VTScada

Software for Monitoring & Control

# Operator's Guide

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Excerpts from the VTScada Help Files


Printed in Canada

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# Contents

# *Operate Your VTScada Application*

**Intended audience: Anyone who uses an existing VTScada application.**
The basic parts of VTScada will be the same in every application, but the person who created your VTScada application may have added features that are specific to your industry or company. Please ask your VTScada developer if there are unique features or work-flow processes that were created for your application.

*Related Information:*

...Starting and Stopping – Starting and Stopping VTScada applications.

...Navigating Application Displays – Move from one display page to another.

...Logon to Your Account – Log into your account. Change your pass-word.

...Mobile and Internet Connections – Log in from a remote location.

...Use the Operator's Controls – Monitor values & write to equipment.

...Alarms – The Alarm Page – How to work with the alarm page.

...Historical Data Viewer: Trends and Graphs – View a trend graph or a history of values.

...Create Reports – The Reports Page – Create a report.

...Operator Log and Notes – Create a written record of changes and events.

...Print... – Send information to the system printer.

# *Finding Help*

F1 help is linked to all VTScada dialogs and message boxes. To view help for any screen or dialog, simply press the "F1" function key on your keyboard, and a corresponding help topic will open to guide you. For example, if you need to know more about the VTScada Application Manager (VAM) and its tools, press your F1 function key while viewing the VAM and the help guide will open to that topic.
The Trihedral web site contains a wealth of information about VTScada including a often-updated how-to guide and a collection of training videos. You can also find the full VTScada documentation on-line.

http://www.trihedral.com
Classroom Training. Please see our web site for the current list of upcoming classes. http://www.trihedral.com/training-courses
Our technical support team is on-site and always available to answer your questions. We understand that if you're phoning, you need to talk to someone who can solve your problem now, not just fill in a support ticket. Trihedral takes pride in providing the best customer support available anywhere.

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# Starting and Stopping

In many cases, the VTScada program and your VTScada application will always be open and running. Developers can configure both to start automatically. But, it is possible that you might be required to start the VTScada program and possibly your VTScada application. The instructions that follow will help you to do so.

The ability to stop an application is controlled by a security privilege that may not have been granted to you. If this is the case, any attempt to stop the application will be met with the Access Denied dialog. This will be true regardless of the method you choose, including an attempt to stop the VTScada program in general.
There is no security privilege that will block an application from starting. In many instances, it is critical that an application be able to re-start automatically, or permit the first available person to initiate the startup (for example, following a power failure).

Note: If VTScada is running as a service, it cannot also run as an interactive application on the same workstation. You may connect to the application using a client instead of attempting to start an interactive session on this computer. See: Mobile and Internet Connections

### *Start the VTScada Program*

On most workstations, there are (at least) two ways to start the VTScada program, the shortcut link and the start menu entry.

#### Use the VTScada Shortcut

A shortcut to the VTScada program may have been added to your desktop when the software was installed.


To open the VTScada program using the shortcut:

1. Locate the VTScada program shortcut icon (as shown above).
2. Double-click the shortcut icon.

The VTScada program runs and the VTScada Application Manager (VAM) opens.

Be careful not to confuse the program link with any ChangeSet files that might be stored on your desktop. A ChangeSet file is (effectively) an application stored in one file. If you double-click the file, VTScada will start if it is not already running, and the application from the ChangeSet will be installed. An example of the ChangeSet icon follows:

 - A ChangeSet file, not a shortcut link.

If you do not find a shortcut to the VTScada program on your desktop, you can start the VTScada program using the Windows Start button.

### Use the Windows Start Button

The most common way to start a program is to use the Windows Start button located at the bottom left-hand corner of the desktop.

1. Click the Start button on the Windows task bar.
2. Click, All Programs.
3. Navigate to and expand the VTScada directory.
4. Select the VTScada program icon.

The VTScada program runs, and the VTScada Application Manager opens.

Note: If your VTScada developer has configured your VTScada application to auto-start, then you will not see the VTScada Application Manager. If this is the case, you may proceed to Navigating Application Displays.

