



New Features in Sybase IQ 12.7

**Sybase® IQ**

12.7

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# About This Book

<b>Subject</b>	This book describes new features in Sybase® IQ 12.7.
<b>Audience</b>	This book is for users of previous versions of Sybase IQ who want to find out what is new and different in this release of the software.
<b>Related documents</b>	<p>The Sybase IQ documentation set includes the following documents:</p> <ul style="list-style-type: none"><li>• <i>Introduction to Sybase IQ</i> Includes hands-on exercises for those unfamiliar with Sybase IQ or with the Sybase Central™ database management tool.</li><li>• <i>New Features in Sybase IQ 12.7</i> Lists new features and behavior changes.</li><li>• <i>Sybase IQ Performance and Tuning Guide</i> Explains query optimization, design, and tuning issues for very large databases.</li><li>• <i>Sybase IQ Reference Manual</i> Provides a full description of the SQL language, stored procedures, data types, and system tables supported by Sybase IQ.</li><li>• <i>Sybase IQ System Administration Guide</i> Covers administration issues such as database creation and load operations, data security and integrity, server start-up and connection, and multiplex operations.</li><li>• <i>Sybase IQ Troubleshooting and Recovery Guide</i> Explains how to solve problems, perform system recovery, and repair databases.</li><li>• <i>Sybase IQ Error Messages</i> Lists Sybase IQ error messages (referenced by SQLCode, SQLState and message text) and SQL preprocessor errors and warnings.</li></ul>

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- *Sybase IQ Utility Guide*  
Provides Sybase IQ utility program reference material, such as available syntax, parameters, and options.
  - *Large Objects Management in Sybase IQ*  
Explains storage and retrieval of Binary Large Objects (BLOBs) and Character Large Objects (CLOBs) within the Sybase IQ data repository. You need a separate license to install this product option.
  - *Encrypted Columns in Sybase IQ*  
Covers the use of user encrypted columns within the Sybase IQ data repository. You need a separate license to install this product option.
  - *Sybase IQ Installation and Configuration Guide*  
Describes Sybase IQ installation, migration to a new version, and configuration for a particular platform.
  - *Sybase IQ Release Bulletin*  
Provides an overview of new features and last minute changes to the product and documentation. Read for help if you encounter a problem.

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### **Sybase IQ and Adaptive Server Anywhere**

Because Sybase IQ is an extension of Adaptive Server® Anywhere, a component of SQL Anywhere® Studio, IQ supports many of the same features as Adaptive Server Anywhere. The IQ documentation set refers you to SQL Anywhere Studio documentation where appropriate.

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Documentation for Adaptive Server Anywhere:

- *Adaptive Server Anywhere Programming Guide*  
Intended for application developers writing programs that directly access the ODBC, Embedded SQL™, or Open Client™ interfaces, this book describes how to develop applications for Adaptive Server Anywhere.
- *Adaptive Server Anywhere Database Administration Guide*  
Intended for all users, this book covers material related to running, managing, and configuring databases and database servers.



- *Adaptive Server Anywhere SQL Reference Manual*

Intended for all users, this book provides a complete reference for the SQL language used by Adaptive Server Anywhere. It also describes the Adaptive Server Anywhere system tables and procedures.

You can also refer to the Adaptive Server Anywhere documentation in the SQL Anywhere Studio 9.0.2 collection on the Sybase Product Manuals Web site. To access this site, go to Product Manuals at <http://www.sybase.com/support/manuals/>.

#### **Other sources of information**

Use the Sybase Getting Started CD, the SyBooks CD, and the Sybase Product Manuals Web site to learn more about your product:

- The Getting Started CD contains release bulletins and installation guides in PDF format, and may also contain other documents or updated information not included on the SyBooks CD. It is included with your software. To read or print documents on the Getting Started CD, you need Adobe Acrobat Reader, which you can download at no charge from the Adobe Web site using a link provided on the CD.
- The SyBooks CD contains product manuals and is included with your software. The Eclipse-based SyBooks browser allows you to access the manuals in an easy-to-use, HTML-based format.

Some documentation may be provided in PDF format, which you can access through the PDF directory on the SyBooks CD. To read or print the PDF files, you need Adobe Acrobat Reader.

Refer to the *SyBooks Installation Guide* on the Getting Started CD, or the *README.txt* file on the SyBooks CD for instructions on installing and starting SyBooks.

- The Sybase Product Manuals Web site is an online version of the SyBooks CD that you can access using a standard Web browser. In addition to product manuals, you will find links to EBFs/Maintenance, Technical Documents, Case Management, Solved Cases, newsgroups, and the Sybase Developer Network.

To access the Sybase Product Manuals Web site, go to Product Manuals at <http://www.sybase.com/support/manuals/>.

- Infocenter is an online version of SyBooks that you can view using a standard Web browser. To access the Infocenter Web site, go to Sybooks Online Help at <http://infocenter.sybase.com/help/index.jsp>.

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## **Sybase certifications on the Web**

Technical documentation at the Sybase Web site is updated frequently.

### **❖ Finding the latest information on product certifications**

- 1 Point your Web browser to Technical Documents at <http://www.sybase.com/support/techdocs/>.
- 2 Click Certification Report.
- 3 In the Certification Report filter select a product, platform, and timeframe and then click Go.
- 4 Click a Certification Report title to display the report.

### **❖ Finding the latest information on component certifications**

- 1 Point your Web browser to Availability and Certification Reports at <http://certification.sybase.com/>.
- 2 Either select the product family and product under Search by Product; or select the platform and product under Search by Platform.
- 3 Select Search to display the availability and certification report for the selection.

### **❖ Creating a personalized view of the Sybase Web site (including support pages)**

Set up a MySybase profile. MySybase is a free service that allows you to create a personalized view of Sybase Web pages.

- 1 Point your Web browser to Technical Documents at <http://www.sybase.com/support/techdocs/>.
- 2 Click MySybase and create a MySybase profile.

## **Sybase EBFs and software maintenance**

### **❖ Finding the latest information on EBFs and software maintenance**

- 1 Point your Web browser to the Sybase Support Page at <http://www.sybase.com/support>.
- 2 Select EBFs/Maintenance. If prompted, enter your MySybase user name and password.
- 3 Select a product.
- 4 Specify a time frame and click Go. A list of EBF/Maintenance releases is displayed.

Padlock icons indicate that you do not have download authorization for certain EBF/Maintenance releases because you are not registered as a Technical Support Contact. If you have not registered, but have valid information provided by your Sybase representative or through your support contract, click Edit Roles to add the “Technical Support Contact” role to your MySybase profile.

- 5 Click the Info icon to display the EBF/Maintenance report, or click the product description to download the software.

## Syntax conventions

This documentation uses the following syntax conventions in syntax descriptions:

- **Keywords** SQL keywords are shown in UPPERCASE. However, SQL keywords are case insensitive, so you can enter keywords in any case you wish; SELECT, Select, and select are equivalent.
- **Placeholders** Items that must be replaced with appropriate identifiers or expressions are shown in *italics*.
- **Continuation** Lines beginning with an ellipsis (...) are a continuation of the statements from the previous line.
- **Repeating items** Lists of repeating items are shown with an element of the list followed by an ellipsis (...). One or more list elements are allowed. If multiple elements are specified, they must be separated by commas.
- **Optional portions** Optional portions of a statement are enclosed by square brackets. For example:

```
RELEASE SAVEPOINT [ savepoint-name ]
```

The square brackets indicate that the *savepoint-name* is optional. The brackets should not be typed.

