

# Oracle® Database Gateway for Informix

## User's Guide



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Oracle Database Gateway for Informix User's Guide, 19c

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# Contents

## Preface

---

|                             |    |
|-----------------------------|----|
| Audience                    | x  |
| Documentation Accessibility | x  |
| Related Documentation       | x  |
| Conventions                 | xi |

## 1 Introduction to the Oracle Database Gateway for Informix

---

|  |     |
|--|-----|
| Overview of Oracle Database Gateways       | 1-1 |
| About Heterogeneous Services Technology    | 1-1 |
| About Oracle Database Gateway for Informix | 1-2 |

## 2 Informix Gateway Features and Restrictions

---

|   |     |
|---|-----|
| Remote Insert Rowsource                     | 2-1 |
| Using the Pass-Through Feature              | 2-1 |
| CHAR Semantics                              | 2-2 |
| Multi-byte Character Sets Ratio Suppression | 2-3 |
| IPv6 Support                                | 2-3 |
| Gateway Session IDLE Timeout                | 2-3 |
| Database Compatibility Issues for Informix  | 2-3 |
| ANSI SQL Standard                           | 2-4 |
| Naming Rules                                | 2-4 |
| Rules for Naming Objects                    | 2-4 |
| Object Names                                | 2-4 |
| Case Sensitivity                            | 2-4 |
| Data Types                                  | 2-5 |
| Binary, Byte and Text Literal Notation      | 2-5 |
| Data Type Conversion                        | 2-6 |
| Queries                                     | 2-6 |
| Row Selection                               | 2-6 |
| Empty Strings                               | 2-6 |
| Empty Bind Variables                        | 2-7 |

|   |      |
|---|------|
| Locking   | 2-7  |
| Known Restrictions  | 2-7  |
| Transactional Integrity                                       | 2-8  |
| Transaction Capability  | 2-8  |
| COMMIT or ROLLBACK in PL/SQL Cursor Loops Closes Open Cursors | 2-9  |
| Pass-Through Feature  | 2-9  |
| Informix SMALLFLOAT and REAL Data Types                       | 2-9  |
| SQL Syntax  | 2-9  |
| WHERE CURRENT OF Clause                                       | 2-9  |
| CONNECT BY Clause   | 2-10 |
| Use of NULL Keyword in SELECT Statement                       | 2-10 |
| Subqueries in INSERT Statement                                | 2-10 |
| Subqueries in DELETE, INSERT, and UPDATE Statements           | 2-10 |
| ROWID   | 2-10 |
| EXPLAIN PLAN Statement  | 2-10 |
| SQL*Plus  | 2-10 |
| Database Links  | 2-10 |
| Gateway Data Dictionary Views                                 | 2-11 |
| Stored Procedures   | 2-11 |
| Known Problems  | 2-11 |
| Encrypted Format Login  | 2-11 |
| Informix BYTE and TEXT Data Types                             | 2-11 |
| Schema Names and PL/SQL                                       | 2-12 |
| Data Dictionary Views and PL/SQL                              | 2-12 |

### 3 Case Studies

---

|                                 |     |
|---------------------------------|-----|
| Case Descriptions               | 3-1 |
| Distribution Media Contents     | 3-1 |
| Demonstration Files             | 3-2 |
| Demonstration Requirements      | 3-2 |
| Creating Demonstration Tables   | 3-2 |
| Demonstration Table Definitions | 3-3 |
| Demonstration Table Contents    | 3-3 |
| Case 1: Simple Queries          | 3-4 |
| Case 2: A More Complex Query    | 3-4 |
| Case 3: Joining Informix Tables | 3-5 |
| Case 4: Write Capabilities      | 3-5 |
| DELETE Statement                | 3-5 |
| UPDATE Statement                | 3-5 |
| INSERT Statement                | 3-5 |

|                                  |     |
|----------------------------------|-----|
| Case 5: Data Dictionary Query    | 3-5 |
| Case 6: The Pass-Through Feature | 3-5 |
| UPDATE Statement                 | 3-6 |
| SELECT Statement                 | 3-6 |

## A Data Type Conversion

---

## B Supported SQL Syntax and Functions

---

|                                     |     |
|-------------------------------------|-----|
| Supported SQL Statements            | B-1 |
| DELETE                              | B-1 |
| INSERT                              | B-1 |
| SELECT                              | B-2 |
| UPDATE                              | B-2 |
| Oracle Functions                    | B-2 |
| Functions Not Supported by Informix | B-2 |
| Functions Supported by Informix     | B-2 |
| Arithmetic Operators                | B-3 |
| Comparison Operators                | B-3 |
| Group Functions                     | B-3 |
| String Functions                    | B-4 |
| Pattern Matches                     | B-4 |
| Date Functions                      | B-4 |
| Other Functions                     | B-4 |
| Functions Supported by the Gateway  | B-5 |

## C Data Dictionary

---

|                                       |     |
|---------------------------------------|-----|
| Informix System Catalog Tables        | C-1 |
| Accessing the Gateway Data Dictionary | C-1 |
| Direct Queries to Informix Tables     | C-2 |
| Supported Views and Tables            | C-2 |
| Data Dictionary Mapping               | C-3 |
| Default Column Values                 | C-4 |
| Gateway Data Dictionary Descriptions  | C-4 |
| ALL_CATALOG                           | C-5 |
| ALL_COL_COMMENTS                      | C-5 |
| ALL_COL_PRIVS                         | C-5 |
| ALL_CONS_COLUMNS                      | C-6 |
| ALL_CONSTRAINTS                       | C-6 |
| ALL_IND_COLUMNS                       | C-6 |

|                   |      |
|-------------------|------|
| ALL_INDEXES       | C-7  |
| ALL_OBJECTS       | C-8  |
| ALL_SYNONYMS      | C-9  |
| ALL_TAB_COLUMNS   | C-9  |
| ALL_TAB_COMMENTS  | C-10 |
| ALL_TAB_PRIVS     | C-11 |
| ALL_TABLES        | C-11 |
| ALL_USERS         | C-12 |
| ALL_VIEWS         | C-13 |
| COLUMN_PRIVILEGES | C-13 |
| DBA_CATALOG       | C-14 |
| DBA_COL_COMMENTS  | C-14 |
| DBA_OBJECTS       | C-14 |
| DBA_TAB_COLUMNS   | C-15 |
| DBA_TAB_COMMENTS  | C-16 |
| DBA_TABLES        | C-16 |
| DICT_COLUMNS      | C-17 |
| DICTIONARY        | C-18 |
| DUAL              | C-18 |
| TABLE_PRIVILEGES  | C-18 |
| USER_CATALOG      | C-18 |
| USER_COL_COMMENTS | C-19 |
| USER_COL_PRIVS    | C-19 |
| USER_CONS_COLUMNS | C-19 |
| USER_CONSTRAINTS  | C-20 |
| USER_IND_COLUMNS  | C-20 |
| USER_INDEXES      | C-21 |
| USER_OBJECTS      | C-22 |
| USER_SYNONYMS     | C-23 |
| USER_TAB_COLUMNS  | C-23 |
| USER_TAB_COMMENTS | C-24 |
| USER_TAB_PRIVS    | C-24 |
| USER_TABLES       | C-25 |
| USER_USERS        | C-26 |
| USER_VIEWS        | C-26 |

## D Initialization Parameters

---

|  |     |
|--|-----|
| Initialization Parameter File Syntax                           | D-1 |
| Oracle Database Gateway for Informix Initialization Parameters | D-2 |
| HS_DB_DOMAIN   | D-3 |

|                              |      |
|------------------------------|------|
| HS_DB_INTERNAL_NAME          | D-4  |
| HS_DB_NAME                   | D-4  |
| HS_DESCRIBE_CACHE_HWM        | D-4  |
| HS_LANGUAGE                  | D-4  |
| Character Sets               | D-5  |
| Language                     | D-5  |
| Territory                    | D-5  |
| HS_LONG_PIECE_TRANSFER_SIZE  | D-6  |
| HS_OPEN_CURSORS              | D-6  |
| HS_RPC_FETCH_REBLOCKING      | D-6  |
| HS_RPC_FETCH_SIZE            | D-7  |
| HS_TIME_ZONE                 | D-7  |
| HS_TRANSACTION_MODEL         | D-7  |
| IFILE                        | D-8  |
| HS_FDS_TIMESTAMP_MAPPING     | D-8  |
| HS_FDS_DATE_MAPPING          | D-9  |
| HS_FDS_CONNECT_INFO          | D-9  |
| HS_FDS_RECOVERY_ACCOUNT      | D-9  |
| HS_FDS_RECOVERY_PWD          | D-10 |
| HS_FDS_TRACE_LEVEL           | D-10 |
| HS_FDS_TRANSACTION_ISOLATION | D-10 |
| HS_FDS_TRANSACTION_LOG       | D-11 |
| HS_FDS_FETCH_ROWS            | D-11 |
| HS_IDLE_TIMEOUT              | D-11 |
| HS-NLS_LENGTH_SEMANTICS      | D-11 |
| HS_KEEP_REMOTE_COLUMN_SIZE   | D-12 |
| HS_FDS_REMOTE_DB_CHARSET     | D-12 |
| HS_FDS_SUPPORT_STATISTICS    | D-13 |
| HS_FDS_SQLLEN_INTERPRETATION | D-13 |
| HS_FDS_ARRAY_EXEC            | D-13 |

## Index

---

## List of Tables

---

|      |  |      |
|------|--|------|
| A-1  | Data Type Mapping and Restrictions                         | A-1  |
| C-1  | Oracle Data Dictionary View Names and Informix Equivalents | C-3  |
| C-2  | ALL_CATALOG  | C-5  |
| C-3  | ALL_COL_COMMENTS   | C-5  |
| C-4  | ALL_COL_PRIVS  | C-5  |
| C-5  | ALL_CONS_COLUMNS   | C-6  |
| C-6  | ALL_CONSTRAINTS  | C-6  |
| C-7  | ALL_IND_COLUMNS  | C-6  |
| C-8  | ALL_INDEXES  | C-7  |
| C-9  | ALL_OBJECTS  | C-8  |
| C-10 | ALL_SYNONYMS   | C-9  |
| C-11 | ALL_TAB_COLUMNS  | C-9  |
| C-12 | ALL_TAB_COMMENTS   | C-10 |
| C-13 | ALL_TAB_PRIVS  | C-11 |
| C-14 | ALL_TABLES   | C-11 |
| C-15 | ALL_USERS  | C-12 |
| C-16 | ALL_VIEWS  | C-13 |
| C-17 | COLUMN_PRIVILEGES  | C-13 |
| C-18 | DBA_CATALOG  | C-14 |
| C-19 | DBA_COL_COMMENTS   | C-14 |
| C-20 | DBA_OBJECTS  | C-14 |
| C-21 | DBA_TAB_COLUMNS  | C-15 |
| C-22 | DBA_TAB_COMMENTS   | C-16 |
| C-23 | DBA_TABLES   | C-16 |
| C-24 | DICT_COLUMNS   | C-17 |
| C-25 | DICTIONARY   | C-18 |
| C-26 | DUAL   | C-18 |
| C-27 | TABLE_PRIVILEGES   | C-18 |
| C-28 | USER_CATALOG   | C-18 |
| C-29 | USER_COL_COMMENTS  | C-19 |
| C-30 | USER_COL_PRIVS   | C-19 |
| C-31 | USER_CONS_COLUMNS  | C-19 |
| C-32 | USER_CONSTRAINTS   | C-20 |
| C-33 | USER_IND_COLUMNS   | C-20 |
| C-34 | USER_INDEXES   | C-21 |



|      |                   |      |
|------|-------------------|------|
| C-35 | USER_OBJECTS      | C-22 |
| C-36 | USER_SYNONYMS     | C-23 |
| C-37 | USER_TAB_COLUMNS  | C-23 |
| C-38 | USER_TAB_COMMENTS | C-24 |
| C-39 | USER_TAB_PRIVS    | C-24 |
| C-40 | USER_TABLES       | C-25 |
| C-41 | USER_USERS        | C-26 |
| C-42 | USER_VIEWS        | C-26 |

# Preface

This manual describes the Oracle Database Gateway for Informix, which enables Oracle client applications to access Informix data through Structured Query Language (SQL). The gateway, with the Oracle database, creates the appearance that all data resides on a local Oracle database, even though the data can be widely distributed.

This preface covers the following topics:

- [Audience](#)
- [Documentation Accessibility](#)
- [Related Documentation](#)
- [Conventions](#)

## Audience

This manual is intended for Oracle database administrators who perform the following tasks:

- Installing and configuring the Oracle Database Gateway for Informix
- Diagnosing gateway errors
- Using the gateway to access Informix data

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## Related Documentation

For more information, see the following documents:

- *Oracle Database New Features Guide*
- *Oracle Call Interface Programmer's Guide*
- *Oracle Database Administrator's Guide*

- *Oracle Database Development Guide*
- *Oracle Database Concepts*
- *Oracle Database Performance Tuning Guide*
- *Oracle Database Error Messages*
- *Oracle Database Globalization Support Guide*
- *Oracle Database Reference*
- *Oracle Database SQL Language Reference*
- *Oracle Database Net Services Administrator's Guide*
- *SQL\*Plus User's Guide and Reference*
- *Oracle Database Heterogeneous Connectivity User's Guide*
- *Oracle Database 2 Day DBA*
- *Oracle Database Security Guide*

## Conventions

The following text conventions are used in this document:

| Convention      | Meaning  |
|-----------------|--|
| <b>boldface</b> | Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.         |
| <i>italic</i>   | Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.                          |
| monospace       | Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter. |

# 1

## Introduction to the Oracle Database Gateway for Informix

Oracle Database Gateways provide the ability to transparently access data residing in a non-Oracle system from an Oracle environment. The following topics briefly cover Heterogeneous Services, the technology that the Oracle Database Gateway for Informix is based on.

### See Also:

*Oracle Database Heterogeneous Connectivity User's Guide* to get a good understanding of generic gateway technology, Heterogeneous Services, and how Oracle Database Gateways fit in the picture.

## Overview of Oracle Database Gateways

Oracle Database Gateways provide the ability to transparently access data residing in a non-Oracle system from an Oracle environment.

Heterogeneous data access is a problem that affects a lot of companies. A lot of companies run several different database systems. Each of these systems stores data and has a set of applications that run against it. Consolidation of this data in one database system is often hard, in large part because many of the applications that run against one database may not have an equivalent that runs against another. Until such time as migration to one consolidated database system is made feasible, it is necessary for the various heterogeneous database systems to interoperate.

Oracle Database Gateways provide the ability to transparently access data residing in a non-Oracle system from an Oracle environment. This transparency eliminates the need for application developers to customize their applications to access data from different non-Oracle systems, thus decreasing development efforts and increasing the mobility of the application. Applications can be developed using a consistent Oracle interface for both Oracle and Informix.

Gateway technology is composed of two parts: a component that has the generic technology to connect to a non-Oracle system, which is common to all the non-Oracle systems, called Heterogeneous Services, and a component that is specific to the non-Oracle system that the gateway connects to. Heterogeneous Services, in conjunction with the Oracle Database Gateway agent, enables transparent access to non-Oracle systems from an Oracle environment.

## About Heterogeneous Services Technology

Heterogeneous Services provides the generic technology for connecting to non-Oracle systems.

As an integrated component of the database, Heterogeneous Services can exploit features of the database, such as the powerful SQL parsing and distributed optimization capabilities.

Heterogeneous Services extend the Oracle SQL engine to recognize the SQL and procedural capabilities of the remote non-Oracle system and the mappings required to obtain necessary data dictionary information. Heterogeneous Services provides two types of translations: the ability to translate Oracle SQL into the proper dialect of the non-Oracle system as well as data dictionary translations that displays the metadata of the non-Oracle system in the local format. For situations where no translations are available, native SQL can be issued to the non-Oracle system using the pass-through feature of Heterogeneous Services.

Heterogeneous Services also maintains the transaction coordination between Oracle and the remote non-Oracle system, such as providing the two-phase commit protocol to ensure distributed transaction integrity, even for non-Oracle systems that do not natively support two-phase commit.

 **See Also:**

*Oracle Database Heterogeneous Connectivity User's Guide* for more information about Heterogeneous Services.

## About Oracle Database Gateway for Informix

The capabilities, SQL mappings, data type conversions, and interface to the remote non-Oracle system are contained in the gateway. The gateway interacts with Heterogeneous Services to provide the transparent connectivity between Oracle and non-Oracle systems.

The gateway can be installed on any machine independent of the Oracle or non-Oracle database. It can be the same machine as the Oracle database or on the same machine as the Informix database or on a third machine as a standalone. Each configuration has its advantages and disadvantages. The issues to consider when determining where to install the gateway are network traffic, operating system platform availability, hardware resources and storage.

# 2

## Informix Gateway Features and Restrictions

After the gateway is installed and configured, you can use the gateway to access Informix data, pass Informix commands from applications to the Informix database, perform distributed queries, and copy data.

### Remote Insert Rowsource

A remote insert rowsource feature allows remote insert requiring local Oracle data to work through the Oracle database and Oracle Database Gateway. This functionality requires that the Oracle database and the Oracle Database Gateway to be version 12.2 or later.

