

ScadaTEC Web Server Interface

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OVERVIEW:

All ScadaTEC products implement an **HTTP Web Server Interface**. There is a core set of features for **viewing status logs** and **modifying datapoints** implemented in every product, but **ScadaPhone** also has features to support **alarm reporting**, **alarm acknowledgement**, **alarm summary** and **scheduler**.

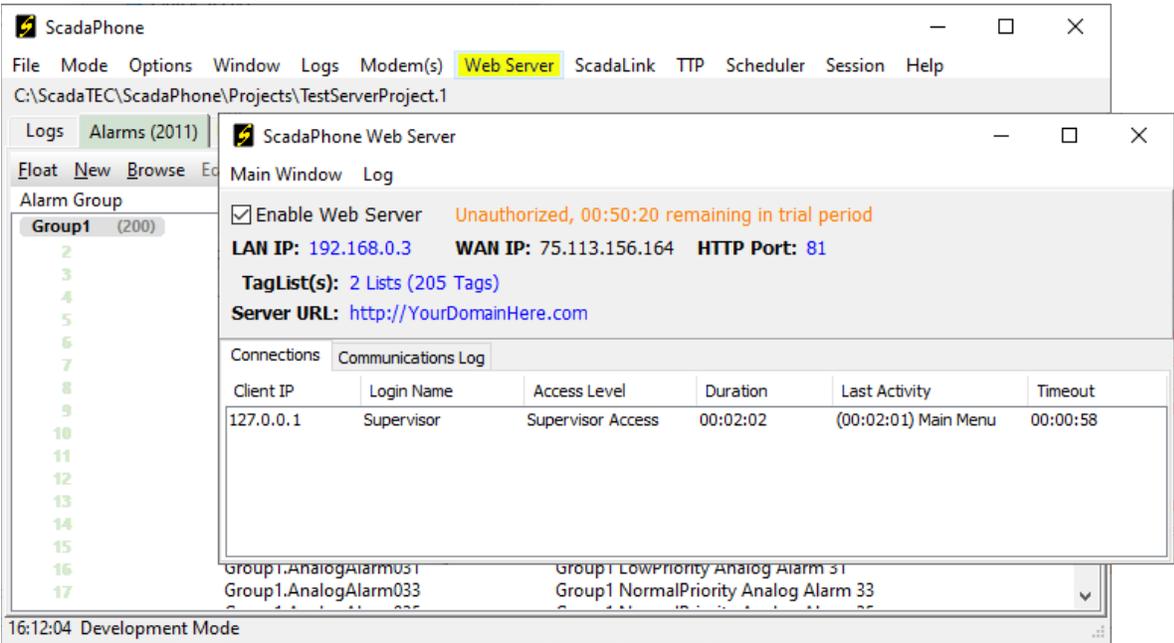
This document will describe the features supported by **ScadaPhone**.

The primary goal of implementing this interface as a standard **HTTP Web Server** is to achieve **cross-platform remote access capability** from any smart-phone, tablet, laptop or desktop computer. No special App is required.

To use the **Web Server Interface**, the **Host Computer** must have internet access and must be allowed to accept incoming connections from remote clients through a configurable **TCP/IP Network Port**.

Web Sever Configuration

To configure **ScadaPhone Web Server** click the **Web Server** menu item from the **ScadaPhone's** main window:



Configuration Controls on the ScadaPhone Web Server window

- **Enable Web Server:** If this box is checked, the TCP/IP server port will be opened to listen for and service incoming connection requests from client web browsers. Note that in the graphic above, there is an orange colored **license-status** label indicating that the Web Server is **Unauthorized**. The HTTP Web Server feature is optional and must be authorized separately from the ScadaPhone authorization. Non-authorized use of this feature is limited to a **one-hour trial period** (for testing and evaluation). To authorize the Web Server for continuous use, click the **license-status** label and follow the instructions.
- The **Local Area Network IP Address (LAN IP)**, **Wide Area Network IP Address (WAN IP)** and **HTTP Port** are displayed to inform the user where to connect (e.g. **http://192.168.0.3:81** from any machine on the local router, or **http://75.113.156.164:81** from the internet).

If the computer on which this server is hosted has a **Dynamic IP Address**, the address values will be subject to change; if this is the case, the best solution is to use a **Dynamic DNS Service** (such as No-IP.com, changeip.com, etc...). A **Dynamic DNS Server** will typically require the installation of a small utility application which periodically makes sure that the current WAN IP of your server is assigned to a static URL which the client web browsers can save as a Bookmark or Favorite URL.

