Oracle Data Pump
Oracle Database 21c – What’s new in *Oracle Data Pump for Cloud*

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Why Data Pump Important for Autonomous Database?
It's the recommended way to migrate to ADW and ATP

What’s New in Data Pump 21c?

• Export dumpfiles into an object store for ADB
• Network Mode import into ATP Dedicated using DB Links
• Validate a dumpfile by checksum before using it
• Include and exclude objects in the same export or import operation
• Control index compression during import
Export Cloud Dumpfiles to Object Store
Export into object store from Autonomous Database & on-premises databases

- Export CREDENTIAL parameter specifies your object store authentication
- Export DUMPFILE parameter specifies the URL path to dumpfiles in the object store
- Example:
  ```
  expdp hr DEFAULT_DIRECTORY=dir1 DUMPFILE= https://objectstorage.us-ashburn-1.oraclecloud.com/n/namespace-string/b/bucketname/o/exp%u.dmp CREDENTIAL=user-credential schemas=schema_name, exclude=cluster, db_link parallel=# encryption_pwd_prompt=yes
  ```

- Details:
  - CREDENTIAL expects DUMPFILE list of URIs as a comma-delimited string
  - DEFAULT_DIRECTORY parameter specifies the location of the local log files
  - LOGFILE allows directory object names as part of the file names
- Documentation: Utilities Guide > Export CLI > CREDENTIAL & DUMPFILE
Import from OOS Dumpfiles to ADW, ATP-Shared, ATP-Dedicated
Differences in recommended parameters for ADB Services

Red text = ADW, ATP-Shared only parameters, Blue text = ATP-Dedicated only

- impdp admin/password@ADWC1_high
directory=data_pump_dir
credential=def_cred_name
dumpfile= https://objectstorage.us-ashburn-1.oraclecloud.com
/n/namespace-string/b/bucketname/o/export%u.dmp
parallel=16
encryption_pwd_prompt=yes
transform=segment_attributes:n
transform=dwcs_cvt_iots:y
transform=constraint_use_default_index:y
exclude=cluster,indextype,db_link
nologfile=yes

Documentation ADW, ATP-Shared, ATP-Dedicated
DEMO: Export to the Oracle Object Store
Import into ATP-Dedicated using Network Mode import
Oracle Database 19c capability

- Export and import in one step w/o referencing the object store and dumpfiles
- Format:

  `impdp user/pwd@host_name:port_#/service_name`
  `    schema=schema_name`
  `    network_link=link_name`
  `    parallel=#`
  `    transform=segment_attributes:n`
  `    exclude=cluster`
  `    nologfile=yes`

Documentation ATP-Dedicated
DEMO: Network Mode import into Oracle ATP-D
21c Validate a Dumpfile with a Checksum
Confirm dumpfile is valid after an object store transfer and has no malicious changes

- **Export** `CHECKSUM & CHECKSUM_ALGORITHM` parameters generate SHA or CRC
- **Import** `VERIFY_CHECKSUM` parameter uses the checksum to validate dumpfile(s)
- **Example:**
  
  ```sql
  expdp hr DIRECTORY=dpump_dir1 DUMPFILE=hr.dmp CHECKSUM_ALGORITHM=SHA384
  impdp hr DIRECTORY=dpump_dir1 DUMPFILE=hr.dmp VERIFY_CHECKSUM=YES
  ```

- **Details:**
  - `CHECKSUM_ALGORITHM = [CRC32|SHA256|SHA384|SHA512]`
  - If only `CHECKSUM=YES` is specified then `CHECKSUM_ALGORITHM = SHA256`
  - Must have `COMPATIBLE = 21.0` or higher
  - `VERIFY_CHECKSUM` and `VERIFY_ONLY` parameters are mutually exclusive
- **Documentation:** Utilities Guide > Export / Import CLI >
21c Include & Exclude objects in Same Job
Easier to migrate to Oracle Cloud / on-premises by being more specific

- Include and exclude objects within the same export or import job
- Example:

  expdp hr DIRECTORY=dpump_dir1 DUMPFILE=exp%u.dmp SCHEMAS=hr,oe
  include=table exclude=statistics

- Details:
  - **INCLUDE** parameter processed first, include all objects identified by the parameter
  - **EXCLUDE** parameter(s) processed next. It removes any objects in the list of include objects

- Documentation: Utilities Guide > Import CLI >
21c Control Import Index Compression

Take control of index compression on import and specify index compression for ADB

- Compress indexes during import with `INDEX_COMPRESSION_CLAUSE` transform
- Example:

```
impdp hr DIRECTORY=dpump_dir1 DUMPFILE=hr.dmp SCHEMAS=hr
TRANSFORM=INDEX_COMPRESSION_CLAUSE:COMPRESS ADVANCED LOW;
```

- Details:
  - `INDEX_COMPRESSION_CLAUSE` [NONE | compression_clause]

- Documentation: Utilities Guide > Import CLI >
What’s New in Oracle Data Pump 21c for Enterprise DBs?
More performance and ease of use

- Parallelize TTS metadata operations for VLDB
- Resume stopped transportable tablespace jobs
- Export and import native JSON datatype
What’s New in Oracle SQL*Loader 21c
More performance and ease of use

- Load JSON data into the native datatype in Oracle Database
- Load from the object store with user-defined credentials
Review: What’s New in Data Pump 19c?

- Suppress Encrypted Columns Clause
- Set Max Data Pump Jobs & Parallelism
- Explicitly Enable Authenticated Roles
- Use Any Object Store Credentials
- Wildcards in Object Store Dumpfile Name
- Transportable Tablespaces Test Mode
- Transportable Tablespaces Import Read-Only Tablespaces
Thank you!

Visit Oracle LiveLabs (https://livelabs.oracle.com) for hands-on workshops to learn more about Oracle Database 21c.