

# OPENEDGE 11.0

## OPENEDGE—THE LEADING APPLICATION DEVELOPMENT PLATFORM FOR SIMPLIFYING THE DEVELOPMENT AND DELIVERY OF RESPONSIVE BUSINESS APPLICATIONS

Are your customers and end users demanding applications that can adapt to their changing needs, such as support for mobile devices, constantly evolving business processes, and deployment in the Cloud? At Progress Software, we have always prided ourselves in our ability to simplify the job of creating and operating the world's best business applications. In order to survive and thrive in today's world of quickly evolving markets and technologies, you must be able to respond quickly while coping with strict budgets and tight timeframes. If you can deliver rapidly customized applications with minimum disruption to business and IT systems, you will be successful.

With OpenEdge 11.0, you can develop dynamic solutions that incorporate business process and integration capabilities securely across multiple platforms and devices. Whether you deploy on-premise or in the Cloud, OpenEdge 11.0 offers a single integrated development platform that is 40% more productive and provides

### KEY FEATURES

*OpenEdge 11.0 enables our customers and partners to deliver Responsive Business Applications through new enhancements that offer:*

- > Multi-Tenancy
- > Increased Productivity
- > Improved Operational Excellence
- > Enhanced Integration & Workflow
- > Increased Security & Compliance
- > Improved Personalization
- > Greater User Interface Flexibility

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a 30% cost savings versus the competition. With OpenEdge, we help you grow—faster!

OpenEdge 11.0 delivers new enhancements and benefits across what Progress Software calls the “seven keys to success” for enabling our customers and partners to deliver Responsive Business Applications:

- > Multi-Tenancy
- > Productivity
- > Operational Excellence
- > Integration & Workflow
- > Security & Compliance
- > Personalization
- > User Interface Flexibility

## MULTI-TENANCY

A multi-tenant database is one which provides database support to a number of separate and distinct groups of users, also referred to as tenants. Multi-tenant applications have taken an increasing foothold in the database marketplace, largely due to the emergence of SaaS as a deployment strategy. For the SaaS application provider, a multi-tenant deployment strategy provides many benefits, especially when a Shared Tenancy approach is used. Management of the deployment can take place either at the overall application or database level, or based on tenant and user. Operational complexity is greatly reduced due to the number of shared resources and because only one instance of the application and database is involved. With OpenEdge 11.0, developing and deploying multi-tenant applications is transformed by using an approach that is unique in the industry, reducing and even eliminating the challenges typically presented when implementing a Shared Tenancy application. This is due to two major factors:

- > Tenant support is implemented in the database layer, and
- > Database utilities and tools are also tenant-aware.

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The significant advantage of the first point is that the application no longer has to manage tenancy—simplifying the code and making tenancy completely transparent. For the second point, the operational aspects of the database are also capable of acting in a mode that is either tenant-specific or database-specific. This streamlines key functions such as index maintenance, data dump and load, object moves, and other database functions.

## ***DATABASE MULTI-TENANCY***

### ***1. Multi-tenant Database Tables***

A key addition to the OpenEdge database is built-in support for multiple tenants within a single database. Many database vendors are promoting multi-tenancy as a new capability for SaaS and Cloud. But with OpenEdge, the unique difference is that instead of the client managing access to tenant data, the database takes care of everything. This means that minimal changes are required for application code; in fact, tenants run the exact same r-code, and utilize the exact same schema definition, as users of a non-multi-tenant instance of the same application! Furthermore, each tenant's data is stored in database partitions that are physically separate from those of other tenants, enhancing data access and making database maintenance easier and more efficient.

### ***2. Web-based Multi-tenant Tooling as an extension of OpenEdge Explorer and OpenEdge Management***

OpenEdge 11.0 includes the Web-based Database Administration Console as an extension of OpenEdge Explorer and OpenEdge Management. This new interface for managing tenants—including tenant users, tenant storage, and tenant security—features a brand new look and feel. A template-based approach provides for increased productivity, and the tool can also generate ABL code that developers can re-purpose in scripts or ABL applications.

