Loading Data

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Data Loading Options

- Data loading via SQL*Net
  - Suitable for small volumes of data
    - SQL*Loader from local filesystem
    - ETL scripts that use DML to insert/update data
- Data loading from Oracle Object Storage
  - Preferred technique for large volumes of data
    - Additionally enables data-sharing with other cloud services
  - Stage data in Oracle Object Storage, then load into the database using new PL/SQL APIs
- Comprehensive UI Support with SQL Developer

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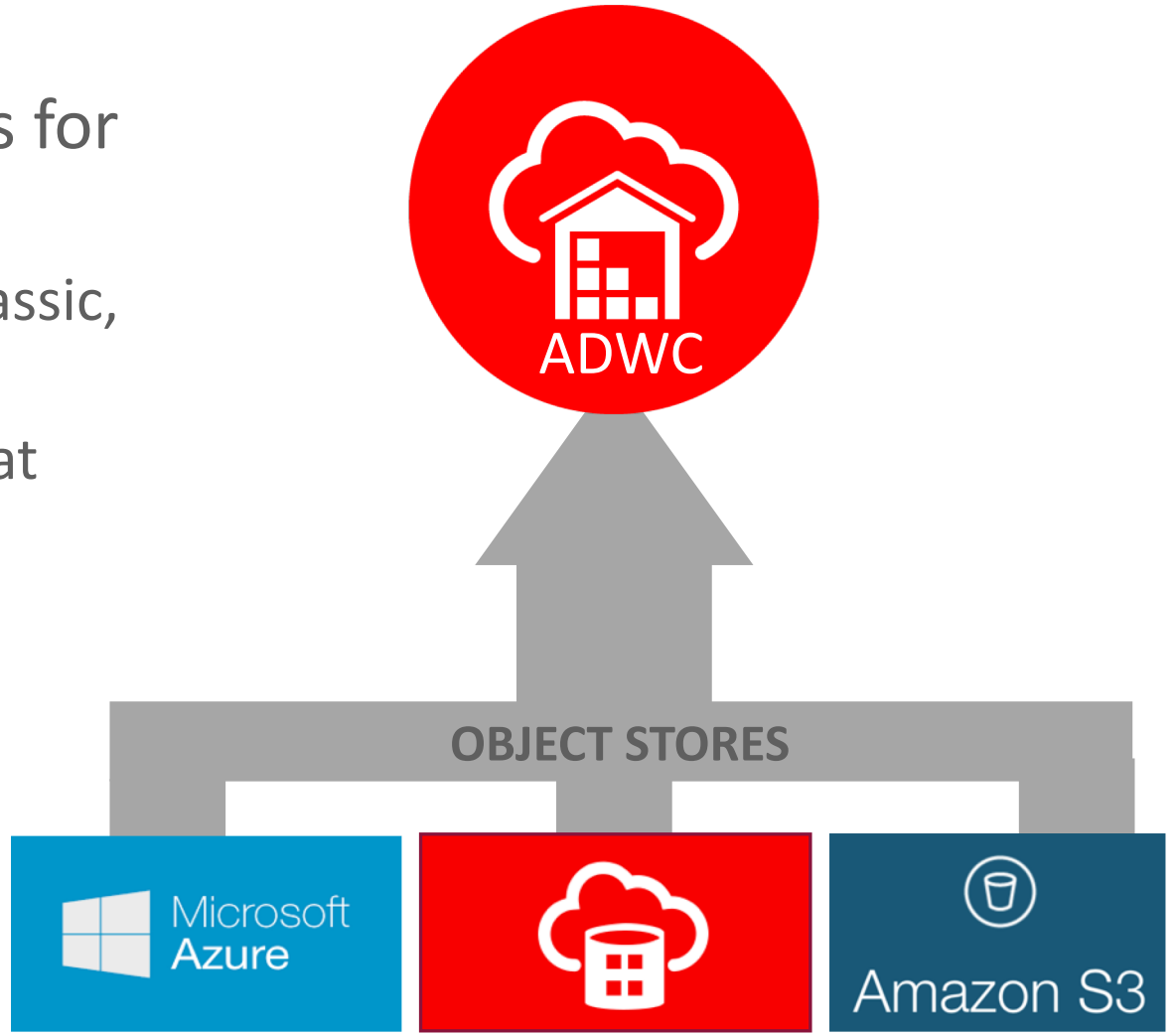
Loading Data from Object Stores

