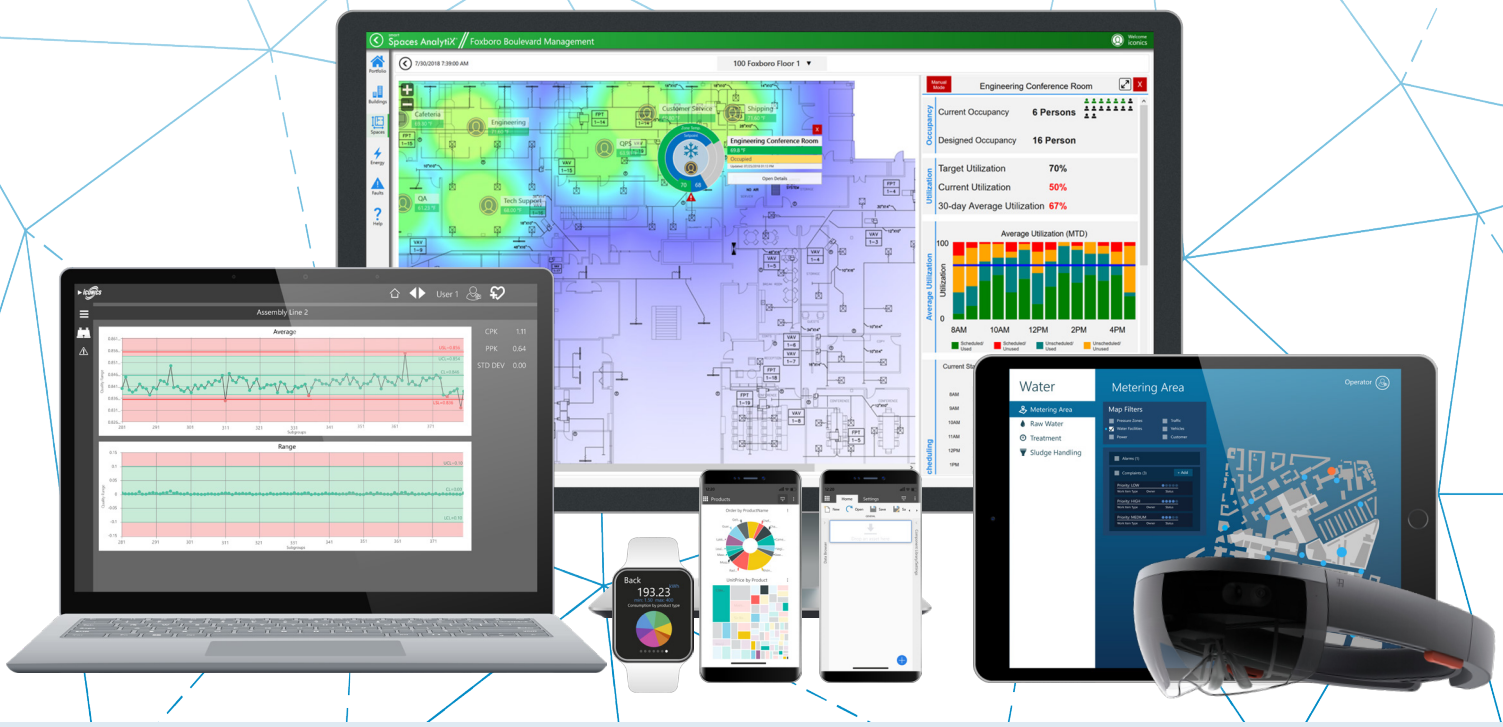
ICONICS 10.96

What's New | ICONICS Suite™

March 2020



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Contents

Introduction to Condensed What's New

This edition of the "What's New" describes many new features and enhancements in version 10.96.

This is not intended to be an exhaustive list of all new features in 10.96. When available, a complete list of all features and enhancements can be found on our website.

For information on fixes made in version 10.96, see the appropriate "Resolved Issues" document.

The most up to date "What's New" and "Resolved Issues" documents can be found in our online documentation here:

Release Notes for 10.96

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.

"First Available In" Column

Some of the features in this document were first added in an update pack for version 10.95. When this is the case, the 10.95 update pack version is listed in the "First Available In" column. Items listed as "New for 10.96" indicate features that were first added in 10.96 and are not currently available in a 10.95 update pack.

Users of any 10.95 update pack version can consult this column to tell which features are new for their version and which they already have.

General

Online Help

(Reference ID: 71988, 72009)

ICONICS' help files for version 10.96 are now available online at https://docs.iconics.com.

The software itself can optionally be configured to direct users this new online help repository. When installing, users now have the choice between locally installed help and online help.

Online help will benefit from continual updates and improvements, whereas locally installed help will always be available to the user, even on machines with limited or no internet access.

Note that when choosing online help, the local help files will not be installed. When local help files are present, they will be used instead of the online help.

Local help can be installed at a later time by browsing your installation media, going to ICONICS Suite > Help, and running setup.exe from that location. Also, users can opt to use online help after the installation by uninstalling the ICONICS Help from Windows Settings.

Compatibility

Added Support for Microsoft SQL Server 2017

(Reference ID: 61341)

As of 10.95.4, Project Reporting (and all of the ICONICS Suite) is now compatible with Microsoft SQL Server 2017.

Added Support for Microsoft SQL Server Contained Databases

(Reference ID: 62188)

Workbench and all providers now support Microsoft SQL Server "contained databases" as configuration and logging databases.

AnalytiX

New: CFSWorX

A brand-new offering in 10.96 is CFSWorX. "CFS" stands for "Connected Field Services". CFSWorX is a notification system designed to streamline the efficiency of field service organizations and reduce downtime through intelligent scheduling and reliable notifications.

Real-Time Monitoring

CFSWorX provides real-time monitoring of connected equipment, whether that be on-premises or via the Internet of Things. Any point coming through FrameWorX can be used for equipment monitoring, including OPC UA, Modbus, SNMP, and more. Alarms are handled by AlarmWorX64 Server.

Field Worker Data

A database of worker data is maintained, including their contact information and schedule. This database can optionally be synchronized with third-party identity databases such as Active Directory and Microsoft Dynamics 365. (Support for other identity databases and CRM systems is planned for future updates.)

Information that can be used to judge a worker's availability or suitability to respond to a particular alarm is collected by CFSWorX. This may include their schedule (which can come from a third-party identity database or be configured with ScheduleWorX), which specific alarms and assets they are responsible for, their groups (which can be used to mark skills and proficiency levels), and data from their mobile device, such as location.

Workers can also be linked to ICONICS security users. This allows the MobileHMI app to identify workers based on their ICONICS login.

Mobile Health Monitoring

Workers utilizing the MobileHMI app can send their mobile health data to the CFSWorX server. This information includes their signal strength, battery life, presence (mobile activity), and GPS location.

See Mobile Device Health for CFSWorX for more information.

Workflow Engine

CFSWorX uses ICONICS' Workflows technology (the same technology used by BridgeWorX64) to configure the appropriate responses for events. Users can configure a graphical flow chart to determine what actions should occur upon an alarm, when a worker responds, or other situations. This powerful tool can be used to configure simple escalation lists, or an advanced series of actions based on complex decisions.

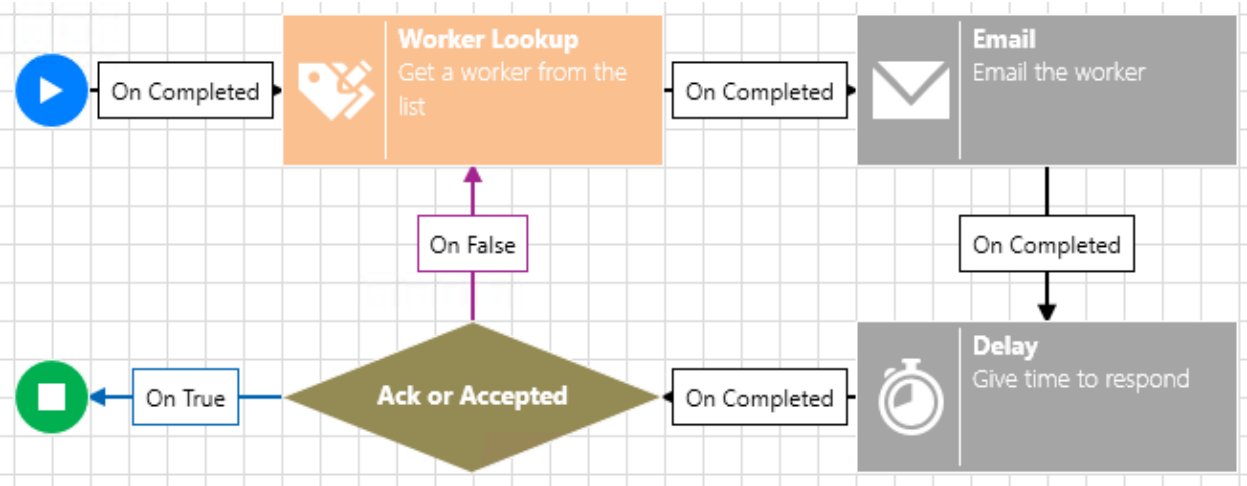
Actions that can be taken include writing to tags, sending SMS or email alerts, and creating a GenEvent entry.

Example templates are included. Some users may be able to leverage the examples for their final projects with very little customization.

Worker Lookup and Fixed Contact List Activities

Two new activities for CFSWorX workflows are the worker lookup and the fixed contact list. Both activities provide a list of workers – one dynamic, the other fixed – to use as targets for the notification activities. The blocks can be configured to send to all list members at once, or one at a time.

When messaging workers one at a time, these activities work best in loops. The first time the block is processed in the workflow it will return the contact information for the first worker in the list. The next time the block is processed it will return the second contact, etc. A simple workflow example will get a worker from the list, email the worker, delay to give the worker time to respond, check to see if the alarm has been acknowledged or accepted, then if not, get the next worker and repeat.



The worker lookup activity can be configured to filter the list of workers based on a variety of conditions, such as schedule, location, group (i.e. skill or area of expertise), alarm source, and alarm area. The list may optionally be sorted by GPS location, with the closest worker listed first.

The worker lookup list is continually refreshed but keeps track of who has already been notified to ensure that if a new worker appears on the list they will be included.

Device Notifications

There are several options for notifying workers. These include:

- Email (SMTP)
- SMS (via modem)
- SMS (AT&T)
- SMS (Twilio)
- WhatsApp (Twilio)
- Voice (Twilio)

Note that Twilio and AT&T alerts require a paid account with those respective services. Direct SMS requires the use of a modem.

Other notification options are planned for the future. Please contact your sales representative if there is a specific notification channel you would like to request.

Audit Log

CFSWorX maintains a detailed audit log of when alarms occur and when workers responded to them.

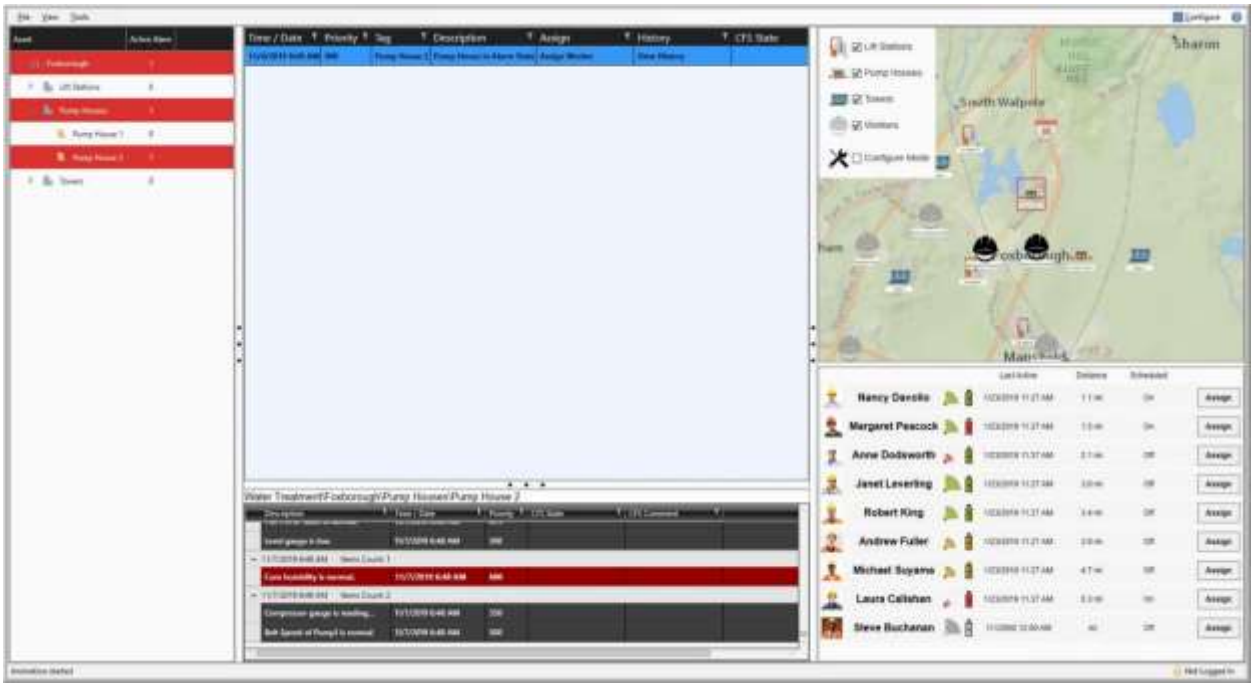
Mobile App

Workers who receive an alert can launch the MobileHMI app and visit the CFSWorX dashboard page. This page displays the available alarms and their details. The worker can respond with "accept", "busy", or "reject" options. These different responses can affect the CFSWorX workflow.

The CFSWorX dashboard page works out of the box and is completely customizable.

Operator Dashboard

CFSWorX also comes with a premade and customizable operator dashboard. This dashboard is designed to be viewed by an in-office operator to view the current state of alarms, the audit log, and optionally to assign alarms to specific field workers.



Create Work Orders

An optional feature is the creation of work orders. CFSWorX can create work orders in external systems such as Microsoft Dynamics 365. This can be done from the MobileHMI app using the "Create Work Order" button.

Support for other work order systems is planned for future updates.

For Further Reference

- Application Notes:
  - *CFSWorX – Getting Started*
  - *CFSWorX – Configuring Dynamics 365*
  - *CFSWorX – Setting up Mobile Device Health*
  - *CFSWorX – SMS Configuration*
- Help: About CFSWorX

AnalytiX-BI

Major Enhancements

Data Flows

Data Flow Usability and Performance Enhancements

There were numerous "quality of life" enhancements to the data flows, including:

- **On demand preview** – The Data Flow Preview panel now runs on demand, via the new **Apply Changes** button at the bottom of the Data Flow configuration panel. Previously, the Data Flow Preview panel for a data flow would populate whenever any changes were made. This was not always optimal, as data flows could attempt to run with incomplete parameters, possibly creating a preview that was nonsensical or had known errors. Also, constantly refreshing very extensive or slow data flows could slow down the development process, as the user had to wait for the data flow to finish. Now, the user can configure at their leisure and use Apply Changes when they feel they need to see the preview. *[64681]*

- **Preview caching** – Data Flow Preview content is now cached. After the preview is loaded the first time the data is stored to disk for quick retrieval when the user comes back to this data flow dialog. The cache is cleared when parameters are changed or on demand using the **Refresh Cache** hyperlink next to the Data Flow Preview section header. Caching allows for faster configuration and can avoid unnecessary queries to expensive data sources. (Note, this caching is for configuration only. Executing the data flow in runtime will always query the data source for data.) *[62367]*

- **Cancel preview** – Data flows that run for a long time or have gotten stuck can now be canceled. A **Cancel** button now appears when a data flow preview is being loaded. *[61503]*

- **Visible data types** – Data Flow Data types for data flow columns are now shown in the Data Flow Preview headers. This makes it easier to see if type conversions are needed. Previously, the only way to confirm a data flow column data type was to ingest it into a data table. *[67999]*

- **Remove multiple columns in one step** – The Remove Column step now allows you to remove multiple columns at the same time. Previously columns had to be removed in separate steps, which could become cumbersome if there were many columns to remove. *[61534]*

- **More descriptive error messages** – Error messages in steps have been enhanced to be more descriptive and give users a better understanding of what went wrong. *[60417]*

For Further Reference

- Help: About AnalytiX-BI Server

New Data Flow Step: Split Column

(Reference ID: 68020)

Data flows can now use the new **Split Column** step to convert a single column into two or more columns based on a number of criteria like delimiter, number of characters, or when a string changes from characters to digits and vice versa.

For Further Reference

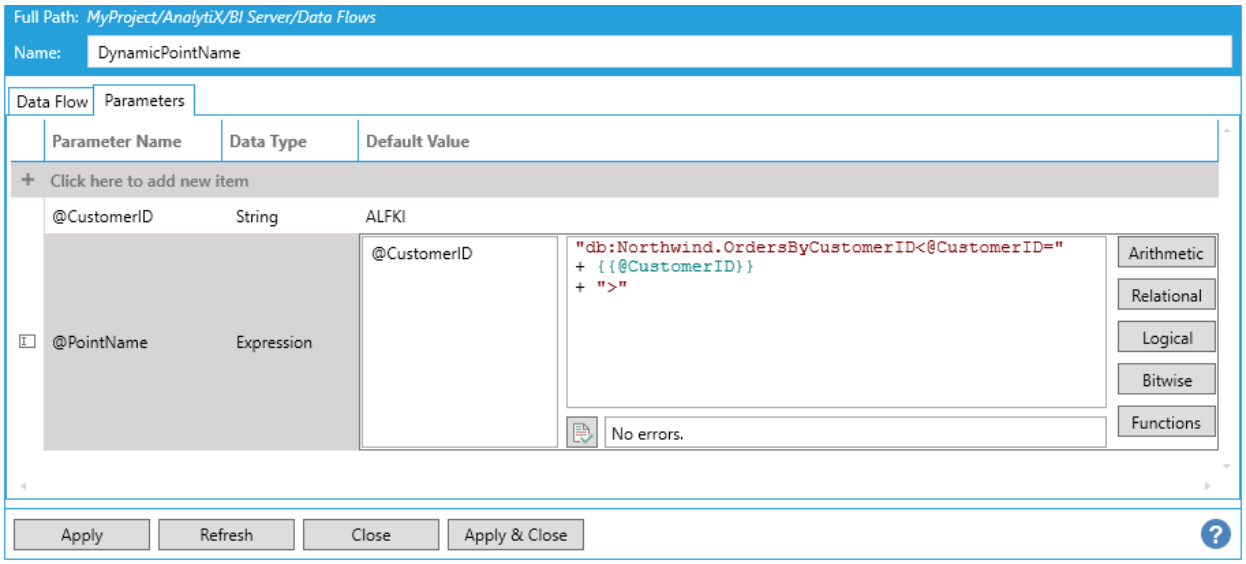
- Help: AnalytiX-BI Server Dataflows

Data Flow Parameters Can Reference Other Parameters

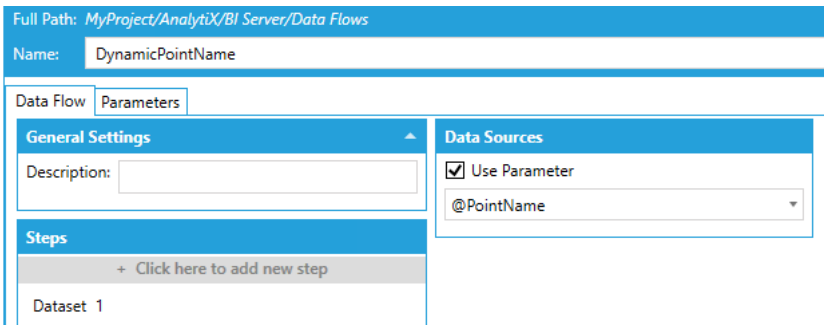
(Reference ID: 61286)

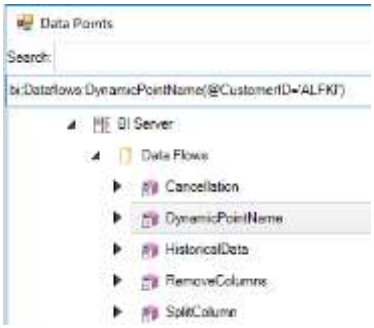
Data flow parameters can now reference other parameters. Data flows using this feature can be easier to use by simplifying the parameters that the user needs to enter when invoking the data flow.

For example, a data flow can be configured with two parameters, @CustomerID and @PointName. The @PointName parameter can be configured as an expression that uses @CustomerID, such as **"db:Northwind.OrdersByCustomerID<@CustomerID=" + {{@CustomerID}} + ">"**. The @PointName parameter can then be used as the parameter for a dataset step.



Now, when a user needs to use this data flow, all they need to specify is the customer ID. Previously, the user would have needed to pass the entire point name as the @PointName parameter, because there was no way to build the point name from just the customer ID.





For Further Reference

- Help: AnalytiX-BI Server Dataflows

Data Flow Parameters with Multiple Values

(Reference ID: 64769)

Data flow parameters can now have multiple values. In the data flow point name, the user can specify multiple values for a parameter by repeating that parameter. In the resulting dataset, the queries will be run individually for each parameter value and the results will be appended.

bi:Dataflows:DynamicPointName(@CustomerID='ALFKI', @CustomerID='ANATR')

OrderID	CustomerID	EmployeeID	OrderDate	RequiredDate	Shipped
10643	ALFKI	6	8/25/1997 12:00 AM	9/22/1997 12:00 AM	9/2/199
10692	ALFKI	4	10/3/1997 12:00 AM	10/31/1997 12:00 AM	10/13/1
10702	ALFKI	4	10/13/1997 12:00 AM	11/24/1997 12:00 AM	10/21/1
10835	ALFKI	1	1/15/1998 12:00 AM	2/12/1998 12:00 AM	1/21/19
10952	ALFKI	1	3/16/1998 12:00 AM	4/27/1998 12:00 AM	3/24/19
11011	ALFKI	3	4/9/1998 12:00 AM	5/7/1998 12:00 AM	4/13/19
10308	ANATR	7	9/18/1996 12:00 AM	10/16/1996 12:00 AM	9/24/19
10625	ANATR	3	8/8/1997 12:00 AM	9/5/1997 12:00 AM	8/14/19
10759	ANATR	3	11/28/1997 12:00 AM	12/26/1997 12:00 AM	12/12/1
10926	ANATR	4	3/4/1998 12:00 AM	4/1/1998 12:00 AM	3/11/19

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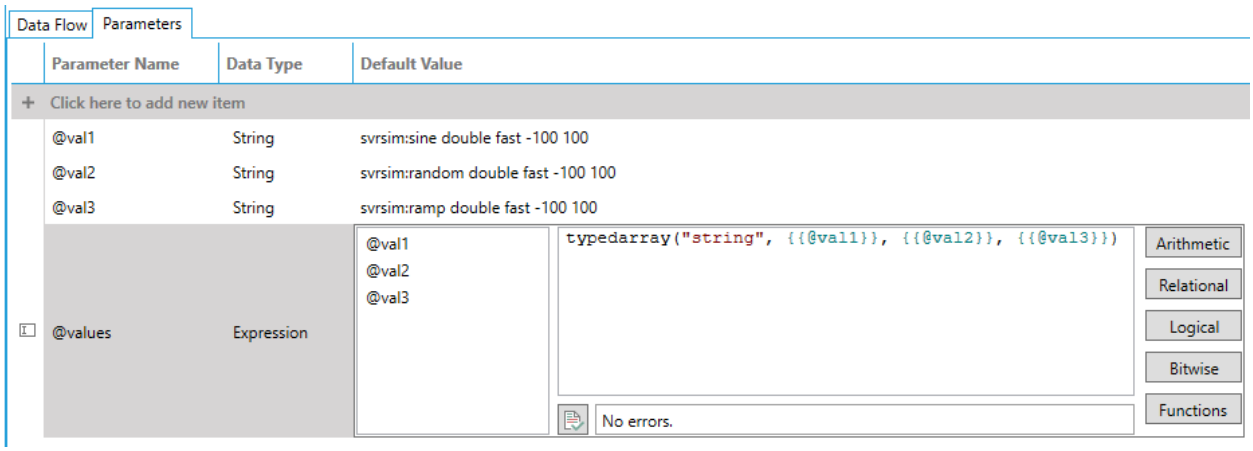
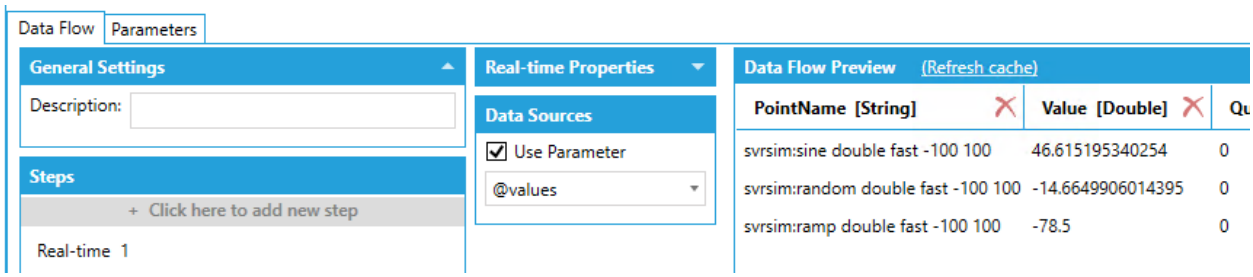
Multi-value parameters can also be built from other parameters using the array functions.





For Further Reference

- Help: AnalytiX-BI Server Dataflows

More Hyper Historian Aggregates

(Reference ID: 64902)

The Hyper Historian Aggregated Data step now provides more aggregate names in the dropdown and allows the use of a parameter. Via the parameter, the user can specify aggregates that do not appear on the list.

Previously, the list of aggregates was much more limited and there was no way to use an aggregate that was not on that list.

For Further Reference

- Help: Data Sources – Historical Data – Hyper Historian Aggregated Data

Data Models

Data Models Can Relate Tables and Views

(Reference ID: 58587)

In data models, it is now possible to create relationships with views. Relationships can be created between a table and a view, or between two views.

This can be especially useful for KPIWorX users, because now views can take full advantage of KPIWorX features such as runtime filtering and joining. This opens a lot of extra functionality for users of AnalytiX-BI and KPIWorX, as they can now use views to add custom columns to their KPIWorX data without losing the powerful filtering and joining functionality.

Note, for technical reasons, only views created or edited in the 10.96 Workbench (or later) can be related to tables. To add this functionality to a preexisting view, simply open your view in a version 10.96 Workbench and hit Apply. (You may need to make a small change to get the apply button to enable. This can be adding and then removing a space from the view's name.)

For Further Reference

- Help: AnalytiX-BI Server Data Models

Data Table Usability and Performance Enhancements

(Reference ID: 68395)

There were numerous "quality of life" enhancements to data tables in a data model, including:

- When the source of a table is a data flow, refreshing the schema only pulls the headers. The data flow does not run. This is useful for situations where the data flow is querying an expensive or slow data source.
- The data preview seen in Workbench now comes directly from the BI Server runtime table. Previously, the Workbench ran the data flow, itself. By having the preview come from the BI Server, we ensure that the preview is exactly what the user will see in runtime, and we also prevent unnecessary querying of possibly expensive data sources. Note, new data tables will no longer have a preview until they have been saved at least once, at which point the BI Server runtime table will be populated.
- Workbench forms for data tables now display some runtime data about the table, such as its status, when it was last updated, and its row count.
- The user can now trigger the table data to be dropped and reloaded on demand. This is done using the **Drop and Reload Table Data** hyperlink in the **Runtime Status** section header.
- The "Nullable" column has been removed from the schema configuration. It was not actually used. All columns in the schema always allowed nulls regardless of the value of this column.

- The "Numeric Scale" column has been removed from the schema configuration. It was removed for several reasons. Users found this column confusing. It was easy for users to accidentally truncate their data (such as removing the minutes and seconds from a datetime column). Any changes in this column required the expensive operation of dropping and reloading the table. If users wish to adjust rounding (which is mostly what the "Numeric Scale" column was used for), they still can do so using a data flow.

For Further Reference

- Help: AnalytiX-BI Server Data Tables

New Data Table Refresh Type: "Delete and Insert"

(Reference ID: 63631)

In addition to the previous refresh types of "Merge new data" and "Overwrite with new data", the data tables can now be configured to "Delete and insert". "Delete and insert" works similar to "Overwrite with new data", except with "Overwrite…", if the data source fails the table will retain the old data. With "Delete…" the BI runtime data table will first be emptied, then the new data will be inserted, guaranteeing old data will be removed even if the data source fails.

For Further Reference

- Help: AnalytiX-BI Server Data Tables

Row Count Tag

(Reference ID: 61147)

Data models tables, views, or ad-hoc query points now provide an @@Count tag that returns the number of rows. This @@Count tag makes it easy to use AnalytiX-BI tags with the GraphWorX64 clone dynamic.

Here are some examples of @@Count tags:

- bi:Models:Northwind.Categories.@@Count
- bi:Models:Northwind(SELECT Categories.CategoryID).@@Count

Note that the @@Count tag may return a different value from a SELECT COUNT(…) aggregate query. The @@Count tag returns the full number of rows, whereas the COUNT aggregate only counts non-null rows.

For Further Reference

- Help: AnalytiX-BI Server SQL Queries

Subscribe to Columns as Arrays

(Reference ID: 66033)

Users can now subscribe to a single column of a data table, view, or ad-hoc query and get the entire column as an array.

Here are some examples of column tags that should now return arrays:

- bi:Models:Northwind.Categories.CategoryID
- bi:Models:Northwind(SELECT Categories.CategoryID)
- bi:Models:Northwind(SELECT Categories.CategoryID, Categories.CategoryName)[1]
- bi:Models:Northwind(SELECT Categories.CategoryID, Categories.CategoryName)[CategoryName]

For backwards compatibility reasons, this feature is disabled by default. To manually enable it, open **Platform Services Configuration**, go to the **Point Managers** tab, select the **BI Server Point Manager**, and set the value for **EnableArraySubscription** to **true** to enable this feature or **false** to disable it.

This feature is also available for the GridWorX and Web Services point managers.

For Further Reference

- Help: Subscribe to Columns as Arrays

AnalytiX-BI General

New Function: ISNULL

(Reference ID: 66091)

A new ISNULL function has been added. It works similarly to the T-SQL ISNULL function, and is defined as follows:

ISNULL(column name, default value) [AS alias]

The function evaluates for all the rows in the column and the result is the column value, if the value is not NULL, otherwise the specified default value. The default value cannot be an expression and must be either a Boolean literal, a string literal, or a number.

The ISNULL function has the following limitations:

1. Can only be used in the SELECT clause.

2. Cannot be used inside an aggregate function (so, "SUM(ISNULL(col, default))" is not supported).

To work around the aggregate limitation, a view can be created to apply the ISNULL function and then a query or other view can apply the aggregate. For example, create this view:

```
SELECT ISNULL(col, 0) AS mycol
```

And then use this query:

```
SELECT SUM(view.mycol) AS sum
```

For Further Reference

- Help: AnalytiX-BI Server SQL Queries

Diagnostic Counters

(Reference ID: 68072)

New in 10.96, the AnalytiX-BI point manager now includes diagnostic information exposed as tags similar to those originally implemented in the FrameWorX Server.

Tables now expose an extra folder called "@@Diagnostics". This new folder contains a few diagnostic points:

- **@@LastUpdated** – The date and time when the table was last updated, in local time. A table is updated when it is first loaded when the service starts, or when a trigger causes a refresh.
- **@@LastUpdatedUTC** – Same as @@LastUpdated, but in UTC time.
- **@@TableStatus** – The current the status of table. Possible values are:
  - **Offline** – The table belongs to a model that is currently offline.
  - **Initialized** – The table belongs to a model that is currently online, but no data has been loaded in the table yet.
  - **Loading** – The BI Server is currently loading data in the table.
  - **Online** – The BI Server completed loading data in the table with no errors, and the table is ready to be queried.
  - **Error** – The BI Server completed loading data in the table and the table is ready to be queried, but an error occurred during the load process.
- **@@TableStatusCode** – Same as @@TableStatus, but as a numeric code instead of a string. Values are: 0 (Offline), 1 (Initialized), 2 (Loading), 3 (Online), 4 (Error).

- **@@LastError** – The last error that occurred while loading data in the table or null if there was no error. (Note, this point is not exposed by default. To enable it, go to **Platform Services Configuration** > **Point Managers** tab, select the **BI Server Point Manager**, and set **EnableErrorDetailsDiagnosticPoints** to true.) If the data source accepts parameters, parameters do have to be included

For Further Reference

- Help: AnalytiX-BI Server – New Diagnostic Counters

Additional Enhancements

AnalytiX-BI General

Ref ID	Description	First Available In
63691	Aggregate functions (like COUNT) now support adding the DISTINCT keyword in order to operate only on distinct values from the underlying column.	New for 10.96
66023	In addition to the previous refresh types of "Merge new data" and "Overwrite with new data", the data tables can now be configured to "Delete and insert". The difference between "Delete and insert" and "Overwrite with new data" is that with "Overwrite..." it will delete the table's contents and insert new data only if there is new data to insert, whereas with "Delete..." it will delete the data regardless of what the data source returns. If it is important to ensure that old data gets removed from the runtime data table, even when there are no records or the data source has failed, use the new "Delete and insert" refresh type.	New for 10.96
68157	Tags consumed in AnalytiX-BI no longer count against the GENESIS64 tag count for licensing.	New for 10.96
61519	CustomIdentifier and Description fields are now exposed for Assets Dimension filtering.	10.95.4
57568 63095	BI Server points can now be subscribed as individual elements in addition to datasets. Not that only "query" points can be accessed in this fashion. So bi:Models:Northwind.Products[0][0] is not supported because it is not a query point, however bi:Models:Northwind(SELECT Products.*)[0][0] would be supported.	10.95.2
62848	BI Server can now query both dynamic and static asset properties with the "Asset Property Values" step. This includes the value of cached properties. Previously, it could only query static properties.	10.95.2
62865 62884	The BI Server now includes a JSON block. This allows users to take an input string containing JSON and parse the contents into a dataset. JSON arrays are parsed into multiple rows, with each row containing an array element. JSON objects are parsed into one row with multiple columns, each column named after the name of the property and containing the property value. If a property is itself a JSON object, its value will be outputted as a string containing the JSON and an additional step can be applied to further parse and expand that column. Use the "Prefix" checkbox to set whether to use the original property name as a prefix for the parsed properties or not.	10.95.2
62872	In the BI Server, the "Assets" step under "Dimensions" now returns a new column ("Enabled") which reports whether the asset is enabled or not. This column can then be used to filter out non-enabled assets.	10.95.2

AnalytiX-BI Workbench Provider

Ref ID	Description	First Available In
66888	The data view data source field has been enhanced for better usability. The font and default height have been adjusted for better readability. The field now accepts tabs and multi-line text, allowing the user to create more readable queries. Descriptive errors are displayed when a query fails. The height of the query field can also be changed.	New for 10.96

Ref ID	Description	First Available In
69141 69142 69143	In a data flow, the real-time and historical (both raw and aggregated) steps now have a dropdown to allow the user to pick a data type for the Value column. It will default to "Native" (which results in the same behavior as previous versions, for backwards compatibility). The user can choose a specific type, and the dataflow will attempt to cast all values to the target type. If the value cannot be cast (for example, attempting to cast a string to a Boolean), the value will have bad quality in the output dataset.	New for 10.96
67988	Dataflow parameters can now be used in Add Column and Transform Column steps.	10.95.5
62294 62292 67933	For data flows, the Asset Property Values and Real-Time data source steps have been enhanced to query in batches instead of all at once. This will improve performance for very large sets of properties or tags by not overloading the data source with many concurrent requests. Users can configure the size of the batches, as well as the length of time the read will wait before timing out. In addition to the batch size and read timeout, the Real-Time step also provides a configurable wait period after receiving a bad quality update. This allows the server to provide a good quality update, as some servers will provide an initial bad quality update (usually indicating "waiting for initial data"), followed by good quality.	10.95.4
62621	When defining parameters for data flows, users can now launch the expression editor for parameters of type expression and can get an appropriate picker for parameters of type datetime or timestamp.	10.95.3

BridgeWorX64 & Workflows

Major Enhancements

BridgeWorX64 & Workflows Engine

Load Balancing and Redundancy

(Reference ID: 68600)

In version 10.96, BridgeWorX64 introduces load balancing. Multiple BridgeWorX64 servers can work together to execute transactions, sharing the load between servers and providing a measure of redundancy if a server goes offline.

