Oracle® TimesTen In-Memory Database

System Tables and Limits Reference

Release 11.2.1

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Oracle TimesTen In-Memory Database System Tables and Limits Reference, Release 11.2.1

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Preface

Oracle TimesTen In-Memory Database is a high-performance, in-memory data manager that supports the ODBC (Open DataBase Connectivity) and JDBC (Java DataBase Connectivity) interfaces.

Audience

This document is intended for application developers who use and administer TimesTen. It provides a reference for TimesTen system tables, replication tables and system limits.

Related documents

TimesTen documentation is available on the product distribution media and on the Oracle Technology Network:

http://www.oracle.com/technetwork/database/timesten/documentation

Conventions

TimesTen supports multiple platforms. Unless otherwise indicated, the information in this guide applies to all supported platforms. The term Windows applies to all supported Windows platforms. The term UNIX applies to all supported UNIX and Linux platforms. Refer to the "Platforms" section in *Oracle TimesTen In-Memory Database Release Notes* for specific platform versions supported by TimesTen.

> **Note:** In TimesTen documentation, the terms "data store" and "database" are equivalent. Both terms refer to the TimesTen database unless otherwise noted.

This document uses the following text conventions:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	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.

Convention	Meaning
italic monospace	Italic monospace type indicates a variable in a code example that you must replace. For example: `Driver=`*`install_dir`*`/lib/libtten.sl` Replace *install_dir* with the path of your TimesTen installation directory.
[ ]	Square brackets indicate that an item in a command line is optional.
{ }	Curly braces indicated that you must choose one of the items separated by a vertical bar (|) in a command line.
|	A vertical bar (or pipe) separates alternative arguments.
. . .	An ellipsis (. . .) after an argument indicates that you may use more than one argument on a single command line.
%	The percent sign indicates the UNIX shell prompt.
#	The number (or pound) sign indicates the UNIX root prompt.

TimesTen documentation uses these variables to identify path, file and user names:

Convention	Meaning
install_dir	The path that represents the directory where the current release of TimesTen is installed.
TTinstance	The instance name for your specific installation of TimesTen. Each installation of TimesTen must be identified at install time with a unique alphanumeric instance name. This name appears in the install path.
bits or *bb*	Two digits, either 32 or 64, that represent either the 32-bit or 64-bit operating system.
release or *rr*	Three numbers that represent the first three numbers of the TimesTen release number, with or without a dot. For example, 1121 or 11.2.1 represents TimesTen Release 11.2.1.
jdk_version	Two digits that represent the version number of the major JDK release. Specifically, 14 represent JDK 1.4; 5 represents JDK 5.
DSN	The data source name.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at
http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit
http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit
http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Technical support

For information about obtaining technical support for TimesTen products, go to the following Web address:

http://www.oracle.com/support/contact.html

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What's New

This preface summarizes the new features of Oracle TimesTen In-Memory Database release 11.2.1 that are documented in this guide. It provides links to more information.

New features in Release 11.2.1.4.0

This section lists new features for Release 11.2.1.4.0 that are documented in this reference and provides cross-references to additional information.

Synonyms

These system views are new:

- `SYS.ALL_SYNONYMS`, `SYS.DBA_SYNONYMS` and `SYS.USER_SYNONYMS`

System statistics

The `SYS.SYSTEMSTATS` system table is new. It stores system-wide monitoring statistics.

New features in Release 11.2.1.1.0

This section lists new features for Release 11.2.1.1.0 that are documented in this reference and provides cross-references to additional information.

Access Control

These system tables and system views are new:

- `SYS.DBA_SYS_PRIVS` and `SYS.USER_SYS_PRIVS`
- `SYS.ALL_TAB_PRIVS`, `SYS.DBA_TAB_PRIVS` and `SYS.USER_TAB_PRIVS`
- `SYS.ALL_USERS`, `SYS.DBA_USERS` and `SYS.USER_USERS`
- `SYS.ALL_COL_PRIVS`, `SYS.DBA_COL_PRIVS` and `SYS.USER_COL_PRIVS`
- `SYS.SESSION_ROLES`

PL/SQL support

These system tables and system views are new:

- `SYS.ALL_ARGUMENTS`, `SYS.DBA_ARGUMENTS` and `SYS.USER_ARGUMENTS`
- `SYS.ALL_DEPENDENCIES`, `SYS.DBA_DEPENDENCIES` and `SYS.USER_DEPENDENCIES`

- `SYS.ALL_DIRECTORIES` and `SYS.DBA_DIRECTORIES`

- `SYS.ALL_ERRORS`, `SYS.DBA_ERRORS` and `SYS.USER_ERRORS`

- `SYS.ALL_IDENTIFIERS`, `SYS.DBA_IDENTIFIERS` and `SYS.USER_IDENTIFIERS`

- `SYS.ALL_OBJECTS`, `SYS.DBA_OBJECTS` and `SYS.USER_OBJECTS`

- `SYS.ALL_PLSQL_OBJECT_SETTINGS`, `SYS.DBA_PLSQL_OBJECT_SETTINGS` and `SYS.USER_PLSQL_OBJECT_SETTINGS`

- `SYS.ALL_PROCEDURES`, `SYS.DBA_PROCEDURES` and `SYS.USER_PROCEDURES`

- `SYS.ALL_SOURCE`, `SYS.DBA_SOURCE` and `SYS.USER_SOURCE`

- `SYS.ALL_STORED_SETTINGS`, `SYS.DBA_STORED_SETTINGS` and `SYS.USER_STORED_SETTINGS`

- `SYS.DBA_OBJECT_SIZE` and `SYS.USER_OBJECT_SIZE`

- `SYS.PUBLIC_DEPENDENCY`

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System Tables

TimesTen stores metadata (information about the contents of your database) in system tables in your database.

Your applications can read the system tables, but it cannot update the system tables. If your application defines a table with the same name as a system table, then your application can read a system table by prefixing the system table name with `SYS`. For example, `SELECT * FROM SYS.TABLES` selects rows from the `TABLES` system table.

Information specific to system tables:

- Locks acquired by users on system tables may prevent others from defining data or executing the `SQLPrepare` ODBC function or the `Connection.prepareStatement` JDBC method.

- The last character in name columns is always a space. Therefore, while the column length for name columns is 31, the maximum object name length is 30.

- On 64-bit systems, TimesTen system tables declare certain fields as data type `TT_BIGINT`. When retrieving these columns with an ODBC program, the application must bind them using `SQL_C_BINARY`. For information about `SQL_C_BINARY`, see ODBC documentation.

> **Note:** Some tables contain columns named `SYSnumber`. Because these columns contain values used internally by TimesTen, they are not documented in this chapter.

Tables and views reserved for internal or future use

Several system tables and views in TimesTen are reserved for internal or future use. These tables are not described in detail in this chapter:

- `SYS.ACCESS$`

- `SYS.ALL_EXTERNAL_TABLES`

- `SYS.COLUMN_HISTORY`

- `SYS.DIR$`

- `SYS.OBJAUTH$`

- `SYS.SYN$`

- `SYS.SYSAUTH$`

- `SYS.TABLE_HISTORY`

- `SYS.USER_ASTATUS_MAP`

PL/SQL system tables are reserved for internal use. Use the PL/SQL system views instead. PL/SQL system tables in TimesTen are:

- `SYS.ARGUMENT$`
- `SYS.DEPENDENCY$`
- `SYS.ERROR$`
- `SYS.IDL_CHAR$`
- `SYS.IDL_SB4$`
- `SYS.IDL_UB1$`
- `SYS.IDL_UB2$`
- `SYS.NCOMP_DLL$`
- `SYS.OBJ$`
- `SYS.OBJERROR$`
- `SYS.PLSCOPE_ACTION$`
- `SYS.PLSCOPE_IDENTIFIER$`
- `SYS.PROCEDURE$`
- `SYS.PROCEDUREINFO$`
- `SYS.PROCEDUREPLSQL$`
- `SYS.SETTINGS$`
- `SYS.SOURCE$`
- `SYS.USER$`
- `SYS.WARNING_SETTINGS$`

If PL/SQL is enabled in your database, there are tables and views created for the operation of the package `UTL_RECOMP`:

- `SYS.UTL_RECOMP_COMPILED`
- `SYS.UTL_RECOMP_ERRORS`
- `SYS.UTL_RECOMP_SORTED`
- `SYS.UTL_RECOMP_ALL_OBJECTS` (PL/SQL view)
- `SYS.UTL_RECOMP_INVALID_ALL` (PL/SQL view)
- `SYS.UTL_RECOMP_INVALID_PARALLEL` (PL/SQL view)

These PL/SQL system views are reserved for internal use:

- `SYS.CODE_PIECES`
- `SYS.CODE_SIZE`
- `SYS.DBA_INVALID_OBJECTS`
- `SYS.DISK_AND_FIXED_OBJECTS`
- `SYS.ERROR_SIZE`
- `SYS.PARSED_PIECES`
- `SYS.PARSED_SIZE`
- `SYS.SOURCE_SIZE`

Required privileges to access system tables and views

By default PUBLIC has SELECT privileges on various system tables and views and EXECUTE privileges on various PL/SQL objects. You can see the list of objects by using this query:

```
SELECT * FROM sys.dba_tab_privs WHERE grantee='PUBLIC';
```

The ADMIN or SELECT ANY TABLE privilege is required to access other system tables and views.

SYS.ALL_ARGUMENTS

The `ALL_ARGUMENTS` view lists the arguments of the procedures and functions that are accessible to the current user.

Related views

- `SYS.DBA_ARGUMENTS` lists the arguments of the procedures and functions that are available in the database. It has the same columns as `ALL_ARGUMENTS`.

- `SYS.USER_ARGUMENTS` describes the arguments of the procedures and functions that are owned by the current user. This view does not display the `OWNER` column.

Columns

Column name	Type	Description
OWNER	VARCHAR2(30) INLINE	Object owner.
OBJECT_NAME	VARCHAR2(30) INLINE	Object name.
PACKAGE_NAME	VARCHAR2(30) INLINE	Package name.
OBJECT_ID	TT_BIGINT NOT NULL	Object number.
OVERLOAD	VARCHAR2(12) INLINE	Indicates the *n*th overloading ordered by its appearance in the source; otherwise, it is `NULL`.
SUBPROGRAM_ID	TT_INTEGER	Unique subprogram identifier.
ARGUMENT_NAME	VARCHAR2(30) INLINE	If the argument is a scalar type, then the argument name is the name of the argument. A null argument name denotes a function return. If the function return or argument is a composite type, this view will have one row for each attribute of the composite type. Attributes are recursively expanded if they are composite. The meanings of `ARGUMENT_NAME`, `POSITION`, `SEQUENCE`, and `DATA_LEVEL` are interdependent. Together, as a tuple, they represent a node of a flattened tree. `ARGUMENT_NAME` can refer to: - Return type, if `ARGUMENT_NAME` is `NULL` and `DATA_LEVEL = 0` - The argument that appears in the argument list if `ARGUMENT_NAME` is `NOT NULL` and `DATA_LEVEL = 0` - Attribute name of the composite type if `ARGUMENT_NAME` is `NOT NULL` and `DATA_LEVEL > 0` - A collection element type if `ARGUMENT_NAME` is `NULL` and `DATA_LEVEL > 0`

Column name	Type	Description
POSITION	TT_INTEGER NOT NULL	If DATA_LEVEL is 0, then this column contains the position of this item in the argument list, or 0 for a function return value.
		If DATA_LEVEL is greater than 0, then this column contains the position of this item with respect to its siblings at the same DATA_LEVEL. For a referenced record field, this is the index of the field within the record. For a referenced collection element, this is 1 because collection elements do not have siblings.
SEQUENCE	TT_INTEGER NOT NULL	Defines the sequential order of the argument and its attributes. Argument sequence starts at 1. Return type and its recursively expanded (preorder tree walk) attributes come first, and each argument with its recursively expanded (preorder tree walk) attributes follow.
DATA_LEVEL	TT_INTEGER NOT NULL	Nesting depth of the argument for composite types.
DATA_TYPE	VARCHAR2(30) INLINE	Data type of the argument.
DEFAULTED	VARCHAR2(1) INLINE NOT NULL	Specifies whether or not the argument is defaulted.
DEFAULT_VALUE	VARCHAR2(4194304) NOT INLINE	Reserved for future use.
DEFAULT_LENGTH	TT_INTEGER	Reserved for future use.
IN_OUT	VARCHAR2(9) INLINE NOT NULL	Direction of the argument: (IN, OUT, IN OUT).
DATA_LENGTH	TT_INTEGER	Length of the argument.
DATA_PRECISION	TT_INTEGER	Length in decimal digits (NUMBER) or binary digits (FLOAT).
DATA_SCALE	TT_INTEGER	Digits to the right of the decimal point in a number.
RADIX	TT_INTEGER	Argument radix for a number.
CHARACTER_SET_NAME	VARCHAR2(16) INLINE	Character set name for the argument.
TYPE_OWNER	VARCHAR2(30) INLINE	Owner of the type of the argument.
TYPE_NAME	VARCHAR2(30) INLINE	Name of the type of the argument. If the type is a package local type (declared in a package specification), then the column displays the name of the package.
TYPE_SUBNAME	VARCHAR2(30) INLINE	Relevant for package local types. Displays the name of the type declared in the package identified in the TYPE_NAME column.

Column name	Type	Description
TYPE_LINK	VARCHAR2(128) INLINE	Relevant for package local types when the package identified in the TYPE_NAME column is a remote package. This column displays the database link used to refer to the remote package. TimesTen ignores this value because remote packages are not supported.
PLS_TYPE	VARCHAR2(30) INLINE	For numeric arguments, the name of the PL/SQL type of the argument. NULL, otherwise.
CHAR_LENGTH	NUMBER	Character limit for string data types.
CHAR_USED	VARCHAR2(1) INLINE NOT NULL	Indicates whether the byte limit (B) or character limit (C) is official for the string.

SYS.ALL_COL_PRIVS

This view returns no rows. The column definitions are the same as the column definitions for the `SYS.ALL_COL_PRIVS` view in the Oracle Database. See *Oracle Database Reference*.

Related views

- `SYS.DBA_COL_PRIVS` returns no rows.
- `SYS.USER_COL_PRIVS` returns no rows.

SYS.ALL_DEPENDENCIES

The `ALL_DEPENDENCIES` describes dependencies between procedures, packages, functions, package bodies, and triggers accessible to the current user.

Related views

- `SYS.DBA_DEPENDENCIES` describes all dependencies between objects in the database.

- `SYS.USER_DEPENDENCIES` describes dependencies between objects that are owned by the current user.

