LabWindows™/CVI™ Release Notes

Version 8.5

These release notes introduce LabWindows™/CVI™ 8.5. Refer to this document for system requirements, installation and activation instructions, and information about new features in LabWindows/CVI.

Contents

NATIONAL INSTRUMENTS™

Minimum System Requirements

To run LabWindows/CVI, you must have the following:

- Personal computer using a Pentium 1 GHz or higher microprocessor
- Microsoft Windows Vista/XP/2000 Service Pack 3 or later
- 1024 × 768 resolution (or higher) video adapter
- Minimum of 128 MB of RAM, 512 MB recommended
- 200 MB free hard disk space for full installation
- Microsoft-compatible mouse

Installation Instructions

Complete the following steps to install LabWindows/CVI:

Note If you already have a different version of LabWindows/CVI installed on your computer, be sure to install version 8.5 in a different directory or uninstall the other version before installing LabWindows/CVI 8.5.

1. Insert the LabWindows/CVI CD into the CD drive. If the CD does not run automatically, open Windows Explorer, right-click the CD drive icon, and select **AutoPlay**.
2. On installation startup, the National Instruments LabWindows/CVI 8.5 screen appears. Click **Install LabWindows/CVI**.
3. In the **User Information** panel, enter your name and organization. Select one of the following options:
   - **Install this product using the following serial number**
   - **Install this product for evaluation**

   If you choose to enter a serial number, enter the serial number found on your Certificate of Ownership card. LabWindows/CVI uses this serial number when you run the NI Activation Wizard.
4. Continue to follow the instructions on the screen.

Activation Instructions

You can activate LabWindows/CVI when the installation completes, or you can activate when you launch LabWindows/CVI. To activate at the end of the installation, click **Next** to launch the NI Activation Wizard. To activate later, deselect the **Activate this version of LabWindows/CVI now** option. If you choose to activate later, a dialog box prompts you to activate a LabWindows/CVI license or run in evaluation mode when you first launch LabWindows/CVI. Click **Activate** in this dialog box to launch the NI Activation Wizard.

Complete the following steps to activate LabWindows/CVI:

1. Select the **Automatically activate through a secure Internet connection** option and click **Next**. Your computer must be connected to the Internet for this option to work. If you do not have Internet access, refer to the instructions following these steps.

2. The **Serial Number** option is populated with the number you entered during installation. Click **Next**.

3. Fill in the necessary information and click **Next**.

4. Check the option if you would like to receive a confirmation email of your activation and click **Next**.

5. After a brief moment, a message appears, indicating whether LabWindows/CVI has been activated. Click **Next**.

6. Continue to follow the instructions on the screen.

7. When you successfully activate LabWindows/CVI, click **Finish**. LabWindows/CVI displays a window indicating when your license expires.

If you do not have Internet access, complete the following steps to activate LabWindows/CVI:

1. Select the **Use a web browser, email client, telephone, or fax machine to acquire an activation code** option to acquire an activation code. Click **Next**.

2. Select **Use a Web browser on this or another computer**. If you have multiple NI products installed on your computer, you may need to select the version of LabWindows/CVI you want to activate. Click **Next**.

3. Keep the default serial number, click **Next**, and click **Save this information** to save the serial number, computer ID, product, and version number in a text file.

4. Go to the NI License Activation Web page at `ni.com/activate`.

5. Select LabWindows/CVI as the **Product to Activate** and 8.5 as the **Product Version**. Fill out the form with the information required and click **Continue**. This step generates the activation code for you.

6. Go back to the LabWindows/CVI activation dialog box and enter that activation code to activate LabWindows/CVI.

7. If you are unable to activate LabWindows/CVI, refer to the NI License Activation Web page at `ni.com/activate`.

What's New in LabWindows/CVI?

This section includes information about changes and enhancements in LabWindows/CVI 8.5.

Note The Real-Time features require the LabWindows/CVI 8.5 Real-Time Module.

Edit Code While Suspended

Edit a program while you debug. In previous versions of LabWindows/CVI, a message box appeared if you tried to edit a program while you were debugging. You also can open files while a program is running.

Collapsible Regions in the Source Window

The LabWindows/CVI Source Window contains collapsible regions to help you view your code in smaller sections. LabWindows/CVI defines code blocks based on lines enclosed by curly braces and blocks of comments that span at least three lines. You also can enclose lines of code with tags to define your own collapsible region.

For more information about collapsible regions, refer to the *Using LabWindows/CVI» Writing Source Code»Source Window Overview»Collapsible Regions* section of the *LabWindows/CVI Help*.

