

Sybase® Adaptive Server® Enterprise (ASE) 15



Sybase ASE 15 substantially enhances a database platform already known for its superior performance, reliability, and low total cost of ownership (TCO), adding unique security options and a host of new features that boost performance while reducing operational cost and risk. At the same time, ASE 15 lays the foundation for new technologies such as grids and clusters, service-oriented architectures, and real-time messaging.

ASE 15 brings this capability to all the platforms it runs on, including low-cost environments such as Linux® operating systems.

IMPROVED PERFORMANCE, TCO, AND SCALABILITY

Adaptive Server Enterprise has always provided low TCO on all platforms, especially on Windows® and Linux operating systems. Now ASE 15 offers enhanced cost and performance capability through new features such as partitions and an advanced optimizer, which make ASE more scalable for very large databases and complex queries.

Smart Partitions

ASE 15 makes large databases easy to manage and more efficient by allowing you to divide tables into smaller partitions that can be individually managed. You can run maintenance tasks on selected partitions to avoid slowing overall performance, and queries run faster because ASE 15's smart query optimizer bypasses partitions that don't contain relevant data.

Computed Columns

Often applications repeat the same calculation over and over for the same report or query. ASE 15 supports both virtual and materialized columns based on server calculations. Columns can be the computed result of other data in the table, saving that result for future repeated queries. Reporting applications fly with ASE 15!

Functional Indexes

When applications need to search tables based on the result of a function, performance can suffer. Often this happens with "smart" keys (e.g. strings of data that often combine several attributes into a single database column). Functional indexes allow the server to build indexes on a table based on the result of a function. When repeated searches use that function, the results do not need to be computed from scratch.

Next Generation Query Engine

ASE has always excelled at simultaneously supporting transaction processing, decision support, and reporting within the same set of data. Now ASE 15 dramatically enhances the reporting of complex information through a patented query optimizer, which speeds query performance by supporting new techniques to optimize performance such as improved star-joins, hash-joins, join histograms, partition elimination, and goals-based optimization.

Device Flexibility for Larger Servers

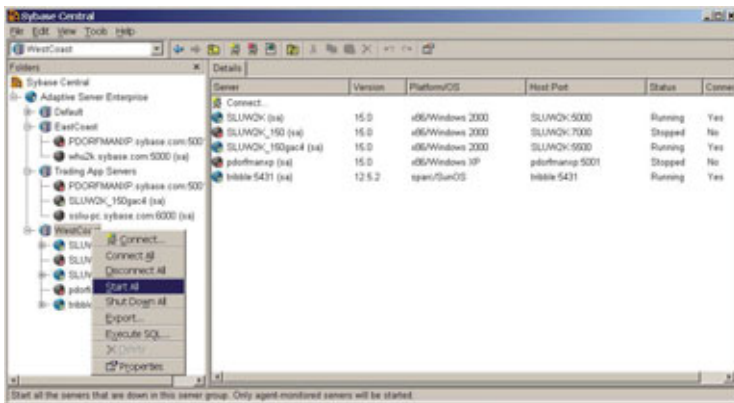
ASE 15 allows you to assign two billion logical devices to a single server, with each device up to four terabytes in size. ASE 15 supports over 32,767 databases, and the maximum size limit for an individual database is 32 terabytes, extending the maximum storage per ASE server to over 1 million terabytes!

SELF-MANAGEMENT AND EMBEDABILITY

Adaptive Server Enterprise already has impressive technologies for reducing management overhead and improving embedability. These include a powerful job scheduler, automatic resource management, dynamic cache management, and high performance maintenance technologies such as sampled statistics. To this, ASE 15 adds substantial new capability, including:

Automated Statistic Updates

Smart databases use internal statistics to improve query performance, but over time these statistics can become out of date and inefficient. ASE 15 solves this problem with automatic statistic updates that save human and system resources while minimizing the impact on system performance. This ensures that the query system always uses the freshest metadata about the contents of the database.



Graphical Plan Viewer

Plans for solving complicated queries can become very complex and make troubleshooting performance issues difficult. To make debugging queries simpler, ASE 15 provides a graphical query plan viewer that lets you visualize the query solution selected by ASE's optimizer.

