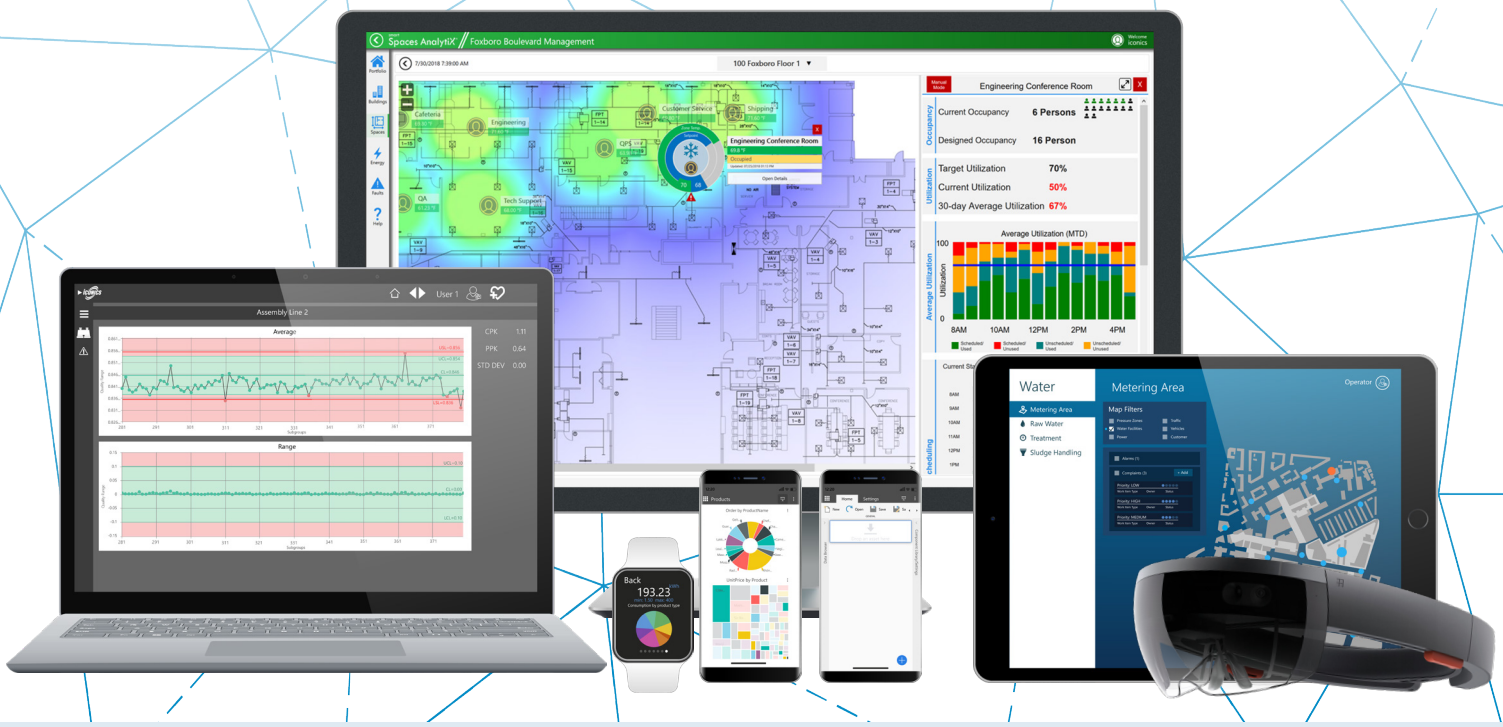
ICONICS 10.96.1

What's New | ICONICS Suite™

July 2020



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ICONICS

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Contents

Introduction to What's New

This edition of the "What's New" describes many notable new features and enhancements in version 10.96.1 since the previous release (10.96). For information on features and enhancements made in earlier versions, see the appropriate "What's New" document for those versions.

For information on fixes made in version 10.96.1, see the appropriate "Resolved Issues" document.

Note that if updates need to be made, the most up to date "What's New" and "Resolved Issues" documents can be found in our online documentation here:

Release Notes

Structure of the Document

This document is split into chapters for the different areas of the ICONICS Suite, then further into sections for major updates, representing significant enhancements or new functionality, followed by tables of additional enhancements and fixes.

Where appropriate, references to additional information, such as instructional application notes or help files, will be indicated.

Most Notable Features

Some of the most notable new features in 10.96.1 are listed below. Visit each link to learn more and see the "Major Enhancements" sections for each product for additional notable features.

- Installation
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  - Specifying Language in URL, so multilanguage systems can have links that open directly in their language
  - Push Notification Support for iOS and Android apps

General

Installation

Major Enhancements

Configuration Files Merged on Upgrade

(Reference ID: 76555)

Previously, when installing one version of ICONICS Suite products on top of another, the various configuration files (other than the configuration databases) would be overwritten with the defaults in the new version. This could affect settings such as the FrameWorX Server Location or any customizations users made to the configuration files.

Starting in version 10.96.1, the installation will back up the configuration files and update them with any settings added by the new version. This should provide a more seamless upgrade experience since user settings will be maintained instead of being reverted to a default.

This feature only applies when upgrading from version 10.96 or later. ICONICS plans to maintain this feature in future upgrades, allowing users to upgrade more seamlessly from 10.96 or later to any future versions.

For Further Reference

- Help: Configuration Files Merged on Upgrade

Additional Enhancements

Ref ID	Description
76659	The Asset AnalytiX configuration is now installed by the default in the starting configuration database in GENESIS64 installations. This makes it easier for users installing from the GENESIS64 installation media to use the AssetWorX-Hyper Historian integration.

AnalytiX

AnalytiX-BI

Major Enhancements

Enhancements to PIVOT Queries

(Reference IDs: 74145, 74701, 74710)

A number of enhancements were made to the PIVOT keyword.

PIVOT queries now allow to specify GROUP BY columns either explicitly or under the PIVOT clause. For example, the following two queries are equivalent:

```
PIVOT
    SUM(OrderDetails.Quantity),
FOR
    Categories.CategoryName IN ('Beverages', 'Condiments', 'Seafood')
GROUP BY
    Orders.[OrderDate.Year] AS Year
ORDER BY
    Orders.[OrderDate.Year]

PIVOT
    SUM(OrderDetails.Quantity),
    Orders.[OrderDate.Year] AS Year
FOR
    Categories.CategoryName IN ('Beverages', 'Condiments', 'Seafood')
WHERE
    OrderDetails.UnitPrice > 20.0
ORDER BY
    Orders.[OrderDate.Year]
```

Note, if GROUP BY columns are specified both in the PIVOT clause and the GROUP BY clause an error will be returned.

A WHERE clause can optionally be applied before the GROUP BY or ORDER BY clause, like follows:

```
PIVOT
    SUM(OrderDetails.Quantity),
    Orders.[OrderDate.Year] AS Year
FOR
    Categories.CategoryName IN ('Beverages', 'Condiments', 'Seafood')
WHERE
    OrderDetails.UnitPrice > 20.0
ORDER BY
    Orders.[OrderDate.Year]
```

Pivoted columns can now appear in the ORDER BY clause, as in this example:

```
PIVOT
    SUM(Products.UnitsInStock)
FOR
    Categories.CategoryName IN ('Beverages', 'Condiments')
GROUP BY
    Orders.[OrderDate.Year]
ORDER BY
    Categories.Beverages
```

And PIVOT queries now allow post-filtering the pivoted dataset on pivoted columns using the HAVING statement, as in this example:

```
PIVOT
    SUM(Products.UnitsInStock),
    Orders.[OrderDate.Year]
FOR
    Categories.CategoryName in ('Beverages', 'Seafood')
HAVING
    Categories.Seafood > 4000
```

For Further Reference

- Help: AnalytiX BI Server SQL Queries - Pivot

New Quality Functions

(Reference ID: 75478)

Several new functions were added to AnalytiX-BI to be used in data flow and data table configurations. These functions help in identifying tag quality.

- **Isgoodq(quality)** - Returns whether the quality code (uint) is good.
- **Isbadq(quality)** - Returns whether the quality code (uint) is bad.
- **Isuncq(quality)** - Returns whether the quality code (uint) is uncertain.
- **Getdescq(quality)** - Returns the human readable description for the quality code (uint).

These functions are custom to AnalytiX-BI only.

For Further Reference

- Help:
    - Quality-Based Functions in Expression in AnalytiX-BI Server
    - Data Flows
    - Data Tables

Additional Enhancements

AnalytiX-BI General

Ref ID	Description
74283 74516	Data flows now support daylight savings changes when using the Data Sources > Historical Data > Hyper Historian Aggregated Data step. This is done by adding a new Time Zone setting. The time zone selected will be used to determine daylight savings information in order to correctly interpret the processing interval on transition days. By default, the BI server's local time zone is used.

BridgeWorX64 & Workflow

Common

Ref ID	Description
60907	Added new option to the CSV File Output activity: "Append new lines to existing CSV file. Do not overwrite if file already exists." When this option is unchecked, the activity will overwrite existing CSV files, as in previous versions. When checked, the activity will instead append new lines to the existing CSV file. Note, when appending, the existing headers in the CSV file will be ignored. If the existing file's headers do not match the schema of the dataset being written there may be unexpected results. Also note that there is no check for maximum file size.
72960	Duplicating a BridgeWorX64 or Workflow block now adds a number to the end of the name instead of giving the new block a generic name of "ActivityXXX".
74371	Historical input blocks now have the option of including bad quality or uncertain data samples. There is a new option in the block properties called, "Ignore Bad Quality Data Samples". Uncheck this property to include bad quality and uncertain samples in the results. Note, this option is only available for English locales. Non-English locales will assume the "Ignore Bad Quality Data Samples" option is enabled, which is consistent with the behavior of previous versions.

BridgeWorX64

Ref ID	Description
71682	Added these tags to monitor the health and status of the BridgeWorX64 point managers: BridgeWorX Point Manager (browsable under Bridging): bwx:@@Active bwx:@@Online bwx:@@RequestedTransactionCount bwx:@@RejectedTransactionCount bwx:@@SuccessfulTransactionCount bwx:@@FailedTransactionCount bwx:@@CancelledTransactionCount bwx:@@RunningTransactionCount bwx:@@DehydratedTransactionCount BridgeWorX64 Scheduling Service (browsable under Platform Services > BridgeWorX64 Scheduler): bwxs:@@Active bwxs:@@Online bwxs:@@State bwxs:QueueLength
72220	Previously, on a redundant system when a transaction was configured for distributed recovery, if the transaction was hibernating while that node failed, the transaction would have been sent to another node to be recovered, while at the same time if the original node recovered the transaction would awaken and finish on that node as well, leading to duplicate execution.

