Oracle Data Dictionary
Pocket Reference

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Oracle Data Dictionary Pocket Reference

The Oracle data dictionary is a collection of tables and related views containing detailed information on every aspect of the Oracle database. By querying these tables and views, DBAs and developers can obtain information about the inner workings of the database.

This quick reference pulls together information on the 400 most commonly used Oracle data dictionary tables and views, along with column specification listings, usage and performance tips, and sample queries. You’ll find information on both static data dictionary views (providing database information that is updated whenever Oracle processes a DDL statement) and dynamic performance views (V$ views, providing information about the memory structures associated with the active instance).

The book covers dictionary contents in a variety of functional areas, including tables, indexes on tables, constraints on columns, jobs in the queue, security and auditing, database locks, log groups, networking and distributed transactions, partitioning, replication, Multi-Threaded Server/Shared Server, Parallel Query, Advanced Queuing, and much more.

Whether you’re a novice Oracle developer or an experienced DBA, you’ll find this concise reference an indispensable and portable addition to your library.
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Chapter 1
Oracle Data Dictionary Pocket Reference

Introduction
The Oracle Data Dictionary Pocket Reference is a quick reference guide to the Oracle data dictionary. This guide pulls together information on the tables and views most commonly used by Oracle database administrators and developers, along with column specification listings and usage and performance tips. Given the small size of this pocket reference, this book obviously cannot serve as a complete reference to the use of the Oracle data dictionary. For more detailed information, refer to the Oracle documentation for your release. This book reflects the data dictionary contents as of Oracle9i Release 2.

Acknowledgments
Many thanks to those who helped in the preparation of this book. In particular, thanks to Jonathan Gennick who provided a technical review of the draft. I also appreciate all the good work of the O’Reilly crew in editing and producing this book. And, of course, thanks to Debby Russell for keeping this book on the fast track.

Conventions
UPPERCASE
Indicates a SQL keyword when used in a query.
lowercase
Indicates a table, view, or column name in a query. (In query results, Oracle displays columns in uppercase.)

Italic
Indicates user-defined items such as filenames.

Constant width
Indicates code examples and output.

# When used in a column listing, indicates that the column has a NOT NULL constraint (which means the column cannot contain a NULL value). Because of space constraints (many column names are very long), we have omitted the NOT NULL display from the column listings. For example, in the TABLESPACES view, the column BLOCK_SIZE has a NOT NULL constraint associated with it and thus is displayed as:

```
BLOCK_SIZE                  #NUMBER
```

What Is the Data Dictionary?

The Oracle data dictionary is a collection of tables and related views that enable you to see the inner workings and structure of the Oracle database. By querying these tables and views, you can obtain information about every object and every user of the database. All of the Oracle monitoring tools look at the information available in the data dictionary and present it in an easy-to-use format.

Traditionally, the data dictionary has consisted of a series of views owned by the SYS user. These views, known as static data dictionary views, present information contained in tables that are updated when Oracle processes a Data Definition Language (DDL) statement. The SYS tables and views, as well as a set of public synonyms for the views, are created by the catalog.sql script. However, the installation of some Oracle features creates tables and views in the SYSTEM schema. In general, tables and views owned by SYSTEM

```
exist to support functionality provided by PL/SQL stored procedures rather than fundamental Oracle functionality.

There is a second set of views known as dynamic data dictionary views or dynamic performance views, and commonly referred to as V$ views. These V$ views are based on a set of internal memory structures maintained by Oracle as virtual tables (which all begin with an “X$” prefix). Just as the static data dictionary views provide information about the database, the V$ views (and underlying X$ tables) provide information about the active instance.

Sample Queries in This Book

In describing many of the data dictionary views in this book, I’ve included examples of sample SQL queries that you might issue to examine or use the view. Because this code is provided only to illustrate a concept or technique, I haven’t taken pains to provide queries that will return output that is easily readable or neatly formatted. For example, I’ve included the following query with the description of V$SYSTEM_PARAMETER:

```sql
SELECT name, value
FROM v$system parameter
WHERE isdefault = 'FALSE';
```

In reality, because name is defined as VARCHAR2(64) and value is defined as VARCHAR2(512), an experienced SQL programmer might instead write this query as:

```sql
SELECT substr(name,1,33), substr(value,1,45)
FROM v$system parameter
WHERE isdefault = 'FALSE';
```
or alternatively might use the COLUMN command from SQL*Plus as follows:

```sql
COLUMN name FORMAT A33
COLUMN value FORMAT A45
SELECT name, value
FROM v$system parameter
WHERE isdefault = 'FALSE';
```
In this case, the query would return a line of 80 characters per row, which would be short enough to be readable on the screen. Of course, some of the information might be truncated if it is longer than the substrings defined! In any event, these short examples are simply intended to show general usage. You may need to adjust them slightly for your situation.

**Static Data Dictionary Views**

While new views are added with every version of Oracle, the static data dictionary views have existed in their current format since Oracle Version 6. These views, which are owned by SYS and built upon tables owned by SYS, provide the ability to access information about database objects.

**Categories of Views**

Most of the static data dictionary is constructed in a matrix fashion. The first way to categorize data dictionary views is by the breadth of information they cover. Views can be divided into three groups:

**USER_views**

Views that allow you to see objects you own. These view names begin with USER_, as in USER_TABLES and USER_INDEXES.

**ALL_views**

Views that allow you to see objects that you own or that you have been granted privileges to access. These view names begin with ALL_, as in ALL_TABLES and ALL_INDEXES.

**DBA_views**

Views that allow you to see all objects in the database, regardless of ownership. Primarily, these views are for use by the DBA, and they begin with DBA_, as in DBA_TABLES and DBA_INDEXES.
There are also a handful of other views that provide information of general interest about the database.

The ALL_ views have the same structure as the DBA_ views. The USER_ views have the same structure as the DBA_ views except that they do not include the OWNER column. The views that exist in multiple forms (i.e., ALL_, DBA_, USER_) are listed in this book in the form *_viewname. So, for example, there are three *_TABLES views:

- ALL_TABLES
- DBA_TABLES
- USER_TABLES

In the following sections, I’ll note when a particular view does not support all three varieties. Some views have only one form or do not follow this naming pattern, and those are listed without the wildcard character (*). Examples include DBA_IND_EXPRESSIONS and DICT_COLUMNS.

The second way to categorize data dictionary views is by content. Many of the USER_, ALL_, and DBA_ views are grouped in families, or functional categories, often according to how their view names end (e.g., TABLES, COLUMNS, and so on). Groups of views provide information about particular Oracle topics. Because related views in a particular category are sometimes used together, I’ve grouped them in the following way:

- Change Data Capture
- Constraints
- Data dictionary
- Indexes
- Jobs and Advanced Queuing
- Locks
- Log groups
- Materialized views
- Networking and distributed transactions
- Objects Option
- Partitioning
Programming and PL/SQL
Replication
Security and auditing
Server information
SQLJ
Storage
Tables, columns, and views

Within each category, views are listed alphabetically.

NOTE
If you cannot immediately find a particular data dictionary view you are searching for, check for the name in the book’s index.

Commonly Used Static
Data Dictionary Views

The following sections summarize the purpose and columns available in most of Oracle’s static data dictionary views. There are more static views than can possibly fit in this compact book, so I’ve included those most commonly used by DBAs and developers. Many views are rather obscure and rarely used; I’m confident that you will find all of the views you are likely to actually use in these pages.

Change Data Capture