By Oracle Database design, some distributed statement must be executed at the database link site. But in certain circumstances, there is data needed to execute these queries that must be fetched from the originating Oracle Database. Under homogeneous connections, the remote Oracle database would call back the source Oracle database for such data. But in heterogeneous connections, this is not viable, because this means that the Foreign Data Store would have to query call back functions, or data, that can only be provided by the Oracle instance that issued the query. In general, these kinds of statements are not something that can be supported through the Oracle Database Gateway.

The following categories of SQL statements results in a callback:

- Any DML with a sub-select, which refers to a table in Oracle database.
- Any DELETE, INSERT, UPDATE or "SELECT... FOR UPDATE..." SQL statement containing SQL functions or statements that needs to be executed at the originating Oracle database.

These SQL functions include USER, USERENV, and SYSDATE; and involve the selection of data from the originating Oracle database.

- Any SQL statement that involves a table in Oracle database, and a LONG or LOB column in a remote table.

An example of a remote INSERT statement that can work through the remote insert rowsource feature is as follows:

```
INSERT INTO gateway_table@gateway_link select * from local_table;
```

### Using the Pass-Through Feature

The gateway can pass Informix commands or statements from the application to the Informix database using the DBMS\_HS\_PASSTHROUGH package.

Use the DBMS\_HS\_PASSTHROUGH package in a PL/SQL block to specify the statement to be passed to the Informix database, as follows:

```
DECLARE
    num_rows INTEGER;
BEGIN
    num_rows := DBMS_HS_PASSTHROUGH.EXECUTE_IMMEDIATE@IFMX('command');
END;
/
```

Where *command* cannot be one of the following:

- COMMIT
- CREATE DATABASE
- DROP DATABASE
- ROLLBACK
- ROLLFORWARD DATABASE
- Informix tool commands

The `DBMS_HS_PASSTHROUGH` package supports passing bind values and executing `SELECT` statements.

 **Note:**

It is recommended that you `COMMIT` after each DDL statement in the pass-through.

 **See Also:**

*Oracle Database PL/SQL Packages and Types Reference* and Chapter 3, *Features of Oracle Database Gateways*, of *Oracle Database Heterogeneous Connectivity User's Guide* for more information about the `DBMS_HS_PASSTHROUGH` package.

## CHAR Semantics

This feature allows the gateway to optionally run in `CHAR` semantics mode.

Rather than always describing Informix `CHAR` columns as `CHAR(n BYTE)`, this feature describes them as `CHAR(n CHAR)` and `VARCHAR(n CHAR)`. The concept is similar to Oracle database `CHAR` semantics. You need to specify `HS_NLS_LENGTH_SEMANTICS=CHAR` gateway parameter to activate this option.


 **See Also:**

[Initialization Parameters](#)

## Multi-byte Character Sets Ratio Suppression


This feature optionally suppresses the ratio expansion from Informix database to Oracle database involving multi-byte character set.

By default, Oracle gateways assume the worst ratio to prevent data being truncated or insufficient buffer size situation. However, if you have specific knowledge of your Informix database and do not want the expansion to occur, you can specify `HS_KEEP_REMOTE_COLUMN_SIZE` parameter to suppress the expansion.

 **See Also:**  
[Initialization Parameters](#)

## IPv6 Support

Besides full IPv6 support between Oracle databases and the gateway, IPv6 is also supported between this gateway and Informix database.

 **See Also:**  
[Initialization Parameters](#) for more detail about the `HS_FDS_CONNECT_INFO` parameter.

## Gateway Session IDLE Timeout

You can optionally choose to terminate long idle gateway sessions automatically with the gateway parameter `HS_IDLE_TIMEOUT`. Specifically, when a gateway session is idle for more than the specified time limit, the gateway session is terminated with any pending update rolled back. Refer to the `HS_IDLE_TIMEOUT` parameter in [Initialization Parameters](#) for more detail.

## Database Compatibility Issues for Informix

Informix and Oracle databases function differently in some areas, causing compatibility problems. The compatibility issues are described in the following links:

- [ANSI SQL Standard](#)
- [Naming Rules](#)
- [Data Types](#)
- [Queries](#)
- [Locking](#)



## ANSI SQL Standard

The American National Standards Institute (ANSI) has established a set of industry standards for SQL. The gateway supports only Informix databases that comply with the ANSI standard. For more information about how to create or start up an ANSI-compliant Informix database, refer to your Informix documentation.

## Naming Rules

Naming rule issues include the following:

- [Rules for Naming Objects](#)
- [Object Names](#)
- [Case Sensitivity](#)

## Rules for Naming Objects

Oracle and Informix use different database object naming rules. For example, the maximum number of characters allowed for each object name can be different. Also, the use of single and double quotation marks, case sensitivity, and the use of alphanumeric characters can all be different.



### See Also:

*Oracle Database Reference* and Informix documentation.

## Object Names

Names of Informix database objects are limited to a maximum of 18 characters. An object name can be composed of these characters:

- Numbers 0 to 9
- Lowercase letters a to z
- Uppercase letters A to Z
- Underscore character ( \_ )

## Case Sensitivity

Informix handles letter case differently from Oracle. Informix uses these rules:

- Table owner names default to uppercase letters, unless the name is surrounded by double quote characters
- Column names, table names, view names, and so on, are always treated as lowercase letters

The Oracle database defaults to uppercase unless you surround identifiers with double quote characters. For example, to refer to the Informix table called `emp`, enter the name with double quote characters, as follows:

```
SQL> SELECT * FROM "emp"@IFMX;
```

However, to refer to the Informix table called `emp` owned by `SCOTT` from an Oracle application, enter the following:

```
SQL> SELECT * FROM "Scott"."emp"@IFMX;
```

If the Informix table called `emp` is owned by `SCOTT`, a table owner name in uppercase letters, you can enter the owner name without double quote characters, as follows:

```
SQL> SELECT * FROM SCOTT."emp"@IFMX;
```

Or

```
SQL> SELECT * FROM scott."emp"@IFMX;
```

Oracle recommends that you surround all Informix object names with double quote characters and use the exact letter case for the object names as they appear in the Informix data dictionary. This convention is not required when referring to the supported Oracle data dictionary tables or views listed in [Data Dictionary](#).

If existing applications cannot be changed according to these conventions, create views in Oracle to associate Informix names to the correct letter case. For example, to refer to the Informix table `emp` from an existing Oracle application by using only uppercase names, define the following view:

```
SQL> CREATE VIEW EMP (EMPNO, ENAME, SAL, HIREDATE)
      AS SELECT "empno", "ename", "sal", "hiredate"
      FROM "emp"@IFMX;
```

With this view, the application can issue statements such as the following:

```
SQL> SELECT EMPNO, ENAME FROM EMP;
```

Using views is a workaround solution that duplicates data dictionary information originating in the Informix data dictionary. You must be prepared to update the Oracle view definitions whenever the data definitions for the corresponding tables are changed in the Informix database.

## Data Types

Data type issues include the following:

- [Binary\\_Byte and Text Literal Notation](#)
- [Data Type Conversion](#)

### Binary, Byte and Text Literal Notation

Oracle SQL uses hexadecimal digits surrounded by single quotes to express literal values being compared or inserted into columns defined as data type `RAW`.

This notation is not converted to syntax compatible with Informix `BINARY`, `BYTE` and `TEXT` data types (a `0x` followed by hexadecimal digits, surrounded by single quotes).

For example, the following statement is not supported:

```
SQL> INSERT INTO BYTE_TAB@IFMX VALUES ('0xff');
```

Where `BYTE_TAB` contains a column of data type `BINARY`, `BYTE` or `TEXT`. Use bind variables when inserting into or updating `BINARY`, `BYTE` or `TEXT` data types.

## Data Type Conversion

Informix does not support implicit date conversions. Such conversions must be explicit.

For example, the gateway issues an error for the following `SELECT` statement:

```
SQL> SELECT DATE_COL FROM TEST@IFMX
      WHERE DATE_COL = "1-JAN-2001";
```

To avoid problems with implicit conversions, add explicit conversions, as in the following:

```
SQL> SELECT DATE_COL FROM TEST@IFMX
      WHERE DATE_COL = TO_DATE("1-JAN-2001");
```



### See Also:

[Data Type Conversion](#) for more information about restrictions on data types.

## Queries

Query issues include the following:

- [Row Selection](#)
- [Empty Strings](#)
- [Empty Bind Variables](#)

### Row Selection

Informix evaluates a query condition for all selected rows before returning any of the rows. If there is an error in the evaluation process for one or more rows, no rows are returned even though the remaining rows satisfy the condition.

Oracle evaluates the query condition row-by-row and returns a row when the evaluation is successful. Rows are returned until a row fails the evaluation.

### Empty Strings

Oracle processes an empty string in a SQL statement as a null value. Informix processes an empty string as an empty string.

Comparing to an empty string

The gateway passes literal empty strings to the Informix database without any conversion. If you intended an empty string to represent a null value, Informix does not process the statement that way; it uses the empty string.

You can avoid this problem by using `NULL` or `IS NULL` in the SQL statement instead of the empty string syntax, as in the following example:

```
SELECT * from "emp"@IFMX where "ename" IS NULL;
```

### Selecting an empty string

For `VARCHAR` columns, the gateway returns an empty string to the Oracle database as `NULL` value.

For `CHAR` columns, the gateway returns the full size of the column with each character as empty space (' ').

## Empty Bind Variables

For `VARCHAR` bind variables, the gateway passes empty bind variables to the Informix database as a `NULL` value.

## Locking

The locking model for an Informix database differs significantly from the Oracle model. The gateway depends on the underlying Informix behavior, so the following possible scenarios can affect Oracle applications that access Informix through the gateway:

- Read access might block write access
- Write access might block read access
- Statement-level read consistency is not guaranteed



### See Also:

Informix documentation for information about the Informix locking model.

## Known Restrictions

If you encounter incompatibility problems not listed in this section or in "[Known Problems](#)", contact Oracle Support Services. The following topics describe the known restrictions and includes suggestions for dealing with them when possible:

- [Transactional Integrity](#)
- [Transaction Capability](#)
- [COMMIT or ROLLBACK in PL/SQL Cursor Loops Closes Open Cursors](#)
- [Pass-Through Feature](#)
- [Informix SMALLFLOAT and REAL Data Types](#)
- [SQL Syntax](#)
- [SQL\\*Plus](#)
- [Database Links](#)
- [Gateway Data Dictionary Views](#)
- [Stored Procedures](#)

**Note:**

If you have any questions or concerns about the restrictions, contact Oracle Support Services.

## Transactional Integrity

The gateway cannot guarantee transactional integrity in the following cases:

- When a statement that is processed by the gateway causes an implicit commit in the target database
- When the target database is configured to work in autocommit mode

**Note:**

Oracle strongly recommends the following:

- If you know that executing a particular statement causes an implicit commit in the target database, then ensure that this statement is executed in its own transaction.
- Do not configure the target database to work in autocommit mode.

## Transaction Capability

The gateway does not support savepoints. If a distributed update transaction is under way involving the gateway and a user attempts to create a savepoint, the following error occurs:

```
ORA-02070: database dblink does not support savepoint in this context
```

By default, the gateway is configured as `COMMIT_CONFIRM` and in this transaction mode it is always the commit point site when the Informix database is updated by the transaction.

If your Informix system does not use logging, then you cannot use the default transaction capability. It is strongly recommended that you enable logging in your Informix system. If you are not using logging, and have read only requirement, then set `HS_TRANSACTION_MODEL=READ_ONLY_AUTOCOMMIT` in the gateway initialization parameter file. If you are not using logging, and you require to update the Informix database, then set `HS_TRANSACTION_MODEL=SINGLE_SITE_AUTOCOMMIT` in the gateway initialization parameter file.

**See Also:**

[Initialization Parameters](#) and the *Oracle Database Heterogeneous Connectivity User's Guide* for more information about customizing the initialization parameter file.

## COMMIT or ROLLBACK in PL/SQL Cursor Loops Closes Open Cursors

Any `COMMIT` or `ROLLBACK` issued in a PL/SQL cursor loop closes all open cursors, which can result in the following error:

```
ORA-1002: fetch out of sequence
```

To prevent this error, move the `COMMIT` or `ROLLBACK` statement outside the cursor loop.

## Pass-Through Feature

If the SQL statements being passed through the gateway result in an implicit commit at the Informix database, the Oracle transaction manager is unaware of the commit and an Oracle `ROLLBACK` command cannot be used to roll back the transaction.

## Informix SMALLFLOAT and REAL Data Types

Informix `SMALLFLOAT` and `REAL` data types have a precision of 6.

## SQL Syntax

Restrictions on SQL syntax are listed as follows:

- [WHERE CURRENT OF Clause](#)
- [CONNECT BY Clause](#)
- [Use of NULL Keyword in SELECT Statement](#)
- [Subqueries in INSERT Statement](#)
- [Subqueries in DELETE\\_ INSERT\\_ and UPDATE Statements](#)
- [ROWID](#)
- [EXPLAIN PLAN Statement](#)

### See Also:

[Supported SQL Syntax and Functions](#) for more information about restrictions on SQL syntax.

## WHERE CURRENT OF Clause

`UPDATE` and `DELETE` statements with the `WHERE CURRENT OF` clause are not supported by the gateway because they rely on the Oracle `ROWID` implementation. To update or delete a specific row through the gateway, a condition style `WHERE` clause must be used.

## CONNECT BY Clause

The gateway does not support the `CONNECT BY` clause in a `SELECT` statement.

## Use of NULL Keyword in SELECT Statement

The `NULL` keyword cannot be used in the select list of a `SELECT` statement because that syntax is not ANSI SQL.

For example, the following statement cannot be used:

```
SQL> SELECT NULL FROM . . .
```

## Subqueries in INSERT Statement

Subqueries of `INSERT` statements cannot use multiple aliases for the same table. For example, the following statement is not supported:

```
SQL> INSERT INTO "emp_target"@IFMX
      SELECT a."empno" FROM "emp_source"@IFMX a,
      "emp_source"@IFMX b WHERE b."empno"=9999
```

## Subqueries in DELETE, INSERT, and UPDATE Statements

SQL statements in subqueries of `DELETE`, `INSERT`, and `UPDATE` statements cannot refer to the same table as specified in the outer query. This is because of the locking mechanism in Informix.

## ROWID

The Oracle `ROWID` implementation is not supported.

## EXPLAIN PLAN Statement

The `EXPLAIN PLAN` statement is not supported.

## SQL\*Plus

In SQL\*Plus, the gateway does not support using a `SELECT` statement to retrieve data from an Informix column defined as data type `BYTE`.

You need to use double quotes to wrap around lowercase table names, for example:

```
copy from tkhouser/tkhouser@inst1 insert loc_tkhodept using select* from
"tkhodept"@holink2;
```

## Database Links

The gateway is not multithreaded and cannot support shared database links. Each gateway session spawns a separate gateway process and connections cannot be shared.

## Gateway Data Dictionary Views

Only the first 64 characters of the view definition are returned when querying `ALL_VIEWS` and `USER_VIEWS` in the gateway data dictionary.

## Stored Procedures

The gateway does not support the procedure feature that allows the execution of stored procedures in a non-Oracle database.

## Known Problems

This section lists known problems and includes suggestions for correcting them when possible. If you have any questions or concerns about the problems, contact Oracle Support Services. A current list of problems is available online. Contact your local Oracle office for information about accessing the list.

The known problems are as follows:

- [Encrypted Format Login](#)
- [Informix BYTE and TEXT Data Types](#)
- [Schema Names and PL/SQL](#)
- [Data Dictionary Views and PL/SQL](#)

## Encrypted Format Login

Oracle database no longer supports the initialization parameter `DBLINK_ENCRYPT_LOGIN`. Up to version 7.3, this parameter's default `TRUE` value prevented the password for the login user ID from being sent over the network (in the clear). Later versions automatically encrypt the password.

## Informix BYTE and TEXT Data Types

The following restrictions apply when using `BYTE` and `TEXT` data types:

- An unsupported SQL function cannot be used in a SQL statement that accesses a column defined as Informix data type `TEXT`.
- You cannot use SQL\*Plus to select data from a column defined as Informix data type `TEXT` when the data is greater than 80 characters in length. Oracle recommends using Pro\*C or Oracle Call Interface to access such data in a Informix database.
- `BYTE` and `TEXT` data types must be `NULLABLE` for `INSERT` or `UPDATE` to work.
- A table including a `BYTE` or `TEXT` column must have a unique index defined on the table or the table must have a separate column that serves as a primary key.
- `BYTE` and `TEXT` data in a view cannot be accessed.
- `BYTE` and `TEXT` data cannot be read through pass-through queries.
- Data less than 32,739 bytes cannot be inserted into `BYTE` and `TEXT` columns using bind variables.



The gateway does not support the PL/SQL function `COLUMN_VALUE_LONG` of the `DBMS_SQL` package.



**See Also:**

[Supported SQL Syntax and Functions.](#)

## Schema Names and PL/SQL

If you do not prefix an Informix database object with its schema name in a SQL statement within a PL/SQL block, the following error message occurs:

```
ORA-6550 PLS-201 Identifier table_name must be declared.
```

Change the SQL statement to include the schema name of the object.

## Data Dictionary Views and PL/SQL

You cannot refer to data dictionary views in SQL statements that are inside a PL/SQL block.

