

What's New Since Elevate 2025

Session Agenda

- DataWindow/DataStore enhancements
- Jump enhancements
- Removes .NET 4.8 Dependency for DataWindow Blob (XPS)
- **.NET 10 Support**
- Source control enhancements
- Support for SQL Server DateTime2
- **Supporting ArithAbort**
- Solution enhancements
- Application Security
- Graph Enhancements

Session Agenda

- IPV6 Support
- **PyPb – calling Python (beta feature)**
- PowerServer new features
- PowerClient optimizations

.NET 10 Support

- Features that previously supported .NET 6 (obsolete) and .NET 8 have been upgraded to also support .NET 10
- Visual C++ Redistributable upgraded to version 2026 / V14 to support .NET 10
- You may be affected if you use an IDE (such as 2025 R2) with an older Runtime, deploy native client/server apps, or use ADO.NET, .NET assembly calls, etc.
- Compatibility issue: Runtime switching within 2025 R2
 - Switching from a newer IDE to an older Runtime (that targets a lower .NET version) may cause runtime incompatibility or IDE crashes
 - Workaround: manually copy select runtimeconfig.json files from the newer Runtime folder to the older Runtime folder

.NET 10 Support (cont.)

- Compatibility issue: MSVCP140.dll errors in native client/server apps
 - Caused by DLL loading priority; Windows may load an older system DLL instead of the Runtime's updated one
 - Solution: install the latest Visual C++ Redistributable, or copy the required VC++ runtime DLLs next to the application executable
- Deployment requirement: .NET Desktop Runtime 10 must be distributed to clients using ADO.NET database interface, .NET assembly calls, MS Excel12, or DataWindow Blob (XPS)

Supporting ArithAbort

- Query performance can degrade when application sessions use ARITHABORT OFF and numeric types do not match
- New "Set ArithAbort" option added to the Database Profile Setup dialog, plus a corresponding ArithAbort DBParm (1 = ON, 0 = OFF)
 - Lets developers explicitly control the setting via the UI or scripts; unspecified by default
- Microsoft recommends keeping ARITHABORT ON – OFF can hurt query optimization
- Only available for MSOLEDBSQL SQL Server and ADO.Net SQL Server
 - Example: SQLCA.DBParm = "ArithAbort=1"

Application Security

- Advanced executable security flags
 - **Beta feature – currently applies only to the application executable file; PowerBuilder Runtime files will support this in the next release**
 - DEP (Data Execution Prevention)
 - Prevents execution of code in non-executable memory regions, helping mitigate buffer overflow attacks.
 - ASLR (Address Space Layout Randomization)
 - Randomizes the memory address layout to hinder attacks that rely on fixed addresses.
 - CFG (Control Flow Guard)
 - Verifies the validity of indirect calls and jumps, reducing the risk of function pointer overwrites and code injection.
 - SafeSEH (Safe Structured Exception Handling)
 - Protects the structured exception handling chain from being tampered with (only effective for 32-bit executables).

PyPb – Calling Python (Beta)

- New .NET assembly enhancement that extends PowerBuilder's .NET assembly capability to call Python directly
 - No .NET knowledge or .NET code required
- Built as an object-centric wrapper around Python.NET, using PowerBuilder's native .NET assembly support
- Problem solved: lets PowerBuilder developers consume popular Python libraries (pandas, numpy, OpenCV, openpyxl, etc.) within PowerScript
 - No external Web APIs or complex command-line inter-process communication required
- Beta feature; documentation, demos, and source code at github.com/Appoon/PyPb

PyPb – Key Objects

- `n_cst_pycontext` – initializes the Python runtime and manages module imports
- `n_cst_pybmodule` – represents a Python module; used for instantiating classes and invoking module-level functions
- `n_cst_pybobject` – represents a Python object instance; used to invoke methods, get/set properties, or convert data to PowerBuilder types
- `n_cst_invocationrequest` – configures complex function calls, including positional and keyword arguments

