

DBMS_HS_PARALLEL

The `DBMS_HS_PARALLEL` PL/SQL package enables parallel processing for heterogeneous targets access. This package is designed to improve performance when retrieving data from a large foreign table.

This chapter discusses the following topics:

- [Using DBMS_HS_PARALLEL](#)
- [Summary of DBMS_HS_PARALLEL Subprograms](#)

Using the DBMS_HS_PARALLEL Subprogram

`DBMS_HS_PARALLEL` is compiled with the authorization ID of `CURRENT_USER`, which uses invoker's rights. In other words, all procedures in this package are executed with the privileges of the calling user.

Summary of DBMS_HS_PARALLEL Subprograms

This table lists the `DBMS_HS_PARALLEL` subprograms in alphabetic order and briefly describes them.

Table 100-1 DBMS_HS_PARALLEL Package Subprograms

Subprogram	Description
CREATE_OR_REPLACE_VIEW	Creates (or replaces) a read-only view to be referenced for retrieving the data from a remote table in parallel.
CREATE_TABLE_TEMPLATE	Writes out a <code>CREATE TABLE</code> template based on information gathered from the remote table. You can use the information to add any optimal Oracle <code>CREATE TABLE</code> clauses.
DROP_VIEW	Drops the view and internal objects created by the <code>CREATE_OR_REPLACE_VIEW</code> procedure. If the view has not already been created by the <code>CREATE_OR_REPLACE_VIEW</code> procedure, an error message is returned.
LOAD_TABLE	Loads the data from a remote table to a local Oracle table in parallel. If the local Oracle table does not already exist, it is created automatically.

CREATE_OR_REPLACE_VIEW Procedure

This procedure creates (or replaces) a read-only view to be referenced for retrieving the data from a remote table in parallel.

Syntax

```
CREATE_OR_REPLACE_VIEW (remote_table, database_link, oracle_view, parallel_degree)
```

Parameters

Table 100-2 CREATE_OR_REPLACE_VIEW Procedure Parameters

Parameters	Description
<code>remote_table</code>	The name of the remote database table. It is specified as <code>[remote_schema_name.]remote_table_name</code> .
<code>database_link</code>	The remote database link name. The call can only be applied to a heterogeneous services database link.
<code>oracle_view</code>	The name of the Oracle view. It is specified as <code>[schema_name.]oracle_view_name</code> . The default schema name is the current user. If the <code>oracle_view</code> parameter is not specified, the remote table name will be used as the view name.
<code>parallel_degree</code>	The number of parallel processes for the operation is computed based on the range-partition number if applicable, or the number of CPUs. The range of values is 2 to 16.

Usage Notes

- The specified Oracle view is created and future reference of this view utilizes internal database objects for parallel retrieval of remote non-Oracle table data. If the Oracle view already exists, the following Oracle error message is raised:
ORA-00955: name is already used by an existing object
- This view is created as a read-only view. If you attempt to insert and update the view, the following Oracle error message is raised:
ORA-01733: virtual column not allowed here
- If the remote table or the database link does not exist, one of the following Oracle error messages is raised:
ORA-00942: table or view does not exist
or
ORA-02019: connection description for remote database not found
- You need the `CREATE VIEW`, `CREATE TABLE`, `CREATE TYPE`, `CREATE PACKAGE`, and `CREATE FUNCTION` privileges to execute the `CREATE_OR_REPLACE_VIEW` procedure.
- If you encounter either of the following Oracle error messages, increase the `PROCESSES` and `SESSIONS` parameter in the Oracle initialization parameter file:
ORA-12801: error signaled in parallel query server P003
or
ORA-00018: maximum number of session exceeded
- Because the `CREATE_OR_REPLACE_VIEW` procedure creates some internal objects, use the `DROP_VIEW` procedure to drop the view and the internal objects. The `SQL DROP VIEW` statement only drops the view and not the internal objects.

CREATE_TABLE_TEMPLATE Procedure

This procedure writes out a `CREATE TABLE` template based on information gathered from the remote table. You can use the information to add any optimal Oracle `CREATE TABLE` clauses.