Oracle9i introduces a feature known as Change Data Capture, used primarily in data warehouses, which allows a user to create a set of change tables that can be used to publish changes to a set of underlying tables:

* _SOURCE_TAB_COLUMNS
Lists the columns in the source tables that are contained in change tables.

<table>
<thead>
<tr>
<th>COLUMN_NAME</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOURCE_SCHEMA_NAME</td>
<td>VARCHAR2 (30)</td>
</tr>
<tr>
<td>SOURCE_TABLE_NAME</td>
<td>VARCHAR2 (30)</td>
</tr>
<tr>
<td>COLUMN_NAME</td>
<td>VARCHAR2 (30)</td>
</tr>
</tbody>
</table>
**DATA_TYPE**  VARCHAR2(106)
**DATA_LENGTH**  #NUMBER
**DATA_PRECISION**  NUMBER
**DATA_SCALE**  NUMBER
**NULLABLE**  VARCHAR2(1)

*_SOURCE_TABLES_*
Lists the links between change tables and their source tables.

**SOURCE_SCHEMA_NAME**  #VARCHAR2(30)
**SOURCE_TABLE_NAME**  #VARCHAR2(30)

*_SUBSCRIBED_COLUMNS_*
Lists the columns of published tables that have been subscribed to.

**HANDLE**  #NUMBER
**SOURCE_SCHEMA_NAME**  #VARCHAR2(30)
**SOURCE_TABLE_NAME**  #VARCHAR2(30)
**COLUMN_NAME**  #VARCHAR2(30)

*_SUBSCRIBED_TABLES_*
Lists all published tables that have been subscribed to.

**HANDLE**  #NUMBER
**SOURCE_SCHEMA_NAME**  #VARCHAR2(30)
**SOURCE_TABLE_NAME**  #VARCHAR2(30)
**VIEW_NAME**  VARCHAR2(30)
**CHANGE_SET_NAME**  #VARCHAR2(30)

*_SUBSCRIPTIONS_*
Lists all subscriptions.

**HANDLE**  #NUMBER
**SET_NAME**  #VARCHAR2(30)
**USERNAME**  #VARCHAR2(30)
**CREATED**  #DATE
**STATUS**  #VARCHAR2(1)
**EARLIEST_SCN**  #NUMBER
**LATEST_SCN**  #NUMBER
**DESCRIPTION**  VARCHAR2(30)
**LAST_PURGED**  DATE
**LAST_EXTENDED**  DATE

**Constraints**
The following views provide information about constraints and the columns included in the constraints:

*_CONS_COLUMNS_*
Shows which columns are affected by each constraint.
Data dictionary

The following views provide information about the objects in the Oracle data dictionary:

* _CATALOG
  Lists all tables, views, sequences, and synonyms in the database.
  
  **OWNER**  VARCHAR2(30)
  **TABLE_NAME**  VARCHAR2(30)
  **TABLE_TYPE**  VARCHAR2(11)

* _DEPENDENCIES
  Lists dependencies between database objects. Used to determine which objects become invalid after other objects are altered or dropped.
  
  **OWNER**  VARCHAR2(30)
  **NAME**  VARCHAR2(30)
  **TYPE**  VARCHAR2(17)
  **REFERENCED_OWNER**  VARCHAR2(30)
REFERENCED_NAME                VARCHAR2(64)
REFERENCED_TYPE                VARCHAR2(17)
REFERENCED_LINK_NAME           VARCHAR2(128)
DEPENDENCY_TYPE                VARCHAR2(4)

DICT_COLUMNS
Lists all columns defined in the data dictionary views.
TABLE_NAME                     VARCHAR2(30)
COLUMN_NAME                    VARCHAR2(30)
COMMENTS                       VARCHAR2(4000)

DICTIONARY
Lists all data dictionary views.
TABLE_NAME                     VARCHAR2(30)
COMMENTS                       VARCHAR2(4000)

* _OBJECTS
Lists all objects in the database. Note that this name predates the Oracle Objects Option and is not restricted to objects created using the Objects Option.
OWNER                          VARCHAR2(30)
OBJECT_NAME                    VARCHAR2(128)
SUBOBJECT_NAME                 VARCHAR2(30)
OBJECT_ID                      NUMBER
DATA_OBJECT_ID                 NUMBER
OBJECT_TYPE                    VARCHAR2(18)
CREATED                        DATE
LAST_DDL_TIME                  DATE
TIMESTAMP                      VARCHAR2(19)
STATUS                         VARCHAR2(7)
TEMPORARY                      VARCHAR2(1)
GENERATED                      VARCHAR2(1)
SECONDARY                      VARCHAR2(1)

Indexes
The following views provide information about indexes and indexed columns:

DBA_IND_EXPRESSIONS
Lists all indexed expressions.
INDEX_OWNER                     VARCHAR2(30)
INDEX_NAME                      VARCHAR2(30)
TABLE_OWNER                     VARCHAR2(30)
TABLE_NAME                      VARCHAR2(30)
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