
Bergmans Mechatronics LLC

LabSocket System: New Capabilities

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New Capabilities

1. LDAP User Authentication

- User access can now be controlled by popular authentication system
- Browser-based LDAP user data management via phpMyAdmin
- Enables on-the-fly updates to authenticated user list

2. LabSocket-MultiClient

- Each browser client connects to a unique instance of Target VI
- Useful for applications in which each user needs to remotely enter or access user-specific information. eg – surveys / quizzes or retrieving data from a certain physical measurement location or a database

3. Picture Element Support

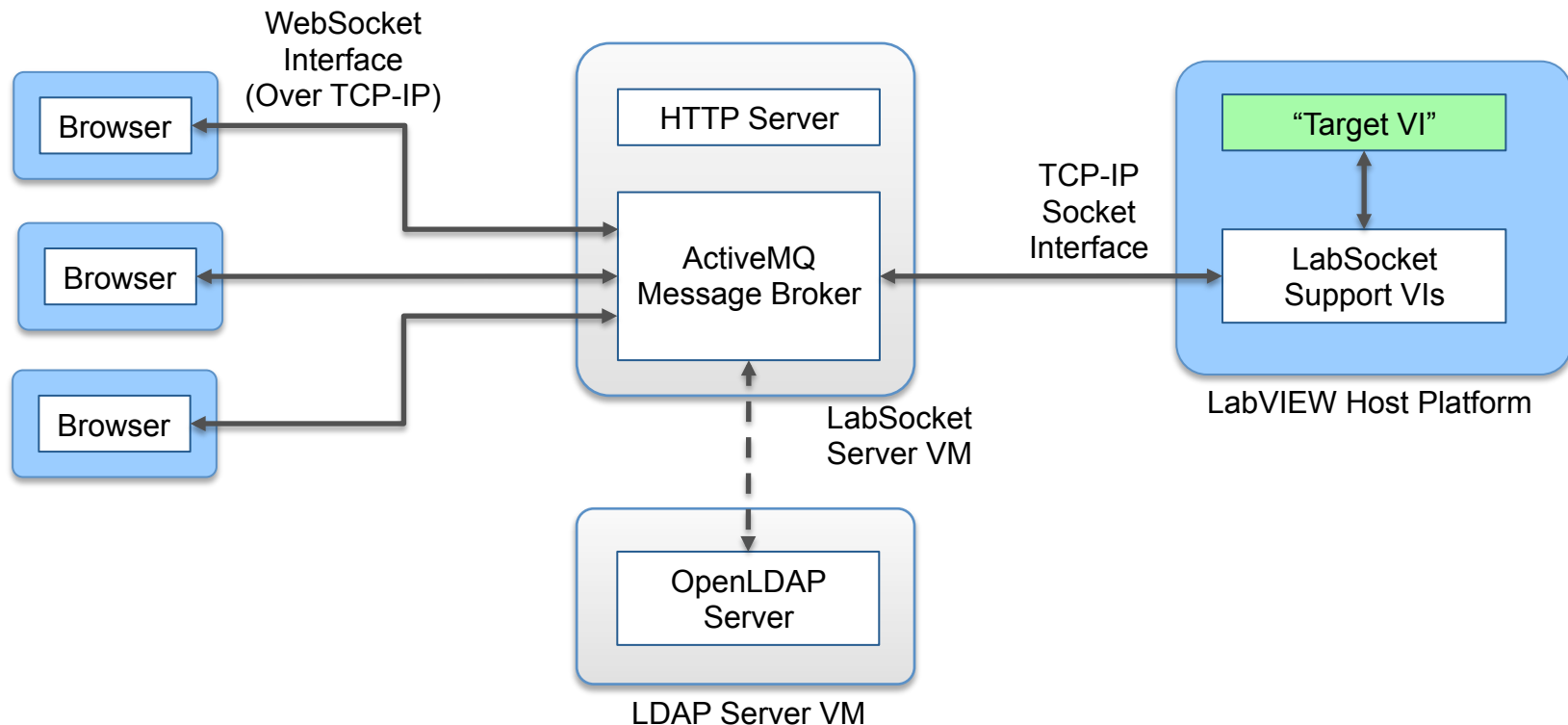
- Picture elements can now be rendered in browser
- Ideal for rendering system schematics and P&ID diagrams in browser