Each BridgeWorX64 machine may run a scheduler and an engine. The schedulers will keep track of the queue of transactions that need to be executed and dispatch them among the running engines. The schedulers keep track of which engines are online and running. If one engine fails, the scheduler will dispatch transactions to the remaining engines.

Systems that should run as a scheduler should run the ICONICS BridgeWorX64 Scheduling Service. Systems that should run as an engine should run the ICONICS BridgeWorX64 Point Manager. Note that the stoplight in Workbench controls both services, but they can be separately controlled through the Windows **Services** control panel. If you would like to prevent a service from accidentally being started with the stoplight, set its startup type to **Disabled** in Windows **Services** or right-click on your project in **Workbench**, select **Configure Services**, and set the **Start Mode** from there.

For redundancy purposes, multiple schedulers can be configured, though only one scheduler will be active at a time. The standby schedulers are prepared to become active if the active scheduler goes offline.

BridgeWorX64 servers running redundantly should share the same configuration database. In **Workbench**, expand **Bridging** > **Transactions** and edit your configuration. In the **Scheduling** section, set the **Scheduling Mode** to **Distributed Load-Balancing Schedulers Network**. For **Scheduling Nodes**, enter one or more machines (IP address or name) to use as scheduling nodes.

If a BridgeWorX64 system fails while the engine is executing a transaction the scheduler can re-submit the transaction to another running engine (distributed recovery) or let the local BridgeWorX64 engine attempt recovery by itself (local recovery). The recovery options are set on a per-transaction basis. In **Workbench**, expand **Bridging** > **Transactions** > *your configuration*, and edit your transaction. In the **Advanced Settings** section, choose either **Local Recovery** or **Distributed Recovery**.

Note that interrupted transactions can either be restarted from the beginning or not recovered at all. BridgeWorX64 is not able to resume the transaction where it left off.

For Further Reference

- Help: Load Balancing and Redundancy

Directly Subscribe to Alarms and Events

(Reference ID: 67740)

Previously, if a BridgeWorX64 transaction needed to execute based on an alarm or an event, the user needed to configure a separate alarm trigger and link the trigger to the transaction. That is still an option, but now users can configure their desired alarm or event subscription directly on the transaction itself.

The alarm subscriptions can be configured on the **Alarm Subscriptions** tab of a BridgeWorX64 transaction. If a transaction has both triggers and alarm subscriptions, the transaction will run when any trigger or matching alarm occurs.

Being able to subscribe directly to events is particularly useful when working with MQTT brokers using our new Information Broker functionality. See the section on New: Information Broker.

This feature is also used with our new CFSWorX product. See the section on New: CFSWorX.

For Further Reference

- Application Notes:
  - *BridgeWorX64 - New Features in 10.96*
  - *ICONICS - Information Broker MQTT Quick Start*
- Help: Directly Subscribe to Alarms and Events

New Activities: JSON Content Reader and Generic JSON Writer

(Reference ID: 57728, 57729, 67769)

BridgeWorX64 now includes activities to help you work with JSON content: the JSON Content Reader activity and Generic JSON Writer activity.

The **JSON Content Reader** activity can take a JSON string and convert it into a standard BridgeWorX64 output dataset to be used in further activities. This can be useful when reading JSONs from external files, web services, databases, or third-party applications.

JSONs can either be parsed as name-value pairs, always returning columns named PropertyName and PropertyValue, or as columns.

When parsing as name-value pairs, you have the option to include array indices, which can be useful if your JSON contains array content.

When parsing as columns, you can choose to match a list of predefined columns by position, or by name. Matching by position is useful if you cannot always guarantee that your JSON items will contain the correct property names.

The JSON Content Reader activity can also output XML, which can be outputted to a file or used in further activities.

The **Generic JSON Writer** activity can build a JSON string and write it to a document. Using a simple content designer, the activity can write simple scalar nodes, complex object nodes, and array nodes. The values for these nodes can come from previous activities, tags, or expressions.

The Generic JSON Writer activity even includes a preview of your JSON.

These activities are particularly useful when working with MQTT brokers using our new Information Broker functionality. See the section on New: Information Broker.

For Further Reference

- Application Notes:
  - *BridgeWorX64 - New Features in 10.96*
  - *ICONICS - Information Broker MQTT Quick Start*
- Help:
  - JSON Content Reader Activity
  - Generic JSON Writer

New Activity: Information Broker Publisher

(Reference ID: 67769)

The new Information Broker Publisher activity makes it easy to publish JSON payloads to a third party MQTT broker. It leverages the new "publish" method in FrameWorX and provides an easy way to design a JSON payload, similar to the Generic JSON Writer activity, mentioned above.

This activity is part of our new Information Broker. See the sections on New: Information Broker.

For Further Reference

- Application Notes:
  - *ICONICS - Information Broker MQTT Quick Start*
  - *BridgeWorX64 - New Features in 10.96*
- Help: Information Broker Publisher Activity

New Expression Functions for Datasets

(Reference ID: 65846)

Version 10.95 of BridgeWorX64 made working with datasets easier by adding the getoutputcell custom expression function, which allowed the user to get a scalar value from a particular cell of a dataset.

In 10.96, there are a few more expressions in this vein to make working with datasets easier:

(Note: These functions first appeared in 10.95 Update 5 except for findoutputcell, which is new for 10.96.)

- **getoutputrow** – Return an array containing scalar values from all columns of specified row.

- **findoutputrow** – Return an array containing scalar values from all columns of the first row that matches a filtering condition (the syntax of rowFilter should be the same as that of ADO.NET DataTable view rows filtering).
- **findoutputcell** – Same as findoutputrow, except returns one particular cell in the row based on an index or column name.
- **findoutputrowindex** – Return an integer index of the first row that matches a filtering condition or (-1) if no matching rows found.

For Further Reference

- Application Note: *BridgeWorX64 - New Features in 10.96*
- Help: Expression Functions for Datasets

Transaction Hibernation

(Reference ID: 69063)

The BridgeWorX64 engine has a certain number of threads for executing transactions. This essentially represents the number of transactions that BridgeWorX64 can have executing at one time. BridgeWorX64 also has a queue of transactions waiting to be executed.

In previous versions, transactions that included long wait times could clog up this queue, using up valuable threads for doing nothing but waiting.

New in version 10.96, transactions can be configured to hibernate. By hibernating a transaction, it is temporarily taken out of the running thread until its wait period is expired, allowing the thread to be used for other transactions. This can greatly increase the efficiency of BridgeWorX64, especially when executing many transactions with waits.

Hibernation occurs when a transaction enters a delay activity which is configured as an unconditional delay (not using a delay expression), and the configured delay period exceeds a certain threshold. This threshold is configured in Workbench on the transaction object (under the **Bridging** > **Transactions** > *your configuration*). It is in the **Advanced Settings** section and named **Hibernation Threshold**. This is the only setting that must be configured to take advantage of hibernation.

For Further Reference

- Application Note: *BridgeWorX64 – Transaction Hibernation*
- Help: BridgeWorX64 Transaction Hibernation

Get Transaction Information in a Dataset Point

(Reference ID: 70464)

There is a new point available under the Bridging node in the data browser, called .Query. This point is a dataset that allows the user to access information about a transaction, such as the transaction log and log details.

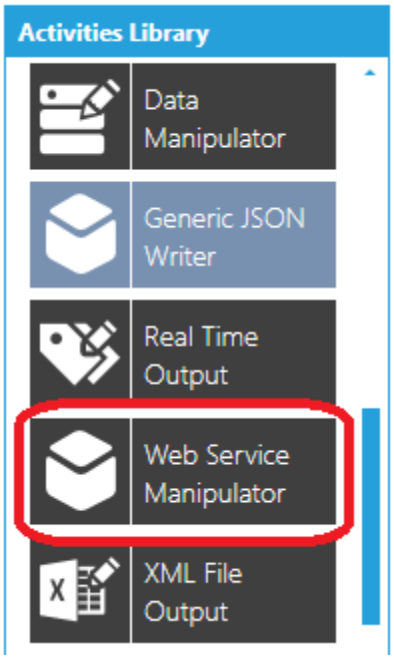
The point was designed to work with the new BridgeWorX64 Navigator, BridgeWorX64 Viewer, and Table controls to provide runtime information to the user about transactions. See New: BridgeWorX64 Navigator and Viewer for more details, including how to find an example of using the .Query tag with these controls.

For Further Reference

- Help: Get Transaction Information in a Dataset Point

New Activity: Web Service Manipulator

(Reference ID: 63724)



As of version 10.95.4, there is now a Web Service Manipulator activity for BridgeWorX64. The activity can execute web manipulators for REST web services. (See "Web Manipulator for REST Web Services" under "Data Connectivity" > "Web Services".)

Edit your BridgeWorX64 template and add a Web Service Manipulator activity. Usage is very similar to the pre-existing Data Manipulator activity.

When executed successfully, this activity exposes an output dataset containing one row and three columns: OutputParameterName, Data, and StatusCode. The value in the OutputParameterName column is a constant string, "ReturnValue", and is provided to be consistent with the schema of the Data Manipulator activity.

Web Service Manipulators can be configured in Workbench under Data Connectivity -> Web Services.

For Further Reference

- Help: Web Service Manipulator Activity

New: BridgeWorX64 Navigator and Viewer

New BridgeWorX64 Controls and Dashboard

(Reference ID: 67783)

A new Navigator and Viewer have been added for BridgeWorX64. These controls act like the ReportWorX64 Navigator and Viewer controls.

The BridgeWorX64 Navigator provides a folder tree of the available transactions, and the BridgeWorX64 Viewer provides a list of filtered transactions, including who executed them, the time they were executed, and their current status. It also allows the user to manually execute transactions and download an XML log.

Both controls have support for the new customized context menu and commands on events.

There is also a premade BridgeWorX64 dashboard that utilizes these controls, plus the new table control, to give you an overview of your running BridgeWorX64 instance. To launch the dashboard, put **GraphWorX64** into runtime, go to the **Runtime** menu, then select **BridgeWorX64** in the **Tools** section. To see how this display is configured, edit the **GwxBridging.gdfx** file in the **Components** directory. (It is highly recommended to make a backup of this display before making any changes.)

For Further Reference

- Help:
  - BridgeWorX64 Navigator Control
  - BridgeWorX64 Viewer Control

Additional Enhancements

BridgeWorX64 & Workflows General

Ref ID	Description	First Available In
59505	Tags consumed in BridgeWorX64 no longer count against the GENESIS64 tag count for licensing.	New for 10.96
59688	BridgeWorX64 now supports caching the configuration database. This is configured in Workbench. Bring up the context menu of your project, choose Configure Application(s) Settings, go to the Applications tab, and enable the "Local Cache" setting for the Bridging module.	New for 10.96
67936 67481	There were several optimizations of the BridgeWorX64 and Workflow engine which should result in better performance.	New for 10.96
69624	Changed the TraceWorX trace level on some messages logged by BridgeWorX64.	New for 10.96
65487 65491	The Historical Input and Historical Alarms Input blocks now allow dynamic start and end times.	10.95.5
62211	It is now possible to create an execution log only when a transaction has failed. To configure this, edit the transaction, go to the Transaction Settings tab > Advanced Settings section and enable "Log Only Failed Transactions".	10.95.4

Ref ID	Description	First Available In
62213	When archiving is enabled, users now have the option of only archiving succeeded transactions. This helps ensure that failed transactions will remain in the log long enough to be examined. To set this, edit the configuration object, go to the Archiving section, and enable "Archive only succeeded transactions".	10.95.4
62556 62557 62558 62559 62560 62561 62562 62563 62564	Added a timeout setting to these blocks: CSV file reader, XML file reader, data set reader, historical input, CSV file output, condition, send email, file transfer, and generate report.	10.95.4
62572	Added a "Log Only Failed Transactions" option to configured transactions.	10.95.4
62573	Added an "Archive only succeeded transactions" option to the Archiving section of a BridgeWorX64 configuration.	10.95.4
62923	The Data Set Reader block now recognizes BI Data Flow input parameters.	10.95.4
60247	Parameters in bulk data manipulator blocks now use the output fields from the specific data input as their default mapping. Previously, they used constants like an empty string or now().	10.95.3
60248	Added a "Refresh" button to the Dataset Transformer block. This works like the Reset button, except it does not remove existing definitions. "Refresh" only adds new columns without deleting the expressions for existing columns.	10.95.3
61039	Attachments can now be added to email activities.	10.95.3
62640	The Dynamic Tag Writer now supports an array of tags of indeterminate size.	10.95.3
62642	CSV and XML writers now support expressions for the File Name. Previously expressions were only supported in the Directory Name.	10.95.3
62644	All tag writer blocks now provide an output dataset. The columns are, PointName, WriteValue, WriteStatus, WriteTimestamp, HasReadValue, ReadValue, ReadStatus, ReadTimestamp. Optionally, a Filtering expression could be applied, as in other blocks with output. All writer blocks now support an additional configuration parameter, "Wait after Write", indicating if the block should wait after a write and grab the very next data update from OPC Server as the "ReadValue". This wait is configured in the number of scan periods, from zero up to three. Blocks will wait for the next data update only if the write was successful with a status of "Good" and the wait period is not zero. For any other write results (i.e. "Good - write skipped"), the writer activity would not wait for next data update and therefore corresponding output row would have False in HasReadValue and null in ReadValue columns.	10.95.3
62672	Two checkboxes were added to the Bulk Data Manipulator: • "Succeed only if All source rows are processed successfully" – This option determines the "Success" or "Fail" result of the block. If checked, "Success" will only be set if all rows succeed. A single failure will result in "Fail". If not checked, "Success" will always be returned unless "Enable Database Transaction scope" is checked, at which point it will return the success or failure of the single database transaction. • "Enable Database Transaction scope" – This refers to database transactions, not BridgeWorX64 transactions. It is applied only if the data manipulator is local. In this case, the Data Manipulator is executed in-process and BridgeWorX64 wraps all data manipulator command executions in a single database transaction. This means if one or more commands fail then the entire batch is rolled back.	10.95.3
62729	The Data Reader block now allows for data sources that need parameters. If a user browses to a dataset point that has a parameters fragment (such as <@param1=value1, @param2=value2>), the "Input Parameters" grid should now populate with the parameters (@param1 and @param2). This may need to hit the "Refresh" link on the input parameters section.	10.95.3
58366	BridgeWorX64 can now read the newly added previous value, previous quality, and previous timestamp values of data triggers (see 62853).	10.95.2
62814	Added a new setting called "Split Array Values into multiple Data Rows" in the BridgeWorX64 DA Reader Activity and Bulk DA Reader Activity which splits array values into their own data rows in the activity's output recordset. This setting will show a new ArrayIndex column in the generated recordset displaying the values index position.	10.95.2

Ref ID	Description	First Available In
	Note, ArrayIndex is a zero-based index list.	
62863	Added a new XML Writer block to BridgeWorX64.	10.95.2
62864	Added a new "DataSet Transform" BridgeWorX64 activity, which is used to manipulate data streams. This provides similar transform functionality to the BI Server that can be used on the datasets within a BridgeWorX64 transaction.	10.95.2
62868	BridgeWorX64 now includes a new block type called "Bulk Real Time Input" for supporting a dynamic array of input tags.	10.95.2
62891	Real Time Input blocks now supports the ability to build an expression which resolves to the name of the tag to be read.	10.95.2
57771	Deleting a block in BridgeWorX64 now removes the associated arrows as well.	10.95.1

BridgeWorX64 & Workflows Workbench Providers

Ref ID	Description	First Available In
56714 57563	BridgeWorX64 archiving can now be configured in Workbench. The archiving settings are configured on each configuration object under the Transactions folder. Previously, archiving was only configurable by editing the IcoBwxService.exe.config file.	New for 10.96
60077 59481 59483 59484 59485 59486 59487 59488 59489 59490 59521 66014 70651	Multiple small changes have been made to the Workbench dialogs for BridgeWorX64 and Workflow to enhance usability and provide better feedback.	New for 10.96
61461	The user is no longer allowed to delete the active configuration object.	New for 10.96
63266	The "Archive only succeeded transactions" option is now available only when "Archive older files" is enabled.	New for 10.96
66554	It is now possible to configure the temporary directory for a BridgeWorX64 configuration. This is configured on a configuration object in the Generic Properties section. The temporary directory is used to store a transaction when it is being hibernated.	New for 10.96
65919	Transaction blocks can now accept timeouts of up to 864000000 milliseconds (10 days). The previous limit was 100 seconds.	10.95.5
61233	Added two new context menu items on a transaction folder for "Enable all transactions" and "Disable all transactions". These items will enable or disable all transactions in the folder.	10.95.4
62058 62056 62057 62059	The Workflow configurator now has a description field for Transactions, Templates, and their folders.	10.95.4
63674	The Data Manipulator and Bulk Data Manipulator activities now show an error when they are configured with a non-GridWorX tag as a data source.	10.95.4
60212	When a template is created from a report or transaction, the template is created in the same subtree as the report or transaction.	10.95.3
60237	Added an "Edit in full screen" option to the context menu of transaction templates. This option opens the template for editing and automatically maximizes the tab.	10.95.3
60597	Deleting an activity that is linked to the "stop" block no longer deletes the "stop" block as well.	10.95.3
57898	The user can now determine how the vertices in a link are drawn. In a template diagram, select a link (line/arrow between two blocks) and choose a Line type. The choices are Polyline, Spline, and Bezier.	10.95.2
57924 62840	Parameters are now supported in Workflows.	10.95.2

Ref ID	Description	First Available In
57973 57974	The default colors of template diagram activities have been updated and are now customizable.	10.95.2
57992 57993 57994 57995 57996 57997 58030 58362 58902 58927 58929	Multiple small changes have been made to the Workbench dialogs for BridgeWorX64 and Workflow to enhance usability and provide better feedback.	10.95.2
58166	Trigger name and other base trigger attributes are now available in the template diagram's expression editor.	10.95.2
58186	It is now possible to disable triggers on a transaction without deleting the trigger.	10.95.2
58187	Added a "Click to refresh variables" link to the header of the template diagram editor. This link will refresh the list of global and local variables in the expression editor and data browser. Prior to this button, the diagram had to be closed and reopened to detect any changes made to the variables while the dialog was open.	10.95.2
58227	Added more feedback to global or local variables to show they are in use in an active transaction. The icon of a variable in the tree indicates if it is in use, there is a new column in the Project Details grid for "Used by transaction", and a warning dialog appears if a user tries to edit a variable that is in use.	10.95.2
58334	Activities can now consume the output of any other activity, and choose which fields are consumed. (Previous to this enhancement, only the output of a previous activity could be consumed.) The output of a specific activity can be accessed in the expression editor using the Activity Output item in the Internal section.	10.95.2
58885 58997	There are now two buttons for data sources in the template designer, one to open the tag browser and the other to open the expression editor.	10.95.2
58900	Columns in the data schema of activities like Data Set Transformer and CSV File Output can now be rearranged. Select "Configure", then use the up and down buttons or enter a new value in the number (#) column.	10.95.2
62866 62867	A new syntax for BridgeWorX64 global and local variables has been added. The new syntax is more consistent with other GENESIS64 products, such as GridWorX and web services. The new syntax is: bwx:global@VariablePathName.Row[0].Col[0] or bwx:global@VariablePathName.Row[0].Col["MyColumnName"] The original syntax style is still supported.	10.95.2
55962	The arrows that connect actions in a template diagram can now have one or more vertices, allowing the creation of "elbow" lines and other shapes. This will aid in creating more easily understood diagrams. Hold down CTRL and select a line to add a vertex.	10.95.1
56666	Workbench now checks to see if each point name is unique in a Real Time Output activity.	10.95.1
56752	It is now possible to immediately trigger a transaction in Workbench for testing purposes. Bring up the context menu for a transaction and select "Test Transaction". Note, this option is only available for enabled transactions in active configurations.	10.95.1
57714	Added a Label field to activities. When it has a value, the label for an activity is shown in the diagram editor, otherwise the name is shown. The name of an activity must be unique, whereas the label is designed to be a short human-readable description of the activity.	10.95.1
57716	Individual activities can be disabled. This is consistent with the functionality of 32-bit BridgeWorX.	10.95.1
57745 57746 57769 57772 57866 57868	Multiple small changes have been made to the Workbench dialogs for BridgeWorX64 and Workflow to enhance usability and provide better feedback.	10.95.1

Ref ID	Description	First Available In
57904		
58065	Template diagrams can now access trigger attributes. Trigger attributes can be accessed in the expression editor of activities.	10.95.1
58066	The variables and attributes available in the template diagram's expression editor are now separated into different sections by type, such as global variables, local variables, and trigger attributes.	10.95.1
58067	The template diagram's expression editor now shows the hierarchy of local and global variables. Previously it was difficult to distinguish between two variables of the same name in different folders.	10.95.1
58088	Local and global variables are now only available in the tag browser and expression editor where DA tags are accepted. They are no longer available for historical or alarm input fields.	10.95.1

Energy AnalytiX

Under Construction

Energy AnalytiX has been temporarily held out of the initial release of version 10.96 while we make some significant updates. Look for the new and improved Energy AnalytiX to be re-introduced in a future update. Please contact your local sales representative or email info@iconics.com with questions or feedback.

Facility AnalytiX & FDDWorX

Major Enhancements

New Fault Viewer Control

Version 10.96 introduces an entirely new Fault Viewer control.

Asset Path	Fault Name	Count	Severity	Timeline	Activation Time	Duration
				11:30 AM 3:30 PM		
Company/	Fault Ramp (Slow	67	500		10/24/2019 3:29:19 PI	0:20:11
Company/	Fault Ramp (Normal)	194	500		10/24/2019 3:30:31 PI	0:19:58
Company/Foxboro ba	Sine (Slow)	66	500		10/24/2019 3:29:52 PI	1:45:03
Company/Foxboro ba	Random	339	500		10/24/2019 3:29:58 PI	0:08:31
Company/Mansfield t	Sine (Fast)	198	500		10/24/2019 3:30:42 PI	1:42:07

This control replaces the preexisting fault control (FDD Viewer) and offers many benefits, including:

- Configuration is now stored entirely in the GraphWorX64 file, rather than partially on the server
- More customizability with styling, colors, and available columns
- Support for global colors and global aliasing
- Linked navigation variables
- Saved views

- Embedded microcharts and timelines
- Ability to query faults from a distributed AssetWorX architecture
- Better parity between desktop (WPF) and HTML5 platforms
- Support for commanding, including the new commands on events
- Virtual columns
- Export Data command support, allowing very large exports
- Enhanced performance

The fault viewer comes with two predefined views, one that can provide a statistical rollup view of your faults and another that shows the individual incidents. Linked navigation variables allow the user to connect two fault viewers so that a selection in the statistical fault viewer will display the individual incidents that made up the statistic.

Linked navigation variables can also allow the fault viewers to be linked to an Asset Navigator for easy filtering on areas and assets, and to a TrendWorX64 Viewer or time duration buttons for easy time navigation. Commanding support can add further connectivity between the fault viewers and the rest of your display or project.

You can easily create a set of fault viewers connected to an Asset Navigator with these steps:

1. Add an **Asset Navigator**.
2. In the **Asset Navigator** menu, select **Write** in the **Selected Asset** section.
3. Add a **Fault Viewer**.
4. In the **Fault Viewer** menu, select **Views** > **Fault Statistics**.
5. Add a second **Fault Viewer**.
6. In the **Fault Viewer** menu, select **Views** > **Fault Incidents**.
7. Go into runtime. The viewers and asset tree will be automatically linked. Selecting an asset will filter the statistics viewers and selecting an item from the statistics viewer will filter the incidents viewer.

The fault viewer can also be linked to the new table control to show even more detailed information about selected fault incidents, such as comments, activation variables, latest causes, etc.

Microcharts and timelines embedded in the fault viewer allow users to visually see and correlate when their faults were occurring.

To customize a fault viewer, you must first choose the fields you want to query from your database or fault server. This is done on the Fields page. Once those fields are chosen, they will be used in other areas of the viewer, such as Columns, Filters, and Style. Any attribute that you wish to display as a column, use in a filter, or use in a style must first be selected on the Fields page.

Displays that use the preexisting fault control will continue to function as normal, but users will not be able to add new copies of the preexisting control into their displays. Users are encouraged to upgrade to the new control when possible but there is not a direct upgrade path, so we made sure existing displays could continue to function with the old control.

This control is available in desktop (WPF) and HTML5, but not Universal Windows Platform (UWP). We plan to add UWP support in a future version.

For Further Reference

- Application Note: *FDDWorX Viewer - New Features in 10.96*
- Help: Fault Viewer Control

Additional Enhancements

Ref ID	Description	First Available In
62256	Improved the performance of loading fault incidents for distributed architecture.	10.95.4
62611	Enhanced the TraceWorX messages for Faults. Notably, the Fault and AssetID(s) that cause null data values are now logged to TraceWorX.	10.95.3
62612	Expressions made for a diagnostic matrix no longer disappear if the diagnostic matrix has changed.	10.95.3
62894	Facility AnalytiX now supports TrueForDuration and TimeSinceLastChange functions for historical fault backfill.	10.95.2

ReportWorX64 & ReportWorX Express

Major Enhancements

ReportWorX Express & Excel Add-In

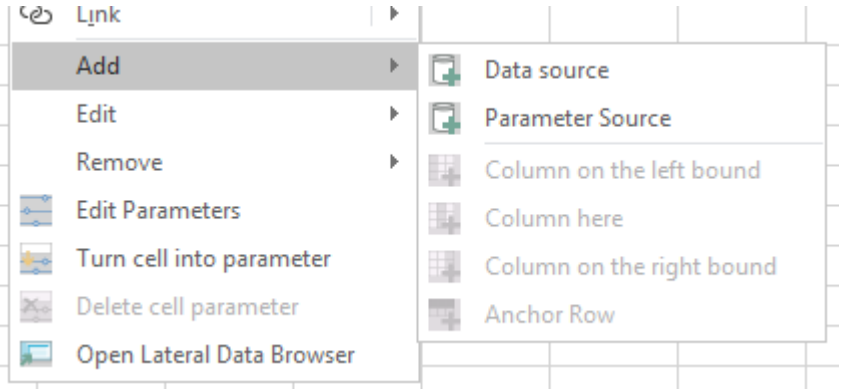
Edit Layout Directly in Excel

(Reference ID: 67818)

The Excel Add-In for ReportWorX64 and ReportWorX Express has been redesigned in version 10.96.

The biggest change is that the Layout and Parameter Configurator has been removed. Mapping and editing data sources can now be done directly in Excel, giving users a much better idea of how their data mapping will look with the rest of their sheet.

To map data sources, select the cell or cell range you'd like to map, then go to the **ReportWorX64** menu and choose **Add** > **Data Source** from the **Edit Data Source** section. A **Data Browser** will open. Choose the data source tag to map, then select **OK**. The cells in your sheet will now appear as mapped. The **Edit** and **Remove** options in the **ReportWorX64** menu can edit or remove data sources.



Data sources can also be added via the context menu. Bring up the context menu of a cell to see the ReportWorX64 options available. These options include the same **Add**, **Edit**, and **Remove** menus found in the ReportWorX64 ribbon, along with the ability to work with parameters and open the data browser.

Users can add brand new data sources or make edits to existing data sources using the **Configure Data Sources** button in the **ReportWorX64** menu. This button will open a slimmed-down version of **Workbench**.

The **Open Lateral Data Browser** button or context menu item can be used to open a data browser alongside the Excel sheet. Similar to how the Layout and Parameter Configurator used to work, data sources can be dragged from this data browser directly into the worksheet. (Note, an "invalid target" crossed circle icon may be shown when dragging data sources. The drag and drop should work, regardless.)

For Further Reference

- Help: Excel Add-In

Improvements to Parameters

(Reference ID: 39667, 69180)

Parameters can now be displayed in the sheet. Mapping parameters is similar to the way data sources are mapped. Select the cell or cell range you'd like to map, then go to the **ReportWorX64** menu and choose **Add** > **Parameter Source** from the **Edit Data Source** section.

An existing populated cell can be turned into a parameter. For example, if cell **A1** contains an asset name and you would like to make that name into a parameter, select cell A1, go to the **ReportWorX64** menu, and choose **Turn Cell Into Parameter** in the **Edit Parameters** section. The cell will appear as a mapped cell, mapped to a new parameter. Select **ReportWorX64** > **Parameters** to edit properties of this new parameter, such as its data type and display name.

Parameters can be added or edited using the **Parameters** button in the **ReportWorX64** menu.

When using the **Download Data** button to populate the report, if there are any parameters that require user input, a dialog will appear to let the user choose those values. This allows ReportWorX64 Express customers to take advantage of parameters, and full ReportWorX64 customers to test parameter values before uploading their workbook as a template.

For Further Reference

- Help: Displaying/Mapping Parameters in Excel Sheet

Quickly Edit Data Sources, Edit Multiple Data Sources

(Reference ID: 68682)

A new section has been added to the ReportWorX64 menu called, **Quick Edit Data Source**. This section allows the user to make many common configuration changes without having to access the data source configuration dialog. These options apply to the data source under the current selection in Excel.

The settings that can be edited in this section include:

- Show headers
- Fill Method
- Number of Rows (for the Use Threshold fill method)
- Date Time Format
- Double Format

The **Quick Edit Data Source** section also allows the user to edit more than one data source at a time. If more than one data source is selected in the sheet, the **Quick Edit Data Source** section will display **Multiple data source mode** in place of **Single data source mode**. Updates made in multiple data source mode will be applied to all selected data sources.

For Further Reference

- Help: Quick Edit Data Source

New General Configuration Menu

(Reference ID: 68683)

At the very end of the ReportWorX64 ribbon is a new button that looks like a pair of gears. This opens the **ReportWorX64 General Configuration** dialog.

The main purpose of this dialog is to allow the user to configure the default settings of data sources. Select the **Data Source** item in the tree to set a number of common configuration settings, such as the presence of headers and the fill method.

Under **Data Sources** > **Columns**, you will find a list of different data source types. Use these to configure the default columns to be created when adding data sources of these types.

The **Message** page of the general configuration dialog provides a way to restore warning messages that have been suppressed.

For Further Reference

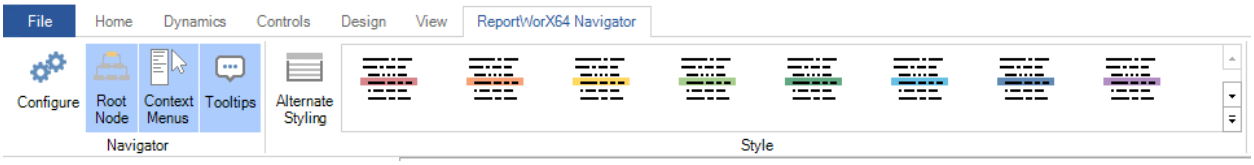
- Help:
  - General Configuration Menu
  - Configurations

ReportWorX64 Navigator

Enhanced Configuration

(Reference ID: 64032, 64039)

The configuration for the ReportWorX64 Navigator has been enhanced. The navigator now has its own ribbon that offers many common configuration options, such as enabling or disabling tooltips and alternate row colors.



The control also has a new configuration dialog. Users no longer need to use the properties panel to configure their ReportWorX64 Navigator (though they are still free to do so).

For Further Reference

- Help: ReportWorX Navigator

Execute Commands on Events

The ReportWorX64 Navigator is one of many controls that now supports executing commands on events. These events vary per control, but for the ReportWorX64 Navigator they include:

- Ready
- Report Selected
- Started

To configure the command to be executed when this event occurs, go to **Runtime** tab. Find the **Commands on Events** section, check **Enable Commands on Events**, then configure the form below.

See Execute Commands on Events for more details.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Executing Commands on Events

Customizable Context Menu

(Reference ID: 57682)

The context menu for the ReportWorX64 Navigator can now be customized in version 10.96. Various parts of the ReportWorX64 Navigator can have different context menus – for instance, a different set of options can be presented for a report node and a report folder.

To configure the context menu:

1. Configure your **ReportWorX64 Navigator.**
2. Go to the **Runtime** page.
3. Go to the **Context Menu** section.
4. Check **Enable**.
5. Choose the **Group** for the context menu you'd like to edit.
6. Add, remove, or edit items in the **Items** table.

Many other controls also support the customizable context menu. See Customizable Context Menu.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help:

- ReportWorX64 Navigator Control
- Customizable Context Menu

ReportWorX64 Viewer

Execute Commands on Events

The ReportWorX64 Viewer is one of many controls that now supports executing commands on events. These events vary per control, but for the ReportWorX64 Viewer they include:

- Ready
- Started

To configure the command to be executed when this event occurs, go to **Runtime** tab. Find the **Commands on Events** section, check **Enable Commands on Events**, then configure the form below.

See Execute Commands on Events for more details.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Executing Commands on Events

Customizable Context Menu

(Reference ID: 57682)

The context menu for the ReportWorX64 Viewer can now be customized in version 10.96.

To configure the context menu:

1. Configure your **ReportWorX64 Viewer.**
2. Go to the **Runtime** page.
3. Go to the **Context Menu** section.
4. Check **Enable**.
5. Add, remove, or edit items in the **Items** table.

