

LabSocket Workshop

LabSocket System

The LabSocket system enables remote access to LabVIEW application from desktop or mobile web browsers without the need for browser plugins or a client-side run time engine. The system automatically creates a web page representation of a LabVIEW application front panel and dynamically synchronizes the contents of the web page and front panel.

A key technology used in the system is the HTML5 WebSocket interface that enables continuous, bi-directional communication with a web browser. This technology also contributes to the name of the system: "LabSocket = LabVIEW + WebSocket".

This one-day workshop will enable LabVIEW developers to quickly get started with using the system and to explore the capabilities of each of the three versions of the system (LabSocket Basic, LabSocket-MultiClient and LabSocket-RT). The workshop also covers advanced topics such as LDAP-based user authentication, integration with the Moodle course management system and an introduction to key components of the LabSocket Server Virtual Machine.

The workshop includes lab exercises to provide developers with hands-on experience in the setup and use of the system.

Additional information about LabSocket is available at labsocket.com.

Workshop Agenda

1. Theory of Operation
 - HTML5 WebSocket
 - Automatic LabVIEW Front Panel to web page conversion
 - Dynamic synchronization between LabVIEW Front Panel and browser
2. LabSocket Basic
 - Supported Front Panel Elements and Properties
 - Details of Notable Elements (eg. XY Graph, Charts, MultiColumn ListBox)
 - Lab: System Setup and Create a First Application*
3. LabSocket-MultiClient: One Target VI Instance per Browser Client
 - Mapping between browser clients and Target VI instances
 - Automatic Target VI instance management
 - LabVIEW / LabSocket as dynamic web application authoring tool
 - Lab: Create a Multi-User, Browser-Based Student Quiz Application*
4. LabSocket-RT: LabSocket for LabVIEW Real-Time Environments
 - LabSocket-RT Converter
 - Block Diagram Interface VIs
 - Supported Elements
 - Lab: Monitor and Control a Headless LabVIEW Real-Time Application*
5. LabSocket Server Virtual Machine
 - HTTP Server
 - Message Broker
 - Administrative Software
 - OpenLDAP Server
 - Moodle Course Management System
 - Lab: Virtual Machine Overview*
6. Integration with Moodle Course Management System
 - Lab: Embed a LabVIEW Application into a Moodle Course*
7. User Authentication
 - ActiveMQ simpleAuthentication Plugin
 - LDAP
 - Lab: OpenLDAP Authentication for a LabSocket Application*

Workshop Objectives

At the conclusion of this workshop, attendees will know how to:

- set up and manage the LabSocket system
- create applications using LabSocket Basic, LabSocket MultiClient and LabSocket-RT
- embed a LabVIEW application into a Moodle course
- perform LDAP-based user management

Requirements

- Minimum experience:
 - Beginner to Intermediate LabVIEW programming and Linux
 - Basic familiarity with Web and networking technologies
- Mac, PC or Linux laptop
- LabVIEW 2012 or later
- VirtualBox virtualization software (<https://www.virtualbox.org/wiki/Downloads>)

Location and Date

The workshop can be held at nearly any location worldwide. A travel surcharge may be applied for locations outside of North America.

Date is TBD.

Price

Workshop price is USD \$995. 50% of the workshop price will be credited towards the purchase of LabSocket software within 90 days after the workshop. Price includes a catered lunch.

The workshop requires a minimum of 4 attendees and is limited to a maximum of 15 attendees. Full refunds will be offered in case of cancellation.

Registration will be via Eventbrite (<http://www.eventbrite.com/>) once a location and date have been selected.

About the Instructor

This workshop is presented by Mr. John Bergmans, Principal Engineer and owner of Bergmans Mechatronics LLC (bergmans.com). In addition to creating the LabSocket system, he has developed control and data acquisition systems for rocket and oxy-fuel combustion system test stands, and instrumentation and automatic test equipment applications, typically using LabVIEW. Mr. Bergmans has also developed other browser-based applications to demonstrate the capability of the WebSocket interface, including the *collectdViewer* server monitoring system (collectdviewer.com)



Mr. Bergmans created and presented a one-day “WebSocket Workshop” in collaboration with Kaazing Corp. and has presented the LabSocket system to several LabVIEW user groups.

Mr. Bergmans is a Certified LabVIEW Developer and received his B. Eng. (Mechanical) and M. Eng. (Mechanical) from Carleton University in Ottawa, Canada.

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