Columns

Column name	Type	Description
OWNER	VARCHAR2(30) INLINE	Object owner.
NAME	VARCHAR2(30) INLINE	Object name.
TYPE	VARCHAR2(17) INLINE NOT NULL	Object type.
REFERENCED_OWNER	VARCHAR2(30) INLINE	Owner of the referenced object.
REFERENCED_NAME	VARCHAR2(30) INLINE	Name of the referenced object.
REFERENCED_TYPE	VARCHAR2(17) INLINE NOT NULL	Type of the referenced object.
REFERENCED_LINK_NAME	VARCHAR2(128) INLINE	Ignored.
DEPENDENCY_TYPE	VARCHAR2(4) INLINE NOT NULL	Indicates whether the dependency is a REF dependency (REF) or not (HARD).

SYS.ALL_DIRECTORIES

The ALL_DIRECTORIES view describes all directories accessible to the current user.

Related views

SYS.DBA_DIRECTORIES describes all directories in the database. It has the same columns as ALL_DIRECTORIES.

Columns

Column name	Type	Description
OWNER	VARCHAR2(30) INLINE	Directory owner.
DIRECTORY_NAME	VARCHAR2(30) INLINE	Directory name.
DIRECTORY_PATH	VARCHAR2(4000) NOT INLINE	Directory path.

SYS.ALL_ERRORS

The ALL_ERRORS describes the current errors on the stored objects accessible to the current user.

Related views

- SYS.DBA_ERRORS describes the current errors on all stored objects in the database. It has the same columns as ALL_ERRORS.

- SYS.USER_ERRORS describes the current errors on the stored objects that are owned by the current user. This view does not display the OWNER column.

Columns

Column name	Type	Description
OWNER	VARCHAR2(30) INLINE	Object owner.
NAME	VARCHAR2(30) INLINE	Object name.
TYPE	VARCHAR2(12) INLINE NOT NULL	Object type (such as PROCEDURE, FUNCTION, PACKAGE).
SEQUENCE	TT_INTEGER NOT NULL	Sequence number (for ordering purposes).
LINE	TT_INTEGER NOT NULL	Line number at which the error occurred.
POSITION	TT_INTEGER NOT NULL	Position in line at which the error occurred.
TEXT	VARCHAR2(4000) NOT INLINE NOT NULL	Text of the error.
ATTRIBUTE	VARCHAR2(9) INLINE NOT NULL	Indicates whether the error is an error (ERROR) or a warning (WARNING).
MESSAGE_NUMBER	TT_INTEGER	Numeric error number (without any prefix).

SYS.ALL_IDENTIFIERS

The `ALL_IDENTIFIERS` view displays information about the identifiers in the stored objects accessible to the current user.

Related views

- `SYS.DBA_IDENTIFIERS` displays information about the identifiers in all stored objects in the database. It has the same columns as `ALL_IDENTIFIERS`.

- `SYS.USER_IDENTIFIERS` describes the identifiers for all stored objects that are owned by the current user. This view does not display the `OWNER` column.

Columns

Column name	Type	Description
OWNER	VARCHAR2(30) INLINE	Identifier owner.
NAME	VARCHAR2(30) INLINE	Identifier name.
SIGNATURE	CHAR(32)	Signature of the identifier.
TYPE	VARCHAR2(18) INLINE NOT NULL	Identifier type.
OBJECT_NAME	VARCHAR2(30) INLINE	Name of the object where the identifier action occurred.
OBJECT_TYPE	VARCHAR2(12) INLINE NOT NULL	Type of the object where the identifier action occurred.
USAGE	VARCHAR2(11) INLINE NOT NULL	Type of the identifier usage (declaration, definition, call, reference, assignment).
USAGE_ID	TT_INTEGER	Unique key for the identifier usage within the object.
LINE	TT_INTEGER	Line number of the identifier action.
COL	TT_INTEGER	Column number of the identifier action.
USAGE_CONTEXT_ID	TT_INTEGER	Context `USAGE_ID` of the identifier usage.

SYS.ALL_OBJECTS

The ALL_OBJECTS view describes all objects in the database that are accessible to the current user.

> **Note:** This view does not include synonyms in databases created with a TimesTen release earlier than 11.2.1.4.0.

Related views

- SYS.DBA_OBJECTS describes all objects in the database. It has the same columns as ALL_OBJECTS.

- SYS.USER_OBJECTS describes all objects owned by the current user. This view does not display the OWNER column.

Columns

Column name	Type	Description
OWNER	VARCHAR2(30) INLINE	Object owner.
OBJECT_NAME	VARCHAR2(30) INLINE	Object name.
SUBOBJECT_NAME	VARCHAR2(30) INLINE	Subobject name is ignored.
OBJECT_ID	TT_BIGINT NOT NULL	Dictionary object number of the object.
DATA_OBJECT_ID	TT_BIGINT	Is ignored.
OBJECT_TYPE	VARCHAR2(17) INLINE NOT NULL	Object type (such as PROCEDURE, FUNCTION).
CREATED	DATE NOT NULL	Timestamp for creation of object.
LAST_DDL_TIME	DATE NOT NULL	Timestamp for the last modification of the object resulting from a DDL statement.
TIMESTAMP	VARCHAR2(78) INLINE NOT NULL	Timestamp for the specification of the object (character data).
STATUS	VARCHAR2(7) INLINE NOT NULL	Status of the object (VALID, INVALID, or N/A).
TEMPORARY	VARCHAR2(1) INLINE NOT NULL	Indicates whether the object is temporary. The current session can see only data that it placed in this object itself. The value is always 'Y'.
GENERATED	VARCHAR2(1) INLINE NOT NULL	Indicates whether the name of this object was system generated (Y or N). The value is always 'N'.
SECONDARY	VARCHAR2(1) INLINE NOT NULL	Whether there is a secondary object created by the ODCIIndexCreate method of the Oracle Data Cartridge (Y or N). The value is always 'N'.

Column name	Type	Description
NAMESPACE	TT_INTEGER NOT NULL	Namespace for the object.
EDITION_NAME	VARCHAR2(30) INLINE	Ignored.

SYS.ALL_PLSQL_OBJECT_SETTINGS

The ALL_PLSQL_OBJECT_SETTINGS view displays information about the compiler settings for the stored objects accessible to the current user.

Related views

- SYS.DBA_PLSQL_OBJECT_SETTINGS displays information about the compiler settings for all stored objects in the database. It has the same columns as ALL_PLSQL_OBJECT_SETTINGS.

- SYS.USER_PLSQL_OBJECT_SETTINGS describes compiler settings for all stored objects that are owned by the current user. This view does not display the OWNER column.

Columns

Column name	Type	Description
OWNER	VARCHAR2(30) INLINE	Object owner.
NAME	VARCHAR2(30) INLINE	Object name.
TYPE	VARCHAR2(12) INLINE NOT NULL	Object type (such as PROCEDURE, FUNCTION).
PLSQL_OPTIMIZE_LEVEL	NUMBER	Optimize level used to compile the object.
PLSQL_CODE_TYPE	VARCHAR2(4000) NOT INLINE	Compilation mode for the object.
PLSQL_DEBUG	VARCHAR2(4000) NOT INLINE	Indicates whether the object was compiled with debug information.
PLSQL_WARNINGS	VARCHAR2(4000) NOT INLINE	Compiler warning settings that were used to compile the object.
NLS_LENGTH_SEMANTICS	VARCHAR2(4000) NOT INLINE	NLS length semantics that were used to compile the object.
PLSQL_CCFLAGS	VARCHAR2(4000) NOT INLINE	Conditional compilation flag settings that were used to compile the object.
PLSCOPE_SETTINGS	VARCHAR2(4000) NOT INLINE	Controls whether the PL/SQL compiler generates cross-reference information.

SYS.ALL_PROCEDURES

The `ALL_PROCEDURES` view describes all PL/SQL functions and procedures, along with associated properties, that are accessible to the current user.

Related views

- `SYS.DBA_PROCEDURES` describes all PL/SQL functions and procedures, along with associated properties. It has the same columns as `ALL_PROCEDURES`.

- `SYS.USER_PROCEDURES` describes all functions and procedures, along with associated properties that are owned by the current user. This view does not display the `OWNER` column.

Columns

Column name	Type	Description
OWNER	VARCHAR2(30) INLINE	Owner of the procedure or function.
OBJECT_NAME	VARCHAR2(30) INLINE	Name of the object: top-level function, procedure or package name.
PROCEDURE_NAME	VARCHAR2(30) INLINE	Name of the procedure or function.
OBJECT_ID	TT_BIGINT NOT NULL	Object number.
SUBPROGRAM_ID	NUMBER	Unique subprogram identifier.
OVERLOAD	VARCHAR2(12) INLINE	Overload unique identifier.
OBJECT_TYPE	VARCHAR2(17) INLINE	Object type.
AGGREGATE	VARCHAR2(3) INLINE	Indicates if object is an aggregate function (`YES` or `NO`). TimesTen does not support aggregate functions so value is `NO`.
PIPELINED	VARCHAR2(3) INLINE	Indicates if object is a pipelined table function (`YES` or `NO`). TimesTen does not support `PIPELINED` so value is `NO`.
IMPLTYPEOWNER	VARCHAR2(30) INLINE	Name of owner of the implementation type, if any.
IMPLTYPENAME	VARCHAR2(30) INLINE	Name of the implementation type, if any.
PARALLEL	VARCHAR2(3) INLINE	Indicates whether the procedure or function is parallel-enabled (`YES` or `NO`). TimesTen does not support `PARALLEL`, so value is `NO`. You can specify the `parallel_enable_clause`, but it has no effect.

Column name	Type	Description
INTERFACE	VARCHAR2(3) INLINE	YES, if the procedure or function is a table function implemented using the Oracle Data Cartridge Interface (ODCI); otherwise NO. TimesTen does not support ODCI so value is NO.
DETERMINISTIC	VARCHAR2(3) INLINE	YES, if the procedure or function is declared to be deterministic; otherwise NO.
AUTHID	VARCHAR2(12) INLINE NOT NULL	Indicates whether the procedure or function is declared to execute as DEFINER or CURRENT_USER (invoker).

SYS.ALL_SOURCE

The ALL_SOURCE view describes the text source of the stored objects accessible to the current user.

Related views

- SYS.DBA_SOURCE describes the text source of all stored objects. It has the same columns as ALL_SOURCE.

- SYS.USER_SOURCE describes the text source of the stored objects that are owned by the current user. This view does not display the OWNER column.

Columns

Column name	Type	Description
OWNER	VARCHAR2(30) INLINE	Object owner.
NAME	VARCHAR2(30) INLINE	Object name.
TYPE	VARCHAR2(12) INLINE NOT NULL	Object type (such as PROCEDURE, FUNCTION, PACKAGE).
LINE	TT_INTEGER NOT NULL	Line number of this line of source.
TEXT	VARCHAR2(4000) NOT INLINE	Text source of the stored object.

SYS.ALL_STORED_SETTINGS

The ALL_STORED_SETTINGS view describes the persistent parameter settings for stored PL/SQL units for which the current user has execute privileges.

ALL_STORED_SETTINGS is retained for backward compatibility. Use the ALL_PLSQL_OBJECT_SETTINGS view instead.

Related views

- SYS.DBA_STORED_SETTINGS describes the persistent parameter settings for stored PL/SQL units for which the current user has execute privileges. It also returns parameter information for all objects in the database.

- SYS.USER_STORED_SETTINGS describes the persistent parameter settings for stored PL/SQL units, but only shows information about PL/SQL units owned by the current user.

Columns

Column name	Type	Description
OWNER	VARCHAR2(30) INLINE	Name of the database user owning the stored PL/SQL unit.
OBJECT_NAME	VARCHAR2(30) INLINE	Name of the PL/SQL unit.
OBJECT_ID	TT_BIGINT NOT NULL	Object number of the PL/SQL unit.
OBJECT_TYPE	VARCHAR2(12) INLINE NOT NULL	The type of the PL/SQL unit: PROCEDURE,FUNCTION, PACKAGE or PACKAGE BODY.
PARAM_NAME	VARCHAR2(30) INLINE NOT NULL	The name of the parameter stored persistently with the PL/SQL unit.
PARAM_VALUE	VARCHAR2(4000) NOT INLINE	The TO_CHAR () representation of the value of the persistently stored parameter. The width of this column is operating system dependent, but it is at least 255.

SYS.ALL_SYNONYMS

The ALL_SYNONYMS view describes the synonyms accessible to the current user. These criteria determine the list of synonyms that ALL_SYNONYMS shows:

- All private synonyms owned by the logged-in user, even if the base object is not accessible to the user.

- All public synonyms, even if the base object is not accessible to the user.

- All private synonyms owned by a different user, where the base object pointed to by the synonym or by nested synonyms is known to be accessible because of a grant to the logged-in user.

The base object can be a table, view, synonym, index, sequence, PL/SQL stored procedure, PL/SQL function, PL/SQL package, materialized view or cache group.

Related views

- SYS.DBA_SYNONYMS describes all synonyms in the database.

- SYS.USER_SYNONYMS describes the synonyms owned by the current user. This view does not display the OWNER column.

Columns

Column name	Type	Description
OWNER	VARCHAR2(30) INLINE	Owner of the synonym.
SYNONYM_NAME	VARCHAR2(30) INLINE	Name of the synonym.
TABLE_OWNER	VARCHAR2(30) INLINE	Owner of the object referenced by the synonym, or creator of the referring synonym if the target is a public synonym.
TABLE_NAME	VARCHAR2(30) INLINE	Name of the object referenced by the synonym.
DB_LINK	VARCHAR2(128)	Reserved for future use. The value is always NULL.

SYS.ALL_TAB_PRIVS

The ALL_TAB_PRIVS view lists the object privileges granted to the current user, the object privileges granted by the current user, the list of object privileges granted for objects owned by the current user and the object privileges granted to PUBLIC.

Related views

- SYS.DBA_TAB_PRIVS describes all object grants in the database.

- SYS.USER_TAB_PRIVS describes the object grants for which the current user is the object owner, grantor, or grantee.

Columns

Column	Type	Description
GRANTOR	VARCHAR2(30) INLINE	Name of the user who granted the privilege.
GRANTEE	VARCHAR2(30) INLINE	Name of the user who has the privilege.
TABLE_SCHEMA	VARCHAR2(30) INLINE	Object owner.
TABLE_NAME	VARCHAR2(30) INLINE	Object name.
PRIVILEGE	VARCHAR2(40) INLINE	Privilege name.
GRANTABLE	VARCHAR2(3) INLINE NOT NULL	Value is always NO.
HIERARCHY	VARCHAR2(3) INLINE NOT NULL	Value is always NO.

SYS.ALL_USERS

The `ALL_USERS` view lists all users of the database that are visible to the current user.

Related views

- `SYS.DBA_USERS` describes all users of the database and contains more columns than `ALL_USERS`.
- `SYS.USER_USERS` describes the current user of the database and contains more columns than `ALL_USERS`.

