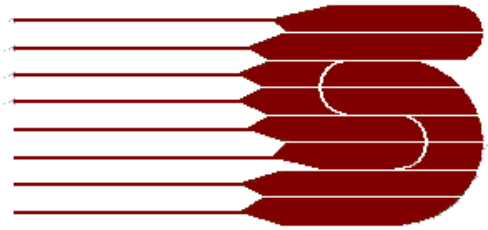


erv-I-Quip

DataServ 3.0
User Manual

Serv-I-Quip, Inc.
127 Wallace Ave
Downingtown, PA 19335

Phone:(610) 873-7010
Fax:(610) 873-7151

5/17/2022

Table of Contents

Dataserv Engine

Requirement

Customers may supply their own PCs for running Dataserv software. Customer supplied PC's should have no less than 250GB Hard Disk storage, 8GB RAM, and an Intel i3 Processor or better. Operating system must be Windows 10 Professional 64 bit or better.

Default ports used by the system are '19336' and '80', both of which should be open to the computer running the Engine.

Purpose

The Dataserv Engine is responsible for processing the business logic of Dataserv. It handles the PLC communication, both writing recipe data and reading historical records. The Engine also serves the information to any connected HMI and Dashboard instances.

Dataserv HMI

Requirement

The HMI can be run on a separate "remote" PC from the system running the Engine. In these cases the HMI computer requirements are as follows.

Customer supplied PC's should have no less than 250GB Hard Disk storage, 8GB RAM, and an Intel i3 Processor or better. Operating system must be Windows 7 Professional 64 bit, Windows 10 Professional 64 bit or better.

Purpose

The Dataserv HMI is the Human Machine Interface (HMI) component of the Dataserv Software Suite. This HMI is meant to be used by the line operators and maintenance personnel to run a unit, monitor the fill process, and help diagnose unit problems.

Main Run Screen

This is the primary operator view of the system process.

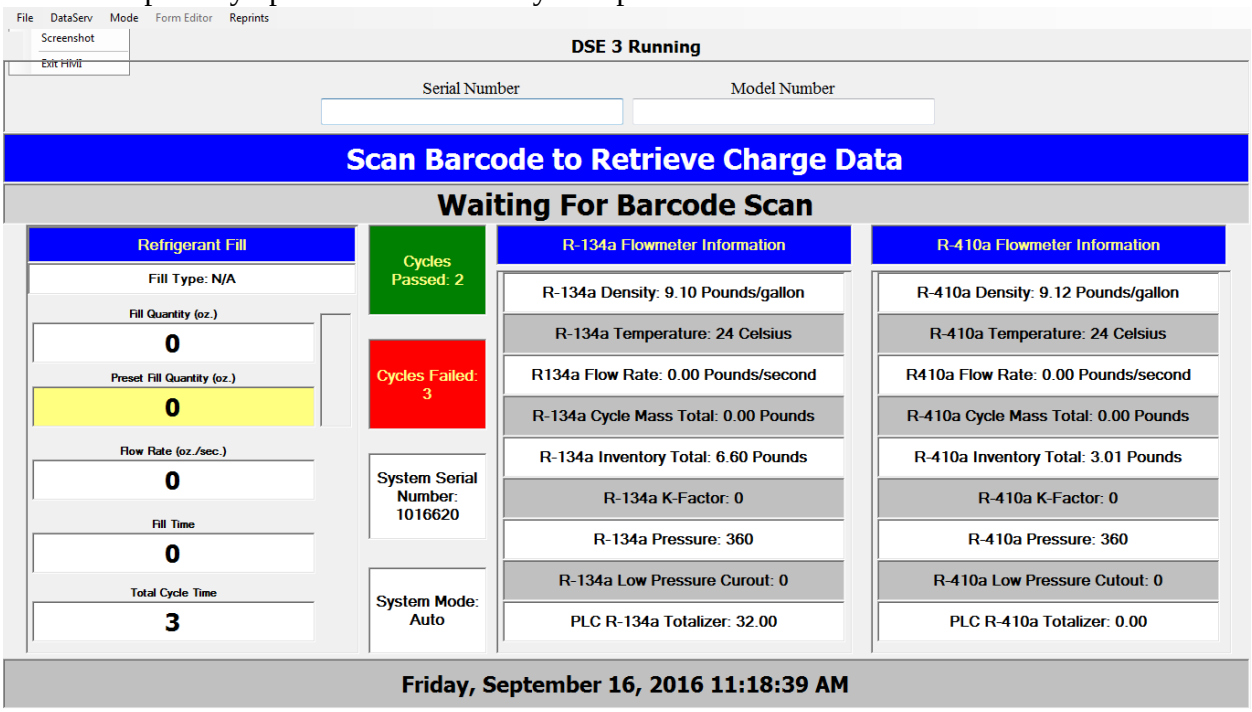


Image 1Main Run Screen on Dual Refrigerant Charger

Components

1. Menu Items
2. Status Bar
3. Scanning Panel
4. Process Steps
5. Statistics (Optional based on Screen Space Available)
6. Other Utilities

- ### Menu Items

a.) File

Screenshot – Takes a picture of the current HMI view and prompts to save it to a local computer directory. This functionality is useful when trying to troubleshoot process errors with someone that does not have immediate access to the computer running the Dataserv Application

Exit HMI – Closes the current application window. The HMI tries to always be the top most window on the computer, if access is required to the desktop of the system it is possible to close it out using this, the HMI can be relaunched from inside the Dataserv Engine interface.

b.) DataServ

Start a Cycle – Brings up a Start Cycle utility allowing a cycle to be started without a barcode scan. Please see the <TODO: link> Main Run Screen\Other Utilities\Start a Cycle section for more details.

Recipes – Brings up the Recipe dialog that allows adding, viewing, and modifying model configurations for process cycles. Please see the Recipe Form section for more details.

Key Component – Brings up the Key Component dialog which allows for configuration of the Key Component validation of units. Please see the Key Component section for more details.

Run History – Brings up the Historical Records linked to this machine's process. Please see the Output Data Viewer section for more details.

Manual Operations – Contains a list of functions that can be run that preform some kind of interaction with the underlying process. These typically include a way to reset pass/fail statistics, totalizers for fluids dispensed, and/or calibrate flow meters. Please see the <TODO: link> Main Run Screen\Other Utilities\Manual Operations section for more details.

Environment Settings – Brings up the Environment dialog allowing for process wide variables to be changed. Some examples of a process wide variable would be final vent times for a pressure check system, or the location of this machine for aggregated records. Please see the Environment Settings section for more details.

View Documentation – Brings up the Documentation dialog allowing for viewing, updating, or appending notes to important files related to this machine or process. Please see the Documentation section for more details.

Security – Allows the user to specifically login or if a user is logged in displays a prompt for them to be logged out.

Show Dataserv Engine – Closes the current instance of Dataserv HMI and brings up the local Dataserv Engine. If a process is running it continues to run but prompts will not be displayed to the user till the HMI is relaunched from inside the Dataserv Engine interface.

Tag Viewer – Brings up the Tag Viewer Utility, an independent form that displays PLC registers and other process tags as raw values. This is a useful troubleshooting utility. Please see the Tag Viewer section for more details.

Diagnostics – Brings up the Diagnostics Utility. This is a useful troubleshooting utility specifically for diagnosing network and communication issues. Please see the Diagnostics section for more details.

c.) Mode

Edit Mode – Switches the HMI into "Edit Mode" allowing the user to add, remove, or adjust the look of the current screen. See the <TODO: link> HMI\Edit Mode section for more details.

Service Mode – Attempts to place the PLC in Service Mode. If the PLC is in a state that will allow it to enter Service Mode the screen will then change. For more details on Service Mode and troubleshooting access to Service Mode please see the <TODO: link> HMI\Service Mode section.

Change Screens – If the system has multiple run screen they can be force changed using this dialog. A system with multiple run screen will typically change the screen itself based on PLC conditions as needed under normal operation.

d.) Form Editor

The Form Editor Options are only enabled during "Edit Mode" and should only be used under direction from a Serv-I-Quip employee. If you were instructed to use "Edit Mode" please see the <TODO: link> HMI\Edit Mode section for more details.

e.) Reprints

If printing is part of this system's configuration, open previous printed items for viewing, copying, editing and reprinting. <TODO: Printing will probably need its own section at some point.>

f.) Other

If this system called for a customization to be implemented that should be launched from the HMI it will likely be a top level menu item along with these. Please see the <TODO: Link customization appendix >Customizations appendix for an explanation if this machine required any Customization.

- ## Status Bar

This is the general status display for the Dataserv application, it mostly shows messages as they relate to HMI <-> Engine communication. The rectangle on the left side depicts our connection status. The text displayed here is the last message we received from the Engine. A status dialog can be brought up by double clicking on the status bar.

Connection Status

Image 2 Status Bar in a Disconnected from Dataserv Engine State

Red – The HMI does not have communication with the Dataserv Engine. This typically means that the Engine has either stopped responding to requests or is no longer running.

Please see the <TODO: add link> Troubleshooting\Dataserv Engine Has Stopped Responding section for more details.

Image 3 Status Bar in a Dataserv Engine Disconnected from PLC State

Yellow – The HMI is communicating with the Engine but the Engine does not have a connection to one or more of its data sources (PLC, Inficon, etc.). Please see the <TODO: add link> Troubleshooting\Dataserv Engine Is Not Communicating section for more details.

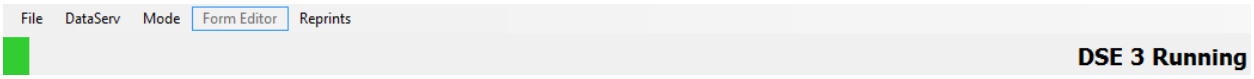


Image 4 Status Bar Showing a Successful Connection State

Green – Everything is working well, data is being passed and read as it should be.

Status Message

Whenever the HMI runs a specific command against the engine, the response is displayed here. Most of the time it should show "DSE 3 is Running" this is our default general response to a status request. While running a manual operation or a specific task like scanning in a new unit you may see it briefly display "Operation Completed Successfully". If you being to experience issues with communications or starting an operation you should check if the message displayed here is potentially related to your problem. See the <TODO: Link troubleshooting> Troubleshooting section to try and identify the issue.

Status Dialog

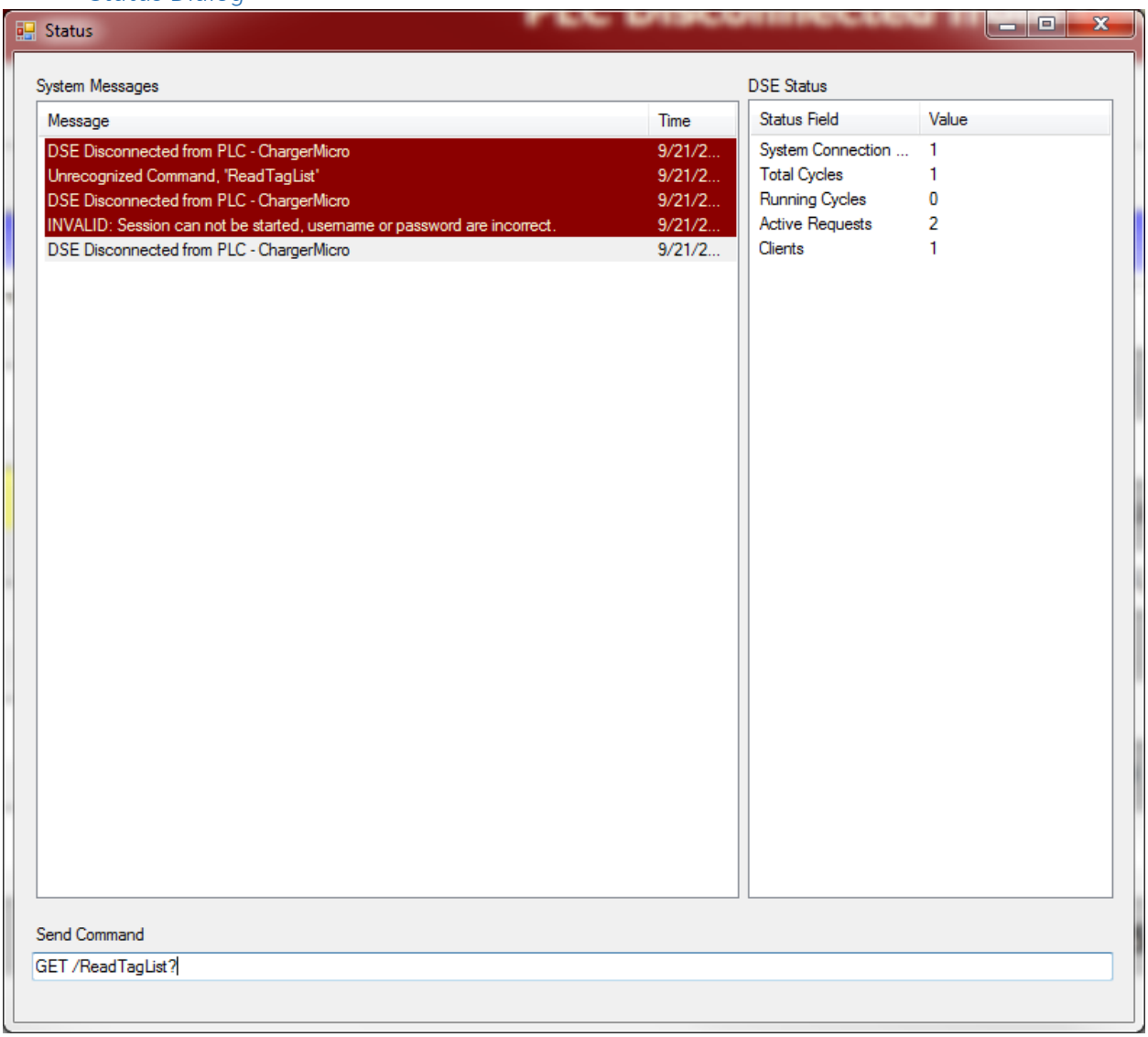


Image 5 Status Dialog

An expanded Status Dialog can be viewed by double clicking the Status Message on the Status Bar. System Messages is a history of all the Status Messages received and timestamped since this instance of the HMI was started. DSE Status is the expanded breakdown from the Status command sent to the DSE instance related to this HMI. Send Command is a troubleshooting that should only be used under direction from a Serv-I-Quip employee.

- ### Scanning Panel

  The Scanning Panel is the primary way an operator would interact with the Dataserv application. It is the set of text boxes typically at top of the screen. Text is usually entered here by use of a hand scanner along with some barcodes, but keyboard entry is supported. Depending on the state of the machine these text boxes are likely to be either hidden with a message, or disabled.

Auto Mode

Auto Mode is the normal run state of the machine, this is the state in which Dataserv with Automatically load unit information into the PLC, prompt the operator to being the unit process, and record data. If the system is in Auto Mode the scanning text boxes will be shown, if the system is waiting for configuration these text boxes will accept the scans. If the system already has a unit loaded and is waiting to be processed these text boxes will be disabled and show relevant scan information, such as loaded serial and recipe model.

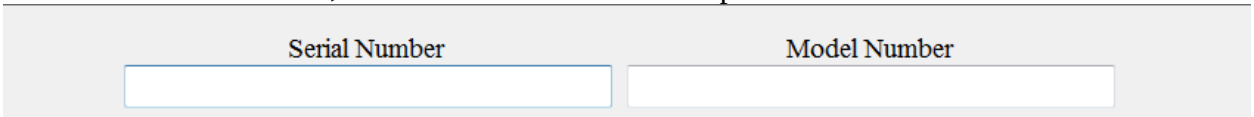


Image 6 Scanning Panel Waiting for Operator Scan in Auto Mode

Image 7 Scanning Panel after Entering a Partial Scan

Image 8 Scanning Panel after Submitting All Scan Elements and Waiting for the Scan to be accepted

Image 9 Scanning Panel Disabled because of PLC State in Auto Mode

Process Steps

Statistics

Other Utilities

Tag Viewer

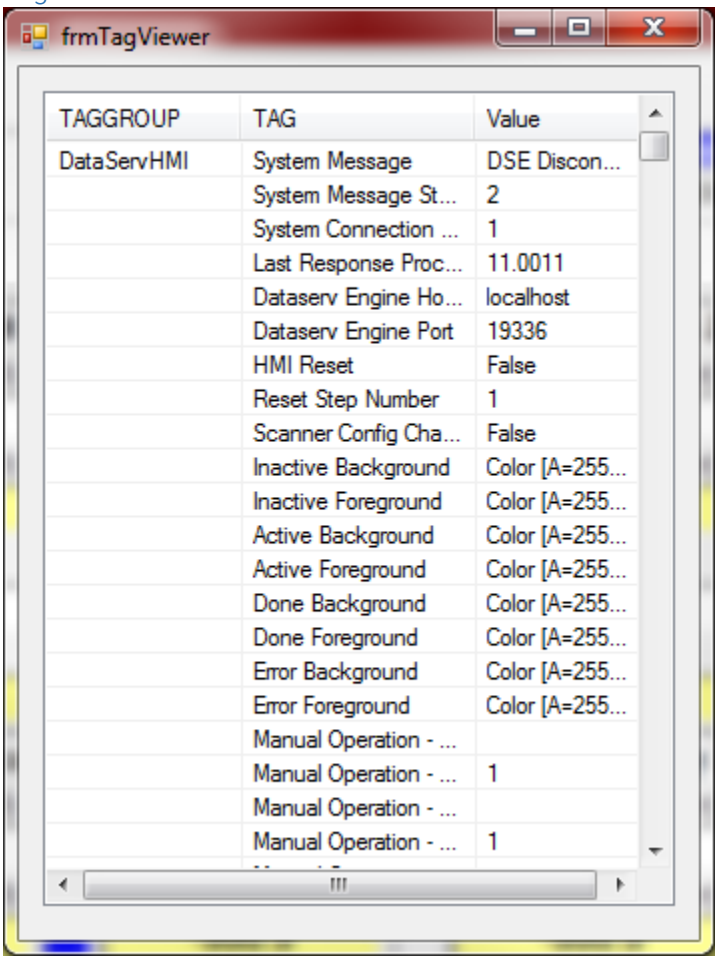


Image 10 HMI Tag Viewer

The Tag Viewer is a basic utility used for troubleshooting communication and value issues between the Dataserv Engine and PLC. The Tag Viewer from the HMI shows all of the values being pushed from the Engine to the HMI. The left column indicates the TagGroup the value is coming from, this is the grouping designated at tag creation and should be help narrow down where the information is coming from. The middle column "Tag" is the specific piece of information being represented, the name should provide some kind of explanation of what it represents. The right column indicates the current value the HMI sees for this tag, anything that uses this tag should be consistent with the value represented here.

There are three right click context options after selecting a tag from the Tag Viewer. "Copy Tag" adds the selected tag's fully quantified path to your clip board to allow pasting into a text edit/e-mail if you notice an issue with some specific value.

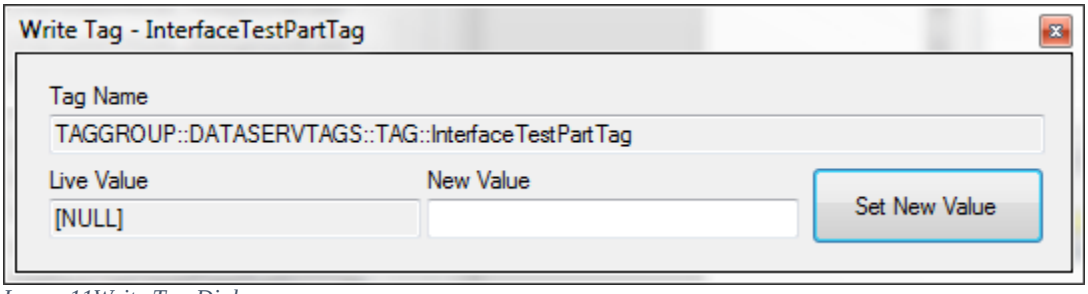


Image 11Write Tag Dialog

"Write Tag" opens up the Write Tag Dialog, this is security protected, but allows direct editing of values if need be *this should only be used under direction from a Serv-I-Quip employee*.

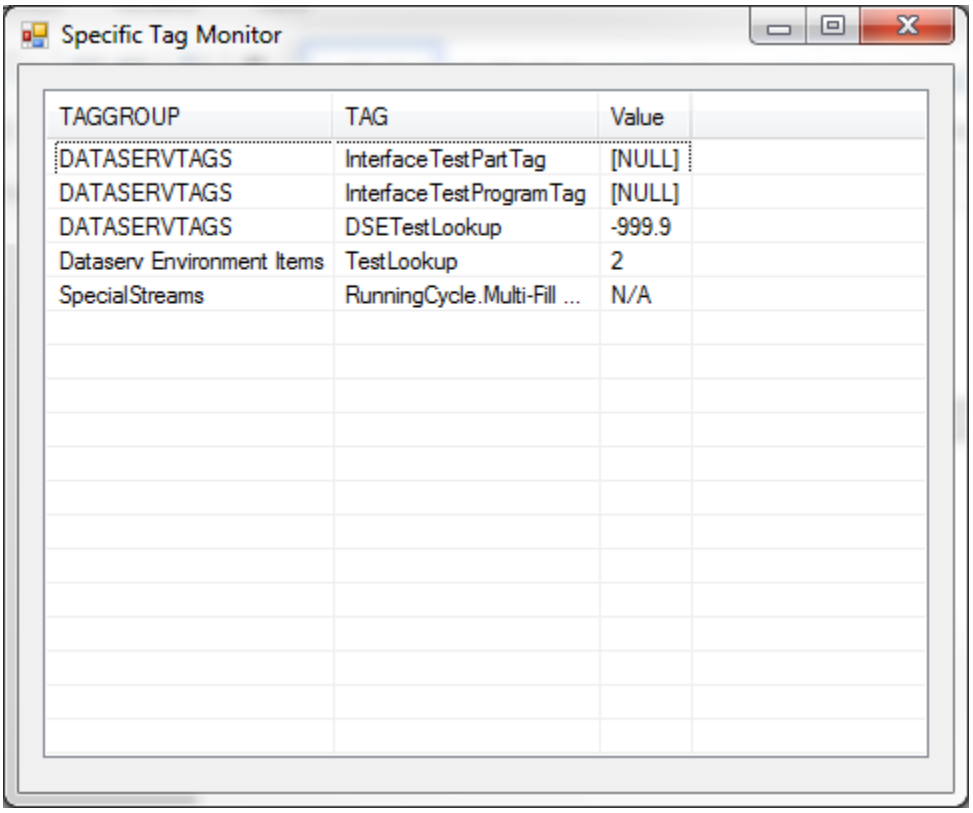


Image 12 Specific Tag Monitor Dialog

"Add to Monitor", this spawns a separate Tag Viewer where any tag that "Add to Monitor" is selected on can be viewed easier. This allows you to group any relevant tags together for easier diagnostics.

Diagnostics

The diagnostics window provides network information relevant to this Dataserv System.

IP Addresses:

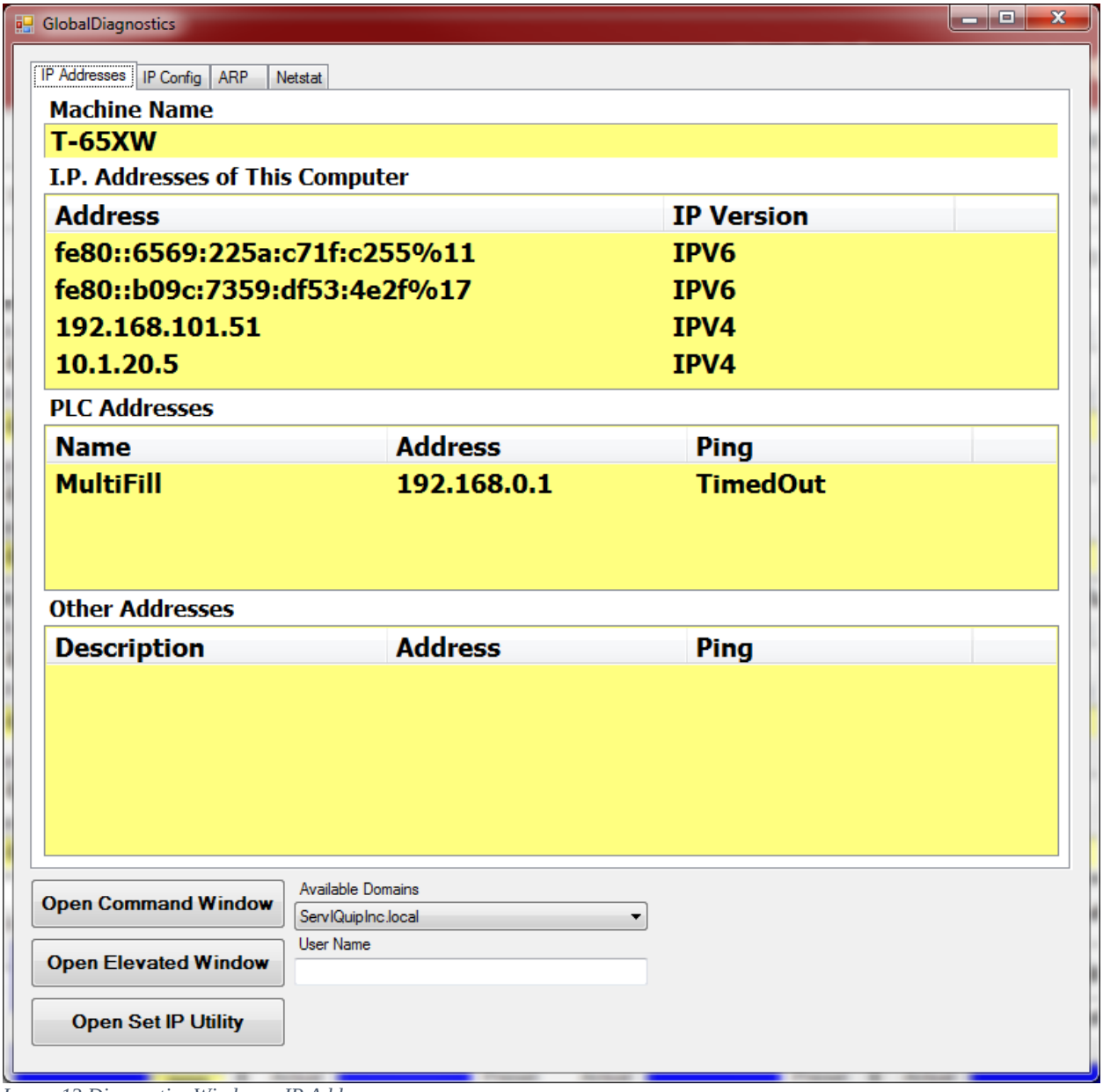


Image 13 Diagnostics Window – IP Addresses

"Machine Name" is the name of the computer running this instance of the HMI. "I.P. Addresses of This Computer" are all the currently configured IPv4 and IPv6 addresses of this system, whether static or dynamic. "PLC Addresses" is a list of addresses for all configured PLCs utilized by the Dataserv Engine. "Other Addresses" is automatically populated if there are any other relevant network addresses utilized by the Dataserv Engine.

IP Config:

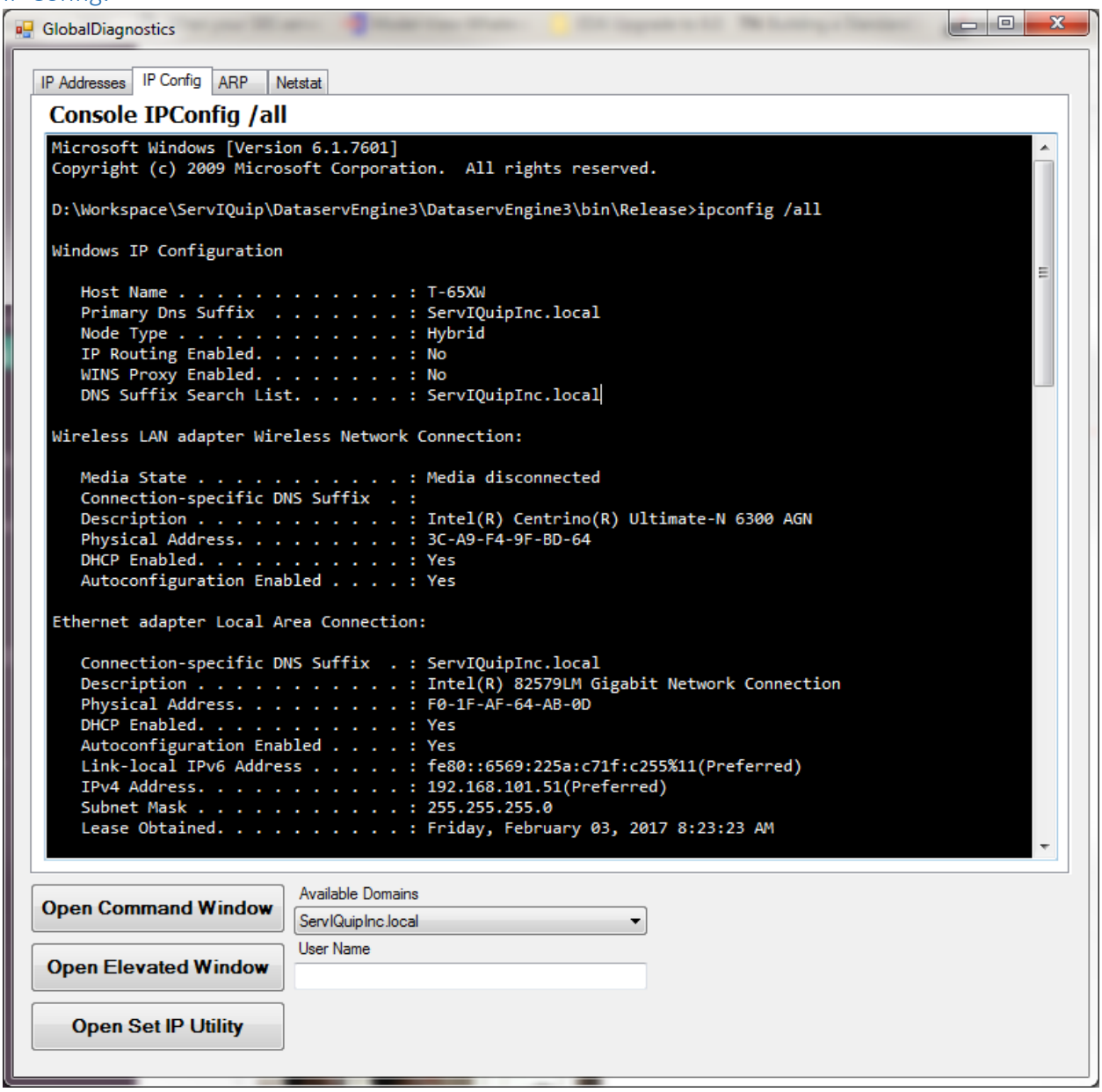


Image 14 Diagnostics Window – IP Config

The IP Config tab is a run of "ipconfig /all" on the current system. This provides an expanded view of the current network configuration information of this system.

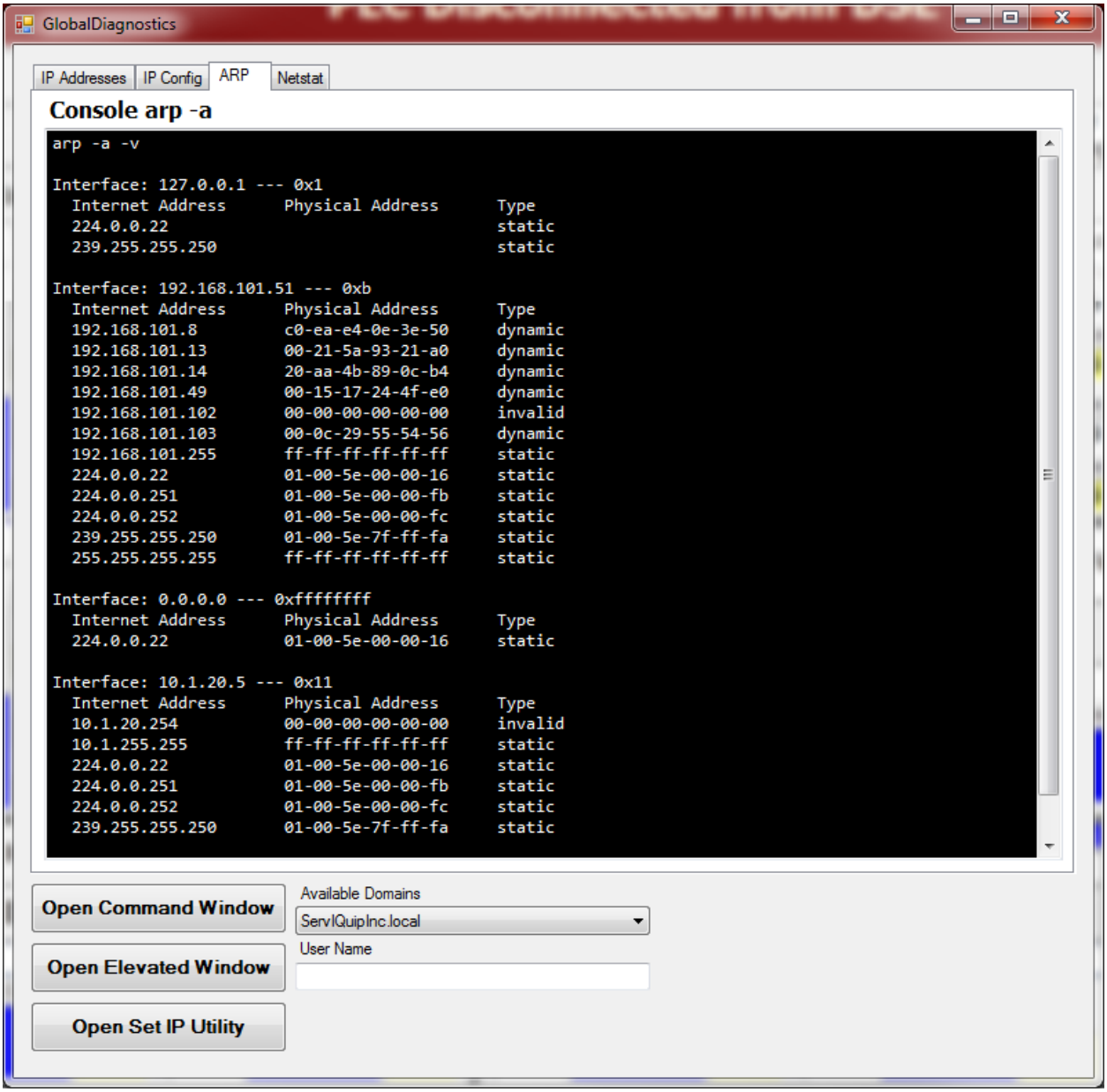


Image 15 Diagnostic Window – ARP

The ARP tab is a run of the ‘arp –a’ command on the local system. The ARP command provides a list of all other address this system has communicated with and knows which network path to reach them. This is mostly used to verify if the system has had a connection to another system in the recent past.

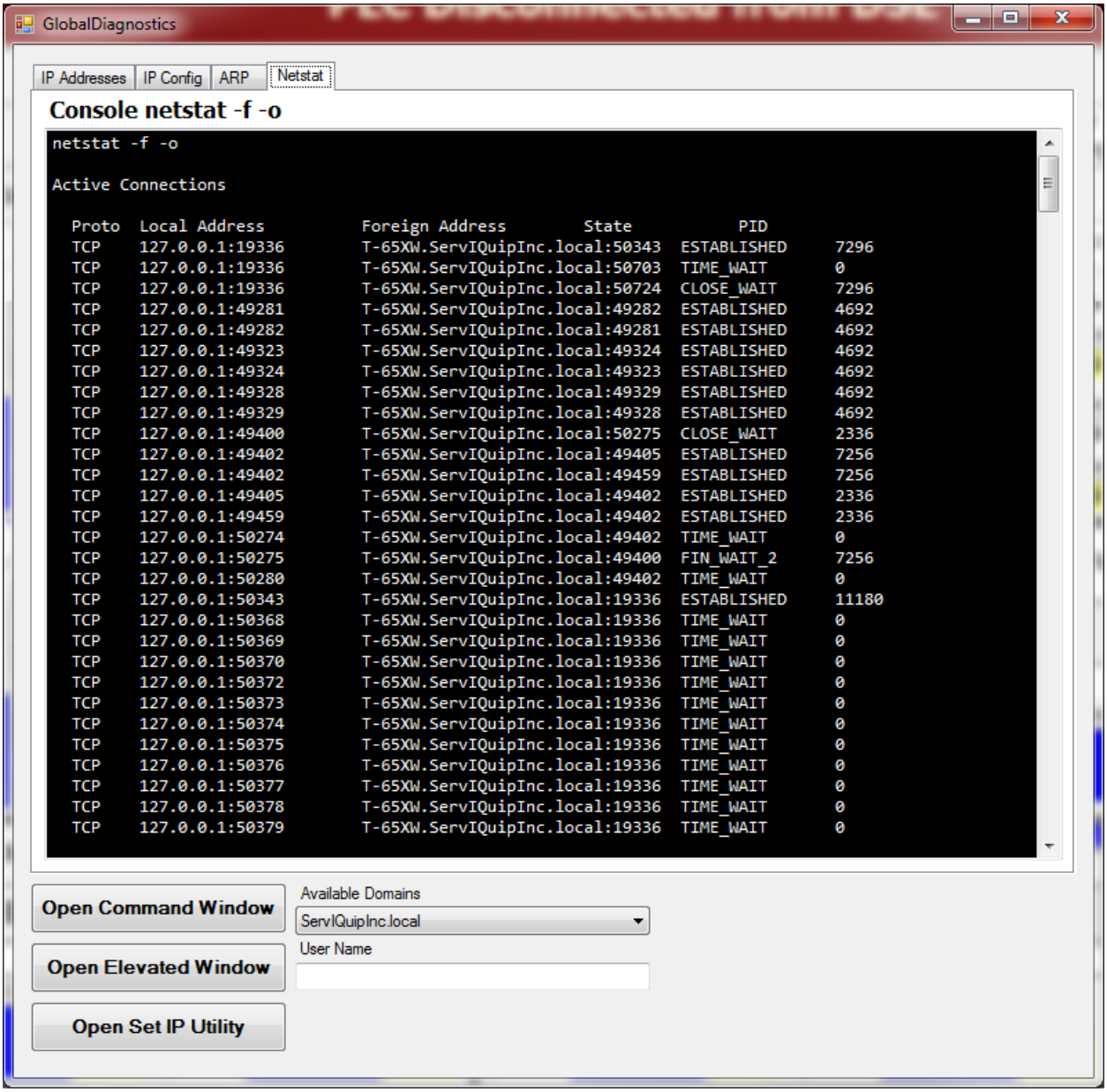


Image 16 Diagnostic Window – Netstat

The Netstat tab is a run of "netstat –f –o" on the local system. This provides a list of all active network connections, the port they are using, activity state, and the process they're associated with. This can be used to verify active real-time connections between systems.

Command Helpers:

The "Open Command Window" spawns a standard window cmd.exe window ("command prompt" or "dos prompt"). The "Open Elevated Window" does the same while using the "Available Domain" and "User Name" to provide UAC credentials.

Set IP:

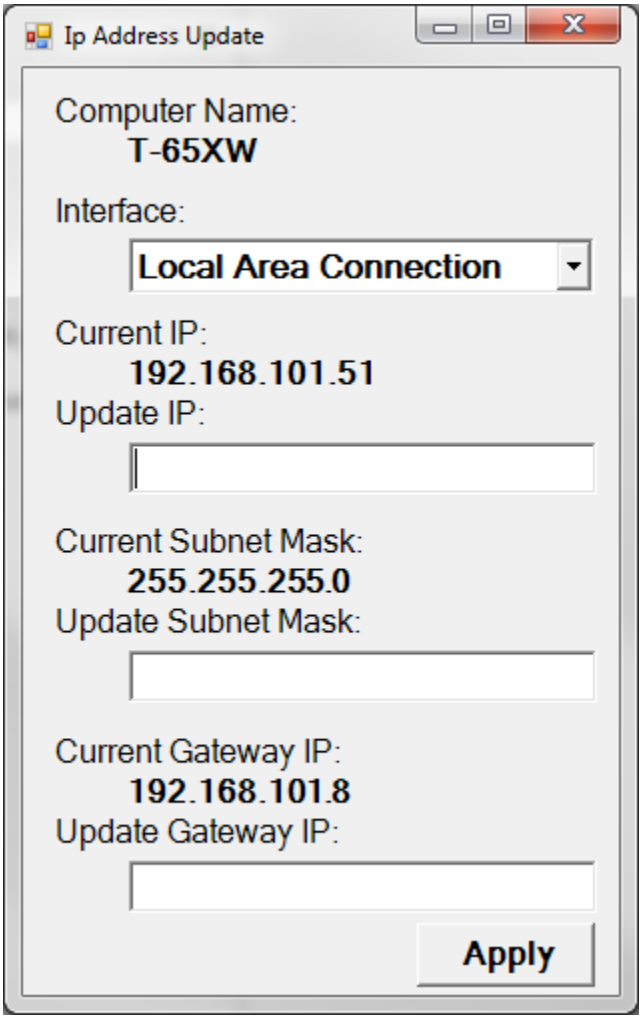


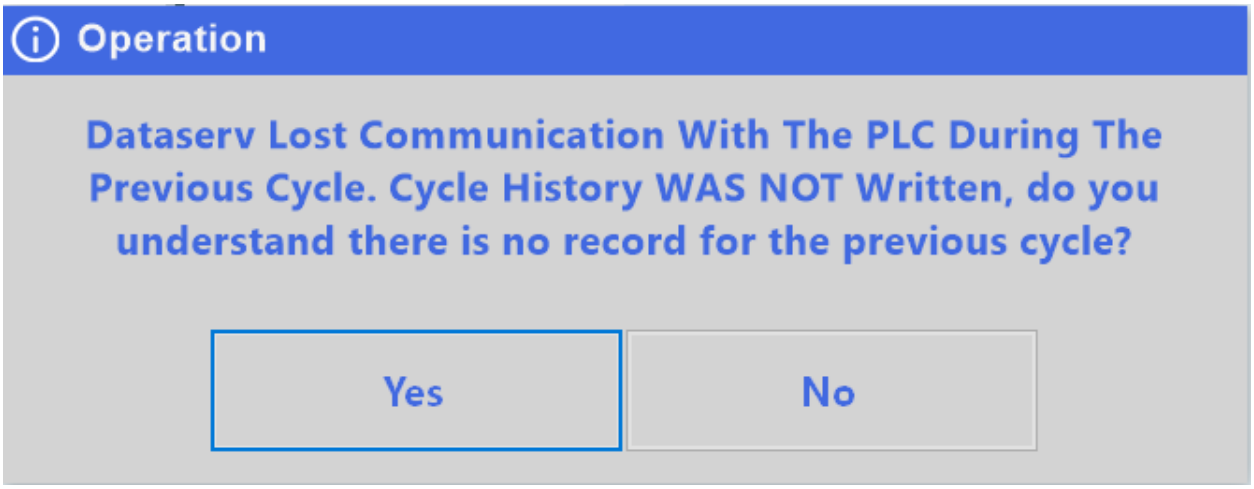
Image 17IP Address Update Utility

The "Open Set IP Utility" spawns the IP Address Update Utility, this is a helper utility to make setting an IP address of the local computer more straight forward *This should only be used under direction of a Serv-I-Quip Employee or local IT support personnel*. By selecting an interface from the drop down the currently configured address information is populated. When the "Apply" button is pressed a basic sanity check is made against the supplied update information, then an attempt will be made to apply the information to the selected interface. If this is successful the interface will be set to a static address and the current information will be updated.