Many other controls also support the customizable context menu. See Customizable Context Menu.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help:

- ReportWorX64 Viewer Control
- Customizable Context Menu

Additional Enhancements

ReportWorX64 General

Ref ID	Description	First Available In
54029	Added a "Reporting" start menu shortcut to the GWXReporting.gdfx display, which is a preconfigured display to allow users to execute and manage their executed reports.	New for 10.96
54240	Reports can now be canceled. This can be done via the ReportWorX64 Viewer or by writing to the @@Cancel tag for a report.	New for 10.96
57091	File copy and web publish redirectors now allow browsing for parameters in the Publish Folder and Publish URL fields. (Previously, parameters were usable in these areas, but they had to be typed in manually.)	New for 10.96
62914 63067	ReportWorX64 can now generate CSV reports. To configure this, open a report object and for "Generate reports as", check CSV. Note that due to the nature of CSV files, many Excel features such as formatting, charts, etc. will be removed from the generated report.	New for 10.96
68045	Tags consumed in ReportWorX64 no longer count against the GENESIS64 tag count for licensing.	New for 10.96
70437	Reports can now be configured with a timeout. This timeout is configured on a report object on the Report Settings tab. If the report takes longer than the specified time, it will be canceled.	New for 10.96
68027	ReportWorX now allows a wider variety of aggregates, such as EndBound.	10.95.5
61800	The formatting of a cell now defaults to using Excel's settings if the Formatting field in the Layout Editor is left blank.	10.95.4
62527	The "Protect Workbook" functionality has been enhanced. In addition to preventing the user from adding, removing, or renaming sheets in Excel reports, you are now prevented from modifying sheets in Excel reports, and PDF reports are now protected (uneditable).	10.95.4
61308 61416	Added an optional anchor row. This allows for expressions to be added under the anchor row whose range could grow as the data source expanded. The anchor row can be added by right-clicking on the mapping. This feature was available in ReportWorX (32-bit).	10.95.3
62812	ReportWorX64 can now include parameter values in reports. To use the feature, open Layout Manager, create parameters and right-click on any empty cell and select "Add Parameter Mapping". Use the property grid for further edits.	10.95.2
57268	Added the LastExecutionInterval (total execution time of a report) and LastExecutedError (the last error message encountered, if any) tags for reports.	10.95.1

ReportWorX64 Navigator

Ref ID	Description	First Available In
62677	Added the "FrameWorX Node" field to the Report Navigator that sets the target server for report data.	10.95.3

ReportWorX64 Express & Excel Add-In

Ref ID	Description	First Available In
35530	When the user selects the "Update" button, a dialog now appears with the progress of the update.	New for 10.96
47897	Added a "Hide comments" option to the Miscellaneous section of the ReportWorX64 menu. This option will hide the comments (red triangles) that note where cells have been mapped.	New for 10.96
54008 54377 68686	Incorrectly configured data sources or parameters are now identified in the worksheet with a red border.	New for 10.96

Ref ID	Description	First Available In
	When the error is resolved, the original user-configured border of the cell is returned. The user-configured border is also used if the cell is copied or cut and pasted, a column is removed or added, etc.	
57524	Added Display Names to parameters. Display Names allow users to give parameters descriptive names.	New for 10.96
57526	Parameter description is no longer a required field.	New for 10.96
59725	Users can now select more than one data mapping at a time and bulk edit properties such as the fill method and whether headers should be shown. To select multiple data mappings, select a cell in one mapping, then hold down the Ctrl key and select a cell in the second mapping. The selection method (single or multiple selection) should be indicated in the ReportWorX64 ribbon above the Display Name. If only one data source is selected, then "Single data source mode" will be displayed. If multiple data sources are selected, "Multiple data source mode" will be displayed. Note that due to limitations of Excel, if multiple data sources are selected and the data sources have different values for a property then the value of the first data source will be shown. If you wish to apply that value to all selected data sources, you must select it twice. For example, assume two data sources are selected. The first data source has "Show Headers" enabled and the second has it disabled. The user wants both data sources to show headers. The ribbon will show "Show Headers" enabled, because that is the value of the first data source. In order to apply that to both data sources, the user must first uncheck "Show Headers" then check it again.	New for 10.96
60991	When an anchor row is added (put the cursor in a mapped data source cell, ReportWorX64 Ribbon > Edit Data Source section > Add > Anchor Row), the fill type is now automatically changed to "Auto with expand". It is not possible to change the fill type until the anchor row is removed.	New for 10.96
61007	The anchor row is now displayed as part of the mapped area, including its own comments to help the user use the row properly.	New for 10.96
61235	Formulas in custom columns and anchor rows are now saved and should persist after downloading data and then clearing data.	New for 10.96
61442	Added more options for adding a new column to a data source. Go to the ReportWorX64 ribbon and select Add, or right-click on a mapped cell and select Add. Choose from one of these options: * Column on the left bound - Adds a column to the beginning of the mapping. All other columns move right. * Column here - Adds a column in the current location. The current column and all other columns move right. * Column on the right bound - Adds a column to the end of the mapping. When the data source is transposed, these options change to "Row on the upper bound", "Row here", and "Row on the lower bound".	New for 10.96
61896	The "AutoWithExpandAll" fill method has been removed. With the updates to the ReportWorX64 plug-in, this method has been obsoleted. Any existing data sources that were configured with "AutoWithExpandAll" will now use the "Auto with expand" fill method.	New for 10.96
68680	Multiple tags can now be selected in the data browser when adding a data source.	New for 10.96
68681 64603	It is now possible to change the tags for a mapped data source. * Select a cell mapped to a data source. * In the ReportWorX64 ribbon, select Edit > Data Source. * Go to the Tags tab. * Select a row in the table. * Select the "x=" button for that row. This will open the data browser. The browser includes data points, along with global aliases, languages aliases, language conversions, and parameters.	New for 10.96

Ref ID	Description	First Available In
	If the new data source has a different schema, the worksheet will update with the new columns and headers.	
68828	A "Stop Download" button has been added, which can be used to cancel an in-progress data update.	New for 10.96
68972	Users can now name their data sources. To rename a data source, use one of these methods: * Select a data source cell, go to the ReportWorX64 ribbon, and update the Display Name field. * Select a data source cell, go to the ReportWorX64 ribbon, and select Edit > Data Source. On the Configuration tab, update the Display Name field. * Right-click on a data source cell and select Edit > Data Source. On the Configuration tab, update the Display Name field.	New for 10.96
69057	Data source columns can now auto-fit after the data has been downloaded. To enable this behavior, go to the ReportWorX64 ribbon and check "Auto fit data sources on download".	New for 10.96
69075	Excel allows users to drag an Excel worksheet into a different workbook. ReportWorX64 data sources will now follow the worksheet into the other workbook. Note that only the data sources and parameters configured on that worksheet will be moved to the new workbook. If the source workbook was configured with only one sheet, any parameters configured but not used on that sheet will be lost when the sheet is dragged into the target workbook.	New for 10.96
69337	The Escape key can now be used to close popup dialogs from the ReportWorX64 add-in.	New for 10.96
69506	Previously, the "Clear" button in the ReportWorX64 Excel add-in would only clear data if it had been updated in this session. If the workbook was saved, closed, and reopened, the Clear button would not clear the data. This functionality has now been added. The plug-in now allows data to be cleared even after it has been saved and reopened. Please note that this only works with reports created in version 10.96 or later. Reports created in 10.95 or earlier are still subject to the previous limitation.	New for 10.96
69586	Improved the consistency in reports generated using the "Download Data" button (from inside the sheet) and via the ReportWorX64 execution engine (executed by the server).	New for 10.96
69631	The ReportWorX64 log now shows a progress bar if the data sources do not finish loading within one second.	New for 10.96
70069	Added an "About Us" menu item.	New for 10.96
70071	Added a "Show Help" menu item.	New for 10.96
70089	If the user is trying to add a new data source where there is not enough room to fit it normally, but there is enough room to fit it while transposed, a dialog box will appear asking if the user would like to cancel the action or transpose the data source.	New for 10.96
70221 71556 71851	The ReportWorX64 Excel add-in now supports wrapping a data source with an Excel table. The table must match the dimensions of the data source exactly for this feature to function properly. Note that to add a table, the user must either use the Ctrl-T shortcut or the Insert > Table button. The "Format as Table" button on the Home menu is not supported.	New for 10.96
70355	The login button now reflects the login state. If no user is logged in it reads, "Not logged in". If a user is logged in, it shows the username.	New for 10.96
71408	Added a "Wrap long text on download" option in the ReportWorX64 menu. When enabled, after ReportWorX64 downloads data to the sheet it will enable text wrapping on all cells that are part of a data source. Note that if both "Wrap long text on download" and "Auto fit data sources on download" are enabled, the auto-fit is applied first.	New for 10.96
71429	ReportWorX64 can optionally warn the user when they are about to overwrite cells with content by mapping a data source or parameter. These warnings are disabled by default. To enable them, go to General Configuration (gear icon), select Data Source, then enable "Show warning if the data source is going to overwrite content".	New for 10.96
71839	Merging cells mapped to data sources or parameters is not supported in ReportWorX64. While a mapped cell is selected all merge options of Excel are disabled.	New for 10.96

Ref ID	Description	First Available In
71885	The report execution log is now stored on a per-workbook basis. This prevents the actions of one workbook from clearing the log of another workbook.	New for 10.96
71913	The "Format as Table" button on the Home menu of Excel is disabled when a data source is added to a worksheet. This is necessary, as creating tables using this button can break ReportWorX64 functionality. The "Format as Table" button becomes re-enabled when there are no more data sources on the worksheet. Note that tables can still be added using the Ctrl-T shortcut or the Insert > Table button.	New for 10.96
72090	When mapping a data source or parameter, if the area to be mapped contains any merged cells, these cells will be unmerged. The user will be warned of this behavior whenever they map a data source or parameter. This warning can be disabled. To re-enable a disabled warning, go to ReportWorX64 > General Configuration (gear button) > Message.	New for 10.96
72096	The "Clear Contents" feature of Excel, located in the context menu and under Home > Clear, is disabled when a cell mapped to a data source or parameter is selected. This is necessary, as clearing cell content using this button can break ReportWorX64 functionality.	New for 10.96
72210	The "Quick Analysis" context menu item is disabled when a data source is added to a worksheet. This is necessary, as using this menu item can break ReportWorX64 functionality.	New for 10.96
61582	Excel formatting options now persist after data is updated. This is more consistent with our 32-bit ReportWorX product.	10.95.4
60702	Added a Transpose option to the Data Mapping in the Layout Manager. This feature was available in ReportWorX (32-bit).	10.95.3
61307	ReportWorX64 now allows additional custom columns to be mapped. For these custom columns, users can type an expression in the body row of the custom column, and it will be auto filled with the rest of the rows. This feature was available in ReportWorX (32-bit).	10.95.3
62637	Previously, errors when hitting the Update button in the ReportWorX Excel add-in would only appear in TraceWorX. Now, errors can be viewed directly in Excel after doing an update by enabling "Show Execution Log". This makes it easier to troubleshoot issues when developing a report.	10.95.3
62639	For data sources that take a start and an end date, if the dates are accidentally swapped (the start date comes after the end date), ReportWorX64 will reverse them to make sure the earlier date is always the start date and the later date is the end date.	10.95.3
62827	The event filter for historical alarm connections now supports parameters as part of an expression filter. Use the "Variables" button in the expression editor to choose from configured parameters.	10.95.2
62843 62844	The Double Format and Date Time Format properties of data sources now provide a dropdown with some common formats. These are not the only formats allowed, but they should serve as examples for those wanting to have a custom format.	10.95.2
62846	In previous versions of the ReportWorX Excel add-in, checkboxes for options such as “Show Headers” and “Show Timestamps in UTC” would appear as a filled box when selected. This was confusing for some users, as a filled box usually indicated a partial selection. These checkboxes now show with an unambiguous checkmark.	10.95.2

ReportWorX64 Viewer

Ref ID	Description	First Available In
42581	The ReportWorX64 Viewer can be configured to show only reports executed by the logged-in user. To configure this, select the ReportWorX64 Viewer in configure mode, go to the Properties panel, then change the "Visualise reports" property.	New for 10.96
53474	The ReportWorX64 Viewer now supports sorting. Select a header to sort ascending. Select the same header again to sort descending, and a third time to remove sorting.	New for 10.96
53475	The ReportWorX64 Viewer now supports paging. For large enough results, users can use the back, forward, first, and last buttons to navigate pages, along with entering in a specific page number.	New for 10.96
53476	The ReportWorX64 Viewer now supports filtering by columns. Select the filter icon on a header to configure the filter. (This is in addition to the preexisting "Advanced filter" functionality, that still exists.)	New for 10.96
53727	By default, the viewer now sorts by execution time, most recent reports first.	New for 10.96

Ref ID	Description	First Available In
66831	The ReportWorX64 Viewer control can now be a target of the Refresh command.	10.95.5
62279	The grid object used in the Asset Navigator, ReportWorX64 Viewer, and AlarmWorX64 Viewer's list view has been enhanced to allow auto-sized columns to shrink as well as expand.	10.95.4

ReportWorX64 Workbench Provider

Ref ID	Description	First Available In
54402 54401 61830	Added a new property to reports called "Multi Parameters". This property is intended to be used in future releases. It will determine the behavior of the report if users select multiple values for a parameter. Users can choose between combining the values into a single dataset or generating multiple sheets in a report, one for each combination of parameters.	New for 10.96
61229	Users can now disable or enable all reports in a folder. Select a folder and bring up the context menu, then choose either "Enable all reports" or "Disable all reports".	New for 10.96
61461	The user is no longer allowed to delete the active configuration object.	New for 10.96
63996	Multiple inactive template versions can now be selected and deleted at once.	New for 10.96
58798	Users can now choose specific sheets to include in a PDF report. To choose this, open a report object, go to the Report Settings tab, go to the Advanced Properties section, check "Specify which sheets should be included in the PDF report", then fill in the Include Sheets field.	10.95.3
60212	When a template is created from a report or transaction, the template is created in the same subtree as the report or transaction.	10.95.3
60360	ReportWorX64 imports no longer allow creating reports with identical GUIDs. If a report with a duplicate GUID exists in the import file, that report will be ignored.	10.95.3
56495	Users can now trigger a test report from within Workbench. Only enabled reports in active configurations can be tested.	10.95.1
56772	Users can now edit comments associated with report template versions. Right-click on a template version to edit it.	10.95.1

Data Connectivity

BACnet

BACnet General

Ref ID	Description	First Available In
69130	When working with objects on a device, BACnet Runtime now checks two properties, whether the device supports RPM/WPM services and whether it also supports segmentation. If both features are supported, then it uses ReadPropertyMultiple/WritePropertyMultiple services for the operations. If one of the features is not supported, then it uses ReadProperty/WriteProperty services. Previously, BACnet Runtime would try ReadPropertyMultiple/WritePropertyMultiple first, and if the device didn't support segmentation it would fail and then BACnet Runtime would try ReadProperty/WriteProperty. This caused unnecessary load and errors.	New for 10.96
65710	BACnet devices with a system status of "Operational_Read_Only" are now displayed as online in Workbench. Previously, only "Operational" devices showed as online, and "Operational_Read_Only" devices showed as offline. These "Operational_Read_Only" devices could always be successfully discovered, even before this update.	10.95.5
62143	The BACnet Point Manager no longer resends updates to the client if the status code hasn't changed. Previously, the same status code could be sent repeatedly. For example, if the point manager tried to subscribe to failed points every 15 seconds; previously, it would send an update to the client with the failed status code every 15 seconds.	10.95.4
62525	BACnet alarms now support acknowledgement comments.	10.95.4
62526	Added a new Boolean alarm attribute called "BACnetEvent", which is true when a BACnet Event Notification is "NotifyTypeEvent". Otherwise, it is false.	10.95.4
62553	Added a number of enhancements to the BACnet EDE Generator utility: • Support for adding BACnet Device information to an existing EDE file. • Support for overwriting preexisting devices with updated information. • A new dialog with the list of all devices available in BACnet Runtime. • Support for more BACnet properties (checkboxes) to be stored in the EDE file.	10.95.4
62554	Added a new alarm attribute called "BACnetRuntimeID". It contains the BACnet Device ID of the specific BACnet Runtime that forwarded the alarm.	10.95.4
62580	Enhanced tracing of the EDE Generator. Traces can now contain details such as the full device, object, and property information.	10.95.4
63197	The processing of DA data updates has been enhanced so that requesting large amounts of data updates (such as when running a report with Project Reporting) has minimal effect on existing clients waiting to get their responses.	10.95.4
62675 62728	Previously, if the BACnet service was restarted the description (message) of active alarms would be lost. This occurred because BACnet would only send the description with the initial notification, but not the response when you read the current state of alarms after the BACnet service is restarted. Now, the BACnet service can cache alarm descriptions, allowing them to persist after a restart of the BACnet service. This feature is disabled by default. It can be enabled on a global level by going to Workbench > Data Connectivity > BACnet > Devices, then to the Communication tab > Alarm Cache section. Check the box for "Store Alarm Descriptions". You can override this global setting on a per-device level. On the settings for the device, check "Override Store Alarm Descriptions" and then check or uncheck "Store Alarm Descriptions".	10.95.3

BACnet Workbench Provider

Ref ID	Description	First Available In
68620	When browsing a very large device in Workbench, keys could appear, and the browsing could fail. This XML exception would be logged: "Maximum quota exceeded for array length (<length>) when reading XML data. This quota can be increased by modifying the MaxArrayLength property on the XmlDictionaryReaderQuotas object used when creating the XML reader. Line 1, position <position>." A new property has been added to set the maximum package size. This can be found in Workbench under Data Connectivity > BACnet > Devices, called "Maximum Entities Number". Reducing this value can avoid the XML exception.	New for 10.96
69212	When Workbench subscribes to property values, it first checks with the BACnet point manager to see what property values exist. Previously, it would always subscribe to a hard-coded list of properties. This could cause errors on devices where these properties did not all exist. Workbench may still subscribe to the full list of properties in cases where the list of existing properties cannot be obtained for some reason.	New for 10.96
60752	The BACnet provider in Workbench no longer attempts to subscribe to all child descriptions by default. To re-enable this feature, edit IcoSetup64.ini and add or edit this entry: [BACNET\Configuration] ReadDescriptions=1 If this feature is enabled, when you browse to a node that has children with descriptions, the BACnet Workbench provider will subscribe to BACnet Runtime to get the description.	10.95.4
63953	Updated the offline BACnet devices icon to be more distinguishable, especially for colorblind users. The icons of offline devices now have a red circle in the corner.	10.95.4

GridWorX

Major Enhancements

GridWorX Server

Subscribe to Columns as Arrays

(Reference ID: 66031)

Users can now subscribe to a single column of a dataset and get the entire column as an array. For example, this tag should now return an array:

db:Northwind.Categories[CategoryID]

For backwards compatibility reasons, this feature is disabled by default. To manually enable it, open **Platform Services Configuration**, go to the **Point Managers** tab, select the **GridWorX Point Manager**, and set the value for **EnableArraySubscription** to **true** to enable this feature or **false** to disable it.

This feature is also available for the AnalytiX-BI Server and Web Services point managers.

For Further Reference

- Help: Subscribe to Columns as Arrays

Diagnostic Counters

(Reference ID: 62614)

Starting in 10.95.3, the GridWorX point manager now includes diagnostic information exposed as tags similar to those originally implemented in the FrameWorX Server. At the root level, the GridWorX point manager now exposes two diagnostic points:

- **@@TotalCacheSize** - The current total size of items in the cache.*
- **@@TotalCachedItemsCount** - The total number of items in the cache.

Data sources now expose an extra folder along with "Columns" and "Data Items" called "@@Diagnostics". This new folder contains a few diagnostic points:

- **@@CachedItemsCount** - The number of cached items for the data source. If the data source accepts parameters, parameters do not have to be included.
  - Example: db:connection.source.@@CachedItemsCount
- **@@CacheSize** - The size of all the items stored in the cache for the data source.* If the data source accepts parameters, parameters do not have to be included
  - Example: db:connection.source.@@CacheSize
- **@@LastCallStatus** - The status of the last (or current, if executing) call. Possible values are: Succeeded, Running, Failed, Timed Out. Please note that "Timed Out" is only returned when connecting to SQL Server; a timeout with other connection types will be reported as "Failed". If the web service accepts parameters, parameters do have to be included.
  - Example: db:connection.source<@p1=1, @p2=2>.@@LastCallStatus
- **@@LastCallStatusCode** - Same as @@LastCallStatus but represented as an integer code. Values are 0 (Succeed), 1 (Running), 2 (Failed), 3 (TimedOut). If the data source accepts parameters, parameters do have to be included.
  - Example: db:connection.source<@p1=1, @p2=2>.@@LastCallStatusCode
- **@@LastError** - The last error that occurred during the method execution or null if there was no error. (Note, this point is not exposed by default. To enable it, go to **Platform Services Configuration** > **Point Managers** tab, select the **GridWorX Point Manager**, and set **EnableErrorDetailsDiagnosticPoints** to true.) If the data source accepts parameters, parameters do have to be included
  - Example: db:connection.source<@p1=1, @p2=2>.@@LastError

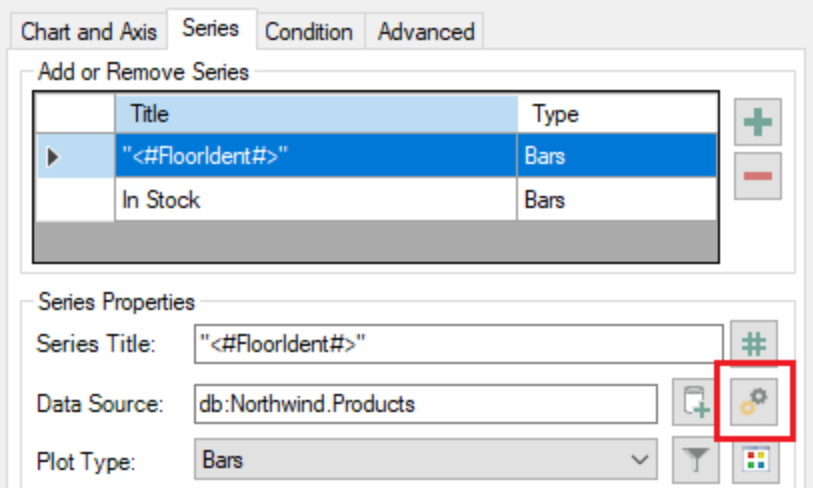
* Cache size points are returned in bytes; however, they are only an approximation of the actual memory consumed by the cached items.

For Further Reference

- Help: GridWorX Diagnostic Counters

GridWorX Viewer

Redesigned Series User Interface and New Series Properties



In 10.96, the GridWorX Viewer's user interface for configuring a grid series has been redesigned to be able to fit more series properties. Many new properties, and some preexisting ones, can now be found by clicking on the **Advanced Properties** button, which is on the same row as the **Data Source** field.

The new properties include:

- **Data Source** – The Data Source field is not new, of course, but in the Advanced Properties dialog there is a larger version of the Data Source field, which can be more easily used to see and fill in parameter values within the tag name. *[69188]*
- **Line Dashes** – Enter a number, which is the length of dashes (in pixels) for line charts. Leave blank for solid lines. If you'd like the dashes and blank spaces to be different lengths, enter two numbers (such as "5,10" for a line 5 pixels long, followed by a blank space 10 pixels long). *[60553]*
- **Show Cursor** – Disabling this checkbox for a series will prevent that series from appearing in the cursor information. (This feature is currently available in desktop (WPF) only.) *[58715]*
- **Show Legend** – Disabling this checkbox for a series will prevent that series from appearing in the legend. *[63539]*

For Further Reference

- Help: GridWorX Viewer Chart, Series Tab

New Chart Type: Donut

(Reference ID: 60860, 70565)

Donut charts are new in version 10.96. To create a donut chart, select your chart, go to the **Chart and Axis** tab, and set the **Chart Type** to **Donut**.

To change the radius of the center, go to the **Advanced** tab and set **DonutRadius**.

For Further Reference

- Help: GridWorX Viewer Chart, Chart and Axis Tab

Execute Commands on Events

(Reference ID: 69779)

The GridWorX Viewer is one of many controls that now supports executing commands on events. These events vary per control, but for the GridWorX Viewer they include:

- Data Downloaded (data has finished downloading)
- Data Downloading (data has started downloading)
- Double Click (chart only)
- Middle Click
- Right Click
- Row Click (chart only)
- Row Selected (chart only)
- Sample Click (grid only)
- Sample Double Click (grid only)

To configure the command to be executed when this event occurs, select your grid and go to the **Behavior** tab, or select your chart and go to the **Chart and Axis** tab. Find the **Commands on Events** section, check **Enable Commands on Events**, then select the **Configure** button.

Commands can be configured to use values from the row selected or clicked. When configuring the command, select the **browse icon**, go to the **Expressions** tab, select **Variables**, then go to the **Context Variables** tab.

Note that the Row Selected event will still be triggered even if a single cell is selected (the default behavior of the viewer). It is not necessary to select an entire row.

This support for commands on events replaces the support added in version 10.95.4 to execute commands when selecting a row using the SelectionCommandColumnKey advanced property.

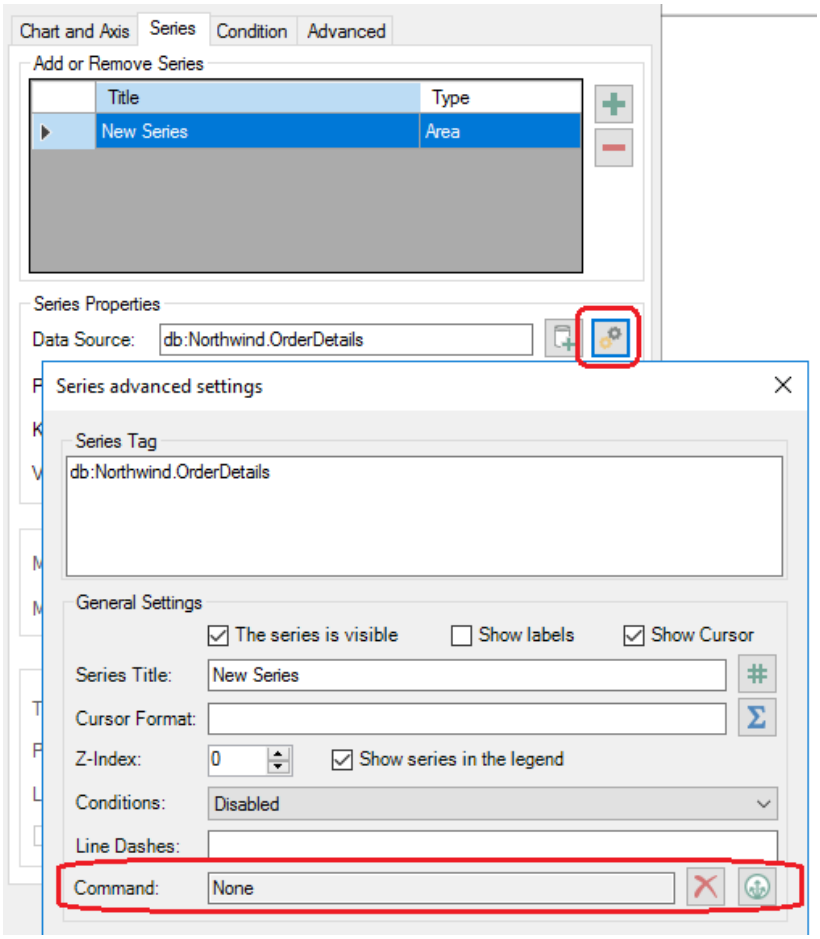
See Execute Commands on Events for more details.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Executing Commands on Events

Execute Command on Chart Series Click

(Reference ID: 61362)



In addition to executing commands on events, users can configure a specific command to execute when clicking or tapping on a chart series. (This functionality was available starting in version 10.95.4.)

Users who want to execute different commands for different series may want to take advantage of this feature, rather than the "execute commands on events" feature, which requires the same command to be executed for every series.

The command to be executed is defined on the Series tab of a Chart. Select the series, select the **Advanced Settings** button on the same row as the data source, then configure the command.

For Further Reference

- Help: GridWorX Viewer – Execute Commands on Events

Enhanced Cursor Format

(Reference ID: 61384)

The Cursor Format property has been enhanced to allow expressions in order to provide more options on what can be shown in the cursor. The Cursor Format property can be found in the advanced settings for a series.

The new cursor format expressions could be used starting in version 10.95.4, but in 10.96 there is now an expression editor available to help users build proper expressions.

Note, the old syntax will still be accepted for backwards compatibility. No changes should be required to existing displays.

Also note, this functionality is currently only supported in desktop (WPF) displays and Universal Windows Platform (UWP) apps. Support for HTML5 apps is planned for future versions.

For Further Reference

- Help: GridWorX Viewer – Series advanced settings Window

Additional Enhancements

GridWorX Server

Ref ID	Description	First Available In
66392	Users can now alter the scheduler granularity of the GridWorX point manager. Speeding up this value can result in faster responses from GridWorX at the cost of higher CPU usage. To change this value, modifying the SchedulerGranularityMsec parameter under Platform Services Configuration > Point Managers tab > GridWorX Point Manager. The default is 1000 ms. Note that setting this parameter to very small values (100 ms or less) might cause high CPU and performance issues in GridWorX.	10.95.5
67662	Added the ability to disable the auto-refresh of GridWorX Viewers after writing to the @@Refresh tag for a data source. Disabling this functionality returns the @@Refresh tag to the way it behaved prior to version 10.95, where users will have to manually refresh the viewer to see updates after writing to the @@Refresh tag. To disable the viewer's auto-refresh, go to Platform Services Configuration > Point Managers tab > GridWorX Point Manager and set the DisableGridClientRefreshSignaling parameter to True.	10.95.5
58881	Added support to export data from a GridWorX chart to CSV, HTML, TXT, and ExcelML. This is available in the context menu, toolbar, and ribbon.	10.95.3
57461	Changed the handling of default values for parameters. Parameters now follow these rules: * If a parameter is not specified at all, it will not be passed to the query or stored procedure. This means that if the stored procedure has a default value, that default value will be used. * If a parameter is specified without a value (for example: @paramName=) then NULL will be used as a value. * If a parameter is specified without a value but enclosed in quotes (either single or double, for example: @paramName='') then an empty string will be used as a value.	10.95.1

GridWorX Viewer

Ref ID	Description	First Available In
11649	Added a "Sorting" tab on the grid configuration. This tab allows the user to configure the sort order for the grid columns. This is an alternative to activating the control and clicking on the column headers to sort them.	New for 10.96
50720 70231 70232	Filters configured in the column header dropdowns can now be saved with the display. There are two ways to save them: 1) In configuration mode, right-click on the viewer and activate the control, then set the filters are you would in runtime mode and save the display. 2) In configuration mode, go to the Advanced tab of the grid configuration and set ShouldResetSettings to false. Enter runtime, set the filters as desired, then go back into configuration mode and save the display.	New for 10.96
61355 70850	Pie and donut charts can now have a legend. This is enabled on the Advanced tab of the chart with the ShowLegend property.	New for 10.96

Ref ID	Description	First Available In
71031		
61914 70371	Added a new option to client-side filters called "Show the filter in runtime". This option can be found on a grid under the Behavior tab > Configure default client-side filter(s) > add or edit a filter. When disabled, this option will hide a filter in runtime. It can be used to create preconfigured filters usable in status indicators, conditions, and elsewhere that you do not want the user to be able to choose from in runtime. Note, this feature is available in desktop (WPF) and Universal Windows Platform (UWP), but not HTML5. We plan to add this to HTML5 in a future version.	New for 10.96
62917	Added a new property, ForceReportDialog, on the Advanced tab of a grid. Setting this property to true will force the the export dialog to show when performing a CSV export, regardless of the value of DefaultReportPath. When ForceReportDialog is false, the dialog will only appear if DefaultReportPath has no value. This property is currently only supported in the desktop (WPF) platform. We plan to add support for HTML5 in later versions. (Unfortunately, this cannot be supported in Universal Windows Platform (UWP) due to sandbox restrictions on UWP apps.)	New for 10.96
63389 70580	The GridWorX Viewer now supports the Export Data command.	New for 10.96
69185	The Resolve Global Alias dialog that appears when refreshing a data source that includes a global alias will no longer list the same alias more than once. Previously, the dialog would list the alias multiple times if it occurred more than once in the tag name.	New for 10.96
69311	Added a new property, ClickCommandColumnKey, that works the same as SelectionCommandColumnKey, except it triggers the command when the row is clicked, rather than selected. Users may want to use ClickCommandColumnKey instead of SelectionCommandColumnKey if they want to be able to trigger the command multiple times without deselecting the row.	New for 10.96
63530	Dynamic values (such as tags and aliases) can now be used in the max and min values of a GridWorX Viewer's chart's "Use specific X-Range" and "Use specific Y-Range" settings.	10.95.4
63733	Added a SelectEntireRow property to the Advanced tab of a grid. The default is false. When set to true, selecting a cell will instead select the entire row. Note that in version 10.96, this property is largely cosmetic. Commands and functionality that look for a selected row will also react to a selected cell, considering the whole row selected. (In version 10.95.4 and 10.95.5 users needed to set this property and SelectionCommandColumnKey to be able to execute a command when clicking any cell on a row. SelectionCommandColumnKey support has been replaced by support for executing commands on events.)	10.95.4
60588	Clickable links in GridWorX Viewer grids are no longer underlined.	10.95.3
60772	Choosing "Print" from the desktop (WPF) context menu of a grid now brings up a print dialog. Previously, it would automatically print to the default printer on the machine. This is now consistent with the "Print" option in the context menu of a chart.	10.95.3

GridWorX Workbench Provider

Ref ID	Description	First Available In
68819	The GridWorX Workbench provider no longer removes manually entered parameters when editing the query of a data source.	New for 10.96
70516	Previously, custom SELECT queries could not have UPDATE commands automatically generated. Now, custom queries can automatically generate UPDATE commands, but only if the schema has a primary key. This change should address a behavior where updating a SELECT command could blank out the existing UPDATE command. The UPDATE command was blanked out because editing the existing SELECT command changed from a table query to a custom query when it was edited, and the UPDATE command could not be regenerated. Now it can be regenerated, as long as there is a primary key.	New for 10.96

Modbus Point Manager

Modbus Workbench Provider

Ref ID	Description	First Available In
65712	Modbus Unit IDs can now be specified with any number from 0-255.	10.95.5

Web Services

Major Enhancements

Subscribe to Columns as Arrays

(Reference ID: 66032)

Users can now subscribe to a single column of a dataset and get the entire column as an array. For example, this tag should now return an array:

ws:Sample Web Services.National Weather Service.Current Conditions<@stationid=KBOS>.cloudLayers

For backwards compatibility reasons, this feature is disabled by default. To manually enable it, open **Platform Services Configuration**, go to the **Point Managers** tab, select the **Web Services Point Manager**, and set the value for **EnableArraySubscription** to **true** to enable this feature or **false** to disable it.

This feature is also available for the AnalytiX-BI Server and GridWorX point managers.

For Further Reference

- Help: Subscribe to Columns as Arrays

Diagnostic Counters

(Reference ID: 62615)

Starting in 10.95.3, the web services point manager now includes diagnostic information exposed as tags similar to those originally implemented in the FrameWorX Server. At the root level, the web services point manager now exposes one diagnostic point:

- **@@TotalCachedItemsCount** - The total number of items in the cache.

Web methods now expose a folder called "@@Diagnostics". This new folder contains a few diagnostic points:

- **@@CachedItemsCount** - The number of cached items for the web method. If the web method accepts parameters, parameters do not have to be included.
    - Example: ws:folder.service.method.@@CachedItemsCount
- **@@LastCallStatus** - The status of the last (or current, if executing) call. Possible values are: Succeeded, Running, Failed, Timed Out. If the web service accepts parameters, parameters do have to be included.
    - Example: ws:folder.service.method<@p1=1, @p2=2>.@@LastCallStatus
- **@@LastCallStatusCode** - Same as @@LastCallStatus but represented as an integer code. Values are 0 (Succeed), 1 (Running), 2 (Failed), 3 (TimedOut). If the data source accepts parameters, parameters do have to be included.
    - Example: ws:folder.service.method<@p1=1, @p2=2>.@@LastCallStatusCode
- **@@LastError** - The last error that occurred during the method execution or null if there was no error. (Note, this point is not exposed by default. To enable it, go to **Platform Services Configuration** > **Point Managers** tab, select the **Web Services Point Manager**, and set **EnableErrorDetailsDiagnosticPoints** to true.) If the data source accepts parameters, parameters do have to be included
    - Example: ws:folder.service.method<@p1=1, @p2=2>.@@LastError

For Further Reference

- Help: Web Services Diagnostics Counters

Support for JSON Web Tokens

(Reference ID: 62716)

Starting in 10.95.3, REST web services can now be created to use JSON Web Tokens.

For Further Reference

- Help: JSON Web Token Authentication

Web Manipulator for REST Web Services

(Reference ID: 62590)

First introduced in 10.95.3, REST services can now have web manipulators. Similar to data manipulators in GridWorX, web manipulators are designed to execute a REST method on demand to perform some action in a "fire and forget" way, rather than querying and displaying data on a regular basis.