# 3

## Case Studies

The following case studies for Informix demonstrate some of the features of the Oracle Database Gateway. You can verify that the gateway is installed and operating correctly by using the demonstration files included on the distribution media.

The demonstration files are automatically copied to disk when the gateway is installed.

Topics:

- [Case Descriptions](#)
- [Distribution Media Contents](#)
- [Demonstration Files](#)
- [Demonstration Requirements](#)
- [Creating Demonstration Tables](#)
- [Case 1: Simple Queries](#)
- [Case 2: A More Complex Query](#)
- [Case 3: Joining Informix Tables](#)
- [Case 4: Write Capabilities](#)
- [Case 5: Data Dictionary Query](#)
- [Case 6: The Pass-Through Feature](#)

## Case Descriptions

The cases illustrate:

- A simple query (Case 1)
- A more complex query (Case 2)
- Joining Informix tables (Case 3)
- Write capabilities (Case 4)
- A data dictionary query (Case 5)
- The pass-through feature (Case 6)

## Distribution Media Contents

The distribution media contains the following:

- Demonstration files
- One SQL script file that creates the demonstration tables in the Informix database
- One SQL script file that drops the demonstration tables from the Informix database

## Demonstration Files

After a successful gateway installation, use the demonstration files stored in the directory `$ORACLE_HOME/dg4ifmx/demo` where `$ORACLE_HOME` is the `$ORACLE_HOME` directory under which the gateway is installed. The directory contains the following demonstration files:

| Demonstration Files      | Demonstration Files       |
|--------------------------|---------------------------|
| <code>bldifmx.sql</code> | <code>case4c.sql</code>   |
| <code>case1.sql</code>   | <code>case5.sql</code>    |
| <code>case2.sql</code>   | <code>case6a.sql</code>   |
| <code>case3.sql</code>   | <code>case6b.sql</code>   |
| <code>case4a.sql</code>  | <code>case7.sql</code>    |
| <code>case4b.sql</code>  | <code>dropifmx.sql</code> |

## Demonstration Requirements

The case studies assume these requirements have been met:

- The gateway demonstration tables are installed in the Informix database
- The Oracle database has an account named `SCOTT` with a password of `TIGER`
- The Oracle database has a database link called `GTWLINK` (set up as public or private to the user `SCOTT`) which connects the gateway to a Informix database as `SCOTT` with password `TIGER2`

For example, you can create the database link as follows:

```
SQL> CREATE DATABASE LINK GTWLINK CONNECT TO SCOTT
      2 IDENTIFIED BY TIGER2 USING 'GTWSID';
```

- Oracle Net Services is configured correctly and running.
- The Informix environment variable, `INFORMIXDIR`, is set correctly.

## Creating Demonstration Tables

The case studies are based on the `GTW_EMP`, `GTW_DEPT`, and `GTW_SALGRADE` tables. If the demonstration tables have not been created in the Informix database, use the `bldifmx.sql` script to create them, as follows:

Set environment variable `DELIMIDENT`.

If you have the Bourne or Korn Shell, enter the following:

```
$ DELIMIDENT = y; export DELIMIDENT
```

If you have the C Shell, enter the following:

```
$ setenv DELIMIDENT y
```

```
$ cd $ORACLE_HOME/dg4ifmx/demo$ dbaccess database_name bldifmx.sql
```

The script creates the demonstration tables in the Informix database accordingly:

```
CREATE TABLE GTW_EMP (
EMPNO      SMALLINT NOT NULL
ENAME      VARCHAR(10),
JOB        VARCHAR(9),
MGR        SMALLINT,
HIREDATE   DATETIME,
SAL        NUMERIC(7,2),
COMM       NUMERIC(7,2),
DEPTNO     SMALLINT)
CREATE TABLE GTW_DEPT (
DEPTNO     SMALLINT NOT NULL,
DNAME      VARCHAR(14),
LOC        VARCHAR(13))
CREATE TABLE GTW_SALGRADE (
GRADE      MONEY,
LOSAL      NUMERIC(9,4),
HISAL      NUMERIC(9,4))
```

## Demonstration Table Definitions

The following table definitions use information retrieved by the SQL\*PLUS DESCRIBE command:

### GTW\_EMP

| Name     | Null?    | Type         |
|----------|----------|--------------|
| EMPNO    | NOT NULL | NUMBER(5)    |
| ENAME    |          | VARCHAR2(10) |
| JOB      |          | VARCHAR2(9)  |
| MGR      |          | NUMBER(5)    |
| HIREDATE |          | DATE         |
| SAL      |          | NUMBER(7,2)  |
| COMM     |          | NUMBER(7,2)  |
| DEPTNO   |          | NUMBER(5)    |

### GTW\_DEPT

| Name   | Null?    | Type         |
|--------|----------|--------------|
| DEPTNO | NOT NULL | NUMBER(5)    |
| DNAME  |          | VARCHAR2(14) |
| LOC    |          | VARCHAR2(13) |

### GTW\_SALGRADE

| Name  | Null? | Type         |
|-------|-------|--------------|
| GRADE |       | NUMBER(19,4) |
| LOSAL |       | NUMBER(9,4)  |
| HISAL |       | NUMBER(9,4)  |

## Demonstration Table Contents

The contents of the Informix tables are:

### GTW\_EMP

| EMPNO | ENAME  | JOB       | MGR  | HIREDATE  | SAL  | COMM | DEPTNO |
|-------|--------|-----------|------|-----------|------|------|--------|
| 7369  | SMITH  | CLERK     | 7902 | 17-DEC-80 | 800  |      | 20     |
| 7499  | ALLEN  | SALESMAN  | 7698 | 20-FEB-81 | 1600 | 300  | 30     |
| 7521  | WARD   | SALESMAN  | 7698 | 22-FEB-81 | 1250 | 500  | 30     |
| 7566  | JONES  | MANAGER   | 7839 | 02-APR-81 | 2975 |      | 20     |
| 7654  | MARTIN | SALESMAN  | 7698 | 28-SEP-81 | 1250 | 1400 | 30     |
| 7698  | BLAKE  | MANAGER   | 7839 | 01-MAY-81 | 2850 |      | 30     |
| 7782  | CLARK  | MANAGER   | 7839 | 09-JUN-81 | 2450 |      | 10     |
| 7788  | SCOTT  | ANALYST   | 7566 | 09-DEC-82 | 3000 |      | 20     |
| 7839  | KING   | PRESIDENT |      | 17-NOV-81 | 5000 |      | 10     |
| 7844  | TURNER | SALESMAN  | 7698 | 08-SEP-81 | 1500 | 0    | 30     |
| 7876  | ADAMS  | CLERK     | 7788 | 12-JAN-83 | 1100 |      | 20     |
| 7900  | JAMES  | CLERK     | 7698 | 03-DEC-81 | 950  |      | 30     |
| 7902  | FORD   | ANALYST   | 7566 | 03-DEC-81 | 3000 |      | 20     |
| 7934  | MILLER | CLERK     | 7782 | 23-JAN-82 | 1300 |      | 10     |

**GTW\_DEPT**

| DEPTNO | DNAME      | LOC      |
|--------|------------|----------|
| 10     | ACCOUNTING | NEW YORK |
| 20     | RESEARCH   | DALLAS   |
| 30     | SALES      | CHICAGO  |
| 40     | OPERATIONS | BOSTON   |

**GTW\_SALGRADE**

| GRADE | LOSAL | HISAL |
|-------|-------|-------|
| 1     | 700   | 1200  |
| 2     | 1201  | 1400  |
| 3     | 1401  | 2000  |
| 4     | 2001  | 3000  |
| 5     | 3001  | 9999  |

## Case 1: Simple Queries

Case 1 demonstrates the following:

- A simple query.
- A simple query retrieving full date information.

The first query retrieves all the data from `GTW_DEPT` and confirms that the gateway is working correctly. The second query retrieves all the data from `GTW_EMP` including the time portion of the hire date because the default date format was set to `DD-MON-YY HH24:MM:SS` for the session by an `ALTER SESSION` command.

## Case 2: A More Complex Query

Case 2 demonstrates the following:

- The functions `SUM(expression)` and `NVL(expr1, expr2)` in the `SELECT` list.
- The `GROUP BY` and `HAVING` clauses.

This query retrieves the departments from `GTW_EMP` whose total monthly expenses are higher than \$10,000.

## Case 3: Joining Informix Tables

Case 3 demonstrates the following:

- Joins between Informix tables.
- Subselects.

The query retrieves information from three Informix tables and relates the employees to their department name and salary grade, but only for those employees earning more than the average salary.

## Case 4: Write Capabilities

Case 4 is split into three cases and demonstrates the following:

- [DELETE Statement](#)
- [UPDATE Statement](#)
- [INSERT Statement](#)

### DELETE Statement

Case 4a demonstrates bind values and subselect. All employees in department 20 and one employee, `WARD`, in department 30 are deleted.

### UPDATE Statement

Case 4b provides an example of a simple `UPDATE` statement. In this example, employees are given a \$100 a month salary increase.

### INSERT Statement

Case 4c is an example of a simple insert statement that does not provide information for all columns.

## Case 5: Data Dictionary Query

Case 5 demonstrates data dictionary mapping. It retrieves all the tables and views that exist in the Informix database that begin with "GTW".

## Case 6: The Pass-Through Feature

Case 6 demonstrates the gateway pass-through feature which allows an application to send commands or statements to Informix.

This case demonstrates:

- A pass-through `UPDATE` statement using bind variables
- A pass-through `SELECT` statement

## UPDATE Statement

Case 6a provides an example of a pass-through `UPDATE` statement with bind variables. In this example, the salary for `EMPNO 7934` is set to 4000.

## SELECT Statement

Case 6b provides an example of a pass-through `SELECT` statement. The data that is returned from the `SELECT` statement is inserted into a local table at the Oracle database.

# A

## Data Type Conversion

The gateway converts Informix data types to Oracle data types as follows:

In addition to the rules shown in the preceding table, if the maximum size for an Informix data type is smaller or larger than the corresponding Oracle data type, data might be lost. For example, if an Oracle table is defined with a column of `VARCHAR2(300)` and you use the `COPY` statement to copy the Oracle table to the Informix table where the Informix column is defined as `VARCHAR(255)`, the data might be truncated.

**Table A-1 Data Type Mapping and Restrictions**

| Informix                     | Oracle                    | Criteria  | If Oracle uses large varchar (32k) |
|------------------------------|---------------------------|---|------------------------------------|
| BLOB                         | LONG RAW                  | -   |                                    |
| BOOLEAN                      | NUMBER(3)                 |   |                                    |
| BYTE                         | LONG RAW                  | -   |                                    |
| CLOB                         | LONG                      | -   |                                    |
| CHAR                         | CHAR                      | -   |                                    |
| DATE                         | DATE                      | -   |                                    |
| DATETIME YEAR TO DAY         | DATE                      |   |                                    |
| DATETIME YEAR TO FRACTION    | DATE                      |   |                                    |
| DATETIME YEAR TO SECOND      | DATE                      |   |                                    |
| DATETIME HOUR TO SECOND      | CHAR(15)                  |   |                                    |
| DATETIME HOUR TO FRACTION    | CHAR(15)                  |   |                                    |
| DECIMAL                      | NUMBER(p[,s])             | -   |                                    |
| FLOAT                        | FLOAT(53)                 | -   |                                    |
| INT8                         | NUMBER(19)                |   |                                    |
| INTEGER                      | NUMBER(10)                | NUMBER range is<br>-2,147,483,647 to<br>2,147,483,647 |                                    |
| INTERVAL YEAR()<br>TO YEAR   | INTERVAL YEAR TO<br>MONTH |   |                                    |
| INTERVAL MONTH()<br>TO MONTH | INTERVAL YEAR TO<br>MONTH |   |                                    |



**Table A-1 (Cont.) Data Type Mapping and Restrictions**

| <b>Informix</b>               | <b>Oracle</b>          | <b>Criteria</b>                                       | <b>If Oracle uses large varchar (32k)</b> |
|-------------------------------|------------------------|---|---|
| INTERVAL YEAR() TO MONTH      | INTERVAL YEAR TO MONTH |   |   |
| INTERVAL DAY() TO DAY         | INTERVAL DAY TO SECOND |   |   |
| INTERVAL HOUR() TO HOUR       | INTERVAL DAY TO SECOND |   |   |
| INTERVAL MINUTE() TO MINUTE   | INTERVAL DAY TO SECOND |   |   |
| INTERVAL SECOND() TO SECOND   | INTERVAL DAY TO SECOND |   |   |
| INTERVAL SECOND() TO FRACTION | INTERVAL DAY TO SECOND |   |   |
| INTERVAL FRACTION TO FRACTION | INTERVAL DAY TO SECOND |   |   |
| INTERVAL DAY() TO HOUR        | INTERVAL DAY TO SECOND |   |   |
| INTERVAL DAY() TO MINUTE      | INTERVAL DAY TO SECOND |   |   |
| INTERVAL DAY() TO SECOND      | INTERVAL DAY TO SECOND |   |   |
| INTERVAL DAY() TO FRACTION    | INTERVAL DAY TO SECOND |   |   |
| INTERVAL HOUR() TO MINUTE     | INTERVAL DAY TO SECOND |   |   |
| INTERVAL HOUR() TO SECOND     | INTERVAL DAY TO SECOND |   |   |
| INTERVAL HOUR() TO FRACTION   | INTERVAL DAY TO SECOND |   |   |
| INTERVAL MINUTE() TO SECOND   | INTERVAL DAY TO SECOND |   |   |
| INTERVAL MINUTE() TO FRACTION | INTERVAL DAY TO SECOND |   |   |
| LVARCHAR                      | VARCHAR2               | N <= 4000   | N <= 32767                                |
| MONEY                         | NUMBER(p[,s])          | -   |   |
| NCHAR                         | CHAR                   | -   |   |
| NVARCHAR                      | VARCHAR2               | N <= 4000   | N <= 32767                                |
| SERIAL                        | NUMBER(10)             | NUMBER range is<br>-2,147,483,647 to<br>2,147,483,647 |   |
| SERIAL8                       | NUMBER(19)             | -   |   |

**Table A-1 (Cont.) Data Type Mapping and Restrictions**

| <b>Informix</b> | <b>Oracle</b> | <b>Criteria</b>  | <b>If Oracle uses large varchar (32k)</b> |
|-----------------|---------------|--|---|
| SMALLFLOAT      | FLOAT(24)     | Precision is 6   |   |
| SMALLINT        | NUMBER(5)     |  |   |
| TEXT            | LONG          | -  |   |
| VARCHAR         | VARCHAR2      | N ≤ 4000<br>If a length is not specified as part of VARCHAR, the data type is converted to VARCHAR2(1) | N ≤ 32767                                 |

# B

## Supported SQL Syntax and Functions

The following topics describe supported SQL Syntax and Functions:

- [Supported SQL Statements](#)
- [Oracle Functions](#)

### Supported SQL Statements

With a few exceptions, the gateway provides full support for Oracle `DELETE`, `INSERT`, `SELECT`, and `UPDATE` statements.

The gateway does not support Oracle data definition language (DDL) statements. No form of the Oracle `ALTER`, `CREATE`, `DROP`, `GRANT`, or `TRUNCATE` statements can be used. Instead, use the pass-through feature of the gateway if you need to use DDL statements against the Informix database.

#### See Also:

*Oracle Database SQL Language Reference* for detailed descriptions of keywords, parameters, and options.

### DELETE

The `DELETE` statement is fully supported. However, only Oracle functions supported by Informix can be used. Also, you cannot have SQL statements in the subquery that refer to the same table name in the outer query.

#### See Also:

["Functions Supported by Informix"](#) for a list of supported functions.

### INSERT

The `INSERT` statement is fully supported. However, only Oracle functions supported by Informix can be used. Also, you cannot have SQL statements in the subquery that refer to the same table name in the outer query.

**See Also:**

"[Functions Supported by Informix](#)" for a list of supported functions.

## SELECT

The `SELECT` statement is fully supported, with these exceptions:

- `CONNECT BY condition`
- `NOWAIT`
- `START WITH condition`
- Subquery in `HAVING` clause

## UPDATE

The `UPDATE` statement is fully supported. However, only Oracle functions supported by Informix can be used. Also, you cannot have SQL statements in the subquery that refer to the same table name in the outer query. Subqueries are not supported in the `SET` clause. Informix does not support table aliases in `UPDATE`.

**See Also:**

"[Functions Supported by Informix](#)" for a list of supported functions.

## Oracle Functions

All functions are evaluated by the Informix database after the gateway has converted them to Informix SQL.

## Functions Not Supported by Informix

Oracle SQL functions with no equivalent function in Informix are not supported in `DELETE`, `INSERT`, or `UPDATE` statements, but are evaluated by the Oracle database if the statement is a `SELECT` statement. That is, the Oracle database performs post-processing of `SELECT` statements sent to the gateway.