### ***3. ABL APIs for multi-tenancy***

An extensive set of ABL APIs for multi-tenancy allows application developers to integrate tenant management into their own applications, for example to provide the capability for tenants to provision themselves, or to build multi-tenant management tools that are more customized to your development and deployment needs.

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#### **4. SQL DDL support for multi-tenancy**

SQL has been enhanced to multi-tenancy, allowing application tenants to enjoy equivalent functionality with both ABL and SQL.

## **PRODUCTIVITY**

OpenEdge 11.0 continues to focus on improving productivity so you can spend more time working in ways that will add value to your business. From Progress Developer Studio for OpenEdge and ABL to the DataServers and user interface, critical productivity enhancements have been made to help you keep up with rapidly changing customer and business demands. OpenEdge 11.0 is more flexible than ever, offering support for new platforms and programming models, and providing new development options. In direct response to customer requests, changes have been made to improve the usability of the system, the ability to troubleshoot, and the ability to manage and extend your .Net interface. And OpenEdge 11.0 provides even greater support for SaaS and Cloud application development with increased user interface flexibility that delivers a dynamic web experience that is rich, engaging, and interactive.

### ***PROGRESS DEVELOPER STUDIO FOR OPENEDGE (FORMERLY KNOWN AS OPENEDGE ARCHITECT)***

#### **1. Usability enhancements**

OpenEdge 11.0 includes several usability enhancements to Developer Studio for OpenEdge based upon customer requests and research into customer issues. Included are improvements to the ProBindingSource designer, the handling of preprocessors, and the Build and Compile functions.

#### **2. Support for WebSpeed programming models**

The evolution of Developer Studio for OpenEdge as a comprehensive development environment for OpenEdge applications continues with the addition of support for WebSpeed programming models; included are CGI Wrappers and Embedded SpeedScript.

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### **3. Remote server development for AppServer and WebSpeed**

One of the hallmarks of the OpenEdge platform is how it facilitates multi-tiered application design and development. In OpenEdge 11.0, Developer Studio for OpenEdge adds support for building AppServer and WebSpeed application components. Debugger support for AppServer and WebSpeed is included.

### **4. Remote Debugger and other Debugger enhancements**

OpenEdge 11.0 allows the Debugger to connect to an already-running AVM (local or remote) and debug the executable with full capabilities. In addition, the Debugger has been enhanced to support breakpoints in “include” files, the ability to step into code on a remote AVM from a local debug session, and the ability to debug without the need for debug listing files. Security of a debug session over a remote connection has also improved.

## ***ABL (ADVANCED BUSINESS LANGUAGE)***

### **1. Unified r-code for portability between 32-bit and 64-bit systems**

OpenEdge 11.0 features complete r-code compatibility between 32-bit and 64-bit platforms, providing for more efficient development and deployment.

### **2. Object-oriented language extensions (interface inheritance and dynamic properties)**

Interface Inheritance allows a developer to create class interfaces that inherit from existing interfaces. OpenEdge 11.0 also introduces the ability of OOABL interfaces to extend .NET interfaces. Dynamic Properties allow a developer to set and get an ABL class property dynamically.

### **3. Improved ProDataSet to XML support**

With OpenEdge 11.0, additional XML documents that conform to the structure of a ProDataSet can be read into a ProDataSet.

### **4. Logging of temp-table information**

The OpenEdge Logging Infrastructure has been enhanced so that application developers can trace the creation and deletion of temp-tables in their applications. This logging capability strengthens the ability to

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troubleshoot applications that utilize temp-tables and ProDataSets as their primary data structures.

### **5. Virtual System Tables for temp-tables**

This ABL enhancement allows clients to gather information about the temp-tables used by the application via Virtual System Tables (VSTs). These tables give the application access to database activity and status information, enabling an application to understand, debug, and tune the use of temp-tables within their application at runtime.