Web manipulators are best to use instead of web methods when you need to perform some action, such as writing a value, or get some limited data on a one-time or sporadic basis. Web methods continue to be the best choice when your goal is to display a set of data for a user.

Unlike web methods, web manipulators do not have configurations for refresh, schema, or return value. They allow the user to choose another REST method to refresh when the manipulator is executed, similar to GridWorX data manipulators.

Like GridWorX data manipulators, web manipulators are run when writing to the @@Execute tag. Parameter values for the web manipulator can either be included in the point name or written to specific parameter tags that are browsable under the web manipulator.

A web manipulator has two tags to get returned values. @@StatusCode contains the HTTP status code of the manipulator call. @@Data will contain the result of the REST method call. If the method returns an object it is possible to get the value of individual properties by adding the property name to the @@Data point. For example, if the call returns this JSON object: { "Name": "Pressure", "Value": 12.8 }, the "Value" portion can be obtained with this tag: ws:folder.service.manipulator<>.@@Data.Value.

For Further Reference

- Help: Creating a Web Manipulator

Additional Enhancements

Web Services General

Ref ID	Description	First Available In
67257	When translating XML to JSON, Web Services will now interpret elements having the nil attribute set to true as NULL values. Previously the xsi:nil element was simply added as a column with a value of true.	10.95.5
67899	On SOAP web methods, for xs:choice parameters that are represented as type "object" it is now possible to pass the desired data type in the JSON representing the object. The data type is specified via the special property __type (note, there are two underscores), for example: { "__type": "TypeOne", "ItemOne": "X", "DateTwo": "2019-03-18" }	10.95.5

Web Services Workbench Provider

Ref ID	Description	First Available In
50938	Web Services can now parse XML responses. Supported content types are application/xml, application/rss+xml, application/atom+xml, application/soap+xml, text/xml.	10.95.5
62139	Introduced the ability to override the default accept-encoding header. This can be done on the service or method level by adding a parameter of type “HTTP Header”.	10.95.4

GENESIS64

New: Voice Machine Interface and Text Machine Interface

(Reference ID: 67798)

Brand new for version 10.96, users can now use digital assistant services, such as Amazon's Alexa, Microsoft's Cortana, and Google Home, to control their ICONICS systems.

Users configure "skills" in the cloud of their choice. These skills are invoked by speaking to a smart device such as Alexa. The user's speech is sent to the cloud, converted into text, matched to the configured skill, then sent to the ICONICS server for it to take action. For example, a user could say to an Alexa device, "Turn off pump two," and a zero would be written to the enabled bit for pump two. A user could also ask for the status of pump two, and Alexa would reply, "Pump two is enabled."

Smart home properties (such as power and brightness) can be associated with assets in AssetWorX. "Scenes" can be created in RecipeWorX, allowing the user to control multiple attributes or points with a single voice command, such as saying, "Alexa, turn on day mode," to set all lights in a particular building to their preset daytime values.

Voice Machine Interface and Text Machine Interface takes advantage of our new support for Open ID Connect security. (See Web Login with External Identity Providers.) Users can authenticate their voice device against ICONICS security, controlling which points the device and read or write to.

This capability is similar to the speech recognition capability of GraphWorX64 and MobileHMI, except in those cases the speech is processed locally by the operating system. Voice Machine Interface support is handled by a third-party cloud service.

Voice Machine Interface and Text Machine Interface can leverage these digital assistants:

- Amazon Alexa (Smart home and custom skills)
- Microsoft Bot (Cortana, Skype, Teams)
- Google Home

For Further Reference

- Application Note: (available upon request)
- Help: About ICONICS Voice Machine Interface

AlarmWorX64

Major Enhancements

AlarmWorX64 Viewer

Flip View Can Automatically Cycle Alarms

(Reference ID: 64561)

The AlarmWorX64 Viewer's flip view can now be configured to automatically cycle through the available alarms. To configure this, select the flip view then go to the Advanced tab. Set the AutoFlipInterval to the number of milliseconds you would like each alarm to be displayed. A value of zero disables the feature (no cycling).

This feature is currently available for desktop (WPF) and Universal Windows Platform (UWP), but not HTML5.

For Further Reference

- Help:
  - Using Flip View to Automatically Cycle Alarms
  - Advanced Display Options (AlarmWorX64)
  - Flip Options in AlarmWorX64 Viewer

New Chart Type: Donut

(Reference ID: 60865)

Donut charts are new in version 10.96. To create a donut chart, select your chart, go to the **Axis** tab, and set the **Plot Type** to **Donut**.

To change the radius of the center, go to the **Advanced** tab and set **DonutRadius**.

For Further Reference

- Help:
  - Donut Plot Type
  - Axes Tab Properties in Charts in AlarmWorX64
  - Advanced Display Options (AlarmWorX64)
  - Chart Options in an AlarmWorX64 Viewer

Execute Commands on Events

(Reference ID: 69620)

The AlarmWorX64 Viewer is one of many controls that now supports executing commands on events. These events vary per control, but for the AlarmWorX64 Viewer they include:

- Double Click
- Middle Click
- Right Click
- Row Click (grid, list, or flip)
- Row Selected (grid, list, or flip)
- Sample Click (chart only)
- Sample Double Click (chart only)

To configure the command to be executed when this event occurs, select your grid, list, or flip and go to the **Behavior** tab, or select your chart and go to the **Axis** tab. Find the **Commands on Events** section, check **Enable Commands on Events**, then select the **Configure** button.

This support for commands on events replaces the support added in version 10.95.4 to execute commands when selecting a row using the SelectionCommandColumnKey advanced property.

See Execute Commands on Events for more details.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Executing Commands on Events

Enhanced Alarm Beep, Different Sounds for Different Conditions

(Reference ID: 9801)

Users can now configure the AlarmWorX64 Viewer to make different sounds based on different conditions. Previously, all alarms had to use the same sound.

To configure custom sounds, configure your alarm viewer, select your grid, go to the **Condition** tab, edit the **Visual Style** for your condition, fill in the new **Custom Beep File** field, and specify a **Beep Speed**. The custom beep file can be a relative path (relative to the display file location) or a web URI.

Note that only one sound will play at a time. If more than one alarm with a configured sound is present the alarm viewer will determine which sound plays by the order of conditions in the list. The topmost matching condition with a sound will be the one that plays.

Also note that alarms that do not match the current filter will not trigger sounds.

Users still have the option of overriding the default beep sound using the BeepFileLocation property of the alarm viewer. Conditions that have a beep speed, but no custom beep file will still play the custom BeepFileLocation sound.

The custom beep file field is not currently supported for the HTML5 alarm viewer. It is supported in desktop (WPF) and Universal Windows Platform (UWP).

For Further Reference

- Application Note: *AlarmWorX64 Viewer - Configuring Sounds for Alarms*
- Help: Setting the Alarm Beep Function

Additional Enhancements

AlarmWorX64 Logger

Ref ID	Description	First Available In
69393	Enhanced performance of new configurations by optimizing table creation.	New for 10.96
64778	Improved the speed of retrieving historical alarm data when requested by a client.	10.95.5
62976	Users can now override the SQL Server timeout. To do so, add or modify the entry below (which is the number of seconds) in the IcoSetup64.ini file. Reducing this value can speed up the historical alarm data replay on a redundant system when the primary SQL Server is offline but note that setting it too fast can cause unintended failover to the secondary SQL Server database. The default value is 20 seconds. [AWX\AWXLog] HistoricalConnectTimeout=20	10.95.1

AlarmWorX64 Server Workbench Provider

Ref ID	Description	First Available In
61461	The user is no longer allowed to delete the active configuration object.	New for 10.96

AlarmWorX64 Viewer

Ref ID	Description	First Available In
11649	Added a "Sorting" tab on the grid configuration. This tab allows the user to configure the sort order for the grid columns. This is an alternative to activating the control and clicking on the column headers to sort them.	New for 10.96
31353	Added an X icon to the list and flip view search bars. This icon can be used to quickly remove the search and return to an unfiltered view. This X icon is currently not available in HTML5.	New for 10.96
33322	In list view, selecting an alarm will now toggle the details pane open and closed. Previously, selecting the alarm would open the details pane but not close it.	New for 10.96

Ref ID	Description	First Available In
	Note that HTML5 does not currently support this functionality. Selecting an alarm in HTML5 will open the details pane, but not close it.	
47200 70586	The AlarmWorX64 Viewer's list view now supports the Sort command.	New for 10.96
57343	The performance of the desktop (WPF) AlarmWorX64 Viewer has been optimized for large bursts of data (such as viewing over 15,000 alarms at once).	New for 10.96
61852	The desktop (WPF) and alarm viewer now allows filtering by time along with date in datetime columns. This feature is currently not available on HTML5 or Universal Windows Platform (UWP).	New for 10.96
62214	The AlarmWorX64 Viewer no longer requires a subscription to the active time field. That field can be unsubscribed.	New for 10.96
63166 63278	The Edit Time Range dialog no longer shows configuration elements for the Shift Schedule Configuration while in runtime mode, only in configure mode. Previously, the dialog allowed the user to edit the shifts in runtime, but the changes would not be saved. This was misleading, so the configuration elements were removed. This affects desktop (WPF) and Universal Windows Platform (UWP), but not HTML5. The HTML5 dialog still shows the configuration elements for shifts in runtime.	New for 10.96
64945	When a virtual column's expression contains an error, a simple exception message is displayed instead of a stack trace. The stack trace that was displayed previously was confusing to end users and usually not necessary to troubleshoot the issue.	New for 10.96
68770	The count of alarms in an alarm viewer is now available as a localsim property. This property is available for both real-time and historical alarms, and all views (grid, chart, list, and flip). For example, to get the alarm count of the first viewer on the first tab of an alarm viewer named "MyAwx" you could use this tag: localsim:property:myAwx.Items[0].Items[0].AlarmCount Note, localsim property tags for the AlarmWorX64 Viewer are not currently available in HTML5.	New for 10.96
69311	Added a new property, ClickCommandColumnKey, that works the same as SelectionCommandColumnKey, except it triggers the command when the row is clicked, rather than selected. Users may want to use ClickCommandColumnKey instead of SelectionCommandColumnKey if they want to be able to trigger the command multiple times without deselecting the row.	New for 10.96
69729	The default AlarmWorX64 Viewer beep sound will now work in desktop (WPF) WebHMI displays running in Internet Explorer without requiring any extra steps. Previously, the AwxBeep.wav file needed to be manually copied into the PubDisplay folder, and the BeepFileLocation advanced setting needed to be set.	New for 10.96
70329 70330 71484	The AlarmWorX64 Viewer's Acknowledge & Operation dialog now has a "Beep Off" option that will turn off the beep sound for the given alarm. "Beep Off" is also now available as an Operation in the Acknowledge command.	New for 10.96
71079 71080	The desktop (WPF) and Universal Windows Platform (UWP) AlarmWorX64 Viewer pie and donut charts now show values when the ShowFieldName advanced property is enabled. Previously they only showed the name and not the value. This makes the behavior consistent with the HTML5 AlarmWorX64 Viewer.	New for 10.96
71212 71204	Added a new property to AlarmWorX64 Viewer pie and donut charts called "ShowFieldValue". When set to true the value is shown in the data labels, when set to false a percentage is shown. This property can be configured on the Advanced tab of a chart. (Note, this feature is currently only available for desktop (WPF) and Universal Windows Platform (UWP) platforms. We plan to add support for HTML5 in a later version.	New for 10.96
62279	The grid object used in the Asset Navigator, ReportWorX64 Viewer, and AlarmWorX64 Viewer's list view has been enhanced to allow auto-sized columns to shrink as well as expand.	10.95.4
63390	Added support for the Export Data command to the AlarmWorX64 Viewer.	10.95.4
60590 60600	Clickable links in the AlarmWorX64 Viewer are no longer underlined.	10.95.3
60773	Choosing "Print" from the desktop (WPF) context menu now brings up a print dialog. Previously, it would automatically print to the default printer on the machine.	10.95.3
56527 56529	The AlarmWorX64 Viewer's Acknowledge & Operation dialog now has a "Latch Reset" option that will reset whatever latch has been applied.	10.95.1

Ref ID	Description	First Available In
56984	In a redundant scenario, the AlarmWorX64 Viewer should now read historical data from the secondary logging database when the primary logging database cannot be reached. The timeout for contacting the primary database is configured by this IcoSetup.ini entry: [AWX\AWXLog] HistoricalConnectTimeout=20 The default value is 20 seconds. Very small timeout values (5 seconds or less) may produce unpredictable results and are not recommended. Note that when the SQL Server is remote from the alarm logger the network timeout detection length may be added to the overall timeout length. (The default Windows network timeout is 72 seconds.) The logger must be restarted after changing this INI entry.	10.95.1

AlarmWorX64 MMX

AlarmWorX64 MMX General

Ref ID	Description	First Available In
63211	Added support for changing the pager agent from PDU-mode to text-mode. For information on how to make this change, contact your regional Technical Support office or open a case at https://partners.iconics.com.	10.95.4
62710	Added an AlarmWorX64 Multimedia mail agent that supports SSL/TLS security. Note: For security reasons, it is critical that the emailcfg.exe be run under the same user account as the mmxmailnt.exe. Failure to do so will result in a failure to properly read the registry and access the stored password. If a user wishes to disable SSL support, the Icosetup64.ini file can be modified as follows: [AWXMMX32\MMXMail] EnableTLS=0	10.95.3
62758	AlarmWorX64 Multimedia no longer posts connection string information to GenEvent. Previously, the connection string could be posted, which might have included sensitive password information.	10.95.3

AlarmWorX64 MMX Workbench Provider

Ref ID	Description	First Available In
65670	Changes to an AlarmWorX64 MMX configuration are now recorded in the audit log and GenEvent.	10.95.5

AlertWorX

Ref ID	Description	First Available In
62430	The Send Email command now supports setting the "from" email address. Note that the "from" email address configured in the AlertWorX email node must have the proper permissions in the email server to "Send As" the email address specified as the "from" address in the command.	New for 10.96
62784	The "from" email address for AlertWorX emails can now be configured on a per-configuration basis. Previously it was a per-port basis, and the "from" email from the first configuration would be used for all emails.	10.95.3
62971	An AlertWorX SMS/Text node can now send message to more than one recipient. Use the semicolon (;) as the separator.	10.95.1

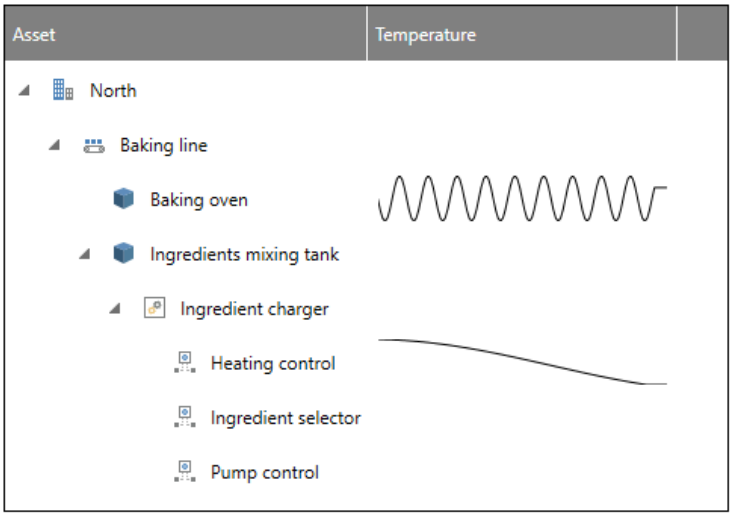
AssetWorX

Major Enhancements

Asset Navigator

Microcharts

(Reference ID: 67777)



It is now possible to include microcharts inside the Asset Navigator control. Microcharts connect to equipment properties to display a minimalist trend of the equipment property over time, allowing operators to quickly spot notable trends or spikes. Microcharts work best with historical data, through real-time data can be plotted as well.

Microcharts are special columns in the Asset Navigator. Each microchart is associated with a particular equipment property. Assets that have that equipment property will show a trend in the configured microchart column.

To add microcharts to your Asset Navigator:

1. Configure the control
2. Go to the **Columns** tab.
3. Go to the **Columns** section.
4. Add a column.
5. Select the column you added.
6. Set the **Content** type to **Microchart**.
7. For the **Property Name** field, fill in the name of the property you would like to trend with this microchart (such as **CurrentTemperature**). You can browse for a specific asset property to use that property's name.
8. Select the **More Options** ⋮ button next to the **Content** field to configure more details about the microchart, such as whether it should use historical or real-time data and the type of chart to display.

There are additional settings for the behavior of microcharts on the **Columns** page in the **Microcharts** section, which may be collapsed by default.

You can quickly add some microcharts to display alarm data by selecting the **Asset Navigator** in configuration mode, then selecting **Columns** > **Alarm Microcharts**.

For Further Reference

- Help: About Microcharts

Execute Commands on Events

(Reference ID: 65398)

The Asset Navigator is one of many controls that now supports executing commands on events. These events vary per control, but for the Asset Navigator they include:

- Asset Clicked
- Asset Selected
- Ready
- Started

To configure the command to be executed when this event occurs, go to **Runtime** tab. Find the **Commands on Events** section, check **Enable Commands on Events**, then configure the form below.

See Execute Commands on Events for more details.

Commands on events are only supported for the desktop (WPF) and HTML5 Asset Navigators. We plan to add support for Universal Windows Platform (UWP) in a future version.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Executing Commands on Events

Customizable Context Menu

(Reference ID: 57682)

The context menu for the Asset Navigator can now be customized in version 10.96. Various parts of the Asset Navigator can have different context menus – for instance, a different set of options can be presented for the context menu of a standard asset node and an asset node in the search results.

To configure the context menu:

1. Configure your **Asset Navigator.**
2. Go to the **Runtime** page.

3. Go to the **Context Menu** section.
4. Check **Enable**.
5. Choose the **Group** for the context menu you'd like to edit.
6. Add, remove, or edit items in the **Items** table.

Many other controls also support the customizable context menu. See Customizable Context Menu.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help:
  - Asset Navigator Control
  - Customizable Context Menu

Favorite Assets

(Reference ID: 57331, 62831, 62983)

Starting in version 10.95.1 and 10.95.2, favorites assets be designated in the Asset Navigator.

Favorites can be added from an Asset Navigator using the customizable context menu. Follow these steps to configure a navigator to allow favorites and then add a favorite:

1) Edit the navigator in configure mode.
2) Go to the **General** page.
3) For **Display Mode**, choose a mode that includes favorites (for example: **Favorites then Assets**).
4) If desired, select the **down arrow** at the bottom of the **Navigator** section to expand more options, the enable **Browsable Favorites**. (This will allow the user to expand items in the favorites section to see their children.)
5) Go to the **Runtime** page.
6) In the **Context Menu** section, for **Group**, choose **Asset Node** or **Search Results Node**.
7) Select the **add** button and choose **Add to Favorites**.
8) Go into runtime.
9) Bring up the context menu for an asset node or search results node and choose **Add to Favorites**.
10) Change the **Name** of the favorite if desired, then choose its location (public or private).
    a. Note, private favorites will only be visible if you are logged in.

Favorites can also be added using the **Add Favorite** command. This command can add a specific asset or the selected asset in a navigator.

Favorites can be removed using the context menu, or the **Remove Favorite** command. They can also be copied and pasted between the public and private favorite groups and folders.

There are both public and private favorites. Private favorites are only available to users who are logged into security.

Public favorites can be secured on a **user** or **group** in ICONICS security, using the **Favorites** tab.

For Further Reference

- Help: Favorite Assets

AssetWorX Server

Configure and Browse Hyper Historian Tags from AssetWorX

(Reference ID: 67824)

Version 10.96 moves the ICONICS Suite towards a more unified configuration environment by allowing you to configure Hyper Historian tags directly from within AssetWorX. AssetWorX is taking steps to become your central configuration environment for ICONICS Suite products. Hyper Historian tags may be configured directly on an asset, or in an equipment class.

These new integrated tags can be browsed from either AssetWorX or Hyper Historian, based on the user's preference.

Users can still create tags in Hyper Historian independently from AssetWorX, if they have tags they want to log that do not relate to the asset structure.

Users of the Bulk Asset Configurator may find that they no longer need to use the ClassHistoryDefinitions sheet of the input Excel workbook. The Hyper Historian dialogs in an equipment class can be fully parameterized. If the equipment class has configured Hyper Historian tags, then the Bulk Asset Configurator will create those tags when instantiating the class. (The ClassHistoryDefinitions sheet is still supported who prefer that method.)

For Further Reference

- Application Note: *AssetWorX – Configure Hyper Historian Tags from AssetWorX*
- Help: Hyper Historian – AssetWorX Integration

All Equipment Class Fields Support Parameters

(Reference ID: 52435, 66792, 69802)

Previously, only text fields supported parameters, but now in version 10.96 any equipment class field may be parameterized. Simply select the **/?** button next to a field to assign it a parameter.

In the parameter dialog for a field, you can see the allowed values for that field. Use these values when instantiating the equipment class. You can use the convenient copy buttons next to the values to copy them to the clipboard.

This support even extends to the new Hyper Historian tags configurable from AssetWorX, meaning equipment classes can be used to easily create Hyper Historian tags for your assets.

For Further Reference

- Help: Equipment Class Fields Parameter Support

Additional Enhancements

AssetWorX General

Ref ID	Description	First Available In
63378	The ASC_DataCache table now contains additional columns: StatusCode, Timestamp, ValueType, and TextValue. These columns are populated from the AssetWorX cache and can be used to retrieve AssetWorX cache values in SQL clients. They are never read back by AssetWorX. TextValue is only populated if the value can be converted to text.	10.95.4
62636	AssetWorX assets can now be linked to a BI model via the external link field.	10.95.3
62705	The 1,024-character limit on "Real Time", "History", and "Dataset" point names has been removed.	10.95.3

Asset Navigator

Ref ID	Description	First Available In
60082 59212	Implemented better data validation for controls such as heatmap, data diagram, and asset navigator. Users are no longer allowed to enter invalid data. (In some cases in the past, invalid data could cause the controls to crash.)	New for 10.96

Ref ID	Description	First Available In
71166	Added a Read Default Commands property to the Asset Navigator. This is configured on the Controls tab in the Selected Asset section. When this property is disabled it prevents assets selected using the "Read Data Source" data source from triggering the default command. Selecting assets by other means (such as clicking or tapping on them in the Asset Navigator) will still trigger the default command. This property is enabled by default, which is consistent with the behavior in previous versions.	New for 10.96
68271	Added a new "Read Default Command" property in the Controls > Selected Asset section of the AssetWorX Navigator configuration. Setting this property to false will prevent default commands from being executed when the selected asset changes due to the tag specified in Selected Asset > Data Source.	10.95.5
61951	Added an option to the Asset Navigator to revert to the old search behavior where the display names were returned instead of the full asset path. To revert to the old behavior, open the Asset Navigator configuration popup, go to the Controls tab, Search section, and hit the expand arrow. Check the box for "Hide Asset Path". You may also want to change the "Results Names" option to "Show Display Names".	10.95.4
62279	The grid object used in the Asset Navigator, ReportWorX64 Viewer, and AlarmWorX64 Viewer's list view has been enhanced to allow auto-sized columns to shrink as well as expand.	10.95.4
62599	Added a new "Command Order" property to the AssetWorX Navigator. Double-click on the AssetWorX Navigator to open the pop-up configurator, then look on the General tab under the Navigator section. By default, it is set to Alphabetical, but it can be switched to Server Defined to sort commands as defined on server. This sorting applies both to commands in context menu and to direct commands.	10.95.3
62984	Search results now have a context menu, similar to the context menu for regular assets. This context menu can be customized - see enhancement 57682.	10.95.1

AssetWorX Workbench Provider

Ref ID	Description	First Available In
70016	In Workbench, under Assets > Product Configuration > Other Settings the Connection String field in the Cache Data Store section now masks passwords.	New for 10.96

Controls

Major Enhancements

New: Security Indicator

New Security Indicator Control

(Reference ID: 67817)

The new Security Indicator control provides a way to display security information, such as the logged-in user or the user's group and provides a way to execute commands based on security events, such as when a user logs in or out.

The text displayed in the security indicator is fully customizable via expressions. These expressions can contain context variables such as @@user, which allows the text to update based on the current security context.

The Security Indicator control supports the new commands on events and customizable context menu features.

The preexisting Security Login control still exists, though users may find that the Security Indicator control can provide all of the same functionality, and more.

For Further Reference

- Application Note: *GraphWorX64 - Security Indicator Control*
- Help: Security Indicator Control

New: Table

New Table Control

A brand-new control in version 10.96 is the table control. This control is very similar to the new fault viewer control, and designed to be used in concert with the fault viewer, allowing the user to see even more detailed information about selected fault incidents, such as comments, activation variables, latest causes, etc.

Review ID	Magazine	Restaurant	Score
21	Restaurant Mag	The Fat Duck	10
14	Cookbook Digest	The Fat Duck	10
35	Restaurant Business	The Fat Duck	9
22	Food Magazine	El Bulli	9
6	Gourmet News	Noma	9
7	Gourmet News	The Fat Duck	9
11	Cookbook Digest	Le Chateau	9

The table control can display any dataset or query data. The table control does not replace the preexisting GridWorX Viewer control, but it has a lot of overlapping features. The benefits of the table control over the GridWorX Viewer include:

- Linked navigation variables
- Premade styles
- Embedded microcharts
- Enhanced performance

The GridWorX Viewer still has some advantages, such as charting support. While we expect that users will choose between the GridWorX Viewer and the new table control depending on their exact needs, we would encourage users to use the table control when possible. In the future, ICONICS plans to replace the GridWorX Viewer with newer compatible controls, such as the table control. Upgrading projects will be easier if they already use the table control.

To configure a table control, you must first choose the fields you want to query from your database. This is done on the Fields page. Once those fields are chosen, they will be used in other areas of the viewer, such as Columns, Filters, and Style. Any attribute that you wish to display as a column, use in a filter, or use in a style must first be selected on the Fields page.

This control is available in desktop (WPF) and HTML5, but not Universal Windows Platform (UWP). We plan to add UWP support in a future version.

For Further Reference

- Help: Table Control

Controls General

Customizable Context Menu

(Reference ID: 57682)

Many controls now include a customizable context menu.

The context menu configuration varies per control, but it is usually configured on the **Runtime** page in the **Context Menu** section.

Controls that include this context menu support include:

- Asset Navigator
- BridgeWorX64 Navigator (new control)
- BridgeWorX64 Viewer (new control)
- Camera Control
- Data Diagram
- Fault Viewer (new control)
- Heatmap
- Recipe Navigator
- ReportWorX64 Navigator
- ReportWorX64 Viewer
- Security Indicator (new control)
- Table (new control)

- TrendWorX64 Viewer

For Further Reference

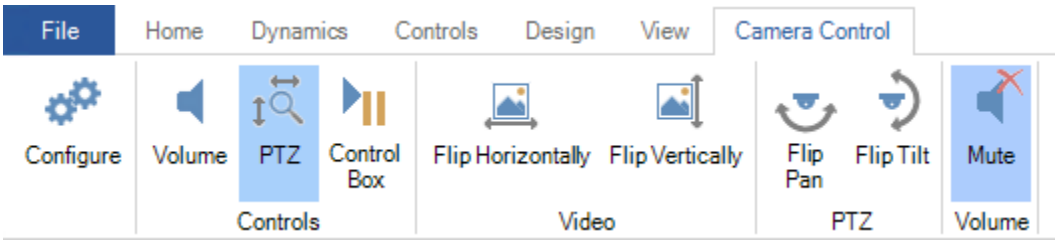
- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Customizable Context Menu

Camera Control

Enhanced Configuration

(Reference ID: 65769)

The configuration for the camera control has been enhanced. The camera control now has its own ribbon that offers many common configuration options, such as enabling or disabling controls and flipping the video.



The control also has a new configuration dialog. Users no longer need to use the properties panel to configure their camera controls (though they are still free to do so).

For Further Reference

- Help: Camera Control

Support for HVEC (H.265/MPEG-H Part 2)

(Reference ID: 59366)

Version 10.96 adds support for High Efficiency Video Coding (HVEC), also known as H.265 or MPEG-H Part 2. This codec allows for greater video resolution and a wider variety of camera devices.

Note that HVEC video streams require higher system requirements than lower resolution streams. To have a good stream experience ICONICS strongly recommends an i7 equivalent or better processor, and a GTX10 series equivalent or better GPU.

HVEC is only supported for desktop (WPF) only. We plan to support HTML5 and Universal Windows Platform (UWP) in future versions.

For Further Reference

- Help: Camera Control

HTML5 Support

(Reference ID: 67811)

The camera control can now be used in HTML5 displays and apps.

Currently the HTML5 camera control only supports MJPEG and JPG. We plan to add RTSP (H.264 and H.265) support in future versions.

See Feature Parity Improvements for other HTML5 parity improvements.

For Further Reference

- Help: Camera Control

Improved Support for ONVIF Cameras with Relative Positioning

(Reference ID: 54252)

The camera control can now support a wider variety of ONVIF cameras, including those that do not use port 80 for their camera service, and those that use relative positioning instead of absolute.

Support for relative positioning required the addition of new buttons into the camera control along with the movement sliders. These buttons, when pressed, will initiate the movement and stop it when the button is released. The slider is only supported for cameras that support absolute positioning, and the buttons for relative positioning.

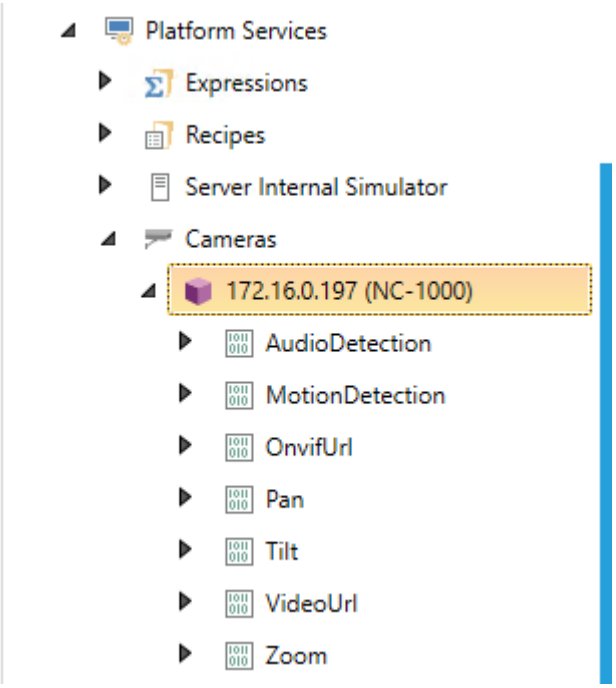
For Further Reference

- Help: Using Camera Control with ONVIF Cameras

Browse for ONVIF Cameras

(Reference ID: 64766)

ONVIF cameras are now browsable in the ICONICS Data Browser.



When configuring a camera control, users can now go to the Data Points tab of the browser, then browse under **My Computer** > **Platform Services** > **Cameras**. Browsing this folder will send a broadcast to enumerate all ONVIF capable cameras on the network.

Expanding a camera will display supported properties of that camera, such as OnvifUrl, VideoUrl, and MotionDetection. The exact properties depend on the capabilities of the camera. The server must be able to connect to the camera to enumerate these properties, which means a password must be correctly configured in the **Platform Services Configuration** dialog on the **Passwords** tab.

For Further Reference

- Help: Using Camera Control with ONVIF Cameras

Play or Pause Video Feedback with Commanding

(Reference ID: 65780)

Previously, users who wanted a way to play or pause the camera control's playback would need to use global aliases for the video URL and set the alias to null to "pause" it. This had a side effect of causing errors in the camera control.

Now, the **SetFreezeMode** command has been enhanced to play or pause the camera control's video. See Set Freeze Mode Command Can Now Play/Pause Camera Control for more details.

For Further Reference

- Help:
  - Camera Control
  - SetFreezeMode Command

Execute Commands on Events

The camera control is one of many controls that now supports executing commands on events. These events vary per control, but for the camera control they include:

- Ready
- Started

To configure the command to be executed when this event occurs, go to **Runtime** tab. Find the **Commands on Events** section, check **Enable Commands on Events**, then configure the form below.

See Execute Commands on Events for more details.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Executing Commands on Events

Customizable Context Menu

(Reference ID: 57682)

The context menu for the Camera Control can now be customized in version 10.96. Various parts of the Camera Control can have different context menus – for instance, a different set of options can be presented for the video itself and the rest of the control.

To configure the context menu:

1. Configure your **Camera Control.**
2. Go to the **Runtime** page.
3. Go to the **Context Menu** section.
4. Check **Enable**.
5. Choose the **Group** for the context menu you'd like to edit.
6. Add, remove, or edit items in the **Items** table.

Many other controls also support the customizable context menu. See Customizable Context Menu.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Customizable Context Menu

Data Diagram

Execute Commands on Events

(Reference ID: 64978)

The data diagram is one of many controls that now supports executing commands on events. These events vary per control, but for the data diagram they include:

- Data Source Changed
- Ready
- Right Click
- Sample Click
- Sample Double Click
- Started

To configure the command to be executed when this event occurs, go to **Runtime** tab. Find the **Commands on Events** section, check **Enable Commands on Events**, then configure the form below.

See Execute Commands on Events for more details.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Executing Commands on Events

Customizable Context Menu

(Reference ID: 60279)

The context menu for the Data Diagram can now be customized in version 10.96.

To configure the context menu:

1. Configure your **Data Diagram.**
2. Go to the **Runtime** page.
3. Go to the **Context Menu** section.
4. Check **Enable**.
5. Add, remove, or edit items in the **Items** table.

Many other controls also support the customizable context menu. See Customizable Context Menu.

Currently, the Data Diagram custom context menu is not supported in HTML5. We plan to add support for that platform in a future version.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Customizable Context Menu

Heatmap

Smooth Transitions

(Reference ID: 63819)

Updating the data source of a heatmap control now optionally creates a smooth animation when transitioning from one dataset to another. This provides a more pleasant transition than the previous sudden change to the new dataset.

To see these smooth transitions, configure your heatmap, go to the **Color Axis** page, and enable **Smooth Transitions**.

For Further Reference

- Help: Heatmap – Smooth Transitions

Execute Commands on Events

The heatmap is one of many controls that now supports executing commands on events. These events vary per control, but for the data diagram they include:

- Ready
- Started

To configure the command to be executed when this event occurs, go to **Runtime** tab. Find the **Commands on Events** section, check **Enable Commands on Events**, then configure the form below.

See Execute Commands on Events for more details.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Executing Commands on Events

Customizable Context Menu

(Reference ID: 60276)

The context menu for the Heatmap can now be customized in version 10.96.

To configure the context menu:

1. Configure your **Heatmap.**
2. Go to the **Runtime** page.
3. Go to the **Context Menu** section.
4. Check **Enable**.
5. Add, remove, or edit items in the **Items** table.

Many other controls also support the customizable context menu. See Customizable Context Menu.

