

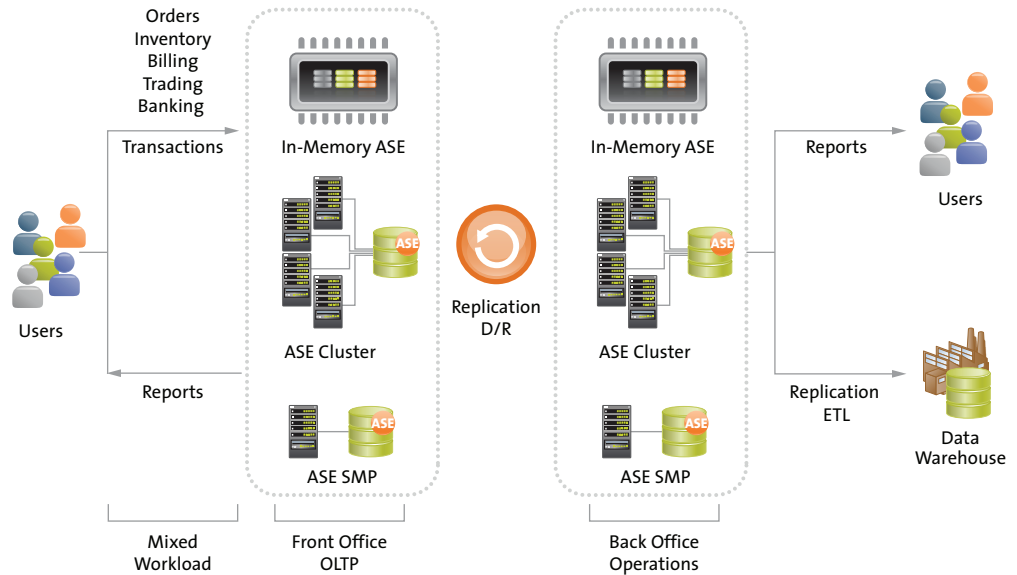
Sybase® Adaptive Server® Enterprise



PRODUCT SOLUTION DATASHEET

Extreme transaction processing systems must support tens of thousands of concurrent users with ultra-fast, non-stop performance on cost-effective, standards-based platforms. ASE, Sybase's mission-critical enterprise database management system, powers 90% of the top 50 global banks and securities firms. These companies choose ASE for its reliability, superior performance and low total cost-of-ownership (TCO).

ASE key features include data encryption to protect from internal and external breaches; partitioning technology for better performance and easier maintenance; and, virtualization and clustering capabilities for continuous availability and efficient use of resources. In-memory database technology provides significant improvements in response time and throughput for high data volume and high concurrent user organizations. And the addition of data compression allows enterprises to reduce storage costs and increase performance on large and growing data sets. ASE brings these capabilities to all of the platforms it runs on, including low-cost commodity hardware.



Sybase Adaptive Server Enterprise's mission-critical enterprise database management system.

EXTREME PERFORMANCE

ASE enables demanding IT departments to achieve millions of transactions per minute with terabyte-sized databases, while maintaining rapid growth rates in data and transaction volume. Bombay Stock Exchange processes 4 million trades per day, networked to 400 cities. BlueCross BlueShield of Tennessee processes 5 terabytes of data with 3,200 concurrent users per day. And, Passport Canada executes 100K transactions per minute on a 9 terabyte database that is growing 2 terabytes per year. In fact, ASE has set transaction processing performance records on IBM Power Systems in 2-core and 4-core configurations running Linux on the leading TPC-C benchmark¹.

“IN-MEMORY DBMS IS AN IMPORTANT DIMENSION OF THE DBMS LANDSCAPE, AND WILL BECOME MORE SO IN THE COMING YEARS. THE SYBASE DEVELOPMENTS THAT PROVIDE TRANSPARENT IN-MEMORY DATABASE MANAGEMENT SHOW CLEAR LEADERSHIP IN THE DBMS FIELD.”

CARL OLOFSON, VICE PRESIDENT OF RESEARCH AT IDC

“WE LOOKED AT EVERY POSSIBLE OPTION AND CONCLUDED THAT THE SYBASE ADAPTIVE SERVER ENTERPRISE ENCRYPTION OPTION WAS THE BEST SOLUTION FOR US.”