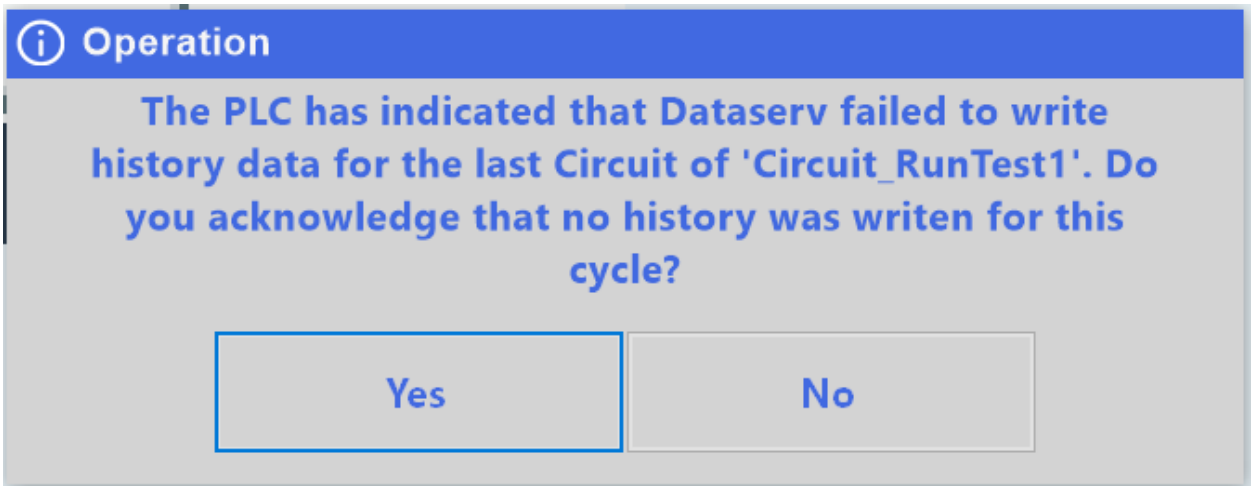
Operator Prompts

History Data Failure

In the case of a loss of communication between the PLC and Dataserv application at the end of a process, the operator is likely to see one or more of the below prompts.



Generic History Failure Prompt



Circuit Specific History Failure Prompt

Selecting “Yes” will indicate to the PLC that the failure was acknowledged (unit should be external marked based on completion status), and situation that lead to this error has been resolved.

Selecting “No” leaves the PLC in the fault state, and a manual recovery must be performed at the direction of Serv-I-Quip.

The most common cause of the prompts being shown is if the Dataserv computer was shut down during a cycle completion, or a network issue caused a loss of communication.

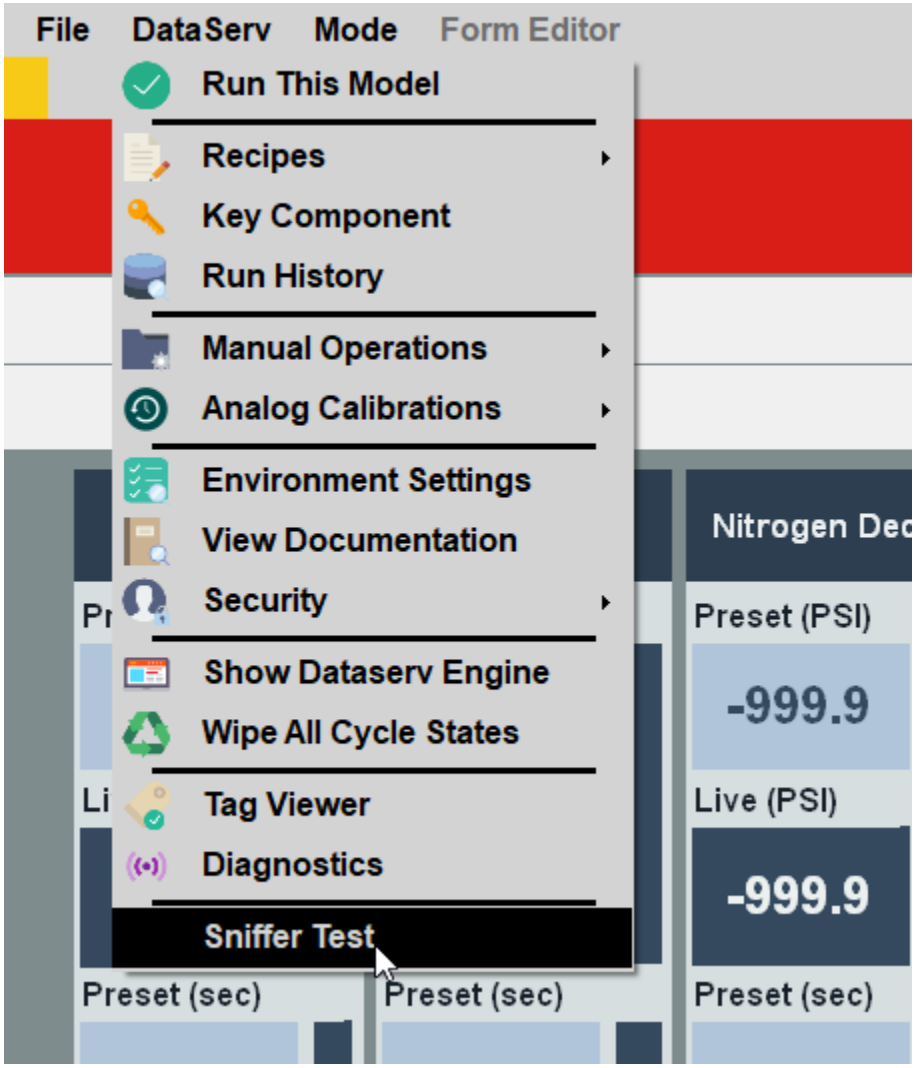
Sniffer Test

Purpose

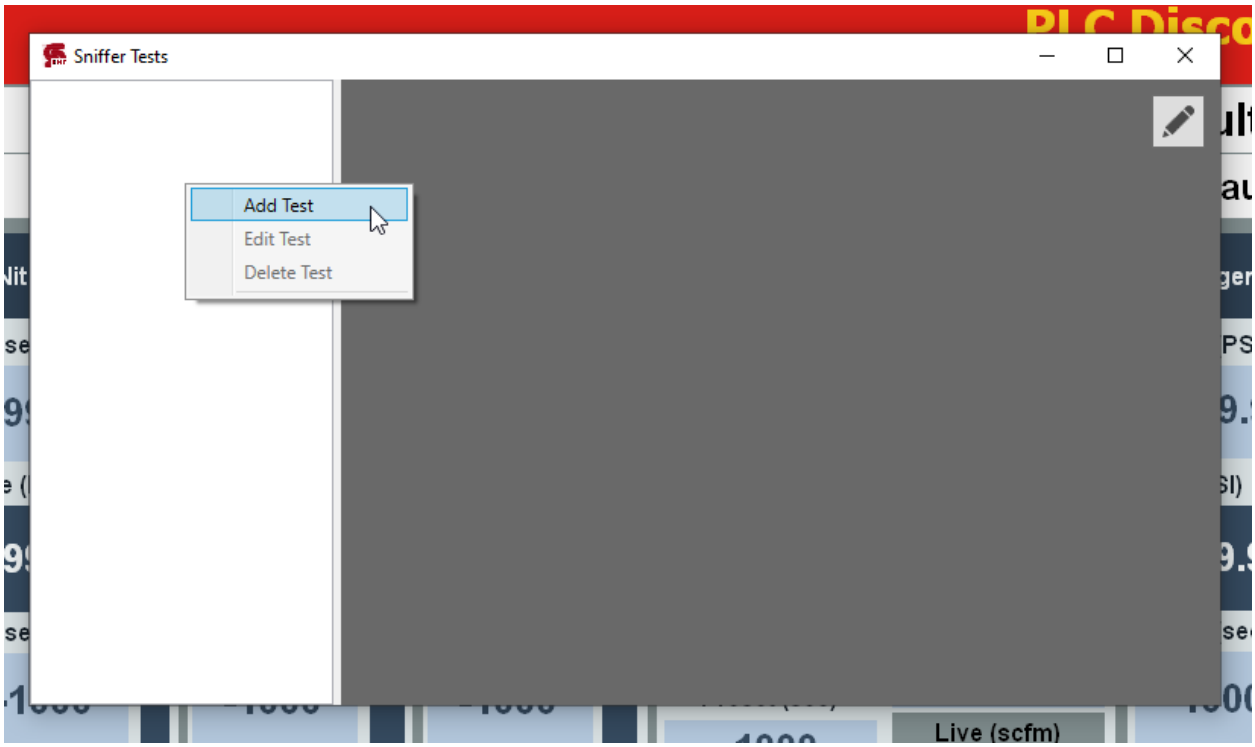
Sniffer testing integrates Inficon Flex sniffer testers using a sleek, easy to use interface.

Editing Tests

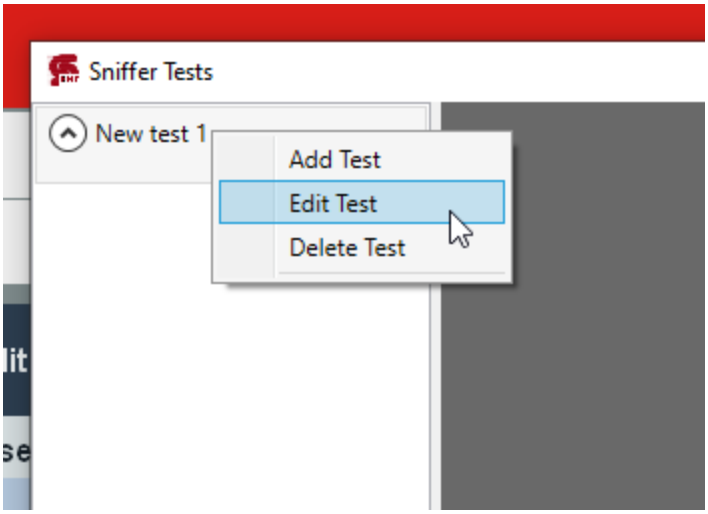
1. Open Sniffer Test editor



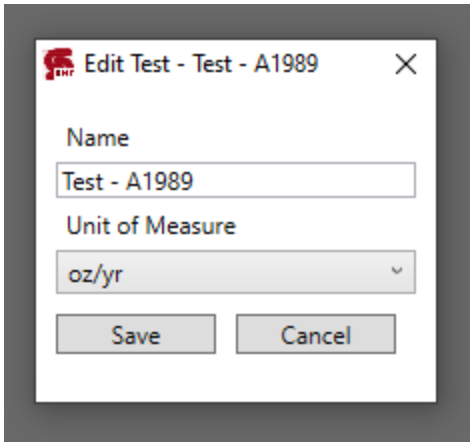
2. Add sniffer test by right clicking in white list view on right hand side of “Sniffer Tests” window



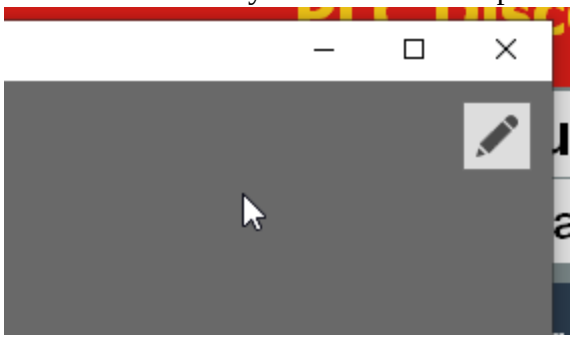
3. Right click on test and hit “Edit Test” context menu item



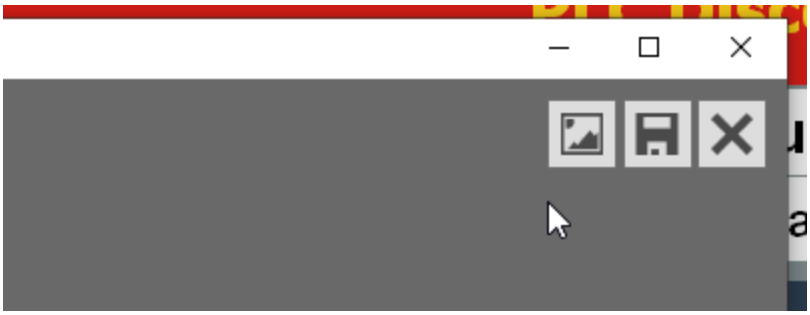
4. Edit name an unit type
    Note: Unit types will be used in point min, max leak rates
    Note: Changing test name will **NOT** require changing your recipe



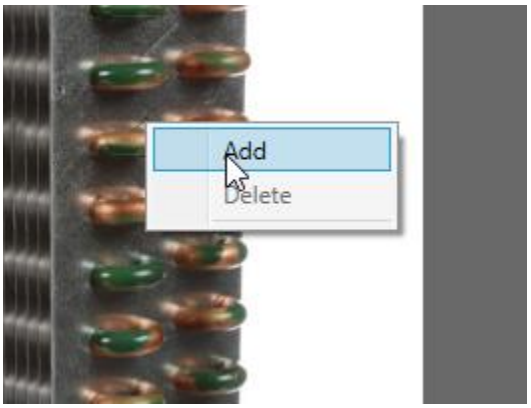
5. Enable edit mode by click button with pencil icon in top right corner.



6. Add image by clicking edit image button in top right corner
    Note: Edit image button is the first button of three, marked by the image icon



7. Add point by right clicking on image and clicking “Add” context menu button



8. Click and drag point to desired location

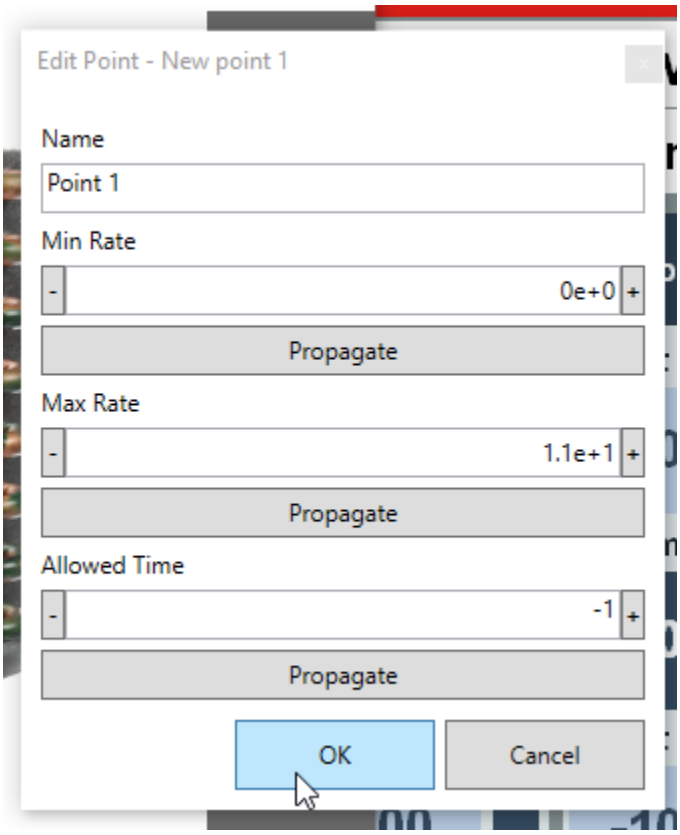
   Note: Location is for visual reference only and will not affect process

9. Edit point by right clicking point and click “Edit” context menu item

10. Edit point details and click “Ok” button to save

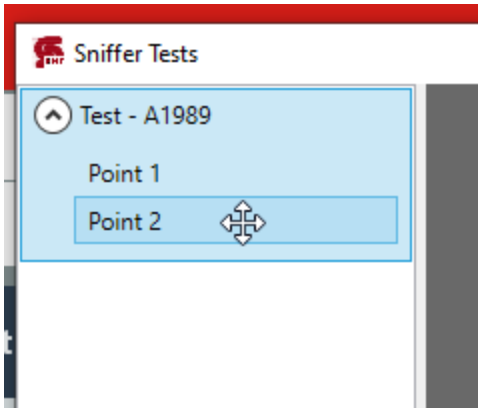
    Note: Min Rate, Max Rate, and Allowed Time fields can be propagated to all points within selected test via propagate buttons.

    Note: Min Rate and Max Rate units of measure are defined in sniffer test and can be configured by following step 4.



11. Drag and drop points to re-order

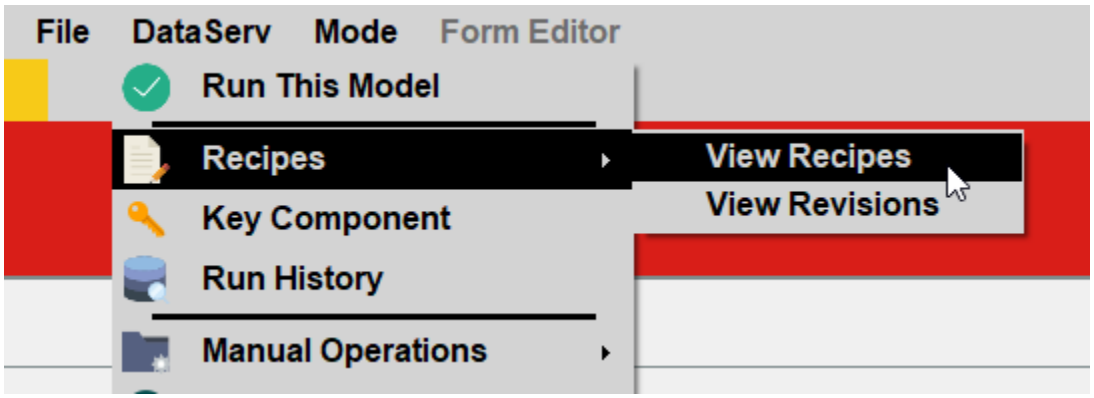
    Note: Point order will be the order points are tested during Cycle



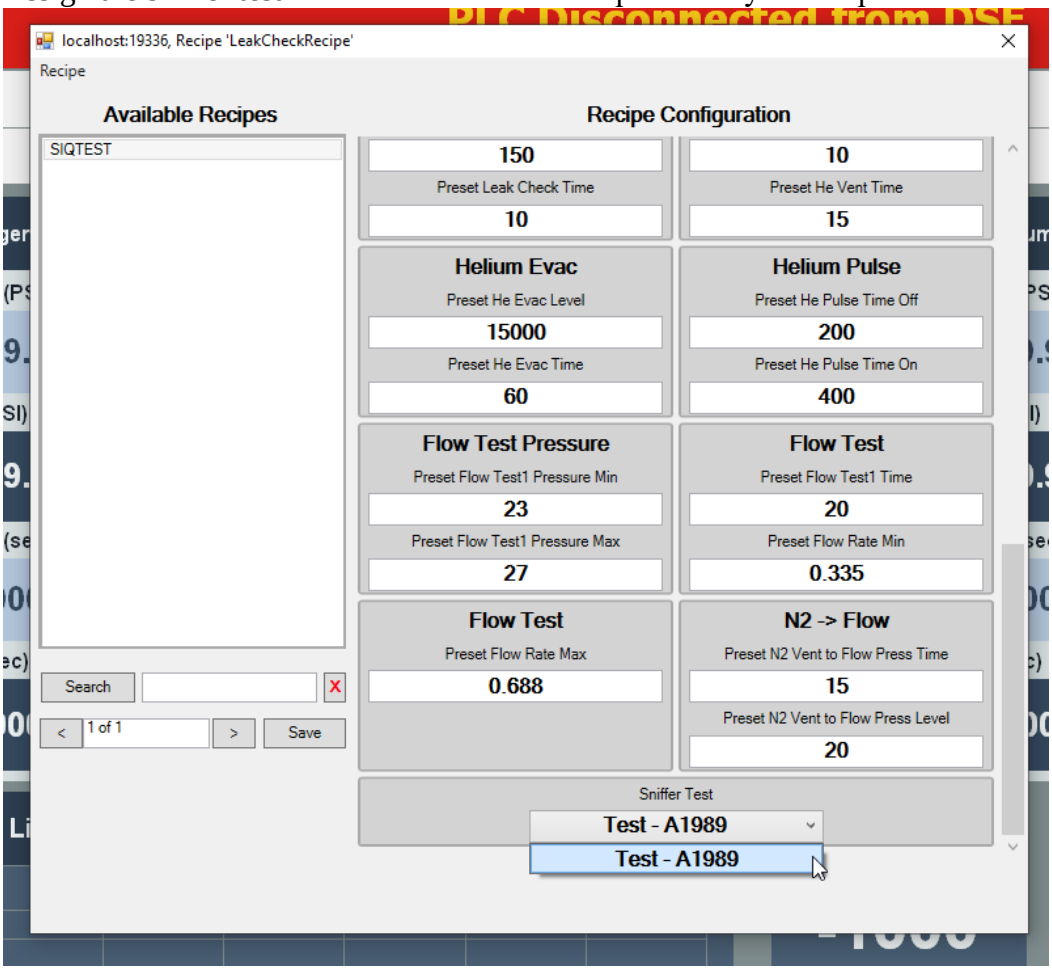
Recipes

In order for a test to run for a given unit, a test needs to be assigned to a recipe. This can be done by following the following visual instructions.

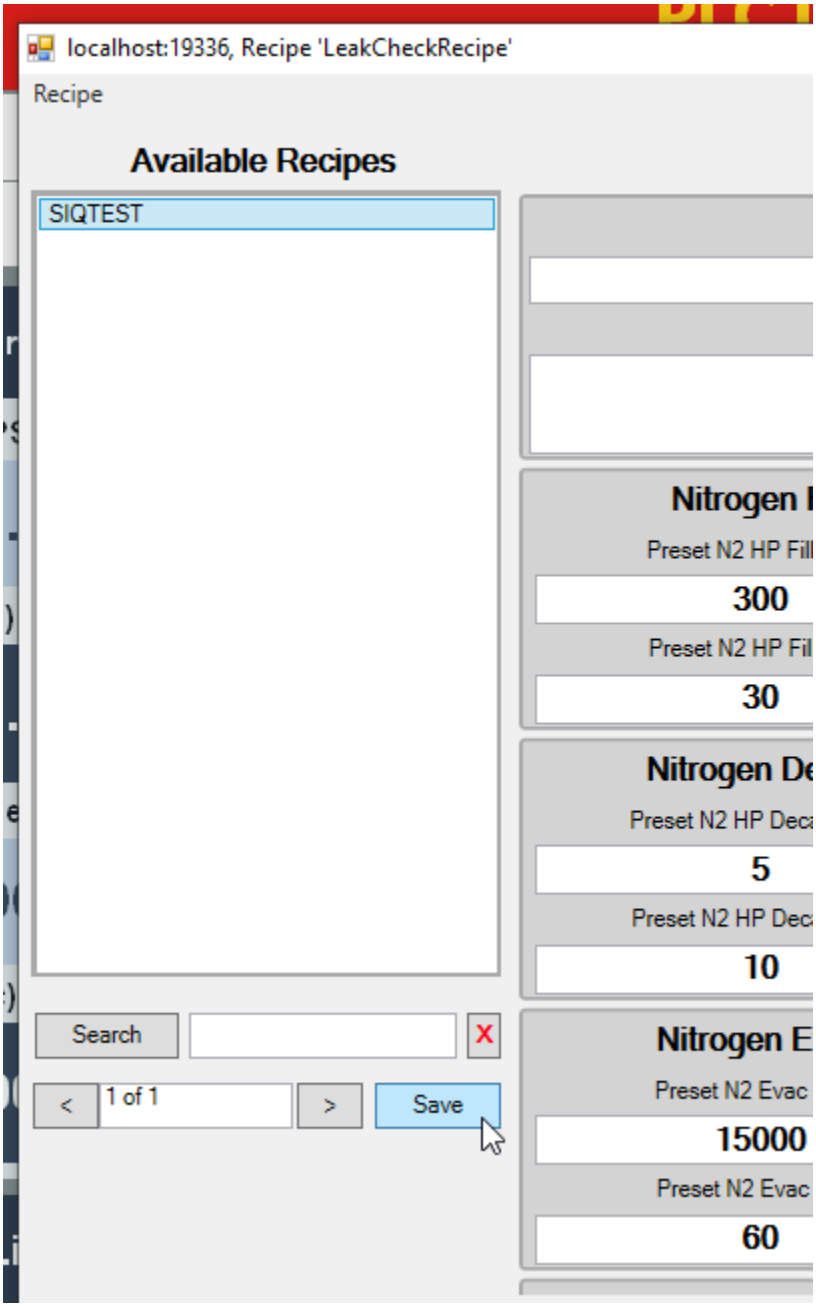
1. Open recipe editor from HMI



2. Assign the sniffer test via the “Sniffer Test” dropdown to your recipe



3. Save your recipe



Dataserv Dashboard

Purpose

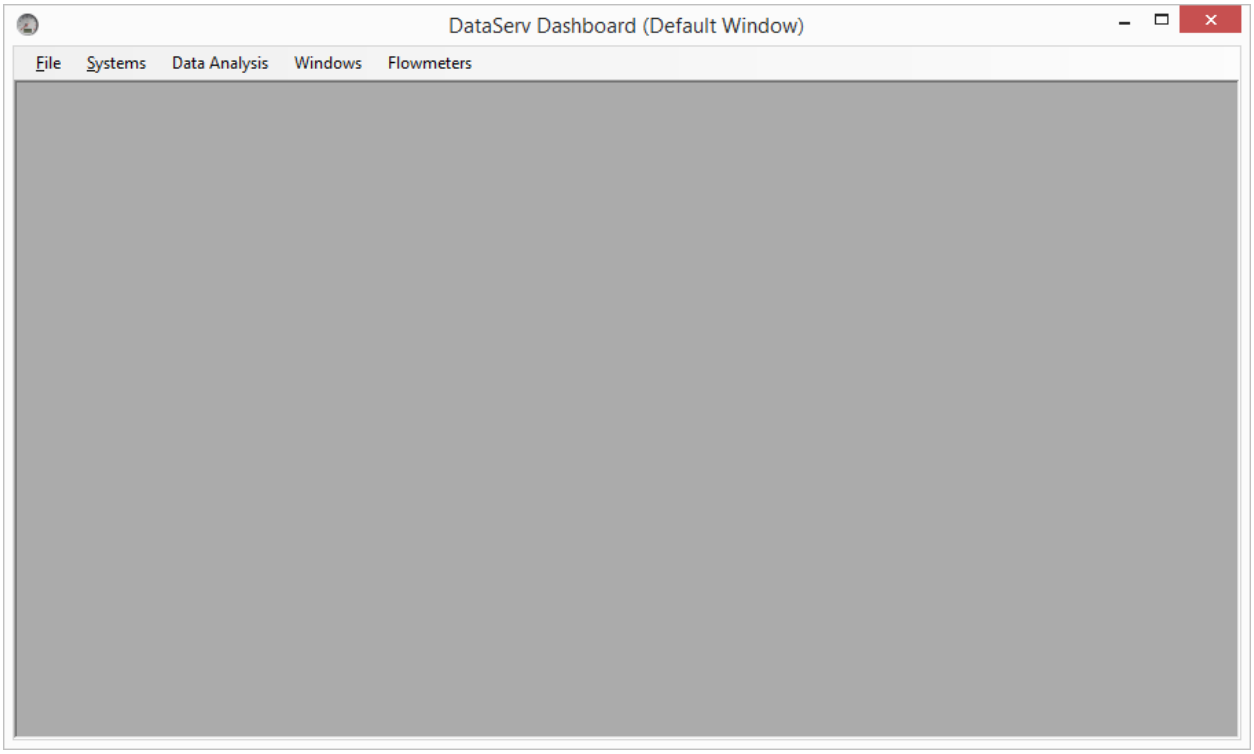
The Dataserv Dashboard provides remote management of any Serv-I-Quip system running the Dataserv Engine 3.0. Line Engineers and Process Owners can use the dashboard to edit Recipes, view Output Data, see a Live View of the Run Screen, perform Backups, and more.

Download

The latest version of the Dataserv Dashboard can be downloaded via https://softwareupdate.siqinc.com/DataservDashboard.zip.

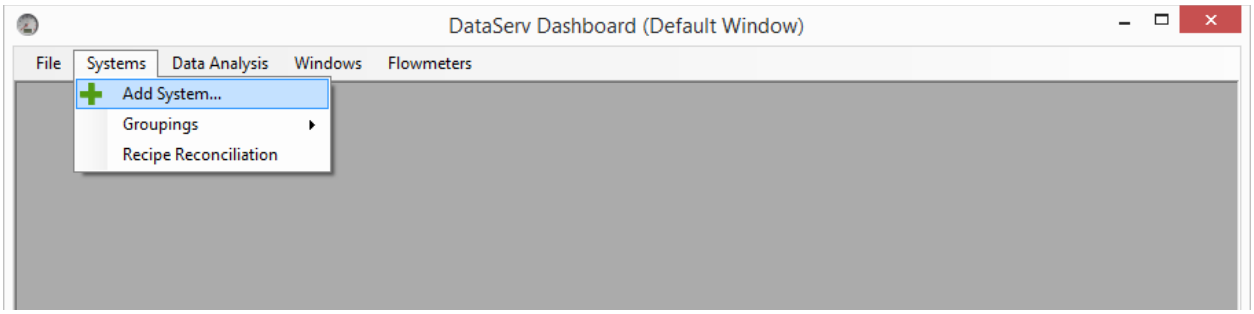
Getting Started

The Dashboard launches as an empty MDI (Multiple-Document Interface) form. Any number of additional MDI forms can be added to take advantage of multiple monitors and to organize workspaces broken out by Process or Assembly Line at the user's discretion. The default MDI form looks like this:

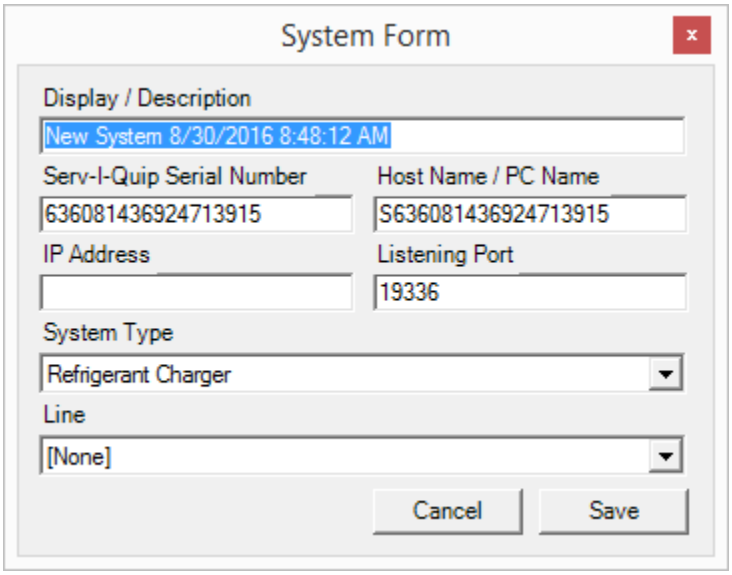


System Maintenance

The first step to using the Dashboard is to add the Systems you will be managing. In the "Systems" menu item (second from the left), choose the sub-item "Add System…" as shown here:



This will bring up the System Details Form with default values:

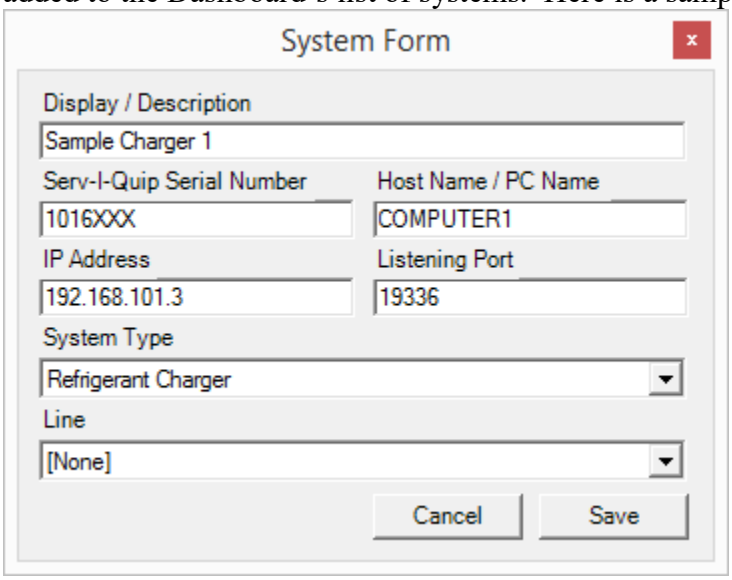


Details describing your new system are entered on this form. This allows the Dashboard to show options for the system, retrieve information from the system, and send commands to the system. The items that can be entered are:

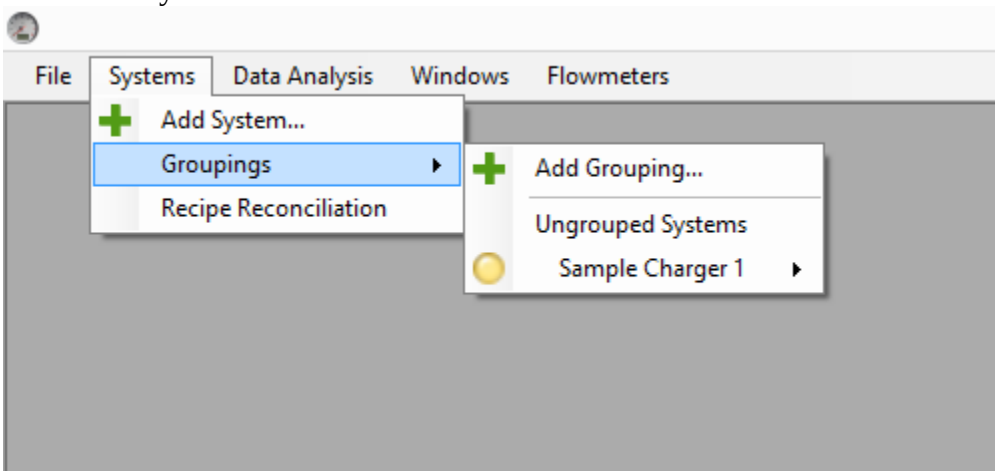
- Display / Description
    i. How you want the system to be shown when selecting from menus and lists
- Serv-I-Quip Serial Number
    i. The unique Serial Number assigned to your system during manufacture. This is generally a 7-digit number starting with "101".
- Host Name / PC Name
    i. The name of the networked PC that is running the Dataserv 3.0 software. If your PC was supplied by Serv-I-Quip, this will be the letter "s" followed by the Serial Number.
- IP Address
    i. If your PC has been given a static I.P. address or DHCP reservation, you can optionally include that I.P. in this field. Leave this field blank if you are unsure.
- Listening Port
    i. The default port on which the Dataserv Engine accepts connections is 19336. It is rare that you will need to change this number.

- System Type
    i. Pick the type of system from the drop-down list. This is used purely for display purposes.
- Line
    i. During first setup, there are no lines pre-configured to choose from. Leave this set to "[None]". If you choose to configure lines <TODO: Link lines> at a later time, this setting can be set at that point.

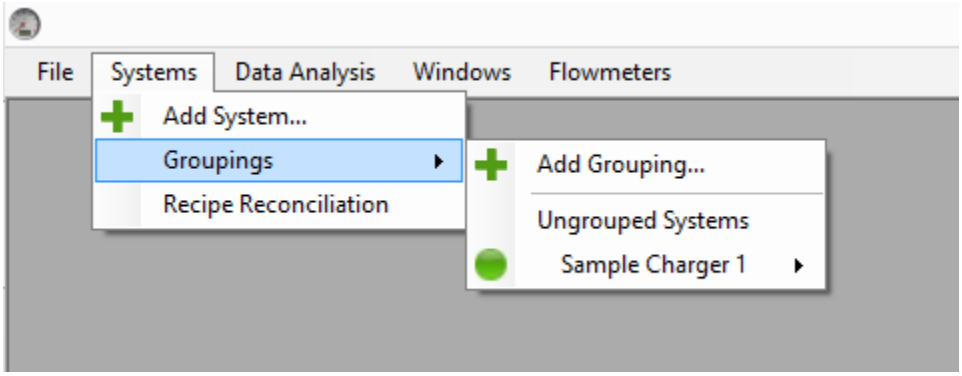
When the system details have been entered, click the "Save" button, and the system will be added to the Dashboard's list of systems. Here is a sample of a completed System form:



After the System is added, a new Menu Item will show up under the "Systems → Groupings" menu below the "Ungrouped Systems" heading. Initially, there will be a yellow "LED" indicator next to the system as shown here:



A yellow indicator means that connectivity to the System is being checked. Once communication is established, the indicator will change to green:



A red indicator means that the system is not responding to "Status" requests. See the Troubleshooting <TODO: Link troubleshooting> section for possible causes.

That is all that is required to set up basic connectivity from the Dataserv Dashboard to a system running Dataserv 3.0. The menu item created by adding a system has sub-items that will let the user Edit Recipes, View Output Data, View the Run Screen in real-time, Open Documentation, and more. Detailed information of Dashboard operation can be seen below. More details about System Maintenance can be found here.

Dashboard Operation

Components

1. Menu Items
2. Notify Icon / Systray Icon

- Menu Items

a) File

Hide This Window – Make the current MDI form invisible. Form can be shown again from Systray Icon Context Menu.

Close This Window – Remove the current MDI window from the collection of Dashboard Windows.

Dashboard Environment Settings – Open up the Dashboard Environment configurator. <TODO: Link Environment>

Open Image – Open an image file from disk for printing. This feature is intended for use as a design and troubleshooting tool for End-Of-Cycle printing from Dataserv. It can be used to determine the best printer settings for label printing.

Exit – Close the dashboard, including all other MDI forms.

b) Systems

Add System – Open the System Details Form for New System Entry.

Groupings – Contains the **Add Grouping** menu item and a list of all Groups currently configured in the Dashboard. Systems not assigned to any Groups will be shown under the "Ungrouped Systems" heading. Each Group menu will also have links for Editing and Deleting groups.

Add Grouping – Open the Group Detail From to add a new System Group

System Description – Under each named group and the "Ungrouped System" heading will be a menu item for each system in that group. Systems may be members of multiple groups. The menu item text is determined by the value shown in the "Display / Description" field in the System Details Form.

Edit Recipes – Open the Recipe Configuration Form for the selected System.

Output Data – Contains options for viewing and copying Output Data for the selected system.

View Output Data – Open the Output Display Form for the selected system.

Copy Data – Export the Output Data from the selected system to .XML or .CSV format.

Reprint Labels – If printing is part of the selected system's configuration, open previous printed items for viewing, copying, editing and reprinting.

Environment Settings – Open up the Environment Configurator of the selected system.

Open Live Screen – Brings up a real-time view of the Operator is currently seeing at the System. With sufficient privileges, a user can right-click and elect to "Take Control" of the screen.

Open Documentation – Bring up the Documentation Window for the selected System.

Tag Viewer – Open a streaming Tag Viewer form connected to the selected System.

Open Security – Open the Security Configurator for the selected System.

Admin Tools – Sub-items of the Admin Tools menu item allow for configuration and backup of several Dataserv Engine features.

Open Command Prompt – Starts a console process on the selected Dataserv System and redirects input and output through a form in the Dashboard.

Open File Explorer – Opens a window in the Dashboard to browse the file structure of the selected System. Files can be downloaded, uploaded, viewed, and deleted through this interface.

Get Log Files – Downloads all Log Files from the selected System. Enables the user to send logs to Serv-I-Quip if troubleshooting or debugging is required.

Get Backup of Current Configuration – Opens the Get Backup window targeting the selected System.

Restart Station – Opens the Update and Restart form targeting the selected System.

Administration – Contains a series of sub-items linked to all the administrative modules of the Dataserv Engine. With the exception of Scan Item Administration and ID Lookup Administration, use of these features without advice from a Serv-I-Quip Technician is discouraged.

PLC Administration – Opens PLC Configurator of selected system.

Tag Administration – Opens Tag Configurator of selected system.

Table Administration – Opens Table Configurator of selected system.

ID Lookup Administration – Opens ID Lookup Configurator of selected system.

Circuit Administration – Opens Circuit Configurator of selected system.

Cycle Administration – Opens Cycle Configurator of selected system.

Recipe Administration – Opens Recipe Configurator of selected system.

Output Mapping Administration – Opens Output Mapping Configurator of selected system.

Scan Item Administration – Opens Scan Item Configurator of selected system.

Manual Operation Administration – Opens Manual Operation Configurator of selected system.

Stream Sampling Administration – Opens Stream Sampling Configurator of selected system.

Printing – Contains sub-items linking to configurators related to Dataserv Printing functionality.

Print Layout Administration – Opens the Print Layout Designer of selected system.

Print Mapping – Opens the Print Mapping Configurator of selected system.