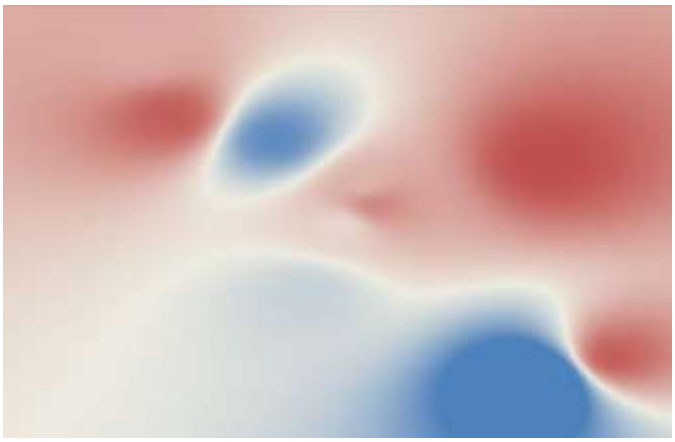
Currently, the Heatmap custom context menu is not supported in HTML5. We plan to add support for that platform in a future version.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Customizable Context Menu

Weighted Average

(Reference ID: 64544)



Originally added in 10.95 Update 3, the weighted average function (WAvg) of the heatmap gives the heatmap a more natural-looking and smooth transition between data points. This works particularly well for a temperature heatmap. See the *Heatmap - Weighted Average* application note for information on how to configure the weighted average.

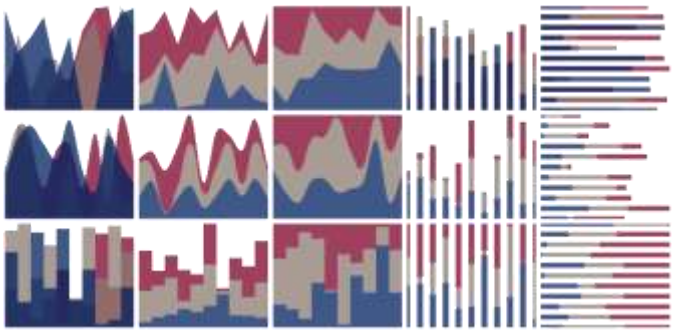
For Further Reference

- Application Note: *Heatmap - Weighted Average*
- Help: Heatmap Control

TrendWorX64 Viewer

Stacked Plots

(Reference ID: 34192, 39268, 61723)



Version 10.96 introduces a number of stacked plot types within the TrendWorX64 Viewer. Simply choose the new plot types on the **plot** object in the TrendWorX64 Viewer configuration tree.

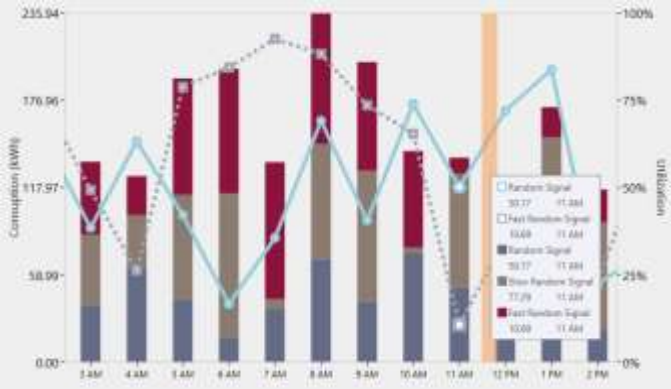
The Create Pen and Edit Pen commands have been enhanced to support these new plot types.

For Further Reference

- Application Note: *TrendWorX64 Viewer - New Features in 10.96*
- Help:
  - Stacked Plots
  - Plot Properties

Combined Plot Types

(Reference ID: 34774)



Users can now combine multiple plot types in a single TrendWorX64 Viewer chart.

To configure multiple plot types, add more than one **plot** to your chart object in the tree. Set each plot with the plot type you would like to use and add pens to those plots.

For Further Reference

- Application Note: *TrendWorX64 Viewer - New Features in 10.96*
- Help:
  - Combined Plot Types
  - Plot Properties

Alternate Background Colors

(Reference ID: 35668)

You can now have alternating background color stripes in your TrendWorX64 Viewer.

Select your chart in the tree and go to the **Chart** tab. Set the **Alternate Plot Area** color with the color of your stripes. This color and the standard **Plot Area** color will be alternated between major X grid lines. Both colors will also be used in the summary view.

If you do not wish to use the background striping, set the **Alternate Plot Area** to no color (the X next to the eyedropper in the color picker).

This feature is currently supported in desktop (WPF) and HTML5, but not Universal Windows Platform (UWP).

For Further Reference

- Application Note: *TrendWorX64 Viewer - New Features in 10.96*
- Help: Alternate Background Colors

Shared Axes and Individual Axis Styling

(Reference ID: 44846, 48034, 67881)

Users now can share an axis with multiple pens without using a global axis. Previously, the user had to choose between each pen having their own independent axis or sharing all pens on one axis. Now you can have any number of axes for any number of pens. For instance, three pens can share an axis and a fourth can be on its own axis.

To enable the shared value axis, configure the **TrendWorX64 Viewer**, select your chart in the tree, then go to the **Y Axis** tab. Check the **Shared Value Axis** box, then select **Configure**. In this dialog, you can create your axes and configure them with their own styles and settings.

Once you have your axes created, select your **pen** in the tree and go to the **Ranges** tab. In the Shared Axis section, select the name of the axis you would like to use for this pen.

Users can also use the shared axes feature to individually style axes for different pens, using one axis per pen.

This feature replaces the "Shared Axis" feature (also known as "Global Ranges" in some earlier versions).

For Further Reference

- Application Note: *TrendWorX64 Viewer - New Features in 10.96*
- Help:
  - Multiple Shared Axes
  - Shared Axes Configuration Window

Display Axes on Both Sides

(Reference ID: 35027, 67885)

Axes can now appear on both sides of a TrendWorX64 Viewer. When configuring a shared axis (see Shared Axes and Individual Axis Styling), check the **Alternative Placement** box to have the axis configured on the non-default side (right) of the viewer.

For Further Reference

- Application Note: *TrendWorX64 Viewer - New Features in 10.96*
- Help:
  - Multiple Shared Axes
  - Shared Axes Configuration Window

Execute Commands on Events

(Reference ID: 47260)

The TrendWorX64 Viewer is one of many controls that now supports executing commands on events. These events vary per control, but for the TrendWorX64 Viewer they include:

- Double Click
- Pen Added
- Pen New Data
- Right Click
- Sample Click
- Started
- Time Range Changed

To configure the command to be executed when this event occurs, select your chart and go to the **Chart** tab. Find the **Commands on Events** section, check **Enable Commands on Events**, then select the **Configure** button.

See Execute Commands on Events for more details.

Commands on events are only supported for the desktop (WPF) and HTML5 trend viewers. We plan to add support for Universal Windows Platform (UWP) in a future version.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Executing Commands on Events

Customizable Context Menu

(Reference ID: 54537)

The context menu for the TrendWorX64 Viewer can now be customized in version 10.96.

The chart and legend have separately configurable context menus. To set up these context menus, configure your trend viewer, select the chart object in the tree, go to either the **Chart** tab or the **Legend** tab, make sure **Context Menu** is enabled and click the associated **Configure** button.

Note that in HTML5 your custom menu items will appear above the default menu items, whereas in desktop (WPF) the entire context menu is replaced by the custom settings.

Currently, the TrendWorX64 Viewer custom context menu is not supported in Universal Windows Platform (UWP). We plan to add support for that platform in a future version.

Many other controls also support the customizable context menu. See Customizable Context Menu.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Customizable Context Menu

"Refresh" Context Menu Item

(Reference ID: 37510)

A "Refresh" option is available in the new customizable context menu. Choosing this option in runtime will have the viewer re-query its historical data.

Previously, such a runtime refresh was only possible by toggling certain pen settings, like disabling and re-enabling a pen, or changing its aggregate.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: New Refresh Context Menu Item

"Delete Pen" Context Menu Item

(Reference ID: 65900)

A "Delete" option is available in the new customizable context menu. Choosing this option from the pen menu in runtime will remove the selected pen.

Previously users could use the context menu to delete pens, but only from the legend's context menu.

For Further Reference

- Help: New Delete Pen Context Menu Item

Show Custom Data in Legend

(Reference ID: 10184)

Users can now add custom data to a pen and show it in the legend.

Configure the trend viewer, select your pen, and fill in the **Custom Data** field. This field can be static text, a global or language alias, a tag, or an expression.

Once your pens are configured with their custom data, select your chart in the tree, go to the **Legend** tab, enable the legend, and move **Custom Data** from **Available Columns** to **Selected Columns**.

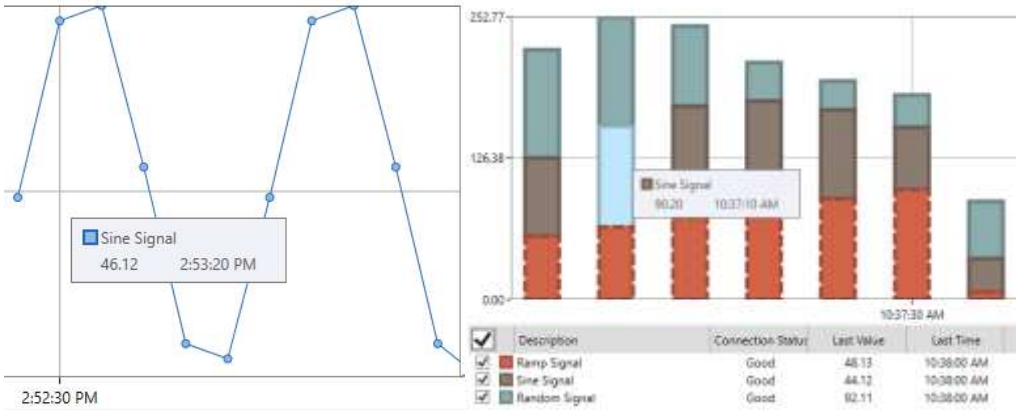
For Further Reference

- Application Note: *TrendWorX64 Viewer - New Features in 10.96*
- Help: Show Custom Data in Legend

Tooltips on Sample Hover

(Reference ID: 31025)

In desktop (WPF), hovering over a sample, bar, or pie slice now gives a tooltip with the pen name, value, and timestamp. Also, for bar and pie charts, the bar or slice being hovered over will change color.



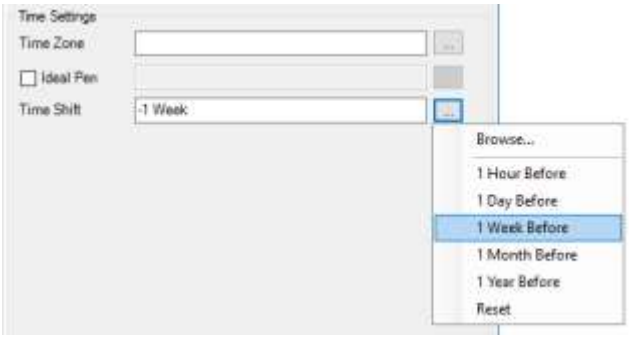
We plan to implement these tooltips for other platforms in later releases.

For Further Reference

- Application Note: *TrendWorX64 Viewer - New Features in 10.96*
- Help: Tooltips on Sample Hover

Enhanced Time Shift Setting

(Reference ID: 17510)



Users can use the **time shift** setting on the **General** tab of a pen to display the pen at a different timestamp than its original samples. The most common use case for this is to compare the recent history of a pen with a previous time period. For example, the same pen could be added twice, once with no time shift and once with a time shift value of -1 Week". This would let the user compare today's logged values to the same day last week.

Users can click the **more** ("...") button to choose from a list of common durations or browse for tags or aliases.

The time shift property was available in previous versions, but it was only available on the Advanced tab, could only take values in a format of hh:mm:ss, and could not use dynamic values.

The Create Pen and Edit Pen commands can now set the time shift parameter.

For Further Reference

- Application Note: *TrendWorX64 Viewer - New Features in 10.96*
- Help: Enhanced Time Shift Setting

Configuration User Interface Improvements

(Reference ID: 70716)

Various improvements were made to the configuration user interface of the TrendWorX64 Viewer to help make the configuration experience better. These enhancements include the following.

- Chart > Cursors tab
  - The data source for the first and second cursors have new options on the "more" ("...") button. Choosing "Current Position" will hard-code the current cursor position into the field. This value becomes the starting position for the cursor. Choosing "Default" will reset the cursor to its default value ("{{localsim::_cursor1:String}}" or "{{localsim::_cursor2:String}}").
  - The data source for the cursor tooltips has new options on the "more" ("...") button. Choosing "First (1)" or "Second (2)" will hard-code a value of 1 or 2, respectively. Choosing "Default" will reset the visibility data source to its default value ("{{localsim::_cursortooltips:Int32}}").
- Chart > Legend tab
  - The "Available Columns" and "Selected Columns" fields are now labeled.
  - In the default columns added to the legend in a new TrendWorX64 Viewer, the width of the Description column has been increased from 100 to 200.
- Chart > Pens
  - For new TrendWorX64 Viewers, the default for uncertain and bad plot mode was changed to "Plot" instead of "Leave gap".
- Chart > Range
  - The data source for the range has new options on the "more" ("...") button. Choosing "Current Range" will hard-code the current range into the field. This value becomes the starting range for the viewer. Choosing "Default" will reset the range to its default value ("{{localsim::_timerange:String}}").
- Pen > General tab
  - The parameters in the Connection field are now automatically set when adding multiple pens at once or when changing the pen data source while the connection parameters are undefined.
  - The time zone and ideal pen settings have been moved into the "Time Settings" section on the General tab, along with the new time shift setting.
- Pen > Style tab
  - Items related to the pen style have been moved to a new Style tab.
  - Maker size is now available on the Style tab. Previously it was only available on the Advanced tab. A value of zero will make the marker size automatically.

- Pens > Values tab
    - The Calculations tab has been renamed to "Values".

Users will also find new options in the configuration user interface to account for new features. These user interface changes are detailed with their relevant enhancements.

For Further Reference

- Help: Configuring TrendWorX64 Viewer

Additional Enhancements

Controls General

Ref ID	Description	First Available In
60082 59212	Implemented better data validation for controls such as heatmap, data diagram, and asset navigator. Users are no longer allowed to enter invalid data. (In some cases in the past, invalid data could cause the controls to crash.)	New for 10.96
62279	The grid object used in the Asset Navigator, ReportWorX64 Viewer, and AlarmWorX64 Viewer's list view has been enhanced to allow auto-sized columns to shrink as well as expand.	10.95.4

Camera Control

Ref ID	Description	First Available In
65133	The Camera Point Manager now runs out of process.	New for 10.96

Data Diagram

Ref ID	Description	First Available In
60082 59212	Implemented better data validation for controls such as heatmap, data diagram, and asset navigator. Users are no longer allowed to enter invalid data. (In some cases in the past, invalid data could cause the controls to crash.)	New for 10.96

Heatmap

Ref ID	Description	First Available In
60082 59212	Implemented better data validation for controls such as heatmap, data diagram, and asset navigator. Users are no longer allowed to enter invalid data. (In some cases in the past, invalid data could cause the controls to crash.)	New for 10.96
64742	Empty or null values in the input dataset are ignored. Previously, they would be filled in by a zero value.	New for 10.96
64764	There were several improvements and fixes to the configuration preview: * The sum aggregate was incorrectly set in preview when the avg aggregate was set, the configuration dialog was open, then the OK button was clicked. This has been resolved. * The red and orange discrete styles were swapped in ribbon. * These settings have new defaults for newly created heatmaps: a) Distance function: x={{@@value}}/pow({{@@distance}},2) b) Minvalue: 0 c) Aggregate: WAvg * When changing the control size in configuration mode the heatmap was not recalculated. This has been resolved. * Implemented a more accurate preview for the WAvg aggregate that better illustrates it.	New for 10.96
58522	The color axis scale can now accept dynamic data sources such as tags or expressions.	10.95.2

TrendWorX64 Viewer

Ref ID	Description	First Available In
23736 60760	Enhanced the "Insert an operator comment" window with the following changes: * Added data source description or tag name (if the description is not available). (10.96) * Timestamp shown is where the comment will appear, rather than the timestamp of when the comment was added. (10.95.3) * Added a cancel button. (10.95.3) * Dialog is now centered to the parent window. (10.95.3)	New for 10.96
24091	The "Is Enabled Tag" field on the General tab of a pen now contains a dropdown that allows users to easily choose true or false when they want to hard-code the enabled state.	New for 10.96
25515 70676	The TrendWorX64 Viewer can be configured to suppress all error messages (for example, when trying to load an invalid configuration file). This is done with the EnableSilentMode property on the Advanced tab of the TrendWorX64 Viewer. Note, the EnableSilentMode property does not apply to HTML5 because these sorts of messages are not displayed in HTML5 viewers.	New for 10.96
31705	Pen descriptions and units can now be configured to use dynamic tags. Note that the description field always interprets its content as a tag unless the content is surrounded by double quotation marks.	New for 10.96
47493	Added a warning message that appears in TraceWorX when users call the TwxChartPen.Samples object in scripts. This object may cause performance issues and is obsolete. The warning message encourages users to call GetDataInWindow() instead of TwxChartPen.Samples. Note that TwxChartPen.Samples is only included for backwards compatibility and may be completely removed in later versions.	New for 10.96
57277 64569	Axis titles can now be configured to use dynamic tags. Note, this is currently only supported in desktop (WPF) and HTML5, not Universal Windows Platform (UWP).	New for 10.96
58532	The TrendWorX64 Viewer can optionally be configured for symmetric auto-scale. On the Ranges tab of a pen, if both the minimum and maximum are set to auto scale the "Symmetric Auto Scale" option becomes available. When enabled, the range of the axis is scaled evenly above and below zero. This option was available in desktop (WPF) starting in 10.95.2, but only became available in HTML5 starting in 10.96.	New for 10.96
60677	The aggregate in use is now available as a column for use in CSV exports. To add this column, configure your TrendWorX64 Viewer, select the chart, go to the Data tab, click the Configure button for Data Export, then add the "Filter" column.	New for 10.96
60717 60145 62588	Users can now specify the connection parameters for tags added in runtime (dragged and dropped or added via Commanding without parameters specified in the command). This addresses a need to specify whether AssetWorX tags dragged and dropped into a TrendWorX64 Viewer should be treated as DA or HDA tags. To configure these default connection parameters, select the chart, go to the Pens tab, check the "Default Connection Parameters" button, then specify the parameters in the "Connection" field. This feature was available starting in 10.95.3 but was only available on the Advanced tab of the chart as the UseDefaultConnectionParameters and DefaultConnectionParameters properties. Version 10.96 added them to the Pens tab.	New for 10.96
60774	Added a new option on the Cursors tab of the chart object, "Move cursors by mouse hover." When enabled, the cursor will follow the mouse without requiring a click. This functionality was available starting in 10.95.3 with the Advanced setting "CursorMoveWithMouse", but it is only available on the Cursors tab starting in 10.96.	New for 10.96
61561	The runtime ribbon can now be disabled. To disable it, configure your TrendWorX64 Viewer, select the top-level item in the tree, and go to the Advanced tab. Set Show Runtime Ribbon (in the Common section) to False. Note that if you have already been in runtime mode you will need to restart GraphWorX64 to see this change.	New for 10.96

Ref ID	Description	First Available In
63015	The user can now configure whether they want the TrendWorX64 Viewer to continuously write to the cursor data source or only write after the cursor has finished moving. This can be configured on the chart element's Cursors tab. When "Write cursor position" is enabled, the "Continuous Write" option becomes available. When this option is selected the viewer will continually write to the configured data source, and when the option is deselected it will only write when the cursor movement has finished. This option is also available on the Advanced tab of the chart element as "ContinuousWriteCursorPosition".	New for 10.96
66722	Updated desktop (WPF) support for systems with the display scaling (DPI) set to something other than 100%. There were no reported issues around this, but we suspect there could have been font-rendering issues on these systems, especially on axes with automatic tick marks.	New for 10.96
68904	Users can now choose the format for exporting data from the TrendWorX64 Viewer. To set this format, open the TrendWorX64 Viewer configuration, select the chart, go to the Data tab, and click Configure in the Export section. Sort by Pens and Sort by Time both export with all pen values in the same columns (sorted by pen name or time, respectively), whereas Table of Values puts the value of each pen in its own column. For best results, only use Table of Values with pens that are all using an aggregate. Exporting raw data with Table of Values will most likely result in many empty/null cells, as the raw timestamps of samples are not likely to match among different pens.	New for 10.96
69128	Added an option to hide the loading wheel, or "busy indicator". This option can be found on the Advanced tab of the chart and is called EnableBusyIndicator. It defaults to true.	New for 10.96
70682	Multiple internal architectural changes to increase performance and stability.	New for 10.96
63604	Users can now configure the stroke for axes. The stroke for the X axis can be configured on the chart's X Axis tab with the Style button. The stroke for the Y axis can be configured for shared axes on the chart's Y Axis tab with the Configure button. When not using shared axes, the stroke for a pen's Y axis can be configured on that pen's Ranges tab with the Style button.	10.95.4

60641	The ShowTimeNavigationDialog() method has been added to Ico.Twx.TwxViewControl. This method shows the Trend Period dialog.
	
	Example script (where the TrendWorX64 Viewer is named "twx"):
	
	var control : Ico.Twx.TwxViewControl = ThisDocument.GetElementByName("twx");
	control.ShowTimeNavigationDialog();
	
	See the GENESIS64 API Reference Help for more details.
		10.95.3

60676	Added a new feature to allow the writing of a pen's value under the cursor to predefined data tags. In the TrendWorX64 Viewer configuration, select a pen, then go to the Values tab. There is a new section for "Cursors", with checkboxes for "Write first cursor value" and "Write second cursor value", and browsable fields to choose the data sources for each.	10.95.3
60689	The timestamp is now available in the tooltip cursor for desktop (WPF) XY Charts.	10.95.3
60695	The desktop (WPF) runtime "Print" option for the TrendWorX64 Viewer now has a new "Landscape" option to print in landscape mode. The Print global command also supports the new Landscape parameter.	10.95.3
60818	The arrow keys can now be used to step between samples in Freeze mode. The TrendWorX64 Viewer must have keyboard focus, which can be achieved by clicking in the viewer or using the tab key. This works only when the first cursor is visible, and the second cursor is hidden.	10.95.3

Data Explorer

Ref ID	Description	First Available In
63770	Data Explorer now obeys custom configured column widths for Assets or OPC tags.	10.95.4

EarthWorX

Ref ID	Description	First Available In
62547	Reduced the CPU usage when opening custom Esri maps.	10.95.4

FDDWorX

See Facility AnalytiX & FDDWorX.

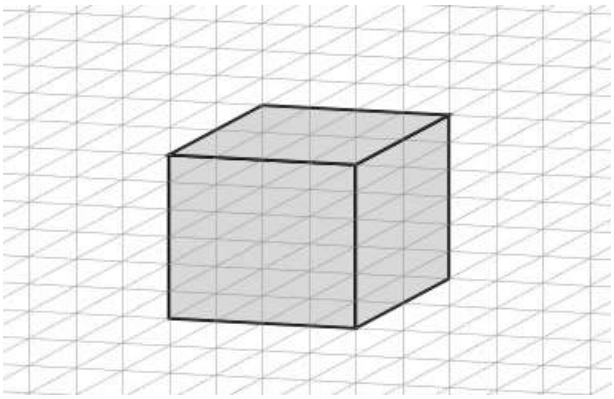
GraphWorX64

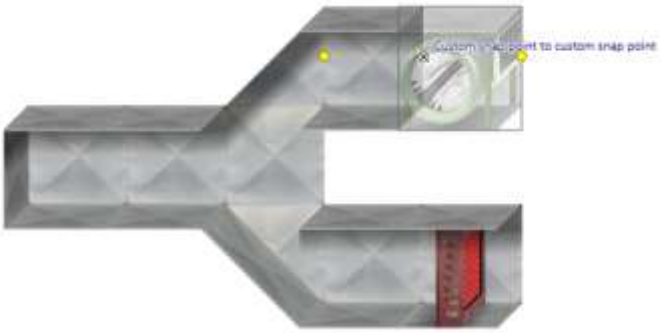
Major Enhancements

Parallel Projection & Advanced Snapping

(Reference ID: 67770)

Version 10.96 makes it easy to create 3D-looking graphics in a 2D space using parallel projection. This is accomplished using several new features, most notably a new parallel projection grid layout, more snapping features, and the ability to define snap points for symbols, allowing the user to create a library of parallel projection symbols and be able to quickly put them together into a perfectly laid out graphic. Symbols properly set up with custom snap points can even be perfectly aligned to each other with the grid snapping turned off.





ICONICS has added several libraries of ductwork symbols created in parallel projection style (specifically, oblique projection) using custom snap points. You do not need to put your display into parallel projection mode to use these symbols! Just enable snapping to custom snap points.

To use the new symbols:

1) Open GraphWorX64.
2) Go to the View tab.
3) Select the **dropdown** button next to the **grid icon** in the **Grid/Ruler** section.
4) Enable **Snap Objects to Objects**.
5) Enable **Snap Custom Snap Points to Objects**.
6) Go to the **Symbols** panel.

7) Expand the second dropdown box.
8) In the list of libraries, go to Building Automation > Building Controls.
9) Select one of these libraries:
    a. 2D_Oblique_AirDucts
    b. 2D_Oblique_Components
    c. 2D_Oblique_Misc
    d. 2D_Oblique_Sensors
    e. 2D_Oblique_Valves
10) When the library has loaded, drag at least two symbols from the library to the canvas.
11) Note that when the symbols are dragged near each other they snap together at the predefined custom snap points, making it easy to lay out ductwork maps.

For Further Reference

- Application Note: *GraphWorX64 - Parallel Projection*
- Help: Parallel Projection

Enhanced 3D Performance

(Reference ID: 67771)

In 10.96, we are using a new engine for our 3D objects in the desktop (WPF) version of GraphWorX64 which allows us to have faster frames-per-second for displays with very high vertex counts.

Some tested displays with large numbers of vertices provided as much as 12x speed improvement. (Actual speed improvements will vary.)

You don't need to do anything to take advantage of this performance boost. Just upgrade to 10.96!

ICONICS does not expect any issues with this new rendering engine, but because this is a large change, we are including the ability to change some or all 3D Viewers back to the old engine. If you find that your 3D Viewers are rendering differently in 10.96 than they were in 10.95, select your 3D Viewer and set the **PreferredRendering** property to **Compatible**. (Note, this is an advanced property. If you do not see it, go to **View** > **Application Mode** and select **Advanced**.)

If you would like to change this for all or most viewers at once, edit Gwx.config.xml in the Program Files\ICONICS\GENESIS64\Components directory. Search for **UseSystem3DRenderer** and set the value to **True**. Now, all viewers with **PreferredRendering** set to **Default** (the default value) will use the old rendering engine. Then if you would like certain viewers to use the new engine, set **PreferredRendering** to **Fast** for those viewers.

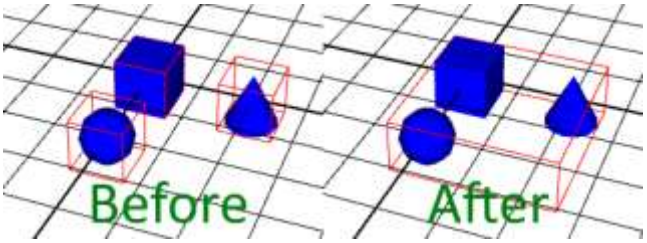
For Further Reference

- Application Note: *GraphWorX64 - Improved 3D Performance and Editing*
- Help: Enhanced 3D Performance

Improved 3D Editing

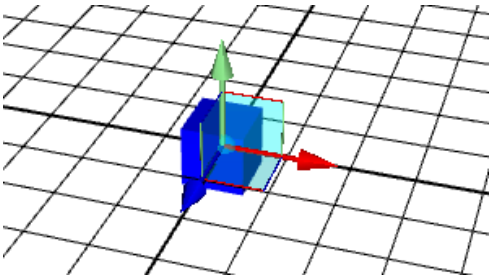
(Reference ID: 67822)

Editing objects in a 3D space has been made easier.



Selecting objects in a group now provides a unified bounding box around all objects. Previously, when using the bounding box, the individual in a group had their own individual boxes.

Moving objects has also become easier. The new enhanced gizmo allows you to move objects along a given axis or plane instead of confusing free movement in a 3D space. You can optionally also snap objects to other objects.



You can even change the functional "center" of an object or group by dragging the enhanced gizmo. The gizmo position determines the snap point and rotation point of an object or selection. It can be snapped to any of the bounding box corners or the center of the bounding box faces. Double-click the gizmo to reset it to the true center.

For Further Reference

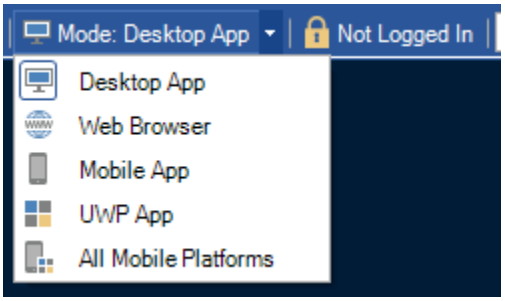
- Application Note: *GraphWorX64 - Improved 3D Performance and Editing*
- Help: Adding a 3D Object

Improved HTML5 Editing Features

(Reference ID: 67772)

Version 10.96 has made some improvements to GraphWorX64 to make it easier to edit displays for HTML5 clients.

GDFX, the standard GraphWorX64 file format, is now also the default file format for web or mobile displays. Users no longer need to separate files for desktop, browser, and mobile experiences. (GDFXP files are still supported, but not required.)



Users can now choose their edit mode, which hides features and components not compatible with certain client types. The edit mode can also enable helpful features for developing for that format. For example, choosing "Mobile App" allows users to enable a faceplate which can help them understand what parts of their display will be visible on clients of different sizes and aspect ratios. Users are free to change their edit mode on the fly while configuring their displays.

If you get frustrated when your displays look slightly different on different clients because the font looks slightly different, you can now embed custom fonts in your GraphWorX64 files. By embedding custom fonts, you never have to worry about whether your client has the font you want. (Please remember to obtain proper permission to redistribute your fonts or use fonts that are freely available to redistribute.)

Last but not least, we found that it was very common for users creating displays for desktop browsers to open their displays in a browser alongside their GraphWorX64 window. So, we added a way to do this quicker! Now in GraphWorX64, if you are editing a display in a web-accessible folder (such as PubDisplay or AnyGlass) and you are in the Web Brower, Mobile App, or All Mobile Platforms edit mode you will see a new "Open in Web Browser" button available near the runtime button. Use this button to launch your display in your Windows default browser or your favorite browser with a single click.

For Further Reference

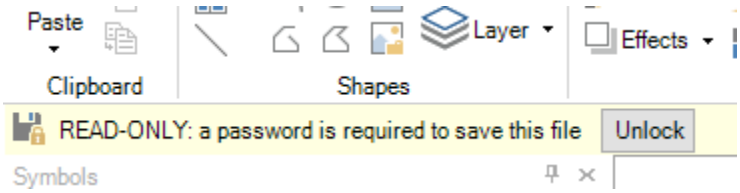
- Application Note: *GraphWorX64 - Improved HTML5 Configuration*
- Help: Enhanced HTML5 Editing Features

Password Protection for Saving

(Reference ID: 31515)

Display creators can now prevent their displays from being modified by adding a password.

If a display file has a save password, the user will still be able to open the display in configuration mode and make edits but will not be able to save the edits without the password. A "warning banner" in the application (similar to Microsoft Office) will make it obvious to the user that saving is currently locked (so the user will know in advance that they would not be allowed to save their changes).



The save password feature is in addition to the preexisting load password feature and does not replace it. Users who wish to protect their intellectual property should use the preexisting load password, and the new save password is designed to protect the display from unauthorized changes. (Note, however, that to fully protect the file from modification, the Windows file system should be used to lock down access to the file.)

To configure a save password:

1) Make sure you are in **Advanced** mode (**View** menu > **Application Mode** > **Advanced**).
2) Select the canvas (i.e. deselect all objects).
3) Go to the **Property** panel.
4) Enter a password into the **SavePassword** property.
5) When prompted, reenter the password.
6) Save the display.

For Further Reference

- Help: Password Protection for Saving

Clone Dynamic

(Reference IDs: 62587, 62598, 62654, 62704, 62725)

First introduced in 10.95.3, the clone dynamic will make copies of an object or symbol in runtime, allowing users to configure a single object or symbol, link it to some arrays or a dataset, and have GraphWorX64 create as many copies needed to display your entire set of data.

Previously, users with a dynamic number of objects to represent had to create the maximum number of objects they expected to need, and use hide dynamics to remove the ones that were not needed. This was annoying, created unnecessary overhead with possibly many hidden and unused objects, and was not easily scalable. The clone dynamic eliminates these problems, providing a simple scalable system to dynamically create as many objects as needed.

The clone dynamic can even react to data changes in runtime, creating or removing cloned objects as the data sources update.

The clone dynamic works best when combined with panels that automatically lay out their contents, such as the stack or wrap panels. These panels will automatically position all of the clones.

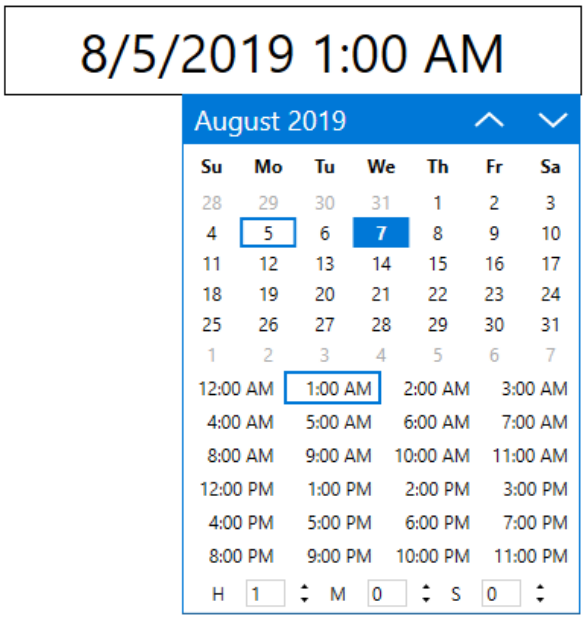
In addition to cloning symbols, the clone dynamic can also be used to clone states in a process point's statefield or menu items in a popup menu. By using a GridWorX data source, you can now create dynamic database-driven dropdowns or popup menus.

For Further Reference

- Application Note: *GraphWorX64 - Clone Dynamic*
- Help: Clone Dynamic

Date Time Picker

(Reference IDs: 62785)



First introduced for desktop GraphWorX64 (WPF) and the Universal Windows Platform (UWP) MobileHMI app in 10.95.2, and in HTML5 in 10.95.3, GraphWorX64 now has a built-in date time picker.

When a Time Date dynamic is added to a display and its DataEntry field is set to true there is now a new option called Picker. When Picker is set to true, the user can select the Time Date object in runtime and be provided with a calendar and time picker.

The picker can be configured to show just the date or just the time, based on the dynamic's TimeDateMode property. If the dynamic's CustomTimeFormat includes milliseconds, the picker will have an option to enter milliseconds.

Even when the picker is activated, users can still hold down Shift when selecting the date time object to type directly into the field.

For Further Reference

- Help: Date Time Picker

Easier Data Entry

(Reference ID: 39190, 69146)

GraphWorX64 can now be more easily used to make screens designed for data entry. Historically, users had to press a key such as Enter to submit a value to a data entry field. This was designed so that users could not accidentally write an incomplete value to a PLC, but it could make entering a lot of data painful. The intuitive behavior to simply click into the next field would cause the loss of data.

Now in 10.96, process points can be configured to submit their value when the focus changes, eliminating the need for the Enter key, and removing the possibility that typed data could be accidentally lost.

These are advanced properties, so make sure you are in Advanced Mode (**View** menu > **Application Mode** > **Advanced**) before attempting to make changes.

To set the default behavior for every process point on your display, select the document/canvas (i.e. deselect all objects), go to the **Properties** panel, and set **DataEntryLostFocusWritesValue** in the **Runtime** section. **True** means that when the process point loses focus it'll submit the current value to the data source, and **false** means that the Enter or Tab key must be used to submit the value - losing focus will erase any value entered.

