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Moving Data

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Objectives

After completing this lesson, you should be able to:

- Describe ways to move data
- Explain the general architecture of Oracle Data Pump
- Create and use directory objects
- Use Data Pump Export and Import to move data between Oracle databases
- Use SQL*Loader to load data from a non-Oracle database (or user files)
- Use external tables to move data via platform-independent files

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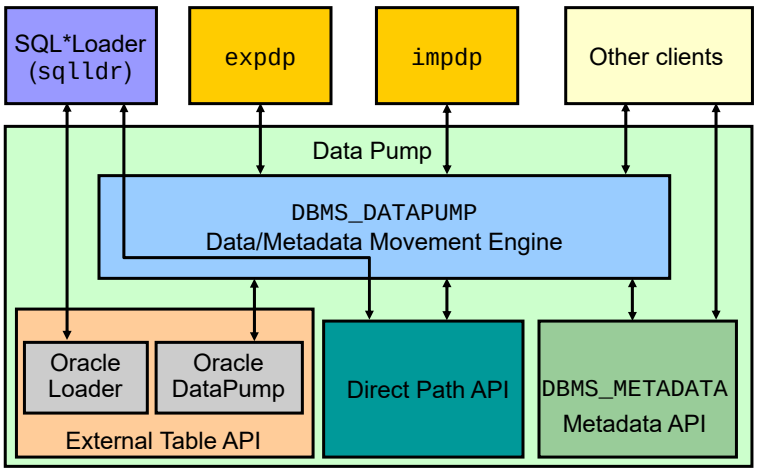
Moving Data: General Architecture



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Oracle Data Pump: Overview

As a server-based facility for high-speed data and metadata movement, Oracle Data Pump:

- Is callable via DBMS_DATAPUMP
- Provides the following tools:
  - expdp
  - impdp
  - GUI interface in Enterprise Manager Cloud Control

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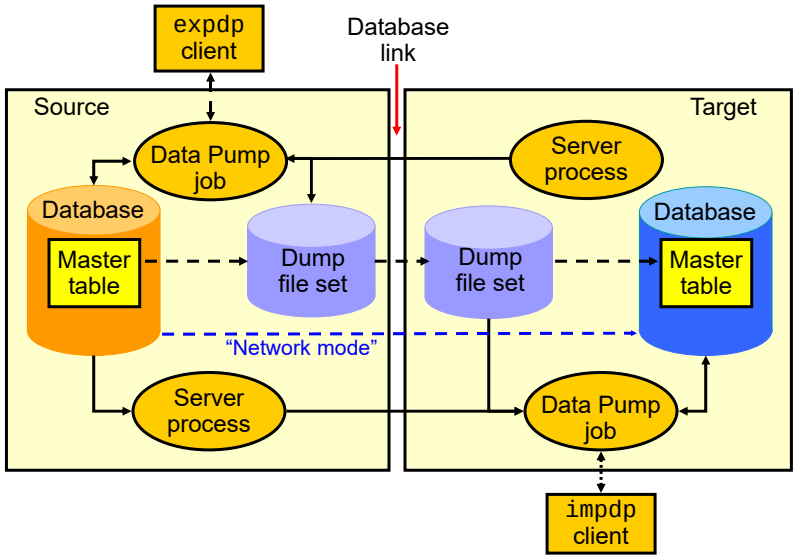
Data Pump Export and Import Clients: Overview



Directory Objects for Data Pump

Directory Objects

Search

Object Name Go

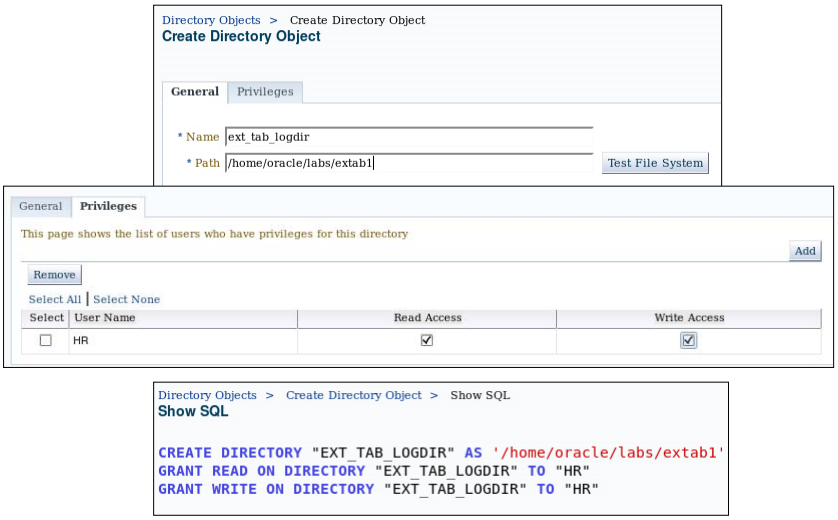
By default, the search returns all uppercase matches beginning with the string you entered. To run an exact or case-sensitive match, double quote the search string.

