

# Sybase® IQ

Sybase IQ delivers precise, actionable answers  
to drive better decisions for winning enterprises



## PRODUCT DATASHEET

### THE SYBASE IQ ADVANTAGE:

- Data Compression – commonly reduces data storage requirement by 70%
- Query speed 10X – 1000X faster than traditional row-based databases
- Supports virtually all hardware and OS configurations
- Ability to efficiently analyze both structured and unstructured data in the same platform
- Supports ANSI standard SQL
- Ability to add server nodes with no need to re-organize the data
- Ability to scale by adding server nodes or storage
- High availability

Sybase IQ is an analytics server designed specifically for analytics, data warehousing, and business intelligence environments. Distinguished from conventional databases by its column-oriented, grid-based architecture, patented data compression, and advanced query optimizer, Sybase IQ is deployed in a wide variety of settings delivering unmatched performance, flexibility, and economy in even the most challenging reporting and analytics environments.

Sybase IQ provides significantly faster query performance than traditional database environments which were designed primarily for processing transactions. The improvement over such solutions can be 10 to 1000 times greater, even as thousands of users and years worth of data are added to the environment, and even in the face of the most complex queries and intensive predictive analyses.

In a conventional relational database management system (RDBMS), data is stored and retrieved horizontally. Such is the ideal structure for logging and processing transactions, but not for analyzing the data. Without building indexes and views in such an environment, retrieving needed information via queries creates a massive workload. Building and maintaining indexes and views requires a significant resource investment, and even then views and summaries still do not give a complete picture, so ad hoc queries remain problematic. Additionally, the database storage footprint must be dramatically expanded to make the environment efficient for complex queries. In such an environment, a single terabyte of raw input data will often expand to six terabytes or more of summaries, aggregates, and views. Between the labor-intensive management and data bloat, such an environment can be very expensive to maintain.

With Sybase IQ, data is stored and retrieved by columns of attributes, making information highly accessible for analysis. Each column of the database is stored separately, and the data itself serves as the index required to perform virtually any query. Querying a Sybase IQ environment means retrieving only the columns used in that specific query, keeping the workload down to a manageable level. Since the data itself is the index, there is no need to create and maintain elaborate summaries, aggregates, and views in order to eke out an acceptable level of performance. Moreover, Sybase IQ's patented data compression provides a data warehouse or analytics environment with a green, lean and efficient footprint — frequently 70% smaller than the original input data.

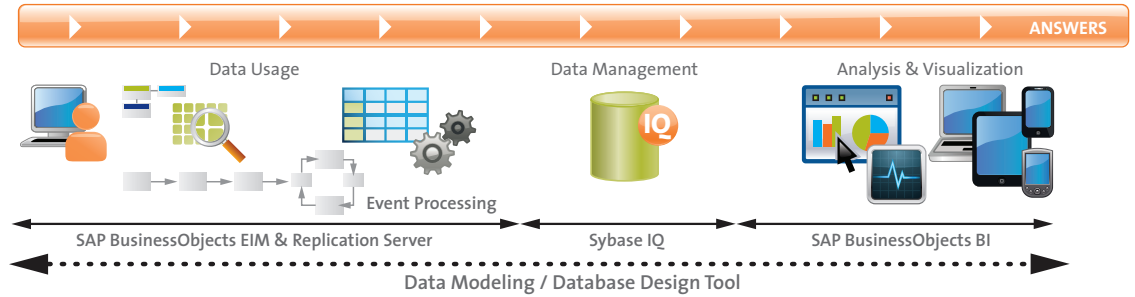
Sybase IQ provides highly efficient and flexible scalability of analytics and data warehousing environments:

- You can start with one server and add CPUs and memory as needed
- You can add servers and CPUs with little or no loss in scalability
- You can add terabytes of disk space and Sybase IQ will manage it efficiently
- You can support multiple users per CPU.

With dynamically configurable read and write nodes, Sybase IQ makes it easy to scale loading or querying or both, depending on the specific needs of the environment. Distributed query processing further accelerates complex queries by distributing work to many computers in a PlexQ™ grid. Unlike shared-nothing architectures, Sybase IQ utilizes a shared-everything approach that dynamically manages and balances query workloads across all the compute nodes in a PlexQ grid. The automatic workload re-balancer aggressively works to avoid contention among users for system resources, thereby providing predictable high performance and resource efficiency for a broad spectrum of concurrent workloads.

THE POWER OF SYBASE IQ DERIVES FROM FLEXIBLE SCALABILITY IN MULTIPLE DIMENSIONS: THE FREEDOM TO ENHANCE THE COMPUTE POWER, STORAGE CAPACITY, OR NUMBER OF USERS INDEPENDENTLY AND AS NEEDED. THAT'S SMARTER ANALYTICS.

## SOLUTION ARCHITECTURE



### Sybase IQ Architecture

With more than a decade of production experience, Sybase IQ has established its leadership position through a unique combination of innovation and maturity, with notable architectural authority in:

- Query processing designed for business intelligence performance and scalability
- Data load performance
- Highly scalable grid technology enabling large number of concurrent users and independent scale out of CPU or storage
- Storage and processing efficiency, particularly through sophisticated and well-integrated indexing and compression

Sybase IQ delivers analytics speed and power without compromising security, economy or manageability. Patented data compression and indexing technology provide the highest levels of performance while making efficient use of available resources.