PyPb – Invocation & Interface

- Supported invocation methods
 - Direct Invocation – for calling functions or instantiating classes without arguments
 - Invocation Request – for calls requiring specific arguments or default/optional parameters
 - Dynamic Proxy – direct calls through the "idn_host" member that match Python signatures and return dotnetobjects (requires manual wrapping)
- Interface: `of_import()`, `of_instantiate()`, `of_invoke()`, `of_get()`, `of_set()`, `of_executestatement()`
 - Errors from the Python runtime, including stack traces and messages, are automatically captured for debugging

System Requirements

- Windows 10 Discontinued
- **SnapDevelop Discontinued (for C# development, use Visual Studio or VS Code)**
- **3D Graphs (DirectX SDK rendering) now obsolete**
- PostgreSQL 18 added
- **Oracle 26ai added (via ADO.NET connection)**
- **SQL Server 2025 added**

PowerServer new features

- DataWindow-to-model conversion optimization
 - If duplicate DataWindows exist across multiple PBLs, only the one from the first PBL in the project list will be exported
- **Loading DataWindow from external libraries at runtime**
- Developer can increment the launcher version so that the launcher will automatically upgrade
- Both applications and the Cloud App Launcher (standard version) are now installed under %localappdata% by default



New Features in PowerBuilder 2025 R2

Bruce Armstrong, Integrated Data Services
October 2026

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Session Agenda

- Code editor: productivity, navigation, and formatting enhancements
- Dynamic DPI support
- IDE usability and productivity enhancements
- Multilingual runtime resources
- SVG image support
- CrypterObject enhancements
- WebBrowser enhancements
- RibbonView enhancements
- SMTPClient enhancements

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Presenter Profile



Bruce Armstrong



<https://www.linkedin.com/in/brucearmstrong/>

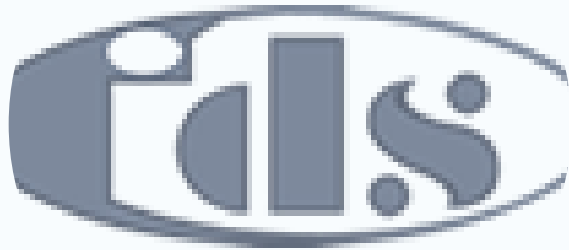
Key Skills

- PowerBuilder
- Oracle PL/SQL
- Java
- SonarQube
- C#
- C++
- AI
 - Claude Code
 - Codex
- Qlik Sense
- HTML5/JavaScript/TypeScript/Angular

Recent Projects

- [OpenSourcePFCLibraries](#) - The open-source PowerBuilder Foundation Class libraries

Company Profile



Integrated Data Services

- IDS has delivered innovative program and financial management information system solutions to the Federal Government for nearly three decades. Our flagship Enterprise Requirements Management product, CCaR™ is used by the DoD and Federal Agencies including the Air Force, Space Force, Army, Navy, USSOCOM, DSCA, DHA, JSF and DOE.

Code editor

- Error and Warning Marks
 - Syntax errors are now underlined with a red wavy line.
- Rectangular (Column) Selection
 - Allows selecting text in a rectangular block for batch editing. Press and hold Alt while dragging to select a block of text.
- Virtual Space
 - Enables placing the caret beyond the end of a line for better code alignment. This feature can be turned off in the Design menu > Options menu > Script tab page.
- Custom Collapsible Code Blocks
 - Use specific markers **#region** and **#endregion** in your code to manually create a collapsible and expandable code section. Lines between these markers can be folded as a block. These markers are automatically ignored during compilation and do not affect the program's execution.

Code editor

- **Outline Enhancement**
 - Improved code folding/unfolding for indented structures, making navigation in large files more efficient.
- **Format Document/Selection**
 - Quickly format an entire file or only the selected code block to maintain consistent indentation and style.
- **Move Selected Lines Up/Down**
 - After selecting text, press Alt + Up/Down Arrow to move the lines without cutting and pasting.
- **Cursor Navigation History**
 - Navigate backwards and forwards to previous caret positions, similar to a web browser's back/forward buttons.

