LabWindows™/CVI™ Release Notes

Version 9.0

These release notes introduce LabWindows™/CVI™ 9.0. Refer to this document for system requirements, installation and activation instructions, and information about new features in LabWindows/CVI.

Contents

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

NATIONAL INSTRUMENTS™

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 9.0 in a different directory or uninstall the other version before installing LabWindows/CVI 9.0.

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 9.0 screen appears. Click the **Next** button if you are not taken automatically to the **User Information** panel of the dialog box.

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.

Note For installation instructions for the LabWindows/CVI Real-Time Module, refer to the *LabWindows/CVI Real-Time Module Readme*.

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. LabWindows/CVI populates the textbox with the serial number you entered during installation. Click **Next**.

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

4. Check the option and enter an email address 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**, 9.0 as the **Product Version**, and click the **GO** button.

6. Fill out the form with the information required and click **Continue**. This step generates the activation code for you.

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

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

Note For activation instructions for the LabWindows/CVI Real-Time Module, refer to the *LabWindows/CVI Real-Time Module Readme*.

What's New in LabWindows/CVI?

This section includes information about changes and enhancements in LabWindows/CVI 9.0.

Note The Real-Time features require the LabWindows/CVI 9.0 Real-Time Module.

Resource Leak Detection

Use the Resource Tracking window to locate potential memory leaks in your LabWindows/CVI program. Select **Extended** as the **Debugging level** in the **Debugging Options** section of the Build Options dialog box to enable resource tracking interactively. You also can enable, disable, and detect resource tracking programmatically using the `SetEnableResourceTracking` and `GetEnableResourceTracking` functions located in the Utility Library.

Note The Resource Tracking window and associated functions are available only in the LabWindows/CVI Full Development System.

For more information about the Resource Tracking window, refer to the *Using LabWindows/CVI» Debugging Tools»Resource Tracking Window* topic of the *LabWindows/CVI Help*.

Precompiled Header Files and Faster Build Times

Decrease the amount of time required to compile a large project by using precompiled headers. When you enable the **Compile with precompiled include file** option in the Build Options dialog box, LabWindows/CVI precompiles a prefix header file that references frequently referenced header files. When compiling, LabWindows/CVI loads the precompiled header file instead of the header files listed in the prefix header file.

For more information about using precompiled header files, refer to the *Programmer Reference» LabWindows/CVI Compiler Overview»Precompiled Headers* topic of the *LabWindows/CVI Help*.

Compiler Extensions

LabWindows/CVI supports the following C99 extensions:

- Mixed declarations and statements
- For loop variable declarations
- Variable-length arrays
- Designated initializers
- `atoll`, `snprintf`, `strtoll`, `strtoull`, and `vsnprintf` functions
- Variable argument macros
- Non-constant initializers for aggregate types
- `long long` integers
- `__func__` identifier
- `inline` and `restrict` keyword recognition

Note C99 extensions might not be supported in external compilers.

For more information about C99 extensions, refer to the *Programmer Reference»LabWindows/CVI Compiler Overview»C Language Extensions»C99 Extensions Supported in LabWindows/CVI* topic of the *LabWindows/CVI Help*.

Updated Interface to Win32 API

This version of LabWindows/CVI installs an updated version of the Interface to Win32 Application Programmatic Interface (API), known in previous versions of LabWindows/CVI as the Windows SDK. For more information about the import libraries in the Full Development System, refer to the *Programmer Reference»Compiler/Linker Issues»Calling Interface to Win32 API Functions in LabWindows/CVI* topic of the *LabWindows/CVI Help*.

Note The Interface to Win32 API is based on the Windows Server 2003 R2 Platform SDK. The Windows Server 2003 R2 Platform SDK was released in March 2006 and does not include tools or functionality added in later versions of the SDK, such as support for functionality specific to Windows Vista.

National Instruments Binary Time Format

The CVI Time functions in the Utility Library and the Time Conversions functions in the Programmer's Toolbox provide the ability to interact with the National Instruments Binary Time Format (NI-BTF). Use the CVI Time functions to manipulate absolute calendar times and time intervals. The Time Conversions functions convert LabWindows/CVI ANSI C Library, User Interface Library, Network Variable Library, and FILETIME time values to and from NI-BTF.

Use NI-BTF if you need a finer resolution than other date-time types, need a platform-neutral date-time type, or want to share date-time information with other NI application development environments.

Mixed Character Sets in a Single User Interface

Use the following functions and attributes to display text in multiple languages with different character sets in the same user interface. You also can use these functions and attributes to ensure that text containing non-Western characters displays correctly, independent of the operating system settings.

Functions

- `CreateMetaFontWithCharacterSet`
- `GetMetaFontInfoWithCharacterSet`
- `SetPanelCharacterSet`

Attributes

- `ATTR_ANNOTATION_CAPTION_CHARACTER_SET`
- `ATTR_LABEL_CHARACTER_SET`
- `ATTR_MENU_BAR_CHARACTER_SET`
- `ATTR_TEXT_CHARACTER_SET`
- `ATTR_TITLE_CHARACTER_SET`
- `ATTR_XLABEL_CHARACTER_SET`
- `ATTR_XYNAME_CHARACTER_SET`
- `ATTR_YLABEL_CHARACTER_SET`

You also can set these attributes in the Edit Control dialog boxes in the User Interface Editor.

