



# CygNet v9.6 Release Notes

**Release Date: March 2, 2022**

**Revised: April 22, 2022; January 30, 2024**

This document describes new features and changes to CygNet Software since the v9.5 release.

For instructions on updating your host, refer to the [CygNet v9.6 Upgrade Procedure](#) document.

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# Revision History

The following revisions have been made the CygNet v9.6 Release Notes:

Revision Number	Revision Date	Description
1	April 22, 2022	Added a release note describing an enhancement to the <a href="#">OPC Weatherford EIE</a> about support for polling Baker 8500 protocol devices on the Matrikon ScadaCAC OPC server.  Fixed a typo in an <a href="#">ODBC</a> note.
2	January 30, 2024	Added a release note describing a modification to the <a href="#">IoT Sparkplug EIE</a> about support for optional aliases for Sparkplug metric names in configurable data groups.

# Product Lifecycle

For more information on the lifecycle of CygNet components, refer to the *CygNet Software Product Lifecycle Matrices* on the [Software Support portal](#) (login required).

## CygNet Lifecycle Notice

CygNet Software follows a fixed product lifecycle policy and offers three years of support (two years of mainstream support followed by one year of limited support). Please contact your Account Manager or CygNet Sales (via email at [CygNet Sales](#)) for more information about your support options.

The following table lists the dates of support for the currently supported versions of CygNet Software.

CygNet Version	Release Date	Limited Support Begins	Limited Support Ends (End of Life)
<b>9.6</b>	March 2, 2022	March 2, 2024	March 2, 2025
<b>9.5</b>	February 5, 2021	February 5, 2023	February 5, 2024
<b>9.4</b>	February 28, 2020	February 28, 2022	February 28, 2023
<b>9.3</b>	July 19, 2019	July 19, 2021	July 19, 2022

The following CygNet versions have reached lifecycle milestones with the release of CygNet v9.6:

- **CygNet v9.4** entered Limited Support on February 28, 2022 and will reach its End of Life on February 28, 2023.
- **CygNet v9.3** entered Limited Support on July 19, 2021 and will reach its End of Life on July 19, 2022.

The following Windows operating systems are no longer supported with the release of CygNet v9.6:

- **Windows 7**
- **Windows 8**
- **Windows Server 2008**
- **Windows Server 2008 R2**

Refer to the [Microsoft Lifecycle Policy](#) for information about Windows operating system support.

# Upgrade Assistance

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Upgrade assistance is provided through prepaid professional service hours provided with your annual services subscription or through time-and-materials consulting services. If you need assistance in planning, upgrading, or deploying this release, please contact CygNet Support for more information about these options. Contact CygNet Support at the [Software Support portal](#) (login required), via phone 1-866-4CYGNET (1-866-429-4638) or via email at [CygNet Support](#).

# CygNet Documentation

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The **CygNet Help** for CygNet v9.6 is available [here](#). It is best viewed in Microsoft Edge or Google Chrome browser. Microsoft Internet Explorer 11 is not supported.

# Highlights in v9.6

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This section highlights some of the major new features and enhancements in the v9.6 release. Please see [Changes in v9.6](#) below for a detailed list of changes. Refer to the *CygNet Help* for user assistance on these enhancements, modifications, and other updates.

## Canvas HMI Client

Some new and enhanced controls, configuration and scripting options, and improved usability features have been implemented in Canvas v9.6. See the full [release notes](#) section for more information about each major highlight listed below.

A new CygNet-aware navigation control has been added to Canvas, the **Map** control, giving geographical context to your facility data.

A new type of button control has been added to Canvas, the **Navigation Button**, which supports hyperlinking to other screens without scripting.

A new type of button control has been added to Canvas, the **SetPoint Button**, which supports setting a new point value without scripting.

The **Search Box** now supports the display of two facility attributes in the search box results.

The **Hyperlink** method has been enhanced to include a **Modal** open option, which will open a designated screen in a modal popup window when a hyperlink is clicked. A modal window is a type of popup that is subordinate to a parent window that appears in front of the parent and usurps the parent's control. You cannot interact with the parent window until the modal window has been closed. Hyperlinking is available on the screen, object, and the navigation button.

The **Tag Chooser** now supports multiple facility types when filtering by facility type in a Group hierarchy.

Script performance and support has been enhanced in CygNet v9.6. Older screens will be converted to an updated script format when saved in v9.6. A new utility, *CanvasFileConverter*, is available to bulk convert multiple Canvas screens to the updated script format.

## CygNet Core

The General Notification Service (GNS) has been enhanced to optionally support the **OAuth 2.0 protocol** for email processing, for user authentication with Microsoft Cloud service resources, supplementing the soon-to-be-obsolete Basic authentication mode. The OAuth 2.0 authorization mode uses the Microsoft Graph API, is a RESTful web API that enables authorization access to Microsoft Cloud service resources, including Microsoft 365 and Azure Active Directory. See all [notes](#) here.

The **CygNet OPC Server** and the **CygNet OPC HDA Server** have been enhanced to support the resolution of OPC items by an External ID. See the [OPC Server note](#) here. Other performance improvements have been made to the **CygNet OPC HDA Server**. See the [OPC HDA Server notes](#) here.

A native OPC UA server is now available, **CygNet OPC UA Server**, which communicates with a CygNet system to request and receive data via HTTP/HTTPS using via our flexible intermediary REST API application, CygNet Bridge API. See the [note](#) here.

# CygNet EIEs

Several enhancements, modifications, and fixes have been added to remote device EIEs and device template files in this release, as described [here](#).

The **Allen Bradley CIP EIE** has been enhanced with the addition of the "Read/Write Tag" and "Read/Write Tag Fragmented" CIP services and added a new "supportsBitPacking" data group attribute to differentiate between device-specific handling methods for Boolean arrays. See the [note](#) here.

The **DNP3 EIE** now supports an Integrity Poll based on any flag from the DNP3 Internal Indicators and automatic polling to trigger configured commands when certain conditions are met. See the [notes](#) here.

EFM support has been added to the **DNP3 Emerson EIE** for Emerson FB3000 flow devices. See the [note](#) here.

The **DNP3 Emerson EIE** now supports an Integrity Poll based on any flag from the DNP3 Internal Indicators and automatic polling to trigger configured commands when certain conditions are met. See the [note](#) here.

The **IoT Sparkplug EIE** now supports bdSeq matching. See the [note](#) here.

The **Modbus EFM EIE** now uses the current time for timestamp DEIDs in a dynacard transaction, if the remote device does not provide card timestamps. See the [note](#) here.

A new EIE called the **Modbus Pickford EIE** has been released, which supports the DrSCADA P700 Wellhead Manager pump controller field device. check this highlight. See the [note](#) here.

The **OPC Comm EIE** now supports forced synchronous communication, via a new check box in the device editor, if an OPC server does not support asynchronous communication. See the [note](#) here.

All EIEs now support the 8-byte data type to the **WordSwap** cvtF Conversion Method to accommodate data from devices using that format. See the [note](#) here.

# CygNet Measurement and Dispatch

An array of enhancements, modifications, and fixes for CygNet Measurement and Dispatch are included in the 9.6 release, as listed below and further detailed [here](#).

In CygNet Dispatch support has been added to schedule variable jobs based on **daily average volumes**. See additional notes for CygNet Dispatch [here](#).

In CygNet Measurement additional functionality has been provided in a variety of arenas including the following.

