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DBMS_ILM_ADMIN

The `DBMS_ILM_ADMIN` package provides an interface to customize Automatic Data Optimization (ADO) policy execution. In combination with partitioning and compression, ADO policies can be used to help implement an Information Lifecycle Management (ILM) strategy.

This chapter contains the following topics:

> **See Also:**
>
> - *Oracle Database VLDB and Partitioning Guide* for information about managing Automatic Data Optimization (ADO) with this package
> - DBMS_ILM
> - DBMS_HEAT_MAP

DBMS_ILM_ADMIN Overview

To implement your ILM strategy, you can use Heat Map in Oracle Database to track data access and modification. You can also use Automatic Data Optimization (ADO) to automate the compression and movement of data between different tiers of storage within the database.

DBMS_ILM_ADMIN Security Model

This package runs under definer's rights. The user requires DBA privileges.

DBMS_ILM_ADMIN Constants

The table in this topic describes constants used by the `DBMS_ILM_ADMIN` package.

The value column refers to the numeric or character value that the constants resolve to.

Table 104-1 DBMS_ILM_ADMIN Constants

Constant	Value	Type	Description
ABS_JOBLIMIT	12	NUMBER	Specifies the absolute number of concurrent ILM ADO jobs.

Table 104-1 (Cont.) DBMS_ILM_ADMIN Constants

Constant	Value	Type	Description
DEG_PARALLEL	10	NUMBER	Decides the degree of parallelism to be used for ADO jobs
ENABLED	7	NUMBER	Provides a way to turn background ADO off or on
EXECUTION_INTERVAL	1	NUMBER	Determines the frequency with which ADO background evaluation occurs. Specified in minutes.
EXECUTION_MODE	4	NUMBER	Controls whether ADO execution is online, offline. The value for this parameter should either be DBMS_ILM_ADMIN.ILM_EXECUTION_OFFLINE or DBMS_ILM_ADMIN.ILM_EXECUTION_ONLINE.
HEAT_MAP_SEG_LOOKUP	8	NUMBER	Index scan done
HEAT_MAP_SEG_READ	1	NUMBER	Segment read done
HEAT_MAP_SEG_SCAN	4	NUMBER	Full table scan done
HEAT_MAP_SEG_WRITE	2	NUMBER	Segment write done
JOB_SIZELIMIT	13	NUMBER	Specifies the size (in megabytes) of the data that is processed by a single ILM ADO row level compression job.
JOBLIMIT	5	NUMBER	Controls the upper limit on number of ILM ADO jobs at any time. The maximum number of concurrent ADO jobs is JOBLIMIT*(number of instances)*(number of CPUs per instance).
POLICY_TIME	11	NUMBER	Decides if ADO policies are treated as though they are specified in seconds rather than days. Can take value ILM_POLICY_IN_SECONDS (treat policy time in seconds) or ILM_POLICY_IN_DAYS (treat policy time in days - default).
RETENTION_TIME	2	NUMBER	Controls the amount of time ADO history should be maintained. Specified in days.
TBS_PERCENT_FREE	9	NUMBER	Decides the targeted tablespace storage through ADO actions as a percentage of tablespace quota.
TBS_PERCENT_USED	8	NUMBER	Decides when a tablespace is considered full. Specified as a percentage of tablespace quota.

The DBMS_ILM_ADMIN package uses the constants as parameter values shown in Table 104-2.

Table 104-2 DBMS_ILM_ADMIN Constants Used as Parameter Values

Constant	Value	Type	Description
AUTO_OPTIMIZE_ENABLED	15	NUMBER	Indicates whether automatic storage compression is enabled.

