

# **Cognex Designer**

## **Release Notes 4.5.0**

**2024 July 15**  
**Revision: 4.5.0.21**

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# Release Information

This section contains information about the current release of Cognex Designer and its release history.

## Security Requirements for VisionPro

VisionPro and Designer software require a USB security key attached to your computer to ensure the software is properly authorized for use. Refer to VisionPro documentation for the latest information on the minimum firmware required for this release.

If you are using a security key with a previous version of firmware, contact Cognex Support for assistance in upgrading to the latest version. Keep your security key firmware up to date to take advantage of the latest features and improvements to Cognex software security.

## About this Release

Cognex Designer 4.5.0 provides compatibility with VisionPro 9.21 and includes the following new features:

- Allows you to host Web HMI settings on a secure (HTTPS) web server
- Adds the ability to communicate with external systems using the MQTT protocol
- Adds new sample plugins that allow you to develop your own custom project components:
  - VisionPro ToolBlock Scaler Component  
Create a single Master ToolBlock which can be used as a template to generate multiple independent instances of that ToolBlock
  - Example Custom Camera Device  
Provides a template for creating a custom adapter Designer can use to integrate with custom camera devices
  - Additional sample Blocks:
    - Camera Configuration Block
    - Custom Styled Block
    - Dynamic Input/Outputs Block
- Instructions for how to speed up project loading

See your installed Designer documentation for details.

## PC Requirements

Your computer must meet minimum requirements to use Cognex VisionPro and Cognex Designer. Refer to the VisionPro Quick Reference, installed with your VisionPro software, for minimum hardware and OS requirements. Find the VisionPro Quick Reference from the Windows Start menu (**Cognex->VisionPro ® Quick Reference**).

Visit the [Cognex Designer Support](#) website for a complete list of compatible versions of Cognex VisionPro and Cognex Designer.

## Operating System Requirements

Microsoft Windows Operating System	Service Pack	English	German	Spanish	French	Japanese	Korean	Simplified Chinese
Windows 10 (64-bit)		✓	✓	✓	✓	✓	✓	✓
Windows 11 (64-bit)		✓	✓	✓	✓	✓	✓	✓

## Plugin Development Requirements

The following requirements are necessary for developing plugins for Cognex Designer 4.5.0:

- Microsoft Visual Studio 2019 (16.8)
- Microsoft .NET Framework 4.7.2

**Note:** Microsoft Visual Studio 2013 is **NOT** supported on the Windows Embedded 8.0 OS used on Cognex Vision Controllers.

For detailed information about working with plug-ins, see the How To... Plugins topic.

## Cognex Vision Controller Requirements

For information regarding the Cognex Vision Controller requirements, please consult the [Cognex Designer Support Website](#). The Technical Bulletins contain additional information about updating the Vision Controller to the latest release of both Cognex Designer and VisionPro.

## Web Browser HMI Requirements

Cognex Designer supports opening Web Pages with the following web browsers:

- Google Chrome™, version 126 or greater  
Cognex recommends Google Chrome for the best performance when viewing and interacting with your Web-based HMI.
- Microsoft Edge®, version 124 or greater

**Note:** Due to issues in Microsoft Edge and Google Chrome, displaying HMIs in Web Browsers for a long period of time (multiple days) can result in the browser window being non-responsive or the browser crashing. Cognex recommends periodically restarting the Web Browser in this scenario.

## About Cognex VisionPro Deep Learning™

Cognex® VisionPro Deep Learning software provides a collection of machine vision tools which tackle different hard-to-program challenges through the use of deep learning.

The Cognex VisionPro DeepLearning Studio uses a common engine, but each tool has a distinct focus:

- Localization (Blue Locate tool)
- Cosmetic inspection (Red Analyze tool),
- Classification (Green Classify tool)
- Hard-to-read OCR (Blue Read tool)

By using the VPDL Runtime plug-in, you enable deep learning integration capabilities with Cognex Designer.

See the VisionPro Deep Learning documentation for complete information about integration with Cognex Designer.

**Note:** For Designer users that require the use of both the VPDL plugin and VisionPro EL Tools, a supplemental installer for VisionPro will be required in order to avoid project conflicts. See the VisionPro documentation for further details.

## Migrating to this Release

This topic contains information about changes that may affect existing projects when migrating projects from the previous release of Cognex Designer (Cognex Designer 4.3) to the current release of Cognex Designer (4.5.0).

- **Obsolete API**

Change from:

```
void CSharpScriptDefinition.RefreshObjectNames()
```

to

```
int CSharpScriptDefinition.RefreshObjectNames()
```

Plugin should be recompiled and have the signature updated.

**Note:** For more information about migrating from earlier releases, see [Release History on page 13](#).

## Resolved Issues

A list of open issues in previous Designer releases that are fixed in this release.

**Note:** Issue numbers have been included (where applicable) to improve the tracking of issues reported to Cognex Technical Support.

Issue #	Summary
RUT-1193	Included Coordinate space tree support for the WebHMI Display
RUT-1675	Fixed issue causing crash when WebHMI was under high load
RUT-1369	Fixed issue causing crash on startup if there was a problem accessing Windows OS details
RUT-879	Fixed issue causing crash on startup if there were "Stale" recent projects entries
RUT-1101	Tool Edit control now supports VisionPro 9.21 ViDiEL tools (Classify, Segment & OCR)

## Behavior Changes and Known Issues

Cognex Designer 4.5.0 introduces multiple new or changed capabilities since 4.4.3.

The following tables describe all known issues and notable changes in Cognex Designer behavior.

### Changes in Behavior

Behavior	Description
<b>Continuous task triggers are deprecated</b>	As of release 4.4.2, the Continuous task trigger mode is deprecated. Existing projects that used this task trigger will be automatically converted to a default Timer Interval task trigger.

<b>Warning when task trigger queue is full</b>	<p>As of release 4.4.2, task trigger queues have a size limit. A warning is displayed when a task trigger fires while the task queue is full.</p> <p>Tasks that use a Timer Interval task trigger with an interval that is shorter than its execution time, will quickly fill up the queue and result in a lot of warnings in the Designer log.</p>																					
<b>Rounding used by the touchscreen</b>	<p>As of release 4.4.1, the rounding at midpoints used by the touch keypad has been changed from <a href="#">Bankers' rounding / half</a> to <a href="#">Round-away-from-zero</a>. Some examples:</p> <table border="1" data-bbox="628 495 936 810"> <thead> <tr> <th>Input</th> <th>4.4.0</th> <th>4.4.1</th> </tr> </thead> <tbody> <tr> <td>1.4</td> <td>1</td> <td>1</td> </tr> <tr> <td>1.5</td> <td>2</td> <td>2</td> </tr> <tr> <td>1.6</td> <td>2</td> <td>2</td> </tr> <tr> <td>2.4</td> <td>2</td> <td>2</td> </tr> <tr> <td>2.5</td> <td>2</td> <td>3</td> </tr> <tr> <td>2.6</td> <td>3</td> <td>3</td> </tr> </tbody> </table>	Input	4.4.0	4.4.1	1.4	1	1	1.5	2	2	1.6	2	2	2.4	2	2	2.5	2	3	2.6	3	3
Input	4.4.0	4.4.1																				
1.4	1	1																				
1.5	2	2																				
1.6	2	2																				
2.4	2	2																				
2.5	2	3																				
2.6	3	3																				
<b>OPC UA Server certificates expiration dates</b>	<p>As of release 4.4.1, Cognex Designer OPC UA Server certificate expiration has increased from one year to 10 years.</p>																					
<b>Saving Images with the Image Recorder Block</b>	<p>As of release 4.4.1, Recording to a remote CDB file is no longer supported as an option on the Image Recorder Block when storing files remotely.</p>																					
<b>ViDi Plugin not supported</b>	<p>As of release 4.3.1, Cognex Designer does not support ViDi Plugin but supports a new DeepLearning plugin (VPDL) replacement. See the topic <a href="#">Product and Upgrade Codes on page 12</a> for compatible versions.</p>																					
<b>Warning if AVX2 instruction set is not supported on PC</b>	<p>As of release 4.3.1, once a project is loaded, the Output window shows the following warning if the CPU of the computer running Cognex Designer does not support the Advanced Vector Extensions 2 (AVX2) instruction set:  AVX2 instruction set is not supported on this machine:  VisionPro 3D functionality will not be available.</p> <p>In such cases, the 3D features of VisionPro will not be supported, and using them in the project can result in crashes or errors.</p>																					
<b>Warning appears when license is about to time out</b>	<p>As of release 4.3.1, when using a Development License, Cognex Designer provides a warning 30 minutes before license expiration, allowing users to properly test and save their project in time.</p>																					
<b>Updated .NET Framework version for Plugin development</b>	<p>As of release 4.3, developing plugins for Cognex Designer requires Microsoft .NET Framework 4.7.2 to be installed.</p>																					
<b>Change in the default behavior of the VisionPro Display element</b>	<p>As of release 4.3, the VisionPro Display control element has been enhanced to auto-fit the images and graphics appearing on it.</p>																					
<b>Changed image format shown on WebHMI</b>	<p>As of release 4.3, Cognex Designer sends 8-bit grayscale images to Web Pages instead of 24-bit grayscale images to improve performance.</p>																					

<b>New Garbage Collection Method</b>	As of release 4.1, Cognex Designer employs a background Garbage Collection technique by default for all new projects. This may result in longer task execution time in Test Mode than in earlier versions, such as 2.x. Therefore, always benchmark using a deployed application. See the Scheduling Garbage Collection topic for more information.
<b>New Garbage Collection Method</b>	As of release 4.1, Cognex Designer employs a background Garbage Collection technique by default for all new projects. This may result in longer task execution time in Test Mode than in earlier versions, such as 2.x. Therefore, always benchmark using a deployed application. See the Scheduling Garbage Collection topic for more information.
<b>Legacy project sequences replaced with Sub Tasks</b>	As of release 4.0, legacy Cognex Designer 2.x project sequences are replaced with a Sub Task.