#### *Stop the VTScada Program*

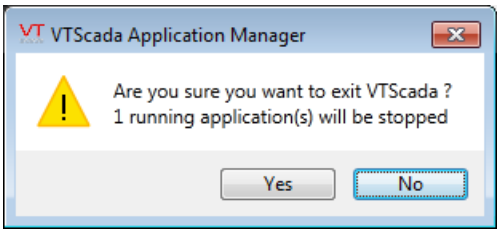
Note: Stopping the VTScada program also stops all running applications. Many VTScada applications are designed to run continuously. Do not stop VTScada unless you have been advised to do so by your manager.

Note: The ability to stop an application is a system privilege (Stop Application) that administrators might not choose to grant to all operators. If this is the case, any attempt to stop the application will be met with an Access Denied dialog.

There are two ways to exit the VTScada program and close the VAM:

- Clicking the VAM's Exit button
- Clicking the Windows close button on the VAM's title bar

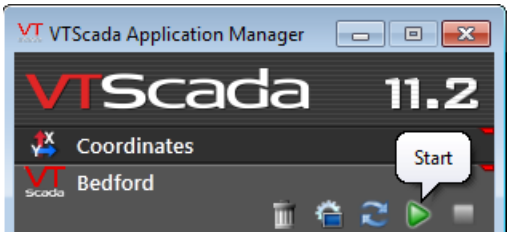
If a VTScada application is running when you attempt to exit the VAM, the following dialog is displayed.




Click Yes to exit VTScada and stop the running application.
Because VTScada saves data automatically prior to shutting down, the size of your VTScada application may affect the amount of time VTScada takes to terminate. Large applications take longer to save their data, so the VTScada program takes longer to exit.

### *Start a VTScada Application*

To start a VTScada application from the VAM (VTScada Application Manager):
Click once on the VTScada application's name in the Available Applications list.
The selected application's bar expands.




- Click the Start button.
- Double-clicking on the application name will also start the application.

While an application is running, the VAM also remains open and running, although your VTScada developer may have configured it to be hidden from view.

*Stop a VTScada Application*

Note: Many VTScada applications are designed to run 24 hours a day, 7 days a week. Do not stop a VTScada application unless you have expressly been advised to do so by your VTScada administrator or other authorized personnel.

Note: The ability to stop an application is controlled by a security privilege (Stop Application) that may not have been granted to you. If this is the case, any attempt to stop the application will be met with the Access Denied dialog. This will be true regardless of the method you choose, including an attempt to stop the VTScada program in general.

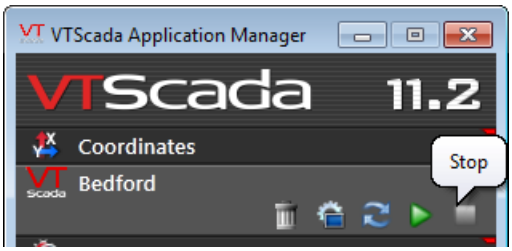
Depending upon the way in which your VTScada application has been configured, you can stop your application in two ways:

- From the VAM (if it has not been configured to remain hidden)
- From the application (if it has been configured to show the Windows® title bar)

### Stopping a VTScada Application Using the VAM

These steps assume that your application has not been configured to hide the VAM.

1. Open the VAM.
   (Click the "VTScada Application Manager" button in the Windows task bar at the bottom of your screen. If your Windows task bar is hidden, rest your mouse at the bottom of the screen to reveal it.)
2. Select the VTScada application from the Available Applications list.
   The selected application will expand and be displayed using a lighter shade of color.

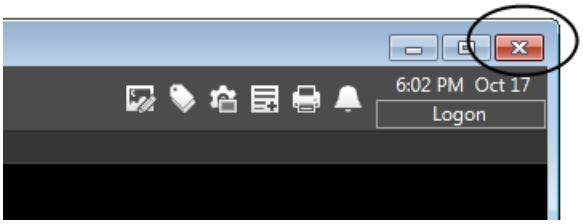



3. Click the Stop button.
   The application stops, but the VAM continues to run. All data and configuration changes are automatically saved when the application is stopped.

Note: Stopping a VTScada application does not stop the VTScada program. The VAM remains running for you to choose another application to run. However, closing the VAM exits the VTScada program and stops all running VTScada applications.