If an unsupported function is used in a `DELETE`, `INSERT`, or `UPDATE`, statement, the following Oracle error occurs:

```
ORA-02070: database db_link_name does not support function in this context
```

## Functions Supported by Informix

The gateway translates the following Oracle database functions in SQL statements to their equivalent Informix functions:

- [Arithmetic Operators](#)

- [Comparison Operators](#)
- [Group Functions](#)
- [String Functions](#)
- [Pattern Matches](#)
- [Date Functions](#)
- [Other Functions](#)

## Arithmetic Operators

| Oracle | Informix |
|--------|----------|
| +      | +        |
| -      | -        |
| *      | *        |
| /      | /        |

## Comparison Operators

| Oracle      | Informix    |
|-------------|-------------|
| =           | =           |
| >           | >           |
| <           | <           |
| >=          | >=          |
| <=          | <=          |
| <>, !=, ^=  | <>          |
| IS NOT NULL | IS NOT NULL |
| IS NULL     | IS NULL     |

## Group Functions

| Oracle | Informix |
|--------|----------|
| AVG    | AVG      |
| COUNT  | COUNT    |
| MAX    | MAX      |
| MIN    | MIN      |
| SUM    | SUM      |

## String Functions

| Oracle   | Informix |
|----------|----------|
| , CONCAT |          |
| ASCII    | ASCII    |
| CHR      | CHR      |
| LENGTH   | LENGTH   |

## Pattern Matches

| Oracle                | Informix              |
|-----------------------|-----------------------|
| LIKE 'a%'             | LIKE "a%"             |
| LIKE 'a_'             | LIKE "a_"             |
| LIKE 'a\%' ESCAPE '\' | LIKE "a\%" ESCAPE "\" |
| NOT LIKE              | NOT LIKE              |

## Date Functions

| Oracle               | Informix             |
|----------------------|----------------------|
| <i>date + number</i> | <i>date + number</i> |
| <i>date - number</i> | <i>date - number</i> |
| <i>date + date</i>   | <i>date + date</i>   |
| <i>date - date</i>   | <i>date - date</i>   |

## Other Functions

| Oracle                  | Informix                         |
|-------------------------|----------------------------------|
| ABS                     | ABS                              |
| COS                     | COS                              |
| EXP                     | EXP                              |
| LOG10                   | LOG10                            |
| LN                      | LOGN                             |
| LTRIM( <i>char</i> )    | TRIM(LEADING FROM <i>char</i> )  |
| MOD                     | MOD                              |
| POWER ( <i>m, n</i> )   | POW( <i>m, n</i> )               |
| RTRIM( <i>char</i> )    | TRIM(TRAILING FROM <i>char</i> ) |
| ROUND (with 1 argument) | ROUND                            |
| SIN                     | SIN                              |

---

| Oracle                  | Informix |
|-------------------------|----------|
| SQRT                    | SQRT     |
| TAN                     | TAN      |
| TRUNC (with 1 argument) | TRUNC    |

---

## Functions Supported by the Gateway

If the Oracle function has no equivalent function in Informix, the Oracle function is not translated into the SQL statement and must be post-processed if the SQL statement is a `SELECT`.

The gateway, however, does support one function even though there is no equivalent in Informix. This function is the `TO_DATE` function:

```
TO_DATE(date_string | date_column)
```

Where:

*date\_string* is converted to a string with the following format:

```
yyyy-mm-dd hh:mi:ss.fff
```

 **Note:**

Supply the date string with the same format as the result (that is, *yyyy-mm-dd hh:mi:ss.fff*).

*date\_column* is a column with a date data type. It is converted to a parameter with a timestamp data type.

# C

## Data Dictionary

The Oracle Database Gateway for Informix translates a query that refers to an Oracle database data dictionary table into a query that retrieves the data from Informix system catalog tables. You perform queries on data dictionary tables over the database link in the same way you query data dictionary tables in the Oracle database. The gateway data dictionary is similar to the Oracle database data dictionary in appearance and use.

Topics:

- [Data Dictionary Mapping](#)
- [Gateway Data Dictionary Descriptions](#)

## Informix System Catalog Tables

Informix data dictionary information is stored in the Informix database as Informix system catalog tables. All Informix system catalog tables have names prefixed with "sys". The Informix system catalog tables define the structure of a database. When you change data definitions, Informix reads and modifies the Informix system catalog tables to add information about the user tables.

## Accessing the Gateway Data Dictionary

Accessing a gateway data dictionary table or view is identical to accessing a data dictionary in an Oracle database. You issue a SQL `SELECT` statement specifying a database link. The Oracle database data dictionary view and column names are used to access the gateway data dictionary in an Oracle database. Synonyms of supported views are also acceptable. For example, the following statement queries the data dictionary table `ALL_CATALOG` to retrieve all table names in the Informix database:

```
SQL> SELECT * FROM "ALL_CATALOG"@IFMX;
```

When a data dictionary access query is issued, the gateway:

1. Maps the requested table, view, or synonym to one or more Informix system catalog table names. The gateway translates all data dictionary column names to their corresponding Informix column names within the query. If the mapping involves one Informix system catalog table, the gateway translates the requested table name to its corresponding Informix system catalog table name within the query. If the mapping involves multiple Informix system catalog tables, the gateway constructs a join in the query using the translated Informix system catalog table names.
2. Sends the translated query to Informix.
3. Might convert the retrieved Informix data to give it the appearance of the Oracle database data dictionary table.



4. Passes the data dictionary information from the translated Informix system catalog table to the Oracle database.

 **Note:**

The values returned when querying the gateway data dictionary might not be the same as the ones returned by the Oracle SQL\*Plus DESCRIBE command.

## Direct Queries to Informix Tables

Queries issued directly to individual Informix system catalog tables are allowed but they return different results because the Informix system catalog table column names differ from those of the data dictionary view. Also, certain columns in an Informix system catalog table cannot be used in data dictionary processing.

## Supported Views and Tables

The gateway supports the following views and tables:

| Supported Views and Tables | Supported Views and Tables |
|----------------------------|----------------------------|
| ALL_CATALOG                | ALL_COL_COMMENTS           |
| ALL_COL_PRIVS              | ALL_CONS_COLUMNS           |
| ALL_CONSTRAINTS            | ALL_IND_COLUMNS            |
| ALL_INDEXES                | ALL_OBJECTS                |
| ALL_SYNONYMS               | ALL_TAB_COLUMNS            |
| ALL_TAB_COMMENTS           | ALL_TAB_PRIVS              |
| ALL_TABLES                 | ALL_USERS                  |
| ALL_VIEWS                  | COLUMN_PRIVILEGES          |
| DBA_CATALOG                | DBA_COL_COMMENTS           |
| DBA_OBJECTS                | DBA_TABLES                 |
| DBA_TAB_COLUMNS            | DBA_TAB_COMMENTS           |
| DICT_COLUMNS               | DICTIONARY                 |
| DUAL                       | TABLE_PRIVILEGES           |
| USER_CATALOG               | USER_COL_COMMENTS          |
| USER_COL_PRIVS             | USER_CONS_COLUMNS          |
| USER_CONSTRAINTS           | USER_IND_COLUMNS           |
| USER_INDEXES               | USER_OBJECTS               |
| USER_SYNONYMS              | USER_TAB_COLUMNS           |
| USER_TAB_COMMENTS          | USER_TAB_PRIVS             |
| USER_TABLES                | USER_USERS                 |

| Supported Views and Tables | Supported Views and Tables |
|----------------------------|----------------------------|
| USER_VIEWS                 |                            |

No other Oracle database data dictionary tables or views are supported. If you use a view not on the list, you receive the Oracle database error code for no more rows available.

Queries through the gateway of any data dictionary table or view beginning with ALL\_ can returns rows from the Informix database even when access privileges for those Informix objects have not been granted. When querying an Oracle database with the Oracle data dictionary, rows are returned only for those objects you are permitted to access.

## Data Dictionary Mapping

The tables in this section list Oracle data dictionary view names and the equivalent Informix system catalog tables used. A plus sign (+) indicates that a join operation is involved.

**Table C-1 Oracle Data Dictionary View Names and Informix Equivalents**

| View Name         | Informix System Catalog Table Name                      |
|-------------------|---|
| ALL_CATALOG       | systables   |
| ALL_COL_COMMENTS  | systables + syscolumns                                  |
| ALL_COL_PRIVS     | systables + syscolumns + syscolauth                     |
| ALL_CONS_COLUMNS  | systables + sysconstraints +<br>syscolumns + sysindexes |
| ALL_CONSTRAINTS   | systables + sysconstraints +<br>sysreferences           |
| ALL_IND_COLUMNS   | systables + sysindexes + syscolumns                     |
| ALL_INDEXES       | sysindexes + systables                                  |
| ALL_OBJECTS       | systables + sysindexes + sysprocedures<br>+ sysprocplan |
| ALL_SYNONYMS      | systables + syssynonyms + syssyntable                   |
| ALL_TAB_COLUMNS   | systables + syscolumns                                  |
| ALL_TAB_COMMENTS  | systables   |
| ALL_TAB_PRIVS     | systables + systabauth                                  |
| ALL_TABLES        | systables   |
| ALL_USERS         | sysusers  |
| ALL_VIEWS         | systables + sysviews                                    |
| COLUMN_PRIVILEGES | systables + syscolauth + syscolumns                     |
| DBA_CATALOG       | systables   |
| DBA_COL_COMMENTS  | systables + syscolumns                                  |

**Table C-1 (Cont.) Oracle Data Dictionary View Names and Informix Equivalent**

| View Name         | Informix System Catalog Table Name                   |
|-------------------|--|
| DBA_OBJECTS       | systables + sysindexes + sysprocedures + sysprocplan |
| DBA_TABLES        | systables  |
| DBA_TAB_COLUMNS   | systables + syscolumns                               |
| DBA_TAB_COMMENTS  | systables  |
| DICTIONARY        | systables  |
| DUAL              | <i>(Defined in the Gateway)</i>                      |
| TABLE_PRIVILEGES  | systabauth + systables                               |
| USER_CATALOG      | systables  |
| USER_COL_COMMENTS | systables + syscolumns                               |
| USER_COL_PRIVS    | systables + syscolumns + syscolauth                  |
| USER_CONS_COLUMNS | systables + sysconstraints + syscolumns + sysindexes |
| USER_CONSTRAINTS  | systables + sysconstraints + sysreferences           |
| USER_IND_COLUMNS  | systables + sysindexes + syscolumns                  |
| USER_INDEXES      | systables + sysindexes                               |
| USER_OBJECTS      | systables + sysindexes + sysprocedures + sysprocplan |
| USER_SYNONYMS     | systables + syssynonyms + syssyntable                |
| USER_TAB_COLUMNS  | systables + syscolumns                               |
| USER_TAB_COMMENTS | systables  |
| USER_TAB_PRIVS    | systables + systabauth                               |
| USER_TABLES       | systables  |
| USER_USERS        | sysusers   |
| USER_VIEWS        | systables + sysviews                                 |

## Default Column Values

There is a minor difference between the gateway data dictionary and a typical Oracle database data dictionary. The Oracle database columns that are missing in an Informix system catalog table are filled with zeros, spaces, null values, not-applicable values (N.A.), or default values, depending on the column type.

## Gateway Data Dictionary Descriptions

The gateway data dictionary tables and views provide the following information:

- Name, data type, and width of each column
- The contents of columns with fixed values

They are described here with information retrieved by an Oracle SQL\*Plus DESCRIBE command. The values in the Null? column might differ from the Oracle database data dictionary tables and views. Any default value is shown to the right of an item, but this is not information returned by DESCRIBE.

## ALL\_CATALOG

**Table C-2 ALL\_CATALOG**

| Name       | Type           | Value                          |
|------------|----------------|--------------------------------|
| OWNER      | VARCHAR2 (32)  | -                              |
| TABLE_NAME | VARCHAR2 (128) | -                              |
| TABLE_TYPE | VARCHAR2 (7)   | "TABLE" or "VIEW" or "SYNONYM" |

## ALL\_COL\_COMMENTS

**Table C-3 ALL\_COL\_COMMENTS**

| Name        | Type           | Value |
|-------------|----------------|-------|
| OWNER       | VARCHAR2 (32)  | -     |
| TABLE_NAME  | VARCHAR2 (128) | -     |
| COLUMN_NAME | VARCHAR2 (128) | -     |
| COMMENTS    | CHAR (1)       | " "   |

## ALL\_COL\_PRIVS

**Table C-4 ALL\_COL\_PRIVS**

| Name         | Type           | Value                                |
|--------------|----------------|--------------------------------------|
| GRANTOR      | VARCHAR2 (32)  | -                                    |
| GRANTEE      | VARCHAR2 (32)  | -                                    |
| TABLE_SCHEMA | VARCHAR2 (32)  | -                                    |
| TABLE_NAME   | VARCHAR2 (128) | -                                    |
| COLUMN_NAME  | VARCHAR2 (128) | -                                    |
| PRIVILEGE    | VARCHAR2 (10)  | "SELECT" or "UPDATE" or "REFERENCES" |
| GRANTABLE    | VARCHAR2 (3)   | "YES" or "NO"                        |

## ALL\_CONS\_COLUMNS

**Table C-5 ALL\_CONS\_COLUMNS**

| Name            | Type          | Value |
|-----------------|---------------|-------|
| OWNER           | VARCHAR2(32)  | -     |
| CONSTRAINT_NAME | VARCHAR2(128) | -     |
| TABLE_NAME      | VARCHAR2(128) | -     |
| COLUMN_NAME     | VARCHAR2(128) | -     |
| POSITION        | NUMBER(10)    | 0     |

## ALL\_CONSTRAINTS

**Table C-6 ALL\_CONSTRAINTS**

| Name              | Value                    |
|-------------------|--------------------------|
| OWNER             | -                        |
| CONSTRAINT_NAME   | -                        |
| CONSTRAINT_TYPE   | "R" or "P" or "U" or "C" |
| TABLE_NAME        | -                        |
| SEARCH_CONDITION  | " "                      |
| R_OWNER           | " "                      |
| R_CONSTRAINT_NAME | " "                      |
| DELETE_RULE       | " "                      |
| STATUS            | " "                      |
| DEFERRABLE        | " "                      |
| DEFERRED          | " "                      |
| VALIDATED         | " "                      |
| GENERATED         | " "                      |
| BAD               | " "                      |
| RELY              | " "                      |
| LAST_CHANGE       | -                        |

## ALL\_IND\_COLUMNS

**Table C-7 ALL\_IND\_COLUMNS**

| Name        | Type         | Value |
|-------------|--------------|-------|
| INDEX_OWNER | VARCHAR2(32) | -     |

Table C-7 (Cont.) ALL\_IND\_COLUMNS

| Name            | Type          | Value |
|-----------------|---------------|-------|
| INDEX_NAME      | VARCHAR2(128) | -     |
| TABLE_OWNER     | VARCHAR2(32)  | -     |
| TABLE_NAME      | VARCHAR2(128) | -     |
| COLUMN_NAME     | VARCHAR2(128) | -     |
| COLUMN_POSITION | NUMBER(10)    | 0     |
| COLUMN_LENGTH   | NUMBER(10)    | 0     |
| DESCEND         | CHAR(1)       | " "   |

## ALL\_INDEXES

Table C-8 ALL\_INDEXES

| Name            | Type          | Value                   |
|-----------------|---------------|-------------------------|
| OWNER           | VARCHAR2(32)  | -                       |
| INDEX_NAME      | VARCHAR2(128) | -                       |
| INDEX_TYPE      | VARCHAR2(1)   | NULL                    |
| TABLE_OWNER     | VARCHAR2(32)  | -                       |
| TABLE_NAME      | VARCHAR2(128) | -                       |
| TABLE_TYPE      | VARCHAR(5)    | "TABLE"                 |
| UNIQUENESS      | VARCHAR2(9)   | "UNIQUE" or "NONUNIQUE" |
| COMPRESSION     | VARCHAR2(1)   | NULL                    |
| PREFIX_LENGTH   | NUMBER        | 0                       |
| TABLESPACE_NAME | VARCHAR2(1)   | NULL                    |
| INI_TRANS       | NUMBER        | 0                       |
| MAX_TRANS       | NUMBER        | 0                       |
| INITIAL_EXTENT  | NUMBER        | 0                       |
| NEXT_EXTENT     | NUMBER        | 0                       |
| MIN_EXTENTS     | NUMBER        | 0                       |
| MAX_EXTENTS     | NUMBER        | 0                       |
| PCT_INCREASE    | NUMBER        | 0                       |
| PCT_THRESHOLD   | NUMBER        | 0                       |
| INCLUDE_COLUMN  | NUMBER        | 0                       |
| FREELISTS       | NUMBER        | 0                       |
| FREELIST_GROUPS | NUMBER        | 0                       |
| PCT_FREE        | NUMBER        | 0                       |