### Known Issues

Issue	Description
<b>Startup Error: Need Admin Access to Create HTTPS Certificates</b>	On startup, an error may occur with "A post-display action failed to run" relating to exception "System.Security.Cryptography.CryptographicException". If this error occurs, next time Designer is started, right-click and select "Run as Administrator".
<b>BouncyCastle.dll Already Exists in Designer</b>	If you upgrade from an earlier version of Designer and use the OPC Plugin in your project, you must upgrade the OPC Plugin to version 1.1.6 to avoid an issue involving duplicate DLLs. See the topic <a href="#">Optional Communications Plugins on page 1</a> for more information.
<b>Block Associated with 3D-A5000 Sensor Missing Output Pins</b>	The Block associated with a 3D-A5000 acquisition sensor lacks output pins for any <b>AcquisitionMode</b> other than <b>PointCloud</b> .
<b>VisionPro Deep Learning Plugin and ViDiEL Tools</b>	Using this Designer release with the VisionPro Deep Learning (VPDL) plugin and the VisionPro 9.10 ViDiEL Tools (CogClassifyTool or CogSegmentTool) requires you install both: <ul style="list-style-type: none"> <li>VPDL 3.1.1 (earlier versions of VPDL are not compatible)</li> <li>The VisionPro 9.10 supplemental GPU installer, which you can find in the same location on MyCognex as the VisionPro 9.10 installer.</li> </ul> <p>In some instances it has been seen that on Windows 10 (even with the supplemental installer) the user may get the error "<i>Cannot get Cartel wrapper factor creator function</i>" when trying to train one of the ViDiEL Tools. To resolve this, copy all .dll and .cbd files from the "VisionPro\bin" folder, to the "Designer\4.4.3" folder.</p>
<b>ViDiEL tool edit controls not supported</b>	The ViDiEL Tools can not be used within Designer's "VisionPro Tool Editor" control. This includes the ViDiEL ClassifyTool and the ViDiEL CogSegmentTool. Access to configuration for these tools can still be provided indirectly by using Designer's "VisionPro ToolBlock Editor" control to host the ToolBlock containing either the Classify or Segment tool.
<b>OxyPlotViewer Plugin not supported</b>	There are issues preventing the OxyPlotViewer plugin working with Cognex Designer release 4.4.3.



<b>OPC UA Plugin</b>	Designer crashes on close, if OPC certificate has expired. The Security certificate (located at: "C:\ProgramData\Cognex\Designer\Certificates\own\certs") used by the Cognex Designer Plugin OPC UA Server should be an open certificate that accepts all connections. Deleting the folder C:\ProgramData\Cognex\Designer\Certificates should force it to be re-created.
<b>Designer projects cannot be opened by multiple users on a shared drive</b>	Designer project file permissions do not allow access by other user accounts. To work around this issue, choose either of the following actions: <ul style="list-style-type: none"> <li>• Make a copy of the project file and replace it in the same directory and replace it in the same directory from the user account attempting to access it</li> <li>• Explicitly add a suitable user group to the file permissions with Full Control.</li> </ul>
<b>Designer crashes after 1 hour when using a DSMax camera with Web HMI enabled</b>	Using a DSMax in a Designer project will crash after one hour if the Web HMI is enabled. To work around this issue, choose either of the following actions: <ul style="list-style-type: none"> <li>• Disable the WebHMI.</li> <li>• Add the environment variable <b>COGNEX_LOG_APG_FG1_DLL_LEVEL</b> and set the value to <b>5</b>.</li> </ul>
<b>Unsupported ports when accessing the WebHMI with Google Chrome or Mozilla Firefox</b>	The Enable Web Server setting (available through <b>Project &gt; Settings &gt; Web HMI</b> ) does not work with Google Chrome and Mozilla Firefox if the port is set to 79. Configure a different port number to solve this problem.
<b>WebHMI Inactivity Timeout does not work in Test Mode</b>	The Inactivity Timeout setting (available through <b>Project &gt; Settings &gt; Web HMI</b> ) currently only works when accessing a deployed project through a web browser, and does not work in Test Mode.
<b>Handling Database files while creating, importing or deleting Databases</b>	When creating, importing or deleting Databases in Cognex Designer, the following limitations apply: <ul style="list-style-type: none"> <li>• Removing a Database from a Cognex Designer project does not remove the underlying Database file.</li> <li>• When you create or import a new Database, using the name that matches an existing *.db3 file will result in having the new Database loaded with the table structure of the previous database.</li> </ul>
<b>Auto-Camera detection limitation</b>	Auto-Camera Detection only functions when Creating a New Project with Project Types.
<b>Errors when handling large recipe configurations</b>	In Recipes, when loading a large configuration (for example, the file size of the corresponding .json file is greater than 550M), an error such as <code>Array dimensions exceeded supported range results</code> .
<b>Anti-Virus software</b>	If anti-virus software is enabled for real-time protection it may also perform disk scans at a user-specified time. The disk scans may interfere with busy vision software applications. If so, consider disabling anti-virus software, or managing behavior in a manner appropriate for the application.

<p><b>Expression Builder function does not get updated.</b></p>	<p>When an <code>ItemAt(\$index, \$array)</code> function is constructed in the Expression Builder, it will only update the returned value when the value of the <code>\$index</code> tag changes, or a new array is assigned to the <code>\$array</code> tag. The following C# script statements illustrate how to trigger a value change event:</p> <pre>\$index++; \$array = { "one", "two", "three" };</pre> <p>The following C# script statement will not trigger a value change event:</p> <pre>\$array[1] = "new value";</pre>
<p><b>Test Mode changes on Pages persist in Program Mode</b></p>	<p>If an element on a Page (e.g. CheckBox, TextBox, etc.) is modified while in Test Mode, after exiting Test Mode, the element will not return to its state prior to entering Test Mode. To do so, the Designer <i>OnStartup Script</i> must be used to explicitly set the default values of Page elements. For example, if a Page contained a TextBox which should be blank at startup, the script would be:</p> <pre>\$Pages.Page.TextBox.Text = string.Empty;</pre>
<p><b>Uninstalling/Reinstalling software on a Cognex vision controller</b></p>	<p>In the event that the default installations of VisionPro or Designer need to be uninstalled and then newer versions installed, if a black desktop (no Cognex wallpaper) and a blank, blue Taskbar is encountered after the initial reboot after uninstalling/reinstalling, press the Windows Logo key to return to the Start screen, and then select the Desktop tile/icon to return to the correct Desktop.</p>
<p><b>Changing the primary language of the operating system on a Cognex vision controller</b></p>	<p>If the primary language of the Operating System on a Cognex Vision Controller is changed (e.g. from English, the default language, to Simplified Chinese), the Vision Controller will need to be restarted. In the event that the desktop appears without the Cognex wallpaper and a blank, blue Taskbar is encountered after the reboot, press the Windows Logo key on your keyboard to return to the Start screen. Next, select the Desktop tile/icon to return to the correct Desktop.</p>
<p><b>Startup Issue resulting in incorrectly firing Precision I/O Events</b></p>	<p>A startup issue incorrectly firing Precision I/O Events can occur in Industrial Communications if the following conditions are met:</p> <ul style="list-style-type: none"> <li>• The output mapping of the configured industrial communications connection is set to falling-edge trigger.</li> <li>• The bit state is low.</li> <li>• Another signal transition causes the industrial communications protocol to push an update through the logic.</li> </ul> <p>In such cases, the mapping will false-trigger one time and incorrectly fires the discrete event.</p> <p>This only occurs when the bit state starts low, and the mapping is set to falling-edge trigger, or the bit state starts high, and the mapping is set to rising-edge trigger.</p>