- **Options** When none or only one of a list of items must be chosen, the items are separated by vertical bars and the list enclosed in square brackets. For example:

```
[ ASC | DESC ]
```

The square brackets indicate that you can choose ASC, DESC, or neither. The brackets should not be typed.

- **Alternatives** When precisely one of the options must be chosen, the alternatives are enclosed in curly braces. For example:

QUOTES { ON | OFF }

The curly braces indicate that either ON or OFF must be provided. The braces should not be typed.

## Typographic conventions

Table 1 lists the typographic conventions used in this documentation.

**Table 1: Typographic conventions**

Item	Description
Code	SQL and program code is displayed in a mono-spaced (fixed-width) font.
User entry	Text entered by the user is shown in bold serif type.
<i>emphasis</i>	Emphasized words are shown in italic.
<i>file names</i>	File names are shown in italic.
database objects	Names of database objects, such as tables and procedures, are shown in bold, sans serif type in print, and in italic online.

## The sample database

Sybase IQ includes a sample database used in many examples in the IQ documentation.

The sample database represents a small company. It contains internal information about the company (employees, departments, and financial data), as well as product information (products), sales information (sales orders, customers, and contacts), and financial information (fin\_code, fin\_data).

The sample database is held in a file named *asiqdemo.db*, located in the directory *\$ASDIR/demo* on UNIX systems and *%ASDIR%\demo* on Windows systems.

## Accessibility features

This document is available in an HTML version that is specialized for accessibility. You can navigate the HTML with an adaptive technology such as a screen reader, or view it with a screen enlarger.

Sybase IQ 12.7 and the HTML documentation have been tested for compliance with U.S. government Section 508 Accessibility requirements. Documents that comply with Section 508 generally also meet non-U.S. accessibility guidelines, such as the World Wide Web Consortium (W3C) guidelines for Web sites.

For information about accessibility support in the Sybase IQ plug-in for Sybase Central, see “Using accessibility features” in the *Introduction to Sybase IQ*. The online help for this product, which you can navigate using a screen reader, also describes accessibility features, including Sybase Central keyboard shortcuts.

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**Configuring your accessibility tool**

You might need to configure your accessibility tool for optimal use. Some screen readers pronounce text based on its case; for example, they pronounce ALL UPPERCASE TEXT as initials, and MixedCase Text as words. You might find it helpful to configure your tool to announce syntax conventions. Consult the documentation for your tool and see “Using screen readers” in the *Introduction to Sybase IQ*.

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For information about how Sybase supports accessibility, see Sybase Accessibility at <http://www.sybase.com/accessibility>. The Sybase Accessibility site includes links to information on Section 508 and W3C standards.

For a Section 508 compliance statement for Sybase IQ, go to Sybase Accessibility at <http://www.sybase.com/products/accessibility>.

**If you need help**

Each Sybase installation that has purchased a support contract has one or more designated people who are authorized to contact Sybase Technical Support. If you cannot resolve a problem using the manuals or online help, please have the designated person contact Sybase Technical Support or the Sybase subsidiary in your area.



# New Features in Sybase IQ 12.7

## About this chapter

This chapter provides an overview of the new features and behavior changes introduced in Sybase IQ 12.7. It briefly describes major and minor new features, with cross-references to details in other Sybase IQ documentation.

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## Major themes of Sybase IQ 12.7

Sybase IQ 12.7 addresses four central themes. Follow the links in the following sections for a description of each feature; read the entire chapter for a complete overview of new and enhanced features and behavior changes.

### OLTP compatibility

Several new features improve compatibility and performance when you use Sybase IQ together with Adaptive Server Enterprise:

- Bulk copy support
- Column default value support
- New system stored procedures equivalent to ASE stored procedures
- Implicit conversion of BIT data to BINARY data
- Hexadecimal and big integer data conversion

### Performance

The following new features enhance transaction processing performance:

- Subqueries in search conditions
- OLAP support

### Security

Sybase IQ 12.7 provides the following new security features:

- Password authentication
- FIPS-certified security
- Sybase IQ Encrypted Column Option
- Multiplex login management



## Usability enhancements

Sybase IQ 12.7 supplies numerous enhancements to usability:

- Read-only hardware support
- Large Objects Management option enhancements (BLOB/CLOB implicit conversion)
- Query performance improvements
- ASA 9.0.2 features support
- jConnect 6.0

## Data Definition Language (DDL) changes

This section contains new features and behavior changes related to Data Definition Language (DDL).

### Read-only hardware support

Sybase IQ 12.6 servers allowed dbspaces to be placed in read-only mode, but did not enforce this at the volume or file system level. Sybase IQ 12.7 supports read-only hardware. For details, see “Archiving data with read-only hardware” in Chapter 14, “Data Backup, Recovery, and Archiving,” in the *Sybase IQ System Administration Guide*.

### Sun Solaris OS error initializing raw device

On Sun Solaris systems, when creating a database or dbspace on a raw device in version 12.6 and later releases, Sybase IQ performs a series of calculations to determine the correct size of the raw partition. Each time IQ tries to initialize the device using its calculation, an operating system error is reported until an appropriate size is calculated. The database or dbspace is successfully created and the errors can be ignored. These errors were not reported in IQ version 12.5 and earlier releases when creating a database or dbspace on a raw device.

## NULL values on a unique multicolumn HG index

Sybase IQ now allows the use of NULL in data values on a user created unique multicolumn HG index, if the column definition allows for NULL values and a constraint (primary key or unique) is not being enforced. For more details, see “Multicolumn indexes” in the “Notes” section of the CREATE INDEX statement in Chapter 6, “SQL Statements” in the *Sybase IQ Reference Manual*.

## UNIQUEIDENTIFIER functions now native to Sybase IQ

The UNIQUEIDENTIFIER functions NEWID, STRTOUUID, and UUIDTOSTR are now native Sybase IQ functions. The CIS performance caveats no longer apply.

The UNIQUEIDENTIFIER data type is often used for a primary key or other unique column to hold UUID (Universally Unique Identifier) values that uniquely identify rows. UUID values are also referred to as GUIDs (Globally Unique Identifiers).

For more information, see UNIQUEIDENTIFIER data type in “Binary data types” in Chapter 4, “SQL Data Types” and “NEWID function [Miscellaneous],” “STRTOUUID function [String],” and “UUIDTOSTR function [String]” in Chapter 5, “SQL Functions” in the *Sybase IQ Reference Manual*.

## Procedure profiling enhancements

Profiling information can now be filtered per user and per connection using the sa\_server\_option stored procedure. For details, see “sa\_server\_option system procedure” in the *Sybase IQ Reference Manual*.

## ALTER DOMAIN statement added

The ALTER DOMAIN statement allows you to rename user-defined domains and data types. For details, see ALTER DOMAIN statement in the *Sybase IQ Reference Manual*.

## NO RESULT SET clause for procedures

You can declare a stored procedure **NO RESULT SET** when external environments need to know that the stored procedure does not return a result set. For details, see **CREATE PROCEDURE** statement in the *Sybase IQ Reference Manual*.

