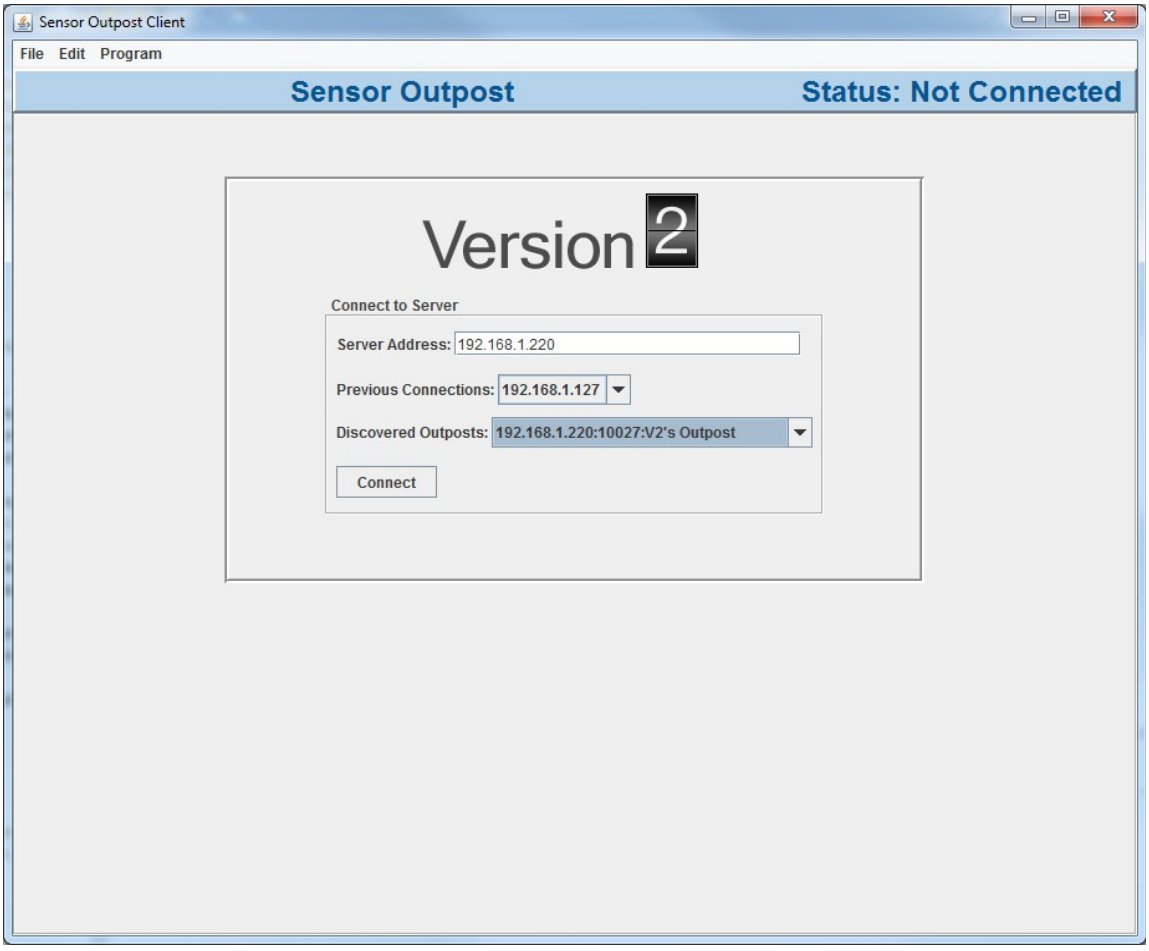
Sensor Outpost Field Administration Program
User Manual



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June 05, 2014

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Change Log

Author	Date	Changes
Derek Markell	2014-03-13	Original Document.
Derek Markell	2014-05-29	Camera and Component Section
Alex Van Leyen	2014-06-05	Minor Edits

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1 Summary

The Sensor Outpost Field Administration Program's primary use is to allow easy configuration of the Sensor Outpost. It has the capability to view and modify Adaptive Sensor Language(ASL) programs currently installed on the Sensor Outpost. ASL programs can also be uninstalled and new programs can be installed. The program is also used to configure what remote server the Sensor Outpost will connect to. The Sensor Outpost's network settings can also be configured and tested through the program. Once installed, the program uses Ethernet to make a connection with the Sensor Outpost. The instructions in this user manual will be based on the Windows 7 Operating system.

2 Installation

2.1 Java

This program requires Java be installed on the computer for the program to run. Java version 7 is the required version. The most up-to-date version of Java can be found at http://www.java.com/en/download/manual.jsp.

2.2 Jar File

Copy the SensorOutpost.jar file to your desktop. A copy can be obtained from the installation CD or our website, www.versiontwo.ca.

3 Network Configuration

Under most circumstances connecting to the Sensor Outpost is straightforward. If the Sensor Outpost was configured to use a static IP address, the address should already be known. In cases where the Sensor Outpost was configured with DHCP, the IP address might not be known. If the Sensor Outpost is connected to a local network using wifi, this is not a problem. On start up, the Field Administration Program scans for Sensor Outposts on the local network and will present a list of them on the connection screen.

