

ALTIBASE HDB 6.5.1

Release Notes

(2015/05)

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1. System Requirements

Minimum Hardware Requirements

1GB RAM (Recommended: 2GB)

1 CPU (Recommended: 2 CPUs)

4GB hard disk space (Recommended: 12GB)

Supported Operating Systems and Platforms

ALTIBASE HDB 6.5.1 can be run on the operating systems and platforms listed in the table below.

OS	CPU	Version	Bit (Server)	Bit (Client)
AIX	PowerPC	6.1 tl03 and higher	64-bit	64-bit, 32-bit
HP-UX	IA64	11.31 and higher	64-bit	64-bit, 32-bit
LINUX	x86, x86-64 (GNU glibc 2.12 higher)	redhat 6.0 and higher	64-bit	64-bit, 32-bit
SUN	SPARC	2.8 and higher	64-bit	64-bit, 32-bit
Windows	x86, x86-64	Windows 2008 Windows 2012 Window 7, 8	64-bit	64-bit, 32-bit

Java version: ALTIBASE HDB 6.5.1 is compatible with JDK 1.4 and higher

2. Release Information

2.1 What's New in ALTIBASE HDB 6.5.1

2.1.1 Improved Functionality - SQL Extension

LATERAL, CROSS APPLY, OUTER APPLY, and UNPIVOT

If the LATERAL keyword is specified for an inline view in the FROM clause, it becomes a lateral view and can reference objects (tables and views) on its left.

If the CROSS APPLY or OUTER APPLY keyword is specified for an inline view in the FROM clause, it can reference objects and perform a cross join or a left outer join with them.

In addition, the user can specify the UNPIVOT keyword to return column data in rows.

ROW Triggers

For 6.3.1 or below, you could not create a BEFORE UPDATE trigger at row level. From 6.5.1, you can create the BEFORE UPDATE trigger at row level with the FOR EACH ROW option.

String Padding Functions

The following string padding/unpadding functions are supported for encryption/decryption functions (DESENCRYPT, DESDECRYPT, AESENCRYPT, and AESDECRYPT).

PKCS7PAD16

PKCS7UNPAD16

FLASHBACK and PURGE Support

A table that was dropped with the DROP statement can be dropped directly from the system or moved to the recycle bin, depending to the value of the RECYCLEBIN_ENABLE property. Tables in the recycle bin can be recovered with the FLASHBACK statement or dropped from the system with the PURGE statement.

Aggregate Functions and Window Functions

The following functions are supported for use with aggregate and window functions.

PERCENTILE_CONT

PERCENTILE_DISC

LISTAGG

STATS_ONE_WAY_ANOVA

2.1.2 Improved Functionality - Application Interfaces

MSDTC in ADO.NET

You can use Microsoft Distributed Transaction Coordinator (MSDTC) transactions in ADO.NET to run distributed transactions within ALTIBASE HDB and other databases.

The .NET data providers for ALTIBASE HDB use both OLE and XA transactions.

Therefore, restrictions on .NET data providers and XA transactions apply.

EF Data Provider and DDEX Provider

The following .NET providers are available from 6.5.1. EF(Entity Framework) Data Provider DDEX(Data Designer Extensibility) Provider

Connection Pooling

Connection pooling is available in ADO.NET to minimize the time taken to connect to the database.

2.1.3 Improved Functionality - Database Objects

Database Roles

Roles (grouped privileges) are supported. You can easily grant multiple privileges to users with roles. The following meta tables have been altered/added to support roles.

SYS_USERS_

SYS_USER_ROLES_

Memory Partitioned Tables

For 6.3.1 or below, you could only partition disk tables. From 6.5.1, you can also partition memory tables. For 6.3.1 or below, you could only partition disk tables. From 6.5.1, you can also partition memory tables.

2.1.4 Improved Functionality –Multiple Languages

MS936

MS936 (a Chinese character set) is supported. This character set is identical to GBK, ZHS16GBK, and CP936 of other vendors.

