What’s New in LabVIEW 2013

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Access the Newest Hardware Technology

Code Reuse and Mobile Device Integration

Code Management and Debugging Tools

Streamlined Application Deployment

New Sample Projects and Improved Examples

Expanded Online Training

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Graphical System Design
A platform-based approach for measurement and control

- Measurement
- Test
- Monitor
- Embedded
- Control

Models of Computation, User Interface

Math and Analysis

Timing
Connectivity with Third Party I/O

Measurement and Control I/O

Commercial Technology
- Desktops and PC-Based DAQ
- PXI and Modular Instruments
- CompactRIO and Custom Designs
- NI Single Board RIO

Deployable Targets

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Graphical System Design

A platform-based approach for measurement and control
Unrivaled Integration with the Latest Technology

NI PXIe-7975R
Featuring Kintex-7 FPGA

NI PCIe-8236 and PCIe-8237R
Power over Ethernet Frame Grabbers

NI cDAQ-9188XT
Rugged 8-slot Ethernet Chassis

NI cRIO-9068
Software-Designed Controller

NI PXIe-7975R
Instrument Driver FPGA Extensions for NI VSTs

NI myRIO
Embedded Student Design Device

7 New C Series Modules
Expanded Platform Functionality

LabVIEW™ 2013
New Hardware Products

Digilent chipKIT
LabVIEW Interface for chipKIT Arduino
LabVIEW RIO Architecture

Processor
Real-Time or PC-Based

FPGA

Analog I/O
Digital I/O
Specialized I/O
Bus Protocols

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The Redesigned CompactRIO

NI LabVIEW System Design
Program with LabVIEW Real-Time and LabVIEW FPGA modules
Quickly port existing LabVIEW applications

High Throughput and Performance
Dual-Core ARM 667 MHz processor
Xilinx 7 Series FPGA fabric with 85k logic cells
16 DMA FIFO channels for data streaming

Ultra Rugged
-40 to 70° C operating temperature range
50 g shock and 5 g vibration tolerance

Community and Code Reuse
NI Linux Real-Time Operating System
Integrate existing applications and libraries
Develop, debug, and deploy C/C++ code

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LabVIEW Support for NI Linux Real-Time OS®

LabVIEW 2013 Real-Time Module supports developing, debugging and deploying applications to the NI Linux Real-Time OS® deterministic operating system

- For users familiar with Linux, unlock the vast Linux ecosystem on the new CompactRIO controller

- **Reuse** C/C++ code in and alongside LabVIEW Real-Time built applications on the redesigned CompactRIO controller

- **Freedom in Connectivity**
  - Expanded LabVIEW design flow for open web service creation
  - Secure file transfer with WebDAV
  - Improved network interface
Data Dashboard for LabVIEW 2.2

**Transparency**
Adjust the transparency of images, controls, and indicators on your dashboard.

**Multi-Plot**
Data Dashboard now supports 2D array of numerics as a datatype for charts and graphs.

**Alternate Servers**
Now you can set up one dashboard to monitor multiple targets and use the drop down menu to switch where the data is streaming from while the dashboard is running.

**Android Tablets**
Data Dashboard 2.2 on Android tablets now supports monitor and control applications and free canvas customizations.
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Code Management and Debugging Tools

Streamlined Application Deployment
Tools to Document Code

**Bookmark Manager**

- Aggregates tags from code comments into a single window
- Allows developers to easily navigate through large code hierarchies
- Built on an open and extensible API
Tools to Document Code

Attached Comments

• Drag arrows from comment to code to create explicit link

• Improve code readability

• Associations preserved with block diagram clean-up
Improved Excel Integration

- Write to measurement file can create an xlsx file
- Does not use ActiveX interface; therefore, Excel does not need to be installed
- Available for use on Real-Time
Mouse Wheel Support for Controls and Indicators

You can change the values of selected controls using the scroll wheel.
Event Structure and API Improvements

- Mouse scrolling included in static events
- Improvements to user interface of ‘Edit Events’ dialog
- New Event Inspector Window to simplify debugging
- New User Event primitives for advanced control over buffer

Features a resizable window and filtering
New Web Service Experience

- Provide Remote Access To LabVIEW Applications
- Formerly a Build Specification Item
- Now a Project Item – Faster Edits and Deployment
New Web Service Experience

Debuggable Web Services integrated into the LabVIEW project

*Reserved VI during debugging*
New Web Service Experience

New EXE Build Specification Category to Include & Auto-Deploy

![LabVIEW 2013 EXE Properties](image)
Simplifying the Creation of Installers

An executable packages all statically linked application software.

An executable typically still depends on external drivers and run-times.

Executable

Installer

Application-Specific, Statically Linked Code

SubVIs

Library 1

Library 2

vi.lib

User-Developed

Reuse (ie: vi.lib)

Application Layer

Drivers and RTEs

NI-DAQmx

NI-Vision RTE

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Simplifying the Creation of Installers

NI LabVIEW Application Builder auto-includes dependencies

LabVIEW Idea Exchange
Automate time-consuming tasks to deliver professional software:

- Inclusion of third-party drivers and run-time engines
- Includes Amazon Cloud hosting services*
- Minimize download footprint by silently downloading dependencies
- Single click install for customers
- In product update notifications

*Deploy can use other services, including local and private servers
VI Package Manager Installed with LabVIEW 2013

Now every LabVIEW user can access and reuse IP and tools from the community
Viewpoint’s TortoiseSVN Toolkit

Icon overlays appear in the Project Explorer

Toolbar source code control menu

Update and Commit from the Project or Quick Drop

Quick drop shortcuts

Automatically configures diff and merge

Free Subversion provider for LabVIEW
Tools to Manage Code

Export graphical comparisons* to external files that can be viewed outside the LabVIEW editor

*The LabVIEW compare tool, can be configured for use with source code control tools, such as SVN and Perforce

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RF Studio by Averna

RF Record and Playback for USRP

ImagingLab Robotics Libraries

Control Common Industrial Robots

SCCT by T4SM

Exchange Data Between Multiple Mobile Platforms

LabVIEW Tools Network


Raima Database API for LabVIEW

Local Database Solution For NI CompactRIO

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New Primitives for Controlling UIs

Advanced API for updating and retrieving values from UI controls and indicators.