The Sensor Outpost, regardless of network configuration (DHCP or static), will always have the IP address 10.10.10.10. This is used as a last-resort address in cases where the DHCP allocated address isn't known.

3.1 Network Configuration

If you can't access the Sensor Outpost any other way, you can configure your Windows computer to access it on the 10.10.10.XXX network. Please make sure to record your previous settings before proceeding.

1) Go to *Network and Sharing Center* from the *Control Panel* and then clicking *Change adapter settings*.
2) Now right click on the desired adapter (ex. *Local Area Connection*) and click *Properties*.
3) In the list of items select *Internet Protocol Version 4 (TCP/IPv4)* and click the *Properties* button.
4) To enable a static configuration, select *Use the following IP address:* and *Use the following DNS server addresses*:(See Figure 1).

Knowledge about specific addresses to use should already by known, as this is beyond the scope of this document.

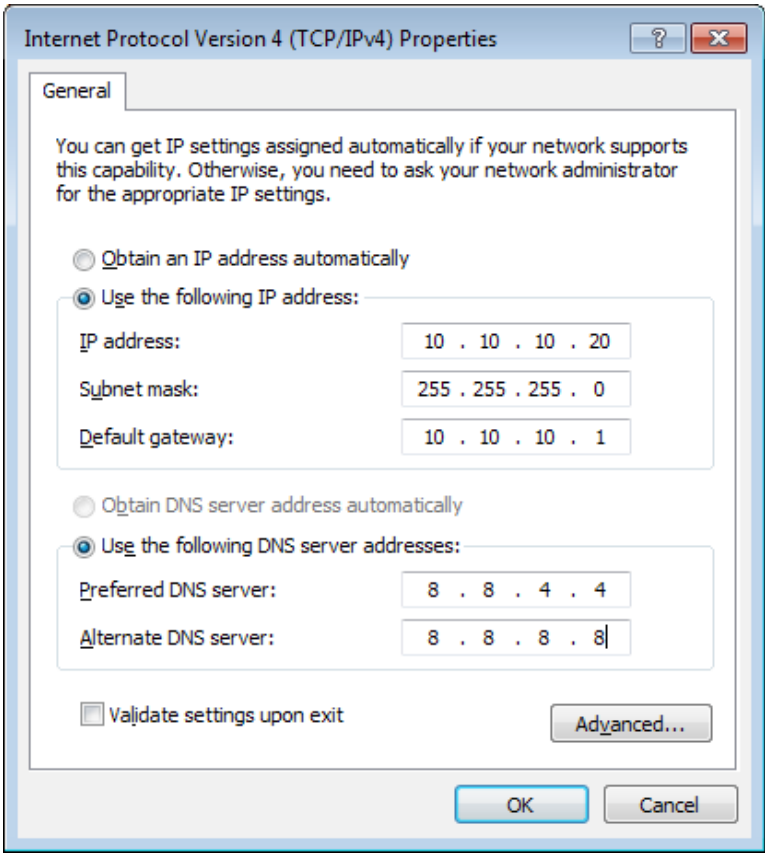

Figure 1: Static IP Address

This will assign the address of 10.10.10.20 to your Windows computer. The Sensor Outpost is at 10.10.10.10.

4 Sensor Outpost Field Administration Program

4.1 Connecting to the Sensor Outpost

Server Address: This is where the user has the ability to manually enter the address that the Sensor Outpost is configured to. If this is not known, 10.10.10.10 will allow access.

Previous Connections: This drop down box has a list of all Sensor Outposts that were previously connected to using this instance of the software. Selecting one will populate the Server Address field.

Discovered Outposts: This drop down list displays all Sensor Outposts that this program has discovered and that should be connectable to.

Once the IP address has been entered, you can press connect and upon a successful connection you will see the screens outlined in the following sections.