Table C-8 (Cont.) ALL\_INDEXES

| Name                    | Type        | Value                               |
|-------------------------|-------------|-------------------------------------|
| LOGGING                 | VARCHAR2(1) | NULL                                |
| BLEVEL                  | NUMBER      | 0                                   |
| LEAF_BLOCKS             | NUMBER      | 0                                   |
| DISTINCT_KEYS           | NUMBER      | 0                                   |
| AVG_LEAF_BLOCKS_PER_KEY | NUMBER      | 0                                   |
| AVG_DATA_BLOCKS_PER_KEY | NUMBER      | 0                                   |
| CLUSTERING_FACTOR       | NUMBER      | 0                                   |
| STATUS                  | VARCHAR2(1) | NULL                                |
| NUM_ROWS                | NUMBER      | 0                                   |
| SAMPLE_SIZE             | NUMBER      | 0                                   |
| LAST_ANALYZED           | DATE        | to_date('01-01-1980', 'dd-mm-yyyy') |
| DEGREE                  | VARCHAR2(1) | NULL                                |
| INSTANCES               | VARCHAR2(1) | NULL                                |
| PARTITIONED             | VARCHAR2(1) | NULL                                |
| TEMPORARY               | VARCHAR2(1) | NULL                                |
| GENERATED               | VARCHAR2(1) | NULL                                |
| SECONDARY               | VARCHAR2(1) | NULL                                |
| BUFFER_POOL             | VARCHAR2(1) | NULL                                |
| USER_STATS              | VARCHAR2(1) | NULL                                |
| DURATION                | VARCHAR2(1) | NULL                                |
| PCT_DIRECT_ACCESS       | NUMBER      | 0                                   |
| ITYP_OWNER              | VARCHAR2(1) | NULL                                |
| ITYP_NAME               | VARCHAR2(1) | NULL                                |
| PARAMETERS              | VARCHAR2(1) | NULL                                |
| GLOBAL_STATS            | VARCHAR2(1) | NULL                                |
| DOMIDX_STATUS           | VARCHAR2(1) | NULL                                |
| DOMIDX_OPSTATUS         | VARCHAR2(1) | NULL                                |
| FUNCIDX_STATUS          | VARCHAR2(1) | NULL                                |

## ALL\_OBJECTS

Table C-9 ALL\_OBJECTS

| Name  | Type         | Value |
|-------|--------------|-------|
| OWNER | VARCHAR2(32) | -     |

Table C-9 (Cont.) ALL\_OBJECTS

| Name           | Type          | Value   |
|----------------|---------------|---|
| OBJECT_NAME    | VARCHAR2(128) | -   |
| SUBOBJECT_NAME | VARCHAR2(1)   | NULL  |
| OBJECT_ID      | NUMBER        | -   |
| DATA_OBJECT_ID | NUMBER        | 0   |
| OBJECT_TYPE    | VARCHAR2(9)   | "TABLE" or "VIEW" or<br>"SYNONYM" or<br>"INDEX" or<br>"PROCEDURE" |
| CREATED        | DATE          | -   |
| LAST_DDL_TIME  | DATE          | -   |
| TIMESTAMP      | VARCHAR2(1)   | NULL  |
| STATUS         | VARCHAR2(1)   | NULL  |
| TEMPORARY      | VARCHAR2(1)   | NULL  |
| GENERATED      | VARCHAR2(1)   | NULL  |
| SECONDARY      | VARCHAR2(1)   | NULL  |

## ALL\_SYNONYMS

Table C-10 ALL\_SYNONYMS

| Name         | Type          | Value |
|--------------|---------------|-------|
| OWNER        | VARCHAR2(32)  | -     |
| SYNONYM_NAME | VARCHAR2(128) | -     |
| TABLE_OWNER  | VARCHAR2(32)  | -     |
| TABLE_NAME   | VARCHAR2(128) | -     |
| DB_LINK      | CHAR(1)       | NULL  |

## ALL\_TAB\_COLUMNS

Table C-11 ALL\_TAB\_COLUMNS

| Name          | Type          | Value |
|---------------|---------------|-------|
| OWNER         | VARCHAR2(32)  | -     |
| TABLE_NAME    | VARCHAR2(128) | -     |
| COLUMN_NAME   | VARCHAR2(128) | -     |
| DATA_TYPE     | VARCHAR2(8)   | -     |
| DATA_TYPE_MOD | VARCHAR2(1)   | NULL  |



**Table C-11 (Cont.) ALL\_TAB\_COLUMNS**

| Name                 | Type        | Value                               |
|----------------------|-------------|-------------------------------------|
| DATA_TYPE_OWNER      | VARCHAR2(1) | NULL                                |
| DATA_LENGTH          | NUMBER      | -                                   |
| DATA_PRECISION       | NUMBER      | -                                   |
| DATA_SCALE           | NUMBER      | -                                   |
| NULLABLE             | VARCHAR2(1) | "Y" or "N"                          |
| COLUMN_ID            | NUMBER(5)   | -                                   |
| DEFAULT_LENGTH       | NUMBER      | 0                                   |
| DATA_DEFAULT         | VARCHAR2(1) | NULL                                |
| NUM_DISTINCT         | NUMBER      | 0                                   |
| LOW_VALUE            | NUMBER      | 0                                   |
| HIGH_VALUE           | NUMBER      | 0                                   |
| DENSITY              | NUMBER      | 0                                   |
| NUM_NULLS            | NUMBER      | 0                                   |
| NUM_BUCKETS          | NUMBER      | 0                                   |
| LAST_ANALYZED        | DATE        | to_date('01-01-1980', 'dd-mm-yyyy') |
| SAMPLE_SIZE          | NUMBER      | 0                                   |
| CHARACTER_SET_NAME   | VARCHAR2(1) | NULL                                |
| CHAR_COL_DECL_LENGTH | NUMBER      | 0                                   |
| GLOBAL_STATS         | VARCHAR2(1) | NULL                                |
| USER_STATS           | VARCHAR2(1) | NULL                                |
| AVG_COL_LEN          | NUMBER      | 0                                   |

## ALL\_TAB\_COMMENTS

**Table C-12 ALL\_TAB\_COMMENTS**

| Name       | Type          | Value             |
|------------|---------------|-------------------|
| OWNER      | VARCHAR2(32)  | -                 |
| TABLE_NAME | VARCHAR2(128) | -                 |
| TABLE_TYPE | VARCHAR2(5)   | "TABLE" or "VIEW" |
| COMMENTS   | VARCHAR2(1)   | NULL              |

## ALL\_TAB\_PRIVS

**Table C-13 ALL\_TAB\_PRIVS**

| Name         | Type          | Value   |
|--------------|---------------|---|
| GRANTOR      | VARCHAR2(32)  | -   |
| GRANTEE      | VARCHAR2(32)  | -   |
| TABLE_SCHEMA | VARCHAR2(32)  | -   |
| TABLE_NAME   | VARCHAR2(128) | -   |
| PRIVILEGE    | VARCHAR2(10)  | "SELECT" or<br>"UPDATE" or<br>"INSERT" or<br>"DELETE" or "INDEX"<br>or "ALTER" or<br>"REFERENCES" |
| GRANTABLE    | VARCHAR2(3)   | "YES"   |

## ALL\_TABLES

**Table C-14 ALL\_TABLES**

| Name            | Type          | Value |
|-----------------|---------------|-------|
| OWNER           | VARCHAR2(32)  | -     |
| TABLE_NAME      | VARCHAR2(128) | -     |
| TABLESPACE_NAME | VARCHAR2(1)   | NULL  |
| CLUSTER_NAME    | VARCHAR2(1)   | NULL  |
| IOT_NAME        | VARCHAR2(1)   | NULL  |
| PCT_FREE        | NUMBER        | 0     |
| PCT_USED        | NUMBER        | 0     |
| INI_TRANS       | NUMBER        | 0     |
| MAX_TRANS       | NUMBER        | 0     |
| INITIAL_EXTENT  | NUMBER        | 0     |
| NEXT_EXTENT     | NUMBER        | 0     |
| MIN_EXTENTS     | NUMBER        | 0     |
| MAX_EXTENTS     | NUMBER        | 0     |
| PCT_INCREASE    | NUMBER        | 0     |
| FREELISTS       | NUMBER        | 0     |
| FREELIST_GROUPS | NUMBER        | 0     |
| LOGGING         | VARCHAR2(1)   | NULL  |
| BACKED_UP       | VARCHAR2(1)   | NULL  |

**Table C-14 (Cont.) ALL\_TABLES**

| Name                      | Type        | Value                               |
|---------------------------|-------------|-------------------------------------|
| NUM_ROWS                  | NUMBER(10)  | -                                   |
| BLOCKS                    | NUMBER      | 0                                   |
| EMPTY_BLOCKS              | NUMBER      | 0                                   |
| AVG_SPACE                 | NUMBER      | 0                                   |
| CHAIN_CNT                 | NUMBER      | 0                                   |
| AVG_ROW_LEN               | NUMBER      | 0                                   |
| AVG_SPACE_FREELIST_BLOCKS | NUMBER      | 0                                   |
| NUM_FREELIST_BLOCKS       | NUMBER      | 0                                   |
| DEGREE                    | VARCHAR2(1) | NULL                                |
| INSTANCES                 | VARCHAR2(1) | NULL                                |
| CACHE                     | VARCHAR2(1) | NULL                                |
| TABLE_LOCK                | VARCHAR2(1) | NULL                                |
| SAMPLE_SIZE               | NUMBER      | 0                                   |
| LAST_ANALYZED             | DATE        | to_date('01-01-1980', 'dd-mm-yyyy') |
| PARTITIONED               | VARCHAR2(1) | NULL                                |
| IOT_TYPE                  | VARCHAR2(1) | NULL                                |
| TEMPORARY                 | VARHCAR2(1) | NULL                                |
| SECONDARY                 | VARCHAR2(1) | NULL                                |
| NESTED                    | VARCHAR2(1) | NULL                                |
| BUFFER_POOL               | VARCHAR2(1) | NULL                                |
| ROW_MOVEMENT              | VARCHAR2(1) | NULL                                |
| GLOBAL_STATS              | VARCHAR2(1) | NULL                                |
| USER_STATS                | VARCHAR2(1) | NULL                                |
| DURATION                  | VARHCAR2(1) | NULL                                |
| SKIP_CORRUPT              | VARCHAR2(1) | NULL                                |
| MONITORING                | VARCHAR2(1) | NULL                                |

## ALL\_USERS

**Table C-15 ALL\_USERS**

| Name     | Type         | Value |
|----------|--------------|-------|
| USERNAME | VARCHAR2(32) | -     |
| USER_ID  | NUMBER       | 0     |

Table C-15 (Cont.) ALL\_USERS

| Name    | Type | Value   |
|---------|------|---------|
| CREATED | DATE | SYSDATE |

## ALL\_VIEWS

Table C-16 ALL\_VIEWS

| Name             | Type          | Value |
|------------------|---------------|-------|
| OWNER            | VARCHAR2(32)  | -     |
| VIEW_NAME        | VARCHAR2(128) | -     |
| TEXT_LENGTH      | NUMBER(10)    | 64    |
| TEXT             | VARCHAR2(64)  | -     |
| TYPE_TEXT_LENGTH | NUMBER(10)    | 0     |
| TYPE_TEXT        | CHAR(1)       | " "   |
| OID_TEXT_LENGTH  | NUMBER(10)    | 0     |
| OID_TEXT         | CHAR(1)       | " "   |
| VIEW_TYPE_OWNER  | CHAR(1)       | " "   |
| VIEW_TYPE        | CHAR(1)       | " "   |

## COLUMN\_PRIVILEGES

Table C-17 COLUMN\_PRIVILEGES

| Name            | Type          | Value   |
|-----------------|---------------|---------|
| GRANTEE         | VARCHAR2(32)  | -       |
| OWNER           | VARCHAR2(32)  | -       |
| TABLE_NAME      | VARCHAR2(128) | -       |
| COLUMN_NAME     | VARCHAR2(128) | -       |
| GRANTOR         | VARCHAR2(32)  | -       |
| INSERT_PRIV     | VARCHAR2(1)   | "Y"     |
| UPDATE_PRIV     | VARCHAR2(1)   | "Y"     |
| REFERENCES_PRIV | VARCHAR2(1)   | NULL    |
| CREATED         | DATE          | SYSDATE |

## DBA\_CATALOG

**Table C-18 DBA\_CATALOG**

| Name       | Type          | Value                             |
|------------|---------------|-----------------------------------|
| OWNER      | VARCHAR2(32)  | -                                 |
| TABLE_NAME | VARCHAR2(128) | -                                 |
| TABLE_TYPE | VARCHAR2(7)   | "TABLE" or "VIEW" or<br>"SYNONYM" |

## DBA\_COL\_COMMENTS

**Table C-19 DBA\_COL\_COMMENTS**

| Name        | Type          | Value |
|-------------|---------------|-------|
| OWNER       | VARCHAR2(32)  | -     |
| TABLE_NAME  | VARCHAR2(128) | -     |
| COLUMN_NAME | VARCHAR2(128) | -     |
| COMMENTS    | CHAR(1)       | " "   |

## DBA\_OBJECTS

**Table C-20 DBA\_OBJECTS**

| Name           | Type          | Value   |
|----------------|---------------|---|
| OWNER          | VARCHAR2(32)  | -   |
| OBJECT_NAME    | VARCHAR2(128) | -   |
| SUBOBJECT_NAME | VARCHAR2(1)   | NULL  |
| OBJECT_ID      | NUMBER        | -   |
| DATA_OBJECT_ID | NUMBER        | 0   |
| OBJECT_TYPE    | VARCHAR2(9)   | "TABLE" or "VIEW" or<br>"SYNONYM" or<br>"INDEX" or<br>"PROCEDURE" |
| CREATED        | DATE          | -   |
| LAST_DDL_TIME  | DATE          | -   |
| TIMESTAMP      | VARCHAR2(1)   | NULL  |
| STATUS         | VARCHAR2(1)   | NULL  |
| TEMPORARY      | VARCHAR2(1)   | NULL  |
| GENERATED      | VARCHAR2(1)   | NULL  |

Table C-20 (Cont.) DBA\_OBJECTS

| Name      | Type        | Value |
|-----------|-------------|-------|
| SECONDARY | VARCHAR2(1) | NULL  |

## DBA\_TAB\_COLUMNS

Table C-21 DBA\_TAB\_COLUMNS

| Name                 | Type          | Value                               |
|----------------------|---------------|-------------------------------------|
| OWNER                | VARCHAR2(32)  | -                                   |
| TABLE_NAME           | VARCHAR2(128) | -                                   |
| COLUMN_NAME          | VARCHAR2(128) | -                                   |
| DATA_TYPE            | VARCHAR2(8)   | -                                   |
| DATA_TYPE_MOD        | VARCHAR2(1)   | NULL                                |
| DATA_TYPE_OWNER      | VARCHAR2(1)   | NULL                                |
| DATA_LENGTH          | NUMBER        | -                                   |
| DATA_PRECISION       | NUMBER        | -                                   |
| DATA_SCALE           | NUMBER        | -                                   |
| NULLABLE             | VARCHAR2(1)   | "Y" or "N"                          |
| COLUMN_ID            | NUMBER(5)     | -                                   |
| DEFAULT_LENGTH       | NUMBER        | 0                                   |
| DATA_DEFAULT         | VARCHAR2(1)   | NULL                                |
| NUM_DISTINCT         | NUMBER        | 0                                   |
| LOW_VALUE            | NUMBER        | 0                                   |
| HIGH_VALUE           | NUMBER        | 0                                   |
| DENSITY              | NUMBER        | 0                                   |
| NUM_NULLS            | NUMBER        | 0                                   |
| NUM_BUCKETS          | NUMBER        | 0                                   |
| LAST_ANALYZED        | DATE          | to_date('01-01-1980', 'dd-mm-yyyy') |
| SAMPLE_SIZE          | NUMBER        | 0                                   |
| CHARACTER_SET_NAME   | VARCHAR2(1)   | NULL                                |
| CHAR_COL_DECL_LENGTH | NUMBER        | 0                                   |
| GLOBAL_STATS         | VARCHAR2(1)   | NULL                                |
| USER_STATS           | VARCHAR2(1)   | NULL                                |
| AVG_COL_LEN          | NUMBER        | 0                                   |

## DBA\_TAB\_COMMENTS

**Table C-22 DBA\_TAB\_COMMENTS**

| Name       | Type          | Value             |
|------------|---------------|-------------------|
| OWNER      | VARCHAR2(32)  | -                 |
| TABLE_NAME | VARCHAR2(128) | -                 |
| TABLE_TYPE | VARCHAR2(5)   | "TABLE" or "VIEW" |
| COMMENTS   | VARCHAR2(1)   | NULL              |

## DBA\_TABLES

**Table C-23 DBA\_TABLES**

| Name            | Type          | Value |
|-----------------|---------------|-------|
| OWNER           | VARCHAR2(32)  | -     |
| TABLE_NAME      | VARCHAR2(128) | -     |
| TABLESPACE_NAME | VARCHAR2(1)   | NULL  |
| CLUSTER_NAME    | VARCHAR2(1)   | NULL  |
| IOT_NAME        | VARCHAR2(1)   | NULL  |
| PCT_FREE        | NUMBER        | 0     |
| PCT_USED        | NUMBER        | 0     |
| INI_TRANS       | NUMBER        | 0     |
| MAX_TRANS       | NUMBER        | 0     |
| INITIAL_EXTENT  | NUMBER        | 0     |
| NEXT_EXTENT     | NUMBER        | 0     |
| MIN_EXTENTS     | NUMBER        | 0     |
| MAX_EXTENTS     | NUMBER        | 0     |
| PCT_INCREASE    | NUMBER        | 0     |
| FREELISTS       | NUMBER        | 0     |
| FREELIST_GROUPS | NUMBER        | 0     |
| LOGGING         | VARCHAR2(1)   | NULL  |
| BACKED_UP       | VARCHAR2(1)   | NULL  |
| NUM_ROWS        | NUMBER(10)    |       |
| BLOCKS          | NUMBER        | 0     |
| EMPTY_BLOCKS    | NUMBER        | 0     |
| AVG_SPACE       | NUMBER        | 0     |
| CHAIN_CNT       | NUMBER        | 0     |