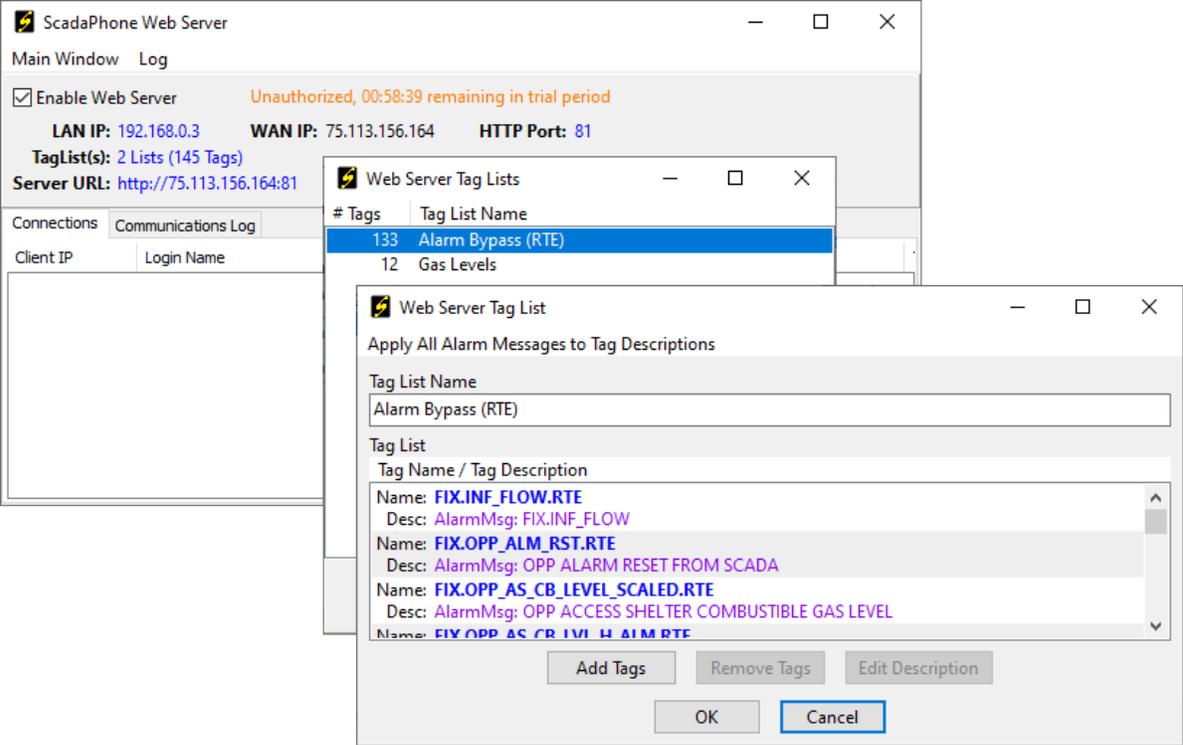
- If the host machine has **multiple Network Adapters**, the preferred adapter can be selected by clicking on the blue **LAN IP** label. The selected adapter preference will be stored via the **MAC Address** (which never changes) to ensure that it is correctly selected on subsequent runs of the host application which may happen after the adapter has been assigned to a different **IP Address**.

This setting is important on machines which have their primary network adapter isolated from the internet; if a secondary adapter has internet access, then the secondary adapter should be selected to host the **Web Server**.

- The **HTTP Port** is the Windows Socket to which Web Server will listen for client connection requests. The globally accepted default port number for **HTTP** servers is port **80**; however, many Internet Service Providers will block traffic going to port **80** for security or performance reasons. To avoid this common issue, ScadaTEC's Web Server defaults to port **81**, but this can be set to any other available port number if desired.
- The **Server URL** setting specifies what kind of **link-back** to the Web Server should be placed in **outgoing alarm notifications**; this link can be set to use a **WAN IP URL**

(<http://75.113.156.164:81>), a **DNS hosted URL** (<http://www.YourSys.net:81>), or no link.

The **ScadaTEC Web Server** allows the system designer to specify lists of tags to be made accessible to web clients. The desired tags should be segregated and placed into groups that have a common association so that the user can navigate to the desired information quickly. To configure the list(s) of tags to be made available through the Web Server, click the **Tag List(s)** hyperlink:



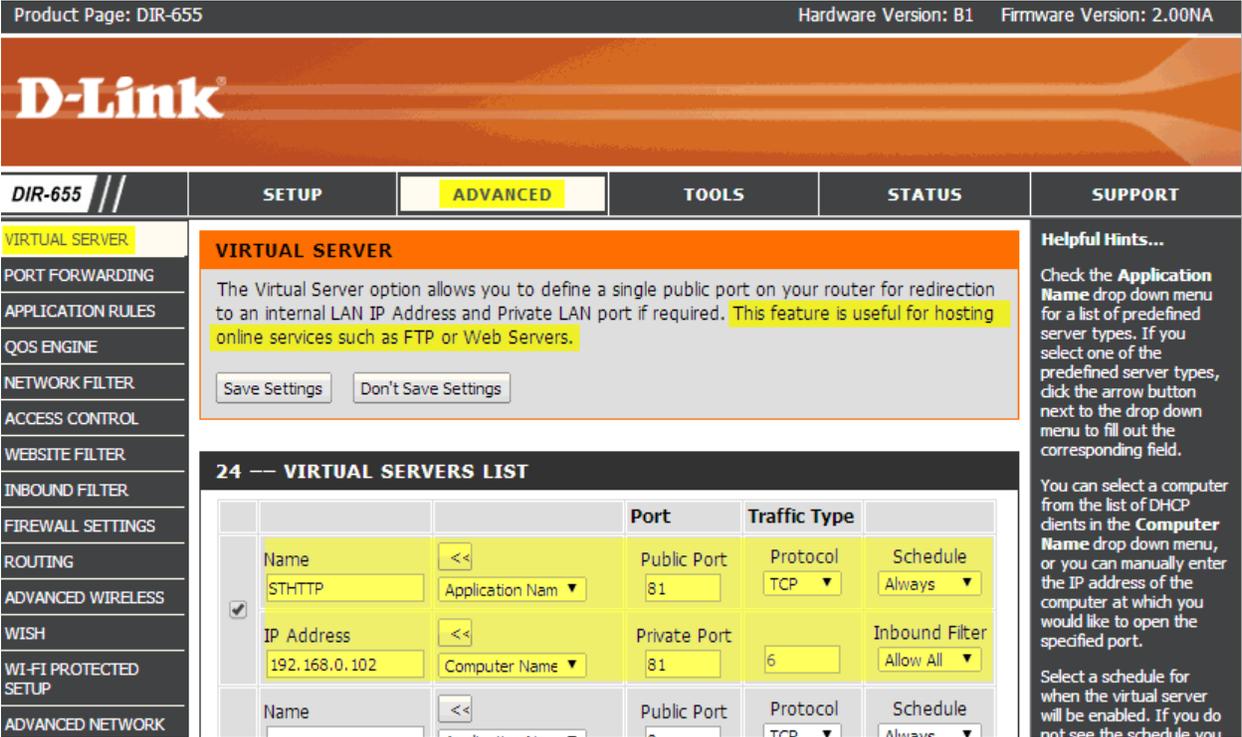
There is no limit to the number of lists or the number of tags in each list, but care should be taken to not over-burden the users with excessively long list when they are viewing this information on their mobile devices.