Columns

Column	Type	Description
USERNAME	VARCHAR2(30) INLINE	Name of the user.
USER_ID	TT_INTEGER NOT NULL	ID number of the user.
CREATED	TT_TIMESTAMP NOT NULL	Date the user was created.

SYS.CACHE_GROUP

The CACHE_GROUP table describes the definition of a TimesTen cache.

Columns

Column name	Type	Description
CGNAME	TT_CHAR(31) NOT NULL	Group name.
CGOWNER	TT_CHAR(31) NOT NULL	Group owner.
CGID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	ID of this cache group.
ROOT	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Unique identifier for cache group's root table.
SOURCE	TT_CHAR(8) NOT NULL	Data source for caching. The only legal value is 'ORACLE'.
CGDURATION	TT_INTEGER NOT NULL	Reserved for internal use.
TBLCNT	TT_SMALLINT NOT NULL	Number of tables in cache group.
REFRESH_MODE	TT_CHAR(1) NOT NULL	The current autorefresh mode. 'N': No autorefresh. 'I': Incremental autorefresh. 'F': Full autorefresh.
REFRESH_STATE	TT_CHAR(1) NOT NULL	The current autorefresh mode. 'N': Off. 'Y': On. 'P': Paused.
REFRESH_INTERVAL	TT_BIGINT NOT NULL	Autorefresh interval in milliseconds.
CGATTRIBUTES	BINARY(4) NOT NULL	Bits 0-7 are for cache group types. Bits 8-15 are for autoload options. Bit 0: 1 - READONLY Bit 1: 1 - SYNCHRONOUS WRITETHROUGH Bit 2: 1 - AUTOREFRESH Bit 3: 1 - PROPAGATE Bit 8: 1 - Autoload on create (Always 1 for AUTOREFRESH) Bit 9: 1 - Dynamic cache group

Column name	Type	Description
REFRESH_WITH_LIMIT	TT_INTEGER NOT NULL	The maximum number of autorefresh change log records kept in the trigger log table in the Oracle database. A larger value causes the autorefresh to use more space in the Oracle database, while it prevents the truncation of logs that are not autorefreshed to TimesTen yet, and therefore reduces the possible fallback to full refresh. The field is used only by incremental autorefresh
CVGRIDID	TT_INTEGER NOT NULL	Unique grid ID among grids whose members contain global AWT cache groups.
GRIDINFO	VARBINARY(409600) NOT INLINE	Reserved for internal use.
ORATOP	TT_VARCHAR(409600) NOT INLINE	Reserved for future use.
ORAPROXY	TT_VARCHAR(409600) NOT INLINE	Reserved for future use.
ORABASE	TT_VARCHAR(409600) NOT INLINE	Reserved for future use.
TTALIAS	TT_VARCHAR(409600) NOT INLINE	Reserved for future use.

SYS.COLUMNS

The COLUMNS table describes every column in every table in the database, including the name of the column, the type of the column and whether the column is nullable.

Columns

Column name	Type	Description
ID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Matches SYS.TABLES.TBLID of the table that owns the column.
COLNUM	TT_SMALLINT NOT NULL	Ordinal number of the column as specified when the table is created or subsequently altered.
COLNAME	TT_CHAR(31) NOT NULL	Column name.
COLOPTIONS	BINARY(1) NOT NULL	Column specification flags: 0x01 - column is in a primary key. 0x02 - column value is varying-length (VARCHAR[2], NVARCHAR[2],VARBINARY). 0x04 - column value can be NULL. 0x08 - column values are unique.
COLTYPE	TT_TINYINT NOT NULL	Data type of column 1 TT_SMALLINT 2 TT_INTEGER 3 BINARY_FLOAT 4 BINARY_DOUBLE 5 TT_CHAR 6 TT_VARCHAR 7 BINARY 8 VARBINARY 11 TT_DECIMAL 12 TT_NCHAR 13 TT_NVARCHAR 14 TT_DATE 15 TIME 16 TT_TIMESTAMP 20 TT_TINYINT 21 TT_BIGINT 22 TT_VARCHAR (inline) 23 VARBINARY (inline) 24 TT_NVARCHAR (inline) 25 NUMBER 26 CHAR 27 VARCHAR2 28 NCHAR 29 NVARCHAR2 30 DATE 31 TIMESTAMP 32 VARCHAR2 (inline) 33 NVARCHAR2 (inline) 34 ROWID

Column name	Type	Description
TYPE_ATTR	TT_INTEGER NOT NULL	Reserved for internal use.
COLLEN	TT_INTEGER NOT NULL for 32-bit systems BIGINT NOT NULL for 64-bit systems	Length of the column (maximum length for varying-length columns).
INLINELEN	TT_INTEGER NOT NULL	Identifies how many bytes a given column contributes to the inline width of a row.
REPUSERID	TT_INTEGER NOT NULL	User-defined identifier for column (set with ttSetUserColumnID built-in procedure).
DEFAULTVALSTR	TT_VARCHAR(409600) NOT INLINE	The default column value.
CHAR_USED	TT_CHAR(1)	Indicates the semantics for the column: 'B' for BYTE 'C' for CHAR NULL for non-character columns

SYS.COL_STATS

The COL_STATS table stores the statistics for table columns in the database. Statistics include the number of unique values, number of nulls, number of rows and other information regarding the distribution of column values. No values are present if statistics have not been computed.

Columns

Column name	Type	Description
TBLID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	TimesTen table identifier.
COLNUM	TT_SMALLINT NOT NULL	Ordinal number of column in table (starting at 1).
INFO	VARBINARY(4000000) NOT INLINE NOT NULL	Contains a binary representative of the column value distribution information. See "ttOptUpdateStats" in *Oracle TimesTen In-Memory Database Reference* for an explanation of the distribution information stored in this column. A text representation of this information can be retrieved using the ttOptGetColStats built-in procedure.

SYS.DBA_ARGUMENTS

DBA_ARGUMENTS lists the arguments of the procedures and functions that are available in the database. It has the same columns as SYS.ALL_ARGUMENTS.

Related views

- SYS.ALL_ARGUMENTS
- SYS.USER_ARGUMENTS

SYS.DBA_COL_PRIVS

This view returns no rows. The column definitions are the same as the column definitions for the SYS.DBA_COL_PRIVS view in the Oracle Database. See *Oracle Database Reference*.

Required privileges

ADMIN

Related views

- SYS.ALL_COL_PRIVS returns no rows.
- SYS.USER_COL_PRIVS returns no rows.

SYS.DBA_DEPENDENCIES

DBA_DEPENDENCIES describes all dependencies between objects in the database. See "SYS.ALL_DEPENDENCIES" on page 1-8 for column descriptions.

Related views

- SYS.ALL_DEPENDENCIES
- SYS.USER_DEPENDENCIES

SYS.DBA_DIRECTORIES

DBA_DIRECTORIES describes all directories in the database. It has the same columns as SYS.ALL_DIRECTORIES.

Related views

SYS.ALL_DIRECTORIES

SYS.DBA_ERRORS

DBA_ERRORS describes the current errors on all stored objects in the database. It has the same columns as SYS.ALL_ERRORS.

Related views

- SYS.ALL_ERRORS
- SYS.USER_ERRORS

SYS.DBA_IDENTIFIERS

DBA_IDENTIFIERS displays information about the identifiers in all stored objects in the database. It has the same columns as SYS.ALL_IDENTIFIERS.

Related views

- SYS.ALL_IDENTIFIERS
- SYS.USER_IDENTIFIERS

SYS.DBA_OBJECTS

DBA_OBJECTS describes all objects in the database. It has the same columns as SYS.ALL_OBJECTS.

Related views

- SYS.ALL_OBJECTS
- SYS.USER_OBJECTS

SYS.DBA_OBJECT_SIZE

The DBA_OBJECT_SIZE view describes the size, in bytes, of PL/SQL objects.

Related views

SYS.USER_OBJECT_SIZE does not display the OWNER column.

Columns

Column name	Type	Description
OWNER	VARCHAR2(30) INLINE	Object owner.
NAME	VARCHAR2(30) INLINE	Object name.
TYPE	VARCHAR2(12) INLINE NOT NULL	Object type (such as PROCEDURE, FUNCTION, PACKAGE).
SOURCE_SIZE	NUMBER	Size of the source in bytes. Must be in memory during compilation or dynamic recompilation.
PARSED_SIZE	NUMBER	Size of the parsed form of the object, in bytes. Must be in memory when an object is being compiled that references this object.
CODE_SIZE	NUMBER NOT NULL	Code size, in bytes. Must be in memory when this object is executing.
ERROR_SIZE	NUMBER NOT NULL	Size of error messages, in bytes. Must be in memory during the compilation of the object when there are compilation errors.

SYS.DBA_PLSQL_OBJECT_SETTINGS

DBA_PLSQL_OBJECT_SETTINGS displays information about the compiler settings for all stored objects in the database. It has the same columns as SYS.ALL_PLSQL_OBJECT_SETTINGS.

Related views

- SYS.ALL_PLSQL_OBJECT_SETTINGS
- SYS.USER_PLSQL_OBJECT_SETTINGS

SYS.DBA_PROCEDURES

DBA_PROCEDURES all PL/SQL functions and procedures, along with associated properties. It has the same columns as SYS.ALL_PROCEDURES.

Related views

- SYS.ALL_PROCEDURES
- SYS.USER_PROCEDURES

SYS.DBA_SOURCE

DBA_SOURCE describes the text source of all stored objects. It has the same columns as SYS.ALL_SOURCE.

Related views

- SYS.ALL_SOURCE
- SYS.USER_SOURCE

SYS.DBA_STORED_SETTINGS

DBA_STORED_SETTINGS describes the persistent parameter settings for stored PL/SQL units for which the current user has execute privileges. It also returns parameter information for all objects in the database. It has the same columns as SYS.ALL_STORED_SETTINGS.

Related views

- SYS.ALL_STORED_SETTINGS
- SYS.USER_STORED_SETTINGS

SYS.DBA_SYNONYMS

The DBA_SYNONYMS view describes all synonyms in the database. It has the same columns as SYS.ALL_SYNONYMS.

Related views

- SYS.ALL_SYNONYMS
- SYS.USER_SYNONYMS

SYS.DBA_SYS_PRIVS

The DBA_SYS_PRIVS view lists the system privileges granted to all users and to PUBLIC.

Required privileges

ADMIN

Related views

SYS.USER_SYS_PRIVS lists system privileges granted to the current user.

Columns

Column	Type	Description.
GRANTEE	VARCHAR2(30) INLINE	Name of the user with the privilege.
PRIVILEGE	VARCHAR2(40) INLINE NOT NULL	Privilege name.
ADMIN_OPTION	VARCHAR2(3) INLINE	Indicates whether the user can grant the privilege. Possible values are YES and NO. The value is YES only for the ADMIN privilege.

SYS.DBA_TAB_PRIVS

The DBA_TB_PRIVS view lists the object privileges granted to all users and to PUBLIC.

Related views

- SYS.ALL_TAB_PRIVS

- SYS.USER_TAB_PRIVS

Required privileges

ADMIN

Columns

Column	Type	Description
GRANTEE	VARCHAR2(30) INLINE	Name of the user with the privilege.
OWNER	VARCHAR2(30) INLINE	Object owner.
TABLE_NAME	VARCHAR2(30) INLINE	Object name.
GRANTOR	VARCHAR2(30) INLINE	Name of the user who granted the privilege.
PRIVILEGE	VARCHAR2(40) INLINE NOT NULL	Privilege name.
GRANTABLE	VARCHAR2(3) INLINE NOT NULL	Value is always NO.
HIERARCHY	VARCHAR2(3) INLINE NOT NULL	Value is always NO.

SYS.DBA_USERS

The DBA_USERS view describes all users of the database.

Related views

- SYS.ALL_USERS
- SYS.USER_USERS

Columns

Column	Type	Description.
USERNAME	VARCHAR2(30) INLINE	Name of the user.
USER_ID	TT_INTEGER NOT NULL	ID number of the user.
PASSWORD	VARCHAR2(30) INLINE	Value is NULL.
ACCOUNT_STATUS	TT_VARCHAR2(32) INLINE NOT NULL	Value is OPEN.
LOCK_DATE	TT_TIMESTAMP	Value is NULL.
EXPIRY_DATE	TT_TIMESTAMP	Value is NULL.
DEFAULT_TABLESPACE	VARCHAR2(30) INLINE NOT NULL	Value is USERS.
TEMPORARY_TABLESPACE	VARCHAR2(30) NOT NULL	Value is TEMP.
CREATED	TT_TIMESTAMP NOT NULL	Date when the user was created.
INITIAL_RSRC_CONSUMER_GROUP	VARCHAR2(30) INLINE	Value is NULL.
EXTERNAL_NAME	VARCHAR2(4000) NOT INLINE	Value is NULL.
PASSWORD_VERSIONS	VARCHAR2(8) INLINE	Value is NULL.
EDITIONS_ENABLED	VARCHAR2(1) INLINE	Value is NULL.

SYS.DUAL

The `DUAL` table can be used in a `SELECT` statement that references no other tables, but needs to return at least one row. Selecting from the `DUAL` table is useful for computing a constant expression with the `SELECT` statement. Because `DUAL` has only one row, the constant is returned only once.

Columns

Column name	Type	Description
DUMMY	TT_VARCHAR(1) NOT INLINE NOT NULL	'X'

SYS.INDEXES

The INDEXES table stores information about the indexes in the database, including the name, the type (range, bitmap or hash), the index key and whether the index is unique.

Columns

Column name	Type	Description
IXNAME	TT_CHAR(31) NOT NULL	Index name.
IXOWNER	TT_CHAR(31) NOT NULL	Name of index owner.
IXID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	TimesTen identifier of index.
TBLID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	TimesTen identifier of indexed table.
IXTYPE	TT_INTEGER NOT NULL	Index type: 0 - hash index 1 - range index 2 - bitmap index
ISUNIQUE	BINARY(1) NOT NULL	Uniqueness: 0 - nonunique index. 1 - unique index.
ISPRIMARY	BINARY(1) NOT NULL	Primary key: 0 - not a primary key for table. 1 - primary key for table.
USETMPHEAP	TT_SMALLINT NOT NULL	Reserved for internal use.
KEYCNT	TT_SMALLINT NOT NULL	Number of columns in the index key.
KEYCOLS	BINARY(32) NOT NULL	Array of 2-byte integer column numbers of index key, mapped to binary.
PAGESPARAM	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Number of pages specified for hash index.
NLSSORTID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	For internal use only.
NLSSORTPARM	VARBINARY(1000) NOT INLINE	For internal use only.