### Stopping an Application Using the Application's Windows Close Button

If your VTScada application has been configured with a Windows title bar appearing on top of the window, and if you have the appropriate security privileges, you may stop your VTScada application by clicking the Windows close box, as indicated by the circle in the following image.




The application shown has been configured to display a Windows title bar above the Display Manager's title bar, complete with minimize, restore, and close buttons.

#### *Activating an Application*

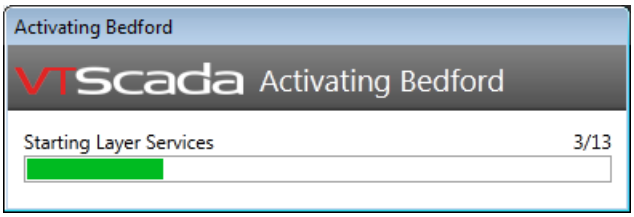
Once an application has been activated, it will remain activated while VTScada continues to run. It is not re-activated when another event in the list occurs and there is no "deactivate" command.

An application is activated when any of the following occur:

- The application starts (either auto-start, or in response to an operator clicking the run button).

- Any layer (application) that was built upon this one is activated.
- A developer opens the Application Configuration dialog.
- A developer chooses to remove the application from the VAM.

The "Activating" dialog is displayed for a few moments during the process.




An application may be activated, but not be running. The attributes of an activated application are:

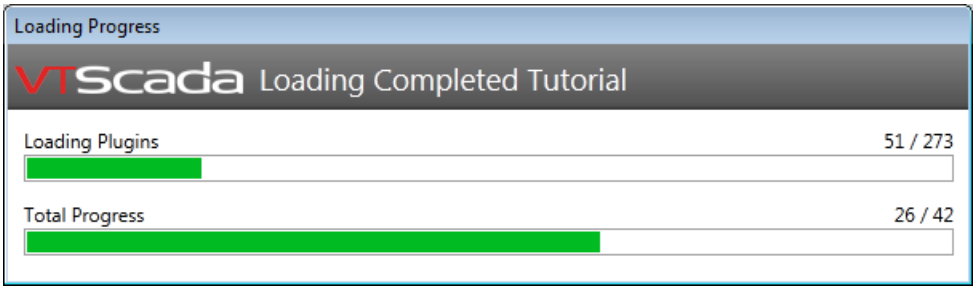
- Security is enabled – only authorized users may Import File Changes or access the Application Configuration dialog.
- In the case of remote (networked) applications, an activated application will send and receive deployed updates.

An application that is activated but not yet started:

- Does not run the display manager. It is not visible.
- There is no I/O activity for any of the tags.

### *The Loading Dialog*

A dialog box shows the progress of a loading application while it starts.




In the unlikely event that an application fails to complete the loading process, it may be helpful to make a note of the last message and the progress indicator before calling Technical Support.

### *Related Information:*

...Navigating Application Displays – Change the view from one page to another.

# Logon to Your Account

Applications are normally secured. Your VTScada developer or manager will most likely have created a user name and password for you to use.

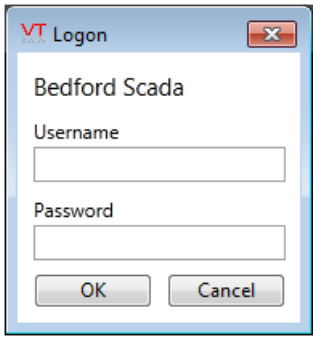
Note: Several consecutive attempts to logon using the wrong password will result in your account being locked for a period of time. The length of the time period and the number of attempts before this happens are both under the control of your VTScada developer.(*)

### To logon to your user account:

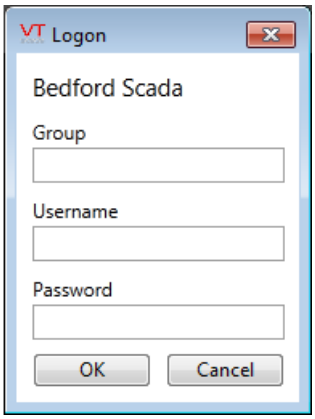
1. Click on the Logon button on the Display Manager's title bar.


The Logon dialog box opens, displaying two fields: Username and Password. Security for your system might be based entirely in VTScada, or it might use your Windows domain.