Designed for updating extremely large numbers of UI components with maximum performance
Tools to Manage Code

Accessor Navigation

- Simplifies finding the source code of a class data accessor
- Right-click menu includes ‘Open Accessor VI’ option
- Only applicable to accessors that are exposed via property nodes
LabVIEW 2013 Desktop Execution Trace Toolkit

New Desktop Execution Trace Toolkit

- Reinvented user interface based on user feedback
- Capable of handling much larger traces
- Improved filtering and sorting options
- Comparison tool for diff’ing trace data
LabVIEW 2013 Desktop Execution Trace Toolkit

Feature Highlights

• Compare different sessions to examine behavioral changes
• User-requested trace configuration options
• Bookmarks make navigating multiple traces simple
• Automatic logging allows extended trace sessions
LabVIEW 2013 Unit Test Framework

Improved user interface makes it easier to create, edit and run tests

Tests can be run from within the editor, which makes it easier to iterate on test parameters and your code

New test cases dialog displays the input and outputs of the VI under test

Improved user interface makes it easier to create, edit and run tests
All Systems. Go.

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LabVIEW™ 2013

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New Templates and Sample Projects

What are Templates and Sample Projects?

- Recommended starting points for common LabVIEW applications
- Clearly indicates where to add or change functionality
- Shows best practices for code design, documentation, and organization
- Add custom templates and sample projects
LabVIEW 2013 Sample Project Additions

Real-Time Sequencer

LabVIEW + LabVIEW Real-Time Module Required
LabVIEW 2013 Sample Project Additions
Supervisory Control and Data Acquisition System

LabVIEW + LabVIEW DSC Module Required
Shipping Example Refresh – Separate Files

This example, while not specifically written for the LabVIEW Real-Time Module, runs on RT targets.

Demonstrates how to display an interactive send and receive message dialog for communication between TCP connections. It establishes a connection on the machine listed and the port specified. It then waits for you to input data into the Input Line string control and hit enter. Once you hit enter, the string you typed is sent to the port and passed to the TCP Communicator - Active.vi.
Shipping Example Refresh – Project Based
Use the Cursor VIs to control the behavior of a busy cursor. This example shows a usage of the Simple State Machine project template.

Monitor Button - For 5 seconds, increment the Busy Progress bar. If the user disabled clicks, he will not be able to change the Button value. Call the Unset Busy VI after 5 seconds to switch back to a normal cursor.

Note: The Busy Progress bar has a maximum scale value of 5000.
Shipping Example Refresh – New Examples

Overview: This VI demonstrates how to create a more complex hierarchy of objects and add light to the scene in a 3D Picture.
Requirements: LabVIEW Full Development System
Instructions:
1. Run the VI.
2. Observe the appearance of the image when the Rotating Light and Fixed Light are turned on and off.
3. Observe the appearance of the image when the Rotating light height and Fixed light height are changed.
4. Click Stop to stop the VI.
Expanded LabVIEW Online Training
Core LabVIEW skills included with your software purchase

LabVIEW Online Training
- LabVIEW Core 1
- LabVIEW Core 2
- LabVIEW Core 3
- Advanced Architectures in LabVIEW
- Object Oriented Design and Programming in LabVIEW
- LabVIEW FPGA
- LabVIEW Real-Time 1 & 2
NI LabVIEW Certifications

New Embedded Systems Developer Certification
ni.com/CLED
Grow Your Proficiency

New free CLD Success Package

- 17 exercises that can be completed in 30 minutes covering key exam requirements
- Supporting files and solutions are provided

Download the Preparation E-kit for the NI Certified LabVIEW Developer Exam

Thank you for your interest in NI training and certification. The following resources can help you prepare for the exam:

**Exam Details**
- Prerequisite: Certified LabVIEW Associate Developer
- Exam format: Application development
- Exam duration: Four hours

**Preparation Resources for the CLD Exam**
- CLD Preparation Guide (PDF)
- CLD Sample Exams

NI technical representatives worldwide can answer your hardware and software questions. Call us now or call (866) 463-3364.

CLD Exercise 10: Step Sequencer based on CSV data

**Objective**
Develop a step sequencer with a timer, using LabVIEW and the given application front panel (Figure 1). Start with the solution from exercise CLD 9: Step Sequencer Express Timer Solution. Replace the hard coded values with values read from the CSV file using CLD 6: CLD file utility.vi.

**General Operation**
The VI sequences three steps and uses the Data File CLD 10 CSV File.excel to read Step Times and Boolean constants. The timer uses the time target for each step, and when that time is elapsed, the application moves to the next step and begins a new time cycle. The application reads the Step LED values based on the step Boolean data. The timer must have Reset and Auto Reset functionality. The Time Target control overrides the step time constants if the Time Target is a positive non-zero number. The application only advances to the next step if the Elapsed Time is ON and the Auto Reset is ON.
Makes it possible to deliver embedded systems using the latest technologies

Saves users time thanks to numerous development environment enhancements and deployment tools

Ensures success with extensive examples, training materials and add-ons

ni.com/labview/whatsnew