

Altibase 7.1.0.0.0

Release Notes

(2016.11)

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1. Operating System Requirements

Minimum Hardware Specifications

1GB RAM (Recommended: 2GB)

1 CPU (Recommended: 2 CPUs)

4GB Sufficient space in hard disk (Recommended: 12GB)

Operating System and Platforms

Altibase 7.1 operation is available under the operating systems and platforms listed in the following table.

OS	CPU	Version	Bit (Server)	Bit (Client)
AIX	PowerPC	6.1 tl03 and higher	64-bit	64-bit
HP-UX	IA64	11.31 and higher	64-bit	64-bit
LINUX	x86-64, PowerPC (GNU glibc 2.12 and higher)	redhat 6.0 and higher	64-bit	64-bit

Java version: Altibase 7.1 is compatible with JDK 1.5 or above.

Window server and client is not supported since Altibase 7.1.

2. Release Information

2.1 New Features and Upgraded function of Altibase 7.1

2.1.1 Improved Features

2.1.1.1 SQL Extension

Conversion of Non-Partitioned table and Partitioned table(Partition Exchange)

CONJOIN TABLE: This statement controls converting a non-partitioned table into a partition of a table. The list partition and range partition are supported, but the hash partitioned is not supported. All the data created in the target table is transferred to the created partition.

DISJOIN TABLE: You can use this statement to convert a partition in a partitioned table into a non-partitioned table. The hash partition is not supported whereas the existing partition attributes of the non-partitioned table remain the same.

Modifying Tablespace of Table

The tablespace storage of a table can be relocated along with the index and LOB column as well. However, only the non-partitioned table is able to transfer the records into the specified tablespace, but the records of the partitioned table cannot be moved.

User-defined Columns during Creation of a Queue

The user can define a column when creating a queue.

Syntax extension of COMPACT and AGING

COMPACT and AGING statements can be executed with a partition unit in partitioned tables.

NOWAIT and WAIT Options

NOWAIT and WAIT options are supported in INSERT, FOR UPDATE, and DEQUEUE statements.

NOCOPY option

The NOCOPY option can be employed along with parameters and local variables which are used in the stored procedures and the stored functions. This option takes a way of assigning parameters by utilizing the reference value, and only supports ASSOCIATIVE ARRAY type.

Overloading of Package Subprogram

Overloading of subprograms is available. That is to say, the name of subprograms are the same; however, the name of parameter and data type can be diversely defined.

Using BULK COLLECTION in FETCH syntax

BULK COLLECT INTO function is supported in the FETCH statement.

Static SQL available for using Cursor

Not only the dynamic SQL is available, but also the static SQL is available for use in the OPEN FOR clause. Note that the static SQL cannot be executed with the USING clause.

Autonomous Transaction and Exception Initializing Pragmas

Altibase supports the following pragmas specifying compile options. Autonomous transaction pragma allows a PSM object to independently operate within a transaction, and there is an exception initializing pragma which can initialize exception variables with Altibase error code.

Aggregate functions and Windows functions

Various functions such as, percentage rank, ratio analysis functions, cumulative distribution of a group, array functions, sort functions, coefficient of correlation, sample covariance, and population distribution are supported in the aggregate functions and window functions as below.

PERCENT_RANK
CUME_DIST
RATIO_TO_REPORT
NTILE
CORR
COVAR_SAMP
COVAR_POP

User Lock functions

The following functions are supported in an attempt to request or release the user lock.

USER_LOCK_REQUEST
USER_LOCK_RELEASE

Other functions

The following function which returns the context of currently accessed environment is supported.

SYS_CONTEXT

The functions returning the VARBYTE type character strings through encoding or decoding are supported as follows:

BASE64_DECODE
BASE64_ENCODE

Altibase supports functions which can return VARBYTE type character strings either by decoding or encoding the VARBYTE type character strings which were converted to Quoted printable format. The functions include as follows:

QUOTE_PRINTABLE_DECODE
QUOTE_PRINTABLE_ENCODE

In addition, exclusive functions based upon the Altibase PIPE method have been added. These functions can efficiently manage overall database not belonging to a specific schema as listed below:

MSG_CREATE_QUEUE
MSG_DROP_QUEUE
MSG_SND_QUEUE
MSG_RCV_QUEUE

'UNTIL NEXT DDL' in LOCK TABLE

If DDL(Data Definition Language) transaction is executed when a session is on NON-AUTOCOMMIT mode, the autocommit is executed before the DDL execution. However, if EXCLUSIVE mode is specified in the lock_mode, the autocommit is not implemented before the DDL execution.