<b>Modifying VisionPro and Tool Block Editor Page Controls while a Task is running</b>	If a Page contains a VisionPro Tool Editor or VisionPro ToolBlock Editor element, they should be configured to not allow user interaction while the application sequence is running. Changes to these two types of controls can be made when the application is being modified at design time in the development environment, or in a deployed application, but only when the sequence using the tools is not running.
<b>Unsupported database data types</b>	<p>Cognex Designer does not support the <i>decimal</i>, <i>geography</i>, <i>hirachyid</i>, <i>image</i>, <i>money</i>, <i>numeric</i>, <i>smallmoney</i>, <i>sql_variant</i>, <i>time</i>, <i>timestamp</i> and <i>xml</i> data type parameters. When creating a database, ensure that these types are not used for columns, otherwise Designer will be unable to connect to the database.</p> <p>Cognex Designer only supports a sub-set of data types: <i>bigint</i>, <i>binarybit</i>, <i>char</i>, <i>date</i>, <i>datetime</i>, <i>datetime2</i>, <i>datetimeoffset</i>, <i>float</i>, <i>int</i>, <i>nchar</i>, <i>ntext</i>, <i>nvarchar</i>, <i>real</i>, <i>smalldatetime</i>, <i>smallint</i>, <i>text</i>, <i>tinyint</i>, <i>uniqueidentifier</i>, <i>varbinary</i>, <i>varchar</i>. Use Microsoft® SQL Server® 2008 Management Studio or later to create and edit SQL Server databases.</p>
<b>Return statements in Script Editor</b>	When wanting to use a return statement to exit a script function, use the <code>return null;</code> statement, instead of the <code>return;</code> statement. In the Script Editor, scripts must always return an object, even though the signature of the script function returns void.
<b>FFP Offline requested Task Triggers for "Online" and "Offline" status</b>	<p>When implementing industrial communications protocols, consider that within Cognex Designer, the <i>OfflineRequested</i> event is mapped into both a scriptable point called <i>FFP Offline Requested</i> and a Task Trigger called <i>Devices.{CommCardName}.FfpOfflineRequested</i>. During execution, if the <i>OfflineRequested</i> event is fired, it will run the script registered to the scriptable point called <i>FFP Offline Requested</i>.</p> <p>At this point, the user can access the <i>ReturnToPreviousState</i> member of the argument, and determine the state of the device (False = Offline and True = Online). After this has occurred, the event triggers the <i>FfpOfflineRequested</i> Task Trigger. However, in this case, there is no way to determine the requested state, so any Task registered to run as a result of this trigger will be executed, regardless of the state.</p>
<b>OPC UA Plugin compatibility with older Windows versions</b>	If Cognex Designer 4.5.0 is used on a machine running <i>Windows 7</i> or <i>Windows Embedded 8</i> , the OPC UA Plugin works only if the <a href="#">.NET Framework 4.7.2. Runtime</a> package has been installed for the operating system. This limitation does not impact machines running on <i>Windows 10</i> .
<b>Updating property page for Tags inside the Tag Editor</b>	When a row is selected in the <b>Tag Manager</b> and the user changes the state of properties in the <b>Property Editor</b> , the change in state will be lost if the user clicks on a different row within the <b>Tag Manager</b> and then clicks back into the row for which the property was changed.
<b>DateTime Entry element can crash on increment/decrement</b>	When the comma is highlighted in the DateTime Entry text (for example, <i>Monday, 27 February 2023 12:00:00 am</i> ), Designer will crash if the user clicks the increment or decrement button.

## Product and Upgrade Codes

Designer	API	Product Code	VisionPro	.NET	Deep Learning	Comments
4.5.0	4.5.0	757D45FA-F26F-4916-9422-0D2708FA84BE	9.21	4.8	VPDL 3.30	
4.4.3	4.4.3	E8FB0D91-685F-48A3-ADC1-75E24212993D	9.10	4.8	VPDL 3.1.1	
4.4.3 Preview 1	4.4.3	D6A61026-A5E7-4388-8D5F-7092B7197217	9.9 SR1	4.8		Comms plugins upgraded to Modbus (1.2.2), TwinCAT (3.0.6), OPC UA (1.1.3)
4.4.2	4.4.2	A0E01B0D-1583-4CDE-9CA2-1EF62C2CE0AA	9.8	4.8	VPDL3.0	Comms plugins upgraded to Modbus (1.2.1), TwinCAT (3.0.5), OPC UA (1.1.2)
4.4.1	4.4.1	1E940356-3D1A-43C5-90F7-FFEC4EBEA89D	9.7	4.7.2	VPDL 1.1	Comms plugins upgraded to: Modbus (1.2.0), TwinCAT (3.0.4), OPC-UA (1.1.1)
4.4.0	4.4.0	9BA1325F-27A4-4159-8D9D-4AA3E1BDC0E1	9.6 SR2	4.7.2	VPDL 1.1	Designer no longer enforces any specific version of VisionPro. TwinCAT plugin upgraded to 3.0.3, Modbus plugin upgraded to 1.1.3, OPC-UA plugin upgraded to 1.1.0.
4.3.1	4.3.2	7E61223A-7C94-4EB2-9D64-E969C854CD5A	9.6	4.7.2	VPDL 1.0-1.0.1	ViDi Plugin no longer supported. Replaced by a new DeepLearning plugin. TwinCAT plugin upgraded to 3.0.2, Modbus plugin upgraded to 1.1.2. OPC UA released 1.0.2
4.3.0	4.3.1	A1253D2A-62D4-4A1D-A129-7FBE718925BD	9.5 SR2	4.7.2	VIDI 4.1.0 - 4.1.3	Comms plugins upgraded to Modbus (1.1.1), TwinCAT (3.0.1), OPC UA (1.0.1).
4.2.0	4.3.0	40ED1DFC-4320-4E5F-AB29-E2FE589C376C	9.5 SR1	4.7.1	Unavailable	Modbus (1.1.0), TwinCAT (3.0.0), OPC UA (1.0.0) plugins first included for 4.x
4.1.2	4.2.0	40ED1DFC-4320-4E5F-AB29-E2FE589C376C	9.5	4.7.1	VIDI 3.4.1	
2.7	3.5.1	54A2FBEA-3ADE-4749-A6D9-CF8A711739C	9.2	4.6	N/A	
2.6	3.5.0	E2951431-1CD9-4B62-ADF4-43A5FD71C387	9.1	4.6	N/A	
2.5 PR5	3.1.0	BE5CEE3F-827E-46B6-B5FF-B1367B2CF87C	9.0		N/A	
2.1	3.0.0	588BE36C-5F7E-440D-BEA3-B443FC39A9FF	8.4 SR3		N/A	

**Note:**

- Designer 4.4 and later releases support VisionPro releases 9.4 to 9.\*. The column **VisionPro** indicates the version used for testing.
- Designer 2.x product codes represent the x64 version only; not the x86.

## Supported Hardware

The following acquisition platforms, communication cards, cameras and sensors are supported by Cognex Designer.

## Supported Acquisition Platforms and Communication Cards

- Cognex Vision Controller
- Cognex CC24 I/O Communication Card
- Cognex CFG-8704e Frame Grabber Card
- Cognex CFG-8724 Frame Grabber Card
- GigE Vision
- MVS-8602e CameraLink
- Acquisition Interface Kit (AIK)

## Supported Cameras and Sensors

- Cognex 2D Industrial Cameras (CIC cameras)
- Cognex 3D Displacement Sensors (DS900 series and DS1000 series)
- As well as those supported by VisionPro for the Acquisition Platforms listed above.

## Designer Sample Projects

Designer includes several sample projects to help illustrate how to use the program, and how different elements of Designer fit together to create modern machine vision application solutions. For more information on opening the sample projects, see the Sample Projects topic.



**Tip:** For additional information and sample codes and projects, please visit the [Cognex Designer Support Site](#). A link to the Cognex Designer Support Site is also included in the Help menu.

**Note:**

Subject to Cognex Corporations terms and conditions and license agreement, you are authorized to use and modify this source project in any way you find useful, provided the Software and/or the modified Software is used solely in conjunction with a Cognex Machine Vision System. Furthermore you acknowledge and agree that Cognex has no warranty, obligations or liability for your use of the Software.



This sample program is designed to illustrate certain Cognex Designer features or techniques in the simplest way possible. It is not intended as the framework for a complete application. In particular, the sample program may not provide proper error handling, event handling, cleanup, repeatability, and other mechanisms that a commercial quality application requires.

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## Release History

The following topic lists the features and resolved issues in previous releases of Cognex Designer.

**Note:** Cognex Designer supports *backwards compatibility*- projects created with earlier Designer versions can be opened and modified in this release. Be aware Cognex does not support loading projects created by later versions of Designer in earlier versions of Designer.

## Cognex Designer 4.4.3 Release

Cognex Designer 4.4.3 is a minor release to provide compatibility with VisionPro 9.9 SR1 and VisionPro 9.10. This release has been tested against both VisionPro 9.9 SR1 and VisionPro 9.10, and offers improvements to Startup and Shutdown times.

### Resolved Issues

A list of open issues in previous Designer releases that are fixed in this release.

**Note:** Change Request numbers (CR#) have been included (where applicable) to improve the tracking of issues reported to Cognex Technical Support.

CR#	Issue
CDVP-355	Added <b>Run Task</b> button before the ToolBlock Editor's <b>Run Tools</b> button
CDVP-1767	Resolved issue causing crash when adding an FTP device in non-English environment
CDVP-1786	Fixed issue with TCP Server consuming too much CPU when connected to Client
CDVP-1788	Improvements to Designer shutdown time for project with many Toolblocks
CDVP-1794	Improvements to Designer startup time

## Cognex Designer 4.4.2 Release

Cognex Designer 4.4.2 is a major release to add the following features:

- Tested against VisionPro 9.8
- The ProjectDiff utility for comparing two projects side-by-side
- Project settings designed to reduce the time required to load your project
- Command-line arguments providing various options for starting your deployed application or the Designer IDE.
- Various enhancements to TCP devices.
- New parameters for configuring a TwinCAT device
- SoftEvents to use as a Trigger for executing a Task
- Details on how to add entries to an Audit Trail
- Updated XAML sample code for a page plugin
- Updated C# sample code for a page plugin
- Updated sample code to illustrate how to export data from a query to a CSV file.
- Scripting functions for Tasks and SoftEvents

### Resolved Issues

A list of open issues in previous Designer releases that are fixed in this release.