- Source data from files on object stores for data loading
  - OCI Object Storage, OCI Object Storage Classic, AWS S3, or Microsoft Azure
  - Any supported ORACLE_LOADER file format
  - Roadmap: any Hadoop file format



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New Cloud API to Access Object Stores, DBMS_CLOUD

- New PL/SQL package for accessing files in object stores
- No need to manually define external tables for loading files
  - Makes it easier to specify the format of the source data

```
CREATE TABLE admin_ext_employees
                   (employee_id       NUMBER(4),
                    first_name        VARCHAR2(20),
                    last_name         VARCHAR2(25),
                    job_id            VARCHAR2(10),
                    manager_id        NUMBER(4),
                    hire_date         DATE,
                    salary            NUMBER(8,2),
                    commission_pct    NUMBER(2,2),
                    department_id     NUMBER(4),
                    email             VARCHAR2(25)
                   )
    ORGANIZATION EXTERNAL
    (
      TYPE ORACLE_LOADER
      DEFAULT DIRECTORY admin_dat_dir
      ACCESS PARAMETERS
      (
        records delimited by newline
        badfile admin_bad_dir:'empxt%a_%p.bad'
        logfile admin_log_dir:'empxt%a_%p.log'
        fields terminated by ','
        missing field values are null
        ( employee_id, first_name, last_name, job_id, manager_id,
          hire_date char date_format date mask "dd-mon-yyyy",
          salary, commission_pct, department_id, email
        )
      )
      LOCATION ('empxt1.dat', 'empxt2.dat')
    )
    PARALLEL
    REJECT LIMIT UNLIMITED;
```

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Loading Data from the Oracle Object Store

- Define your credentials for the object store
  - Oracle Cloud Infrastructure Object Store username and Swift password required
- Credential stored in the database schema once and used for accessing the object store for all loads

```
begin
  dbms_cloud.create_credential(
    credential_name => 'OBJ_STORE_CRED',
    username => 'tenant1',
    password => 'password'
  );
end;
/
```

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Loading Data from the Oracle Object Store

- Load data directly into the target table without any intermediate steps
- Data format in the source file easily specified as JSON

```
begin
 dbms_cloud.copy_data(
    table_name =>'CHANNELS',
    credential_name =>'OBJ_STORE_CRED',
    file_uri_list =>'https://swiftobjectstorage.us-ashburn-
1.oraclecloud.com/v1/dwcsdemo/DEMO_DATA/chan_v3.dat',
    format => json_object('ignoremissingcolumns' value 'true',
                          'removequotes' value 'true')
 );
end;
/
```

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Troubleshooting Loads

- Load operations logged for troubleshooting and historical load tracking
  - New table user/dba_load_operations
- Log and bad files accessible as tables

```
select table_name,status,rows_loaded,logfile_table,badfile_table
from user_load_operations;

TABLE_NAME           STATUS    ROWS_LOADED LOGFILE_TABLE     BADFILE_TABLE
-------------------- --------- ----------- ------------------- -------------------
CHANNELS             FAILED                COPY$1_LOG          COPY$1_BAD
CHANNELS             COMPLETED           5 COPY$2_LOG          COPY$2_BAD
```

