SYBASE®

New Features in Sybase IQ 12.6

Sybase® IQ

12.6

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Contents

About This Book

Sybase® IQ is a high-performance decision support server designed specifically for data warehouses and data marts. This book, *New Features in Sybase IQ 12.6*, describes new features in Sybase IQ 12.6.

Audience

This manual 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.

Related documents

The following documents comprise the Sybase IQ documentation set:

- *Introduction to Sybase IQ*

  Read and try the hands-on exercises if you are unfamiliar with Sybase IQ, with the Sybase Central™ database management tool.

- *Sybase IQ Performance and Tuning Guide*

  Read to understand query optimization, design, and tuning issues for very large databases.

- *Sybase IQ Reference Manual*

  Read for a full description of the SQL language, stored procedures, data types, and system tables supported by Sybase IQ.

- *Sybase IQ System Administration Guide*

  Read to manage the IQ Store.

- *Sybase IQ Troubleshooting and Error Messages Guide*

  Read to solve problems, perform system recovery and database repair, and understand both IQ error messages which are referenced by SQLCode, SQLState, Sybase error code, and message text, and SQL preprocessor errors and warnings.

- *Sybase IQ Utility Guide*

  Read for Sybase IQ utility program reference material, such as available syntax, parameters, and options.

- *Large Objects Management in Sybase IQ*

Read to understand storage and retrieval of Binary Large Objects (BLOBs) and Character Large Objects (CLOBs) within the Sybase IQ data repository.

- *Sybase IQ Installation and Configuration Guide*

  Read the edition for your platform before and while installing Sybase IQ, when migrating to a new version of Sybase IQ, or when configuring Sybase IQ for a particular platform.

- *Sybase IQ Release Bulletin*

  Read just before or after purchasing Sybase IQ for last minute changes to the product and documentation. Read for help if you encounter a problem.

Note 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.

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 Error Messages*

  This book lists all Adaptive Server Anywhere error messages with diagnostic information.

- *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 9.0.1 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/.

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. Select Products from the navigation bar on the left.
3. Select a product name from the product list and click Go.
4. Select the Certification Report filter, specify a time frame, and click Go.
5. Click a Certification Report title to display the report.

❖ **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 UPPER CASE. However, SQL keywords are case insensitive, so you can enter keywords in any case you wish; SELECT is the same as Select which is the same as select.
- **Placeholders** Items that must be replaced with appropriate identifiers or expressions are shown in *italics*.
- **Continuation** Lines beginning with ... 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 (three dots). One or more list elements are allowed. If more than one is 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 ]
  ```

  It indicates that the *savepoint-name* is optional. The square 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 ]
  ```

  It indicates that you can choose one of ASC, DESC, or neither. The square 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 }
  ```

  It indicates that exactly one of 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.
emphasis	Emphasized words are shown in italic.
file names	File names are shown in italic.
database objects	Names of database objects, such as tables and procedures, are shown in bold, san-serif type in print, and in italic online.

The sample database

Sybase IQ includes a sample database, which many of the examples in the IQ documentation use.

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 12.6 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 *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.

Note 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 *Introduction to Sybase IQ*.

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.

CHAPTER 1

New Features in Sybase IQ 12.6

About this chapter

This chapter provides an overview of the new features and behavior changes introduced in Sybase IQ 12.6. It provides brief descriptions of major and minor new features, with cross references to locations where each feature is discussed in detail.

Categories of new features and behavior changes covered in this chapter are:

Major themes of Sybase IQ 12.6

Sybase IQ 12.6 addresses four central themes. Follow the links for a description of each feature; read through the entire chapter for a complete overview of new and enhanced features and behavior changes.

Real-time analytics

Sybase IQ 12.6 helps you make instantaneous decisions on a seamless view of operational and historical data. Several new features improve compatibility and performance when you use Sybase IQ together with Adaptive Server Enterprise.

- "IDENTITY/AUTOINCREMENT columns" on page 5
- "Permanent table creation with SELECT INTO (behavior change)" on page 6
- "CHECK constraints enforced (behavior change)" on page 7
- "Constraints can now be named" on page 6
- "Owner specification with temporary tables (behavior change)" on page 8
- "Subqueries supported in SELECT lists and SET clauses" on page 21
- "Improved query optimization" on page 22
- "Positioned UPDATE and DELETE (updatable cursors)" on page 32
- "Improved performance for INSERT...VALUE statements" on page 54

Complex analytics

Several new features support the very large data warehouse (VLDW) trend of data explosion and risk management:

- "Large Objects Management option extended" on page 7
- "Multiplex intermediate versioning" on page 11
- "Subqueries support quantified comparison predicates" on page 20
- "UNION ALL view performance" on page 21
- "Infer_Subquery_Predicates option" on page 22

- "DATEPART query optimization" on page 23
- "Optimization of expressions" on page 25
- "Web services" on page 38
- "XML support" on page 60
- "Extended stored procedures" on page 27

Tools for faster application development and easier administration

This version offers better tools for developing applications and managing your IQ data warehouse:

- "Index rebuild capability" on page 6
- "Different IQ versions on nodes after upgrade" on page 12
- "Multiplex login management" on page 12
- "Query prioritization" on page 20
- "Index advisor" on page 20
- "Query timer limit" on page 20
- "Directory specification for HTML query plans" on page 25
- "Stored procedure language enhancements" on page 27
- "Data load, update, and extraction enhancements" on page 30
- "Logging index information" on page 30
- "Data conversion changes" on page 30
- "Interactive SQL enhancements" on page 44
- "Sybase Central enhancements" on page 47
- "Catalog Store temporary space" on page 51
- "Dbspace management enhancements" on page 35
- "Backup performance improvement" on page 36
- "Emergency recovery option" on page 37
- "DBCC (sp_iqcheckdb) progress messages" on page 38
- "Controlling placement of buffer cache monitor output files" on page 37

Compliance with standards and regulations

Sybase IQ 12.6 addresses industry and governmental standards in several ways:

- "Subqueries supported in SELECT lists and SET clauses" on page 21
- "Data type conversion functions" on page 30
- "Accessibility features" on page 55
- "Security enhancements" on page 52

Data Definition Language (DDL) changes

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

Concurrent DDL support changed

Users may now perform concurrent DDL operations on objects within the same database at the same time, as long as the operations are not on the same table. In previous versions of IQ, locking occurred at the database level, not the table level. For more information, see "How locking works" in Chapter 10, "Transactions and Versioning" of the *Sybase IQ System Administration Guide*.

IDENTITY/AUTOINCREMENT columns

Sybase IQ now supports IDENTITY columns. An IDENTITY or AUTOINCREMENT column is a unique identifier for incoming data. It acts as a primary key for data that has no other primary key. The column stores a sequential value—for example, an invoice number or employee number—that is generated automatically and is never reused, even when rows are deleted from the table.

Many applications require a unique identifier, so that a unique record can be created for data coming into the database from multiple sources at different times of the day. An identity column is an easily maintained means of providing a unique identifier, and is consistent with Adaptive Server Enterprise.

Sybase IQ supports a single IDENTITY/AUTOINCREMENT column per table.

To insert values into or to update an IDENTITY/AUTOINCREMENT column, you must set the IDENTITY_INSERT option equal to the tablename. For example, if you use the table employees to run explicit inserts:

```
SET TEMPORARY OPTION IDENTITY_INSERT = 'employees'
```

To create a unique HG index on each IDENTITY_INSERT column you must set the IDENTITY_ENFORCE_UNIQUENESS option ON.

For more information, see CREATE TABLE statement, IDENTITY_INSERT option, IDENTITY_ENFORCE_UNIQUENESS option, and "Global variables" in the *Sybase IQ Reference Manual*.

Index rebuild capability

A new stored procedure, sp_iqrebuildindex, reduces cache usage, reclaims storage space, and improves query performance by rebuilding default indexes into one-byte or two-byte FP indexes. This feature allows you to execute queries during index rebuilds. For details, see "sp_iqrebuildindex procedure" in the *Sybase IQ Reference Manual*.

Permanent table creation with SELECT INTO (behavior change)

Sybase IQ 12.6 allows you to create a permanent base table when you select into more than one column and do *not* use the *#table* variable.

As in previous releases, SELECT... INTO *#table* always creates a temporary table regardless of the number of columns, and SELECT... INTO *table* with just one column selects into a host variable. For details, see Chapter 6, "SQL Statements" in *Sybase IQ Reference Manual*.

Maximum size of CHAR data increased

The maximum length of CHAR data strings has been increased to 32KB - 1 in Sybase IQ 12.6. This limit applies to column definitions, input data, and storage. Only the default index, WD, and CMP index types are supported for CHAR columns over 255 bytes. For more information, see Chapter 4, "SQL Data Types" in *Sybase IQ Reference Manual*.

Constraints can now be named

Check constraints, unique constraints, and referential integrity constraints can now be assigned names. This permits modification of table and column constraints by changing individual constraints, rather than by modifying an entire table constraint. Named constraints are an Adaptive Server Enterprise compatibility feature. For more information, see ALTER TABLE statement and CREATE TABLE statement in *Sybase IQ Reference Manual*.

CHECK constraints enforced (behavior change)

Sybase IQ 12.6 enforces column and table CHECK constraints, which you can use to allow arbitrary conditions to be verified. Column-level constraints can only reference the column on which they are defined. If the constraint also references more than one column in the table, a table constraint must be used.

The UNENFORCED keyword is no longer supported on check constraints. Supported constraints previously not enforced are now enforced on updates, inserts, and loads of new data. Constraints are not enforced on existing data. Some constraints are not supported by Sybase IQ; an error is now reported for unsupported constraints.

For restrictions and changes, see the ALTER TABLE statement, CREATE TABLE statement, and the CHECK CONSTRAINTS option on the LOAD TABLE statement in *Sybase IQ Reference Manual*.

Note If you have databases created with a previous version of Sybase IQ, you should run the sp_iqprintconstraints procedure to list all IQ tables and columns in a format that allows you to recreate them after they are deleted. You can then run the sp_iqdropconstraints procedure, if you want to drop all constraints on all IQ tables in the database. For more information, see the chapter "Migrating Data from Prior Versions" in your *Sybase IQ Installation and Configuration Guide*.

Large Objects Management option extended

The specially licensed Large Objects Management option has been extended to include support of Character Large Object (CLOB) data, in addition to Binary Large Object (BLOB) data.

In addition to the functions added to support BLOB data, BYTE_LENGTH64, BYTE_SUBSTR64, and BYTE_SUBSTR, four new functions support CLOB data: BIT_LENGTH, OCTET_LENGTH, CHAR_LENGTH64, and SUBSTRING64. The BIT_LENGTH and OCTET_LENGTH functions support all data types.

The IQ data extraction facility has been enhanced with the new BFILE function, which allows you to extract individual BLOB and CLOB cells to individual operating system files on the server. BFILE can also be used without the data extraction facility.

For information on 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.

Owner specification with temporary tables (behavior change)

To create a local temporary table, the owner specification must be omitted. If you include the owner specification when creating a temporary table, for example, `CREATE TABLE dbo.#temp(col1 int)`, a base table is incorrectly created. This behavior is not new, but was not documented previously.

When you declare a local temporary table, omit the owner specification. If you specify the same owner.table in more than one DECLARE LOCAL TEMPORARY TABLE statement in the same session, a syntax error is reported. This behavior is a change from previous versions.

CREATE FUNCTION and ALTER FUNCTION now permit Transact-SQL syntax

You can now create user-defined functions in the Transact-SQL dialect that return a scalar value to the calling environment. CIS functional compensation performance considerations apply to all user-defined functions. For more information see CREATE FUNCTION statement in *Sybase IQ Reference Manual*, or ALTER FUNCTION in *Adaptive Server Anywhere SQL Reference*.

DROP statement parameters

The parameters EVENT and MESSAGE have been added to the DROP statement. For more information, see Chapter 6, “SQL Statements” in the *Sybase IQ Reference Manual*.

Database password case sensitivity is independent of database case sensitivity

The CREATE DATABASE statement allows you to specify whether passwords are to be case sensitive or case insensitive. The case sensitivity setting for passwords is independent of the database case sensitivity setting used for string comparisons. The new CaseSensitivePasswords database property allows you to check the password case sensitivity setting for a database.

For more information, see CREATE DATABASE statement in *Sybase IQ Reference Manual*.

BLANK PADDING OFF (behavior change)

CREATE DATABASE no longer supports BLANK PADDING OFF for new databases. This change has no effect on existing databases.

Sybase recommends that you change any existing columns affected by BLANK PADDING OFF, to ensure correct join results. Recreate join columns as CHAR data type, rather than VARCHAR. CHAR columns are always blank padded. You can test the state of existing databases using the BlankPadding database property:

```
select db_property ( 'BlankPadding' )
```

Catalog page size 4KB minimum

The CREATE DATABASE statement enforces a minimum PAGE SIZE value of 4096 bytes (4KB) for the size of the Catalog page. If you specify a size smaller than 4096, IQ creates a database with a Catalog page size of 4096.

Unique identifier support

Sybase IQ supports unique identifiers (UUIDs and GUIDs). UUIDs (universally unique identifiers) and GUIDs (globally unique identifiers) are a mechanism for uniquely identifying rows, even across distinct databases in a synchronization environment. For best performance, avoid using the unique identifiers in predicates, as these identifiers are currently supported through CIS functional compensation.

COMMENT statement changed (behavior change)

Previously, the syntax for COMMENT ON INDEX included an optional owner name of the index. The index name can now optionally include the owner and table. The syntax for COMMENT ON INDEX is now:

COMMENT ON INDEX [[*owner*.]*table*.]*index-name* **IS** *comment*

For more information, see Chapter 6, "SQL Statements" in *Sybase IQ Reference Manual*.

New system tables

Several new system tables have been added:

- SYSCHECK and SYSCONSTRAINT apply to both the IQ Store and the Catalog Store. For more information, see "SYSCHECK system table" and "SYSCONSTRAINT system table" in *Sybase IQ Reference Manual*.
- SYSHISTORY, SYSATTRIBUTE, and SYSATTRIBUTENAME contain information about Adaptive Server Anywhere features that relate to the Catalog Store only.

Databases can hold more procedures The primary key values for the SYSPROCEDURE, SYSPROCPARM, and SYSPROCPERM system tables have been changed from SMALLINT to UNSIGNED INT. This change increases the number of procedures that a database can hold.

For more information about the number of procedures a database can hold, see Chapter 8, "Physical Limitations" in *Sybase IQ Reference Manual*.

To use this feature, you must upgrade the database file format.

PRESERVE_SOURCE_FORMAT option

This new option controls whether the original source definition of procedures, views, and event handlers is saved in system files. The formatted source column in the appropriate system tables allows you to view the definitions with the spacing, comments, and case that you want. For more information, see "PRESERVE_SOURCE_FORMAT option [database]" in *Sybase IQ Reference Manual*.

Multiplex enhancements

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

Query server persistent tables

You can now create base tables and store data in them that persists after you disconnect. Create these base tables in the local IQ Main Store, a collection of dbspaces owned by the query server. Operations on such tables will not have global effect, so users can continue development operations on a query server without impacting the shared main storage.

Query servers also no longer need to be synchronized after the write server executes DDL on the shared IQ Main Store. Query server synchronization is required only for:

- Creating new query servers
- Restoring query servers
- Restarting an excluded query server

To support this new functionality, the new database option LOCAL_RESERVED_DBSPACE_MB was added. The stored procedures sp_iqcheckdb, sp_iqtable, sp_iqdbsize, and sp_iqspaceinfo have new input arguments, and the stored procedures sp_iqtable, sp_iqcolumn, sp_iqconstraint, and sp_iqindex have new output columns. For more information, see Chapter 2, “Database Options” and Chapter 9, “System Procedures” in *Sybase IQ Reference Manual*.

Multiplex intermediate versioning

When the oldest running transaction on a query server changes, IQ replicates the updated information to the write server. This information can be recorded when a transaction commits, rolls back, or closes its last active cursor. For more information, see *Sybase IQ System Administration Guide*.

Multiplex login management

The IQ login management stored procedures (sp_iqaddlogin, etc.) have been enhanced to manage user logins in the multiplex environment. On any server in the multiplex environment, user passwords can be set to expire at a certain time, a user can be locked out of a database, and a user can change his password and reset the expiration time. This feature requires that all servers in the multiplex are running IQ 12.6 and the database is upgraded. For more information, see *Sybase IQ System Administration Guide*.

Different IQ versions on nodes after upgrade

In Sybase IQ 12.6, you can deploy new releases on one server of an existing multiplex without interrupting other servers. The write server must be the last node updated to version 12.6.

Note New 12.6 features are only completely available after all servers are upgraded to 12.6.

Sybase IQ 12.5 and Sybase IQ 12.6 require different versions of the IQ plug-in, the IQ Agent, the Sybase Central Toolkit, and the Java Runtime Environment. For related information, see “Controlling IQ Agent port number” on page 48.

For upgrade instructions and supported components, see *Sybase IQ Installation and Configuration Guide*.

Startup and connection changes

This section contains new features and behavior changes related to startup and connection.

Changes to server command line options

Character set translation enabled by default (behavior change) In previous versions, character set translation was turned off by default and you had to specify the -ct command line option to enable character set translation. Character set translation is now enabled by default, but can be disabled using the -ct- command line option.

When the server determines that the connection's character set differs from the database's character set, the server applies character set translation to all the character strings sent to and from the server for that connection.

The server disables character set translation for a connection when it determines that the database and the connection have equivalent character sets.

In most cases, character set translation should be enabled. One possible change in behavior occurs when binary data is inserted into a database and is fetched as character data, or vice versa. In this case, the data may not be returned exactly as it was entered because the server applies character set translation only to character data. To avoid this problem, applications should not send or fetch character data using a binary type.

For more information, see Chapter 1, “Running the Database Server” in *Sybase IQ Utility Guide*.

-cw command line option This server option lets you use Catalog Store cache sizes up to 64 GB on Windows 2000, Windows XP, and Windows Server 2003.

For more information, see Chapter 1, “Running the Database Server” in *Sybase IQ Utility Guide*.

Dynamic Catalog cache sizing more aggressive (behavior change) Dynamic cache sizing for the Catalog Store is now more aggressive at resizing the cache after a new database is started or when a file grows significantly. Prior to this change, statistics were sampled and the cache was resized at most once per minute. Now, after a database is started or a file grows significantly, statistics are sampled and the cache may be resized every five seconds for thirty seconds. To ensure appropriate behavior, start your server with the recommended minimum or higher for -c. For more information, see Chapter 1, "Running the Database Server" in *Sybase IQ Utility Guide*.

-e option replaced by -ec (behavior change) The -e command line option and the -e option in the Data Source Utility, used to encrypt client/server communications, have been replaced by the -ec option. On the server, -ec simple uses the same encryption algorithm as -e in previous versions.

For more information on new encryption features, see "Security enhancements" on page 52.

-iqsmem server option is deprecated This option to specify unwired memory is not needed for any platform supported for version 12.6. It has been removed from the documentation, and from the IQ plug-in.

-d server option no longer supported (behavior change) As a result of enhancements to NetWare support, the -d server option is no longer required.

Server's quiet mode enhanced The server's quiet mode and error logging switches have been enhanced to allow the server to suppress a variety of messages. Additionally, the -qw option has replaced the -q option, and the -qi option has replaced the -Q option. For more information, see Chapter 1, "Running the Database Server" in *Sybase IQ Utility Guide*.

-qp and -qs options The -qp server option lets you suppress messages about performance in the database server window. On Windows servers, the -qs server option suppresses startup error dialogs. For more information, see Chapter 1, "Running the Database Server" in *Sybase IQ Utility Guide*.

Obtain the most recently prepared SQL statement for a connection The database server -zl command line option turns on capturing of the most recently prepared SQL statement for each connection to the database on a server. You can also turn on this feature using the sa_server_option stored procedure with the remember_last_statement setting.

When this feature is turned on, the LastStatement property function and the sa_conn_activity system procedure return the most recently prepared SQL statement for the current connection and all connections to the database on a server respectively.

For more information on -zl, see Chapter 1, "Running the Database Server" in *Sybase IQ Utility Guide*.

For more information on sa_conn_activity and sa_server_option, see Chapter 9, "System Procedures" in *Sybase IQ Reference Manual*.

For more information on the LastStatement property, see the *Adaptive Server Anywhere Database Administration Guide*.

START DATABASE statement allows log truncation on checkpoint and read-only mode, and password for strong encryption The START DATABASE statement now allows a database to be started either with log truncation on checkpoint enabled, or in read-only mode. It also lets you specify a key (password) to start a strongly encrypted database.

For more information, see START DATABASE statement [DBISQL] in Chapter 6, "SQL Statements" of the *Sybase IQ Reference Manual*.

Connection parameter changes

CommLinks ShMem connection parameter (use shared memory) replaces NONE Use CommLinks=ShMem to explicitly specify shared memory. As in previous versions of Sybase IQ, connections that do not specify a CommLinks connection parameter always attempt to connect over shared memory.

Connection errors abort process (behavior change) Previously, connection protocols listed in the CommLinks connection parameter were attempted one by one until a connection occurred. Now, if a connection error occurs during the process, it aborts the connection process immediately, regardless of whether or not all the listed protocols were tried.