Ref ID	Description
	Now, the interaction of distributed recovery and hibernation has been enhanced so that when a node with hibernating transactions fails, if the transactions are sent to another node to be recovered the original transactions will be canceled.
74909 74907	The Generic JSON Writer and CSV File Output activities now provide output datasets. The output dataset consists of one row and four columns for FolderName, FileName, JsonContent or CsvContent, and Status.

BridgeWorX64 Navigator

Ref ID	Description
75015	To use the value of a global alias as a root node, users can now enter just the <#alias#> syntax in the Root Node Path properly. Previously, expression syntax like this was required: {{"<#alias#>"}}. The previous expression syntax is still supported.

BridgeWorX64 Viewer

Ref ID	Description
72929	The BridgeWorX64 Viewer's filter now has an option to show transactions in all states.

BridgeWorX64 & Workflow Workbench Providers

Ref ID	Description
74408	The delay activity now includes a sampling rate field to determine how often the delay expression is evaluated.

Workflow

Ref ID	Description
74994	Global alias resolutions are now cached. This improves the speed of blocks that utilize global aliases, especially when the same alias is used in many tags. The first time an alias is used it may take 10-40 milliseconds to resolve, but further uses of the alias should be instantaneous.

CFSWorX

Major Enhancements

General

New: Standalone Installation

(Reference ID: 76308)

CFSWorX is now available as a standalone installation separate from ICONICS Suite and other packages. To minimize download time and installation footprint, this installation provides only the core components necessary to configure a CFSWorX application.

The CFSWorX standalone installation also provides a free trial that will work until December 31st, 2020. The free trial cannot be installed on the same machine as an existing licensed system; however, it can be installed on a separate physical or virtual machine and be configured to talk to a preexisting ICONICS system.

The CFSWorX standalone installation and free trial includes access to these features:

- CFSWorX intelligent alarm or fault notifications to field workers.
- AlarmWorX64 alarm server and alarm logger.
- FDDWorX fault detection and diagnostics.
- MobileHMI and WebHMI access for CFSWorX mobile screens and dispatcher desktop dashboard.
- Remote expert functionality, allowing field workers video communication with an expert in the office.
- GraphWorX64 design capabilities for editing prebuilt dashboard and remote worker mobile screen.
- OPC UA, BACnet, and OPC Classic connectivity.

Users who have installed the CFSWorX standalone installation can upgrade to a full ICONICS Suite system at any time by running the ICONICS Suite installation on top of the CFSWorX standalone installation. Your CFSWorX configuration will be preserved. Note, this will end the free trial period.

To request your free trial of CFSWorX, visit https://iconics.com/cfsworx-free.

Worker Access

Sort Workers Based on Travel Time

(Reference IDs: 66123, 74447)

By default, CFSWorX's worker lookup activity sorts workers by distance. As a new option in 10.96.1, the worker lookup activity can sort workers based on travel time, rather than physical distance. The travel time is calculated using the driving time in Bing Maps. It can optionally take traffic data into account.

To enable travel time sorting:

1) Follow these instructions to get a Bing Maps key: https://github.com/Microsoft/BingMapsRESTToolkit/blob/master/Docs/Getting%20Started.md#CreatingABingMapsKey
2) Log into Windows as the user configured as the identity of the ICONICS Connected Field Worker services. This is very important, as we will be adding a user environment variable, and if it is added under the wrong user then travel time sorting will not function.
3) Open **Windows Settings**.
4) Search for **Environment Variables**.
5) Select **Edit environment Variables for your account**.

6) Add a new user variable.
7) For **Variable name**, enter **Ico_Cfs_BingMapsKey**.
8) For **Variable value**, enter the Bing Maps key you obtained earlier.
9) Select **OK** twice.
10) If desired, you may log into Windows as a different user at this time.
11) Restart the **ICONICS Connected Field Worker Point Manager** service if it was running. When it restarts, worker lookup activities will automatically sort based on travel time.
    a. Note, if the Worker Access Point Manager is not configured to run out-of-process, restart the **ICONICS FrameWorX** service instead. This is not a common configuration.
12) Open **Workbench** and create or edit your Connected Field Worker template.
13) Select your worker lookup activity.
14) In the **Worker Lookup** section, check **Apply Location Restrictions** and ensure the **Location Data** expression is properly filled with location data.
15) Set **Distance Measurement Type** to **Time**.
16) If desired, check **Apply Traffic Calculation**. This will apply traffic data to the travel time calculations.
17) Apply the changes.

To discontinue using Bing Maps travel time, delete the **Ico_Cfs_BingMapsKey** environment variable and restart the **ICONICS Connected Field Worker Point Manager** service, or simply change the **Distance Measurement Type** to **Distance** or **Radius** in the worker lookup activity.

For Further Reference

- Help:
  - Sort Workers Based on Travel Time
  - Worker Lookup

Enhanced Group Filtering in Dynamics 365 Sources

(Reference IDs: 66864, 68533, 72924)

Dynamics 365 sources under Connected Field Worker > Field Workers includes a new section called **Only users from specific group(s)**. When enabled, this section determines which groups and users are imported into CFSWorX. (When disabled, all users and all groups of all group types will be imported.)

Filtering on resources category, organizational unit, and characteristic group types were already allowed. These fields were moved to the **Only users from specific group(s)** section. Filtering is now also allowed on business unit, team, and territory group types.

All group filters are now browsable. Before browsing is allowed, the Dynamics 365 connection information must first be configured and applied. Once the connection has been made, go to the **Only users from specific group(s)** section, select the **Enabled** box, find the group type you are interested in, change the dropdown from **All** to **Specific**, then use the **more (...)** button to select the specific groups. Remember to hit **apply** when you are finished configuring all filters.

For Further Reference

- Help:
  - Enhanced Group Filtering in Dynamics 365 Sources
  - Field Workers

Enhanced Group Filtering in Worker Lookup

(Reference IDs: 72534, 72536)

In worker lookup activities, the Group Name field has been replaced by Group Data. The Group Data field allows more than one group name, separated by commas, and supports expressions. Workers will be returned if they are in one or more of the listed groups.

It also allows the user to specify proficiency levels by putting the level in parentheses. For example, specifying **Software support (Proficient),Software Support (Good)** will find users who are either good or sufficient at software support.

This new syntax can also be used in the **GroupName** parameter of **wa:** tags.

For Further Reference

- Help:
  - Worker Lookup
  - Field Workers

Workflows and Alerts

Vonage Alerts

CFSWorX can now send alerts using Vonage. See the AlertWorX feature: Vonage Alerts.

Workflows can now Subscribe to FDDWorX Fault Incidents

(Reference ID: 72325)

In its initial release, CFSWorX was only able to alert workers based on AlarmWorX64 Server alarms. Now in addition to alarms, CFSWorX can alert based on FDDWorX Fault Incidents.

To subscribe a workflow to fault incidents:

1) Open **Workbench**.
2) Edit **Connected Field Worker** > **Workflows** > *your configuration*.
3) Go to the **Alarm Settings** tab.
4) Add a new subscription.
5) Select the **browse** button in the new row.
6) Browse to **My Computer** > **AnalytiX** > **FDDWorX**.
7) Select FDDWorX to subscribe to the entire set of fault incidents or a specific asset underneath for faults related to that asset.
8) Select **OK**.
9) Select **Apply**.

For Further Reference

- Help: Workflows

Acknowledge Alarms Via WhatsApp

(Reference ID: 66866)

Users can now respond to a Twilio WhatsApp alert message from CFSWorX to acknowledge the alarm.

Similar to acknowledging messages via SMS sent by Twilio, to acknowledge an alarm the recipient can respond to the WhatsApp alerts with the message ID, their acknowledge code, and an optional comment.

Acknowledging via WhatsApp requires a WhatsApp business account. Currently only WhatsApp messages sent from Twilio support this feature. See the reference links below for information on how to configure acknowledgements.

For Further Reference

- Help: Notification Methods

Additional Enhancements

Ref ID	Description
68933	Added a "Synchronize Now" button to Active Directory and Microsoft Dynamics 365 worker sources. This button will trigger an immediate synchronization.
70465	To aid in troubleshooting, recipient information is now logged in TraceWorX and GenEvent messages when notifications are sent from a CFSWorX workflow.
70583	Information about the current worker from a worker lookup or fixed contact list activity is now available to be used in expressions. These new variables are available in the expression editor of CFSWorX workflow templates: * cfscoreVariable:WorkerName * cfscoreVariable:WorkerEmail * cfscoreVariable:WorkerPhone

Ref ID	Description
	* cfscoreVariable:WorkerSMS * cfscoreVariable:WorkerVOIP * cfscoreVariable:WorkerWhatsApp * cfscoreVariable:WorkerServiceContact (Twilio or Vonage number) These variables are only valid after a worker lookup or fixed contact list activity is called by the workflow. For worker lookup activities, this information is gathered from the worker database. For fixed contact lists, cfscoreVariable:WorkerName will get its value from the Field Worker column and all other variables listed above will get their value from the Contact column.
71146	The optional event posted when an alert block is processed now includes information about the user being contacted. (This event can be enabled or disabled using the "Post event when block processed" box on the alert activity.)
73110 73109	When importing workers from Microsoft Dynamics 365, if the workers have an Azure Active Directory ID this ID will be imported. When planning to synchronize ICONICS security with Azure Active Directory, it is recommended to configure the security synchronization before importing workers from Dynamics. This order will allow CFSWorX to display the proper security name filled in for each worker immediately after import. Configuring the system in the reverse order (Dynamics worker import first, then security connected to Azure Active Directory) is allowed, and the workers will still be connected to security, but the security names will not be immediately visible.
74137	The performance of wa: tags was greatly improved when using a dataset with around 500 or more workers.
74207	Improved the efficiency of deleting an Active Directory or Microsoft Dynamics 365 source. Deleting these sources will no longer use as many system and point manager resources and will no longer log as many messages into TraceWorX.
74443	The DynamicsCreateWorkOrder method (usable with the "call method" global command) now returns the work order ID (GUID) when it successfully creates a work order. Note, batch commanding must be used in order to access a return value from a command. The ID is also included in the GenEvent message that gets logged when the method successfully creates a work order.
75465	The default timeout for new worker lookup blocks has been changed to 10 seconds.
75620	Added a new variable for use in CFSWorX workflow template expressions: cfscoreVariable:AreaAsString. This variable returns the area of the current alarm as a comma-separated string. AreaAsString is only available after a CFSWorX condition block (such as Alarm, Ack, Busy, Reject, etc.).
75921	The worker access wa: tags now contain a UserName parameter. Users who do not match the UserName are excluded from the results. This parameter can be used to get the data for a specific worker. If there are no workers matching the name, an empty result will be returned.
76913	A shortcut to the CFSWorX dashboard has been added to the start menu in the ICONICS Tools folder.