Business Intelligence (BI) tools provide an integrated view of this trusted information to business professionals for decision making. Sybase IQ is certified with the leading reporting and analytics visualization tools, including SAP® BusinessObjects™ BI. Enterprise Information Management (EIM) solutions to move, improve and govern data also integrate with Sybase IQ, including SAP BusinessObjects EIM. At the foundation of the analytics platform, Sybase IQ offers a data warehouse capable of storing and accessing large amounts of data quickly.

### A WIDE RANGE OF OPTIONS

Sybase offers a wide range of options to extend the power of Sybase IQ to meet specific requirements for performance, scalability, security, availability and manageability.

#### Sybase IQ Advanced Security Option

The Sybase IQ Advanced Security Option provides the highest levels of security capability for Sybase IQ environments. For data in-flight, this option enables encryption of client-server communication and supports the IPV6 protocol. For data at rest, the Advanced Security Option allows user access with authentication against Kerberos servers, supports FIPS 140-2 certified algorithms, and provides for strong AES compliant encryption of data stores at the column, table, or database level.

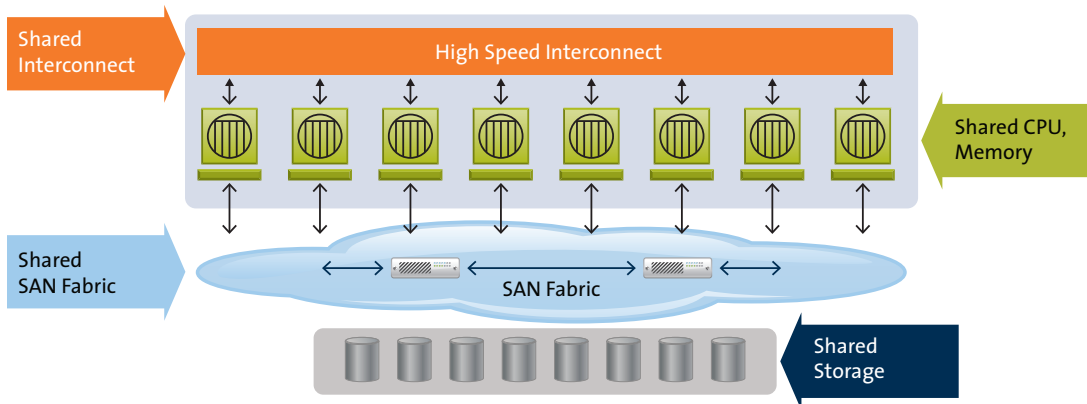
To learn more, read the Sybase IQ Advanced Security Option datasheet [www.sybase.com/detail?id=1066560](http://www.sybase.com/detail?id=1066560)

#### Sybase IQ Multiplex Grid Option

The Sybase IQ Multiplex Grid Option enables users to incrementally scale-out concurrent query jobs, load jobs, or both in a PlexQ grid. With Distributed Query Processing, users can scale-out an individual query across many nodes in a PlexQ grid. Logical servers allow IT staff to band together compute resources in a PlexQ grid into virtual groups in order to isolate the impact of different workloads and users from each other. Users have the flexibility to independently and easily add servers to a PlexQ grid, or disk space to the SAN.

Licensed as Sybase IQ Multiplex Grid Option, a PlexQ grid provides linear, incremental scalability to your analytics environment. To learn more, read the Sybase IQ Multiplex Grid Option datasheet [www.sybase.com/detail?id=1066562](http://www.sybase.com/detail?id=1066562)

## PLEXQ ARCHITECTURE



“SYBASE IQ IS A BRILLIANT ANALYTICS ENGINE. COUPLED WITH A GOOD REPORTING AND DATA MANIPULATION TOOL, IT’S HARD TO BEAT. I DON’T KNOW THAT THE BUSINESS WOULD STILL BE HERE TODAY WITHOUT OUR SYBASE SOLUTIONS. BECAUSE YOU’VE GOT TO HAVE A LOT MORE THAN GUT INSTINCT TO GUIDE YOU IN THE CURRENT BUSINESS ENVIRONMENT.”

SIMON ROSE  
DIRECTOR OF INFRASTRUCTURE,  
PLAYPHONE EMEA

### Sybase IQ Very Large Database Management Option

The Sybase IQ Very Large Database Management (VLDB) Option enhances the manageability of very large data sets. This option enables you to partition data logically in a range of values and to partition data in logical groups of objects called table spaces. Range partitioning enables you to work at a higher level of granularity with the data in your analytics environment by defining manageable subsets that are relevant for a particular set of queries. Table spaces also enable you to define more manageable sets of data, and to treat these as separate databases when ease of administration and/or other factors require that some data be isolated from the entire data set.