SharedMemory tried first (behavior change) Previously, the ports specified in the LINKS= connection parameter were tried in the order in which they were specified. Now, if the SharedMemory (shmem) port is specified, it is tried first, followed by the other ports specified in the order in which they appear.

For more information, see "CommLinks connection parameter [Links]" in Chapter 4, "Connection and Communication Parameters" of the *Sybase IQ System Administration Guide*.

Default packet size change (behavior change) The default packet size for client/server communications has been changed from 1024 bytes to 1460 bytes.

For more information on packet size, see the -p server option in "Starting the database server" in the *Sybase IQ Utility Guide*, and "CommBufferSize connection parameter [CBSize]" in *Sybase IQ System Administration Guide*.

PrefetchBuffer connection parameter (behavior change) The default value has been increased from 32 to 64 (KB). This connection parameter lets you specify the maximum amount of memory for storing prefetched rows.

For more information, see "PrefetchBuffer connection parameter [PBUF]" in *Sybase IQ System Administration Guide*.

The network server supports the LocalOnly communication parameter [LOCAL] You can use the LocalOnly communication parameter [LOCAL] with the server. Running a server with the LocalOnly communication parameter set to YES allows the network server to run as a personal server without experiencing connection or CPU limits.

For more information, see "LocalOnly communication parameter [LOCAL]" in *Sybase IQ System Administration Guide*.

Database server registers with LDAP The database server can now register itself with an LDAP server, so that clients and the Locate Utility [DBLOCATE] can query the LDAP server to find it. This allows clients running over a WAN or through a firewall to find servers without specifying the IP address to find such servers. LDAP is only used with TCP/IP, and only on network servers.

For more information, see "LDAP communication parameter [LDAP]" in *Sybase IQ System Administration Guide*.

New communication parameters can improve network responsiveness The LazyClose and PrefetchOnOpen network communication parameters can improve performance on networks with poor latency or with applications that process many requests.

For information about these parameters, see "LazyClose connection parameter [LCLOSE]" and "PreFetchOnOpen communication parameter" in *Sybase IQ System Administration Guide*

Improved handling of a large number of connections (behavior change) The liveness timeout value now increases automatically when there are more than 200 connections in an effort to better handle a large number of connections.

For more information, see "Starting the database server" in *Sybase IQ Utility Guide* and "LivenessTimeout connection parameter [LTO]" in *Sybase IQ System Administration Guide*.

New LocalOnly connection parameter controls broadcasts You can use the LocalOnly connection parameter to connect only to a server on the local machine, if one exists. Setting LocalOnly=YES uses the regular broadcast mechanism, except that broadcast responses from servers on other machines are ignored.

For more information, see "LocalOnly communication parameter [LOCAL]" in *Sybase IQ System Administration Guide*.

Improved buffer size negotiation Buffer sizes can now be specified separately for both the client and the server. For more information, see "CommBufferSize connection parameter [CBSize]" in *Sybase IQ System Administration Guide*.

Communication compression A new type of communication compression can lead to improved performance if you are transferring data across networks with limited bandwidth, including some wireless networks, some modems, serial links and some WANs.

For more information, see the -pc and -pt server options in Chapter 5, "The Database Server," and the COMP and COMPTH connection parameters, in Chapter 3, "Client/Server Communications, in *Adaptive Server Anywhere Database Administration Guide*.

DEBUG connection parameter no longer supported (behavior change) The DEBUG connection parameter has been deprecated. You can still use LOG parameter to create a log file containing the debug information. As of version 12.6, `LOG=filename` does what `DEBUG=YES;LOG=filename` used to do.

For more information, see "LogFile connection parameter [LOG]" in *Sybase IQ System Administration Guide*.

UseUDP communication parameter no longer supported (behavior change) On the server side, you can specify DoBroadcast=NO. On the client side, you can specify the ClientPort communication parameter. For more information, see "DoBroadcast parameter [DBROAD]" and "ClientPort parameter [CPort]" in *Sybase IQ System Administration Guide*.

Port connection property removed (behavior change) The port connection property has been removed. Note that this is the *connection property*, not the port connection parameter.

Other connection enhancements

Server Location [dblocate] utility enhancements The Server Location [dblocate] utility now allows you to supply a host name or IP address to limit the search for database servers to a specific machine. As well, it supports a -n option that specifies that IP addresses are not to be resolved into machine names, which results in better performance.

For more information, see "The Server Location utility (dblocate)" in *Sybase IQ Utility Guide*.

WAITFOR statement This statement delays processing for the current connection for a specified amount of time or until a given time. For more information, see "WAITFOR statement" in *Sybase IQ Reference Manual*.

Suppress warnings on fetch operations The database server returns a wider range of fetch warnings than earlier versions. The ODBC configuration dialog allows you to suppress warning messages returned from the database server to ensure that they are handled properly for applications that are deployed with earlier versions of the software.

For more information, see "Configuring ODBC data sources" in *Sybase IQ System Administration Guide*.

Connectivity sample programs Sybase IQ now installs sample programs formerly in the *cxmp* directory in *samples/asa/c*. The samples in this directory illustrate using ESQL and C with Adaptive Server Anywhere. Because Adaptive Server Anywhere and Sybase IQ share common code, the samples can be adapted for use with IQ.

Connections persist across hibernation times Connections from embedded SQL, ODBC or OLE DB clients now persist while a computer hibernates. Previously, TCP/IP connections between a client and a server on the same machine would be dropped when the machine was woken from hibernation if the machine hibernated for longer than the liveness or idle timeout time.

RAISERROR statement allows connections to be disallowed This statement can now be used to disallow or limit connections. For more information, see Chapter 6, "SQL Statements" in *Sybase IQ Reference Manual*.

New connection limit (behavior change) The database server now allows one extra DBA connection above the connection limit, to allow a DBA to connect and drop other connections in case of an intentional or accidental denial-of-service.

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

Enhanced dbping The dbping utility has additional options to help diagnose connection problems. These include the ability to use ODBC to connect, and the ability to report connection, database, and server properties upon connection.

For more information, see “The Ping utility (dbping)” in *Sybase IQ Utility Guide*.

DEDICATED_TASK option When specified, a request handling task is dedicated to handling requests from a single connection. This pre-established connection allows you to gather information about the state of the database server if it becomes otherwise unresponsive. For more information, see “DEDICATED_TASK option” in *Sybase IQ Reference Manual*.

Client can specify idle timeout Each client can specify its own idle timeout using the IDLE connection parameter. Previously, all connections to a server used the same idle timeout. The `-ti` server command line option, which defaults to 4400 in start_asiq, continues to specify the default idle timeout for the server.

For more information, see “Idle connection parameter [IDLE]” in *Sybase IQ System Administration Guide*.

New server and connection properties The new IdleTimeout server property returns the default idle timeout value.

Two new connection properties have also been added. LivenessTimeout returns the liveness timeout of the connection, and IdleTimeout returns the idle timeout of the connection.

For more information, see *Adaptive Server Anywhere Database Administration Guide*.

NetBios unsupported (behavior change) The NetBios port is no longer supported. If you use NetBios, you should switch to TCP/IP.

IPX unsupported (behavior change) The IPX port is no longer supported. If you use IPX, you should switch to TCP/IP.

Query enhancements, optimization, and changes

This section contains enhancements and behavior changes related to queries.

Index advisor

An index advisor now generates messages when the optimizer would benefit from an additional index on one or more columns in your query. For details see "INDEX_ADVISOR option" in the *Sybase IQ Reference Manual*.

Query timer limit

In Sybase IQ 12.6, if you execute a query that takes longer than desired, the query is stopped with an appropriate error. For details, see "MAX_QUERY_TIME option" in the *Sybase IQ Reference Manual*.

Query prioritization

In Sybase IQ 12.6, you can assign some queries to start before others by assigning them a priority. For details, see the IQGOVERN_PRIORITY, IQGOVERN_MAX_PRIORITY, and IQGOVERN_PRIORITY_TIME options and the new IQGovernPriority column of sp_iqcontext in the *Sybase IQ Reference Manual*.

Subqueries support quantified comparison predicates

As of this release, the quantified comparison predicates, ANY and ALL, may be used in WHERE and HAVING clauses with comparison predicates to filter a table by comparing an expression with multiple values in a column produced by a subquery. Formerly, only subqueries that compared two single-value expressions were supported.

Subqueries supported in SELECT lists and SET clauses

Sybase IQ 12.6 includes expanded subquery capabilities to ease migration of Adaptive Server Enterprise applications. IQ now supports scalar subqueries (subqueries that return a single value) in two new locations:

- Within the SELECT list of query or an INSERT INTO ... SELECT statement, such as:

```
SELECT r.x, r.y,
   (SELECT MAX(t.o) FROM t ... WHERE t.y = r.y),
   (SELECT MAX(s.o) FROM s ... WHERE s.x = r.x)
FROM r
WHERE ...
```

- Within the SET clause of an UPDATE statement, for example:

```
UPDATE r
SETr.o= (SELECT MAX(t.o) FROM t ... WHERE t.y = r.y),
   r.s= (SELECT SUM(x.s) FROM x ... WHERE x.x = r.x)
WHERE r.a = 10
```

For details, see SELECT statement and UPDATE statement in the *Sybase IQ Reference Manual*.

GROUP BY ROLLUP and CUBE syntax (behavior change)

All columns (even one column) specified in a GROUP BY ROLLUP or GROUP BY CUBE clause must be enclosed within parentheses. The parentheses were not required syntax in previous releases. For more information, see SELECT statement in Chapter 6, “SQL Statements” in the *Sybase IQ Reference Manual*.

UNION ALL view performance

If a UNION ALL view has a very large number of arms or a very large number of columns in each arm, then an enhancement to the optimizer in this release significantly improves query performance when there are many unused view columns.

An enhancement to the optimizer in estimating the number of distinct values improves the performance of queries with a UNION ALL view on unscaled integer columns.

In this release, the GROUP BY over a UNION ALL view performance enhancement can be applied to queries with more than one view column in the argument of an aggregate function.

For more information on queries that reference UNION ALL views, see Chapter 4, "Managing System Resources" in the *Sybase IQ Performance and Tuning Guide*.

Improved query optimization

Optimization of queries has been improved by evaluating simple predicates before the optimizer selects a query plan, including join ordering, join algorithm selection, and grouping algorithm selection. A new database option EARLY_PREDICATE_EXECUTION controls whether simple local predicates are executed before query optimization. For more information, see "EARLY_PREDICATE_EXECUTION option" in Chapter 2, "Database Options" of the *Sybase IQ Reference Manual*.

NOEXEC option (behavior change)

When the new database option EARLY_PREDICATE_EXECUTION is ON, IQ executes the local predicates for all queries before generating a query plan, even when the NOEXEC option is ON. The generated query plan is the same as the runtime plan. For this reason, a NOEXEC query may take longer to run than in previous releases.

Infer_Subquery_Predicates option

The INFER_SUBQUERY_PREDICATES option controls the optimizer's inference of additional subquery predicates. This option was not documented in the previous release of IQ. For more information, see Chapter 2, "Database Options" in the *Sybase IQ Reference Manual*.

DATEPART query optimization

Queries with DATEPART function ranges or IN list predicates are now converted into queries with range predicates on DATE, TIME, or DATETIME columns or DATEPART equality predicates, so that the optimizer can use DATE, TIME, and DTTM indexes to process the queries. For more information on queries that match the criteria for this performance improvement, see the section "The Date (DATE), Time (TIME), and Datetime (DTTM) index types" in Chapter 6, "Using Sybase IQ Indexes" of the *Sybase IQ System Administration Guide*.

Allocating resources to queries (behavior change)

The database option MAX_IQ_THREADS_PER_TEAM lets you limit the number of threads allocated to a single operation. This option existed in the previous version, but was not enforced until Version 12.6. For more information, see "MAX_IQ_THREADS_PER_TEAM option" in the *Sybase IQ Reference Manual*.

Improving query performance for HG indexes

The new BT_PREFETCH_MAX_MISS option controls the way IQ determines whether to continue prefetching B-Tree pages for a given query. This option can be used to improve performance of queries using HG indexes that run more slowly than expected. For more information, see "BT_PREFETCH_MAX_MISS option" in the *Sybase IQ Reference Manual*.

STDDEV and VARIANCE (behavior change)

The STDDEV and VARIANCE aggregate functions no longer support the DISTINCT keyword. A syntax error is reported, if DISTINCT is used with STDDEV or VARIANCE. This change provides syntactic compatibility with Adaptive Server Anywhere and ANSI standards.

REPLACE function result column width (behavior change)

The REPLACE string function returns a different column width in Sybase IQ 12.6, if the replace string is wider than the search string. This change may alter the formatting of some reports. If you need to control the width of the resulting column when the replace string is wider than the search string, use the CAST function. For more information, see "REPLACE function [String]" in Chapter 5, "SQL Functions" of the *Sybase IQ Reference Manual*.

DATEFORMAT accepts character strings (behavior change)

The DATEFORMAT date and time function now accepts strings of data type CHAR and VARCHAR as the datetime expression to convert. Sybase IQ implicitly converts the character string to a date, time, or timestamp data type, so an explicit cast is no longer necessary.

CONVERT function extension

The CONVERT function has a new format style 365 that facilitates the conversion of date and datetime type data to and from either string or integer type data. For more information, see Chapter 5, "SQL Functions" in the *Sybase IQ Reference Manual*.

CASE statements

The ANSI standard allows two forms of CASE statements in stored procedures. While Sybase IQ allows both forms, if CASE is in the predicate, for best performance you must use the form shown in CASE statement in *Sybase IQ Reference Manual*.

If you require the other form (also called ANSI syntax) for compatibility with Adaptive Server Anywhere, see CASE statement Syntax 2 in *Adaptive Server Anywhere SQL Reference*.

Directory specification for HTML query plans

The new QUERY_PLAN_AS_HTML_DIRECTORY database option allows you to specify the directory into which IQ writes the HTML query plans. Used with the QUERY_PLAN_AS_HTML option, this new option provides additional security, as query plans can contain sensitive data. For more information, see Chapter 2, "Database Options" in the *Sybase IQ Reference Manual*.

Optimization of expressions

The new FPL_EXPRESSION_MEMORY_KB option controls the use of memory for the optimization of queries involving functional or arithmetic expressions against columns having enumerated storage. For more information, see Chapter 2, "Database Options" in the *Sybase IQ Reference Manual*.

Command statistics method no longer supported (behavior change)

The COMMAND_STATS database option and the sp_iqcommandstats system stored procedure are no longer supported by Sybase IQ.

New and changed functions

New function returns data type of an expression The EXPRTYPE function returns the data type of an expression. For best performance, avoid using the EXPRTYPE function in predicates, as CIS functional compensation performance considerations apply. For more information, see "EXPRTYPE function [Miscellaneous]" in *Adaptive Server Anywhere SQL Reference.*

Variable test function A new function VAREXISTS is available to test whether a user-defined variable has been created or declared with a given name. After this test, the variable can be created if necessary, and then used safely. For best performance, avoid using the VAREXISTS function in predicates, as CIS functional compensation performance considerations apply. For more information, see "VAREXISTS function [Miscellaneous]" in *Adaptive Server Anywhere SQL Reference*.

Three new values can be passed to the event_parameter function Three new values can be passed to the event_parameter function. ScheduleName returns the name of the schedule which fired the event. AppInfo returns the value of the connection_property('AppInfo') for the connection which caused the event. DisconnectReason returns a string indicating why the connection terminated.

For more information, see "EVENT_PARAMETER function [System]" in *Sybase IQ Reference Manual*.

Non-deterministic functions Functions that modify underlying data, or that rely on underlying data that may change during the course of query execution, can be declared NOT DETERMINISTIC. Functions that are declared this way are re-evaluated each time they are called during query execution. Otherwise, the function value is cached and reused for better performance. For best performance, avoid use of this feature in predicates, as CIS functional compensation performance considerations apply.

For more information, see CREATE FUNCTION statement in *Sybase IQ Reference Manual*.

User-defined functions (behavior change) User defined function parameters and return values are now cached. If a function is used several times within a SQL statement, the cached parameter values may result in the cached result being used, instead of the function being evaluated again. In previous releases, user-defined functions were re-evaluated each time they were needed. The new behavior provides more consistent results, but may change results compared to previous releases of the software.

Some functions treated as non-deterministic (behavior change) The RAND, NEWID, and GET_IDENTITY functions are treated as non-deterministic. This means that they do not always return the same result for a given set of parameters, or that they have other side effects on the underlying data. A consequence is that these functions are not cached during query execution.

New extended property function added The new db_extended_property() is similar to db_property() except that it also allows an optional property-specific string parameter to be specified. For more information, see "DB_EXTENDED_PROPERTY function [System]" in *Adaptive Server Anywhere SQL Reference.*

New embedded SQL function to obtain database properties The function db_get_property can be used to obtain database properties. For more information, see "db_get_property function" in *Adaptive Server Anywhere Programming Guide*.

Other query features

SELECT statements can operate on stored procedure result sets In SELECT statements, a stored procedure call can now appear anywhere a base table or view is allowed. However, CIS functional compensation performance considerations apply. For more information, see FROM clause on page 488 of *Sybase IQ Reference Manual*.

Unqualified table references with multiple matches are reported as syntax errors (behavior change) In previous releases, if a query contained a reference to a table without an owner name specified (an unqualified table reference) and if more than one match was possible on that table, the first match found was used. Unqualified table references now cause an error. See Chapter 6, "Database Error Messages" in *Sybase IQ Troubleshooting and Error Messages Guide*.

Square brackets can delimit identifiers You can use square brackets to delimit identifiers. Square brackets can always be used, regardless of the setting of the QUOTED_IDENTIFIER option.

For more information, see "Identifiers" in Chapter 3, "SQL Language Elements" in *Sybase IQ Reference Manual.*

New global variable compatible with Microsoft SQL Server A new global variable has been introduced to allow for Microsoft SQL Server compatibility. The @@fetch_status global variable is the same as the @@sqlstatus global variable, except that it returns the status of the most recent fetch in different values.

For more information, see "Global variables" in *Sybase IQ Reference Manual*.

Return empty string as a NULL string for TDS connections (behavior change) The TDS_EMPTY_STRING_IS_NULL option controls whether the server returns empty strings as a string containing one blank character or a NULL string for TDS connections. For more information, see "TDS_EMPTY_STRING_IS_NULL option [database]" in *Sybase IQ Reference Manual*.

Stored procedure language enhancements

Extended stored procedures Sybase IQ now supports extended stored procedures for sending electronic mail using the Microsoft Messaging API standard (MAPI) or the Internet standard Simple Mail Transfer Protocol (SMTP). These system procedures are implemented as extended stored procedures: each procedure calls a function in an external DLL.

For more information, see Chapter 7, "System Procedures and Functions," in *Adaptive Server Anywhere SQL Reference*.

EXECUTE IMMEDIATE supports queries that return result sets The EXECUTE IMMEDIATE statement can return a result set when you specify the WITH RESULT SET ON clause. This new feature allows more dynamic construction of statements inside stored procedures. The default setting is WITH RESULT SET OFF.

EXECUTE IMMEDIATE allows more flexible escape character processing A new option WITH ESCAPES OFF allows escape character processing to be suppressed. This feature makes it easier to construct dynamic statements that include file paths.

EXECUTE IMMEDIATE allows more control over identifier delimiters A new option WITH QUOTES overrides the current setting of the QUOTED_IDENTIFIER option.

For more information, see "EXECUTE IMMEDIATE statement [ESQL] [SP]" and "QUOTED_IDENTIFIER option [TSQL]" in *Sybase IQ Reference Manual*.

SET statement can be used to assign variable values You can now assign values to variables using the SET statement in Transact-SQL procedures.

Source format preserved for stored procedures The source format, including spaces and line breaks, is now stored in the database as a comment. This comment is used for procedure profiling.

MESSAGE statement enhancements A FOR CONNECTION clause has been added to the MESSAGE statement.

Also, a DEBUG ONLY clause has been added to the MESSAGE statement. When the DEBUG_MESSAGES option is set to ON, debugging messages appear for all stored procedures and triggers that contain a MESSAGE statement that includes the DEBUG ONLY clause.

For more information, see MESSAGE statement and DEBUG_MESSAGES option in *Sybase IQ Reference Manual*.

Extended support for variables in SQL statements Several statements have been made more flexible by permitting variables as well as constants in some locations. This is especially useful in stored procedures and batches, where variables can be declared and used. It provides functionality previously only available, in more cumbersome form, in EXECUTE IMMEDIATE.

The following statements have this extended support for variables:

- The TOP clause of the SELECT statement can now reference integer variables as well as constants.
- BACKUP statement *archive-device*.
- RESTORE statement *db-file*, *archive-device*, and *dbspace-name*.
- LOAD TABLE statement *filename*.

For more information, see Chapter 6, "SQL Statements" in *Sybase IQ Reference Manual*.

sa_make_object system procedure This system procedure can be used in a SQL script to ensure that a skeletal instance of an object exists before executing an ALTER statement which provides the actual definition.

For more information, see "sa_make_object system procedure" in *Adaptive Server Anywhere SQL Reference*.

Data load, update, and extraction enhancements

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

Logging index information

In Sybase IQ versions 12.5 and 12.6, the IQ message file (*.iqmsg*) file no longer prints by default some details for insert and delete operations. To send these additional details to the IQ message file, set the DDL_OPTIONS2 database option. For more information, see the *Sybase IQ Reference Manual.*

CHAR data storage size consistent with VARCHAR

The size of CHAR data for storage, column width definitions, and input data has been increased from 255 bytes to (32K-1) bytes. For details, see the *Sybase IQ Reference Manual*.

Data conversion changes

Implicit conversion of binary data to bit data

