Oracle数据同步服务使用说明

环境准备

Oracle XStream Out

开启归档日志

```
-- 1.open oracle archive log,and enable XStream.

sqlplus / as sysdba
-- sqlplus /nolog
-- CONNECT sys/password@host:port AS SYSDBA;

alter system set db_recovery_file_dest_size = 100G;
alter system set db_recovery_file_dest = '/opt/oracle/oradata/recovery_area' scope=spfile;
alter system set enable_goldengate_replication=true;

shutdown immediate;
startup mount;

-- 开启归档日志
alter database archivelog;
-- 关闭归档日志
-- alter database noarchivelog;

-- 打开数据库，然后通过[select status from v$instance]检查STATUS是否为OPEN
alter database open;

-- 检查是否为归档模式"Database log mode: Archive Mode"
archive log list;

exit;
```

配置管理员和用户

```
-- 2.Creating an XStream Administrator user

sqlplus / as sysdba
-- sqlplus sys/password@host:port/SID as sysdba
-- 为XStream创建管理员用户和表空间
CREATE TABLESPACE xstream_adm_tbs DATAFILE
'/opt/oracle/oradata/orcl/xstream_adm_tbs.dbf' SIZE 25M REUSE AUTOEXTEND ON
MAXSIZE UNLIMITED;
CREATE USER xstrmadmin IDENTIFIED BY dbz DEFAULT TABLESPACE xstream_adm_tbs
QUOTA UNLIMITED ON xstream_adm_tbs;
GRANT CREATE SESSION TO xstrmadmin;
BEGIN
   DBMS_XSTREAM_AUTH.GRANT_ADMIN_PRIVILEGE(
    grantee                 => 'xstrmadmin',
    privilege_type          => 'CAPTURE',
    grant_select_privileges => TRUE,
    container              => 'ALL'
   );
END;


-- Creating the connector’s XStream user
-- 为XStream创建连接用户和表空间
CREATE TABLESPACE xstream_tbs DATAFILE
'/opt/oracle/oradata/orcl/xstream_tbs.dbf' SIZE 25M REUSE AUTOEXTEND ON MAXSIZE
UNLIMITED;
CREATE USER xstrm IDENTIFIED BY dbz DEFAULT TABLESPACE xstream_tbs QUOTA
UNLIMITED ON xstream_tbs;
-- 为连接用户授权
GRANT CREATE TABLE TO xstrm;
GRANT CREATE SESSION TO xstrm;
GRANT SELECT ON V_$DATABASE to xstrm;
GRANT FLASHBACK ANY TABLE TO xstrm;
GRANT SELECT ANY TABLE to xstrm;
GRANT LOCK ANY TABLE TO xstrm;
grant select_catalog_role to xstrm;
GRANT EXECUTE_CATALOG_ROLE TO xstrm;

-- 开启补全日志
-- alter database add supplemental log data (all) columns;
alter database add supplemental log data (primary key, unique index) columns;

exit;
```

配置出站服务

```
-- 3.Create an XStream Outbound Server

-- XStream管理员登录，创建一个出站服务，参数值[server_name]值可以自定义
sqlplus xstrmadmin/password@host:port/SID

DECLARE
tables DBMS_UTILITY.UNCL_ARRAY;
schemas DBMS_UTILITY.UNCL_ARRAY;
```

```
BEGIN
tables(1) := NULL;
schemas(1) := 'XSTRM';
DBMS_XSTREAM_ADM.CREATE_OUTBOUND(
     server_name => 'dbzxout',
     table_names => tables,
     schema_names => schemas
   );
END;
/

exit;
```

绑定服务

```
-- 4.Configure the XStream user account to connect to the XStream Outbound Server

-- DBA用户登录，将上一步创建的出站服务[server_name]和XStream连接用户绑定
sqlplus / as sysdba
-- sqlplus sys/password@host:port/SID as sysdba

BEGIN
DBMS_XSTREAM_ADM.ALTER_OUTBOUND(
     server_name  => 'dbzxout',
     connect_user => 'xstrm'
   );
END;
/

exit;

-- 开启自动事务
set autocommit on
-- 关闭自动事务
set autocommit off
-- 查看自动事务开关
show autocommit
```

快速新建XStream捕获进程(可选)

```
-- 先使用xstream管理员登录创建一个新的出站服务
sqlplus xstrmadmin/dbz@ip:port/sid

DECLARE
tables DBMS_UTILITY.UNCL_ARRAY;
schemas DBMS_UTILITY.UNCL_ARRAY;
BEGIN
tables(1) := NULL;
schemas(1) := 'XSTRM';
```

```
DBMS_XSTREAM_ADM.CREATE_OUTBOUND(
     server_name => '你的参数值',
     table_names => tables,
     schema_names => schemas
   );
END;
/

exit

-- 再使用Oracle管理员登录，把XStream连接用户和上面新建的出站服务进行绑定
sqlplus / as sysdba

BEGIN
DBMS_XSTREAM_ADM.ALTER_OUTBOUND(
     server_name  => '你的参数值',
     connect_user => 'xstrm'
   );
END;
/
```