2.1.5 Improved Functionality –Data Types

Control Default Lengths of Character Data Types

You can specify the default lengths of character data types with properties. On omission, the default length was 1 for 6.3.1 or below. The following properties have been added

CHAR_DEFAULT_PRECISION

VARCHAR_DEFAULT_PRECISION

NCHAR_DEFAULT_PRECISION

NVARCHAR_DEFAULT_PRECISION

2.1.6 Improved Functionality –Built-in Functions

DBMS Stats Functions

Arguments for the following built-in functions pertaining to statistics have been altered

SET_INDEX_STATS

SET_TABLE_STATS

The following built-in functions have been added for dropping statistics

DELETE_SYSTEM_STATS**DELETE_DATABASE_STATS****DELETE_TABLE_STATS****DELETE_INDEX_STATS****DELETE_COLUMN_STATS**

2.1.7 Improved Functionality –Client Tool

New iSQL Command

A command that specifies whether or not to display script file results and command on the iSQL prompt has been added.

New iSQL Option: /NOLOG

The /NOLOG option allows the user to execute iSQL without connecting to the database.

SSL/TLS Connection

SSL/TLS connection is supported for ALTIBASE HDB utilities such as iSQL, iLoader, aexport, and altiComp.

2.1.8 Efficiency - Server Performance

Parallel Queries

Parallel queries, which allow multiple threads to run concurrently for the execution of a single query, are supported.

Full Scan using DBLink

DB Link allows the user to retrieve all the data of a table (perform a full scan) faster.

Memory Table Updates

Unnecessary index updates have been removed when updating columns without indexes in memory tables to improve performance.

The DBMS_CONCURRENT_EXEC Package

The DBMS_CONCURRENT_EXEC package allows the parallel execution of multiple procedures in a session.

Direct Key Indexes

A direct key index stores the record pointer and the record in the index node, and reduces index scan cost. However, a direct key index cannot be created on an index that resides on disk, a compressed column, or an encrypted column.

. New Replication Options

The following options (only available in LAZY mode) have been added to the replication feature.

Replication gapless option

Parallel receiver applier option

Replicated transaction grouping option

Materialized View Optimization

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

Function and Subquery Caching

Caching is available for functions and subqueries that are frequently called.

If the SELECT statement contains a DETERMINISTIC function in the stored procedure, the return results are cached for reuse.

The return results of scalar subqueries are cached for reuse.

2.1.9 Efficiency - Client Performance

JDBC Driver

The JDBC Driver has been improved to perform DML statements faster.

Atomic Batch

The ALTIBASE HDB JDBC Driver 6.5.1 supports atomic batches. This guarantees batch atomicity and fast data inserts.

2.1.10 Efficiency - Resource Efficiency

Limit the Number of Threads

A property that limits the total number of threads to be created on an ALTIBASE HDB server has been added. This property can be used to limit ALTIBASE HDB resources.

MAX_THREAD_COUNT

Compress Disk Table Columns

From 6.5.1, disk tables can also be compressed.

Memory Manager

The memory manager has been improved to minimize load and allows you to check memory usage.

Signal Handler

You can output trace log files while the ALTIBASE HDB server is running with the catlog and tailog utilities.

Network Management

You can manage and monitor network devices, and improve network performance with Simple Network Management Protocol (SNMP).

Trace Logging

Warnings and trace messages that are printed after ALTIBASE HDB has started are written to the altibase_trc.log file. Messages for threads of the same process are written in consecutive order; this allows the user to track errors.

2.1.11 Enhanced Security

SSL/TLS

You can use the SSL/TLS protocol to safely exchange data between the server and client, without third-party exposure.

ALTIBASE HDB uses the TLS 1.0 protocol supported by the OpenSSL library. You need an additional port (apart from the port that was used) to use SSL and you can use it with the JDBC and ODBC interfaces. This feature currently supports Linux only.

User Password

You can set a case sensitive user password for the database.

Encryption Functions

The following encryption functions that use AES (a 16-byte encryption algorithm) have been added

AESDECRYPT
AESENCRYPT

PSM Encryption

The altwrap utility encrypts PSM code programs such as stored procedures and stored functions to prevent them from being exposed.

Table/Partition Access Modes

You can set the following access modes for tables or partitions in partitioned tables.

2.1.12 High Availability

Partition Replication

You can replicate partitions in memory partitioned tables with the CREATE REPLICATION or ALTER REPLICATION statement. Partition replication has the following restrictions

Altibase Heartbeat

The Altibase Heartbeat utility detects failed nodes in a distributed database environment

and helps you take appropriate action.

