

Update 5b - Detailed Release Notes

Complete feature and improvement details for FrameworkX 10.1 Update 5 and Update 5b, organized by product area.

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FrameworkX 10.1 Update 5b — Released June 5, 2026

Resolved from Update 5

- **Visual Query Editor** — the schema tree now reflects the actual tables and columns from the connected Dataset database, enabling live schema-driven query design. The embedded Visual Query Editor is now fully operational.
- **Industrial Ontology import** — JSON-LD (`.jsonld`) and Turtle (`.ttl`) formats are now importable, completing import/export format symmetry: all four formats (RDF/JSON, N-Triples, JSON-LD, Turtle) are available in both directions.

New Features and Enhancements

- **OIDC / OAuth2 — SSO Sign-In Button**: The SSO entry-point button on the client logon surface is now active. Operators see a direct single sign-on option alongside the standard login; identity provider sessions are managed transparently through the configured Keycloak, Auth0, Entra ID, or login.gov provider.
- **AI Chat — Multi-Provider and Richer Conversations**: AI Chat now supports multiple simultaneous providers — Local AI, Anthropic Claude, OpenAI GPT-4o, Google Gemini, and Azure OpenAI — with the active provider selectable per conversation. The conversation experience adds streaming responses, code-block rendering with syntax highlighting, and one-click copy, making AI-assisted operator workflows more productive.
- **Local AI — Simplified Setup and SecureGateway Routing**: A guided first-run wizard streamlines Local AI service configuration. SecureGateway routing enables AI endpoints hosted in the cloud to be accessed through the FrameworkX gateway, simplifying hybrid and air-gapped deployments.
- **Runtime REST API — Tag Writes and Standardised Errors**: The Runtime REST API gains `POST /tags/{name}/value` for writing tag values, complementing the existing read and history capabilities. All REST endpoints now return RFC 9457 Problem Detail error responses, providing consistent, machine-parseable error handling for IT integrations.
- **SiemensPlus — Cross-Platform Siemens Driver**: Update 5b introduces SiemensPlus, a new Siemens driver built on a modern API foundation with native cross-platform support — running on Windows, Linux, and Docker-hosted FrameworkX deployments. Existing solutions using the original Siemens driver continue to operate without any changes; the legacy driver remains fully supported for backward compatibility.
- **Combo Box and List Box — Live Enumeration Source**: Combo Box and List Box controls can now source their data items directly from a Tag enumeration definition. Values and display labels update dynamically as the enumeration changes — keeping dropdowns in sync with process configuration without manual maintenance.
- **Linear Gauge — Fully Dynamic**: Fill colour, minimum, maximum, and all range-band boundaries on the Linear Gauge are now bindable to tags. Gauge appearance responds live to runtime value changes, enabling process-aware visualisations without scripting.
- **Security Secrets — At-a-Glance Credential Health**: The Security Secrets dialog is redesigned around operational clarity: each secret shows its current status (Valid / Invalid / Expired), expiry date, and a *Rotate* action — giving administrators a single, actionable view of credential health.
- **Industrial Ontology — Faster Large-Scale Imports**: Large ontology imports are significantly faster, with reduced memory usage during RDF graph traversal. Deployments with complex or extensive ontology definitions see meaningful performance improvements on import and reload.
- **Device Nodes — Category Field**: A new *Category* field on Device Nodes enables grouping and filtering in the Device Explorer tree, improving navigation and organisation in solutions with large numbers of devices or complex architectures.
- **Solution Center — Offline License Activation**: Air-gapped deployments can now activate FrameworkX licenses without internet connectivity. A QR-based activation code exchange allows a connected machine to generate and transfer the activation to the isolated target machine.
- **JSON Import/Export — More Control**: Exports support filtering by tag type, enabling targeted round-trips for specific asset categories. Import correctly handles circular UserType reference structures that previously required workarounds.

Improvements

OPC UA

- Remote engineering certificate management is more robust: the private key is correctly preserved across saves, and the Designer certificate list remains clean.
- Server endpoint URLs are validated before a connection is attempted; feedback is surfaced immediately in the TraceWindow.
- Reconnection after a server restart completes within the configured timeout.
- Subscription recovery after a lost connection correctly reflects only actual value changes, preventing stale data from appearing as live updates.