## Column statistics updated during index creation (behavior change)

The **CREATE INDEX** statement now has the side effect that column statistics are updated for the indexed columns in Catalog Stores.

## SNMP Agent

Sybase IQ can now be monitored from Simple Network Management Protocol (SNMP) applications. For more about SNMP, see the Adaptive Server Anywhere SNMP Extension Agent User's Guide.

## New collations added

The following collations have been added in this release:

- **1252SWEFIN** has been added to support Swedish and Finnish. On Swedish and Finnish systems, the database server chooses 1252SWEFIN as the default collation for a new database if no collation is specified.
- **1255HEB** has been added to support Hebrew. On Hebrew Windows systems, the database server chooses 1255HEB as the default collation for a new database if no collation is specified.
- **1256ARA** has been added to support Arabic. On Arabic Windows systems, the database server chooses 1256ARA as the default collation for a new database if no collation is specified.
- **950ZHO\_HK and 950ZHO\_TW** have been added to support Chinese. 950ZHO\_HK provides support for the Windows Traditional Chinese character set cp950 plus the Hong Kong Supplementary Character Set (HKSCS). The 950ZHO\_TW collation provides support for the Windows Traditional Chinese character set cp950, but does not support HKSCS. Ordering is based on a byte-by-byte ordering of the Traditional Chinese characters. These collations supersede the deprecated 950TWN collation.

- **1252SPA** has been added to support Spanish. On Spanish Windows systems, the database server chooses 1252SPA as the default collation for a new database if a collation is not specified.
- **874THAIBIN** has been added to support Thai. This is the recommended collation for Thai on both Windows and UNIX systems.

For details, see Chapter 11, “International Languages and Character Sets,” in the *Sybase IQ System Administration Guide*.

## Data Manipulation Language (DML) changes

This section contains new features and behavior changes related to Data Manipulation Language (DML).

### OLAP support

Extensions to the ANSI SQL standard to include complex data analysis were introduced as an amendment to the 1999 SQL standard. Sybase IQ added portions of these SQL enhancements in previous releases. Sybase IQ 12.7, however, contains comprehensive support for the extensions.

These analytic functions, which offer the ability to perform complex data analysis within a single SQL statement, are sometimes referred to as OLAP, or On Line Analytical Processing, whose functions include:

- GROUP BY clause extensions – CUBE and ROLLUP
- Analytical functions:
  - Simple aggregates – AVG, COUNT, MAX, MIN, and SUM, STDDEV and VARIANCE

---

**Note** All simple aggregates, except the Grouping() function, can be used with a windowed function.

---

- Window functions:
  - Windowing aggregates – AVG, COUNT, MAX, MIN, and SUM
  - Ranking functions – RANK, DENSE\_RANK, PERCENT\_RANK

- Statistical functions – STDDEV, STDDEV\_SAMP, STDDEV\_POP, VARIANCE, VAR\_SAMP, and VAR\_POP
- Distribution functions – PERCENTILE\_CONT and PERCENTILE\_DISC
- Numeric functions – WIDTH\_BUCKET, CEIL, LN, EXP, POWER, SQRT, and FLOOR

See Chapter 4, “Using OLAP,” in the *Sybase IQ Performance and Tuning Guide* for details.

The following SQL/OLAP functions are new in Sybase IQ 12.7:

- **STDDEV\_POP** Computes the standard deviation of a population consisting of a numeric expression as a DOUBLE
- **STDDEV\_SAMP** Computes the standard deviation of a sample consisting of a numeric expression as a DOUBLE
- **VAR\_POP** Computes the statistical variance of a population consisting of a numeric expression as a DOUBLE
- **VAR\_SAMP** Computes the statistical variance of a sample consisting of a numeric expression as a DOUBLE

See Chapter 5, “SQL Functions,” in the *Sybase IQ Reference Manual* for information and syntax.

## Accumulating index advice

Sybase IQ now accumulates the messages from the index advisor along with the number of times each occurred while the server has been up. The INDEX\_ADVISOR\_MAX\_ROWS option limits the number of messages accumulated. Upon reaching the specified limit, the INDEX\_ADVISOR stops storing new messages, but continues updating counts and timestamps for existing messages. The procedure sp\_iqindexadvice, retrieves accumulated advice information.

See “INDEX\_ADVISOR\_MAX\_ROWS option,” Chapter 2, “Database Options,” and “sp\_iqindexadvice procedure,” Chapter 10, “System Procedures,” in the *Sybase IQ Reference Manual*.

## **BINARY data type CONVERSION\_MODE option**

The new `CONVERSION_MODE` database option lets you restrict implicit conversion from binary data types to any other nonbinary data type on `INSERT`, `UPDATE`, and in queries. The restrict binary conversion mode also applies to `LOAD TABLE` default values and `CHECK` constraints. Using this option prevents implicit data type conversions of binary information such as encrypted data that would result in semantically meaningless operations.

For more information on the `CONVERSION_MODE` option and its usage, see “`CONVERSION_MODE` option” in Chapter 2, “Database Options” in the *Sybase IQ Reference Manual*.

For more information on column encryption in Sybase IQ, see “Sybase IQ Encrypted Column Option” on page 26.

## **Conversion of BIT to BINARY data type**

Sybase IQ supports `BIT` to `BINARY` and `BIT` to `VARBINARY` implicit and explicit conversion and is compatible with ASE support of these conversions. IQ implicitly converts `BIT` to `BINARY` and `BIT` to `VARBINARY` data types for comparison operators, arithmetic operations, and `INSERT` and `UPDATE` statements.

For more information on `BIT` to `BINARY` and `VARBINARY` conversions, see “Conversion of `BIT` to `BINARY` data type” in Chapter 4, “SQL Data Types” in the *Sybase IQ Reference Manual*.

## **STDDEV and VARIANCE behavior changes**

In Sybase IQ 12.7, the `STDDEV` and `VARIANCE` functions return the `NULL` value if applied to the one-element input sets.

## **Multiplex enhancements**

This section contains new features and behavior changes related to multiplex capability.

## Multiplex login management

Sybase IQ now propagates login management operations made on one server to other servers in the multiplex. For details and a few documented exceptions, see “Multiplex login management” in the *Sybase IQ System Administration Guide*.

## Start-up and connection changes

This section contains new features and behavior changes related to start-up and connection.

## Changes to server command line switches

The following command line switches are new or changed for this release:

- The `-iqro` server switch opens the IQ Main Store or IQ Local Store in read-only mode, regardless of the status of the dbspaces in the main or local store.
- The `-iqstartN` server switch provides start-up diagnostics relating to dbspaces.
- The default `-igtss` (thread stack size) server switch on 64-bit platforms increased from 350KB in version 12.6 to 512KB in version 12.7.
- The `-zn` server switch specifies how many request log files should be retained.

For details about these switches, see “Starting the database server” in the *Sybase IQ Utility Guide*.

## Locating ODBC data sources

The `.odbc.ini` file specifies ODBC data sources on UNIX systems. Prior to this release, clients checked `$HOME` and `$PATH` in addition to `$ODBCINI` and `$ODBCHOME` to locate the `.odbc.ini` file at runtime. As of Sybase IQ12.7, clients search only the path specified by the value of the `ODBCINI` environment variable and then the `ODBCHOME` variable. You must explicitly set at least one of these variables in order to use ODBC data sources.

