

The Progress RDBMS leads the database market with low cost of ownership and the ability to scale to meet the demands of enterprise applications, e-commerce, and application service providers.

HIGHLIGHTS

Progress' high performance RDBMS has demonstrated record-breaking throughput and perfect linear scalability, freeing developers to let their applications grow with customer needs.

The Progress RDBMS provides extensive flexibility in application development with a high performance interface for the Progress 4GL and an open, standards-based SQL-92 database engine.

FEATURES AT A GLANCE

- Virtually unlimited data storage capabilities
- High availability with on-line backup and cluster failover
- Total data management for Web-based, client/server, host-based, and mixed mode environments
- Open-client interfaces: ODBC, JDBC, ESQL
- Self-tuning features make databases easy to maintain

Applications must perform in complex, enterprise and Web-centric computing environments that demand a highly scalable and open relational database management system (RDBMS).

The Progress® RDBMS is a high-performance, relational database that scales from single-user Windows® desktop systems to massive symmetric multiprocessing (SMP) and cache coherent non-uniform memory (ccNUMA) UNIX® systems, supporting thousands of concurrent users.

The Progress RDBMS offers many characteristics that are essential to both application developers and IT departments, such as:

- The industry's lowest cost of ownership
- High availability and absolute reliability
- Support for mission-critical transaction processing
- Unmatched performance
- Broad platform support
- Open interfaces for integration with other tools and applications

Leverage the Benefits of the #1 Embedded Database

The Progress RDBMS is the world's #1 embedded database, according to a Gartner Group/Dataquest study. That means that more developers put Progress at the heart of their applications than any other database.

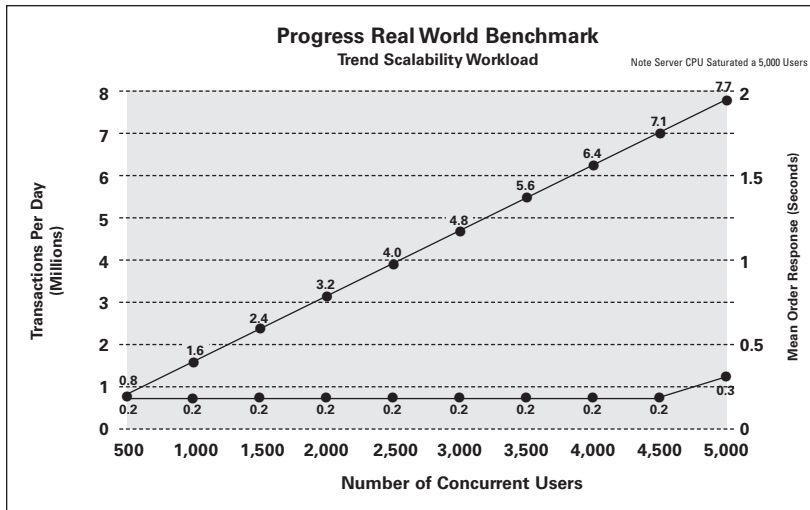
One reason why is that Progress' ease of maintenance, superior reliability, and high availability translate to the industry's lowest cost of ownership. Industry analysts and customers have attested to the fact that Progress provides the lowest cost of ownership of any relational database, year in and year out.

Scalable Database Presents No Upper Limits

The architecture of the Progress storage engine lets your applications take full advantage of the power of your computing systems. With support for over 10,000 concurrent users and numerous terabytes of data, it provides exceptional capacity for large-scale, high-performance computing. As your organization grows, you can be assured that the Progress Enterprise RDBMS will meet the challenge.

Continuous development work on maximizing database performance and scalability has enabled the RDBMS to demonstrate:

- Perfect Linear Scalability with a real-world application and 5,000 concurrent database users, maintaining flat sub-second response times.
- The ability to handle virtually any transaction workload with record-breaking throughput of 600,000 transactions per minute (ATM).



The Progress RDBMS has demonstrated perfect linear scalability in testing by serving as many as 5,000 concurrent users with little effect on response time.

One reason for these breakthrough results is the addition of the patent-pending Concurrent Commit Lock Protocol. This new feature increases the parallelism allowed within the storage engine for primitive update and commit operations used by most database applications. The net effect is that less work is done inside the storage engine for most operations, and CPU cycles are saved.

Highly concurrent processing for on-line interactive users is provided through features that reduce contention for shared resources, such as support for today's large multi-processor SMP and ccNUMA configurations, fine-grained shared memory locking, and SMP spin locks. The resulting performance advantages allow the Enterprise RDBMS to scale effectively from smaller servers to the largest enterprise servers.

A large buffer pool of up to 125 million database buffers allows more than 100 Gigabytes of the database to be stored in memory in a 64-bit OS environment. This provides memory-speed access to

the frequently used parts of the database and ultimately reduces disk I/O.

In today's environment of inexpensive disk storage, the Progress RDBMS lets your databases grow with you.

Progress presents virtually no limitations to the amount of data that can be stored in a single database other than the storage limits of your own computing environment.

The Enterprise RDBMS also provides seamless access to all data stored in multiple databases across a network. Applications can connect to as many as 240 databases simultaneously.