**Note:** Change Request numbers (CR#) have been included (where applicable) to improve the tracking of issues reported to Cognex Technical Support.

CR#	Issue
CDVP-344	Added TCP Client events (OnConnected / OnDisconnected). OnDataReceived includes raw binary.
CDVP-1165	Fixed the ExampleElement plugin to be able to resize control.
CDVP-1427	Ability to configure message format for TCP and Serial devices.
CDVP-1537	Add a project comparison tool to display differences between project versions.
CDVP-1652	Fix a crash when starting the Web Server due to Intel CPUs with Performance and Efficiency cores.
CDVP-1660	Added missing Designer ImageFileCamera API to documentation
CDVP-1664	Added warning to log for any Toolblock script errors found on startup
CDVP-1666	Add support for configuring TCP KeepAlive messages through the user interface.
CDVP-1668	Added function \$System.Restart() to restart a deployed application.
CDVP-1670	Added a command-line argument, "/delay=###" to delay the start-up of Designer. See the topic <a href="#">How To ... Properties Shortcuts on page 1</a> for details.
CDVP-1672	Provide functionality to trigger soft events with an associated object. See the topic <a href="#">SoftEvents on page 1</a> for details.
CDVP-1673	Fixed a bug that would cause Designer to crash when opening the advanced data type editor with the Deep Learning plugin.
CDVP-1675	Fixed a bug that prevented the upgrading of a 2.6 project that contained a binary object.
CDVP-1678	Improved error message when OPC UA server certificate expires and fails to auto renew
CDVP-1680	Speed up Designer IDE loading. See the topic <a href="#">How To...Speed Up Project Loading on page 1</a> for details.
CDVP-1683	Expose the ability to set the thread priority level of different threads.
CDVP-1686	Fix broken device paths. See the topic <a href="#">Device Paths on page 1</a> for details.
CDVP-1691	Correctly escape characters when using the \$Databases.DB.Table.Query.DataSet.GetDataCsv(). See the topic <a href="#">Export Query Data to a CSV File on page 1</a> for details.
CDVP-1718	Fixed Designer's Installer version of the ProcessorAffinityTool
CDVP-1722	Added VisionPro user guide link to the start page
RUT-526	Prevented TwinCat client device from loading large PLC variables, and instead warn the user before adding that symbol to a black list
RUT-527	Fixed issue with Performance Profiler GC0 and OnCompleted columns being swapped

## Cognex Designer 4.4.1 Release

Cognex Designer 4.4.1 is a minor release to address a number of bugs primarily relating to the touch keypad and TwinCAT:

- Tested against VisionPro 9.7.
- Deployed application icons can be added via the Deployment Options dialog
- Sample plugins added for Devices and WinForms HMI elements
- Added the ability to query databases directly
- The Merge Graphics Block has the option ignore missing graphics

## Cognex Designer 4.4 Release

Cognex Designer 4.4 introduces multiple new or changes capabilities since the previous generally available (GA) release (4.3.1):

- Drop support for Windows 7. Windows 10 is the only officially supported operating system.
- Plugin development should now use Visual Studio 2019 (16.8)
- Supports VisionPro 9.6 SR2
- OPC UA Plugin to support tag subscriptions
- Option to increase the limit of a Recipe's size
- Option to asynchronously write to a database

### Resolved Issues

Cognex Designer 4.4.1 introduces multiple new or changed capabilities since 4.4.

This section describes changes and resolved issues.

**Note:** Change Request numbers (CR#) have been included (where applicable) to improve the tracking of issues reported via Cognex Technical Support.

CR#	Issue
CDVP-817	Remove incomplete support for saving CDB files to remote sources (for example, FTP)
CDVP-921	TwinCAT Group write errors after changing plc variable name
CDVP-936	Re-adding lost database queries results in error messages.
CDVP-951	The argument 'description' of \$FileSystem.ShowFolderDialog() doesn't work
CDVP-952	Gateway logs do not clear space
CDVP-965	Keypad - Clicking +/- makes the existing pre-set number disappear
CDVP-968	HMI Keypad mid point rounding changed from banker's rounding to away from zero
CDVP-1066	Textbox for Recipe Config string value ingredient is annoyingly small.
CDVP-1288	Closing keypad using touch causes keypad to reopen in some scenario
CDVP-1320	Correct password cannot exit Test Mode on a different user account
CDVP-1321	Fix total memory usage in performance profiler
CDVP-1324	Constantly closing and reopening VisionPro ToolBlock editor will cause Designer to crash
CDVP-1333	Non-instantiable parameters in a Designer <b>ClickCommand</b> will cause start-up errors and makes Designer content irrecoverable for user.
CDVP-1406	Trying to connect TwinCAT device in Designer crashes when PLC has circular pointers
CDVP-1413	HMI.ShowKeyboard, the preset string would be erased when clicking on any key button
CDVP-1418	Designer crashes when using ListBox HMI control scrollbar
CDVP-1485	Extend the default OPC UA server certificate expiry to 10 years
CDVP-1495	Touch Keyboard not responding to touch events
CDVP-1525	Unable to save to a network path after long file path support was added
CDVP-1530	Access violation during ImgHttpRequestHandler
CDVP-1531	Changing the "Encoding" of a TCP connection via Reconfigure doesn't work.



CDVP-1535	Performance Profiler produces unusable logs when run under certain languages like DE.
CDVP-1545	TwinCAT TryWrite fail isn't logging which tag has failed
CDVP-1555	Gracefully handle ComputerInfo.FullName throwing


## Cognex Designer 4.3.1 Release

Cognex Designer 4.3.1 introduces multiple new or changed capabilities since the previous generally available (GA) release (4.4.3). See the below list for more information.

- ViDi Plugin is no longer supported, and replaced by a new DeepLearning plugin (VPDL Runtime Plugin).
- **Sample Project for WebHMI Vision Tool Editing:** Practice the editing of the supported Vision Tools through the WebHMI with a new WebHMI Vision Tool sample project, `Basics_EditGraphics`. Access this project through the *Sample Projects* list of the **Cognex Designer Launch Page**. See the **Sample Projects** topic for more information on the Cognex Designer sample projects, and the **Edit VisionPro Tools Through the WebHMI** topic for more information on editing supported VisionPro Vision Tools through project web pages.

### Resolved Issues

This section describes changes and resolved issues.

 <b>Note:</b> Change Request numbers (CR#) have been included (where applicable) to improve the tracking of issues reported via Cognex Technical Support.
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CR#	Issue
CDVP-1248	Updated the handling of Development Licenses. Cognex Designer now sends a warning 30 minutes before license expiration, allowing users to test and deploy their project in time.
CDVP-1272	Fixed a memory leak that occurred when using a dollar tag \$ expression in the <code>TagPath</code> field of a <code>Tag</code> .
CDVP-1244	Fixed an issue with the <code>KeyPad</code> control on the HMI not responding to touch events correctly when opened in a pop-up window.
CDVP-605	Fixed an issue with the HMI <code>ListBox</code> not saving the changes made for its <code>Display Column</code> and <code>Value Column</code> properties.
CDVP-1270	Fixed an issue with Recipes returning a configuration type mismatch error when loading a Recipe, even though the configuration and recipe types were actually compatible with each other.
CDVP-1275	Updated the TwinCat device of Cognex Designer to support reconnecting in runtime during connection problems.
CDVP-1258	Fixed an issue that prevented users from using a custom splash screen for their deployed applications.
CDVP-1273	Improved the performance of the Script Editor's auto-fix feature to better handle C# scripts.

## Cognex Designer 4.3 Release

Cognex Designer 4.3 introduces multiple new or changed capabilities since the previous generally available (GA) release (4.2). See the below list for more information.

- Supports VisionPro 9.5 SR2
- **Editing Vision Tools in Runtime through the WebHMI:** Adjust and/or fine-tune the Vision Tools of your project during runtime by modifying them remotely through the WebHMI.

- **Ease of Use Enhancements:** The Cognex Designer user interface has received several graphical enhancements (such as new category icons or window naming changes) along with the following new features:
  - Added a new Web Pages Browser, allowing you to quickly access the list of WebHMI pages created in the project.
  - Added the ability of configuring a startup web page for the project through the Web Pages Browser or the Project Explorer. See the Configure a Startup Web Page topic for more information.
  - Updated the Script Editor with new buttons and hotkeys for quickly commenting out lines of code, or uncommenting existing comment lines.
  - Updated the Task Editor and the Tag Manager to support directly assigning tags to compatible Page and WebPage user input elements. See the Assign a Pin to a Page or Web Page Control and the Tag Manager topics for more information.
- **New Sample Plugins:** Develop your own custom Task Blocks, HMI elements, or HMI chart control elements with a set of sample plugins supplied with the Cognex Designer 4.3 installation. See the Use Sample Plugins topic for more information.
- **Shared Project Resources:** Share project resources between your development project and deployed application with the new Share Resources with IDE setting of the Deployment dialog. See the Deployment Options topic for more information.
- **Test Mode Password:** Protect your Cognex Designer Development project by specifying a password for exiting Test Mode. See the General topic for more information.