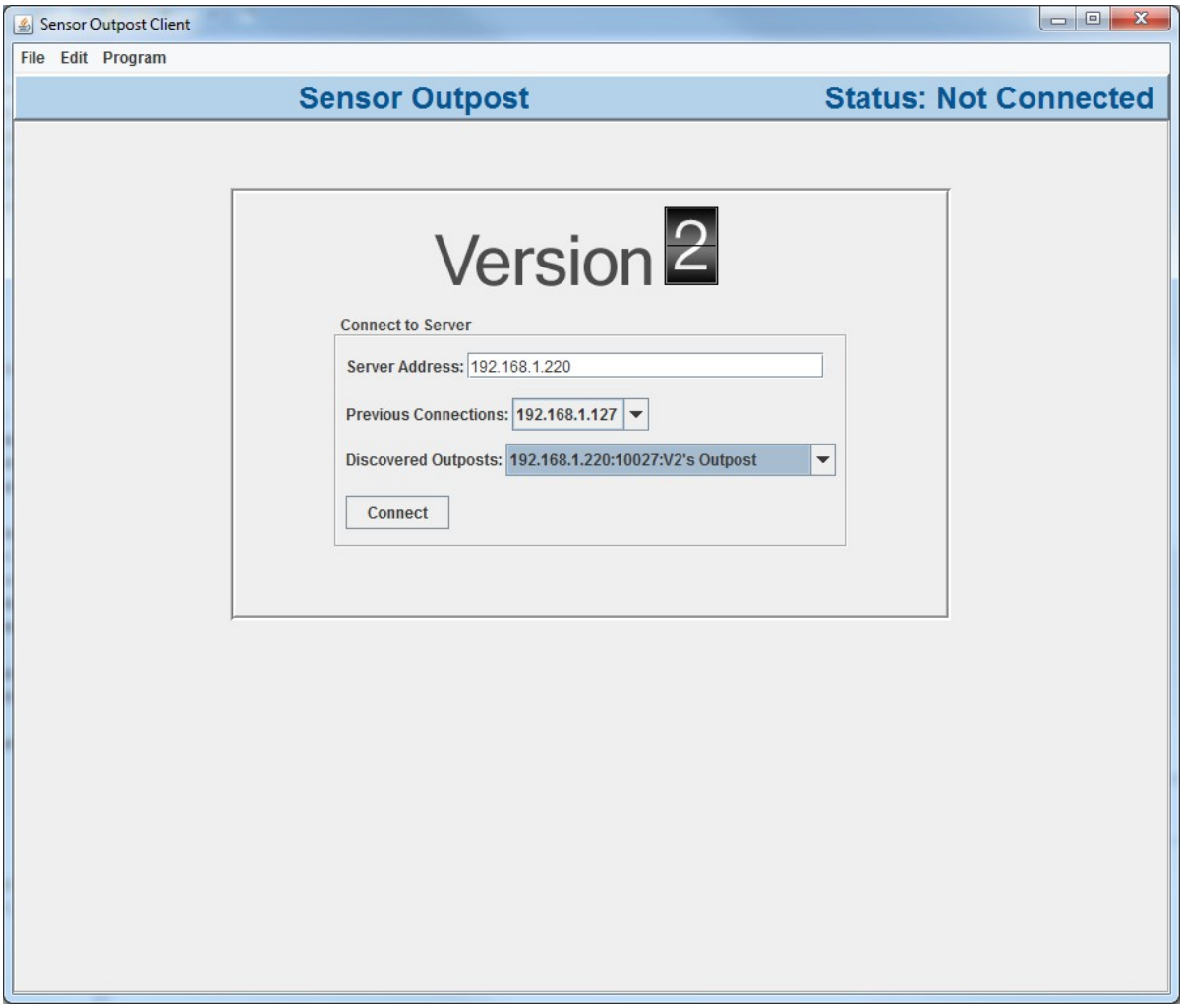

Figure 2: Connect Screen

4.2 Operating System Status

This screen allows you to view the output of three programs on the Sensor Outposts Operating System. These include, Disk Free(df), Process Status(ps), and Interface Configuration(ifconfig). The three options are listed in the drop down menu, and upon selection the output will be displayed in the output panel. You can also to save the output from any of the commands by either clicking the *Save As* button , or by choosing the File menu and then selecting *Save As*.