ControlLogix

- Program-scope tags are read and written correctly when the controller is in Remote Program mode.

Bailey Driver

- Full communication is maintained for solutions upgraded from FactoryStudio 9.x.

TraceWindow

- The module name column is auto-sized on first open; wide module names are accommodated without layout impact.

Displays

- `Shape.StrokeThickness` changes applied via script take effect immediately.

- Portable controls (TRadialGauge, TKnowledgeGraph) inside a TChildDisplay loaded from a different solution render correctly in all configurations.

Trend Chart

- Real-time data for a newly added pen appears immediately, without requiring a manual time-range change.

Reports

- Page breaks in multi-page tables are positioned correctly in PDF output, eliminating any row overlap.
- Embedded images in HTML export are Base64-encoded inline, producing fully self-contained HTML files.
- The Alarm Linear Gauge report element renders correctly for all alarm count values.

Designer

- Theme changes (Light/Dark) propagate to all open property editors without a Designer restart.
- The *Clone from template* step in the Solution Wizard handles paths that contain non-ASCII characters.

Runtime

- The .NET 10 runtime correctly binds to ports 80 and 443 when running as a Windows Service.
- SQL Server connections default to `Encrypt=Optional` for compatibility with older on-premises instances; the `TrustServerCertificate` flag is exposed in the connection string helper.

Alarms

- The alarm count badge on the AlarmViewer toolbar reflects acknowledgements made via the REST API immediately.

Scripts

- E-Sign triggers defined in a Script Task's `OnValidated` event fire correctly when the task runs from an automation schedule.

FrameworkX 10.1 Update 5 — Released May 26, 2026

Platform Foundation

.NET 10 (LTS) Runtime

FrameworkX 10.1 Update 5 ships on .NET 10 Long-Term Support — Microsoft's latest and most performant runtime baseline. Every server deployment, Web Contents target, and Designer Web host benefits automatically. The upgrade is handled entirely by the installer; no solution changes or manual steps are required. .NET Framework 4.8 continues to be supported for environments where it is needed.

Within-Major Compatibility

Every 10.1.x solution opens and runs on Update 5 without migration, code changes, or rework. Solution Center's multi-version routing allows 10.1.4 and 10.1.5 installations to coexist side-by-side during phased rollouts.

Platform Reliability

- Designer–Runtime IPC applies a bounded timeout, so a slow device driver can never drop an active Designer session.
- Backend services maintain uninterrupted operation in unattended deployments.
- Protocol driver file lookup is case-insensitive across Windows and Linux/Docker hosts, enabling seamless cross-platform deployments.

Enterprise IT, Security, and Deployment

OIDC / OAuth2 Single Sign-On

FrameworkX now integrates with enterprise identity providers through OIDC/OAuth2, with out-of-the-box support for Keycloak, Auth0, Microsoft Entra ID, and login.gov. Per-provider configuration dialogs, LDAP dispatch, and industry-standard JWT validation (RFC 8725) are all managed by the runtime. The SSO sign-in button on the client logon surface is available from Update 5b onward.

Runtime REST API v1.0

A new data-plane REST API (port 3101+) exposes live tag values, alarm state, historian queries, and aggregated history — purpose-built for enterprise IT integrations and partner systems. Authentication is via Bearer-GUID. Update 5b adds tag write support.

SolutionCenter API v1.0

A management-plane REST API (port 10108) covers the full solution lifecycle: solution management, file operations, license control, and machine-level administration. Secured with JWT/OIDC and documented via a published OpenAPI 3.0 specification.

Kubernetes-Native Deployment

TServer and TWebServices expose `/health` and `/ready` HTTP endpoints fully compatible with Kubernetes liveness and readiness probes, making container-native and cloud-hosted FrameworkX deployments first-class citizens.

PowerShell and CLI Tooling

- **Tatsoft.FrameworkX PowerShell Module v1.0.0** — wraps the installer, TManageServices CLI, and SolutionCenter API into a cohesive scripted deployment toolkit.
- **UpgradeSolution.exe** — command-line solution upgrader with automatic named backups; the original solution is fully preserved if any step encounters an issue.

- **TManageServices CLI** — script-friendly Windows Service install/uninstall with standard exit codes and silent mode.