Column name	Type	Description
NLSSORTSTR	TT_VARCHAR(200) NOT INLINE	For internal use only.
NLSSORTBUFSIZE	TT_SMALLINT	For internal use only.
NLSSORTMAXSIZE	TT_SMALLINT NOT NULL	For internal use only.
HAKANFACTOR	TT_INTEGER NOT NULL	For internal use only.

SYS.MONITOR

The MONITOR table stores information about system performance. It contains a single row with statistics about certain events. For many columns, statistics are gathered starting from the time the database is loaded into memory and statistics are cleared when the database is unloaded from memory. With a ramPolicy of manual or always, the database remains in memory when there are no application connections.

For some columns, statistics are gathered as needed. TimesTen does not gather statistics from the time of the first connection for these columns:

- PERM_ALLOCATED_SIZE

- PERM_IN_USE_SIZE

- TEMP_ALLOCATED_SIZE

- LAST_LOG_FILE

- REPHOLD_LOG_FILE

- REPHOLD_LOG_OFF

- FIRST_LOG_FILE

- CHECKPOINT_BYTES_WRITTEN

For most columns, the MONITOR table is reset whenever there are no connections to the database. TimesTen does not reset the values of the following columns, even when there are no connections to the database:

- PERM_ALLOCATED_SIZE

- PERM_IN_USE_SIZE

- TEMP_ALLOCATED_SIZE

- LAST_LOG_FILE

- REPHOLD_LOG_FILE

- REPHOLD_LOG_OFF

- FIRST_LOG_FILE

TimesTen frequently updates information in the MONITOR table. To prevent these updates from slowing down the system, they are not protected by latches. Hence values in the MONITOR table are not absolutely accurate. They can be used as a reliable indication of activities in the system.

> **Note:** See the SYS.SYSTEMSTATS table if the desired statistic is not in the SYS.MONITOR table.

Columns

Column name	Type	Description
TIME_OF_1ST_CONNECT	TT_CHAR(32) NOT NULL	Time at which the first connection was made.
DS_CONNECTS	TT_INTEGER NOT NULL	Number of connects to the database.

Column name	Type	Description
DS_DISCONNECTS	TT_INTEGER NOT NULL	Number of disconnects from the database.
DS_CHECKPOINTS	TT_INTEGER NOT NULL	Number of checkpoints taken.
DS_CHECKPOINTS_FUZZY	TT_INTEGER NOT NULL	Number of fuzzy checkpoints taken.
DS_COMPACTS	TT_INTEGER NOT NULL	Number of database compactions.
PERM_ALLOCATED_SIZE	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Allocated size in kilobytes of the permanent data partition.
PERM_IN_USE_SIZE	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Size in kilobytes of the portion of the permanent data partition that is currently in use.
PERM_IN_USE_HIGH_WATER	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	The highest amount (in kilobytes) of permanent data partition memory in use since the first connection to the database. The value of this field can be reset to the current value of the PERM_IN_USE_SIZE attribute by using the ttMonitorHighWaterReset built-in procedure.
TEMP_ALLOCATED_SIZE	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Allocated size in kilobytes of the temporary data partition.
TEMP_IN_USE_SIZE	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Size in kilobytes of the portion of the temporary data partition that is currently in use.
TEMP_IN_USE_HIGH_WATER	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	The highest amount (in kilobytes) of temporary data partition memory in use since the first connection to the database. The value of this field can be reset to the current value of the TEMP_IN_USE_SIZE attribute by using the ttMonitorHighWaterReset built-in procedure.
TPL_FETCHES	TT_BIGINT NOT NULL	Number of times TimesTen fetches data from Oracle into TimesTen using dynamic load.

Column name	Type	Description
TPL_EXECS	TT_BIGINT NOT NULL	Number of times TimesTen communicates with Oracle to dynamically load data into TimesTen. This count also includes attempts to perform a dynamic load when there is no data to fetch from Oracle.
CACHE_HITS	TT_BIGINT NOT NULL	Number of times TimesTen successfully finds the required data in TimesTen.
PASSTHROUGH_COUNT	TT_BIGINT NOT NULL	Number of successful passthrough executions.
XACT_BEGINS	TT_BIGINT NOT NULL	Number of transactions started.
XACT_COMMITS	TT_BIGINT NOT NULL	Number of durable and nondurable transactions committed.
XACT_D_COMMITS	TT_BIGINT NOT NULL	Number of transactions committed durably.
XACT_ROLLBACKS	TT_BIGINT NOT NULL	Number of transactions rolled back.
LOG_FORCES	TT_BIGINT NOT NULL	Number of times log files were synchronized to disk.
DEADLOCKS	TT_BIGINT NOT NULL	Number of deadlocks.
LOCK_TIMEOUTS	TT_BIGINT NOT NULL	Number of lock requests denied due to timeouts.
LOCK_GRANTS_IMMED	TT_BIGINT NOT NULL	Number of lock requests granted without a wait.
LOCK_GRANTS_WAIT	TT_BIGINT NOT NULL	Number of lock requests granted after a wait.
CMD_PREPARES	TT_BIGINT NOT NULL	Number of commands prepared (compiled).
CMD_REPREPARES	TT_BIGINT NOT NULL	Number of commands re-prepared.
CMD_TEMP_INDEXES	TT_BIGINT NOT NULL	Number of temporary indexes created during query execution.
LAST_LOG_FILE	TT_INTEGER NOT NULL	Number of last log file.
REPHOLD_LOG_FILE	TT_INTEGER NOT NULL	Number of last log file held by replication.
REPHOLD_LOG_OFF	TT_INTEGER NOT NULL	Offset in last log file held by replication.
REP_XACT_COUNT	TT_INTEGER NOT NULL	The number of replicated transactions generated on the local database that are being replicated to at least one peer database.

Column name	Type	Description
REP_CONFLICT_COUNT	TT_INTEGER NOT NULL	The number of replicated transactions that ran into a conflict when being applied on the local database.
REP_PEER_CONNECTIONS	TT_INTEGER NOT NULL	The sum of all peer connections initiated by the local replication agent. There is one connection for every peer relationship where the local database is the master. If a transport level failure results in the establishment of a new connection, this count is incremented.
REP_PEER_RETRIES	TT_INTEGER NOT NULL	The number of retry attempts while trying to establish a new peer connection.
FIRST_LOG_FILE	TT_INTEGER NOT NULL	The number of the oldest existing (not yet purged) log file.
LOG_BYTES_TO_LOG_BUFFER	TT_BIGINT NOT NULL	The number of bytes written to the log since first connect. This value includes the sizes of actual log records plus any log overhead.
LOG_FS_READS	TT_BIGINT NOT NULL	The number of times that a log read could not be satisfied from the in-memory log buffer.
LOG_FS_WRITES	TT_BIGINT NOT NULL	The number of times TimesTen has written the contents of the in-memory log buffer to the operating system. This column does not count the number of times data was flushed to disk. It counts writes to the operating system's file buffers.
LOG_BUFFER_WAITS	TT_BIGINT NOT NULL	The number of times a thread was delayed while trying to insert a log record into the log buffer because the log buffer was full. Generally speaking, if this value is increasing, it indicates that the log buffer is too small.
CHECKPOINT_BYTES_WRITTEN	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	The number of bytes written to disk by the most recent checkpoint operation.
CURSOR_OPENS	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Number of SELECT statements issued.

Column name	Type	Description
CURSOR_CLOSES	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Number of SELECT statements completed.
CHECKPOINT_BLOCKS_WRITTEN	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Total number of blocks written for all completed checkpoints. To improve I/O efficiency, multiple blocks may be coalesced into a single write or a single block may be split across multiple writes.
CHECKPOINT_WRITES	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Total number of write operations issued by all completed and in-progress checkpoints.
REQUIRED_RECOVERY	TT_INTEGER NOT NULL	1: When the database was initially loaded into RAM at TIME_OF_1ST_CONNECT, recovery ran. This means that the previous time the database was in memory, the database did not shut down cleanly. When it was loaded into memory this time, the log was replayed and other operations were performed in an attempt to recover data. If DurableCommit had been set to 0, transactions could have been lost. 0: The database was previously shut down cleanly. Thus the database was restarted cleanly.
TYPE_MODE	TT_INTEGER NOT NULL	0: Oracle mode 1: TimesTen mode

See also

SYS.SYSTEMSTATS

SYS.PLAN

The PLAN table contains the execution plan that the TimesTen query optimizer prepares after an application calls ttOptSetFlag. See "Generating a query plan" and "Modifying plan generation" in *Oracle TimesTen In-Memory Database Operations Guide*.

The execution plan includes the operation performed at each step and the table or index that it references.

Columns

Column name	Type	Description
STEP	TT_INTEGER NOT NULL	Ordinal number of the operation, starting at 1.
LEVEL	TT_INTEGER NOT NULL	Level of this operation in the plan tree.

Column name	Type	Description
OPERATION	TT_CHAR(31) NOT NULL	Type of operation, one of:
		`TblLkSerialScan` - full table scan
		`RowLkSerialScan` - full table scan
		`TblLkTtreeScan` - range scan
		`RowLkTtreeScan` - range scan
		`TblLkHashScan` - hash lookup
		`RowLkHashScan` - hash lookup
		`TblLkRowidScan` - rowid lookup
		`RowLkRowidScan` - rowid lookup
		`TblLkUpdate` - updates one or more rows
		`RowLkUpdate` - updates one or more rows
		`TblLkDelete` - deletes one or more rows
		`RowLkDelete` - deletes one or more rows
		`TblLkInsert` - inserts one or more rows
		`RowLkInsert` - inserts one or more rows
		`TmpTtreeScanTmpHashScan` - create a temporary index
		`NestedLoop [OuterJoin	SemiJoin]` - nested loop join (with optional outer join or semijoin)
		`MergeJoin` - merge join
		`OrderBy` - sorts rows (requires extra temp space)
		`SortedDistinct` - identifies distinct rows from a sorted list (requires minimal extra space)
		`Distinct` - identifies distinct rows from an unsorted list (requires extra temporary space)
		`SortedGroupBy` - identifies distinct groups from a sorted list (requires minimal extra space)
		`GroupBy` - identifies distinct groups from an unsorted list (requires extra temp space)
		`TmpTable` - materializes intermediate results (requires extra temporary space)
		`TblLkUpdView` - updates a view based on changes to detail table(s)
		`RowLkUpdView` - updates a view based on changes to detail table(s)
		`OracleInsert` - flushes changes to Oracle
		`ZeroTblScan` - evaluates a predicate on a single set of values (no scan required)
		`ViewUniqueMatchScan` - uniquely identifies those view rows that need to be updated (requires extra temp space
TBLNAME	TT_CHAR(31)	Name of table scanned at this step.
		Column is NULL if no table is scanned.

Column name	Type	Description
IXNAME	TT_CHAR(31)	Name of index used at this step.
		Range index names may have a "(D)" after the name, which indicates a descending scan.
		Column is NULL if no index is scanned.
PRED	TT_VARCHAR(1024) NOT INLINE	Predicate applied during table or index scan or join. Column is NULL if no predicate applies.
OTHERPRED	TT_VARCHAR(1024) NOT INLINE	Predicate applied after table or index scan or join. Column is NULL if no predicate applies.

SYS.PUBLIC_DEPENDENCY

The PUBLIC_DEPENDENCY view describes dependencies to and from objects, by object number (OBJECT_ID).

Columns

Column name	Type	Description
OBJECT_ID	TT_BIGINT NOT NULL	Object number.
REFERENCED_OBJECT_ID	TT_BIGINT NOT NULL	Referenced object (the parent object).

SYS.SEQUENCES

The SEQUENCES table contains all the information about sequences. Data from the system table is restored to the new database during a CREATE SEQUENCE statement.

Columns

Column name	Type	Description
NAME	TT_CHAR(31) NOT NULL	Sequence name.
OWNER	TT_CHAR(31) NOT NULL	Sequence owner.
MINVAL	TT_BIGINT NOT NULL	Minimum value.
MAXVAL	TT_BIGINT NOT NULL	Maximum value.
INCREMENT	TT_BIGINT NOT NULL	Increment value.
CACHESIZE	TT_BIGINT NOT NULL	Number of sequence number to be cached. For internal TimesTen use.
LASTNUMBER	TT_BIGINT NOT NULL	Last number incremented.
SEQID	TT_INTEGER NOT NULL on 32-bit systems TT_BIGINT NOT NULL on 64-bit systems	ID of the sequence row.
CYCLE	BINARY(1) NOT NULL	Flag to indicate to wrap around value.
IS_REPLICATED	BINARY(1) NOT NULL	0 – Sequences are not being replicated 1 – Sequences are being replicated
REPACCESS	TT_CHAR(1) NOT NULL	Flag to indicate that sequences cannot be incremented on subscriber-only databases.

SYS.SESSION_ROLES

This view returns no rows. The column definitions are the same as the column definitions for the `SYS.SESSION_ROLES` view in the Oracle Database. See *Oracle Database Reference*.

SYS.SYSTEM_PRIVILEGE_MAP

The SYSTEM_PRIVILEGE_MAP table describes privilege type codes. This table can be used to map privilege type numbers to type names.

Columns

Column name	Type	Description
PRIVILEGE	TT_INTEGER NOT NULL	Numeric privilege type code.
NAME	VARCHAR2(40) INLINE NOT NULL	Name of the type of privilege.
PROPERTY	TT_INTEGER NOT NULL	Property flag of the privilege.

SYS.SYSTEMSTATS

The SYSTEMSTATS table stores systemwide monitoring statistics.

Columns

Column name	Type	Description
NAME	TT_CHAR(64) NOT NULL	Name of statistic.
VALUE	TT_BIGINT NOT NULL	Value of statistic.

Rows

This section contains tables with names and definitions of the statistics reported in the SYSTEMSTATS table.

Table 1–1   Asynchronous writethrough (AWT) cache group statistics

Name	Description
cg.awt.tt_txns	Number of TimesTen transactions propagated to the Oracle database.
cg.awt.sql_mode.inserts.rows	Number of rows inserted into the Oracle database in SQL mode (CacheAWTMethod=0).
cg.awt.sql_mode.updates.rows	Number of rows updated in the Oracle database in SQL mode.
cg.awt.sql_mode.deletes.rows	Number of rows deleted from Oracle database in SQL mode (CacheAWTMethod=0).
cg.awt.sql_mode.inserts.batches	Number of insert batches sent to the Oracle database in SQL mode (CacheAWTMethod=0).
cg.awt.sql_mode.updates.batches	Number of update batches sent to the Oracle database in SQL mode (CacheAWTMethod=0).
cg.awt.sql_mode.deletes.batches	Number of delete batches sent to the Oracle database in SQL mode (CacheAWTMethod=0).
cg.awt.sql_mode.bytes	Number of bytes sent to the Oracle database in SQL mode (CacheAWTMethod=0).
cg.awt.sql_mode.batches	Number of batches sent to the Oracle database in SQL mode (CacheAWTMethod=0).
cg.awt.plsql_mode.inserts.rows	Number of rows inserted into the Oracle database in PL/SQL mode (CacheAWTMethod=1).
cg.awt.plsql_mode.updates.rows	Number of rows updated in the Oracle database in PL/SQL mode (CacheAWTMethod=1).
cg.awt.plsql_mode.deletes.rows	Number of rows deleted from the Oracle database in PL/SQL mode (CacheAWTMethod=1).
cg.awt.plsql_mode.bytes	Number of bytes sent to the Oracle database in PL/SQL mode (CacheAWTMethod=1).
cg.awt.plsql_mode.batches	Number of PL/SQL block batches sent to the Oracle database (CacheAWTMethod=1).

