

August 2014

Remote Operations of SCADA Systems using InduSoft



This month's TechCorner will focus on some of Quantum Automation's favorite products to use for setting up SCADA systems and how to enable remote access using InduSoft's Secure Access Viewer. The products below are game changers when it comes to remote connectivity, and provide secure methods of communication to remote systems otherwise unreachable. With the assistance of InduSoft's various thin clients, setting up your SCADA system to run remotely is quick and only includes a few steps. Is your SCADA system ready for the next generation of connectivity?

■ What is a SCADA system?

- **SCADA (supervisory control and data acquisition)** is a system which communicates with individual smaller systems to provide control of remote equipment. The supervisory system may be combined with a data acquisition system by adding communication methods to acquire data about the status of the remote equipment for display or recording purposes. It is a type of industrial control system (ICS) used to easily micro manage devices.
 - **InduSoft Web Studio*** is a truly unique development and runtime software that incorporates all the tools users need to create SCADA HMI

(Human Machine Interface) applications, dashboards and OEE (Overall Equipment Effectiveness) interfaces.

■ Why is SCADA important?

- The use of SCADA software is important because it provides controls for essential processes used in industrial manufacturing, production, power generation, fabrication, and refining. SCADA systems may be run in continuous, batch, repetitive or discrete modes to provide scalability and flexibility when controlling a project. In order for a project to operate fluidly, a collection of devices must be tied together to work coherently, and SCADA software such as InduSoft provides that bridge to success. SCADA can be used remotely in many ways as long as the devices in your system are connected by any method, i.e. Serial, Ethernet, WiFi, etc. your SCADA software InduSoft may communicate with it.

■ How can InduSoft be connected to remotely?

- **Local Area Network:** If the devices in your system are connected to a PLC or your machine by serial or local network (Ethernet or WiFi) your InduSoft project may operate in one room, and be viewed or controlled in another. This is a simple operation by utilizing InduSoft's **Secure Access Viewer**.
- **Internet:** SCADA systems may also communicate between machines over a Wide Area Network, or the Internet. Using the internet to remotely connect to your SCADA system could reduce the time it takes to get a machine back up and running by reducing the need to physically operate the machine. InduSoft provides different options for connecting to the server including: **Web Thin Clients, Secure Access Viewers, and Studio Mobile Access**. Other methods may include utilizing screen sharing software such as LogMeIn or Team Viewer.
- **Cellular:** With the advancements of cellular connectivity, SCADA systems are now capable of communicating long distances securely using cellular connections on most world-wide carriers. This method relies on the previous method through internet, however does not require either a hard connection or WiFi. Below are some examples of devices we provide which provide cellular connectivity to devices connected enabling remote SCADA.



- **eWON:** The eWON* **industrial router** is an IP-based connectivity device that enables the complete integration of a **remote terminal unit (RTU)** into a central supervision system. In a traditional implementation of a **RTU, PLC** and **SCADA**, eWON technology leverages easy-to-use Web technologies for decentralized monitoring of many different devices. Thanks to its FTP client/server functionality, eWON technology makes it possible push data acquired from the RTU to an eWON industrial router acting as a data concentrator on the local LAN. This feature enables data aggregation from multiple RTUs without the expense of polling remote units via landlines links from a master control station.
- **Moxa OnCell:** The OnCell* G3110 and G3150 industrial RS-232 and RS-232/422/485 **GSM/GPRS/EDGE** IP gateways are designed to transmit data transparently over **GSM/GPRS/EDGE** cellular networks. The OnCell G3110 and G3150 can transmit data from both serial devices and Ethernet devices to a WAN interface, and come with private IP management software and **VPN** support for handling the IP address issue in cellular network structures. The products also come with a built-in relay output that can be configured to indicate the priority of events when notifying or warning engineers in the field.



With a Cellular connection to your InduSoft runtime, you may also access system by using a **Secure Mobile Access** client, which is included with your runtime package.