Enterprise View

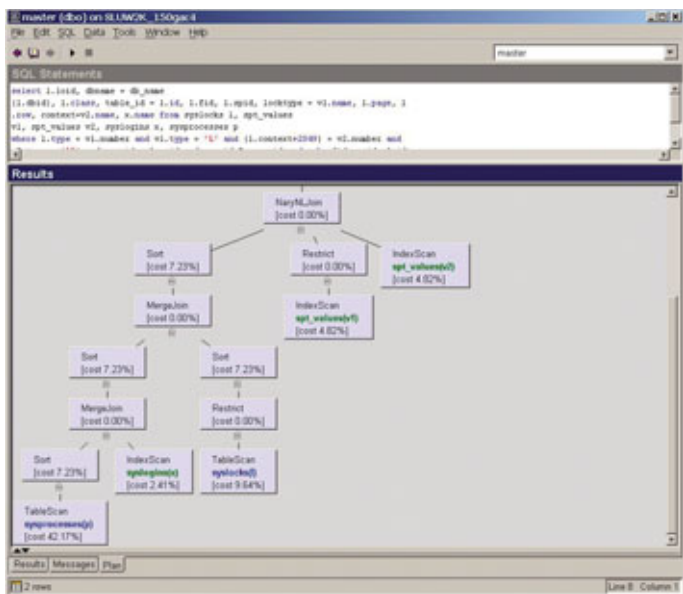
To simplify managing multiple ASE servers, Sybase Central with ASE 15 supports an Enterprise View of all ASE servers on the network. Administrators can create groups of servers for simultaneous administration such as server start/stop or retrieving server logs.

ENABLING APPLICATIONS

With impressive XML and Web Services capability, Adaptive Server Enterprise has been a rich environment for developing applications. ASE 15 builds on this legacy by providing new features such as bi-directional SQL/XML transformation in the database server and native support for custom Web Services. ASE 15 also adds features to make building applications easier.

Advanced XML

There is a growing need to support XML not only in middle tiers but in the database tier. ASE 12.5 and later versions already support native storage and manipulation of XML data. With ASE 15, these services extend to include support for XML internationalization and XML schema validation, along with enhanced support for rich XML generation from relational data and numerous enhancements to XML query and performance.



Web Services

Web Services are the foundation for building Service Oriented Architectures. ASE 15 features the ability to create user-defined Web Services right in the database server, making building a web service as easy as building a stored procedure. Web Services can be created and accessed from within ASE through an HTTP listener and a SOAP/WSDL processor.

Scrollable Cursors

With large data sets, filing through a mountain of results data can be difficult. ASE 15's bi-directional scrollable cursors make it convenient to work with large result sets because your application can easily move backward and forward through a result set, one row at a time. This especially helps with Web applications which need to process large result sets but present the user with subsets of those results.

Unicode UNITEXT Data Type

By adding a UNITEXT data type in addition to existing support for UNICHAR and UNIVARCHAR data types, ASE 15 makes it easy for international applications to store large blocks of Unicode data.

BIGINT and UNSIGNED INT Datatypes

To improve compatibility with a large number of applications, ASE 15 delivers data types to handle large numbers and unsigned values.

ADO.NET Provider

Working within the .NET framework? ASE 15's new ADO.NET provider makes integrating your .NET applications a snap.

Large Identifiers

Sometimes you need longer names for variables and other identifiers in the database. ASE 15 delivers by expanding the identifier limit from 30 bytes to 255 bytes. Examples of identifiers that have been expanded include names for tables, columns, indexes, views, stored procedures, variables, and data types.

TECHNICAL SPECIFICATIONS

PLATFORMS SUPPORTED

- HP-UX / HPPA (64 bit)
- Linux / x86 (32 bit)
- IBM® AIX® (64 bit)
- Microsoft® Windows 2000/2003/x86 (32 bit)
- Sun™ Solaris™ / SPARC (32 & 64 bit)

HIGH AVAILABILITY (available as an Option)

Hardware/Software Supported

- IBM AIX – HACMP
- Sun Solaris / SPARC – Sun Cluster & VERITAS® Cluster Software
- HP-UX / HPPA – ServiceGuard
- Windows / x86 – Microsoft® Cluster Software (MSCS)
- Linux / x86 – VERITAS Cluster Software

SECURITY

Authentication

- LDAP
- PAM (available as an Option)
- Microsoft Active Directory
- MIT Kerberos (available as an Option)

Encryption

- FIPS 140 certified algorithms for SSL encryption (available as an Option)
- Common Criteria Certification
- Encrypted Columns (available as an Option)

SERVER SPECIFICATIONS

Database Statistics (Maximum)