**Table C-23 (Cont.) DBA\_TABLES**

| Name                      | Type        | Value                               |
|---------------------------|-------------|-------------------------------------|
| AVG_ROW_LEN               | NUMBER      | 0                                   |
| AVG_SPACE_FREELIST_BLOCKS | NUMBER      | 0                                   |
| NUM_FREELIST_BLOCKS       | NUMBER      | 0                                   |
| DEGREE                    | VARCHAR2(1) | NULL                                |
| INSTANCES                 | VARCHAR2(1) | NULL                                |
| CACHE                     | VARCHAR2(1) | NULL                                |
| TABLE_LOCK                | VARCHAR2(1) | NULL                                |
| SAMPLE_SIZE               | NUMBER      | 0                                   |
| LAST_ANALYZED             | DATE        | to_date('01-01-1980', 'dd-mm-YYYY') |
| PARTITIONED               | VARCHAR2(1) | NULL                                |
| IOT_TYPE                  | VARCHAR2(1) | NULL                                |
| TEMPORARY                 | VARHCAR2(1) | NULL                                |
| SECONDARY                 | VARCHAR2(1) | NULL                                |
| NESTED                    | VARCHAR2(1) | NULL                                |
| BUFFER_POOL               | VARCHAR2(1) | NULL                                |
| ROW_MOVEMENT              | VARCHAR2(1) | NULL                                |
| GLOBAL_STATS              | VARCHAR2(1) | NULL                                |
| USER_STATS                | VARCHAR2(1) | NULL                                |
| DURATION                  | VARHCAR2(1) | NULL                                |
| SKIP_CORRUPT              | VARCHAR2(1) | NULL                                |
| MONITORING                | VARCHAR2(1) | NULL                                |

## DICT\_COLUMNS

**Table C-24 DICT\_COLUMNS**

| Name        | Type          | Value |
|-------------|---------------|-------|
| TABLE_NAME  | VARCHAR2(128) | -     |
| COLUMN_NAME | VARCHAR2(128) | -     |
| COMMENTS    | VARCHAR2(1)   | -     |



## DICTIONARY

**Table C-25** DICTIONARY

| Name       | Type          | Value |
|------------|---------------|-------|
| TABLE_NAME | VARCHAR2(128) | -     |
| COMMENTS   | CHAR(1)       | " "   |

## DUAL

**Table C-26** DUAL

| Name  | Type        | Value |
|-------|-------------|-------|
| DUMMY | VARCHAR2(1) | "X"   |

## TABLE\_PRIVILEGES

**Table C-27** TABLE\_PRIVILEGES

| Name            | Type          | Value      |
|-----------------|---------------|------------|
| GRANTEE         | VARCHAR2(32)  | -          |
| OWNER           | VARCHAR2(32)  | -          |
| TABLE_NAME      | VARCHAR2(128) | -          |
| GRANTOR         | VARCHAR2(32)  | -          |
| SELECT_PRIV     | VARCHAR2(1)   | "Y" or "N" |
| INSERT_PRIV     | VARCHAR2(1)   | "Y" or "N" |
| DELETE_PRIV     | VARCHAR2(1)   | "Y" or "N" |
| UPDATE_PRIV     | VARCHAR2(1)   | "Y" or "N" |
| REFERENCES_PRIV | VARCHAR2(1)   | "Y" or "N" |
| ALTER_PRIV      | VARCHAR2(1)   | "Y" or "N" |
| INDEX_PRIV      | VARCHAR2(1)   | "Y" or "N" |
| CREATED         | DATE          | SYSDATE    |

## USER\_CATALOG

**Table C-28** USER\_CATALOG

| Name       | Type          | Value |
|------------|---------------|-------|
| TABLE_NAME | VARCHAR2(128) | -     |

Table C-28 (Cont.) USER\_CATALOG

| Name       | Type        | Value                          |
|------------|-------------|--------------------------------|
| TABLE_TYPE | VARCHAR2(7) | "TABLE" or "VIEW" or "SYNONYM" |

## USER\_COL\_COMMENTS

Table C-29 USER\_COL\_COMMENTS

| Name        | Type          | Value |
|-------------|---------------|-------|
| TABLE_NAME  | VARCHAR2(128) | -     |
| COLUMN_NAME | VARCHAR2(128) | -     |
| COMMENTS    | VARCHAR2(1)   | NULL  |

## USER\_COL\_PRIVS

Table C-30 USER\_COL\_PRIVS

| Name        | Type          | Value                                |
|-------------|---------------|--------------------------------------|
| GRANTOR     | VARCHAR2(32)  | -                                    |
| OWNER       | VARCHAR2(32)  | -                                    |
| TABLE_NAME  | VARCHAR2(128) | -                                    |
| COLUMN_NAME | VARCHAR2(128) | -                                    |
| GRANTEE     | VARCHAR2(32)  | -                                    |
| PRIVILEGE   | VARCHAR2(10)  | "SELECT" or "UPDATE" or "REFERENCES" |
| GRANTABLE   | VARCHAR2(3)   | "YES" or "NO"                        |

## USER\_CONS\_COLUMNS

Table C-31 USER\_CONS\_COLUMNS

| Name            | Type          | Value |
|-----------------|---------------|-------|
| OWNER           | VARCHAR2(32)  | -     |
| CONSTRAINT_NAME | VARCHAR2(128) | -     |
| TABLE_NAME      | VARCHAR2(128) | -     |
| COLUMN_NAME     | VARCHAR2(128) | -     |
| POSITION        | NUMBER        | 0     |

# USER\_CONSTRAINTS

**Table C-32 USER\_CONSTRAINTS**

| Name              | Type          | Value                    |
|-------------------|---------------|--------------------------|
| OWNER             | VARCHAR2(32)  | -                        |
| CONSTRAINT_NAME   | VARCHAR2(128) | -                        |
| CONSTRAINT_TYPE   | VARCHAR2(1)   | "R" or "P" or "U" or "C" |
| TABLE_NAME        | VARCHAR2(128) | -                        |
| SEARCH_CONDITION  | VARCHAR2(1)   | NULL                     |
| R_OWNER           | VARCHAR2(32)  | NULL                     |
| R_CONSTRAINT_NAME | VARCHAR2(128) | NULL                     |
| DELETE_RULE       | VARCHAR2(1)   | NULL                     |
| STATUS            | VARCHAR2(1)   | NULL                     |
| DEFERRABLE        | VARCHAR2(1)   | NULL                     |
| DEFERRED          | VARCHAR2(1)   | NULL                     |
| VALIDATED         | VARCHAR2(1)   | NULL                     |
| GENERATED         | VARCHAR2(1)   | NULL                     |
| BAD               | VARCHAR2(1)   | NULL                     |
| RELY              | VARCHAR2(1)   | NULL                     |
| LAST_CHANGE       | DATE          |                          |

# USER\_IND\_COLUMNS

**Table C-33 USER\_IND\_COLUMNS**

| Name            | Type          | Value |
|-----------------|---------------|-------|
| INDEX_NAME      | VARCHAR2(128) | -     |
| TABLE_NAME      | VARCHAR2(128) | -     |
| COLUMN_NAME     | VARCHAR2(128) | -     |
| COLUMN_POSITION | NUMBER        | 0     |
| COLUMN_LENGTH   | NUMBER        | 0     |
| DESCEND         | VARCHAR2(1)   | -     |

# USER\_INDEXES

**Table C-34 USER\_INDEXES**

| Name                    | Type          | Value                      |
|-------------------------|---------------|----------------------------|
| INDEX_NAME              | VARCHAR2(128) | -                          |
| INDEX_TYPE              | VARCHAR2(1)   | NULL                       |
| TABLE_OWNER             | VARCHAR2(32)  | -                          |
| TABLE_NAME              | VARCHAR2(128) | -                          |
| TABLE_TYPE              | VARCHAR2(5)   | "TABLE"                    |
| UNIQUENESS              | VARCHAR2(9)   | "UNIQUE" or<br>"NONUNIQUE" |
| COMPRESSION             | VARCHAR2(1)   | NULL                       |
| PREFIX_LENGTH           | NUMBER        | 0                          |
| TABLESPACE_NAME         | VARCHAR2(1)   | NULL                       |
| INI_TRANS               | NUMBER        | 0                          |
| MAX_TRANS               | NUMBER        | 0                          |
| INITIAL_EXTENT          | NUMBER        | 0                          |
| NEXT_EXTENT             | NUMBER        | 0                          |
| MIN_EXTENTS             | NUMBER        | 0                          |
| MAX_EXTENTS             | NUMBER        | 0                          |
| PCT_INCREASE            | NUMBER        | 0                          |
| PCT_THRESHOLD           | NUMBER        | 0                          |
| INCLUDE_COLUMN          | NUMBER        | 0                          |
| FREELISTS               | NUMBER        | 0                          |
| FREELIST_GROUPS         | NUMBER        | 0                          |
| PCT_FREE                | NUMBER        | 0                          |
| LOGGING                 | VARCHAR2(1)   | NULL                       |
| BLEVEL                  | NUMBER        | 0                          |
| LEAF_BLOCKS             | NUMBER        | 0                          |
| DISTINCT_KEYS           | NUMBER        | -                          |
| AVG_LEAF_BLOCKS_PER_KEY | NUMBER        | 0                          |
| AVG_DATA_BLOCKS_PER_KEY | NUMBER        | 0                          |
| CLUSTERING_FACTOR       | NUMBER        | 0                          |
| STATUS                  | VARCHAR2(1)   | NULL                       |
| NUM_ROWS                | NUMBER        | 0                          |
| SAMPLE_SIZE             | NUMBER        | 0                          |

**Table C-34 (Cont.) USER\_INDEXES**

| Name              | Type        | Value                               |
|-------------------|-------------|-------------------------------------|
| LAST_ANALYZED     | DATE        | to_date('01-01-1980', 'dd-mm-yyyy') |
| DEGREE            | VARCHAR2(1) | NULL                                |
| INSTANCES         | VARCHAR2(1) | NULL                                |
| PARTITIONED       | VARCHAR2(1) | NULL                                |
| TEMPORARY         | VARCHAR2(1) | NULL                                |
| GENERATED         | VARCHAR2(1) | NULL                                |
| SECONDARY         | VARCHAR2(1) | NULL                                |
| BUFFER_POOL       | VARCHAR2(1) | NULL                                |
| USER_STATS        | VARCHAR2(1) | NULL                                |
| DURATION          | VARHCAR2(1) | NULL                                |
| PCT_DIRECT_ACCESS | NUMBER      | 0                                   |
| ITYP_OWNER        | VARCHAR2(1) | NULL                                |
| ITYP_NAME         | VARCHAR2(1) | NULL                                |
| PARAMETERS        | VARCHAR2(1) | NULL                                |
| GLOBAL_STATS      | VARCHAR2(1) | NULL                                |
| DOMIDX_STATUS     | VARCHAR2(1) | NULL                                |
| DOMIDX_OPSTATUS   | VARCHAR2(1) | NULL                                |
| FUNCIDX_STATUS    | VARCHAR2(1) | NULL                                |

## USER\_OBJECTS

**Table C-35 USER\_OBJECTS**

| Name           | Type          | Value  |
|----------------|---------------|--|
| OBJECT_NAME    | VARCHAR2(128) | -  |
| SUBOBJECT_NAME | VARCHAR2(1)   | NULL   |
| OBJECT_ID      | NUMBER        | -  |
| DATA_OBJECT_ID | NUMBER        | 0  |
| OBJECT_TYPE    | VARCHAR2(9)   | "TABLE" or "VIEW" or "SYNONYM" or "INDEX" or "PROCEDURE" |
| CREATED        | DATE          | -  |
| LAST_DDL_TIME  | DATE          | -  |
| TIMESTAMP      | VARCHAR2(1)   | NULL   |

**Table C-35 (Cont.) USER\_OBJECTS**

| Name      | Type        | Value |
|-----------|-------------|-------|
| STATUS    | VARCHAR2(1) | NULL  |
| TEMPORARY | VARCHAR2(1) | NULL  |
| GENERATED | VARCHAR2(1) | NULL  |
| SECONDARY | VARCHAR2(1) | NULL  |

## USER\_SYNONYMS

**Table C-36 USER\_SYNONYMS**

| Name         | Type          | Value |
|--------------|---------------|-------|
| SYNONYM_NAME | VARCHAR2(128) | -     |
| TABLE_OWNER' | VARCHAR2(32)  | -     |
| TABLE_NAME   | VARCHAR2(128) | -     |
| DB_LINK      | VARCHAR2(1)   | NULL  |

## USER\_TAB\_COLUMNS

**Table C-37 USER\_TAB\_COLUMNS**

| Name            | Type          | Value      |
|-----------------|---------------|------------|
| TABLE_NAME      | VARCHAR2(128) | -          |
| COLUMN_NAME     | VARCHAR2(128) | -          |
| DATA_TYPE       | VARCHAR2(8)   | -          |
| DATA_TYPE_MOD   | VARCHAR2(1)   | NULL       |
| DATA_TYPE_OWNER | VARCHAR2(1)   | NULL       |
| DATA_LENGTH     | NUMBER        | -          |
| DATA_PRECISION  | NUMBER        | -          |
| DATA_SCALE      | NUMBER        | -          |
| NULLABLE        | VARCHAR2(1)   | "Y" or "N" |
| COLUMN_ID       | NUMBER(5)     | -          |
| DEFAULT_LENGTH  | NUMBER        | 0          |
| DATA_DEFAULT    | VARCHAR2(1)   | NULL       |
| NUM_DISTINCT    | NUMBER        | 0          |
| LOW_VALUE       | NUMBER        | 0          |
| HIGH_VALUE      | NUMBER        | 0          |
| DENSITY         | NUMBER        | 0          |

**Table C-37 (Cont.) USER\_TAB\_COLUMNS**

| Name                 | Type        | Value                               |
|----------------------|-------------|-------------------------------------|
| NUM_NULLS            | NUMBER      | 0                                   |
| NUM_BUCKETS          | NUMBER      | 0                                   |
| LAST_ANALYZED        | DATE        | to_date('01-01-1980', 'dd-mm-YYYY') |
| SAMPLE_SIZE          | NUMBER      | 0                                   |
| CHARACTER_SET_NAME   | VARCHAR2(1) | NULL                                |
| CHAR_COL_DECL_LENGTH | NUMBER      | 0                                   |
| GLOBAL_STATS         | VARCHAR2(1) | NULL                                |
| USER_STATS           | VARCHAR2(1) | NULL                                |
| AVG_COL_LEN          | NUMBER      | 0                                   |

## USER\_TAB\_COMMENTS

**Table C-38 USER\_TAB\_COMMENTS**

| Name       | Type          | Value             |
|------------|---------------|-------------------|
| TABLE_NAME | VARCHAR2(128) | -                 |
| TABLE_TYPE | VARCHAR2(5)   | "TABLE" or "VIEW" |
| COMMENTS   | VARCHAR2(1)   | NULL              |

## USER\_TAB\_PRIVS

**Table C-39 USER\_TAB\_PRIVS**

| Name         | Type          | Value   |
|--------------|---------------|---|
| GRANTEE      | VARCHAR2(32)  | -   |
| TABLE_SCHEMA | VARCHAR2(32)  | -   |
| TABLE_NAME   | VARCHAR2(128) | -   |
| GRANTOR      | VARCHAR2(32)  | -   |
| PRIVILEGE    | VARCHAR2(6)   | "SELECT" or<br>"UPDATE" or<br>"INSERT" or<br>"DELETE" or "INDEX"<br>or "" |
| GRANTABLE    | VARCHAR2(3)   | "YES"   |

# USER\_TABLES

**Table C-40 USER\_TABLES**

| Name                      | Type          | Value                               |
|---------------------------|---------------|-------------------------------------|
| TABLE_NAME                | VARCHAR2(128) | -                                   |
| TABLESPACE_NAME           | VARCHAR2(1)   | NULL                                |
| CLUSTER_NAME              | VARCHAR2(1)   | NULL                                |
| IOT_NAME                  | VARCHAR2(1)   | NULL                                |
| PCT_FREE                  | NUMBER        | 0                                   |
| PCT_USED                  | NUMBER        | 0                                   |
| INI_TRANS                 | NUMBER        | 0                                   |
| MAX_TRANS                 | NUMBER        | 0                                   |
| INITIAL_EXTENT            | NUMBER        | 0                                   |
| NEXT_EXTENT               | NUMBER        | 0                                   |
| MIN_EXTENTS               | NUMBER        | 0                                   |
| MAX_EXTENTS               | NUMBER        | 0                                   |
| PCT_INCREASE              | NUMBER        | 0                                   |
| FREELISTS                 | NUMBER        | 0                                   |
| FREELIST_GROUPS           | NUMBER        | 0                                   |
| LOGGING                   | VARCHAR2(1)   | NULL                                |
| BACKED_UP                 | VARCHAR2(1)   | NULL                                |
| NUM_ROWS                  | NUMBER(10)    | 0                                   |
| BLOCKS                    | NUMBER        | 0                                   |
| EMPTY_BLOCKS              | NUMBER        | 0                                   |
| AVG_SPACE                 | NUMBER        | 0                                   |
| CHAIN_CNT                 | NUMBER        | 0                                   |
| AVG_ROW_LEN               | NUMBER        | 0                                   |
| AVG_SPACE_FREELIST_BLOCKS | NUMBER        | 0                                   |
| NUM_FREELIST_BLOCKS       | NUMBER        | 0                                   |
| DEGREE                    | VARCHAR2(1)   | NULL                                |
| INSTANCES                 | VARCHAR2(1)   | NULL                                |
| CACHE                     | VARCHAR2(1)   | NULL                                |
| TABLE_LOCK                | VARCHAR2(1)   | NULL                                |
| SAMPLE_SIZE               | NUMBER        | 0                                   |
| LAST_ANALYZED             | DATE          | to_date('01-01-1980', 'dd-mm-yyyy') |