### **6. Improved support for large objects**

OpenEdge 11.0 removes several large-object restrictions that have existed in previous releases. The BUFFER object's SAVE-ROW-CHANGES( ) and BUFFER-COMPARE( ) methods, and the BUFFER-COMPARE statement, now allow CLOB fields to be compared. Additionally, when used on records that contain LOB fields, the CURRENT-CHANGED( ) function now can detect when a LOB field has been altered. The ABL also supports the comparing of LOB fields. One benefit of this change is that programs using GUI for .NET may now include LOBs in updateable grids.

### **7. ProBindingSource improvements**

Prior to OpenEdge 11.0, for a grid control that supports a hierarchy of tables (thereby allowing you to bind to a ProDataSet), you had to rely upon the grid to do any sorting of the child tables. In OpenEdge 11.0 the application can now change the Data-Relation's WHERE-STRING attribute if the corresponding ProDataSet is bound to a .NET BindingSource.

### **8. Allow input- blocking statements anywhere**

OpenEdge 11.0 removes all restrictions on where an input-blocking statement can occur, providing more flexibility when using user-defined functions, OOABL non-void methods, and elsewhere.

### **9. ABL performance enhancements**

Analyzing and improving the performance of ABL is an ongoing task for OpenEdge. In OpenEdge 11.0 some of the key performance benefits include faster deletion of tables in Type II storage, as well as others. For example, in OpenEdge 11.0, the AVM delays the instantiation of temp-tables, ProDataSets and their associated indexes until the object is used in the program. This

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change improves procedure-and class-instantiation performance. Additionally, ABL “FOR EACH” blocks include a new TABLE-SCAN option, which improves performance when a program is reading all of the records stored in a Type II storage area.

## *DATASERVER*

### ***MS SQL Server DataServer CLOB support***

OpenEdge 11.0 adds support for the OpenEdge CLOB datatype to the DataServer for MS SQL Server, allowing a CLOB field in OpenEdge to be migrated and pulled against MS SQL Server.

## *USER INTERFACE*

### ***1. Improvements to ProBindingSource at design time and support for recursive relations***

Usability issues with ProBindingSource are addressed in OpenEdge 11.0, including the removal of multiple modal dialogs for schema selection. ProBindingSource also can now define recursive relationships amongst tables, which was previously possible only by coding the ABL directly.

### ***2. JSON Parser***

OpenEdge 11.0 introduces a package of built-in ABL objects to represent JSON. These objects can be created by parsing JSON, and JSON can be created by serializing these objects. This will allow applications to work directly with JSON using ABL rather than having to parse the DOM structure themselves, a capability that particularly benefits programs that take advantage of AJAX and Web UI programming.

### ***3. .NET Open Client changes***

The .NET Open Client adds an additional way of supporting NULL data values by supporting nullable value types, which are essentially structures that can represent the normal range of values for its underlying type, plus an additional null value.

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## *PLATFORM SUPPORT*

### ***64-bit SQL drivers for Linux***

Integrating 64-bit SQL drivers for 64-bit Linux platforms completes the work to provide 32-bit SQL drivers for 32-bit platforms and 64-bit SQL drivers for 64-bit platforms, across the board.

## **OPERATIONAL EXCELLENCE**

OpenEdge 11.0 continues to focus on supporting the development of high-performance and ultra-reliable applications to support the needs of 24x7 business operations with ever-increasing numbers of users. Across the board—the AppServer, the database, the DataServers, and more—critical performance enhancements have been made to ensure that your application matches aggressive business demands. Diagnostic and monitoring tools have been improved and enhanced to provide a more proactive environment for troubleshooting issues. Additionally, special considerations have been made to facilitate deployments to the Cloud where performance and reliability are paramount.

## **APPSERVER**

### ***1. Improved AppServer error handling***

Improvements to AppServer error handling provide better information regarding the type of error that has resulted and where it has occurred. Included is better handling of the error condition when an AppServer connection has been refused as well as the error when there are no ports available to allocate to an agent.

### ***2. Diagnostics to determine which AppServer code is running***

Further improvements to AppServer diagnostics include the ability to determine which specific r-code is running, allowing verification of whether the agent is actually hung or is just running for a very long time.