Print Link – Opens the Print Link Configurator of selected system.

Watchdog Administration – Opens the Watchdog Configurator of selected system.

Station Details – Opens the Station Details Form with the details of the selected System.

Remove from Group / Remove from Dashboard – If the system is "Ungrouped", this menu item will remove all references of it from the Dashboard. If the System is grouped, it will be removed from the current group. If this is the only Group the System is a member of, it will be added to the list of "Ungrouped Systems."

Recipe Reconciliation – Launch the Recipe Reconciliation interface for all Systems.

c) *Data Analysis*

Configuration – Contains sub-items related to System and Process configuration used when performing Data Analysis.

Shifts – Opens the Shift Configurator.

Recipe / Final Data Relationships – Opens the Recipe to Output Field Relationship Configurator.

Processes – Opens the Process Configurator.

Station Monitor – Opens the Station Monitor.

Capability Analysis / Production – Opens the Process Capability Evaluator and Production Report Generator.

Unit Trace – Opens the Unit Trace interface.

d) Windows

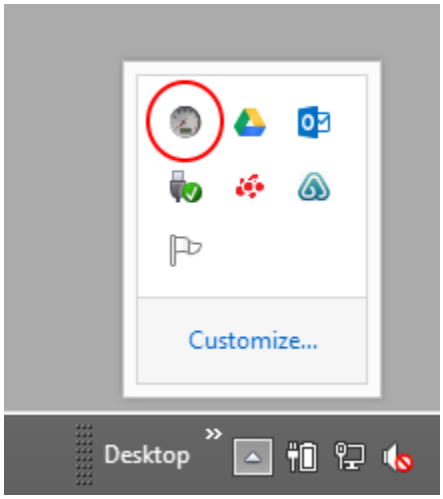
Window Text – Every Child Window of the current MDI Window will be a sub-item of this menu, allowing the user to quickly activate and bring each form to the front of all others.

e) Flowmeters

Launches the flowmeter display window.

- Notify Icon / Systray Icon

The Dashboard's Systray Icon provides Balloon Tooltip style notifications to the user and allows program control of otherwise invisible Dashboard objects. The Dashboard Systray Icon has the same Icon as the Dashboard application, a small dial gauge as seen here:



Right-Clicking on the Systray Icon will bring up the Systray Context Menu which contains the following items:

a) Add Window

Prompts the user for the title of a new Dashboard MDI Form.

b) Show/Hide

Contains an entry for each loaded Dashboard MDI Form. The user can choose to show or hide the MDI Form from these sub-items.

c) Exit

Close the Dataserv Dashboard and all open windows.

System and Group Options

As noted in the Getting Started heading of the Dashboard documentation, individual DataServ machines are referred to as "Systems" within the Dashboard, and Systems can be members of one or more Groups. The purpose of Groups is to give the user the ability to categorize Systems by Process, physical location, or any criteria desired to make it easier to navigate to that System's specific menus as quickly and easily as possible. Making groups is not a required action within the Dashboard. If no group affiliations are created, all Systems will simply be listed in the **Systems → Groupings → Ungrouped Systems** menu area.

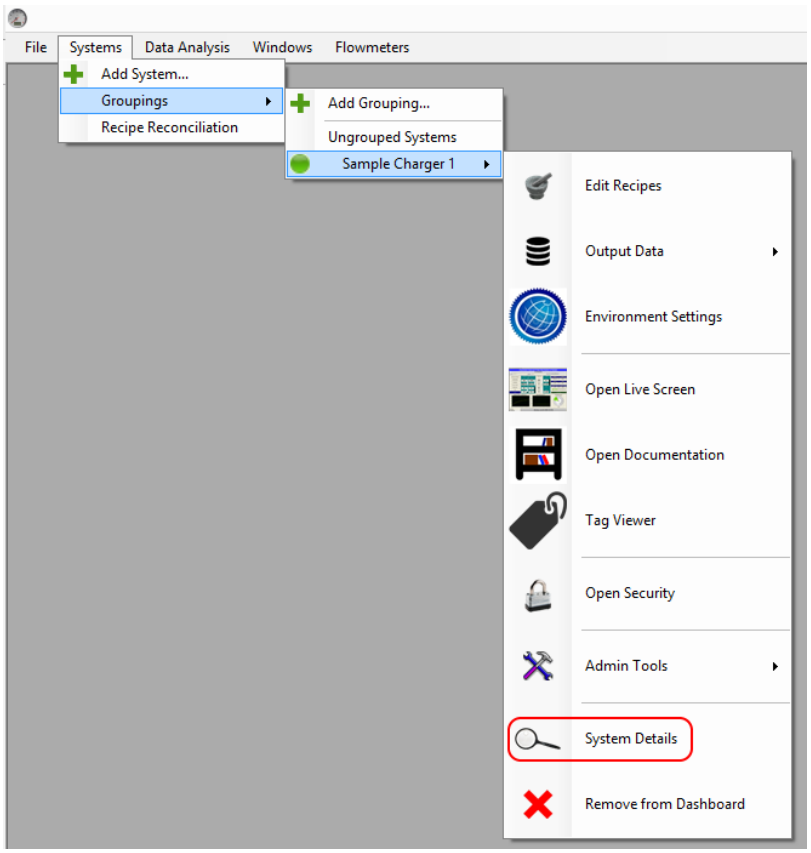
System Maintenance

Adding a System

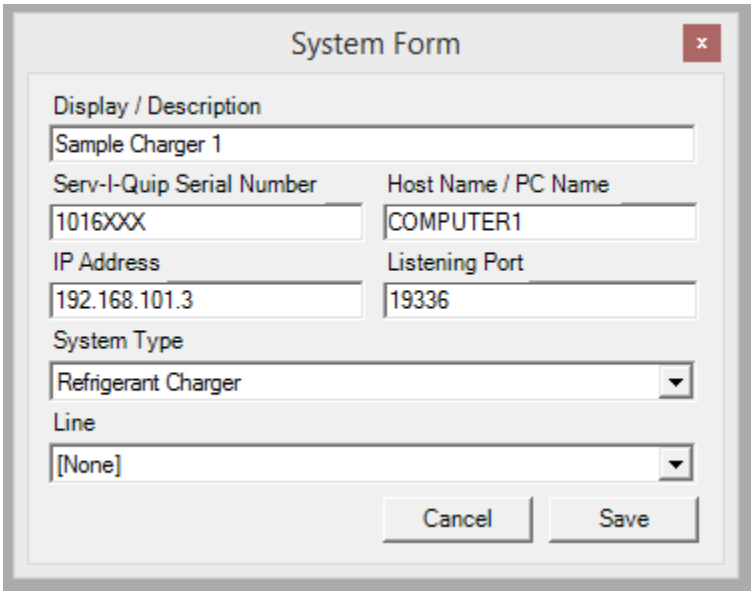
For instructions on adding a new system, please refer to the System Maintenance section in the Getting Started heading of this document. Adding a system is the minimum requirement for using the Dashboard. Having a System in the Dashboard gives the user access to all basic Dashboard functionality.

Editing a System

To edit a System's properties (Serial Number, I.P. Address, etc.), access the System's menu options from anywhere in the **Systems** menu tree, either as a grouped System or an Ungrouped System. Click the **Station Details** menu.



This will bring up the System Details Form. Make any desired changes and click the **Save** button.



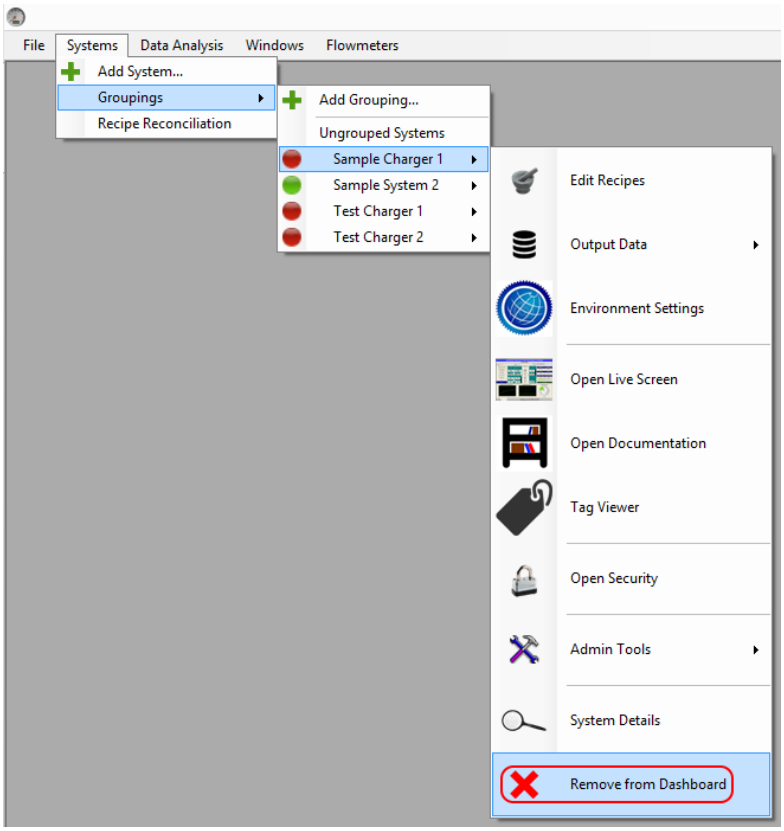
The items that can be entered are:

- Display / Description

        i. How you want the system to be shown when selecting from menus and lists
    - Serv-I-Quip Serial Number
        i. The unique Serial Number assigned to your system during manufacture. This is generally a 7-digit number starting with "101".
    - Host Name / PC Name
        i. The name of the networked PC that is running the Dataserv 3.0 software. If your PC was supplied by Serv-I-Quip, this will be the letter "s" followed by the Serial Number.
    - IP Address
        i. If your PC has been given a static I.P. address or DHCP reservation, you can optionally include that I.P. in this field. Leave this field blank if you are unsure.
    - Listening Port
        i. The default port on which the Dataserv Engine accepts connections is 19336. It is rare that you will need to change this number.
    - System Type
        i. Pick the type of system from the drop-down list. This is used purely for display purposes.
- Line
    i. During first setup, there are no lines pre-configured to choose from. Leave this set to "[None]". If you choose to configure lines <TODO: Link lines> at a later time, this setting can be set at that point.

Deleting a System

To delete a System, expand that System's menu and select **Remove from Dashboard** at the bottom of the menu as shown below:



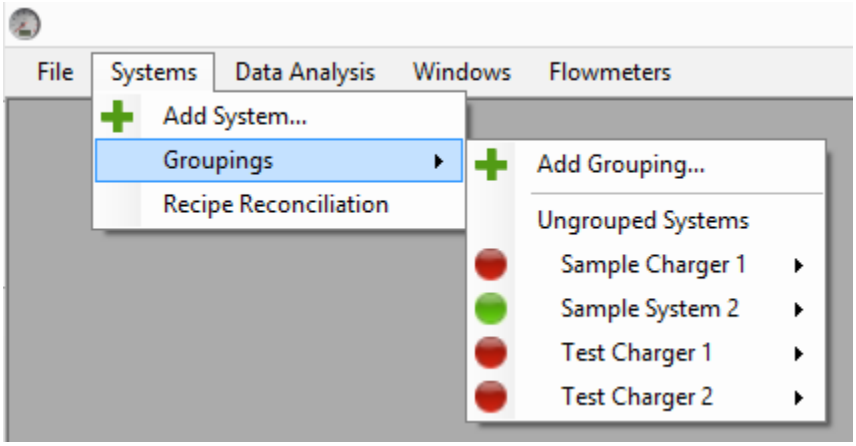
Note that if the System belongs to a Group, the text of this menu item is **Remove from Group**. If a System is a member of one or more Groups, it must be removed from all Groups before it can be removed from the Dashboard entirely.

Group Maintenance

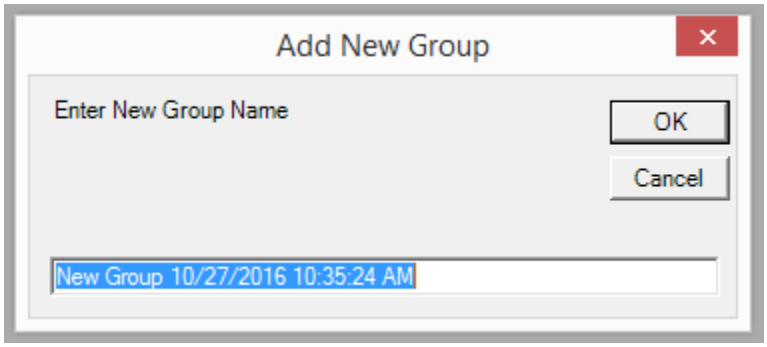
As stated earlier, Groups are an optional feature of the Dashboard intended to provide a means to logically group Systems by Process, Line or some other criterion. When only a few Systems are in a given facility, Groups will probably not be necessary or useful. The only affect Group membership has on a System is where it will be located under the **Systems** menu.

Adding a Group

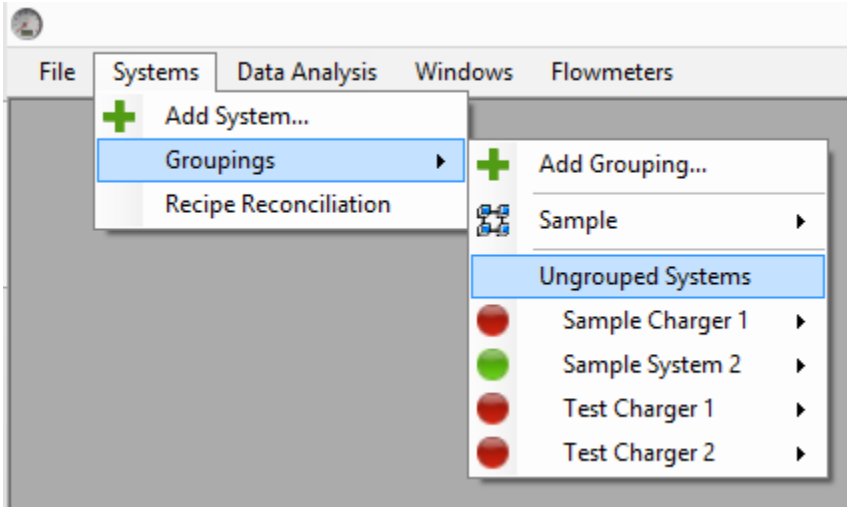
When no groups exist, the **Systems** menu will look something like this:



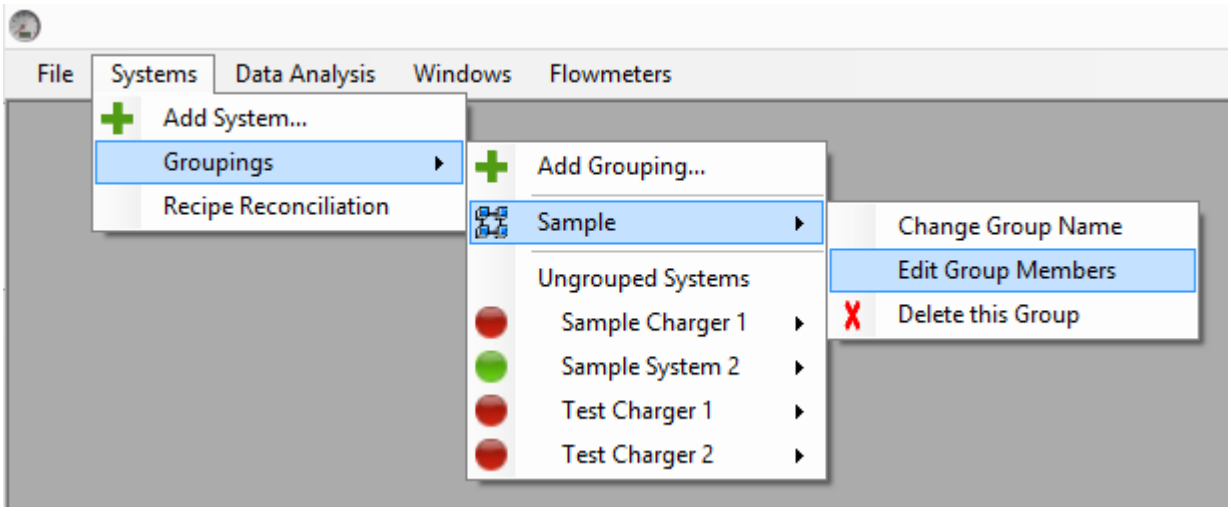
In this state, all Systems are listed under the **Ungrouped Systems** heading. To start creating a new Group, simply click **Add Grouping**. A text prompt will be shown asking for a new Group Name. The default text will be "New Group" and the date and time as seen here:



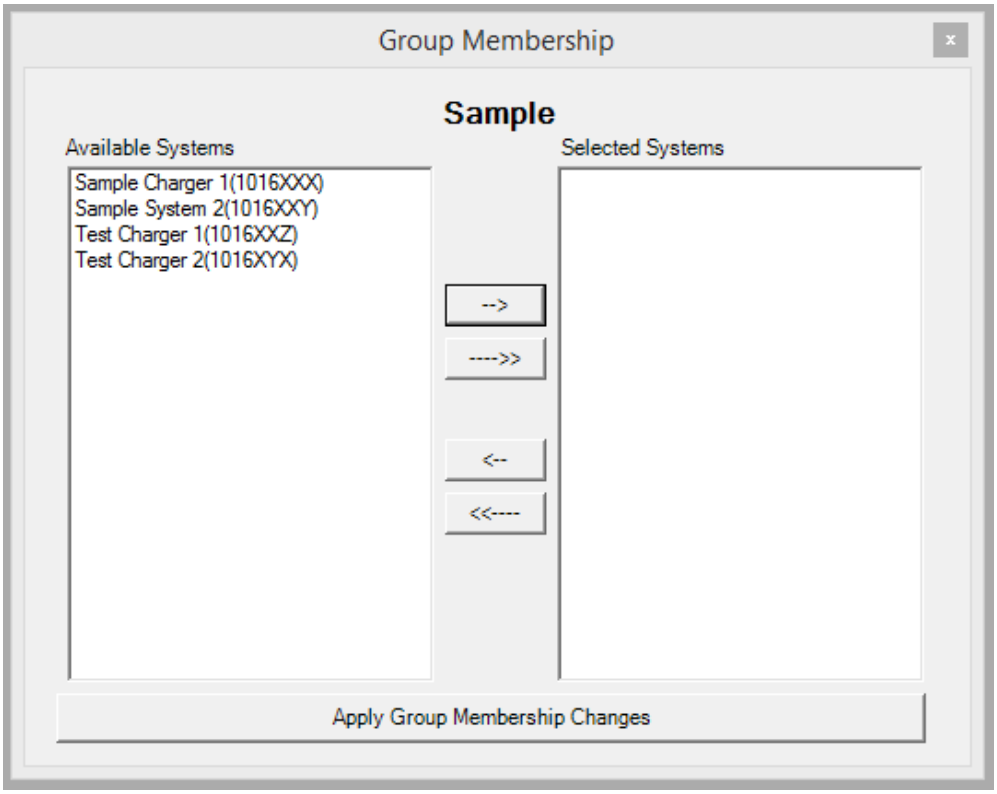
For this example, the Group will be named "Sample." Once the desired Group Name is entered and the OK button is pressed, the group will be added to the **Groupings** menu as seen here:



At this point, the Group exists, but has no members. To add or remove Systems, the Group menu can be expanded to expose the **Edit Group Members** menu.

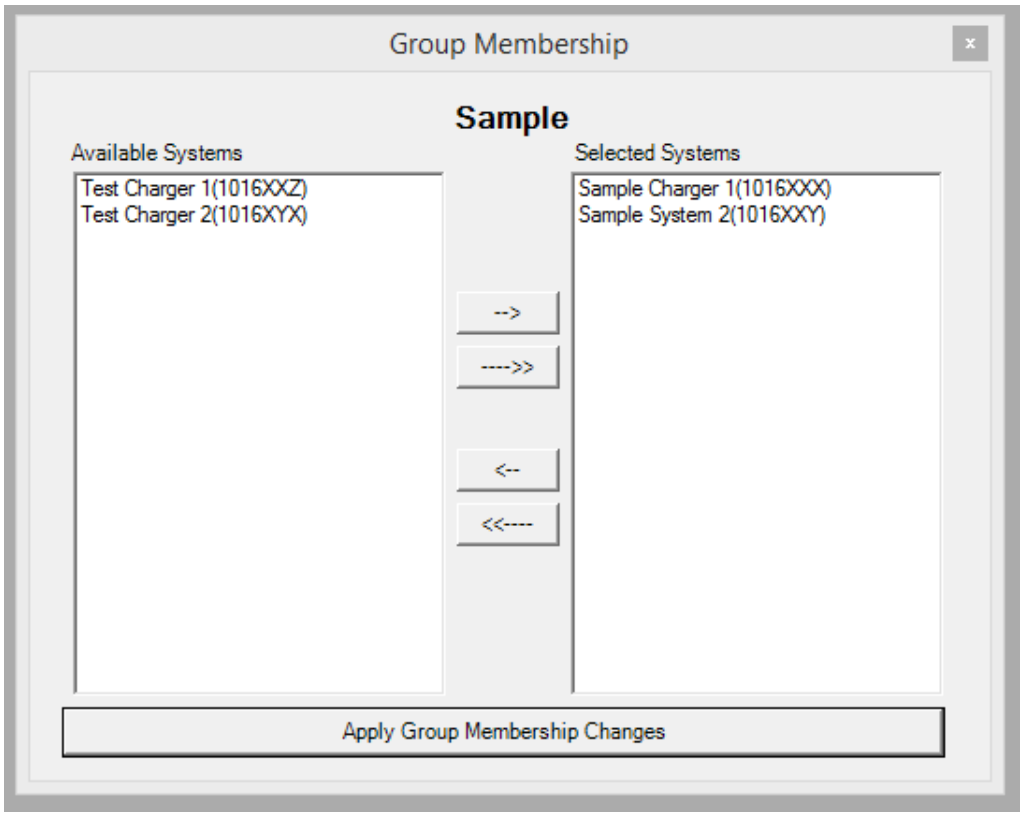


When this menu item is selected, the Group Membership Window is displayed. This is the Group Membership Window:

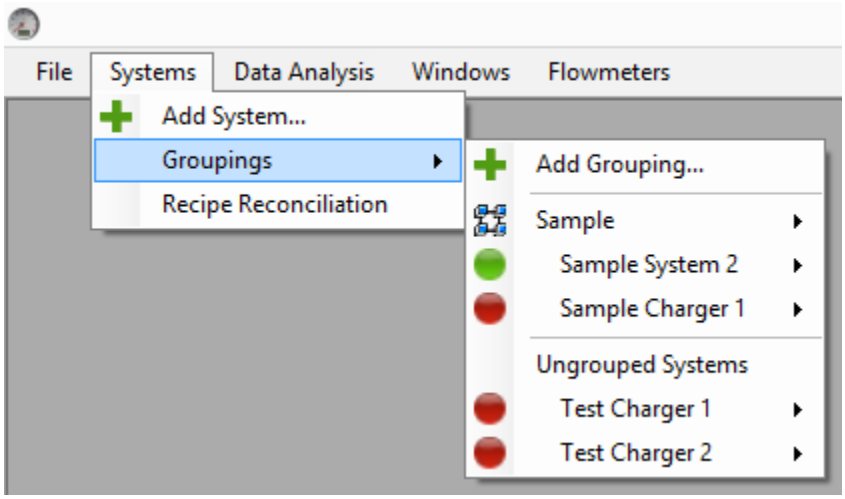


Systems can be added or removed from the current Group by highlighting them and clicking the → button (select) or ← button (deselect). In this example, both systems with

"Sample" in the name will be added to the "Sample" group. This will have the Group Membership Window displaying like this:



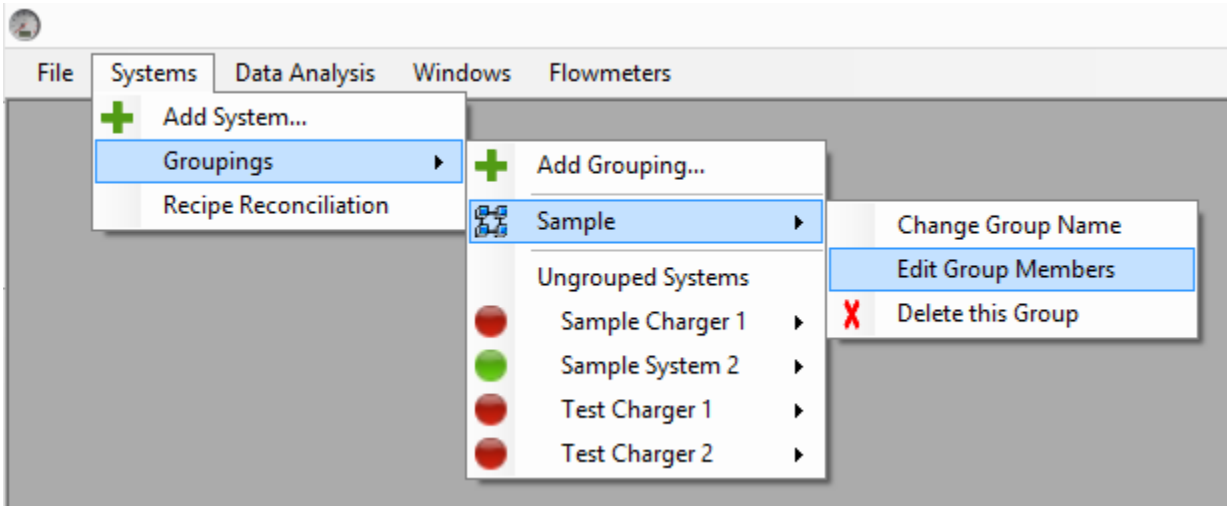
When the **Apply Group Membership Changes** button is clicked, the form will close and the **Systems** menu tree will change to reflect the new Group memberships. Continuing with the example, the menu would look like this:



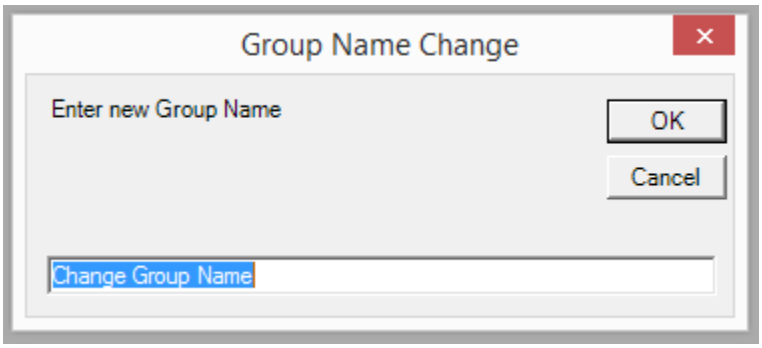
"Sample System 2" and "Sample Charger 1" are now listed under the "Sample" group, and only "Test Charger 1" and "Test Charger 2" are listed under "Ungrouped Systems.

Renaming a Group

Group names can be changed without affecting membership. Expanding the Group menu of any group gives access to the Change Group Name menu.



Group name changes are displayed exactly the same as when Adding a Group. An input box will be displayed with the default value "Change Group Name."



Whatever value is placed in the box becomes the Group's new name once the **OK** button is clicked.

Deleting a Group

The last option in the **Group** menu is **Delete this Group**. Deleting a Group will automatically return any Systems in that group to the **Ungrouped Systems** area if they aren't members of another Group.

Data Analysis

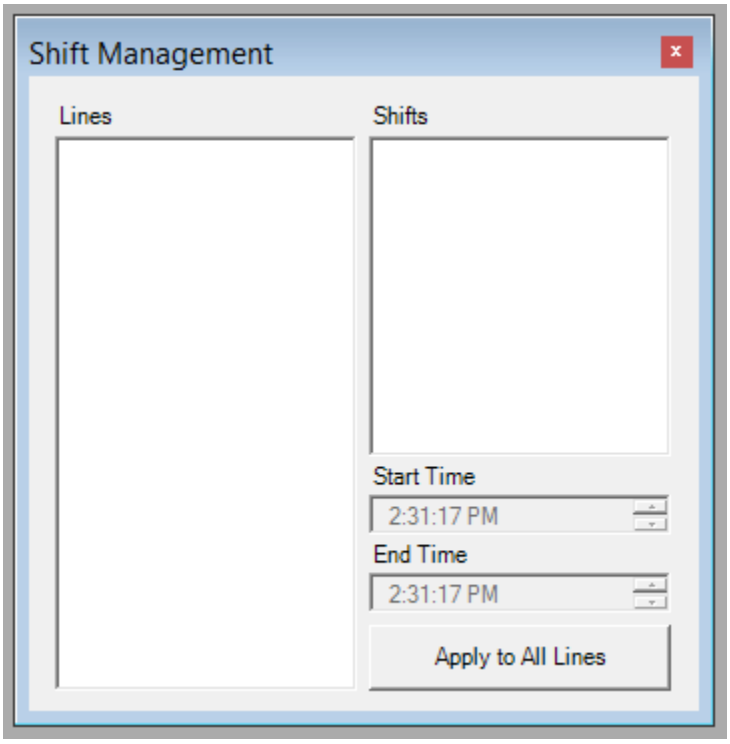
Configuring Systems and Groups gives immediate access to basic functionality: Recipe editing, Output viewing, Live View, Administration, etc. More functionality is available through the **Data Analysis** menu. This functionality requires input from the user to group Systems into Processes, associate Recipe and Output data points and some other important information.

Configuration

The **Data Analysis → Configuration** menu offers links to the configuration pages for extended Dashboard functionality. The first area listed is **Shift Management**. This is followed by Recipe / Final Data Relationships and Processes.

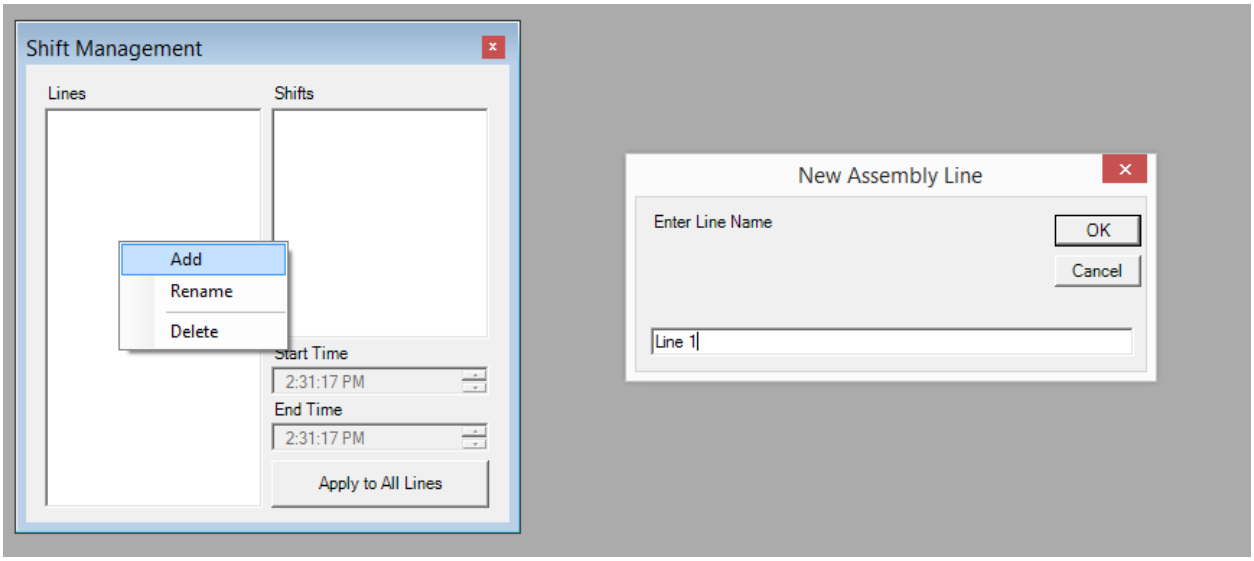
Shift and Line Management

Shifts and Lines are one way data can be sorted and filtered when doing Data Analysis and Visualization within the Dashboard. In order to do so, individual Lines and their Shifts must be configured here first. Like Groups, Lines and Shifts are optional configurable items. Clicking the **Data Analysis → Configuration → Shifts** menu will bring up the Lines and Shifts configurator:

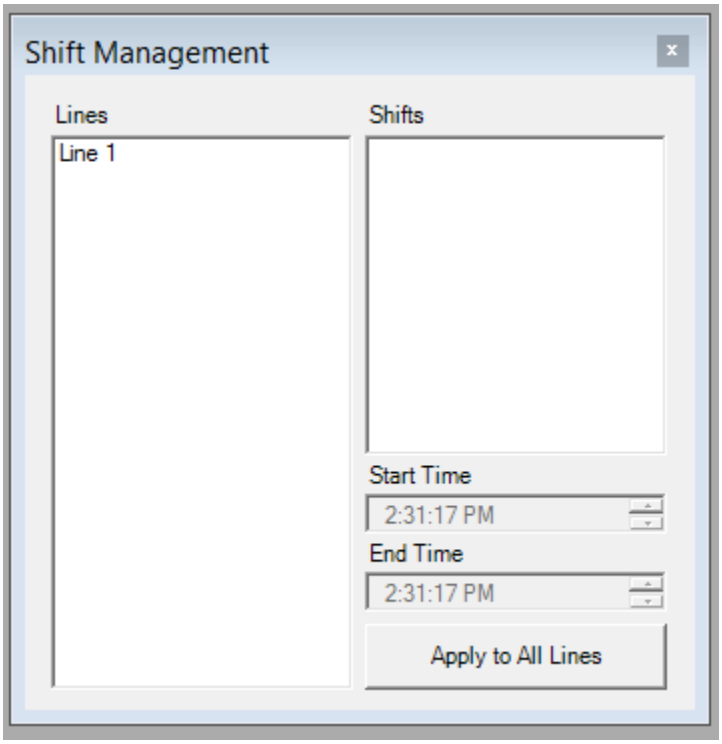


Line Management

Lines are added by right-clicking the Lines list and selecting Add from the context menu. This will bring up an input box to allow the user to give the Line a name.



When the **OK** button is pressed, the new Line is added to the list of Lines as seen below:

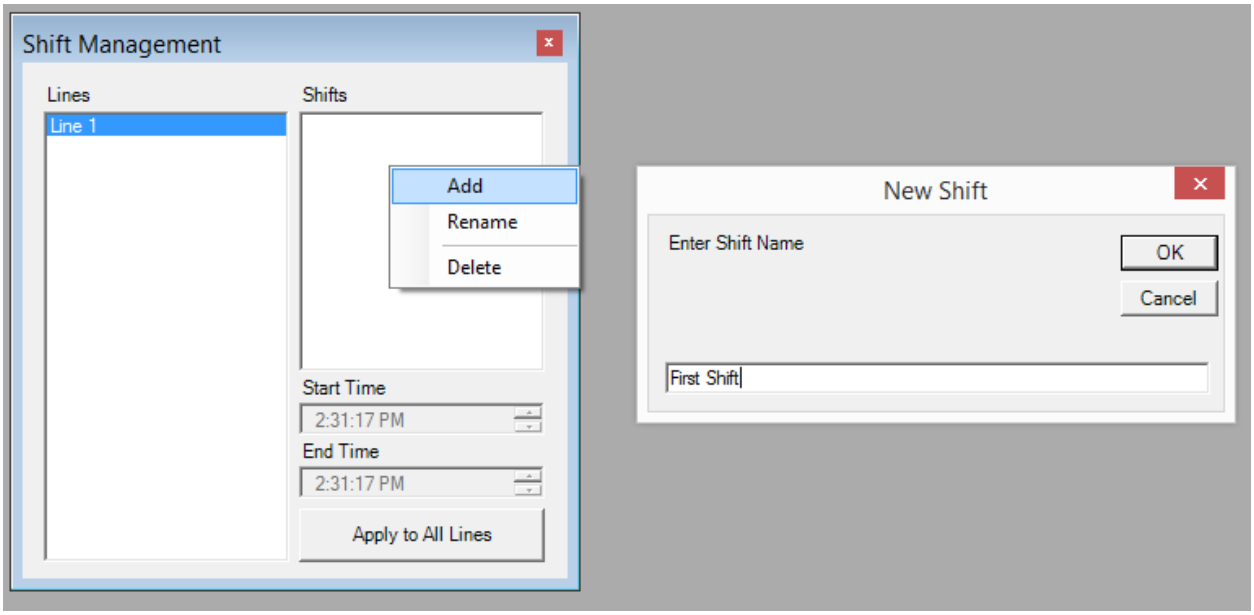


The same context menu also contains the menu items for **Renaming** an **Deleting** Lines. These options require that one and only one Line be highlighted.

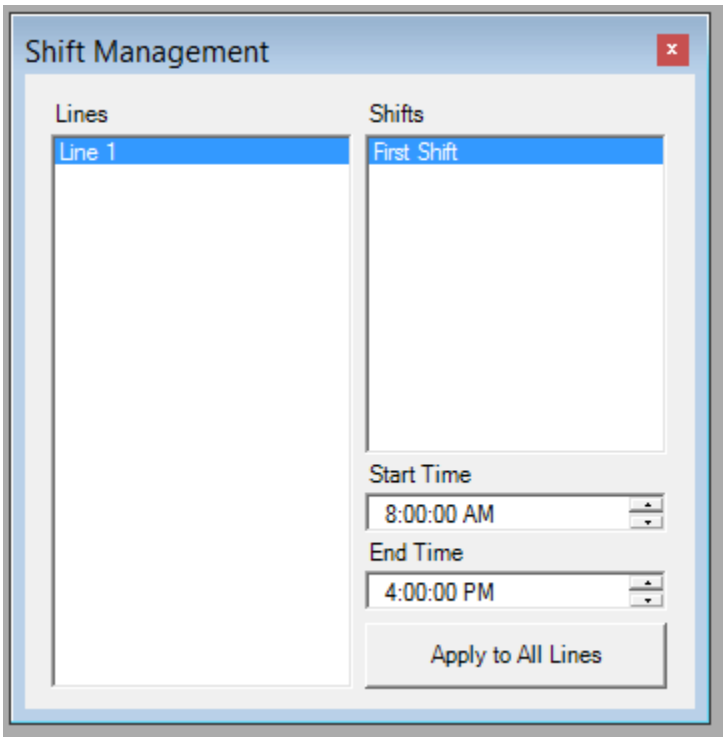
Shift Management

Changing Shifts within a Line is similar to changing Lines. When a Line is highlighted in the Line list, it will be shown as what text on a blue background. Any existing Shifts

will be shown in the Shifts List. Right-clicking on the Shift list will bring up a context menu with the same **Add**, **Rename**, and **Delete** options available for Lines. As shown for Lines, **Add** will bring up an input box to enter a Shift name.



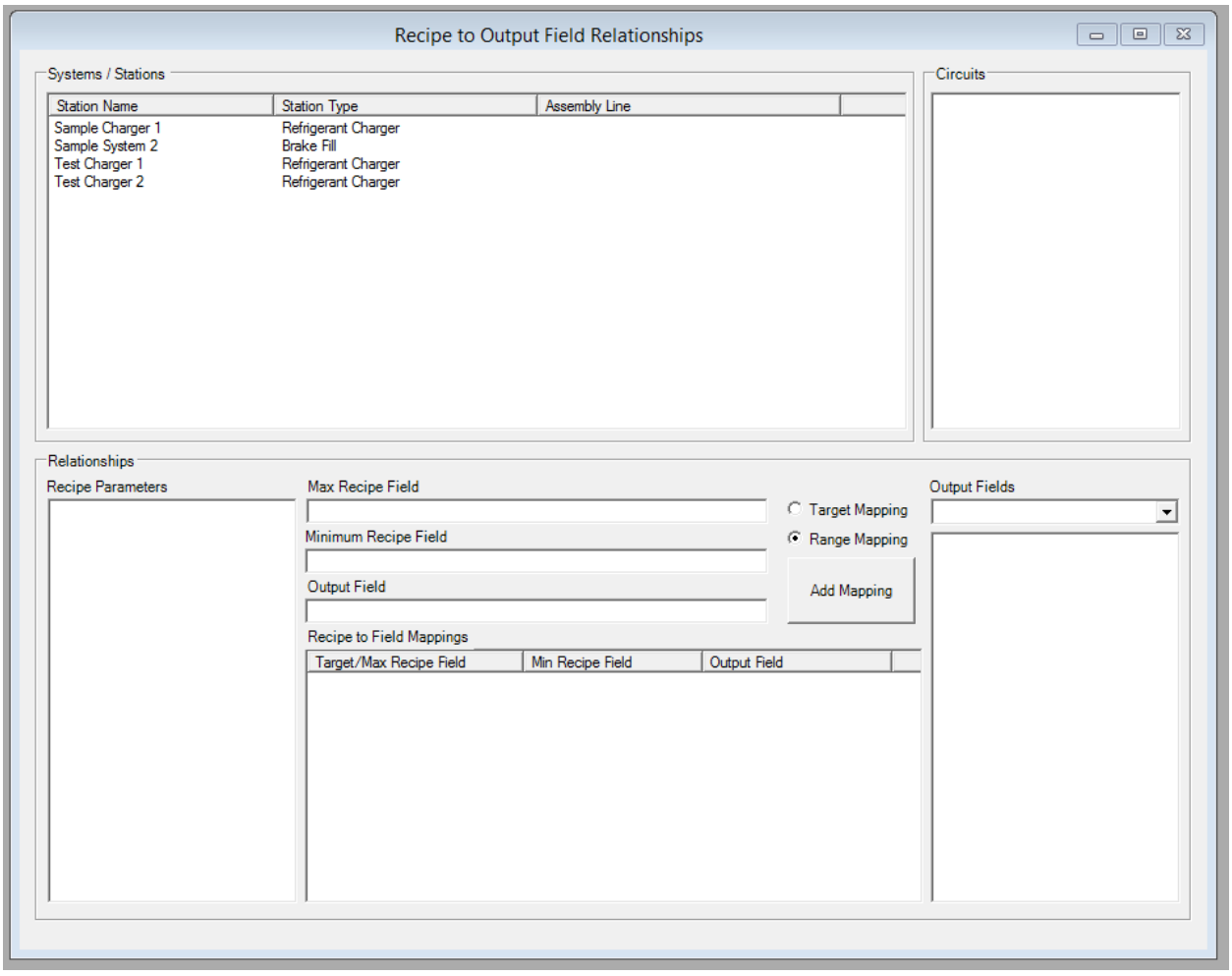
As before, once the OK button is clicked, the Shift is added to the Shift list with the name chosen. If the shift is highlighted, the start and end times of that shift will be enabled below the shift list. Newly created Shifts will default to 8:00 am to 4:00 pm. The end result of the above example looks like this:



Start and End times are editable through the time controls. If desired, a list of Shifts from one Line can be applied to all Lines configured. With one Line selected, clicking the **Apply to All Lines** button will erase all current Shifts on other Lines and replace them with the Shifts from the selected Line. Highlighting an individual Shift and right-clicking will bring up the context menu and allow **Renaming** or **Deleting** that shift.