**Table C-40 (Cont.) USER\_TABLES**

| Name         | Type         | Value |
|--------------|--------------|-------|
| PARTITIONED  | VARCHAR2(1)  | NULL  |
| IOT_TYPE     | VARCHAR2(1)  | NULL  |
| TEMPORARY    | VARHCHAR2(1) | NULL  |
| SECONDARY    | VARCHAR2(1)  | NULL  |
| NESTED       | VARCHAR2(1)  | NULL  |
| BUFFER_POOL  | VARCHAR2(1)  | NULL  |
| ROW_MOVEMENT | VARCHAR2(1)  | NULL  |
| GLOBAL_STATS | VARCHAR2(1)  | NULL  |
| USER_STATS   | VARCHAR2(1)  | NULL  |
| DURATION     | VARCHAR2(1)  | NULL  |
| SKIP_CORRUPT | VARCHAR2(1)  | NULL  |
| MONITORING   | VARCHAR2(1)  | NULL  |

## USER\_USERS

**Table C-41 USER\_USERS**

| Name                        | Type         | Value  |
|-----------------------------|--------------|--------|
| USERNAME                    | VARCHAR2(32) | -      |
| USER_ID                     | NUMBER       | -      |
| ACCOUNT_STATUS              | VARCHAR2(4)  | "OPEN" |
| LOCK_DATE                   | DATE         | NULL   |
| EXPIRY_DATE                 | DATE         | NULL   |
| DEFAULT_TABLESPACE          | VARCHAR2(1)  | NULL   |
| TEMPORARY_TABLESPACE        | VARCHAR2(1)  | NULL   |
| CREATED                     | DATE         | NULL   |
| INITIAL_RSRC_CONSUMER_GROUP | VARCHAR2(1)  | NULL   |
| EXTERNAL_NAME               | VARCHAR2(1)  | NULL   |

## USER\_VIEWS

**Table C-42 USER\_VIEWS**

| Name        | Type          | Value |
|-------------|---------------|-------|
| VIEW_NAME   | VARCHAR2(128) | -     |
| TEXT_LENGTH | NUMBER        | 64    |

Table C-42 (Cont.) USER\_VIEWS

| Name             | Type         | Value |
|------------------|--------------|-------|
| TEXT             | VARCHAR2(64) | -     |
| TYPE_TEXT_LENGTH | NUMBER       | 0     |
| TYPE_TEXT        | VARCHAR2(1)  | NULL  |
| OID_TEXT_LENGTH  | NUMBER       | 0     |
| OID_TEXT         | VARCHAR2(1)  | NULL  |
| VIEW_TYPE_OWNER  | VARCHAR2(1)  | NULL  |
| VIEW_TYPE        | VARCHAR2(1)  | NULL  |

# D

## Initialization Parameters

The Oracle database initialization parameters in the `init.ora` file are distinct from gateway initialization parameters. Set the gateway parameters in the initialization parameter file using an agent-specific mechanism, or set them in the Oracle data dictionary using the `DBMS_HS` package. The gateway initialization parameter file must be available when the gateway is started.

The following topics contain a list of the gateway initialization parameters that can be set for each gateway and their description. The topics also describe the initialization parameter file syntax.

- [Initialization Parameter File Syntax](#)
- [Oracle Database Gateway for Informix Initialization Parameters](#)

## Initialization Parameter File Syntax

The syntax for the initialization parameter file is as follows:

- The file is a sequence of commands.
- Each command should start on a separate line.
- End of line is considered a command terminator (unless escaped with a backslash).
- If there is a syntax error in an initialization parameter file, none of the settings take effect.
- Set the parameter values as follows:

```
[SET][PRIVATE] parameter=value
```

Where:

*parameter* is an initialization parameter name. It is a string of characters starting with a letter and consisting of letters, digits and underscores. Initialization parameter names are case sensitive.

*value* is the initialization parameter value. It is case-sensitive. An initialization parameter value is either:

- A string of characters that does not contain any backslashes, white space or double quotation marks (")
- A quoted string beginning with a double quotation mark and ending with a double quotation mark. The following can be used inside a quoted string:
  - \* backslash (\) is the escape character
  - \* \n inserts a new line
  - \* \t inserts a tab
  - \* \" inserts a double quotation mark

- \* \ inserts a backslash

A backslash at the end of the line continues the string on the next line. If a backslash precedes any other character then the backslash is ignored.

For example, to enable tracing for an agent, set the `HS_FDS_TRACE_LEVEL` initialization parameter as follows:

```
HS_FDS_TRACE_LEVEL=ON
```

`SET` and `PRIVATE` are optional keywords. You cannot use either as an initialization parameter name. Most parameters are needed only as initialization parameters, so you usually do not need to use the `SET` or `PRIVATE` keywords. If you do not specify either `SET` or `PRIVATE`, the parameter is used only as an initialization parameter for the agent.

`SET` specifies that, in addition to being used as an initialization parameter, the parameter value is set as an environment variable for the agent process. Use `SET` for parameter values that the drivers or non-Oracle system need as environment variables.

`PRIVATE` specifies that the initialization parameter should be private to the agent and should not be uploaded to the Oracle database. Most initialization parameters should not be private. If, however, you are storing sensitive information like a password in the initialization parameter file, then you may not want it uploaded to the server because the initialization parameters and values are not encrypted when uploaded. Making the initialization parameters private prevents the upload from happening and they do not appear in dynamic performance views. Use `PRIVATE` for the initialization parameters only if the parameter value includes sensitive information such as a user name or password.

`SET PRIVATE` specifies that the parameter value is set as an environment variable for the agent process and is also private (not transferred to the Oracle database, not appearing in dynamic performance views or graphical user interfaces).

## Oracle Database Gateway for Informix Initialization Parameters

The initialization file parameters that can be set for the Oracle Database Gateway for Informix are as follows:

- `HS_DB_DOMAIN`
- `HS_DB_INTERNAL_NAME`
- `HS_DB_NAME`
- `HS_DESCRIBE_CACHE_HWM`
- `HS_LANGUAGE`
- `HS_LONG_PIECE_TRANSFER_SIZE`
- `HS_OPEN_CURSORS`
- `HS_RPC_FETCH_REBLOCKING`
- `HS_RPC_FETCH_SIZE`
- `HS_TIME_ZONE`

- HS\_FDS\_TRANSACTION\_ISOLATION
- HS\_TRANSACTION\_MODEL
- IFILE
- HS\_FDS\_TIMESTAMP\_MAPPING
- HS\_FDS\_DATE\_MAPPING
- HS\_FDS\_CONNECT\_INFO
- HS\_FDS\_RECOVERY\_ACCOUNT
- HS\_FDS\_RECOVERY\_PWD
- HS\_FDS\_TRACE\_LEVEL
- HS\_FDS\_TRANSACTION\_LOG
- HS\_FDS\_FETCH\_ROWS
- HS\_IDLE\_TIMEOUT
- HS\_NLS\_LENGTH\_SEMANTICS
- HS\_KEEP\_REMOTE\_COLUMN\_SIZE
- HS\_FDS\_REMOTE\_DB\_CHARSET
- HS\_FDS\_SUPPORT\_STATISTICS
- HS\_FDS\_SQLLEN\_INTERPRETATION
- HS\_FDS\_ARRAY\_EXEC

## HS\_DB\_DOMAIN

| Property        | Description         |
|-----------------|---------------------|
| Default value   | WORLD               |
| Range of values | 1 to 199 characters |

Specifies a unique network sub-address for a non-Oracle system. The `HS_DB_DOMAIN` initialization parameter is similar to the `DB_DOMAIN` initialization parameter, described in the *Oracle Database Reference*. The `HS_DB_DOMAIN` initialization parameter is required if you use the Oracle Names server. The `HS_DB_NAME` and `HS_DB_DOMAIN` initialization parameters define the global name of the non-Oracle system.

### Note:

The `HS_DB_NAME` and `HS_DB_DOMAIN` initialization parameters must combine to form a unique address in a cooperative server environment.

## HS\_DB\_INTERNAL\_NAME

| Property        | Description                    |
|-----------------|--------------------------------|
| Default value   | 01010101                       |
| Range of values | 1 to 16 hexadecimal characters |

Specifies a unique hexadecimal number identifying the instance to which the Heterogeneous Services agent is connected. This parameter's value is used as part of a transaction ID when global name services are activated. Specifying a nonunique number can cause problems when two-phase commit recovery actions are necessary for a transaction.

## HS\_DB\_NAME

| Property        | Description       |
|-----------------|-------------------|
| Default value   | HO                |
| Range of values | 1 to 8 characters |

Specifies a unique alphanumeric name for the data store given to the non-Oracle system. This name identifies the non-Oracle system within the cooperative server environment. The `HS_DB_NAME` and `HS_DB_DOMAIN` initialization parameters define the global name of the non-Oracle system.

## HS\_DESCRIBE\_CACHE\_HWM

| Property        | Description |
|-----------------|-------------|
| Default value   | 100         |
| Range of values | 1 to 4000   |

Specifies the maximum number of entries in the describe cache used by Heterogeneous Services. This limit is known as the describe cache high water mark. The cache contains descriptions of the mapped tables that Heterogeneous Services reuses so that it does not have to re-access the non-Oracle data store.

If you are accessing many mapped tables, increase the high water mark to improve performance. Increasing the high water mark improves performance at the cost of memory usage.

## HS\_LANGUAGE

| Property        | Description                                    |
|-----------------|--|
| Default value   | System-specific                                |
| Range of values | Any valid language name (up to 255 characters) |

Provides Heterogeneous Services with character set, language, and territory information of the non-Oracle data source. The value must use the following format:

```
language[_territory.character_set]
```

 **Note:**

The globalization support initialization parameters affect error messages, the data for the SQL Service, and parameters in distributed external procedures.

## Character Sets

Ideally, the character sets of the Oracle database and the non-Oracle data source are the same. In almost all cases, `HS_LANGUAGE` should be set exactly the same as Oracle database character set for optimal character set mapping and performance. If they are not the same, Heterogeneous Services attempts to translate the character set of the non-Oracle data source to the Oracle database character set, and back again. The translation can degrade performance. In some cases, Heterogeneous Services cannot translate a character from one character set to another.

 **Note:**

The specified character set must be a superset of the operating system character set on the platform where the agent is installed.

As more Oracle databases and non-Oracle databases use Unicode as database character sets, it is preferable to also run the gateway in Unicode character set. To do so, you must set `HS_LANGUAGE=AL32UTF8`. However, when the gateway runs on Windows, the Microsoft ODBC Driver Manager interface can exchange data only in the double-byte character set, UCS2. This results in extra ratio expansion of described buffer and column sizes. Refer to [HS\\_FDS\\_REMOTE\\_DB\\_CHARSET](#) for instruction on how to adjust to correct sizes.

## Language

The language component of the `HS_LANGUAGE` initialization parameter determines:

- Day and month names of dates
- AD, BC, PM, and AM symbols for date and time
- Default sorting mechanism

Note that Oracle does not determine the language for error messages for the generic Heterogeneous Services messages (ORA-25000 through ORA-28000). These are controlled by the session settings in the Oracle database.

## Territory

The territory clause specifies the conventions for day and week numbering, default date format, decimal character and group separator, and ISO and local currency

symbols. Note that the level of globalization support between the Oracle database and the non-Oracle data source depends on how the gateway is implemented.

## HS\_LONG\_PIECE\_TRANSFER\_SIZE

| Property        | Description          |
|-----------------|----------------------|
| Default value   | 64 KB                |
| Range of values | Any value up to 2 GB |

Sets the size of the piece of `LONG` data being transferred. A smaller piece size means less memory requirement, but more round-trips to fetch all the data. A larger piece size means fewer round-trips, but more of a memory requirement to store the intermediate pieces internally. Thus, the initialization parameter can be used to tune a system for the best performance, with the best trade-off between round-trips and memory requirements, and network latency or response time.

## HS\_OPEN\_CURSORS

| Property        | Description   |
|-----------------|---|
| Default value   | 50  |
| Range of values | 1 to the value of Oracle's <code>OPEN_CURSORS</code> initialization parameter |

Defines the maximum number of cursors that can be open on one connection to a non-Oracle system instance.

The value never exceeds the number of open cursors in the Oracle database. Therefore, setting the same value as the `OPEN_CURSORS` initialization parameter in the Oracle database is recommended.

## HS\_RPC\_FETCH\_REBLOCKING

| Property        | Description |
|-----------------|-------------|
| Default value   | ON          |
| Range of values | OFF or ON   |

Controls whether Heterogeneous Services attempts to optimize performance of data transfer between the Oracle database and the Heterogeneous Services agent connected to the non-Oracle data store.

The following values are possible:

- `OFF` disables reblocking of fetched data so that data is immediately sent from agent to server.
- `ON` enables reblocking, which means that data fetched from the non-Oracle system is buffered in the agent and is not sent to the Oracle database until the amount of fetched data is equal or higher than the value of `HS_RPC_FETCH_SIZE` initialization parameter. However, any buffered data is returned immediately when a fetch indicates that no more data exists or when the non-Oracle system reports an error.



## HS\_RPC\_FETCH\_SIZE

| Property               | Description   |
|------------------------|---------------|
| <b>Default value</b>   | 50000         |
| <b>Range of values</b> | 1 to 10000000 |

Tunes internal data buffering to optimize the data transfer rate between the server and the agent process.

Increasing the value can reduce the number of network round-trips needed to transfer a given amount of data, but also tends to increase data bandwidth and to reduce latency as measured between issuing a query and completion of all fetches for the query. Nevertheless, increasing the fetch size can increase latency for the initial fetch results of a query, because the first fetch results are not transmitted until additional data is available.

## HS\_TIME\_ZONE

| Property                                | Description   |
|---|---|
| <b>Default value for '[+ -]hh:mm'</b>   | Derived from the NLS_TERRITORY initialization parameter |
| <b>Range of values for '[+ -]hh:mm'</b> | Any valid datetime format mask                          |

Specifies the default local time zone displacement for the current SQL session. The format mask, [+|-]hh:mm, is specified to indicate the hours and minutes before or after UTC (Coordinated Universal Time—formerly Greenwich Mean Time). For example:

```
HS_TIME_ZONE = [+ | -] hh:mm
```

## HS\_TRANSACTION\_MODEL

| Property        | Description  |
|-----------------|--|
| Default Value   | COMMIT_CONFIRM   |
| Range of Values | COMMIT_CONFIRM, READ_ONLY, SINGLE_SITE, READ_ONLY_AUTOCOMMIT, SINGLE_SITE_AUTOCOMMIT |

Specifies the type of transaction model that is used when the non-Oracle database is updated by a transaction.

The following values are possible:

- **COMMIT\_CONFIRM** provides read and write access to the non-Oracle database and allows the gateway to be part of a distributed update. To use the commit-confirm model, the following items must be created in the non-Oracle database:
  - Transaction log table. The default table name is `HS_TRANSACTION_LOG`. A different name can be set using the `HS_FDS_TRANSACTION_LOG` parameter. The

transaction log table must be granted `SELECT`, `DELETE`, and `INSERT` privileges set to public.

- Recovery account. The account name is assigned with the `HS_FDS_RECOVERY_ACCOUNT` parameter.
- Recovery account password. The password is assigned with the `HS_FDS_RECOVERY_PWD` parameter.
- `READ_ONLY` provides read access to the non-Oracle database.
- `SINGLE_SITE` provides read and write access to the non-Oracle database. However, the gateway cannot participate in distributed updates.
- `READ_ONLY_AUTOCOMMIT` provides read only access to the non-Oracle database that does not use logging.
- `SINGLE_SITE_AUTOCOMMIT` provides read and write access to the non-Oracle database without logging. The gateway cannot participate in distributed updates. Moreover, any update to the non-Oracle database is committed immediately.

## IFILE

| Property        | Description                |
|-----------------|----------------------------|
| Default value   | None                       |
| Range of values | Valid parameter file names |

Use the `IFILE` initialization parameter to embed another initialization file within the current initialization file. The value should be an absolute path and should not contain environment variables. The three levels of nesting limit do not apply.