Selection Mode Single

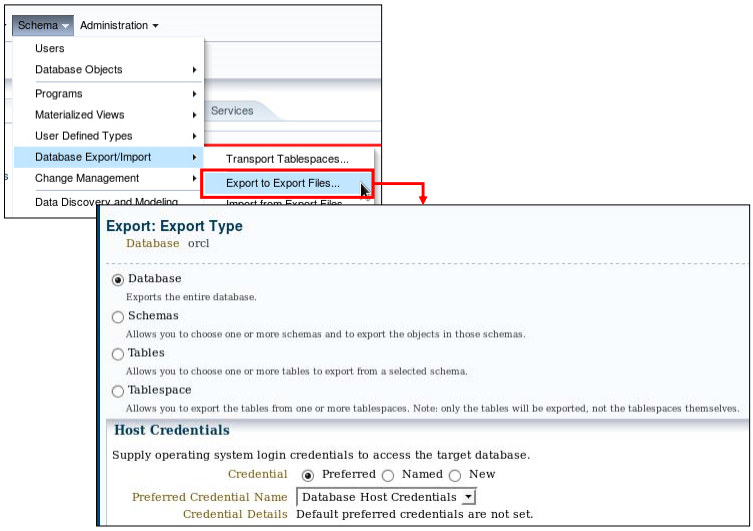
Edit View Delete Actions Create Like Go

Select	Name	Path
◉	DATA_FILE_DIR	/u01/app/oracle/product/12.1.0/dbhome_1/demo/schema/sales_history/
○	DATA_PUMP_DIR	/u01/app/oracle/admin/orcl/dpdump/
○	LOG_FILE_DIR	/u01/app/oracle/product/12.1.0/dbhome_1/demo/schema/log/
○	MEDIA_DIR	/u01/app/oracle/product/12.1.0/dbhome_1/demo/schema/product_media/
○	OPATCH_LOG_DIR	/u01/app/oracle/product/12.1.0/dbhome_1/QOpatch
○	OPATCH_SCRIPT_DIR	/u01/app/oracle/product/12.1.0/dbhome_1/QOpatch
○	ORACLE_OCM_CONFIG_DIR	/u01/app/oracle/product/12.1.0/dbhome_1/ccr/hosts/EDRSR11P1/state
○	ORACLE_OCM_CONFIG_DIR2	/u01/app/oracle/product/12.1.0/dbhome_1/ccr/state
○	SS_OE_XMLDIR	/u01/app/oracle/product/12.1.0/dbhome_1/demo/schema/order_entry/
○	SUBDIR	/u01/app/oracle/product/12.1.0/dbhome_1/demo/schema/order_entry//2002/Sep
○	XMLDIR	/u01/app/oracle/product/12.1.0/dbhome_1/rdbms/xml
○	XSDDIR	/ade/b/4061281185/oracle/rdbms/xml/schema

Creating Directory Objects



Performing a Data Pump Export by Using Enterprise Manager Cloud Control



Performing a Data Pump Import

Data Pump can be invoked on the command line:

```
$ impdp hr DIRECTORY=DATA_PUMP_DIR \
DUMPFILE=HR_SCHEMA.DMP \
PARALLEL=1 \
CONTENT=ALL \
TABLES="EMPLOYEES" \
LOGFILE=DATA_PUMP_DIR:import_hr_employees.log \
JOB_NAME=importHR \
TRANSFORM=STORAGE:n
```

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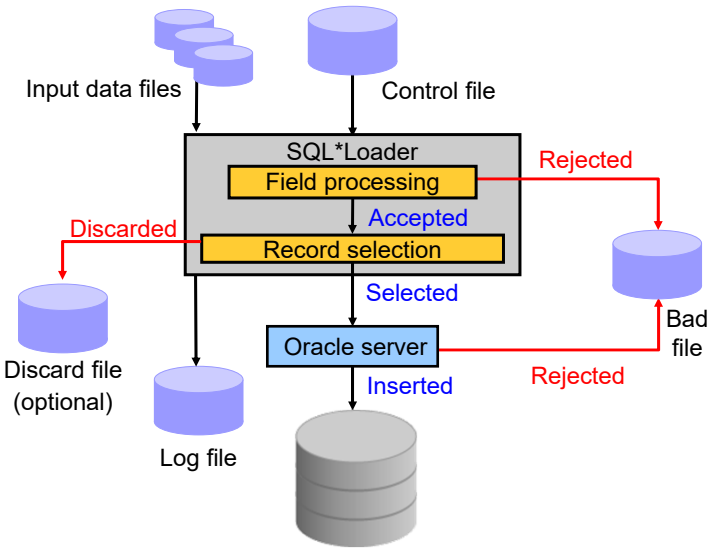
SQL*Loader: Overview