Tabbed Workspace

Open multiple function panels and `.c`, `.h`, `.uir`, and `.fp` files within the Window Confinement Region in tabs. The following figure shows the tabbed workspace:
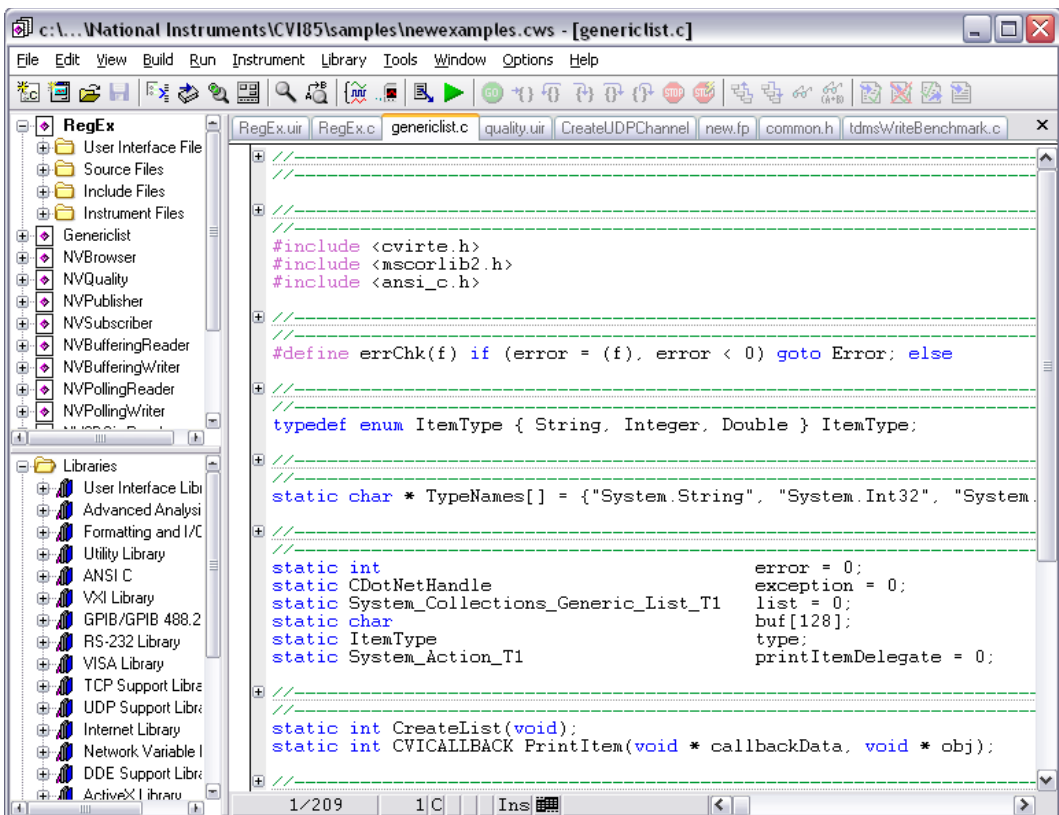
Auto-Backup and Auto-Recover

LabWindows/CVI can recover `.uir`, `.c`, `.h`, `.prj`, and `.fp` files with unsaved changes if LabWindows/CVI fails to shut down normally. When you launch LabWindows/CVI after an abnormal shutdown, a dialog box lists the files available for recovery. This feature helps you ensure that you do not lose changes.

For more information about recovering files, refer to the *Using LabWindows/CVI»Managing Projects»Auto Recovering Files* topic of the *LabWindows/CVI Help*.

Network Variable Library Updates

The Network Variable Library includes functions that you can use to create and configure network variables programmatically. Use the functions in the Configurations Functions and Process Functions classes to create a single network variable or an entire collection of network variables.

In addition, the Network Variable Library uses a new, more efficient TCP-based implementation of the NI-PSP protocol called LogosXT to transfer network variable data.

For more information about the Network Variable Library, refer to the *Library Reference» Network Variable Library* section in the *LabWindows/CVI Help*.

UDP Support Library

The UDP Support Library contains functions for using the User Datagram Protocol (UDP) to transfer data. UDP is a connectionless protocol that runs on IP networks, like TCP. You can use the UDP Support Library to send a message to a single computer, broadcast a message to all computers on a subnet, or send a message to all computers that subscribe to a multicast address.

Note You can use the functions in the UDP Support Library in RT applications.

For more information about the UDP Support Library, refer to the *Library Reference»UDP Support Library* section of the *LabWindows/CVI Help*.