Facility AnalytiX & FDDWorX

Major Enhancements

FDDWorX Point Manager

Faults Available as Alarms

(Reference ID: 76064)

FDDWorX faults are now exposed as OPC UA alarms.

To subscribe to all faults, browse under **AnalytiX** and choose **FDDWorX**. To subscribe to the faults for a particular asset, choose that asset under FDDWorX. The subscription tag name should start with **fdd:**.

For Further Reference

- Help: Fault Detection and Diagnostics

Fault Viewer Control

Asset Icons

(Reference ID: 72714)

The fault viewer control can now display asset icons. To add a column for icons:

1) In your fault viewer, go to the **Fields** page.
2) Add a new field.
3) For **Data Column**, select **Asset Icon**.
4) Go to the **Columns** page.
5) Select the **Add new item to the collection** + button and choose the **AssetIcon** field or select the **Generate columns from list of fields** button to have the field added automatically.
6) Reorder the columns as desired.

The fault viewer control can also support interpreting any string field as an icon. The source for these icons is the AssetWorX icon repository, configured in **Workbench** under **Assets** > **Product configuration** > **Images**. The expected format of the string is: **ac:.Icon Definitions/*name*** (example: **ac:.Icon Definitions/Enterprise**). Note that expressions can be used to build the string name if the database or asset provides only part of the required string (example expression: **x="ac:.Icon Definitions/" + {{@@value}}**).

To change a string column into an icon, go to the **Columns** page, select the column in question, and set the **Content Type** to **Icon**.

The table control also supports interpreting string fields as icons. See Display Icons from AssetWorX Configuration.

For Further Reference

- Help:
  - Asset Icons in Fault Viewer Control
  - Fault Viewer
  - Images Node

Predefined Comments

(Reference ID: 52011)

Users can now configure a predefined list of comments the user can choose from when commenting on a fault.

To configure the predefined comments, go to the new **Comments** page in the fault viewer configuration. Check the **Configurable Comments** box, then use the **Add** button to add a new comment. Each configured comment must have a **Display Name**, which is the text that will be displayed when the user is choosing, and a **Comment**, which is the actual text that will be used in the comment. Both the Display Name and Comment fields support aliases and expressions.

In runtime, when this option is enabled the **Add Comment** dialog includes a new dropdown box called **Select Comment**. The user can optionally choose a predefined comment from this list, and it replace the text in the **Comment** field. The user can then further modify the comment before submitting, if needed.

For Further Reference

- Help: Fault Viewer

Additional Enhancements

General

Ref ID	Description
70188	Faults configured with a constantly false expression (such as "x=0" or "x=False") in the Enabled field are no longer loaded, meaning their data sources are not subscribed. Faults with a dynamic expression in the Enabled field are still loaded, even if the expression evaluates to zero.
72711	GenEvents are now generated when faults are acknowledged. The event includes the incident ID, name of the user who acknowledged the fault, and the acknowledgment comment (if any).

Fault Viewer

Ref ID	Description
58312	Added a new property called Maximum String Size. It can be found on the General page in the Data section. This property, which defaults to 1000, limits the number of characters displayed for string values. This improves the performance when data sources contained extremely long strings.
69682	Previously, when configuring the fault viewer, if a user wanted to choose a literal asset as the parent (as opposed to a localsim value or tag that would resolve to an alias name), they had to use the tag browser button, choose the asset, then remove the double curly brackets. Now, there is a new button attached to the Parent field specifically for browsing assets. Users can use this button to choose their literal asset, and their choice will not be wrapped in double curly brackets.
72289	Improved the loading time of fault incidents when using a distributed architecture.
72460 71294	The scrollbar performance has been improved when using incremental loading to better reflect the size of the full data source on the server and respond more intuitively when more rows are loaded from the server.

Ref ID	Description
	When incremental loading is disabled, the contents of old pages are no longer discarded. This means when a user moves from page one to page two then back to page one, page one's data will load immediately without having to retrieve the rows from the server again. Scrollbar performance in general has been improved.
72712	Added two new properties in the Controls page, Dialogs section. These both affect the pop-up dialog that is displayed when the user adds comments, acknowledges, resolves, or deactivates faults. * Show Current User: When enabled, this displays the currently logged-in user (if any) at the top of the pop-up dialog. This is enabled by default. * Allow Custom User: When enabled, if no user is currently logged into ICONICS security the user is allowed to supply a custom username in the pop-up dialog. This custom username is remembered and automatically filled in the next time the dialog is reopened. Note, this cannot be used to override the logged-in ICONICS security user.
72747	The scroll position is now maintained after the data source is refreshed.
72838	Added "Margin" as a new property of columns. Margin determines the minimum space allowed between the cell content and the cell border.
72868	There are two new preconfigured views for the fault viewer: Active Fault Statistics and Active Fault Incidents. These work like the preexisting Fault Statistics and Fault Incidents views; except they only display information about active faults. These are selectable from the Views menu of the Fault Viewer ribbon in configuration mode.
75131	When adding a filter, the tag browser now displays the Simulation tab, allowing users to choose localsim values for the filter's value field. Prior to this fix, localsim values worked but the user had to type them in manually.
75496	Added a "Row Click" event to the table and fault viewer controls. This new event is different from the preexisting "Row Selected" event because "Row Selected" only occurs when the row is first selected. The row must first be deselected before the "Row Selected" event will be triggered again for that row. The new "Row Click" event will be executed any time the row is clicked or touched, even if it is already selected.

ReportWorX64 & ReportWorX64 Express

Major Enhancements

Select Multiple Values for Parameters

(Reference ID: 74303)

ReportWorX64 now allows users to select multiple values for list parameters. To use this new feature:

1) Edit the ReportWorX64 template in **Excel**.
2) Open the **Parameters** window.
3) Select a parameter of type **Select from a fixed list of values** or **Select from a dynamic list of values**.
4) Enable **Allow Multiselection**.
5) If desired, enable **Limit Selection to** and choose a limit value.
6) Select **Save and close**.
7) Open **Workbench**.
8) Select the template object.
9) Upload your Excel file as a new version of the template.
10) Select the report object that uses your template.

11) In the **Advanced Properties** section, choose an option for **Multi-value Parameters** depending on whether you want one sheet per parameter value, or all parameter values merged into one sheet.
12) **Apply** the changes, if needed.
13) Use the ReportWorX64 Viewer or the ReportWorX64 button in the GraphWorX64 runtime menu to execute your report. Select multiple values for your multi-select parameters.

For Further Reference

- Help: Multiple Value Selection for Parameters

Additional Enhancements

ReportWorX64 Excel Add-In

Ref ID	Description
72196	Mapping multiple instances of the same column in a dataset is now allowed.
72239	Text orientation is now preserved for data sources wrapped in an Excel table.
72330	Added support for or disabled various Excel features that previously could break ReportWorX64 mappings.
72400	Transposing a data source now keeps style changes.
72626	Improved the experience of copying and pasting when the add-in was enabled.
73042	Various small user interface changes to improve ease of use.
73245	The "Turn Cell into Parameter" feature now attempts to infer the parameter data type from the cell formatting. For example, if the cell is formatted as a date then the parameter will be created with a type of "date time". When the data type cannot be inferred, a data type of string will be used.
74144	When downloading data, the "Select Parameter(s) Values" dialog now lists parameters after their dependent parameter, if any. For example, if ParamA depends on the value chosen for ParamB, ParamB will be listed first in the dialog.
74286	Previously, if a real-time data source value responded with a bad quality sample, that sample would be used in the report, even if the status was temporary and a good value followed shortly. Now, upon receiving a bad quality sample the report will wait a configured period of time to see if a good quality sample will follow. This wait time can be configured on a per-data source basis using the new "Bad Quality Delay" setting.
75782	Previously when the template is in data mode (showing downloaded data), changes were extremely limited. Now, certain changes are allowed, and will persist after the data is cleared.

ReportWorX64 Navigator

Ref ID	Description
75015	To use the value of a global alias as a root node, users can now enter just the <#alias#> syntax in the Root Node Path properly. Previously, expression syntax like this was required: {{"<#alias#>"}}. The previous expression syntax is still supported.

ReportWorX64 Workbench Provider

Ref ID	Description
72967 75829	"Send Email" redirector commands now support From, CC, and BCC fields.

Data Connectivity

BACnet Point Manager

Workbench Provider

Ref ID	Description
69144	The Read Range Type can now be configured on a per-device basis. In the device configuration, check "Override Read Range Type", then choose the desired type.
72612	Added a new option on the BACnet > Devices object > General tab called, "Read Description From Devices". If enabled, when browsing a node, Workbench will subscribe to any descriptions of that node's children. When disabled, Workbench will not load the child descriptions. This feature is disabled by default to reduce network traffic and load on the devices. This option replaces the ReadDescriptions INI entry that was added in version 10.96 (reference ID: 60752).

GridWorX

GridWorX Server

Ref ID	Description
71120 73137	The GridWorX Point Manager now supports the query protocol. Currently the query protocol is only used by the table control when choosing "query" as the type. Previously, GridWorX data sources would only be usable using a type of "dataset" in the table control. The query protocol is more efficient when modifying the original dataset, such as by sorting, calculating aggregates, or displaying only a subset of the columns. The query protocol allows the server to more efficiently process those modifications before sending the data to the client, whereas with the original dataset protocol the client had to retrieve the entire dataset and modify it on the fly in runtime.