The default value for new displays is false (consistent with the behavior prior to this feature's addition), but this can be changed on the **Preferences** panel under **New This Display Default Settings**.

Individual process points can use their own value for **DataEntryLostFocusWritesValue**. This property can be found on the **Dynamics** panel and is only visible when **DataEntry** is set to **true**. The default value is **Default**, which means this process point will follow the configured behavior on the document.

ICONICS **highly recommends** not using this feature for process points connected to live equipment. It can lead to accidental submission before a value is completely typed, which can damage equipment.

For Further Reference

- Help: Easy Data Entry

Updated Client-Side Speech Recognition

(Reference ID: 65759, 65760)

Windows 10 clients can now benefit from client-side speech recognition. Users can speak to GraphWorX64 to trigger handsfree pick actions. This can allow users to interact with their displays without needing to touch a screen or a mouse. It can be essential in clean environments such as a hospital, in places where operators are required to wear bulky gloves, or when operators must use both hands for some operation while interacting with a display.

On your desired pick action, set the **VoiceCommand** field to the text of the voice command you'd like to trigger the action. Optionally, you can also set the **VoiceFeedback** to hear an audible confirmation that the action has triggered. For the MobileHMI Universal Windows Platform (UWP) app no additional steps are needed, but for GraphWorX64 clients, go to **Preferences** > **Runtime Options** and set **EnableSpeechRecognition** to **True**. Now, whenever a display with at least one configured VoiceCommand field is running, GraphWorX64 or the MobileHMI app will listen for the command.

Client-side speech recognition requires a Windows 10 device. Speech and gesture commands via a Kinect device are no longer supported in favor of this new Windows 10 speech recognition. The new Windows 10 code is cleaner, faster, and doesn't require extra drivers.

For more information on cloud speech recognition, using services like Alexa, Cortana, and Google Home, see New: Voice Machine Interface and Text Machine Interface.

For Further Reference

- Application Note: *GraphWorX64 - Client-Side Speech Recognition*
- Help: Client-Side Speech Recognition

Additional Enhancements

GraphWorX64 General

Ref ID	Description	First Available In
21735	The "Update Shared" feature now optionally preserves the size, orientation, and smart property values of objects inside of a symbol. Previously "Update Shared" could only update preserve these values for the symbol itself, and any objects inside the symbol would be changed to match the selected symbol. To preserve these values, check one or both "Recursive" boxes under "Size and Orientation" and "Smart Property Values" on the Update Shared Objects dialog.	New for 10.96
24596	The Smart Property Editor's property grid now provides a context menu that includes options such as cut, copy, paste, and undo.	New for 10.96
25492	The tab order for the onscreen keyboard has been changed. The tab key now moves the selection to these controls in this order: text field > Enter > Cancel > Back > Clear > New Line (for alpha keyboard) > other number or letter buttons > text field.	New for 10.96
25942	Added a new option under View > Grid called "Align Grid to Current Parent". This option will automatically offset the current grid to match its parent. It affects panels (such as grid panels) and the pivot control.	New for 10.96
26697	There are new non-scripting ways to get the context of an embedded GraphWorX64 Viewer. Users can access "localsim" variables to get the source display name and current global aliases. For example, if we assume the GraphWorX64 Viewer is named "gwx1", these variables can be accessed to get the source and global aliases, respectively: localsim:property:gwx1.Source localsim:property:gwx1.CurrentGlobalAliases	New for 10.96
34986	In the past, choosing "Hide Faceplate" would simply hide the faceplate image, but features related to the faceplate (such as zooming and scaling to fit the faceplate) would still function. Now, choosing "Hide Faceplate" truly removes the faceplate and related functionality entirely until it is re-enabled.	New for 10.96
39070	Added touch events to the scripting, such as TouchDown, TouchUp, TouchMove, etc. (See the GENESIS64 API Reference Help for more details on these events.)	New for 10.96
39434	The "Combine Objects" functionality, which can combine multiple shapes into a single path element, can now be more effectively used in grid displays or grid panels. Previously, objects could only be combined if they were in position (0,0) of a grid. Now, they can be combined from any cell. (The final object will use the grid properties of the original head object.)	New for 10.96
41554	The "Styles and Colors" section on the "Home" menu now includes a "transparent" color.	New for 10.96
43812	Added a new option for the StartLocation window property: "Center Embedded Viewer". This can be used to launch popup windows relative to the launching embedded viewer.	New for 10.96

Ref ID	Description	First Available In
46675 69619	Added two new display-level properties: * UsePointFailColorsForUncertainQuality * UsePointFailTextForUncertainQuality These properties default to false for compatibility with previous versions. When true, uncertain quality values use the point fail colors or text, respectively. When false, only bad quality values use the point fail colors or text. These properties are supported in both desktop (WPF) and HTML5 platforms.	New for 10.96
48044	Commanding-related runtime window properties, such as CommandingName, CommandingDisplayName, and MaxCommandsScope are now available on GDFXP displays.	New for 10.96
49354	The username dropdown in the login dialog of the desktop version of GraphWorX64 has been resized on systems with touchscreen devices to make touch interactions easier.	New for 10.96
50021	The tab order for the security login control has been changed. The tab key now moves the selection to these fields and buttons in this order: username > password > Login button > Logout button.	New for 10.96
56173	When importing BIM files (IFC or XBIM) into a 3D viewport, the user now has the option to import the BIM properties directly into AssetWorX. Previously, the user was only able to generate a CSV file from the BIM properties, which then had to be manually imported into AssetWorX. (Generating a CVS file is still an option.)	New for 10.96
56668	The Print() scripting method has been enhanced to include more parameters including showDialog, printerName, printArea, and printWithWhiteBackground. (Please refer to the GENESIS64 API Reference Help for full documentation on this method.)	New for 10.96
60180	Empty strings in desktop (WPF) and Universal Windows Platform (UWP) no longer cause numeric-formatted process points to display using point fail color and text. They will simply display as empty, with no error. Note that the HTML5 behavior has not changed as of 10.96, but we plan to make HTML5 consistent with this in a later version.	New for 10.96
61600	The date picker is now available for process points that have a null value.	New for 10.96
61767 72187	Previously, the line width of shapes would zoom with the shape. A line that appeared to be one pixel wide at 100% zoom would appear 2 pixels wide at 200% zoom. Added a new property for shape objects named LineNoZoom. The default value is false, which results in the same line width behavior as described above. When set to true, the line width no longer scales with the zoom. Line width will remain fixed regardless of the GraphWorX64 zoom level. The LineNoZoom property currently only applies to the desktop (WPF) and Universal Windows Platform (UWP) platforms. We plan to add support for HTML5 in later versions.	New for 10.96
61798 70201	Updated various icons and nomenclature for a more consistent look-and-feel.	New for 10.96
62025	On the Challenge Password dialog, the cursor used to be placed wherever the user clicked or tapped in the Challenge Answer field. Users not paying attention could start to type the answer in the middle of the field and not have enough room to type or paste the entire answer. The cursor is now automatically placed at the front of the field.	New for 10.96
62115	When entering a challenge password, the enter key can now be used to submit the form.	New for 10.96
62121	The clone dynamic has been added to the quick access toolbar of the Dynamics panel.	New for 10.96
65102 65086 65103 65104 65105 65106	Because the technology has been obsoleted by Microsoft, Silverlight support has been removed from GraphWorX64. Users are encouraged to use HTML5 displays for cross-browser support. Users can no longer create or update Silverlight displays (GDFXS file types) or publish displays to Silverlight format. These files can still be opened using the "All Files" file type, but users will not be able to save changes without choosing "Save as" and choosing a new file type such as GDFX.	New for 10.96

Ref ID	Description	First Available In
	Users who have many GDFXS displays to convert may want to use the Web Publisher to bulk convert them to GDFX. The Web Publisher can still take GDFXS files as inputs and will automatically convert them to GDFX format when publishing.	
66024	In configure mode, the F2 key will now execute the default "edit" action for the selected object (similar to double-clicking).	New for 10.96
68980 68981	Scroll panels embedded in GraphWorX64 displays can now be scrolled horizontally by holding down Shift and scrolling the mouse wheel. If vertical scrolling is disabled, then the Shift key is not necessary - simply scrolling the mouse wheel will scroll horizontally.	New for 10.96
70183	The GraphWorX64 and Workbench desktop (WPF) apps that run in Internet Explorer are now compatible with TLS 1.1 and 1.2.	New for 10.96
70238	The border of process points now obey the DisabledLineFillColor and PointFailLineFillColor.	New for 10.96
70704	The Select View global command can now be used with a GraphWorX64 display or 3D viewport to select a predefined custom view.	New for 10.96
62552	Added four new GenEvent messages relating to saving or publishing displays: * Display File Save Success (Severity=600 (OperatorChange)) * Display File Save Failure (Severity=750 (Error)) * File Web Publish Success (Severity=600 (OperatorChange)) * File Web Publish Failure (Severity=750 (Error))	10.95.4
63971	When importing AutoCAD files, imported labels' name are now equal to the original attribute names.	10.95.4
64010	When importing from AutoCAD DWG files, polygons, polylines, and paths will no longer be exploded. They will remain as those shapes instead of being broken into individual lines or arcs.	10.95.4
62589	The "Find what" dropdown in the "Find" or "Replace" dialog will now only show data from the selected objects. If no object is selected, it will show all data sources from the whole display. (This is consistent with how GraphWorX32 functions.)	10.95.3
62617	Added a ReleaseDataWhenHidden property for all of the primary panel types, such as grid, stack panel, and wrap panel. This property behaves the same as the ReleaseDataWhenHidden property on layers, except ReleaseDataWhenHidden defaults to true for layers and false for panels (to ensure compatibility with previous versions).	10.95.3
62659	When adding one single object to a viewbox, a group is no longer created. The viewbox now only creates groups if more than one object is selected.	10.95.3
62669	The Ctrl-C, Ctrl-X, and Ctrl-V keyboard shortcuts for copy, cut, and paste now work for dynamics on the dynamics tab. Previously it was possible to copy, cut, and paste dynamics, but only through the right-click context menu.	10.95.3
62740	A display's custom scrollbar colors will now automatically propagate to its scroll viewers.	10.95.3
67755 72188	Added a new display-level property called ToolTipDuration that controls how long tooltips are displayed in milliseconds. Note that this property currently only affects the desktop (WPF) and Universal Windows Platform (UWP) platforms. We plan to add support for HTML5 in later versions.	10.95.3
58809	When running desktop GraphWorX64 (WPF) in Internet Explorer, the Internet Explorer tab name now gets its name from the Text property under of the window properties.	10.95.2
62835	"Edit View" and "Add Current View" have been moved to the top of the Custom Views menu so users with many views do not have to scroll all the way to the bottom to manage them.	10.95.2
62922	In order to prevent situations where unauthorized users (usually web users) access a GraphWorX64 page and use up license seats, GraphWorX64 no longer consumes a license when launched in runtime mode, when no user is logged in, and when no display is loaded (other than the "File Access Denied" display). As soon as a user logs in, GraphWorX64 enters configure mode, or a FrameWorX data point is requested a license will be consumed.	10.95.1
62956	Previously, if a file became denied while a user was editing it (such as if they were logged out, or FrameWorX Server went offline), the display would be unloaded and any unsaved changed would be lost.	10.95.1

Ref ID	Description	First Available In
	To prevent the loss of work, GraphWorX64 now obscures the display instead of unloading it. This gives the user an opportunity to resolve the permissions issue (by logging back in or getting FrameWorX back online) and then save their work. Note that if GraphWorX64 is closed before the permissions issue is resolved then the work will still be lost - this is necessary to ensure that users who have had their save permission legitimately revoked cannot bypass security and save.	
62962	When a single object is selected, users can now right-click on most properties in the Properties panel and see a "Copy Property Reference" option. This will copy the localsim:property tag for that property to the Windows clipboard. This tag can be pasted into another bind-enabled property (with a "tag" icon next to it. i.e., the DataSource property of a process point) to reference it. Right-clicking to paste the localsim:property tag will give you the option to paste an absolute path or a relative path. Relative paths can be encapsulated in a symbol so that the symbol can be reused without having to change the object names in the localsim:property tags. The tag can also be pasted directly onto the GraphWorX64 main view area, which will result in a process point with the DataSource set to the localsim:property tag.	10.95.1
63045	Added a new "Auto-Start Runtime" option when publishing displays for Internet Explorer (WPF) with a Control Type of Configuration. This option will start the display in runtime mode when it is loaded but allow the user to exit runtime and go into configure mode. (Choosing "Runtime Only" as the Control Type will also start the display in runtime mode but will not allow the user to exit runtime.)	10.95.1
63083	The object explorer now remembers the object that was selected when entering runtime and returning to configuration mode.	10.95.1

GraphWorX64 3D Viewport

Ref ID	Description	First Available In
69568	On the Materials menu, the X, Y, and Z buttons will now take effect as soon as they are pressed. Previously, if you wanted to change the material mapping direction you had to pick one of the X, Y, or Z buttons, then press one of the mapping methods (Planar, Cylindrical, etc.).	New for 10.96
70049	The export feature of the 3D Viewport now has a progress bar.	New for 10.96
58233	Added two new options to the context menu of an object in the 3D Viewer: "Duplicate Selected Faces" and "Split from Parent Geometry". To use either option, set the Selection Mode to "Only faces can be selected", select one or more faces, then right-click on the faces and select the appropriate option. The faces with either be duplicated into a new object or split into a new object.	10.95.3
63056	When multiple items are selected, the head object is highlighted in a different color. This color can be configured in the options (activate the 3D viewport, go to File > Options). The head object is usually the last one selected and is used for aligning and similar options.	10.95.1

Internet of Things Provider

See the Internet of Things Workbench Provider section under

IoTWorX & Internet of Things.

RecipeWorX

Recipe Grid

Major Enhancements

Execute Commands on Events

The recipe grid is one of many controls that now supports executing commands on events. These events vary per control, but for the recipe grid they include:

- Data Downloaded
- Data Downloading
- Double Click
- Middle Click
- Right Click
- Row Click
- Row Selected

To configure the command to be executed when this event occurs, select your grid and go to the **Behavior** tab, or select your chart and go to the **Chart and Axis** tab. Find the **Commands on Events** section, check **Enable Commands on Events**, then select the **Configure** button.

See Execute Commands on Events for more details.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help:
    - Recipe Grid
    - Executing Commands on Events

Recipe Navigator

Major Enhancements

Enhanced Configuration

(Reference ID: 63877, 64031)

The configuration for the Recipe Navigator has been enhanced. The navigator now has its own ribbon that offers many common configuration options, such as enabling or disabling tooltips and alternate row colors.

The control also has a new configuration dialog. Users no longer need to use the properties panel to configure their Recipe Navigator (though they are still free to do so).

For Further Reference

- Help: Recipe Navigator

Execute Commands on Events

The recipe navigator is one of many controls that now supports executing commands on events. These events vary per control, but for the recipe navigator they include:

- Ready
- Recipe Selected
- Started

To configure the command to be executed when this event occurs, go to **Runtime** tab. Find the **Commands on Events** section, check **Enable Commands on Events**, then configure the form below.

See Execute Commands on Events for more details.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help:
  - Recipe Navigator
  - Executing Commands on Events

Customizable Context Menu

(Reference ID: 57682)

The context menu for the Recipe Navigator can now be customized in version 10.96. Various parts of the Recipe Navigator can have different context menus – for instance, a different set of options can be presented for the context menu of a recipe node and a recipe folder.

To configure the context menu:

1. Configure your **Recipe Navigator.**
2. Go to the **Runtime** page.
3. Go to the **Context Menu** section.
4. Check **Enable**.
5. Choose the **Group** for the context menu you'd like to edit.
6. Add, remove, or edit items in the **Items** table.

Many other controls also support the customizable context menu. See Customizable Context Menu.

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help:
  - Recipe Navigator
  - Customizable Context Menu

ReportWorX Express

See ReportWorX Express & Excel Add-In.

Workflows

See BridgeWorX64 & Workflows.

Hyper Historian

New: Data Exporter

(Reference ID: 67825)

New in version 10.96, the Data Exporter is a powerful, high-performance extension module for Hyper Historian that makes it easier to regularly export your logged data to third party storage components. Data Exporters work by scheduling tasks to sort logged data into a dataset and then transfer that dataset into a storage space, such as a data lake.

The data explorer currently supports these storage types:

- Microsoft Azure Data Lake
- Microsoft Azure SQL
- Microsoft SQL Server
- Apache Kafka
- Apache Hadoop
- Local CSV Files

Users who previously used the Hyper Reader – a command-line tool to export data from Hyper Historian into a SQL Server database – should be able to use data exporters to accomplish the same tasks without having to use the command line. The Hyper Reader is still included for backwards compatibility, but we expect users will prefer to use the Data Exporter and ICONICS recommends it for new projects.

Data exporters are configured in **Workbench** under **Historical Data** > **Hyper Historian** > **Data Exporters**.

For Further Reference

- Application Note: *Hyper Historian - Data Exporter*
- Help: Data Exporter

Logger

Major Enhancements

Configure and Browse Hyper Historian Tags from AssetWorX

Hyper Historian tags can now be optionally configured from within AssetWorX. See Configure and Browse Hyper Historian Tags from AssetWorX.

Log Real-Time Expressions Directly

(Reference ID: 52034, 66533)

New in version 10.96, users can configure expressions directly in a collected tag. Previously, in order to log a real-time expression, the user needed to create an expression object in the Unified Data Manager, then use that expression object in an AssetWorX property or Unified Data Manager register, and then log that property or register. Now, users have the option to configure the expression directly in the Hyper Historian collected tag, greatly simplifying the process. Also, because they do not require any external pieces, these real-time expressions can be more easily used on Hyper Historian Collector nodes.

To log an expression, create a new tag under **Historical Data** > **Hyper Historian** > **Data Collections**, select the **browse** button next to **Signal Name**. Select the **Expressions** tab and configure your expression.

These expressions can utilize real-time sampling functions, such as timesincelastchange(), trueforduration(), currentdatetime(), and currentdatetimeutc().

Logged real-time expressions differ from calculated tags in several ways. Real-time expressions are evaluated at the time of the log, whereas calculated tags are calculated after the fact. Real-time expressions do not require their component tags to be logged individually, whereas calculated tags do. Real-time expressions cannot be recalculated after the fact.

In most cases, users will want to log real-time expressions when they want to make relatively simple adjustments to their raw tags (such as adding two tags together, or scaling a tag), and calculated tags when they wish to do more complex calculations or do calculations on data that has already been logged in the past.

For Further Reference

- Help: Add Tag

Additional Enhancements

Ref ID	Description	First Available In
69807	Calculated Condition/Event tags can now be used in performance calculations. Previously, a complex object was returned that was not usable in expressions.	New for 10.96
63854	TraceWorX messages generated when a calculation delay is detected now identify the specific collector causing the delay.	10.95.5
66873	Added support for tracing datasets using extended point tracing. (See knowledgebase article KB-3225 about how to enable extended point tracing.)	10.95.5

Data Replay

Major Enhancements

Enhanced OPC HDA Point Names

(Reference ID: 62426)

HDA point names may now contain additional specifications for Percent Good/Bad and other aggregate configuration properties. This allows greater control over the data returned by Hyper Historian to OPC HDA clients. This feature first appeared in 10.95 Update 4.

Note, the behavior of these settings is as defined by the OPC UA specifications (Part 13: Aggregates).

This is an example tag that includes aggregate parameters:

@ICONICS.HyperHistorian.1\hh:\Configuration\Signals:RandomFast(PctGood=20;PctBad=100;).History

These keywords are all optional. (For instance, you can specify PctGood without PctBad.) All available keywords are:

- PctGood - Percent Good (integer, 0-100, default 100)
- PctBad - Percent Bad (integer, 0-100, default 0)
- UncAsBad - Treat Uncertain as Bad (Boolean, true or false, default false)
- SlopedExt - Sloped Extrapolation (Boolean, true or false, default false)

For Further Reference

- Help: OPC HDA Point Names

Performance Calculations

Major Enhancements

New Functions: Nextevent, Resetevent and Isevent

(Reference ID: 63766, 63744)

Version 10.95.4 added new expression functions: nextevent, resetevent and isevent.

These new functions are designed to allow periodic processing based on some other event (a value change, etc.). Previously, the user would have to create very fast time-based functions and use logic in the calculation itself to see if the process needed to be completed.

Here is an example use case scenario. We have a Boolean value named Start, which determines whether a product line is making product. When it is in production, we need to make periodic calculations to monitor the production line. We also need to know when the line started and stopped production.

First, create a calculation trigger as a data trigger. Select "Trigger On" as "Expression". Then, use the following expression:

IF {{data:Calc.Start}} THEN nextevent(5000, (IF !isevent() THEN 1 ELSE 2)) ELSE resetevent(3)

Second, create a performance calculation and add the created trigger to the list of triggers in the "Triggers" section. This performance calculation will run based on created trigger events and the trigger value will contain one of the following values:

1) Production line started
2) Periodic check when production line is in production
3) Production line stopped

The trigger value can then be used in your performance calculation tag's logic.

For Further Reference

- Help: Performance Calculation Enhancements

Additional Enhancements

Ref ID	Description	First Available In
65737	Arrays are now allowed as parameters to C# custom functions.	10.95.5

Installation

Ref ID	Description	First Available In
61814	A silent installation can now be run without copying the installation media locally. This is done by specifying the location of the CustomSetup.ini file in the registry. Create a registry key at HKEY_LOCAL_MACHINE\SOFTWARE\ICONICS\Installation. In the key, create a string value named CustomSetupIniPath. Set the data value to be the path to the INI file. Example data value: C:\Users\MyUser\Desktop\MyFile.ini. For more information about the silent installation, see the Installation – Silent Installation application note.	New for 10.96
61741	Backups created by the installation when upgrading configuration databases are now removed when the upgrade has successfully completed.	10.95.4

IoTWorX & Internet of Things

New: Information Broker

(Reference ID: 67831, 67769)

What is *Information Broker*? Information Broker is a set of features for BridgeWorX64 and the IoTWorX Point Managers designed to connect GENESIS64 and ICONICS products to MQTT brokers, such as Mosquitto and ActiveMQ. MQTT connectivity was available previously, but Information Broker makes working with datasets and JSONs much easier.

The Information Broker features should give users the ability to:

- Publish information to an MQTT broker from Commanding, GraphWorX64 scripting, or BridgeWorX64 transactions.
- Subscribe to MQTT messages as events (for clients such as AlarmWorX64 Viewer) or datasets (for clients such as GridWorX Viewer).
- Use BridgeWorX64 transactions to more easily work with JSONs, converting them to and from datasets.
- The IoTWorX edge device deployment optionally includes an MQTT broker.

See these related features:

- Enhancements to MQTT Support, Including Datasets
- New Activity: Information Broker Publisher
- New Activities: JSON Content Reader and Generic JSON Writer
- MQTT Broker Module

For Further Reference

- Application Note: *ICONICS - Information Broker MQTT Quick Start*
- Help:
  - Information Broker Publisher
  - JSON Content Reader
  - Generic JSON Writer
  - MQTT Brokers

Edge Installation & Provisioning

Major Enhancements

Additional Operating System Support

(Reference ID: 50650)

Version 10.96 has a new implementation that leverages Docker containers and Azure IoT Edge. This allows IoTWorX to support a new set of operating systems for its edge device installation. These operating systems have been tested and confirmed by ICONICS:

- Raspbian Buster (ARM32v7)
- Raspbian Stretch (ARM32v7)
- Ubuntu 16.04 (AMD64)
- Ubuntu 18.04 (AMD64)
- Ubuntu Server 16.04 (AMD64)
- Ubuntu Server 18.04 (AMD64)

Customers may choose other Linux AMD64 or ARM32v7 operating systems from the list of Tier 2 Azure IoT Edge supported operating systems. Compatibility can be reasonably assumed for Tier 2 Linux AMD64 or ARM32v7 operating systems but is not guaranteed.

Windows IoT Enterprise edge devices are still supported using the 10.95 edge installation. Version 10.96 server-side GENESIS64 installation can manage Windows IoT Enterprise devices running the 10.95 edge software, however, not all new 10.96 features will be available on the 10.95 edge devices. (See Create 10.95 IoT Projects and Templates.)

For Further Reference

- Application Note: *IoTWorX – Quick Start*
- Help: IoTWorX Edge Device System Requirements

IoTWorX Installer for Ubuntu (AMD64)

(Reference ID: 50650)

A new IoTWorX installer is available for Ubuntu (AMD64) devices. It is a web or command line installer that installs and configures all software, including Azure IoT Edge, IoTWorX shared folders, and the initial configuration databases.

Note that since Ubuntu Server has no graphical user interface the installation must be run in console mode and cannot use the installation wizard as on regular Ubuntu.

To launch the installer, cd into the **Linux64/Disk1/InstData/VM** folder. Run this command: **sudo sh ./IcoIoT_64.bin**

This installer is currently available only for Ubuntu and Ubuntu Server. Raspbian devices must use the manual installation process described in the *IoTWorX – Quick Start* application note.

For Further Reference

- Application Note: *IoTWorX – Quick Start*
- Help: IoTWorX Installer for Ubuntu (AMD64)

Remotely Deploy and Update Modules

(Reference ID: 64963)

The modules installed on an edge device can be deployed and updated remotely in version 10.96. Right-click a device and choose **Configure Modules** to see what modules are deployed on that device. Select **Click to configure modules** to make changes, including installing or uninstalling modules. This dialog can also be used to upgrade the version of the containers on a module, when new versions become available.

For Further Reference

- Help: Remotely Deploy and Update Modules

Device Management & Configuration

Major Enhancements

Device Twins

IoTWorX now uses Azure *device twins*. A device twin is a digital representation of the edge device's settings, stored in the cloud.

Device twins are used to exchange settings and status information with the device. Utilizing device twins, users can preconfigure packages to be automatically downloaded when a device is provisioned, configure a device even when it is offline, and get status information and detailed errors from devices even when they have not been properly configured (such as when a configuration file fails to load).

The device twin also stores the configuration in the cloud, allowing devices to be safely re-provisioned without losing the configuration.

For Further Reference

- Application Note: *IoTWorX – Quick Start*

- Help: Device Twins

Enhancements to IoT Projects

The layout of IoT projects in Workbench has been enhanced in 10.96. Some of these improvements include:

- All devices configured in the Azure IoT Hub are automatically detected
- Devices can be grouped or hidden
- Wizard to configure modules such as SNMP, IoT Visualizer, and Mosquitto
- Use template configurations to apply similar configurations to multiple devices
- Create configuration and deploy in one step

Note that projects and templates created with a 10.95 version may not benefit from these enhancements.

For Further Reference

- Application Note: *IoTWorX – Quick Start*
- Help: IoT Gateway Configuration in Workbench

Create 10.95 IoT Projects and Templates

(Reference ID: 67525)

For backwards compatibility, users can configure an IoT project to manage 10.95 edge devices.

When creating a new IoT project, set the **Template Version** to **10.95**. Templates and devices configured in this project will be usable with edge devices running version 10.95 IoTWorX software.

Creating a specific 10.95 project is best for users that have a large number of 10.95 edge devices, but for those who only have a few edge devices, a better option is to create a single 10.96 project, then within that project create a 10.95 template. When creating a new device template, set **Template Version** to **10.95**. (Users can also create 10.96 templates within a 10.95 project.)

Note that 10.95 templates cannot benefit from new 10.96 features, such as device twins. This means that 10.95 devices must be online and provisioned to be managed via the IoT project, and the process may be slower than working with 10.96 devices.

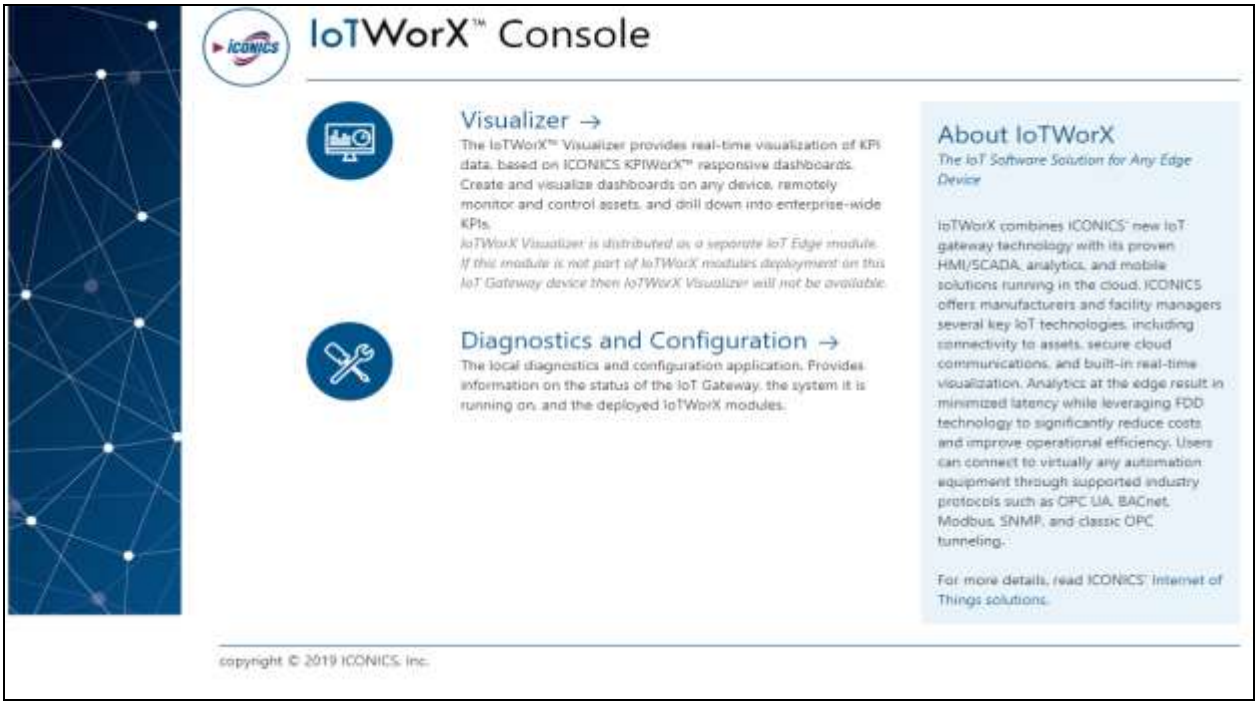
For Further Reference

- Application Note: *IoTWorX – Quick Start*
- Help: Create 10.95 IoT Projects and Templates

Edge Device Landing Page

(Reference ID: 67707)

Version 10.96 edge devices now have a landing page when navigating to http://*deviceIpAddress*. This landing page is lightweight and responsive.



This landing page provides easy access to both the IoT Visualizer and the Diagnostics and Configuration pages, eliminating the need to remember the specific URLs for these handy pages.

For Further Reference

- Help: IoTWorX Console

Configure Multiple Devices with Templates

(Reference ID: 60931, 60501)

Starting in 10.95.3, users can use Device Templates to configure to multiple devices simultaneously.

Devices are organized into device groups. Edit a device group and set the **Configuration Template**. The template will be applied to every device in the group by default.

Individual devices can override this and use a different database for some or all of their applications. To set a specific database for a device, open **Configure Application Settings** for the device, go to the **Server Applications** section, check the **Override Template** box for the desired application, then set a database (**Catalog** column) for that application. Apply the changes. Once an application's database has been overridden, changes to that application can be configured under the device itself, otherwise it must be configured under the template.

Templates include a folder for **Nodes**. Nodes associate connection strings for publishers and subscribers with specific devices. This allows the user to use a single template database for many devices even though each device may require different connection strings.

Once the template and device have been configured, right-click on the device or device group and select **Deploy Device(s) Configuration**. This will deploy the associated configurations to the device or devices in question.

For Further Reference

- Application Note: *IoTWorX – Quick Start*
- Help: Device Templates

Deploy Custom Files to Devices

(Reference ID: 66707)

Users can now configure custom files and certificates to deploy to a remote edge device. This allows the user to easily send Mosquitto configuration files, certificates, KPIWorX symbols, and other files to a device.

To designate files to send, open **Workbench**, expand *your IoT project* > **Device Templates** > *your template* > **Project Files** > **Archives**. Create a new archive, then add your files to the appropriate sections. Add a node to **Project Files** > **Nodes** to associate your archive with one or more devices. When the configuration is deployed to the edge device, these files will be deployed to the device as well. Items on the **Files** tab will be deployed into the common data folder (usr/share/ICONICS/).

The Project Files provider is also available for standard (non-IoT) projects. See New: Project Files.

For Further Reference

- Help:
  - Device Templates
  - Deploy Custom Files to Devices

Platform Services

Major Enhancements

Support for ICONICS Security

(Reference ID: 67839)

Edge devices can now contain a security configuration. This allows the IoT Visualizer to be secured and for system administrators to limit the actions certain users can take via the Visualizer.

The edge device security configuration is based on ICONICS suite security, but with a limited set of features based on the features that are available on edge devices.

For Further Reference

- Application Note: *IoTWorX – Security and GenEvent*
- Help:
  - IoT Visualizer
  - Support for Security

Support for GenEvents

(Reference ID: 67902)

GenEvents on the edge device can now be recorded and viewed locally in the IoT Visualizer. GenEvents are logged for incidents such as a user writing to a point or logging in.

For Further Reference

- Application Note: *IoTWorX – Security and GenEvent*
- Help:
  - IoT Visualizer
  - Support for GenEvents

REST Interface for Third Party Containers

Other containers running on an edge device can communicate with IoTWorX containers using the REST API. This allows partners and systems integrators to create their own containers to integrate with ICONICS components on an edge device.

For Further Reference

- Application Note: (available upon request)
- Help: What is an IoT Device?

GenBroker and Health Monitor

(Reference ID: 63672)

As of 10.95.4, GenBroker and Health Monitor support were added to the IoT device installation.

Version 10.96 IoT edge devices do not currently support GenBroker or Health Monitor, but these configurations are still supported when deploying and managing 10.95 edge devices.

For Further Reference

- Help: IoTWorX Console

Communicator Modules

Major Enhancements

MQTT Broker Module

(Reference ID: 67831)

To make it easier to talk to devices that send MQTT messages, when deploying modules to an edge device, users can choose to deploy the Mosquitto MQTT broker.

This functionality is part of our new Information Broker. See the sections on New: Information Broker.

For Further Reference

- Help: MQTT Brokers

Modbus Module

When deploying modules to an edge device, users can choose to deploy the Modbus Point Manager module, allowing the data collection from Modbus devices without having to install a separate OPC server on the edge device.

For Further Reference

- Help: Modbus Module

BACnet Module Under Construction

BACnet connectivity for the 10.96 IoTWorX edge devices will be introduced in a future update.

Note that users who require BACnet connectivity can continue to use the 10.95 version of the IoTWorX edge software, and that version 10.96 servers can communicate with and deploy to 10.95 edge devices. (See Create 10.95 IoT Projects and Templates.)

Please contact your local sales representative or email info@iconics.com with questions or feedback.

New: IoT Hyper Collector

(Reference ID: 66536)

Replacing the IoT Collector module, the IoT Hyper Collector allows local data to be buffered locally, allowing store-and-forward capability and historical playback on the edge device. Logged historical data can be sent via Azure IoT Hub or Platform Services.

The Hyper Collector allows multiple collection rates, multiple loggers, and absolute deadband for points to give a lot of control of the number of messages being sent.

The Hyper Collector is based off of Hyper Historian. Hyper Historian users will be familiar with the configuration dialogs of Hyper Collector, giving them a more consistent experience across products.