Table 1–1   (Cont.) Asynchronous writethrough (AWT) cache group statistics

Name	Description
cg.awt.calls_to_oracle	Number of calls made to the Oracle database for AWT writes.
cg.awt.commits_on_oracle	Number of AWT transactions committed on the Oracle database.
cg.awt.rollbacks_on_oracle	Number of rollbacks on the Oracle database because of errors.
cg.awt.retries_on_oracle	Number of times AWT transactions are retried on the Oracle database in case of an error.

Table 1–2   Autorefresh cache group statistics

Name	Description
cg.autorefresh.inserts.rows	Number of rows inserted in TimesTen during autorefresh from the Oracle database.
cg.autorefresh.updates.rows	Number of rows updated in TimesTen during autorefresh from the Oracle database.
cg.autorefresh.deletes.rows	Number of rows deleted in TimesTen during autorefresh from the Oracle database.
cg.autorefresh.cycles.completed	Number of autorefresh cycles completed successfully on TimesTen.
cg.autorefresh.cycles.failed	Number of autorefresh cycles that failed because of errors.
cg.autorefresh.full_refreshes	Number of full refreshes triggered during autorefresh operations.

Table 1–3   Cache group flush statistics

Name	Description
cg.flush.execs	Number of flush cache group executions.
cg.flush.rows	Number of rows flushed to the Oracle database.
cg.flush.bytes	Number of bytes flushed to the Oracle database.

Table 1–4   Synchronous writethrough (SWT) cache group statistics

Name	Description
cg.swt.inserts.rows	Number of rows in SWT cache groups inserted into the Oracle database.
cg.swt.updates.rows	Number of rows in SWT cache groups updated in the Oracle database.
cg.swt.deletes.rows	Number of rows in SWT cache groups deleted from the Oracle database.
cg.swt.bytes	Number of bytes sent to Oracle database during SWT cache group operations.

Table 1–5   Local cache group statistics

Name	Description
`cg.dynamic.local.hits.count`	Number of dynamic load queries that find the requested data within the TimesTen database.
`cg.dynamic.local.misses.count`	Number of dynamic load queries that do not find the requested data within the TimesTen database and need to load the data from the Oracle database.
`cg.dynamic.local.misses.oracle.loads`	Number of data loads from the Oracle database when servicing dynamic load misses for dynamic local cache groups.
`cg.dynamic.local.misses.oracle.bytes_loaded`	Total number of bytes loaded from Oracle database for servicing dynamic load misses for dynamic local cache groups.

Table 1–6   Grid operational statistics

Name	Description
`grid.member.attaches`	Number of attach operations.
`grid.member.detaches`	Number of detach operations.

Table 1–7   Dynamic global cache group statistics

Name	Description
`cg.dynamic.global.hits.count`	Dynamic loads that find the data in the local grid member without requiring data to be loaded from the Oracle database or another grid member.
`cg.dynamic.global.misses.count`	Dynamic loads that do not find data initially in the local grid member. The dynamic load must search the Oracle database or another grid member.
`cg.dynamic.global.misses.remote.loads.successes`	Dynamic loads that do not find data in the local grid member and successfully load the data from a different grid member.
`cg.dynamic.global.misses.oracle`	Number of times a dynamic load had to load the requested data from the Oracle database.
`cg.dynamic.global.misses.oracle.bytes_loaded`	Total number of bytes loaded from the Oracle database for servicing dynamic load misses.
`cg.dynamic.global.requests.received`	Number of requests for data received by this grid member from another grid member as a result of a dynamic load on the remote grid member.
`cg.dynamic.global.requests.received.data_not_present`	Number of requests for data received by this grid member when the data requested was found not to be present on this grid member.

Table 1–7   (Cont.) Dynamic global cache group statistics

Name	Description
cg.dynamic.global.requests.received.data_locked	Number of requests for data received by this grid member when the data requested was locked by a transaction on this grid member.
cg.dynamic.global.requests.received.data_dirty	Number of requests for data received by this grid member when the data requested must first be propagated to the Oracle database.

Table 1–8   Persistence statistics (logging and checkpointing)

Name	Description
log.buffer.insertions	Number of log records inserted into the log buffer.
log.buffer.bytes_inserted	Number of bytes inserted into the log buffer.
log.buffer.waits	Total number of waits experienced by all insertion processes.
log.file.reads	Number of file system reads.
log.file.writes	Number of file system writes.
log.forces	Number of times the log has been synchronized to disk.
log.files.generated	Number of log files generated.
log.file.earliest	Earliest log file that currently exists in the database.
log.file.latest	Most recent log file present.
log.commit.bytes.read	Number of bytes read from the log for commit processing.
log.commit.file.reads	Number of file system reads from the log for commit processing.
log.recovery.bytes.read	Number of log bytes read during database recovery.
ckpt.bytes_written	Number of bytes written for checkpointing.
ckpt.writes	Number of checkpoint writes.
ckpt.completed	Number of checkpoints completed.
ckpt.completed.fuzzy	Number of fuzzy checkpoints completed.
ckpt.bytes_written.during_recovery	Number of bytes written for checkpointing during database recovery.

Table 1–9   User and system activity statistics

Name	Description
stmt.prepares.count	Number of statement prepares.
stmt.prepares.command_cache_miss	Number of command cache misses during statement prepare.
stmt.reprepares.count	Number of statement reprepares, including forced and automatic.

Table 1–9 (Cont.) User and system activity statistics

Name	Description
`stmt.reprepares.automatic`	Number of automatic statement reprepares.
`stmt.executes.count`	Number of SQL statements executed.
`stmt.executes.updates`	Number of UPDATE statements executed.
`stmt.executes.deletes`	Number of DELETE statements executed.
`stmt.executes.merges`	Number of MERGE statements executed.
`stmt.executes.inserts`	Number of INSERT statements executed.
`stmt.executes.selects`	Number of SELECT statements executed.
`stmt.executes.alters`	Number of ALTER statements executed.
`stmt.executes.creates`	Number of CREATE statements executed.
`stmt.executes.drops`	Number of DROP statements executed.
`txn.commits.count`	Number of transactions committed.
`txn.commits.durable`	Number of durable transaction commits.
`txn.commits.nondurable`	Number of nondurable transaction commits.
`txn.commits.replicated.durable`	Number of durable replicated transaction commits.
`txn.commits.replicated.nondurable`	Number of nondurable replicated transaction commits.
`txn.commits.internal.replication`	Number of replication-initiated transaction commits.
`txn.commits.internal.xla`	Number of XLA-initiated transaction commits.
`txn.rollbacks`	Number of transaction rollbacks.
`connections.established.count`	Number of database connections established.
`connections.established.direct`	Number of direct-linked database connections established.
`connections.established.client_server`	Number of client/server connections established.
`connections.established.threshold_exceeded`	Number of database connection threshold exceeded events.
`connections.disconnected`	Number of database disconnects.

Table 1–10   Database activity statistics

Name	Description
db.table.rows_read	Number of table rows read.
db.table.rows_inserted	Number of table rows inserted.
db.table.rows_updated	Number of table rows updated.
db.table.rows_deleted	Number of table rows deleted.
db.table.full_scans	Number of full table scans.
db.index.rebuilds	Number of indexes rebuilt.
db.index.hash.inserts	Number of rows inserted into hash indexes.
db.index.hash.inserts.recovery_rebuild	Number of rows inserted into hash indexes during index rebuild phase of database recovery.
db.index.hash.deletes	Number of rows deleted from hash indexes.
db.index.hash.scans.count	Number of hash indexes scanned.
db.index.hash.scans.repl	Number of hash indexes scanned during replication operations (such as insert, update and delete operations on tables).
db.index.hash.rows_fetched.count	Number of rows fetched from hash indexes.
db.index.hash.rows_fetched.repl	Number of rows fetched from hash indexes during replication operations.
db.index.range.inserts.count	Number of rows inserted into range indexes.
db.index.range.inserts.recovery_rebuild	Number of rows inserted into range indexes during index rebuild phase of database recovery.
db.index.range.deletes	Number of rows deleted from range indexes.
db.index.range.updates	Number of rows updated on range indexes.
db.index.range.scans.count	Number of range indexes scanned.
db.index.range.scans.repl	Number of range indexes scanned during replication operations (such as insert, update and delete operations on tables).
db.index.range.rows_fetched.count	Number of rows fetched from range indexes.
db.index.range.rows_fetched.repl	Number of rows fetched from range indexes during replication operations.
db.index.temporary.created	Number of temporary indexes created.
db.index.temporary.scans.count	Number of temporary indexes scanned.
db.index.temporary.scans.repl	Number of temporary indexes scanned during replication operations.
db.index.temporary.rows_fetched.count	Number of rows fetched from temporary indexes.

Table 1–10   (Cont.) Database activity statistics

Name	Description
db.index.temporary.rows_fetched.repl	Number of rows fetched from temporary indexes during replication operations.
db.sorts	Number of sorts done.
db.joins.nested_loop	Number of nested loop joins done.
db.joins.merge	Number of merge joins done.

Table 1–11   Locking statistics

Name	Description
lock.locks_granted.immediate	Number of locks granted immediately.
lock.locks_granted.wait	Number of locks granted that required waiting.
lock.timeouts	Number of lock timeouts.
lock.deadlocks	Number of deadlocks.
lock.locks_acquired.table_scans	Number of locks acquired for table scans.
lock.locks_acquired.dml	Number of locks acquired for DML activity.

Table 1–12   Aging statistics

Name	Description
aging.timebased.cycles	Number of time-based aging cycles completed since the data store was loaded into memory.
aging.timebased.commits	Number of time-based aging commits since the data store was loaded into memory.
aging.timebased.rows.deleted	Number of rows deleted during time-based aging since the data store was loaded into memory.
aging.timebased.rows.skipped	Number of rows that were not deleted using time-based aging because of lock contention since the data store was loaded into memory.
aging.lru.cycles	Number of LRU aging cycles completed since the data store was loaded into memory.
aging.lru.commits	Number of LRU aging commits since the data store was loaded into memory.
aging.lru.rows.deleted	Number of rows deleted during LRU aging since the data store was loaded into memory.
aging.lru.rows.skipped	Number of rows that were not deleted using LRU aging because of lock contention since the data store was loaded into memory.
aging.lru.high_threshold_reached	Number of times LRU aging high threshold has been reached since the data store was loaded into memory.
aging.lru.low_threshold_reached	Number of times LRU aging low threshold has been reached since the data store was loaded into memory.

See also

SYS.MONITOR

SYS.TABLE_PRIVILEGE_MAP

The `TABLE_PRIVILEGE_MAP` system table describes privilege type codes. This table can be used to map privilege type numbers to type names.

Columns

Column name	Type	Description
PRIVILEGE	TT_INTEGER NOT NULL	Numeric privilege type code.
NAME	VARCHAR2(40) INLINE NOT NULL	Name of the type of privilege.

SYS.TABLES

The TABLES table stores information about the tables in the database, including the name, the owner, the number of columns, the size of a row and the primary key (if any). The TABLES table also stores information on system tables.

Specific column information is stored in the COLUMNS table.

Columns

Column name	Type	Description
TBLNAME	TT_CHAR(31) NOT NULL	Table name.
TBLOWNER	TT_CHAR(31) NOT NULL	Name of user who owns the table.
OWNER	TT_INTEGER NOT NULL	Owner of table: 0 - TimesTen system table. 1 - User table.
NUMVARY	TT_SMALLINT NOT NULL	Number of varying-length columns in table.
NUMNULL	TT_SMALLINT NOT NULL	Number of nullable columns in table.
NUMCOLS	TT_SMALLINT NOT NULL	Number of columns in table.
LENGTH	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Length of inline portion of each row.
TBLID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	TimesTen identifier for table. Matches SYS.COLUMNS.ID.
NUMTUPS	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Table cardinality. This value is precise only when no INSERT or DELETE transactions are active. The value includes uncommitted inserts, but not uncommitted deletes. Consequently, the value of this field may be larger than the actual table cardinality.
MAXTUPS	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Maximum table cardinality.
PRIMCNT	TT_SMALLINT NOT NULL	Number of columns in primary key (0 if none).
PRIMCOLS	BINARY(32) NOT NULL	Array of 2-byte integer column numbers of primary key, mapped to binary.
CACHEFLAG	BINARY(1) NOT NULL	1 - if the table is in a cache group, 0 otherwise.

Column name	Type	Description
XLAFLAG	BINARY(1) NOT NULL	If set, updates to this table should be transmitted to the transaction log API.
PXLAFLAG	BINARY(1) NOT NULL	If set, indicates that persistent XLA has been enabled for this particular user table.
CACHEGROUP	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	ID of cache group that this table belongs to.
OCACHEGROUP	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Reserved for internal use.
MVID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	If TBLNAME is a view, indicates the ID of the associated row in the SYS.VIEWS system table. Otherwise, the value is 0.
MVIDS	TT_VARCHAR(1024) NOT INLINE	If TBLNAME is a detail table, indicates the ID of an array that contains the rowids in SYS.VIEWS that correspond to a materialized view that references the detail table.
PERMLTBLID	TT_INTEGER NOT NULL	The ID of the associated permanent table.
CVVERSIONNUM	TT_INTEGER NOT NULL	Reserved for internal use.
REPNUMKEYCOLS	TT_SMALLINT NOT NULL	Number of columns in the replication key described by REPKEYCOLS.
REPTSCOLNUM	TT_SMALLINT NOT NULL	Column number of the column used for replication's timestamp-based conflict checking.
REPRETURNSERVICE	TT_CHAR(1) NOT NULL	Return service for this subscriber with respect to this replication element: 'C' - RETURN COMMIT 'R' - RETURN RECEIPT '2' - RETURN TWOSAFE '\0' - NO RETURN services
REPRETURNBYREQUEST	BINARY(1) NOT NULL	0 - Return services are provided unconditionally 1 - Return services are provided only by request. This field is ignored if REPRETURNSERVICE = '\0'
REPUSERID	TT_BIGINT NOT NULL	User-defined identifier for table (set with ttSetUserTableID built-in function).