ENABLE and DISABLE functions

The user can set the status either to enable or disable when creating triggers, and the ALTER TRIGGER statement can modify the status.

2.1.1.2 Application Interface Improvement

JDBC Logging

JDBC Logging indicates recording of all sorts of logs occurring in the Altibase JDBC driver, and the relevant logs can be stored by using java.util.logging package.

2.1.1.3 Data Types

Support for Date format

Altibase supports 'WW2' data format that returns which week of the year regardless of the date.

2.1.1.4 Built-in Functions

DBMS Stats Functions

The built-in function has been added in this release, and this function can duplicate partition stats.

`COPY_TABLE_STATS`

Other Built-in Functions

The stored procedures, which can store the setting of V\$SESSION information have been added as in the followings:

`SET_CLIENT_INFO`

`SET_MODULE`

2.1.1.5 Client Tools

Improved altimon.sh

The altimon.sh has been enhanced in order to efficiently monitor the Altibase server and the host system in which the altiMon is installed. altiMon primarily monitors OS information and DB information, and the OS which can use the PICL library is required to collect the OS information.

Host Variable

The default value of declared host variables has been modified.

New ISQL command

A command configuring the formatted display for the result of a SELECT column in the iSQL prompt has been added.

SET NUMF[ORMAT]
COLUMN
CL[EAR] COL[UMNS]

-prefetch_rows option of iLoader utility

iLoader utility newly support -prefetch_rows option in the out mode of iLoader. This specify the number of records that can be fetched from the database at once. The default value is 0 which is the maximum size where the network packet can be input.

Partition Information Output

The DESC command allows to view partition information when viewing the table structure.

aexport Property

The following properties of aexport utility have been added.

ILOADER_ARRAY
ILOADER_COMMIT
ILOADER_ERRORS
ILOADER_PARALLEL

2.1.2 Efficiency

2.1.2.1 Enhanced Server Performance

Newly Added Packages

The system-defined stored packages newly added in Altibase are as follows.

DBMS_ALERT
DBMS_APPLICATION_INFO
DBMS_CONCURRENT_EXEC
DBMS_LOCK
DBMS_OUPUT
DBMS_RANDOM
DBMS_SQL
DBMS_STATS
DBMS_RECYCLEBIN
DBMS_UTILITY
UTL_FILE
UTL_RAW
UTL_TCP

Result Cache

By using the Result Cache, the intermediate result or the final result of initially executed query can be stored so that the results can be reused when executing the same query again.

Two-Phase Commit(2PC)Level of DBLink

DB Link provides 2PC protocol to ensure interoperable compatibility of the global transaction conducted between other database system and the Altibase.

Collecting of Automatic Statistics

Columns that are not referenced from the outside are excluded to reduce the size and accelerate the performance of materialized views.

Additional Hints

In Altibase 7.1, various and advantageous hints, such as normalization code, join methods, and table access methods as well as parallel query execution have been added.

INDEX_ASC
INDEX_DESC
LEADING
NO_EXPAND
NO_INDEX
NO_PARALLEL
NO_USE_HASH
NO_USE_MERGE
NO_USE_NL
NO_USE_SORT
USE_CONCAT

Delay on Execution Plans

A function delaying execution of hierarchy, sorting, windowing, grouping, set, and distinction in fetch is provided based upon execution plan graphs. The user can check the added DELAY plan under the top PROJECTION in the execution plan.

IPCDA Protocol

IPCDA (Inter Process Communication Direct Attach) is a protocol provided by Altibase to exchange data between the server and client by using shared memory as with IPC. IPCDA can produce much advanced performance by reducing idle time between the server and client as well as simplifying data reading and writing compared to IPC.

Like as IPC, CLI and OBDB are supported, but JDBC is not supported. Besides, LOB data cannot be used when using IPCDA. IPCDA is only supported on Linux. The following properties should be configured in order to use IPCDA.

ACCESS LIST Management Extension

The following ACCESS_LIST_FILE property has been added to allow or deny access of the IP packet described in an external file.

