Using External Tables

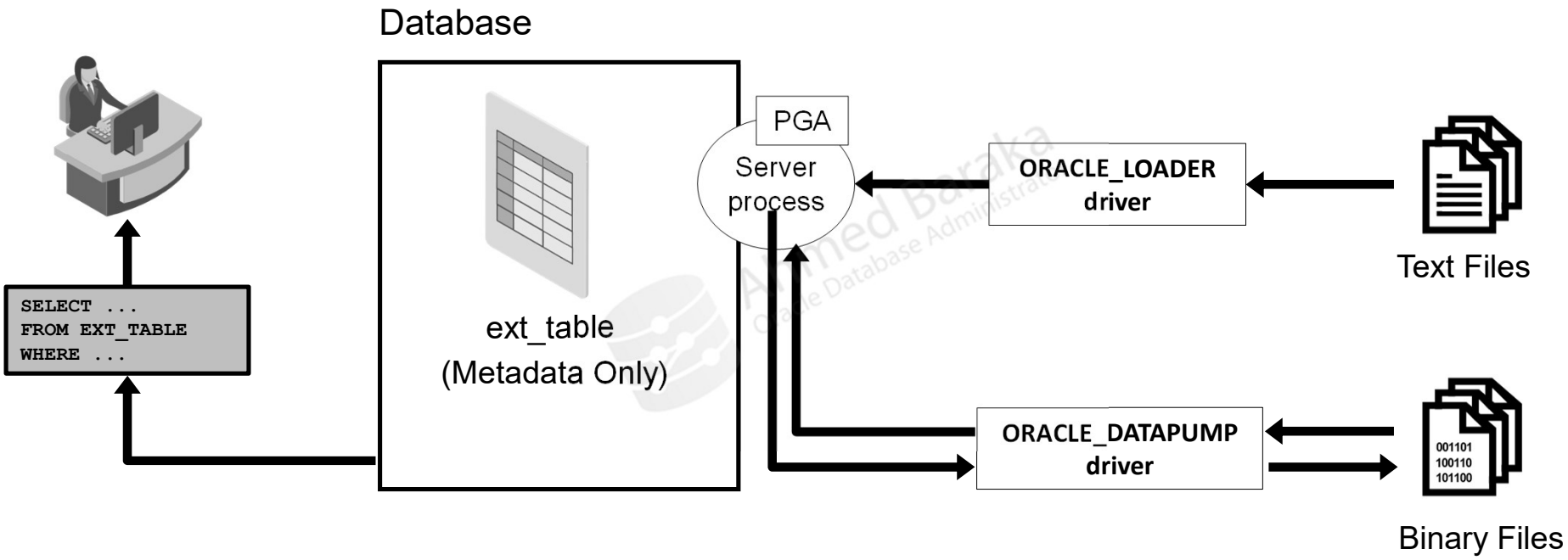
By Ahmed Baraka

Objectives

By the end of this lecture, you will learn how to perform the following:

- Describe External Tables
- Use External Tables with **`ORACLE_LOADER`** driver
- Use External Tables with **`ORACLE_DATAPUMP`** driver

External Tables



About External Tables

- Used to access data in external files as if it were in a table in the database
- No DML operations are possible, and no index can be created on them
- Accessing files stored on DNFS or Storage Object is supported
- Access driver options:
  - **`ORACLE_LOADER`**: used to access text files. Cannot be used to load text files.
  - **`ORACLE_DATAPUMP`**: used to access Data Pump based files (dump files). Allows unloading and loading external data.
  - **`ORACLE_HDFS`**: access data stored in HDFS in Apache Hadoop
  - **`ORACLE_HIVE`**: access data stored in Hive Tables in Apache Hadoop
  - **`ORACLE_BIGDATA`**: enables read-only access to data stored in both structured and unstructured formats, including Apache Parquet, Apache Avro, Apache ORC, and text formats

About External Tables

- With **`ORACLE_LOADER`**:
  - We can perform data loading from external flat files
  - Used to read data saved in flat files
- With **`ORACLE_DATAPUMP`**:
  - We can perform unloading data into external binary files using external table and loading back into a database also using external tables
  - Better for exchanging data between Oracle databases

