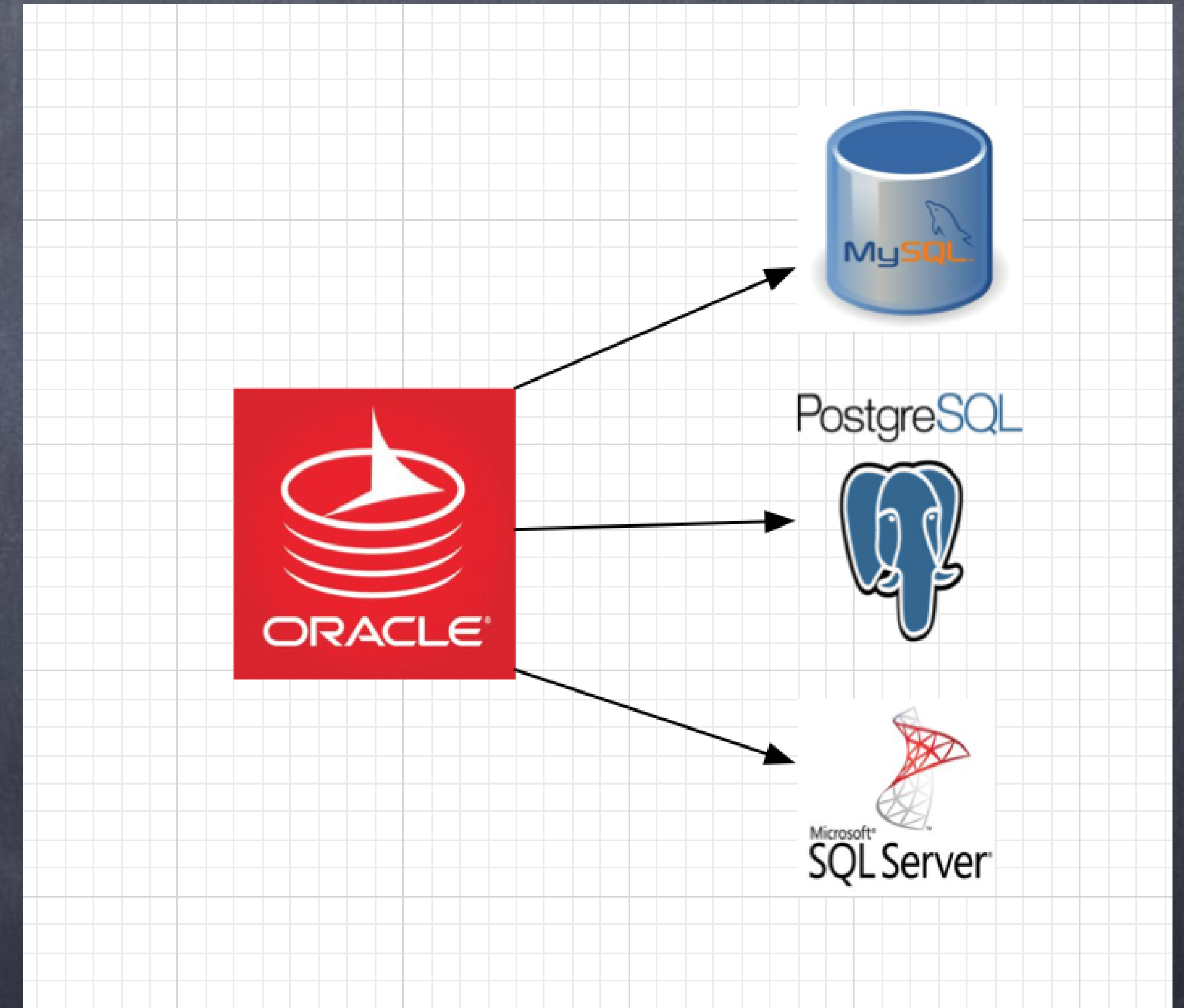# •Oracle—>MySQL

—冯帅

Before considering of migration data

- Appropriate alternative database

- Appropriate migration tool

- Don't affect the source side

- Incremental data

- The data object is different

- The data type is different

- Data integrity check

- Performance optimization

Alternative Database

- MySQL VS PG
- MySQL branch
- MySQL version
- Mongodb、Redis
- MySQL architecture