Ease of Administration Simplifies IT's Job

Embedded in enterprise applications, Progress databases are often transparent to the IT staff that supports them. Progress' unparalleled reliability minimizes the cost and complexity of database management and tuning.

Self-tuning features, such as the Asynchronous Page Writers adjust their behavior based on database activity, even when the activity changes dramatically. This provides excellent performance with a manageable number of configuration options.

Optimized recovery log space management and automatic space reuse techniques minimize the need to monitor resources used during normal processing. If an operation does not require recovery, resources will not be used, thereby minimizing recovery time in the event of a system failure. Automatic crash recovery means no special steps are required when bringing an application online.

The Progress Enterprise RDBMS eases the management of large databases by supporting multiple storage areas, which can be distributed across your available disk space with complete control. Important tables can be located on fast disk drives, and time-consuming management operations can be performed only on the storage areas that are required, rather than the database as a whole.

Progress Explorer Provides Powerful Configuration Tools for Enterprise and ASP Deployments

The Progress Explorer further simplifies administration and management of Progress databases and servers across the network. Through a single, graphical interface, you can configure, monitor, start and stop the various server components associated with an application.

Progress Explorer can be run from a single location and used remotely to manage systems simultaneously across multiple platforms.

–Database servers, application servers, transaction servers, and name servers can all be managed through a common interface.

–Flexible configuration options provide for multiple service levels by allowing multiple named service groups.

–Configuration support is provided for current network designs including firewall support.

High Availability Means No Downtime for Applications

Mission critical applications require industrial-strength armor to protect your data. The Progress Enterprise RDBMS provides all of the security and data protection capabilities required to ensure reliability and maintain high availability.

The following are some of the key features that insure high availability:

- Efficient and Automatic Crash Recovery* is performed when the database is restarted after failure without user intervention.
- Transaction Logging* to protect the database in the event of a database failure. The database uses the recovery log during crash recovery to reapply committed changes to the database and remove all changes from uncommitted transactions.

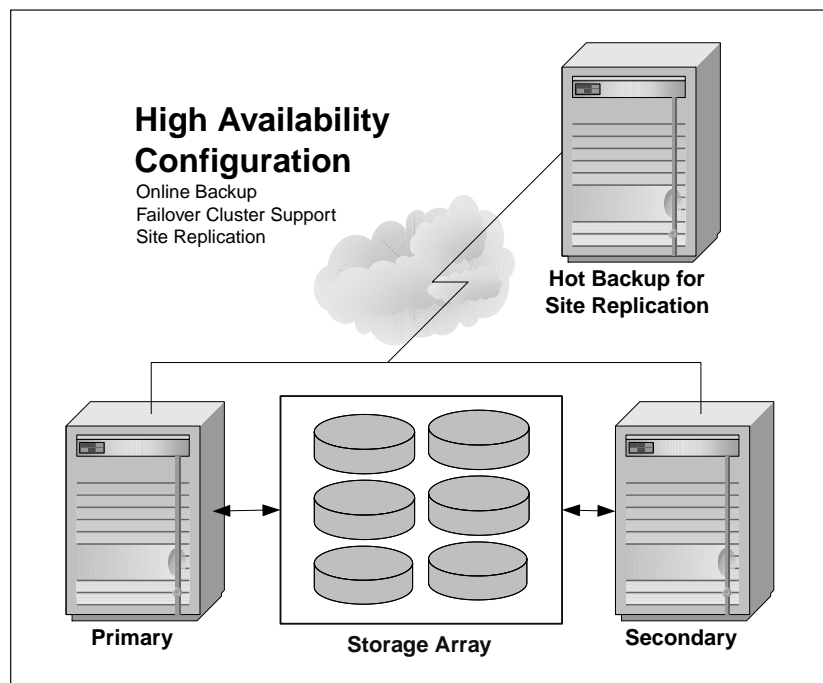
–*Roll-Forward Recovery* allows recovery of lost transactions in the event of media failure. Roll-forward recovery replays committed transactions that have occurred since the last backup.

–*Point-in-Time Recovery* allows the database to be rolled forward from a backup to a particular point in time. This allows recovery from an inadvertent user error or other data related failures.

–*Site Replication* to allow hot standby for one or more systems to be maintained at the same site or a remote site.

–*On-line Full and Incremental Backup* to eliminate the need for scheduled downtime for backups. The Enterprise RDBMS supports on-line backup during normal processing.

–*On-Line Table and Index Reorganization* provides the ability to reorganize a table while the system is



High database availability can be achieved with both failover cluster support and site replication. By constantly applying individual transactions, a secondary system stays current with the live system without requiring constant backups. For instances where a database image is lost, a Hot Backup can be maintained at the same site or remote location.

in operation and users are reading the table. Users can continue forward processing with no restrictions while indexes are verified, compressed and repaired.