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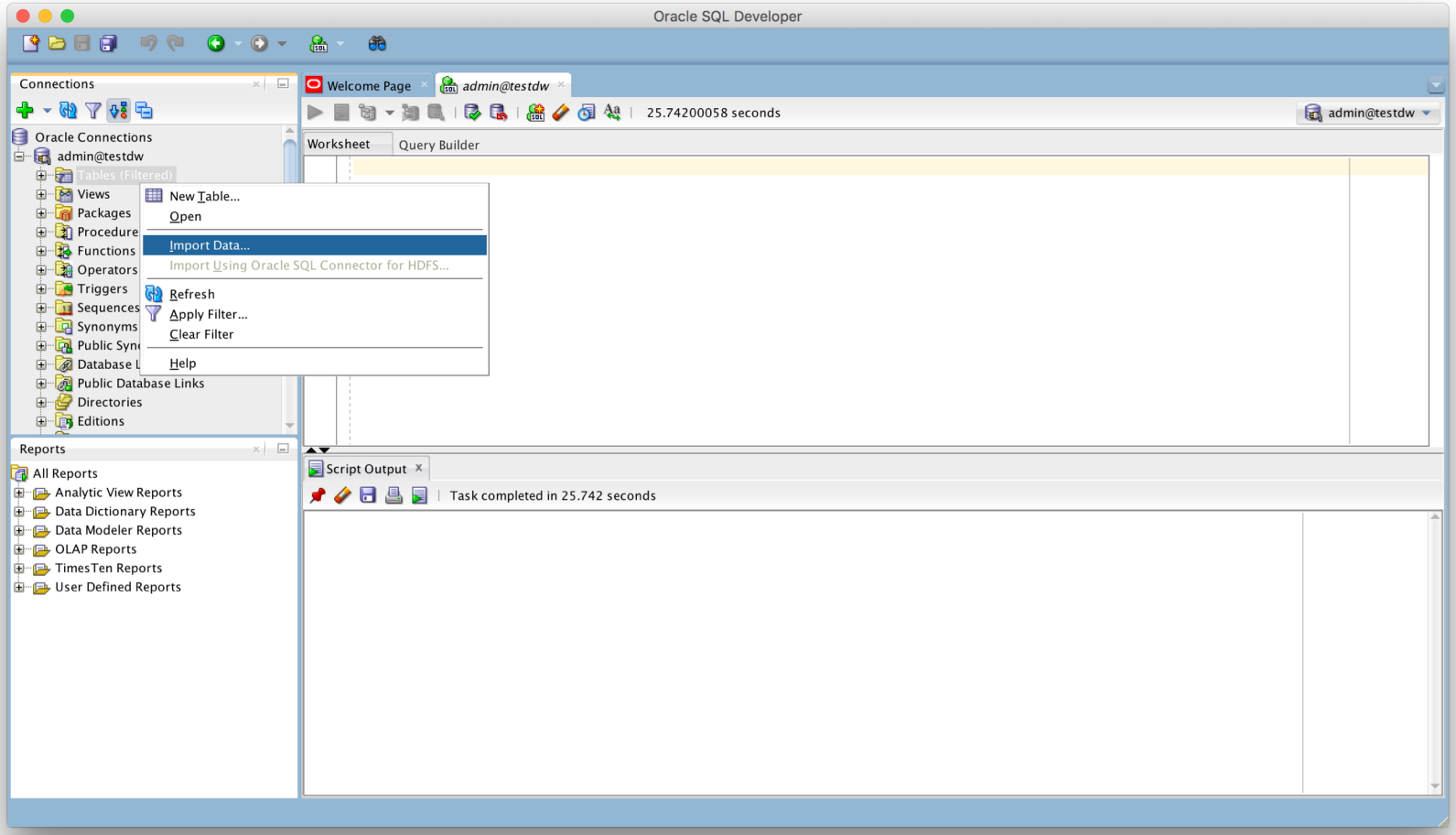
SQL Developer Import Wizard