LabSocket LDAP Integration

- LDAP (Lightweight Directory Access Protocol) enables on-the-fly LabSocket user management using industry-standard database system
- For commercial systems - OpenLDAP server can be included in LabSocket Server VM or customers can configure ActiveMQ for use with own LDAP server

Demo Configuration

When user authentication enabled, WebSocket Interface is not enabled until valid user credentials supplied



LDAP Server Management using phpLDAPadmin

- phpLDAPadmin permits browser-based LDAP server management
- Easy to add / remove users to / from list of authorized users

OpenLDAP Server Management Using phpLDAPadmin

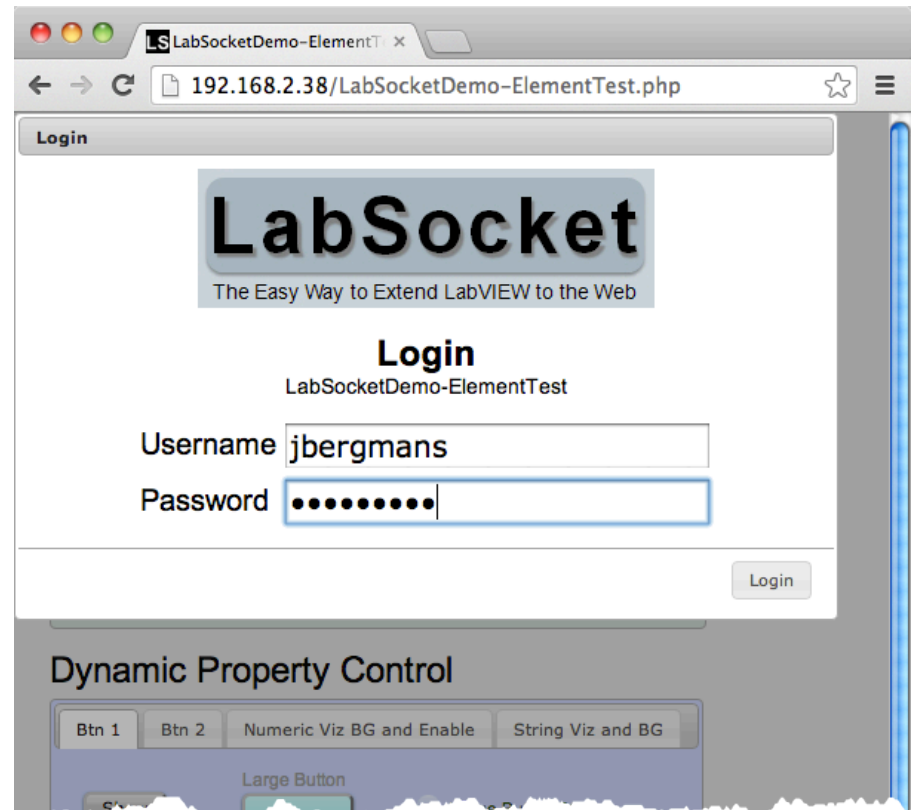
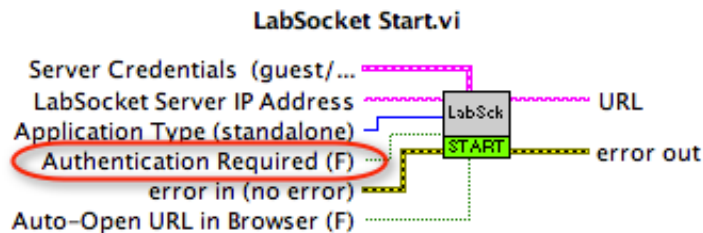
The screenshot displays the phpLDAPadmin (1.2.2) web interface in a browser window. The address bar shows the URL: `192.168.2.37/phpldapadmin/cmd.php?cmd=template_engine&server_id=1&dn=uid%3Djbergmans%2Cou%3DUser%2Cou%3DActiveMQ%2Cdc=labsocketserver,dc=com`.