Note that each **Tag List** item can be given an optional **Description** (shown in purple font); this is helpful if systems having cryptically-abbreviated tag names. The optional descriptions can be set to display a customized message, the associated alarm message (if the tag is associated with an alarm), or left blank.

Router Configuration:

In most cases, the ScadaTEC Web Server will be installed on a network under the control of a router. So, when ScadaPhone displays the WAN IP on the Web Server setup window, this is really the IP Address of the router as allocated by the Internet Service Provider. In order to properly route connections from the internet through the router and down to the host machine, some minor configuration must be done in the router. Accessing the router setup screen varies from one router type to another, the following outlines the steps for configuring a D-Link router.

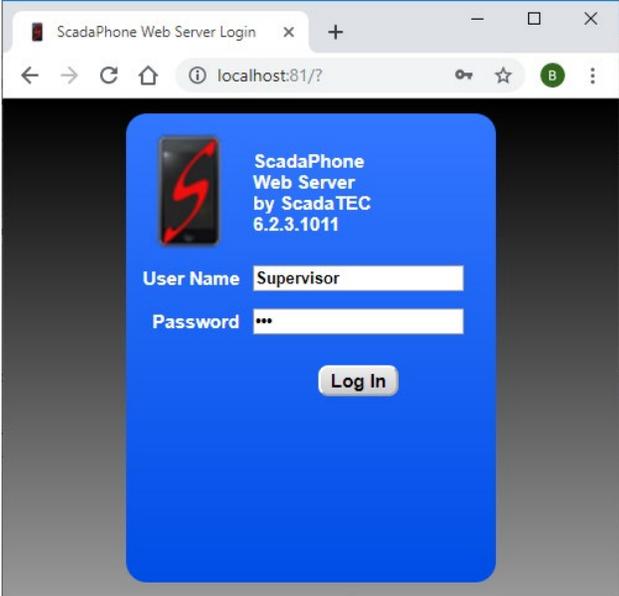
On a LAN supported by a D-Link Router, entering <http://dlinkrouter/> into the address bar of any web browser will open the router configuration page. After logging-in, find the configuration page for Virtual Servers (which is similar in concept to Port Forwarding); on the D-Link Routers, this can be found under Advanced options.



The configuration for the ScadaTEC Web Server requires that HTTP client connections be directed from the WAN IP Address (the router’s internet address) to the ScadaPhone host machine. For the sake of simplicity, the example above routes all traffic to WAN IP Port 81 to LAN IP Port 81. However, any combination of ports can be specified (as long as the LAN Port matches the ScadaPhone configuration and the WAN Port matches the configuration specified when setting up the Dynamic DNS service).

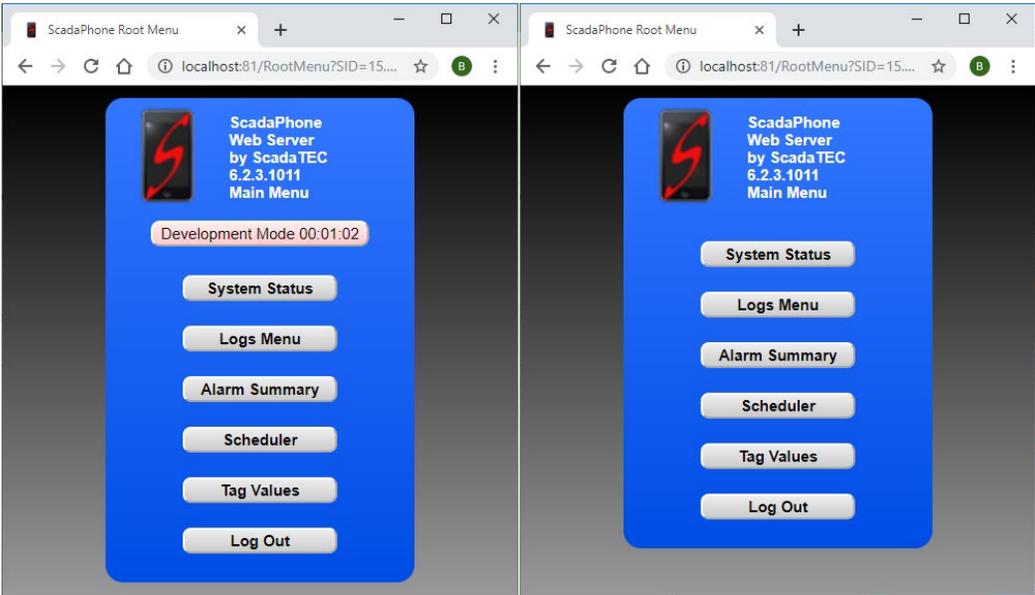
View From The Web Browser:

To access the Web Server from the host machine (for the purposes of testing), type **localhost:81** into the address bar of any web browser, this should result in the **Login Page** to be displayed:



Note: The **User Names** and **Passwords** are configured under ScadaPhone's **Users** tab. In all other apps, the **User List** can be edited from the **Edit User List** window (accessible from the **Session** menu item).