## Cognex Designer 4.2 Release

Cognex Designer 4.2 introduces multiple new or changed capabilities since the previous generally available (GA) release (4.1 PR2). See the below list for more information.

- Supports VisionPro 9.5 SR1
- **Optional Communications Plugins** - Enhance the industrial communications capabilities of your vision project with the following optional industrial communications protocols:
  - *Modbus* - With a set of new Devices, Task Blocks and \$ functions, the Modbus plugin adds support for the general-purpose Modbus communications protocol in Cognex Designer.
  - *OPC UA Server* - Represented in the Devices node of the Project Explorer, the OPC UA Server functionality brings support for the OPC UA cross-platform machine to machine communication protocol, allowing you to read and write exposed project Tags and \$ Functions through OPC UA client applications on the network.
  - *TwinCAT* - Interact with Beckhoff® TwinCAT® 2 or 3 software systems through the ADS/AMS protocol by setting up a TwinCAT client device in Cognex Designer, and performing synchronous or asynchronous read/write operations through TwinCAT tags and \$ functions.
- **FTP Client Support** - Avoid local storage limitations by setting up an authenticated FTP connection in the Project Explorer, and uploading acquired images to a remote FTP server with the enhanced Image Recorder task block.
- **Image File Device Enhancements** - Get a better picture of simulated image acquisition by utilizing the enhancements of the Image File device. Use the new device tags in tandem with the Watch list window to get up-to-date information on the number of images used for emulation, the currently loaded image, and more.

## Cognex Designer 4.1 PR2 Release

Cognex Designer 4.1 PR2 introduces multiple new or changed capabilities since the previous generally available (GA) release (4.0).

- **Supports VisionPro 9.5**
- **Performance Monitoring** - Browse performance statistics relating to your Cognex Designer application's task execution time, memory usage, and garbage collection details, using the [Analyzing Application Performance with Performance Profiler](#), which runs and monitors tasks in a project and produces a report and CSV file. See a breakdown of block execution times in a succinct bar-graph format by [Displaying Block Time Performance Data](#).
- **Efficient, Less Disruptive Garbage Collection** - The Resource-intensive Dynamic Garbage Collection present in releases 4.0.0 and before has been deprecated. Settings have been changed to allow Background Garbage Collection which can lessen performance impact. This new Garbage Collection setting is enabled by default for all new projects. See the [Scheduling Garbage Collection](#) topic for more information.
- **Performance Tuning** - Tune performance metrics by [Scheduling Garbage Collection](#) and implementing processor [Load Balancing Using Core Assignments](#).
- **Graphics Consolidation** - Combine multiple supported graphics and image formats into a single CogRecord for convenient and efficient processing in Cognex applications. See the [VisionPro Tool Block Graphics Options](#) topic for complete details.
- **Project Types** - Cognex Designer now supports drastically [Accelerating Development With Predefined Project Types](#). With a single click, launch a fully defined project template that can be quickly customized. Project Types enable you to spend more time developing vision applications and less time creating HMIs or writing scripts.
- **Getting Started Tutorials** - Walk through every phase of creating a standalone Vision Application with the new [Getting Started](#) documentation section that lets you learn at your own pace, with only the content that applies to your needs.

## Cognex Designer 4.0 Release

Cognex Designer 4.0.0 introduces multiple new or changed capabilities since the previous generally available (GA) release (2.7).

- **Supports VisionPro 9.3**
- **Supports Cognex ViDi Suite** - Supports Cognex ViDi Suite, which enables Deep Learning programming within Cognex Designer. The ViDi Suite is a separate product and requires an additional license and installation. Please see the Cognex Deep Learning-based Image Analysis page or contact your sales representative for more information about the ViDi Suite optional plug-in for Cognex Designer.
- **WebHMI** - With WebHMI, access your deployed application through a standard browser, enhancing user productivity. Run your remotely hosted applications, free from the constraints of local sites and domains. Drag and drop a display or viewer object on customizable Web Pages and bind objects to any tag, function, or query. Create your own scripts to add advanced functionality to your WebHMI applications. Deliver your vision application securely with support for Web authentication and set timeout values for your WebHMI log-ins. For more information, see WebHMI: A Functional Overview.
- **Improved IDE and New Graphical Editing Shortcuts** - Featuring a high-resolution rich-text interface, ability to add multi-line text to labels, and other convenient graphical shortcuts for Working With Task Blocks and Working With Script Blocks.
- **Localization** - Manage multiple-language translations from a single interface with Project Localization.
- **Launch Page** - Use the Cognex Designer Launch Page to quickly open new projects, saved projects or sample projects with a few mouse clicks.

## Cognex Designer 2.7 Release

Cognex Designer 2.7 introduced multiple new or changed capabilities since the previous generally available (GA) release of Designer (2.6):

- Supports VisionPro 9.2
- No longer supports x86 (32-bit)

### Resolved Issues in Designer 2.7

CR#	Issue
44464	Serial device not correctly processing byte data

## Cognex Designer 2.6 Release

Cognex Designer 2.6 introduces multiple new or changed capabilities since the previous generally available (GA) release of Designer (2.5):

- Supports VisionPro 9.1
- Supports .NET Framework 4.6

**Note:** This primarily affects plugin developers.

### Resolved Issues in Designer 2.6

CR#	Issue
41629	Fixed an issue, where a tag exposed in a VisionPro ToolBlock got into an invalid state and caused start up error.
40523	Fixed an issue with obfuscation that prevented custom Plugins being developed using Visual Studio 2015.

## Cognex Designer 2.5 PR5 Release

Cognex Designer 2.5 PR5 introduces multiple new or changed capabilities since the previous generally available (GA) release of Designer (2.1):

- **Update Properties of RS232 and TCP/IP Devices**

The right-click menu for [RS232](#) and [TCP/IPDevices](#) has been updated and now includes a *Reconnect* option, which allows you to reconfigure the properties of a previously connected device.

In addition, the properties of RS232 devices can be updated programmatically, while at runtime.

- **Updated VisionPro Display 3D and New VisionPro Display 3D Status Bar**

The [VisionPro Display 3D](#) has been updated with the new control introduced in VisionPro version 9.0, and the [VisionPro Display Status Bar 3D](#) element has been added as a new control in Designer 2.5.

- **Find/Replace Dialog for the Script Editor**

A *Find and Replace* dialog has been added to the [Script Editor](#), using the [Script Editor Keyboard Shortcuts](#).

- **Minimize the Window of Deployed Applications**

The *Windowed Mode* parameter has been added to the [Deployment Options](#) dialog, which determines whether or not the deployed application window can be minimized.

- **Add External Assemblies to Designer Projects**

The ability to add custom or 3rd party DLL/.NET assembly references to your project, which allows you to create tags of any data type, through the [External Assemblies](#) tab of the [Project Settings](#) dialog, and the *Script References* dialog (see the [Adding References](#) topic for more information).

- **Longer Security Operation**

The Designer security mechanism has been modified to last 8 hours when using a Cognex USB Development Dongle.

- **New Database Sample**

A new sample project has been added to the Cognex Designer Launcher - Samples tab, showing examples for implementing and using databases in Designer.

- **The Cognex Designer User Guide Improvements**

The Cognex Designer User Guide has been overhauled, with a new Table of Contents and numerous new topics, including new How To... topics.

- **Resolved Issues in Designer 2.5 PR4**

CR#	Issue
41339	Fixed an issue when loading an older project whose PropertyDefinition is set to null. Now, when loading a project with a ConfigurableBlock that has a PropertyDefinitions property set to null, it will be converted to an empty array.
41311	Fixed an issue present in Designer 2.5 PR1, PR2 and PR3 that affected custom plugins, in which a published property in an abstract class would not be detected.
39276	Fixed an issue when loading projects in Designer 2.5 that were created in Designer 2.0, which resulted in Designer 2.5 closing unexpectedly.
38936	Fixed an issue with the Format PLC Output Data block throwing a "Specified cast is not valid" error, when migrating a project from Designer 2.0 to 2.5.
39283	Fixed an issue when a Cog3DPlane value was saved as a persistent tag. The value is now saved and restored correctly.
39528	Fixed an issue with Data Change scripts which could cause a "The data change script is no longer connected to a tag." error message.
38292	Fixed an issue when loading large projects; the Designer application could take additional time to startup while the project was loaded.
36625	Fixed an issue with an Out of Memory - Value of an input and output pin in a Sub Sequence block was saved in a project file.
36505	Fixed an issue where an Unhandled Exception was encountered when logging in via Remote Desktop to a Vision Controller while a Designer project was running.
36510	Fixed an issue with a possible deadlock on long running image inspection tasks.
36507	Fixed an issue with a Parallel region Task 'InvokeAsync' error.
35185	Fixed an issue with deployed applications, which showed script compile errors at startup: "Could not write to output file 'C:\%TMP%\z13st3bc.dll', The process cannot access the file because it is being used by another process."
35503	Fixed an issue with a project freezing when a Sequence was run, and a VisionPro Tool Block is open.
35568	Fixed an issue where changing the SelectedItem property in one SelectionBox would change the SelectedItem property in an unrelated SelectionBox.
35723	Fixed an issue where Designer would crash when using a CogPMAAlignTool on the Vision Controller.
36168	Fixed an issue where the Tag Browser would open slowly if there were more than 1000 tags.
36165	Fixed an issue where disconnecting a camera would cause any links to the associated Camera block to be broken.