Sybase IQ now implicitly converts any binary value to a bit column on insertion. Non-zero values are converted to 1 and zero values are converted to 0. This behavior 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” of the *Sybase IQ System Administration Guide*.

Data type conversion functions

The ISDATE function tests if a string can be converted to a date. For more information, see “ISDATE function [Date and time]” in *Sybase IQ Reference Manual*.

The ISNUMERIC function tests if a string can be converted to a number. ISNUMERIC is processed by the Adaptive Server Anywhere portion of IQ, so CIS functional compensation performance considerations apply. For more information, see "ISNUMERIC function [Miscellaneous]" in *Sybase IQ Reference Manual*.

RETURN_DATE_TIME_AS_STRING database option added

RETURN_DATE_TIME_AS_STRING controls how a date, time, or timestamp value is passed to the client application when queried. All connections can now use this option. For more information, see "RETURN_DATE_TIME_AS_STRING option" in *Sybase IQ Reference Manual*.

MAX_CLIENT_NUMERIC_PRECISION option

MAX_CLIENT_NUMERIC_PRECISION controls the maximum precision for numeric data sent to the client. Setting this new option allows Open Client and some ODBC applications to handle wide numeric results correctly. For more information, see "MAX_CLIENT_NUMERIC_PRECISION option" in *Sybase IQ Reference Manual*.

MAX_CLIENT_NUMERIC_SCALE option

MAX_CLIENT_NUMERIC_SCALE controls the maximum scale returned for numeric data results. For more information, see "MAX_CLIENT_NUMERIC_SCALE option" in *Sybase IQ Reference Manual*.

NULL to NUMERIC conversion

If neither precision nor scale is specified for the explicit conversion of NULL to NUMERIC, the default is now NUMERIC(1,0). Previously, this conversion used the default precision and scale of the database. For more information, see "Numeric data types" in Chapter 4, "SQL Data Types" of the *Sybase IQ Reference Manual*.

Positioned UPDATE and DELETE (updatable cursors)

Sybase IQ now supports updating or deleting a row at the current position of a cursor using the WHERE CURRENT OF CURSOR *cursor-name* clause of the UPDATE or DELETE statement. The PUT statement inserts a new row in a cursor. The DECLARE CURSOR statement supports the FOR UPDATE OF *column-name-list* syntax. Sybase IQ supports only type of cursor sensitivity, asensitive, and ignores requests for other types.Updatable cursors are supported from ODBC using the SQLSetPos statement with UPDATE, DELETE, and INSERT.

A new database option, FORCE_UPDATABLE_CURSORS, specifies that cursors that have not been declared as updatable can be updated. This option allows updatable cursors to be used in front-end applications without specifying the FOR UPDATE clause of the DECLARE CURSOR statement.

For more information on updatable cursor support, see DECLARE CURSOR statement [ESQL] [SP], UPDATE (positioned) statement [ESQL] [SP], PUT statement [ESQL], and DELETE (positioned) statement [ESQL] [SP] in Chapter 6, “SQL Statements” and “FORCE_UPDATABLE_CURSORS option” in Chapter 2, “Database Options” of the *Sybase IQ Reference Manual*.

DECLARE CURSOR syntax (behavior change)

The DECLARE CURSOR statement does not support the UNIQUE and INSENSITIVE keywords. Use of these keywords does not cause an error; Sybase IQ ignores them. The UNIQUE and INSENSITIVE keywords have been removed from the documentation of the DECLARE CURSOR statement syntax in the *Sybase IQ Reference Manual*.

DEALLOCATE statement

The DEALLOCATE statement is provided for Adaptive Server Enterprise and Microsoft SQL Server compatibility, but with different behavior. Sybase IQ ignores this statement; it does not release resources associated with a cursor. For more information, see *Adaptive Server Anywhere SQL Reference*.

Increased security for data extraction

The new TEMP_EXTRACT_DIRECTORY database option controls whether a user is allowed to use the data extraction facility. The TEMP_EXTRACT_DIRECTORY option provides increased security and helps control disk management by restricting the creation of large data extraction files to only the directories for which a user has write access. For more information about this option, see Chapter 2, “Database Options” in the *Sybase IQ Reference Manual*. For more information about the data extraction facility, see “Data extraction options” in Chapter 7, “Moving Data In and Out of Databases” of the *Sybase IQ System Administration Guide*.

Column width when extracting null as zero (behavior change)

In Sybase IQ 12.6, if TEMP_EXTRACT_NULL_AS_ZERO is set to ON, the number of characters that an ASCII extract writes to a file for a CHAR or VARCHAR column equals the number of characters in the column. In version 12.5, this situation returned at least four characters. For more information, see “TEMP_EXTRACT_NULL_AS_ZERO option” in Chapter 2, “Database Options” of the *Sybase IQ Reference Manual*.

Extracting null as the empty string

The TEMP_EXTRACT_NULL_AS_EMPTY option controls the representation of null values in the output of the data extraction facility for ASCII extractions. When the TEMP_EXTRACT_NULL_AS_EMPTY option is set to ON, a null value is represented as '' (the empty string) for all data types. For more information about this option, which was not documented previously, see Chapter 2, “Database Options” in the *Sybase IQ Reference Manual*. For more information about the data extraction facility, see “Data extraction options” in Chapter 7, “Moving Data In and Out of Databases” of the *Sybase IQ System Administration Guide*.

Increased security for INSERT...LOCATION

The new INSERT...LOCATION statement parameter ENCRYPTED PASSWORD allows you to specify the use of password encryption when connecting to a remote server that supports Open Client Library default password encryption, such as Adaptive Server Enterprise.

When you connect to Adaptive Server Enterprise using INSERT...LOCATION, Sybase IQ identifies itself as the connecting program in the sysprocesses table in the ASE master database.

For more information on INSERT...LOCATION, see Chapter 6, "SQL Statements" in the *Sybase IQ Reference Manual*.

Administration and troubleshooting improvements

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

Dbspace management enhancements

Dbspace management has been enhanced to allow users to move IQ data off of disks and take the disks offline without any downtime. Key features include:

- Any dbspace can be dropped
- Improved disk striping
- Read-only Main dbspaces
- Dbspaces can be resized

New stored procedures, new database options, and SQL statements provide the interface to determine where objects reside and to relocate objects within the resource constraints of the database. For more information, see the appropriate chapters in the *Sybase IQ Reference Manual*.

- New stored procedures: sp_iqindexinfo, sp_iqdbspaceinfo, sp_iqrelocate, sp_iqdbspace in Chapter 9, "System Procedures"
- New database options: MAIN_KB_PER_STRIPE, TEMP_KB_PER_STRIPE in Chapter 2, "Database Options"
- New SQL statement: ALTER DBSPACE in Chapter 6, "SQL Statements"
- Changed SQL statements: CREATE DBSPACE, CREATE DATABASE, DROP (DBSPACE) in Chapter 6, "SQL Statements"

See also Chapter 5, "Working with Database Objects" in the *Sybase IQ System Administration 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 12.6.

The following options have been removed from version 12.6. All except USE_OLD_GROUPBY_ALGORITHM were never documented.

- ALLOW_REPLICATION_PKEY_UPDATE

- ALLOW_SYNC_PKEY_UPDATE
- USE_OLD_GROUPBY_ALGORITHM
- COMMAND_STATS_DUMP_FILE
- COMMAND_STATS_DUMP_FILE_FORMAT
- COMMAND_STATS_SAMPLING_PERIOD
- STRIPING_DENSITY

These options still exist in databases created before version 12.6, even if you run ALTER DATABASE UPGRADE.

Backup performance improvement

Backup performance has improved in this version through a combination of greater parallelism and fewer I/O operations. To take advantage of this performance improvement, set the BACKUP statement BLOCK FACTOR option to a value greater than or equal to 25. The greater the value of BLOCK FACTOR, the more efficiently IQ BACKUP performs writes to the archive device. If enough memory is available, Sybase recommends setting BLOCK FACTOR greater than 25.

Performance is also improved for restores from Sybase IQ 12.6 backups. A restore from a backup performed prior to version 12.6 cannot take advantage of the performance improvement, but the database is properly restored.

BACKUP syntax extended (behavior change)

The BACKUP statement now supports virtual backup with the two new parameters VIRTUAL DECOUPLED and VIRTUAL ENCAPSULATED. The new parameters perform the functions of the database options VIRTUAL_BACKUP and BACKUP_EXEC_CMD, which have been deprecated.

You can now perform incremental virtual backups using the new BACKUP syntax. The deprecated VIRTUAL_BACKUP database option is ignored for incremental backups.

For more information, see BACKUP statement in Chapter 6, “SQL Statements” of the *Sybase IQ Reference Manual* and Chapter 14, “Backup and Data Recovery” in the *Sybase IQ System Administration Guide*.

RESTORE checks raw device size (behavior change)

When restoring to a raw device, you need to make sure that the device is large enough to hold the dbspace you are restoring. IQ RESTORE now checks the raw device size and returns an error, if the raw device is not large enough to restore the dbspace. For more information, see "Restoring to a raw device" in Chapter 14, "Backup and Data Recovery" of the *Sybase IQ System Administration Guide*.

RESTORE DATABASE statement permissions (behavior change) A connection to the utility database is no longer required to execute a RESTORE DATABASE statement. The permissions required to execute a RESTORE DATABASE statement are controlled by the `-gu` command line option.

Emergency recovery option

Version 12.6 includes an option for restarting the server in the rare situation where there is no usable backup or transaction log, and no time to work with Sybase technical staff to develop alternatives. Before using this option, you must understand its implications for your database. For details, see "Emergency recovery without a transaction log" in Chapter 2, "System Recovery and Database Repair" of the *Sybase IQ Troubleshooting and Error Messages Guide*.

Transaction log mirror recommended
Sybase now recommends using a mirror log with IQ databases, especially for sites that do not back up frequently. To add a mirror log to an existing database, see "The Transaction Log utility (dblog)" in Chapter 3, "Database Administration Utilities" of the *Sybase IQ Utility Guide*.

Controlling placement of buffer cache monitor output files

A new database option, MONITOR_OUTPUT_DIRECTORY, lets you specify a directory for monitor output. Setting this option keeps your database root directory from filling up with monitor output. To set this option, see "MONITOR_OUTPUT_DIRECTORY option" in *Sybase IQ Reference Manual*.

DBCC (sp_iqcheckdb) progress messages

The new database option DBCC_LOG_PROGRESS option instructs the sp_iqcheckdb system stored procedure to send progress messages to the IQ message file. These messages allow the user to follow the progress of the sp_iqcheckdb operation. For more information, see "DBCC_LOG_PROGRESS option" in Chapter 2, "Database Options" of the *Sybase IQ Reference Manual*.

Windows Performance Monitor changes

For more information about the Windows Performance Monitor, see Chapter 6, "Tuning Servers on Windows Systems" in *Sybase IQ Performance and Tuning Guide*.

Web services

This release introduces Web services features, as well as XML features for the Catalog Store. A Web server is built directly in to the database. A flexible interface lets you retrieve data as XML and store XML data in the Catalog Store. Integration with Microsoft Visual Studio .NET through an ADO.NET provider rounds out the web services offerings. For more information, see "Web services" on page 38 and "XML support" on page 60.

HTTP server in the database Sybase IQ database servers can now act as web servers, allowing you to write and run web-based applications using only an IQ database and a web browser of your choice.

This feature allows the database server to handle standard HTTP and HTTPS requests, as well as standard SOAP requests. Service types available are HTTP, HTTPS, XML, RAW, SOAP, and DISH. DISH is a SOAP service handler.

To gain the benefits of this enhancement on databases created before this release, you must upgrade the database using ALTER DATABASE UPGRADE.

For more information, see "CREATE SERVICE statement" and "ALTER SERVICE statement"in the *Sybase IQ Reference Manual*.

Stack trace file change on HP platforms

Stack trace information on HP platforms is now written to the same file as the stack trace information on other UNIX platforms supported by Sybase IQ. The stack trace file name is *stktrc-YYYYMMDD-HHNNSS_#.iq* and is located by default in the directory where you start the database server.

Stack trace for each IQ thread

When the server is unresponsive, you can generate a stack trace for each IQ thread by creating a file named *DumpAllThreads* or *dumpallthreads* in the *$ASDIR/logfiles* directory (the *%ASDIR%\logfiles* folder on Windows platforms).

This feature was introduced in Sybase IQ version 12.5 ESD0002. For more information, see the section "Sybase IQ stops processing or stops responding" in the *Sybase IQ Troubleshooting and Error Messages Guide*.

stop_asiq parameter renamed (behavior change)

The stop_asiq parameter -force has been renamed to -stop. For more information on the stop_asiq utility, see Chapter 2, "Running Sybase IQ" in the *Sybase IQ System Administration Guide*.

time automatically resets (behavior change)

When the time changes, the server automatically resets the time setting. You do *not* have to stop and restart the server to change the time, for example, from Standard Time to Daylight Savings Time.

getiqinfo script prompts added

Previously, the getiqinfo script prompted users for engine name, User ID, and password to allow connection to an IQ server. Now it also prompts for host name and port number.

sp_iqspaceinfo_table procedure replaced

The new system stored procedure sp_iqindexinfo provides the information formerly displayed by the user defined stored procedure sp_iqspaceinfo_table.

New database properties and statistics

Database properties allow you to obtain information about connections and the current database server and database. Many properties available to Sybase IQ users apply only to Adaptive Server Anywhere or to the Catalog Store, for example, properties related to fragmentation, query plans and optimization, histograms, cache use, free pages, product version, indexes, and triggers. Properties that show the state of database options used in IQ, network communications, collation, and reads and writes, apply to IQ databases.

Several new properties are available in this release and summarized in this section, or with related features elsewhere in this chapter.

For more information about database properties at the connection, server, and database level, see *Adaptive Server Anywhere Database Administration Guide*.

New server property specifies how many concurrent users are connected to the IQ server The new LicensesInUse property determines the numbers of concurrent users currently connected to the IQ server. Each concurrent user is determined by the number of unique client network addresses connected to the server, not the number of connections. For example, if three client machines are connected to a server, and each client machine has two connections, `select property ( 'LicensesInUse' )` returns `'3'`.