Enhancements made to the **Configuration control** improve usability when handling "rejected" records in the Gas Analysis data view.

The **Validate Data** command can now be used to validate data coming into the system for liquid device Nodes.

New **FMS validation rules** have been implemented, including several rules provided to validate periodic metering and historical data for liquid device Nodes, in order to identify data issues and generate exceptions.

Support has been enhanced for liquid device Node data to add new functionality and expanded visibility into liquids data including:

- reporting of **liquid configuration data** in the Liquid Device QTR and Liquid Device Raw QTR reports
- data validation and exceptions generation for liquid Nodes
- **viewing exceptions** for liquid device Node data via the Exception control in FMS Explorer

- **viewing exception counts** for liquid device Node data via the Dashboard and History Grid controls in FMS Explorer
- **closing periods for liquid device Nodes** following close period behavior defined in FMS Explorer based on exceptions status

Additional modifications and fixes have been implemented throughout CygNet Measurement to improve performance and to provide additional usability of FMS controls, commands, and reports. See additional notes for CygNet Measurement [here](#).

# Changes in v9.6

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This section describes Enhancement, Modification, and fixes to existing components in CygNet v9.6.

## CygNet Clients – Canvas, Canvas View, and Canvas View Lite

The following changes have been made to the Canvas client applications in CygNet v9.6.

### All Canvas Clients

#### Modifications

- The Canvas applications have been modified to convert pre-9.6 Canvas screens containing script to an **updated script format** when saved in Canvas 9.6. In Canvas, a Script Change Pending message will warn users of the pending change. Older screens opened in Canvas View or Canvas View Lite will be converted on the fly, but not saved. A new utility, [CanvasFileConverter](#), is available to bulk convert multiple Canvas screens to the updated script format.
- The Canvas clients have been modified to use a set of GUID-based folder and file names when viewing screens to avoid resource contention between temporary files. The **Unique** name property value was previously used to represent the precompiled script's assembly name, but now represents the folder name created in the temporary working directory. This folder will be used to store all assemblies related to the screen.
- Canvas, Canvas.View, and Canvas.View.Lite utilize a **file cache** to efficiently manage performance when opening individual screens and objects. This also applies to screens and objects used in Nested Views, the Object Container, and other controls. All requests for screens or objects are made to the file cache. If the cache contains the necessary screen, it will be returned. If the requested file is not in the cache, it is retrieved from either disk or the BSS, loaded into the file cache, and then returned to the caller. There is one exception to this:

Within Canvas, file open actions from the toolbar/Open menu will bypass the file cache and always open the file from either disk or the BSS. If a Canvas.View or Canvas.View.Lite client has already opened a screen and it then is modified by a Canvas user, the Canvas.View and Canvas.View.Lite client won't retrieve the new screen until the client application is closed and reopened.

Additionally, when opening a screen from the toolbar/Open menu Canvas will load the file directly from the source, ignoring the screen cache, however if that screen contains any nested views or objects, those will still use the screen cache. Only the selected file is considered when ignoring the cache. Any related files that get opened in connection to the selected file are still pulled from the cache, if available.

#### Fix

- Fixed an issue in **CygNet.API.Cache** that could cause a background thread to become unresponsive, ultimately preventing updates to cached data. In the case of Canvas the application hung after exit.

## Canvas Client

### Modification

- We have improved the way Canvas handles **screen caching**. When opening a screen from the File menu Canvas will load the file directly from the source, effectively ignoring the screen cache, allowing multiple Canvas screen developers to work on the same screen independently.

### Fixes

- Fixed an issue where copying and pasting controls between two screens could cause **control name collisions** resulting in multiple controls sharing the same control name. Canvas now flags these name collisions on the **Controls** tab and appends a unique string to the control name to avoid duplicate control names.
- Fixed an issue with the **Save As** dialog box where the Windows file system dialog box failed to populate with the known file name.
- It is now possible to **save style sheets for different control types** with the same style name. Previously, when creating a new style and using a name that already existed for a different control type, Canvas failed to apply the correct style and threw an exception.
- Removed the white hard-coded color assignment for the **Email** text box so that the field will change to a different theme color as expected.
- Fixed an issue where the **Lock** (IsLocked) property was incorrectly applied to controls on a screen. Previously when adding multiple controls to a screen and then changing the Lock property on any one control, Canvas changed the Lock property for the other controls on the screen.
- Fixed an issue where existing controls on a Canvas screen were getting **duplicated** when the screen was loaded.

## Canvas View Client

### Fix

- Fixed an issue in Canvas View when opening a screen from the Backstage View or when hyperlinked from another screen where the new screen was **offset** from the previous screen in a cascading effect, eventually rendering the screens unusable.

# Canvas Controls

## Alarm Grid

### Fixes

- Fixed an issue with the **Timestamp** column in the Alarm Grid where the column was presenting the date and time in UTC rather than the local time.
- Fixed an issue with the Alarm Grid where the control generated an error when attempting to use the **context menu** with a specific column configuration. Previously the control unnecessarily required the Alarm Condition Description point-based column. The Alarm Grid control now displays the expected context menu, independent of the column configuration.

- Fixed an issue with the Alarm Grid where a **scripted filter** returned unexpected results. Previously, when a scripted filter returned no results, the alarm grid failed to reset and continued to display previous filtered results.
- Fixed an issue with the Alarm Grid where it failed to resolve the **associated CAS** from the screen's facility tag for a templated screen. Now the control is able to resolve the associated CAS from the screen's Facility tag or SiteService/Facility setting, if the grid's SiteService is set to Screen. The following Alarm Grid API methods were also modified:
  - **Refresh()** — Modified the Refresh() method to update the control, i.e., to reset the cache and get alarm data.
  - **SetSiteServiceAndFilter()** — Added a new method, SetSiteServiceAndFilter() to assist in modifying the SiteService and Filter properties without causing the control to duplicate work between each property change.
- Fixed the Alarm Grid so the control behaves as expected when more than one **facility-based column** is defined. Previously, adding two or more facility-based columns to an Alarm Grid caused Canvas to fail when the screen was previewed.

## Button

### Fixes

- Fixed an issue where the Button failed to display the correct **point state color** for Background, Border, and Text elements when the Auto color theme was configured. Now the Button will display colors that follow the application's selected theme.
- Fixed an issue with the **Lock** (IsLocked) property. Previously the property used to lock a button control to a position on the screen was not getting saved.

## Chart

### Fix

- Fixed an issue with the execution of **Chart** methods on screen initialization where the **ReceiveNewSiteService** method executed even when the SiteService hadn't changed, which caused the **DataLoadCompleted** event to execute a second time unnecessarily.

## CygNet Grid

### Fix

- Fixed a scripting issue with a Generic column in a **CygNet Grid** where the column failed to show scripted values in cells as expected.

## Detail

### Fix

- Fixed the functionality and order of the **OK** and **Cancel** buttons on the **Configure Alarm Icons** dialog box.

## Edit Box

### Enhancement

- Two events have been added to the Edit Box, **KeyUp** and **KeyDown**, to allow scripted events when any key is pressed or released. In order to access to the key-related properties of the event arguments, you will need to add a reference to the WindowsBase system assembly using Canvas' assembly manager UI. After adding the reference, you will be able to safely use the System.Windows.Input.Key element. Refer to the [Canvas Help](#) for more information.