The interface is divided into two main sections:

- Left Panel (Tree View):** Shows the LDAP directory structure for 'LabSocket LDAP Server'. The tree includes:
 - `dc=labsocketserver,dc=com (2)`
 - `ou=ActiveMQ (3)`
 - `ou=Destination (3)`
 - `ou=Group (2)`
 - `ou=User (5)`
 - `uid=admin`
 - `uid=jbergmans` (selected)
 - `uid=jdoe`
 - `uid=LabSocketPHP`
 - `uid=LabVIEWTarget`
 - `ou=Services (1)`
- Right Panel (Entry Management):** Displays the details for the selected entry `uid=jbergmans`.
 - Header:** `uid=jbergmans`
 - Metadata:** Server: LabSocket LDAP Server, Distinguished Name: `uid=jbergmans,ou=User,ou=ActiveMQ,dc=labsocketserver,dc=com`, Template: Default.
 - Actions:** Refresh, Switch Template, Copy or move this entry, Rename, Create a child entry, Show internal attributes, Export, Delete this entry, Compare with another entry, Add new attribute.
 - Hints:** To delete an attribute, empty the text field and click save. To view the schema for an attribute, click the attribute name. An attribute (Password) was modified and is highlighted below.
 - Form Fields:**
 - `cn` (required): (add value)
 - `objectClass` (required):

LabSocket User Authentication

- LDAP interface works with existing LabSocket authentication logic
- Login pop-up window appears in browser when “Authentication Required” input of “LabSocket Start.vi” set to “true”
- Remote users must enter credentials in pop-up window in browser
- Credentials are passed via ActiveMQ message broker to LDAP server for authentication
- WebSocket interface between browser and ActiveMQ only enabled if valid credentials supplied