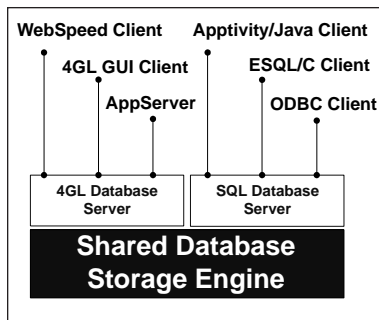
–*Two-phase Commit Protocol* to ensure the integrity and consistency of transactions that span multiple databases and multiple sites. This automatic feature makes sure that a transaction can be rolled back if a failure occurs at any node on the network when applications create transactions that use multiple databases.

–*Dynamic User and Application-Specific Buffer Allocation* to prevent table scan operations from affecting the overall buffer pool.

–*Support for Zero Impact Backups* using database quiet points and split mirror backup techniques allow the Enterprise RDBMS to be used in the most demanding environments with the latest storage array technology. The high availability afforded by this feature supports "non-stop" applications.

Flexible Engine Has First Class Interface to SQL

The Progress RDBMS offers essential flexibility in developing software solutions by providing both a high performance interface for the Progress 4GL and an open, standards-based interface for SQL-92. The database meets the ANSI SQL-92 Entry-Level standard, providing an open environment that enables efficient integration with third-party tools, such as development software, reporting and OLAP tools.



With 4GL and SQL-92 access to the database, applications developers can provide first class support for a wide variety of clients and the Progress AppServer.

Featuring a state-of-the-art, cost-based query optimizer, the SQL-92 language processor incorporates APIs for ODBC, JBDC, and Embedded SQL/C, and provides SQL extensions for more robust solutions. These extensions include:

- Java stored Procedures and Triggers
- GRANT/REVOKE security model
- Updatable views
- Derived Tables
- Multi-Schema support
- Integrated Schemas

Since both language interfaces share the same storage engine, SQL applications enjoy the same rock solid foundation as the 4GL, and can be used simultaneously without restrictions.

With Progress' ODBC driver and server approach, the Progress RDBMS allows a single broker to support both 4GL and SQL connections, which greatly simplifies support for SQL-based database connections.

A Full Suite of Tools to Build Your Applications

Progress brings more than a database to application developers. From our own Progress 4GL and WebSpeed languages to the Open AppServer, we provide all the tools necessary to develop, deploy and manage applications. And, our Universal Application Architecture (UAA) ensures that Progress tools integrate with technologies that you will use today, and tomorrow.

Develop Once and Watch Your Application Scale

The Progress Enterprise RDBMS is built on the same code base as our other database products, the *Progress Workgroup RDBMS* and *Progress Personal RDBMS*. Choose a solution that satisfies your business objectives today and upgrade as your needs grow – all without a single change in your program code. You can continue to enjoy the reliable service and proven technology of an industry leader, and your staff will not lose productivity learning a new system.

The *Progress Workgroup RDBMS* offers many of the same powerful capabilities as the Enterprise RDBMS, but is optimized for workgroups of 2 to 30 concurrent users. This solution provides high performance, cross-platform interoperability, and multi-user support at an excellent value. If an organization grows larger than 49 users, they simply need a license upgrade to move up to the Enterprise database. The *Progress Personal RDBMS* is designed primarily for developing, prototyping, and testing applications.

Maximum Database Parameters	Enterprise	Workgroup	Personal
Tables	32,000	32,000	32,000
Indexes	32,000	32,000	32,000
Fields per table	32,000	32,000	32,000
Rows per table	2.147 Billion	2.147 Billion	2.147 Billion
Rows per block	256	256	256
Concurrent Users	Up to 10,000	Up to 49	1
Concurrent Transactions	Up to 10,000	Up to 49	1
Record length	32,000 bytes	32,000 bytes	32,000 bytes
Buffers (32-bit)	500,000/4GB	500,000/4GB	500,000/4GB
Buffer pool (64-bit)	125 Million/128GB	N/A	N/A
Database Size	16,000 TB	1 TB	512 GB
Recovery Area	32 TB	1 TB	512 GB
Data Area	16 TB	1 TB	512 GB
Storage Areas	1,000	100	10
Data Area Block Size	8,192 bytes	4,192 bytes	4,192 bytes
Extent Size:	2 GB	2 GB	2 GB

These limits were determined by testing ability or platform capacity, and not necessarily by product design.

Specifications

Data Types Supported

Character: 32,000 bytes (maximum)
 Date: 1/1/32768 BC to 1/1/32767 AD
 Decimal: 50 digits total, 1-10 decimal places
 Integer: -2,1467,483,648 to 2,167,483,648
 Logical: true/false, yes/no
 BLOB: Binary Large Objects up to 4GB per BLOB (SQL-only)

Network Support

–TCP/IP

Operating System Support

–Windows NT®/2000®, Citrix® MetaFrame
 –Windows 95/98*
 –Compaq Tru64
 –DG/UX Intel
 –HP-UX®
 –IBM® AIX®
 –Linux Intel
 –SCO Unixware®, OpenServer™
 –Sun™ Solaris® Intel & SPARC
 * Personal RDBMS only

API Support

–ANSI SQL-92, Progress 4GL, ODBC, JBDC
 –Embedded SQL/C

Language Support

Supports most languages including double-byte-enabled character sets and Unicode.

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