Updated Strip Chart Control

The strip chart control provides the following functionality:

- Add auto-scaling for left and right y-axes.
- Pause tracing using the `ATTR_STRIP_CHART_PAUSED` attribute. You can specify how much previously plotted data is available with the `ATTR_HISTORY_BUFFER_SIZE` attribute. When you enable `ATTR_STRIP_CHART_PAUSED`, LabWindows/CVI adds a horizontal scroll bar to the strip chart, which you can use to view previously plotted data.
- Add a legend control on which to display traces.
- Display a right y-axis.

- Set the maximum number of traces to 512 using the ATTR_NUM_TRACES attribute.
- Configure the color of the line that follows traces in sweep mode using the ATTR_SWEEP_LINE_COLOR attribute.

For more information about the strip chart control, refer to the *Library Reference»User Interface Library»Controls»Control Types»Strip Chart Control* section of the *LabWindows/CVI Help*.

Enhanced Graph Zooming

Select from the following modes to zoom in graphs:

- **Zoom to Rectangle**—Draw a rectangle around the area you want to zoom into. To draw the rectangle, press <Ctrl> and the left mouse button and drag the outline that appears until you have defined the rectangular area. You also can set this zoom mode programmatically by setting the ATTR_ZOOM_STYLE attribute to VAL_ZOOM_TO_RECT.
- **X-Zoom**—Zoom along the x-axis. Press <Ctrl> and the left mouse button and drag the line that appears. You also can set this zoom mode programmatically by setting the ATTR_ZOOM_STYLE attribute to VAL_ZOOM_XAXIS.
- **Y-Zoom**—Zoom along the y-axis. Press <Ctrl> and the left mouse button and drag the line that appears. You also can set this zoom mode programmatically by setting the ATTR_ZOOM_STYLE attribute to VAL_ZOOM_YAXIS.
- **Zoom Around Point**—Select a point around which to zoom. Press <Ctrl> and the left mouse button to zoom. You also can set this zoom mode programmatically by setting the ATTR_ZOOM_STYLE attribute to VAL_ZOOM_AROUND_PT. This zoom mode matches the zooming functionality in previous versions of LabWindows/CVI.

For more information about zooming, refer to the *Library Reference»User Interface Library»Controls»Control Types»Graph Control* section of the *LabWindows/CVI Help*.

Color Ramps in Numeric Slide Controls

Add a color ramp to delineate different ranges in numeric slide controls such as thermometers, tanks, and gauges. The color ramp consists of colors that correspond to data values along the scale.

For more information about color ramps, refer to the function panel help for SetNumericControlRamp, GetNumericControlRamp, and DiscardColorRamp.

Rotated Text for User Interface Objects

You can specify an angle of rotation for user interface control labels; text messages; table and row column labels; tree column labels; graph annotations; and graph, strip chart, and digital graph axis labels. You also can create a metafont with rotated text with the CreateMetaFontEx function. Use the metafont you create in functions such as CanvasDrawText and PlotText.

For more information about rotated text, refer to the CreateMetaFontEx function panel help.

64-Bit Integer Support in the User Interface Library

You can assign 64-bit integer as the data type for user interface controls.

.NET Delegates and Events

The .NET Library and the wrappers you generate using the .NET Controller Wizard support .NET delegates and events. A .NET delegate is similar to a C function pointer. You can use a .NET delegate to call a callback function when an event occurs.

For more information about .NET delegates, refer to the function panel help for `CDotNetCreateDelegate`.

Toolbox Hash Table Functions

The Programmer's Toolbox file includes hash table functions that you can use to create a hash table. Hash tables can store keys and their associated data values.

Use the following functions to create and configure hash tables:

- `HashTableCreate`
- `HashTableDispose`
- `HashTableInsertItem`
- `HashTableGetItem`
- `HashTableFindItem`
- `HashTableRemoveItem`
- `HashTableClear`
- `HashTableIteratorCreate`
- `HashTableIteratorGetItem`
- `HashTableIteratorAdvance`
- `HashTableIteratorDispose`
- `HashTableGetAttribute`
- `HashTableSetAttribute`

For more information about these new functions, refer to the function panel help for each function.

Real-Time Utility Library

LabWindows/CVI includes the new Real-Time Utility Library, which contains functions that you can use to replicate an RT system, configure timing, create and configure trace sessions, and configure RT target settings.

For more information about this library, refer to the *LabWindows/CVI Real-Time Module Help»Real-Time Utility Library* section of the *LabWindows/CVI Help*.