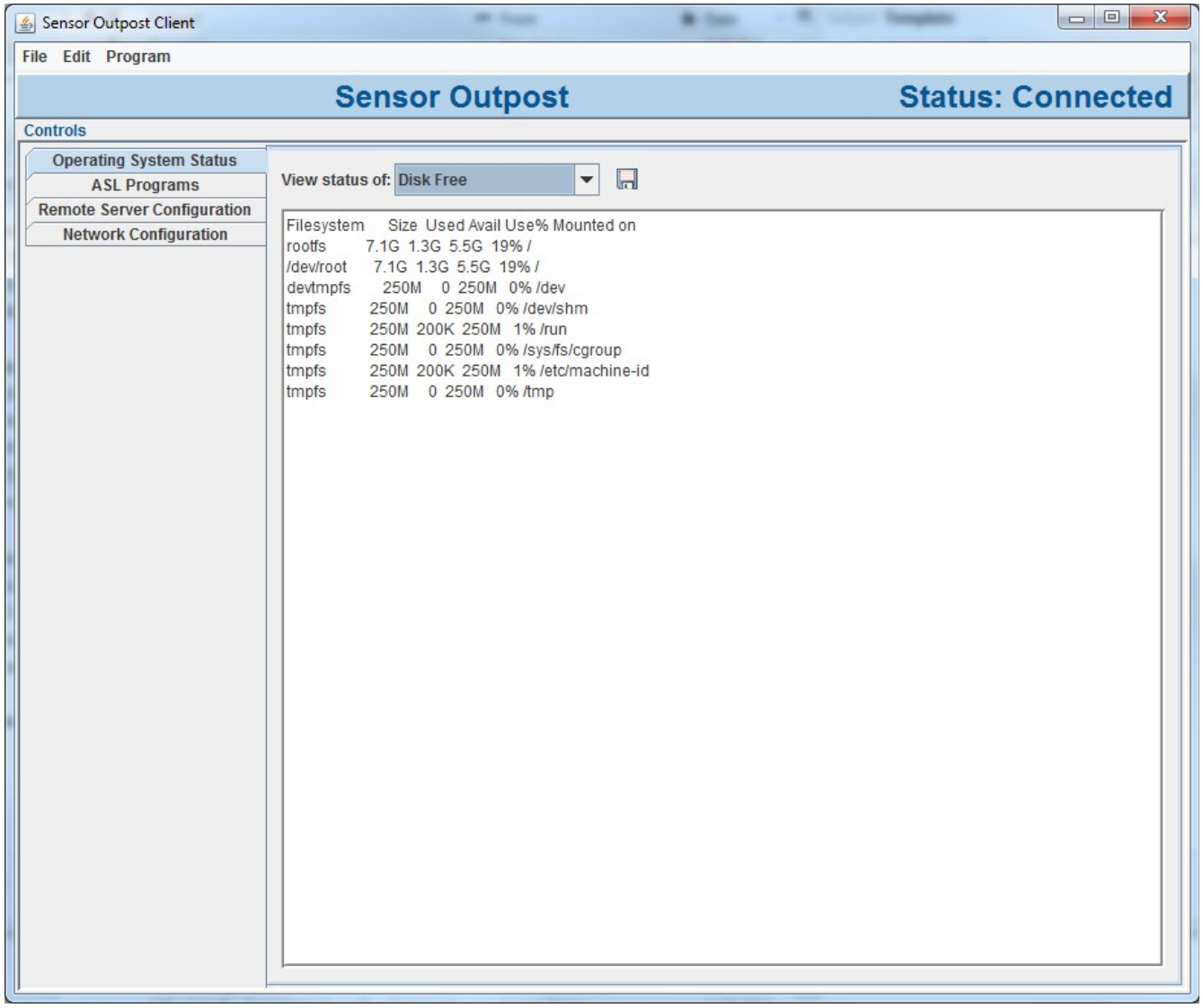

Figure 3: Operating System Status Screen

4.3 Adaptive Sensor Language (ASL) Programs

In this screen you can manage all ASL programs running on the Sensor Outpost, as well as any ASL programs on the local computer. To start off, the user should select a workspace. This is simply any directory on the local computer where ASL programs are stored. To do this, click on the *Browse* button . Once a directory has been chosen, click on the *Change* button . Doing so should populate the *Workspace* table with all ASL programs located in the workspace directory

The *Installed Programs* table should already be populated with all of the ASL programs installed on the Sensor Outpost.

Local ASL Programs can be edited directly by selecting the desired program and then toggling the *Edit button* to enable *Edit Mode*. To exit *Edit Mode*, toggle the *Edit button* again. Multiple actions can be performed on a local program, the following describes those actions:

Save: Clicking the *Save* button, all changes made to the selected program will be written to the file system. Must be in *Edit Mode*

Save As: Opening the *File* menu and clicking *Save As*, the user can save the selected program with a different name.

Undo: Clicking the *Undo* button, any change made will be reverted, character by character. Must be in *Edit Mode*.

Redo: Clicking the *Redo* button, any change made by Undo will be brought back, character by character. Must be in *Edit Mode*.

Revert: Clicking the *Revert* button, the program will be brought back to its last saved state. Must be in *Edit Mode*.

Install: Clicking the *Install* button, the selected program will be installed to the Sensor Outpost. If a program with the same name already exists, the user will be given the option to overwrite the version of that program already installed on the Sensor Outpost. If successfully installed, the program will appear in the Installed Programs table.

Run: Clicking the *Run* button, will run the currently selected local program on the Sensor Outpost and will display any output in the form of a popup window, once the program has finished running.

Delete: Opening the *Edit* menu and clicking on *Delete*, the selected program will be permanently deleted from the file system. A prompt asking the user to confirm this action will be shown.

New: Opening the *File* menu and clicking the *New* button will create a new, empty program. A prompt asking the user for the name of this program will appear. The newly created, empty program will now appear in the *Workspace* table.

Rename: Opening the *File* menu and clicking the *Rename* button will allow the user to rename the selected program.

Using any of the previous actions on a local ASL program will have no effect to any programs currently installed on the Sensor Outpost, regardless if they have the same name or not. As with being able to perform actions on local programs, actions can also be performed on installed programs. The following will describe those actions:

Wipe: Right-clicking an installed program and clicking the *Wipe* button or opening the *Program* menu and clicking the *Wipe* button will clear the program's persistent variable memory.

Uninstall: Right-clicking an installed program and clicking the *Uninstall* button or opening the *Program* menu and clicking the *Uninstall* button will permanently uninstall and remove the program from the Sensor Outpost.

Import: Opening the *File* menu and clicking the *Import* button will import the selected installed program to the local machine. The imported program will now be visible in the Workspace table.

Wipe All: This action is similar to the *Wipe* action, except it will wipe **all** programs' persistent variable memory. This can be achieved by opening the *Program* menu and clicking the *Wipe All* button.

Refresh Programs: Opening the *Program* menu and clicking the *Refresh Programs* button will retrieve all the installed programs from the Sensor Outpost and repopulate the *Installed Programs* table. This action may take a few seconds to complete.