LARRY GILLEN, PRINCIPAL DATABASE ADMINISTRATOR PHOENIX NEWSPAPERS

For many applications every microsecond counts. With Sybase in-memory databases, you can achieve unparalleled performance for data intensive environments. ASE in-memory databases are ASE databases that have zero disk footprint and reside completely in memory. They compromise on data durability in order to obtain the highest possible performance. Internal and external customer benchmarks indicate that customers can achieve significant improvements in response time and throughput. While removal of disk I/O itself delivers significant performance gains, other internal ASE optimizations and reduced code paths further reduce the response times for many database operations. Sybase in-memory databases share the same drivers, SQL language and administration tools as their on-disk versions. This allows IT departments to quickly migrate an existing system to an in-memory database with minimal cost and complexity. A Wall Street customer saw a nine to 10 times performance improvement in pre-trading compliance checks after implementing ASE in-memory databases. The migration was seamless with no special training or new engineering development required.

REDUCE RISK

Rock-solid security. It's just one of the many reasons that enterprises around the globe use ASE. ASE data encryption and security technologies protect data from both internal and external security breaches. Offering the perfect combination of regulatory compliance and customer privacy, ASE allows you to protect your data more effectively than ever before, keeping data secure at all times — whether in transit, when accessed or while at rest. ASE offers two security options: the Encrypted Column Option and the Security & Directory Services Option.

Data at rest needs to be secured and the ASE Encrypted Column Option employs a unique, patent-pending encryption system that ensures data privacy without the expense and effort of changing existing applications. Using column-based encryption, you may encrypt selective parts of your databases and tables. ASE will integrate key access through a decryption permission-based system that provides keys only to designated users.

ASE's Security and Directory Services Option ensures data privacy through row-based access controls, the encryption of in-transit data, and support for LDAP, Active Directory, and Pluggable Authentication Modules (PAM) services. Row-level access control is a flexible and unique approach to information filtering. Administrators can define security parameters that are applied to individual data elements or records in a database. Encryption of in-transit data keeps sensitive data private during transmission using FIPS 140 compliant encryption for Secure Sockets Layer (SSL) and Public Key Infrastructure (PKI) certificates. Lightweight Directory Access Protocol (LDAP), PAM, and Active Directory provide mechanisms to simplify the management of directory information across multiple servers and platforms.

INCREASE AVAILABILITY & RELIABILITY

For mission critical applications that require continuous operation, ASE Cluster Edition takes ASE's proven reliability to a new level, while offering even greater opportunities to lower infrastructure costs. ASE Cluster Edition allows databases to run on multiple hardware servers using a shared-disk clustering architecture. By running on multiple servers, a shared-disk cluster architecture ensures the database service continues to run even if one or more of the nodes in the cluster is unavailable. By combining virtualization and clustering techniques, organizations can reduce the complexities of managing and maintaining multiple workloads on a single cluster, which is key to maximizing server resources. Sybase is the only database vendor to combine shared-disk clustering and virtualization into one product. This ensures that enterprises can not only protect database service availability against server failures, but also allows enterprises to do this as efficiently and effectively as possible. Our unique Virtualized Resource Management™ (VRM) technology supports workload allocation across multiple cluster nodes, increasing the manageability of the database servers and allowing IT to maximize the use of each individual server.

IMPROVE EFFICIENCY AND LOWER COSTS

Ease of use and efficient storage are key to controlling costs and raising service levels in the data center especially as the volume of data continues to grow. Partitioning in ASE makes large databases easy to manage and more efficient by allowing you to divide tables into smaller partitions each of which can be individually managed. Data and index partitioning in ASE reduces maintenance times, enables optimal data storage, and ultimately provides increased levels of performance. And more efficient maintenance and management drives down costs by reducing the time and effort required by your DBAs to manage and maintain databases.

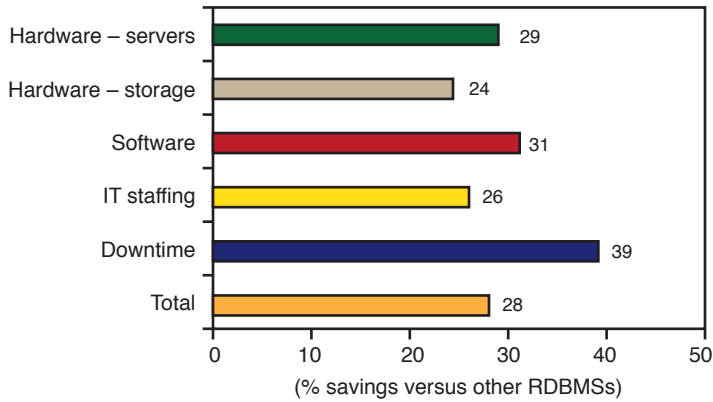
Advanced in-database compression in ASE, of both structured and unstructured data, allows large data volumes to be stored more compactly while reducing I/O times to ensure high performance on even the largest data sets. These compression enhancements allow you to reduce storage costs for online data and increase savings in I/O when caching compressed data. ASE conducts its compression algorithms without requiring any changes to your applications so you are up and running quickly. Although the cost of acquiring new racks of physical storage continue to trend lower per TB, the total cost to manage that data continues to escalate. Compression capabilities in ASE address this growing need by efficiently storing and retrieving large data sets for processing.