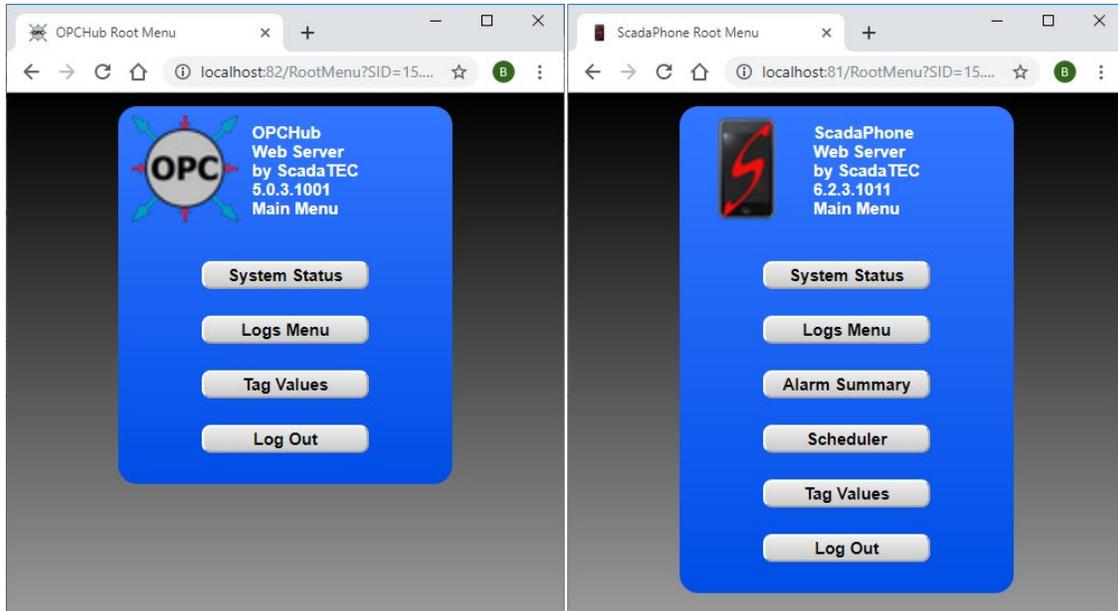
After a successful log-in, the Web Server's **Root Menu** will be displayed:



Note that there is a warning banner (displayed on all Web Server pages) which indicates when the host app is in **Development Mode** or **OFF-LINE**. The banners disappear when the system is running normally.

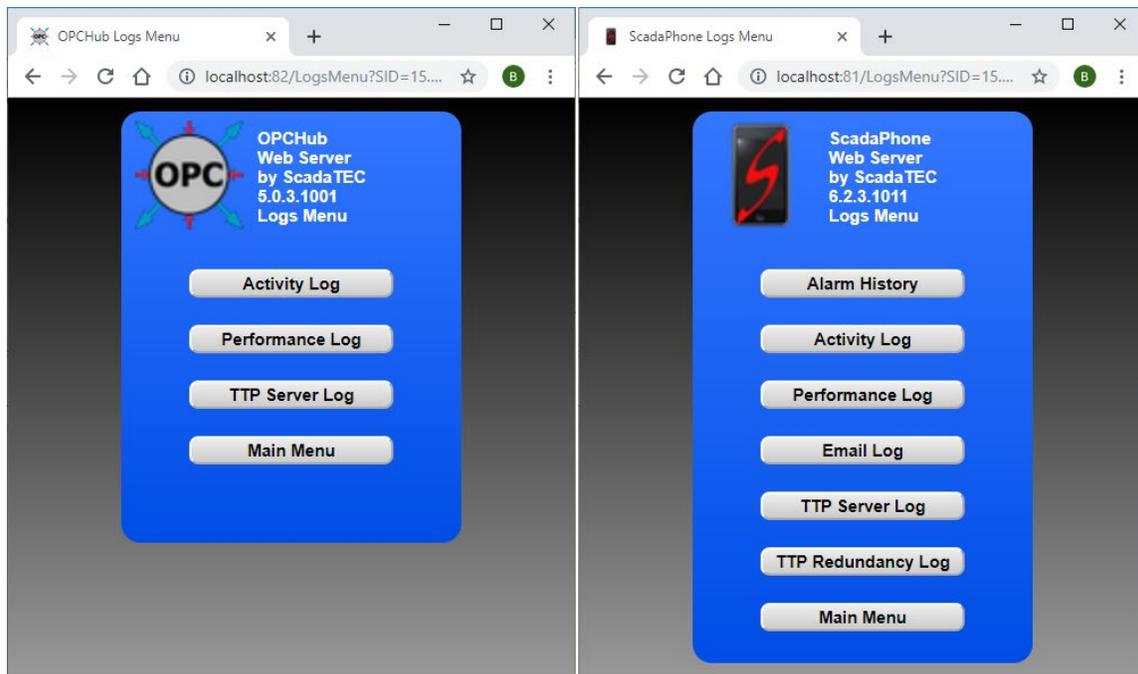
Root Menu:

All ScadaTEC apps support the **System Status**, **Logs Menu** and **Tag Values** functions; additionally, ScadaPhone Web Server supports functions related to **Alarm Reporting** and **Acknowledgement**, **Alarm Summary** and **Scheduler**:



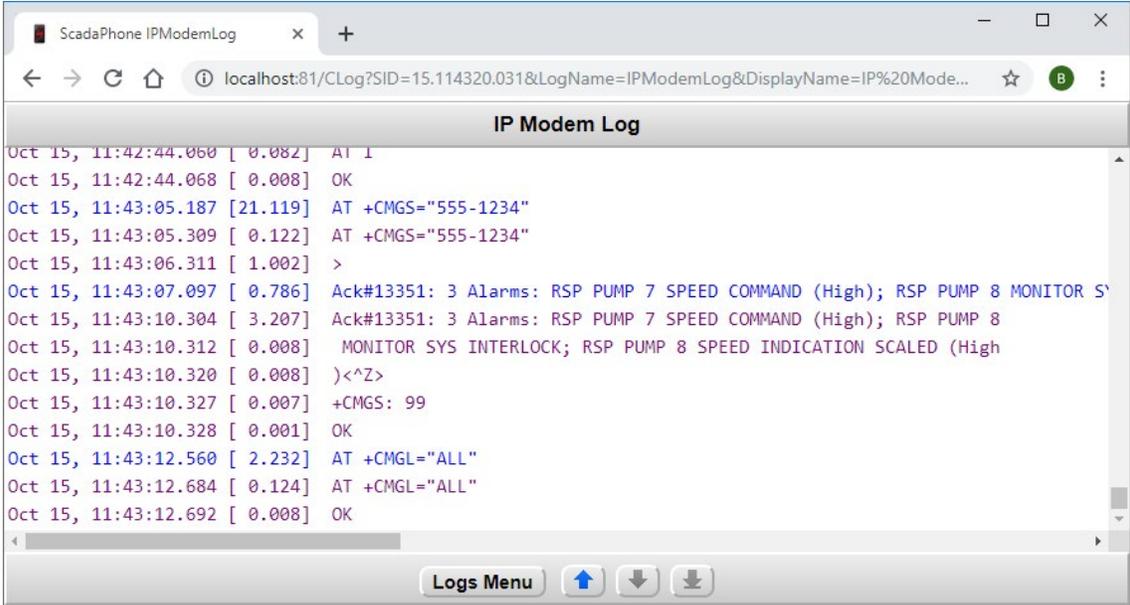
Logs Menu

This also varies between ScadaTEC apps depending upon which features are supported:



Event Logs

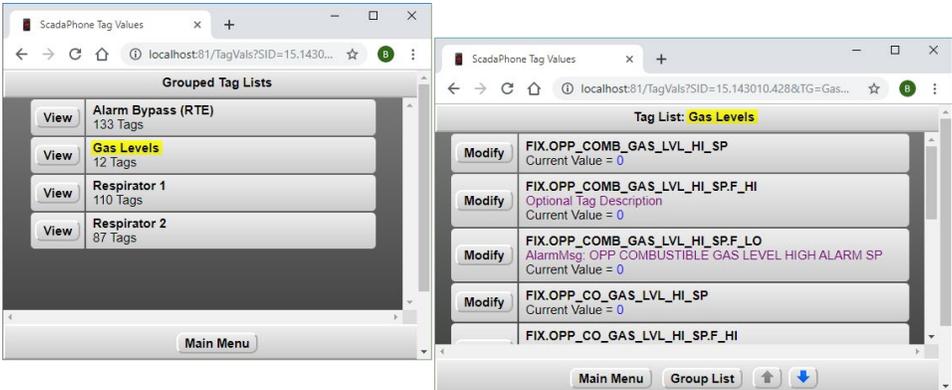
The most common type of log implemented in ScadaTEC apps is the **Event Log**; the Web Server provides access to these logs so that the users can view current system activity:



Tag Lists:

All ScadaTEC applications support the **Tag List** feature (which was introduced in the **Web Server Setup** earlier in this document). The **Tag List** feature consists of two page types:

- **Grouped Tag Lists:** This is the main index page which displays the list of user-defined tag lists; to open the user-defined lists, click the **View** button.
- **User Defined Tag List:** This window displays the tag names and values selected for each list. Users logged-in with **Data Entry** access can change data-point values by clicking the **Modify** buttons.



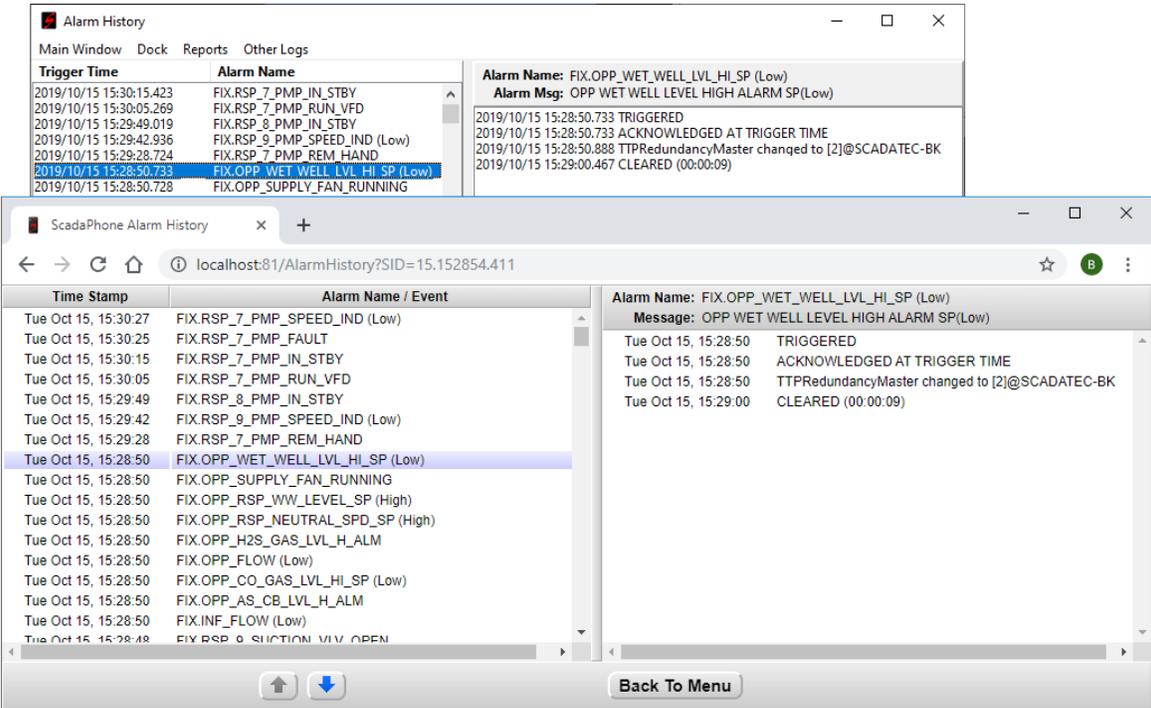
Note that the optional **Description** (if defined) is displayed in purple font between the **Tag Name** and **Value**.