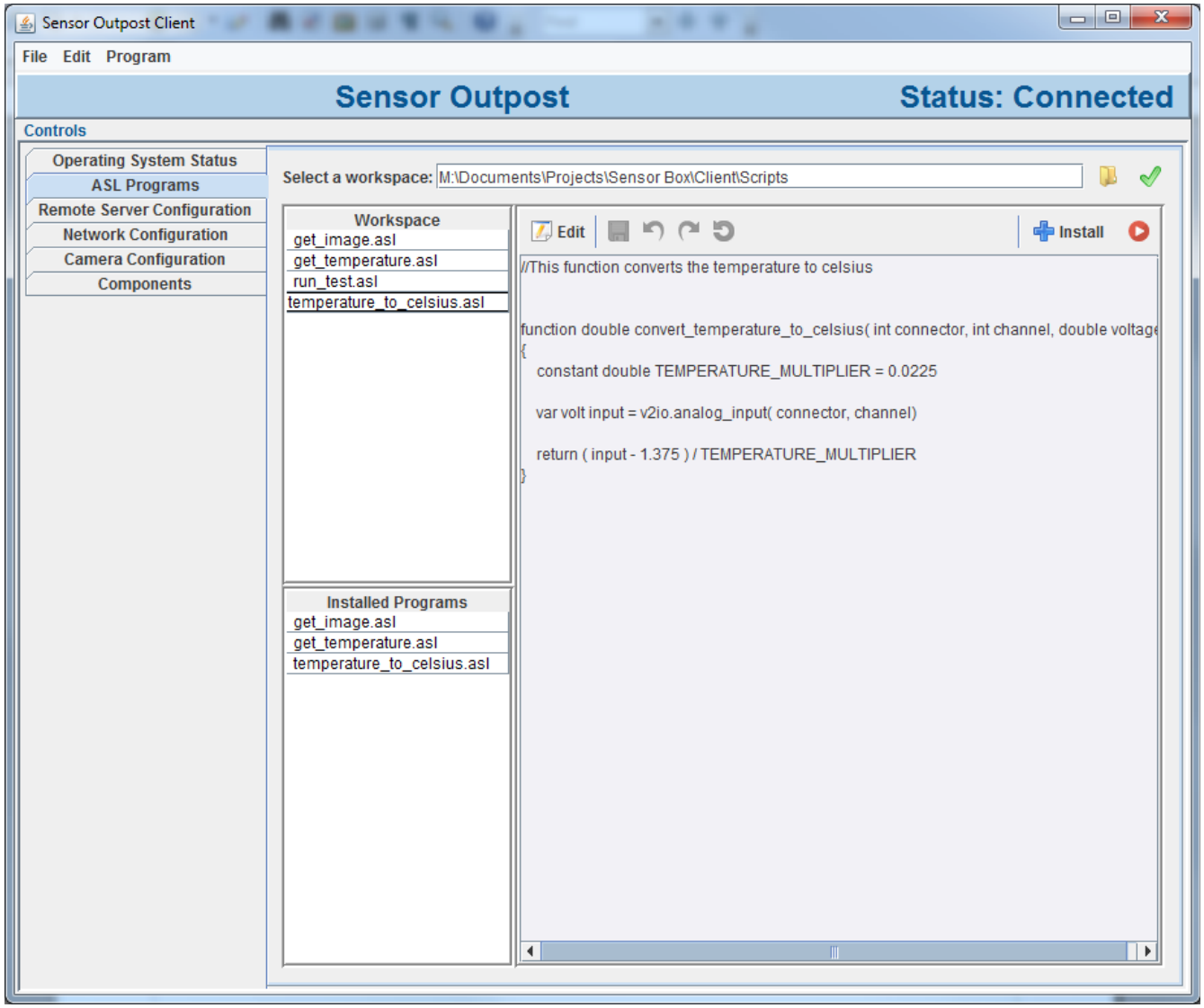

Figure 4: ASL Programs Screen

4.4 Remote Server Configuration

In this screen you can set the location of the Sensor Outpost's remote server and to also log into that server. To change the location of the remote server, the user must click the *Configure* button. This will enable the user to modify the IP and port fields. To save these settings, the user must click the *Save* button. To test that the Sensor Outpost can make a connection to the remote server, the user can click the *Test Connection* button.

You can also has the ability to log into the remote server. To do so, while in a logged out state, enter the username and password and click the *Login* button. To test whether these credentials are valid, the user can click the *Test Authentication* button.