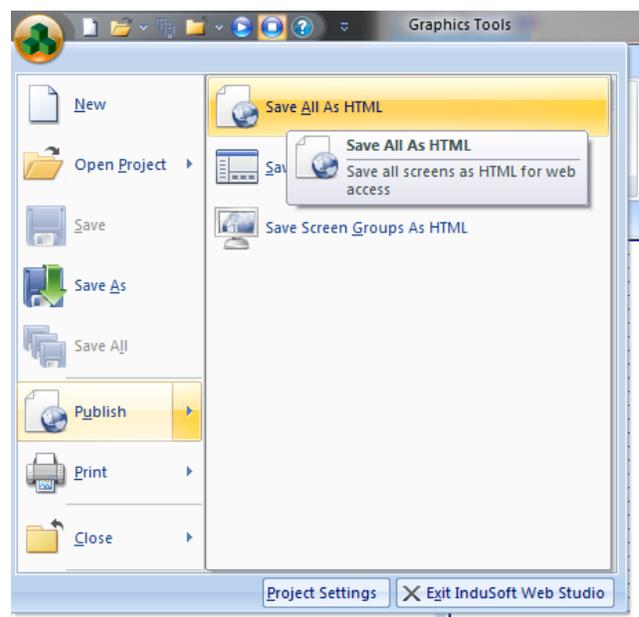
How can SCADA be operated remotely?

- **Supervision:** The remote access clients allow the user to view live data as the machines are operating. By using an eWON, the user may take it one step further by operating on a remotely located machine which has seemingly no means of connection to the Internet. This application is perfect for mobile projects which may never be in the same location, or remotely located plants which are still located in service of a GSM cell carrier.
- **Control:** By connecting to a remotely located project, InduSoft then allows the control of tags within the running project as if it were local. This ability lets the user control PLCs and devices attached, monitor tags, or even manipulate the control of the project on the fly without ever having to be close to the application.
- **Data Acquisition:** As a part of their many functions, data acquisition is a key component in InduSoft's operation and can provide users with the ability to utilize sampled data and print it out into a human viewable format. This includes emailing reports back to the remote client, printing reports to a remote printer by creating a VPN (Virtual Private Network) and connecting to your local printer, and InduSoft can also place reports to a FTP server for easy access to your created documents.



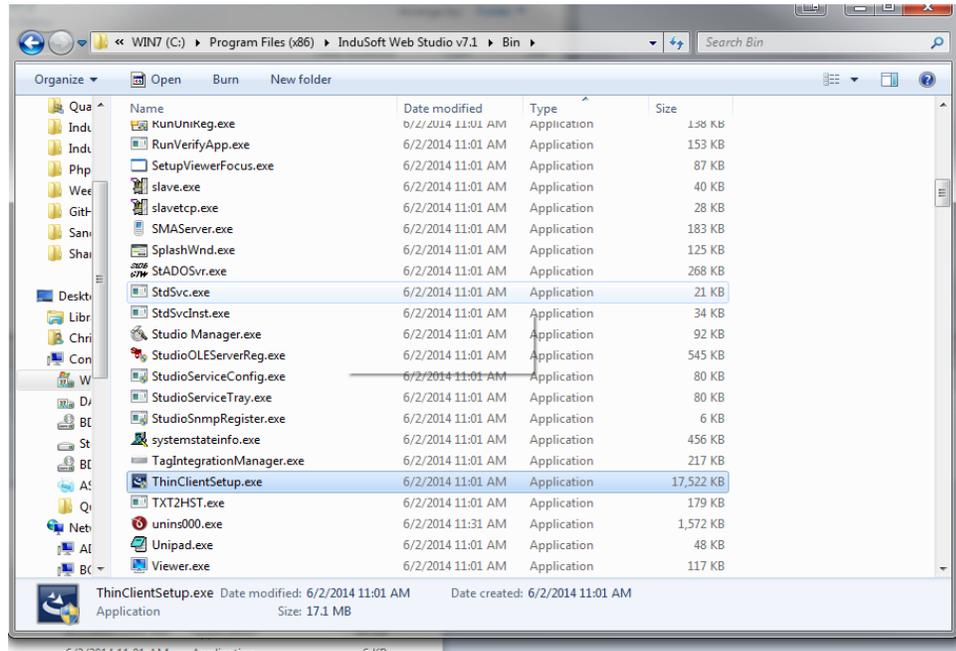
Where do I get started to remotely connect to my InduSoft Project?