Databases per Adaptive Server Enterprise ..32,767
 Maximum Physical Devices per Server2,147,483,647
 Maximum Size Per Device4 TB
 Maximum Storage Limit per Database32 TB
 Maximum Storage Limit per Server1,048,544 TB
 Page Size2K, 4K, 8K, 16K
 Databases spanned by one update16
 Databases opened by one transaction16
 Tables in a query50
 Logins per server2,147,516,416
 Users per database2,146,484,223
 Groups per database1,032,193
 Columns per table1024
 Arguments to stored procedure2048

Locking

Row Level Locking
 Page Level Locking
 Data Page Locking
 Table Level Locking
 All Page Locking

Datatype Statistics

Binary Large Objects (BLOB) (Maximum)

Text2 GB
 Unitext datatype:2,147,483,646 bytes (max)
 Image2 GB
 Binaryup to 16384 bytes
 Varbinary(n)up to 16384 bytes

Character (Maximum)

Char(n)up to 16384 bytes
 Varchar(n)up to 16384 bytes

Numeric (Maximum)

Int+/-2,147,483,647 integer range
 Smallint+/-32,767 integer range
 Tinyintbetween 0 and 255 inclusive
 Float8 byte floating point number
 Shortfloat4 byte floating point number
 Decimal, numeric38 digits
 Double precision8 byte floating point number
 Moneybetween +/-
 922,337,203,685,447,5807
 Unsigned bigint: 0-18,446,744,073,709,551,615 (2⁶⁴-1)
 Unsigned int: 0- 4,294,967,295 (2³²-1)
 Unsigned smallint: 0-65535 (2¹⁶-1)

INTERNATIONAL SUPPORT

Localized Messages in:

- French German Spanish Simplified
- Chinese Japanese Korean
- Polish Thai Brazilian-Portuguese
- Character Sets: 45 plus character sets including Unicode

ENHANCED SECURITY

Adaptive Server Enterprise already includes critical security features such as row-based security, DBA authorization, and LDAP. Using an LDAP Server or Microsoft Active Directory, many Sybase ASE servers can authenticate users from a single administration and control point—with no changes to client applications. ASE 15 builds on this impressive environment with technologies that assure data is protected when in transit, when accessed, and when at rest.

On-Disk Encryption

Data at rest needs to be secured. ASE 15 introduces a unique, patent-pending encryption system that does not require application modifications, thus keeping down your cost of implementation. Using column-based encryption, you have the option to encrypt selective parts of databases and tables. The system also integrates key access through a permission-based system that provides keys only to designated users.

FIPS PUB 140-2 Compliant SSL Support

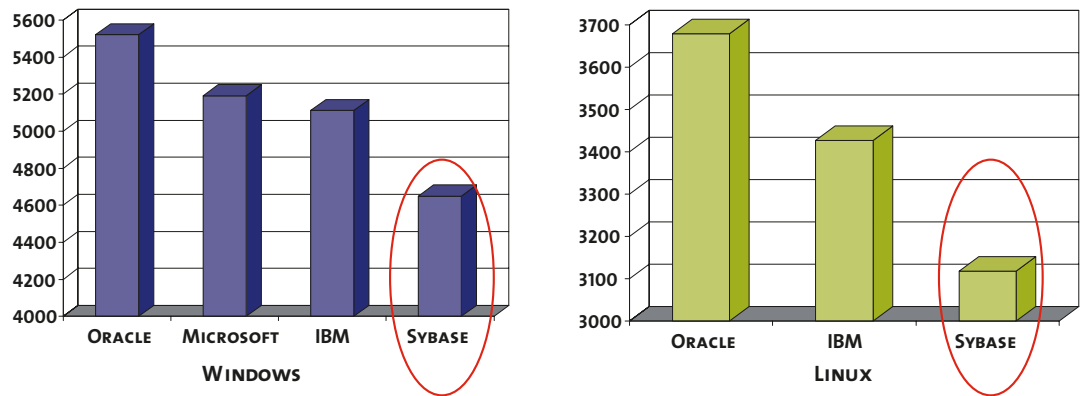
Protecting data while it is being transmitted is an important part of security. ASE 15 supports FIPS PUB 140-2 Compliant SSL technology that encrypts data being conveyed between clients and servers.

ISO 15408 Common Criteria Certification

Common Criteria is the standard by which the security of access controls and authentication mechanisms for systems are measured. ASE 15 will be submitted for evaluation against the Common Criteria (ISO 15408) Level 4 standard.

A LOW TCO ENVIRONMENT FOR YOUR APPLICATION

On Windows or Linux operating systems, Sybase ASE is a low-TCO leader. In a recent Standish Group report ASE cost 15% to 37% less than other alternatives. Below is a sample of the savings:



Annual Total Cost of a Portfolio Management Application