## Linear Gauges

### Fix

- Fixed an issue where the Linear Gauges failed to display the correct point state color for text when the Auto color theme was configured. Now the gauges will display colors that follow the application's selected theme.

## Map

### Enhancement

- A new CygNet-aware navigation control has been added to Canvas, the **Map** control, which can be used to give geographical context to your facility data. The map supports multiple map layers, which can be used to display CygNet facility location data via three types of visual items, including:
  - **Images** — an image or an icon, for example, an oil droplet image shown at a well site
  - **Shapes** — a geometric shape, for example, a diamond showing information about the facility
  - **Objects** — a Canvas object, for example, a donut or linear gauge showing information about the facility.

Some configuration is required in the **Facility** service to store a facility's location data in facility attributes. Canvas' global settings must be configured to indicate the map provider, API key, and the facility attributes used to store the location data. Other configurable properties include the map units, map mode, zoom level, and the map's center when first displayed. You can also restrict a map layer's visual items to a zoom range, meaning you can display different visuals as you zoom in and out of a map. The map acts as a facility sender and is limited to a specific map layer, which can be designated as the facility source on any other control configured to receive it. Whenever the visible items are updated (via pan, zoom, etc.) the dependent control's facilities are updated accordingly. Other run-mode features include a map view control, a navigation control for panning around the map, a zoom level control, a mini map, mouse position coordinates, and a map scale.

## Navigation Button

### Enhancement

- A new type of button control has been added to Canvas, the **Navigation Button**, which supports hyperlinking to other screens without scripting. The button supports the same operational modes as the Hyperlink method on the Screen object: Open, Modal open, Open and close, Replace, Replace with navigation, and Close. The control includes the same properties, events, and methods as the standard Canvas Button control.

## Nested View

### Fixes

- Fixed an issue with the **Nested View** control when setting a screen path via script. Previously when setting the Nested View's screen to a new path, the reference to the screen was cleared causing a **SendParentMessage** function to fail because no screen was found.
- Fixed an issue related to exception handling for **Hyperlinking** (with any of the Replace screen options) on a nested screen. Previously, when Hyperlinking was invoked from script with an invalid path, Canvas would display a script compiler error and terminate the script operation. That is still the behavior if you are running under the script debugger. In any other circumstance, an error message is displayed and script processing continues.

## Object Container

### Fixes

- Fixed a performance issue with the Object Container control such that screens now **load much faster**. Previously a screen containing multiple Object Containers or a screen with a single Object Container containing multiple objects took several seconds to load.
- Fixed an issue with the Object Container that could result in an **unhandled exception** when an event fired before the underlying control was finished initializing.
- Fixed an issue with **resolving relative facility** configuration settings. Previously a screen would use some settings from the global settings file specified in the screen configuration, but others would fall back to the global settings file specified on the Canvas Settings backstage menu. Now a screen will correctly resolve the relative facility configuration using only the screen's global settings file. As a result, the Object Container and the Relative Facility Tree control will now correctly resolve relative facilities and their related children using the expected global settings configuration.
- Fixed a **scripting issue** with the Object Container control when configured to include an object containing script, so that custom script is now executed against the expected object rather than against the last object present on a screen inside an Object Container control.

## Relative Facility Tree

### Fix

- Fixed an issue with **resolving relative facility** configuration settings. Previously a screen would use some settings from the global settings file specified in the screen configuration, but others would fall back to the global settings file specified on the Canvas Settings backstage menu. Now a screen will correctly resolve the relative facility configuration using only the screen's global settings file. As a result, the Object Container and the Relative Facility Tree control will now correctly resolve relative facilities and their related children using the expected global settings configuration.

## Search Box

### Enhancements

- Added two properties "**Facility attribute: Primary**" (SearchBoxResultPrimary) and "**Facility attribute: Secondary**" (SearchBoxResultSecondary) to allow configuration of the facility attributes displayed in a Search Box results. Both options present a drop-down menu of facility attributes from which you can choose the text displayed on the left position of a search results and the text displayed on the right position of a search results. The default attributes are Facility Description (left) and Facility Site.Service (right).
- Added support for the use of **grayscale facility icons** in Search Box results, which can be displayed when using a dark or light color theme.

## SetPoint Button

### Enhancement

- A new type of button control has been added to Canvas, the **SetPoint Button**, which supports setting a new point value without scripting. The button allows the designer to configure a small dialog box that prompts a user to enter a new point value. The dialog box's title and instructional message are configurable via tokenized values and static text. The point's current value, primary units and timestamp are included on the dialog box for reference. The control includes the same properties, events, and methods as the standard Canvas Button control.

## Screen and Object

### Enhancement

- The **Hyperlink** method for the screen and object has been enhanced to include a **Modal open** option, which will open a designated screen in a modal popup window when a hyperlink is clicked. A modal window is a type of popup that is subordinate to a parent window that appears in front of the parent and usurps the parent's control. You cannot interact with the parent window until the modal window has been closed. This type of window is used when you want a user to focus on or interact with information in the popup.

## Shape Control

### Fix

- Fixed an issue with the Shape control so that it now **resolves facility attributes** when no point configuration is specified. Previously if the control was configured to display a facility attribute (e.g., %FacilityDescription%), the **Text** property appeared blank at runtime. If the same control was provided a UDC (e.g., PRCASXIN) and a real-time property (e.g., %Value%), then the **Text** property updated with the expected value at runtime.

## Tag Chooser

### Enhancements

- When filtering by Facility type in a Group hierarchy in the Tag Chooser you can now **specify multiple facility types** using a semicolon separated list of facility types, for example, WELL; METER; TANK.
- Added two properties (**BackgroundColor** and **BackgroundColorSource**) to allow configuration of the background color of the tag chooser. The color can be automatically overridden with a theme-appropriate color (default) or self-selected.

- Added support for the use of **grayscale facility and point icons** in a tag chooser hierarchy, which can be displayed when using a dark or light color theme.

## Text Tool

### Fixes

- The Text Tool control now correctly **resolves point configuration** when set to use SiteService/Facility and the Screen as its source. Previously the Text Tool control failed to load real-time values and displayed "Invalid Tag" at runtime.
- Fixed an issue with the **Lock** (IsLocked) property. Previously the property used to lock a text tool to a position on the screen was not getting saved.

## Tile View

### Fix

- Fixed an issue with the Tile View where the **nested Detail screen** (the screen displayed when the nested Detail is maximized) failed to display information for a selected facility.

## Tree Map

### Fix

- Fixed an issue with the Tree Map control where the Canvas application failed when viewing a tree map in a **Stacked** layout with both positive and negative values in the data set. The control now better protects against unsupported (negative, zero, and non-numeric) values.

## Canvas Scripting

### Modification

- Modified **script event exception handling** so that Canvas screens will continue to operate even after an exception is generated. All script-driven exceptions are now reported to the Canvas application log with greater detail. If the screen is in script debugging mode, the script is stopped and the exception message is published as a script compile error, in addition to the normal logging.

### Fix

- Fixed an issue where an error message was generated when firing a **SendParentMessage** method on a screen when no parent screen existed. If encountered this error will be added to the log file.