Updated Icon Editor

The Icon Editor supports 48 × 48 and 256 × 256 icons, 32-bit color depth, and `.png`-based images with compression and alpha-blending. The Icon Editor also contains a Color Eyedropper Tool.

Select **Tools»Icon Editor** to open the Icon Editor. For more information about the Icon Editor, refer to the *Using LabWindows/CVI»Wizards and Tools»Icon Editor* topic of the *LabWindows/CVI Help*.

Editing Instrument Drivers on Windows Vista

LabWindows/CVI can assist you in editing instrument drivers installed to directories on Windows Vista that require administrator privileges to modify files. If you attempt to edit an instrument driver in a write-protected IVI or VXI*plug&play* framework directory, LabWindows/CVI prompts you for permission to copy the files to a directory with write access. If you accept, LabWindows/CVI copies the files to a directory with write access and creates a project DLL to allow you to edit and build the instrument. To replace the files in the original location with the edited copies, click the **Deploy** button in the Edit Instrument dialog box, select the **Deploy Instrument** context menu item in the Library Tree, or follow the prompts when you unload the project.

For more information about the editing instrument drivers in write-protected directories, refer to the *Using LabWindows/CVI»Instrument Drivers»Editing Instrument Drivers in Write-Protected Directories* topic of the *LabWindows/CVI Help*.

Reliance File System Support (Real-Time)

The Reliance™ file system provides quick disk access and data preservation in the event of a power failure. The LabWindows/CVI Real-Time Module supports the Reliance file system on desktop PC real-time (RT) targets.

NI-Watchdog for Real-Time Targets (Real-Time)

The LabWindows/CVI Real-Time Module includes support for watchdog timer hardware on supported PXI real-time targets. Use the NI-Watchdog functions in the Real-Time Utility Library to detect and respond to failure conditions in your application, even if your software becomes unresponsive.

Internet Library Support (Real-Time)

The LabWindows/CVI Internet Library is supported on RT targets. The Internet Library includes functions to access the services of FTP, Telnet, POP3, and SMTP servers from your RT applications.

Additional LabWindows/CVI Enhancements

LabWindows/CVI 9.0 includes the following additional enhancements. Refer to the *LabWindows/CVI Help* for more information about these features.

Functions

Analysis

- `ConvolveEx`
- `CorrelateEx`
- `CxMatrixVectorMul`
- `MatrixVectorMul`

Interface to Win32 API (Real-Time)

- `ReadConsoleOutputA`
- `SetConsoleTextAttribute`

LabWindows/CVI ActiveX Server Interface

- `GetCurrentProject`
- `GetCVIVersion`
- `SetManifestFile`
- `SetWorkingDirectory`

Miscellaneous Programmer's Toolbox

- `HostIsBigEndian`
- `HostIsLittleEndian`
- `ToBigEndian16`
- `ToLittleEndian16`
- `ToOtherEndian16`

TCP Support

- `GetTCPHostConnectionAddr`

User Interface

- `FontSelectPopupEx`
- `GetBitmapFromFileEx`
- `GetLegendItemFromPoint`
- `GetNumImagesInFile`
- `SetColumnWidthToWidestCellContents`

Note The `SetColumnWidthToWidestCellContents` is new for table controls. It existed for tree controls in previous versions of LabWindows/CVI.

- `SetFontPopupDefaultsEx`
- `SetRowHeightToTallestCellContents`
- `SetTextCtrlHeight`

Windows Registry

- `RegEnumerateKey`
- `RegRemoveKey`
- `RegRemoveValue`

Additional Function Changes

- The Runtime Error Report class is renamed to Debugging and Runtime Error Reporting.

User Interface Attributes

- `ATTR_ENABLE_DRAG_DROP`
- `ATTR_ENABLE_CHARACTER_MASKING`
- `ATTR_FIRST_PLOT`
- `ATTR_FIXED_PLOT_AREA`
- `ATTR_FORCE_SMOOTH_DRAGGING`
- `ATTR_FRAME_ACTUAL_HEIGHT`
- `ATTR_FRAME_ACTUAL_WIDTH`
- `ATTR_MASK_CHARACTER`
- `ATTR_MENU_ARROW_HEIGHT`
- `ATTR_MENU_ARROW_WIDTH`
- `ATTR_NEXT_PLOT`
- `ATTR_NUM_PLOTS`
- `ATTR_SLIDE_INCDEC_LENGTH`
- `ATTR_SNAP_COLUMN_WIDTHS_TO_CTRL_WIDTH`
- `ATTR_TITLEBAR_ACTUAL_THICKNESS`