The configuration of historical publish lists has been simplified. Rather than having a specific publish list for historical points, users can now configure a single publish list for both real-time and historical points and enable which points should be buffered on a point-by-point basis. (See Publish List Configuration Simplified.)

For Further Reference

- Application Note: *IoTWorX – Hyper Collector*
- Help: Collector

IoT Visualizer

Major Enhancements

Writing to Points

(Reference ID: 68514)

A new widget, the KPI Process Point, allows Visualizer users to write to points.

Writing to points can be secured with the new security features for IoTWorX. See Support for ICONICS Security and Support for Security.)

For Further Reference

- Help:
  - IoT Visualizer
  - Writing to Points

Support for Security

(Reference ID: 67385, 67386)

The Visualizer can now be secured. Security can be configured for an edge device to require users to log into the Visualizer to access certain functionality.

See Support for ICONICS Security for more details about security in IoTWorX edge devices.

For Further Reference

- Application Note: *IoTWorX – Security and GenEvent*
- Help:
  - IoT Visualizer
  - Support for Security

Viewing GenEvents

(Reference ID: 68513)

A new widget, the alarm viewer, allows Visualizer users to see GenEvents.

See Support for GenEvents for more details about GenEvents in IoTWorX edge devices.

For Further Reference

- Application Note: *IoTWorX – Security and GenEvent*
- Help:
  - IoT Visualizer
  - Viewing GenEvents

Internet of Things Workbench Provider

Major Enhancements

Enhancements to MQTT Support, Including Datasets

(Reference ID: 67831, 66597)

Prior to version 10.96 users were able to publish or subscribe simple messages to MQTT brokers. Now, users have the ability to send and receive datasets.

MQTT communication requires some configuration in **Workbench**. First, under **Internet of Things** > **MQTT Broker**, an MQTT broker connection must be configured. Then under **Internet of Things** > **Subscriber Connections**, a subscriber with a **Connection Type** of **MQTT** must be configured. In the **MQTT Basic Settings** section, go to **MQTT Broker** and choose the MQTT broker object you created earlier.

Once that is configured the tag browser should contain a new item under the Internet of Things. The new item should have the same name as your subscriber connection, and under it should be the *Publish* method.

To call the new Publish method, users can invoke the Call Method global command, run a GraphWorX64 script using FwxClientWrapper.MethodCallAsync, or call the new BridgeWorX64 Information Broker Publisher activity. This allows you to send information to the MQTT broker.

To receive information from the MQTT broker, use an event client (such as AlarmWorX64 Viewer or BridgeWorX64) to subscribe to the subscriber connection object under Internet of Things in the tag browser. (This is the same object that contained the Publish method.)

If the incoming information is a JSON, a custom JSON decoder can be used to transform the message to a dataset that can be used by ICONICS clients. In Workbench, create a custom decoder under **Internet of Things** > **Custom Encoders/Decoders**. Set **Plugin** to **CustomJson** and **Message Type** to **The whole message is a dataset**. Then select your MQTT subscriber connection under **Subscriber Connections**, choose your decoder as the **Default Decoder**, go to the **Dataset Support** section, and choose whether you'd like to overwrite or append values as new updates arrive from the MQTT broker.

The dataset should now be browsable under **Internet of Things** as your subscriber connection name. This dataset can be read by a GridWorX Viewer, BridgeWorX64, or other clients that work with datasets.

This functionality is part of our new Information Broker. See the sections on New: Information Broker.

For Further Reference

- Application Note: *ICONICS - Information Broker MQTT Quick Start*
- Help: MQTT Broker

Publish List Configuration Simplified

In version 10.95, there were three types of publish lists, real-time, historical, and analyzer. Now, in version 10.96, there is only a single type of publish list. All real-time and historical settings can be configured in the single publish list. This not only simplifies the configuration but also eliminates the need to have multiple publish lists for the same set of points if they are to be published in different ways.

To create the equivalent of the real-time or historical publish lists, go to the **Published Points** tab of your publish list and enable the appropriate boxes for the type of publishing you would like to do for each point. The same point can have multiple publishing options enabled.

For real-time publishing, enable **Real Time Publishing**. For historical publishing, enable **Local Buffering and HDA** or **Cloud Buffering and HDA**. (Local buffering makes the data available locally on the edge device to the IoT Visualizer, and cloud buffering makes it available via the cloud to remote servers and Hyper Historians. Local buffering is required to enable cloud buffering.)

For analyzer publish lists, create an **Analyzer Group** under your device template, then on the publish list's **General** tab choose that group for **Analyzer Group**.

In addition, the collection rate for samples used to be specified in the publish list. Users who wanted to collect different tags at different rates needed to use a unique publish list per rate. Now, a new type of object called **Collection Groups** has been introduced.

To add a new collection group, expand **Internet of Things** and bring up the properties of **Collection Groups**. Add a new item to the list, give it a name and collection rate.

Once a collection group has been created it can be used in your publish list. In the publish list properties on the **General** tab, a default collection group can be chosen. The collection rate of this collection group is applied to all points in the publish list except where specified on the **Published Points** tab. To change a point's collection rate from this default, go to the **Published Points** tab and change the **Collection Group** for that tag.

For Further Reference

- Application Notes:
  - *IoTWorX – Quick Start*
  - *IoTWorX – Hyper Collector*
  - *IoTWorX - Analyzer*
- Help:
  - Publish Lists

- Publish List Configuration Simplified

New Custom Encoder Keywords

(Reference ID: 61098, 62662)

IoTWorX configurations now have additional keywords available for Custom Encoders. These keywords were available starting in 10.95.3 but were only browsable in the keyword selection form as of 10.95.4.

- ACCESSRIGHTS - Point access rights property (byte) – e.g. 1 = READ, 2 = WRITE, 3 = READ WRITE.
- DESCRIPTION - Point description property (string).
- FORMAT - Point format property (string).
- HIGHRANGE - High range of point AnalogRange property (double).
- LOWRANGE - Low range of point AnalogRange property (double).
- MEMBER - Represents a complex object that wraps properties such as value, description, etc. Each property will be exposed as a specific point. It can only be used for decoders.
- UNITS - Point units property (string).

For Further Reference

- Help:
  - Keyword Selection Form Window
  - Custom Encoders/Decoders

Additional Enhancements

Ref ID	Description	First Available In
63663 63661 63662	Added a "Select All" option to the context menu to the "Configure Device Group Settings" dialog, the "Create IoT Packages" page, and the "Deploy Packages" page.	10.95.4
61111	After deleting items from the registry and selecting "Update IoT Nodes and Connections", the old connections and nodes will now be deleted.	10.95.3
56751	Previously, when creating an IoT project all the devices would initially appear as offline. Selecting Update Devices would show them as online and able to be configured. This has been improved - the devices should show their correct status immediately after creating an IoT project.	10.95.1

IoT General

Additional Enhancements

Ref ID	Description	First Available In
63400	Enhanced the TraceWorX messages logged when publishing a list that contains duplicate tag names to help users identify the source of the issue.	New for 10.96
61454	When tracing at DEBUG_VERBOSE, the IoT Point Manager now logs the first 1024 characters of received messages. Previously, only the first 100 characters of the message could be logged in TraceWorX.	10.95.5
63552	Added a button in the Publish List header to remove duplicates.	10.95.4
70536 70537	Starting in 10.95.3, WebSockets communication is supported for AMQP and MQTT.	10.95.3

KPIWorX

Major Enhancements

Support for Apple Watch

(Reference ID: 67803)

New in version 10.96, you can view KPIs on your wrist using the KPIWorX app and your Apple Watch!

KPIWorX on the Apple Watch can support a variety of charts such as pie, donut, bar, column, and line. It can use the same data sources as standard KPIWorX, from OPC to databases to web services and more. Watch users can use the crown to scroll through a trend history or highlight different bars in a bar chart to see more information.

Watch decks are configured in KPIWorX on your desktop, tablet, or phone, then viewed on the watch. Swipe to the side to get to the next chart in the deck.

Multiple decks can be configured and can even be linked with location data. When choosing a deck in the watch, the decks are sorted by distance, with the closest ones at the top of the list. This makes it easy to find the deck most relevant to your current location.

Data on the watch comes from live data sources and refreshes once every twenty seconds or when the chart is first loaded. A refresh can also be triggered via 3D touch.

KPIWorX support for Apple Watch requires Apple Watch Series 2 or later.

For Further Reference

- Application Note: *KPIWorX – Support for Apple Watch*
- Help: Using KPIWorX on Apple Watch

Enhanced Sizing of Widgets

(Reference ID: 66930)

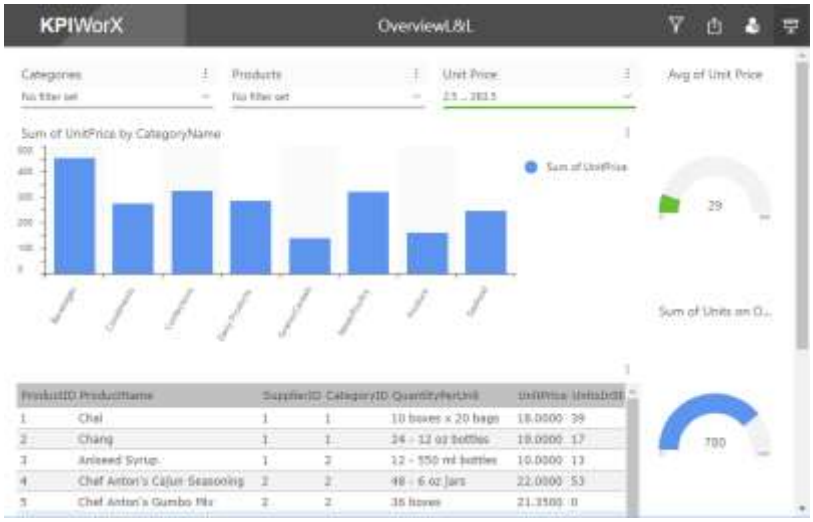
Previously, it could be difficult to get the data you wanted on one dashboard, especially when working with smaller devices. Charts and other widgets could wind up squished, as shown below:

We made several improvements to try to make displays act better when the vertical space is limited.

First was an enhancement to the size of rows in grid mode. In previous versions, adding more rows to a dashboard would keep the same vertical canvas size and simply shrink the row height. Now the row height is restricted to not go below a minimum value. This value is set as a proportion of the window size. If adding more rows or shrinking the window size would make the rows go below that minimum height, the canvas is expanded instead, and a scroll bar is added.

Second, we improved the behavior of many widgets when rendered at a small size. For example, filter widgets change from a scrollable list to a dropdown menu.

The end result is a much better looking and easier to use dashboard at a smaller window size.



For Further Reference

- Help: Add and Modify Widgets

Security for KPIWorX Application Actions

(Reference ID: 55320)

Security now includes a set of KPIWorX application actions, allowing better control over KPIWorX's behavior and the ability to define different behavior for different users.

The KPIWorX application actions include:

- Data Browser
  - Show Asset Navigator
  - Show Data Tag Browser
  - Show Favorites
- Edit Filters
- Edit Mode
- Edit Navigation
- Menu
  - File New
  - File Open
  - Layout Management
  - Location
  - Reset
  - Save
  - Save As
  - Save As Default
  - Show Header
  - Symbols
  - Themes
  - Watch Mode
- Share

The previous way to alter these settings (such as starting in presentation mode) involved editing config files, and they applied to all users. These configuration file flags are no longer supported in favor of the more intuitive and granular application actions.

For Further Reference

- Help: Security for KPIWorX Application Actions

Enhanced Filtering

(Reference ID: 67800)

There are now three types of filters in KPIWorX. The filters that existed previously, which could be applied in presentation mode by selecting parts of a widget, are now called "runtime filters". In addition to runtime filters, KPIWorX can now have widget-level filters and dashboard-level filters (sometimes referred to as global filters).

Widget-level filters and dashboard-level filters work in similar ways. They are configurable in edit mode only. They can only work with data coming from AnalytiX-BI. They both require the user to choose a column, select either a basic or advanced filter, and choose the filter properties. They both can filter on more than one column at a time.

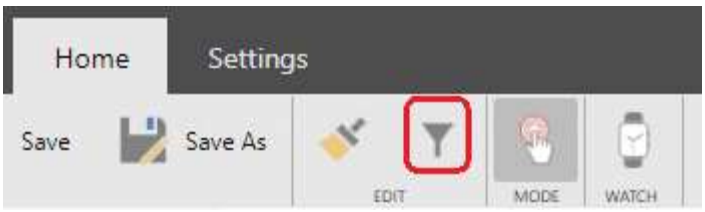
If more than one filter type is active at once, data must match all active filters in order to be shown.

Widget-Level Filter

Widget-level filters are configured on the **Widget Property** panel in the **Filters** section. Drag a column into the field and configure it as either a basic or advanced filter. More than one column can be added at a time. Widget-level filters are static (no aliases or dynamic data sources).

Widget-level filters are designed to give users an easy way to remove unwanted data from certain widgets without having to create new AnalytiX-BI views or dataflows for each unique widget.

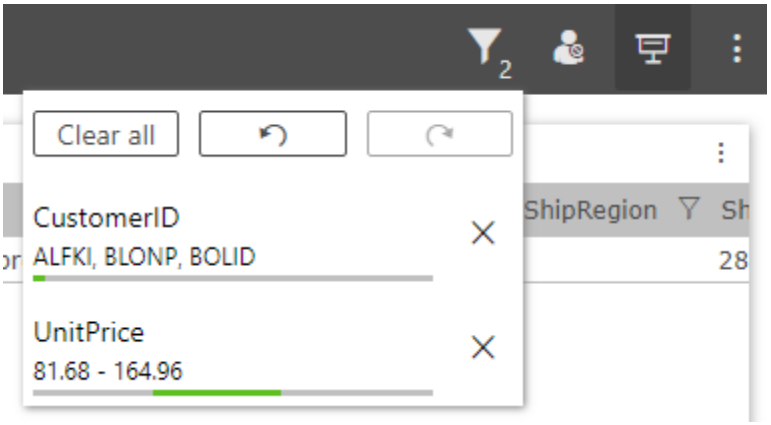
Dashboard-Level Filter



Dashboard-level filters are configured from the **filter** button in the **Home** menu's **Edit** section. Drag a column onto the page and configure it as either a basic or advanced filter. Dashboard-level filters can filter based on the logged-in user. (See the Filter Based on Security Context section below.)

Dashboard-level filters are designed to focus a dashboard on a particular area, such as a particular point in time or a particular asset.

Dashboard-level filters differ from runtime filters (the type of filters available prior to 10.96) in several ways. Runtime filters require a widget, whereas dashboard-level filters do not. Dashboard-level filters cannot be changed in presentation mode, and do not appear as part of the filters panel. Runtime filters will persist if the user follows a link to a new dashboard, dashboard-level filters will not.



Runtime Filter Panel

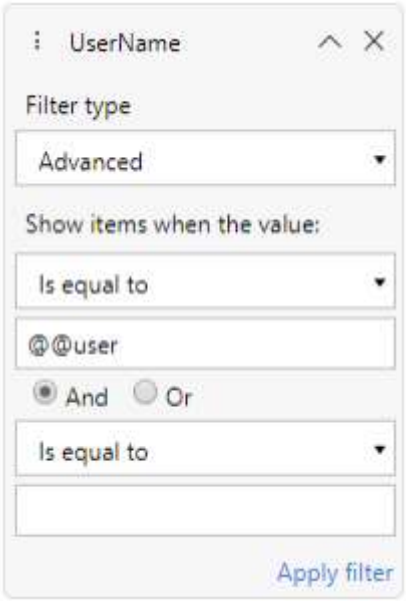
Runtime filters, previously the only type of filter available for KPIWorX, now have a filter panel that shows all active runtime filters.

This panel is available in the header next to the security login and edit/presentation mode buttons. The number next to the icon shows the number of filters currently applied. The filter panel can be used to see the active runtime filters, undo or redo filters, clear specific filters, or clear all filters at once.

Filter Based on Security Context

Dashboard-level and widget-level filters in advanced mode can take advantage of two new aliases:

- **@@user** – The currently logged user or empty string if no user is logged in.
- **@@customid** - The value of the custom identifier field for the currently logged-in user. This field is configured for each user in Workbench under the security provider.



These aliases are case-insensitive and cannot be combined with any other characters when used in a filter.

An example use case for these filters is to create a database table that maps usernames or custom identifiers to assets in your AssetWorX tree, then add that table into your AnalytiX-BI data model. You can then add a dashboard-level filter to restrict the dashboard to only the assets relevant to the logged-in user.

Filter Types Comparison

This table provides an overview of the three types of filters and how they can be used.

Characteristic	Runtime	Dashboard-Level	Widget-Level
Scope	Entire dashboard	Entire dashboard	Widget only
Configuration	From presentation mode, select value in widget	**Home** > **Filter**	**Widget Settings** panel
Changeable in edit mode	✗	✓	✓
Changeable in presentation mode	✓	✗	✗
Can be saved with dashboard	✓	✓	✓
Persist when following dashboard links	✓	✗	✗
Visible in filter panel	✓	✗	✗
Filter based on security context	✗	✓	✓

For Further Reference

- Help: Enhanced Filtering

Tables and Symbols Can be Dashboard Links

(Reference ID: 47879, 55397)

Prior to 10.96, users could configure a charts widget's behavior to be "link", so when a user selected a chart element they would be taken to a new dashboard, filtered to that element.

New in 10.96, symbols and tables can also have these links. This gives dashboard designers more navigation options. When following one of these links, any runtime filters will persist, applying to the new dashboard.

Tables are configured similarly to charts. In edit mode, select the widget and go to the **Widget Settings** panel. In the **Behavior** section, choose the **link** option, then fill the **Target** field with the link name of your target dashboard. Choose a **NavigationColumn**. The navigation column determines the filter that gets added to the new page – the chosen column will be filtered on the value of that column in the selected row.

Symbols simply have a **Target** field on the **Widget Settings** panel. Clicking or tapping anywhere on the symbol will take you to the target dashboard.

See the next section, Share Dashboard Name, for an easier way to get the right name to put in the target field for any of these links.

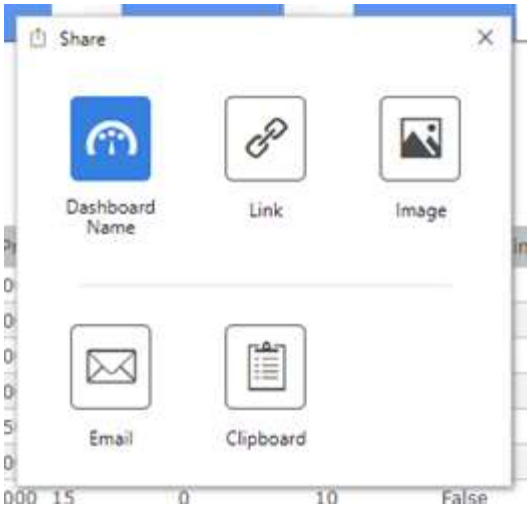
For Further Reference

- Application Note: *KPIWorX – Creating Dashboard Links*
- Help: Tables and Symbols as Dashboard Links

Share Dashboard Name

(Reference ID: 47879)

Users have had the ability to load a KPIWorX dashboard via a command from GraphWorX64 or AssetWorX, or to specify a target dashboard for chart links, but it has always been a challenge to find the appropriate dashboard name.



Now, users can choose the **Share** option on a dashboard and pick **Dashboard Name**. This will retrieve the proper dashboard name for use in commanding and the **Target** field of widgets. The user can email this name or copy it to the clipboard.

Note, this option only appears when sharing a dashboard that has been saved.

For Further Reference

- Application Note: *KPIWorX – Creating Dashboard Links*
- Help: Share Dashboard Name

Set Widget Order in Stack Mode

(Reference ID: 71780)

At certain aspect ratios where the horizontal space is limited (such as on a phone screen), KPIWorX dashboards go into stack mode. In stack mode, the widgets are displayed in a vertical line (or "stack"), and the dashboard is scrollable.

Stack mode is not new in 10.96, but what is new is the ability to reorder stacked widgets. Sometimes when entering stack mode, the order KPIWorX puts the widgets in is not the same order in which an operator would prefer to see the widgets. Now, when this happens, the stack order can be adjusted.

To change the widget order, view your dashboard in edit mode and in stack mode (on a desktop, resize your browser, shrinking it horizontally, until you see your widgets align themselves in a stack), then activate a widget and use the arrows on the top or bottom of the widget to change its order.

Changing the order in stack mode will not affect the widget order in standard mode. Widgets will retain their order in stack mode even if the dashboard is toggled in and out of stack mode.

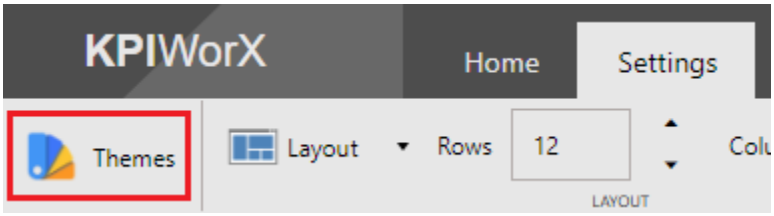
For Further Reference

- Help: Set Widget Order in Stack Mode

Theme Manager

(Reference ID: 70532, 70533, 70534, 70535)

Starting in 10.95.3, KPIWorX includes a **Themes** button in the **Settings** menu.



Themes allow the user to customize the colors of various KPIWorX elements, including:

- Header colors
- Navigation colors
- Browser/Property grid colors
- Canvas color
- Widget colors

KPIWorX comes with a number of pre-built themes and allows the user to customize and save their own themes and apply them across multiple dashboards.

For Further Reference

- Help: Modify Dashboard Layout and Style

Additional Enhancements

Ref ID	Description	First Available In
67951	Added a new "Current Day" preset to the calendar widget.	10.95.5
62529	Favorites now allow folders instead of just points.	10.95.4
62530	Enhanced the "favorites" feature. There are now public and private favorites, similar to Asset Navigator favorites. Public favorites are available to everyone (including users who are not logged in), and private favorites are only available for logged-in users.	10.95.4

Ref ID	Description	First Available In
63542	KPIWorX now allows resizing the navigation and saved Dashboards side panel.	10.95.4
65408	Ctrl-C and Ctrl-V can now be used to copy and paste widgets.	10.95.4

MobileHMI & HTML5 WebHMI

Note, features common to the desktop (WPF) platform will be listed in the desktop sections and not in this. For example, features common between MobileHMI's TrendWorX64 Viewer and the desktop TrendWorX64 Viewer will be listed only in the TrendWorX64 Viewer section. Features in this section are specific to MobileHMI apps and the HTML5 WebHMI.

Common

Major Enhancements

Mobile Device Health for CFSWorX

(Reference ID: 66092)

A key feature of ICONICS' new CFSWorX product is the ability to send notifications to workers based on their locations and other information received from their devices. To support this ability, the MobileHMI apps for iOS, Android, and Universal Windows Platform (UWP) were enhanced to provide this information to the server.

The mobile health information provided is:

- Position
- Battery status
- Signal strength

See the application note, *CFSWorX – Setting up Mobile Device Health* for more information on how to configure mobile health data for CFSWorX.

For Further Reference

- Application Note: *CFSWorX – Setting up Mobile Device Health*
- Help: Setting Up Mobile Device Health

Remote Expert Mode

(Reference ID: 63760)

An exciting new feature for MobileHMI is Remote Expert Mode. This feature allows users to take a mobile device, such as a tablet or a wearable like RealWear's HMT-1, into the field to look at an issue and elicit help from a remote expert who might be sitting in an office or at home. With remote expert mode, your experienced technicians can better get that expertise out into the field.

The worker can engage in a video call with the remote expert, sharing what he's looking at. The worker can also share a video still with the remote expert, who can make annotations to help the worker understand what steps need to be taken to solve the issue.

For Further Reference

- Application Note: *MobileHMI - Remote Expert Mode*
- Help: Remote Expert Mode

HTML5, iOS, Android

Major Enhancements

Feature Parity Improvements

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

- New in 10.96
  - Camera control (see HTML5 Support) *[67811]*
  - Web browser control *[40664]*
  - Clone dynamic in popup menus *[59969]*
  - Target property for drag and drop commands *[63836]*
- Added in 10.95.4
  - Data Explorer custom styles for its GridWorX, TrendWorX64, AlarmWorX64, and Schedule Viewer components *[62571]*
- Added in 10.95.3
  - Schedule Control
    - BACnet Calendar View *[62608]*
    - BACnet Schedule View *[62608]*
    - Weekly view *[62655]*
    - Holidays view *[62660]*
    - Exceptions view *[62661, 62723]*
    - Support for saving changes to schedules *[62726]*
  - AlarmWorX64 Viewer's Flip View *[62684]*

There have been more smaller feature parity improvements as well. See the Additional Enhancements section for more details.

HTML5 Support for Integrated Authentication

(Reference ID: 63760)

As of 10.95.4, HTML5 supports Integrated Authentication with ICONICS security, where possible. Note, not all browsers support this functionality, and the system must be configured to meet these specifications:

1. Both the server and the clients must be joined to the same domain (or trusted domains).
2. The IIS Application Pool of AnyGlass (IcoAnyGlass) must run under the LocalSystem account. (This is the default when installing.)
3. The Authentication settings of the AnyGlass application in IIS must allow "Windows Authentication" and must disallow "Anonymous Authentication".
4. In the FrameWorX Server Location dialog, on the Servers tab, the Client Authentication must be set to "Integrated Windows Authentication".
5. In Workbench, Security must be connected to Active Directory, and the Automatic log in option must be Enabled (this is the default).

Known Supported Browsers

- **Internet Explorer** – Works out of the box.
- **Edge** – Works from a remote machine, but not from the same machine as the IIS server. This is a known Edge issue.
- **Firefox** – Additional configuration is necessary (it is required to add the server url into network.negotiate-auth.trusted-uris).

Known Unsupported Browsers

- **Chromium browsers (Chrome, Opera, etc.)** – There is a known issue in Chromium which causes the NT-based login to fail for WebSockets. As WebSockets are necessary for HTML5 deployment, this means that these browsers cannot support Integrated Authentication until the issue is fixed. As of the publishing of this document, the issue has not yet been fixed, but it seems likely that it will be in the near future. For more information about this Chromium issue, see https://bugs.chromium.org/p/chromium/issues/detail?id=423609.

For Further Reference

- Help: HTML5 Support for Integrated Authentication

Additional Enhancements

MobileHMI & HTML5 Common

Ref ID	Description	First Available In
52392	More target types were added to the Load Display command in HTML5. Load Display now supports all of the same target types as desktop (WPF) except for the popup types.	New for 10.96
55511	Users attempting to open HTML5 displays in versions of Internet Explorer older than version 11 will be given a "Your browser is not supported" message.	New for 10.96
56561	Optimized the HTML5 server to reduce memory consumption.	New for 10.96
57255	The HTML5 context menu can now be customized by editing the ico.anyglass.parsing.config file. Edit the file and set the various elements to "false" to disable them. The home page link can also be customized by editing the HomeUrlItem value.	New for 10.96
60565	Users should no longer need to clear their cache after updating the HTML5 server to get the latest updates.	New for 10.96
65496 68676	Improved the performance of scrolling using the mouse wheel or dragging the scroll bars.	New for 10.96
68647	Reduced the amount of "_waitForClient" messages logged into the Windows Application event log.	New for 10.96
70114	The screen size threshold for hiding the login button in the upper right corner of the AppHub has been changed so that 1334x750 resolution devices (such as the iPhone 8) will show the login button. Previously, devices of this size were hiding the login button.	New for 10.96
70559	The http://*ipAddress*/anyglass/ landing page has been redesigned for cosmetic purposes and for easier access to common links.	New for 10.96
63736 67377 67379	Added two new options in the ico.anyGlass.clientCommunicationLayer.config file (located by default in Program Files\GENESIS64\WebSites\AnyGlass\Bin) to increase the security of cookies: <ForceHttpsCookie enabled="false" /> <CookieLifetime value="5000000" /> The ForceHttpsCookie option, when set to true, will set the Secure flag for cookies that ICONICS HTML5 pages use. This ensures that cookies will only be transmitted across encrypted connections (HTTPS). Note that when this setting is true your HTML5 pages will no longer function over HTTP. CookieLifetime is the time in minutes that the cookies will exist. Set a value of -1 to indicate that cookies will expire when the session ends. The default values for these settings are consistent with the behavior in previous versions. In addition, the HttpOnly flag has been enabled for the ICONICS HTML5 cookies.	10.95.5
63737	Session tracking cookies are now regenerated after a user logs out and back in.	10.95.5
62517	Configured sounds (such as alerts in the AlarmWorX64 Viewer) should now play in HTML5 displays. There is no additional configuration required.	10.95.4
62860	Multilevel popup menus (popup menu pick actions configured inside popup menus) are now supported in HTML5 displays.	10.95.2

MobileHMI & HTML5 AlarmWorX64 Viewer

Ref ID	Description	First Available In
71079 71080	The desktop (WPF) and Universal Windows Platform (UWP) AlarmWorX64 Viewer pie and donut charts now show values when the ShowFieldName advanced property is enabled. Previously they only showed the name and not the value. This makes the behavior consistent with the HTML5 AlarmWorX64 Viewer.	New for 10.96
61430	The default value for the acknowledge dialog is now "Selected Items" instead of "All Items". This was changed to help prevent the accidental acknowledgment of more alarms than intended.	10.95.5

Ref ID	Description	First Available In
62972 50322	Added support for flip view to the AlarmWorX64 Viewer.	10.95.1

MobileHMI & HTML5 AssetWorX Navigator

Ref ID	Description	First Available In
71166	Added a Read Default Commands property to the Asset Navigator. This is configured on the Controls tab in the Selected Asset section. When this property is disabled it prevents assets selected using the "Read Data Source" data source from triggering the default command. Selecting assets by other means (such as clicking or tapping on them in the Asset Navigator) will still trigger the default command. This property is enabled by default, which is consistent with the behavior in previous versions.	New for 10.96

MobileHMI & HTML5 Data Explorer

Ref ID	Description	First Available In
62571	The HTML5 Data Explorer control now supports custom styles for its GridWorX, TrendWorX64, AlarmWorX64, and Schedule Viewers.	10.95.4

MobileHMI & HTML5 Fault Viewer

Ref ID	Description	First Available In
63793	The legacy FDDWorX Viewer did not support runtime column filtering in HTML5. This feature is supported in the new Fault Viewer.	New for 10.96

MobileHMI & HTML5 GraphWorX64

Ref ID	Description	First Available In
59907	Holding down the middle mouse button now allows the user to pan around GraphWorX64 HTML5 displays. Note, desktop (WPF) uses Alt+middle mouse button to perform a pan, however this combination was not possible to use in a browser.	New for 10.96
61219	The load display TargetType of "New Instance (Separate Process)" is now supported in HTML5. It opens the display in a new tab. Note that Internet Explorer's behavior is slightly different than other browsers when clicking on the same "new instance" load display button multiple times. Instead of opening multiple tabs, it will reload the display in the already opened tab. This is a limitation of Internet Explorer.	New for 10.96
61482	Added a box zoom functionality. Hold down ALT and drag a rectangle with the left mouse button to designate a zoom area.	New for 10.96
61737	In HTML5, pick actions triggered by the PressedWhen property would trigger any time the data source changed, and the resulting value matched the trigger condition. This has been changed to be consistent with desktop (WPF) GraphWorX64, where the pick action is only triggered when the condition changes from false to true.	New for 10.96
65499	The "localsim:property:Source" and "localsim:property:OriginalSource" variables are now supported in HTML5 displays. (Previously the Source and OriginalSource properties were only available for embedded GraphWorX64 Viewers.)	New for 10.96
67425	The source property of an embedded GraphWorX64 Viewer now always returns the full path to the display. Previously it could return a full or partial path, depending on how the source for the viewer was set.	New for 10.96
69228	There are new non-scripting ways to get the context of an embedded GraphWorX64 Viewer. Users can access "localsim" variables to get the source display name and current global aliases. For example, if we assume the GraphWorX64 Viewer is named "gwx1", these variables can be accessed to get the source and global aliases, respectively:	New for 10.96

Ref ID	Description	First Available In
	localsim:property:gwx1.Source localsim:property:gwx1.CurrentGlobalAliases	
64941	ImageBrushes are now supported in HTML5 primitives, like paths or polygons.	10.95.5
68363	Clicking and holding the left/right or up/down arrows on a scrollbar will now continue scrolling after a small delay. Previously it would only scroll one time, regardless of how long the button was held down.	10.95.5
62528	Added a ReleaseDataWhenHidden property for all of the primary panel types, such as grid, stack panel, and wrap panel. This property behaves the same as the ReleaseDataWhenHidden property on layers, except ReleaseDataWhenHidden defaults to true for layers and false for panels (to ensure compatibility with previous versions).	10.95.4
63449	Added support for the localsim:property:Width, localsim:property:Height, localsim:property:ActualWidth, and localsim:property:ActualHeight properties inside embedded GraphWorX64 Viewers.	10.95.4
63805	Multi-line tooltips are now supported.	10.95.4
61035	Extremely large font sizes (such as 600 point) are now properly displayed in HTML5 displays.	10.95.3
62596 51299	Drag and drop is now supported in HTML5 displays. Commands from buttons (if enabled) and from the Asset Navigator (if enabled on the commands configured in Workbench) can be dragged to certain viewers like GraphWorX64 Viewer, AlarmWorX64 Viewer, and ScheduleWorX Viewer. Process points can also be dragged (if enabled) into a TrendWorX64 Viewer, which creates a new pen.	10.95.3
62631	HTML5 Smart Pins now support the NoZoom property.	10.95.3
62761	The value in a data entry process point is no longer written when the field loses focus by default. The user has to press Enter or Tab. This is now consistent with WPF GraphWorX64.	10.95.3
62793	Added a loading indicator to HTML5 GraphWorX64 Viewers.	10.95.2
62795	Tooltips are now supported in HTML5. On touch devices, tooltips will be displayed during a long tap.	10.95.2
62801	Data entry is now supported for datetime process points in HTML5. The implementation is the same as what was added in version 10.95 for desktop (WPF) and Universal Windows Platform (UWP).	10.95.2
62802	HTML5 TimeDate dynamics now support the TimeDateKind property.	10.95.2
62828	HTML5 displays will now use the display's Title property as the HTML title (displayed in the browser title bar or tab).	10.95.2
62837	The localsim::currentPanX, localsim::currentPanY and localsim::currentZoom variables are now writable in HTML5 displays. This is now consistent with the desktop (WPF) behavior.	10.95.2
57321	The @@self, @@parent, and @@ancestor[n] keywords for localsim:property tags are now supported in HTML5 displays.	10.95.1
63032 53378	The PressedWhen property of pick actions, which allows the pick action to be triggered by a data source, is now supported in HTML5 displays.	10.95.1
63046	Users can now add a carriage return to the end of the text of a data entry using Shift + Enter.	10.95.1
63089	HTML5 split panels now support the SplitterThickness property.	10.95.1

MobileHMI & HTML5 GridWorX Viewer

Ref ID	Description	First Available In
67949	Changed HTML5 GridWorX chart cursor behavior to be consistent with the desktop (WPF) version. Previously they were always visible in HTML5 charts. Now, cursors are now disabled by default. They can be enabled in the configuration, or via the runtime context menu, as in the desktop version.	10.95.5

MobileHMI & HTML5 Schedule Control

Ref ID	Description	First Available In
62542	The HTML5 BACnet Schedule Viewer now attempts 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.	10.95.4

MobileHMI & HTML5 TrendWorX64 Viewer

Ref ID	Description	First Available In
65949	The colors automatically chosen for new pens in runtime for HTML5 are now the same as those chosen in the desktop (WPF) and Universal Windows Platform (UWP) trend viewers.	New for 10.96
63246	Previously, the selection boundaries of the time range in Summary View were very wide. This was done to make it easier to "grab" using a touch-capable device. However, it made it difficult to tell exactly where the range began and ended. This has been improved. The boundaries are now narrower lines. The "grab" area is still the same, so this should not affect the ease of changing the time range on touch systems.	10.95.4
63329	In 10.95 Update 3, a new feature was added to allow the writing of pen cursor values to predefined data tags. In the TrendWorX64 Viewer configuration, select a pen, then go to the Values tab. There is a new section for "Cursors", with checkboxes for "Write first cursor value" and "Write second cursor value", and browsable fields to choose the data sources for each. This is now supported in HTML5.	10.95.4

MobileHMI & HTML5 Security

Ref ID	Description	First Available In
64658	Users can now control the security login dialog with voice commands, using "username" and "password" to move between fields. On RealWear devices, the RealWear built-in keyboard can be brought up to fill in the username and password by voice, or a QR code can be scanned. This solves an issue where RealWear users were able to bring up the login dialog with voice commands, but then could not interact with it.	New for 10.96

MobileHMI & HTML5 Server

Ref ID	Description	First Available In
62094	The 128-character limit was removed from the QR code field.	10.95.4

Windows 10/Universal Windows Platform (UWP) App

Major Enhancements

Enhanced HTTPS Security

(Reference ID: 63782, 63783, 63784)

Several features have been implemented to boost security when using HTTPS.