Migration Tool

- MySQL Migration Toolkit
- SQL LOAD
- Python
- OGG
- KETTLE

SQL LOAD

Step 1.Export csv/sql from Oracle

Step 2.Load csv/Source sql into MySQL

Merits and Demerits:

Fastest

Simple

It's difficult to automate

Data may be a problem

Demo

```
oracle@o dbadmin@test 01:12:31>select * from t where name is null;
sqset colse Empty set (0.00 sec)
    dbadmin@tes dbadmin@test 01:13:00>select * from t where name='';                    datetime);
Ta  Query OK, 0 +---
SQ  | id [dbadmin@wfcrm 02:28:43>select * from t where age is null;                      '~,~';
    dbadmin@tes +---
    Query OK, 3 | [+------+------+------+---------------------+
    Records: 3 | | id   | name | age  | birthday            |
1   S[            +------+------+------+---------------------+
    dbadmin@tes 2 ro|  2 | NULL | NULL | 2017-03-23 13:08:57 |
SQ  +---          |  3 | NULL | NULL | NULL                |
    | Level  dbad +------+------+------+---------------------+
    S[+---        2 rows in set (0.00 sec)
[1  S[ | Warning | id
    | Warning |    [dbadmin@wfcrm 02:28:50>select * from t where birthday is null;
SQ  | Warning |    +------+------+------+----------+
    S[+---        | id   | name | age  | birthday |
[1  3 rows in s   +------+------+------+----------+
    S            |  3 | NULL | NULL | NULL     |
SQ  dbadmin@tes  +------+------+------+----------+
    +------+---  dbad 1 row in set (0.00 sec)
[Co | id   | na
    +------+---  | id dbadmin@wfcrm 02:29:19>▯
SQ  |    1 | a   +---
    |    2 |      | id ⊟  🗑  | ⚙
    |    3 |      +---
    [+------+---  | id )17/03/24 14:26:45 - loanbiz - Dispatching started for transformation [loanbiz]
    3 rows in s   +--- )17/03/24 14:26:45 - t 2.0 - Connected to database [loanbiz] (commit=1000)
--  3 ro )17/03/24 14:26:45 - t.0 - Finished reading query, closing connection.
oracle@o     )17/03/24 14:26:45 - t.0 - Finished processing (I=3, O=0, R=0, W=3, U=0, E=0)
1~,~a~,~( dbad )17/03/24 14:26:45 - t 2.0 - Finished processing (I=0, O=3, R=3, W=3, U=0, E=0)
2~,~~,~~,~2017/03/23 13:08:57
3~,~~,~~,~
```

Python

- Step 1.Create Mapping table

- Step 2.Code、Code、Code

- Step 3.Run procedure

Merits and Demerits:

- Agility
- Exception

- Logic control
- Slow

Python Code

```
def export_data(tab1,pk0,tab2):
    global cnt_err
2017-02-14 17:40:01  Start ...
/python/o2m/o2m_replace_subclos.py:158: Warning: Incorrect string value: '\xF0\xAF\xA0\xA5' for column 'FNAME' at row 1
    mysor.execute(sql2)
/python/o2m/o2m_replace_subclos.py:158: Warning: Incorrect string value: '\xF0\xA4\xA4\xB4' for column 'FNAME' at row 1
    mysor.execute(sql2)
/python/o2m/o2m_replace_subclos.py:158: Warning: Incorrect string value: '\xF0\xA5\x96\x84' for column 'FNAME' at row 1
    mysor.execute(sql2)
/python/o2m/o2m_replace_subclos.py:158: Warning: Incorrect string value: '\xF0\x9F\x86\x95' for column 'FNAME' at row 1
    mysor.execute(sql2)
/python/o2m/o2m_replace_subclos.py:158: Warning: Incorrect string value: '\xF0\xAF\xA3\x8D\xE5\x8D...' for column 'FNAME
' at row 1
    mysor.execute(sql2)
Error 1064: You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the
  right syntax to use near '><x>")' at line 1
Error happens on the row: PK(col0)=11949613 ,ignore and continue...
/python/o2m/o2m_replace_subclos.py:158: Warning: Incorrect string value: '\xF0\xA3\x87\x88\xE6\x98...' for column 'FNAME
' at row 1
    mysor.execute(sql2)
/python/o2m/o2m_replace_subclos.py:158: Warning: Incorrect string value: '\xF0\xAF\xA0\xA5\xE6\xAF...' for column 'FNAME
' at row 1
    mysor.execute(sql2)
/python/o2m/o2m_replace_subclos.py:158: Warning: Incorrect string value: '\xF0\xA3\x87\x88\xE4\xB8...' for column 'FNAME
' at row 1
    mysor.execute(sql2)
/python/o2m/o2m_replace_subclos.py:158: Warning: Incorrect string value: '\xF0\x9F\x8D\xAC' for column 'FNAME' at row 1
    mysor.execute(sql2)
/python/o2m/o2m_replace_subclos.py:158: Warning: Incorrect string value: '\xF0\x9F\x88\xBA\xEF\xB8...' for column 'FNAME
' at row 1
    mysor.execute(sql2)
Error 1064: You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the
  right syntax to use near '"郭成群\")' at line 1
Error happens on the row: PK(col0)=15936184 ,ignore and continue...
2017-02-14 17:44:37  Thread 1 commit last 61963 record.
2017-02-14 17:44:48  Counter of err-row is 2 .Finished ...
        print "User Exit ..."
        exit(1)
    finally:
        mysor.close()
```

OGG

- Step 1.Configure Oracle OGG

- Step 2.Configure MySQL OGG

- Step 3.Run

Merits and Demerits:

- real-time

- Support Data type

- Complex

- Only Support Innodb

OGG notes

- Goldengate to mysql support innodb engine only

- Does not support DDL

- 5.6 Must OGG 12.1.2 to support

- Must configure defgen

- Binlog_format must be set to the value of ROW（two-way）

MySQL Migration Toolkit

- Step 1.Load odbc.jar

- Step 2.Configure And Mapping

- Step 3.Run

Merits and Demerits:

- Create table

- Type conversion

- Date type weak support

- Only Windows

KETTLE

- Step 1.Load mysql.jar

- Step 2.Configure And Mapping

- Step 3.Run

Merits and Demerits:

- Fast

- Type conversion

- Auto Mapping

- Learning cost

KETTLE DEMO

VIEW

```
dbadmin@test 03:15:24>create view v_test as select * from (select * from test)
;
ERROR 1349 (HY000): View's SELECT contains a subquery in the FROM clause
dbadmin@test 03:15:30>
dbadmin@test 03:15:37>create view v_sub_test as select * from test;
Query OK, 0 rows affected (0.00 sec)

dbadmin@test 03:15:39>create view v_test as select * from v_sub_test;
Query OK, 0 rows affected (0.00 sec)
```

Materialized Views

refresh

event

performance

trigger

Procedure、Function、Trigger

- Trigger OR

- %type

- Elseif、For

- Cursor

- PACKAGE

- Predefined

- :=、||

- Annotation

- LEAVE

- Exception

Other Difference

- Page

- Join

- Group By

- Bitmap

- Partitioned table

- Role

- emoji

- Sequence

Complete Check

- Log And Warning

- Count(*)

- Sampling

- APP

- Congos

SQL_MODE

- TRADITIONAL

- ONLY_FULL_GROUP_BY

Without Regard to any trailing spaces

Explicit_defauls_for_timestamp

Performance Parameters

max_allowed_packet   AIO

   innodb_flush_log_at_trx_commit

 innodb_log_file_size   innodb_buffer_pool_instances

 innodb_log_buffer_size

innodb_buffer_pool_size

Conclusion

- Appropriate migration tool

- Data integrity check is very important

- Repeat operation is normal

"Thanks for your time."

—UcJmh