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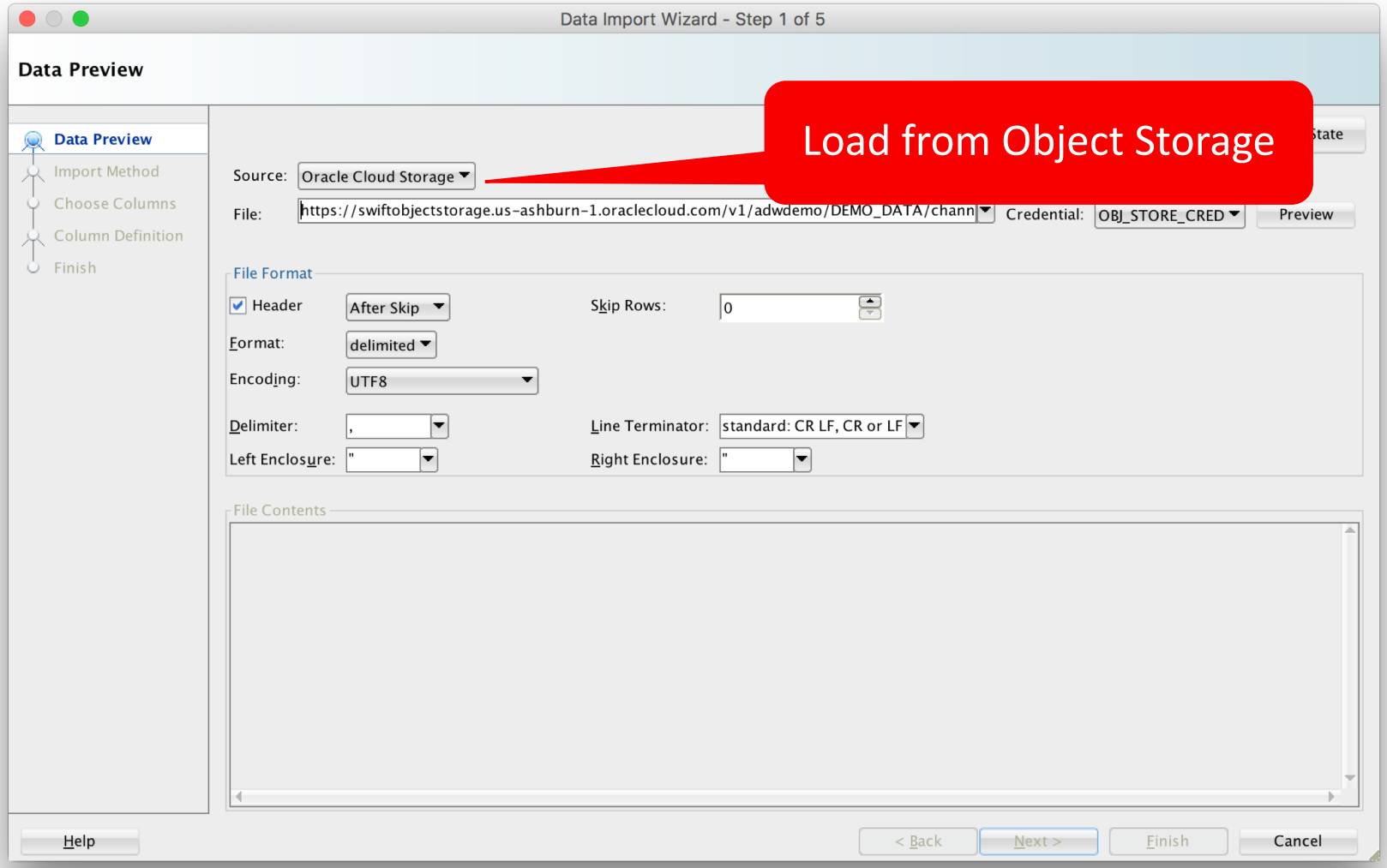
SQL Developer Import Wizard