For example, if your *.odbc.ini* file is in the directory */usr/u/fiona/mysources*, set the ODBCINI variable as follows in a c or tcsh shell:

```
setenv variable ODBCINI  
/usr/u/fiona/mysources/.odbc.ini
```

In shells such as sh, bash, or ksh, set the same variable as follows:

```
ODBCINI=/usr/u/fiona/mysources/.odbc.ini; export  
ODBCINI
```

## Remote server connections can now be explicitly closed

In previous releases, connections from Sybase IQ to remote servers were disconnected only when a user disconnected from Sybase IQ. You can now explicitly disconnect Sybase IQ from a remote server using the new CONNECTION CLOSE clause of the ALTER SERVER statement. For details, see ALTER SERVER statement in the *Sybase IQ Reference Manual*.

## Server class for 64-bit platforms

ASAODBC is the only server class supported for 64-bit platforms. For more information about ASAODBC, see Chapter 17, “Server Classes for Remote Data Access,” in the *Sybase IQ System Administration Guide*.

## Initialization files can be obscured with dbfhide

The File Hiding utility (dbfhide) can now be used to obscure the contents of *.ini* files used by Sybase IQ and its utilities. For details, see Chapter 3, “Database Administration Utilities,” in the *Sybase IQ Utility Guide*.

## New connection properties

The following connection properties are supported:

- ClientPort
- LoginTime
- ServerPort



For details, see “Connection-level properties” in the *Adaptive Server Anywhere Database Administration Guide*.

## Query enhancements, optimization, and changes

This section contains enhancements and behavior changes related to queries.

### Condition hint string

Sybase IQ supports new syntax that lets you specify per-condition hints, such as selectivity, usefulness, index preference, and execution phase, within the text of a query.

Under normal circumstances, there are no advantages to delaying evaluation, which could slow the query. You can, however, move certain behaviors to later in the query.

For syntax, parameters, and examples, see “User-supplied condition hint strings,” in Chapter 3, “SQL Language Elements,” in the *Sybase IQ Reference Manual*.

### ASE compatibility for data conversion functions

The new database option `ASE_FUNCTION_BEHAVIOR` specifies that output of IQ functions, including the data conversion functions `INTTOHEX` and `HEXTOINT`, is consistent with the output of Adaptive Server Enterprise functions. The default value of `ASE_FUNCTION_BEHAVIOR` is `OFF`.

For more information on the `ASE_FUNCTION_BEHAVIOR` option and its usage, see “`ASE_FUNCTION_BEHAVIOR` option” in Chapter 2, “Database Options,” and “`INTTOHEX` function [Data type conversion]” and “`HEXTOINT` function [Data type conversion]” in Chapter 5, “SQL Functions” in the *Sybase IQ Reference Manual*.

## INTTOHEX output format (behavior change)

The output of the INTTOHEX function is now compatible with the output of Adaptive Server Anywhere functions. Depending on the input, which can be up to a 64-bit integer, the output of INTTOHEX can be 8 digits or 16 digits and is left padded with zeros; the return data type is VARCHAR rather than BINARY. The output of INTTOHEX no longer has a “0x” or “0X” prefix.

The output of the INTTOHEX function can also be controlled by setting the database option ASE\_FUNCTION\_BEHAVIOR.

For more information, see “INTTOHEX function [Data type conversion]” in Chapter 5, “SQL Functions,” and “ASE\_FUNCTION\_BEHAVIOR option” in Chapter 2, “Database Options,” in the *Sybase IQ Reference Manual*.

## Table owner added to index advisor

The index advisor now generates messages in OWNER.TABLE.COLUMN format. For details see Chapter 5, “Managing System Resources,” in the *Sybase IQ Performance and Tuning Guide*.

## ASE compatibility string functions

Sybase IQ now supports the following string functions:

- **LEN** Returns the number of characters, not the number of bytes, of a specified string expression, excluding trailing blanks
- **REVERSE** Returns the specified string with characters listed in reverse order
- **STR\_REPLACE** Replaces any instances of the second string expression (*string\_expr2*) that occur within the first string expression (*string\_expr1*) with a third expression (*string\_expr3*)

For more information, see Chapter 5, “SQL Functions,” in the *Sybase IQ Reference Manual*.

## Subqueries in search conditions

You can now use subqueries within BETWEEN conditions. A BETWEEN predicate is of the form “A between B and C.”

In Sybase IQ 12.6 and prior versions, “A”, “B”, and “C” all had to be value expressions or columns.

Now, either “B” or “C” or both “B” and “C” can be subqueries. “A” must still be a value expression or column.

For details, see Chapter 3, “SQL Language Elements,” in the *Sybase IQ Reference Manual*.

## Double quotes within identifiers

You can use double quotes within identifiers.

If the QUOTED\_IDENTIFIER database option is set to OFF, double quotes are used to delimit SQL strings and cannot be used for identifiers. However, you can always use square brackets to delimit identifiers, regardless of the setting of QUOTED\_IDENTIFIER.

The default setting for the QUOTED\_IDENTIFIER option is OFF for Open Client and jConnect connections; otherwise, the default is ON.

For details, see Chapter 3, “SQL Language Elements,” in the *Sybase IQ Reference Manual*.

## Cursor name logged in detailed query plan

The name of a declared cursor is now logged in the detailed query plan, as shown in the following sample output:

```
I. 03/21 11:59:44. 0000000002 [20535]: Est. Temp Space Used (Mb): 0.0
I. 03/21 11:59:44. 0000000002 [20535]: Cursor Name: resultcursor
I. 03/21 11:59:44. 0000000002 [20535]: Requested attributes: Scroll Chained
I. 03/21 11:59:44. 0000000002 [20535]: Effective Number of Users: 1
```

Since all queries are executed as cursors, a query that does not have a user-specified cursor name is assigned an internal cursor name by IQ. You may see internal cursor names like “AAAAAAA” and “BAAAAAA” in the query plan.

Refer to Chapter 3, “Optimizing Queries and Deletions” in the *Sybase IQ Performance and Tuning Guide* for more information on query plans.

## Data load, update, and extraction changes

This section discusses enhancements and behavior changes related to data load, update, and extraction facilities.

### Column default value support

Sybase IQ now supports column default values in addition to the AUTOINCREMENT/IDENTITY default. Column default value support applies to the following commands:

- LOAD TABLE
- INSERT...VALUES
- INSERT...SELECT
- INSERT...LOCATION
- UPDATE
- SELECT...FROM...FOR UPDATE

You can use the CREATE TABLE statement to create column defaults at the time a table is created, ALTER TABLE to add or modify a column default value in an existing table, and CREATE DOMAIN to specify column default values in a user-defined domain (data type).

For more information on the types of constant expressions allowed for column default values and their use, see “Using column defaults” in Chapter 9, “Ensuring Data Integrity” of the *Sybase IQ System Administration Guide* and CREATE TABLE statement, ALTER TABLE statement, CREATE DOMAIN statement, and LOAD TABLE statement in Chapter 6, “SQL Statements” of the *Sybase IQ Reference Manual*.

### Bulk copy support

Sybase IQ supports an Open Client-based utility that copies a database table to or from an operating system file in a user-specified format.