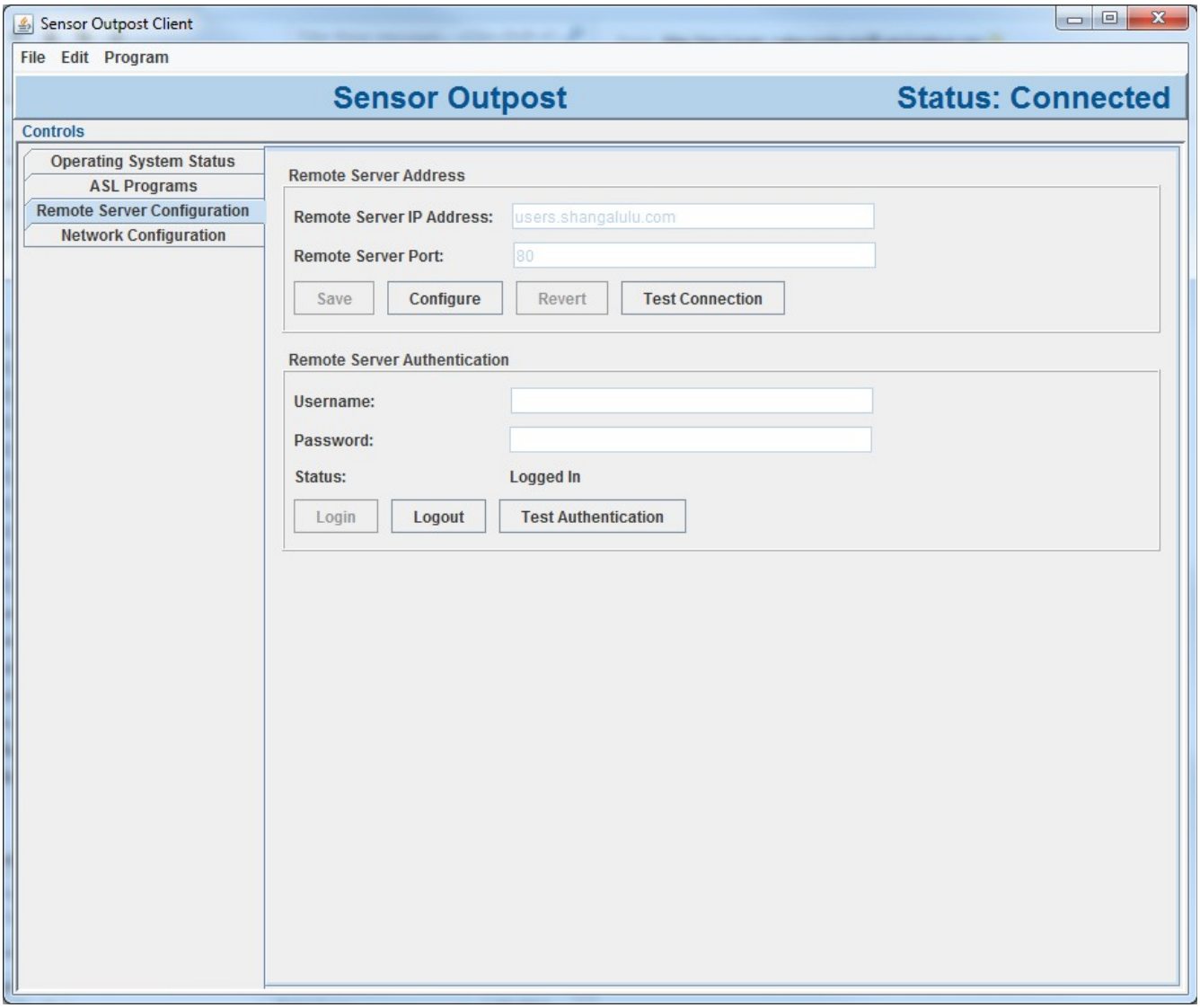

Figure 5: Remote Server Configuration Screen

4.5 Sensor Outpost Network Configuration

In this screen you can configure the Sensor Outpost's network settings and perform some tests to make sure the settings are as desired.

DHCP Configuration: To have the network configured using DHCP, the *Use DHCP network configuration* radio button must be selected and for it to take effect the user must click the *Apply* button. Within a few seconds the changes should have taken place.

Static Configuration: To configure the network statically, the *Use static network configuration* radio button must first be selected. The next step is to click the *Configure* button which will enable the fields for editing. Once all fields are filled in, click *Apply* and within a few seconds the changes should have taken place.

In order to test the network there are two programs that can be run from the Sensor Outpost. The first is *Ping* and the second is *Traceroute*. Both programs require a hostname or IP address to be entered. Clicking on either of the two buttons (*Ping* or *Traceroute*) will have the Sensor Outpost execute those commands and the output will be displayed in the output panel. It should be noted that depending on the IP address or hostname, either of these actions could take up to 30 seconds to finish.