ScadaPhone Specific Pages

As indicated previously, the **ScadaTEC Web Server** interface has more pages defined when being hosted by **ScadaPhone**. This is necessary to provide access to the **alarm reporting** and **alarm acknowledgement** features associated with ScadaPhone (but aren't present in other apps). The remainder of this document describes features present only in ScadaPhone.

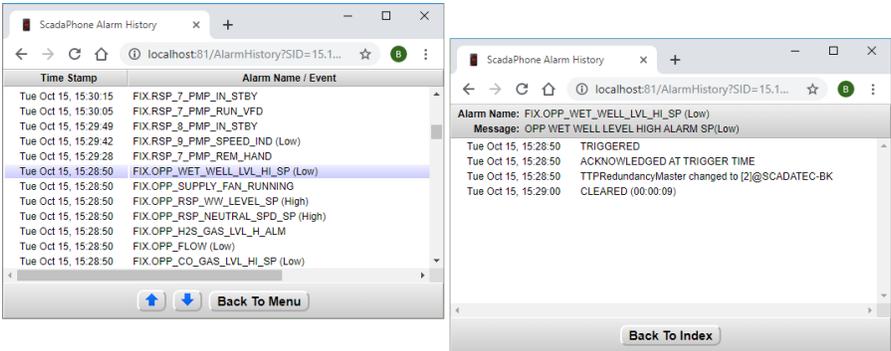
Alarm History Log

The **Web Server Alarm History** page mimics the corresponding log in the **Windows** application:



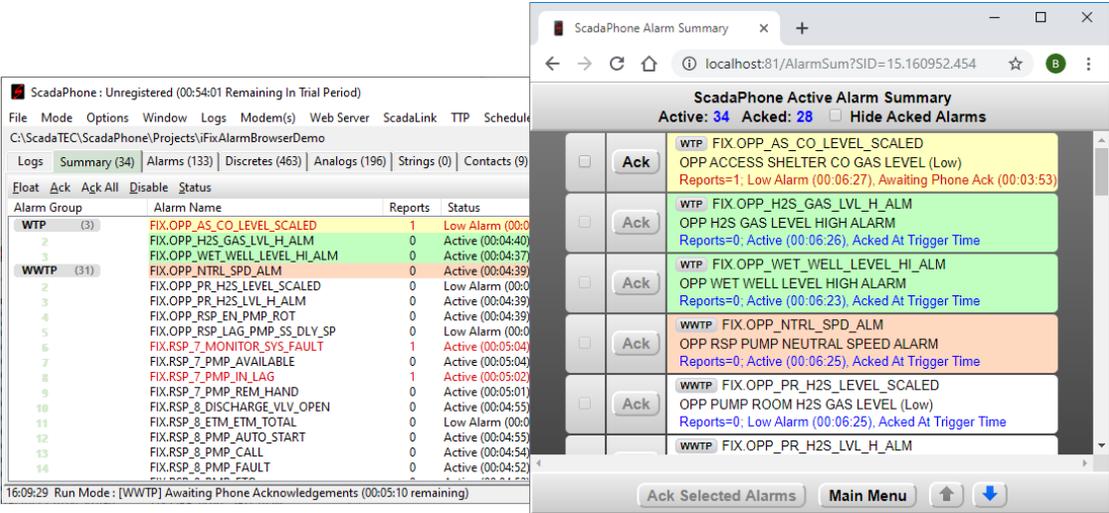
This allows the user to view all of the events associated with a particular alarm cycle. When an alarm is highlighted in the left panel, the events associated with that alarm cycle are displayed on the right panel.

When viewing this page on a small device such as a tablet or smart phone, the JavaScript logic in the page senses the narrow display width and shifts the display mode to only show one panel at a time:



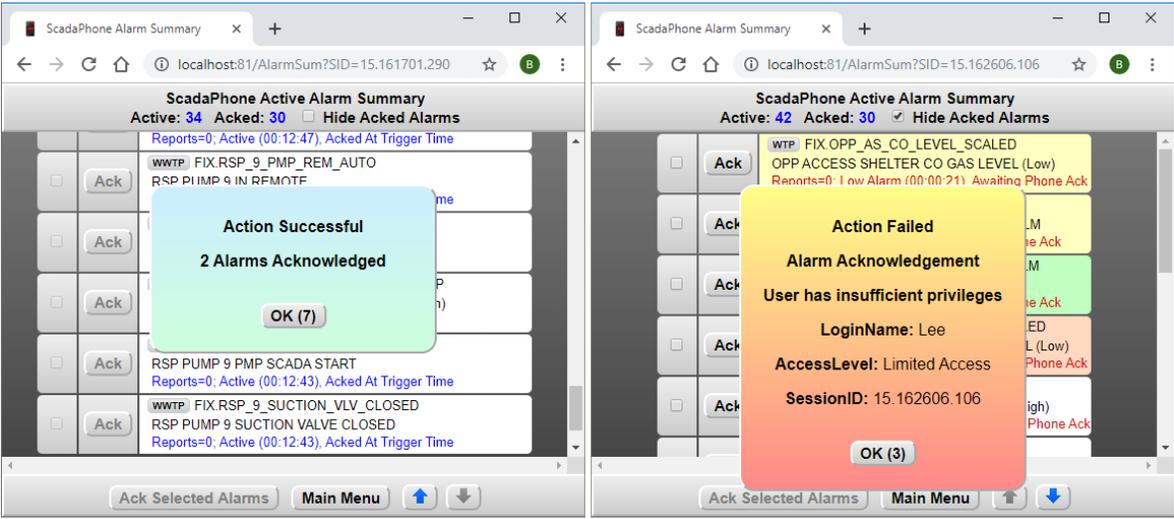
Alarm Summary

The **Alarm Summary** page (accessible from the **Root Menu** page) also mimics a corresponding page in the ScadaPhone Windows application:



From this page, the user can acknowledge alarms individually by simply clicking the associated **Ack** button, or select multiple alarms by placing check-marks in the leftmost column and clicking the **Ack Selected Alarms** button.