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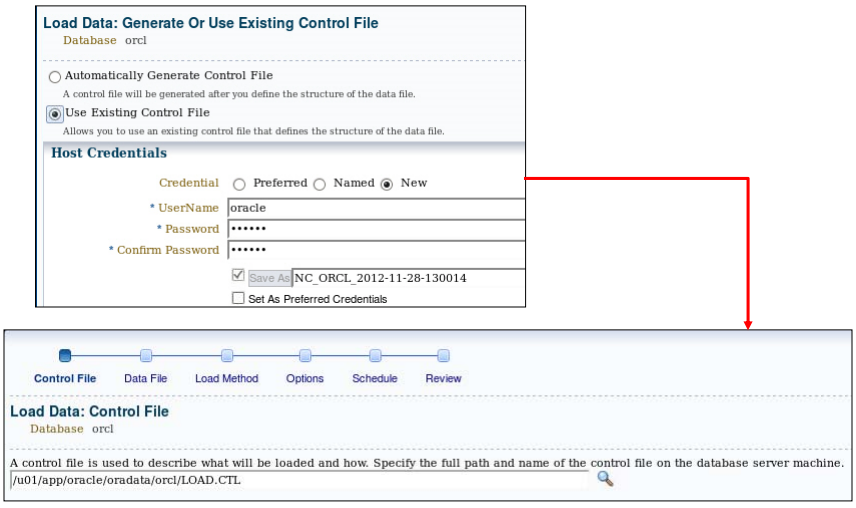
SQL*Loader Control File

The SQL*Loader control file instructs SQL*Loader about:

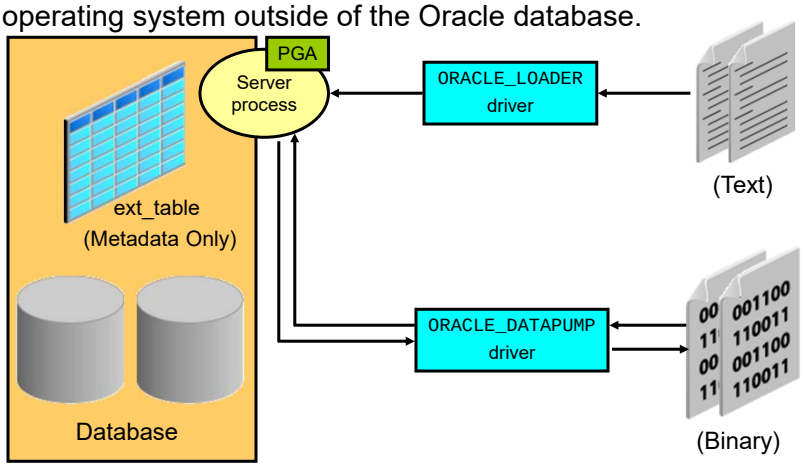
- Location of the data to be loaded
- Data format
- Configuration details:
  - Memory management
  - Record rejection
  - Interrupted load handling details
- Data manipulation details

Loading Data by Using Enterprise Manager Cloud Control



External Tables

External tables are read-only tables stored as files on the operating system outside of the Oracle database.



External Table: Benefits

- Data can be used directly from the external file or loaded into another database.
- External data can be queried and joined directly in parallel with tables residing in the database, without requiring it to be loaded first.
- The results of a complex query can be unloaded to an external file.
- You can combine generated files from different sources for loading purposes.

From Oracle Database

From external file

Defining an External Tables with ORACLE_LOADER

```
CREATE TABLE extab_employees
                (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;
```


Using External Tables

- Querying an external table:

```
SQL> SELECT * FROM extab_employees;
```

- Querying and joining an external table with an internal table:

```
SQL> SELECT e.employee_id, e.first_name, e.last_name,
d.department_name FROM departments d, extab_employees e
WHERE d.department_id = e.department_id;
```

- Appending data to an internal table from an external table:

```
SQL> INSERT /*+ APPEND */ INTO hr.employees SELECT *
FROM extab_employees;
```

Summary

In this lesson, you should have learned how to:

- Describe ways to move data
- Explain the general architecture of Oracle Data Pump
- Create and use directory objects
- Use Data Pump Export and Import to move data between Oracle databases
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