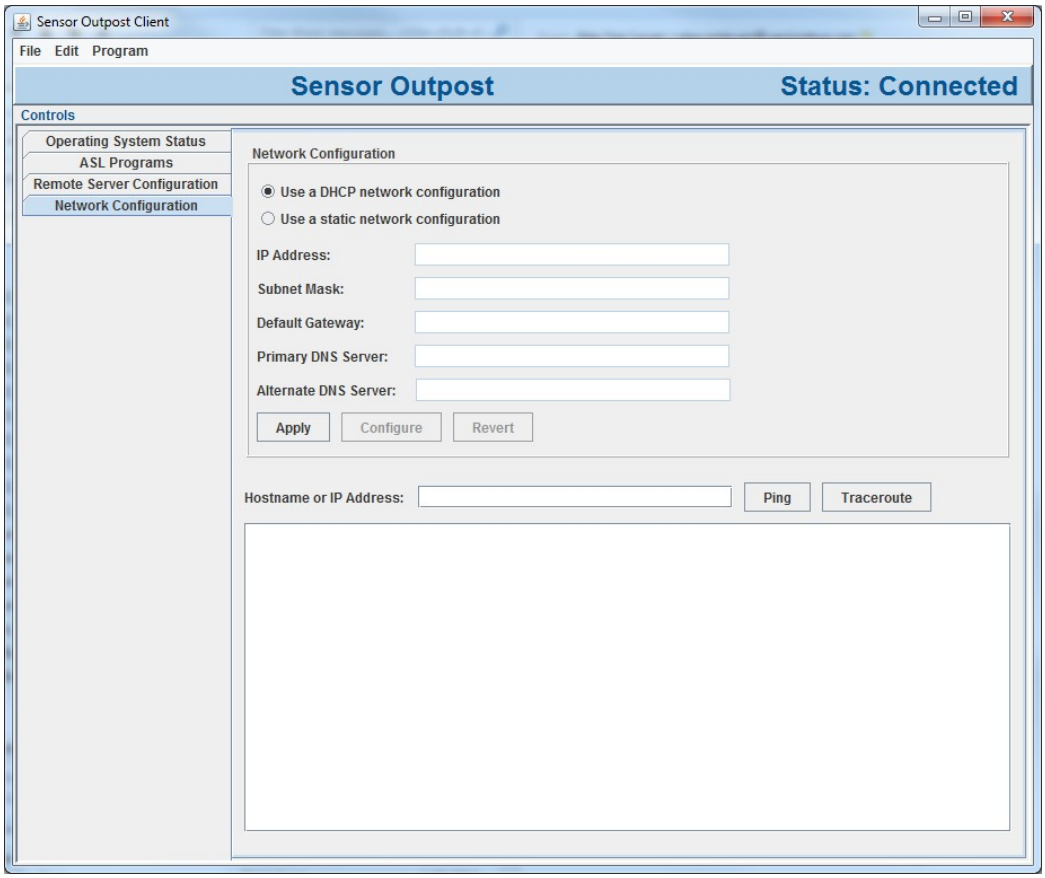

Figure 6: Network Configuration Screen

4.6 Camera Configuration

The camera configuration tab can be used to take individual images with the camera or have the camera continuously loop, taking images. Among these options the user can save the most recent image to the local file system.

Capture Image: Clicking the *Capture* button, will result in the Sensor Outpost captuing an image with the camera. The image will then be displayed in the viewing area above the controls.

Loop: Clicking the *Loop* button, will have the Sensor Outpost continuously capture images and display them in the viewing area. This will go on until the *Stop* button, is clicked. All other controls are disabled while this is happening

Save: Clicking the *Save* button, will bring up a file browser, allowing the user to save the image that is currently displayed.