Recipe to Output Field Relationships

With many systems, especially Runtest and Flowtest systems where Recipe values have upper and lower limits, it can be advantageous to compare Set Point Limits to calculated Control Limits to evaluate Process Capability. To do so, the Dashboard must have a roadmap to match up Recipe values to Actual values. The Recipe to Output Field Relationship Window is where this can be done. A blank Recipe/Output Field Relationship Window looks like this:



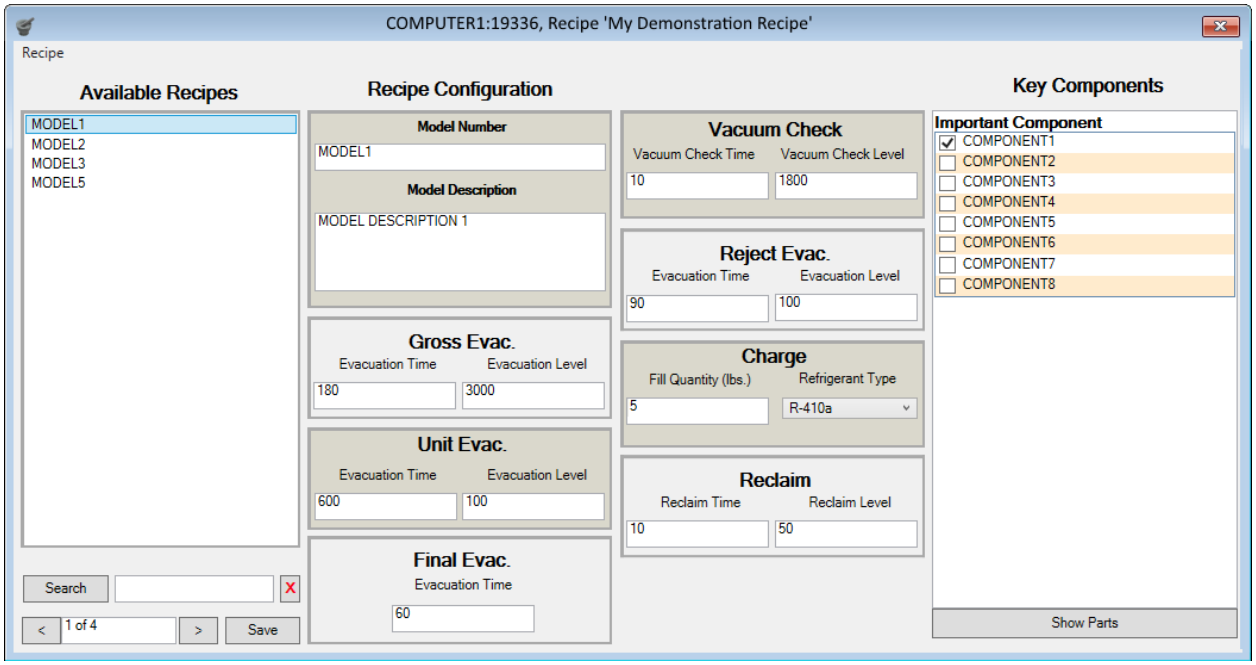
As long as a system is Online, highlighting that System in the System list will fill in the Circuits list.

Shared Components

Many Dataserv interfaces are available from more than one menu or application. These are called “Shared Components.”

- ## Recipe Form

The Recipe Form provides the Process Owner a user-friendly interface for updating Recipe information either at the system through the HMI and through the Dashboard. Each system has a unique Recipe Form layout. A typical Recipe Form will look something like this:



Components

1. Available Recipes List
2. Search Controls
3. Record Navigator
4. Save Button
5. Recipe Value Controls
6. Key Component List
7. Main Menu
8. Context Menu
9. Exit Multi-Update Button

- ## Available Recipes List

All Recipes currently configured can be found in the List Box under the heading “Available Recipes.” Selecting any recipe in the list will fill the form with the values from that recipe.

- Search Controls

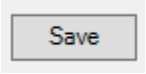
  With the “Search” controls, the user can narrow down the contents of the “Available Recipes” list by entering a partial or complete Model Number and clicking the “Search” button. Clicking the red “X” button will clear the search and repopulate the “Available Recipes” list with all models.

- Record Navigator

  The Record Navigator is a set of three controls that allows the user to move forward or backwards, alphabetically, through the Recipe list one Recipe at a time.

- Save Button

  The Save Button initiates a save of the current Recipe, preceded by Data Validation



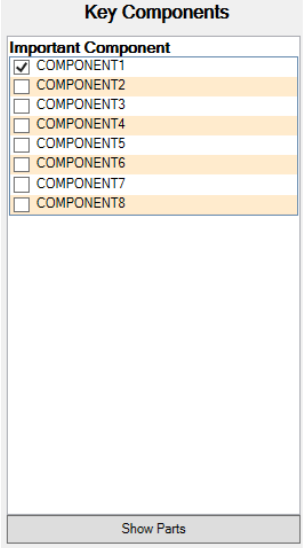
- Recipe Value Controls

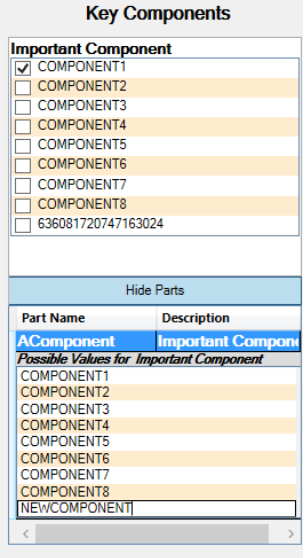
  All controls on the Recipe Form related to Recipe values or their descriptions are in this group. They are typically grouped visually by Process Step on simpler systems such as Refrigerant Chargers or Leak Detection Systems. Multi-Fill Systems or Electrical Runtest Systems will usually separate Fluids or Runtest steps into separate tabs, respectively.

- Key Component List

  If the system is performing Key Component checking, a list of key components associated with that model will be listed under the “Key Components” label. Each Key Component will be listed by name (“Important Component” in this example) with possible part numbers for that component listed underneath. Any and all valid part numbers should have the checkbox next to them ticked to mark them as “valid” for that model. Leaving all checkboxes unticked will skip Key Component validation for that model.

  Clicking the “Show Parts” Button in the Key Component List will enable editing of Key Component Part Numbers. Existing components can be edited or deleted and new components added from this interface. Clicking “Hide Parts” will return the Key Component List to select-only mode.





- Main Menu / Context Menu

  The Main Menu and The Context Menu brought up by right-clicking the Available Recipes List contain the same options.

  1. New

     Adds a new row to the recipe list with all blank parameters.

  2. Copy

     Adds a new row to the recipe list by making an exact copy of the currently selected recipe and adding "_COPY" to the end of the model number.

  3. Delete

     Deletes the currently selected recipe.

  4. Set Global Preset

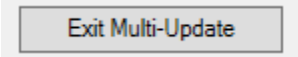
     Opens the Global Preset <TODO: Link Global Preset> Window.

  5. Update Several Models

     Opens the Recipe Picker Window to begin a Multi-Update session. <TODO: Link Multi Update>

- Exit Multi-Update Button

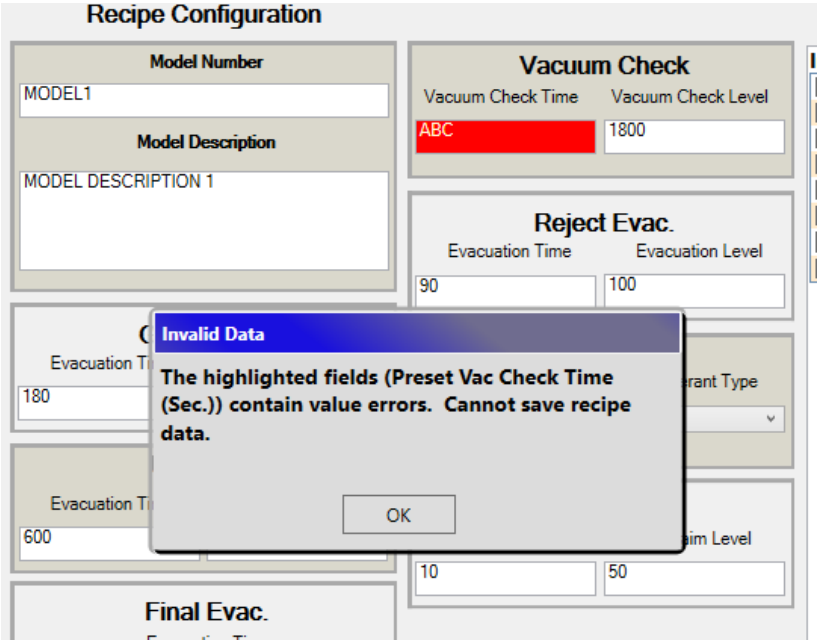
This button cancels or terminates a Multi-Update session.



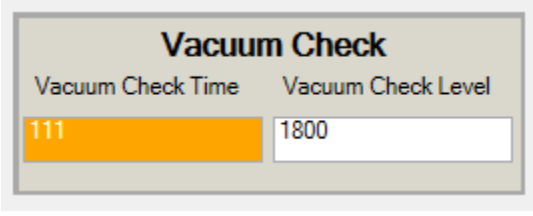
Updating Recipe Fields

Once a Recipe has been selected, either by creating a new Recipe, copying an existing Recipe, or highlighting an existing Recipe, the Recipe Value Controls will be filled in with the appropriate values from that Recipe. When a New Recipe is created, all fields will be blank and the Record Navigator will indicate "(New Row)."

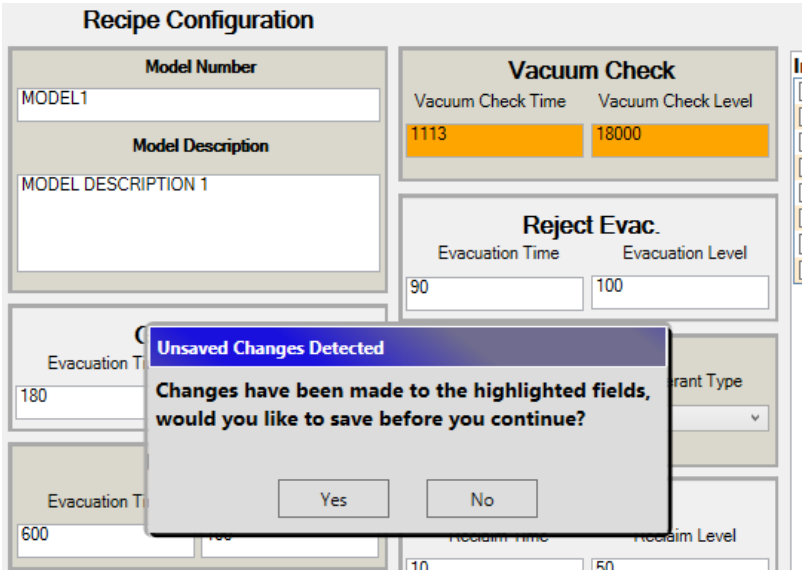
To make changes to recipe fields, TAB to or click on the desired parameter and type the new value or select the desired option from the drop-down list. Once all desired changes are made, click the "Save" button. If any user entries are not valid for the data type of the recipe field, a message will be displayed to the user and the fields identified as shown here:



If no errors are present, the recipe will be saved and fields that were updated will be shown in Orange for reference.

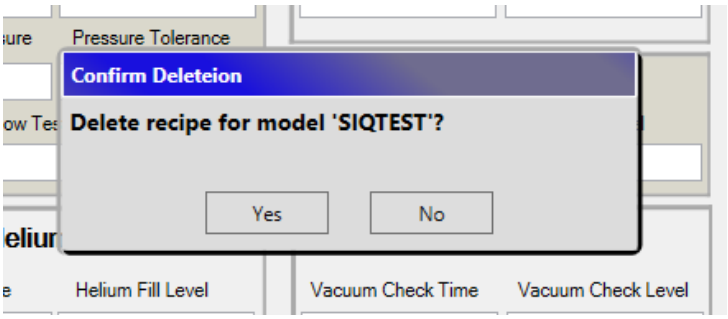


Similarly, if the user makes changes to recipe fields and navigates away from the current model by clicking another model or using the forward and back buttons, the Recipe Form will prompt the user and offer the choice of whether to preserve or discard the changes.



Deleting Recipes

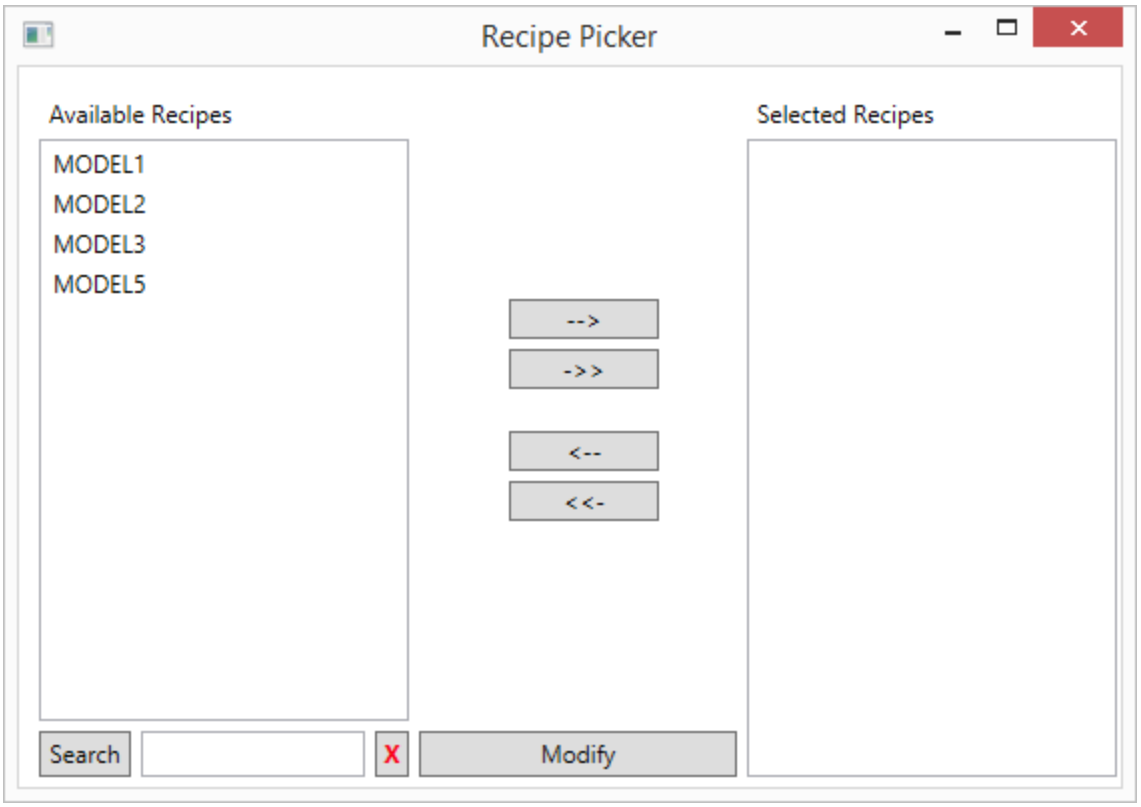
Though it's not recommended, recipes can be removed from the recipe database by using the "Delete" option from the Main Menu or the Context Menu. When a delete request is made by the user, the Recipe form will prompt for acknowledgment.



If a user selects "Yes", a delete request will be sent to the Dataserv Engine. If deletion is successful, the recipe will be removed from the list of Available Recipes.

Multi-Update

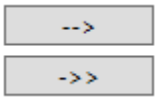
It is often necessary or advantageous to be able to make the same updates to two or more recipes at once. The Recipe Form provides this ability through a "Multi-Update." To begin a Multi-Update, chose "Update Several Models" from the Main Menu under "Recipe", or through the Context Menu of the Available Recipes list. Doing so will bring up the Recipe Picker Window:



The Recipe Picker has similar Available Recipes and Search Controls to the main Recipe Form. There are four selector/deselector controls in the middle, a Selected Recipes list on the right, and a "Modify" button bottom center.

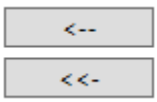
Selectors and deselectors with single arrows select or deselect the currently selected recipe. Selectors with double arrows select or deselect all recipes in a list.

These are the selector controls, the single arrow control on top will move the currently selected Recipe into the "Selected Recipes" list.

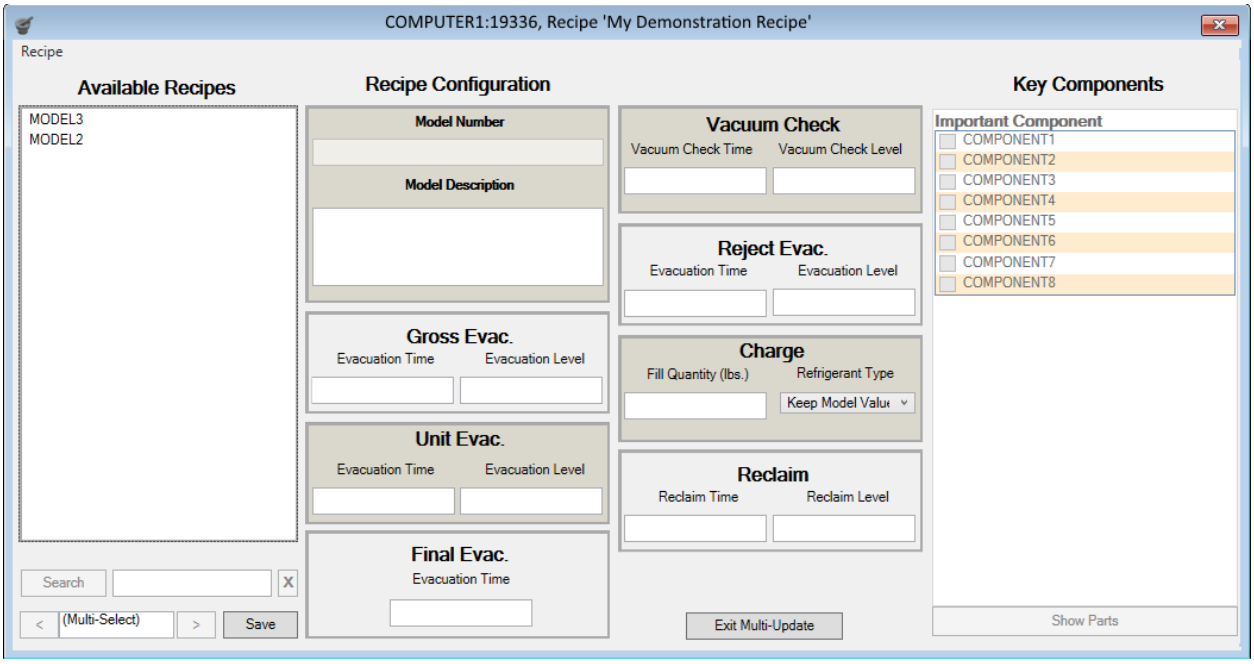


The select all button on the bottom will move all Recipes in Available Recipes to the "Selected Recipes" list. If the contents of "Available Recipes" is not the result of a search, all recipes in a system are selected for the Multi-Update.

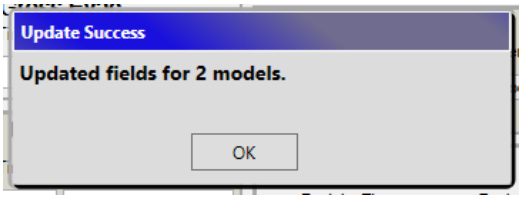
The deselector buttons have the same basic functionality as the selector buttons. They move the highlighted recipe or all Recipes out of the "Selected Recipes" list and into the "Available Recipes" list.



For this example, MODEL2 and MODEL3 recipes will be selected. Once the user clicks the "Modify" button, the Multi-Update process is started. Several small changes take place on the recipe screen during a Multi-Update. The Search Controls, Record Navigator, and Key Component Control (if present) will become disabled. Also, the "Exit Multi-Update" button will become visible. The Record Navigator text will change to "(Multi-Select)", all text-box controls in the Recipe Value Controls group will be blanked, and all drop-down lists in the Recipe Value Controls group will gain an additional choice "Keep Model Value" and be automatically set to that value. A sample of what the recipe screen will look like is shown below.



Any Recipe Value Controls left blank or set to "Keep Model Value" will have no effect when the "Save" button is clicked. To update Recipe values for the selected recipes, place the values in the desired Recipe Value Controls and click "Save." Value checking is performed just as with a regular save. An acknowledgement will be displayed when a response is received from the Dataserv Engine that the update is complete.



The altered Recipe Value Controls will maintain their new values, but will not be shown in orange as during a single Recipe update. The update and save process can be repeated until the user is satisfied with all the results. A Multi-Update session can be terminated at any time by clicking the "Exit Multi-Update" button. The Recipe Form will be returned to the default state with the first model in Alphabetical Order selected.

<TODO: Many Links above and MANDATORY REVISION NOTES>

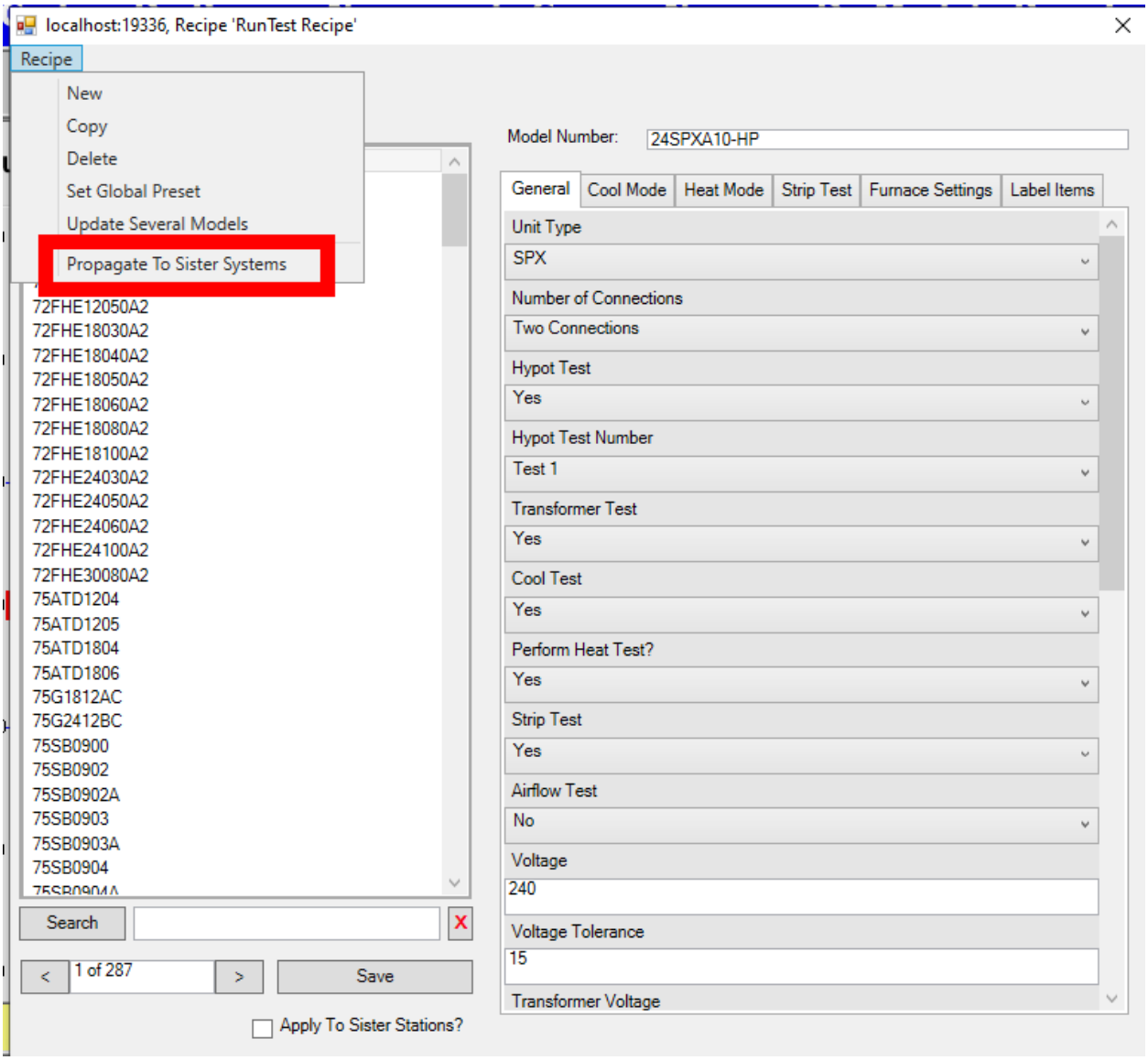
Sister System

- Requires enabling Sister Systems through the Admin Designers, please contact Serv-I-Quip for more details. Sister Systems are required to have identical recipe tables to allow for the syncing.

Sister System configuration allows two or more systems that share a process configuration (recipe design and table) to sync their model lists. The model lists are synced under two conditions:

1.) When enabled the recipe list gains an "Apply to Sister Stations?" check box, if this check box is checked at the time of a recipe change (add, delete, update), then that change will also be pushed to all Sister Systems available at the time the change is made.

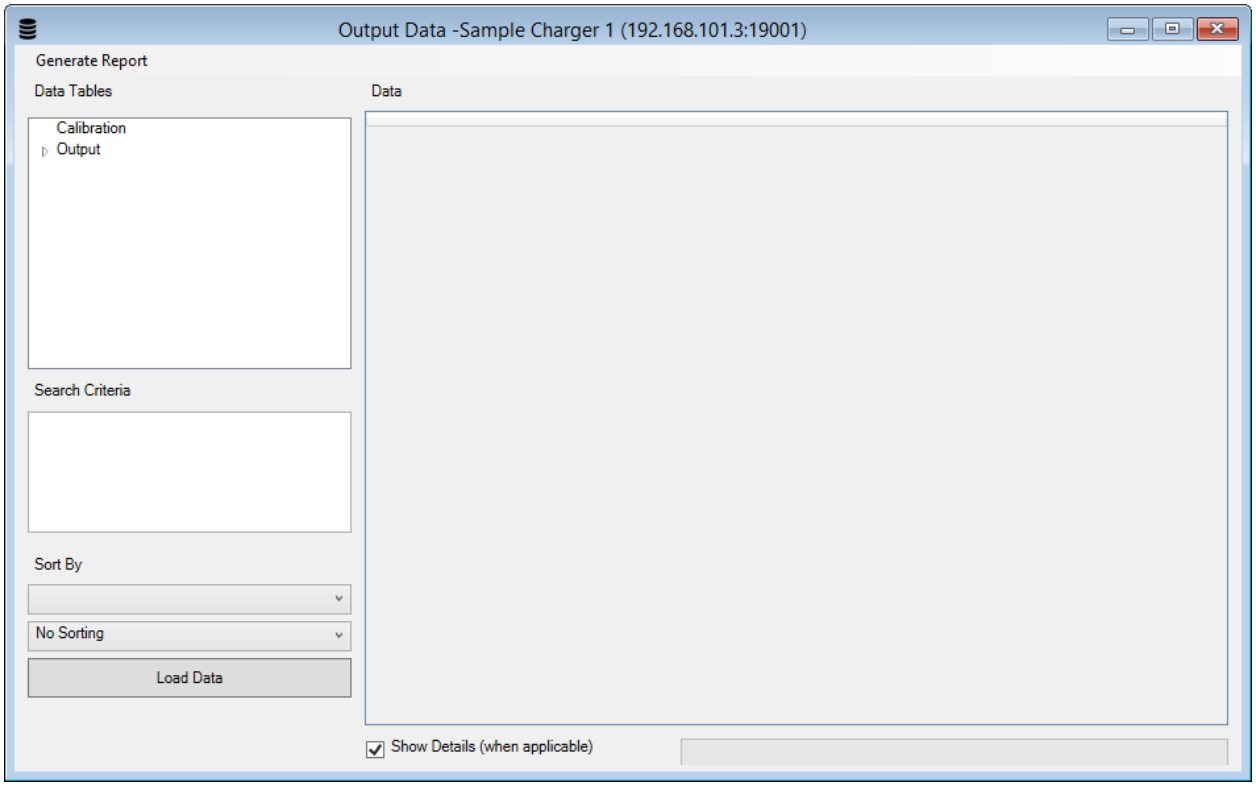
2.) When enabled the recipe list gains a "Propagate to Sister Systems" menu item off of the "Recipe" menu drop down. When pressed the system this button was pressed on will attempt to push its entire recipe list to all remote Sister Systems, overwriting what was on those systems entirely.



a. This is primarily to be used to get systems back in sync if they were unavailable, or a new system was added.

- ## Output Data Viewer

The Output Data Viewer is one way to look at the Run History of a System. It's available at the System via the HMI Menu <TODO: Link HMI Menu> and in the Dashboard as a sub-item of individual System menus. <TODO: Link Dashboard Menu> A typical Output Data Viewer looks something like this when opened:



Components

1. Data Tables List
2. Search Criteria List
3. Sort Controls
4. Load Data Button
5. Main Menu
6. Data Grid
7. Show Details Selector
8. Detail Progress Indicator

- ### Data Tables List

  All Dataserv Systems will have a number of Tables configured. If the table is marked to be "Shown in Output View", it will be listed in the "Data Tables" list on the top left of the Output Data Viewer. To load data for that table, the user must highlight the desired table and click the "Load Data" button.

- ### Search Criteria List

  The Search Criteria List, located directly beneath the Data Tables List, shows all current search criteria, and provides a Context Menu to Add, Delete, and Change criteria.

- Sort Controls

  The Sort Controls provide the user the ability to pick a field to sort the data on, and which direction to sort the data. Clicking any column header will also sort the data by that column, clicking the header again will reverse the sort order.

- Load Data Button

  Clicking the "Load Data" button will load data from the selected table based on the currently defined Search Criterial and Sort options.

- Main Menu

  The Main Menu provides extended Run History options.

  a.) Generate Report

  Generates an Excel workbook with Pareto Chart, Production Report, and Raw Data for the selected output table, where applicable.

- Data Grid

  All data that is loaded in the Output Data Viewer is displayed in the Data Grid.

- Show Details Selector

  When checked, selecting a row in the Data Grid causes details about the row, and any Child Table information to be loaded into the Row Details portion of the Data Grid. These details can include Printed Items, Stream Samplings, and other data related to the selected Output record.

- Detail Progress Indicator

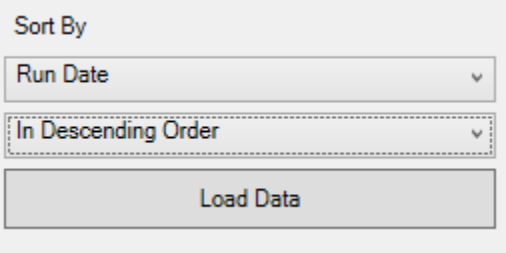
  The Detail Progress Indicator displays a rough measurement of the progress of the load details process. Details are loaded one at a time from the Dataserv Engine.

Loading Data

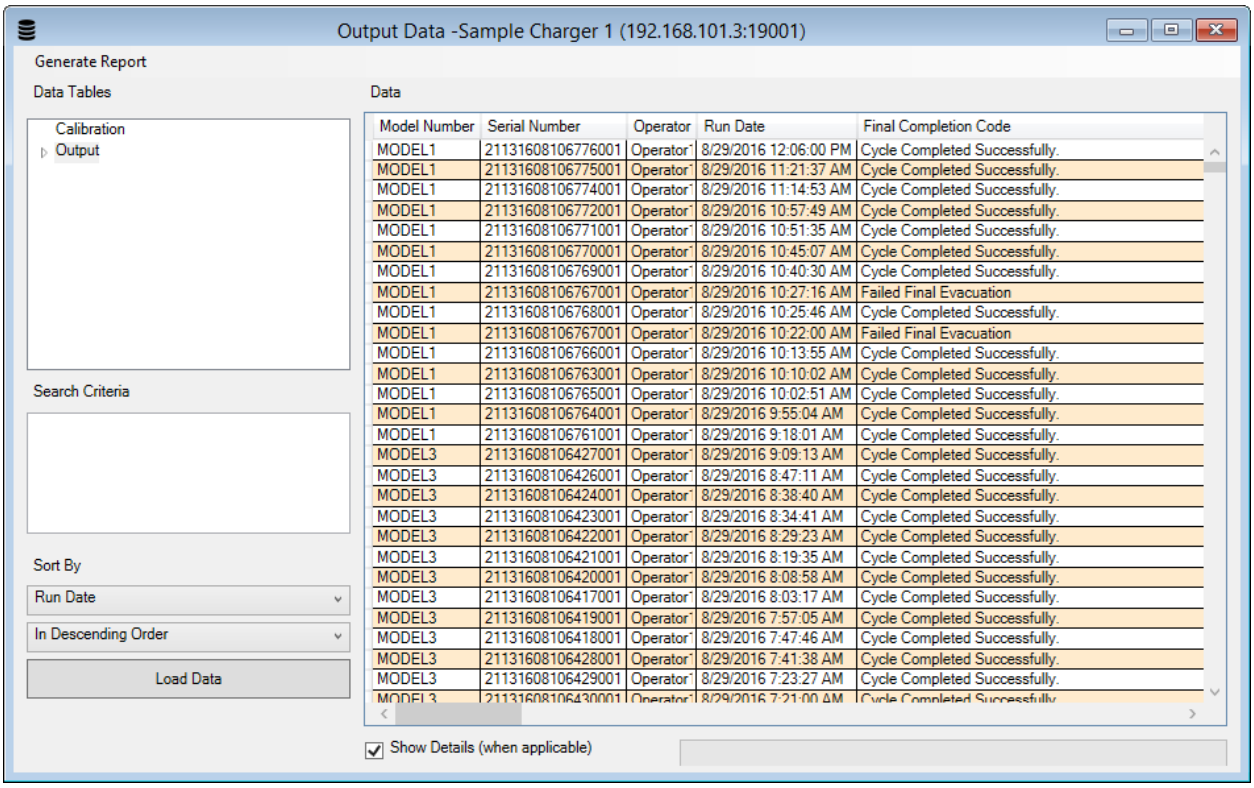
As previously stated, just loading data is as simple as selecting a table and clicking the "Load Data" button. Usually, when loading data, the intent is to find something specific. This is what the Search Criteria list and the Sort Controls are for.

To sort, the user picks a field from the first Sort drop-down list. A typical selection would be the "Run Date" or "Cycle Data" field. Next, a sort direction must be picked, in the case of

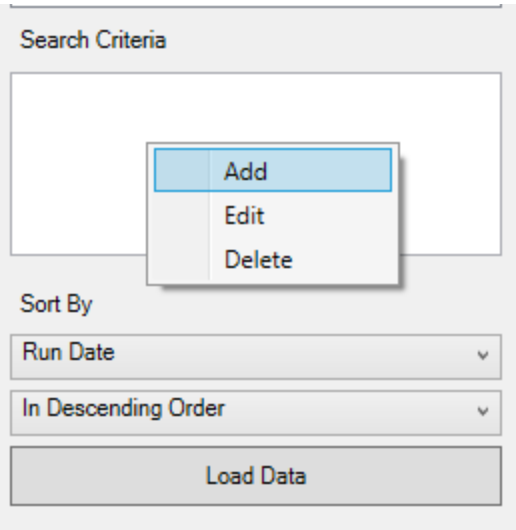
Date/Time fields, “Descending” is the obvious choice as it will put the newest records at the top of the list. In the sample application, a sort as described here would look like this:



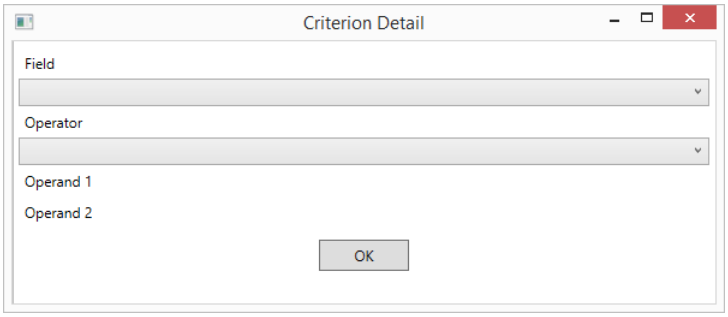
The resulting “Load Data” operation results in the following display to the user:



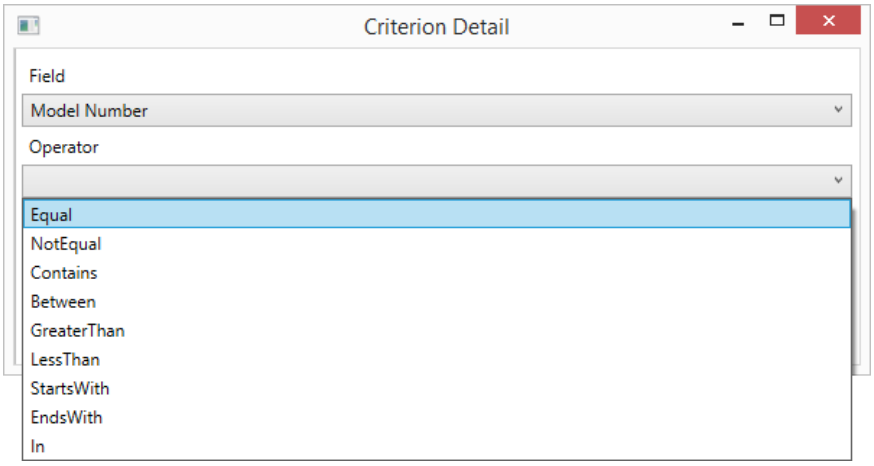
To further organize data, the user can restrict the results to a subset of the available records using the Search Criteria list. To add a new criteria, the user can right-click on the Search Criteria List and select “Add” from the context menu options.



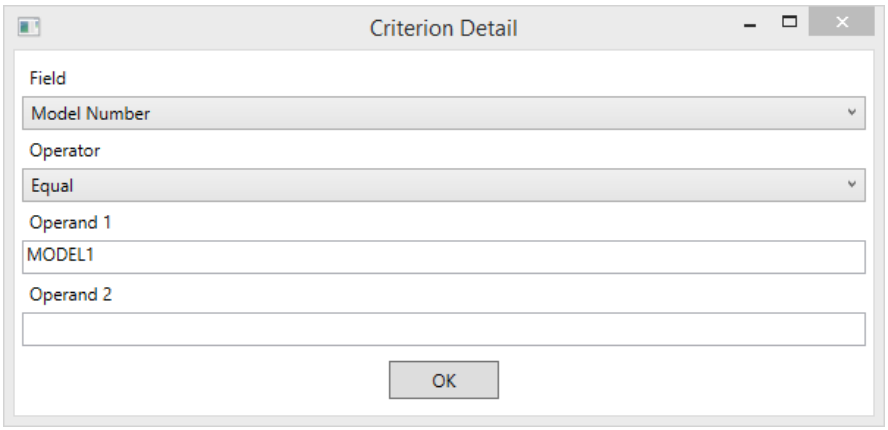
This brings up the Criterion Detail Window in “New Criterion” mode, meaning no options are selected. The Window looks like this:



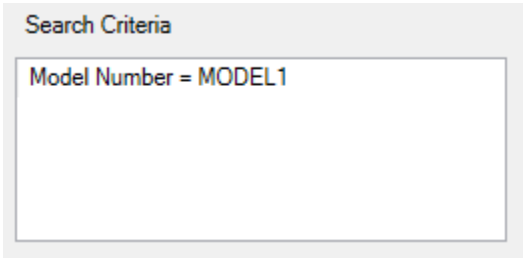
The user can now select the properties of the Criterion they wish to add to filter Output Data. The first item to set is “Field”, or the data column to apply the filter to. This example will use Model Number to get only records for a specific Model. Next, the user must select the “Operator”, or compare method, that the Criterion will use. These are comparisons such as “Equal”, “Not Equal”, “Greater Than”, etc. Depending on the data type (number, alphanumeric, date, etc.) the options for this item will be different. Continuing with the example, “Equal” will be selected.