Security

- `Session.AutoLogOff` correctly enforces the configured `DurationHours` value across all client types.
- `TPasswordBox` delivers improved input reliability: cursor positioning is preserved during mid-string edits, and a binding adapter is available for tag write-back.
- `SecuritySecrets` values are masked by default; clipboard operations are restricted to administrators. `BearerToken`, `AssociatedUser`, and `Enabled` fields are accessible programmatically.
- ADO API database operations include built-in SQL injection prevention; an opt-in parameterised query mode via the `PARAMS` prefix enables safe handling of untrusted inputs.
- TLS/SSL certificate management for remote engineering workflows is more robust; MQTT certificate upload is available in a unified Designer dialog.
- `EditSecurity` popup management is improved: the dialog responds correctly to repeated interactions and permission-denied messages accurately reflect the access state.

Historian, Alarms, and Runtime Stability

Historian — Full Nested Path Support

Historian can now be enabled for tags in any `AssetTree` subfolder structure with full path fidelity. When enabled via Tag Properties, the complete qualified path (e.g. `Folder1/Folder2/Tag`) is stored and used for history retrieval — ensuring that deeply nested assets are historised, queried, and displayed with complete accuracy.



Upgrade note: Tags previously enabled with a leaf-only name will appear as “*not enabled*” when Tag Properties is reopened on Update 5. Re-enabling via Tag Properties registers the correct full path. Existing historical data is not affected.

Historian and Canary Compatibility

Canary Historian maintains continuous logging through v9.2-to-v10.1 solution upgrades. The `AssetTree` path is preserved consistently when enabling Historian, Alarm, or Device for nested tags.

Runtime Stability

- Communication layer improvements provide significantly stronger TCP connection resilience under sustained high-frequency polling loads.
- `OnlineConfiguration` operates cleanly without `TraceWindow` noise.
- Device group startup is robust to edge cases in sort key configuration.
- Redundancy activates correctly when a solution is started from Solution Center; `SmartClient` URLs correctly carry redundancy parameters.

Alarms

- `AlarmViewer` displays sub-second (millisecond) timestamps with full precision when configured.
- `AlarmViewer` theme changes (Light/Dark) propagate correctly at runtime.
- `AlarmViewer` operates correctly in solutions where the Alarm module is present but not currently active.

Trend Chart and DataHub

- Quality-gap rendering is consistent between WPF and HTML5: gaps appear correctly when adjacent point quality transitions to Undefined.
- Each pen independently displays its own value for uncertain-quality (quality 64) data.
- Pen unit settings are preserved per pen after navigating away from a trend view and returning.
- Legend text respects the active theme on both WPF and HTML5.
- Trend Chart symbols render correctly in printed reports.
- `LoadXY` method behaviour is consistent between WPF and HTML5.
- DataHub cross-pen value isolation is improved for quality change events.

Devices and Protocols

OPC UA

- Tag imports complete reliably for address spaces beyond 1,000 tags, with no impact on Designer responsiveness during large import operations.
- Private UDT members are correctly withheld from external OPC UA clients, preserving data confidentiality at the OPC UA layer.
- Remote engineering certificate management correctly generates and binds certificates on the remote runtime host.
- A new `Host Override` field on the OPC UA Client enables flexible endpoint configuration for complex network topologies.

ControlLogix

- Tag imports complete reliably for large databases beyond 1,000 tags.
- Multi-byte data types are read and written with correct byte ordering in all configurations.
- Program-scope tag communication is fully supported via CIP two-segment encoding; `<Type>:PROGRAM:<TaskName>.<Member>` addressing is parsed correctly.
- A new `ForceCIPLittleEndian` option per Point enables compatibility with non-standard device configurations.
- L5K file import is now supported.

Siemens

- The XML importer produces consistent tag mappings, valid data types, and correct PLC addresses across all configurations.
- `DBSTR/DBST/ST` length is enforced as the total byte count including the 2-byte S7 STRING header (`N+2` for `TIA STRING[N]`), and fully documented.

- Legacy address formats are automatically migrated to the canonical form when the configuration dialog is reopened.