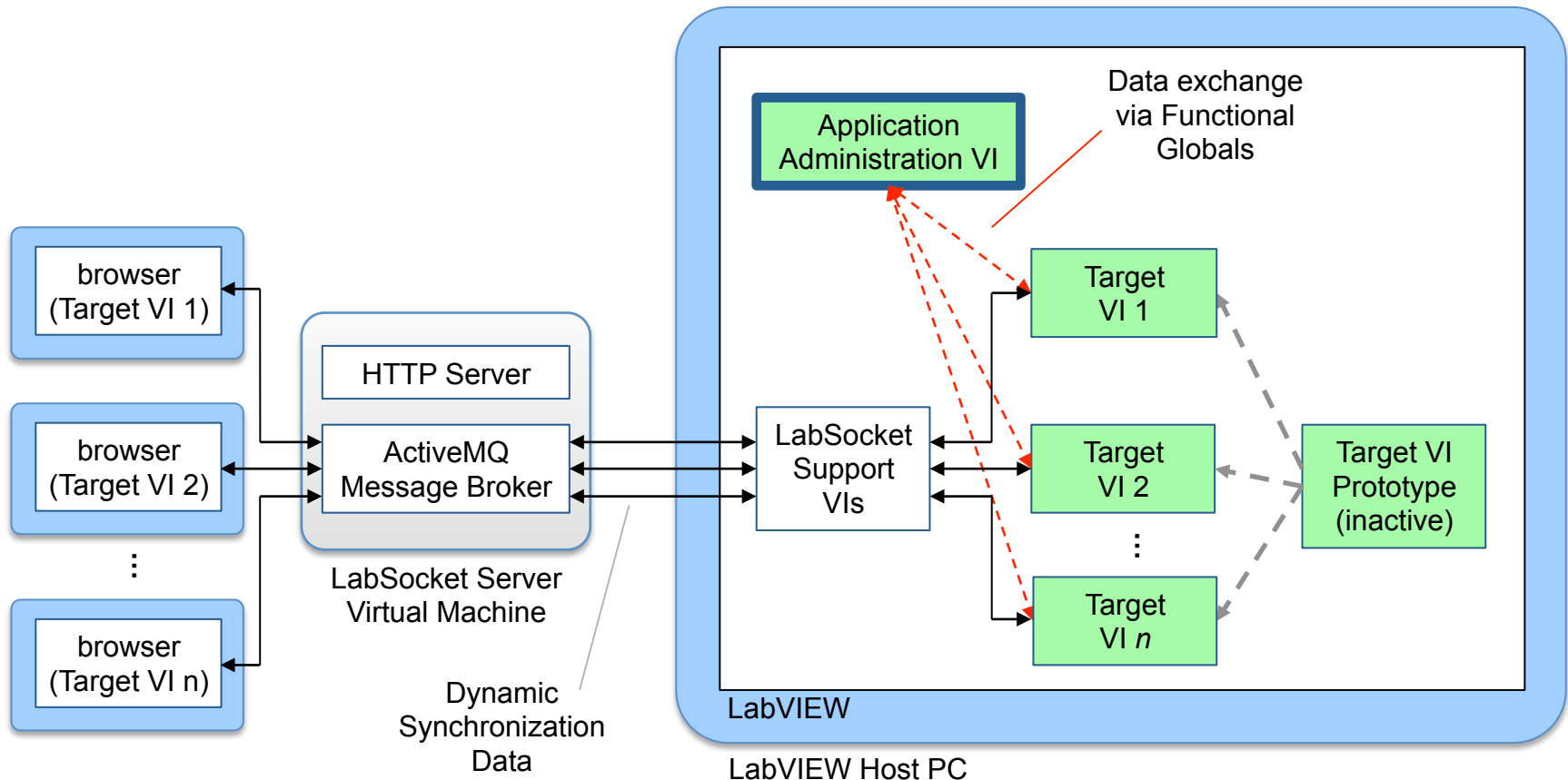


User Authentication - Future Work

- Use LDAP server for definition of user roles (eg. admin, normal, guest, etc)
- Automatically configure browser elements based on user role. For example:
 - administrators can change all controls
 - normal users can change developer-defined set of controls
 - guests cannot change any controls

LabSocket-MultiClient

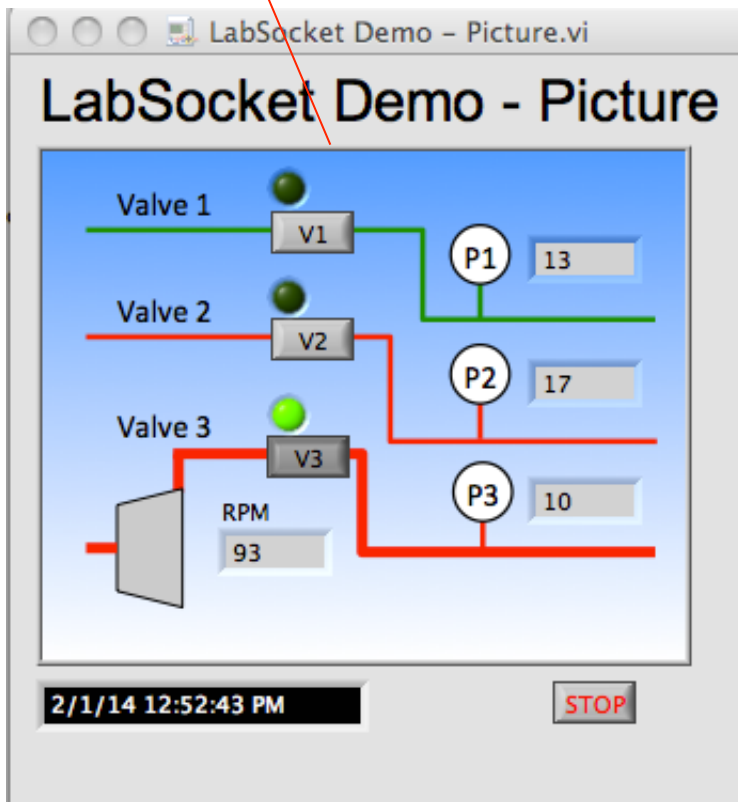
- Each browser connects to unique instance of Target VI
- Each Target VI instance is a copy of an inactive Target VI prototype
- LabSocket Support VIs automatically start and stop Target VI instances
- Useful for applications in which users need to enter or retrieve user-specific information
- ***NB: With LabSocket-MultiClient, LabVIEW is now a dynamic web application authoring tool***