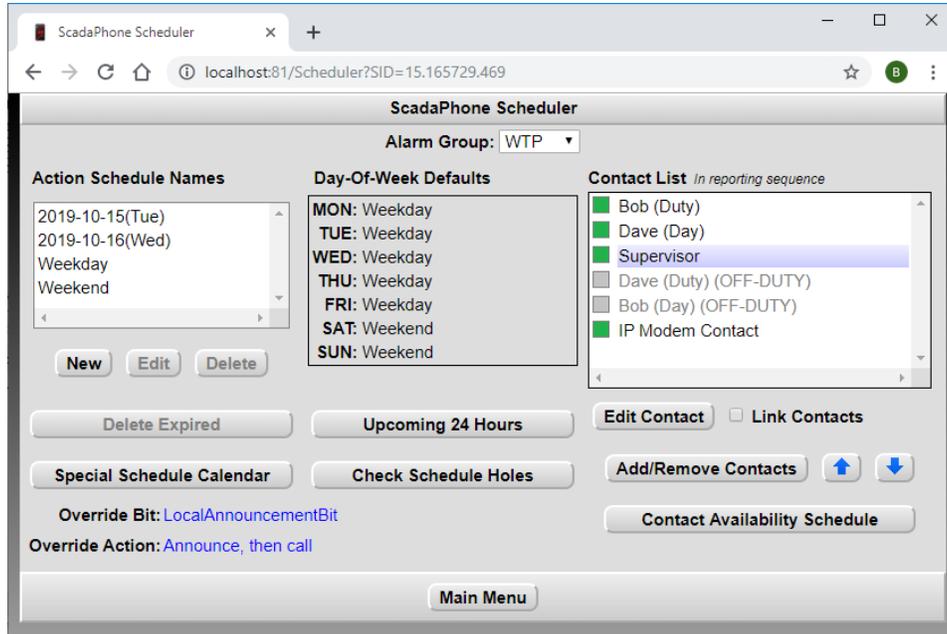
If the logged-in **User** has **Alarm Acknowledgement** security access (or higher), a confirmation message will be displayed; otherwise, a rejection message will be displayed.



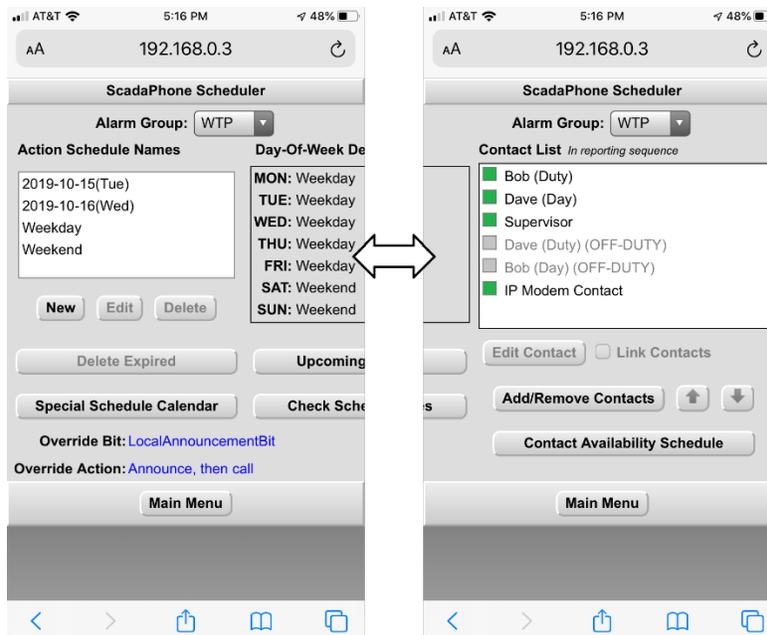
Note that the **User Access Levels** are enforced for all operations within the Web Server interface; acknowledging alarms requires **Alarm Ack** access (just as changing tag values in the **Tag List** page via the **Modify** buttons requires **Data Entry** access or higher).