GridWorX Viewer

Ref ID	Description
72951	Added a new advanced property to a series. This property is called "Hide zero or null samples". When enabled, samples that are zero or null will not be plotted. This can be used to hide slices of a pie chart where the value is zero, though it applies to all chart types. This property is currently only supported in the desktop (WPF) platform. Support for HTML5 and Universal Windows Platform (UWP) is planned for future versions.

SNMP Point Manager

Major Enhancements

Redesign, Performance Improvements

(Reference ID: 72898)

The SNMP point manager has been redesigned from the ground up to gain major improvements in performance and give users more control over their SNMP networks.

In particular, there were several improvements designed to increase performance on networks that have many devices and networks that may have a lot of devices go offline at one time. Offline devices should no longer affect the performance of online devices.

The mapping of SNMP traps to OPC alarms and events has been improved, as has the performance of traps.

There are new timeout settings for exploring networks and devices. The timeout for device discovery is configured per network. Edit a network and set the **Read Timeout** in the **SNMP Settings** section. There is also a timeout setting in the discovery dialog itself that governs the timeout of the whole discovery process. This is configured in the **SNMP Explorer**. Expand **Explorer Advanced Settings** and set a value for **Cancel device discovery after … minutes**.

There are new settings configurable under **Data Connectivity** > **SNMP** > **Networks** that can modify communication behavior. These settings include:

- **Max unused socket time:** How long the point manager caches sockets that are not used. A setting of zero indicates they are cached until the next restart.
- **Max active requests:** The limit of the total number of the requests across all devices that can be executed at the same time. A setting of zero indicates no limit.
- **Max active requests per device:** Limit of requests per device that can be executed at the same time. A setting of zero indicates no limit.
- **Device status errors:** If a device receives this number of consecutive errors (or more), it will switch to offline mode.
- **Device status polling rate:** The polling rate for the device status. Active devices are polled continuously at this rate, but offline devices will be polled at an increasingly slower rate. Each offline result slows the rate of the next check by ten seconds, up to a maximum of five minutes.

For Further Reference

- Help:
  - Traps
  - Networks
  - Explore Network

Additional Counters

(Reference ID: 52930)

More counters have been added to monitor the performance of the SNMP point manager. These counters can be accessed in the data browser under **Data Connectivity** > **SNMP** > **.counters** or **Data Connectivity** > **SNMP** > *network* > *device* > **.counters**.

Root counters:

- **Device Subscribed Offline Count** – The number of the devices that are on scan but offline
- **Device Subscribed Online Count** – The number of the devices that are on scan and online.
- **Request Average Process Time** – The average time that is needed to process one request (read or write), calculated since the point manager was started.
- **Request Average Queue Time** – The average time that the request waits in the processing queue, calculated since the point manager was started. (This is part of the average process time.)
- **Request Processed Count Total** – The total number of the processed requests since the point manager was started.
- **Server Running** – Elapsed time from the moment when the point manager was started.
- **Server Started** – The timestamp of when the server was started, UTC time.
- **Socket Allocated Count** – The number of allocated sockets that are used for the communication with devices over the network.
- **Socket Blocked Count** – The number of the sockets that are currently in use.
- **Socket Blocked Count Total** – The total number of the sockets that have been created since the point manager was started.
- **Socket Freed Count** – The number of the sockets that are currently available.
- **Socket Freed Count Total** – The total number of the sockets that have been freed since the point manager was started.
- **Tag Client DA Subscription Count** – The number of active client DA subscriptions.
- **Trap Aborted Count Total** – The total number of aborted traps.

Device counters:

- **Request Average Process Time** – The average time that is needed to process one request (read or write), calculated since the point manager was started.

- **Request Average Queue Time** – The average time that the request waits in the processing queue, calculated since the point manager was started. (This is part of the average process time.)
- **Request Processed Count Total** – The total number of processed requests.
- **Request Read Count** – The number of currently running read requests.
- **Request Read Count Total** – The total number of read requests processed since the point manager was started.
- **Request Read Error Count Total** – The total number of read errors encountered since the point manager was started.
- **Request Write Count** – The number of currently running write requests.
- **Request Write Count Total** – The total number of write requests since the point manager was started.
- **Request Write Error Count Total** – The total number of write errors encountered since the point manager was started.
- **Tag Subscribed Count** – The number of currently subscribed tags, including DA and dataset tags.

For Further Reference

- Help: SNMP Counters

Additional Enhancements

SNMP Server

Ref ID	Description
72349	When exploring a network or device using SNMP v3, the SNMP point manager now logs an error to TraceWorX if the username or password was entered incorrectly. (In future versions we plan to make this feedback more immediately accessible.)

SNMP Workbench Provider

Ref ID	Description
72997	If an error is encountered during network or device discovery, the device becomes red and the error is available in the tooltip. This can aid in troubleshooting device connectivity issues.

GENESIS64

AlarmWorX64

AlarmWorX64 Logger

Ref ID	Description
50690	Added a new IcoSetup64.ini entry that affects how the alarm logger retrieves historical alarm data when there are redundant logging databases: [AWX\AWXLog] UseAutoFailBack=0 When UseAutoFailBack is set to 0 (disabled), if the primary database is offline the alarm logger will begin retrieving historical data from the secondary database and will not "fail back" to the primary automatically. It will continue getting data from the secondary database until the secondary fails or the logger is restarted. When UseAutoFailBack is set to 1 (enabled, default behavior), every time the alarm logger needs to retrieve historical data it will first try the primary database, then it will try the secondary database once the connection to the primary has timed out. After the primary has failed the connection will "fail back" once the primary has recovered. Users whose historical alarm viewers are configured to automatically refresh may wish to disable UseAutoFailBack to avoid situations where the auto-refresh of the viewer takes a long time while the primary database is offline (because the alarm logger is attempting to query the offline primary database with every refresh).

AlarmWorX64 Server

Ref ID	Description
36987	Users can now prevent the alarm server from generating automatic text for the various Message Text fields of an alarm when no text is configured. To disable the automatic text generation, edit the IcoSetup64.ini file and add or modify this entry, then restart the alarm server if it was already running: [AWX\AWXServer] DisableAutoGenerateMessage=1
75565	Added a new Input_Tag_Quality point to the alarm DA server. This point reports the quality of the input tags. Example syntax: @ICONICS.AlarmSvr_.1\AlarmName.Input_Tag_Quality.Value
76908	Added Area_TagInput_Quality and Recursive_Area_TagInput_Quality to track the qualities of input tags for alarms in a given area. These tags report the lowest quality of all input tags in the area.

AlarmWorX64 Viewer

Ref ID	Description
52863	When displaying historical alarms, the AlarmWorX64 Viewer now accepts the Navigate command with the "Navigate" property set to "More". This retrieves more records from the server, the same as the "More Data" option in the context menu or toolbar.
77657	When the "Force Comment" property is enabled for an AlarmWorX64 Viewer, comments consisting of just spaces are no longer allowed. Note, the "Force Comment" property is currently not enforced in Universal Windows Platform (UWP). We plan to add this support into UPW in a later version.

AlarmWorX64 Multimedia

Ref ID	Description
75413	On secure systems, sometimes the SNMP email agent could have problems sending emails due to being unable to access the stored SNMP credentials, or the agent will send fine, but the Test button could fail for similar reasons. The location of the encrypted SNMP credentials has been moved to help mitigate these issues.
75914	Language aliases are now supported in AlarmWorX64 MMX templates.

AlertWorX

Major Enhancements

Vonage Alerts

(Reference IDs: 75409, 75084)

Users can now send alerts using Vonage. Similar to Twilio, these alerts require a Vonage account.

Vonage credentials can be configured under **Alarms and Notifications** > **AlertWorX** > **Vonage Configurations**.

CFSWorX workflow templates can now include these alert blocks:

- Send Vonage Message
- Send Vonage Voice Message
- Send Vonage WhatsApp

For Further Reference

- Application Note: *CFSWorX - SMS Configuration*
- Help: Vonage Configurations

Additional Enhancements

Ref ID	Description
70644	The AlertWorX message log now supports archiving old messages. To configure, go to Alarms and Notifications > AlertWorX > General Settings.

AlertWorX Workbench Provider

Ref ID	Description
72170	Added test buttons to test SMS, WhatsApp, and voice connectivity. In the Twilio configuration item (under Alarms and Notifications > AlertWorX > Twilio Configurations > your item), go to the General Settings tab, scroll to the "Test this configuration" section, fill in the number and press the appropriate Test button. (The new Vonage configurations also support these test buttons.)
75192	Added additional logging for failed attempts to send a message. (The location of this log is configured under Alarms and Notifications > AlertWorX > General Settings > Logging Settings tab.)

AssetWorX

Major Enhancements

Point Manager

Cache now Reads Changes from Database

(Reference ID: 72917)

AssetWorX already included the ability to cache values written to equipment properties into a database so they could be preserved after the engine was restarted. This was configured with the **Use database cache** option on the **Real Time Data** tab of the equipment property.

Previously, AssetWorX only read from this cache when starting. New in version 10.96.1, AssetWorX will monitor the database table for changes and propagate those changes to runtime. This provides new options, including the ability to have two AssetWorX installations run redundantly and share equipment property values via the cache database.

For more information on how to access the cache data store and run redundant AssetWorX, see the further reference links below.

For Further Reference

- Help: AssetWorX Cache

Additional Enhancements

Ref ID	Description
63000	Fields that accept <<@@>> aliases can now resolve the real-time value of equipment properties that have been cached (the "Use Database Cache" option is enabled and the value has been successfully cached). Previously this functionality was available only to static real-time values. The real-time value of equipment properties can be accessed using an alias such as: <<@@self/EquipmentPropertyName>>.
70163	Assets are no longer shown as expandable in tree views if they have no children.
72169	Previously, for equipment properties on the Real Time Data tab, static string properties limited the value field to 1024 characters. This limit has been removed.
74615	Attributes of equipment (such as .ChildEquipmentNames and .Description) now function for equipment in virtual trees. Note that .Path is an exception and does not function for equipment in virtual trees.
77400	The "External link type" and "External Link" fields for equipment have been renamed to "Link type" and "Link target", respectively. The link target can now contain a link to the local AssetWorX. Previously, the only way to create a link to the local AssetWorX was to use points that included the name or IP address of the local machine. Using these links was very inefficient, and users are highly encouraged to use the new local link functionality instead of using the local name or IP address. Note, creating an excessive amount of external links (including links to the local computer using the local node name) is very memory intensive on both AssetWorX and the FrameWorX Server. Users are encouraged to minimize the external links, ideally to one link per remote server.