ACCESS_LIST_FILE

2.1.2.2 Resource Efficiency

Reorganization of Memory Index

You can reorganize the index space through integration of leaf nodes in the memory index. This function ensures high space efficiency especially when the index range is relatively greater than that of the data, or there is an occurrence of index fragmentation on a particular index.

2.1.3 High Availability

Hybrid Partitioned Table

Hybrid partitioned tables are supported in Altibase 7.1, and the partitioned table can transfer data from disk tablespace to memory/volatile tablespace, and vice versa; however, global indexes are not supported.

Specifying the size of PSM character data

Properties that can determine the size of character data type used in the stored procedures and the stored functions have been added as indicated below.

PSM_CHAR_DEFAULT_PRECISION
PSM_NCHAR_UTF8_DEFAULT_PRECISION
PSM_NCHAR_UTF16_DEFAULT_PRECISION
PSM_NVARCHAR_UTF8_DEFAULT_PRECISION
PSM_NVARCHAR_UTF16_DEFAULT_PRECISION
PSM_PARAM_AND_RETURN_WITHOUT_PRECISION_ENABLE
PSM_VARCHAR_DEFAULT_PRECISION

The properties specifying the basic size of character type data have been removed as follows.

CHAR_DEFAULT_PRECISION
NCHAR_DEFAULT_PRECISION
NVARCHAR_DEFAULT_PRECISION
VARCHAR_DEFAULT_PRECISION

REMOTE Functions for Batch Process

Altibase 7.1 have included Remote function and the related functions that can batch the database links. The added functions can be used only within the stored procedures.

JDBC Adapter

JDBC Adapter is an utility which applies modified data in Altibase database to other databases which support JDBC. The structure of this utility is to replicate the modified data to the target database through ALA(Altibase Log Analysis API) and JDBC(Java DataBase Connectivity). As of now, JDBC Adapter is only supported in Linux OS and operates in JRE 7 or higher version.

2.1.4 Other

2.1.4.1 Other Changes

Deprecation of Supporting Window Platform

Window server and client is not supported since Altibase 7.1.

Table Function

The TABLE FUNCTION transforms the return values of associative array type or the record type variables into a table form, then output them; however, this is not a function

Dynamic SQL Method 4

Method 4 has been added in dynamic SQL. This method allows a user to insert values of parameter

markers during the program operation. Functions, such as BIND VARIABLES, SELECT LIST, and ARRAY SIZE SET have been added in Altibase 7.1, and OPEN, FETCH, and EXECUTE functions have been highly improved.

Support for JRE 1.5

JDK and JRE 1.5 or above is supported.

Elimination of DataPort

Data transferring function of DataPort, and convdp utility are no longer supported since they have been eliminated.

Support Hibernate

Hibernate dialect class is supported for Altibase to provide non-standard SQL. Since the official Hibernate library does not include AltibaseDialect.class, AltibaseDialect.java file should be compiled and ported in order to properly use it.

Deprecation of Shared Memory mode

Shared memory mode is no longer supported since Altibase version 7.1. The management tool supporting shared memory 'shmutil' and the following properties are not available for use anymore. The management tool supporting shared memory 'shmutil' and properties are not available for use anymore.

2.2 Changes

The added, modified, and eliminated functions for database administrators and developers to be informed are explicated in the following sections.

Database Versions

Database components per the latest version.

Altibase Version	Database Binary Version	Communication protocol Version	Meta Version	Replication Protocol Version
6.5.1	6.3.1	7.1.3	8.1.1	7.4.2
7.1	6.5.1	7.1.3	8.1.1	7.4.2

Compatibility

Database Binary Version

The database binary version signifies the compatibility between database image file and log files. Since the format of database image file and log file have been changed, the existing database should be migrated when upgrading the database.

Altibase Version	Database Binary Version
6.5.1	6.3.1.
7.1	6.5.1

Communication Protocol Version

The communication Protocol Version remains the same

Altibase Version	Communication Protocol Version
6.5.1	7.1.3
7.1	7.1.3

Meta Version

The Meta Version has not been changed.

Altibase Version	Meta Version
6.5.1	8.1.1
7.1	8.1.1

Replication Protocol Version

The replication between Altibase 6.5.1 and 7.1 can be performed since the protocol version has not been changed.

Altibase Version	Replication Protocol Version
6.5.1	7.4.2
7.1	7.4.2

Properties

The following properties have been included or eliminated.

