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# OPENEDGE® RDBMS

## THE DATABASE CHALLENGE: MEETING BUSINESS NEEDS

How can you provide best-in-class IT systems to the business year after year—including state-of-the-art Software as a Service (SaaS) and cloud computing services and applications—without breaking the budget? How can you be sure the production system can scale—easily and cost-effectively? How can you free staff from routine database maintenance chores so they can focus on supporting the business—and be assured of database performance, reliability, and availability?

Whether you use Windows, Linux, or any major UNIX system, one key answer is: by deploying your services and applications on Progress® OpenEdge® RDBMS. This is a high-performance, relational database that scales from single-user laptop systems to massive multiprocessing environments that support thousands of concurrent users and terabytes of data. OpenEdge RDBMS products offer characteristics essential to IT operations teams as well as SaaS service and application providers, such as:

▸ The industry's lowest cost of ownership

▸ High availability and absolute reliability

▸ Extensive scalability

▸ A focus on mission-critical production systems

▸ Broad platform support

▸ Open industry-standard interfaces for integration with tools and applications

In fact, studies from IDC, Forrester and other analysts report that OpenEdge RDBMS is the number one embedded[1] database from a pure play perspective.[2] According to analysts, key reasons for this success are its low administrative costs; high performance, scalability, and reliability; and the tight focus on online transaction processing (OLTP.)[3] These traits make it ideal for many organizations, including SaaS/cloud computing providers and large enterprises becoming business service providers (BSPs).

## A SCALABLE DATABASE—FOR OPERATIONAL RESPONSIVENESS

OpenEdge RDBMS has been designed for high performance and scalability. It can handle thousands of users and high-traffic loads with sub-second response times. As a result, it helps to ensure that users are productive, customers are satisfied, and, for SaaS/cloud computing environments, service-level agreements (SLAs) are met.

Specifically, OpenEdge RDBMS easily and cost-effectively grows as your business grows, providing operational responsiveness to business conditions. It is a single product, packaged for single-user (personal), workgroup, or enterprise and SaaS use with specific scalability features enabled as deployments increase in size. In fact, it has been proven in large-scale, high-performance application to demonstrate:

### HIGHLIGHTS:

▸ Total data management with low TCO—to meet the demands of SaaS/cloud computing, client/server, and appserver environments

▸ Virtually unlimited data storage capabilities

▸ High performance, scalability, exceptional reliability, and easy maintenance: it just works, on everything from a small PC to a large multiprocessor

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- Perfect linear scalability with real-world applications and 20,000 concurrent database users, maintaining flat sub-second response times
- The ability to handle virtually any transaction workload with throughput of 600,000 transactions per minute

A large shared-memory buffer pool allows up to a terabyte of the database to be cached in memory in a 64-bit OS environment. This gives memory-speed access to the frequently used parts of the database for best performance.

In addition, its storage or space management is extendable: architected for expansion and optimized for performance. As a result, OpenEdge RDBMS 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.

## EASY, COST-EFFECTIVE ADMINISTRATION

What if the effort to tune the database, perform routine maintenance, update schema for application changes, and manage the physical data files was made simpler and non-intrusive to production operations? You could reduce IT work and focus the DBA team on providing more support for business users and compliance requirements.

In fact, with OpenEdge RDBMS, your database is easy and cost-effective to operate, manage, and maintain. It simplifies database management with many automated and self-tuning features and a single point of administration even for configurations with multiple systems and platforms. And there's no need to take the application offline until maintenance is complete—so there's less scheduled downtime for greater application availability.

## MANAGING PERFORMANCE WITH LESS WORK

OpenEdge RDBMS has many self-administering features for managing performance. Asynchronous Page Writers adapt their behavior based on the ever-changing database workload. This provides excellent performance with a small number of configuration options. Optimized transaction logging and automatic space reuse techniques minimize the need to monitor or adjust log resources used during normal processing. Automatic recovery means no special steps are required when bringing an application online again in the event of a system failure.

## AUTOMATING ROUTINE MAINTENANCE

OpenEdge RDBMS also saves IT time and costs by automating routine maintenance. Normal forward processing keeps space utilization very efficient by automatically coalescing record fragments when a record is written out. This eliminates one major reason for dump-and-load operations.

## MINIMAL DOWNTIME

When applications evolve requiring schema updates, or the business grows so that you need more data storage, with OpenEdge RDBMS you can easily and safely make the required changes, often online, to minimize or eliminate planned outages. That means that your

systems are available to support your business and accommodate employees, subscribers, and customers. For example:

▶ Both the Progress Advanced Business Language (ABL) and SQL have the ability to update schema structures on-line. You can add tables, columns, fields, or indexes on-line, without downtime.

▶ Database storage is mapped to files on your computing system, either at the SAN level or through file systems. OpenEdge RDBMS allows additional files to be added to your database while production is online, providing space to expand tables, indexes, or log files as needed.

▶ Structural changes to the database can be analyzed by OpenEdge RDBMS utilities to ensure that changes to support new tables or indexes are available and ready for use—before the DBA needs to commit changes on-line. This validation is the "safety check" that can help keep re-work out of application upgrade processes.

## PROACTIVE TROUBLESHOOTING

With OpenEdge RDBMS and the add-on Progress® OpenEdge® Management, your DBA team can keep your application running smoothly despite the demands of year-end processing, power users, and a dependence on remote systems that provide essential data into the central complex. With Progress you can monitor real-time database use and proactively troubleshoot impending problems to ensure user/customer satisfaction and meet SLAs. For example:

▶ DBAs can use OpenEdge RDBMS tables with operational statistics relating performance to users and to tables or indexes, and the OpenEdge Management graphical interface to see where the bottlenecks are and which users are consuming certain resources. With these capabilities, they can spot opportunities to balance the system or help a user early on. With the alerting facility in OpenEdge Management, DBAs can handle issues literally as they emerge, keeping users productive all the while.