Ref ID	Description
	Additionally, a warning is now logged to the FrameWorX Server's TraceWorX log if a client creates too many AE subscriptions.

AssetWorX Navigator

Ref ID	Description
75015	To use the value of a global alias as a root node, users can now enter just the <#alias#> syntax in the Root Node Path properly. Previously, expression syntax like this was required: {{"<#alias#>"}}. The previous expression syntax is still supported.
75016	If the Root Node Path property contains an alias and the value of that alias is changed, the navigator will automatically refresh.

Controls

Major Enhancements

Common

New Reference Property

(Reference ID: 60394)

In the past, for controls like the table, it could be difficult to configure the control when the control's data source tag name included a global alias or was generated by an expression. These aliases and expressions could not be resolved in configure mode, so information required to configure the control, such as the fields of the table control, had to be entered manually or possibly could not even be entered at all.

Now, there is a new field available for many controls called **Reference**. The reference field appears under the data source field. When the data source has a dynamic name, the tag listed in the reference field will be used to configure the control.

For example, in the table control, if the data source was set to a dynamic tag name, alias like "db:Northwind.<#TableName#>", the control cannot determine the value of the <#TableName#> alias in runtime, so the "generate fields" button on the Fields tab would not be able to retrieve any fields. However, when the reference field is set to a static tag name, like "db:Northwind.Reviews", the "generate fields" button will be able to successfully retrieve the fields from the Reviews data source.

For best results, users should ensure that the tag name used in the reference field is a valid possible result of the aliases or expression used in the data source field.

The controls that have this new reference field are:

- Table
- Heatmap

- Data Diagram

For Further Reference

- Help:
  - Reference Property
  - Table
  - Heatmap
  - Data Diagram

Table Control

Display Icons from AssetWorX Configuration

(Reference ID: 72714)

The table control can now display a column of icons. It can interpret a string column as an AssetWorX icon path and display that icon.

The source for these icons is the AssetWorX icon repository, configured in **Workbench** under **Assets** > **Product configuration** > **Images**. The expected format of the string is: **ac:.Icon Definitions/*name*** (example: **ac:.Icon Definitions/Enterprise**). Note that expressions can be used to build the string name if the database or asset provides only part of the required string (example expression: **x="ac:.Icon Definitions/" + {{@@value}}**).

To change a string column into an icon, go to the **Columns** page, select the column in question, and set the **Content Type** to **Icon**.

The fault viewer control also supports this feature. See Asset Icons.

For Further Reference

- Help:
  - Display Icons from AssetWorX Configuration
  - Table
  - Images Node

Additional Enhancements

General

Ref ID	Description
75888 75836	Made some minor styling enhancements to control configuration dialogs.

Data Diagram

Ref ID	Description
60789	The color scale field on the Color Axis page of the heatmap and data diagram controls now includes a color picker button and a visual representation of the currently chosen color scale.

Table Control

Ref ID	Description
58312	Added a new property called Maximum String Size. It can be found on the General page in the Data section. This property, which defaults to 1000, limits the number of characters displayed for string values. This improves the performance when data sources contained extremely long strings.
71481	The sub-header can now be styled like the main header. There is a new configuration group for the sub-header style.
72215	The configure mode "preview" of real number columns now displays them with decimal places.
72460	The scrollbar performance has been improved when using incremental loading to better reflect the size of the full data source on the server and respond more intuitively when more rows are loaded from the server. When incremental loading is disabled, the contents of old pages are no longer discarded. This means when a user moves from page one to page two then back to page one, page one's data will load immediately without having to retrieve the rows from the server again. Scrollbar performance in general has been improved.
72747	The scroll position is now maintained after the data source is refreshed.
72789	When using an FDDWorX table (data source of AnalytiX > FDDWorX > .Query) and creating a filter, only the "equals" operator was allowed for some columns. Now all filter operations are available on all FDDWorX table columns.
72838	Added "Margin" as a new property of columns. Margin determines the minimum space allowed between the cell content and the cell border.
74806	Tag names contained in data source values can now be resolved and the runtime values displayed. To configure this, go to the Columns page, select the column that contains a tag name, and set the Content Type to Data Source. The resolved value of a data source can also be used in an expression. Use @@resolvedvalue to refer to the resolved value of a data source.
75131	When adding a filter, the tag browser now displays the Simulation tab, allowing users to choose localsim values for the filter's value field. Prior to this fix, localsim values worked but the user had to type them in manually.
75496	Added a "Row Click" event to the table and fault viewer controls. This new event is different from the preexisting "Row Selected" event because "Row Selected" only occurs when the row is first selected. The row must first be deselected before the "Row Selected" event will be triggered again for that row. The new "Row Click" event will be executed any time the row is clicked or touched, even if it is already selected.
75789	Previously, the “Generate fields from list of data columns” button on the Fields page would completely drop the existing set of fields and reload them from scratch. Now it only adds new fields and removes missing fields. This preserves existing configuration (such as aggregates, grouping, and sorting) for fields that still exist after the schema update.

GraphWorX64

Ref ID	Description
75027	When importing IFC models, equipment class properties are now created for the imported assets, where applicable. Also, equipment classes created as part of the import are now created in a folder named for the root folder of the imported equipment. This ensures that the user can import two projects with similar objects but different sets of properties without the classes overwriting each other.

RecipeWorX

Recipe Navigator

Ref ID	Description
75015	To use the value of a global alias as a root node, users can now enter just the <#alias#> syntax in the Root Node Path properly. Previously, expression syntax like this was required: {{"<#alias#>"}}. The previous expression syntax is still supported.

ScheduleWorX64

Major Enhancements

ScheduleWorX64 Viewer

Enhanced Commanding Support

(Reference ID: 71915)

Commanding support for the ScheduleWorX64 Viewer has been enhanced. Users can now configure their own pick actions to perform common scheduling actions for the viewer.

There is a new command called **Schedule Event**. The Schedule Event command can be used to create, edit, and delete events. Use the Action parameter to determine which of the three subcommands is executed.

The ScheduleWorX64 Viewer is now a valid target for the preexisting **Refresh** and **Apply Discard** commands.

For Further Reference

- Help:
  - Schedule Event Command (in Equipment in Assets)
  - Schedule Event Command (in Equipment Classes in Assets)
  - Schedule Event Command (in GraphWorX64)

Additional Enhancements

Schedule Control

Ref ID	Description
62541	The BACnet Schedule Viewer and Workbench provider now attempt to save calendar entries by list modification instead of saving the entire property value. If the list modification fails (for instance, if it is not supported by the device), it will fall back to saving the entire property value.

TrendWorX64

Major Enhancements

TrendWorX64 Viewer

Customizable Export Statistic Command

(Reference ID: 72841, 74552)

The report generated by the Export Statistic command with a TrendWorX64 Viewer target has been enhanced to be more customizable.

Previously, running the Export Statistic command with a target of a TrendWorX64 Viewer would perform the same action as selecting the Export Statistics button in the trend viewer toolbar, which was to display a report that then could be saved to CSV or other formats.

Now, the action taken by the command depends on the TrendWorX64 Viewer configuration. The command itself has no new parameters, but in the target TrendWorX64 Viewer the user can select the **chart**, go to the **Data** tab, and select the **Configure** button next to **Statistics Export**. Similar to the preexisting data export configuration, the statistics export configuration presents various configurable settings for the statistics report, including which columns to include in the report and whether to export visible pens.

By default, the Export Statistic command now immediately saves the report to a CSV file, but the user can return to the legacy behavior of opening the report page by selecting **Use legacy export** in the statistics export settings.

This functionality of the Export Statistic command is currently only supported in desktop (WPF) and Universal Windows Platform (UWP). Equivalent functionality for the HTML5 trend viewer is planned for a future version.

For Further Reference

- Help:
  - Export Statistic Command (in GraphWorX64)
  - Export Statistic Command (Equipment in Assets)
  - Export Statistic Command (Equipment Classes in Assets)

Additional Enhancements

TrendWorX64 Logger

Ref ID	Description
72742	Sometimes when logging expressions the expression will be evaluated before the first update of its source tags is received. This results in the first sample logged for that expression to be bad quality. To avoid this issue, users can now set this IcoSetup64.ini entry. This entry will force TrendWorX64 Logger to wait until it has the first good quality evaluation of an expression before it begins logging samples for it. [TWXLOG64\Data] IgnoreFirstBadExpression=1

TrendWorX64 Viewer

Ref ID	Description
74134	TrendWorX64 Viewer now better supports the desktop/web/mobile configuration mode when choosing plot types. The previous "Show plots available on all platform" box has been removed, and the available plot types are automatically filtered based on the configuration mode. The current plot type is highlighted at the top of the dialog so that the user can see the current plot type even if it is not supported by the current configuration mode.
77861	The TrendWorX64 Viewer can now visualize unsorted datasets. It will sort samples chronologically in runtime. Previously it could only visualize datasets that were already sorted chronologically. This means it should be easier to display BACnet trendlog objects, in particular.

Hyper Historian

Hyper Historian Performance Calculations

Ref ID	Description
73329	Added four new methods to the FunctionLibrary class (used when creating custom calculation function libraries): * AddValue(IDataVariableNode variableNode, bool replaceExisting, LoggerDataValue value) * DeleteValue(IDataVariableNode variableNode, DateTime timestamp) * AddRecalculatedValue(IDataVariableNode variableNode, DateTime previousValueTimestamp, LoggerDataValue value) * DeleteValues(IDataVariableNode variableNode, DateTime start, DateTime end) These methods can be used to add, update, or delete samples from non-collected tags.

Hyper Historian Workbench Provider

Ref ID	Description
69220 74684	For Hyper Historian tags, the "In Group" and "Merge Group" fields now display both the data logger and the logging/merge group to help distinguish when there are groups with the same name under different loggers.
72752 74223	Minor changes to the behavior of the Data Exporter datasets configuration dialogs to make them more intuitive.
74504	For Data Exporter datasets, the default PointName column's length has been extended to 255 characters.
74633	Azure authentication strings are now encrypted in the Data Exporter configuration database and sensitive parts of the strings are now masked when being displayed in Workbench.

