --------------------------------------------------------------  --------------
SYS                  OGG_DUMP        /u01/export_dump/                                               3
```


Ambiente de Origem

Transfira o dump gerado na ORIGEM para o DESTINO

```
$ cd /u01/export_dump

$ scp -i /home/oracle/.ssh/ggbr-treinamento-oracle.pem expdp_SCHEMA_OGG_SOURCE_01.dmp
<19c_hostname>:/u01/export_dump/
```

Ambiente de Destino

Configure o parfile para o import do dump

```
$ cd /u01/export_dump ; ls -l


$ vi /u01/export_dump/impdp_SCHEMA_OGG_SOURCE.par
USERID="sys/Oracle4U@PDBOGG01 as sysdba"
dumpfile=expdp_SCHEMA_OGG_SOURCE_%u
LOGFILE=impdp_SCHEMA_OGG_SOURCE.log
JOB_NAME=impdp_SCHEMA_OGG_SOURCE
DIRECTORY=OGG_DUMP
REMAP_SCHEMA=OGG_SOURCE:OGG_TARGET
REMAP_TABLESPACE=TBS_APP_SOURCE:TBS_APP_TARGET
TABLE_EXISTS_ACTION=REPLACE
```

Importe o dump transferido

```
$ cd /u01/export_dump

$ nohup impdp parfile=impdp_SCHEMA_OGG_SOURCE.par > impdp_SCHEMA_OGG_SOURCE_nohup.out &
```

Para acompanhar o import, dispare o seguinte comando

```
$ cd /u01/export_dump

$ tail -40f impdp_SCHEMA_OGG_SOURCE_nohup.out
```

Ambiente de Origem

Insira novos registros na tabela OGG_SOURCE.CHALLENGE_M2

```
SQL> @src_insert3_tab_challenge_m2
```

Output:

```
SQL> insert into OGG_SOURCE.CHALLENGE_M2 values (1000005, '--> 05) GO CURINTIIIASS', 'COL_B','COL_C',sysdate);
SQL> insert into OGG_SOURCE.CHALLENGE_M2 values (1000006, '--> 06) PALMEIRAS DOES NOT HAVE A WORLD CUP',
'COL_B','COL_C',sysdate);
SQL> commit;


SQL> select * from OGG_SOURCE.CHALLENGE_M2 where ID in (1000001,1000002,1000003,1000004,1000005,1000006) order
by 1;

     ID PASS                                                              COL_B  COL_C  COL_D
------- ------------------------------------------------------------------ ------ ---------------------
1000001 --> 01) INSERT BEFORE CREATING THE EXTRACT                         COL_B  COL_C  08-08-2024 15:23:00
1000003 --> 03) INSERT AFTER CREATING AND STARTING THE EXTRACT             COL_B  COL_C  08-08-2024 16:01:21
1000004 --> 04) INSERT AFTER RUNNING EXPORT                                COL_B  COL_C  09-08-2024 07:24:04
1000005 --> 05) GO CURINTIIIASS                                            COL_B  COL_C  09-08-2024 07:44:24
1000006 --> 06) PALMEIRAS DOES NOT HAVE A WORLD CUP                        COL_B  COL_C  09-08-2024 07:44:24
```

Ambiente de Destino

Verifique o estado atual da tabela OGG_TARGET.CHALLENGE_M2

```
SQL> @trg_ver_tab_challenge_m2
```

Output:

```
SQL> select * from OGG_TARGET.CHALLENGE_M2 where ID in (1000001,1000002,1000003,1000004,1000005,1000006) order
by 1;

     ID PASS                                                              COL_B COL_C COL_D
------- ------------------------------------------------------------------ ----- ----- --------------------
1000001 --> 01) INSERT BEFORE CREATING THE EXTRACT                         COL_B COL_C 08-08-2024 15:23:00
1000003 --> 03) INSERT AFTER CREATING AND STARTING THE EXTRACT             COL_B COL_C 08-08-2024 16:01:21
```

Ambiente de Destino

Crie e configure um novo REPLICAT

```
OGG> dblogin USERIDALIAS ogg_connect
Successfully logged into database.


OGG> ADD REPLICAT REPMIGRA, EXTTRAIL ./dirdat/mi, CHECKPOINTTABLE OGGUSER.CHECKPOINTTABLE


OGG> edit params REPMIGRA

REPLICAT REPMIGRA
USERIDALIAS ogg_connect
MAP OGG_SOURCE.*, TARGET OGG_TARGET.*;
```

Inicie o processo REPLICAT utilizando o valor da variável flashback_scn, momento de export do dump

```
$ cd $OGG_HOME


$ ./ggsci


OGG> start replicat REPMIGRA AFTERCSN 1587688


OGG> send replicat REPMIGRA stats
```

AFTERCSN O REPLICAT pode levar alguns instantes para processar o trail devido o posicionamento via

Ambiente de Origem

NA SESSÃO EM QUE FICOU UM INSERT ABERTO:

Dispare um commit

```
SQL> @src_closing_transaction_tab_challenge_m2
```

Output:

```
SQL> commit;


SQL> select * from OGG_SOURCE.CHALLENGE_M2 where ID in (1000001,1000002,1000003,1000004,1000005,1000006) order
by 1;

    ID     PASS                                                              COL_B    COL_C    COL_D
---------- ----------------------------------------------------------------- -------- -------- ----------------
   1000001 --> 01) INSERT BEFORE CREATING THE EXTRACT                        COL_B    COL_C    25-07-2024
   1000002 --> 02) INSERT BEFORE CREATING THE EXTRACT... BUT WITHOUT COMMIT  COL_B    COL_C    25-07-2024
   1000003 --> 03) INSERT AFTER CREATING AND STARTING THE EXTRACT            COL_B    COL_C    25-07-2024
   1000004 --> 04) INSERT AFTER RUNNING EXPORT                               COL_B    COL_C    25-07-2024
   1000005 --> 05) GO CURINTIIIASS                                           COL_B    COL_C    25-07-2024
   1000006 --> 06) PALMEIRAS DOESNT HAVE A WORLD CUP                         COL_B    COL_C    25-07-2024
```

Ambiente de Destino

Valide a tabela no destino

```
SQL> @trg_ver_tab_challenge_m2
```

Output:

```
SQL> select * from OGG_SOURCE.CHALLENGE_M2 where ID in (1000001,1000002,1000003,1000004,1000005,1000006) order
by 1;

  ID       PASS                                                                 COL_B    COL_C    COL_D
---------- -------------------------------------------------------------------- -------  -------  ----------
   1000001 --> 01) INSERT BEFORE CREATING THE EXTRACT                           COL_B    COL_C    25-07-2024
   1000002 --> 02) INSERT BEFORE CREATING THE EXTRACT... BUT WITHOUT COMMIT     COL_B    COL_C    25-07-2024
   1000003 --> 03) INSERT AFTER CREATING AND STARTING THE EXTRACT               COL_B    COL_C    25-07-2024
   1000004 --> 04) INSERT AFTER RUNNING EXPORT                                  COL_B    COL_C    25-07-2024
   1000005 --> 05) GO CURINTIIIASS                                              COL_B    COL_C    25-07-2024
   1000006 --> 06) PALMEIRAS DOESNT HAVE A WORLD CUP                            COL_B    COL_C    25-07-2024
```

Capítulo 15 – Desafio

Crie uma replicação de acordo com os seguintes requisitos:

1. Os owners envolvidos deverão ser: OGG_SOURCE e OGG_TARGET;

2. A estrutura dos objetos será de livre escolha do aluno;

3. O fluxo deverá ser bidirecional.