## Canvas File Cleanup

### Modification

- After upgrading to CygNet 9.6, you may want to remove an orphaned file from your APPS service. Find the following file and delete it:

**[SITE].APPS\Bin\Canvas.Script.E~.XmlSerializers.dll**

- Remove the corresponding local file from your CygNet host and client computers. Find the following file and delete it:

**[LocalDrive]:\CygNet\Bin\Canvas.Script.Engine.XmlSerializers.dll**

# Canvas Utilities

## CanvasFileConverter

### Enhancement

- A new utility, **CanvasFileConverter**, is available to bulk convert multiple pre-9.6 Canvas screens containing script to an updated script format and preserve a backup of the original file. The utility is not automatically installed on the host computer. It is distributed on the CygNet v9.6 CD\_Image. It is automatically included in the APPS service, but it is not installed, nor is it automatically included in .rsp/.rsq files for version management. Refer to the [Canvas Help](#) for usage information.

# CygNet Clients – Other

The following changes have been made to the following CygNet client applications in CygNet v9.6.

## CygNet Explorer

### Modification

#### For new installations:

- As part of the [OAUTH email authentication enhancement](#), the descriptive label for the "SM" **Notification Address Type** in the GNS user interface in CygNet Explorer has been changed to **Email Message** to indicate support for any type of email message. Previously the label was **SMTP Mail Message** as SMTP was the only type of outgoing email message.

#### For upgraded systems:

- Any existing or new email message types ("SM") will continue to display the descriptive label **SMTP Mail Message** even if you modify your system to use OAUTH email authentication for outgoing messages. The SM label is stored in the GNSTYPE table in the TRS Database, and can be edited if desired.

### Fix

- Fixed a display issue for the **CVS Point Properties** dialog box where data in the details panes was illegible on some high DPI monitors.

## CygNet Studio

### Fixes

- Fixed an issue with the **FacNavBar** control in CygNet Studio so that ACS permissions are fully respected when viewing facilities in filtered results. Previously some facility attributes could appear in listed results without adequate user permissions.
- Fixed an issue in CygNet Studio so that **tokens are resolved** properly and correct values are displayed in **Tooltip** pop-ups.

## CygNet Vision

### Fix

- Fixed an issue in CygNet Vision so that **tokens are resolved** properly and correct values are displayed in **Tooltip** pop-ups.

# CygNet Bridge and Bridge API

**Important:** CygNet Bridge v4.5 is required to run Bridge features with CygNet v9.6. Refer to the [CygNet v9.6 System Requirements](#) document for additional version compatibility information.

## Enhancements

- Several enhancements were made to **CygNet Bridge** and **Bridge API** to support the [CygNet OPC UA Server](#), which is compatible with CygNet v9.5 and later. The following enhancements are also available for general use in CygNet v9.6:
  - Added new API for the retrieval of historical data, including forward and reverse historical access, bounded by time and by count.
  - Modified history retrieval to skip past duplicate timestamps in both forward and reverse directions. Since the Bridge API does not allow timestamp ordinals to be specified when requesting historical values nor return historical value timestamp ordinals, the underlying value iteration logic in the Bridge API has been modified to skip to the last ordinalized value entry to avoid a possible endless loop of historical value requests and responses.
  - Added support for returning point state for historical values (e.g., status bits, unreliable state, point state/alarm condition description).
  - Added support for returning external status for historical values.
  - Added new API for retrieving facility properties.
  - Added support for returning table-based facility and point attributes.
  - Added support for returning the following alarm properties that are resolved from the CVS metadata: Point State, Alarm Condition, and Alarm Priority Category Description.

# CygNet Dispatch

**Important:** CygNet Bridge v4.5 is required to run Dispatch with CygNet Measurement in v9.6. Refer to the [CygNet v9.6 System Requirements](#) document for additional version compatibility information.

## Enhancement

- You can now schedule variable jobs in Dispatch based on daily average volumes. Configuration options include a new **Data type** of *Volume* and a **Calc type** of *Average* or *Summation*.

## Fixes

- For users of **CygNet Dispatch**, fixed an issue with the jobs approval process in the FMS Explorer **Jobs** control to prevent unexpected FMS service timeouts that could previously occur in some circumstances.
- Fixed a **database error** when syncing Dispatch with the FMS database.

# CygNet Measurement (FMS)

The following changes have been made to CygNet Measurement in CygNet v9.6.

## Enhancements

- Added several tokens to the **Liquid Device QTR** and **Liquid Device Raw QTR** reports to enable display of liquid configuration data.
- Added support for several new types of **validation rules**, to expand capabilities for liquid Node data validation for periodic metering history data and historical data.
- Added the ability to the **Exception** control to view exceptions for liquid Nodes.
- Added the ability to the **Dashboard** control to view exception counts for liquid Nodes in the Analyst Overview, and Open Exceptions data views.
- Added the ability to the **History Grid** control to view open exception counts for liquid Nodes.
- Added support for liquid Device Nodes to the **Validate Data** command so that validation can be run on liquid data coming into the system.
- Updated the **Close Period** command so that liquid Nodes adhere to the close period behavior defined via the Administrative menu system options, including the existence of exceptions within the record period.
- In the **Configuration** control, the ability to view rejected records was previously added to the Gas Analysis data view. The following additional modifications have been made to improve usability and record viewing/editing functionality in the control:
  - In both the Configuration and Gas Analysis data views, expand and collapse options have been added (via + and - icons, similar to functionality in the History Grid control) so that previous records and edits can be displayed for a selected record and point in time.
  - In the Gas Analysis data view, the top row of a record can now be edited and saved, and child rows representing previous versions of the record can be viewed (for informational purposes) but not edited.
  - In the Gas Analysis data view, filter configuration options have been updated so that any record state(s) - including Pending, Sent, Failed, Timeout, Review, and/or Rejected - can be selected for display in the grid.

## Modifications

- The **Raw Data** control in the FMS Explorer has been modified to load only the most recent record for each hour to improve usability. A check box, **Show only most recent record**, has been added to the toolbar for all data views to toggle between showing all records or only the most recent record for each hour. The check box is selected by default.
- Updated the list of supported **FMS Data Items Units** to reflect the shared unit types available when configuring gas/liquid unit sets for the system.

## Fixes

- For users of **CygNet Dispatch**, fixed an issue with the jobs approval process in the FMS Explorer **Jobs** control to prevent unexpected FMS service timeouts that could previously occur in some circumstances.

- For users of **CygNet Dispatch**, the Dispatch keyword section has been removed from the FMS configuration file and the previous functionality to administratively limit jobs data quantity per synchronization action is no longer supported.
- Fixed an issue with the processing of certain **SQL system update commands** so that the FMS service maintains uninterrupted functionality. Previously the service could stall in cases with a non-compliant command history description field.
- Fixed an issue with the **Import CSV** commands (Gas Analysis, Gas Quality, History, Configuration) to successfully retrieve Node ID data. Previously, this was not occurring in some circumstances.
- Fixed an issue with **liquid import nodes** where a node continued to show missing alarms, events, or configuration data, even when support for such data was removed and no such data was ever imported for the node.
- Fixed an intermittent issue with importing large **CSV files**, to improve efficiency and reduce memory consumption.
- Fixed an issue with the **Delete Nodes** dialog (accessed via the FMS Explorer Nodes menu) so that it closes manually, but no longer closes automatically.
- Fixed an issue with the **Send Gas Quality** command, so that when handling input Gas Quality/Analysis values from CSV files, gas composition values not present in the file are sent to the field devices as 0 (zero). Previously some values were persisted unintentionally.
- Fixed an issue with the **Update Normalization Views** command, so that no change occurs when ID-based update requests find no records requiring normalization. Previously the index could be incorrectly reset to zero in such circumstances.
- Fixed an issue in the **Exceptions** control so that all exception types are selected by default when configuring filters.
- Fixed an issue with **processing liquid records**, as presented in the History Grid control or published in QTR reports, so that aggregated values that include liquid data items defined by \*\_Begin and \*\_End process variable variants correctly report values for the first or last records indicated, when rolled up into longer record span formats.
- Fixed an issue in the **Device QTR** report so that values for custom process variable items are aggregated properly when in daily record span mode.
- Fixed an issue in the **Missing Data Overview** report so that it performs as expected in cases where the "Unavailable" token is not present in the report template.