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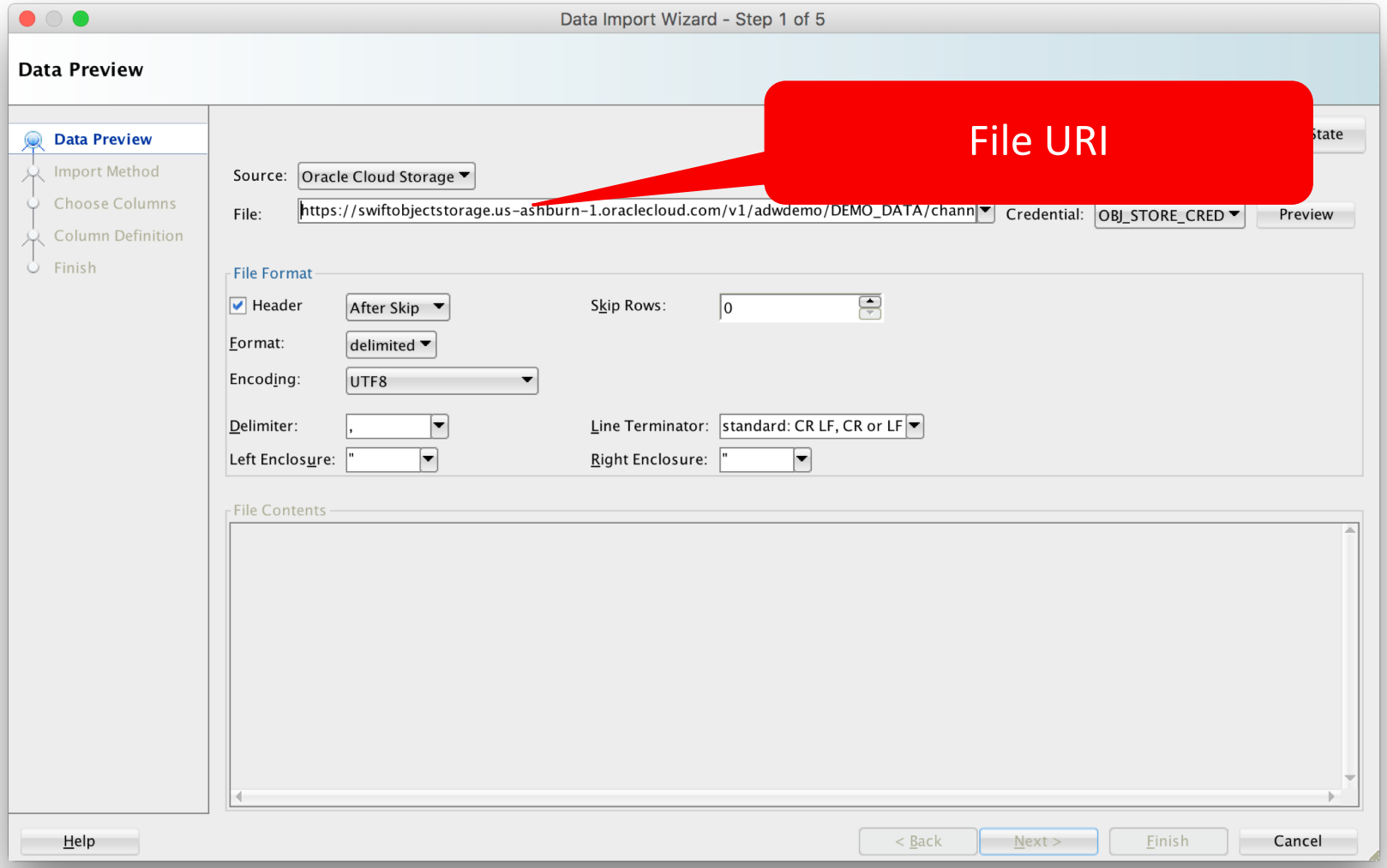
SQL Developer Import Wizard