Syntax

```
CREATE_TABLE_TEMPLATE (remote_table, database_link, oracle_table,
create_table_template_string)
```

Parameters

Table 100-3 CREATE_TABLE_TEMPLATE Procedure Parameters

Parameter	Description
<code>remote_table</code>	The name of the remote database table. It is specified as <code>[remote_schema_name.]remote_table_name</code> .
<code>database_link</code>	The remote database link name. The call can only be applied to a heterogeneous services database link.
<code>oracle_table</code>	The name of the local Oracle table the data will be loaded into. It is specified as <code>[schema_name.]oracle_table_name</code> . The default schema name is the current user. If the <code>oracle_table</code> parameter is not specified, the remote table name will be used as the local Oracle name.
<code>create_table_template_string</code>	Contains the Oracle <code>CREATE TABLE</code> SQL template when the procedure is returned.

DROP_VIEW Procedure

This procedure drops the view and internal objects created by the `CREATE_OR_REPLACE_VIEW` procedure. If the view has not already been created by the `CREATE_OR_REPLACE_VIEW` procedure, an error message is returned.

Syntax

```
DROP_VIEW (oracle_view)
```

Parameters

Table 100-4 DROP_VIEW Procedure Parameter

Parameter	Description
<code>oracle_view</code>	The name of the Oracle view created by the <code>CREATE_OR_REPLACE_VIEW</code> procedure. If the view has not been created by the <code>CREATE_OR_REPLACE_VIEW</code> procedure, an error is returned.

LOAD_TABLE Procedure

This procedure loads the data from a remote table to a local Oracle table in parallel. If the local Oracle table does not already exist, it is created automatically.

Syntax

```
LOAD_TABLE (remote_table, database_link, oracle_table, truncate, parallel_degree,
row_count)
```

Parameters

Table 100-5 LOAD_TABLE Procedure Parameters

Parameter	Description
remote_table	The name of the remote database table. It is specified as [remote_schema_name.]remote_table_name
database_link	The remote database link name. The call can only be applied to a heterogeneous services database link.
oracle_table	The name of the local Oracle table the data will be loaded into. It is specified as [schema_name.]oracle_table_name. The default schema name is the current user. If the oracle_table parameter is not specified, the remote table name will be used as the local Oracle name.
truncate	Determines whether the Oracle table is truncated before the data is loaded. The value is either TRUE or FALSE. The default value is TRUE which means the Oracle table is truncated first. When set to FALSE, the Oracle table will not be truncated before the data is loaded.
parallel_degree	The number of parallel processes for the operation is computed based on the range-partition number if applicable, or the number of CPUs. The range of values is 2 to 16.
row_count	Contains the number of rows just added with the load table operation.

Usage Notes

- This procedure only loads the remote table data into Oracle local table. It does not create a key, index, constraints or any other dependencies such as triggers. It is recommended that you create these dependencies after the table data is loaded as performance will improve greatly. You will need to decide whether to create the dependencies before or after the data is loaded based on your knowledge of the remote table data and dependencies.
- If the local table does not exist, the `LOAD_TABLE` procedure creates a simple (non-partitioned) local table based on the exact column matching of the remote table after which the data is inserted into the local table.
- If the remote table or the database link does not exist, an error message is returned.
- If the local table is incompatible with the remote table, an error message is returned.
- You need the `CREATE TABLE`, `CREATE TYPE`, `CREATE PACKAGE`, and `CREATE FUNCTION` privileges to execute the `LOAD_TABLE` procedure.

- If you encounter either of the following Oracle error messages, increase the `PROCESSES` and `SESSIONS` parameter in Oracle initialization parameter file:

ORA-12801: error signaled in parallel query server P003
or
ORA-00018: maximum number of session exceeded
- One of the following is required for parallel processing:
 - The remote table is range partitioned.
 - Histogram information for a numeric column is available.
 - There is a numeric index or primary key.
- To drop the local table, use the `DROP TABLE` SQL statement.