Scheduler

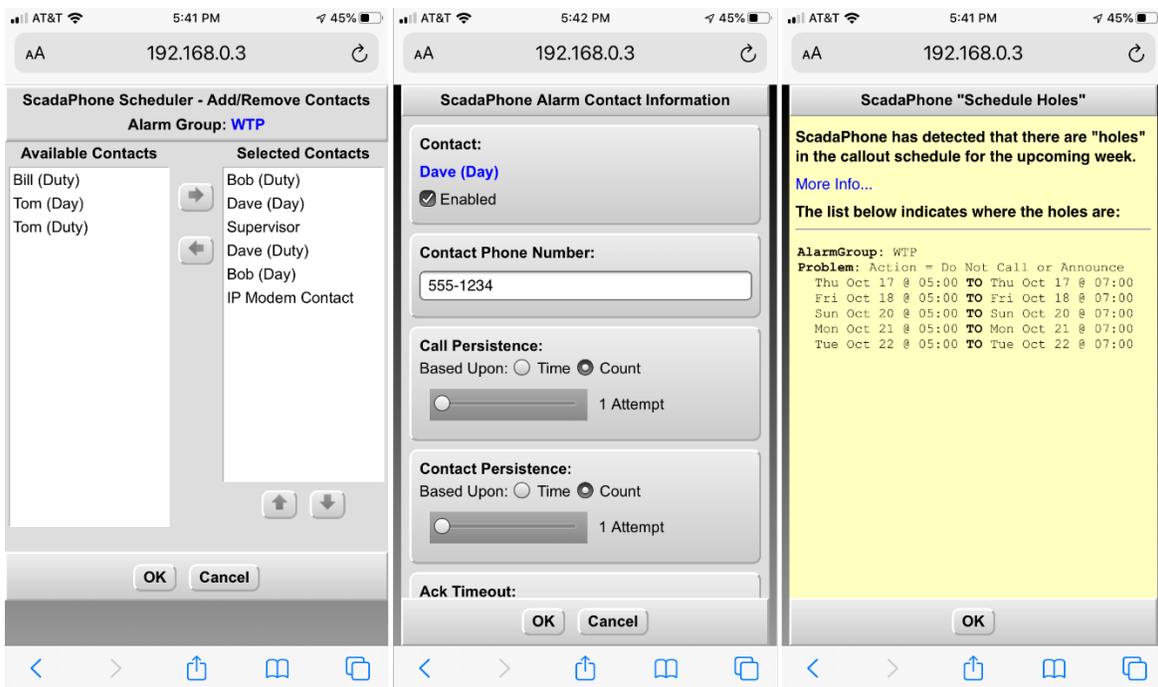
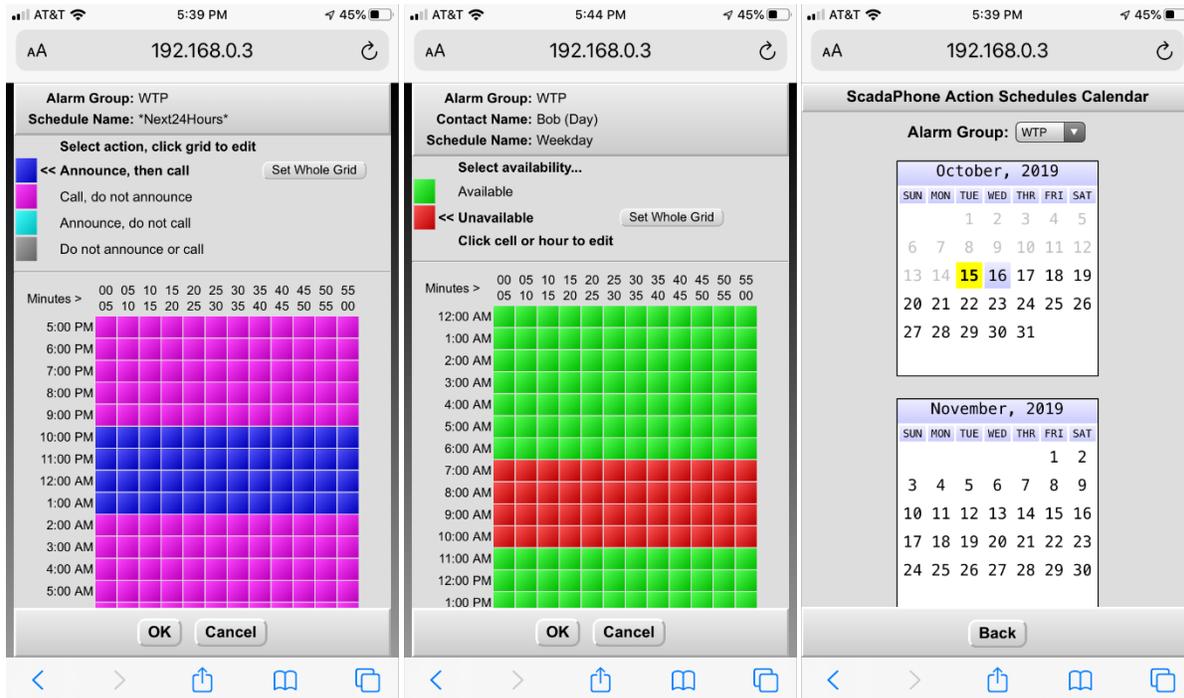
Access to view and modify **Contact Scheduling** is also supported by the Web Server interface. Users having **Schedule Change** or **Supervisor** access can make modifications to the **Scheduler**:



Once again, this web server page is modeled after its Windows GUI counterpart, but adjustments have been made to make it more accessible from a smartphone or tablet. On a small screen, the page retains its horizontal layout and the user can scroll to the right to perform **Contact Schedule** operations or scroll to the left to perform **Action Scheduling** modifications:



The schedule-editing controls, which display as **pop-up windows** in the ScadaPhone desktop GUI, have been implemented as **separate pages** in the web server:



This collection of control pages allows the system administrator to make the vast majority of necessary scheduling adjustments from remote.

Security

As was mentioned at the beginning of this document, remote access to the ScadaTEC Web Server interface is **password protected**, and the password-protected access is **multi-tiered**. The **hierarchy** of access levels is as follows:

- **Supervisor**
- **Schedule Change** (ScadaPhone only)
- **Data Entry**
- **Alarm Ack** (ScadaPhone only)
- **Limited** (for viewing statuses only)

Additionally, pages will only be served to clients referencing a valid **Session ID**, the **Session ID** is assigned at the time of login and expires after either a **log-out** or a **time-out**.

If a user logs in, interacts with a few pages, and then forgets to log-out, the session will be terminated due to **Session Inactivity**.



This improves system security by not allowing abandoned sessions to remain open and accessible to unauthorized computer users.

(775)348-7471, International | (888) 722-3283, USA & Canada
www.scadatec.com | support@scadatec.com