Code editor

- **Bookmarks**
 - Related commands are added to the main menu, context menu, and toolbar for quick marking and navigation within code
- **Replace All Result Count**
 - Displays the total number of replacements after a Replace All operation
- **Rename symbol**
 - Developers can quickly rename identifiers (such as variables, functions, or objects) within the current document, by right-clicking a symbol in the editor and then selecting *Rename*
 - Rename is limited to the current document and does not affect references in other scripts or objects
- **Quick Info Optimization**
 - Fixed missing tooltips for certain functions, variables, and classes

Code editor

- Parameter Info Optimization
 - Fixed missing parameter hints for some function calls
- Completion Enhancements
 - Added autocomplete for:
 - Enum members
 - Global functions, variables, and structures
- Clickable URLs
 - URLs in the editor are automatically recognized and can be opened by CTRL + single click
- Shortcut Key Enhancements
 - Added shortcuts for:
 - Jump to location: CTRL + F12
 - Toggle comment/uncomment: ALT + M and ALT + N
 - Convert case (uppercase/lowercase): CTRL + SHIFT + U and CTRL + U

Dynamic DPI support

- When the DPI scale changes while the application is running, the application automatically adjusts the size and layout of windows, controls, and fonts to match the new DPI.
- **New Function: GetDpiForWindow**
 - Use this function to query the current DPI for a window or control and implement DPI-aware custom drawing or layout adjustments. This is especially useful when mixing standard PowerBuilder controls with manual rendering logic
- **New Event: DPIChanged**
 - Use this window event to handle DPI change notifications at runtime, so you can adjust layouts, fonts, or graphics immediately when the system DPI changes

IDE usability and productivity enhancements

- IDE Theme support
 - Theme options:
 - Flat Design Dark
 - Flat Design Light
 - Do not use theme
 - You can switch between Dark and Light without restarting IDE
 - Switching between Do Not Use Them and the other options requires an IDE restart
- Database Painter — Edit Data shows table/view name and DB profile
 - The result window title bar now displays the table or view name together with the active DB profile name, making multiple result panes easy to distinguish.
- Expression window enhancements
 - Resizable window to comfortably inspect long expressions
- Migrate window improvements
 - Default window size increased by 150% for better overview
 - Resizable window to view long library lists with ease

IDE usability and productivity enhancements

- **Debug — Modify Variable window enhancements**
 - Resizable window
 - Word wrap enabled to read long variable values more conveniently
- **Search Library Entries window enhancements**
 - Search For field retains last search term
 - For PBTs/Projects, search scope can be limited to the selected PBLs only (users can select or deselect PBLs in the search window).
- **Distinct icons by access level in Function List**
 - When IDE theme is enabled, Public, Protected, and Private methods use different color icons (green, yellow, red) to improve readability.
- **QuickWatch/Watch window enhancements**
 - Double-clicking an expression will open the Display Value window
 - QuickWatch adds a Copy Value button; when inspecting an expression

IDE usability and productivity enhancements

- DataWindow Column Specification improvements
 - DBName column accepts longer input and is no longer constrained by the initial column width
 - Name and DBName columns can receive focus and allow copy values (read-only) via CTRL+C
- System Tree context menu enhancements
 - For PB object nodes in the System Tree and Library Painter, Copy Name context menu is added to easily copy the object name
 - On PBT nodes, Optimize context menu is added so that all of the PBLs within that PBT can be optimized in one click
- Help → About window refinements
 - Added a Copy Info button to copy version details to the clipboard in one click

Multilingual runtime resources

- Text resources previously embedded directly in runtime DLLs are now separated into independent .lng language package files
- .lng files are located in the runtime language folder
 - C:\Program Files (x86)\Appeon\Common\PowerBuilder\Runtime 25.1.0.6180\lang
- A custom.lng file is provided for user-defined translations and initially contains the same content as english.lng
- The PowerBuilder Runtime Packager allows you to select which language packages to include in the deployment
- New Methods:
 - SetLanguage (LanguageType type)
 - GetLanguage()

SVG image support

- Bitmap image formats such as BMP, JPG, and PNG can become blurry when scaled
- SVG (Scalable Vector Graphics) format ensures images remain crisp across different resolutions and DPI settings
- The picture controls (including Picture, PictureBox, PictureHyperlink, PictureListBox, and DropDownPictureListBox), Menu, ListView, TreeView, TabPage, DataWindow, and RibbonBar support using the SVG image.
- The following runtime file is required for SVG image to work: pbsvg.dll.
- New theme that use SVG images
 - Flat Design Blue (SVG)
 - Flat Design Black (SVG)