For details, see “Bulk Copy utility (iq\_bcp),” in Chapter 3, “Database Administration Utilities,” in the *Sybase IQ Utility Guide*.

## QUOTES ON option of the LOAD TABLE statement

The QUOTES ON option of the LOAD TABLE statement allows input fields to include the column and row delimiters in their data, if they are enclosed between quote characters.

For syntax and usage details, see LOAD TABLE statement in Chapter 6, “SQL Statements” in the *Sybase IQ Reference Manual*. For an example, see “Bulk loading data using the LOAD TABLE statement” in Chapter 7, “Moving Data In and Out of Databases” in the *Sybase IQ System Administration Guide*.

---

**Note** Earlier versions of Sybase IQ required that the LOAD TABLE... QUOTES option be set OFF. This is no longer true in 12.7. The error message ESCAPES option must be OFF replaces the former message Both QUOTES and ESCAPES options must be OFF.

---

## ON PARTIAL INPUT ROW option of the LOAD TABLE statement

The ON PARTIAL INPUT ROW option of the LOAD TABLE statement allows you to control whether a load operation rolls back or continues when a partial input row is encountered. For details, see LOAD TABLE statement in Chapter 6, “SQL Statements” in the *Sybase IQ Reference Manual*.

## WORD SKIP option of the LOAD TABLE statement

The WORD SKIP option allows a load to continue when it encounters data longer than the limit specified when the word index was created. For details, see LOAD TABLE statement in Chapter 6, “SQL Statements” in the *Sybase IQ Reference Manual*.

## Large Objects Management option enhancements

The Large Objects Management option has been enhanced to include support for additional data type conversion and control of data compression.

## Expanded data type conversion

The specially licensed Large Objects Management option has been enhanced to include implicit conversion between the LONG VARCHAR data type and CHAR and VARCHAR data types and between the LONG BINARY data type and BINARY and VARBINARY data types for INSERT and UPDATE.

Support has also been added for explicit conversion from the LONG VARCHAR data type to CHAR and VARCHAR data types and from the LONG BINARY data type to BINARY and VARBINARY data types using the CAST and CONVERT functions.

Use of the STRING\_RTRUNCATION database option is also supported for LONG BINARY and LONG VARCHAR data type conversion.

For more details on these enhancements, see Chapter 2, “Binary Large Object (BLOB) data,” and Chapter 3, “Character Large Object (CLOB) data,” in *Large Objects Management in Sybase IQ*, which is included in the Sybase IQ documentation set.

To install this feature, you must enter a license key provided in *Sybase IQ Large Objects Management Option Installation Key*, a paper document you receive when you purchase the Large Objects Management option.

## Disabling data compression

The new sp\_iqsetcompression stored procedure controls the compression of columns of data type LONG BINARY and LONG VARCHAR when writing database buffers to disk and allows you to disable compression. This functionality saves CPU cycles, because certain data formats stored in a LONG BINARY or LONG VARCHAR column (for example, JPG files) are already compressed and gain nothing from additional compression. The new sp\_iqshowcompression stored procedure displays the compression setting of large object columns.

For more information on these stored procedures, see “sp\_iqsetcompression procedure” and “sp\_iqshowcompression procedure” in Chapter 5, “Stored Procedure Support” of *Large Objects Management in Sybase IQ*.

## Hexadecimal and big integer data conversion

Two new functions support the explicit conversion of hexadecimal to big integer data and big integer to hexadecimal data. The `HEXTOBIGINT` function accepts hexadecimal integers and returns the `BIGINT` data type equivalent. The `BIGINTTOHEX` function accepts an integer expression that evaluates to `BIGINT` and returns the hexadecimal equivalent as `VARCHAR(16)` data type.

For more information on these data type conversion functions, see “`HEXTOBIGINT` function [Data type conversion]” and “`BIGINTTOHEX` function [Data type conversion]” in Chapter 5, “SQL Functions” in the *Sybase IQ Reference Manual*.

## Implicit conversion of BIT data to BINARY data

Sybase IQ now supports the implicit conversion of `BIT` data type to `BINARY` and `VARBINARY` data types for insertions and updates. This conversion matches that of Adaptive Server Enterprise. For more information on `INSERT` and `UPDATE` conversions, see “Data conversions in IQ” in Chapter 7, “Moving Data In and Out of Databases” in the *Sybase IQ System Administration Guide*. For more information on `BIT` to `BINARY` and `VARBINARY` conversions, see “Conversion of `BIT` to `BINARY` data type” in Chapter 4, “SQL Data Types” in the *Sybase IQ Reference Manual*.

## INSERT...LOCATION statement enhancements

The `INSERT...LOCATION` statement includes new syntax that allows users to specify the settings for options on the remote server. `INSERT...LOCATION` also supports use of a remote login when connecting to a remote server.

---

**Note** In previous versions of IQ, `INSERT...LOCATION` used the user ID and password of the current connection to connect to the remote server. In IQ 12.7, the user ID and password of the current connection are used only if a remote login has not been created for the user ID of the current connection.

---

For details, see `INSERT` statement in Chapter 6, “SQL Statements” in the *Sybase IQ Reference Manual*.

## Default index forms specialized for fixed-width columns

Sybase IQ now supports creating a form of 1-byte default index on fixed-width column data 1 byte wide and a 2-byte default index for columns with fixed-width data 2 bytes wide. This lets the query engine use faster access methods available through the enumerated FP index structure. For details, see “sp\_iqrebuildindex procedure” and “MINIMIZE\_STORAGE option” in the *Sybase IQ Reference Manual*.

## Stored procedure displays index metadata

A new stored procedure, sp\_iqindexmetadata, generates a report describing a specified index or indexes belonging to a specified owner or table. For example, the output allows easy checking of whether a given index is a 1-byte or 2-byte default index.

Sybase recommends that if users see “Old One Byte FP” (or “Old Two Byte FP”), they rebuild the default index to leverage the newer, faster index structure. After the rebuild, users see the typical “One Byte FP”.

For details, see “sp\_iqindexmetadata procedure” in the *Sybase IQ Reference Manual*.

## Stored procedure displays index advice

A new stored procedure, sp\_iqindexadvice, displays stored index advice messages and optionally clears advice storage. For example, sp\_iqindexadvice lets users query aggregated index advisor messages using SQL. Information can be used to help decide which indexes or schema changes will affect the most queries. For details, see “sp\_iqindexadvice procedure” in the *Sybase IQ Reference Manual*.

## Integer data type support changes

You can now use INSERT...LOCATION statements to retrieve values with the UNSIGNED INT, BIGINT, and UNSIGNED BIGINT data types. INSERT...LOCATE requires Open Client, and OpenClient 15.0 added support for these data types.



## DBISQL options can no longer be set TEMPORARY

Options that control how DBISQL interacts with the database now return an error if set TEMPORARY for a given connection in Sybase IQ 12.6 and higher releases. For example, a statement like `SET TEMPORARY OPTION AUTO_COMMIT='ON'` returns the error “Cannot execute a temporary option for user 'DBA'.” For a list of affected options, see “DBISQL options” in Chapter 2, “Database Options,” in the *Sybase IQ Reference Manual*.

## Administration and troubleshooting improvements

This section contains enhancements and behavior changes related to administration and troubleshooting.