# CygNet Services

The following changes have been made to CygNet services in CygNet v9.6.

## Access Control Service (ACS)

### Enhancement

- A keyword has been added to the Access Control Service (ACS) service configuration file, **ACTIVE\_DIRECTORY\_TLS\_USAGE**, to force TLS access to an Active Directory when making LDAP queries. Configuring the keyword to "on" is the recommended setting. Run the **CygNet Config File Manager** as part of the upgrade process to add the keyword to the config file.

## Common Alarm Service (CAS)

### Fix

- Fixed an issue where a **point's highest alarm priority** was not necessarily sent to the CAS. Previously, the alarm priority reported in the CAS did not reflect the actual state of the point, remaining stuck on the previously reported value. This fix also addresses an issue where the **reporting delay** on configuration bits 11-15 would be ignored if another alarm condition with a different delay was triggered.

## Current Value Services (CVS)

For notes about the Enhanced Alarm Configuration (EAC) feature, see [Enhanced Alarm Configuration](#).

### Fix

- Fixed an issue where a **point's highest alarm priority** was not necessarily sent to the CAS. Previously, the alarm priority reported in the CAS did not reflect the actual state of the point, remaining stuck on the previously reported value. This fix also addresses an issue where the reporting delay on configuration bits 11-15 would be ignored if another alarm condition with a different delay was triggered.

## Device Definition Service (DDS)

### Fix

- Fixed an issue when **copying devices** in the DDS so that modifications to existing facility IDs ("Device ID" or "New Facility ID" values) are successful and linked facilities are correctly updated.

## General Notification Service (GNS)

### Enhancements

- The General Notification Service (GNS) has been enhanced to optionally support the **OAuth 2.0 protocol for email processing**, for user authentication with Microsoft Cloud service resources, supplementing the soon-to-be-obsolete Basic authentication mode. The OAuth authentication protocol is a far more secure method for accessing and sharing information.

Enhancements include:

Added optional support for an OAuth 2.0 authorization mode using the Microsoft Graph API. The Microsoft Graph API is a RESTful web API that enables authorization access to Microsoft Cloud service resources, including Microsoft 365 and Azure Active Directory. Added OAuth 2.0 authorization configuration to the **GNS Configuration** utility and eight **keywords** to the GNS configuration file (Gns.cfg):

- EMAIL\_AUTH\_MODE
- EMAIL\_CHECK\_CERT\_REVOKE\_LISTS
- EMAIL\_OAUTH\_AUTHORITY
- EMAIL\_OAUTH\_CLIENT\_ID
- EMAIL\_OAUTH\_CLIENT\_SECRET
- EMAIL\_OAUTH\_TENANT
- EMAIL\_OAUTH\_TYPE
- GRAPH\_RESPONSE\_TIMEOUT

The following existing keywords are now used by both the POP and GRAPH API servers, so they have been renamed and moved to the **Shared Mail Settings** section of the Gns.cfg file:

- EMAIL\_POLLING\_RATE (previously POP3\_UPDATE\_RATE)
- EMAIL\_RETAIN\_COUNT (previously POP3\_EMAIL\_RETAIN\_COUNT)

Modified support for separate outgoing (SMTP) and incoming (POP) credentials to the **GNS Configuration** utility. Added four keywords to the Gns.cfg to accommodate separate SMTP and POP3 authorization credentials

- SMTP\_USERNAME
- SMTP\_PASSWORD
- POP3\_USERNAME
- POP3\_PASSWORD

The two keywords that allow shared credentials on SMTP and POP3 servers remain supported:

- EMAIL\_USERNAME
- EMAIL\_PASSWORD

Migrated POP3 server support to a more fully featured, secure, and performant email library (MailKit).

Moved email processing out of the GNS to protect the service from malicious emails, reduce unexpected errors, and improve stability.

Enhanced the GNS to better translate HTML-only emails sent via SMS from an Apple iPhone.

After upgrading to CygNet v9.6, run the **CygNet Config File Manager** to add and rename keywords in the Gns.cfg. If desired, use the **GNS Configuration** utility to configure OAuth 2.0 authentication for your GNS notification emails. See the [CygNet Help](#) for more information.

## Modification

### For new installations:

- As part of the OAUTH email authentication enhancement, the descriptive label for the "SM" **Notification Address Type** in the GNS user interface in CygNet Explorer has been changed to **Email Message** to indicate support for any type of email message. Previously the label was **SMTP Mail Message** as SMTP was the only type of outgoing email message.

### For upgraded systems:

- Any existing or new email message types ("SM") will continue to display the descriptive label **SMTP Mail Message** even if you modify your system to use OAUTH email authentication for outgoing messages. The SM label is stored in the GNSTYPE table in the TRS Database, and can be edited if desired.

## Fix

- Fixed an issue with a General Notification Service configured to use a **VoIP/SIP** server connection, so that the connection automatically attempts re-registration after loss, and VoIP notifications can succeed after SIP reconnection. Previously a service restart was required in such circumstances.

## Master Scheduling Service (MSS)

### Fix

- Updated the Master Scheduling Service (MSS) so that new **facility attributes** added in CygNet v9.5 are also available when configuring scheduled task parameters for UIS commands. Previously these items were not appearing in the drop-down menu options.

## OPC Interface Service (OPCIS)

### Fix

- Fixed an issue with the OPCIS where **Boolean OPC values** would be incorrect when stored in CygNet digital points.

## Point Service (PNT)

For notes about the Enhanced Alarm Configuration (EAC) feature, see [Enhanced Alarm Configuration](#).

### Fix

- Fixed an issue where a **point's highest alarm priority** was necessarily sent to the CAS. Previously, the alarm priority reported in the CAS did not reflect the actual state of the point, remaining stuck on the previously reported value. This fix also addresses an issue where the reporting delay on configuration bits 11-15 would be ignored if another alarm condition with a different delay was triggered.

## Service Monitoring Service (SVCMON)

### Fix

- Fixed an issue with slow **SVCMON timer cycles** when monitoring multiple domains. If a domain becomes unreachable during a timer cycle, the SVCMON will now attempt to find an ARS on that domain only two times, before marking all points configured for that timer on that domain as unreliable. Previously when a SVCMON timer was configured to monitor multiple domains, and one domain became unavailable, the timer would attempt to find an ARS on that domain for each service on the domain that was being monitored.

# Enhanced Alarm Configuration (EAC)

## Modification

- The following modification has been made to **self-referencing EAC configurable bit state evaluation**: When an EAC expression for a specific config bit references self, the value of the config bit used (Set/Clear) in the expression will now represent the value the bit held prior to the processing of the current value that is initiating the evaluation of the expression. Prior to this change, the value used by the expression was always 'Set', which represented the intermediate bit state prior to the EAC expression evaluation. Since the new bit state is still being evaluated when the EAC expressions are executing, resolving to the bit state that existed prior to the determination of the new bit state makes more sense.