IoTWorX & Internet of Things

IoT Analyzer

Major Enhancements

IoT Analyzer Fault Incidents Available as Alarms

(Reference ID: 73240)

IoT Analyzer fault incidents are now available as alarms.

To see to fault incident alarms in the IoT Visualizer, add an alarm widget and configure it to subscribe to **AnalytiX** > **IoT Analyzer** > *your analyzer group name*. The resulting alarm point should look like **analyze:*GroupName***.

For Further Reference

- Help:
  - Analyzer
  - Visualizer

IoT Data Sources

Major Enhancements

BACnet Connectivity in IoTWorX Edge Devices

(Reference ID: 67844)

The BACnet Point Manager is now available to version 10.96.1 IoTWorX edge devices. This implementation of BACnet uses .NET Standard, allowing us to deploy to supported Linux devices. (The lack of BACnet connectivity was listed as a known issue for the 10.96 release.)

The new IoTWorX BACnet provider includes some features that are not yet available to the desktop BACnet provider. These features include:

- The BACnet cache is now stored in the configuration database instead of a CSV file.
- Support for channels.
- Library of supported properties.
- New and improved network discovery dialog.
- Compliance with ANSI/ASHRAE Standard 135-2016 (revision 19).

We plan to include these features in the desktop BACnet provider in a later version.

When creating a new IoT project, make sure to select the BACnet application to get BACnet connectivity on your devices. To add BACnet connectivity to an existing project:

1) Go to **Project** > **Configure Database**.
2) Select the database used by your IoT project and select **Next**.
3) If it is not already installed, check the **Install/Overwrite** box for **BACnet**.
4) Select **Install** if you made changes, otherwise select **Cancel**.
5) When the database has been installed successfully, expand *your IoT project* > **Device Templates**.
6) Right-click your template and select **Configure Application(s) Settings**
7) Enable the **BACnet** application.
8) Make sure **Update the applications in all groups associated with this template** is enabled.
9) Select **Apply**.
10) Repeat for any other templates where you would like to add BACnet connectivity.

Once BACnet has been added to your project, configure BACnet under **Device Templates** > *template* > **Data Connectivity** > **BACnet**.

To add the BACnet module to a specific device, right-click the device and select **Configure Modules**, select **Click to configure modules**, check the **Deploy** box for the **BACnet Point Manager**, then select **Deploy**.

Once BACnet has been configured in your template and the modules have been deployed, right-click on your device, select **Deploy Device(s) Configuration** to deploy the configuration to the device.

For Further Reference

- Help:
  - BACnet Configuration in IoTWorX

IoT General

Ref ID	Description
64954 72737	Sending IoT Analyzer fault incidents to FDDWorX via IoT Hub and MQTT broker is now supported. Previously fault incidents could only be sent by Platform Services (FrameWorX) communication. This was documented as a known limitation for 10.96.
74042 74043	Users can now change the ports used by the Diagnostics and Configuration pages and IoT Visualizer. Previously these ports were hard-coded. Now they can be modified in /usr/share/ICONICS/IoT/uiOptions.json.

Internet of Things Workbench Provider

Ref ID	Description
74444	When configuring publish lists, the user can no longer choose loggers that are used by subscribers. This configuration was never valid and would cause elements in the publish list to fail completely.
74757	Imports into Internet of Things branches of the Workbench tree now include an "Ignore GUID" option. When this option is enabled the import will ignore the GUIDs in the import and use the name to identify items.
77806	Users can now restart a gateway (edge) device from Workbench. In the IoT project, right-click the device and choose "Restart Gateway".

KPIWorX

Major Enhancements

Widgets

Pivot Functionality in Table and Categorical Chart

(Reference IDs: 55383, 55391, 74046)

Table and categorical chart widgets now include a "pivot" functionality. This feature is only available for AnalytiX-BI data sources. Pivoting a dataset involves taking unique values from one column and turning them into multiple columns or series in the output.

To pivot a table widget, select one dataset column with an aggregate for the **Columns** field and one dataset column for the new **Pivot** field. If you would like to display more than one row, select a third column for the **Group By (Rows)** field. The unique values provided by the Pivot column will be used for the table's column headers. If Group By is used, the unique values provided by the Group By column will be used as an additional first table column, identifying each row. The aggregated value for the Columns column will be used in the cells.

When pivoting the Columns field must contain only one column, and it must be aggregated.

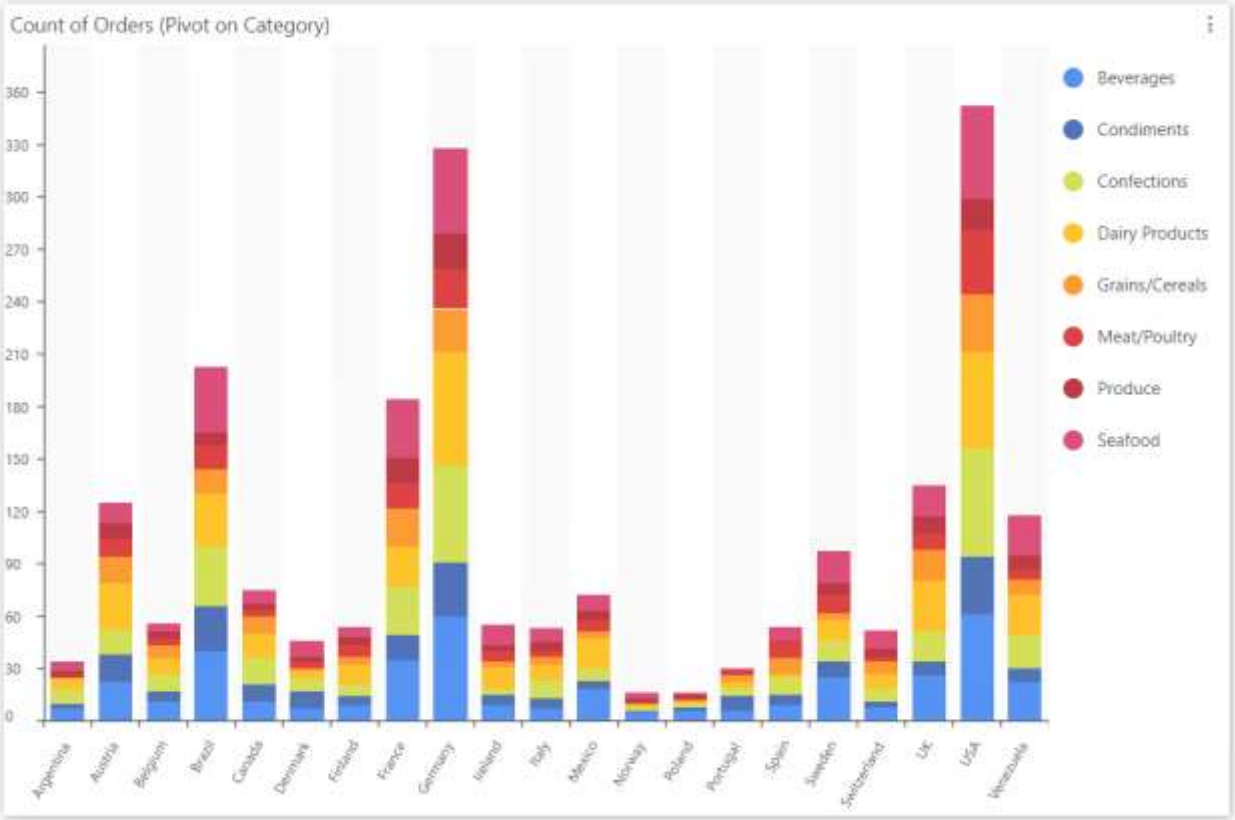
To see an example of pivoting using the example Northwind AnalytiX-BI data model, follow these steps:

1) Add a table widget to your dashboard.
2) In the **data browser**, browse to **AnalytiX** > **BI Server** > **Data Models** > **Northwind**.
3) Select the table widget and open the **Widget Settings** panel.
4) Expand **OrderDetails** > **Quantity** and drag **Avg** into the **Columns** field.
5) Expand **Customers** and drag **Country** into the **Group By (Rows)** field.
6) Expand **Categories** and drag **CategoryName** into the **Pivot** field.
7) You should now have a table showing the average quantity of each product type ordered by customers in different countries.

Average Quantity by Category Name and Country

Country	Beverages	Condiments	Confections	Dairy Products	Grains/Cereals	Meat/Poultry	Produce	Seafood	Total
Argentina	11.71	15.00	7.13	9.00	20.00		8.25	9.60	**80.69**
Austria	44.64	45.00	41.07	38.04	38.67	36.20	43.11	44.42	**331.14**
Belgium	24.73	24.50	27.00	32.78	20.71	22.25	24.50	15.20	**191.67**
Brazil	24.20	21.85	21.24	22.77	22.50	15.93	19.00	16.71	**164.19**
Canada	27.55	25.60	27.87	27.21	20.70	35.25	24.67	25.50	**214.34**
Denmark	27.86	21.00	26.43	17.80	15.00	36.50	33.33	25.56	**203.47**

To pivot a categorical chart widget, choose a dataset column for **Category (X-axis)** as normal. Choose an aggregated dataset column for **Value (Y-axis)**. Then choose a third dataset column for **Pivot**. One series will be added to the chart for every unique value of the pivot column.



For Further Reference

- Help: Pivot Functionality in Table and Categorical Chart

Additional Enhancements

Ref ID	Description
44909	Enhanced the widget property grid and added a tooltip with the property name for cases where a property name is too long to be completely visible.
61105	There is now a "Refresh" context menu item in the data browser.