### New system stored procedures

This version of Sybase IQ has several new system stored procedures that facilitate the tasks of the database administrator when gathering information about database objects, renaming objects, and monitoring IQ components, users, connections, and tasks. The new stored procedures are listed in Table 1-1.

For more information, see Chapter 10, “System Procedures” in the *Sybase IQ Reference Manual*.

**Table 1-1: New IQ system stored procedures**

<b>Procedure name</b>	<b>Description</b>
<code>sp_iqcursorinfo</code>	Displays information about cursors currently open on the server
<code>sp_iqdatatype</code>	Displays information about system data types and user-defined data types
<code>sp_iqevent</code>	Displays information about system and user-defined events
<code>sp_iqhelp</code>	Displays information about system and user-defined objects and data types
<code>sp_iqjoinindex</code>	Displays information about join indexes
<code>sp_iqpkeys</code>	Displays information about primary keys and primary key constraints by table, column, table owner, or for all IQ tables in the database
<code>sp_iqprocedure</code>	Displays information about system and user-defined procedures
<code>sp_iqprocparm</code>	Displays information about stored procedure parameters, including result set variables and SQLSTATE/SQLCODE error values

<b>Procedure name</b>	<b>Description</b>
sp_iqrename	Renames user-created tables, views, columns, indexes, constraints (unique, primary key, foreign key, and check), stored procedures, and functions
sp_iqshowpsex	Displays information about the settings of database options that control the priority of tasks and resource usage for connections
sp_iqsysmon	Monitors multiple components of Sybase IQ, including the management of buffer cache, memory, threads, locks, I/O functions, and CPU utilization
sp_iqwho	Displays information about all current users and connections or about a particular user or connection

## New SYSIQOBJECTS view

A new view, `dbo.SYSIQOBJECTS`, provides database administrators with a single source of information about all IQ objects. Table 1-2 lists the system tables from which the `SYSIQOBJECTS` information is derived and the values of the *type* column, which identifies each object type.

**Table 1-2: `SYSIQOBJECTS.type` values**

<b>Type of object</b>	<b>Value of <i>type</i> column</b>	<b>Source system table</b>
System table	S	SYS.SYSTABLE SYS.SYSIQTABLE
User table	U	SYS.SYSTABLE SYS.SYSIQTABLE
View	V	SYS.SYSTABLE SYS.SYSIQTABLE
Procedure	P	SYS.SYSPROCEDURE
Trigger (not currently supported by IQ)	TR	SYS.SYSTRIGGER SYS.SYSTABLE
Event	EV	SYS.SYSEVENT
Join index	JI	SYS.SYSIQJOININDEX
Constraint	CO	SYS.SYSCONSTRAINT
Domain (sysdomain)	SD	SYS.SYSDOMAIN
Domain (sysusertype)	UD	SYS.SYSUSERTYPE
Column	CL	SYS.SYSCOLUMN
Index	IX	SYS.SYSINDEX

The `SYSIQOBJECTS` column `crdate` contains the creation date of objects for which IQ has stored the creation date.

## Output of getiqinfo script reduced (behavior change)

The troubleshooting script getiqinfo no longer returns patch-level information.

## Support for integrated logins using Windows user groups

In addition to integrated logins for individual users on Windows 2000/XP, you can now create integrated login mappings to user groups on Windows 2000/XP. It is recommended that you upgrade your database before using this feature.

## Copy Definition utility (defncopy) support

Sybase IQ now supports the defncopy utility, which copies definitions for specified procedures, views, or Adaptive Server Anywhere triggers from a database to an operating system file or from an operating system file to a database. For a complete description of this utility and the supported parameters, see “Copy Definition utility (defncopy)” in Chapter 3, “Database Administration Utilities” in the *Sybase IQ Utility Guide*.

## Installation and migration changes

See *Sybase IQ Installation and Configuration Guide* for your platform for new migration steps you must take before installing Sybase IQ 12.7, and for details about the following subsections.

### New installation parameters

The following are new command parameters for the sybinstall utility:

- -add\_license – Install a license for features purchased separately
- -products – Specify products to install

The following are new parameters for the setup.exe utility:

- -add\_agent – Installs a standalone IQ Agent
- -add\_license – Installs a license for features purchased separately

- -r – Records more information
- -s – Runs in silent mode

## File and directory names changes

The following file and directory names have changed for Sybase IQ 12.7:

- *IQAgent1261.jar* is now *IQAgent12.jar*.
- *IQHelpen1261.jar* is now *IQHelpen12.jar*.
- *IQPlugin1261.jar* is now *IQPlugin12.jar*
- *S99SybaseIQAgent1261* is now *S99SybaseIQAgent12*

## SYBASE\_OCS setting behavior change

Sybase IQ 12.7 installs version 15.0 of the Open Client Software Developer's Kit (SDK) on all platforms except Linux 32, on which it installs version 12.5.1.

The SYBASE\_OCS environment variable controls the version of the SDK used by Sybase products. On UNIX platforms, the behavior of setup files has changed regarding this variable.

In Sybase IQ 12.6, running the setup procedure *ASIQ-12\_6.csh* or *ASIQ-12\_6.sh* set the SYBASE\_OCS variable. If another installed Sybase product had already set the variable, the value was changed.

In Sybase IQ 12.7, running the setup procedure *ASIQ-12\_7.csh* or *ASIQ-12\_7.sh* sets the variable only if it is not already set. *If the value of SYBASE\_OCS has been set by another Sybase product, that value remains in effect unless you unset SYBASE\_OCS, and then run the source file.* See the *Sybase IQ Installation and Configuration Guide* for details.

On Windows, the installation program sets SYBASE\_OCS when it installs the Open Client Software Developer's Kit.

## Upgrade messages added

You can now monitor the progress of ALTER DATABASE UPGRADE. The Result pane of DBISQL displays messages like the following:

```
Database upgrade started
```

Setting option values  
Setting option values completed  
Creating system views  
Creation of system views completed  
Creating DBO views  
Creation of DBO views completed  
Creating system procedures  
Creation of system procedures completed  
Creating MobiLink Server system tables and stored  
procedures  
Creation of MobiLink Server system tables and stored  
procedures completed  
Creating migration procedures  
Creation of migration procedures completed  
Creating jConnect procedures  
Creation of jConnect procedures completed

## **Sybase Central enhancements**

The following enhancements affect Sybase Central or the IQ plug-in for Sybase Central.

### **Query timeout value added to plug-in preferences**

You can now specify that IQ stop connections made through the plug-in after a certain time period if a query server becomes unresponsive. The Plug-in Preferences dialog box now includes a Query Timeout value. For details, see the IQ plug-in online help.

### **Remote servers can be tested before they are created or modified**

The Remote Server Creation wizard in Sybase Central has a Test Connection button that allows you to test whether the connection information supplied in the remote server definition allows you to connect successfully before the remote server is created.

The Remote Server property sheet in Sybase Central also has a Test Connection button that allows you to test whether you can successfully connect to a remote server if its properties are changed.

## Validate Database wizard added

The Sybase Central Validate Database wizard returns information about system tables in the IQ Catalog Store. (It returns no information about other system tables.) The wizard indicates the current table being validated, as well as the overall progress of the validation operation. In addition, for databases with checksums enabled, you can validate both tables and checksums at the same time.

