

•Oracle—>MySQL

—冯帅

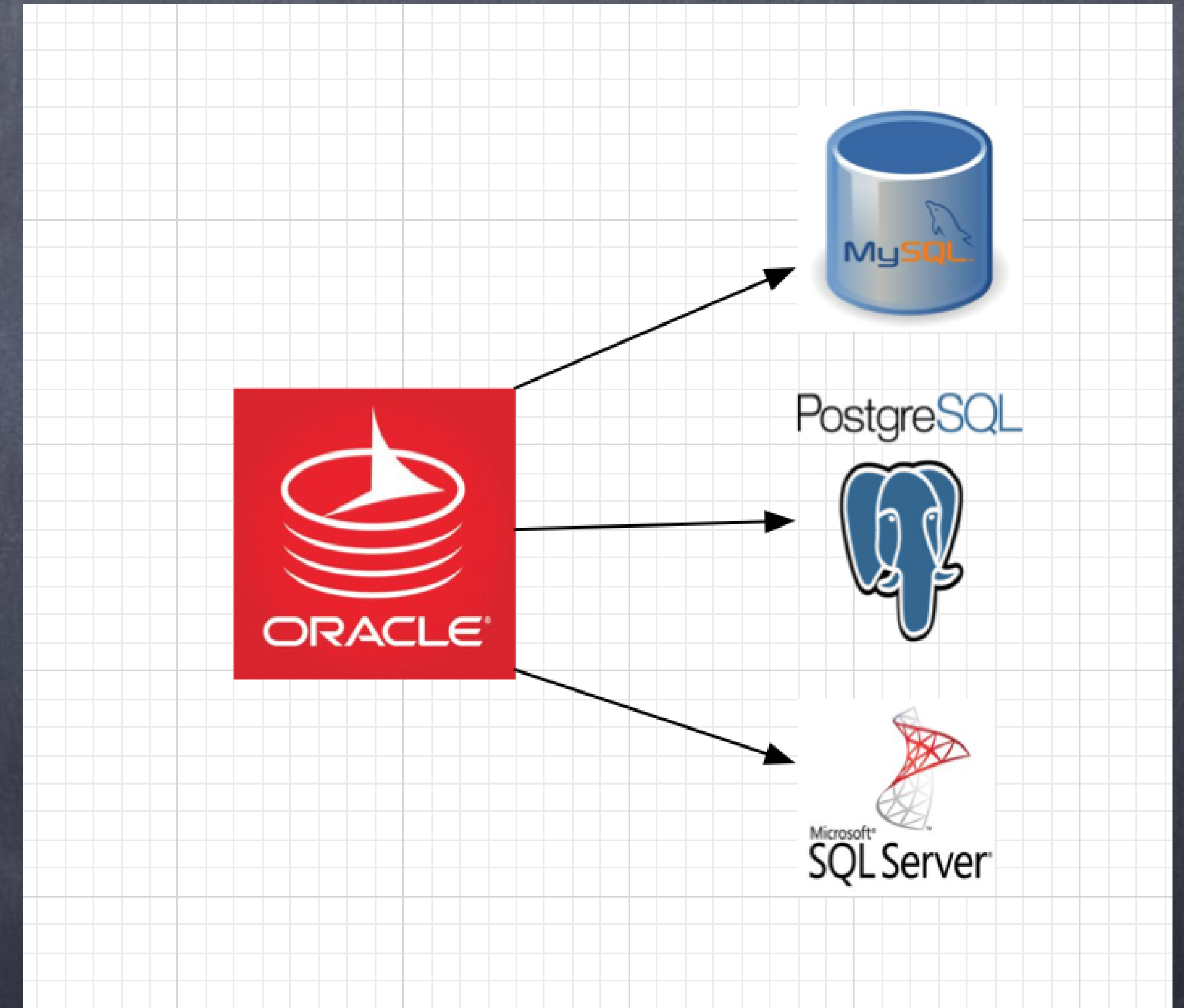
• Before considering of migration data

- 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@oracledbadmin@test 01:12:31>select * from t where name is null;
Empty set (0.00 sec)

sql>set colsep ' '
dbadmin@test 01:13:00>select * from t where name='';
Query OK, 0 rows affected (0.00 sec)

Table structure for table 't':
+----+-----+
| id | name | age | birthday |
+----+-----+
| 2 | NULL | NULL | 2017-03-23 13:08:57 |
| 3 | NULL | NULL | NULL |
+----+-----+
2 rows in set (0.00 sec)

dbadmin@test 02:28:43>select * from t where age is null;
Query OK, 3 rows affected (0.00 sec)
Records: 3

dbadmin@test 02:28:50>select * from t where birthday is null;
Query OK, 1 row affected (0.00 sec)
Warning: Truncated result set (this statement is more complex than others)
Warning: Truncated result set (this statement is more complex than others)
Warning: Truncated result set (this statement is more complex than others)
3 rows in set (0.00 sec)

dbadmin@test 02:29:19>

```


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
- Auto Mapping
- Type conversion
- Learning cost

KETTLE DEMO

The screenshot displays the Kettle (Spoon) application window titled "Spoon - loanbiz". The interface includes a menu bar (File, Edit, View, Action, Tools, Help), a toolbar, and a perspective dropdown set to "Data Integration".

On the left, the "Steps" panel shows a tree view of available components: Input, Output, Transform, Utility, Flow, Scripting, BA Server, Lookup, Joins, Data Warehouse, Validation, Statistics, Big Data, Agile, Cryptography, Palo, Open ERP, Job, Mapping, Bulk loading, and Inline.

The main workspace shows a transformation named "loanbiz" with a flow from "oracle table" to "mysql table". Both components have green checkmarks above them, indicating successful execution.

Below the workspace is the "Execution Results" panel, which contains tabs for Execution History, Logging, Step Metrics, Performance Graph, Metrics, and Preview data. The "Execution History" tab is active, showing a log of events:

- 2017/03/26 21:03:23 - cfgbuilder - Warning: The configuration parameter [org] is not supported by the default configurati
- 2017/03/26 21:13:01 - Spoon - Transformation opened.
- 2017/03/26 21:13:01 - Spoon - Launching transformation [loanbiz]...
- 2017/03/26 21:13:01 - Spoon - Started the transformation execution.
- 2017/03/26 21:13:01 - loanbiz - Dispatching started for transformation [loanbiz]
- 2017/03/26 21:13:01 - mysql table.0 - Connected to database [loanbiz] (commit=1000)
- 2017/03/26 21:13:01 - oracle table.0 - Finished reading query, closing connection.
- 2017/03/26 21:13:01 - oracle table.0 - Finished processing (I=3, O=0, R=0, W=3, U=0, E=0)
- 2017/03/26 21:13:01 - mysql table.0 - Finished processing (I=0, O=3, R=3, W=3, U=0, E=0)
- 2017/03/26 21:13:01 - Spoon - The transformation has finished!!

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

trigger

performance

• 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_defaults_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