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NEW DATA PUMP FEATURES IN ORACLE DATABASE 11G

Data Pump delivers several new features in Oracle Database 11g, including major new capabilities such as dump file encryption and data compression. This paper describes these and other new features of Data Pump.

Enhanced Compression

The ability to compress the metadata associated with a Data Pump job is provided in Oracle Database 10g Release 2. In Oracle Database 11g, this compression capability has been extended so that you can now compress table data on export. Data Pump compression is an inline operation, so the reduced dump file size means a significant savings in disk space. Unlike operating system or file system compression utilities, Data Pump compression is fully inline on the import side as well, so there is no need to uncompress a dump file before importing it.

In the following compression example from the Oracle sample database, the oe and sh schemas were exported while simultaneously compressing all data and metadata. The dump file size was reduced by 74.67%.

Three versions of the gzip (GNU zip) utility and one UNIX compress utility were used to compress the 6.0 MB dump file set. The reduction in dump file size was comparable to Data Pump compression. Note that your reduction in dump file size will vary based on data types and other factors.

Compression Method	Dump File Size	Reduction %
Expdp schemas=oe,sh Compression=none	6.0 MB	N/A
Expdp schemas=oe,sh Compression=all	1.5 MB	74.67%
gzip -cv1 oesh.dmp	1.1 MB	82.7%
gzip -cv6 oesh.cmp	835 KB	86.2%
gzip -cv9 oesh.dmp	818 KB	86.5%
UNIX compress Oesh.dmp	1.6 MB	74.24%

You get full Data Pump functionality using a compressed file. Any command that you would use on a regular file will also work on a compressed file.

The compression parameter is part of the new Advanced Compression Option and requires Oracle Enterprise Edition.

New Encryption Options

Oracle Database 10g R2 supports the encrypted column functionality of the database by ensuring that encrypted columns are handled securely throughout export and import operations. In Oracle Database 11g, Data Pump supplies more encryption options for more flexible and robust security.

The most important new encryption feature for Data Pump is the ability to encrypt dump file sets. You can select encryption for the data, the metadata, or the entire dump file as your needs require.

You can also specify the type of security to use during an export. If Transparent Data Encryption is installed, then transparent encryption employing the Oracle Wallet can be used. If you are moving sensitive data to a system that does not share wallet information with the source database, then password-based encryption might be a better choice. Or, if you want to use both password-based encryption and transparent data encryption, then dual mode is available. All of these encryption modes can be used in combination with dump file compression if you desire.

Encryption is part of the Advanced Security Option and requires Oracle Enterprise Edition.

OTHER NEW FEATURES

Data Transforms

This feature allows you to remap data during export or import. There may be a need to obscure data as it is being moved from a production system to a test system so that unauthorized users do not see the data, but the essential processing characteristics of the data are preserved. For example, you may have a column of customer credit card

numbers that needs to remain secure, but for test purposes would still need to retain a particular format and range of values. During export, you can replace the actual data from the source database with numbers generated by a user-defined remap function. The data retains its essential characteristics without exposing the credit card numbers to unauthorized users.

The remap feature can also be used to remap data as it is being inserted into a new database during import. This can be useful to avoid collision of unique values such as sequences when merging data from multiple sources.

XML Support

XML schemas and XMLType columns are now supported for both export and import.

Single Partition Transportable Tablespace

You can now export one or more partitions of a table without having to move the entire table. On import, you can choose to load partitions as is, merge them into a single table, or promote each into a separate table.

Dynamic Restart of Workers

If a worker process hits a fatal error, such as a process being manually shut down, then the worker will be restarted a number of times in an attempt to continue processing.

Re-use Dump Files

You would normally get a fatal error during a Data Pump export if you specify dump files that already exist. This feature allows you to overwrite existing dump files during an export operation.

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