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

Two new Catalog Store properties added Two new properties have been added: FileSize and FreePages. Each of these properties can take an optional argument which specifies the dbspace for which the property is being requested. These properties apply to Catalog Store dbspaces only.

For more information on database properties, see *Adaptive Server Anywhere Database Administration Guide*.

New startup command line server property The new server property CommandLine gives you the line that was used to start the server.

For more information, see “Server-level properties” in *Adaptive Server Anywhere Database Administration Guide*.

Two new server properties identify processor type Two new server-level properties have been added. ProcessorArchitecture identifies the processor type, and on platforms where a processor can be emulated NativeProcessorArchitecture identifies the native processor type.

For more information, see "Server-level properties" in *Adaptive Server Anywhere Database Administration Guide*.

New connection property returns the name of the communication link for the connection The new CommNetworkLink connection property returns the name of the communication link for the connection.

For more information, see "Connection-level properties" in *Adaptive Server Anywhere Database Administration Guide*.

Properties and statistics removed (behavior change) The ServerIdleWaits database property, and the TaskSwitch and CurrTaskSwitch connection properties have been removed, along with their corresponding performance monitor statistics: Context Switches, Server Idle Waits/sec, Request Queue Waits/sec.

Fragmentation statistics for Catalog Store File, table, and index fragmentation can all decrease performance. In Sybase IQ 12.6, when you start a database on Windows platforms, the server automatically displays information about the number of file fragments in each Catalog Store dbspace.

The new system procedure sa_table_fragmentation allows database administrators to obtain information about the fragmentation in Catalog Store tables. For more information, see *Adaptive Server Anywhere SQL Reference*.

Validating the Catalog Store

Fast Catalog Store validation A new type of validation check has been added that reduces the amount of time it takes to validate a Catalog Store. This option is of particular interest to people who need to validate databases with a large Catalog Store with a small cache size. Affected tools include the sa_validate system procedure and the Validation utility (dbvalid).

To use this feature on databases created before this release, you must upgrade the database.

The Validation utility gives more detailed return codes The Validation utility for the Catalog Store (dbvalid) gives more specific return codes to indicate the reason a failure occurs.

Service Creation [DBSVC] utility can now start and stop services

Two new options have been added to the Service Creation [DBSVC] utility. Dbsvc -u <*service_name*> starts the service named service_name, and *dbsvc -x* <*service_name*> stops the service named service_name. It also lists service name used to start and stop the service with the system net start and net stop commands, and handles dependencies on other services and groups

For more information, see Chapter 15, "Database Administration Utilities," in *Adaptive Server Anywhere Database Administration Guide*.

Remote data access enhancements

Remote Data Access now names remote connections Remote Data Access connections made via ODBC are now given names, so that they can be dropped.

For more information, see "Managing remote data access connections" in *Sybase IQ System Administration Guide*.

New sp_remote_primary_keys stored procedure In order to obtain primary key information about remote tables using remote data access, a new stored procedure called sp_remote_primary_keys has been added.

To gain the benefits of this enhancement on databases created before this release, you must upgrade the database using ALTER DATABASE UPGRADE.

For more information, see "sp_remote_primary_keys system procedure" in *Sybase IQ Reference Manual*.

sp_remote_tables system procedure A new argument, tabletype, has been added to the sp_remote_tables stored procedure. This argument returns the remote table's type.

For more information about the tabletype *argument*, see "sp_remote_tables system procedure" in *Sybase IQ Reference Manual*.

Remote Data Access now handles UUID/GUID columns Remote Data Access can now manage SQL Server unique identifier columns. For more information, see "Server class mssodbc" in *Sybase IQ System Administration Guide*.

Server logging and message enhancements

New ways to obtain server message window contents A new system procedure, sa_get_server_messages, and three new properties, MessageText, MessageTime, and MessageWindowSize, return information from the server window.

For more information about sa_get_server_messages, see *Adaptive Server Anywhere SQL Reference*. For more information about MessageText, MessageTime, and MessageWindowSize properties, see *Adaptive Server Anywhere Database Administration Guide*.

Server log name is consistent for all platforms The default server log name on Windows has been changed to *server.###.srvlog* to be consistent with the name on UNIX platforms. Previously the prefix on Windows was *.svrlog*.

Improved debugging server log The information logged in the connection debugger has been improved to give more context about the portion of the connection being attempted; to remove the CONN: prefix; to increase the number of TCP/IP messages.

Request log filtering, host variable support Output to the request-level log can now be filtered to include only requests from a specific connection or for a specific database. As well, host variable values can now be output to a request log.

For more information, see "sa_server_option system procedure" in *Sybase IQ Reference Manual*, and -zr server option in "Starting the database server," in *Sybase IQ Utility Guide*. See also "sa_get_request_profile system procedure," "sa_get_request_times system procedure," and "sa_statement_text system procedure" in *Adaptive Server Anywhere SQL Reference*.

The request-level log file size can be changed without restarting the database server On starting the database server, you can specify the size of the request-level log file with the -zs server option. You can use the sa_server_option system procedure to change the size of the request-level log file without restarting the database server.

For more information, see "Starting the database server" in *Sybase IQ Utility Guide* and "sa_server_option system procedure" in *Sybase IQ Reference Manual*.

Suppress TDS debugging option The SUPPRESS_TDS_DEBUGGING option controls whether TDS debugging information appears in the server window. For more information, see "SUPPRESS_TDS_DEBUGGING option" in *Sybase IQ Reference Manual*.

Performance messages now display database name (behavior change)
The engine performance advice messages now display the database name. Messages starting with the word *Note* indicate that they are advice messages.

dbdsn utility renamed iqdsn (behavior change)

The dbdsn command line utility for managing Sybase IQ ODBC data sources is now called iqdsn and is restricted to Sybase IQ data sources only.

OPTION settings validated (behavior change)

Integer options with minimum and maximum values are now validated. Setting an option to an invalid value gives the error `Invalid setting for option '%1'`.

If you run ALTER DATABASE UPGRADE on a database that contains invalid option settings, they are set to the closest legal value.

The affected options are listed in Table 1-1. The square brackets indicate an inclusive range.

Table 1-1: Validated integer options

Option	Range
ISOLATION_LEVEL	[0, 3]
PRECISION	[0, 127]
SCALE	[0, 127]
NEAREST_CENTURY	[0, 100]
MAX_HASH_SIZE	[2, 64]
MAX_WORK_TABLE_HASH_SIIZE	[2, 64]
FIRST_DAY_OF_WEEK	[1, 7]
DEFAULT_TIMESTAMP_INCREMENT	[1, 60 000 000]

Interactive SQL enhancements

Sybase IQ 12.6 includes many enhancements to Interactive SQL (Java), also called dbisql. For details on Interactive SQL, see Chapter 2, “Using Interactive SQL (dbisql)” in *Sybase IQ Utility Guide*.

Setting code page for READ AND OUTPUT statements Interactive SQL determines the code page that is used for a particular OUTPUT or READ statement as follows, where code page values occurring earlier in the list take precedence over those occurring later in the list:

- the code page specified in the ENCODING clause of the OUTPUT or READ statement
- the code page specified with the DEFAULT_ISQL_ENCODING option (if this option is set)
- the code page specified with the -codepage command-line option when Interactive SQL was started
- the default code page for the computer Interactive SQL is running on

For more information, see "DEFAULT_ISQL_ENCODING option [DBISQL]" in *Sybase IQ Reference Manual*.

OUTPUT statement accepts ASIS keyword The OUTPUT statement writes output to a file. When ASIS is specified, values are written to the file without any escaping.

Note The OUTPUT statement and OUTPUT_FORMAT option were incorrectly omitted from some version 12.5 documentation. The OUTPUT statement is useful in making the results of a query or report available to another application, but is not recommended for bulk operations. For high volume data movement, and to produce a file you can use for loads, use the ASCII and BINARY data extraction functionality with the SELECT statement. For more information, see OUTPUT statement [DBISQL], "OUTPUT_FORMAT option [ISQL],", "OUTPUT_LENGTH option [ISQL]," and "OUTPUT_NULLS option [ISQL]" in *Sybase IQ Reference Manual*.

Syntax highlighting editor in Interactive SQL You can configure the appearance of syntax typed in the SQL Statements pane of Interactive SQL using the Interactive SQL Options dialog.

Printing from Interactive SQL You can print the contents of the SQL Statements pane in Interactive SQL.

Row numbers can appear beside results in Interactive SQL Interactive SQL has an option to display row numbers beside results. This option can be set on the Results tab of the Interactive SQL options dialog.

Interactive SQL can be set as the default editor for .SQL files On Windows platforms, you can create a file association for *.SQL* files so that when you double-click the file, Interactive SQL is used to open the file.

Interactive SQL Command History dialog enhancements You can now copy and delete commands from the Command History dialog in Interactive SQL, as well as select multiple commands in the window. The command history now persists between Interactive SQL sessions.

Warning messages now have W prefix Prior to version 12.6, all warning and error messages had a prefix of I or E. Warning messages now have a prefix of W.

EXIT statement enhanced The Interactive SQL EXIT statement can now set an exit code for Interactive SQL. See "EXIT statement [Interactive SQL]" in *Adaptive Server Anywhere SQL Reference*.

Query Editor A graphical query editor has been added to Interactive SQL. With the Query Editor, you can create or edit SELECT statements without using SQL code. You can open the Query Editor in Interactive SQL by clicking Tools > Edit Query.

For more information, see SQL Anywhere Studio Help, Chapter 6, "Query Editor Help," available in SQL Anywhere Studio 9.0.1 Core Documentation Set at http://sybooks.sybase.com/onlinebooks/group-aw/awg0901e/.

Note All queries that you can create using the graphical Query Editor can also be entered directly as SQL statements, using your usual method.

Editable data in Interactive SQL and Sybase Central You can update the database by editing Interactive SQL result sets, and by editing tables and views in Sybase Central. You can copy, edit, insert, and delete row values.

Data displayed in Sybase Central can be copied to the clipboard.

For more information, see "Editing table values in Interactive SQL" in *Introducing SQL Anywhere Studio*.

Interactive SQL supports SQL escape syntax handling Interactive SQL now supports JDBC escape syntax that allows you to access a library of functions implemented by the JDBC driver. For more information, see "Using JDBC escape syntax" in *Adaptive Server Anywhere Programming Guide.*

Interactive SQL batch options Additional control is given to Interactive SQL when running batch files, through the `-codepage` and `-onerror` command line options. Also, the `-d1` command line option provides feedback useful for debugging batch files.

For more information, see Chapter 2, "Using Interactive SQL (dbisql)" in *Sybase IQ Utility Guide*.

Sybase Central and Interactive SQL accept COMMLINKS connection parameter (behavior change) In previous versions of Adaptive Server Anywhere, Sybase Central and Interactive SQL (the dbisql command line utility) ignored the COMMLINKS connection parameter. Sybase Central and Interactive SQL now accept this parameter.

As a result of this change, some connection strings may behave differently than in previous versions of Adaptive Server Anywhere. Specifically, if you do not supply `COMMLINKS=tcpip`, Interactive SQL and Sybase Central do not look for servers on the network.

For more information, see "CommLinks connection parameter [Links]" in *Sybase IQ System Administration Guide*.

Interactive SQL supports integrated logins When you connect to Interactive SQL on Windows, the Connect dialog Identification tab allows you to use an integrated login to connect to the database.

ON_ERROR = 'CONTINUE' option (behavior change) The ON_ERROR database option, which controls the action taken by dbisql if an error is encountered while reading statements from a command file, now displays the error when the option is set to CONTINUE. Previously, the error was ignored. Now the error is displayed and dbisql continues reading statements from the command file. For more information, see Chapter 2, "Database Options" in the *Sybase IQ Reference Manual*.

Options that affect data exported to ASCII files The following options were available in Version 12.5, but were previously omitted from the documentation: ISQL_ESCAPE_CHARACTER, ISQL_FIELD_SEPARATOR, and ISQL_QUOTE. For more information, see Chapter 2, "Database Options" in the *Sybase IQ Reference Manual*.

Option to control SQL command timing The ISQL_COMMAND_TIMING option, while available in Version 12.5, was previously omitted from the documentation. For more information, see Chapter 2, "Database Options" in the *Sybase IQ Reference Manual*.

Sybase Central enhancements

Plug-in name changed

In this release, the plug-in name has changed from Adaptive Server IQ to Sybase IQ. If you have connection profiles created using the former name, you need to delete them and recreate them using the new name.

Controlling IQ Agent port number

Prior to Sybase IQ 12.6, the port number used for IQ Agent/plug-in communication was hard-coded to 1099. In Sybase IQ 12.6, you can override the default value when starting the plug-in and Agent. (Once started, you cannot change the port value.)

This functionality enables users to run IQ Agents for Sybase IQ 12.5 and 12.6 on the same system. It also allows you to run any number of 12.6 agents on a given host.

You can override the IQ Agent port number two ways:

- Set the environment variable ASIQPORT. For details, see Chapter 1, "File Locations and Installation Settings," *Sybase IQ Reference Manual*.
- Specify the -DASIQPORT parameter on the scjview command when you start Sybase Central, for example:

```
scjview -DASIQPORT=3335
```

New version of Sybase Central

Sybase IQ 12.6 installs and requires version 4.3 of the Sybase Central Toolkit. See the section "Before you install" in your *Sybase IQ Installation and Configuration Guide* for required plug-in and related components to support this version.

Sybase IQ plug-in changes The Sybase IQ plug-in for Sybase Central has been reorganized. Much of the information that was previously available in property sheets, dialog boxes, and folders in the left pane is now available on tabs in the right pane. For example, to view information about a foreign key, you now select the table that has the foreign key in the left pane and then select the Foreign Keys tab in the right pane. In previous versions, there was a separate Foreign Keys folder in the left pane.

Several other changes have been made to the plug-in, including the following:

- The Code Editor and Table Editor are no longer separate windows. Now you can edit stored procedures, functions, and events, as well as edit tables, in the right pane of Sybase Central.
- The toolbar buttons now change to include options specific to the object selected.

- The SQL Statements log and server messages (the same information that appears in the Server Messages window) can now be viewed directly in the Sybase Central main window. To view this information, in Sybase Central choose File > Design Details. The Design Details pane appears at the bottom of the main Sybase Central window.

Enhanced clipboard support in the Sybase IQ plug-in Clipboard support has been enhanced in the Sybase IQ plug-in so you can copy and paste most objects within Sybase Central into other applications, such as Interactive SQL or a text editor. When you copy objects into other applications, depending on the object you select, either the object name or the SQL for the object appears. For example, if you copy an index in Sybase Central and paste it into a text editor, the CREATE INDEX statement for that index appears.

Debugger changes The database object debugger that lets you debug both stored procedures and Java classes has been integrated into Sybase Central. The user interface has been redesigned.

Editable data in Interactive SQL and Sybase Central You can update the database by editing Interactive SQL result sets, and by editing tables and views in Sybase Central. You can copy, edit, insert, and delete row values.

Data displayed in Sybase Central can be copied to the clipboard.

Procedure profiling Sybase Central contains a Profile tab that displays information about the number of calls and execution times for stored procedures, functions, events, and triggers. You can also view information about the execution speed for each line within a procedure. Profiling information is available through Sybase Central and SQL stored procedures.

For more information about viewing procedure profiling information in Sybase Central, see “Profiling database procedures” in *Sybase IQ Performance and Tuning Guide*.

For more information about obtaining procedure profiling information with SQL stored procedures, see sa_procedure_profile and sa_procedure_profile_summary in *Adaptive Server Anywhere SQL Reference*.

To use this feature, you must upgrade the database.

Sybase Central accepts COMMLINKS connection parameter (behavior change) In previous versions of Sybase IQ, Sybase Central ignored the COMMLINKS connection parameter. Sybase Central now accepts this parameter.

As a result of this change, some connection strings may behave differently than in previous versions. Specifically, if you do not supply `COMMLINKS=tcpip`, Sybase Central does not look for servers on the network.

For more information, see “CommLinks connection parameter [Links]” in *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.

Catalog Store temporary space

Enforcing quota on Catalog Store temporary space (behavior change) A new database option, TEMP_SPACE_LIMIT_CHECK, lets you prevent connections from using more than their quota of Catalog Store temporary space. As a result of this change, when this option is enabled, some queries against Catalog Store tables may fail in situations where they did not in previous versions; however, this option helps ensure that temporary space requirements of individual connections do not affect server stability. For more information, see "TEMP_SPACE_LIMIT_CHECK option" in *Sybase IQ Reference Manual*.

sa_disk_free_space system procedure This procedure allows you to determine the space available for your Catalog Store dbspaces and temporary file, the transaction log, and transaction log mirror. For more information, see the *Adaptive Server Anywhere SQL Reference*.

Limits increased

The following limits have changed:

- LOAD_MEMORY_MB maximum is increased from 500 to 2000.
- Maximum key size for multicolumn indexes is increased from 1024 to 5300 bytes, for consistency with Adaptive Server Enterprise.

MAX_STATEMENT_COUNT default increased (behavior change)

The default value of the MAX_STATEMENT_COUNT database option is increased from 50 to 100. This option specifies a resource governor to limit the maximum number of prepared statements that a connection can use at once. For more information, see Chapter 2, "Database Options" in the *Sybase IQ Reference Manual*.

Security enhancements

Sybase IQ 12.6 offers many new security features, including Certicom database encryption, and the ability to hide the contents of certain types of files.

Hide procedure text to keep your logic confidential You can obscure the logic contained in stored procedures, functions, and views using the SET HIDDEN clause of the ALTER PROCEDURE, ALTER FUNCTION, and ALTER VIEW statements. This allows applications and databases to be distributed without revealing the logic in stored procedures, functions, and views.

To gain the benefits of this enhancement on databases created before this release, you must upgrade the database using ALTER DATABASE UPGRADE.

For more information, see "Hiding the contents of procedures, functions, and views" in *Sybase IQ System Administration Guide*. For syntax details, see *Adaptive Server Anywhere SQL Reference*.

New utility allows you to hide the contents of files Configuration files, also known as command files, sometimes contain passwords. As an enhanced security feature, Sybase IQ has a new utility, called the File Hiding utility, that allows you to hide the contents of configuration files using simple encryption.

For more information, see "The File Hiding Utility" in the *Adaptive Server Anywhere Database Administration Guide*.

Certicom encryption changes Security has been enhanced to support RSA_TLS Certicom encryption. The encryption known in previous versions of Adaptive Server Anywhere as Certicom encryption has been renamed to RSA_TLS encryption. The Certicom parameter is still accepted and is equivalent to RSA_TLS encryption.

For more information, see "Starting the database server" in *Sybase IQ Utility Guide* and Chapter 13, "Transport-Layer Security" in *Sybase IQ System Administration Guide*.

Strong encryption over TCP/IP Sybase IQ now supports certificate-based encryption over TCP/IP ports on Solaris, Linux, and all supported Windows operating systems. Strong encryption protects the confidentiality and integrity of network packets as they pass between the client and the server. This encryption is also called Transport Layer Security (TLS).

The database server `-ec` command line option allows you to set the server's connection parameters and replaces the `-e` command line option in previous versions of Sybase IQ. You can set the client connection parameters with the encryption connection parameter.

For more information, see “Starting the database server” in *Sybase IQ Utility Guide*, and “Encryption connection parameter [ENC]” and “EncryptedPassword connection parameter [ENP]” in *Sybase IQ System Administration Guide*.

To use this feature, you must use Sybase IQ 12.6 or higher software at both the client and the server. You do not need to upgrade the database.

Strong encryption of the database file The database file itself can now be strongly encrypted for greater security.

For more information, see the following locations:

- “sa_audit_string system procedure,” “sa_enable_auditing_type system procedure,” and “sa_disable_auditing_type system procedure,” and “AUDITING option [database]” in *Sybase IQ Reference Manual*.
- CREATE DATABASE statement, DROP DATABASE statement, START DATABASE statement [DBISQL], and RESTORE statement in the *Sybase IQ Reference Manual*.
- You must use Sybase IQ 12.6 or higher to create encrypted database files.

Database page checksums Database page checksums are used to detect whether a database page has been modified on disk. In Sybase IQ, when a database is created with checksums enabled, a checksum is calculated for each Catalog Store page before it is written to disk. When a Catalog Store page is read from disk, its checksum is calculated again and compared to the stored checksum. If the values are different, the page has been modified or otherwise corrupted while on disk. You can only add checksums to new databases you create in version 12.6 or higher. You can check whether checksums are enabled for a database using the Checksum property.

For more information about creating databases with checksums on the Catalog Store, see “Choosing database attributes” in *Introduction to Sybase IQ*.

Checksums can also be used to validate the Catalog Store. For more information, see “The Validation utility (dbvalid)” in *Sybase IQ Utility Guide*, or “sa_validate system procedure” in *Sybase IQ Reference Manual*.

LOGIN_PROCEDURE option requires DBA authority (behavior change) The LOGIN_PROCEDURE option can only be set by a user with DBA authority. In previous versions, DBA authority was not required to set this option. A user with DBA authority can change the setting of this option for other users, but users without DBA authority cannot change their own setting of this option. As a result of this change, the DBA can ensure that a common procedure, if necessary, is executed when a user connects.

Server performance enhancements

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

Improved performance for INSERT...VALUE statements

Sybase IQ 12.6 features improved performance when you issue a series of consecutive INSERT...VALUE commands.

Temporary tables can be declared as NOT TRANSACTIONAL

When NOT TRANSACTIONAL is used, the table is not affected by COMMIT or ROLLBACK. This extension is useful when procedures that access the table are called repeatedly without a COMMIT.

For more information, see CREATE TABLE statement and DECLARE LOCAL TEMPORARY TABLE statement in *Sybase IQ Reference Manual*.

Miscellaneous enhancements

This section contains miscellaneous enhancements and behavior changes.

Accessibility features

Sybase IQ is compliant with Section 508 of the US Federal Rehabilitation Act. The user interfaces and documentation have been prepared in compliance with the act. User interfaces are certified for Section 508 compliance on Windows 2000, for use with all supported Sybase IQ 12.6 server platforms.

The SyBooks CD for Sybase IQ 12.6 is Section 508 compliant, and can be installed on Windows platforms. The PDF files on the SyBooks CD are also Section 508 compliant when used with Acrobat Reader 6.

For a detailed statement of Section 508 compliance and other information about accessibility, go to Sybase Accessibility at http://www.sybase.com/accessibility

For information about accessibility features in the Sybase IQ product and documentation see “Accessibility features” on page xii and “Using accessibility features” in Chapter 1, “Introducing Sybase IQ” of *Introduction to Sybase IQ*.

Adaptive Server Anywhere version

Sybase IQ 12.6 uses several components, including connectivity, from Adaptive Server® Anywhere 9.0.1, which is a component of SQL Anywhere® Studio 9.0.1. When you see references to Adaptive Server Anywhere documentation, use the 9.0.1 documentation provided on the Sybase IQ SyBooks Bookshelf CD, or online in the SQL Anywhere Studio 9.0.1 Collection at http://sybooks.sybase.com/awg0901e.html

Perl interface

The new DBD::ASAny driver for the Perl DBI module allows you to access and modify Adaptive Server Anywhere databases from Perl scripts. For more information, see “The DBD::ASAny Perl Interface” in *Adaptive Server Anywhere Programming Guide*.

International language changes

Sybase IQ 12.6 includes several changes to international languages, listed below. For details of these features, see Chapter 11, "International Languages and Character Sets" in *Sybase IQ System Administration Guide*.

New Lithuanian and Turkish collations There are two new collations available: one to support Lithuanian (1257LIT, ANSI Code Page 1257) and one to support Turkish (1254TRKALT). This Turkish collation considers I-dot and I-no-dot equal.

New Greek collation for Windows environment (behavior change) Greek collations for OEM/DOS character sets existed in previous versions, however, a new Greek collation, 1253ELL, has been added for Windows. When creating a new database in a Greek Windows environment, 1253ELL will be selected automatically if a collation is not specified.

Deprecated collations (behavior change) The following collations are no longer supported. Where indicated, they have been superseded by different collations:

Deprecated	Superseded by
437	437LATIN1
850	850LATIN1
852	852LATIN2
860	860LATIN1
863	863LATIN1
865	865NOR
SJIS	932JPN
SJIS2	932JPN
WIN_LATIN1	1252LATIN1
WIN_LATIN5	1254TRK
Internal	850LATIN1
437EBCDIC	

Custom collation changes (behavior change) Previously, the `-d` option in the Collation utility accepted three parameters; now it accepts only two parameters. The *cust-map-file* parameter is no longer accepted. The syntax for the Collation utility is