Column name	Type	Description
REPKEYCOLS	BINARY(32) NOT NULL	Column numbers used by replication for unique identification of a row. (an array of 2-byte integers, mapped to binary)
REPACCESS	TT_CHAR(1) NOT NULL	The access restrictions imposed by replication: '-' - no access permitted 's'- may be read by read-only (SELECT) transactions 'r' - may be read by updating transactions 'w' - may be updated w => r and r => s.
REPTSUPDATERULE	TT_CHAR(1) NOT NULL	The rule for maintaining the TS_COLUMN for a timestamp-based conflict detector: '\0' - rule not defined 'U' - BY USER 'S' - BY SYSTEM (default)
CACHEDTBLPOS	TT_INTEGER NOT NULL	Reserved for future use.

SYS.TBL_STATS

The TBL_STATS table stores the statistics for tables in the database, namely the number of rows in the table. No values are present if the statistics have not been computed.

Column-specific statistics are stored in the SYS.COL_STATS table.

Columns

Column name	Type	Description
TBLID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	TimesTen identifier of table.
NUMTUPS	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Number of rows in the table.
LASTSTATSUPDATE	TT_CHAR(25)	Time of most recent update of this table, in the following format: Day Mon DD HH:MM:SS YYYY For example: Sun Jan 03 18:24:12 2010 The string is null-terminated. This column is NULL if no statistics update has been performed on the table.

SYS.TCOL_STATS

The TCOL_STATS table stores the statistics for table columns in temporary table instances associated with active sessions. Statistics include the number of unique values, number of nulls, number of rows and other information regarding the distribution of column values. No values are present if statistics have not been computed.

Columns

Column name	Type	Description
TBLID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	TimesTen table identifier.
COLNUM	TT_SMALLINT NOT NULL	Ordinal number of column in table (starting at 1).
INFO	VARBINARY(4000000) NOT NULL NOT INLINE	Contains a binary representative of the column value distribution information. See "ttOptUpdateStats" in *Oracle TimesTen In-Memory Database Reference* for an explanation of the distribution information stored in this column. A text representation of this information can be retrieved using the ttOptGetColStats built-iin procedure.

SYS.TINDEXES

The TINDEXES table stores information about the indexes in the temporary table instances associated with active sessions, including the name, the type (range or hash), the index key and whether the index is unique.

Columns

Column name	Type	Description
IXNAME	TT_CHAR(31) NOT NULL	Index name.
IXOWNER	TT_CHAR(31) NOT NULL	Name of index owner.
IXID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	TimesTen identifier of index.
TBLID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	TimesTen identifier of index's table.
IXTYPE	TT_INTEGER NOT NULL	Index type: 0 - hash index. 1 - range index.
ISUNIQUE	BINARY(1) NOT NULL	Uniqueness: 0 - nonunique index. 1 - unique index.
ISPRIMARY	BINARY(1) NOT NULL	Primary key: 0 - not a primary key for table. 1 - primary key for table.
USETMPHEAP	TT_SMALLINT NOT NULL	
KEYCNT	TT_SMALLINT NOT NULL	Number of columns in the index key.
KEYCOLS	BINARY(32) NOT NULL	Array of 2-byte integer column numbers of index key, mapped to binary.
PAGESPARAM	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Number of pages specified for hash index.
NLSSORTID	TT_INTEGER NOT NULL	For internal use only.
NLSSORTPARM	VARBINARY(1000) NOT INLINE	For internal use only.
NLSSORTSTR	TT_VARCHAR(200) NOT INLINE	For internal use only.
NLSSORTBUFSIZE	TT_SMALLINT	For internal use only.
NLSSORTMAXSIZE	TT_SMALLINT	For internal use only.

Column name	Type	Description
HAKANFACTOR	TT_INTEGER NOT NULL	For internal use only.

SYS.TRANSACTION_LOG_API

The TRANSACTION_LOG_API table keeps track of the persistent Transaction Log API bookmarks. Each row in the system table corresponds to a persistent bookmark. Each persistent bookmark has a text identifier associated with it, which is used to keep track of the bookmark.

These columns are for internal use: REPLICATED, ID_A, ID_B, CTN_HIGH_A, CTN_HIGH_B, CTN_LOW_A, CTN_LOW_B.

Columns

Column name	Type	Description
ID	TT_CHAR(31) NOT NULL	A text tag identifier used to keep track of the bookmark.
READLSNHIGH	TT_INTEGER NOT NULL	The high value of the read log record to which this bookmark points.
READLSNLOW	TT_INTEGER NOT NULL	The low value of the read log record to which this bookmark points.
PURGELSNHIGH	TT_INTEGER NOT NULL	The high value of the lowest LSN required by this bookmark.
PURGELSNLOW	TT_INTEGER NOT NULL	The low value of the lowest LSN required by this bookmark.
PID	TT_INTEGER NOT NULL	The process ID of the process to last open the XLA bookmark.
INUSE	BINARY(1) NOT NULL	Bookmark being used by any persistent Transaction Log API connection.
REPLICATED	BINARY(1)	Used for a replicated bookmark
COUNTER	TT_BIGINT	Used for a replicated bookmark
COUNTER_A	TT_BIGINT	Used for a replicated bookmark
COUNTER_B	TT_BIGINT	Used for a replicated bookmark
CTN_HIGH_A	TT_INTEGER	Used for a replicated bookmark
CTN_LOW_A	TT_INTEGER	Used for a replicated bookmark
CTN_HIGH_B	TT_INTEGER	Used for a replicated bookmark
CTN_LOW_B	TT_INTEGER	Used for a replicated bookmark

SYS.TTABLES

The TTABLES table stores information about temporary table instances associated with active sessions, including the name, the owner, the number of columns, the size of a row and the primary key (if any).

Specific column information is stored in the COLUMNS table.

Columns

Column name	Type	Descriptions
TBLNAME	TT_CHAR(31) NOT NULL	Table name.
TBLOWNER	TT_CHAR(31) NOT NULL	Name of user who owns the table.
OWNER	TT_INTEGER NOT NULL	Owner of table: 0 - TimesTen system table. 1 - User table.
NUMVARY	TT_SMALLINT NOT NULL	Number of varying-length columns in table.
NUMNULL	TT_SMALLINT NOT NULL	Number of nullable columns in table.
NUMCOLS	TT_SMALLINT NOT NULL	Number of columns in table.
LENGTH	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Length of inline portion of each row.
TBLID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	TimesTen identifier for table.
NUMTUPS	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Table cardinality. This value is precise only when no INSERT or DELETE transactions are active. The value includes uncommitted inserts, but not uncommitted deletes. Consequently, the value of this field may be larger than the actual table cardinality.
MAXTUPS	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Maximum table cardinality.
PRIMCNT	TT_SMALLINT NOT NULL	Number of columns in primary key (0 if none).
PRIMCOLS	BINARY (32) NOT NULL	Array of 2-byte integer column numbers of primary key, mapped to binary.
CACHEFLAG	BINARY(1) NOT NULL	1 - if the table is in a cache group 0 otherwise

Column name	Type	Descriptions
XLAFLAG	BINARY(1) NOT NULL	If set, updates to this table should be transmitted to the transaction log API.
PXLAFLAG	BINARY(1) NOT NULL	If set, indicates that persistent XLA has been enabled for this particular user table.
CACHEGROUP	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	ID of cache group that this table belongs to.
MVID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	If the table is a view, indicates the ID of the associated row in the SYS.VIEWS system table.
MVIDS	TT_VARCHAR(1024) NOT INLINE	If the table is a view detail table, indicates the ID of the array or the IDs of the rows in the SYS.VIEWS system table of the materialized views that reference this detail table.
PERMLTBLID	TT_INTEGER NOT NULL	The associated permanent table's ID.
CVVERSIONNUM	TT_INTEGER NOT NULL	Reserved for internal use.
REPNUMKEYCOLS	TT_SMALLINT NOT NULL	Number of columns in the replication key described by REPKEYCOLS.
REPTSCOLNUM	TT_SMALLINT NOT NULL	Column number of the column used for replication's timestamp-based conflict checking.
REPRETURNSERVICE	TT_CHAR(1) NOT NULL	Return service for this subscriber with respect to this replication element: 'C' - RETURN COMMIT 'R' - RETURN RECEIPT '2' - RETURN TWOSAFE '\0' - NO RETURN services
REPRETURNBYREQUEST	BINARY(1) NOT NULL	0 - Return services are provided unconditionally 1 - Return services are provided only by request. This field is ignored if REPRETURNSERVICE = '\0'
REPUSERID	TT_BIGINT NOT NULL	User-defined identifier for table (set with the ttSetUserTableID built-in procedure).
REPKEYCOLS	BINARY(32) NOT NULL	Column numbers used by replication for unique identification of a row (an array of 2-byte integers, mapped to binary).

Column name	Type	Descriptions
REPACCESS	TT_CHAR(1) NOT NULL	The access restrictions imposed by replication: '–' - no access permitted 's'- may be read by read-only (SELECT) transactions 'r' - may be read by updating transactions 'w' - may be updated w => r and r => s.
REPTSUPDATERULE	TT_CHAR(1) NOT NULL	The rule for maintaining the TS_COLUMN for a timestamp-based conflict detector: '\0' - rule not defined 'U' - BY USER 'S' - BY SYSTEM (default)
CACHEDTBLPOS	TT_INTEGER NOT NULL	Reserved for future use.

SYS.TTBL_STATS

The `TTBL_STATS` table stores the statistics for temporary table instances associated with active sessions, namely the number of rows in the table. No values are present if the statistics have not been computed.

Column-specific statistics are stored in the `SYS.COL_STATS` table.

Columns

Column name	Type	Description
TBLID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	TimesTen identifier of table.
NUMTUPS	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	Number of rows in the table.

LASTSTATSUPDATE	TT_CHAR(25)	Time of most recent update of this table, in the following format:
		
		`Day Mon DD HH:MM:SS YYYY`
		
		For example:
		
		`Sun Jan 03 18:24:12 2010`
		
		The string is null-terminated.
		
		This column is `NULL` if no statistics update has been performed on the table.

SYS.USER_ARGUMENTS

USER_ARGUMENTS describes the arguments of the procedures and functions that are owned by the current user. This view does not display the OWNER column. See "SYS.ALL_ARGUMENTS" on page 1-4 for column descriptions.

Related views

- SYS.ALL_ARGUMENTS
- SYS.DBA_ARGUMENTS

SYS.USER_COL_PRIVS

This view returns no rows. The column definitions are the same as the column definitions for the `SYS.USER_COL_PRIVS` view in the Oracle Database. See *Oracle Database Reference*.

Related views

- `SYS.ALL_COL_PRIVS` returns no rows.
- `SYS.DBA_COL_PRIVS` returns no rows.

SYS.USER_DEPENDENCIES

USER_DEPENDENCIES describes dependencies between objects that are owned by the current user.

Related views

- SYS.ALL_DEPENDENCIES
- SYS.DBA_DEPENDENCIES

Columns

Column name	Type	Description
NAME	VARCHAR2(30) INLINE	Object name.
TYPE	VARCHAR2(17) INLINE NOT NULL	Object type.
REFERENCED_OWNER	VARCHAR2(30) INLINE	Owner of the referenced object.
REFERENCED_NAME	VARCHAR2(30) INLINE	Name of the referenced object.
REFERENCED_TYPE	VARCHAR2(17) INLINE NOT NULL	Type of the referenced object.
REFERENCED_LINK_NAME	VARCHAR2(128) INLINE	Ignored.
SCHEMAID	NUMBER	ID of the current schema.
DEPENDENCY_TYPE	VARCHAR2(4) INLINE NOT NULL	Indicates whether the dependency is a REF dependency (REF) or not (HARD).

SYS.USER_ERRORS

USER_ERRORS describes the current errors on the stored objects that are owned by the current user. This view does not display the OWNER column. See "SYS.ALL_ERRORS" on page 1-10 for column descriptions.

Related views

- SYS.ALL_ERRORS

- SYS.DBA_ERRORS

SYS.USER_IDENTIFIERS

USER_IDENTIFIERS describes the identifiers for all stored objects that are owned by the current user. This view does not display the OWNER column. See "SYS.ALL_IDENTIFIERS" on page 1-11 for column descriptions.

Related views

- SYS.ALL_DEPENDENCIES
- SYS.DBA_DEPENDENCIES

SYS.USER_OBJECTS

USER_OBJECTS describes all objects owned by the current user. This view does not display the OWNER column. See "SYS.ALL_OBJECTS" on page 1-12 for column descriptions.

Related views

- SYS.ALL_OBJECTS
- SYS.DBA_OBJECTS

SYS.USER_OBJECT_SIZE

USER_OBJECT_SIZE describes the size, in bytes, of PL/SQL objects owned by the current user. This view does not display the OWNER column. See "SYS.DBA_OBJECT_SIZE" on page 1-34 for column descriptions.

Related views

SYS.DBA_OBJECT_SIZE

SYS.USER_PLSQL_OBJECT_SETTINGS

USER_PLSQL_OBJECT_SETTINGS describes compiler settings for all stored objects that are owned by the current user. This view does not display the OWNER column. See "SYS.DBA_PLSQL_OBJECT_SETTINGS" on page 1-35 for column descriptions.

Related views

- SYS.ALL_PLSQL_OBJECT_SETTINGS

- SYS.USER_PLSQL_OBJECT_SETTINGS

SYS.USER_PROCEDURES

USER_PROCEDURES describes all functions and procedures, along with associated properties that are owned by the current user. This view does not display the OWNER column. See "SYS.ALL_PROCEDURES" on page 1-15 for column descriptions.

Related views

- SYS.ALL_PROCEDURES
- SYS.DBA_PROCEDURES

SYS.USER_SOURCE

USER_SOURCE describes the text source of the stored objects that are owned by the current user. This view does not display the OWNER column. See "SYS.ALL_SOURCE" on page 1-17 for column descriptions.

Related views

- SYS.ALL_SOURCE

- SYS.DBA_SOURCE

SYS.USER_STORED_SETTINGS

USER_STORED_SETTINGS describes the persistent parameter settings for stored PL/SQL units, but shows only information about PL/SQL units owned by the current user. See "SYS.ALL_STORED_SETTINGS" on page 1-18 for column descriptions.

Related views

- SYS.ALL_STORED_SETTINGS
- SYS.DBA_STORED_SETTINGS

SYS.USER_SYNONYMS

The USER_SYNONYMS view describes the synonyms owned by the current user. This view does not display the OWNER column. See "SYS.ALL_SYNONYMS" on page 1-19 for column descriptions.