Refer to the General Reference for in-depth information on each property

New Properties in Altibase 7.1

- ACCESS_LIST_FILE
- DBLINK_RECOVERY_MAX_LOGFILE
- IPCDA_CHANNEL_COUNT
- IPCDA_DATABLOCK_SIZE
- IPCDA_FILEPATH
- LOCK_MGR_CACHE_NODE
- LOCK_MGR_DETECTDEADLOCK_INTERVAL
- LOCK_MGR_MAX_SLEEP
- LOCK_MGR_MIN_SLEEP
- LOCK_MGR_SPIN_COUNT
- LOCK_MGR_TYPE
- LOCK_NODE_CACHE_COUNT
- MEM_INDEX_KEY_REDISTRIBUTION
- MEM_INDEX_KEY_REDISTRIBUTION_STANDARD_RATE
- MSG_QUEUE_PERMISSION
- OPTIMIZER_AUTO_STATS
- OPTIMIZER_DELAYED_EXECUTION
- OPTIMIZER_PERFORMANCE_VIEW
- PSM_CURSOR_OPEN_LIMIT
- PSM_CHAR_DEFAULT_PRECISION
- PSM_NCHAR_UTF8_DEFAULT_PRECISION
- PSM_NCHAR_UTF16_DEFAULT_PRECISION
- PSM_NVARCHAR_UTF8_DEFAULT_PRECISION
- PSM_NVARCHAR_UTF16_DEFAULT_PRECISION
- PSM_PARAM_AND_RETURN_WITHOUT_PRECISION_ENABLE
- PSM_VARCHAR_DEFAULT_PRECISION
- RESULT_CACHE_ENABLE
- RESULT_CACHE_MEMORY_MAXIMUM
- TABLE_LOCK_MODE
- TOP_RESULT_CACHE_MODE

- USER_LOCK_POOL_INIT_SIZE
- USER_LOCK_REQUEST_CHECK_INTERVAL
- USER_LOCK_REQUEST_LIMIT
- USER_LOCK_REQUEST_TIMEOUT

The following property has been eliminated.

- CHAR_DEFAULT_PRECISION
- DATAPORT_FILE_DIRECTORY
- DATAPORT_IMPORT_COMMIT_UNIT
- DATAPORT_IMPORT_STATEMENT_UNIT
- IPC_PORT_NO
- NCHAR_DEFAULT_PRECISION
- NVARCHAR_DEFAULT_PRECISION
- SHM_DB_KEY
- SHM_PAGE_COUNT_PER_KEY
- STARTUP_SHM_CHUNK_SIZE
- VARCHAR_DEFAULT_PRECISION

Meta Tables

The following meta table has been eliminated.

- SYS_DATA_PORTS_

Performance Views

The following performance views have been added.

- V\$ACCESS_LIST
- V\$DBLINK_NOTIFIER_TRANSACTION_INFO

The following performance views have been altered.

- V\$DBLINK_LINKER_DATA_SESSION_INFO
- V\$DBLINK_GLOBAL_TRANSACTION_INFO
- V\$DBLINK_REMOTE_STATEMENT_INFO
- V\$DBLINK_REMOTE_TRANSACTION_INFO
- V\$SESSION
- V\$REPESENDER
- V\$REPESENDER_PARALLEL

2.3 Packages

OS	CPU	Archive Name
AIX	PowerPC	altibase- server-7.1.0.0.0-AIX-POWERPC-64bit-release.run altibase- client-7.1.0.0.0-AIX-POWERPC-64bit-release.run
HP-UX	IA64	altibase- server-7.1.0.0.0-HPUX-IA64-64bit-release.run altibase- client -7.1.0.0.0-HPUX-IA64-64bit-release.run
LINUX	X86	altibase- server-7.1.0.0.0-LINUX-X86-64bit-release.run altibase- client-7.1.0.0.0-LINUX-X86-64bit-release.run
	PowerPC	altibase- server-7.1.0.0.0-LINUX-POWERPC-64bit-release.run altibase- client-7.1.0.0.0-LINUX-POWERPC-64bit-release.run

2.4 Downloads

Location

Package

- <http://support.altibase.com>

Manual

- <http://support.altibase.com>
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Installation

Refer to the Altibase Installation Guide for in-depth information.