- For beginners, InduSoft's remote access is a simple process. The software allows the user to save their screens as HTML pages which allows the user to view the pages over **Web Thin Clients, Secure Access Viewers, or Secure Mobile Access** clients. This step requires that you have finished your project screens before saving otherwise you will have to continually save

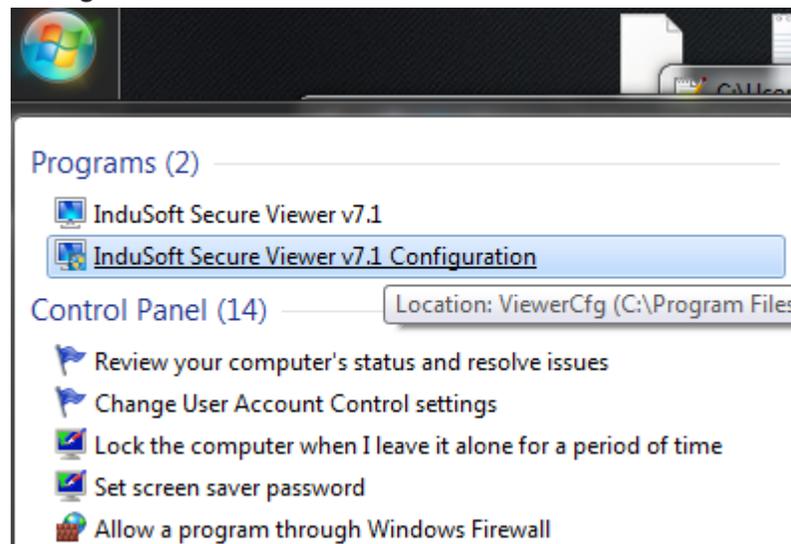


once changes have been made.

- Once the screens have been saved as HTML, setting up remote access by Secure Access Viewer easy will be listed in these few steps:
 - 1. Locate the Bin folder in your InduSoft installation.

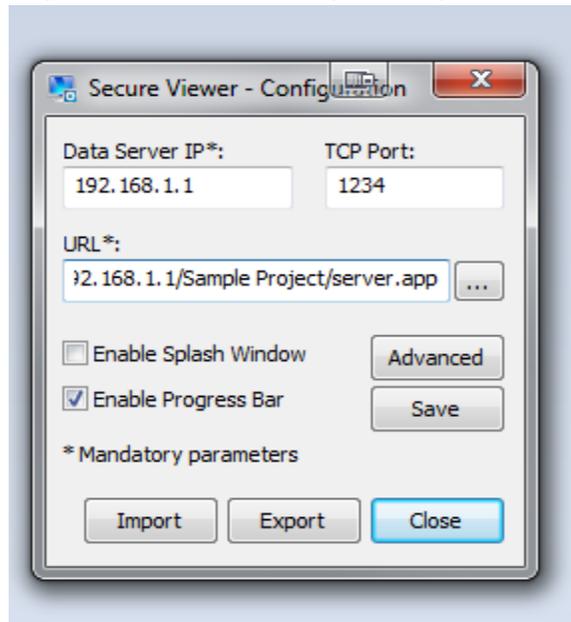


- 2. Run the executable and install the Thin Client software.
- 3. Hit the Windows button and type in Secure Viewer, click on the configuration

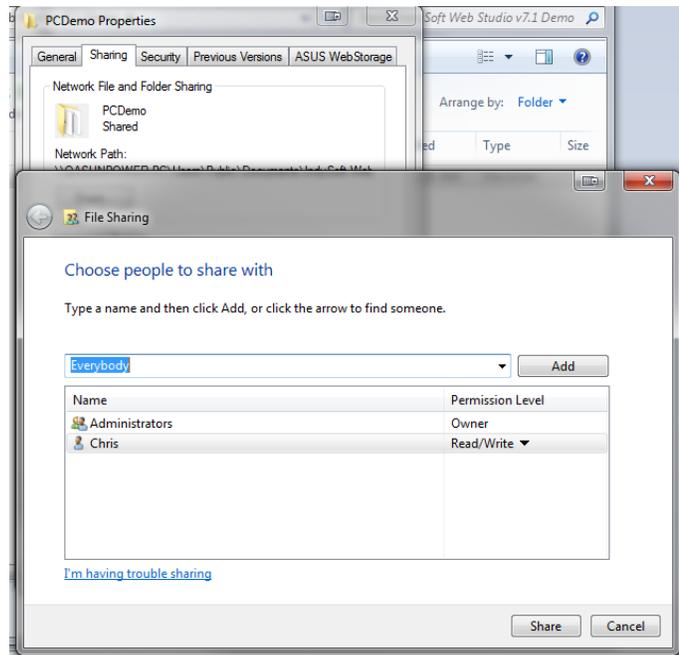


- 4. Add the data server IP to your remote machine's IP address.