Related views

- SYS.ALL_SYNONYMS

- SYS.DBA_SYNONYMS

SYS.USER_SYS_PRIVS

The `USER_SYS_PRIVS` view lists the system privileges of the current user.

Related views

`SYS.DBA_SYS_PRIVS` lists the system privileges granted to all users and to `PUBLIC`.

Columns

Column	Type	Description
USERNAME	VARCHAR2(30) INLINE	User name.
PRIVILEGE	VARCHAR2(40) INLINE NOT NULL	Privilege name.
ADMIN_OPTION	VARCHAR2(3) INLINE	Indicates whether the user can grant the privilege. Possible values are YES and NO. The value is YES only for the ADMIN privilege.

SYS.USER_TAB_PRIVS

The USER_TAB_PRIVS view lists the object privileges granted to the current user, the object privileges granted by the current user, and the list of object privileges granted for objects owned by the current user.

Related views

- SYS.ALL_TAB_PRIVS

- SYS.DBA_TAB_PRIVS

Columns

Column	Type	Description
GRANTEE	VARCHAR2(30) INLINE	Name of the user with the privilege.
OWNER	VARCHAR2(31) INLINE	Object owner.
TABLE_NAME	VARCHAR2(31) INLINE	Object name.
GRANTOR	VARCHAR2(30) INLINE	Name of the user who granted the privilege.
PRIVILEGE	VARCHAR2(40) INLINE NOT NULL	Privilege name.
GRANTABLE	VARCHAR2(3) INLINE NOT NULL	Value is always NO.
HIERARCHY	VARCHAR2(3) INLINE NOT NULL	Value is always NO.

SYS.USER_USERS

The USER_USERS view describes the current user.

Related views

- SYS.ALL_USERS

- SYS.DBA_USERS

Columns

Column	Type	Description
USERNAME	VARCHAR2(30) NOT NULL	Name of the user.
USER_ID	TT_INTEGER NOT NULL	ID number of the user.
ACCOUNT_STATUS	VARCHAR2(32) NOT NULL	Value is OPEN.
LOCK_DATE	TT_TIMESTAMP	Value is NULL.
EXPIRY_DATE	TT_TIMESTAMP	Value is NULL.
DEFAULT_TABLESPACE	VARCHAR2(30) NOT NULL	Value is USERS.
TEMPORARY_TABLESPACE	VARCHAR2(30) NOT NULL	Value is TEMP.
CREATED	TT_TIMESTAMP NOT NULL	Date when the user was created.
INITIAL_RSRC_CONSUMER_ GROUP	VARCHAR2(30)	Value is always NULL.
EXTERNAL_NAME	VARCHAR2(4000)	Value is always NULL.

SYS.VIEWS

The VIEWS table stores the statistics for views in the database.

Columns

Column name	Type	Description
NAME	TT_CHAR(31) NOT NULL	View name.
OWNER	TT_CHAR(31) NOT NULL	View owner.
ID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	ID of the view row.
TBLID	TT_INTEGER NOT NULL for 32-bit systems TT_BIGINT NOT NULL for 64-bit systems	ID of the view.
SQL	TT_VARCHAR(409600) NOT INLINE NOT NULL	View SELECT statement.
REFRESH_INTERVAL	TT_BIGINT	Refresh interval in seconds
REFRESH_START	TT_TIMESTAMP	The start time of the most recent refresh
REFRESH_END	TT_TIMESTAMP	The ending time of the most recent refresh
REFRESH_ROWCNT	TT_INTEGER	Number of rows refreshed in the most recent refresh

SYS.XLASUBSCRIPTIONS

The `XLASUBSCRIPTIONS` table stores information needed for table subscriptions at the bookmark level.

Columns

Column name	Type	Description
BOOKMARK	TT_CHAR(31) NOT NULL	Bookmark name.
TBLNAME	TT_CHAR(31) NOT NULL	The name of the subscribed table.
TBLOWNER	TT_CHAR(31) NOT NULL	Owner of the subscribed table.

2

Replication Tables

TimesTen stores metadata about replication in replication tables in your database.

Your applications can read the replication tables, but it cannot update them. If your application defines a table with the same name as a replication table, then your application can read a replication table by prefixing the replication table name with `TTREP`. For example, `SELECT * FROM TTREP.REPTABLES` selects rows from the `REPTABLES` replication table.

Information specific to replication tables:

- Locks acquired by users on replication tables may prevent others from defining data or executing the `SQLPrepare` ODBC function or the `Connection.prepareStatement` JDBC method.

- The last character in name columns is always a space. Therefore, while the column length for name columns is 31, the maximum object name length is 30.

- On 64-bit systems, TimesTen replication tables declare certain fields as data type `TT_BIGINT`. When retrieving these columns with an ODBC program, the application must bind them using `SQL_C_BINARY`. For information about `SQL_C_BINARY`, see ODBC documentation.

> **Note:** Some tables contain columns named `SYSnumber`. Because these columns contain values used internally by TimesTen, they are not documented in this chapter.

Replication tables reserved for internal or future use

The `TTREP.CLIENTFAILOVER` table is reserved for internal or future use.

Required privileges to access replication tables

By default `PUBLIC` has `SELECT` privileges on various system and replication tables and `EXECUTE` privileges on various PL/SQL objects. You can see the list of objects by using this query:

```
SELECT * FROM sys.dba_tab_privs WHERE grantee='PUBLIC';
```

The `ADMIN` or `SELECT ANY TABLE` privilege is required to access other system and replication tables and views.

TTREP.REPELEMENTS

The REPELEMENTS table describes elements in a replication scheme. In this release, the only elements recorded are tables.

Columns

Column name	Type	Description
REPLICATION_NAME	TT_CHAR(31) NOT NULL	Name for a replication scheme.
REPLICATION_OWNER	TT_CHAR(31) NOT NULL	The replication scheme's owner.
ELEMENT_NAME	TT_CHAR(31) NOT NULL	The replication name for this element, logically different from the DS_OBJ_NAME of the underlying data base object. For example, the ELEMENT_NAME for a replicated table may differ from the table name. This name must be unique in a replication scheme.
ELEMENT_TYPE	TT_CHAR(1) NOT NULL	The type of this replication element: 'T' – Table 'D' – Database 'S' – Sequence
OWNED_BY_SYSTEM	BINARY(1) NOT NULL	0x01 - Element is maintained by the system and cannot be directly referenced by SQL statements. 0x00 - Element is defined and maintained by a user.
MASTER_ID	TT_BIGINT NOT NULL	The TT_STORE_ID for the master or propagator of this element.
OLD_MASTER_ID	TT_BIGINT NOT NULL	The TT_STORE_ID for the immediately preceding MASTER for this element. -1 if none.
IS_PROPAGATOR	BINARY(1) NOT NULL	0 if the MASTER_ID identifies a true MASTER database. 1 if MASTER_ID identifies a PROPAGATOR.
DS_OBJ_NAME	TT_CHAR(31) NOT NULL	If this replication refers to a single, underlying data base object, then this is its name. Specifically, it is the name of the replicated table if ELEMENT_TYPE = 'T'. It is NULL if ELEMENT_TYPE = 'D'. DS_OBJ_OWNER.DS_OBJ_NAME need not be unique in a replication scheme, but each occurrence must be associated with a distinct ELEMENT_NAME.

Column name	Type	Description
DS_OBJ_OWNER	TT_CHAR(31) NOT NULL	The owner of the replication element – if defined. NULL otherwise. This is always the owner of the table. DS_OBJ_OWNER.DS_OBJ_NAME need not be unique in a replication scheme, but each occurrence must be associated with a distinct ELEMENT_NAME.
DS_OBJ_ID	TT_INTEGER	If the ELEMENT_TYPE = 'T': Table ID - Table is in the owning (master or propagator) database. 1- Table is in the subscriber database. If the ELEMENT_TYPE = 'D': 0 - Database is a master or propagator. 1- Database is a subscriber. NULL - If the database has been migrated, restored or upgraded from an earlier version.
DURABLE_TRANSMIT	BINARY(1) NOT NULL	0 - Transactions are made durable before they are transmitted (default). 1 - Transactions are not made durable before they are transmitted.
CONFLICT_CHECKS	BINARY(8) NOT NULL	A bit map indicating which conflict detectors are enabled. This field is either: 0x0000000000000000 (no configured conflict detector, the default) or: 0x0000000000000001 (ROW TIMESTAMP conflict detector).
TS_COLUMN_NAME	TT_CHAR(31)	The name of the timestamp column specified in the CHECK CONFLICTS clause of a CREATE REPLICATION statement. This column must be of type BINARY(8) and permit NULL values.
TS_EXCEPTION_ACTION	TT_CHAR(1) NOT NULL	The action to take upon detecting a conflict by a timestamp-based detector. The action is specified by the ON EXCEPTION clause in the CHECK CONFLICTS clause of a CREATE REPLICATION statement. They appear in this column as: '\0' - action not defined 'N' - NO ACTION 'R' - roll back transaction (default)
TS_UPDATE_RULE	TT_CHAR(1) NOT NULL	The rule for maintaining the timestamp for a timestamp-based conflict detector: '\0' - rule not defined 'U' - by user 'S' - by system (default)

Column name	Type	Description
TS_REPORT_FILE	TT_VARCHAR(1000) NOT INLINE	The name of the file to which the replication agent reports timestamp conflicts.
		This file is specified by the REPORT TO clause in the CHECK CONFLICTS clause of a CREATE REPLICATION statement.
IS_MASTER_PROPAGATOR	BINARY(1) NOT NULL	Indicates if the database is both a master and a propagator.
EXTERNAL_DB	TT_CHAR(1)	Indicates replication to a database that is not TimesTen:
		NULL - No replication to another kind of database
		O - Replication to Oracle database, which occurs in a TimesTen database with an AWT cache group
REPORT_FORMAT	TT_CHAR(1)	The report format for the replication conflict file:
		NULL - No report file specified, therefore no format
		'S' - Standard format
		'X' - XML format

TTREP.REPLICATIONS

The REPLICATIONS table collects together general information about all replication schemes in which the local database participates. The table indicates whether a replication scheme was created by ttRepAdmin -upgrade or by a CREATE MATERIALIZED VIEW statement.

Columns

Column name	Type	Description
REPLICATION_NAME	TT_CHAR(31) NOT NULL	Name for a replication scheme.
REPLICATION_OWNER	TT_CHAR(31) NOT NULL	The replication scheme's owner.
REPLICATION_ORIGIN	TT_CHAR(1) NOT NULL	'U' - created by ttRepAdmin -upgrade 'C' - created by CREATE REPLICATION (or a ttRepAdmin command that was translated into CREATE REPLICATION).
REPLICATION_VERSION	TT_INTEGER NOT NULL	The number of ALTER REPLICATION commands applied to this replication scheme after its initial creation.
SOURCE_STORE_ID_ALIGN	TT_INTEGER NOT NULL	Used internally to properly align the SOURCE_STORE_ID column.
SOURCE_STORE_ID	TT_BIGINT NOT NULL	If this replication scheme was created by restoring it from a backup, the database ID of the database from which this replication scheme was backed up and restored. otherwise -1 (the invalid database ID).
CHECKSUM	TT_BIGINT	Indicates that the replication scheme has been updated.

TTREP.REPNETWORK

The REPNETWORK table stores information on interfaces used by the replication agent when two peers communicate. Each row represents a communication path between master and subscriber and describes either the sending or receiving interface used.

Columns

Column name	Type	Description
REPLICATION_NAME	TT_CHAR(31) NOT NULL	Name of the replication scheme.
REPLICATION_OWNER	TT_CHAR(31) NOT NULL	The owner of the replication scheme.
TT_STORE_ID	TT_BIGINT NOT NULL	Unique, system-generated identifier for a HOST_NAME/TT_STORE_NAME pair.
SUBSCRIBER_ID	TT_BIGINT NOT NULL	The identifier for a database that subscribes to at least one replication element owned by TT_STORE_ID.
HOST_NAME	TT_VARCHAR(200) NOT NULL NOT INLINE	Name associated with the network interface.
PRIORITY	TT_INTEGER NOT NULL	Integer from 1-99 that denotes the priority of the IP address.
INTERFACE	TT_CHAR(1)	Indicates whether the HOST_NAME refers to an interface on the sending side ('S') or on the receiving side ('R').

TTREP.REPPEERS

The `REPPEERS` table displays status information about the stores in a replication scheme. After the initial upgrade, the `REPPEERS` table contains peer information only about the local database and other databases that it transmits updates to.

Columns

Column name	Type	Description
REPLICATION_NAME	TT_CHAR(31) NOT NULL	Name for a replication scheme.
REPLICATION_OWNER	TT_CHAR(31) NOT NULL	The replication scheme's owner
TT_STORE_ID	TT_BIGINT NOT NULL	Unique, system-generated identifier for a `HOST_NAME`/`TT_STORE_NAME` pair.
SUBSCRIBER_ID	TT_BIGINT NOT NULL	The identifier for a database that subscribes to at least one replication element owned by `TT_STORE_ID`. If a valid ID then this record describes the status of `TT_STORE_ID`/`SUBSCRIBER_ID` as a sender/subscriber pair.
COMMIT_TIMESTAMP	TT_INTEGER	This field and `COMMIT_SEQNUM` together store the value of the Commit Ticket Number of the refreshed transaction that the subscriber has just committed.
COMMIT_SEQNUM	TT_INTEGER	This field and `COMMIT_TIMESTAMP` together store the value of the Commit Ticket Number of the refreshed transaction that the subscriber has just committed.
SENDLSNHIGH	TT_INTEGER	The log file number of the highest `TT_STORE_ID` log sequence number sent to and acknowledged by `SUBSCRIBER_ID`.
SENDLSNLOW	TT_INTEGER	The log file offset of the highest `TT_STORE_ID` log sequence number sent to and acknowledged by `SUBSCRIBER_ID`.
REPTABLESLSNHIGH	TT_INTEGER	For TimesTen internal use.
REPTABLESLSNLOW	TT_INTEGER	For TimesTen internal use.