Disaster Recovery

The Disaster Recovery feature minimizes data loss and recovery time, and ensures high availability when the main server fails.

Replicate Compressed Tables

You can replicate compressed tables.

2.1.13 Other

New Output Format for Execution Plans

In 6.5.1, the TRCLOG_DETAIL_SCHEMA property that specified whether or not to print the name of a schema object (a table or index) owner has been dropped.

New Date Conversion Functions

The following functions have been added to convert TIMESTAMP values to DATE.

DATE_TO_UNIX

UNIX_TO_DATE

audit Renamed to altiComp

The audit utility has been renamed to altiComp. The altiComp utility compares the tables of two databases, to print information about mismatching data and synchronize the databases.

2.2 Changes

The following section describes the added, updated and removed features for the benefit of database administrators and developers.

Versions of Database Components

Database Binary Version Updated Versions of Database Components

ALTIBASE HDB Version	Database Binary Version	Communication Protocol Version	Meta Version	Replication Protocol Version
6.3.1	6.2.1	7.1.1	6.2.1	7.4.1
6.5.1	6.3.1	7.1.2	8.1.1	7.4.2

Compatibility

Database Binary Version

The database binary version indicates the compatibility between database image files and log files. Since the format of database image files and log files change, the existing database must be migrated when the database is upgraded.

ALTIBASE HDB Version	Database Binary Version
6.3.1	6.2.1
6.5.1	6.3.1

Communication Protocol Version

ALTIBASE HDB Version	Communication Protocol Version
6.3.1	7.1.1
6.5.1	7.1.2

Meta Version

ALTIBASE HDB Version	Meta Version □
6.3.1	6.2.1
6.5.1	8.1.1

Replication Protocol Version

ALTIBASE HDB Version	Replication Protocol Version
6.3.1	7.4.1
6.5.1	7.4.2

Properties

The following properties have been added.

For further information on each property, please refer to the General Reference.

New Properties for ALTIBASE HDB

- CASE_SENSITIVE_PASSWORD
- CHAR_DEFAULT_PRECISION
- CONCURRENT_EXEC_DEGREE_DEFAULT
- CONCURRENT_EXEC_DEGREE_MAX
- CONCURRENT_EXEC_WAIT_INTERVAL
- DISK_MAX_DB_SIZE
- DISK_RECYCLEBIN_SIZE
- DR_ENABLE
- DR_MAX_LOGFILE
- DR_RM_PORT_NO
- DR_PORT_NO
- DR_CONNECT_TIMEOUT
- DR_RECEIVE_TIMEOUT
- DR_HBT_CONNECT_WAIT_TIME
- DR_HBT_DETECT_HIGHWATER_MARK
- DR_HBT_DETECT_TIME
- DR_PREFETCH_LOGFILE_COUNT
- DR_SENDER_SLEEP_TIME
- DR_KEEP_ALIVE_CNT
- DR_SENDER_NEXT_CONNECTION_TIMEOUT
- DR_STANDBY_WAIT_TIMEOUT
- EXTPROC_AGENT_CALL_RETRY_COUNT
- EXECUTOR_FAST_SIMPLE_QUERY
- FAST_UNLOCK_LOG_ALLOC_MUTEX
- HASH_JOIN_MEM_TEMP_AUTO_BUCKET_COUNT_DISABLE
- HASH_JOIN_MEM_TEMP_PARTITIONING_DISABLE
- MAX_THREAD_COUNT