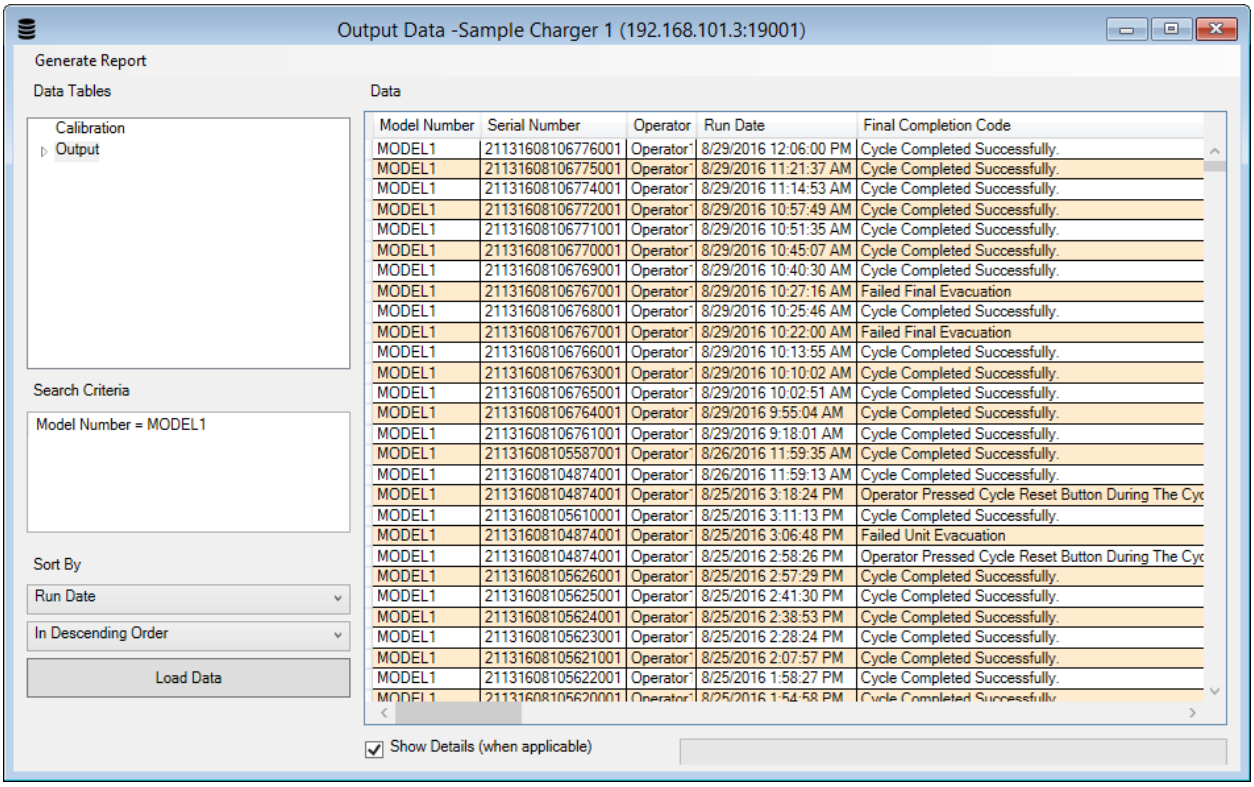
The last item the user sets are the Operands, or the values that the Operator will use to compare to the value in the Run History database. Operand 1 is always used while Operand 2 is only used with a limited number of comparisons. To complete the example, Operator 1 will be set to "MODEL1."



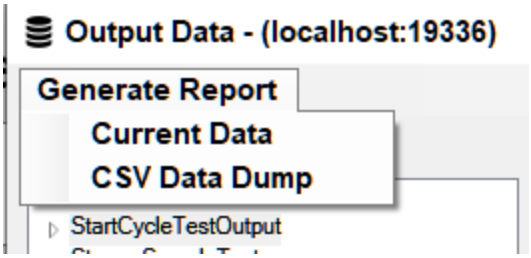
When the "OK" button is clicked, the Search Criteria List on the Output Data Viewer will be updated to show the new Criterion:



Now, when "Load Data" is clicked, only records for "MODEL1" will be included in the Data Grid:



Generate Report

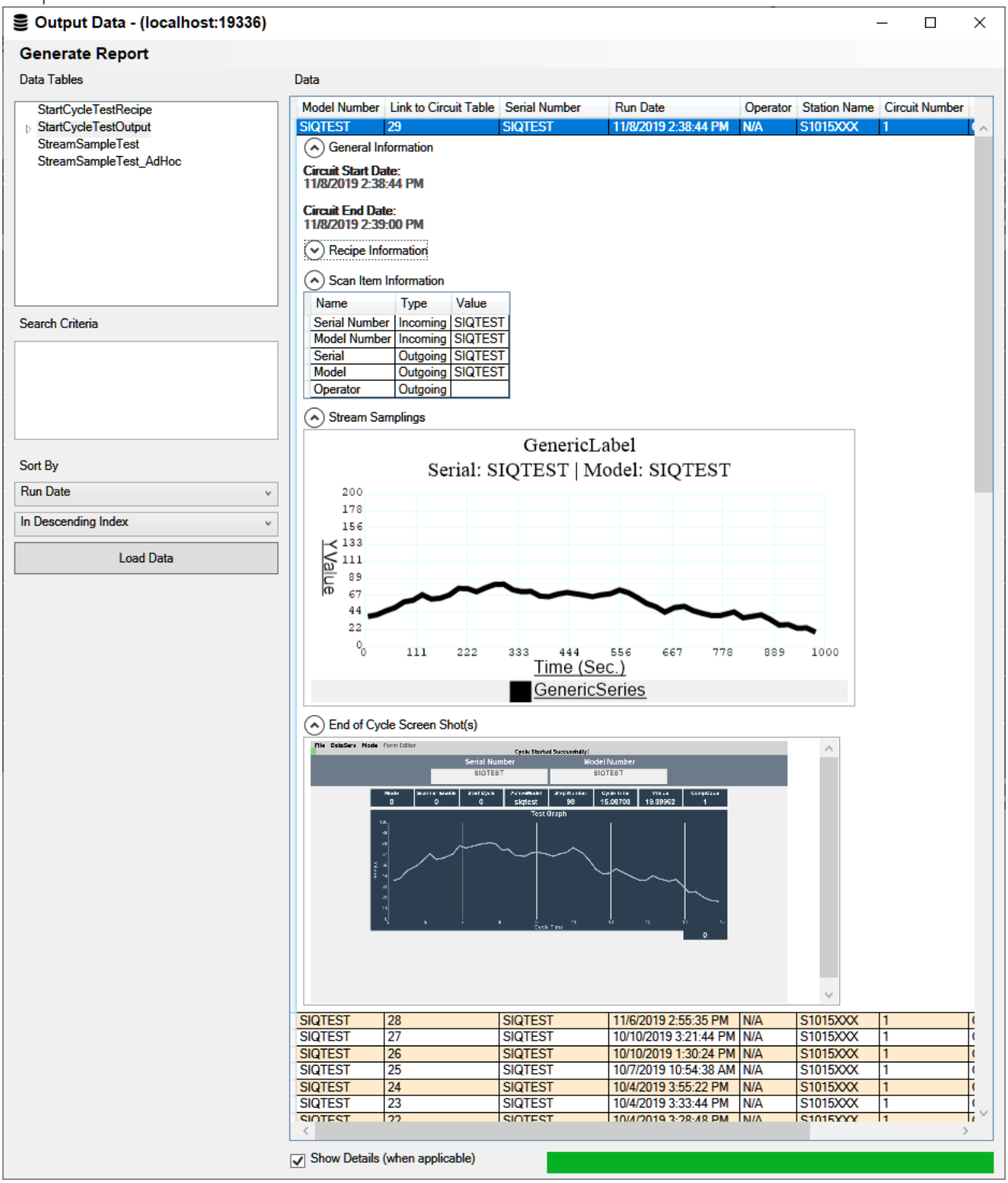


The Generate Report menu item has two options, both are used to get the currently "Data" into a different format. As such before pressing either of these buttons it is important to have only the data you want a report of "Loaded", that includes using the Search Criteria to filter the results.

1. Current Data – This generates a Excel document of the current "Data" view. The first workbook is meant to contain a "Pareto" chart of the cycle history from the view, this will include the failure codes relevant. The second workbook will contain a pre-configured excel table that can be sorted by column of all the data. ***NOTE*** This feature requires that some version of Microsoft Excel be installed on the local system to perform these advance functions. Serv-I-Quip is not reseller of Microsoft's Office suite, as such we do not include Excel by default. We typically recommend running this function from the Dashboard application installed on a system that has a known working version of Excel.

2. CSV Data Dump – This generates a “generic comma separated variable” document that can be opened in any data analysis or generic text editor. The first row will contain the raw column names, not the translations.

Output Details



When “Show Details (when applicable)” is checked, selecting a row from a table with an Arrow (▷) next to it will expand the record to include additional details.

These details can include:

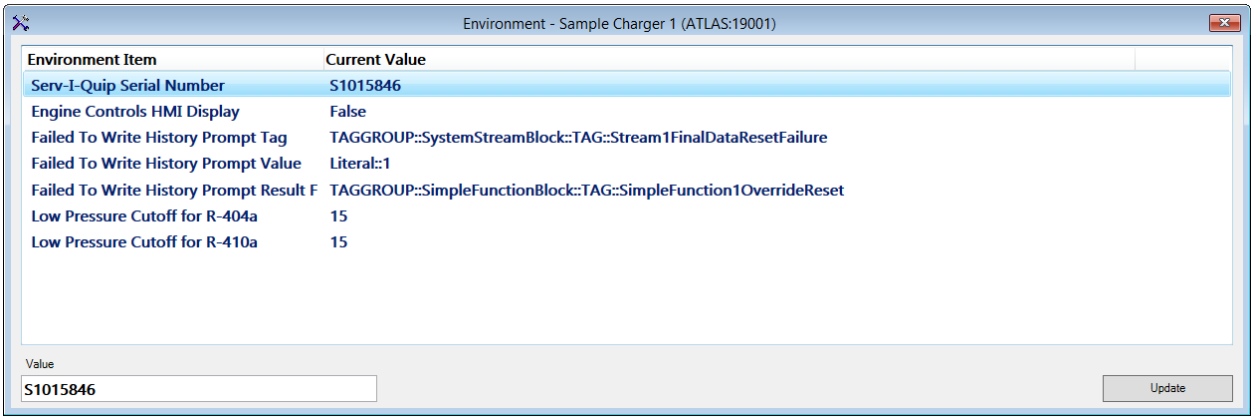
1.) Cycle Start and End Date Times, for determining wall clock duration.
2.) Recipe Information, for determining the parameters of the given Model at time of run.
3.) Watchdog Results, if a prompt was requested and the answer and or who by passed.
4.) Stream Samplings, a graph of in process snapshot data.
5.) End of Cycle Screenshot, a picture of what the operator saw when the cycle closed out.
6.) Sniffer Test Results.
7.) Print Results.

Important Note about Details

The data for the "Details" is typically stored in different manner depending on type, most will have a right click option for the type of data that is being presented, but because of this those details are not globally exportable like the regular run history. If you require this data in a report format, contact Dataserv@siqinc.com and Serv-I-Quip will help as it can. The typical solution will be to "Load" just the detail table, and export, or to load the SQL data directly through Excel or other Data Processing application.

• Environment Settings

The Environment Settings Window is where all values that are global to a particular system are kept. Most Environment Settings are not changed once a System has been installed and tested, but a few may require changes from time to time. The Environment Settings Window looks like this:



Components

1. Environment Item List
2. Value Control
3. Update Button

○ Environment Item List

The largest feature of the Environment Settings Window is the list of Environment Items. It's a two-column list with the description of the item on the left, and the current value on the right.

Value Control

On the bottom-left of the Environment Settings Window is the Value Control. When an item is selected in the Environment Item List, the appropriate type of control will appear and have the current value in it.

Update Button

If a user desires a change to an Environment Item, the value in the Value Control must be changed, and the Update Button clicked.

Changing Environment Item Values

Changing the value of an Environment Item is an easy process. The user clicks on the desired item, enters the new value or picks the new drop-down option, and clicks the "Update" button. If the value is valid for the data type of the Environment item, the update is complete.

Security

Security is a set of tools to allow only certain users to have access to specific information or make changes to the application view or configuration. The security suite included with Dataserv is all maintained on a per-system basis and challenged through the Dataserv Engine, this means that a user connecting through the dashboard to a system must challenge that specific systems security. If that system is un-reachable then that feature is locked out by default.

Logging In

When selecting a restricted feature, if there is no active user logged in, or the active user does not have permission to access that feature the user will be presented with a login screen.

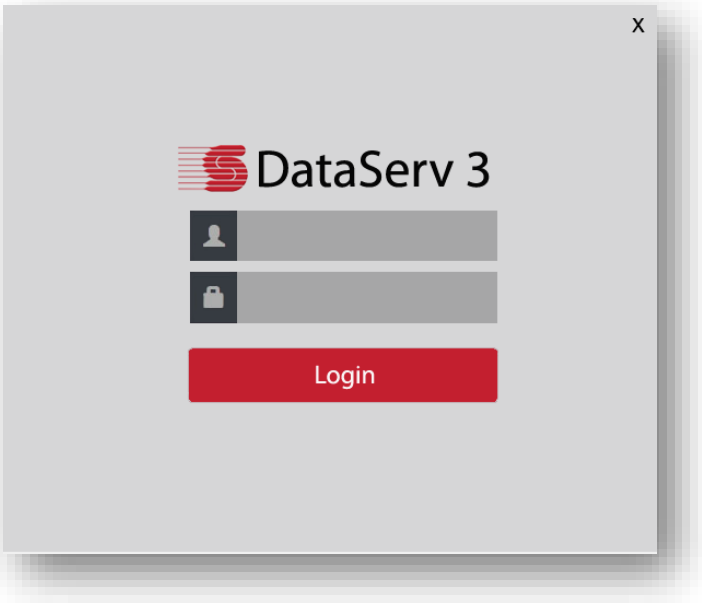


Image 18 Security Login Prompt

If there is a problem logging in a notice will pop up on the bottom of the window. For details on troubleshooting login issues please see <TODO: add link> Troubleshooting\Security.

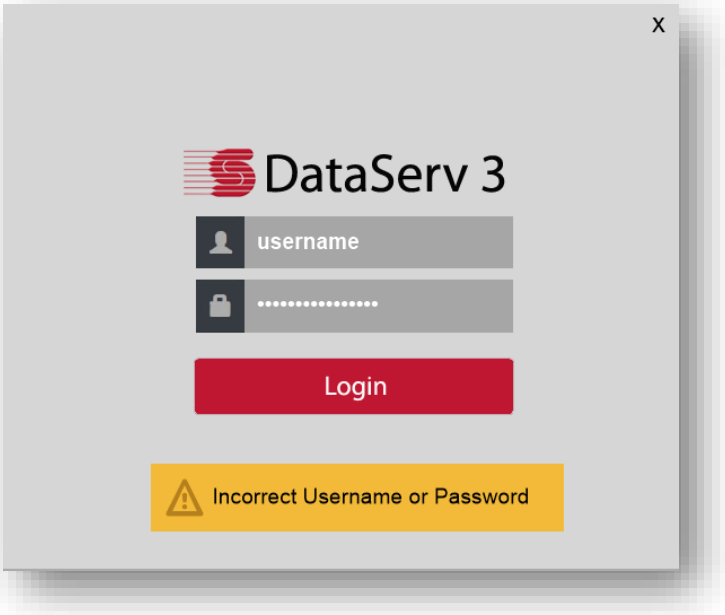


Image 19 Security Login with Failure Message

Default Credentials

The default application credentials are:

Username: serviquip
Password: dataserv

The default computer credentials are:

Username: Operator
Password: Dataserv1

- Please note, for computers supplied or joined to a customer domain, the computer credentials are likely changed. If the local account was still allowed, the default password may be `Dataserv1!` or `Dataserv1234!@#$`. Or non-existent and customer should contact their IT for computer access.

Managing Security

The Security management interface can be accessed from the Dataserv Engine Console or through the Dashboard for a specific station.

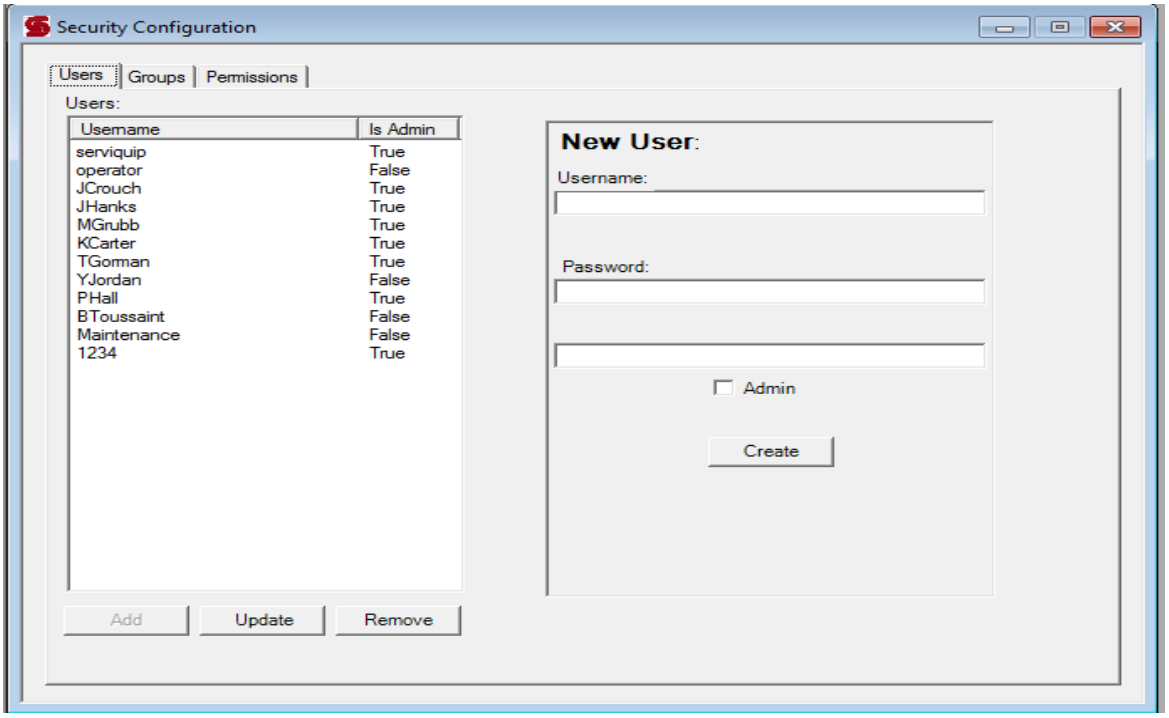


Image 20 Security New User Form

The default page of security is the list of users. A new user can be added by clicking the "Add" button on the bottom. To update an existing user select them on from the list of current users. To remove a user select them from the list and clicke the "Remove" button.

The Admin toggle for a user means that they have access to all sections by default and do not require specific permissiosn granted to them for access. Admin should only be set on user acconts that need to be able to do everything always.

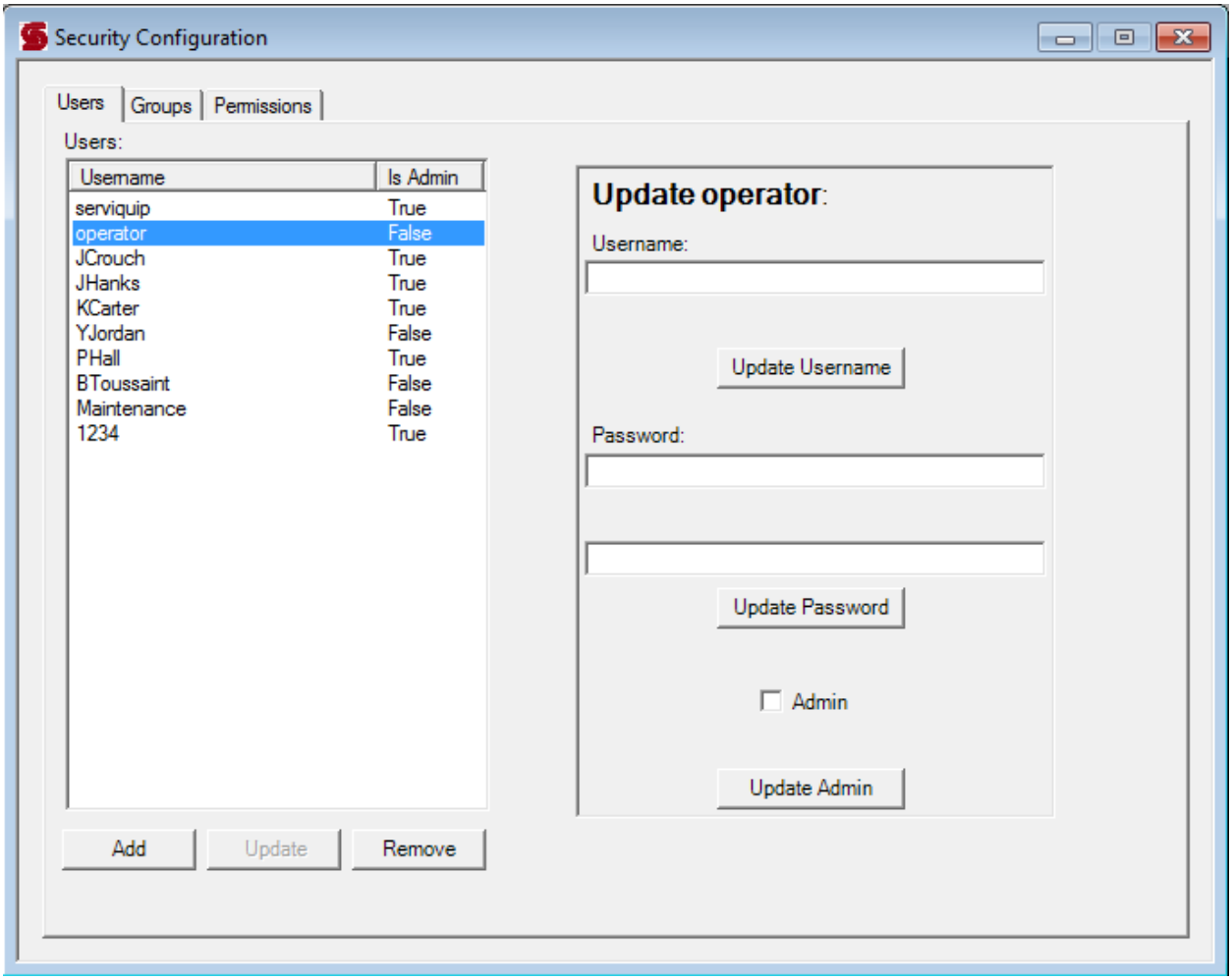


Image 21 Security Update User Form

Updating a user changes their general account information. If there is an issue updating a field a message will be displayed near the issue in red, giving you information on how to solve the problem.

Security Groups

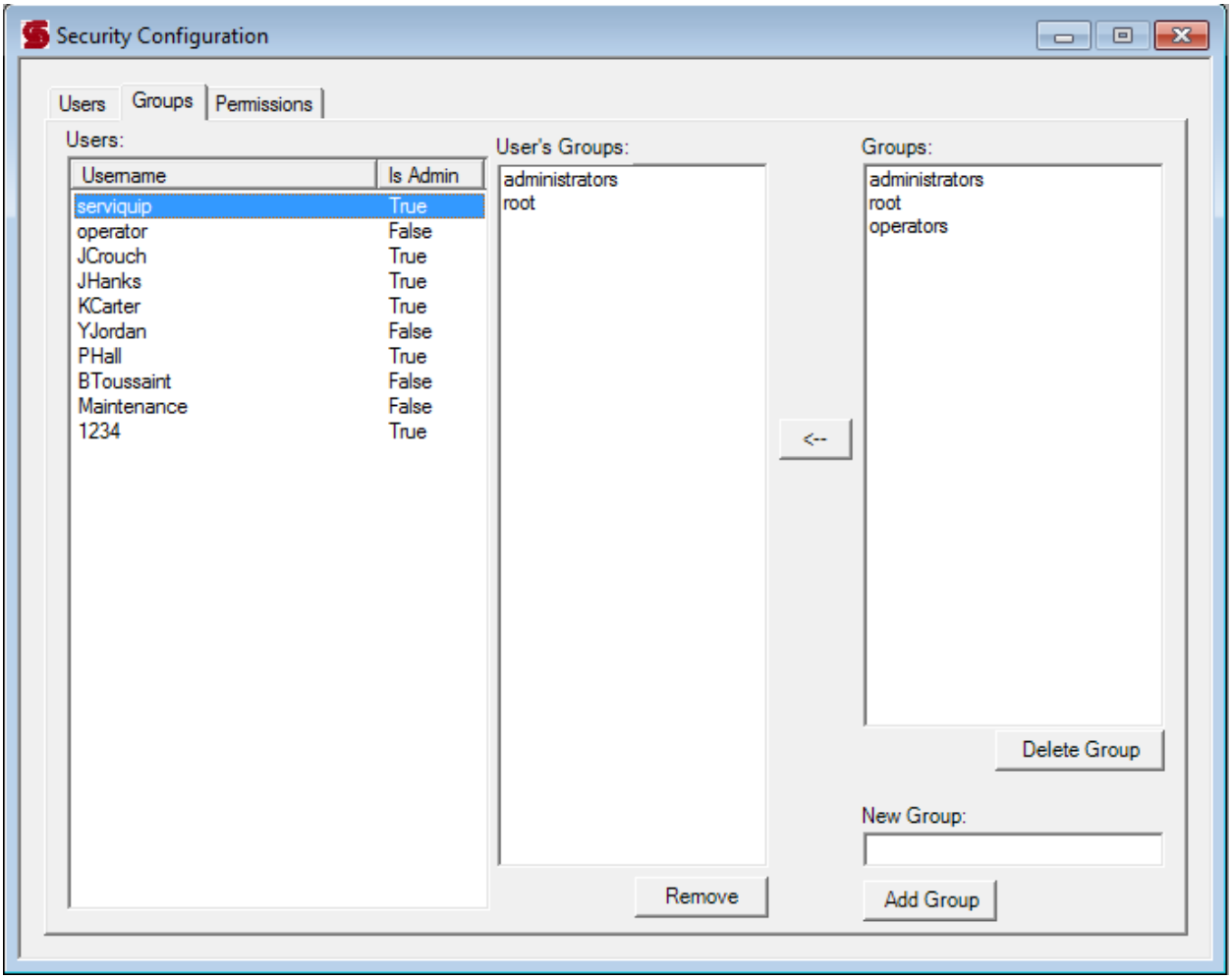


Image 22 Security Update Groups Form

Security Groups allow you to change and grant permissions for multiple people without having to edit the permissions for those people individually. For example, it is recommended that if you create separate users for each of your Maintenance personnel that you make a Maintenance group and administer their permission through that.

The all available Groups are listed on the right side. A new group can be added by entering a name under “New Group” and clicking Add Group. A Group can be deleted by selecting it from the “Groups” list and clicking “Delete Group”.

Selecting a user from the “Users” list will populate the “User’s Groups” with all groups they currently belong to. To add a member ship to this user select a global group from the “Groups” list and click the “←” button. To remove membership highlight the group you wish to remove from the “User’s Groups” list and click the “Remove” button underneath.

Security Permissions

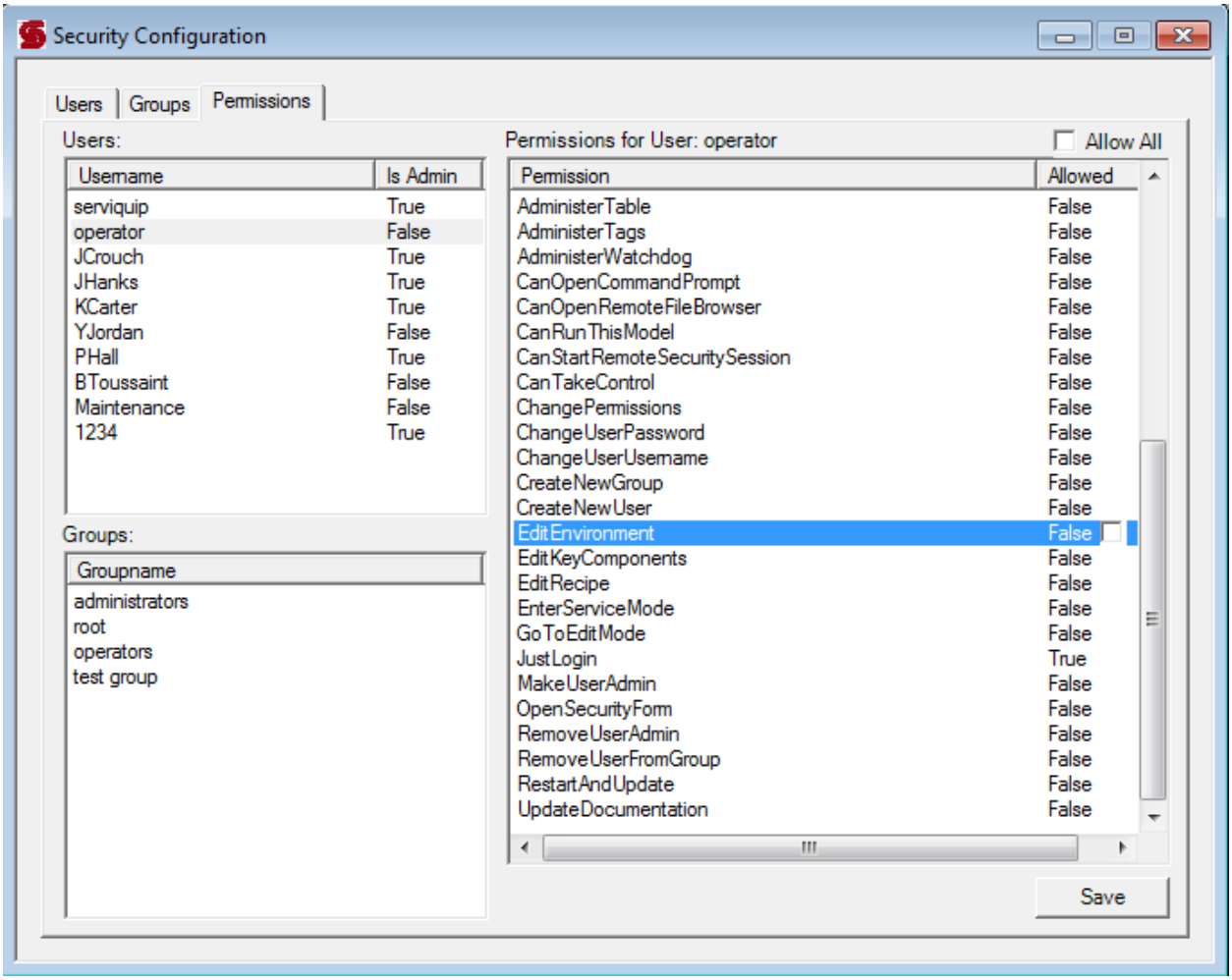


Image 23 Security Edit Permissions Form

Permissions are what we check to see if a user has access to a given feature or interface of the Dataserv Application. If a user is listed as “Is Admin” – True then they have access to everything regardless of the explicit permissions of their user or group membership.

When we challenge a given user’s permissions we check whether the “Allowed” is true for either their user itself, or any of the groups that user belongs to as described in the Security Groups section.

To change access for a user select them from the “Users” list, this will update the “Permissions for Users” with their current explicit permissions. If you want to enable or disable all current permissions without making the user an “Admin” you can toggle the “Allow All” check box. For specific permissions, selecting the permission from the “Permissions for User” list then toggling the checkbox that appears on the right side under “Allowed” will adjust that specific permission. The same can be done for Groups by selecting the Group under the “Groups” list.

When a user's permissions get challenged we check the explicit permissions for the user, and the permissions for all of the groups that user belongs to. If any of those are set to allowed the user then passes that challenge and is allowed to continue on with the task. If the account that the user tried to access that feature with does not successfully pass the challenge they will be prompted to login with an account that does. If the user fails to login with an account that has that permission or is an "Admin" they will be prevented from accessing that feature.

List of Permissions <TODO: Should we add better descriptions or links to where these are relevant? There are also probably more, or ones for Customizations that won't show up everywhere>

AddUserToGroup – Ability to add a user to a group through security.

AdministerCircuit – Ability to access the Administration Circuit dialog.

AdministerCycle – Ability to access the Administration Cycle dialog.

AdministerEnvironment – Ability to access the Administration Environment dialog.

AdministerIDLookups – Ability to access the Administration IDLookups dialog.

AdministerKeyComponent – Ability to access the Administration Key Component dialog.

AdministerManualOperation – Ability to access the Administration Manual Operations dialog.

AdministerOutputMapping – Ability to access the Administration Output Mapping dialog.

AdministerPLC – Ability to access the Administration PLC dialog.

AdministerPrintLayout – Ability to access the Administration Print Layouts dialog.

AdministerPrintLink – Ability to access the Administration Print Links dialog.

AdministerPrintLinks – Ability to access the Administration Print Links dialog. <TODO:Check this>

AdministerPrintMapping – Ability to access the Administration Print Mappings dialog.

AdministerPrintMappings – Ability to access the Administration Print Mappings dialog. <TODO:Check this>

AdministerRecipe – Ability to access the Administration Recipe dialog.

AdministerScanItem – Ability to access the Administration Scan Items dialog.

AdministerStreamSampling– Ability to access the Administration Stream Sampling dialog.

AdministerTable – Ability to access the Administration Table dialog.

AdministerTags – Ability to access the Administration Tag dialog.

AdministerWatchdog – Ability to access the Administration Watchdog dialog.

CanOpenCommandPrompt – Ability to open a remote command prompt to the given Station's system.

CanOpenRemoteFileBrowser – Ability to open a remote file browser to the given Station's system.

CanRunThisModel – Ability to start a cycle through the "Run This Model" dialog.

CanStartRemoteSecuritySession – Is the user allowed to access this system remotely, either through the Dashboard or HMI.

CanTakeControl – Ability to take control of the Station's system remotely through the Dashboard.

ChangePermissions – Ability to change any user's permissions through the Security Configuration Form.

ChangeUserPassword – Ability to change any user's password through the Security Configuration Form.

ChangeUserUsername – Ability to change any user's username through the Security Configuration Form.

CreateNewGroup – Ability to create a group through the Security Configuration Form.

CreateNewUser – Ability to create a new user through the Security Configuration Form.

EditEnvironment – Ability to edit Environment settings through the HMI or Dashboard.

EditKeyComponents – Ability to edit KeyComponents through the HMI or Dashboard.

EditRecipe – Ability to edit Recipes through the HMI or Dashboard.

EnterServiceMode – Ability to enter Service Mode through the HMI.

GoToEditMode – Ability to enter Edit Mode on the HMI.

JustLogin – Ability to login.

MakeUserAdmin– Ability to make any user an “Admin” through the Security Configuration Form.

OpenSecurityForm – Ability to open the Security Configuration Form.

RemoveUserAdmin – Ability to revoke a user’s “Admin” status thorugh the Security Configuration Form.

RemoveUserFromGroup – Ability to remove a group from any user’s security settings through the Security Configuration Form.

RestartAndUpdate – Ability to issue a Restart and Update command remotely from the Dashboard.

UpdateDocumentation – Ability to access the update dialogs through Documentation.

- Documentation

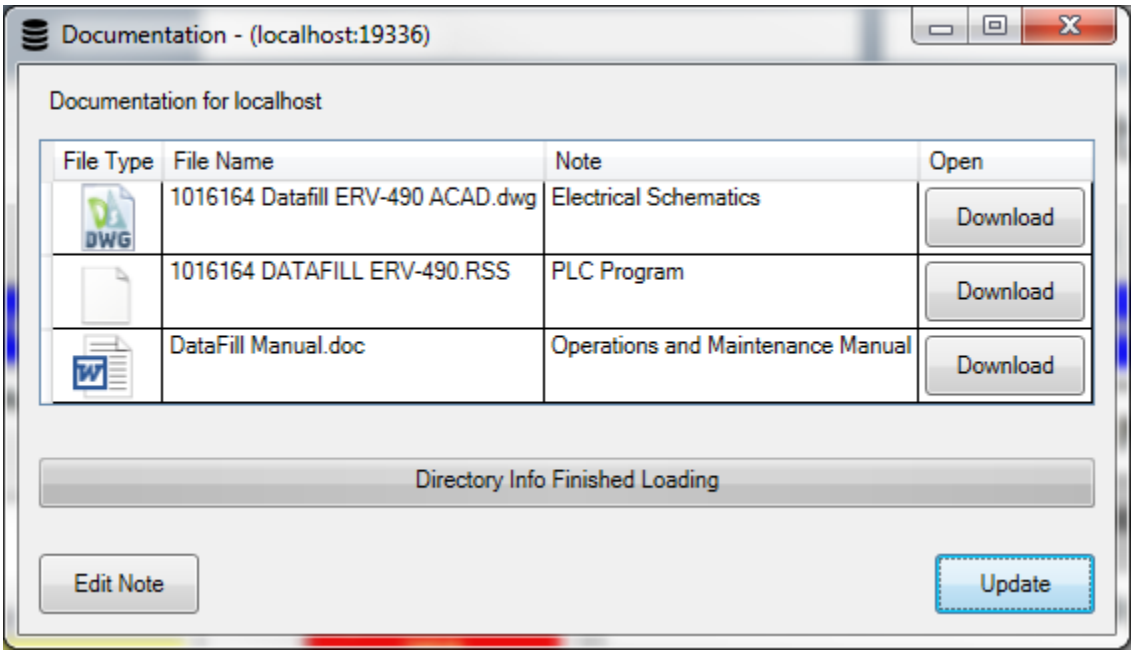


Image 24 Documentation Form

Documentation stores and allows access to any relevant digital files to a specific Dataserv system. Documentation allows for these files to be shared through the HMI or any number of Dashboard connections. Each file can have a note attached to them to detail what they are, and to whom they may be relevant. The files are only pulled from the Engine when the “Download” button is clicked, if the local file is up to date it can instead open the file immediately. The files are opened on your local system using the built in Windows file association.

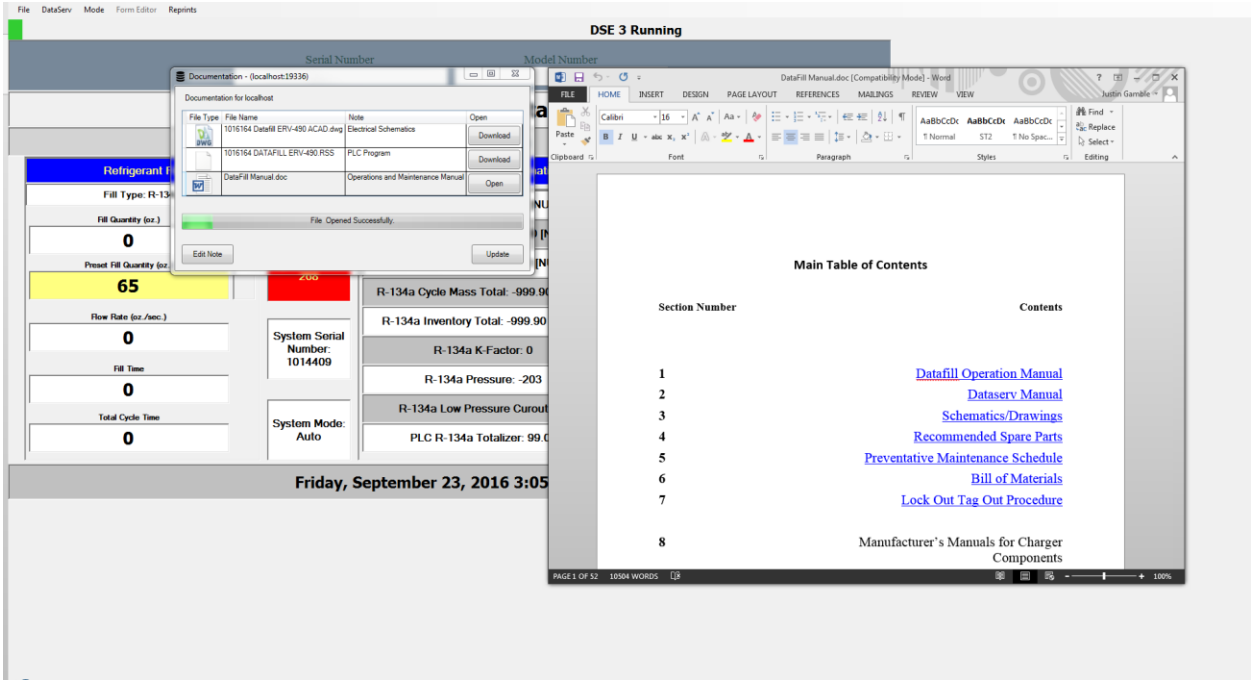


Image 25 Opening a document through the Documentation Form on the HMI.

Editing a Note

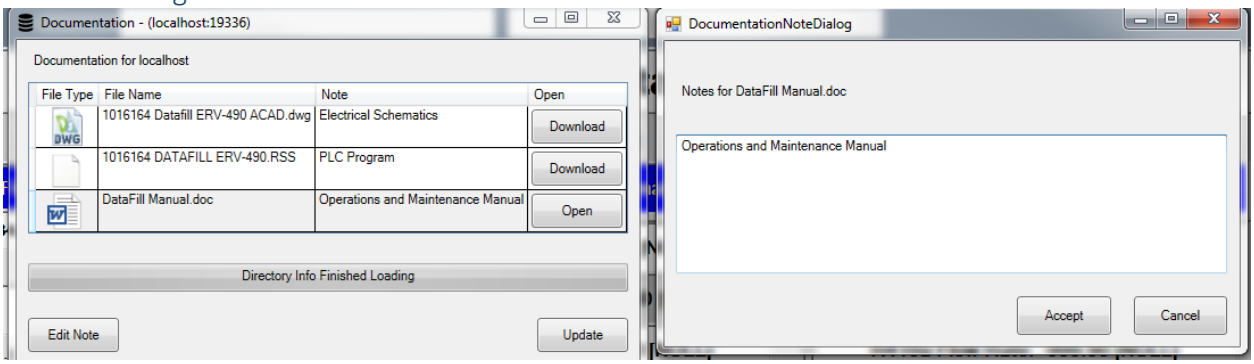


Image 26 Editing Documentation Note

After selecting a listed file and clicking the "Edit Note" button on the Documentation window, the Note dialog will come up. This allows you to put expanded relevant text that anyone accessing the Documentation for this system will be able to see. Some useful information to attach to Documentation files would be who should need to see this file (Electrical drawings of the system may be relevant to the Maintenance personnel) or when this file created (You can store production reports inside the documentation).