## Fix

- Fixed an issue where **all point CfgBit15 status bits** were hidden from the list of configurable bits on the left side of the Enhanced Alarm Settings editor. The intent was to only hide the CfgBit15 status bit if it was also configured with a description of "EAC Prevented" as is the case for point scheme '0'.

# EIEs – Communication Devices

The following changes have been made to CygNet communication devices in CygNet v9.6.

## Modem Bank EIE

### Fix

- Fixed an issue with Modem Bank comm devices so that **Queue Priority** is handled properly when processing UIS commands on the pending comm queue.

## OPC Comm EIE

### Enhancement

- Added a check box to the OPC Comm EIE driver properties to force synchronous communication. Set the **Force synchronous I/O** option if an OPC server does not support asynchronous communication. If checked, the comm device will override the value of the **SyncIO** parameter in the UIS command component parameters.

# EIEs – Device Template Files

The following change has been made to CygNet device template files in CygNet v9.6.

**Important:** *If a device template file has been updated for this release, we strongly recommend that you obtain the applicable v9.6 sample device template file, edit it to retain customizations you added to your pre-v9.6 in-use template, and replace your pre-v9.6 in-use template with the version v9.6 sample template. Do not simply replace your pre-v9.6 in-use template with that provided on the source image because you will lose any template customizations that you previously made. Refer to the **Device Template Files** sections of the **CygNet Help** for detailed information about modifying templates.*

# EIEs – Remote Devices

The following changes have been made to CygNet remote devices in CygNet v9.6.

## Changes affecting all EIE Remote Devices

### Enhancement

- Added support for 8-byte data types to the **WordSwap** cvtF Conversion Method to accommodate data from devices using that format.

### Modification

- Improved DTF validation for the defDataGroups and defUisCmds sections of the device template file.

## Allen Bradley CIP EIE

### Enhancement

- Enhanced the Allen Bradley CIP EIE with the addition of the **Read/Write Tag** and **Read/Write Tag Fragmented** CIP services and added a new "supportsBitPacking" data group attribute to differentiate between device-specific handling methods for Boolean arrays. Previously, the Allen Bradley CIP EIE only performed tag read/writes with the "Multiple Service Packet" CIP service, and used bitpacking behavior of 32 bits per dword. The addition of these CIP services allows communication with the Micro800 series devices, which do not support the "Multiple Service Packet" CIP service and do not support bitpacking. The addition of the new data group attribute "supportsBitPacking" retains current behavior when set to "true" (default value) while allowing setting a value of "false" to accommodate the one bit per byte Boolean behavior used by Micro800 series devices.

## Amocams 700 EIE

### Enhancement

- Enhanced the Amocams 700 EIE to allow **opcode 0x80** to be used for the following data groups: "Control Logs (Long)" (CtrlLogL), "Control Logs (Short)" (CtrlLogS), "Daily Prod Log" (DProdLog), "Monthly Prod Log" (MProdLog), "Prod Cycle Log" (ProdCLog), and "Test Set Prod Cycle Log" (TProdCLog) (new). To enable polling these logs with opcode 80, add the following to each data group: baseOrd="1", maxCnt="2", opcode="0x80".
- Added "History – Hourly" (HrlyHist) data group support for the Amo700EGMP2 and Amo700EGMWC devices that returns a different response to the **Upload Audit Log command**. There is a new optional attribute on the **HrlyHist** data group named "autoDetectResponse". If autoDetectResponse="true", the EIE will parse the data based on data length of the response. Response data will be parsed according to the Command Code 32 EGM layout as defined in the Communication Manuals for Models 700EGMWC and 700EGMP2 if the response data length matches.

## AutoCom EIE

### Modification

- The **32-character limit** on the Description field for the data group element in the **Data Group Element Definition** dialog box for Configurable Data Groups has been removed in the AutoCom EIE to conform with other EIEs.

## DNP3 EIE

### Enhancements

- Added **Integrity Poll** support to the DNP3 EIE, including the ability to customize the device template file to automatically issue a configured command based on any flag from the DNP3 Internal Indicators or upon UIS device reload. Enabling or disabling the commands can be done on a per device instance basis.
- Support for automatic polling to trigger configured commands when certain conditions are met has been added to the DNP3 EIE. An **autoPoll** structure has been added to the **dnp3Support** section of the device template files to configure the auto-polling conditions and actions. An **Auto poll** button and dialog box had been added to the **Device** page of the remote device editor in CygNet Explorer allowing you to override any configured condition for a remote device instance. The default BASICPOLL UIS command had been removed. The following command types can be configured to automatically execute:
  - **INTEGRITY** — perform an integrity poll for the following conditions:
    - when the UIS is restarted
    - when the remote device is reenabled
    - when the IIN.7 flag indicates a device restart
    - when the IIN.11 flag indicates an event overflow condition
  - **RESTART** — clear the IIN.7 flag and perform an integrity poll
  - **DG\_F\_DEV** — read events from the device when the IIN.1, IIN.2, IIN.3 flags indicate that class 1, 2, or 3 events are available
  - **DG\_T\_DEV** — initiate a time sync when the IIN.4 flag indicates the device needs time.
- The mechanism for issuing an integrity poll has changed for the DNP3 EIE so you can build a custom integrity poll. A special built-in UIS command, **INTEGRITY**, is now used to issue an integrity poll, retrieving events for all classes 1-3 followed by class 0 (all points) in a single message. The data received from an integrity poll is split into the existing **Event** and **AllPoints** data groups for point processing and data group transaction retention. The INTEGRITY UIS command uses a special INTEGRITY command component type.

The previous default UIS command (also named INTEGRITY) has been removed from the DNP3 EIE device template file.

The **Service Migration** utility has been modified to migrate the definition of any previous UIS commands named INTEGRITY to use the new built-in UIS command INTEGRITY. Run the utility if you have existing devices using the previous INTEGRITY UIS command.

When adding a new DNP3 device the built-in UIS command INTEGRITY is automatically added. A UIS command (CLRSTXA) to clear historical data (cached value for get latest) is also available for new DNP3 devices.

- Added an **EVENT** default UIS command type to the DNP3 EIE device template file to get all class 1, 2, or 3 events. An event overflow condition (IIN.11 bit) will now automatically issue an integrity poll when detected.

### Modification

- The **32-character limit** on the Description field for the data group element in the **Data Group Element Definition** dialog box for Configurable Data Groups has been removed in the DNP3 EIE to conform with other EIEs.

## Fix

- Fixed an issue with receiving **binary input (BI) values** when a DNP3 field device sends by index instead of by range.