To learn more, read the Sybase IQ VLDB Option datasheet visit [www.sybase.com/detail?id=1066561](http://www.sybase.com/detail?id=1066561)

### Sybase IQ Unstructured Data Analytics Option

This option provides the means to store, retrieve and analyze unstructured data as part of the same repository as transactional or analytical data. Unstructured data can include images, maps, documents (postscript files, word processing files, presentations, etc.), web content, audio, video, and XML files. With Sybase IQ’s full text search capabilities, users can now:

- Search for words and phrases within text data
- Perform Boolean and proximity searches
- Score results from text queries based on relevance

To learn more about Unstructured Data Analytics visit [www.sybase.com/detail?id=1066561](http://www.sybase.com/detail?id=1066561)

### In-Database Analytics — Partner Solutions Option (for Predictive Analytics)

This option brings in-database analytics capability to Sybase IQ via libraries of pluggable analytical algorithms from statistical and data mining software partners who have certified their products with Sybase IQ’s in-database analytics capabilities. In-database analytics delivers immediate performance and scalability improvements to your business.

Using this technique, your data never leaves the database until results are filtered and processed. Further benefits are that the analytics code and models are shareable across your organization and allow ad-hoc analysis, plus they are applicable to your most current data set.

To learn more about in-database analytics visit [www.sybase.com/detail?id=1066564](http://www.sybase.com/detail?id=1066564)

### Real-time Loading with Sybase IQ

Businesses demand access to mission-critical information delivered both when and how they need it. These businesses require an analytics environment that is both flexible and fast. Beyond Business Objects Data Services ETL capabilities, Sybase meets this need for speed and flexibility when moving data into Sybase IQ with Sybase Replication Server® Real-Time Loading Edition and Sybase IQ InfoPrimer. Customers can select the loading solution or combination that meets the need of their business.

**Replication Server Real-Time Loading Edition** — enables you to move beyond nightly batch loads to continuous loads throughout the day, delivering ASE operational system changes to your Sybase IQ analytics server within minutes of the source transaction change. To learn more about high performance loading from ASE databases to your Sybase IQ analytics servers visit [www.sybase.com/detail?id=1080064](http://www.sybase.com/detail?id=1080064).

**Sybase IQ InfoPrimer** — previously known as Sybase ETL, Sybase IQ InfoPrimer extracts data from multiple heterogeneous data sources and loads it into Sybase IQ using a comprehensive set of transformation functions. Sybase IQ InfoPrimer includes change data capture (CDC) capability using Replication Server as the CDC agent as well as support for Extract, Load, Transform (ELT) flows, where transformation is handled by the Sybase IQ engine.

Whether you require real-time loading or data transformation, Sybase IQ has flexible data movement covered. To learn more about Sybase IQ InfoPrimer visit [www.sybase.com/detail?id=1095100](http://www.sybase.com/detail?id=1095100).

#### **SYBASE IQ — SHINING THE LIGHT ON THE FUTURE OF ANALYTICS**

When it comes to getting the answers you need, environments designed for operational (not analytical) excellence consistently provide the same disappointing results. Today's business leaders realize that a business can only deliver and win if it enables decision-makers, throughout the enterprise, to make better decisions. Faster, more accurate answers are the path to success in today's market. Decision-makers need to analyze results, predict outcomes, and keep the business competitive. In an age of no excuses, Sybase IQ has emerged as the smart approach for businesses that need to analyze, compete, and deliver.

#### **Sybase IQ product features:**

##### **Flexibility**

- Independent compute power and storage capacity scalability utilizing a shared everything MPP architecture
- On-the-fly schema changes without query blockage or downtime
- No need for materialized views
- Supports pre-computed join indexes for pre-aggregates
- Handles structured and unstructured data
- Certified to work with industry-leading visualization and data integration tools
- Query federation
- Web-enabled analytics

##### **Speed**

- Multiple bit-mapped index types
- Cost-based query optimizer
- Column-based architecture
- Subquery performance improvements
- Multi-column index usage
- Increased in-memory compressed query processing
- Tokenization enhanced for even faster queries
- In-database analytics
- Real-time loading

##### **Information Availability**

- Enhanced large table loads
- Direct loads from clients
- Multi-node loading
- Patented data compression
- High availability/disaster recovery
- Query federation
- Real-time loading

##### **Power**

- High performance from any schema
- SQL logic deployable through 3GL, stored procedures, or cursors
- One-touch multiplex grid configuration
- Configurable tablespaces
- Query parallelism per node
- Text search and analysis

##### **Security**

- Password authentication/encryption for data-in-flight
- Database and column encryption for data-at-rest
- FIPS on UNIX
- Kerberos
- User settable passwords
- IPV6
- Role-based administration

##### **Economy**

- Supports all standard connectivity protocols
- Supports all standard hardware platforms and operating systems
- Supports all standard disk technologies
- Range partitioning

##### **Manageability**

- Index advisor utility guides index selection for optimal performance
- XML and GUI-based query plan generator for diagnostics
- Versatile GUI-based administrative console for server management
- Improved resource/utilities management
- Configurable tablespaces
- Role-based administration
- Web-based monitoring

For more information on Sybase IQ, visit [www.sybase.com/IQ](http://www.sybase.com/IQ).