Table 104-2 (Cont.) DBMS_ILM_ADMIN Constants Used as Parameter Values

Constant	Value	Type	Description
AUTO_OPTIMIZE_INACTIVITY_THRESHOLD	14	NUMBER	The period of inactivity that will determine that there are no modifications. This can be specified using DBMS_ILM_ADMIN.CUSTOMIZE_ILM. The default value is 1440 minutes, which is 1 day.
ILM_DISABLED	2	NUMBER	Indicates automatic ADO policy evaluation and execution is disabled
ILM_ENABLED	1	NUMBER	Indicates automatic ADO policy evaluation and execution is enabled
ILM_EXECUTION_OFFLINE	1	NUMBER	Specifies that the object may be offline while ADO action is performed.
ILM_EXECUTION_ONLINE	2	NUMBER	Specifies that the object should be online while ADO action is performed
ILM_POLICY_IN_DAYS	0	NUMBER	Indicates policy is specified in days. This is the default.

Table 104-2 (Cont.) DBMS_ILM_ADMIN Constants Used as Parameter Values

Constant	Value	Type	Description
ILM_POLICY_IN_SECONDS	1	NUMBER	Indicates policy unit is changed from days to seconds. This could be used to test ADO policy evaluation quickly instead of waiting for the policy duration.

Note:

- Setting ILM_POLICY_IN_SECONDS does not compress the blocks within the specified seconds.
- Setting ILM_POLICY_IN_SECONDS is for test ADO and should not be set in the production environment.

Summary of DBMS_ILM_ADMIN Subprograms

This table lists and briefly describes the DBMS_ILM_ADMIN package subprograms.

Table 104-3 DBMS_ILM_ADMIN Package Subprograms

Subprogram	Description
CLEAR_HEAT_MAP_ALL Procedure	Deletes all rows except the dummy row
CLEAR_HEAT_MAP_TABLE Procedure	Clears all or some statistics for the heat map table, deleting rows for a given table or segment which match a given pattern, or all such rows
CUSTOMIZE_ILM Procedure	Customizes environment for ILM execution by specifying the values for ILM execution related parameters
DISABLE_ILM Procedure	Turns off all background ILM scheduling
ENABLE_AUTO_OPTIMIZE Procedure	Enables Auto Compression for all Hybrid Columnar Compression objects in the PDB.
ENABLE_ILM Procedure	Turns on all background ILM scheduling
IGNORE_AUTO_OPTIMIZE_CRITERIA Procedure	Ignores the inactivity threshold so that uncompressed loads will be eligible for background auto optimization immediately.
SET_HEAT_MAP_ALL Procedure	Updates or inserts heat map rows for all tables
SET_HEAT_MAP_START Procedure	Sets the start date for collecting heat map data
SET_HEAT_MAP_TABLE Procedure	Updates or inserts a row for the specified table or segment

CLEAR_HEAT_MAP_ALL Procedure

This procedure deletes all rows in `HEAT_MAP_STAT$` except the dummy row.

Syntax

```
DBMS_ILM_ADMIN.CLEAR_HEAT_MAP_ALL;
```

CLEAR_HEAT_MAP_TABLE Procedure

This procedure clears all or some statistics for the heat map table, deleting rows for a given table or segment which match a given pattern, or all such rows.

Syntax

```
DBMS_ILM_ADMIN.CLEAR_HEAT_MAP_TABLE  (
   owner                  IN  VARCHAR2,
   tablename              IN  VARCHAR2,
   partition              IN  VARCHAR2 default '',
   access_date            IN  DATE DEFAULT NULL,
   segment_access_summary IN  NUMBER DEFAULT NULL);
```

Parameters

Table 104-4 *CLEAR_HEAT_MAP_TABLE Procedure Parameters*

Parameter	Description
`owner`	Table owner
`tablename`	Table name

Table 104-4 (Cont.) *CLEAR_HEAT_MAP_TABLE Procedure Parameters*

Parameter	Description
partition	Name of the subobject, defaults to NULL
access_date	Date for the entry in HEAT_MAP_STAT$ to be removed
segment_access_summary	Summary of segment access constants indicating access operations performed on the segment

CUSTOMIZE_ILM Procedure

This procedure customizes environment for ILM execution by specifying the values for ILM execution related parameters. These values take effect for the next background scheduling.