## DNP3 Emerson EIE

### Enhancements

- Added **Integrity Poll** support to the DNP3 Emerson EIE, including the ability to customize the device template file to automatically issue a configured command based on any flag from the DNP3 Internal Indicators or upon UIS device reload. Enabling or disabling the commands can be done on a per device instance basis.
- Support for automatic polling to trigger configured commands when certain conditions are met has been added to the DNP3 Emerson EIE. An **autoPoll** structure has been added to the **dnp3Support** section of the device template files to configure the auto-polling conditions and actions. An **Auto poll** button and dialog box had been added to the **Device** page of the remote device editor in CygNet Explorer allowing you to override any configured condition for a remote device instance. The default BASICPOLL UIS command had been removed. The following command types can be configured to automatically execute:
  - **INTEGRITY** — perform an integrity poll for the following conditions:
    - when the UIS is restarted
    - when the remote device is reenabled
    - when the IIN.7 flag indicates a device restart
    - when the IIN.11 flag indicates an event overflow condition
  - **RESTART** — clear the IIN.7 flag and perform an integrity poll
  - **DG\_F\_DEV** — read events from the device when the IIN.1, IIN.2, IIN.3 flags indicate that class 1, 2, or 3 events are available
  - **DG\_T\_DEV** — initiate a time sync when the IIN.4 flag indicates the device needs time.
- The mechanism for issuing an integrity poll has changed for the DNP3 Emerson EIE so you can build a custom integrity poll. A special built-in UIS command, **INTEGRITY**, is now used to issue an integrity poll, retrieving events for all classes 1-3 followed by class 0 (all points) in a single message. The data received from an integrity poll is split into the existing **Event** and **AllPoints** data groups for point processing and data group transaction retention. The INTEGRITY UIS command uses a special INTEGRITY command component type.

The previous default UIS command (also named INTEGRITY) has been removed from the DNP3 Emerson EIE device template file.

The **Service Migration** utility has been modified to migrate the definition of any previous UIS commands named INTEGRITY to use the new built-in UIS command INTEGRITY. Run the utility if you have existing devices using the previous INTEGRITY UIS command.

When adding a new DNP3 device the built-in UIS command INTEGRITY is automatically added. A UIS command (CLRHXSTA) to clear historical data (cached value for get latest) is also available for new DNP3 devices.

- Added an **EVENT** default UIS command type to the DNP3 Emerson EIE device template file to get all class 1, 2, or 3 events. An event overflow condition (IIN.11 bit) will now automatically issue an integrity poll when detected.

- **EFM support** has been added to the DNP3 Emerson EIE for **Emerson FB3000 flow devices**, which requires minimum firmware version 02.07.02. The DNP3 Emerson driver has been modified to extrapolate EFM configuration, history (hourly and daily), event, and alarm data needed by CygNet FMS from the device-specific historical data that was previously available, providing better access to the native meter configuration data using the standard DNP3 protocol. The following data groups are polled:
  - **FMS Configuration** data is retrieved for DP, Linear, and Liquid Linear (allocation) meter types
    - Get data comes from the **Meter Configuration** data groups (MtrCfgDp, MtrCfgLin, and MtrCfgLiq)
    - Send data is written to the **Gas Component Configuration** data group (GasCfg)
  - **FMS History** data comes from the Station History data group (HistStaD and HistStaH)
  - **FMS Event** data comes from the Event History data group (HistEvent)
  - **FMS Alarm** data comes from the Alarm History data group (HistAlarm).

If you have previously created history data groups for this device type, they can coexist with new history data groups created for FMS. The naming convention for data element ID's (DEIDs) in history data groups was modified to support multiple meters per station. For multi-meter stations, History Configuration and Station History data groups will need to be re-polled, which will change the DEIDs and affect point mapping.

The DNP3 Emerson EIE driver and editor files (32-bit and 64-bit versions), and the DNP3Emerson\_FB3000.dtf template file have been modified in support of this enhancement.

- Added support for **multi-meter stations to send historical data** to FMS from the **Emerson FB3000 device**, while continuing to support single-meter stations.
  - For single-meter stations, the naming convention is maintained: auto-created history DEIDs will continue to use the Hxxx format, where xxx is an EFM item ID.
  - For multi-meter stations, the meter instance is appended: the Hxxx-yyyy format is used, where yyyy is a type/instance, one for each meter in the station, e.g., H004\_0211 and H004\_0212.

The DNP3Emerson\_FB3000.dtf has been modified to use the **efmItem** attribute instead of the **deid** attribute for history items in the **fmsMaps/histItems** and **fmsMaps/alarmItems** sections of the device template file. This provides support for both single-meter and multi-meter stations.

## Modification

- The **32-character limit** on the Description field for the data group element in the **Data Group Element Definition** dialog box for Configurable Data Groups has been removed in the DNP3 Emerson EIE to conform with other EIEs.

## Fix

- Fixed an issue with receiving **binary input (BI) values** when a DNP3 field device sends by index instead of by range.

## Eagle EIE

### Fix

- Fixed an issue with the Eagle EIE when **sending data to field devices** using UIS commands with generic data groups. Previously a crash could occur in this circumstance.

## eProd EIE

### Modification

- The **32-character limit** on the Description field for the data group element in the **Data Group Element Definition** dialog box for Configurable Data Groups has been removed in the eProd EIE to conform with other EIEs.

## IoT EIE

### Modification

- The **32-character limit** on the Description field for the data group element in the **Data Group Element Definition** dialog box for Configurable Data Groups has been removed in the IoT EIE to conform with other EIEs.

### Fix

- Fixed an issue with the IoT EIE so that during UIS command creation the **Choose group** button is correctly enabled when **adding a DG\_T\_DEV** (send data group to device) component type.

## IOT Sparkplug EIE

### Modifications

- The **32-character limit** on the Description field for the data group element in the **Data Group Element Definition** dialog box for Configurable Data Groups has been removed in the IoT Sparkplug EIE to conform with other EIEs.
- Configurable data groups on IoT Sparkplug devices now support the use of optional **aliases for Sparkplug metric names**.

### Fixes

- Fixed an issue with the IoT Sparkplug EIE so that when an **NDEATH** or **NBIRTH** message is received, points mapped to data groups that are subscribed to that node will be marked as **unreliable** (true if the topic is subscribed just to the node level topic or any child device level topic of that same node). Previously the child device level topic points were not marked unreliable.
- Fixed an issue with the IoT Sparkplug EIE so that during UIS command creation the **Choose group** button is correctly enabled when **adding a DG\_T\_DEV** (send data group to device) component type.

## Modbus EFM EIE

### Enhancement

- When polling dynacard data with the Modbus EFM EIE, if the remote device does not provide card timestamps the current time will be used for **timestamp DEIDs** in the card transaction.

### Modification

- When exporting DDS transaction data with references, DEIDs that are references to **arrays** will now be included.
- Improved DTF validation for Modbus devices to continue validation after a Modbus block error and improve error messages.

## Modbus Pickford EIE

### Enhancement

- A new EIE called the Modbus Pickford EIE has been released, which supports the DrSCADA P700 Wellhead Manager pump controller field device. The EIE contains all standard Modbus functionality plus additional special handling for dynacards.

## All OPC EIEs (OPC EIE, OPC Lufkin EIE, and OPC Weatherford EIE)

### Modification

- The **32-character limit** on the Description field for the data group element in the **Data Group Element Definition** dialog box for Configurable Data Groups has been removed in the OPC EIE, OPC Lufkin EIE, OPC Weatherford EIE to conform with other EIEs. Refer to the

## OPC Weatherford EIE

### Enhancement

- Enhanced the OPC Weatherford EIE to support polling Baker 8500 protocol devices on the Matrikon ScadaCAC OPC server. Use the OPCWFord\_8500.dtf to support Matrikon OPC card retrieval from Baker 8300/8500 protocol devices. Refer to the [CygNet Help](#) for more information.

## Thermo EIE

### Fix

- Fixed an issue with the Thermo EIE so that **cryouts** report valid responses for Thermo AutoPILOT PRO devices.