Real-Time Execution Trace Toolkit

The LabWindows/CVI Real-Time Module includes an evaluation version of the Real-Time Execution Trace Toolkit, which includes the Real-Time Execution Trace Tool and the Execution Trace functions. Use the Execution Trace functions to capture the timing and execution data for applications running on an RT target.

For more information, refer to the *LabWindows/CVI Real-Time Module Help»Real-Time Execution Trace Toolkit* section of the *LabWindows/CVI Help*.

Symmetric Multiprocessing

The LabWindows/CVI Real-Time Module supports multiple processors. You can use the LabWindows/CVI Real-Time Module along with a multicore target, such as a National Instruments dual core RT PXI controller, to increase speed and determinism in your RT applications. Use the `SetProcessorAffinityForThread` and `ConfigureProcessorPool` functions to take advantage of multiple processors.

For more information about symmetric multiprocessing, refer to the function panel help for `SetProcessorAffinityForThread` and `ConfigureProcessorPool`.

Real-Time Deployment

Use the **Run»Install to Execution Target** item to deploy a release RT DLL and its dependencies to an RT target that you specify. LabWindows/CVI copies these files to the `NI-RT\CVI` directory on the RT target. This command also sets the DLL as the startup DLL. If the `NI-RT\CVI` directory contains other startup DLLs, the **Install to Execution Target** command deactivates other startup DLLs.

For more information about this menu item, refer to the *LabWindows/CVI Real-Time Module Help»Creating Real-Time Applications»Deploying* section of the *LabWindows/CVI Help*.

New Advanced Analysis Library Functions

The Advanced Analysis Library includes the following functions:

Measurement	`HarmonicAnalyzerUsingSignal`
	`StateLevels`
	`PulseMeas`
	`TransMeas`
	`CycleRMSAverage`

Time Domain Analysis	`DifferenceEx` `UnWrap1DByUnit`
Statistics	`CxRMS`

Note The Advanced Analysis Library is available in the LabWindows/CVI Full Development System only.

For more information about the updated Advanced Analysis Library, refer to the *Library Reference»Advanced Analysis Library* section of the *LabWindows/CVI Help*.

Welcome Page

When you launch LabWindows/CVI for the first time, you will see the LabWindows/CVI Welcome Page. The Welcome Page contains links to various commonly used resources, such as most recently used projects, example programs, project templates, web resources, and documentation.

Updated Example Programs Location

LabWindows/CVI example programs are located in the following location on Windows Vista: `C:\Users\Public\Documents\National Instruments\CVI85\samples`. On Windows XP/2000, example programs are located in the following location: `C:\Documents and Settings\All Users\Documents\National Instruments\CVI85\samples`. You can find a link to these locations from the previously used location (`C:\Program Files\National Instruments\CVI85\samples`).

LabWindows/CVI Resources

How do I get started?

Read th*e Getting Started with LabWindows/CVI* manual, which provides a tutorial for learning basic LabWindows/CVI program development techniques.

Are there known issues or late-breaking information?

Refer to the *LabWindows/CVI Readme*, which you can access from **Start»Programs» National Instruments»LabWindows CVI 8.5»LabWindows CVI Readme**. The readme file contains information about known issues.

Where can I find reference information?

The *LabWindows/CVI Help* contains complete reference information. The help file includes the following sections:

- *Using LabWindows/CVI* describes the LabWindows/CVI development environment and features.

- *Library Reference* provides information about functions you can call in LabWindows/CVI.

- *Programmer Reference* provides information to help you develop applications.

- *Tools Library* provides information about the LabWindows/CVI Toolslib controls.

- *LabWindows/CVI Real-Time Module Help* includes an introduction to the LabWindows/CVI Real-Time Module, programming considerations for RT applications, and function reference information for the LabWindows/CVI Real-Time Utility Library.

Use the **Search** tab in the *LabWindows/CVI Help* to quickly locate specific information. For information about how to use the search functionality, refer to the *Using Help»Searching Help* topic of the *LabWindows/CVI Help*.

Where can I find examples?
Find examples with the NI Example Finder, which you can access by selecting **Help» Find Examples**.

Is there a list of LabWindows/CVI documentation?
The *Guide to LabWindows/CVI Documentation* topic provides links to LabWindows/CVI documentation, including manuals, application notes, and white papers. You can access the *Guide to LabWindows/CVI Documentation* topic through the *LabWindows/CVI Help*.

Where else can I go for LabWindows/CVI information?
Visit the LabWindows/CVI Web site and NI Developer Zone at `ni.com` for the most up-to-date information about LabWindows/CVI.