Syntax

```
DBMS_ILM_ADMIN.CUSTOMIZE_ILM  (
   parameter            IN       NUMBER,
   value                IN       NUMBER);
```

Parameters

Table 104-5 *CUSTOMIZE_ILM Procedure Parameters*

Parameter	Description
parameter	One of the parameter constants defined in DBMS_ILM_ADMIN package
value	Value of parameter

DISABLE_AUTO_OPTIMIZE Procedure

Disables Auto Compression for all Hybrid Columnar Compression objects in the PDB.

Syntax

After you issue enable_auto_optimize, auto compression will be enabled. New direct loads will be in an uncompressed format and the data will be compressed gradually in the background. For example, after five direct loads the user issues disable_auto_optimize. If the background auto compression task was only able to compress three of them (because of autotask time constraints, data not yet cold, etc.), the remaining two will be in an uncompressed format. The data from these two uncompressed loads will be compressed in the background even after the user issues disable_auto_optimize, but new direct loads will now be compressed.

```
DBMS_ILM_ADMIN.DISABLE_AUTO_OPTIMIZE;
```

DISABLE_ILM Procedure

This procedure turns off all background ILM scheduling.

Syntax

```
DBMS_ILM_ADMIN.DISABLE_ILM;
```

ENABLE_AUTO_OPTIMIZE Procedure

Enables Auto Compression for all Hybrid Columnar Compression objects in the PDB.

When Auto Compression is enabled, direct loads into a Hybrid Columnar Compression (HCC) object would use the uncompressed format to achieve faster loads. The system will then wait until there are no modifications to the newly loaded data, for the duration of the specified inactivity threshold. At that point, the data from the uncompressed direct load will be gradually HCC compressed using a background Auto Compression task.

Syntax

```
DBMS_ILM_ADMIN.ENABLE_AUTO_OPTIMIZE;
```

ENABLE_ILM Procedure

This procedure turns on all background ILM scheduling.

Syntax

```
DBMS_ILM_ADMIN.ENABLE_ILM;
```

IGNORE_AUTO_OPTIMIZE_CRITERIA Procedure

Ignores the inactivity threshold so that uncompressed loads will be eligible for background auto optimization immediately.

Syntax

```
DBMS_ILM_ADMIN.IGNORE_AUTO_OPTIMIZE_CRITERIA;
```

SET_HEAT_MAP_ALL Procedure

This procedure sets an HTTP request header. The request header is sent to the Web server as soon as it is set.

Syntax

```
DBMS_ILM_ADMIN.SET_HEAT_MAP_ALL  (
   access_date            IN DATE,
   segment_access_summary IN NUMBER);
```

Parameters

Table 104-6 *SET_HEAT_MAP_ALL Procedure Parameters*

Parameter	Description
access_date	Date for the entry in HEAT_MAP_STAT$ to be added
segment_access_summary	Summary of segment access constants indicating access operations performed on the segment

SET_HEAT_MAP_START Procedure

This procedure sets the start date for collecting heat map data.

Syntax

```
DBMS_ILM_ADMIN.SET_HEAT_MAP_START  (
   start_date  IN   DATE);
```

Parameters

Table 104-7 *SET_HEAT_MAP_START Procedure Parameters*

Parameter	Description
start_date	Indicates the new date from which all statistics are valid

SET_HEAT_MAP_TABLE Procedure

This procedure updates or inserts a row for the specified table or segment.

Syntax

```
DBMS_ILM_ADMIN.SET_HEAT_MAP_TABLE  (
   owner                  IN VARCHAR2,
   tablename              IN VARCHAR2,
   partition              IN VARCHAR2 DEFAULT '',
   access_date            IN DATE DEFAULT NULL,
   segment_access_summary IN NUMBER DEFAULT NULL);
```

Parameters

Table 104-8 *SET_HEAT_MAP_TABLE Procedure Parameters*

Parameter	Description
owner	Table owner
tablename	Table name
partition	Name of the subobject, defaults to NULL
access_date	Date for the entry in HEAT_MAP_STAT$ to be added
segment_access_summary	Summary of segment access constants indicating access operations performed on the segment