## Cognex Designer 2.1 PR1 Release

- **Updated Project File Format**

The file format of Designer projects has been modified, and when projects developed in previous versions of Designer are opened and loaded in Designer 2.1, they will automatically be converted to the new format.

- **Sub Sequence Blocks now Allow Input/Output Pins**

The Sub Sequence block has been updated and modified, and now contains internal and external input and output pins to help configure a Sequence.

- **Updated Data Type Selector**

The [Data Type Selector](#) has been updated and modified, and now also contains the ability to create data type arrays and/or generic data types with the [Complex Type Selector](#).

- **Create Arrays**

The ability to create single-dimensional and multi-dimensional arrays of data has been added, through both the [Complex Type Selector](#) and in the [Expression Builder](#). This allows Designer to pass groups of related data around a project. For example, transferring arrays of integers, doubles or CogBlobResults from one Sequence block to another.

- **Updated Template File Format**

The file extension for the template files has been updated, from .cdt to .cdtx. Please see the [Templates](#) topic for more information about the file format change.

- **Updated Recipe File Format**

The file format for [Recipes](#) has been modified.

- **Updated Keyboard Shortcuts**

The following keyboard shortcuts have been introduced:

- CTRL+S: Saves a project.
- F1: Opens the Cognex Designer User Guide.
- F2: Used to rename a node in the Application Explorer treeview.
- F5: Used to start and stop Test Mode.
- F6: Executes the current Sequence, or compiles the current script (depending on which editor is active, e.g. the Sequence Editor or the [Script Editor](#)).

- Resolved Issues in Designer 2.1

CR#	Issue
	Added the ability to create arrays of data using the Complex Type Selector, and basic functions to handle arrays in the Expression Builder.
33190	Added keyboard shortcuts to Designer for saving a project (CTRL+S), opening the Cognex Designer User Guide (F1), renaming a node in the Application Explorer treeview (F2), starting and stopping Test Mode (F5) and executing the current Sequence or compiling the current script (F6).
34614	Added "String.FormatNumber(value, decimals)" for formatting a double value data type in the Expression Builder.
34432	Added the RunAsync(...) function to the Task functions, which allows a Task to be run asynchronously from a script, using the following format: <code>\$Tasks.Task.RunAsync(. . );</code>
34416	Added the ability to publish the recent query results from a database query, through a tag, using a script.
34410	Added the ProductVersionString tag, which retrieves the project version information so it can be used programmatically or displayed on the HMI.
32640	Fixed an issue where a memory leak was possible during development when a mouse hovered over a pin storing an image.
32709	Fixed an issue where a 2D Image Display would be resized when going into Test Mode.
32814	Fixed an issue where custom splash screens were not displayed.
34389	Fixed an issue where two Script blocks, pointing to the same script, changes in one block were seen by the other block.
34395	Fixed an issue where the Tag Manager would not detect a circular tag reference.
34407	Fixed an issue where importing tags using CSV files caused an error in some cases due to a missing default value. Tags that were exported with null values will not be able to be imported in Designer 2.1 and later.
34458	Fixed an issue where having two tags written to by different Tasks, and binding their sum to a Label, could cause Designer to not respond.
34470	Fixed an issue where a TCP/IP Client device would not reconnect after the server shuts down and reopened the connection.
34809	Fixed an issue where VisionPro Tool Blocks that share the same input image tag may have crashed when executed in parallel.
34901	Fixed an issue where the Expression Builder bitwise operators do not work.



## Cognex Designer 2.0 Release

- **Tasks, Sequences and Blocks**

The following enhancements have been implemented. For more information on them, see the Sequence Blocks topic.

- New Sequence Blocks have been created to make byte array handling easier. These can be used when using the UserData from the FFP on the Cognex Communications Card:
  - [Format PLC Input Buffer](#)
  - [Format PLC Output Buffer](#)
- New Sequence Blocks have been created for composing and decomposing arrays, and for retrieving an element of an array, to make the handling of general arrays easier:
  - [Compose Collection](#)
  - [Decompose Collection](#)
  - [Get by Index](#)
- New String Encoder and Decoder (to/from byte array) Sequence Blocks:
  - [Decode Byte Stream Data](#)
  - [Encode Byte Stream Data](#)
- The [Notify PLC](#) has been improved to allow setting up the input values directly on the Configuration UI and add a graphical interface to setup complex input values.
- New Sequence Blocks have been created to “manually” schedule and cancel a (scheduled) PrecisionIO event:
  - [Cancel Event](#)
  - [Schedule Event](#)

- **Communications**

New Sequence Blocks have been created to make possible using COM port and TCP/IP communication without scripting:

- [Decode Byte Stream Data](#)
- [Encode Byte Stream Data](#)
- [Receive Data](#)
- [Send Data](#)

Support for SLMP Protocol, similar to existing EIP and PROFINET support, has been added. For more information, see the [SLMP PLC Configuration](#) topic.

Added a UI to be able to configure Precision IO events (causes and responses) for the Cognex Communications Card. For more information, see the [Precision IO Configuration Editor](#) topic.

- **Templates**

It is now possible to import and export components from a project into a user library and that can be easily re-used in another project. For more information, see the [Templates](#) topic.

- **Expression Builder**

The Expression Builder has been revamped. It is recommended to run a project verification that should identify any expressions that are no longer compatible.

Known differences since v1.0:

- Equality comparison between an object and a string used to perform string comparison (e.g. converting the object to string first), allowing expressions like: `$myBoolTag="True"`. This is no longer allowed.
- Numeric values were compared as integers, e.g. `3.14 = 3` evaluated to true. This has been fixed.
- The old expression builder was culture-dependent (for example, decimal separators). The new one uses culture-agnostic parser.

For more information, see the [Expression Builder](#) topic.

- **Updated Plugins and Projects**

It is now possible to automatically update a project to a newer version of a plugin it depends on. For more information, see the [Updating a Designer Project To a Newer Version Of The Plugin It Uses](#) topic.

- **Designer Launcher Enhancements**

The Designer Launcher has been enhanced with two tabs, Samples and Utilities. For more information on them, see the [The Cognex Designer Launcher](#) topic.

- **Opto and Differential Trigger Signals**

Switching between trigger signals no longer requires scripting. See the [Switching Between Opto- and Differential Trigger Signals](#) topic.

- Resolved Issues in Designer 2.0

Issue	Description
Designer gives an error about the SQLite database	Third-party applications may install (against SQLite guidelines) the <code>System.Data.SQLite.dll</code> into the Global Assembly Cache (GAC). This could cause Designer to show the "Visual C++ Runtime Error" message.
Memory error while saving	This occurred while working with unusually big images and objects.
Changing the name of a Tag assigned to a Pin is not updated in Sequence Editor	When a Tag assigned to a Pin was renamed, the displayed Tag name in Sequence Editor was not updated/renamed.
HMI builder hangs when using an ungroup command	The HMI builder hanged when two or more HMI elements were grouped, and an additional element (type already existent in the group as well) was created and then the grouped elements were ungrouped.
DS1100: The laser does not shut down when the user exits from Designer	It was possible to enable the laser in Acquisition Wizard and then exit Designer with the laser on.
Project file is corrupt and asks for a password when loading	The saving process had to be enhanced to prevent accidental effects on the project file.
Unhandled exception when closing Designer and a connected device is being renamed	When Designer was closed while a connected device was being renamed the application threw an unhandled exception.
Replacing and renaming tags stop working after saving and reopening the project	Replacing and renaming tags in scripts did not work after saving and reloading the project until the scripts were recompiled.
The <b>Save As</b> functionality does not transfer necessary files	When <b>Save As</b> was used to save an existing project under another name/path, only the <code>.cdp</code> file was copied/renamed to the new location. This function has been enhanced to copy all files and subdirectories from the original project path as well.

## Cognex Designer 1.0 PR1 Release

The Cognex Designer 1.0 Patch Release 1 did not contain any new features compared to version 1.0, only enhancements to existing features and resolved issues.

## Release Migration History

### Migrating projects from Cognex Designer 4.3.1 to Designer 4.4.1

- ViDi Plugin is no longer supported, and has been replaced by a new DeepLearning plugin (VPDL Runtime Plugin).
- Obsolete API**

Change from:

```
void CSharpScriptDefinition.RefreshObjectNames()
```

to

```
int CSharpScriptDefinition.RefreshObjectNames()
```

Plugin should be recompiled and have the signature updated.

### Migrating projects from Cognex Designer 4.3 to Designer 4.3.1

- **Handling Components that were created and saved while using Cognex Designer with a different language.**

In case you are using a project that was created and saved with an earlier version of Cognex Designer (3.0 to 4.1) and with a different language setting than what you are using now, then any Components you have configured for the project will not be loaded in Cognex Designer 4.5.0. Instead, you have to re-add the missing Components manually.