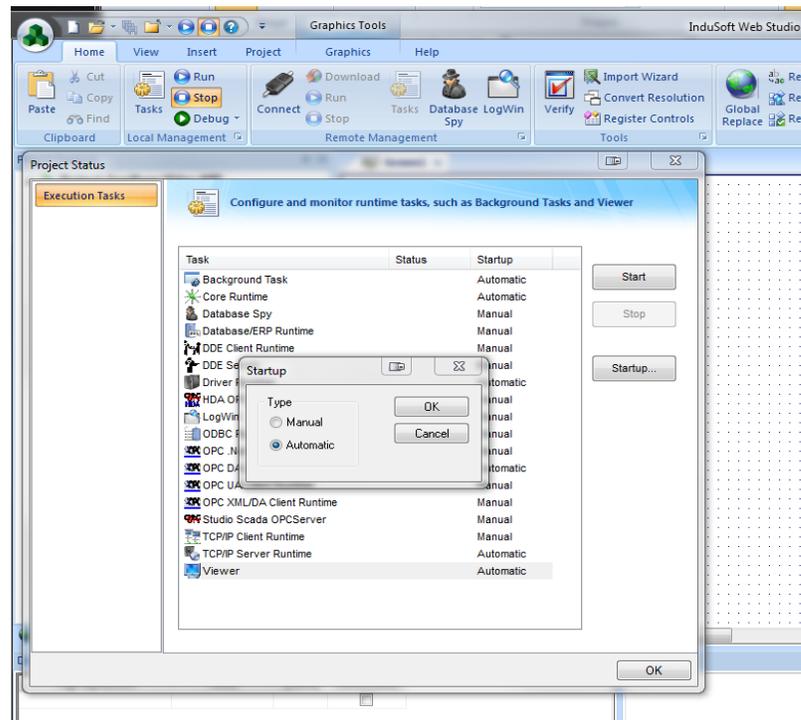
- 5. Add the remote path of your remote machine's InduSoft application .app path. I.E.
`http://192.168.1.1/Sample_Project/Server.app`



- 6. Share your application folder to your network. Navigate to your project, right click the containing folder and hit Properties. Click on the Sharing tab. Click on the "Share" button. Share the project with everybody by typing in **"Everybody"** without quotes and click on the Add button. Your project should be shared and accessible. In this example, it will be shared to my Local Area Network.



- 7. Disable your viewer on the runtime by opening your InduSoft project, clicking on the Home ribbon, clicking on Tasks, then select viewer, click the Startup button, then choose **Manual**. Click OK.
- 8. Run your project by clicking on the “Run” or play button in InduSoft.



- 9. Open your Secure Viewer Client. Your project should be run remotely as if it were running as the actual runtime.

Note: This step shows how to operate the Secure Viewer client on Local Area Network. These instructions will work with connecting to a true remote network by using the eWON VPN connectivity, and pointing the path to project as if it were in a Local Area Network but will require some tinkering with the network. *For further questions, please contact me. My information will be listed below.

Where can we find out more about these products?

- **InduSoft:** <http://www.quantumautomation.com/by-vendor/category/InduSoft>
- **eWON:** <http://www.quantumautomation.com/by-vendor/category/ewon>
- **Moxa OnCell:** http://certifications.quantumautomation.com/product.php?id_product=131

- **Quantum Automation:** <http://www.quantumautomation.com>

Feel free to contact us regarding any questions at our office number:

(714) 854-0800

If you have further questions regarding any of the listed subjects, contact me at chrisdoan@quantumautomation.com I will be available to help set up your project for remote connection.

Where can we get these products?

These product lines are proudly sold at Quantum Automation. As our part to help serve our customers we also provide long term support for each of the products we sell. If there are any questions regarding these products, we are available for support anytime and will provide help along the way to help to ensure our customer's success.

Questions:

1. What are the three options of remote access in the InduSoft Web Studio SCADA package?
2. If you are currently an InduSoft user, what methods of remote communication are you using?

ANSWER THE QUESTIONS FOR A CHANCE TO WIN A \$100 AMAZON GIFT CARD!

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<http://www.quantumautomation.com/techcorner-questionnaire.html>

References:

<http://www.eWON.us/us/eWON-2005cd-4005cd.html?ewp=4>

http://www.moxa.com/product/OnCell_G3110_G3150.htm

<http://en.wikipedia.org/wiki/SCADA>