JDK11

数据同步服务是完全基于jdk 11开发的，需要安装jdk11

```
rpm -i jdk-11.0.16.1_linux-x64_bin.rpm

-- rpm包安装完以后查看环境变量是否生效
java -version
```

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Oracle instantclient21及以上

安装Oracle instantclient并且设置环境变量

```
export PATH
export EDITOR=vi
export GGATE=
export NLS_LANG=AMERICAN_AMERICA.AL32UTF8
export ORACLE_BASE=/home/oracle/instantclient_21_6
export ORACLE_HOME=/home/oracle/instantclient_21_6
export ORACLE_SID=
export PATH=$ORACLE_HOME:$ORACLE_HOME/OPatch:$GGATE:$PATH
export LD_LIBRARY_PATH=$ORACLE_HOME:/usr/lib:$GGATE:$LD_LIBRARY_PATH
export TNS_ADMIN=$ORACLE_HOME/network/admin
```

下载地址

启动参数说明

```
--help
    Show help about ltdts_recvlogical_ora command line arguments

--oh
    Specifies the host of the Oracle,the port of the Oracle,and the database name of the Oracle.
    the format is like 192.168.1.1:1521/ORCL
--ou
    Oracle user name to connect as
--op
    Oracle user password
--oa
    Oracle XStream out apply name

--m
    Data synchronization format mode, options are {SQL,JSON},the default value is SQL.
--sd
    Where do you want to synchronize data, options are {LT,FILE},the default value is LT.
    [tips:LT is short for LightDB]

--lh
    Specifies the host of the LightDB,the port of the LightDB,and the database name of the LightDB.
    The format is like 192.168.1.1:5432/postgres
--lu
    LightDB user name to connect as
--lp
    LightDB user password
```

运行服务

同步到文本文件

```
nohup java -jar ltdts_recvlogical_ora.jar --server.port=7777 --oh=10.20.30.199:1521/test --ou=XSTRM --op=dbz --oa=DBZXOUT14 --sd=FILE > log.file  2>&1 &
```

同步到LightDB

```
nohup java -jar ltdts_recvlogical_ora.jar --server.port=7777 --oh=10.20.30.199:1521/test --ou=XSTRM --op=dbz --oa=DBZXOUT14 --lh=10.20.30.218:7000/postgres --lu=lightdb --lp=lightdb123 > log.file  2>&1 &
```

XStream常用 查询

```
-- 查获捕获信息
select capture_name,status from dba_capture;
select apply_name,status from dba_apply;

-- 上面dba_capture和dba_apply的状态必须都是ENABLED，再查看动态视图的状态，STATE的值为[WAITING FOR TRANSACTION]，则功能正常
SELECT CAPTURE_NAME, STATE,
    TO_CHAR(CAPTURE_MESSAGE_CREATE_TIME, 'HH24:MI:SS MM/DD/YY') CREATE_MESSAGE,
    TO_CHAR(ENQUEUE_MESSAGE_CREATE_TIME, 'HH24:MI:SS MM/DD/YY') ENQUEUE_MESSAGE
FROM V$XSTREAM_CAPTURE;

-- 查获捕获参数
select * from dba_capture_parameters WHERE CAPTURE_NAME = 'XX';
select * from dba_capture_parameters WHERE PARAMETER = 'XX';

select * from dba_apply_parameters WHERE PARAMETER = 'XX';
select * from dba_apply_parameters WHERE APPLY_NAME = 'XX';

-- 查询所有出站服务
SELECT SERVER_NAME,
       CONNECT_USER,
       CAPTURE_NAME,
       SOURCE_DATABASE,
       CAPTURE_USER,
       QUEUE_OWNER
FROM ALL_XSTREAM_OUTBOUND;

-- 查询所有XStream会话
SELECT SERVER_NAME,
    SID,
    SERIAL#,
    SPID
FROM V$XSTREAM_OUTBOUND_SERVER;
-- 查询所有XStream会话
SELECT /*+PARAM('_module_action_old_length',0)*/ ACTION,
    SID,
    SERIAL#,
    PROCESS,
    SUBSTR(PROGRAM,INSTR(PROGRAM,'(')+1,4) PROCESS_NAME
FROM V$SESSION
WHERE MODULE ='XStream';

-- 杀死会话，比如ALTER SYSTEM KILL SESSION '9398,7181';
ALTER SYSTEM KILL SESSION 'SID,SERIAL';

-- 删除捕获进程
```

```
select capture_name from dba_capture;
exec dbms_capture_adm.drop_capture('CAP$_DBZXOUT7_55');

select apply_name from dba_apply;
exec dbms_apply_adm.drop_apply('DBZXOUT7');

-- 关闭捕获进程
select capture_name from dba_capture;
exec dbms_capture_adm.stop_capture('CAP$_DBZXOUT7_55');

select apply_name from dba_apply;
exec dbms_apply_adm.stop_apply('DBZXOUT7');

-- 查询补全日志
SELECT supplemental_log_data_min min,
     supplemental_log_data_pk pk,
     supplemental_log_data_ui ui,
     supplemental_log_data_fk fk,
     supplemental_log_data_all allc
FROM v$database;
```

XStream状态参考地址