MQTT

- TLS 1.1 and TLS 1.2 connections are fully supported.
- The Sparkplug B `PublishMetricNames` option decouples name-based publishing from Store and Forward — third-party subscribers that join after DBIRTH receive named DDATA regardless of Store and Forward state.
- Certificate upload is available through a consolidated, unified Designer dialog.

Other Drivers

- **DNP3**: log path is configurable; TraceWindow output correctly identifies the device.
- **AB SLC/PLC5**: Byte Swap is correctly applied to Device Points over TCP/IP.
- **TwinCAT**: stale handle caches are cleared on reconnect; the driver recovers from ADS router restarts without requiring a runtime restart.
- **Omron FINS Master**: UDP interface is fully supported.
- **ModbusSlave**: startup is clean when a channel uses the ModbusSlave protocol.
- Channel-level disable correctly scopes to the intended channel without affecting sibling channels.
- Device Points scaling values propagate correctly to the mapped tag definition.

Scripts and Automation

Script Engine

- `@Module.Property` references compile correctly in scripts that combine multiline block comments (`/* ... */`) and single-line comments (`//`) on the same line.
- Script Classes automatically inject WPF usings (`Canvas`, `TDisplayControl`, and related types), eliminating boilerplate in display code-behind scripts.
- Script Tasks in solutions with namespace classes compile cleanly; cross-script references to Script Class types resolve correctly at compile time.
- Compile diagnostics surface the fully qualified name (`Namespace.Class`) of unresolved identifiers, making troubleshooting faster.
- Designer *Rebuild All* converges correctly across cross-row Script Class DLL dependencies.

New Script APIs

- `@Server.Retentive.Snapshot()` — forces an immediate retentive flush on demand.
- `AddTagAndDevicePoint` — programmatic provisioning of tags and device points from scripts.
- `TK.ApplyImageBytesToShape` — applies an in-memory image to a Shape fill at runtime.
- The Script TK toolkit is reorganised into six sub-namespaces for improved discoverability. All existing `TK.X` scripts continue to work without modification.

Visualization, Displays, and Reports

New Controls

- **TRadialGauge** — a single portable control (Full, SemiCircle, CenterValue, and BandedRange presets) available across WPF and HTML5. Replaces three legacy circular gauges while maintaining backward compatibility for existing solutions.
- **TChatSession** — renders AI conversation threads bound to session tags, enabling operator-facing AI chat interfaces on any display.

Display Authoring and Runtime

- Image flip operations and clockwise polyline rotation behave correctly in all display configurations.
- Symbol Width/Height edits apply immediately in the Properties panel; a new `LockAspectRatio` property provides precise aspect-ratio control.
- Dashboard displays with static-text `TextBox` cells compile and render correctly.
- `TChildDisplay` frames remain correctly populated when a parent display is revisited.
- Display navigation buttons respond reliably during display load.
- Visibility transitions operate correctly on components with combined Shine and Visibility dynamics.
- `TTextBlock.MaxLength` is configurable directly in the Designer.
- Display Connectors are fully restored with undo, clipboard, and delete support; endpoints snap to connectable shapes and auto-finalize under the `SelectionTool`.
- Display open time is improved with a cold-load optimisation.

TWebBrowser

- A new `EnableBrowserStorage` property enables `localStorage` support.
- SVG rendering handles URL-encoded colours and missing `viewBox` attributes correctly.

HTML5 Web Client

- `DataGrid` columns persist after display navigation.
- Blazor-based elements load correctly on mobile browsers.
- SSL/TLS URLs without a trailing slash connect correctly.
- `DateTimePicker` calendar and clock popups display correctly within `TChildDisplay` containers.
- A `/displays/resource/<name>` HTTP endpoint enables image resolution for embedded viewers over plain HTTP.

Reports

- PDF, XPS, and HTML report save is fully supported on .NET 10 deployments via a co-shipped .NET 4.8 helper.
- Text, Unicode, and ASCII export correctly preserves table content.
- The new Alarm Linear Gauge report element provides alarm-state visualisation in printed reports.

- Trend Chart symbols render correctly in all report formats.

Mobile

- First iOS Camera integration for the Mobile FX Client: QR/barcode scanning and photo capture are accessible via the `Client.Session` script API.
 - The PDF viewer renders correctly on both mobile browsers and the native mobile app.
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