### Migrating projects from Cognex Designer 2.1 to Designer 2.5

- **Using the Updated VisionPro Display 3D and New VisionPro Display 3D Status Bar**

The VisionPro Display 3D control has been updated with the new control introduced in VisionPro version 9.0, and [VisionPro Display Status Bar 3D](#) is a new control in Designer 2.5. This will affect projects that were using the VisionPro Display 3D control in their HMI.

The following considerations apply to the new controls:

- The previous VisionPro Display 3D included a right-click context menu which could be used to display the X, Y and Z coordinates either on the display itself, or in a built-in status bar (or both). These options have been removed from the new VisionPro Display 3D control. Now, in order to display the coordinates, you must add a VisionPro Display 3D Status Bar and configure the *Subject* property to the VisionPro Display 3D.
- The VisionPro Display 3D does not support displaying 2D images as height maps; these types of images will not be displayed and a warning will be shown, instead.
- The VisionPro Display 3D does not work when using a Windows Remote Desktop Connection. Third party options, such as VNC® or TeamViewer, may be used.
- The VisionPro Display 3D requires a VisionPro security bit; therefore, previously created Designer projects will need to be updated with this security bit to continue to work correctly.
- The VisionPro Display 3D will not work on virtual machines.


### Migrating projects from Cognex Designer 2.0 to Designer 2.1

- **New Project File Format**

The file format of Designer projects has been modified, and when projects developed in previous versions of Designer are opened and loaded in Designer 2.1, they will automatically be converted to the new format. Projects saved in Designer 2.1 cannot be opened in previous versions of Designer. For more information, see the [Cognex Designer Version Compatibility](#) topic.

- **Recipes Folder Location**

For Designer 2.1, the folder location of Recipes will no longer be editable, and must be located in the following directory: <ProjectName>\Recipes\<RecipeName>

 **Note:** If you had edited the Recipe directory location in 2.0, you must manually move your Recipe folder into the new directory location.

- **Recipes File Format Conversion**

Recipes will only be converted from XML to [JSON](#) format when they are being loaded through the System.Recipes.{RecipeName}.Load and the System.Recipes.{RecipeName}.LoadFile methods.

- **New Template File Extension in Designer 2.1**

For the Designer 2.1 release, the Template file extension was updated from .cdt to .cdtx. The first time that you start Designer 2.1, all of your .cdt template files will be automatically converted to .cdtx files, with the same name. Both files will exist in the *Templates* directory (C:\Users\<username>\Documents\Cognex Designer\Templates).

If you delete a .cdtx file, you will also need to delete the .cdt file. Otherwise, when you start Designer 2.1 again, or refresh the tree view in the [Template Browser](#), Designer will automatically perform the conversion process again and recreate another .cdtx file, based on the .cdt file.

- **Read IO and Write IO Block Visible Pins State Change**

In Designer 2.0, it was possible to add and configure [Read IO](#) and [Write IO](#) blocks with *Visible Pins*, even though they did not have the *Selected Device* property set to a supported device (Cognex Communication Card or Vision Controller). If a project is loaded in Designer 2.1 which has these types of [Read IO](#) and [Write IO](#) block configurations, the pins will not be visible until the *Selected Device* property is set, and any links between the pins will be disconnected and have to be reset.

### Migrating projects from Cognex Designer 1.0 to Designer 2.0

- **MessageID Pin Type Changed**

The *MessageID* pin of the Notify PLC block in `AsyncSoftEventComplete` has been changed from a `int` (Int32) data type to a `long` (Int64) data type.

**Note:** This does not cause any issue with existing projects.

- **Opening 1.0 or 1.0 PR1 Projects in Designer 2.0**

When a Designer 1.0/1.0 PR1 project is opened in version 2.0, the `UsedAcquisitionIDCollection` pin of the **Notify PLC** block in `InspectionCompleteMode` will be replaced with two other pins: `AcquisitionID0` and `CameraIndex0`. If you have more than one cameras, you can set it in the block's Configuration UI.

- **"Assign New Tag" Option**

Starting with Designer 2.0 the **Assign to New Tag** option on a pin does not initialize the created tag with the data-type's default value.

- **Read IO Block New Pin**

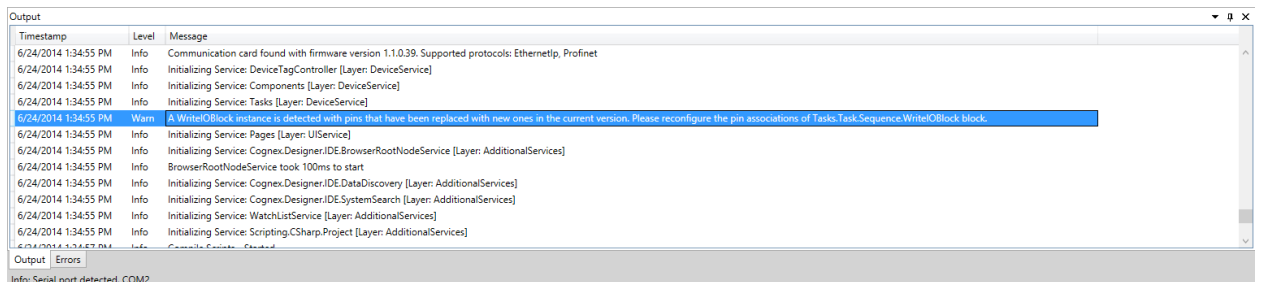
A new pin has been added to the [Read IO](#) Block: **PrioState**.

- **Expression Builder**

The Expression Builder has been revamped. It is recommended to run a project verification that should identify any expressions that are no longer compatible.

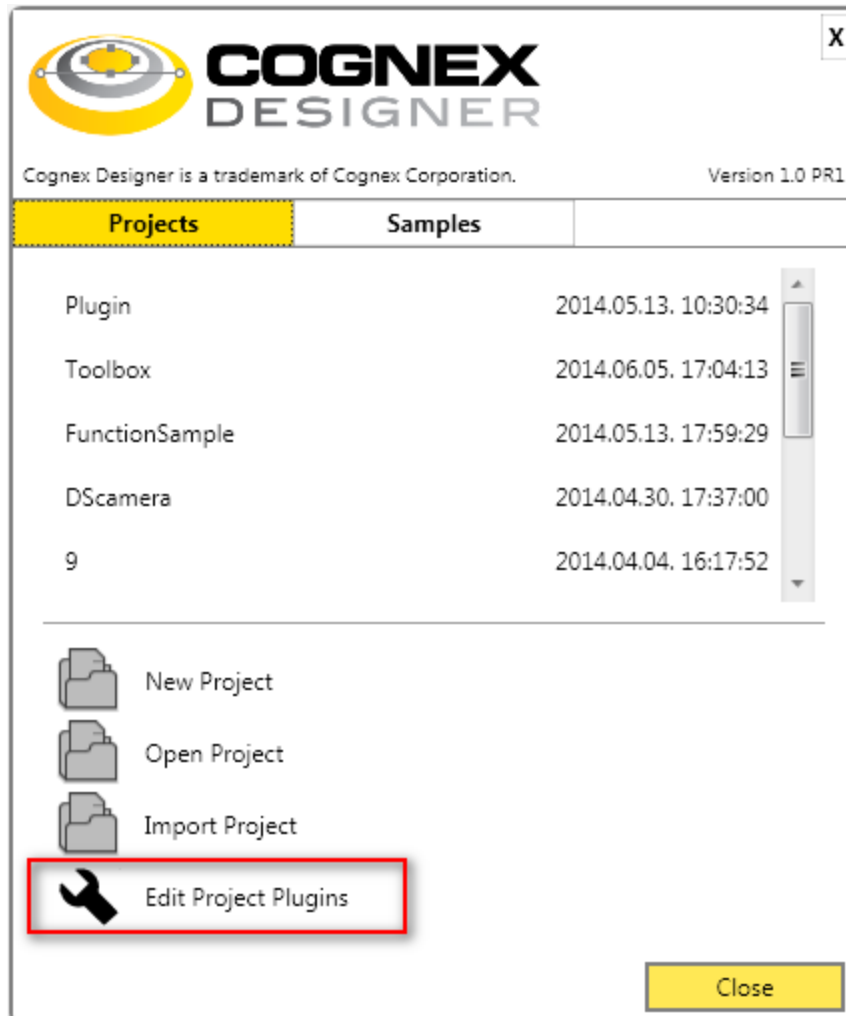
- **Opening 1.0 projects that have WriteIOBlock with pins**