Ref ID	Description
65413	The filter dialog in the KPIWorX header now keeps information about the current drilldown level. It is also now possible to go back and forward in the drilldown history.
65416	Added an OpenXML export ("Data XML") when choosing the "Share" option on a widget.
70056	A GenEvent is now logged when KPIWorX dashboards are accessed. The log includes the security username, dashboard name, and whether access was allowed or denied.
71061	Sorting one control no longer forces the same sort on other controls. Also, the table control now includes Sort order and Sort by properties, allowing the users to pick a default sort.
74242	Asset and time series can now have their hierarchical drill-down disabled. After mapping adding a column to a widget, select the column's dropdown in the widget settings panel and choose Flat instead of Hierarchy.
74645	For DateTime columns, users can now choose a specific date part to display in their widgets such as year, month, day, etc. Expand the DateTime column and drag the appropriate level into the widget or Widget Settings panel.
75916	In the table widget's settings, added a new alignment property for columns. In the Widget Settings panel, scroll to the Columns section, choose a column, then set the alignment. This will determine the alignment of the cell values for that column.
75917	Data Diagrams can now reverse the color axis. In the Widget Settings panel, go to the Appearance section and toggle Reverse.

MobileHMI & HTML5 WebHMI

HTML5, iOS, Android Platform

Major Enhancements

Common

Feature Parity Improvements

HTML5 browsers and the MobileHMI apps for iOS and Android can now use the following features and functionality that were previously only available in the desktop GraphWorX64 app (WPF) or the Universal Windows Platform (WPF) MobileHMI app.

General

Ref ID	Description
70252 60350 70388	Reduced minor graphical differences between equivalent WPF and HTML5 displays.

AlarmWorX64 Viewer

Ref ID	Description
70274	Custom Beep File property of conditions
70584	The X icon in the list and flip view search bars
70585	In list view, selecting an alarm to toggle the details pane open and closed
71119	Drill-down support in charts
71213	ShowFieldValue advanced property for donut and pie charts to toggle between showing the field value or percentage
71467	The details panel (advanced setting: ShowDetails). Note, there are some limitations due to the platform. Notably, marquee animation is not supported.
72781	Sorting on hidden fields
72798	Transparent color in the MouseOverBackground advanced property
74124 74126	In list view, the Wrap Text and Trim Text options for columns
74713	ShowPopup property for disabling the context menu
76366	The "Show the original value..." option on the Text Translator tab

Commanding

Ref ID	Description
70919	The @@data.count context variable for events in controls
75104	Using wildcards in the PenName field of the Delete Pen command

EarthWorX

Ref ID	Description
72731 72736	Localsim:property tags for ActualLatitude, ActualLongitude, ActualZoomLevel, ActualLatitudeStorage, and ActualLongitudeStorage*

GraphWorX64

Ref ID	Description
63118	Images in the Background property of the canvas (note, currently only works for root displays, not embedded viewers)
65624	The padding property for the scale control.
71194	The localsim:property:Document.MinimumZoom and localsim:property:Document.MaximumZoom tags
71199	The "View - Toggle Box Zoom" subcommand of the "Local Runtime Menu Command" local command
74630	DataEntryLostFocusWritesValue property of process points

Ref ID	Description
74715	The localsim:property tags for the tooltip options, such as localsim:property:Document.ToolTipOptions.ShowToolTips*
75112	UseDisabledColors property

GridWorX Viewer

Ref ID	Description
63863	Global colors in grid cells
70372	The "Show the filter in runtime" option on a grid under the Behavior tab > Configure default client-side filter(s) > add or edit a filter.
74173 74174	Enhanced cursor format
74176	Updating the rendering of a GridWorX Viewer chart using localsim:property: *ChartName.Series* [*Index*].PropertyName tags*
74318	The y-axis Interval and Offset fields configured per series on the Series tab
74332	CursorBackground, CursorForeground, CursorFontSize, and CursorFontFamily properties (note, CursorBorderBrush and CursorBorderThickness are not supported because in HTML5 the tooltips have no border)
74713	ShowPopup property for disabling the context menu
75229	Chart series commands that were a new WPF feature in version 10.96.

* Note that localsim:property tags are not universally supported in HTML5 due to the difference in structure between desktop (WPF) and HTML5 displays. Where possible, commanding should be used instead of modifying localsim:property tags.

Specifying Language in URL

(Reference ID: 74338)

HTML5 WebHMI displays can now specify the language to use for Language Aliasing in the URL of the display. This is done by specifying the "lang" parameter in the URL and passing in the language code. Set "lang" equal to the culture name or "language tag" of the language to be used.

This feature allows multi-language sites to give separate URLs to their users to load the site in their native language without having to create separate pages on the server side to load the language. While it is possible to specify a default language for a security user, specifying the language in the URL allows pages to be translated before anyone logs in or on pages that do not require a login.

Example URLs:

- http://servername/AnyGlass/PubDisplay/Display1.gdfx?lang=fr
- http://servername/AnyGlass/PubDisplay/Display2.gdfx?lang=en-GB

When specified in this fashion, the display acts as if the Set Language command was processed upon display load.

For Further Reference

- Help: Specifying Language in URL

iOS & Android Apps

Push Notification Support

(Reference ID: 66140)

Version 10.96 introduced Azure-based push notifications for the Universal Windows Platform (UWP) app (reference ID 68034). Version 10.96.1 extends that functionality to the iOS and Android apps.

These new notifications leverage Azure functionality to deliver notices to specific devices or specific users. Also, the Send Notification command can be used to generate any custom notification message. It does not have to be linked to alarms or events.

Currently UWP, iOS, or Android apps must be customized per organization. Contact your ICONICS sales representative for information on how to get your own customized version of the MobileHMI app to support push notifications.

For Further Reference

- Help: Azure-Based Push Notifications

Additional Enhancements

General

Ref ID	Description
66829	Refined the error level of some TraceWorX messages logged by the HTML5 engine.
66995	HTML5 displays now support dynamic URLs such as those used with reverse proxy services.

Camera Control

Ref ID	Description
61391	Previously, when users of the MobileHMI iOS or Android app connected to a secured server and encountered an issue with the certificate they would be unable to connect to that server. Now, the problem with the certificate is displayed to the user and they are given the option to ignore the certificate problems and continue to the site.

GraphWorX64

Ref ID	Description
70057	A GenEvent is now logged when HTML5 displays are accessed. The log includes the security username, file URL, and whether file access was allowed or denied.

GridWorX Viewer

Ref ID	Description
72061	Pie and donut chart labels are anchored closer to the slices to be more consistent with the chart rendering in desktop (WPF) and improve readability.
74168	Language aliases can now be resolved in HTML5 GridWorX Viewer charts. Note, language aliasing in charts is currently not supported for Universal Windows Platform (UWP) and desktop (WPF) platforms. We plan to add it in a future version.

Ref ID	Description
74224	GridWorX charts with very long vertical legends now display the legend in a scrollable list instead of wrapping around to a second column. This is more consistent with the desktop (WPF) format and provides more space for the actual chart.

Schedule Control

Ref ID	Description
73065	Improved the performance of the load time for the schedule viewer. Further performance improvement can be achieved by editing the viewer, going to the Advanced tab, and setting HidePastYears to True. This option is disabled by default for backwards compatibility but enabling it can greatly enhance performance.
74039	The HTML5 ScheduleWorX Viewer now shows errors in the bottom of the control instead of as popup message boxes.

TrendWorX64 Viewer

Ref ID	Description
52266	When right-clicking on a pen in the TrendWorX64 Viewer, the context menu now includes a "Delete" option, allowing the user to easily delete the selected pen.

Platform Services

Commanding

Ref ID	Description
25624	The Acknowledge command has a new property, ShowDialog. When set to true, the Acknowledge command will display the same acknowledgment dialog that users see when acknowledging alarms via the alarm viewer. The other fields will be used as initial values in the dialog, in this case. This use of the Acknowledge command is currently not supported for Universal Windows Platform (UWP).
71057	When configuring a Set Global Aliases command (commands on events or commands in context menus), there is now a new button for the GlobalAliases field that opens the standard tag browser, including the expression editor.
76640 75862	Many command fields supported dynamic tags, but there was no way to browse for them in the command editor (used in batch commands and in many controls). An additional tag browser button has been added for these fields.

FrameWorX Server

Major Enhancements

Read Only Option

(Reference ID: 39706)

For systems designed for monitoring only, FrameWorX now provides an option to prevent writing to any OPC servers or point managers.

From the **start menu** or **Workbench**, open **Platform Services Configuration**, go to the **Advanced** tab, and select **Read only**.

When enabled all points coming through this FrameWorX server will be treated as read only. Users will be unable to write to real-time points, historical points, or datasets. This is an alternative to ensuring that all users and groups in security cannot write to points, and functions even when security is disabled. This read only option cannot be overridden by security permissions.

This option is designed to work like the Read Only option in the GENESIS32 or BizViz GenBroker Configurator under Advanced > Server > Security.

For Further Reference

- Help:
  - Read Only Option
  - Platform Services Configuration

Additional Enhancements

Ref ID	Description
49937	Added two extended point syntax (EPS) functions:

Ref ID	Description
	* statuscode(*pointName*) - Returns the numeric status code of the point * statustext(*pointName*) - Returns the point status as localized text (such as "Bad - Not Implemented") Note, these are not expression editor functions. When used in expressions they need to go inside of the curly brackets, such as: x={{statustext(svrsim:sine int32 bad -100 100)}} These functions can either be typed in manually or chosen from the EPS dropdown at the bottom of the data browser.

Expressions

Major Enhancements

Switch Statement

(Reference IDs: 70817, 72458, 72982)

The expression editor now supports switch statements. These statements can replace long series of IF-THEN statements. They are used to covert single expression values to other values, most often integer values to strings. The syntax is very similar to that used by Transact-SQL.

The syntax is as follows:

```
CASE input_expression
     WHEN when_constant_expression THEN result_expression [ 1...n ]
     [ ELSE else_result_expression ]
END
```

Where:

- *input_expression* is any standard expression, such as an external variable (like {{my variable}}) or combination of functions and variable(s).
- *when_constant_expression* can be any constant or constant expression, such as: 1 + 2, “my text”, etc. All WHEN expressions values must have the same data type – either numbers or strings – and must be unique within CASE statement.
- *result_expression* and *else_result_expression* are any standard expression text.

The statement will try to match the input expression to one of the WHEN values. If a match is found, the statement will return the value in the following THEN expression. Multiple WHEN statements can be called in a row to have them all return the same THEN value.

If no WHEN value can be matched, the value in the ELSE expression will be returned. The ELSE section is optional. When it is omitted, an empty value will be used.