External Tables with ORACLE_LOADER Example

```
CREATE TABLE ext_emp
                  (EMPLOYEE_ID        NUMBER(4),
                   FIRST_NAME         VARCHAR2(20),
                   LAST_NAME          VARCHAR2(25),
                   HIRE_DATE          DATE)
ORGANIZATION EXTERNAL
     ( TYPE ORACLE_LOADER DEFAULT DIRECTORY extab_dat_dir
       ACCESS PARAMETERS
       ( RECORDS DELIMITED BY NEWLINE
         BADFILE EXTAB_BAD_DIR:'empxt.bad'
         LOGFILE EXTAB_LOG_DIR:'empxt.log'
         FIELDS TERMINATED BY ',' OPTIONALLY ENCLOSED BY '"'
         MISSING FIELD VALUES ARE NULL
     ( employee_id, first_name, last_name,
          hire_date char date_format date mask "dd-Mon-yyyy"))
     LOCATION ('empxt1.dat') )
     REJECT LIMIT UNLIMITED;
```

External Tables with ORACLE_LOADER with Parallelism Example

```
CREATE TABLE ext_emp
                  (employee_id       NUMBER(4),
                   first_name        VARCHAR2(20),
                   last_name         VARCHAR2(25),
                   hire_date         DATE)
ORGANIZATION EXTERNAL
     ( TYPE ORACLE_LOADER DEFAULT DIRECTORY extab_dat_dir
       ACCESS PARAMETERS
       ( RECORDS DELIMITED BY NEWLINE
         BADFILE EXTAB_BAD_DIR:'empxt%a_%p.bad'
         LOGFILE EXTAB_LOG_DIR:'empxt%a_%p.log'
         FIELDS TERMINATED BY ','
         MISSING FIELD VALUES ARE NULL
     ( employee_id, first_name, last_name,
          hire_date char date_format date mask "dd-Mon-yyyy"))
     LOCATION ('empxt1.dat', 'empxt2.dat') )
     PARALLEL REJECT LIMIT UNLIMITED;
```

Unloading External Table Population with ORACLE_DATAPUMP

```
CREATE TABLE ext_emp_dump
  (FIRST_NAME, LAST_NAME, DEPARTMENT_NAME)
ORGANIZATION EXTERNAL
  (
    TYPE ORACLE_DATAPUMP
    DEFAULT DIRECTORY ext_dir
    LOCATION ('emp.exp')
  )
AS
SELECT e.first_name,e.last_name,d.department_name
FROM   employees e, departments d
WHERE  e.department_id = d.department_id AND
       d.department_name in ('Marketing', 'Operations');
```

Loading External Table Population with ORACLE_DATAPUMP

```
CREATE TABLE ext_emp_dump
  (FIRST_NAME VARCHAR2(10), LAST_NAME VARCHAR2(10), DEPARTMENT_NAME
VARCHAR2(10))
ORGANIZATION EXTERNAL
  (
    TYPE ORACLE_DATAPUMP
    DEFAULT DIRECTORY ext_dir
    LOCATION ('emp.exp')
  )
/
```

Enabling Parallelism

```
CREATE TABLE orders_xt
    ORGANIZATION EXTERNAL
    ( TYPE ORACLE_DATAPUMP
      DEFAULT DIRECTORY ext_dir
      LOCATION ( 'ord1.dmp', 'ord2.dmp', 'ord3.dmp', 'ord4.dmp')
    )
PARALLEL 4
AS
SELECT *
FROM   orders;
```

Obtaining Information about External Tables

Column	Description
`*_EXTERNAL_TABLES`	Specific attributes of external tables in the database
`*_EXTERNAL_LOCATIONS`	Data sources for external tables
`*_DIRECTORIES`	Describes the directory objects in the database

Summary

By the end of this lecture, you should have learnt how to perform the following:

- Describe External Tables
- Use External Tables with **`ORACLE_LOADER`** driver
- Use External Tables with **`ORACLE_DATAPUMP`** driver