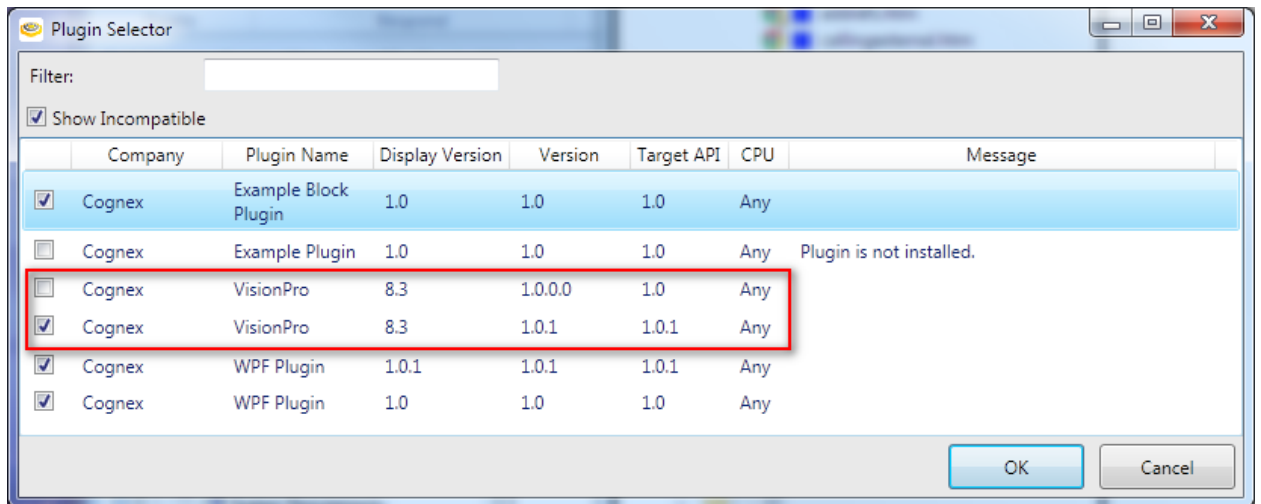
When an 1.0 project is opened in version 1.0 PR1, the existing "DS1000OutputBank0Line0" "DS1000OutputBank0Line1" pins of a WriteIOBlock will be replaced with new empty pins. If the pins were assigned to tags, the connection to the tags will be no longer available. This means that the user has to reassign the pins to the tags (since they are still available in Tag Manager).



- **Migrating Plugins From Designer 1.0 to 1.0 PR1**

After Designer 1.0 PR1 is installed, all new projects created using either 1.0 or 1.0 PR1, will use the 1.0.1 VisionPro Plugin. Old projects that use VisionPro Plugin 1.0.0.0 will need to be updated to VisionPro Plugin 1.0.1, using the **Edit Project Plugins** option from the Launcher. **Click Edit Project Plugins**, select the desired .cdp project file in the **Open file** dialog box, and check/uncheck the desired plugins.





## Previous Product and Upgrade Codes

This topic lists the product and upgrade codes for the previous Cognex Designer releases.

### Cognex Designer 4.3

- **API Version: 4.4.0**
- **Upgrade codes**
  - x64 - 84F14F46-58D4-4B7C-A963-4C7F1D57D1DB
- **Product Codes**
  - X64 - A1253D2A-62D4-4A1D-A129-7FBE718925BD

### Cognex Designer 4.2

- **API Version: 4.3.0**
- **Upgrade codes**
  - x64 - 84F14F46-58D4-4B7C-A963-4C7F1D57D1DB
- **Product Codes**
  - X64 - 40ED1DFC-4320-4E5F-AB29-E2FE589C376C

### Cognex Designer 4.1 PR2

- **API Version: 4.2.1**
- **Upgrade codes**
  - x64 - 84F14F46-58D4-4B7C-A963-4C7F1D57D1DB
- **Product Codes**
  - X64 - 40ED1DFC-4320-4E5F-AB29-E2FE589C376C

### Cognex Designer 4.0

- **API Version: 4.1.0**
- **Upgrade Codes**
  - x64 - 84F14F46-58D4-4B7C-A963-4C7F1D57D1DB

- **Product Codes**
  - x64 - 21B3FB72-8EEE-4B76-9D37-26EE0ED5F464

## Cognex Designer 2.7

- **API Version: 3.5.1**
- **Upgrade Codes**
  - x64 - 9DBBCE96-D0AB-482E-B207-730F83879934
- **Product Codes**
  - x64 - 54A2FBEA-3ADE-4749-A6D9-CF8A711739C

## Cognex Designer 2.6

- **API Version: 3.5.0**
- **Upgrade Codes**
  - x86 - A667A24A-4053-46DB-9F21-08C7C1AAF225
  - x64 - 09463BE5-A8A1-4A11-B5F4-1FB103045FFD
- **Product Codes**
  - x86 - 20314593-0303-4894-8971-4449E16DC793
  - x64 - E2951431-1CD9-4B62-ADF4-43A5FD71C387

## Cognex Designer 2.5 PR5

- **API Version: 3.4.2**
- **Upgrade Codes**
  - x64 Upgrade Code : {05535DD2-B5CE-43AC-8A6F-B3E6F688152D}
  - x86 Upgrade Code: {6F5CE606-BF9D-49C0-AF35-A0D640DCB7EC}
- **Product Codes**
  - x64 Product Code: {BE5CEE3F-827E-46B6-B5FF-B1367B2CF87C}
  - x86 Product Code: {E58141E1-53E6-4B45-9CD1-11E6D4D42857}

## Cognex Designer 2.5 PR4

- **API Version: 3.4.1**
- **Upgrade Codes**
  - x64 Upgrade Code : {05E4ECBF-F7DD-4A0B-B89A-1DE7AF62EDCE}
  - x86 Upgrade Code: {3AF8F441-3C09-407B-9D3A-32043FC71139}
- **Product Codes**
  - x64 Product Code: {088A01D1-C55D-40E4-8564-979121053E0E}
  - x86 Product Code: {A4CF8B0B-7291-462E-A402-77E1A1863566}



## Cognex Designer 2.5 PR3

- **API Version: 3.4.0**
- **Upgrade Codes**
  - x64 Upgrade Code : {2A5E6455-3836-4355-AF7F-38756089B7E1}
  - x86 Upgrade Code: {4BC0E777-A9FD-4D5C-9D9D-16D9602F8BCA}
- **Product Codes**
  - x64 Product Code: {700FEF35-30BD-4CD2-90EE-4BD07AE68EED}
  - x86 Product Code: {F05AD810-2439-43E2-84DB-7455C01E2EE6}

## Cognex Designer 2.5 PR2

- **API Version: 3.3.0**
- **Upgrade Codes**
  - x64 Upgrade Code : {0DDB9972-5984-40B0-9C66-CC1FBD7FBF7A}
  - x86 Upgrade Code: {8F99785D-6FB4-4338-A4FD-14A404846DD5}
- **Product Codes**
  - x64 Product Code: {7362BAC2-5DEF-4442-B60B-B1F409437762}
  - x86 Product Code: {620CA0D5-F890-4B52-B422-4391BB662BC1}

## Cognex Designer 2.5 PR1

- **API Version: 3.2.0**
- **Upgrade Codes**
  - x64 Upgrade Code : {23113A5C-4075-49AA-8810-7C4A3EAD3987}
  - x86 Upgrade Code: {E53089F6-C513-4833-BD35-F359C356BFEC}
- **Product Codes**
  - X64 Product Code: {AEA08E15-7752-4BD1-A914-A23C9D575147}
  - X86 Product Code: {81C5F404-0820-449C-968A-2FA3FD666C6B}

## Cognex Designer 2.5

- **API Version: 3.1.0**
- **Upgrade Codes**
  - x64 Upgrade Code : {E2C81BA6-E13A-4A4E-85D2-D95D15FF228E}
  - x86 Upgrade Code: {FC3C5831-C296-4D05-8103-C21072024C31}
- **Product Codes**
  - X64 Product Code: {263D442E-D9F2-43CE-9360-0DD4F50CCE4E}
  - X86 Product Code: {480E41FB-CE00-4ED1-A0EB-A7D958A8A84E}

## Cognex Designer 2.1

- **API Version: 3.0.0**
- **Upgrade Codes**
  - x64 Upgrade Code : {97F0B719-546F-4AA6-BC55-815FCA69EC23}
  - x86 Upgrade Code: {5F63548C-8FD0-4989-8DC5-9461DDD1C151}
- **Product Codes**
  - X64 Product Code: {588BE36C-5F7E-440D-BEA3-B443FC39A9FF}
  - X86 Product Code: {C898076C-30E1-4614-A126-A69112EE32C7}

## Cognex Designer 2.0

- **API Version: 2.0.0**
- **Upgrade Codes**
  - x64 Upgrade Code : {02DBDD85-75DB-42A9-AC6C-F489779D3C6B}
  - x86 Upgrade Code: {FDA5A797-AB67-47F3-98E4-A1D6BFB7462B}
- **Product Codes**
  - X64 Product Code: {62FE9614-45D0-4CFB-A0C5-FF30B5C96E62}
  - X86 Product Code: {7712CB00-516B-412D-A60D-60F070E12352}

## Cognex Designer 1.0 PR1

- **API Version: 1.0.1**
- **Product Codes**
  - X64 Product Code: {0DE9D772-01F8-4CE9-A3A5-20F03C8F710E}
  - X86 Product Code: {63293020-9AFE-4125-A08D-90934DE68935}

## Cognex Designer 1.0

- **API Version: 1.0.0**
- **Product Codes**
  - X64 Product Code: {B5F274C9-A833-46C8-A479-BBC9DC7FE016}
  - X86 Product Code: {7984E600-9901-4B0D-82B6-8997B0E97B40}

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