Updating Documentation

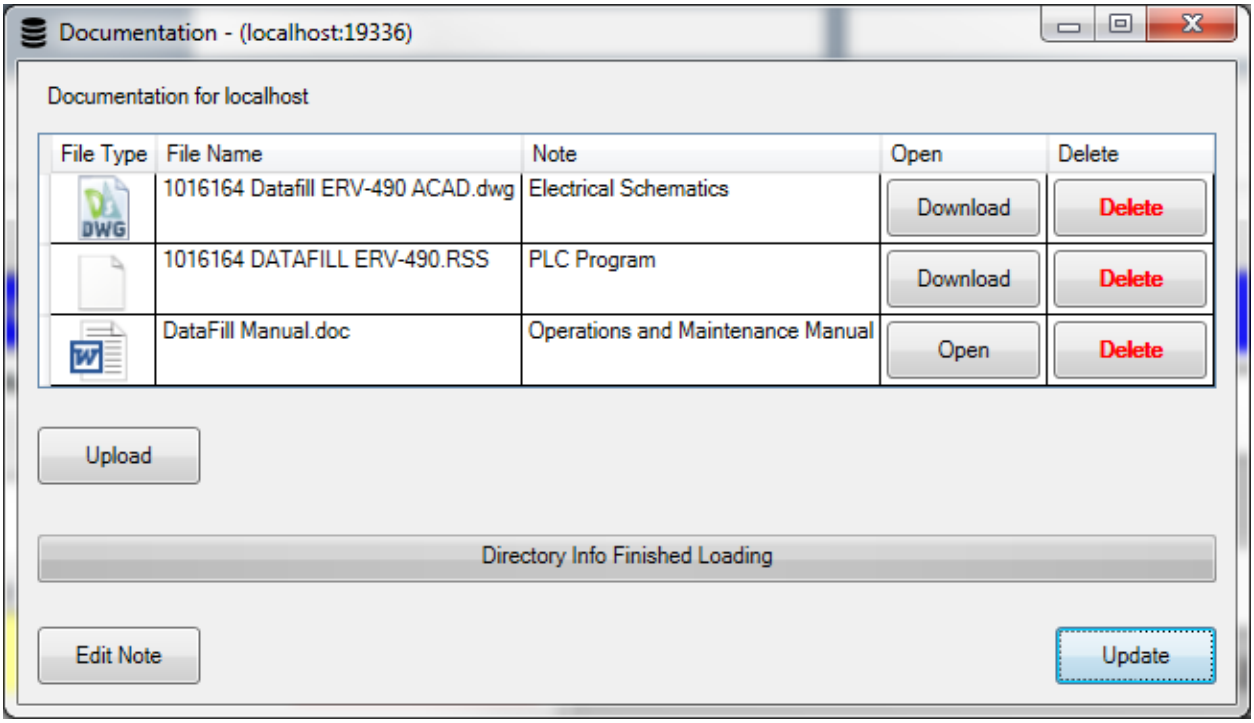


Image 27 Updating Documentation

Documents can be updated by clicking the "Update" button and passing a security challenge. Inside the update version of the form you have the ability to delete document files from the list and upload new documents. If you happen to delete a file you did not mean to, a backup is created in the Dataserv Configuration folder under Documentation\Backup. Uploading files through the Upload dialog will allow anyone with access to this station to retrieve these files.

Customizations

Option Codes

Terminology

'Serial Number' – Unique identifier for a specific unit.
'Option Code' – The Number or Text String that indicates a variance for a unit (e.g. '8050' could mean give this unit Fluid #2 instead of Fluid #1).
'Effect' – The modification to make to a base recipe when an Option Code is discovered for a unit.
'Adjustment' – Type of Effect, applied to numeric recipe field, adds or subtracts given value.
'New Base Value' – Type of Effect, sets the base recipe value to this value, adjustments can be applied on top.
'Override' – Type of Effect, applied after all other effects, set to a specific value, not adjustable by other codes.

‘Additional Code’ – Additional parameter for an Effect, only applied is the base code and this code are both present at the same time.

Purpose

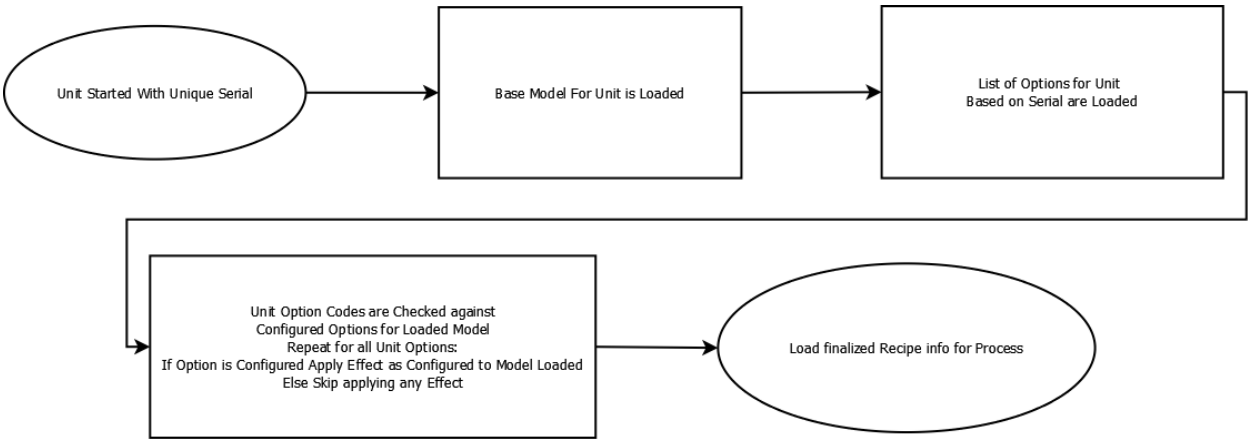
Option Codes enable a recipe to be dynamically updated at cycle initiation based on parameters besides just ‘Model Number’.

Requirements

Utilization of Option Codes requires that the ‘Serial Number’ of the unit be able to uniquely identify a list of ‘Codes’ that apply to a given unit, these ‘Codes’ are then configured on a Model by Model basis to update that model at cycle start. Typically these list of Options are served to the application through a few different means, customer defined on a per-implementation basis.

Flow

1 Option Code Flow Chart



Example Sources

SQL – A query to an SQL Table using the ‘Serial Number’ as a parameter to determine all relevant Options.

Directory – A file generated by something like SAP for each ‘Serial Number’ stored on a network share that the application can pre-process.

Flat File – A single file that contains all units that is looked through to find the Option information for a given ‘Serial Number’.

Configuration

Editing Option Codes is done through the Recipe Configuration Form (HMI and Dashboard). If Option Codes are enabled a “Modify Option Codes” menu item will be available when selecting an already configured model from the recipe list.

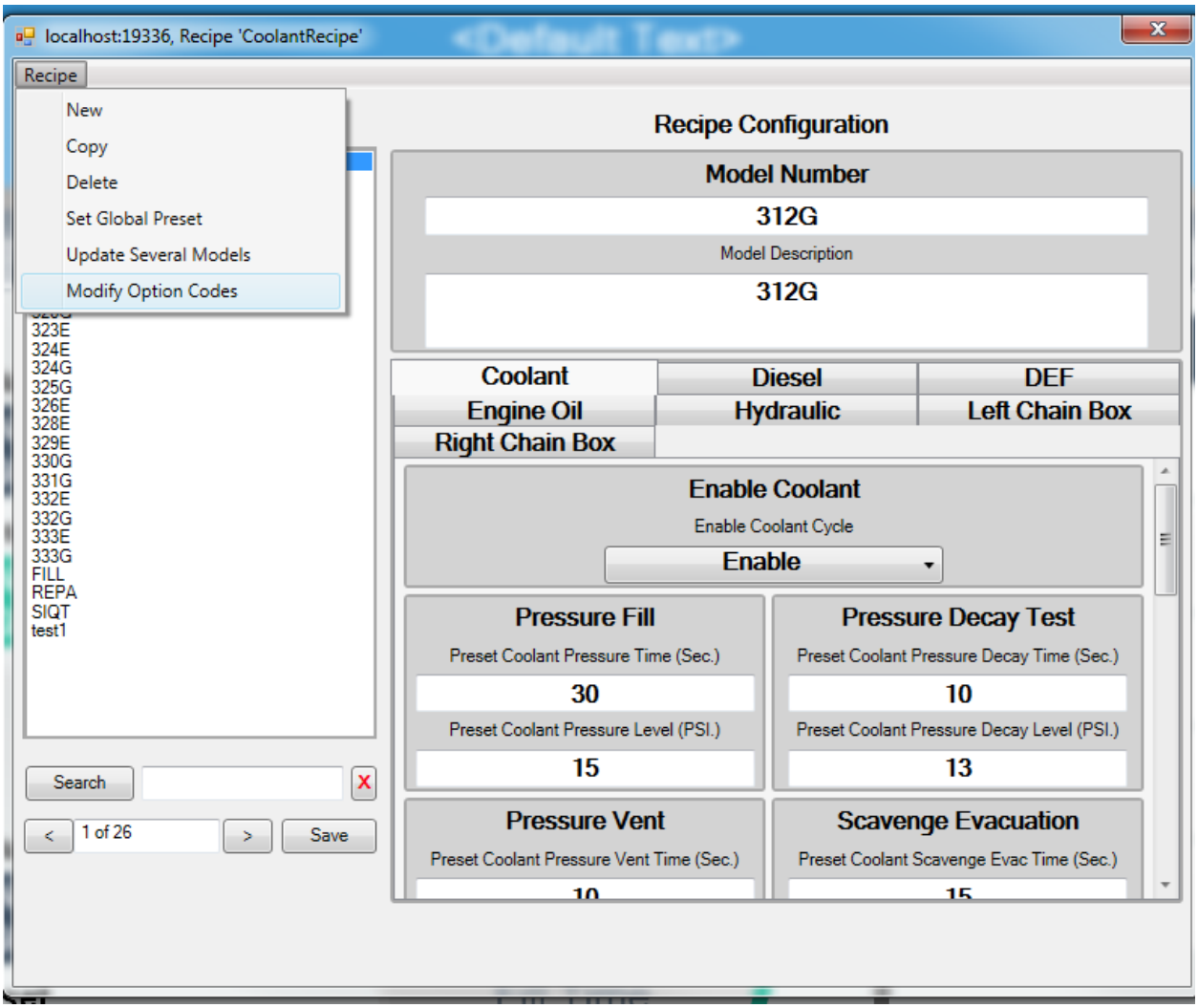


Image 28 Edit Option Codes from Recipe Form

That will then open up the Option Code Effect form for the model that was selected.

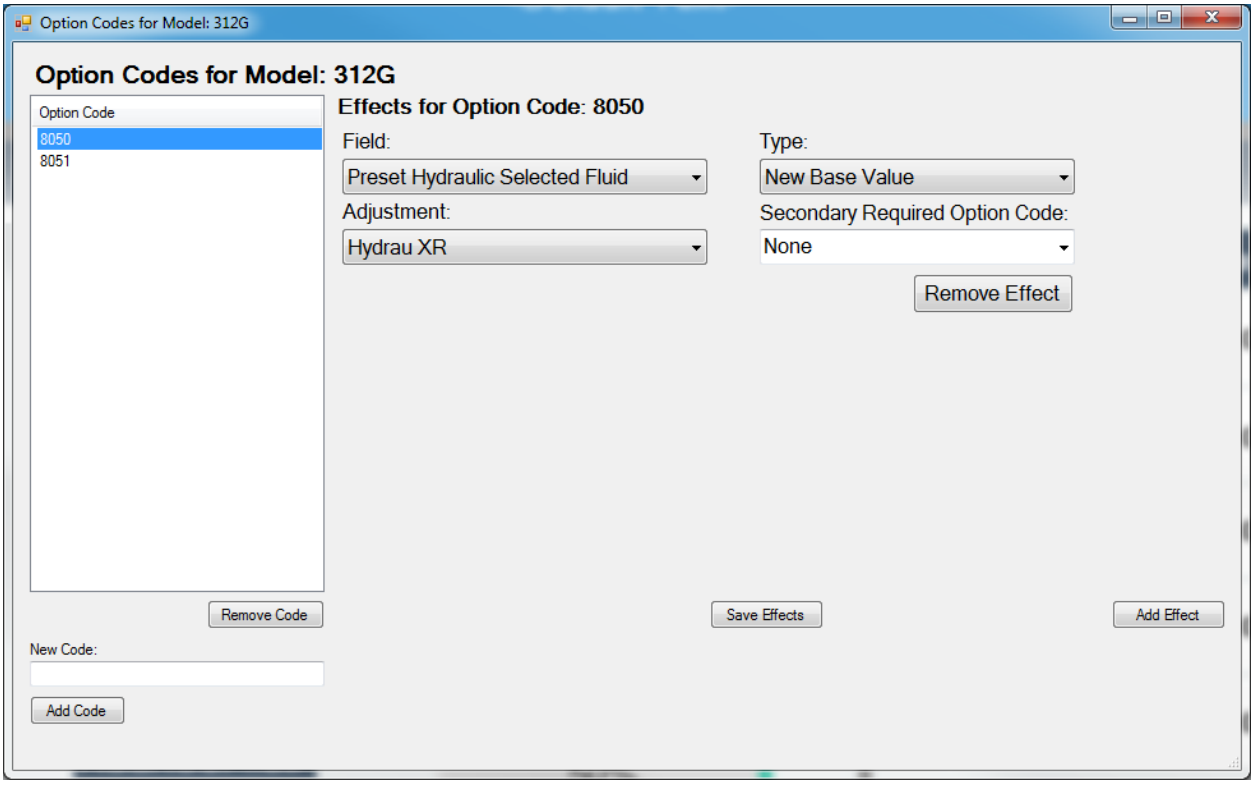


Image 29 Option Code for Model Form

The Option Code list on the left of the form shows all currently configured codes for this model. To add an additional code enter the text for the code (exactly as it will appear when queried from the source) and click the "Add Code" button. To remove a code select it from the list and press the "Remove Code" button.

When a code is selected from the list its effects will load on the right side of the form.

Field – The recipe parameter this effect will apply to.

Type – New Base Value, Adjustment, or Override; how the effect will apply to the field. (If the selected field is a Look Up, it can only be "New Base" or "Override").

Adjustment – Value to be applied, if the field a Look Up then it can only be one of the pre-configured field values.

Secondary Required Option Code – If this is set, then for this effect to be applied the selected code must also be present for the unit. The secondary code does not need to be configured separately unless it has effects that will be applied independently.

Remove Effect – Removes the configured effect from this code.

The "Add Effect" button will add a new blank effect to the selected Option Code. "Save Effect" will manually save any changes, selecting a different option code with un-saved effect changes will prompt for a save, same with closing the form.

Manual Option Code Entry

Image 30 Manual Option Code Entry Menu Item

When Option Codes are enabled on a system, the HMI will have a "Manual Option Code Entry" top level menu item. This will launch a form to do a single run where the operator is allowed to enter the required Scan Items, select the model, and input any options that are needed for the unit, bypassing the check for the unit existing in the 'Option Code Source'. This is useful if the unit was not present in the source, or the source is unreachable.

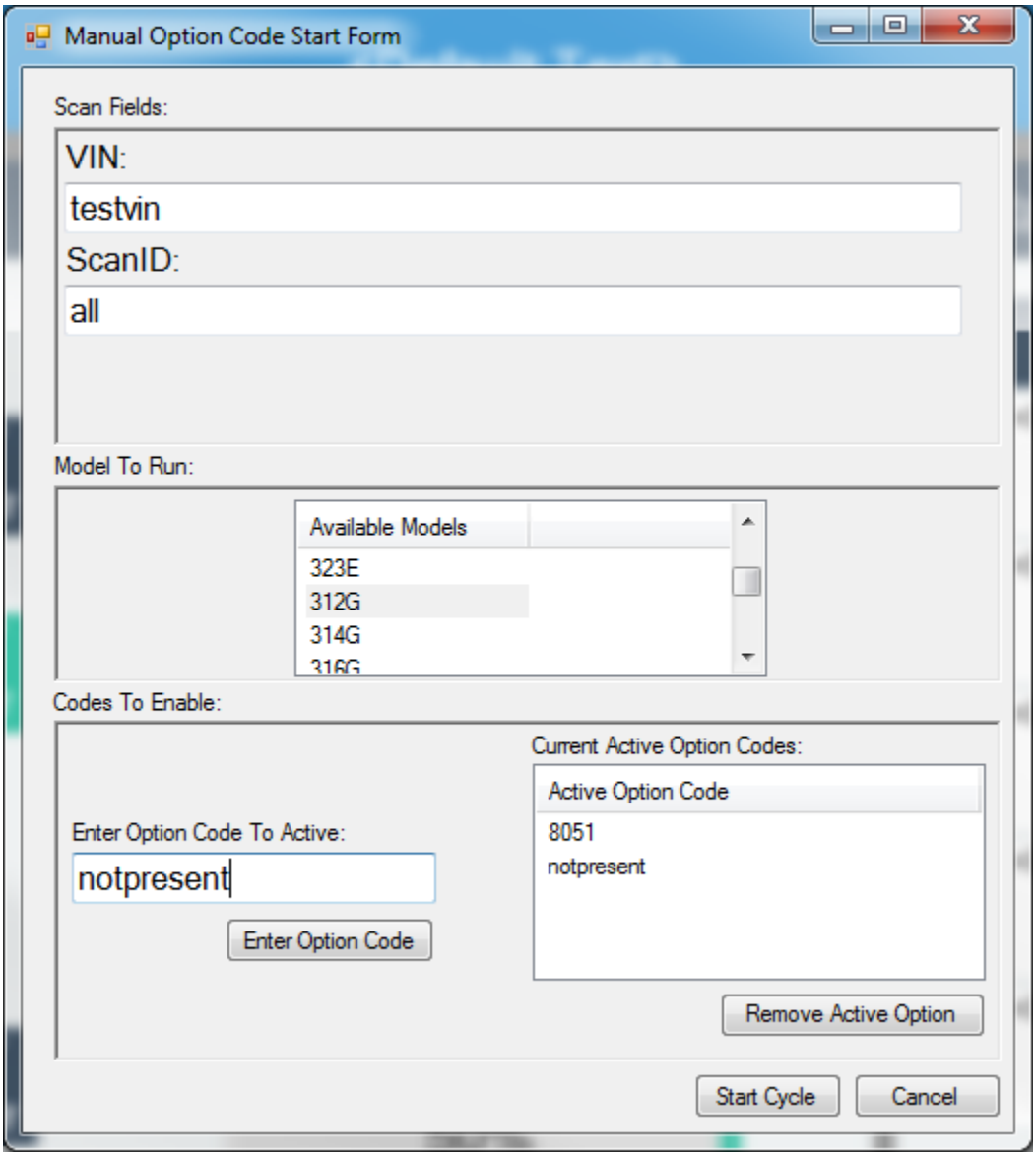


Image 31 Manual Option Code Start Form

Scan fields are required and still validated unlike "Run This Model", but the Model that is run is not pulled from it if the system is configured to do that. Any string can be entered (they do not need to be previously configured codes), but only configured codes for the selected model will

apply any effects. Pressing the “Start Cycle” button will initiate the process, using the “Active Option Codes”.

Procedures

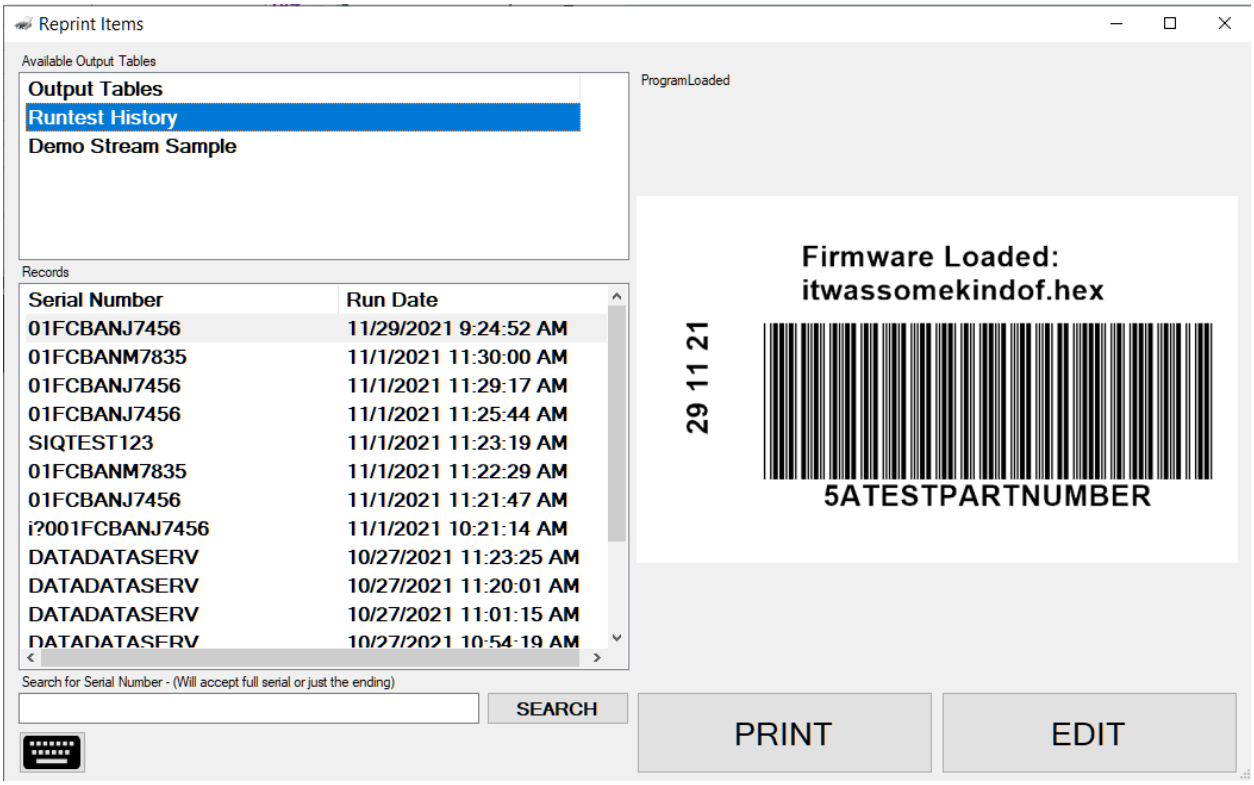
Reprints

Purpose

When a system has the printing suite enabled, the operator gains a “Reprint” option from the Dataserv HMI. This form allows for manually reprinting an existing label, or making minor text corrections and printing a new label.

Dataserv HMI - Reprint Menu Item

Reprint Item



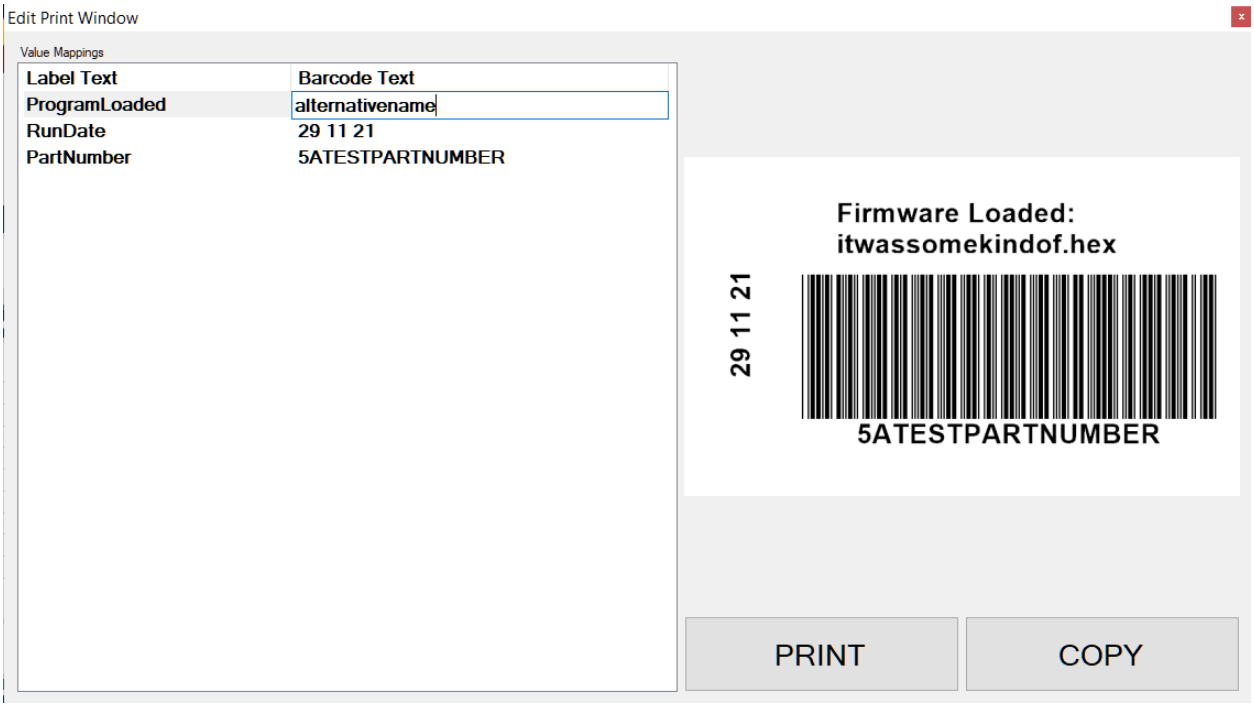
Reprint Item Form

When a label is generated for a unit, it is associated with an output record. Upon opening the form the primary table will be loaded and chronologically ordered. Selecting a record provides a view of the label that was generated, and provides an option to PRINT or EDIT.

Print

Takes the existing label and prints to the same printer as originally defined. Useful if the label was lost, destroyed, or failed to print automatically.

Edit



Reprint - Edit Form

When selecting a label and pressing EDIT an additional form is launched that allows for minor adjustments to the fields of that label.

To edit a field:

- Double click the “Barcode Text” you wish to edit.
- Change the value
- Press the ENTER key on the keyboard to submit the change.
- The label will then re-render with the change.
- Print will send the edited label to the standard printer, Copy allows the edited label to be pasted into a document (email, word).

Taking and Restoring Backups

Purpose

Having regular backups of the Dataserv Application is important so that if there is ever an unexpected issue with the computer running the application, downtime can be significantly mitigated. The recommended procedure is detailed below, Serv-I-Quip suggests taking a backup before and after any major updates to the application take place (i.e., major changes to recipes or actual configuration changes to, but not limited of, Scanner, Database, and Messages). It is always better to have a backup and not need it than to need a backup and not have it, so it is recommended to also take a backup monthly if not weekly.

Standard Backup Routine

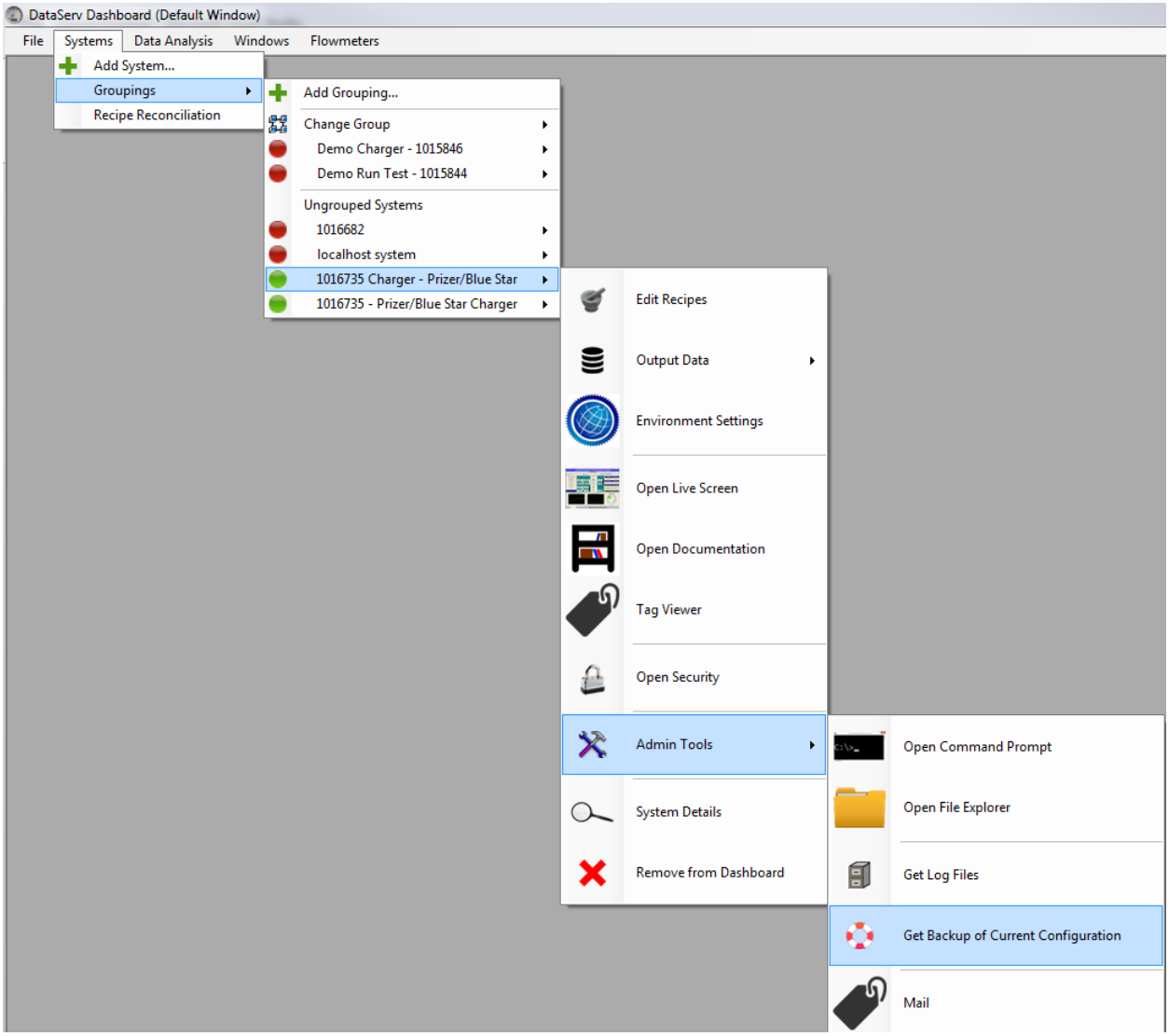


Image 32 Dashboard Backup Menu Item

The Dataserv Dashboard has a Station -> 'Get Backup of Current Configuration'.

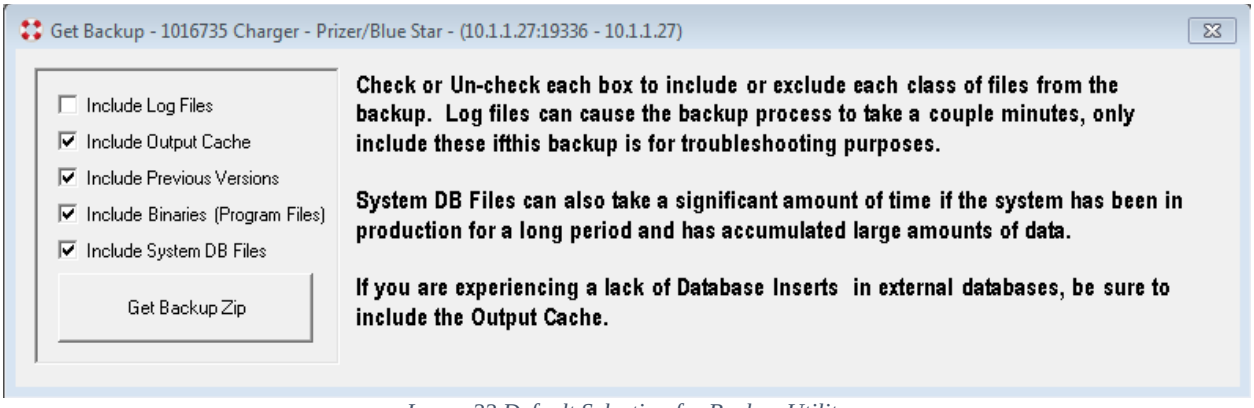


Image 33 Default Selection for Backup Utility

The default selection is recommended, this will provide all the information that is required to restore the Dataserv Application as it was running. After clicking the “Get Backup Zip” button there will a slight delay while the backup is created and sent from the remote station. Afterwards a file dialog will allow you to designate where the Backup is saved. If you have a dedicated network share for the station backup would be ideal, but store it some place you have access to and know where it will be (Default is the Dashboard install location -> files -> station connection info).

Automatic Periodic Backup

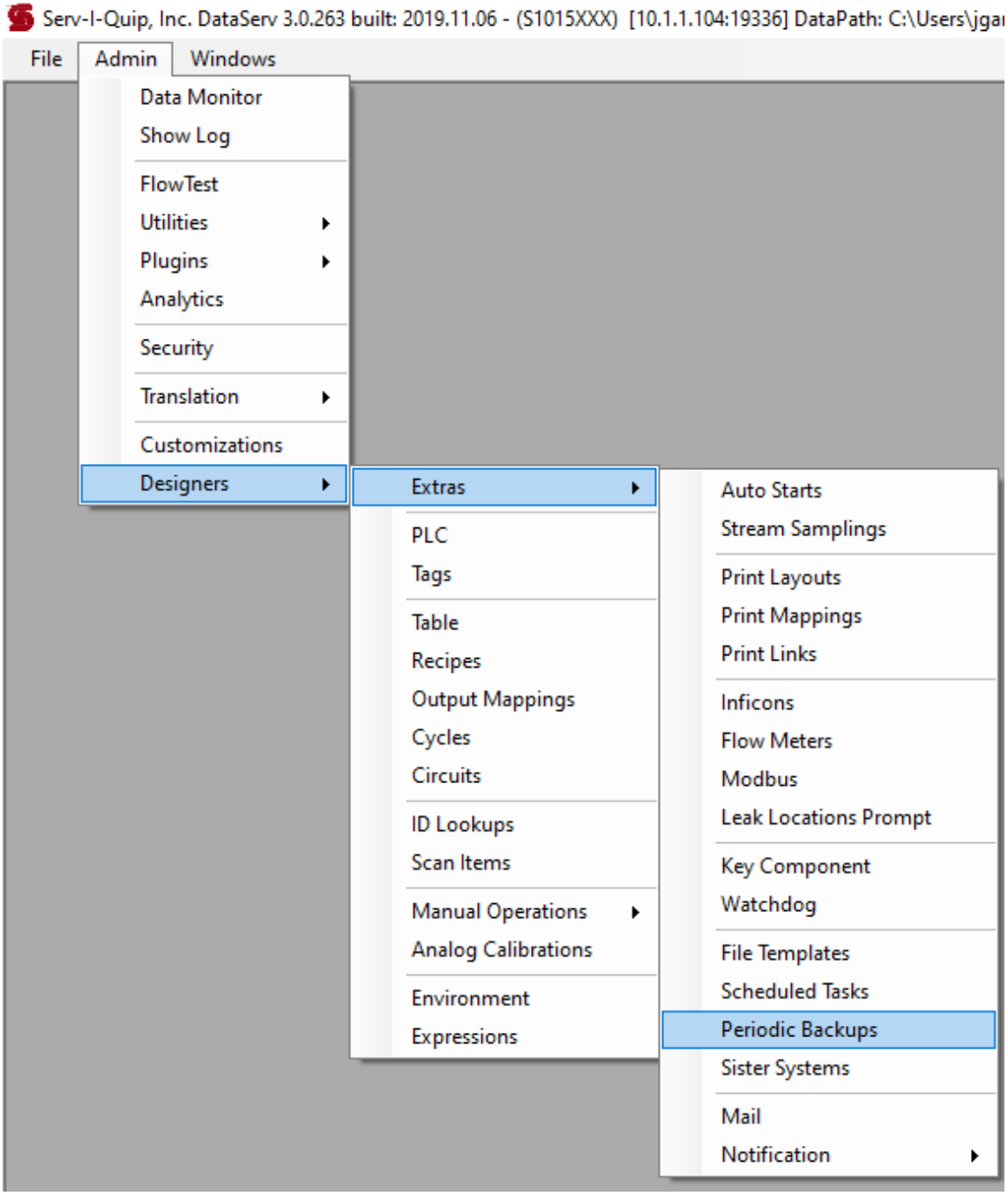


Image 34 Periodic Backup Configuration Selection

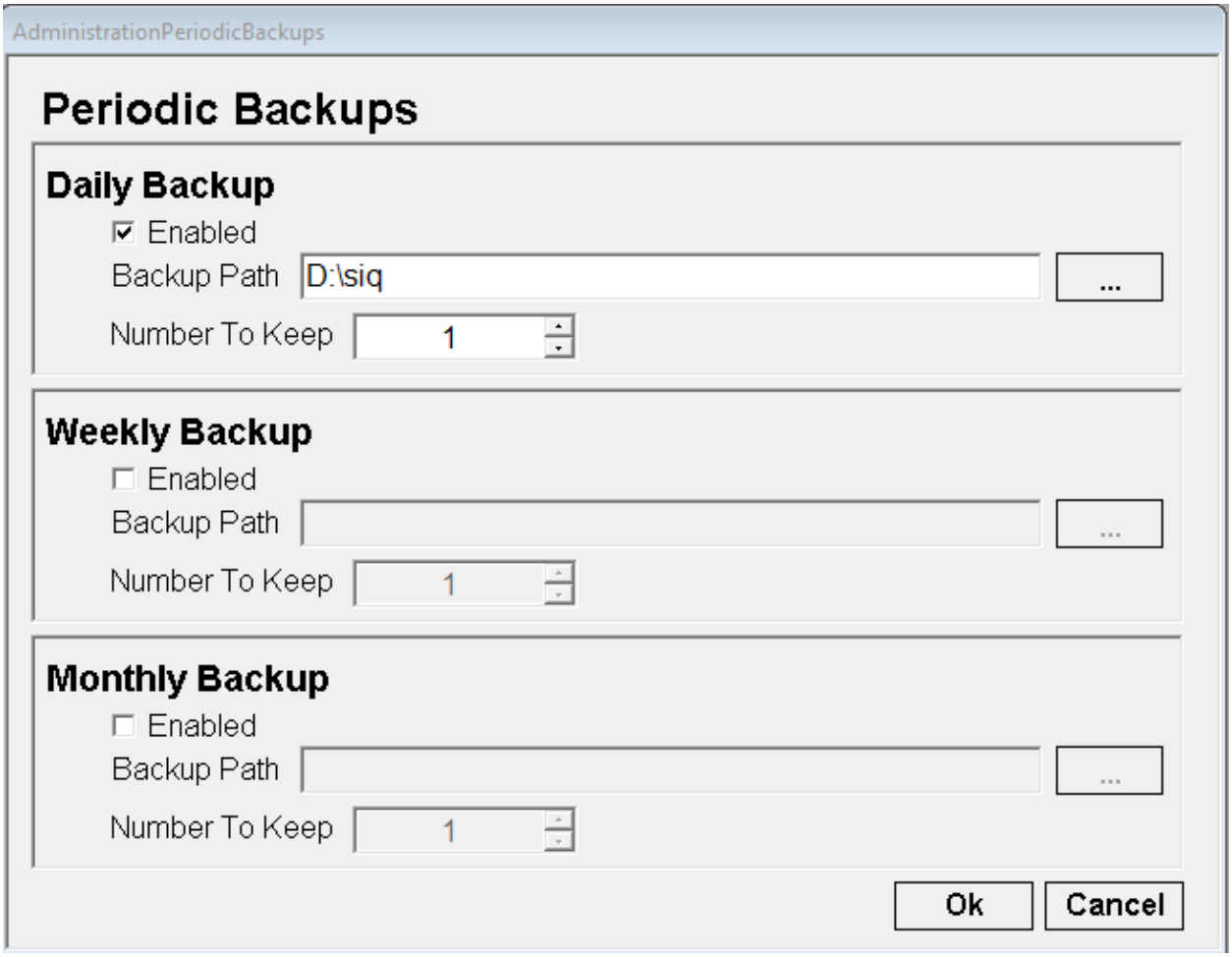


Image 35 Periodic Backup Configuration Form

The Dataserv Engine can be configured to periodically generate a standard backup file and store it in a local or mapped network path.

There are three periods of backup.

1.) Daily – Performed when the time since last backup is greater than 1 full day.
2.) Weekly – Performed when the time since last backup is greater than 7 full days.
3.) Monthly – Performed when the time since last backup is greater than 30 full days.

Each backup has the option to keep additional and cleanup out of date backups in the final location. Having a number greater than 1 is useful in case a change was made to the system that was later determined to be in correct.

The Backup Path must be an existing folder, on first run of a given periodic backup a sub-folder will be created in that directory for the period and the backup zip file will be placed inside.

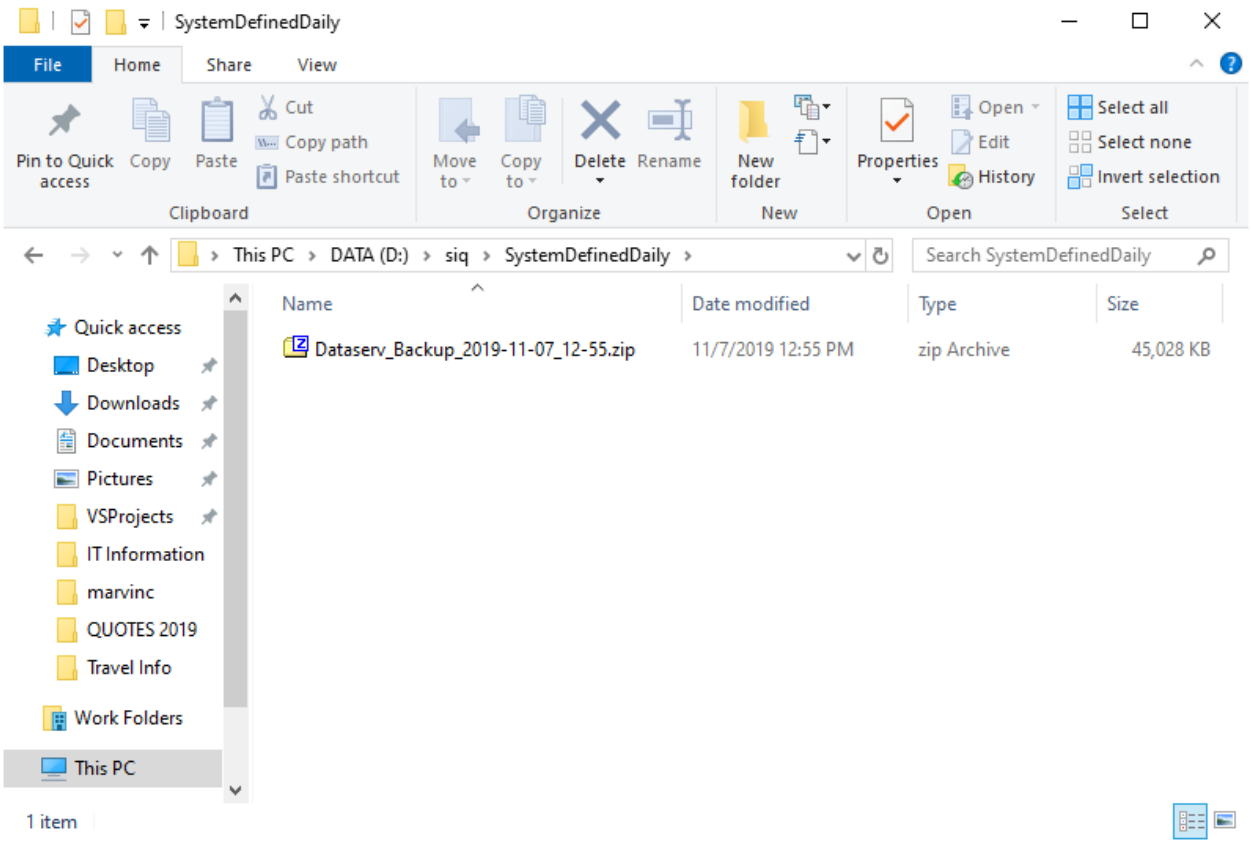


Image 36 Periodic Backup Directory Structure

If the system is shutdown or for some reason is incapable of generating a backup file, the next time the Engine is run another backup attempt will be performed.