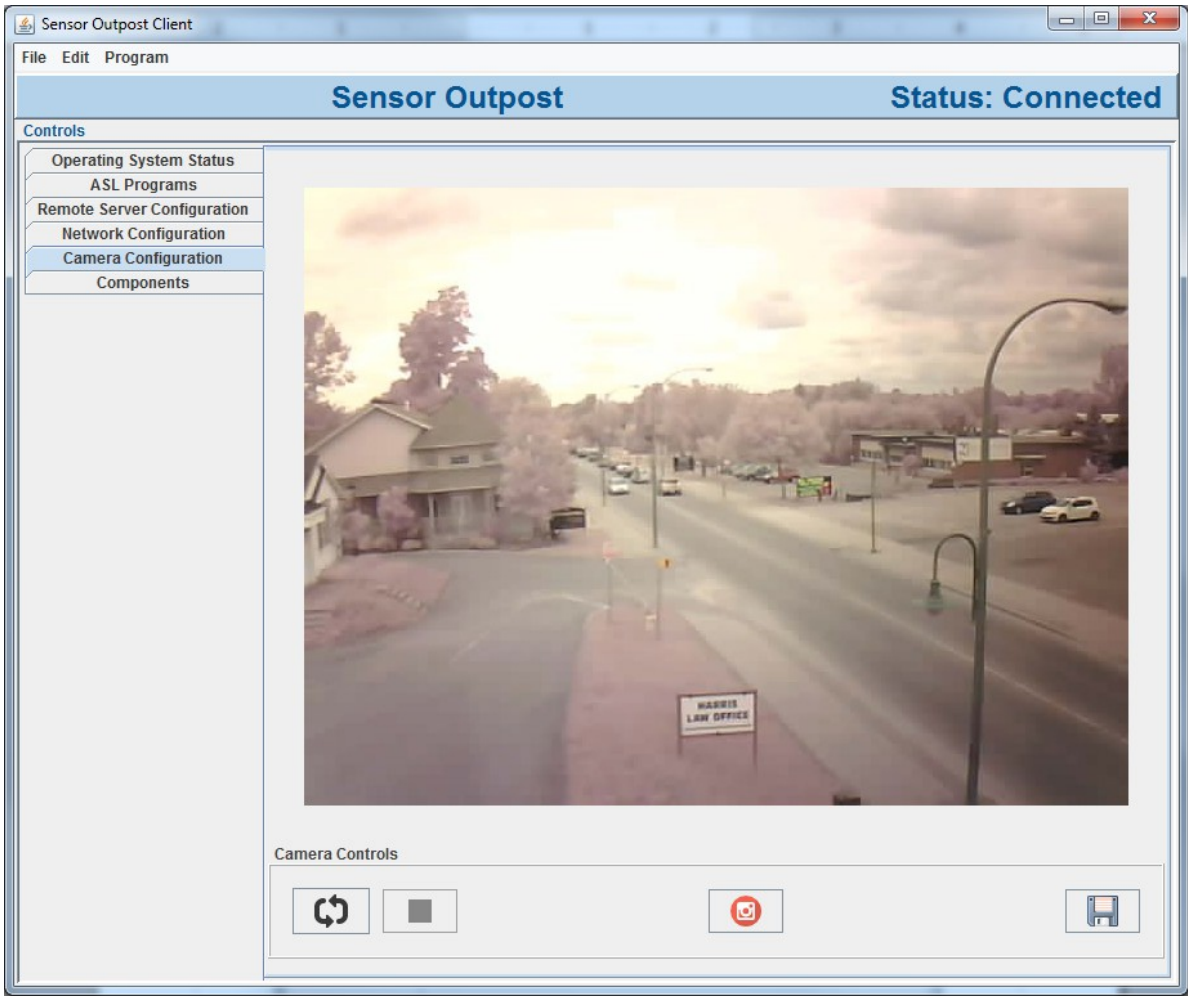

Figure 7: Camera Configuration Screen

4.7 Components

The components tabbed pane can be used to view the hardware configuration of the Sensor Outpost. The *Select a board* drop down allows the user to view components associated with the board they're connected to. The *Select a component* drop down allows the user to select and view a top-level component and any subcomponents which are apart of the selected board.

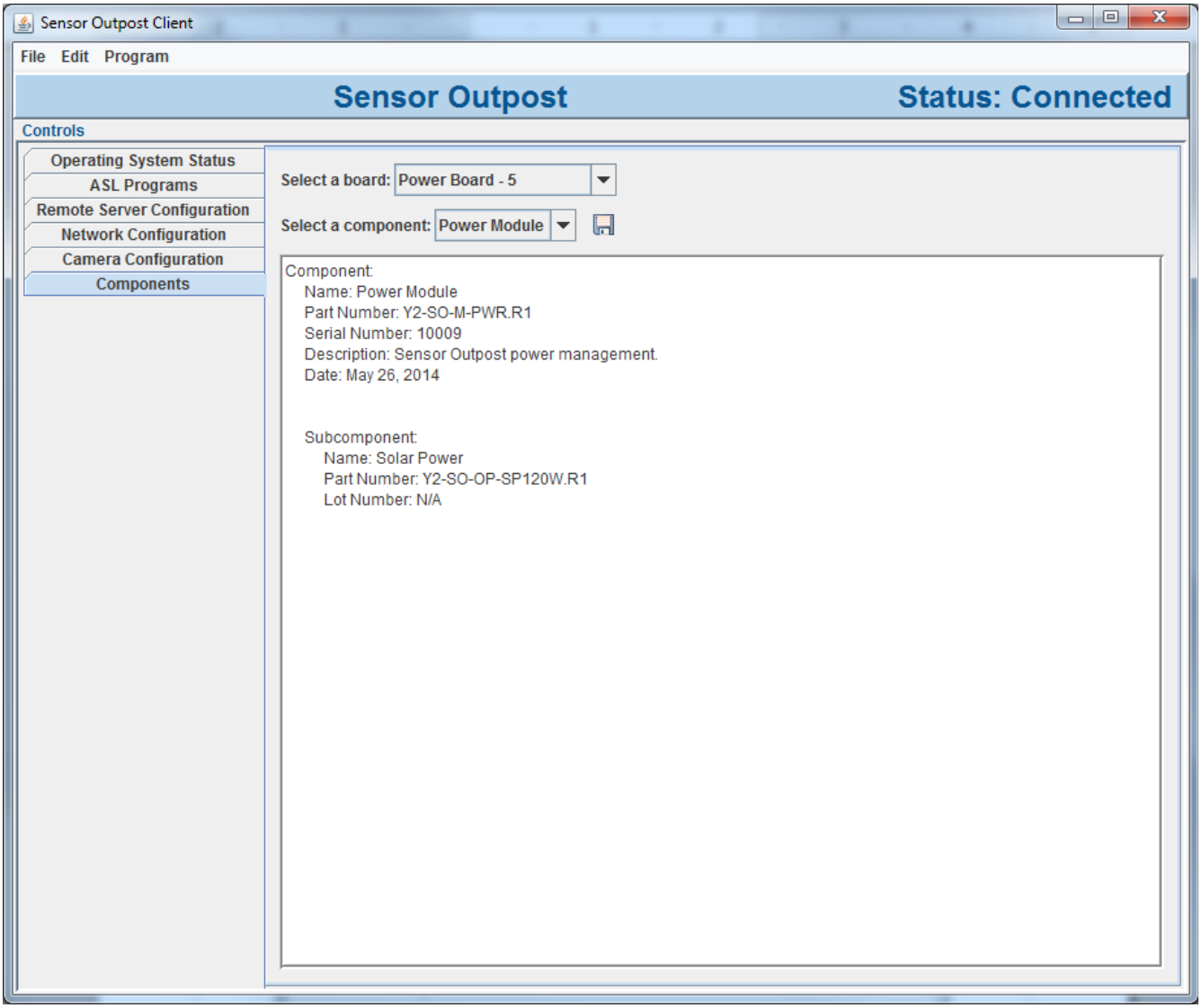

Figure 8: Components Screen