SVG image support

- Limitations

- The icon property of Application and Window objects does not support SVG
- The SVG image will not appear dimmed or grayed out when the control is disabled (it always appears in normal color no matter the control is enabled or disabled).
- When using NativePDF export, SVG images are converted to bitmap format. Features like resolution-independent scaling are not preserved
- Although SVGs display correctly in Windows and DataWindow controls, printing does not preserve the original vector properties

CryptoObject enhancements

- Symmetric encryption & decryption
 - A new algorithm, AES_GCM!, has been supported in addition to AES, DES, TDES, DESX, and Blowfish
 - Requires OperationModeCTR!
 - Supports key lengths of 128, 192, and 256 bits
 - Uses a 12-byte initialization vector (IV)
 - Supports Additional Authenticated Data (AAD)
 - The SymmetricEncrypt and SymmetricDecrypt functions support a new argument: Additional Authenticated Data (AAD)

CrypterObject enhancements

- Asymmetric signature and verification
 - AsymmetricSign and AsymmetricVerifySign methods have new SignatureStandard argument supporting values of PKCS1V15! (default) and PSS!
 - AsymmetricSign and AsymmetricVerifySign methods have new HashAlgorithm argument supporting values of SHA1!, SHA224!, SHA256!, SHA384!, SHA512!, SHA3_224!, SHA3_256!, SHA3_384!, SHA3_512!

WebBrowser enhancements

- DevTools property
 - Specifies whether the browser's built-in developer tool is enabled. The default value is TRUE
- PasswordAutosave property
 - Specifies whether the browser shows the "Save password" prompt when users log in
- ClearBrowsingData function
 - Provides the ability to clear browsing data programmatically in the WebBrowser control

RibbonView enhancements

- Double-click category to toggle ribbon bar
 - Double-click on a Category (tab header) to quickly collapse or expand the ribbon bar, similar to the behavior in Microsoft Office
- QuickAccessToolbar tooltips
 - Tooltips defined for QuickAccessToolbar items are now also displayed in the Windows taskbar
- ToolbarItemSpace property
 - A new ToolbarItemSpace property is supported for QuickAccessToolbar items. It allows developers to insert spacing between toolbar buttons, enabling clearer grouping and layout
- Support for more themes
 - Flat Design Lime
 - Flat Design Orange

SMTPClient enhancements

- **AddAttachment function**
 - Adds a binary (Blob) value as an attachment to the email message. The attachment content is specified via fileblob argument, and the attachment file name is specified via filename argument
- **DeliveryReceipt property**
 - Requests a delivery receipt when sending emails. This confirms whether the message was successfully delivered to the recipient's mail server
- **ReadReceipt property**
 - Requests a read receipt from the recipient, confirming whether the message has been opened and read

DataWindow/DataStore enhancements

- GetDWObject method
 - Retrieves the DWObject of the following objects by name and returns a DWObject reference for further operations
 - Data columns
 - Computed fields
 - Controls
- Enhanced error message
 - The “invalid DataWindow row/column” error has been updated to include the column name that was being accessed when the error occurred

Jump enhancements

- Main menu entry
 - A Jump command has been added to the main menu, in addition to the right-click context menu
- Shortcut key support
 - The Jump command can now be triggered via a dedicated shortcut key (CTRL + F12),
- CTRL+Click navigation
 - Developers can press CTRL and click a symbol (variable, function, or class name) to jump directly to its definition
- Cursor-based recognition
 - Manual text selection is no longer required

Removes .NET 4.8 Dependency for DataWindow Blob (XPS)

- Sybase.PowerBuilder.NETInterop.dll renamed to Appeon.PowerBuilder.NETInterop.dll
- New additional runtime files
 - Appeon.PowerBuilder.NETInterop.deps.json
 - Appeon.PowerBuilder.NETInterop.runtimeconfig.json
 - nethost.dll
- The runtimes and related files are consolidated into the Runtime directory
- COM registration is no longer required