▶ With OpenEdge Explorer, a feature of OpenEdge RDBMS, a DBA can configure, start, monitor, or stop any database service—whether local or at a remote location. The optional OpenEdge Management adds trending, rule-based alerting, and reporting capabilities needed to understanding what's happening at, and to manage, scores of remote locations.

## MANAGING COMPLIANCE REQUIREMENTS

Audit triggers can consume performance. Wouldn't it be great to have that capacity back for the application itself? With OpenEdge RDBMS, you have it.

OpenEdge RDBMS has policy-based auditing services written into the application in a way that minimizes the performance impact. You don't have to divert programming resources to coding compliance via trigger-based schemes. As a result, you can meet compliance requirements more cost-effectively and get the best possible performance.

In addition, OpenEdge RDBMS provides role-based separation of duties so that you can designate an audit administrator and audit readers, each with capabilities focused on only their appointed tasks—to ensure the integrity of the compliance data and process.

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## HIGH AVAILABILITY

Your application should never stop, even if one of the computers does. This is crucial for all enterprises and their customers, but especially for providers of SaaS/cloud computing services. With OpenEdge RDBMS, you have a database that "just works" reliably. Failover cluster functionality (included in OpenEdge Enterprise RDBMS) eliminates a single machine as a failure point, protecting the database from server hardware failure. In addition, on-line, full and incremental backup functionality eliminates the need for scheduled downtime for backups. What's more, OpenEdge RDBMS allows on-line backup without interfering with normal processing.

For business continuity best practice, you can integrate the optional Progress® OpenEdge® Replication products with your OpenEdge database:

▸ OpenEdge Replication automatically sends data to hot-standby servers in real time. It has an integrated failover and fail-back capability to bring a standby system to full production status in the event of a failure.

▸ OpenEdge Replication Plus performs replication to hot-standby servers and also permits those servers to be used for read-only reporting and for on-line backups, relieving the load on the primary production system.

## REAL-TIME BUSINESS REPORTING

OpenEdge RDBMS offers essential flexibility in developing software solutions by providing both a high-performance interface for the OpenEdge ABL (Advanced Business Language) and open, standards-based interfaces for SQL through ODBC and JDBC. This open environment gives you a large variety of query, reporting, and OLAP tools. Featuring a state-of-the-art, cost-based query optimizer, the SQL language processor incorporates APIs for ODBC and JBDC and provides industry-standard features. Since both language interfaces share the same storage engine, SQL applications enjoy the same rock solid foundation as ABL applications, and both can be used concurrently.

## TOTAL COMPATIBILITY

OpenEdge RDBMS product suite includes OpenEdge Enterprise RDBMS, OpenEdge Workgroup RDBMS, and OpenEdge Personal RDBMS. All are built on the same code base. As a result, you can choose a solution that satisfies your business objectives today and upgrade as your needs grow—all without a single change in your program code or extensive retraining of your staff that would be required to learn a new system.

The following table shows the key features of these products.

| FEATURE | ENTERPRISE | WORKGROUP | PERSONAL |
|---|---|---|---|
| Maximum Users | 23,000 | 50 | 1 |
| Async. Page Writers | Yes | No | No |
| After Image Writers | Yes | No | No |
| Before Image Writers | Yes | No | No |
| Failover Clusters | Yes | No | No |
| Multi-thread Index Build | Yes | 1 Thread | 1 Thread |
| Large Files | Yes | No | No |
| SMO tuning ("-spin") | Adjustable | Set to "1" | No |

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The **_Enterprise_** edition has full language functionality for ABL and SQL, along with performance features that allow the Enterprise application to scale up to many thousands of users and virtually unlimited (exabyte) database size on large-scale multiprocessor systems.

The **_Workgroup_** edition is a cost-effective, departmental-level solution that provides performance, multi-user support, and cross-platform interoperability—at an excellent value. It typically handles up to 50 concurrent users and a database in the 2-20 gigabyte range .

The **_Personal_** edition supports all OpenEdge data types, language features, and development tools as well as one incoming client connection. It also typically supports databases up to 4GB, though larger sizes can be accommodated.

## THE BOTTOM LINE: LOWER TCO

With Progress OpenEdge, you get highly efficient data management—along with deployment flexibility and great scalability. You can develop and deploy services and applications easily, in your existing environment, to leverage your computing investment. You can reduce the IT resources needed to manage and maintain the database—for cost savings. And it just works. You have a database that runs reliably while DBAs can manage and change it online—decreasing losses in productivity or customer dissatisfaction from downtime and outages.

Add up these benefits and you get low TCO!

For additional information, please contact your local Progress sales representative or visit: www.progress.com/openedge

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[1] *An embedded database is one included as part of an application and is sold to software providers for inclusion in their products. Many such databases are also sold directly to end user organization.*

[2] *Carl W. Olofson, "IDC Competitive Analysis: Worldwide Embedded Database Management Systems," 2007 Vendor Shares," December 2008. IDC #215446, Volume 1.*

[3] *Lauren Hughes, Jeff North, Sadaf Roshan, Forrester Consulting "The Total Economic Impact™ of the Progress® OpenEdge® Platform," Forrester Research, January 18, 2006. and, Nucleus Research," Guidebook: Progress OpenEdge," January 2008.*

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