## Limits, memory, and disk use changes

This section contains enhancements and behavior changes related to limits, memory, and disk use.

### Limits changed

The following limits have changed:

- Database size: The maximum database size is approximately the number of files times the file size on a particular platform, depending on the maximum disk configuration. Refer to your operating system documentation for kernel parameters that affect the maximum number of files.
- Maximum number of tables per database is now 4,293,918,719
- Maximum number of tables or views per query increased to 512.
- Maximum length of a SQL statement defaults to Catalog page size (not IQ page size) of connected database. This affects long commands such as RESTORE statements with many renamed databases. To run such commands, you can start the server with an increased -gp setting, although the default of -gp 4096 should generally be used.
- Number of rows per table: 248
- Field size:
  - 255 bytes for BINARY, VARBINARY
  - 32,767 for CHAR, VARCHAR

- Up to 512TB for 128KB pages or 1PB for 512KB pages for LONG BINARY, LONG VARCHAR

For a complete list of limits, see Chapter 8, “Physical Limitations” in the *Sybase IQ Reference Manual*.

## Data access mode changes

In Sybase IQ 12.6, `sp_iqrelocate` does not check for appropriate dbspace modes before running. It parses and executes the command even if the net result is that nothing moves. In 12.7, `sp_iqrelocate` checks for the existence of at least one dbspace in relocate mode and at least one dbspace in read-write mode immediately after parsing the target string. If the dbspace check fails, the command returns the error “There must be at least one read-write dbspace and one relocate dbspace to relocate data.”

You cannot alter a dbspace directly from read-write to read-only mode if there are active read-write transactions. You must first alter the dbspace to relocate mode and then alter it again to read-only mode after all read-write transactions that were active while the dbspace was read-write have completed.

## Security enhancements

Sybase IQ 12.7 offers many new security features, described in the following subsections and in “Multiplex enhancements” on page 8.

### Password authentication

You can implement password rules for Sybase IQ users and verify that new passwords comply with them as the `GRANT CONNECT` statement executes. For example, you could require that passwords include at least one digit. For details, see “`VERIFY_PASSWORD_FUNCTION` option” in the *Sybase IQ Reference Manual*.

## Sybase IQ Encrypted Column Option

Sybase IQ 12.7 supports user-encrypted columns with the addition of the ENCRYPT and DECRYPT functions and the LOAD TABLE ENCRYPTED clause. These functions permit explicit (via calls from the application) encryption and decryption of column data. Encryption and decryption key management is the responsibility of the application.

*Users must be specifically licensed to use the encrypted column functionality of the Sybase IQ Encrypted Column Option.*

For more information on column encryption and decryption in Sybase IQ, refer to the document *Encrypted Columns in Sybase IQ*.

## FIPS-certified security

On all supported Windows platforms except Windows CE, you can now use secure communication with FIPS 140-2 certified software from Certicom. For details, see Chapter 13, “Transport-Layer Security” in the *Sybase IQ System Administration Guide*.

Strong database encryption using FIPS 140-2 certified software from Certicom is also available on supported 32-bit Windows platforms.

## sa\_verify\_password system procedure added

Sybase IQ has added the sa\_verify\_password system procedure to verify the current user's password. For details, see “sa\_verify\_password procedure” in the *Sybase IQ Reference Manual*.

## Documentation changes

For this release, the *Sybase IQ Troubleshooting and Error Messages Guide* has been greatly expanded and divided into two publications. The error messages portion is now available only in online format as the *Sybase IQ Error Messages*. The remainder is a separate book called the *Sybase IQ Troubleshooting and Recovery Guide*.



A new document, *Encrypted Columns in Sybase IQ*, describes the column encryption option. For more information, see “Sybase IQ Encrypted Column Option” on page 26.



# New Features in Sybase IQ 12.6 ESDs

## About this chapter

This chapter provides an overview of the new features and behavior changes introduced in Sybase IQ 12.6 ESDs (Electronic Software Downloads). It provides brief descriptions of major and minor new features, with cross-references to locations where each feature is discussed in detail. These features are included in the Sybase IQ 12.7 product but are described in this separate section to clarify functionality for customers administering mixed-version multiplexes.

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## Data Definition Language (DDL) changes

This section contains new features and behavior changes related to Data Definition Language (DDL).

### Domain names are case insensitive

In Sybase IQ 12.5, user-defined data types (domains) were case sensitive in case-sensitive databases. For example, you could create domains *HIRE\_DATE* and *hire\_date*. Starting in Sybase IQ 12.6, domain names are case insensitive. Sybase IQ returns an error if you attempt to create a domain with the same name as an existing domain except for case.

## Multiplex enhancements

This section contains new features and behavior changes related to multiplex capability.

### Mixed-version multiplex restrictions

Any multiplex where all servers are not at the same version is a mixed-version multiplex. Upgrading Sybase IQ from version 12.5 to 12.6, for example, typically results in a mixed-version multiplex for a short period.

Please see “Before You Install” in Chapter 1 of the *Sybase IQ Installation and Configuration Guide* for details about running multiple IQ Agents on a mixed-version multiplex.

### Force drop behavior change on write server

If the `FORCE_DROP` option is set to 'ON', you cannot drop a join index on a multiplex write server. To force drop a join index on a multiplex write server, you must first start the server in single-node mode, and after the drop, restart only the write server.

## Multiplex permission changes

Starting with version 12.6 ESD 3, Sybase IQ restricts certain permissions by default. For details, see “Multiplex permissions overview” in Chapter 12, “Managing User IDs and Permissions” in the *Sybase IQ System Administration Guide*.

Prior to ESD 3, Sybase IQ allowed query servers to create and drop users, groups, and group memberships and to change permissions on objects created by write servers. This caused conflicts with permissions set by write servers.

The database options `MPX_GLOBAL_TABLE_PRIV` and `MPX_LOCAL_SPEC_PRIV` let you override the permission restrictions. For details, see “`MPX_GLOBAL_TABLE_PRIV` option” and “`MPX_LOCAL_SPEC_PRIV` option” in *Sybase IQ Reference Manual*.

## Start-up and connection changes

This section contains new features and behavior changes related to start-up and connection.

### New start\_asiq utility switches

The following command switches are new for 12.6:

- `-iqnotemp` lets you start a multiplex database without a temporary dbspace by creating a temporary file in place of the dbspace.
- `-iqnomain` means start the query server without opening the shared IQ Main Store.
- `-iqnolocalreplay` specifies that IQ *not* replay the local TLV log after synchronizing the multiplex.

For details, see “Starting the database server” in the *Sybase IQ Utility Guide*.

## Overriding IQ Agent Port Number

You can now override the IQ Agent port number when starting Sybase IQ on Windows or UNIX systems. For details, see “Overriding the IQ Agent Port Number” in Chapter 2, “Running Sybase IQ” in the *Sybase IQ System Administration Guide*.

## New parameter for IQ Agent start-up

In ESD3, an optional host parameter was added to the start-up command on UNIX for the IQ Agent. For details, see “Specifying the host for the IQ Agent on UNIX,” in the *Sybase IQ System Administration Guide*.