```
dbcollat -d coll-defn-file custom-file
```

As well, the script files *collsqmp.sql* and *custmap.sql* are no longer present and cannot be used for built-in or custom collations, respectively.

For newly-created databases, the SYSCOLLATIONMAPPINGS table contains only one row with the collation mapping. For databases created with previous versions of Adaptive Server Anywhere, this table contains a row for each built-in collation.

Character set conversion function A new function CSCONVERT is available to convert strings between character sets. For best performance, avoid using the CSCONVERT keyword in predicates, as CIS functional compensation performance considerations apply. For more information, see *Adaptive Server Anywhere SQL Reference*.

ON_CHARSET_CONVERSION_FAILURE option A new option controls what happens if an error is encountered during character conversion. For more information, see "ON_CHARSET_CONVERSION_FAILURE option" in *Sybase IQ Reference Manual*.

Determining the language for interfaces and messages (behavior change) Two new environment variables, ASLANG and ASCHARSET, control languages used in interfaces (such as Sybase Central or Interactive SQL) and messages. ASLANG specifies the language, and ASCHARSET specifies the character set.

For more information, see "ASCHARSET environment variable" and "ASLANG environment variable" in *Sybase IQ Reference Manual.*

SQLLOCALE environment variable no longer supported (behavior change) SQLLOCALE environment variable has been replaced by two new environment variables, ASLANG and ASCHARSET.

Clients ignore SQLLOCALE environment variable (behavior change) Clients can use the CharSet connection parameter to specify the character set to be used on a connection. In previous versions of Adaptive Server Anywhere, the CHARSET parameter of the SQLLOCALE environment variable was used to change the client's default character set if the CharSet connection parameter was not supplied. Clients now ignore the SQLLOCALE environment variable.

For more information, see "CharSet connection parameter [CS]" in *Sybase IQ System Administration Guide*.

Unsupported character sets cause connection failure (behavior change) Clients can use the CharSet connection parameter to specify the character set to be used on a connection. However, if the server does not support the requested character set, the connection fails. When a client requested an unsupported character set in previous versions, the connection succeeded with a warning. If the client does not specify a character set, but the client's local character set is unsupported by the server, the connection succeeds, but with a warning that the character set is not supported.

See also “Changes to server command line options” on page 13 for a related behavior change.

Viewing collation label and name for custom collations The dbinfo command line utility now returns the collation label and name for custom collations. As well, two new fields, collationnamebuffer and collationnamebufsize, have been added to the a_db_info structure in *dbtools.h*.

For more information, see “The Information utility (dbinfo)” in *Sybase IQ Utility Guide* and “a_db_info structure” in *Adaptive Server Anywhere Programming Guide*.

Full-length and abbreviated day names are recognized in all supported languages for event schedules (behavior change) When creating events, the database server recognizes both full-length and abbreviated English day names, in any of the languages supported by Sybase IQ. Previously, schedules in non-English languages required full day names.

For more information, see “CREATE EVENT statement” of *Sybase IQ Reference Manual*.

Adaptive Server Anywhere Translation Driver removed (behavior change) Use of translation drivers is no longer recommended. The server automatically handles character set translation.

xp_cmdshell displays a command window (behavior change)

It is now possible to control whether xp_cmdshell starts a new window on Windows platforms. The behavior change applies to databases created with or upgraded to version 12.6 or later. The new behavior is compatible with other databases such as Adaptive Server Enterprise and Microsoft SQL Server.

You can hide the command window by specifying a second parameter in the call to xp_cmdshell.

For more information, see *Adaptive Server Anywhere SQL Reference*.

JDBC features

New iAnywhere JDBC driver This robust and high-performance JDBC driver enjoys the benefits of ODBC data sources and the Command Sequence client/server protocol. It is an alternative to the jConnect JDBC driver.

For information on the iAnywhere JDBC driver and choosing a JDBC driver, see *Adaptive Server Anywhere Programming Guide*.

The iAnywhere JDBC driver is now the default driver for DBISQL (Java) connections.

The jConnect driver is the default driver for the IQ plug-in to Sybase Central. The iAnywhere JDBC driver is the default driver for the iAnywhere plug-in to Sybase Central.

You may use whichever driver works best for your Sybase Central and Interactive SQL connections.

Note An earlier version of the iAnywhere JDBC driver was called the JDBC-ODBC Bridge.

JAR file name for internal JDBC driver changed (behavior change) The internal JDBC driver classes are now installed as a JAR file named ASAJRT instead of ASAJDBC.

ODBC_DISTINGUISH_CHAR_AND_VARCHAR option The ODBC_DISTINGUISH_CHAR_AND_VARCHAR option controls how the Adaptive Server Anywhere ODBC driver describes CHAR columns. For more information, see “ODBC_DISTINGUISH_CHAR_AND_VARCHAR option” in *Sybase IQ Reference Manual*.

XML and Java support

This section contains enhancements and behavior changes related to XML and Java.

XML support

Sybase IQ 12.6 includes a broad range of support for XML, including storing XML documents, exporting relational data as XML, importing XML, and returning XML from queries on relational data.

Currently, all of these new XML features are processed by Adaptive Server Anywhere when they occur in a predicate of an IQ query, so CIS functional compensation performance considerations apply.

- **FOR XML clause** The SELECT statement supports a FOR XML clause with three modes, RAW, AUTO, and EXPLICIT, that allow you to obtain query results as an XML document. Each mode allows you a different level of control over the format of the XML that is generated. For more information, see *Adaptive Server Anywhere SQL Reference*.
- **FOR_XML_NULL_TREATMENT option** You can use the FOR_XML_NULL_TREATMENT option to control how NULL values are returned by a query that includes the FOR XML clause. For more information, see *Adaptive Server Anywhere Database Administration Guide.*
- **OPENXML function** This function generates a result set from an XML document. For more information, see *Adaptive Server Anywhere SQL Reference*.
- **SQL/XML support** SQL/XML is a draft standard that describes the ways SQL can be used in conjunction with XML. As part of its SQL/XML support, Sybase IQ includes an XML data type that can be used to store XML documents in the database.

  For more information, see *Adaptive Server Anywhere SQL Reference*.

  Sybase IQ also supports the following SQL/XML functions that provide an alternative method to the FOR XML clause for generating XML documents from your relational data:

  - **XMLAGG function** This aggregate function generates a forest of XML elements from a collection of XML elements.

- **XMLCONCAT function** This function generates a forest of XML elements by concatenating together the XML values that are passed in to it.
- **XMLELEMENT function** This function generates an XML element for which you can optionally specify element content, attributes, and attribute content.
- **XMLFOREST function** This function generates a forest of XML elements.
- **XMLGEN function** This function generates an XML value based on an XQuery Constructor.

  For more information on all of these functions, see *Adaptive Server Anywhere SQL Reference*.

XML export using the OUTPUT statement You can export query results as XML format. The output has an embedded DTD. Binary values are encoded in CDATA blocks with the binary data rendered as two-hexadecimal-digit strings.

For more information, see OUTPUT statement [DBISQL] on page 535 in *Sybase IQ Reference Manual*.

Java support

Several changes have been made to Java support in Sybase IQ.

Java objects in the database not supported (behavior change) Support has been removed for storing data as Java objects. Support is maintained for Java stored procedures.

JRE version Sybase IQ now installs Java Runtime Environment (JRE) version 1.4.2 on all platforms.

Java sample programs Sybase IQ now installs sample programs formerly in the *jxmp* directory in *samples/asa/java*.

Information utility reports the version of installed Java classes The dbinfo utility and a_db_info structure now report the version of the Java classes installed in a database.

For more information, see "The Information utility (dbinfo)" in *Sybase IQ Utility Guide* and "a_db_info structure" in *Adaptive Server Anywhere Programming Guide*.

Debugger changes The database object debugger that lets you debug both stored procedures and Java classes has been integrated into Sybase Central. The user interface has been redesigned.

For more information, see Appendix C, “Debugging Logic in the Database” in *Sybase IQ System Administration Guide*.

Java 2 support Java in the database can now use classes from Java 2 (JDK 1.2 and 1.3) and Java.

For more information, see *Adaptive Server Anywhere Programming Guide*.

To use this feature, you must upgrade the database using ALTER DATABASE UPGRADE.

JDBC 2.0 Java classes in the database can now use the JDBC 2.0 interface to access data.

For more information, see *Adaptive Server Anywhere Programming Guide*.

To use this feature, you must upgrade the database using ALTER DATABASE.

Diagnostic procedure A new system procedure, sa_java_loaded_classes, lists all classes loaded by the Java virtual machine.

For more information, see *Adaptive Server Anywhere SQL Reference*.

To use this feature, you must upgrade the database.

Security manager You can use a built-in security manager or provide your own implementation to control access to security-sensitive Java features.

For more information, see *Adaptive Server Anywhere Programming Guide*.

Documentation changes

In version 12.6, Sybase reorganized the IQ documentation set in order to:

- Meet customer needs better
- Eliminate redundancy
- Reflect changes in the structure of documentation sets for sister products Adaptive Server Anywhere and Adaptive Server Enterprise.

Table 1-2: 12.6 Sybase IQ new books

Title	Purpose	Contents*	Changes
New Features in Sybase IQ 12.6	Overview of new features for this release for all IQ users	List of new features and pointers to books with details about each.	Moved new features from Release Bulletins into this book
Sybase IQ Utility Guide	Guide to utility programs executed at the operating system level for system administrators	Syntax and options for all utility programs including dbisql	Moved chapter 4 from *Sybase IQ Reference Manual* into this book
Performance and Tuning Guide	Guide for DB administrators. Response to numerous customer requests for more information about database design issues, query optimization, tuning for very large databases, disk and cache issues, effects of locking and cursors on performance.	• "Monitoring and Tuning Performance" and "Managing System Resources" (chapters 12 and 13 from *Administration and Performance Guide*) • Query optimization details, formerly part of "Managing System Resources," set aside as a separate chapter. • "Selecting Data from Database Tables" and "Joining Tables" from *Introduction to Sybase IQ* • NT tuning info from Installation and Configuration Guide • New information from Engineering	Moved chapters from existing books; added 12.6 new features.
Large Objects Management in Sybase IQ	Description of storage and retrieval of Large Object (LOB) data in Sybase IQ	Syntax and descriptions of commands and functions used to store and move Binary and Character Large Object data.	None.

Table 1-3 describes changes to existing books.

Table 1-3: 12.6 Sybase IQ changed books

Title	Purpose	Contents*	Changes
Performance and Tuning Guide	Guide for DB administrators. Response to numerous customer requests for more information about database design issues, query optimization, tuning for very large databases, disk and cache issues, effects of locking and cursors on performance.	• "Monitoring and Tuning Performance" and "Managing System Resources" (chapters 12 and 13 from *Administration and Performance Guide*) • Query optimization details, formerly part of "Managing System Resources," set aside as a separate chapter. • "Selecting Data from Database Tables" and "Joining Tables" from *Introduction to Sybase IQ* • NT tuning info from Installation and Configuration Guide • New information from Engineering	Moved chapters from existing books; added 12.6 new features.
Reference Manual	Full description of the SQL language supported by Sybase IQ for all IQ users	SQL syntax, system tables and procedures, SQL functions, and database options.	Moved information on startup and connection to *Sybase IQ System Administration Guide*. Moved SQL Preprocessor chapter to *Sybase IQ Utility Guide*. Moved SQL Preprocessor errors to *Sybase IQ Troubleshooting and Error Messages Guide*
Introduction to Sybase IQ	Product overview and tutorial	Hands-on exercises for those unfamiliar with Sybase IQ.	Moved select and join chapters to *Sybase IQ Performance and Tuning Guide*. Moved DBISQL chapter to *Sybase IQ Utility Guide*.

Title	Purpose	Contents*	Changes
Sybase IQ Installation and Configuration Guide	Procedures for installing Sybase IQ, migrating to a new version of Sybase IQ, and configuring Sybase IQ for a particular platform.	Installation requirements, directions and configuration procedures for both the IQ Server and Network Client.	Moved Windows tuning info into *Sybase IQ Performance and Tuning Guide*
Sybase IQ Release Bulletin	Information useful to read just before or after purchasing Sybase IQ, or if you encounter a problem.	Restrictions, late changes, known problems, and special installation instructions.	Moved list of new features into this book (*New Features in Sybase IQ 12.6*).
System Administration Guide	Information that system administrators need to manage the IQ Store	Details about creating database objects, indexing and loading data, and guidelines for managing security, user and system databases, character conversion, international language and sort order settings	Moved memory and performance chapters to separate Performance Guide. Moved all information in *Adaptive Server IQ Multiplex User's Guide* into this book. Replaced redundant LOAD TABLE syntax with pointer to *Sybase IQ Reference Manual*.
Error Messages and Troubleshooting Guide	Guidelines for solving problems, procedures for performing system recovery and database repair, and error message reference information	List of error messages referenced by SQLCode, SQLState, Sybase error code, and message text, troubleshooting recommendations for common errors	Moved SQL Preprocessor errors from Reference Manual to *Sybase IQ Troubleshooting and Error Messages Guide*. Moved all log file info here from other books. Error message descriptions reorganized and now listed by SQLCode.
Multiplex User's Guide	Details about creating and administering multiplex databases	Multiplex overview and management procedures.	This book is discontinued. See Table 1-4

Table 1-4 shows the new location for information moved out of the *Adaptive Server IQ Multiplex User's Guide*, the discontinued book.

Table 1-4: Relocated multiplex information

12.5 Multiplex User's Guide Chapter	12.5 Multiplex User's Guide section	12.6 Document title	Location
Chapter 1," Introducing IQ Multiplex Capability"	"Understanding multiplex architecture"	*Sybase IQ System Administration Guide*	"Multiplex capability" on page 9
Chapter 2, "Setting Up the Multiplex Environment"	"Multiplex requirements"		"Rules for running multiplex servers" on page 36
	"Running the Sybase ASIQ Agent"		"Running the Sybase IQ Agent" on page 37
	"Setting up the raw device"	*Sybase IQ Installation and Configuration Guide*	Chapter 1, section "Setting up raw devices for multiplex access."
	"Granting administrator privilege to the ASIQ service"		Chapter 3, section "Granting administrator privilege to the ASIQ service"
Chapter 3, "Creating and Populating the Multiplex	"Before creating databases"	*Sybase IQ System Administration Guide*	"Creating databases with multiplex functionality" on page 193
	Populating persistent tables for query servers		"Populating persistent tables in multiplex databases" on page 235
Chapter 4, "Running Multiplex Servers"		*Sybase IQ System Administration Guide*	"Starting all servers in a multiplex" on page 41

12.5 Multiplex User's Guide Chapter	12.5 Multiplex User's Guide section	12.6 Document title	Location
Chapter 5, "Managing the Multiplex Environment"	"Managing servers"	*Sybase IQ System Administration Guide*	"Managing multiplex servers" on page 204
	"Deleting query servers"		"Deleting query servers" on page 208
	"Updating multiplex databases"		"Updating multiplex databases" on page 209
	"Changing the DBA password"		"Changing the DBA password in a multiplex" on page 544
	"Managing disk space"	*Sybase IQ Performance and Tuning Guide*	"Managing disk space in multiplex databases" on page 77
	"Managing memory"		"Server memory" on page 45
	"Truncating the transaction log"		"Truncating the transaction log for a multiplex database" on page 71
	"Backing up and restoring the multiplex"	*Sybase IQ System Administration Guide*	"Backing up and restoring the multiplex" on page 666
	"Multiplex server migration and failover"		"Multiplex server migration and failover" on page 673

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