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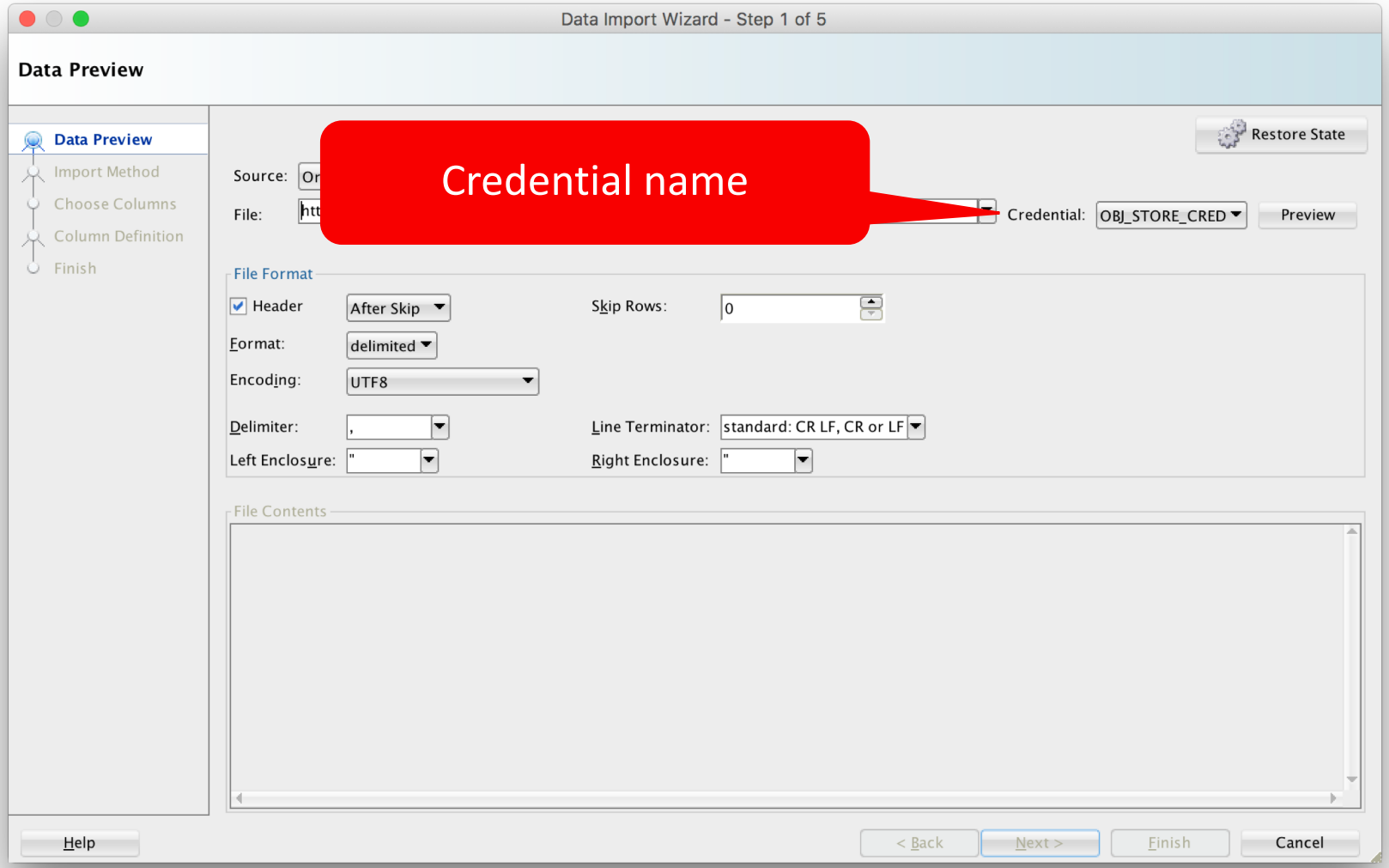
SQL Developer Import Wizard



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Supported by a rich Data Warehouse Ecosystem

Oracle Autonomous Data Warehouse supports:

- **Existing tools** running on-premise or in Oracle Cloud
  - Oracle BI and data-integration tools
  - 3rd party BI tools
  - 3rd party data-integration tools
- Connectivity via SQL*Net

Oracle Cloud Services

- Oracle Analytics Cloud
- Oracle Data Integration Platform Cloud
- and others…

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