Menus and Context Menu Changes

- The **Specify External Process** menu item on the **Run** menu is now the **Specify Executable to Debug** menu item.
- The **Switch Execution Target** menu item on the **Run** menu is now the **Select Execution Target for Debugging** menu item.
- Functionality from the Select Target with Options dialog box is now accessible through **Run» Select Execution Target for Debugging»New Execution Target** and **Run»Select Execution Target for Debugging»Manage Execution Targets**.
- Move the cursor to the previous or next region boundary in the Source window by selecting **View»Collapsible Regions»Go to Previous Region Boundary** and **View»Collapsible Regions» Go to Next Region Boundary**.
- Right-click within the **References** tab in the Source Code Browser window and select **Find** to open the Find dialog box. You then can search for text in the **Results** column in the Source Code Browser.
- Select **Edit»Select All** in the Help Editor to select all text in the Help Editor window and position the keyboard cursor at the end of the file.
- The **Run»Threads** and **Run»Loaded Modules** menu items are now **Window»Threads** and **Window»Modules** respectively. LabWindows/CVI displays the windows in the Debugging Region.

Microsoft Visual Studio 2008 Support

You can use Microsoft Visual Studio 2008 to create a new Visual C++ project that uses LabWindows/CVI libraries or converts an existing LabWindows/CVI project into a Visual C++ project. You also can use Visual Studio 2008 as the release configuration compiler from within the LabWindows/CVI environment.

Color Picker Control

Use the Color Picker Control, available in the Tools Library, and associated functions to select colors.

Functions

- `ColorPicker_Convert`
- `ColorPicker_GetActiveColorCell`
- `ColorPicker_GetAreaFromPoint`
- `ColorPicker_GetAttribute`
- `ColorPicker_GetColor`
- `ColorPicker_GetCustomColor`
- `ColorPicker_GetCustomColors`
- `ColorPicker_GetFixedColor`
- `ColorPicker_GetFixedColors`
- `ColorPicker_InstallCallback`
- `ColorPicker_Revert`
- `ColorPicker_SetActiveColorCell`
- `ColorPicker_SetAttribute`
- `ColorPicker_SetColor`
- `ColorPicker_SetCustomColor`
- `ColorPicker_SetCustomColors`
- `ColorPicker_SetFixedColor`
- `ColorPicker_SetFixedColors`
- `ColorPicker_SizeChanged`

HyperLink Control

Use the HyperLink Control, available in the Tools Library, and associated functions to create and manage hyperlinks.

- `NewHyperLinkCtrl`
- `SetHyperLinkCtrlAttribute`
- `GetHyperLinkCtrlAttribute`
- `RevertHyperLinkCtrlAttribute`

Dialog Box Changes

- Select **Custom directory** in the **Where to copy DLL** pull-down menu of the Target Settings dialog box to copy the DLL into a directory of your choice when the DLL is built.

- Select **IVI standard root directory + VXI***plug&play* **directory** in the **Where to copy DLL** pull-down menu of the Target Settings dialog box to copy the DLL to both the to both the bin directory under the IVI framework directory and the bin directory under the VXI*plug&play* framework directory.

- You can specify a working directory to use for debugging in the one of following ways:
  - Select **Run»Command Line** and designate a working directory in the **Working Directory** field.
  - If the project is a DLL project, select **Run»Specify Executable to Debug** and designate a working directory in the **Working Directory** field.

- Select the **Automatically save copy of UIR as TUI** file option in the Editor Preferences dialog box to save a `.uir` file as an ASCII text formatted `.tui` file automatically.

- When you build an installer that includes additional installers or components, you might be prompted with the Distributions Needed dialog box if LabWindows/CVI cannot locate the installer you selected or any of the dependencies of the installer.

- Edit the font of all windows that appear in the Workspace window using the Environment Font Preferences dialog box.

- Click the **Build Steps** button in the Manage Distributions dialog box to launch a Build Steps dialog box. Use this dialog box to add pre- and post-build steps for each distribution in the Manage Distributions dialog box.

- Select **Mark Files in Project** or **Mark Files in Workspace** in the Find dialog box to quickly select files only in the project or workspace respectively to include in your search.

Additional Features

- Use the `IgnoreUnreferencedIdentifiers` pragma to set specific symbol names to ignore.

- Use the `EVENT_MOUSE_WHEEL_SCROLL` event data parameter for horizontal scroll events.

- The Watch window includes a **Scope** column that contains the scope information for the watch expression.

- In the Graphical Array View, you now can edit the minimum and maximum axis label, zoom and pan the graph, and return the graph to its original state by right-clicking it and selecting **Reset graph** from the context menu.

Submitting Feedback on LabWindows/CVI Help

All topics in the *LabWindows/CVI Help* include a **Submit feedback on this topic** link. Click this link to submit feedback and suggestions for improvement on specific topics in the *LabWindows/CVI Help*.

LabWindows/CVI Resources

How do I get started?

Read the *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»All Programs» National Instruments»LabWindows CVI 9.0»LabWindows CVI 9.0 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**.

LabWindows/CVI example programs are located in the following location on Windows Vista: `C:\Users\Public\Documents\National Instruments\CVI90\samples`. On Windows XP/2000, example programs are located in the following location: `C:\Documents and Settings\All Users\Documents\National Instruments\CVI90\samples`.

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.