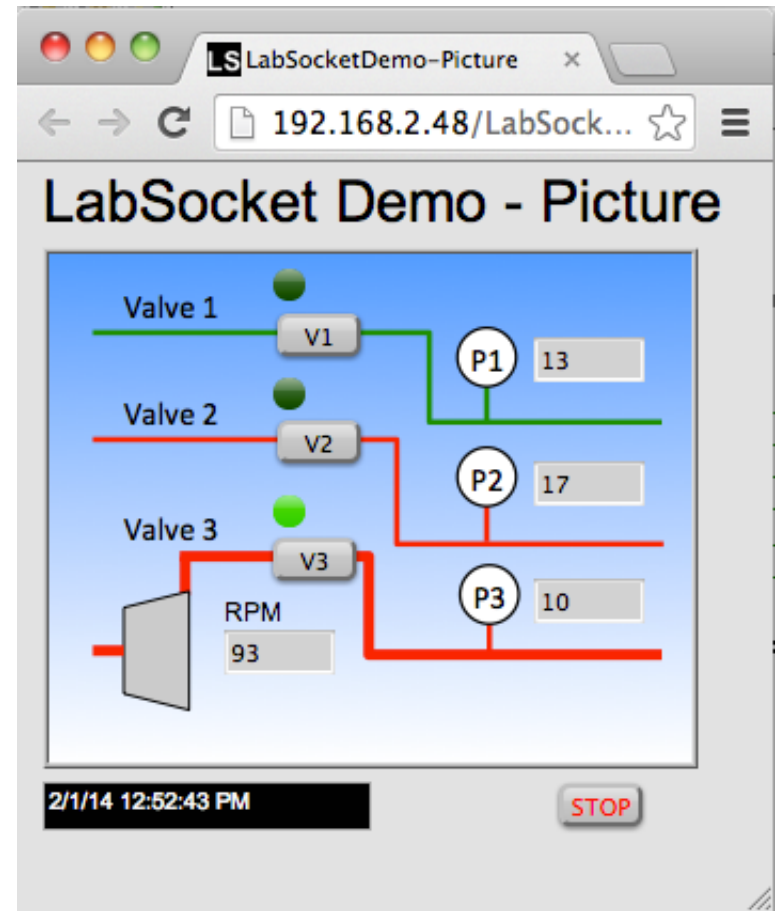
Picture Elements

- Front Panel picture elements automatically rendered as image elements in browser
- Well suited for rendering Front Panel system schematics / P&ID diagrams in browser
- “PNG to Picture Converter” tool converts PNG image files to picture elements