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Source control enhancements

- Git Rebase support
 - Reapply local commits on top of the updated remote branch
- Git Fetch support
 - See what changed on the remote without altering your local work
- Git branch name displays in status bar

Support for SQL Server DateTime2

- Support for datetime with 7 digits of precision in the seconds
 - DataWindow functions: GetItemDateTime, GetItemTime, GetDataValue
 - JsonParser functions: GetItemDateTime, GetItemTime
 - Graph functions: grAddData, grDeleteCategory, grFindCategory
 - EditMask functions: GetData
 - DatePicker functions: SetValue
 - DynamicDescriptionArea functions: GetDynamicDateTime
 - System functions: DateTime(), Time(), Hour(), IsTime(), Now()

Supporting ArithAbort

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- Query performance can degrade when application sessions use ARITHABORT OFF and numeric types do not match
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- Only available for MSOLEDBSQL SQL Server and ADO.Net SQL Server
 - Example: SQLCA.DBParm = “ArithAbort=1”

Solution enhancements

- The IDE no longer automatically performs incremental builds when running or debugging applications in a solution
- When deploying applications, the output window now includes details about skipped PBDs and summary statistics of successful, failed, and skipped PBDs
- Memory consumption has been optimized when opening large solutions in the IDE
- Fixed multiple issues in the IDE and compiler to improve stability and reliability

Application Security

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- Advanced executable security flags
 - *Beta feature – currently applies only to the application executable file; PowerBuilder Runtime files will support this in the next release*
 - DEP (Data Execution Prevention)
 - Prevents execution of code in non-executable memory regions, helping mitigate buffer overflow attacks.
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Application Security

- Runtime Security
 - Strict mode
 - Limits third-party DLL loading to specific folders
 - DLL signature verification
 - Digital signature is verified during application startup
 - The DLLs must be in the same directory as pbvm.dll
- Application Signing
 - Allow for signing of client/server executables, similar to what is already offered for PowerServer and PowerClient

Graph Enhancements

- Data values are now supported for the following graph types
 - Bar
 - Bar3DObj
 - Col
 - Col3DObj

IPV6 Support

- IPV6 is now supported by the following objects
 - HTTPClient
 - RESTClient
 - SMTPClient
 - Database connections
 - Cloud App Launcher downloads
 - PowerServer Web API access

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- Problem solved: lets PowerBuilder developers consume popular Python libraries (pandas, numpy, OpenCV, openpyxl, etc.) within PowerScript
 - No external Web APIs or complex command-line inter-process communication required
- Beta feature; documentation, demos, and source code at github.com/Appeon/PyPb

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- PostgreSQL 18 added
- Oracle 26ai added (via ADO.NET connection)
- SQL Server 2025 added

PowerServer new features

Supports Windows authentication

- Authentication modes
 - Anonymous (no credentials)
 - Integrated (uses current Windows login, otherwise prompts for login)
 - UserPassword (user is prompted for credentials)
- The CloudAppGet and CloudAppSet methods can be used to get or change the authentication mode
- The SessionCreating event can be used to modify the settings before the session is created

PowerServer new features

- Supports secure connection strings
 - As with the same feature for Desktop apps, supports encrypting connection strings
- Supports database configuration through environmental variables
 - Considered an ASP.Net best practice, particularly when working with containerized deployments
- More license details in PowerServer project
 - The PowerServer project now displays license details such as the license key, product edition, expiration date, and watermark. This helps developers verify that the correct license is applied and prevents accidental misuse.
- Supports silent uninstall for application
- Multilingual support

PowerServer new features

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- Loading DataWindow from external libraries at runtime
- Developer can increment the launcher version so that the launcher will automatically upgrade
- Both applications and the Cloud App Launcher (standard version) are now installed under %localappdata% by default

PowerClient optimizations

- Provide built-in support for Windows authentication
- The Cloud App Launcher supports multilingual resources
- Developer can increment the launcher version so that the launcher will automatically upgrade
- Both applications and the Cloud App Launcher (standard version) are now installed under %localappdata% by default
- Support silent uninstall for application

Thank you

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linkedin.com/company/appeon

Build up your career profile, and stay in contact with other professionals.



youtube.com/Appeon

Share important Appeon videos with others; no account registration required.

Q&A Time