## ODBC applications reset LOGIN\_PROCEDURE database options

The following option settings are explicitly set by the Sybase jConnect driver and the iAnywhere ODBC driver in accordance with the ODBC specification:

- Time\_format = 'hh:nn:ss'
- Timestamp\_format = 'yyyy-mm-dd hh:nn:ss.sssss'
- Date\_format = 'yyyy-mm-dd'
- Date\_order = 'ymd'
- Isolation\_level = 0

These options overwrite settings by the LOGIN\_PROCEDURE database option. Because the ODBC specification mandates these option settings, ODBC applications, including DBISQL applications, must explicitly set these options to obtain different behavior. This can be done using the ODBC connection parameter InitString; for example:

```
iqdsn -wu foo -c  
"uid=dba;pwd=sql;eng=foo;InitString='SET OPTION  
PUBLIC.DATE_ORDER = ' ' DMY ' ' ' ' "
```

## Query enhancements, optimization, and changes

This section contains enhancements and behavior changes related to queries.

## GROUP\_MEMBER function added

The GROUP\_MEMBER function identifies whether a user belongs to the specified group. For details, see “GROUP\_MEMBER function [System]” in the *Sybase IQ Reference Manual*.

## Stored procedure language enhancements

The enhancements and behavior changes in this section affect system stored procedures. For details, see Chapter 10, “System Procedures” in the *Sybase IQ Reference Manual*.

### Specifying index type for sp\_iqcheckdb

In ESD 4, the new parameter *indextype* was added to specify an index type for all of the sp\_iqcheckdb modes. For details, see “sp\_iqcheckdb procedure,” in the *Sybase IQ Reference Manual*.

### sp\_iqversionuse procedure added

The sp\_iqversionuse system stored procedure was added to help troubleshoot situations where the databases uses excessive storage space due to multiple table versions. For details, see “sp\_iqversionuse procedure,” in the *Sybase IQ Reference Manual*.

### sp\_iqaddlogin behavior change

A userid/password created using sp\_iqaddlogin and set to expire in one day is now defined as valid all day tomorrow and invalid on the following day. In other words, a login created today and set to expire in  $n$  days will not be usable once the date changes to the day  $(n+1)$ .

### sp\_iqlistpasswordexpirations behavior change

The sp\_iqlistpasswordexpirations stored procedure output changed in ESD 3. For details, see “sp\_iqlistpasswordexpirations procedure,” in the *Sybase IQ Reference Manual*.

## New database option **DEFAULT\_HAVING\_SELECTIVITY**

A new database option, **DEFAULT\_HAVING\_SELECTIVITY**, sets the selectivity for **HAVING** clauses, overriding optimizer estimates. For details, see “**DEFAULT\_HAVING\_SELECTIVITY** option” in the *Sybase IQ Reference Manual*.

## New database option **MIN\_SMPDJ\_OR\_HPDI\_FILTERED\_PPM**

**Description** A new database option, **MIN\_SMPDJ\_OR\_HPDI\_FILTERED\_PPM**, specifies the minimum percentage of rows that must remain after all simple local predicates (expressed in parts per million) before the optimizer can consider using either the hash push-down join (HPDI) or sort-merge push-down join (SMPDJ) algorithms. For details, see “**MIN\_SMPDJ\_OR\_HPDI\_FILTERED\_PPM** option” in the *Sybase IQ Reference Manual*.

## New database option **MIN\_NLPDJ\_FILTERED\_PPM**

**Description** A new database option, **MIN\_NLPDJ\_FILTERED\_PPM**, specifies the minimum percentage of rows that remain after all simple local predicates (expressed in parts per million) before the optimizer can consider using the nested-loop push-down join (NLPDJ) algorithm. For details, see “**MIN\_NLPDJ\_FILTERED\_PPM** option” in the *Sybase IQ Reference Manual*.

## Data load, update, and extraction enhancements

This section discusses enhancements and behavior changes related to data load, update, and extraction facilities.



## Large Objects Management procedures added

In ESD 4, two stored procedures were added to control the compression (done when writing database buffers to disk) for columns of data type LOB: `sp_iqsetcompression` and `sp_iqshowcompression`. This functionality saves CPU cycles because certain data formats stored in a LOB column (such as *.jpg* files) are already compressed and gain nothing from additional compression.

For information on the procedures and the Large Objects Management option, see *Large Objects Management in Sybase IQ*, which is included in the Sybase IQ documentation set.

To install this feature, you must enter a license key provided in *Sybase IQ Large Objects Management Option Installation Key*, a paper document you receive when you purchase the Large Objects Management option.

## New select statement delimiter in INSERT...LOCATION

You can use either curly braces { } or single quotation marks to delimit the SELECT statement within an INSERT...LOCATION statement. Curly braces represent the start and end of an escape sequence in the ODBC standard, and may generate errors in the context of ODBC.

## CONVERSION\_ERROR option behavior change

When the CONVERSION\_ERROR option is set ON, each thread doing data conversion for a LOAD statement now writes at most one warning message to the *.iqmsg* file. For details, see “CONVERSION\_ERROR option [TSQL]” in the *Sybase IQ Reference Manual*.

## LOAD\_ZEROLENGTH\_ASNULL option added

The LOAD\_ZEROLENGTH\_ASNULL database option added to 12.6 ESD 4 lets you specify LOAD statement behavior when the following conditions both apply:

- You are inserting a zero-length data value into a column of data type CHAR, VARCHAR, LONG VARCHAR, BINARY, VARBINARY, or LONG BINARY

- A NULL column-spec (For example, NULL(ZEROS) or NULL(BLANKS)) is also given for that same column.

For details, see “LOAD\_ZEROLENGTH\_ASNULL option” in the *Sybase IQ Reference Manual*.

## Sybase Central enhancements

This section contains new features and behavior changes that affect the Sybase Central graphical user interface for Sybase IQ server administration.

### Moving the message file in Sybase Central

Sybase Central now provides a way to specify the location of the *.iqmsg* file for a query server if you do not want it to default to the same directory as the catalog database. On the Temporary DB Information page, select the Override Default File Paths check box. In the Specify the Path to the Message Files pop-up box, type a new path to the *.iqmsg* file. You can then create the query server.

### IQ UNIQUE field added to Sybase Central

As of ESD 4, you can add IQ UNIQUE constraints on the Sybase Central column properties page. To edit column properties, see “Working with column defaults in Sybase Central” in the *Sybase IQ System Administration Guide*.

## Limits, memory, and disk use changes

This section contains enhancements and behavior changes related to limits, memory, and disk use.

## Managing thread allocation

Sybase IQ 12.6 featured a new algorithm to avoid running out of threads. When the algorithm is used (the default), the IQ optimizer assigns a thread quota to each table that contains invariant predicates, based on the row counts after high selectivity filters. In ESD 4, the `ENABLE_THREAD_ALLOWANCE` option was added to let users control when the optimizer uses the algorithm. For details, see “`ENABLE_THREAD_ALLOWANCE` option” in the *Sybase IQ Reference Manual*.

## Server performance enhancements

This section contains enhancements and behavior changes related to server performance.

### HG delete performance

Sybase IQ includes performance enhancements for delete batch processing. The `HG_DELETE_METHOD` option lets you specify which of three algorithms to apply to the delete. If no algorithm is specified, the version 12.6 cost model considers many factors, including I/O costs, CPU costs, available resources, index metadata, parallelism, and predicates available from the query. See “`HG_DELETE_METHOD` option” in the *Sybase IQ Reference Manual* for details.



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