- MEMORY_ALLOCATOR_AUTO_SHRINK
- MEMORY_ALLOCATOR_DEFAULT_SPINLOCK_COUNT
- MEMORY_ALLOCATOR_MAX_INSTANCES
- MEMORY_ALLOCATOR_POOLSIZE
- MEMORY_ALLOCATOR_POOLSIZE_GLOBAL
- MEMORY_ALLOCATOR_POOLSIZE_PRIVATE
- MEMORY_ALLOCATOR_TYPE
- MEMORY_ALLOCATOR_USE_PRIVATE
- MEMORY_RECYCLEBIN_SIZE
- NCHAR_DEFAULT_PRECISION
- NVARCHAR_DEFAULT_PRECISION
- PARALLEL_QUERY_THREAD_MAX
- PARALLEL_QUERY_QUEUE_SIZE
- QUERY_PROF_LOG_DIR
- RECYCLEBIN_ENABLE
- REPLICATION_ALLOW_DUPLICATE_HOSTS
- REPLICATION_SENDER_ENCRYPT_XLOG
- REPLICATION_GAPLESS_ALLOW_TIME
- REPLICATION_GAPLESS_MAX_WAIT_TIME
- REPLICATION_GROUPING_TRANSACTION_MAX_COUNT
- REPLICATION_GROUPING_AHEAD_READ_NEXT_LOG_FILE
- REPLICATION_RECEIVER_APPLIER_ASSIGN_MODE
- REPLICATION_RECEIVER_APPLIER_QUEUE_SIZE
- SNMP_ENABLE
- SNMP_PORT_NO
- SNMP_TRAP_PORT_NO
- SNMP_RECV_TIMEOUT
- SNMP_SEND_TIMEOUT
- SNMP_MSGLOG_FLAG
- SNMP_ALARM_QUERY_TIMEOUT
- SNMP_ALARM_FETCH_TIMEOUT
- SNMP_ALARM_UTRANS_TIMEOUT
- SNMP_ALARM_SESSION_FAILURE_COUNT
- SSL_CA
- SSL_CAPATH
- SSL_CERT
- SSL_CIPHER_LIST
- SSL_CLIENT_AUTHENTICATION
- SSL_ENABLE
- SSL_KEY
- SSL_MAX_LISTEN

- SSL_PORT_NO
- SSL_VERIFY
- TRC_MSGLOG_COUNT
- TRC_MSGLOG_FILE
- TRC_MSGLOG_SIZE
- TRC_MSGLOG_RESERVE_SIZE
- TRC_MSGLOG_SIZE
- VARCHAR_DEFAULT_PRECISION

Delete properties for ALTIBASE HDB

- LOG_FILE_GROUP_COUNT

Performance Views

The following performance views have been added.

For further information on each performance view, please refer to the General Reference.

New Performance Views for ALTIBASE HDB

- V\$DR_SERVERS
- V\$DR_CONNECTION_INFO
- V\$DR_GAP
- V\$DR_STATUS
- V\$INTERNAL_SESSION
- V\$REPRECEIVER_PARALLEL_APPLY

Modified performance views in ALTIBASE HDB

- V\$MEMSTAT
- V\$REPRECEIVER
- V\$REPRECEIVER_TRANSTBL
- V\$SESSION

2.3 Packages

OS	CPU	Archive Name
AIX	PowerPC	altibase-HDB-server-6.5.1.0.0-AIX-POWERPC-64bit-release.run altibase-HDB-client-6.5.1.0.0-AIX-POWERPC-64bit-release.run altibase-HDB-client-6.5.1.0.0-AIX-POWERPC-32bit-release.run
HP-UX	IA64	altibase-HDB-server-6.5.1.0.0-HPUX-IA64-64bit-release.run altibase-HDB-client -6.5.1.0.0-HPUX-IA64-64bit-release.run altibase-HDB-client -6.5.1.0.0-HPUX-IA64-32bit-release.run
LINUX	X86	altibase-HDB-server-6.5.1.0.0-LINUX-X86-64bit-release.run altibase-HDB-client-6.5.1.0.0-LINUX-X86-64bit-release.run altibase-HDB-server-6.5.1.0.0-LINUX-X86-32bit-release.run
SUN	SPARC	altibase-HDB-server-6.5.1.0.0-SOLARIS-SPARC-64bit-release.run altibase-HDB-client-6.5.1.0.0-SOLARIS-SPARC-64bit-release.run altibase-HDB-client-6.5.1.0.0-SOLARIS-SPARC-32bit-release.run
Windows	X86	altibase-HDB-server-6.5.1.0.0-WINDOWS-X86-64bit-release.exe altibase-HDB-client-6.5.1.0.0-WINDOWS-X86-64bit-release.exe altibase-HDB-client-6.5.1.0.0-WINDOWS-X86-32bit-release.exe

2.4 Downloads

Location

Package

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

Manual

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

Please refer to the ALTIBASE HDB Installation Guide