### ***3. Network compression for state-free AppServer mode, Java OpenClient, and .NET OpenClient***

Message compression improves application performance on a network. In OpenEdge 11.0, AppServer messages are compressed when operating in state-free mode and communicating with any client. This

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completes compression work for all modes of the AppServer. In addition, the Java and .NET OpenClient include compression as well.

## *OPENEDGE MANAGEMENT*

### ***Support for remote jobs***

Administrators can now use OpenEdge Management as a central console to manage jobs on remote systems in addition to the local system. The ability to manage scripts that reside on remote machines is also included

## *ACTIONAL SUPPORT*

### ***1. OpenEdge Database interceptor for Actional***

Visibility into the OpenEdge database with Actional is now available due to additional client-side interceptors for the OpenEdge database and DataServer.

### ***2. Call size, message field, and payload capture interceptors for Actional***

Additional OpenEdge interceptors for Actional include call size (the size of an incoming request and outgoing response), message fields (additional header information that can be used for setting policy information or doing root-cause analysis), and payload capture (the capture of XML-based payloads for use in auditing or setting policy).

## *DATASERVER*

### ***MS SQL Server DataServer dynamic query join optimization***

When using a large array of table join conditions with MS SQL Server DataServer, OpenEdge 11.0 shows performance improvements by reducing the number of round trips to the foreign database server and/or by pushing as much of the processing as possible to the MS SQL Server database.

## **INTEGRATION AND WORKFLOW**

To remain competitive, it is vital companies have the agility to meet ever-changing customer and market demands. This level of agility requires flexible business applications—both in terms of process and integration. The days of making code changes every time a business process is defined or refined, or whenever a customer has unique requirements, are gone.

Companies need the ability to support the fast pace of business by quickly and efficiently incorporating those new processes and capabilities into their new and existing applications. And those applications need to be adaptable enough to integrate easily with other applications—now and in the future.

OpenEdge 11.0 delivers additional integration flexibility as well as Business Process Management (BPM)—a new feature set integrated into the OpenEdge development environment. Progress customers and partners now have a simple way to modernize existing applications with OpenEdge BPM in addition to building new and add-on business process applications. With BPM, OpenEdge developers can add process workflow into their OpenEdge applications in a natural and intuitive manner—while also reducing development costs and delivering greater business value to their customers.

## *INTEGRATION*

### ***Sonic 8.0 support for Sonic adapter***

The Sonic adapter for OpenEdge supports the Version 8.0 release from Sonic.

## *WORKFLOW*

### ***OpenEdge BPM***

From the eclipse-based Progress Developer Studio for OpenEdge development environment, developers can:

- > Define how process steps execute OpenEdge business logic via the OpenEdge Application Server through a purposed managed adapter, and an intuitive “drag and drop” of ABL procedure code onto the workflow design canvas
- > Pass native OpenEdge data types from process step to process step through an enhanced dataslot capability
- > Have access to a new set of process-related ABL APIs to carry out a variety of standard BPM functions, such as obtain the task information for a user to display in the application User Interface, inform the BPM processing engine that a process step is now completed, and so on

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- > Simplify the use of existing WebSpeed Forms in business process flows

## SECURITY & COMPLIANCE

OpenEdge 11.0 reinforces our commitment to our customers' needs for security, privacy and compliance. In this era of increased regulatory requirements, data must be secure and private in order to protect intellectual property, maximize business success, and prevent liability. The stakes are even higher in a SaaS or Cloud environment, where security and compliance are vital for customer trust and market success. Customers adopting SaaS- and Cloud-based applications expect the same assurances of data security and compliance that they have long expected from applications that run on-premises in their own data centers. OpenEdge 11.0 includes enhancements that improve and simplify identity management. And essential updates and support for new encryption methods significantly improve performance and ensure you keep pace with current industry regulations.