Column name	Type	Description
STATE	TT_INTEGER	The state of replication kept by TT_STORE_ID with respect to this SUBSCRIBER_ID:
		0 - START: Replication is in the active state and all log updates are retained until they have been applied at SUBSCRIBER_ID.
		1 - PAUSE: Replication is not in the active state but all log updates are retained until they have been applied at SUBSCRIBER_ID.
		2 - STOP: Replication is not in the active state and log updates are not retained.
		4 - FAILED: Replication is not in the active state, log updates are not retained, and the log updates that need to be retained exceed the user defined threshold (TTREP.REPSTORES.FAIL_THRESHOLD). When this state has been communicated to SUBSCRIBER_ID it is changed to STOP.
TIMESEND	TT_INTEGER	The timestamp (in seconds) for the time of the last known successful transmission from TT_STORE_ID to SUBSCRIBER_ID.
TIMERECV	TT_INTEGER	The timestamp (in seconds) for the time TT_STORE_ID last received a transmission from SUBSCRIBER_ID.
PROTOCOL	TT_INTEGER	A number in the range 0 to 5 indicating the protocol level that replication uses for communication between TT_STORE_ID and SUBSCRIBER_ID. A higher number indicates a newer protocol.
LATENCY	BINARY_DOUBLE	An estimate of the time interval (in seconds) from the commit of a transaction on TT_STORE_ID to its receipt of acknowledgement that it has been applied at the subscriber identified by SUBSCRIBER_ID.
TPS	TT_INTEGER	An estimate of the number of transactions per second that are committed on TT_STORE_ID and successfully received by the subscriber identified by SUBSCRIBER_ID.
RECSPERSEC	TT_INTEGER	An estimate of the number of records per second retrieved by the subscriber identified by SUBSCRIBER_ID from the database TT_STORE_ID.
TRACK_ID	TT_TINYINT	Identifies a replication track used in user-specified parallel replication.
CTNLISTINDEX	TT_INTEGER	For internal use by the replication agent.

TTREP.REPSTORES

The `REPSTORES` table lists the replication attributes of databases that participate in every TimesTen replication scheme in which the local database participates. Each database is identified by a unique `TT_STORE_ID` that TimesTen replication assigns to it. A `TT_STORE_ID` may appear at most once for a given replication scheme, but may appear multiple times in the `REPSTORES` table. Various replication schemes may define different replication attributes for the same database.

Columns

Column name	Type	Description
REPLICATION_NAME	TT_CHAR(31) NOT NULL	Name for a replication scheme.
REPLICATION_OWNER	TT_CHAR(31) NOT NULL	The replication scheme's owner
TT_STORE_ID	TT_BIGINT NOT NULL	Unique, system-generated identifier for a HOST_NAME/TT_STORE_NAME pair.
PEER_TIMEOUT	TT_INTEGER NOT NULL	The number of seconds for this database to wait for a subscriber response before trying to reconnect.
FAIL_THRESHOLD	TT_INTEGER NOT NULL	The number of log files whose accumulation makes this database, in this replication scheme, mark subscribers "failed." (See the STATE field in TTREP.REPPEERS.)
HEARTBEAT_FACTOR	BINARY_DOUBLE	A multiplier of the current heartbeat frequency.

TTREP.REPSUBSCRIPTIONS

The REPSUBSCRIPTIONS table registers each subscribing database that maintains a secondary copy of a replication element.

Columns

Column name	Type	Description
REPLICATION_NAME	TT_CHAR(31) NOT NULL	Name for a replication scheme.
REPLICATION_OWNER	TT_CHAR(31) NOT NULL	The replication scheme's owner.
ELEMENT_NAME	TT_CHAR(31) NOT NULL	The replication name for this element, logically distinct from the name of an underlying database object.
SUBSCRIBER_ID	TT_BIGINT NOT NULL	The TT_STORE_ID for a subscriber to this element. A subscriber may not subscribe more than once to a replication element in a replication scheme.
RETURN_SERVICE	TT_CHAR(1) NOT NULL	Return service for this subscriber with respect to this replication element: 'C' - RETURN COMMIT 'R' - RETURN RECEIPT '\0' - No return services '2' - RETURN TWOSAFE
RETURN_BY_REQUEST	BINARY(1) NOT NULL	The type of return services for this element. 0 - Return services are provided unconditionally 1 - Return services are provided only by request This field is ignored if RETURN_SERVICES = '\0'.
PRIVILEGES	TT_CHAR(1) NOT NULL	Privileges for this subscriber with respect to this replication element: '\0' - no special subscriber privileges

TTREP.REPTABLES

The `REPTABLES` table contains subscriber-relative information about each of the columns in each table transmitted to a subscriber. This information appears in `REPTABLES` in the owner (transmitter) database but not in `REPTABLES` in the subscriber database.

Columns

Column name	Type	Description
REPLICATION_NAME	TT_CHAR(31) NOT NULL	Name for a replication scheme.
REPLICATION_OWNER	TT_CHAR(31) NOT NULL	The replication scheme's owner.
ELEMENT_NAME	TT_CHAR(31) NOT NULL	The replication name for this element, logically different from the REF_NAME of the underlying data base object. For example, the ELEMENT_NAME for a replicated table may differ from the table name. This name must be unique in a replication scheme.
SUBSCRIBER_ID	TT_BIGINT NOT NULL	The TT_STORE_ID for a subscriber to this element. A subscriber may not subscribe more than once to a replication element in a replication scheme.
COLNUM	TT_SMALLINT NOT NULL	Ordinal number of column in table (starting at 1).
COLOPTIONS	BINARY(1) NOT NULL	Column specification flags: 0x01 - column is in a primary key 0x02 - column value is varying length data type (VARCHAR[2], NVARCHAR[2], VARBINARY) 0x04 - column value can be NULL 0x08 - column values are unique

Column name	Type	Description
COLTYPE	TT_INTEGER NOT NULL	Data type of column 1 TT_CHAR 2 TT_DECIMAL 3 TT_DECIMAL 4 TT_INTEGER 5 TT_SMALLINT 6 BINARY_FLOAT 7 BINARY_FLOAT 8 BINARY_DOUBLE 9 TT_DATE 10 TIME 11 TT_TIMESTAMP 12 TT_VARCHAR 13 DATE 14 TIMESTAMP 15 NUMBER 16 CHAR 17 VARCHAR2 18 NCHAR 19 NVARCHAR2 -1 LONGVARCHAR -2 BINARY -3 VARBINARY -4 LONGVARBINARY -5 TT_BIGINT -6 TT_TINYINT -7 BIT -8 WCHAR -9 WVARCHAR -10 WLONGVARCHAR
COLLEN	TT_INTEGER NOT NULL	Length of the column (maximum length for varying-length columns).
COLPRECISION	TT_INTEGER NOT NULL	The number of digits in a fixed-point number, or the number of digits in the mantissa of a floating point number.
COLSCALE	TT_INTEGER NOT NULL	A non-negative number. A scale of 0 indicates an integer with no digits to the right of a decimal point. For a scale of S, the exact numeric value is the integer value of the significant digits multiplied by: `10 (exp -S).`
PTNNUM	TT_SMALLINT NOT NULL	The table partition that contains the column.
PTNCOLOFF	TT_INTEGER NOT NULL	The offset of the column within the partition.
PTNNULLOFF	TT_INTEGER NOT NULL	The offset to the null byte within the partition.
REPKEYPOSITION	TT_SMALLINT NOT NULL	The ordinal position of this column in the replication key described by the REPKEYCOLS.

Column name	Type	Description
TS_EXCEPTION_ACTION	TT_CHAR(1) NOT NULL	The action to take upon detecting a conflict by a timestamp-based detector. The action is specified by the ON EXCEPTION clause in the CHECK CONFLICTS of a CREATE REPLICATION statement. They appear in this column as: \0' - Action not defined 'N' - NO ACTION 'R' - ROLLBACK WORK (default)
PNBOFF	TT_INTEGER	For internal use only.
NULLMASK	TT_TINY_INT	For internal use only.
COLNAME	TT_CHAR(31)	Column name.

TTREP.TTSTORES

The TTSTORES table maps the host name and database name to a unique TT_STORE_ID. The TT_STORE_ID is a foreign key for all other replication schema tables that refer to a database in a replication scheme.

Columns

Column name	Type	Description
TT_STORE_ID	TT_BIGINT NOT NULL	Unique, system-generated identifier for a HOST_NAME/TT_STORE_NAME pair.
HOST_NAME	TT_VARCHAR(200) NOT NULL NOT INLINE	Name of the participating host node.
TT_STORE_NAME	TT_VARCHAR(200) NOT NULL NOT INLINE	The name for this database.
IS_LOCAL_STORE	BINARY(1) NOT NULL	1 if this TT_STORE_ID represents the local database. 0 otherwise.
MAJOR_RELEASE	TT_INTEGER NOT NULL	The major release part of this database's TimesTen release number. 0 indicates the current release.
MINOR_RELEASE	TT_INTEGER NOT NULL	The minor release part of this store's TimesTen release number.
REP_SCHEMA_VERSION	TT_INTEGER NOT NULL	The version of the replication schema in this database.
REP_PORT_NUMBER	TT_INTEGER NOT NULL	The port number that replication uses to communicate with this database. 0 if automatically assigned.
RRPOLICY	TT_CHAR(1)	Subscribers affected by return service failure policy. Legal values are: 'S' - Single subscriber 'A' - All subscribers 'N' - No policy
RRTRIGGER	TT_INTEGER	Number of timeouts before the return service failure policy is triggered.
RRRESUME_LATENCY	TT_INTEGER	Resume latency in milliseconds.

Column name	Type	Description
RRDURABLE	BINARY(1)	Durable commits on RETURN RECEIPT failure. Legal values are: 1 - True 0 - False
RET_LOCAL_ACTION	TT_CHAR(1)	Default commit behavior for RETURN TWOSAFE transactions: 'C' - COMMIT 'N' - NO ACTION
RET_WAIT_TIME	TT_INTEGER	The defaulted timeout value for RETURN TWOSAFE transactions.
RET_WHEN_STOPPED	BINARY(1)	If either the replication agent for the database is stopped or if the database is used as master and the replication agent for the database is set to STOP, then if the value of the column is a non-zero value, return services for the database are suspended.
COMPRESSION	TT_CHAR(1)	If Y, indicates compression of all data from the database.
MASTER	TT_CHAR(1)	Active or standby database or subscriber database. Values are: 'Y' - active or standby database 'N' - subscriber database NULL - all other cases.
ROLE	TT_CHAR(1)	Role is one of: 'A' - active 'S' - standby NULL - all other cases.
TS	TT_BIGINT	The timestamp at which the specified role change was made.
CONFLICT_REPORT_STOP	TT_INTEGER	The threshold at which conflict reporting is stopped.
CONFLICT_REPORT_RESTART	TT_INTEGER	The rate at which conflict reporting is resumed.
CONFLICT_REPORT_FLUSH_METHOD	TT_INTEGER	Reserved for future use.

Column name	Type	Description
TABLECHECK	TT_CHAR(1)	One of the following values:
		E (exact) - The table structures on the master and subscriber databases must be identical for replication to occur.
		R (relaxed) - Replication can occur between master and subscriber if a relaxed table check has been passed. This means that the number of columns and column data types match for the tables in the master and subscriber databases.
		NULL (default) - all other cases

3

System Limits

The following sections list all TimesTen system limits and defaults.

- System limits and defaults
- Limits on number of open files
- Path names

System limits and defaults

Specific operating system limits may take precedence over these values. For more information, see "Installation prerequisites" in *Oracle TimesTen In-Memory Database Installation Guide*.

Description	32-bit Value	64-bit Value
Maximum number of subscriber databases in a replication scheme that is not an active standby pair.	128	128
Maximum number of propagators in a replication scheme. Each propagator can have the maximum number of subscribers.	128	128
Maximum number of subscriber databases in an active standby pair	127	127
Minimum database size (bytes). Size includes both the permanent and temporary space required to perform operations on the database.	32 MB	32 MB
Maximum length for a fixed-length column (bytes).	8,300	8,300
Maximum number of columns in a table.	1,000	1,000
Maximum number of columns in an ORDER BY clause.	1,000	1,000
Maximum number of columns in a GROUP BY clause.	1,000	1,000

Description	32-bit Value	64-bit Value
Maximum cumulative length of a row's fixed-length columns (bytes).	32,768	32,768
Maximum number of rows in a table.	2^{28} = 268,435,256	$(2^{31}\text{-}1)$ = 2,147,483,647
Maximum length for a varying-length column (bytes).	2^{22} = 4,194,304	2^{22} = 4,194,304
Maximum length for a replicated column	4 MB	4 MB
Maximum number of concurrent connections to a database.	2047	2047
Maximum number of concurrent client connections to a TimesTen instance **Note:** Some instances may support a slightly smaller maximum number of connections depending on such things as whether the database is shared or replicated and operating system limits. Most configurations support no less than 2,000 connections.	25,000	25,000
Maximum length of database names.	32	32
Maximum length of the path name for a database in an asynchronous writethrough cache group	248	248
Maximum number of projected expressions in a SELECT statement.	32,767	32,767
Maximum length of string specifying a join order.	1,024	1,024
Maximum number of columns in an index (or primary) key.	16	16
Maximum length of basic names.	30	30
Maximum length of displayed predicate string in the SYS.PLAN table.	1,024	1,024
Maximum length of SQL statement, including the NULL terminator.	409,600	409,600
Maximum number of table references in an SQL query.	24	24
Maximum number of indexes on a table.	32	32

Description	32-bit Value	64-bit Value
Maximum number of partitions in a table	999	999
Maximum number of concurrent shared memory segment client/server connections per TimesTen instance.	512	512
Maximum size of IPC shared memory segment for client/server connections	1 gigabyte	1 gigabyte
Maximum number of allocated statement handles per shared memory segment client/server connection.	512	512
Maximum depth of nesting subqueries.	Equal to the maximum number of table references in a SQL query.	Equal to the maximum number of table references in a SQL query.
Maximum error message length for applications that specify an error message length, for example through a call to SQLError.	512	512

Limits on number of open files

Each process connected to a TimesTen database keeps at least one operating-system file descriptor open from the time of the first connection until the process terminates. Additional file descriptors may be opened for each database connection:

- Connections to databases that have logging to disk enabled require an additional two file descriptors for the duration of the connection.

- An additional file descriptor is needed for the duration of database checkpoints issued by the process.

- Additional file descriptors may be opened during transaction commit or rollback operations.

For multithreaded applications that maintain many concurrent TimesTen database connections, the default number of open files permitted to each process by the operating system may be too low.

- On HP-UX, the default is 4096 open files per process and may be raised through the tunable parameter *maxfiles* or with the ulimit command (limit for csh users). You can also set the per-process limit programmatically with setrlimit.

- On Solaris, the default limit is 256 open files and may be raised for a session with the ulimit command (limit for csh users). You can also set the per-process limit programmatically with setrlimit.

- On AIX, the limit is 2,048 open files, so you are not likely to encounter problems.

- On Linux, the default limit is 1,024 open files, so you are not likely to encounter problems.

- On Windows, the default limit is at least 2,000 open files, so you are not likely to encounter problems.

Most of the open file descriptors are used for reading and writing database recovery log files. If a process fails to open a log file, the database is marked as requiring recovery and all current connections to the database are terminated.

Path names

TimesTen does not support file path names that contain multibyte characters. Make sure that the installation path, database path, transaction log path, and temporary file path do not contain any multibyte characters.

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