Picture Element with Numeric Indicators, Buttons and LEDs superimposed



LabVIEW VI Front panel

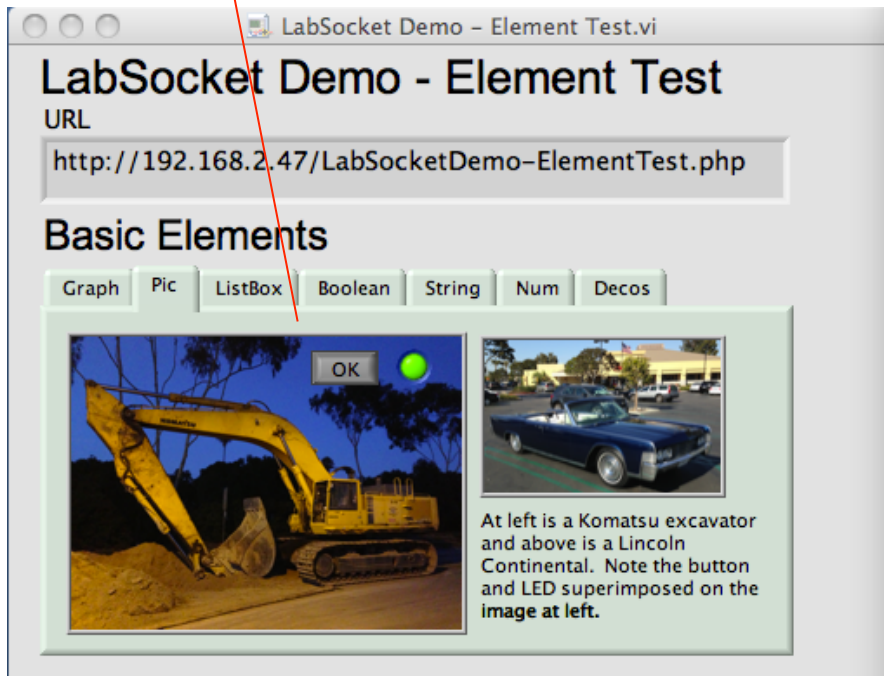


Browser Representation

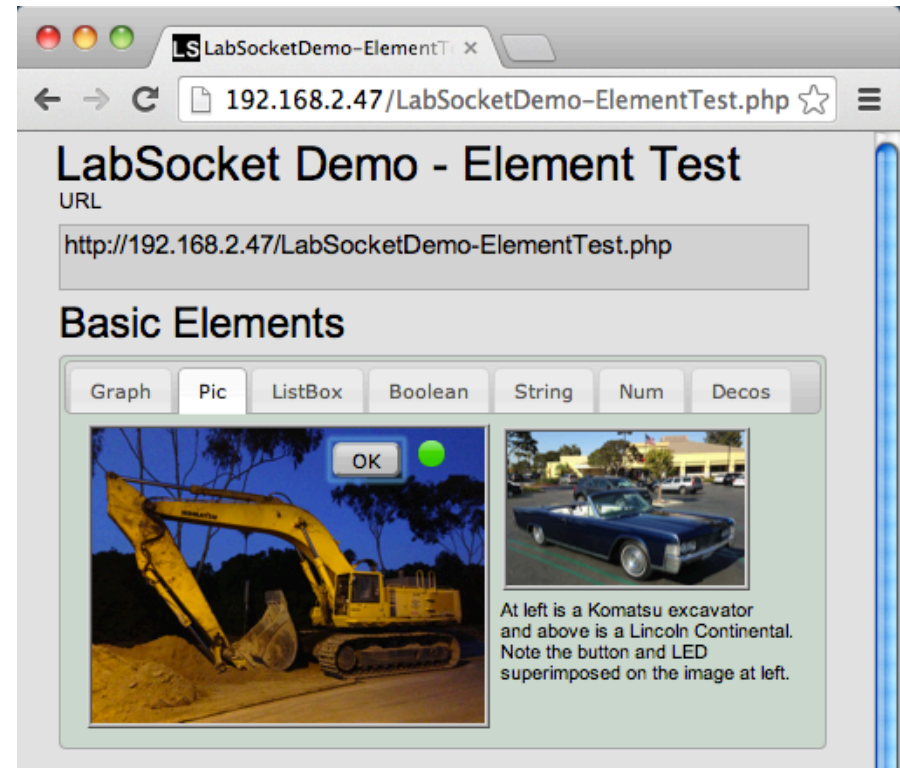
Picture Elements (continued)

- Photos contained in Picture elements are rendered accurately in browser

Picture Element with button and LED superimposed



LabVIEW VI Front panel



Browser Representation

More Information

- LabSocket home page: <http://labsocket.com>
- November 2013 presentation to Bay Area LabVIEW User Group Meeting:
<https://decibel.ni.com/content/docs/DOC-33131>
- Contact
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