# Link Service

The following changes have been made to the Link Service for MQTT publishing in CygNet v9.6.

### Modification

- The Link service now includes a new version of the **MQTTnet library (v3.0.17)**, which provides MQTT-based communication. This version of MQTTnet includes a change to configure the number of topics that can be included in a single subscription. This is necessary because AWS (Amazon Web Services IoT Core) only allows 8 topics per subscription, and will shut down the connection if more are submitted. Link will automatically set the option if the vendor name is set to "Amazon". No user configuration is required.

# ODBC Driver

### Fix

- CORE-6184/ CORE-6204 Fixed an issue with the CygNet ODBC driver which occurred when **running a query against a DBS-based service that joined one index table with another index table**. Before the fix, the number of records returned from this type of query was incorrectly capped at 100. Although this type of index-to-index join is supported, it is not recommended. Most likely, joining an index table directly to a data table, instead of joining to another index table, will produce the same results in less time.

# OPC Server

## Enhancements

- The CygNet OPC Server has been enhanced to support the **resolution of OPC items by an External ID**. The External ID attribute is a CygNet Point Reference property of an external point. The following changes have been made:
  - Added parsing and resolution of ExternalID-based CygNet tags passed in as OPC items.
  - A new OPC item format is supported: SITE.SERV::  - Omitting the "SITE.SERV::" portion of the OPC item and only including the "MixedCaseExternalId" portion of the OPC item will search the services listed in the OpcServerDefaultSiteServices.txt file. See the [CygNet Help](#) for details about this configuration file.
  - All printable ASCII characters are allowed in the "MixedCaseExternalId" portion of the OPC item, except for the semi-colon character (;). Allowed characters:
    - Any mixed-case alpha-numeric characters (A-Z,a-z,0-9)
    - Any special characters (!\"#\$%&'()\*+,-./:;<=>?@[\\]^\_`{|}~ ), including the <space> character ( ), but excluding the semi-colon character (;)
    - 256 character limit
  - Added ";EXTERNALID" as a valid property identifier when specifying an OPC item.
  - Added the retrieval of a point's ExternalId field to the default OPC item properties returned by QueryProperties.
  - To optimize performance when resolving OPC items by an External ID, you must add the following index to the **PntAppl.ddl** file and reindex the PNT database.

```
DEFINE INDEX ID=EX_INDEX,  
  
NAME=PNT_EX_INDEX,  
  
VERSION=1,  
  
RECORD_ID_BYTE=27,  
  
PREFIX=EX,  
  
DESCR="External ID",  
  
ITEM=(EXTID.ExtId, LENGTH=79);
```

- Reindex the PNT. Stop the PNT service, reindex the database using ReIndexESE (run as admin), restart the PNT.

## Fix

- The CygNet tag string format (**Site.Service.PointID**) is now supported by the CygNet OPC Server.

# OPC HDA Server

## Enhancements

- The CygNet OPC Server has been enhanced to support the **resolution of OPC items by an External ID**. The External ID attribute is a CygNet Point Reference property of an external point. Note that the CygNet OPC HDA Server does not support the use of point properties in the OPC HDA tag format because the server retrieves a list of historical values, not single attributes for a point as the CygNet OPC Server does. The following changes have been made:
  - Added parsing and resolution of ExternalID-based CygNet tags passed in as OPC items.
  - A new OPC item format is supported: SITE.SERV::  - Omitting the "SITE.SERV::" portion of the OPC item and only including the "MixedCaseExternalId" portion of the OPC item will search the services listed in the OpcServerDefaultSiteServices.txt file. See the [CygNet Help](#) for details about this configuration file.
  - All printable ASCII characters are allowed in the "MixedCaseExternalId" portion of the OPC item, except for the semi-colon character (;). Allowed characters:
    - Any mixed-case alpha-numeric characters (A-Z,a-z,0-9)
    - Any special characters (!\"#\$%&'()\*+,-./:;<=>?@[\\]^\_`{|}~), including the <space> character ( ), but excluding the semi-colon character (;)
    - 256 character limit
  - Added ";EXTERNALID" as a valid property identifier when specifying an OPC item.
  - Added the retrieval of a point's ExternalId field to the default OPC item properties returned by QueryProperties.
  - To optimize performance when resolving OPC items by an External ID, you must add the following index to the **PntAppl.ddl** file and reindex the PNT database.

```
DEFINE INDEX ID=EX_INDEX,  
  
    NAME=PNT_EX_INDEX,  
  
    VERSION=1,  
  
    RECORD_ID_BYTE=27,  
  
    PREFIX=EX,  
  
    DESCR="External ID",  
  
    ITEM=(EXTID.ExtId, LENGTH=79);
```

- Reindex the PNT. Stop the PNT service, reindex the database using ReIndexESE (run as admin), restart the PNT.

## Fixes

- Fixed an issue with the CygNet OPC HDA Server where it **continued to create new threads** and failed to release them until the server became inoperable. The CygWtHDAsvr.dll (a supporting library used to integrate data with OPC) has been renamed and moved to the **Support\CygNetOPCHDA\** folder alongside the CygNetOPCHDA.exe. The CHostUpdater will handle the placement of this file.

- The CygNet tag string format (**Site.Service.PointID**) is now supported by the CygNet OPC HDA Server.

## OPC UA Server

### Enhancement

- CygNet Software introduces a native OPC UA server, **CygNet OPC UA Server**, which communicates with a CygNet system to request and receive data via HTTP/HTTPS using via our flexible intermediary REST API application, CygNet Bridge API. The CygNet OPC UA Server is a separately licensed component from existing CygNet SCADA software components.

For more information about obtaining and licensing the CygNet OPC UA and CygNet Bridge products, contact your Account Manager or CygNet Sales. You can download the CygNet OPC UA Server installer file from the CygNet Download Site. See the [CygNet Help](#) for installation and configuration information about the CygNet OPC UA Server and CygNet Bridge (login required).

Note that several enhancements have been made to [CygNet Bridge](#) to support data retrieval by the CygNet OPC UA Server.

## Redundancy

### Modification

- Some enhancements have been made to the failover process to reduce latency to **improve failover performance**.

## Scripting

### CxDds

#### Modification

- When exporting DDS transaction data with references, DEIDs that are references to **arrays** will now be included.

#### Fix

- Fixed an issue that would occur in CxEventIF or CxHMIUtils when retrieving certain CvsMetadata-sourced properties.

# Utilities

The following changes have been made to CygNet utilities in CygNet v9.6.

## CygNet Service Migration

### Enhancement

- Added a new **Update Option** to the CygNet Service Migration utility, **DNP3 Integrity Poll**, to change the definition of any UIS commands named INTEGRITY to use a new special UIS command INTEGRITY, which will get events for all classes 1-3 followed by class 0 (all points) in a single message, instead of getting data in two separate messages. See the related [note](#) here. Refer to the **DNP3 EIE** section in the [CygNet Help](#) for more information.

## DDS Check

### Fix

- Fixed an issue with the DDS Check utility (DdsCheck.exe) where the utility was **incorrectly showing "Orphan DEID"** warnings for FmsConfig and other Fms data groups, as well as some configurable data groups that have UDCs mapped to data group elements.

## VHS Data Analyzer Utility

### Fix

- Fixed an intermittent issue in the VHS Data Analyzer utility so that, when using an **unreliable thinning model**, history values are not unintentionally deleted from the Value History Service.