### *SECURITY*

#### **1. Improved identity management**

OpenEdge 11.0 introduces the following improvements to identity management:

- > A simplified process for creating and using user credentials for both client-server and Application Server OpenEdge applications
- > A single programming model for configuring any combination of runtime security features at production time, requiring few, if any, changes to the application code
- > Support for multiple tenants with one or more domains per tenant.
- > Support for the configuration per-tenant of user authentication methods that meet the tenant's specific security requirements
- > A simplified way for using SQL Server together with ABL in the same OpenEdge application without having to rely on the security standards of the `_user` table accounts

## **2. RC4 for ENCRYPT( ) and DECRYPT( )**

Supporting RC4 encryption for the ENCRYPT( ) and DECRYPT( ) functions significantly enhances the performance of these functions.

## **3. SHA-256 and SHA-512**

An upgrade to SHA-256 and SHA-512 hashing algorithms is essential to keep current with recommendations by security organizations, standards councils, and government authorities.

## **4. More SSL certificate support**

Upgrading to version 5.1.0.1 allows OpenEdge to take advantage of AES data encryption ciphers and x509 version 3 extensions support available in the newer release

## **PERSONALIZATION**

Improved personalization options within OpenEdge 11.0 increase the productivity associated with installing, uninstalling and upgrading your OpenEdge application. Users can take advantage of new personalization options for simplifying and accelerating the install process as well as automating the upgrade process.

### **1. Install “Finish” button**

To streamline the installation process, a new option has been provided on each dialog that allows the user to finish the data collection phase of an installation. The user will still be able to navigate through each dialog if desired, but they will be brought directly to the summary screen when they choose to finish data collection. The summary screen will display all of the user’s selections and for all skipped dialogs the default values will be used.

### **2. Option to uninstall WebClient**

When installing the WebClient, the install program now determines whether previous installations of WebClient already exist and provides a list to the user so that any or all may be uninstalled. The uninstall will complete prior to beginning the new install.

### **3. Option to suppress WebClient dialog-box when upgrading**

This feature provides an optional override of the dialog-box presented to the user by the WebClient when it detects that an application has changed and needs to be upgraded. User confirmation of the upgrade is bypassed and the upgrade begins automatically.

## **USER INTERFACE FLEXIBILITY**

Today, the market demand is high for web applications that have many of the qualities and characteristics of desktop applications but are delivered over the web. OpenEdge 11.0 now offers greater user interface flexibility with support for Enhanced Rich Internet Applications (RIAs). RIAs combine the flexibility, responsiveness, and ease of use of desktop applications with the broad reach of the web. RIAs provide a dynamic web experience that is rich and engaging, as well as interactive. RIA technologies provide a variety of development, deployment, and runtime options for SaaS-based applications. Due to the flexibility of the platform, OpenEdge already supports many different RIA technologies. Since no RIA technology has taken the lead, OpenEdge 11.0 will provide support for many additional options, more specifically: JSON parser support in the ABL, updated Infragistics controls (GUI for .NET), and architect support for custom project types (Ajax/WebSpeed).

### **USER INTERFACE**

#### **1. Updated Infragistics controls**

OpenEdge 11.0 includes an update to the current release of the Infragistics Net Advantage WinForm Controls, providing enhanced functionality as well as bug fixes.

#### **2. Allow the use of .NET objects for non-GUI**

In OpenEdge 11.0, .NET objects that are not related to UI can now be used. Also, ABL access to .NET objects is now allowed in non-user-interface executables. This means that AppServer agents, WebSpeed agents, batch jobs, and the character client can now work with .NET objects.

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## PROGRESS SOFTWARE

Progress Software Corporation (NASDAQ: PRGS) is a global software company that enables enterprises to be operationally responsive to changing conditions and customer interactions as they occur. Our goal is to enable our customers to capitalize on new opportunities, drive greater efficiencies, and reduce risk. Progress offers a comprehensive portfolio of best-in-class infrastructure software spanning event-driven visibility and real-time response, open integration, data access and integration, and application development and management—all supporting on-premises and SaaS/cloud deployments. Progress maximizes the benefits of operational responsiveness while minimizing IT complexity and total cost of ownership.

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