### See Also:

*Oracle Database Reference*

## HS\_FDS\_TIMESTAMP\_MAPPING

| Property        | Description   |
|-----------------|---|
| Default Value   | DATE  |
| Range of Values | CHAR DATE TIMESTAMP   |
| Syntax          | <code>HS_FDS_TIMESTAMP_MAPPING={CHAR DATE TIMESTAMP}</code> |

If set to `CHAR`, then non-Oracle target timestamp would be mapped to `CHAR(26)`. If set to `DATE` (default), then non-Oracle target timestamp would be mapped to Oracle `DATE`. If set to `TIMESTAMP`, then non-Oracle target timestamp would be mapped to Oracle `TIMESTAMP`.

## HS\_FDS\_DATE\_MAPPING

| Property        | Description                                       |
|-----------------|---|
| Default Value   | DATE  |
| Range of Values | DATE CHAR   |
| Syntax          | HS_FDS_DATE_MAPPING={ <i>DATE</i> / <i>CHAR</i> } |

If set to CHAR, then non-oracle target date would be mapped to CHAR(10). If set to DATE, then non-Oracle target date would be mapped to Oracle date.

## HS\_FDS\_CONNECT\_INFO

| Property        | Description    |
|-----------------|----------------|
| Default Value   | None           |
| Range of Values | Not applicable |

HS\_FDS\_CONNECT\_INFO that describes the connection to the non-Oracle system.

The default initialization parameter file already has an entry for this parameter. The syntax for HS\_FDS\_CONNECT\_INFO for the gateway is as follows:

```
HS_FDS_CONNECT_INFO=host_name:port_number/server_name/database_name
```

where, *host\_name* is the host name or IP address of the machine hosting the Informix database, *port\_number* is the port number of the Informix database server, *server\_name* is the name of the Informix database server, and *database\_name* is the Informix database name.

This release supports IPv6 format, so you can enter IPv6 format in place of hostname, but you need to wrap square brackets around the IPv6 specification.

For example,

```
HS_FDS_CONNECT_INFO=[2001:0db8:20c:f1ff:fec6:38af]:port_number/...
```

## HS\_FDS\_RECOVERY\_ACCOUNT

| Property        | Description       |
|-----------------|-------------------|
| Default Value   | RECOVER           |
| Range of values | Any valid user ID |

Specifies the name of the recovery account used for the commit-confirm transaction model. An account with user name and password must be set up at the non-Oracle system. For more information about the commit-confirm model, see the HS\_TRANSACTION\_MODEL parameter.

The name of the recovery account is case-sensitive.

## HS\_FDS\_RECOVERY\_PWD

| Property        | Description        |
|-----------------|--------------------|
| Default Value   | RECOVER            |
| Range of values | Any valid password |

Specifies the password of the recovery account used for the commit-confirm transaction model set up at the non-Oracle system. For more information about the commit-confirm model, see the `HS_TRANSACTION_MODEL` parameter.

The name of the password of the recovery account is case-sensitive.

## HS\_FDS\_TRACE\_LEVEL

| Property        | Description    |
|-----------------|----------------|
| Default Value   | OFF            |
| Range of values | OFF, ON, DEBUG |

Specifies whether error tracing is turned on or off for gateway connectivity.

The following values are valid:

- OFF disables the tracing of error messages.
- ON enables the tracing of error messages that occur when you encounter problems. The results are written by default to a gateway log file in LOG directory where the gateway is installed.
- DEBUG enables the tracing of detailed error messages that can be used for debugging.

## HS\_FDS\_TRANSACTION\_ISOLATION

| Property        | Description   |
|-----------------|---|
| Default Value   | READ_COMMITTED  |
| Range of Values | {READ_UNCOMMITTED READ_COMMITTED REPEATABLE_READ SERIALIZABLE}                          |
| Syntax          | HS_FDS_ISOLATION_LEVEL={ {READ_UNCOMMITTED READ_COMMITTED REPEATABLE_READ SERIALIZABLE} |

`HS_FDS_TRANSACTION_ISOLATION` specifies the isolation level that is used for the transaction that the gateway opens on the non-Oracle database.

The isolation levels of `READ_UNCOMMITTED`, `READ_COMMITTED`, `REPEATABLE_READ`, and `SERIALIZABLE` are the four isolation levels defined in the SQL standard and adopted by both ANSI and ISO/IEC. For additional information regarding them, see *Oracle Database Concepts*.

Use caution when specifying an isolation level lower than the Oracle transaction isolation level being used, as the gateway transaction will have different Preventable Read Phenomena from what will occur in the Oracle database transaction.

## HS\_FDS\_TRANSACTION\_LOG

| Property        | Description          |
|-----------------|----------------------|
| Default Value   | HS_TRANSACTION_LOG   |
| Range of Values | Any valid table name |

Specifies the name of the table created in the non-Oracle system for logging transactions. For more information about the transaction model, see the `HS_TRANSACTION_MODEL` parameter.

## HS\_FDS\_FETCH\_ROWS

| Property        | Description                        |
|-----------------|------------------------------------|
| Default Value   | 100                                |
| Range of Values | Any integer between 1 and 1000     |
| Syntax          | <code>HS_FDS_FETCH_ROWS=num</code> |

`HS_FDS_FETCH_ROWS` specifies the fetch array size. This is the number of rows to be fetched from the non-Oracle database and to return to Oracle database at one time. This parameter will be affected by the `HS_RPC_FETCH_SIZE` and `HS_RPC_FETCH_REBLOCKING` parameters.

## HS\_IDLE\_TIMEOUT

| Property        | Description                      |
|-----------------|----------------------------------|
| Default Value   | 0 (no timeout)                   |
| Range of Values | 0-9999 (minutes)                 |
| Syntax          | <code>HS_IDLE_TIMEOUT=num</code> |

This feature is only available for Oracle Net TCP protocol. When there is no activity for a connected gateway session for this specified time period, the gateway session would be terminated automatically with pending update (if any) rolled back.

## HS-NLS\_LENGTH\_SEMANTICS

| Property        | Description  |
|-----------------|--|
| Default Value   | BYTE   |
| Range of Values | BYTE   CHAR  |
| Syntax          | <code>HS-NLS-LENGTH-SEMANTICS = { BYTE   CHAR }</code> |

This release of gateway has Character Semantics functionality equivalent to the Oracle Database Character Semantics, that is, NLS\_LENGTH\_SEMANTICS. When HS\_NLS\_LENGTH\_SEMANTICS is set to CHAR, the (VAR)CHAR columns of Informix database are to be interpreted as having CHAR semantics. The only situation the gateway does not honor the HS\_NLS\_LENGTH\_SEMANTICS=CHAR setting is when both Oracle database and the gateway are on the same multi-byte character set.

## HS\_KEEP\_REMOTE\_COLUMN\_SIZE

| Property        | Description   |
|-----------------|---|
| Default Value   | OFF   |
| Range of Values | OFF   LOCAL   REMOTE   ALL                              |
| Syntax          | HS_KEEP_REMOTE_COLUMN_SIZE = OFF   LOCAL   REMOTE   ALL |
| Parameter type  | String  |

HS\_KEEP\_REMOTE\_COLUMN\_SIZE specifies whether to suppress ratio expansion when computing the length of (VAR)CHAR datatypes during data conversion from non-Oracle database to the gateway, and then to the Oracle database. When it is set to REMOTE, the expansion is suppressed between the non-Oracle database and the gateway. When it is set to LOCAL, the expansion is suppressed between the gateway and the Oracle database. When it is set to ALL, the expansion is suppressed from the non-Oracle database to the Oracle database.

When the parameter is set, the expansion is suppressed when reporting the remote column size, calculating the implicit resulting buffer size, and instantiating in the local Oracle database. This has effect only for remote column size from non-Oracle database to Oracle database. If the gateway runs on Windows and HS\_LANGUAGE=AL32UTF8, then you must not specify this parameter, as it would influence other ratio related parameter operation. It has no effect for calculating ratio for data moving from Oracle database to non-Oracle database through gateway during INSERT, UPDATE, or DELETE.

## HS\_FDS\_REMOTE\_DB\_CHARSET

| Property        | Description              |
|-----------------|--------------------------|
| Default Value   | None                     |
| Range of values | Not applicable           |
| Syntax          | HS_FDS_REMOTE_DB_CHARSET |

This parameter is valid only when HS\_LANGUAGE is set to AL32UTF8 and the gateway runs on Windows. As more Oracle databases and non-Oracle databases use Unicode as database character sets, it is preferable to also run the gateway in Unicode character set. To do so, you must set HS\_LANGUAGE=AL32UTF8. However, when the gateway runs on Windows, the Microsoft ODBC Driver Manager interface can exchange data only in the double-byte character set, UCS2. This results in extra ratio expansion of described buffer and column sizes. To compensate, the gateway can re-adjust the column size if HS\_FDS\_REMOTE\_DB\_CHARSET is set to the corresponding non-

Oracle database character set. For example,  
HS\_FDS\_REMOTE\_DB\_CHARSET=KO16KSC5601.

## HS\_FDS\_SUPPORT\_STATISTICS

| Property        | Description                             |
|-----------------|---|
| Default Value   | TRUE                                    |
| Range of values | {TRUE FALSE}                            |
| Syntax          | HS_FDS_SUPPORT_STATISTICS= {TRUE FALSE} |

We gather statistics from the non-Oracle database by default. You can choose to disable the gathering of remote database statistics by setting the HS\_FDS\_SUPPORT\_STATISTICS parameter to FALSE.

## HS\_FDS\_SQLLEN\_INTERPRETATION

| Property        | Description                           |
|-----------------|---------------------------------------|
| Default Value   | 64                                    |
| Range of values | {64 32}                               |
| Syntax          | HS_FDS_SQLLEN_INTERPRETATION= {64 32} |

This parameter is only valid for 64 bit platforms. ODBC standard specifies `SQLLEN` (of internal ODBC construct) being 64 bit on 64 bit platforms, but some ODBC driver managers and drivers violate this convention, and implement it as 32 bit. In order for the gateway to compensate their behavior, you need to specify `HS_FDS_SQLLEN_INTERPRETATION=32` if you use these types of driver managers and driver.

## HS\_FDS\_ARRAY\_EXEC

| Property        | Description                     |
|-----------------|---------------------------------|
| Default Value   | TRUE                            |
| Range of values | {TRUE FALSE}                    |
| Syntax          | HS_FDS_ARRAY_EXEC= {TRUE FALSE} |

If set to `TRUE`, the gateway will use array operations for insert, update, delete statements containing binds against the remote data source. The array size is determined by the value of the `HS_FDS_FETCH_ROWS` eter.

If set to `FALSE`, the gateway will not use array operations for insert, update, and delete statements. Instead, a single statement will be issued for every value.

# Index

## A

---

ALTER statement, [B-1](#)  
Arithmetic operators, [B-3](#)

## B

---

BYTE data type, [A-1](#)

## C

---

Case rules, [2-4](#)  
Case studies, [3-1](#)  
case1.sql, [3-2](#)  
CHAR data type, [A-1](#)  
character sets  
    Heterogeneous Services, [D-5](#)  
COMMIT  
    restrictions, [2-9](#)  
Commit point site, [2-8](#)  
Comparison operators, [B-3](#)  
CONNECT BY clause, [2-10](#)  
CREATE statement, [B-1](#)  
Cursor loops  
    restrictions, [2-9](#)

## D

---

Data definition language, [B-1](#)  
Data dictionary  
    views, [C-2](#)  
Data type  
    BYTE, [A-1](#)  
    CHAR, [A-1](#)  
    conversion, [2-6](#)  
    DATETIME, [A-1](#)  
    DECIMAL, [A-1](#)  
    FLOAT, [A-1](#)  
    INTEGER, [A-1](#)  
    LONG, [A-3](#)  
    LONG RAW, [A-1](#)  
    MONEY, [A-2](#)  
    NCHAR, [A-2](#)  
    NVARCHAR, [A-2](#)

Data type (*continued*)

    SERIAL, [A-2](#)  
    SMALLFLOAT, [A-3](#)  
    TEXT, [A-3](#)  
    VARCHAR, [A-2](#), [A-3](#)  
    VARCHAR2, [A-2](#), [A-3](#)  
Date functions, [B-4](#)  
DATETIME data type, [A-1](#)  
DECIMAL data type, [A-1](#)  
DELETE statement, [3-5](#), [B-1](#), [B-2](#)  
    restrictions on use, [2-10](#)  
Demo build SQL script, [3-2](#)  
Demonstration files, [3-2](#)  
Demonstration tables, [3-2](#)  
Demonstration tables build SQL script, [3-2](#)  
describe cache high water mark  
    definition, [D-4](#)  
DROP statement, [B-1](#)

## E

---

Encrypted format login, [2-11](#)  
Error messages  
    error tracing, [D-10](#)  
Errors  
    ORA-02070, [2-8](#)

## F

---

fetch array size, with HS\_FDS\_FETCH\_ROWS,  
    [D-11](#)  
FLOAT data type, [A-1](#)

## G

---

Gateway  
    case studies, [3-1](#)  
    pass-through feature, [2-1](#)  
    supported functions, [B-1](#)  
    supported SQL syntax, [B-1](#)  
globalization support  
    Heterogeneous Services, [D-4](#)  
GRANT statement, [B-1](#)  
Group functions, [B-3](#)



---

**H**

Heterogeneous Services

- defining maximum number of open cursors, [D-6](#)
- optimizing data transfer, [D-6](#)
- setting global name, [D-4](#)
- specifying cache high water mark, [D-4](#)
- tuning internal data buffering, [D-7](#)
- tuning LONG data transfer, [D-6](#)

Hexadecimal notation, [2-5](#)

HS\_DB\_NAME initialization parameter, [D-4](#)

HS\_DESCRIBE\_CACHE\_HWM initialization parameter, [D-4](#)

HS\_FDS\_CONNECT\_INFO, [D-9](#)

HS\_FDS\_FETCH\_ROWS parameter, [D-11](#)

HS\_FDS\_TRACE\_LEVEL initialization parameter, [D-10](#)

- enabling agent tracing, [D-2](#)

HS\_FDS\_TRANSACTION\_ISOLATION parameter, [D-10](#)

HS\_FDS\_TRANSACTION\_LOG initialization parameter, [D-11](#)

HS\_IDLE\_TIMEOUT initialization parameter, [D-11](#)

HS\_KEEP\_REMOTE\_COLUMN\_SIZE initialization parameter, [D-12](#)

HS\_LANGUAGE initialization parameter, [D-4](#)

HS\_LONG\_PIECE\_TRANSFER\_SIZE initialization parameter, [D-6](#)

HS-NLS\_LENGTH\_SEMANTICS initialization parameter, [D-12](#)

HS\_OPEN\_CURSORS initialization parameter, [D-6](#)

HS\_RPC\_FETCH\_REBLOCKING initialization parameter, [D-6](#)

HS\_RPC\_FETCH\_SIZE initialization parameter, [D-7](#)

HS\_TIME\_ZONE initialization parameter, [D-7](#)

---

**I**

IFILE initialization parameter, [D-8](#)

Initialization parameter file

- customizing, [D-1](#)

INSERT statement, [3-5](#), [B-1](#), [B-2](#)

- restrictions on use, [2-10](#)

INTEGER data type, [A-1](#)

isolation level,

- HS\_FDS\_TRANSACTION\_ISOLATION, [D-10](#)

---

**K**

Known restrictions, [2-7](#)

---

**L**

Locking, database, [2-7](#)

LONG data type, [A-3](#)

LONG RAW data type, [A-1](#)

---

**M**

MONEY data type, [A-2](#)

---

**N**

NCHAR data type, [A-2](#)

NVARCHAR data type, [A-2](#)

---

**O**

Objects

- valid characters, [2-4](#)

Objects, naming rules, [2-4](#)

ORA-02070, [2-8](#)

Oracle functions

- TO\_DATE, [B-5](#)

---

**P**

parameters

- gateway initialization file
  - HS\_FDS\_FETCH\_ROWS, [D-11](#)
  - HS\_FDS\_TRANSACTION\_ISOLATION, [D-10](#)

Pass-Through Feature, [3-5](#)

Passing commands to database, [2-9](#)

Pattern matching, [B-4](#)

PL/SQL, [2-12](#)

---

**R**

RAW data type, [2-5](#)

REAL data type, [2-9](#)

remote

- HS\_FDS\_TRANSACTION\_ISOLATION, [D-10](#)

ROLLBACK

- restrictions, [2-9](#)

ROWID, [2-9](#), [2-10](#)

---

**S**

savepoint support, [2-8](#)

SELECT statement, [3-6](#), [B-2](#), [C-1](#)

- use of NULL keyword, [2-10](#)

SERIAL data type, [A-2](#)

Set operations, [B-4](#)

SMALLFLOAT data type, [2-9](#), [A-3](#)

SQL

statements,

HS\_FDS\_TRANSACTION\_ISOLATION,  
[D-10](#)

Stored procedures, [2-11](#)

String functions, [B-4](#)

SUM function, [3-4](#)

T

---

TEXT data type, [A-3](#)

TO\_DATE function, [B-5](#)

transactional capability, [2-8](#)

transactional integrity, [2-8](#)

TRUNCATE statement, [B-1](#)

Two-phase commit, [2-8](#)

U

---

UPDATE statement, [3-5](#), [3-6](#), [B-2](#)  
restrictions on use, [2-10](#)

V

---

VARCHAR data type, [A-2](#), [A-3](#)

VARCHAR2 data type, [A-2](#), [A-3](#)

W

---

WHERE CURRENT OF clause, [2-9](#)