Example expressions using the switch statement:

```
CASE {{my tag}}
  WHEN 1
  WHEN 2 THEN "A"
  WHEN 3 THEN "B"
  WHEN 8
  WHEN 9
  WHEN 10 THEN "C"
  ELSE "D"
END


CASE {{my tag}}
  WHEN "A"
  WHEN "B" THEN 0
  WHEN "C"
  WHEN "D" THEN 1
  ELSE 2
END


CASE {{my tag}} - 10
  WHEN 1
  WHEN 2 THEN {{my second tag}}
  WHEN 3 THEN {{my second tag}} + {{my tag}}
  WHEN 8
  WHEN 9
  WHEN 10 THEN {{my third tag}}
END
```

For Further Reference

- Help:
  - Switch Statement
  - Expression Editor

Code Blocks and Looping

(Reference ID: 73070, 73071)

As new functionality has been added to the expression engine over the years, expressions have grown more and more complex, difficult to read, and difficult to maintain. To help simplify complex expressions, users can now optionally use **code blocks**, which provide looping functionality and fast access to internal variables.

```
DECLARE
      Optional internal variable declaration section
      (example: @myvariable; @mysecondVariable = 10;)
BEGIN
      Code section with code lines...
END
```

Each code block returns a single value. Code blocks can be used by themselves or in line with standard expression editor functions.

Inside the code section of a code block, users can utilize new commands, such as SET, FOR, FOREACH and EXIT. See the reference links below for more details and examples on how to use the new code blocks.

For Further Reference

- Help:
  - Code Blocks and Looping
  - Expression Editor

Array Manipulation Functions

(Reference IDs: 73098, 73099)

New functions were added to aid in array manipulation:

- **createarray** (length) – Creates an empty array with the specified length.
- **createtypedarray** (datatype, length) – Create an array with the specified length where all elements are of the specified datatype.
- **setlen** (array, length) – Modify the number of elements stored in the array.
- **setat** (array, index, value) – Set the value at the specific index (zero-based).

For Further Reference

- Help: Expression Editor

Additional Enhancements

Ref ID	Description
74230	Added new functions: bhour, bminute, and bsecond. These functions act like the preexisting b-time functions (such as bmonth and byear) to round a datetime value to the beginning of the hour, minute, or second.

MonitorWorX Viewer

Ref ID	Description
73959	Users can now launch the login dialog from the MonitorWorX Viewer tool. Select the security info in the bottom right corner.

OData Connector

Ref ID	Description
72833	The OData Connector Point Manager can now only run out of process.

Redundancy Support

Major Enhancements

Enabling Point (Forced Redundancy Failover Support) for FrameWorX and Point Managers

(Reference IDs: 47214, 50505, 64910)

Users can now force a redundancy failover for FrameWorX or individual point managers. Point managers and FrameWorX as a whole can have a particular point associated with them, called an **enabling point**, and when the enabling point evaluates to zero or bad quality that FrameWorX or point manager instance will go offline. This feature can be used to identify point managers or FrameWorX instances that are in an undesirable state and prevent clients from using them.

In a standard redundancy scenario, a client will only connect to the secondary point manager if the primary point manager is not responding. There could be other problems with the primary point manager, however, such as if it has lost connection to its source data. The primary point manager would still be detected as online in this case, even though all of its data points would be bad quality. Clients may continue talking to it, even if the secondary point manager has good quality points. With this enabling point feature, the presence of a particular bad quality point could be used to force this point manager to report itself as offline, causing clients to failover to the second functional point manager.

To configure an enabling point for FrameWorX, open **Platform Services Configuration** from **Workbench** or the **start menu**, then go to the **Advanced** tab. Enter a point name into the **Server Enabling Point** field.

To configure an enabling point for an individual point manager, open **Platform Services Configuration** from **Workbench** or the **start menu**, then go to the **Point Managers** tab. Find your desired point manager in the list, then scroll to the right to find the **Enabling Point** column. Enter a or point name into this column. Note that this feature is only supported for point managers running out-of-process.

Enabling points must be a single point, not an expression, however users can configure an expression tag in the Unified Data Manager (**Platform Services** > **Unified Data Manager** > **Expressions**) and use that exp: tag as an enabling point, if desired.

Note that FrameWorX and point managers disabled by their enabling point will still function, they will simply close any existing client connections and reject any further communication attempts from clients until the enabling point allows them to come online again.

These features were designed for a redundancy scenario, but they can also be used in a non-redundant scenario to temporarily prevent clients from connecting to a particular point manager or FrameWorX.

Users are encouraged to utilize this feature with care, as using an unreliable enabling point can cause a FrameWorX server or point manager to appear to go offline for no good reason. If a FrameWorX server or point manager's communication was disabled due to its enabling point, a message will be logged in TraceWorX at the error level.

This feature is similar to the preexisting "Controlled Redundant Servers" feature for OPC Classic servers, configured in Workbench under **Platform Services** > **FrameWorX** > **Server Settings** > **GenBroker64 Settings**. Note that the "Controlled Redundant Servers" feature is evaluated on the client side, which is different from the enabling points for FrameWorX and point managers.

For Further Reference

- Help: Enabling Point for FrameWorX and Point Managers

Security

Major Enhancements

Secure Alarms by Asset Name

(Reference ID: 71301)

When subscribing to assets for alarms and events, the viewing and acknowledgement of those alarms can now be secured by the asset path. This provides a more intuitive way to secure alarms for users who rely heavily on assets.

To support this feature, there is a new setting configured in **Workbench** under **Assets** > **Product configuration** > **Alarms & Events settings** > **General settings and subscriptions** called **Modify SourceName to start with Equipment or Property point name**. This setting is enabled by default. When it is enabled, the SourceName field of alarms subscribed via AssetWorX is modified to include the equipment or property name.

An example SourceName would be:

ac:Alarms/Plant Area B/Sub Area A/:0:@ICONICS.AlarmSvr.1\Valve1.Limit.Condition

Including the asset name like this allows the **Alarms** tab of users or groups in security to properly match alarms with the asset tree. It would be possible to deny users the ability to acknowledge alarms under "Sub Area A" by denying them **ac:Alarms/Plant Area B/Sub Area A/*** on the Alarms tab.

For Further Reference

- Help:
  - Secure Alarms by Asset Name
  - General Settings and Subscriptions
  - Security Privileges for Users and Groups (Alarms Tab)

Additional Enhancements

Ref ID	Description
72874 72943	In application actions under Workbench > Schedules, the Monitor Mode, Override, and Print application actions have been removed. The Monitor Mode and Print application actions were obsolete. To prevent users from overriding schedules via Workbench, remove the entire Workbench > Schedules application action.
76882	The "Show currently logged in user in login dialog" setting now also disables the "Advanced" button in the login dialog, which shows a list of currently logged-in users.

Security Workbench Provider

Ref ID	Description
72478	It is now possible to copy and paste rights from one group to another using the context menu. Previously it was only possible to copy and paste rights between users.
73044	Multiple small updates to configuration dialogs to enhance usability.

Server Internal Simulator

Major Enhancements

Simulator Registers

(Reference ID: 75533)

The Server Internal Simulator (browsable under Platform Services) now includes registers. These registers work similarly to the preexisting svrsim:out points, except they can use custom names and are not limited to one point per data type. Because they are evaluated by the server, these simulation registers allow the user to share values between clients and are usable on IoTWorX edge devices.

Registers are not configured in advance and are not browsable. Simply use a tag with this format wherever you would use an OPC UA or other tag name:

svrsim:reg *datatype identifier*

Datatype is the desired data type supported by the simulator and *identifier* is a custom string used to identify this particular register tag. Example: **svrsim:reg int myRegisterName**

Note, only 64 unique registers are supported. If a project attempts to use more than 64 unique identifiers the registers beyond the 64th will return a bad status code. Registers are counted as points in terms of licensing.

For Further Reference

- Help: Simulator Registers

Triggers

Ref ID	Description
65390	Data triggers and time triggers have a new DA property called ConditionActive. If the trigger is an event trigger, this property will be an empty string. If the trigger is a condition trigger, the property will be true when the condition is active and false when the condition is not active.

Workbench

Ref ID	Description
61828	Enhanced the way certificates are managed in Workbench. When browsing certificates, you now get a list of all certificates that are visible to FrameWorX Server. Previously, for standard projects only certificates in the certificate store were available, and for IoT projects browsing was not possible at all. Certificates can now be browsed respective to a particular edge device. When browsing for certificates in an IoT project (such as when configuring security settings for an MQTT broker), the user will be prompted to pick a device and then choose from certificates present on that device. The Project Files provider can now be used to create, import, and restore certificates to the certificate folder, C:\ProgramData\ICONICS\pki, where they should be automatically recognized and visible to FrameWorX.
70553	In Platform Services Configuration on the Point Managers tab, the main table can now be sorted by many of the columns, including the point manager name. Click on the header to sort by that header or reverse the sorting order.
71853	To help prevent accidental data loss, a warning was added when the user chooses the "Purge database" option on import.
72961	Sorting and filtering are now allowed in the Configure Database dialog's list of configurations.
72965	It is now possible to filter on the Description column in the Project Details panel.
72966	It is now possible to reorder columns in the Project Details panel.
72970	It is now possible to restrict access to the Usability section of the Workbench Tools ribbon. In security, the Workbench > Project Management application action controls access to that section.
74434	After adding an application to a project, if the database does not already include configuration tables for that application, the tables can now be quickly added from the Project Explorer. Right-click on the application and choose "Create configuration" or select the application and choose "Create configuration" from the Home menu.

Project Files

Ref ID	Description
74317	Environment variables such as %USERPROFILE% can now be used in custom destination folders of archives.

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ICONICS Sales Offices

World Headquarters

100 Foxborough Blvd.
Foxborough, MA, USA, 02035
+1 508 543 8600
us@iconics.com

European Headquarters

Netherlands
+31 252 228 588
holland@iconics.com

Australia
+61 2 9605 1333
australia@iconics.com

China
+86 10 8494 2570
china@iconics.com

Czech Republic
+420 377 183 420
czech@iconics.com

France
+33 4 50 19 11 80
france@iconics.com

Germany
+49 2241 16 508 0
germany@iconics.com

India
+91 265 6700821
india@iconics.com

Italy
+39 010 46 0626
italy@iconics.com

Singapore
+65 6667 8295
singapore@iconics.com

UK
+44 1384 246 700
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