The backup generated is the same result as running the standard backup function with all options selected (see Image 33).

Advanced/Manual Backup

The Advanced Backup section will be for IT personnel that would like to roll the Dataserv Application backup into an existing backup mechanism. There are two major components that should need to be backed up, the application install directory and the historical records database.

The application install directory by default is "**C:\siq**", this is where the application, configuration, and any required utilities will be installed on a Dataserv 3.0 system. If only periodic configuration backups are desired, that path is "**C:\siq\DSE 3.0\CONFIG**". A single "c:\siq" backup will be required to restore, but after startup a config only backup will get the majority of changes that will be made.

The historical records are stored in a local Microsoft SQL Server instance on the system, all inside a "Dataserv" database. Default instance credentials are username: "sa", password:

"Dataserv1". If a SQL server backup is not possible, a data backup to a flat file is possible, but not recommended for standard backup procedures.

Install Prerequisites on New Computer

If the Dataserv Application is being moved to a new system there are a few prerequisites that need to be setup before the backup can be fully restored.

UPDATED DOWNLOAD INSTRUCTIONS –

Follow this link to the Serv-I-Quip Public File Share: https://softwareupdate.siqinc.com/2019_Dataserv_Base_Install.zip (if this does not work, please contact Serv-I-Quip for download mirrors). Grab the "2019 Dataserv Base Install.zip".

Move the install zip to the desktop of the new computer, and extract the contents. Make sure that the computer has been restarted at least once before proceeding, there's an occasional issue with the windows install service and the SQL Server install routine.

Grab the Backup zip, or backup files that were made from the previous machine, and extract them in a place that is reachable from the new machine (Desktop is fine). Copy the contents of the "Binaries" directory into the extracted installer directory's "\siq\DSE 3.0". Then copy the "Config" directory into that same directory (so the path looks like "\siq\DSE 3.0\Config").

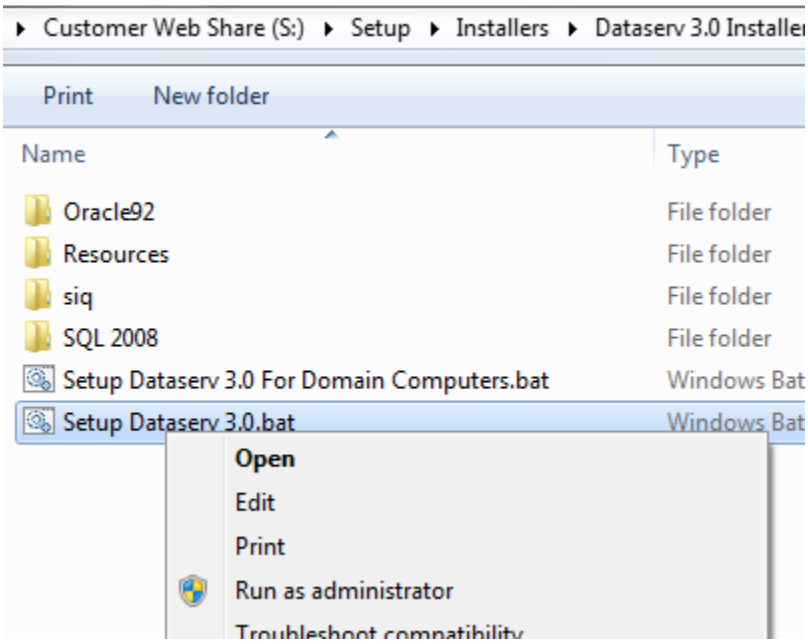


Image 34 'Run as Administrator' Dialog is required for the setup routine.

Right click and select "Run as Administrator" on the "Setup Dataserv 3.0.bat", alternatively if you do not want the computer to automatically logon to a local user account (typically for Domain computers), run the "Setup Dataserv 3.0 for Domain Computers.bat" instead.

The process will run and install all of the prerequisites. There will be a shortcut placed on the desktop of all users pointing to the Dataserv Engine executable, run this to verify that the system is setup.

Acquire License for New Computer

If DataServ was installed on a completely new computer and not just a fresh windows install than an updated 'DSELicense.lic' file will have to be acquired from Serv-I-Quip. The first time the application is run a "license prompt" <TODO: show the windows> will be displayed. Press the 'Copy' button and send the copied text to Serv-I-Quip along with any relevant details for the rebuild/system serial information, and Serv-I-Quip will return a new file with directions for installation.

Roll Back Running Installation to Backup

To restore a configuration backup that was taken, simply exit the Dataserv engine and HMI completely, and overwrite the existing "C:\siq\DSE 3.0\CONFIG" with the one from the backup.

Restoring an SQL Backup

Restoring the SQL Backup should only be done on a fresh computer that has not had any units processed yet. If the records need to be restored from a backup for analysis but were not restored before running it is recommended that a local IT personnel contacts Serv-I-Quip for directions (this requires setting up a dummy instances of SQL Server and doing a data export).

NOTE: Following the rest of this procedure will likely overwrite any existing data in the database, only proceed if you have already acquired a recent backup or exported the data for analysis.

With the backup extracted to an accessible location, open up Microsoft SQL Server Management Studio (MSSMS). If MSSMS is not currently installed on the system, and this is a new install then the SQL install likely failed, please contact Serv-I-Quip for troubleshooting tips (TODO: provide some in line tips here)

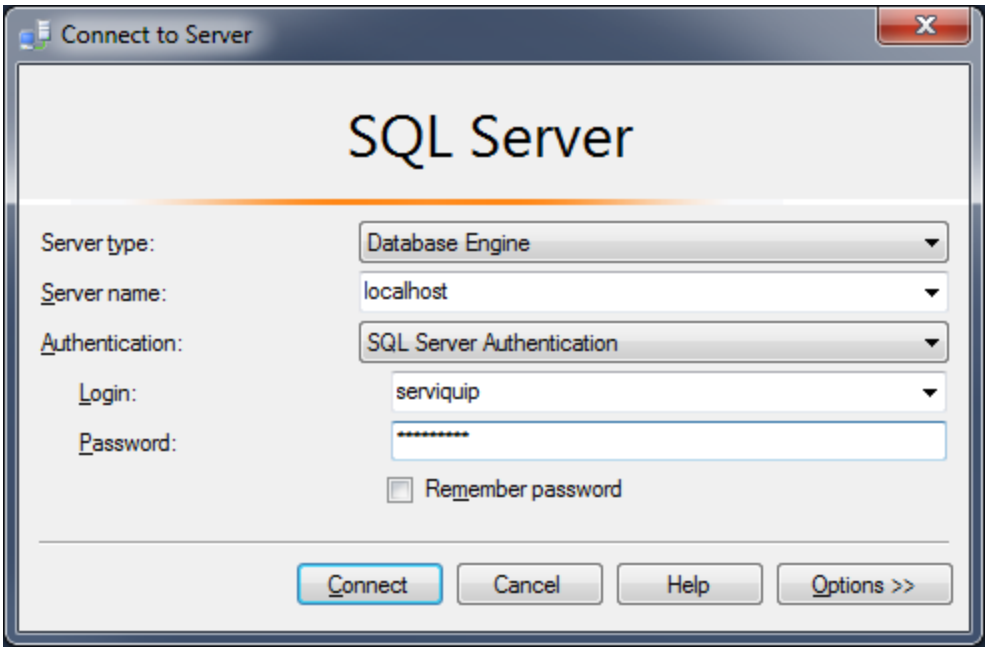


Image 35 MSSMS Connect Dialog

Logging into the local server instance should look like the above, recommended credentials are username: “sa”, password: “Dataserv1”. Under “Databases” there should be a “DataServ”, if this is a restore into a different SQL Server Instance than a new database “DataServ” should be created.

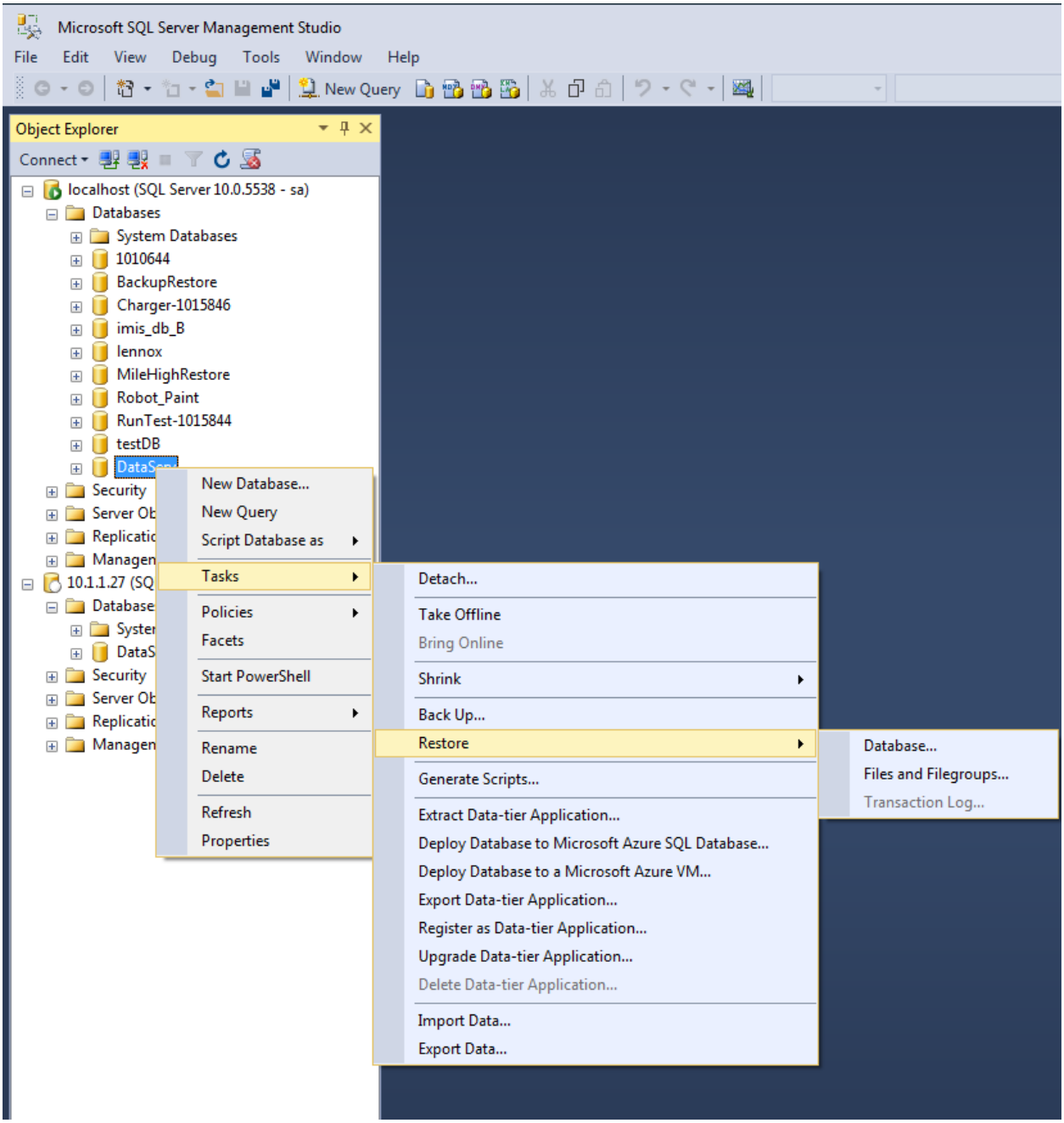


Image 36 Restore Database Task Dialog Selection

Right clicking on the “DataServ” database, selecting Tasks -> Restore -> Database will bring up the ‘Restore Database’ dialog, enter the information as the image below shows, selecting the Backup’s “dbBackup\DataservDatabase.bak” where applicable.

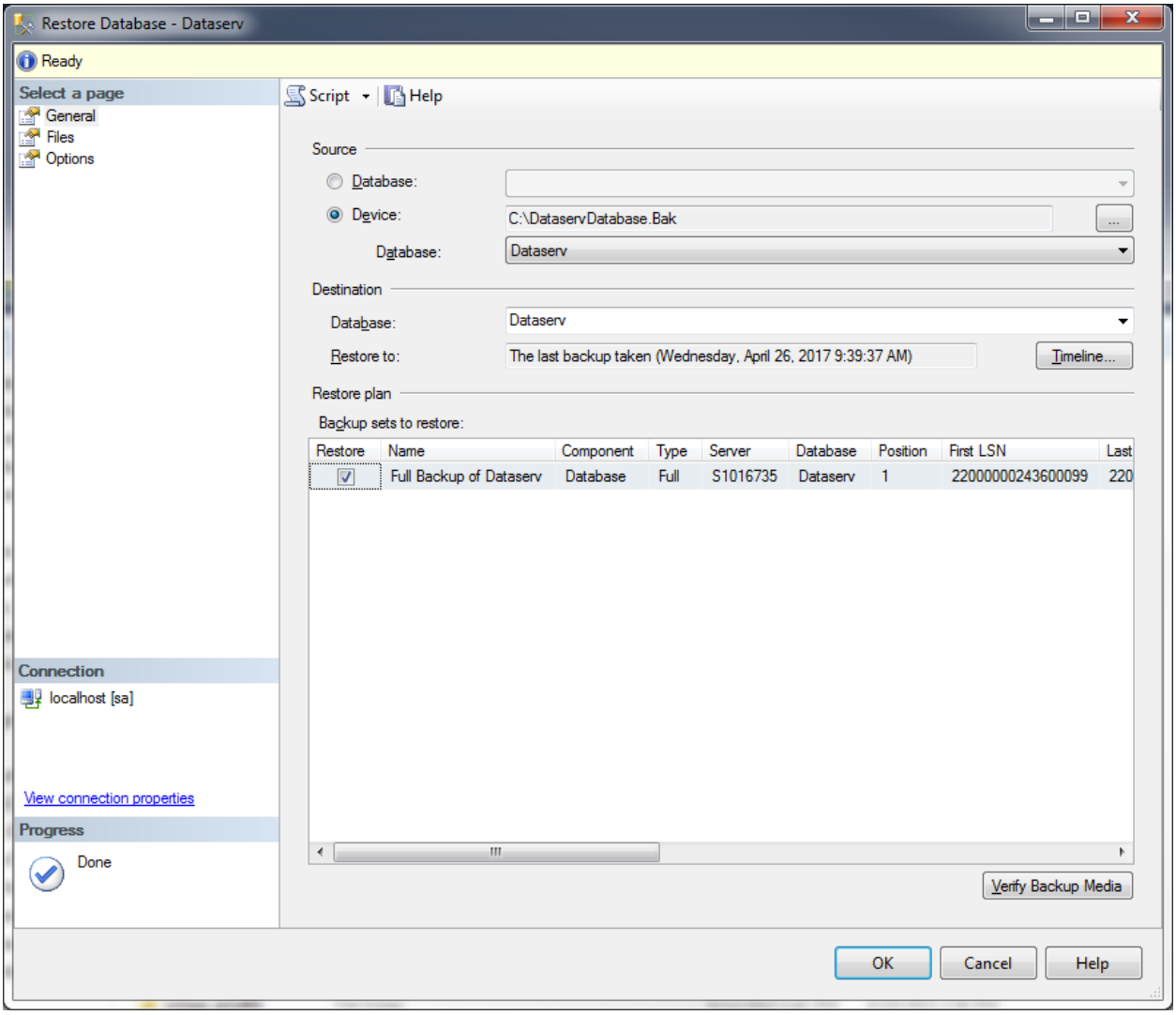


Image 37 Restore Database Dialog

Select the "Options" page and tick the "Overwrite the existing database (WITH REPLACE)" before hitting OK to begin the restore procedure. Once complete the Database is restored as it existed at the time of the backup.

Restoring to a Multi-Database Server

If the restore is being done onto a test or central SQL Server instance that contains multiple database, and may already have a "DataServ" database, then a few options need to be adjusted to allow the restore to proceed without issue.

- On the Restore Database Dialog, change the "Destination – Database:" to reflect what the final name of the database will be, something like "DataServ-Restore-#SerialNumber-#Date".
- Under the Options tab, change the "Restore As" value consistently for all Logical Files listed.

Services Maintenance

MS SQL Express

The standard install of Dataserv utilizes a local Microsoft SQL Server Express (SQL Server) instance.

Due to built-in limitations for deployment of this DBMS there is the potential to max out the standard “DataServ” database.

Limitations

SQL Server 2008 – 4GB Database size
SQL Server 2014 – 10GB Database size
SQL Server 2017 – 10GB Database size

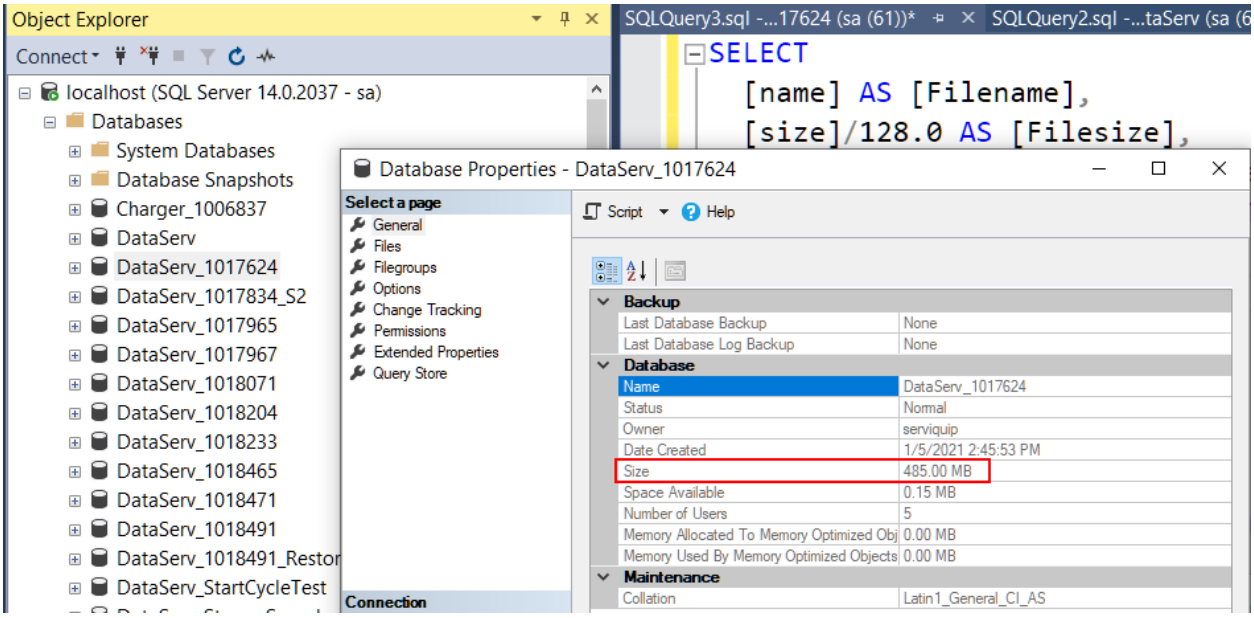
Failure

- The most common symptom of the Database hitting this size limit is that a Cycle will not be able to be started. The logs of the application will have a failure for “Inserting Row”.
- Before that, but less visibly the application will likely fail to insert history records, when the count of database write failures hits a certain threshold, the application will notify that records are not being inserted into the database.

Verification

Microsoft SQL Server Management Studio (SSMS) is also part of the standard Dataserv install, this application is provided by Microsoft to manage SQL Server instances.

Logging into the local database and selecting the `DataServ` (different names may be utilized depending on deployment) database will provide an option to open the “properties” and check the “Size” to identify if the database is getting close to this limit.



2- Database Properties with Size

Remediation

- This should only be performed by someone familiar with SQL, and under direction from Serv-I-Quip to avoid data loss.

If the system has reached this point, then the data needs to be backed up and database shrunk below the limit.

- Follow the procedure from `Advanced/Manual Backup` pertaining to grabbing a backup from the Database via SSMS.
- Check each table's storage size to identify which are most likely to have been the cause of reaching the limit.
    - Due to the resolution and details of information stored, the most likely culprits are:
        - Printing – images of print outs.
        - Stream Sampling – the period between sampling, and data types being sampled.
        - Circuit – the snapshot of the recipe parameters.
- Create a new Database on the same server (the limit is per database not per-server), and import the data from each table that is suspected of being excessive.
- Once the data is copied, select a range that is still "relevant" to production for these tables, and attempt to truncate/delete the rows.
    - Due to the size of the table, it will likely be necessary to run the queries multiple times, restarting the service (to clean up transaction logs) and shrink the database (to free up database storage) between executions.
    - Alternative: If data has been exported via other means, a quicker mitigation is to simply make a new database, run a query of `sp_changedbowner 'serviquip'` on the new database, update the table connection strings in Dataserv, and allow the application to make new tables. The values from the old database will still exist, but unless new tables are created in the application, Dataserv will not be able to utilize them.

Mitigation

- If storage space is a concern for a given deployment, this should be discussed with Serv-I-Quip during specification of the equipment.
    - If, and How Long, the SQL Server would take to fill up is entirely dependent on system Cycle Times and Production Parameters. A single cycle record rarely exceeds 20KB, and would take 500,000 cycles to hit this limit. Most records are significantly smaller than 20KB on disk.
    - The top recommendation depending on feasibility would be for the Dataserv database be homed on a remote, centralized, and managed DBMS.
- A Preventative Maintenance schedule with rolling backups/truncations can prevent the issue from occurring.
    - MS SQL supports Database Triggers that can be utilized to monitor for database usage and notify local IT of the schedule.

Glossary

Circuit

A Circuit in Dataserv is defined as an individual process within a Cycle. The term Circuit is taken from refrigeration systems where each sealed system is commonly referred to as a circuit. In a Vehicle system, each fluid or individual fill is usually defined as a Circuit. Fuel, Coolant, AC, and Transmission fluids, for example, would all be configured as individual circuits. When multiple Circuits are present, Dataserv can be configured to run them in series, in parallel, or a combination of the two. When combined with multiple Cycles, Circuits can also become Stations at a System level. A three Station System where each Station is doing a single fill would have three Cycles, each with one Circuit. When dealing with Run History, each instance of a Circuit being run generates one output row in the database.

Cycle

A Cycle in Dataserv is defined as any single Circuit or group of Circuits initiated by a single barcode scan. All Circuits within the Cycle derive Serial, Model, and Recipe information based on that scan.

System

A single Serv-I-Quip machine with a unique Serv-I-Quip Serial Number.

External Data Destinations

All Output Data for a Dataserv3 system is configured by default to store to a local instance of SQL Server Express 2008 or higher. It is recommended that a central repository on the network be added as an additional target for output data. The server that is targeted should be on a routine backup schedule to ensure no data is lost. There are two ways to add an

additional Data Destination, Automatic and Manual. Automatic can be used if the destination table matches the table definition from the current Dataserv System exactly (typically if it's a table dedicated to this specific equipment), Manual should be done if the fields have to be mapped between this system and an existing table.

Automatic

To perform the automatic remote data destination setup, access the Administration Table designer. Select the table that you would like to duplicate, right click and select "Copy as Remote". Select the new Table entry and update the connection string to point to the remote destination (database, server, username, and password are required). Save and restart to apply the change. You can verify the changes to Circuit and Output Mappings as detailed in the 'Manual' setup if required.

Manual

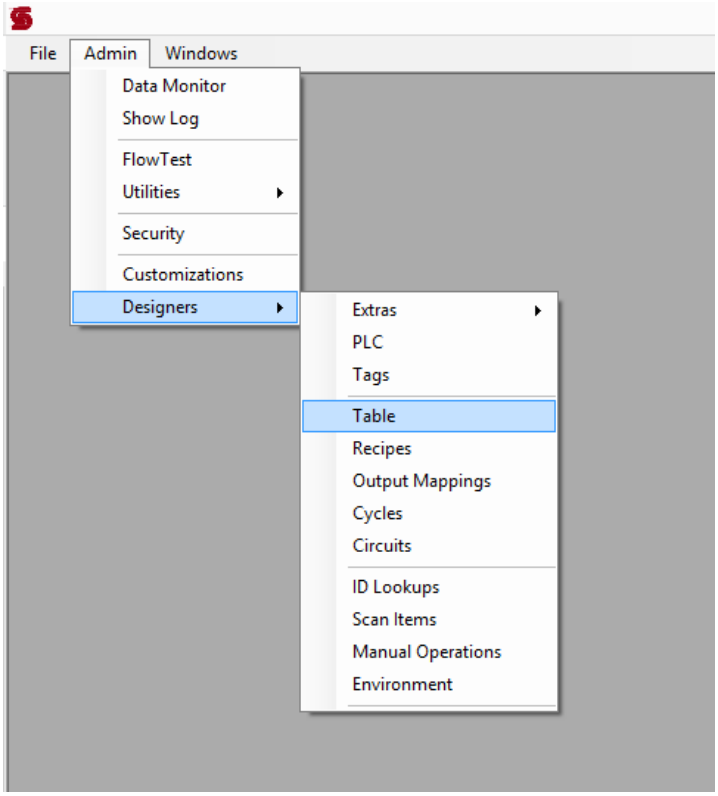
The steps to adding an additional data destination are as follows:

- Adding a Table to the Dataserv3 configuration.
- Adding an Output Mapping to the new table.
- Linking the Circuit to the Output Mapping.

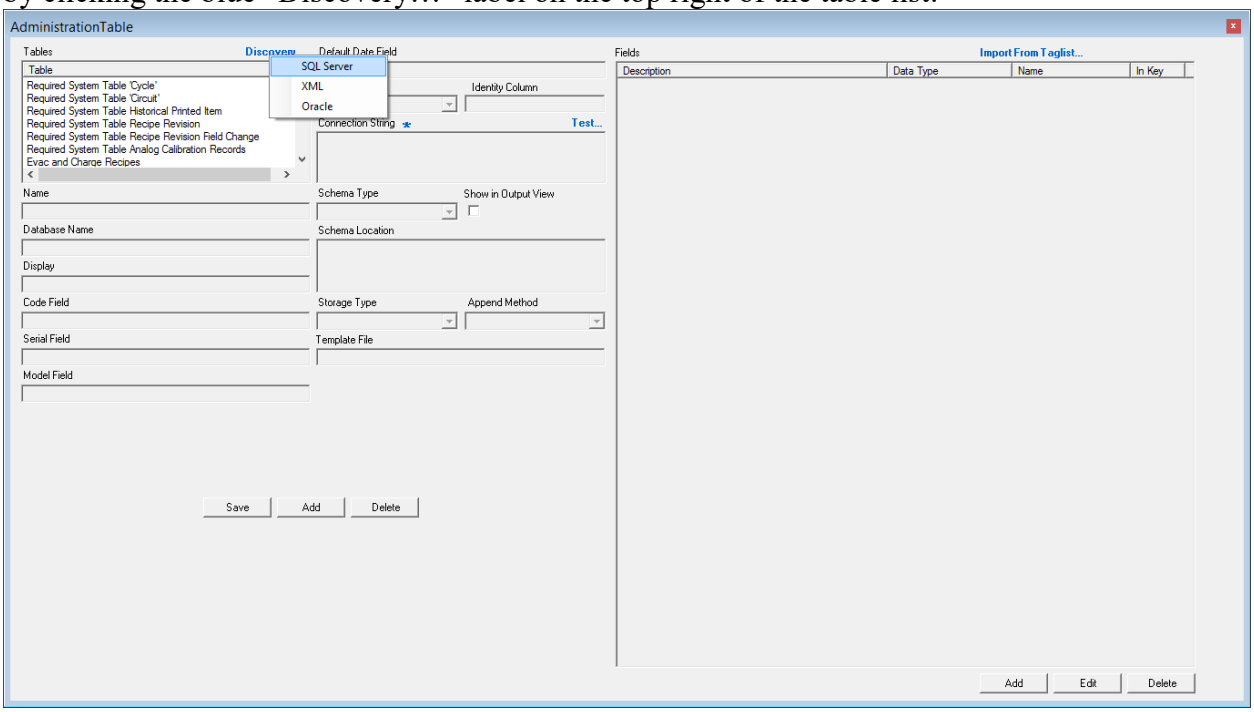
Adding a Table

Adding a table to Dataserv3 is done in one of two ways, using discovery, or by manually creating the table. Manual table entry is recommended to be done only by Serv-I-Quip personnel. If a custom table is desired, it is recommended that Serv-I-Quip be contacted for assistance.

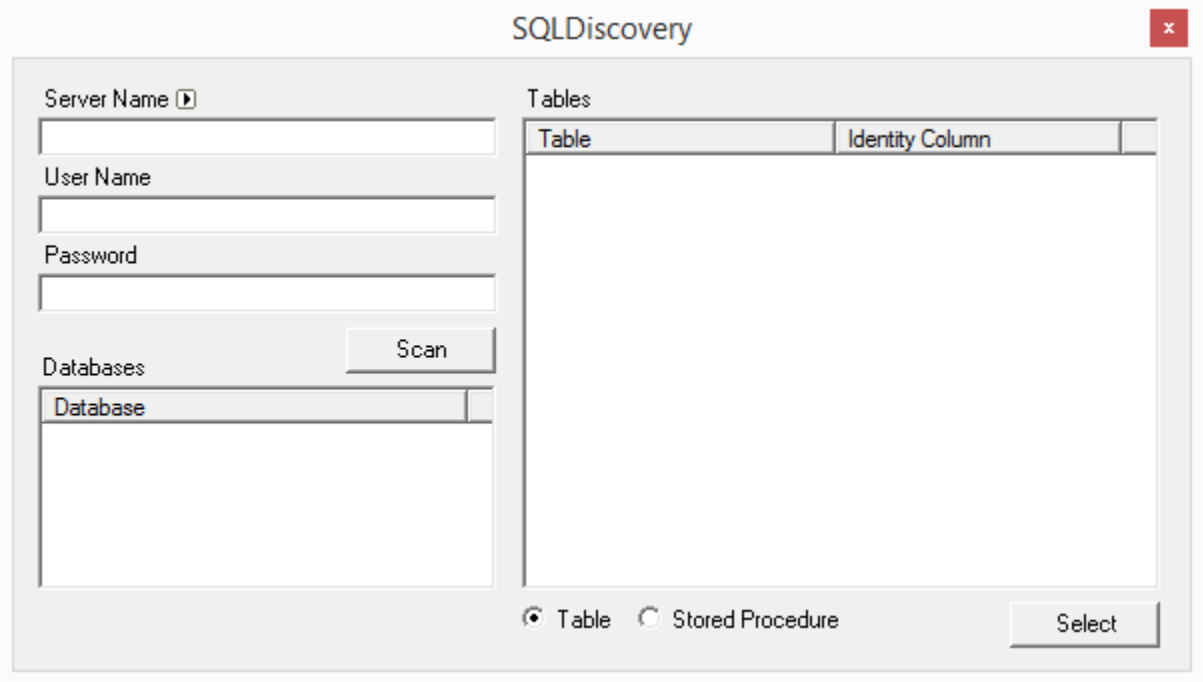
The Table Designer is entered by bring up the Dataserv Engine interface, and choosing the Admin → Designers → Table menu item.



If the user has sufficient privileges, the designer will be shown. Table discovery is accomplished by clicking the blue "Discovery…" label on the top right of the table list:

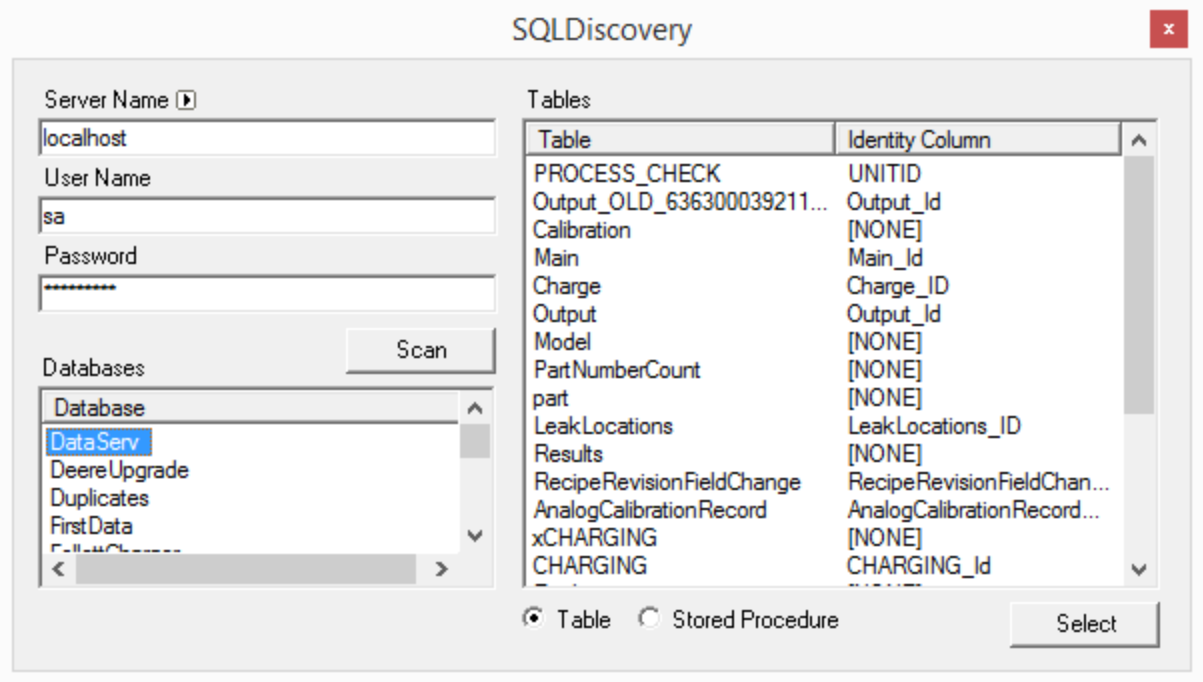


When a Storage Method is chose (SQL, Oracle, etc.), the associated discover form will be shown. This example will use the SQL discovery window. If the server name and port are known, they can be entered in the "Server Name" entry box.

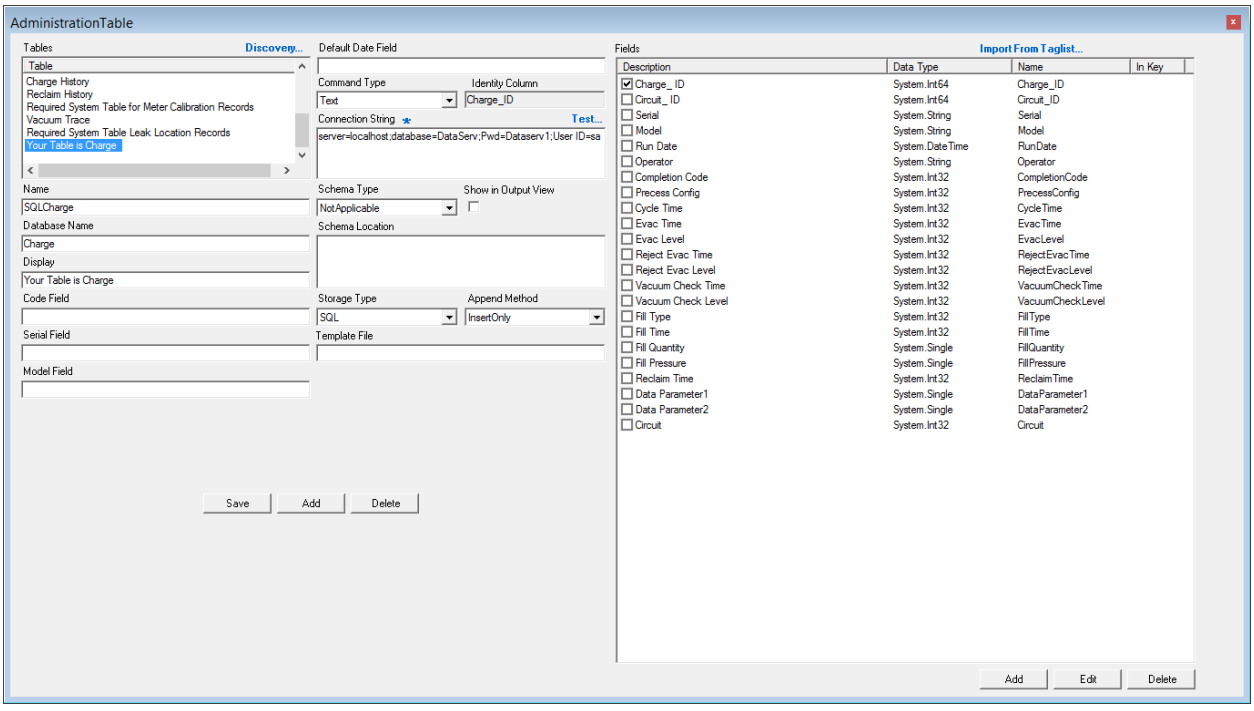


Clicking the expander next to the "Server Name" label will poll the network for SQL servers. This may take some time and may or may not find all SQL Server instances on the network.

When a Server Name is entered, and valid credentials are entered into the "User Name" and "Password" fields, clicking the "Scan" button will display a list of Databases on that server. When a Database is highlighted in the "Databases" list, the Tables or Stored Procedures in that database will be displayed in the "Tables" list.

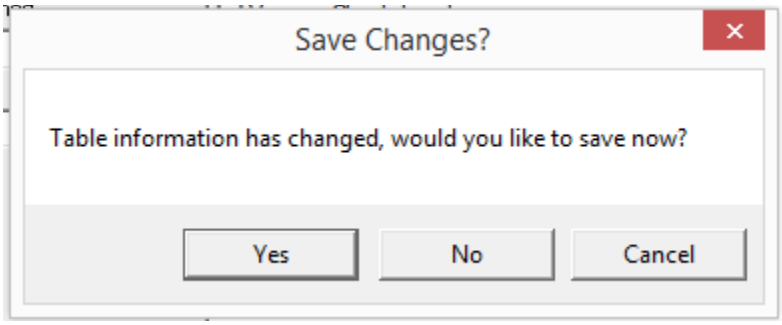


Highlighting a table in the "Tables" list and clicking the "Select" button, will import the selected table into Dataserv. The Discovery window will not automatically close. If only one new table is desired, close the Discovery window and return to the Table Designer. The imported table will be the last table in the list. Highlighting it will show the default details.



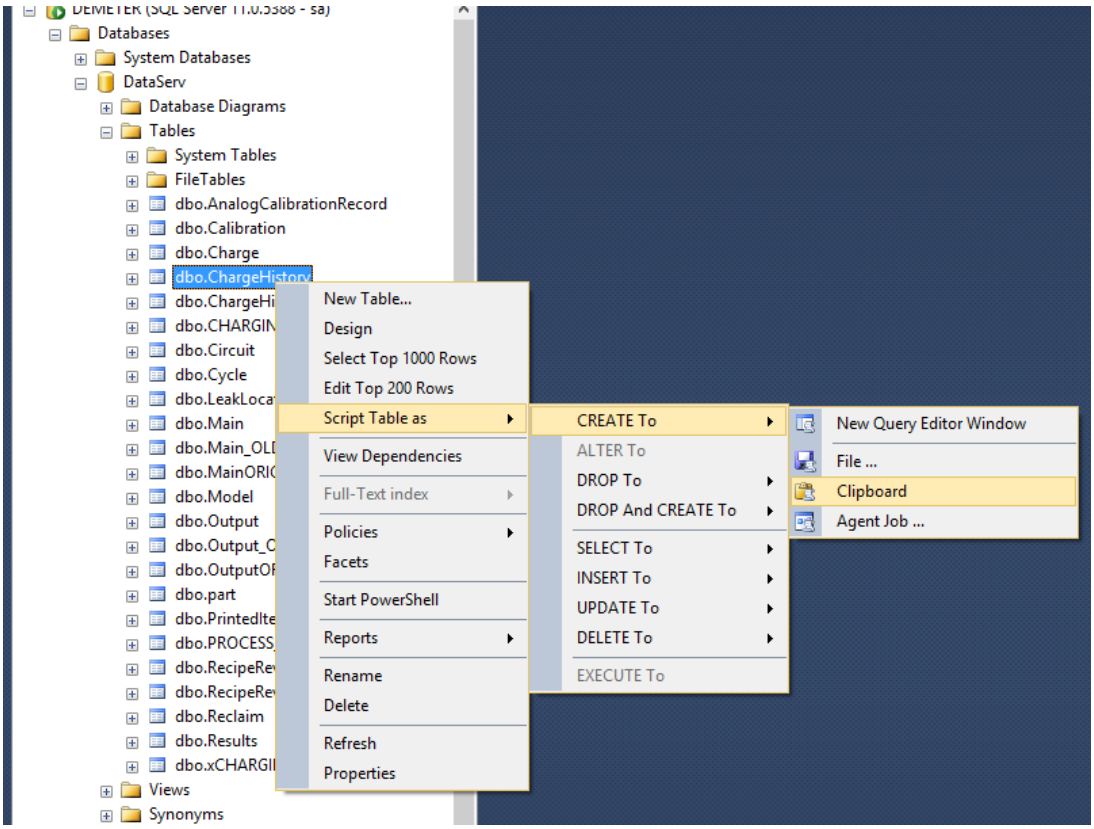
The "Name" property must be unique. It is recommended the name be short but descriptive. The "Database Name" property should not be changed as it is defined by the Database. The

"Display" field is how the table will be shown in user interfaces locally and in the dashboard. This is where longer descriptions of the table's location and purpose should be kept. Clicking the "Save" button will apply this change to the Dataserv Engine. If the window is closed without saving, the user will be prompted to save.