Often, many long term cost factors are not considered when running a given relational database management system. According to a recent Sybase-sponsored report by IDC, firms should regularly assess the total cost of ownership of their major database applications, including hardware, software and staff time, as well as opportunity costs due to poor performance and other issues. In the report, IDC found that ASE total costs were 28% less than the total costs of other relational databases². Additionally ASE installations were more efficient than other systems, requiring 24% less storage capacity and running on 29% less server processor power; and, ASE required 27% fewer IT staff resources overall. As illustrated in the chart below, ASE contains a number of features that help control costs by making the system a stingy user of hardware resources, making it easy to optimize operations with a minimum of staff, and providing maintenance that is augmented by a direct connection to Sybase support.

“ON AVERAGE, COMPANIES IN THE STUDY ESTIMATED THE TOTAL COST FOR SYBASE ASE TO BE 28% LESS THAN THE TOTAL COST OF OTHER RDBMS THEY ARE USING, WHICH WILL SAVE THEM ABOUT \$129,000 PER 100 USERS OVER FIVE YEARS.”

CALCULATING THE TRUE COST OF RDBMS OWNERSHIP AND HOW SYBASE ASE STACKS UP: A GUIDE FOR SAP BUSINESS SUITE USERS; IDC, 2011.

Sybase ASE Five-Year Savings per 100 Users



Five-year savings per 100 users = \$128,580

Source: IDC, October 2011

PLATFORMS SUPPORTED

- HP-UX Itanium
- IBM AIX (64 bit)
- Linux / x86 (32 bit)
- Linux Power
- Microsoft Windows x86/x64
- Sun Solaris / SPARC (64 bit)

A WIDE RANGE OF OPTIONS

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

ASE Cluster Edition – Enterprise data management solution for deploying a database application across a shared disk cluster for increased application availability, resource utilization and efficiency.

Data Compression Option – In-database compression capabilities for relational and unstructured data reduce storage costs and increase performance on large and growing data sets

In-Memory Databases Option – Fully integrated within ASE, the In-Memory Databases Option equips applications with instant responsiveness and very high throughput. The in-memory databases have zero-disk footprint and reside completely in memory.

Partitions Option – Allows users to manage large tables and indexes by dividing them into smaller, more manageable pieces helping to reduce maintenance times and manage large, growing data sets.

Encrypted Columns Option – Allows data to be natively and selectively encrypted and stored with ASE without requiring application modifications.

ASE Security & Directory Services Option – Ensures data privacy through row-based access controls, the encryption of in-transit data, and support for LDAP, Active Directory and Pluggable Authentication Modules (PAM) services.

ASE Advanced Backup Services – Tivoli™ Storage Manager Option: Supports the integration of Adaptive Server Backup Server with Tivoli Storage Manager for increased efficiency in the data center.

ASE High Availability Option – Provides near continuous database access for critical business applications in the event of unexpected system failures.

SYBASE ASE: A BRIDGE TO THE FUTURE

If businesses are to create and sustain competitive advantages in the face of exponential data growth, their data management systems must address key challenges in the areas of performance, operational risk, and efficiency. ASE meets these challenges and lays the long-term foundation for strategic agility and continuing innovation in mission-critical environments.

For more information on Sybase ASE, visit www.sybase.com/ASE.

¹4-core: (Updated 08/09) Based on IBM TPC-C results of 276,383 tpmC, 2.55 \$/tpmC, configuration available as of 05/24/09 and runs on a p-550 Model 8204-E8A5 running Sybase Adaptive Server 15.0.3 on Red Hat Enterprise Linux 5.1.

2-core: Based on IBM TPC-C results of 81,439 tpmC, 2.99 \$/tpmC, configuration available as of 12/22/06 and runs on a p5-520 Model 9131-520 running Sybase Adaptive Server on SUSE Linux 9.

² *Calculating the True Cost of RDBMS Ownership and How Sybase ASE Stacks Up: A Guide for SAP Business Suite Users*; IDC, 2011.