The user must now explicitly choose between HTTP and HTTPS protocols when configuring a server connection.

In earlier versions, the user would fill in the name or IP address of the server and the app would try both HTTP and HTTPS. This could be a security vulnerability, as a malicious actor could block the HTTPS connection and then intercept or modify the communication over HTTP. That vulnerability has now been eliminated.

In addition, there is now an **Ignore certificate errors** option in the server configuration on the **Servers** page. Previously, this functionality was always on (always ignoring errors) in order to allow users to work with self-signed certificates. Now this option is configurable. When it is disabled, the server must use a valid certificate from a trusted certificate authority, the certificate must be valid (not expired), and the server address must match the certificate domain name.

For Further Reference

- Help: Enhanced HTTPS Security

Support for GDFX File Format

(Reference ID: 69864)

Standard GraphWorX64 display files (GDFX) can now be loaded in the Universal Windows Platform (UWP) app. Displays no longer need to be saved as GDFXP.

The GDFX format is now supported in all three platforms (desktop/WPF, HTML5, and UWP).

For Further Reference

- Help:
  - Creating a New Mobile Display
  - Support for GDFX File Format

Compact Overlay

(Reference ID: 64688)

MobileHMI now supports Windows 10's compact overlay feature. This feature automatically shrinks the window and allows the app to stay on top of other windows, similar to the "picture-in-picture" feature of some television sets.

Select the  button in the title bar to put the app in compact overlay mode.

The display will continue to have all normal runtime functionality in compact overlay mode. Note that for best results the displays should be designed to be displayed at such a small resolution using either display scaling or responsive features.

For Further Reference

- Help: Compact Overlay

Windows Mixed Reality Support

(Reference ID: 58617)

The ICONICS MobileHMI UWP app now supports the Windows Mixed Reality platform. Now, in addition to HoloLens, users with any Windows Mixed Reality device can use MobileHMI's 3D and mixed reality features.

For Further Reference

- Help: Windows Mixed Reality Support

iBeacon Location Services

(Reference ID: 63763)

The MobileHMI app can now detect iBeacons and automatically execute an action, such as loading a specific display.

To configure the action for a beacon:

1. Open **Workbench**.
2. Expand **MobileHMI** > **Configuration**.
3. Right-click on **Augmented Reality** and add a new location.
4. Give the location a **name**.
5. Set the **Type** to **iBeacon**.
6. Set **Value** to the beacon's GUID. It should be in the format of *UUID*:*Major*:*Minor*.
7. Configure your action in the **Actions** section.
8. Apply the changes.

When the MobileHMI app is running and the user approaches a beacon, an overlay will appear that allows the user to trigger the command.

This feature is similar to the functionality to launch commands based on GPS location.

For Further Reference

- Help:
  - Augmented Reality
  - iBeacon Location Services

Azure-Based Push Notifications

(Reference ID: 68034)

The MobileHMI UWP app previously had push notifications, but they could only be used for notifying alarms.

Now, in addition to the previous alarm push notifications, there's a new style of notifications available. These new notifications leverage Azure functionality to deliver notices to specific devices or specific users. Also, commanding can be used to generate any custom notification message. It does not have to be linked to alarms or events.

Currently these push notifications are only supported on the UWP platform, and the UWP app must be customized per organization. Contact your ICONICS sales representative for information on how to get your own customized version of the UWP app.

Support for iOS and Android apps is planned for a future version.

For Further Reference

- Help: Azure-based Push Notifications

Updated Client-Side Speech Recognition

Windows 10 clients can now benefit from client-side speech recognition. See Updated Client-Side Speech Recognition for more details.

Feature Parity Improvements

The MobileHMI UWP app can now use the following controls and functionality that were previously only available in the desktop GraphWorX64 app (WPF) or HTML5 apps (iOS and Android).

- New in 10.96
  - Smart Symbols *[46756]*
  - Heatmap control *[58650]*

Additional Enhancements

MobileHMI Windows 10 App (UWP) Common

Ref ID	Description	First Available In
62922	In order to prevent situations where unauthorized users (usually web users) access a GraphWorX64 page and use up license seats, GraphWorX64 no longer consumes a license when launched in runtime mode, when no user is logged in, and when no display is loaded (other than the "File Access Denied" display). As soon as a user logs in, GraphWorX64 enters configure mode, or a FrameWorX data point is requested a license will be consumed.	10.95.1

MobileHMI Windows 10 App (UWP) AlarmWorX64 Viewer

Ref ID	Description	First Available In
67429	The AlarmWorX64 Viewer and GridWorX Viewer can now sort by the text of a hyperlink column. Previously, sorting by a hyperlinked column would only sort based on the URL or serialized command rather than the visible text.	New for 10.96

Ref ID	Description	First Available In
71212 71204	Added a new property to AlarmWorX64 Viewer pie and donut charts called "ShowFieldValue". When set to true the value is shown in the data labels, when set to false a percentage is shown. This property can be configured on the Advanced tab of a chart. (Note, this feature is currently only available for desktop (WPF) and Universal Windows Platform (UWP) platforms. We plan to add support for HTML5 in a later version.	New for 10.96

MobileHMI Windows 10 App (UWP) Asset Navigator

Ref ID	Description	First Available In
71166	Added a Read Default Commands property to the Asset Navigator. This is configured on the Controls tab in the Selected Asset section. When this property is disabled it prevents assets selected using the "Read Data Source" data source from triggering the default command. Selecting assets by other means (such as clicking or tapping on them in the Asset Navigator) will still trigger the default command. This property is enabled by default, which is consistent with the behavior in previous versions.	New for 10.96

MobileHMI Windows 10 App (UWP) GraphWorX64

Ref ID	Description	First Available In
46756	Smart symbols are now supported in the Universal Windows Platform (UWP) app.	New for 10.96
48044	Commanding-related runtime window properties, such as CommandingName, CommandingDisplayName, and MaxCommandsScope are now available on GDFXP displays.	New for 10.96

MobileHMI Windows 10 App (UWP) GridWorX Viewer

Ref ID	Description	First Available In
67429	The AlarmWorX64 Viewer and GridWorX Viewer can now sort by the text of a hyperlink column. Previously, sorting by a hyperlinked column would only sort based on the URL or serialized command rather than the visible text.	New for 10.96

MobileHMI Windows 10 App (UWP) TrendWorX64 Viewer

Ref ID	Description	First Available In
54364	In version 10.95, the Zoom command was enhanced to work with the desktop (WPF) TrendWorX64 Viewer. Now the HTML5 TrendWorX64 Viewer can work with the zoom command as well.	New for 10.96

Workbench

New: Project Files

New Provider: Project Files, for Backups and Pack-and-Go

(Reference ID: 42104, 66707, 66958)

A new provider has been added that allows users to store files and pack them along with their Pack and Go project, or simply provide storage and versioning for important files that may need to be recovered at a later date.

The **Project Files** provider contains two subfolders, **Archives** and **Nodes**. Archive items define sets of files to store, and Nodes associate those archives with a particular machine (allowing the same configuration database to be used for multiple machines).

When creating or editing an archive, the user can pick between these **Types**:

- **The archive is used as a simple backup storage** – This type of archive is used to store backups and multiple versions of files. These files will not be packed in a Pack and Go operation.
- **The files in the archive can be restored during Unpack operations** – This type of archive will pack the files in a Pack and Go operation and restore them when the package file is unpacked.

When choosing the "unpack" type, users can pick one of these **Destination Types** where the files will be placed on unpack:

- **Anyglass Folder** – C:\Program Files\ICONICS\GENESIS64\WebSites\AnyGlass in a default installation.
- **Binaries Folder** – C:\Program Files\ICONICS\GENESIS64\Components in a default installation.
- **Common Data Folder** – C:\ProgramData\ICONICS in a default installation. (This is the only option available in IoT projects, and it refers to /usr/share/iconics in that case.)
- **Published Displays Folder** – C:\Program Files\ICONICS\GENESIS64\WebSites\PubDisplay in a default installation.
- **Custom Folder** – The user can choose a custom location, specified in the **Custom Folder** field.

When unpacking, all files on the **Files** tab of this archive will be placed in this location. They will be placed in the root directory unless a folder is specified as part of the **File Path** column. For example, a file with a **File Path** of **Subfolder\Display1.gdfx** in an archive with the **Destination Type** of **Custom Folder** and **C:\Temp** as the **Custom Folder** will create a file at **C:\Temp\Subfolder\Display1.gdfx** when unpacked.

Files in other tabs will be placed in the proper locations based on the tab.

To add files or certificates, go to the appropriate tab and select one of the **Import** options (such as **Import files**). Browse for the file or files you'd like to import and select **Open**. Apply the changes when done.

The **Files** tab has an **Advanced Import** option that allows the user to choose an entire folder at once.

Select the **Extract the file** button for a file to download a copy of the default (usually the latest) version. Users can also right-click on an archive and choose **Restore archived files** to restore the default version of each file to its original location.

Multiple versions can be kept for each file. Select the **Manage file versions** button next to the file in question to upload a new file version, choose which version is the default, delete versions, or download a specific version of the file.

Select the **Delete the file** (X) button next to a file to delete it and all of its versions from the archive.

Remember to hit the apply button after each of these actions.

The **System Files** tab is for special GraphWorX64 system files that have to be stored in a special location (Isolated Storage). These files are for user settings, symbols, the materials toolbox, and similar settings. Use the **Import system files** link to choose which sorts of files you'd like to store in the archive.

Nodes can be used to specify which archives to extract on which systems. Expand **Project Files**, edit **Nodes**, and add items to the list to associated archives with machines. Nodes are optional – if no items exist in the nodes list, all archives with the "unpack" type will be unpacked for every system. Nodes have no effect on archives with the "backup" type.

This provider is also available in IoT project templates, where it can be used to deploy files to edge devices. See Deploy Custom Files to Devices.

For Further Reference

- Help: About Project Files

PowerShell Support

Major Enhancements

New Commands

A host of new commands has been added to Workbench's PowerShell support. These new commands allow the user to perform the following Workbench actions via PowerShell scripts:

- Log in or out of security (both synchronous and asynchronous options) *[66423]*
- Copy, paste, move, and multiply Workbench entities *[68516]*
- Interact with applications, application projects, application servers, audit messages, available file paths, and SQL Server connections *[64810]*
- Interact with the Recent Tasks panel, including downloading pack files or export files *[65362, 68560]*
- Backup, restore, attach, and detach SQL databases *[68524]*
- Recursively delete objects and their children *[68518]*

For Further Reference

- Application Note: *Workbench – New PowerShell Enhancements in 10.96*
- Help: About ICONICS PowerShell Extension

Find and Replace Support

(Reference ID: 68575)

Users can now perform a global find and replace across their entire Workbench project. This feature is currently only available via PowerShell commands, but we plan to add user interface dialogs to support it in a future version.

For Further Reference

- Application Note: *Workbench – New PowerShell Enhancements in 10.96*
- Help: About ICONICS PowerShell Extension

Improvements to "Name" Parameter

(Reference ID: 59765)

The "name" parameter, used to identify an entity in many Workbench commands, has been enhanced to allow a wider variety of formats. Now when supplying a value for the "name" parameter you can choose to use:

- A string representing the name of the entity
- A string representing the full path of the entity (for example, "Assets/Equipments/Alarms")
- An integer representing the identifier of the entity in the database
- The IEntityKey representing the key of the entity
- The IEntity representing the entity itself

As an additional enhancement, the "name" parameter now supports wildcards.

For Further Reference

- Application Note: *Workbench – New PowerShell Enhancements in 10.96*
- Help: [About ICONICS PowerShell Extension]

Workbench General

Ref ID	Description	First Available In
37209	Users can now change the location for the output of Workbench tasks, such as Pack & Go and Project Reporting. Go to the Project tab and use the Task Folder Configuration button.	New for 10.96
43210	Selections of multiple items can now be dragged from the tag browser into a grid. Only appropriate points are added when dragging (so, for example, if dragging points into an alarm subscription grid, only alarm points will be added).	New for 10.96
44174	Editing the project properties (right-click on a project and select Configure Application(s) Settings) will no longer reapply the entire set of active databases. Now, only applications that have been changed will have their databases activated.	New for 10.96
47482	When configuring a project (right-click on a project and select Configure Application(s) Settings) there is a new option on the General Settings tab called, "Disable the services for the applications not available in in this project". Checking this box will automatically disable the point manages and disable and stop the services for any modules that have been disabled on the Applications tab.	New for 10.96
55199	General performance improvements.	New for 10.96
58415	Users can now be notified whenever a drag & drop is triggered, giving them the option to cancel accidental actions. This feature can be enabled under Tools > Drag&Drop.	New for 10.96
58574	There is a new option when importing a file called "Ignore GUID". When this option is enabled the import will ignore the GUIDs in the import and user the name to identify items.	New for 10.96
58657	When going to Project > SQL Configuration and selecting the green arrow to test a connection a "busy" message is now shown.	New for 10.96
59294	Import and export tasks now have a default description appropriate to the provider that was imported or exported. This makes it easier to identify items in the Recent Tasks pane without having to manually edit the import/export description.	New for 10.96
61827	Selecting a checkbox in a grid will now immediately cause the Apply button to become available. Previously the user would have to click something outside the cell for the Apply button to become available.	New for 10.96
63858	There is now a single stoplight on the Home tab for the BridgeWorX64 provider. It controls both the Scheduler and Point Manager.	New for 10.96
64876	Configuration databases can now be upgraded if the SQL Server database property "Change Tracking" is disabled.	New for 10.96
66963	Improved the error message that Workbench shows when the connection to the server fails in order to help the user better troubleshoot the situation. These detailed error messages can be disabled in IcoCustomSetup.ini using this entry: [Sql] ShowVerboseErrors=0	New for 10.96

Ref ID	Description	First Available In
67150	In the Configure Application(s) Settings dialog on the Applications tab there is a new column of buttons. These buttons allow the user to quickly create or overwrite the configuration for this specific application. The configuration will be created or updated in the database specified in the SQL Server and Catalog columns.	New for 10.96
68030	The Pack Project feature now allows the user to specify a file to populate the list of aliases for find and replace.	New for 10.96
68261	Long tooltips now include line breaks to make them easier to read.	New for 10.96
68781	The log for CSV import/export tasks now includes the number of rows parsed. Very large CSV files can take a long time to parse, and the extra logging gives the user more feedback on this process.	New for 10.96
68916 70655 72586	Added additional messages and made enhancements to various error and validation messages to improve the clarity and enhance the ease of use of Workbench.	New for 10.96
70181	Local cache database files are now stored under ProgramData\ICONICS\Cache rather than ProgramData\ICONICS. Note that this only affects new installations or providers where the user has updated the local cache settings. Existing cache files will remain in their original location.	New for 10.96
70254	When typing into the Database field of the "Upgrade Database" dialog, the database contents are no longer queried until the user selects the "Download the list of providers that must be upgraded" button. This prevents unnecessary traffic to databases that may not exist.	New for 10.96
62419	In the "Configure Services" option of Workbench, you can now choose "Auto (Delayed)" as a Start Mode.	10.95.4
59904 56756	Added the full path of entities to the header of their tab.	10.95.3
60125	Reduced the idle CPU usage of the ICONICS Workbench Configuration service (IcoConfigService).	10.95.3
60376	The "local cache" feature of configuration databases can now be enabled in Workbench. Right-click on a project, select "Configure Application(s) Settings", then go to the Applications tab. The "Local Cache" column enables this feature. Previous to this column, the local cache for most configurations had to be enabled by modifying the IcoSetup64.ini file.	10.95.3
57930	Added a warning/confirmation message when detaching or deleting a database.	10.95.2
58261	Imports now ignore duplicate items.	10.95.2
56565	In a task log, it is now possible to copy only the selected items to the clipboard. Previously the entire log had to be copied.	10.95.1

Audit Log

Ref ID	Description	First Available In
66970	The audit log feature is enabled by default. To disable the audit log, go to Workbench > Tools and select the "Audit Log Enabled" button. It should change to "Audit Log Disabled".	New for 10.96
61025	In the Audit Log, the JSON column has been moved to be the last column. This makes the User and Host columns easier to view.	10.95.3
56734	For every system change, the audit log now records a JSON detailing what was updated.	10.95.1

Project Reporting

Ref ID	Description	First Available In
62148	Enhanced Project Reporting so that BACnet reports no longer browse each object. This was causing unnecessary and excessive overhead.	10.95.4
62243	Improved the performance of writing to the database in Project Reporting.	10.95.4
62245 62248	When running a BACnet report, the percentage complete is updated more frequently, and more messages are shown.	10.95.4

Platform Services

New: Web API

(Reference ID: 67778, 71844)

Version 10.96 introduces a new service and Workbench provider called *Web API*. Web API is the new gateway for all third-party components that use REST. It provides the framework for these new features:

- CFSWorX mobile health and integration with third parties
- KPIWorX support for Apple Watch
- Web Login with External Identity Providers (OIDC and SAML 2.0)
- Voice Machine Interface and Text Machine Interface

In addition, the Web API provides a new REST endpoint for retrieving data points from FrameWorX and its point managers. The new Web API REST endpoint is secured by OAuth 2.0, and supports writing to points. (Note, the OData Connector service still exists, and its endpoint is still functional.)

An example REST URI for the Web API service would be: **http://localhost/fwxapi/rest/data?pointname=svrsim:sine double med -100 100**.

You can find the Web API in Workbench under Platform Services. Configuration for the new features listed above will be described with those features. No configuration is necessary for the REST endpoint.

The Windows service associated with the Web API is the **ICONICS Web API Service** (IcoWebAPIService). This service must be running to support the REST endpoint and the aforementioned other features.

For Further Reference

- Help: Web API

Commanding

Major Enhancements

Existing Commands Updated for New Features

There have been a number of updates to commands related to other enhancements (for example, the Create Pen and Edit Pen commands have been updated to be able to use the new plot types mentioned in Stacked Plots).

Details about these commanding changes can be found in the descriptions of the relevant enhancements.

Batch Commands and Command Return Values

(Reference ID: 67821)

Previously, multiple commands could be triggered at the same time (such as with multiple pick actions on a single button) but they were executed independently from each other.

Now, with 10.96, you can configure a chain of commands, be sure they will always trigger in the correct order, and even set up conditional branches and looping.

Many preexisting commands have been updated to provide results or return values that can be used in subsequent steps in batch commands. Some examples of what can be returned are:

- Create Pen returns pen name
- Delete Pen returns number of pens deleted
- Export Data returns file name of export

Batch commands are a script-free way to make your displays and project much more powerful. You can create drill-down sequences, write to a value to notify the user that their command succeeded, and more.

Batch commands become even more powerful if you execute them in the new custom context menus or on the new control events.

For Further Reference

- Application Note: *Commanding – Batch Commands*
- Help:
  - Batch Commands
  - Commanding

Execute Commands on Events

(Reference ID: 67808)

Commands used to be limited to responding to the user, most often from a button press or other direct interaction. Now, with 10.96, commands can be executed automatically on certain events.

Combine this with the new batch commands, and you may never need to use scripting again!

Events are configured in the individual control. It varies per control, but there is usually a **Commands on Events** section, **Enable Commands on Events** checkbox, then a **Configure** button.

Controls that include this commanding support include:

- AlarmWorX64 Viewer
- Asset Navigator
- BridgeWorX64 Navigator (new control)
- BridgeWorX64 Viewer (new control)
- Camera Control
- Data Diagram
- Fault Viewer (new control)
- GridWorX Viewer
- Heatmap
- Recipe Grid
- Recipe Navigator
- ReportWorX64 Navigator
- ReportWorX64 Viewer
- Security Indicator (new control)
- Table (new control)
- TrendWorX64 Viewer

For Further Reference

- Application Note: *Commanding - Commands on Events and Context Menus*
- Help: Help: Executing Commands on Events

New Command: Edit Trend Chart

(Reference ID: 57477, 57637)

The new Edit Trend Chart command can be used to change a wide variety of properties of an existing TrendWorX64 Viewer chart and legend, such as sampling interval and whether the legend is visible.

When configuring the Edit Trend Chart command, first edit the **SelectedProperties** parameter, and select the properties of the chart you would like to change. Properties that are selected will then show up as additional parameters of the command.

This powerful new command can be used along with the new batch commands and the command event support to configure your TrendWorX64 Viewer with drilldown actions.

For Further Reference

- Application Notes:

  - *TrendWorX64 Viewer – New Features in 10.96*
  - *TrendWorX64 Viewer - How to Configure Drilldown*
- Help: Edit Trend Chart Command

New Command: Send Notification

(Reference ID: 68107)

The **Send Notification** command can be used to send new push notifications to ICONICS apps. Currently only the MobileHMI Universal Windows Platform (UWP) app supports this command.

See Azure-Based Push Notifications for more details.

For Further Reference

- Help: Send Notification

Set Freeze Mode Command Can Now Play/Pause Camera Control

(Reference ID: 65780)

The **Set Freeze Mode** command can now be used to play or pause the video playback in a camera control. Set the camera control as the command target. The freeze action pauses the video, the unfreeze action plays, and the toggle action toggles between the two.

See Play or Pause Video Feedback with Commanding.

For Further Reference

- Help: Set Freeze Mode Command

Additional Enhancements

Ref ID	Description	First Available In
40983	All commanding properties now support tags.	New for 10.96
59085	The Write Value command now supports numbers when writing to Boolean values. A value of zero is False and any non-zero number is True.	New for 10.96
68519	The global Write Value command can now be used to write to an array. The entire array must be written. The value to write must be a string able to be converted to a comma-separated list of values (such as "12,5,6,10").	New for 10.96
69093 68863 69094	The Select Element global command has a new value for the Element property called DataEntry. By using the DataEntry element, the Select Element command can be used to focus a particular data entry field. This allows displayed designed for hands-free operation to use voice commands to write values into process points.	New for 10.96
63607	Added a new global command, "Scan". For iOS and Android devices, the Scan command will initiate the "Scan code" feature. For the Universal Windows Platform (UWP) app, the Scan command will turn on or off Augmented Reality mode, determined by the Action parameter. (iOS and Android devices ignore the Action property.) The "Scan" command is ignored for desktop (WPF) clients.	10.95.4

Ref ID	Description	First Available In
60695	The desktop (WPF) runtime "Print" option for the TrendWorX64 Viewer now has a new "Landscape" option to print in landscape mode. The Print global command also supports the new Landscape parameter.	10.95.3
62610 52286	Added a new "Apply Discard" command. This command takes a GridWorX Viewer as a target, and it performs the same actions as the "Apply Changes" and "Discard Changes" context menu items. Change the "Action" property to define whether it performs an apply or discard action. This was added for desktop (WPF) and Universal Windows Platform (UWP) in 10.95.2, and for HTML5 in 10.95.3.	10.95.3
57297	New "Log Event" command allows sending a custom GenEvent message.	10.95.2

Data Browser

Ref ID	Description	First Available In
66990	Improved the loading speed of the data browser when enumerating OPC Classic or OPC UA servers under Data Connectivity > OPC Data Access, Data Connectivity > OPC UA, Alarms and Notifications, and Historical Data.	10.95.5

Expressions

Major Enhancements

New Expression Functions

(Reference ID: 62514)

To complement the pre-existing indexof() function, the functions lastindexof(), indexofany(), and lastindexofany() have been added to expressions as of 10.95.4.

- **Lastindexof** – Returns the zero-based index of the last occurrence of a substring within a string or returns the zero-based index of the last occurrence of an item in an array.
- **Indexofany** – Returns the zero-based index of the first occurrence within a string of any character from a specific set of characters.
- **Lastindexofany** – Returns the zero-based index of the last occurrence within a string of any character from a specific set of characters.

In addition, as of 10.95.4 the indexof() function was modified to make the "startIndex" parameter (the third parameter) optional, and to add a fourth optional parameter for "count". This keeps indexof() consistent with the new functions but will not affect pre-existing projects.

For Further Reference

- Help: New Expression Functions in V10.96

Additional Enhancements

Ref ID	Description	First Available In
62514 61943 62577 62578	The functions indexof(), lastindexof(), indexofany(), and lastindexofany() have been added to expressions.	10.95.4

FrameWorX

Ref ID	Description	First Available In
61438	FrameWorX can now recognize its own machine name or alias in point names and treats these points as local points. This eliminates some unnecessary communication overhead. Previously, points such as \\MyServer\ac:somePath would still go through the FrameWorX network, even if "MyServer" was a FrameWorX alias pointing to the local server.	New for 10.96
63869	OPC UA clients may now specify a username and password when connecting. The username and password are verified against ICONICS security when determining if the client can access the requested points. Previously, OPC UA clients could only connect anonymously, at which point the credentials of the user specified in Platform Services Configuration > Passwords tab > "OPC UA -> FWX" would be used. (Clients may still connect anonymously and use the "OPC UA -> FWX" credentials.)	10.95.4
64524	Added new "heartbeat" tracing to GenBroker/GenClient communications. This tracing is designed to assist in troubleshooting issues when communication to an OPC server has failed. When enabled, it will log a trace message that says, "[Heartbeat] Elapsed: X" at the configured rate. To enable this tracing, add these entries into the IcoSetup64.ini file: [GenClient\Debug] HeartbeatTraceLevel=700 HeartbeatTracePeriod=5000 HeartbeatTraceLevel is the level at which the traces will appear in TraceWorX, and HeartbeatTracePeriod is the rate, in milliseconds, of how often the heartbeat should be logged. These entries can either go into the [GenClient\Debug] or [GenBroker\Debug] sections (or both). [GenClient\Debug] affects the FrameWorX Server and GenClient Point Manager. [GenBroker\Debug] affects the GenBroker64 service. The relevant service must be restarted after making changes to these entries.	10.95.4

Language Aliasing

Default Languages for Users and Groups

(Reference ID: 62604, 62735)

First introduced in 10.95.3, users and groups can now be assigned a default language. When the user logs into security, their default language will automatically be selected for the purposes of Language Aliasing.

The default language is configured in Workbench's **Security** provider on a user or group in the **General Properties** section.

For Further Reference

- Help: Users and Groups

Licensing

Ref ID	Description	First Available In
54421	More than 255 Hyper Historian remote collectors can now be added to the same license server.	10.95.5
65489	When checking the node name of a machine against the reserved license nodes, only the "raw" node name will be used. Previously, the entire node name was used, which was a combination of the machine name, session ID, and username, such as, "MachineA:0:UserX". Now, only "MachineA" will be checked.	10.95.5

OData Connector

Ref ID	Description	First Available In
62108	OData Connector now returns NULL for empty data fields. Previously, it would return no record. Returning NULLs helps guarantee consistent results sets. To revert to the old behavior, go to Platform Services Configuration -> Point Managers -> OData Connector Point Manager, and set ODataRemoveAssetPropertiesWithNullValue to true.	10.95.4
62422	Added additional request tracing. Since this tracing can put a load on the server, it is disabled by default. When enabled, requests will be traced from start to end. Messages from the same request can be correlated as they will contain the same request id (GUID). To enable this tracing, edit C:\Program Files\ICONICS\GENESIS64\Components\FwxServer.PointManagers.config. Search for "ODataPointManager". In the <Params> section under it, add these lines: <Param> <Name>EnableRequestTracing</Name> <Value xsi:type="xsd:boolean">true</Value> <Hidden>false</Hidden> </Param> <Param> <Name>MaxConcurrentRequests</Name> <Value xsi:type="xsd:int">-1</Value> <Hidden>false</Hidden> </Param> The MaxConcurrentRequests property controls the number of concurrent requests that can be handled by the server. The default is -1, which means 100 times the number of CPU cores on the machine. Once the config file has been edited, these values can be changed by modifying the EnableRequestTracing and MaxConcurrentRequests parameters under Platform Services Configuration -> Point Managers tab -> OData Connector Point Manager.	10.95.4
62682	By default, the OData provider read static properties directly from the AssetWorX database on start-up, and then never checked them again. Now, if the static property has database caching enabled (meaning it is read/write), it will be treated the same as a dynamic property, and its value will be refreshed when the next scheduled property refresh occurs.	10.95.3
62847	The OData Connector can now optionally expose AssetWorX Runtime as an OData service. The OData endpoint for AssetWorX Runtime is disabled by default. Users should use the EnableODataEndpoint property to enable the AssetWorX OData endpoint.	10.95.2
56992	Added write support for real-time tags in the OData Connector. For more details, please refer to your local OData Connector online documentation: http://localhost/ODataConnector/rest/Help/Html?method=post.	10.95.1

OPC UA

Ref ID	Description	First Available In
67021	Classic OPC DA updates with a quality of "Bad - Last Known Value" previously would be converted to OPC UA updates of "Bad", and the value would be discarded. Now they are converted to "BadUncertain" and include the value.	10.95.5

Security

Major Enhancements

Web Login with External Identity Providers

(Reference ID: 67812)

In version 10.96, users have the option of linking ICONICS security to an external OpenID Connect or SAML 2.0 identity provider. Instead of logging into the ICONICS security login dialog, users will be directed to a custom login page or the login page of a compatible identity provider, log in with their credentials for that provider, and then ICONICS security will recognize them as an ICONICS user and grant them the appropriate permissions.

For example, when properly configured, users could log in with an Okta account and be authenticated with ICONICS security. Okta would validate the authentication of the login and pass an identity token to ICONICS security. ICONICS security would match that token to an existing ICONICS user and log them in.

Organizations that already provide security via a compatible identity provider can have users log into ICONICS with those credentials, without having to require them to remember a separate password for their ICONICS account.

Note that support for specific identity providers, such as Okta, relies on their continued support for the OpenID Connect or SAML 2.0 standards.

For Further Reference

- Application Note: *Security - Working with Identity Providers (SAML, Azure AD, OpenID)*
- Help: Web Login with External Identity Providers

Use ICONICS Security as an OpenID Connect Identity Provider

(Reference ID: 67812)

Also in version 10.96, third-party clients, such as Cortana, Alexa, Google Assistant, and the Apple Watch, can authenticate with ICONICS security as an OpenID Connect identity provider. This allows these clients to get access to secured data points.

This support works with both built-in security (database or active directory) and external identity providers.

For Further Reference

- Application Note: *Security - Working with Identity Providers (SAML, Azure AD, OpenID)*
- Help: Use ICONICS Security as an OpenID Connect Identity Provider

Azure Active Directory Support

(Reference ID: 67814)

Previously, ICONICS security could synchronize with Active Directory, but only for in-house Active Directories. Now in version 10.96, ICONICS security can also synchronize with Azure Active Directory.

Web login support can also be enabled for Azure Active Directory, allowing users to log in via Microsoft's login screen. Using Microsoft's login screen allows you to use single-sign-on between Azure Active Directory and ICONICS Security and gives ICONICS security any additional features of the Azure Active Directory login, such as multi-factor authentication.

For Further Reference

- Application Note: *Security - Working with Identity Providers (SAML, Azure AD, OpenID)*
- Help: Global Settings

Testing Mode

(Reference ID: 71687)

Previously, security was either active (enabled) or inactive (disabled). When it was active, all permissions defined in security applied, and when it was inactive no permissions were applied and users were allowed to do anything, even without logging in.

Now in 10.96, users can put security into testing mode. This is set in **Workbench** under **Security** > **Global Settings** on the **General** tab. Instead of a checkbox, **Security active** is now a radio button where the user can pick from **Inactive**, **Testing**, and **Active**.

Testing mode is designed to be a temporary state to allow system designers to test their security permissions without risking locking themselves out of security. When in testing mode, if no user is logged in then all permissions are allowed (similar to having security inactive). But when a user logs in, its permissions are applied as if security were active.

Testing mode should not be used for live production systems. Make sure to change your security to active when putting a system live.

For Further Reference

- Help: Global Settings

New Security Indicator Control

There is a new Security Indicator control. See New: Security Indicator for more details.

Default Languages for Users and Groups

First introduced in 10.95.3, users and groups can now be assigned a default language. See Default Languages for Users and Groups.

Additional Enhancements

Security Workbench Provider

Ref ID	Description	First Available In
61461	The user is no longer allowed to delete the active configuration object.	New for 10.96
68337	The allowed password length was increased to 128 characters.	New for 10.96
70971	When selecting the Users folder, the Project Details now includes the Custom Identifier column instead of the Description column.	New for 10.96

Triggers

Triggers General

Ref ID	Description	First Available In
61821 61473	Enhanced Data Triggers to support multiple tags.	10.95.4
62853	Previous value, previous quality, and previous timestamp are now exposed properties of Data Triggers.	10.95.2

Triggers Workbench Provider

Ref ID	Description	First Available In
61472	When adding a new trigger in the Workbench in the related values tab, there is a new option to enter a description for tags.	10.95.4

Ref ID	Description	First Available In
61474	Added the ability to reorder related values for triggers.	10.95.4

Unified Data Manager

Unified Data Manager Workbench Provider

Ref ID	Description	First Available In
65817	The maximum scan rate for Unified Data Manager registers is no longer limited.	10.95.5

Tools

Bulk Asset Configurator

Ref ID	Description	First Available In
65170	When a parameter field is left blank in the ClassInstantiation or ClassInstantiationRowBased sheets, the Bulk Asset Configurator now instantiates those assets using the default value for those parameters, as defined in the equipment class.	10.95.5

ConverterWorX

Ref ID	Description	First Available In
65431	Added new option to the ConverterWorX Importer under GraphWorX64 Translation - General: "Config mode rotations disabled for (None, Rectangles or All)" In GraphWorX32, the user could set the Angle property of an object to rotate it. If the object also had a rotation dynamic, the Angle property was ignored in runtime, though the object would still appear rotated in configure mode. In GraphWorX64, the Angle property would be added to whatever rotation was specified by the rotation dynamic. So, in the rare event that a display used both the Angle property and a rotation dynamic, the runtime behavior was not consistent between GraphWorX32 and GraphWorX64. The objects would be rotated to different angles. Use this ConverterWorX option if you have objects with both an Angle property and a rotation dynamic. The Angle property will be discarded in the converted GraphWorX64 display, making the runtime behavior consistent between GraphWorX32 and GraphWorX64 for these objects. Select the type of objects (only rectangles, or all objects) where you would like to discard the Angle property.	10.95.5
59898	Appropriate default values are now supplied for the "Host Name" and "SQL Instance Name" fields in ConverterWorX.	10.95.3

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