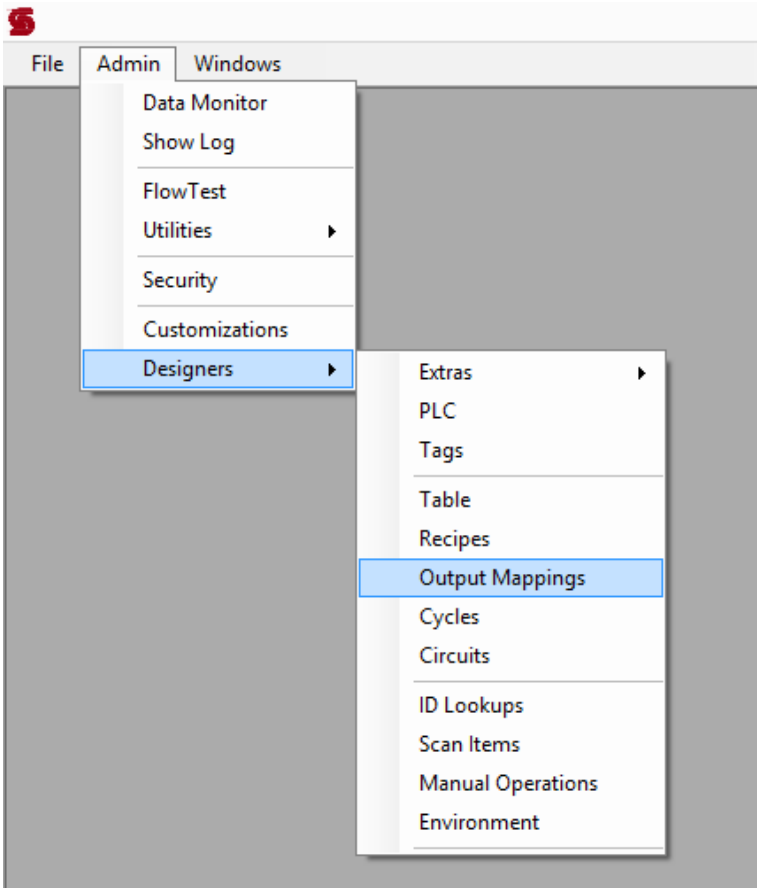
Clicking "Cancel" will keep the Table Designer open, clicking "Yes" saves the changes, and clicking "No" will discard the changes.

The most common, and recommended way to make a secondary data destination is to make a clone of Dataserv's internal table. This can be done by logging into the local instance of SQL, browsing to the desired table in the "Dataserv" database, right-clicking the table and choosing "Script Table as → CREATE To → " and either "File" or "Clipboard" and then providing the generated script to IT to be modified and added to the production Database.

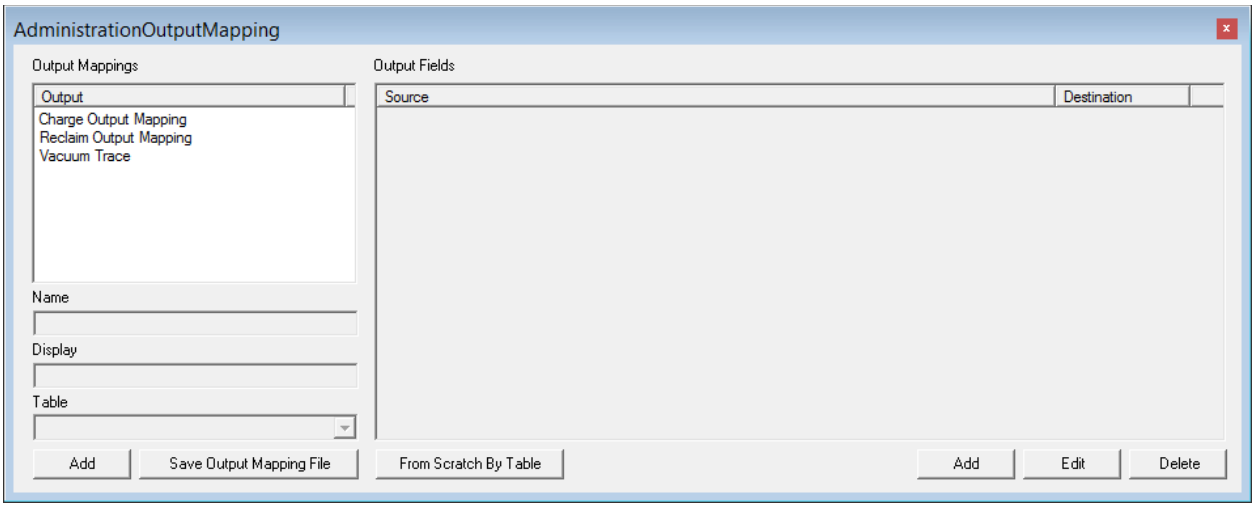


Adding an Output Mapping

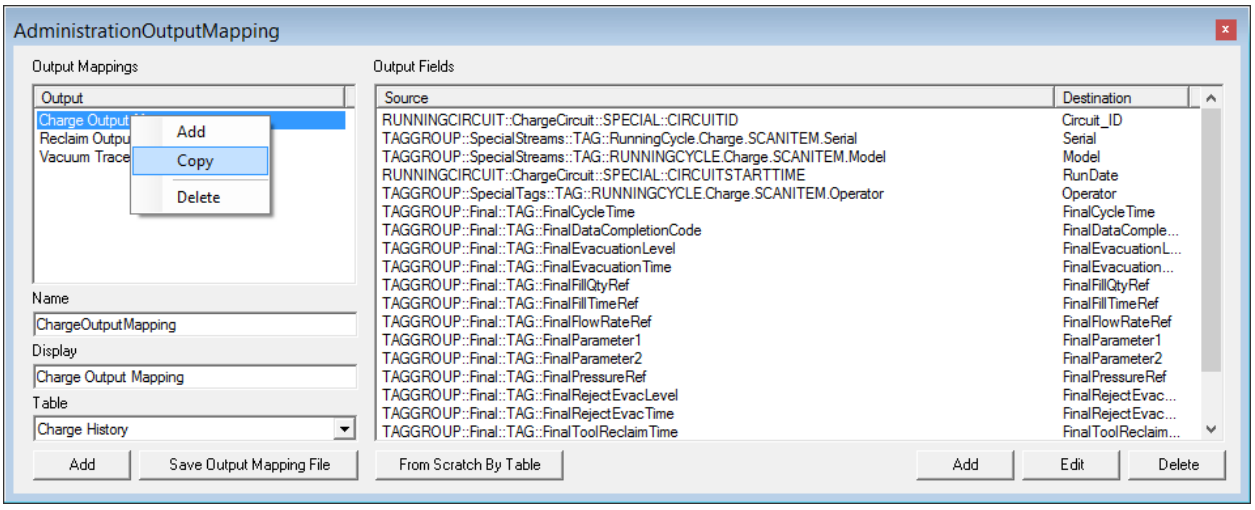
Once a table is created to contain the Output Data, an Output Mapping must be created to tell Dataserv which process variables should be inserted into which fields in the Table. The Output Mapping Designer is entered by bring up the Dataserv Engine interface, and choosing the "Admin → Designers → Output Mappings" menu item from the Dataserv Engine.



The Output Mapping Designer shows a list of existing Output Mappings on the left. When any Output Mapping is highlighted, its details will be shown. "Name", "Display", and "Table" are, respectively, the unique name the mapping is known by within Dataserv, the legend displayed wherever the mapping is displayed in user interfaces, and the table who's fields are being mapped to. On the right, the "Output Fields" list will show all of the mappings from Process Variables (known as "Tags") to fields.

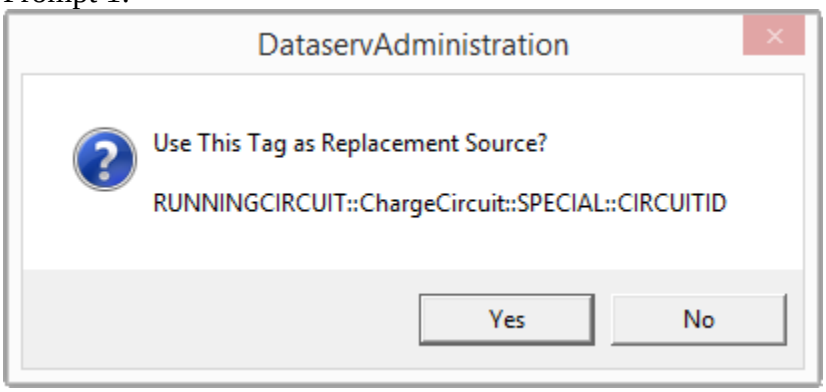


If the most recommended method of adding an external data write are being followed, the process of adding the mapping is quite simple. In this example, the table "Charge History" associated with the mapping "Charge Output Mapping" has been cloned. It has kept the default name assigned by the designer, "Your Table is ChargeHistory_Sample". As this should be a direct copy of all mappings, a new Output Mapping can be created by right-clicking the output mapping, and selecting "Copy".

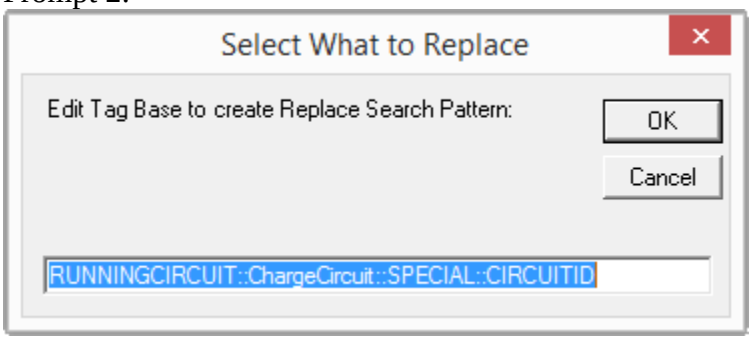


The system may prompt for a "Replacement Source". This step in the copy tool is only for multi-station or multi-circuit systems. When making copies for external data writes, this step should be "ignored" by providing identical replacement sources and destinations by choosing "Yes" at the first prompt, "OK" at the second and third prompts without making changes, and "Yes" again at the last warning.

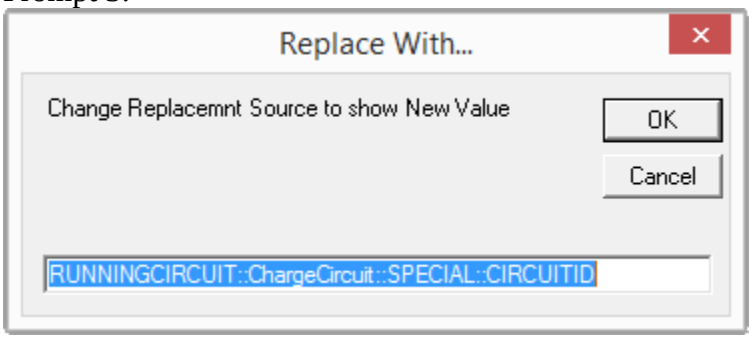
Prompt 1:



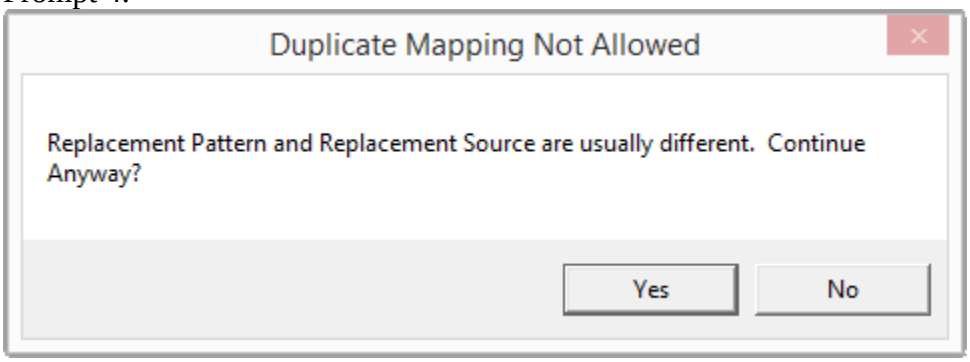
Prompt 2:



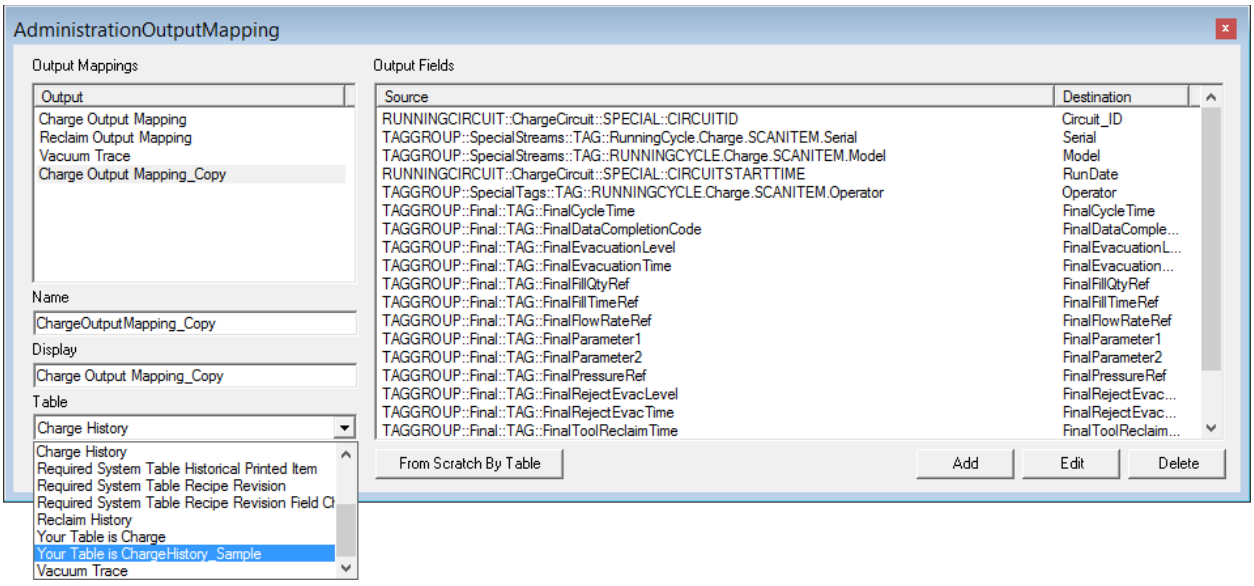
Prompt 3:



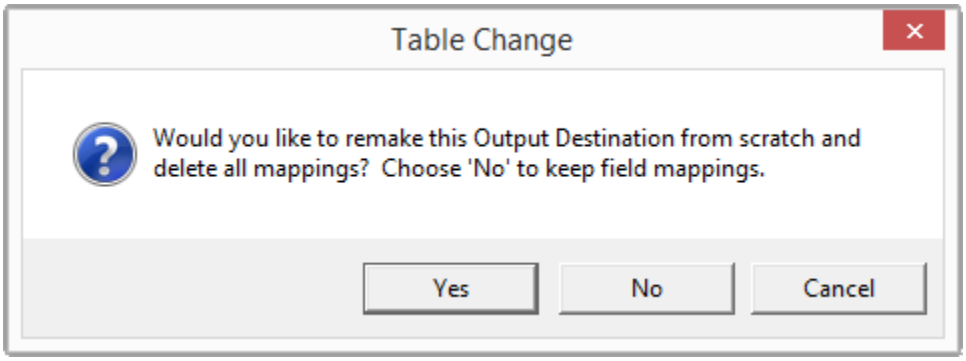
Prompt 4:



Once all the prompts have been answered, a new Output Mapping will be added to the list with "_Copy" appended to the name. To complete the new Output Mapping, it must now be directed at the external table. This is done by highlighting the new mapping and changing the combo box selection for "Table".



Dataserv will prompt for what should be done about the table change:



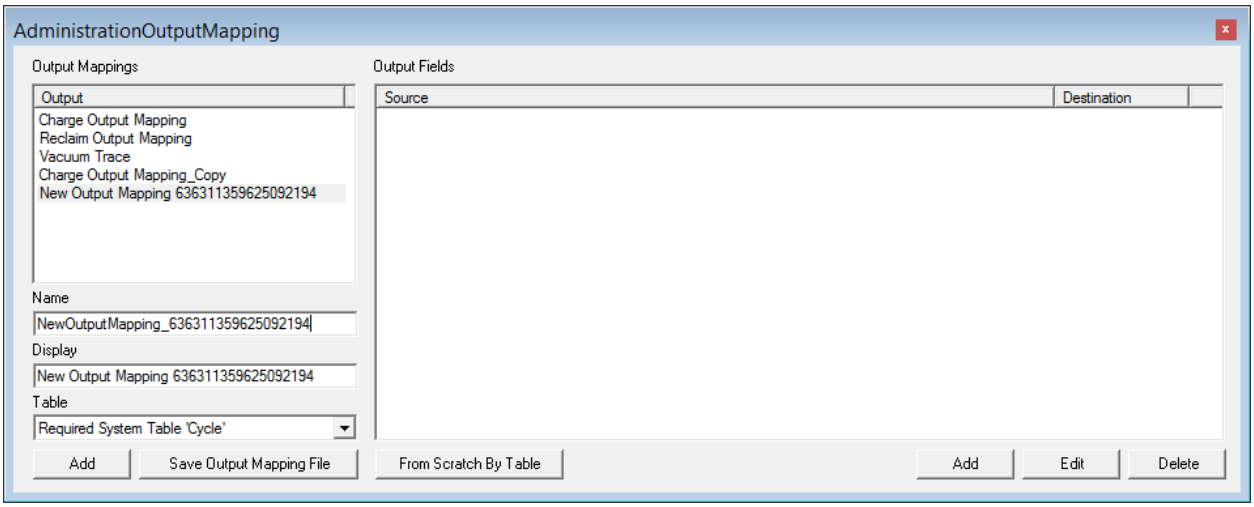
"Cancel" will revert to the previously selected table, "Yes" will erase all field mappings and try to match process variables to field names based on name, "No" (the option desired here", will leave the Output Mapping unchanged and direct it to the selected table.

Clicking the "Save Output Mapping File" button, or answering "Yes" to the prompt when closing the Designer will apply the changes to the Output Mapping configuration.

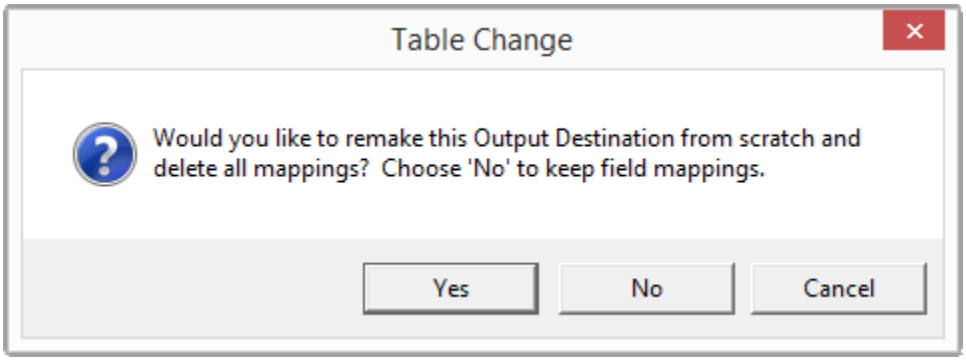
Translating Column Names and Data Types (non-cloned Tables)

Sometimes, data must be mapped to an existing table in a database where the field names and data types will not match those of the internal Dataserv Table. In this instance, each field must be mapped manually. For these cases, it's easiest to add the mapping blank by right-clicking the Output Mappings List and selecting "Add".

A new mapping will be created with default values. The "Name" and "Display" fields will be timestamped with a large number, and the "Table" will be set to the first Table in the list.

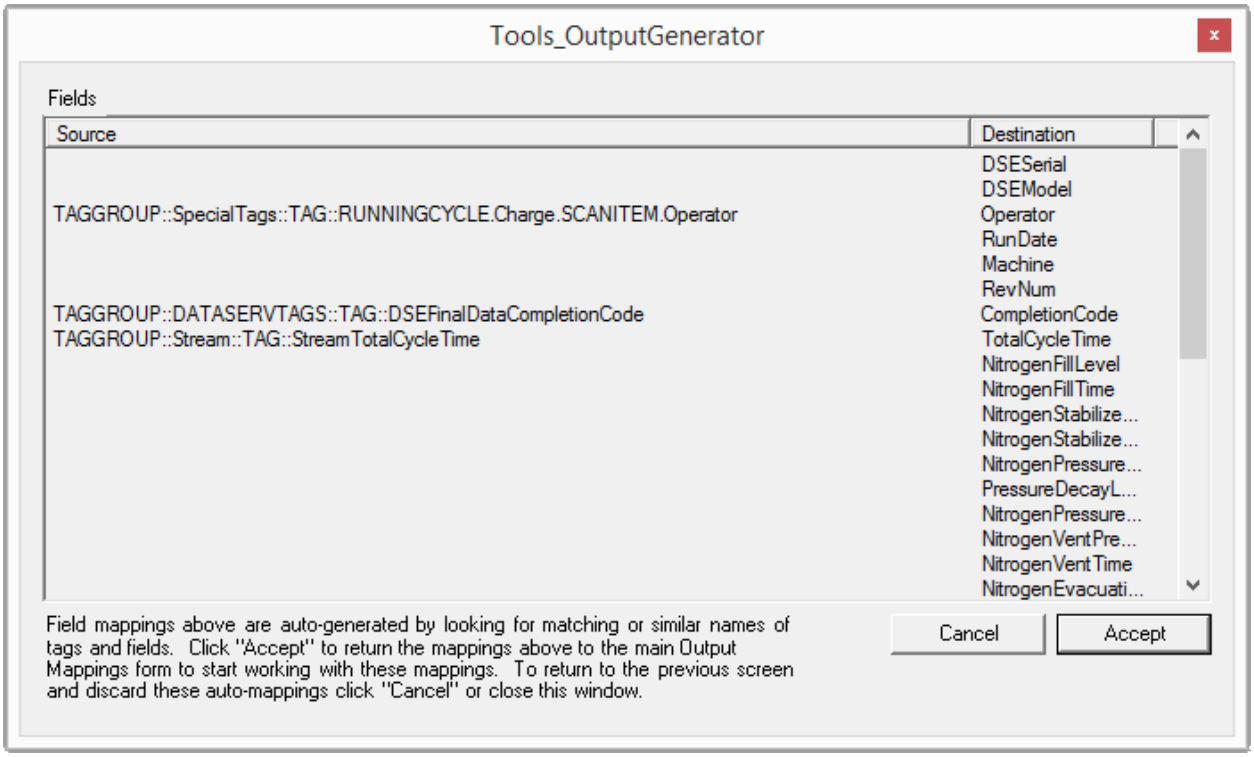


"Name" can be changed to anything unique, and "Display" can be anything. When "Table" is selected, the user is prompted whether all field mappings should be deleted.

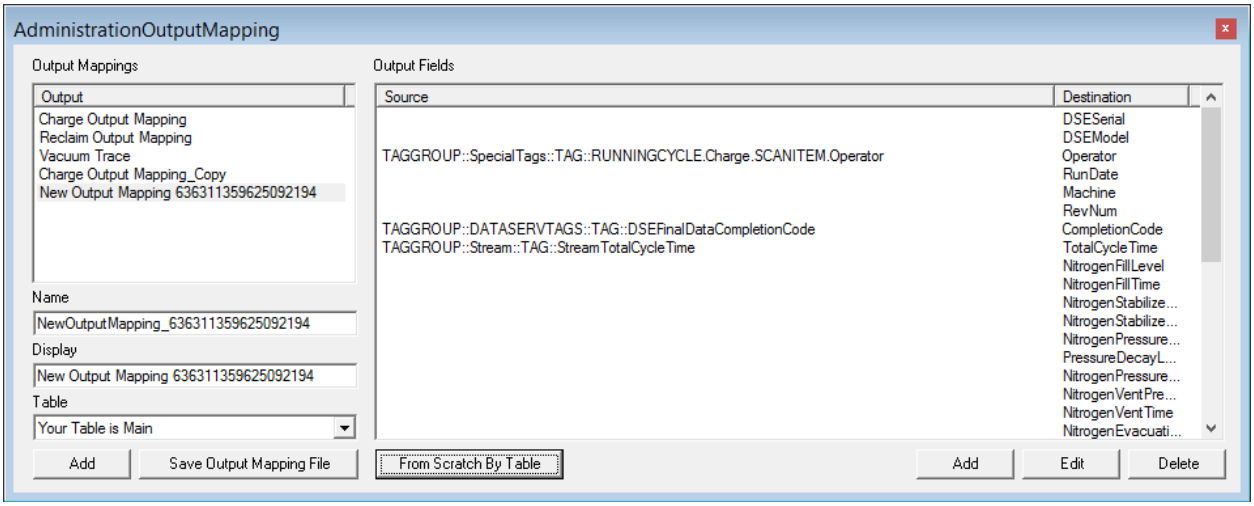


When creating a new mapping from scratch, the appropriate answer is "Yes".

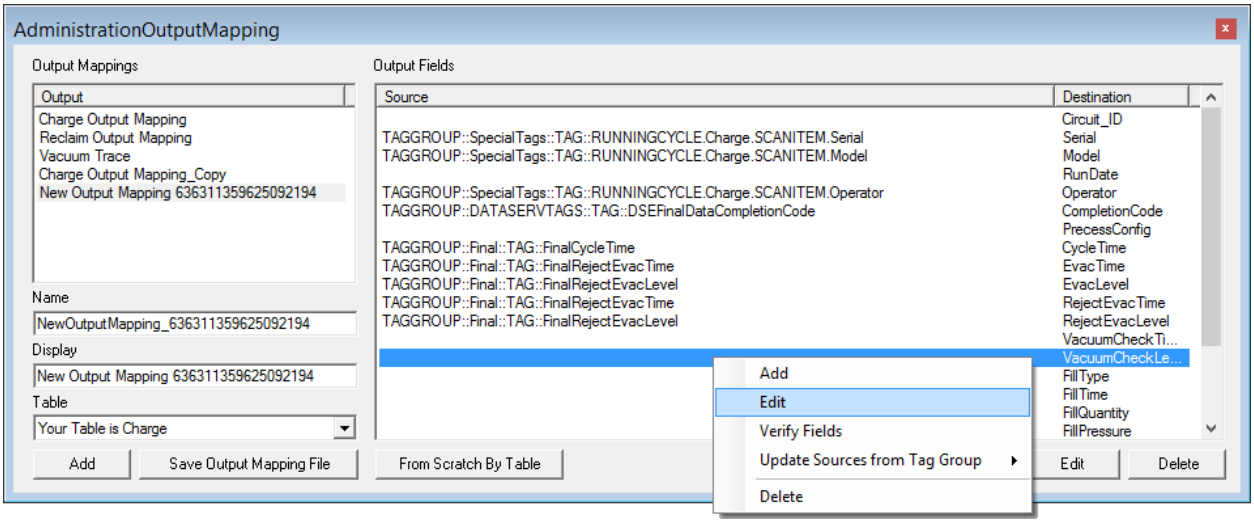
To get started, clicking the “From Scratch By Table” button will create a field mapping for each column in the selected Table (except Identity Columns), and attempt to match it with a “Tag”, or process variable. This will bring up a window with recommended Source/Destination mappings.



Choosing “Accept” will apply these Field Mappings to the new Output Mapping.



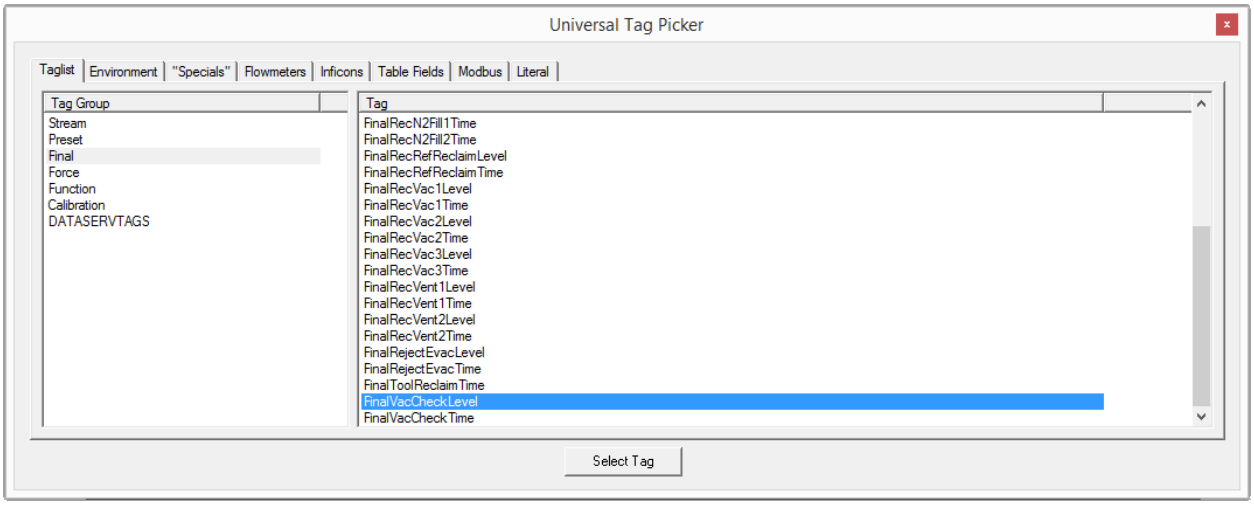
How many fields are matched, and how many matches are correct, has much to do with how similarly the data points have been named. Individual fields can be set by right-clicking a field, and choosing “Edit”.

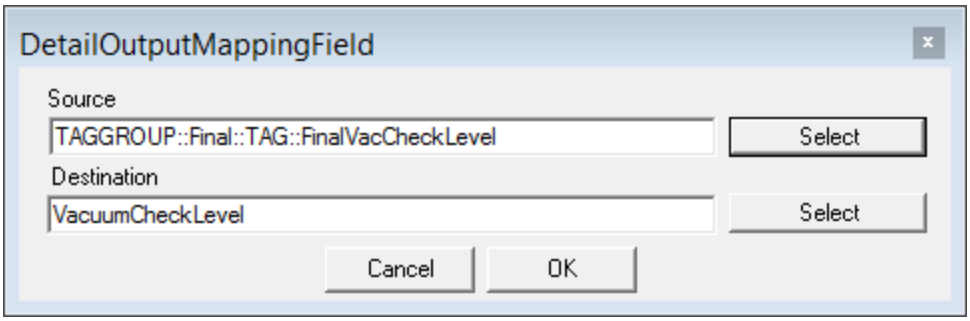


This brings up the Field Detail Toolbox.

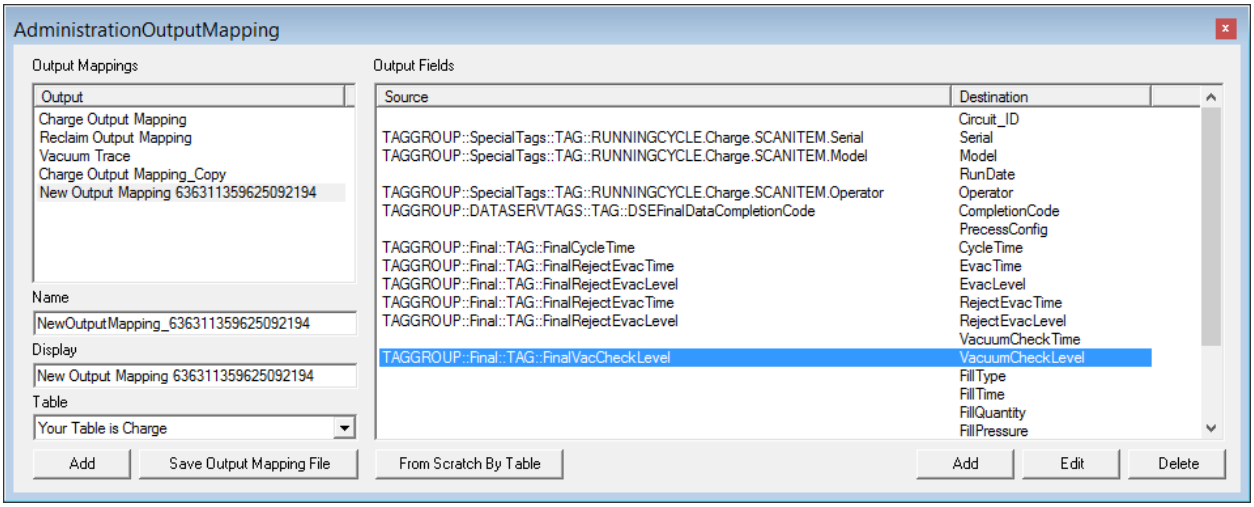
Clicking the “Select” button next to the “Source” input box will launch the Universal Tag Picker, which provides an interface for choosing every process variable available within the given application.

When the desired Tag is found, clicking the “Select Tag” button will auto-fill the “Source” box in the Field Detail Toolbox.



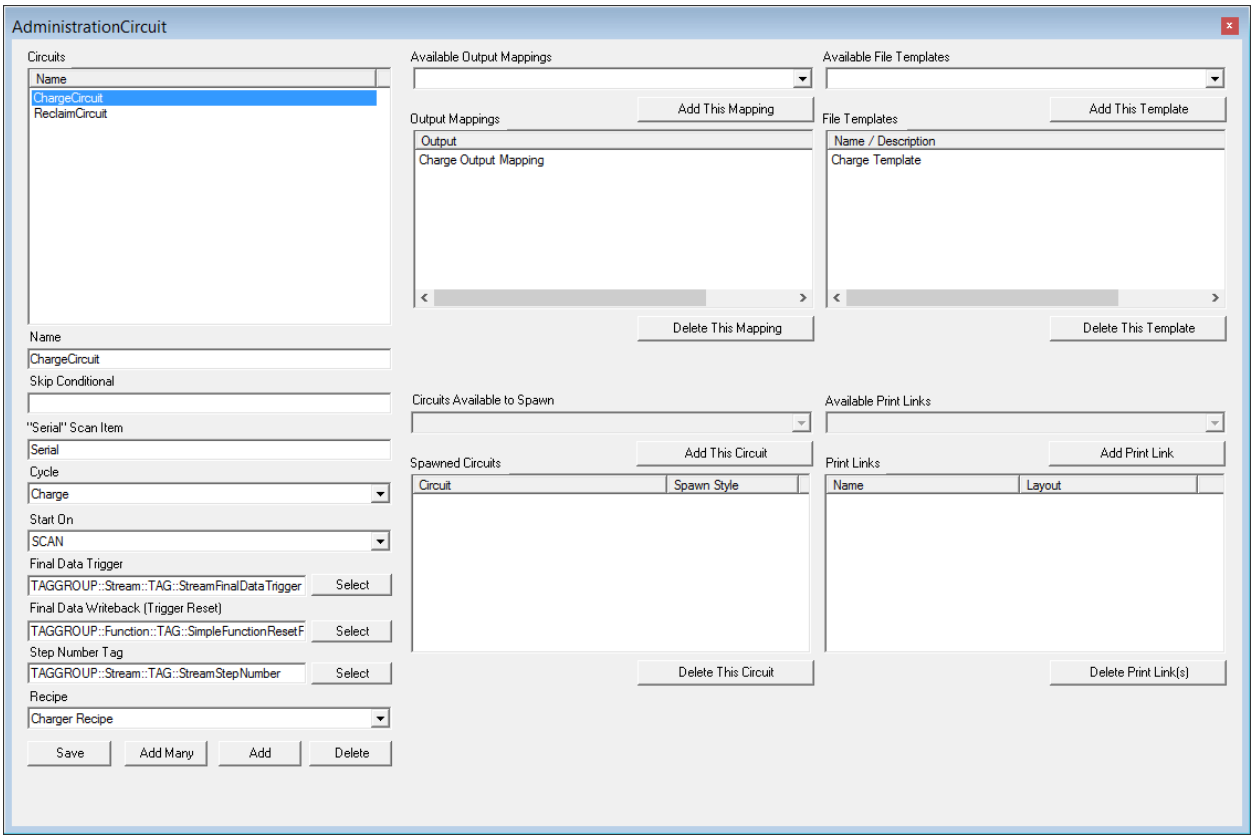


Clicking the "OK" button updates the Field Mapping in the Output Mapping.

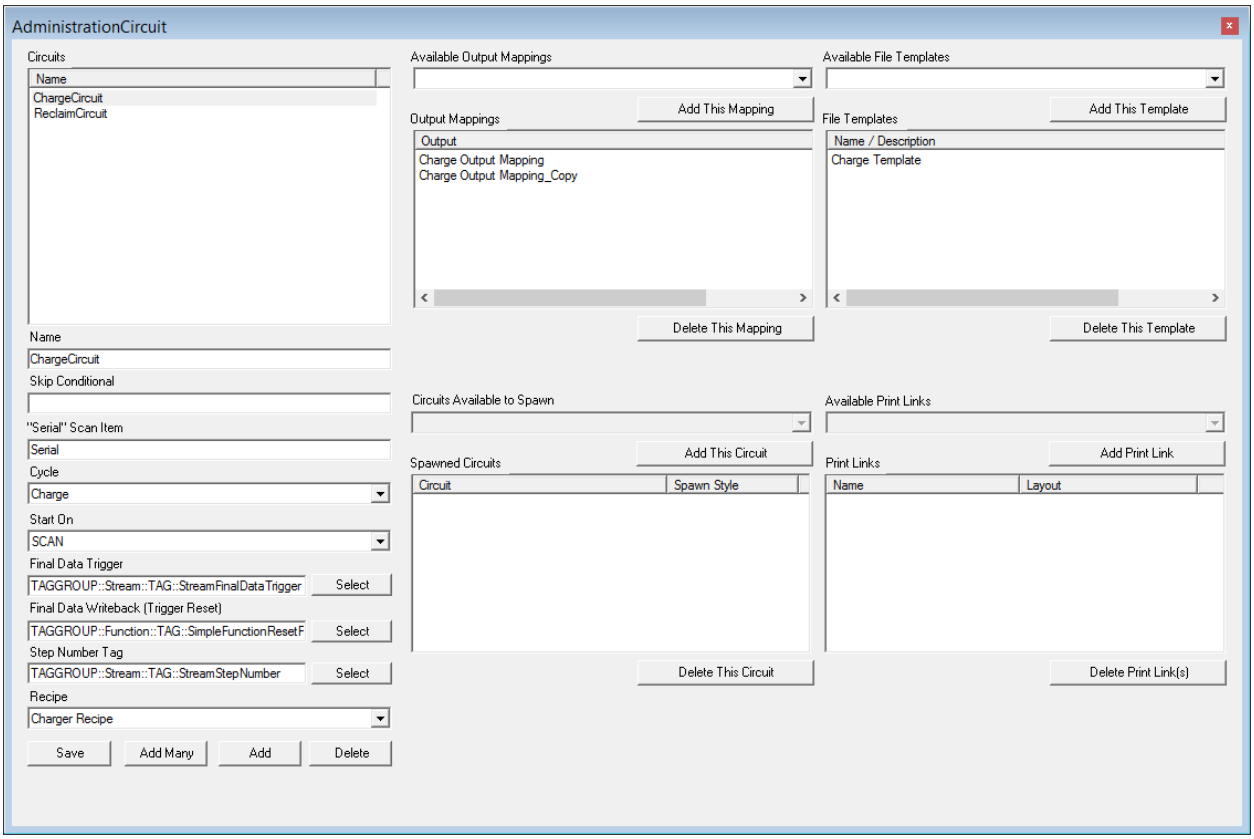


Linking the Circuit to the Output Mapping

The final step in adding the external data write is to link the output mapping with a "Circuit". The Circuit Designer is accessed by the Dataserv Engine menu items "Admin → Designers → Circuits". Many systems will have only one Circuit, a Serv-I-Quip Technician can offer guidance when the appropriate circuit is unknown. When a Circuit is selected in the "Circuits" List, the "Available Output Mappings" combo box to the right of the Circuits List will become enabled.

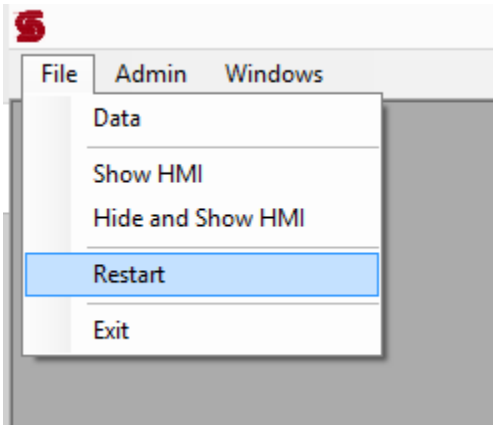


The mapping can be added by selecting it in the “Available Output Mappings” list and clicking the “Add This Mapping” button.

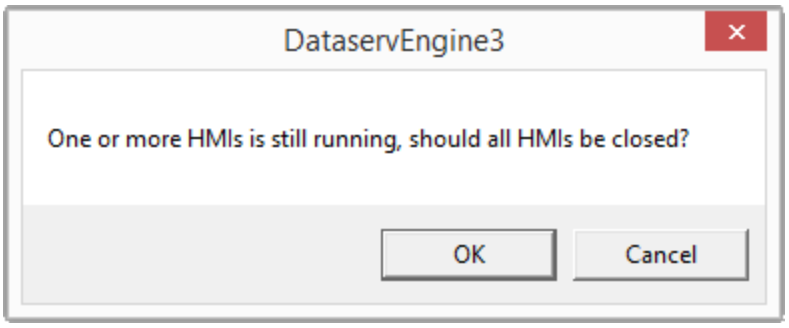


As always, the "Save" button will save these changes. If the user does not save before closing the Designer, a prompt will be displayed to determine whether the changes will be saved or not.

Changes to the Output Mappings can now be tested. The Dataserv Engine must be restarted for the configuration changes to take effect. This can be done by exiting the Dataserv HMI and Engine, or by the "File → Restart" menu option from the Dataserv Engine.



If the Engine prompts about closing open HMI windows, the answer should be "OK".


DataservEngine3
One or more HMIs is still running, should all HMIs be closed?
OK
Cancel