- If VTScada-based enter the Username and Password that you were assigned.
- If Windows-based, enter your full windows account name and password, as if you were logging on to your workstation.

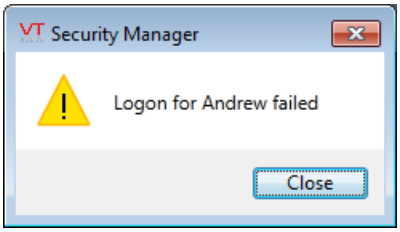



If Groups have been created, the Logon dialog will have an additional field as shown in the following image. In the top field, type the name of the group, to which you have been assigned.




2. Enter your security account name in the Username field.
   The name is not case-sensitive, so you can type in upper or lower case, or a combination of each.
3. Enter your password in the Password field.
   Your password *is* case-sensitive. You must type it as it was defined. As you type your password, you will see a series of asterisks (*) instead of characters. This protects you so that no one can read your password while you are typing.
4. Click OK.
   If you have entered everything correctly, your account name now appears on the Logon button in place of the label Logon. Your account is activated, and your privileges are in effect.

***Troubleshooting:***




If you cannot logon:

- Check whether Caps Lock is on. Passwords are case-sensitive.
- After several failed attempts, VTS will lock your account for a period of one minute. (Both the number of attempts, and the lock-out period are configurable.) While locked, no messages will be displayed – you simply will not be able to log in.

(*) A program attempting to hack an account by brute force will trigger the lock-out sooner and for a longer time than an operator making

several attempts to remember a password and pausing between each attempt. This trigger-point is also under the control of your VTScada developer.

*Related Information:*

...User Accounts and Privileges - General security information.

...Security Related Dialogs - Dialogs you may see.

*Related Tasks:*

...Change Your Password - Give yourself a new password.

...Log Off From Your Application

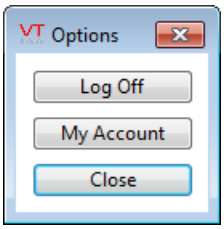
# Change Your Password

Your developer or security manager may have configured your account to require a new password on a regular basis. If so, VTScada will inform you when it is time for a new password and require that you create one. VTScada will provide the necessary dialog boxes and instructions to guide you through the process.

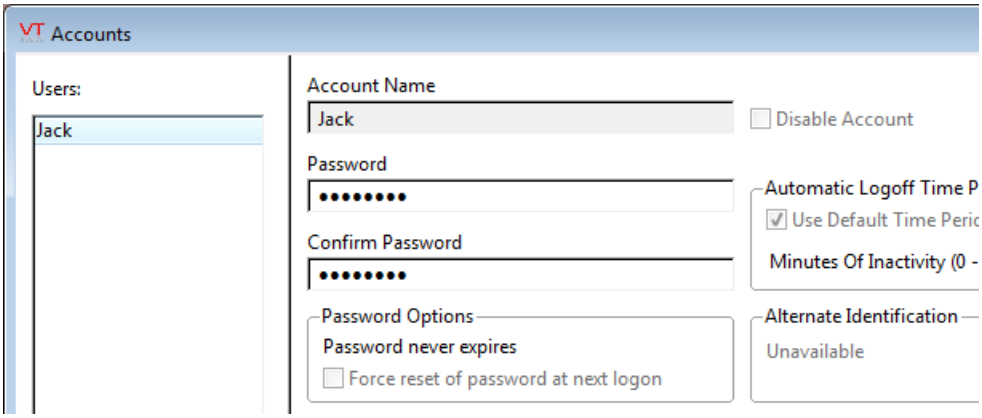
Note: If your system uses Windows authentication, you cannot change your password through VTScada.

In addition, you may or may not have the ability to change your password at any time you choose. If so, you can change it as follows:

1. Logon to the application using your username and current password.
2. Click on the Logon button (which now displays your username).
   The Options dialog opens, and displays at least the Log Off, and Close buttons as shown. (The Options dialog may contain additional buttons, depending upon your user privileges.) If there is a button labeled "My Account," you may proceed.




3. Click the My Account button. The Account dialog opens.




4. Enter your new password in the New Password field.
5. Enter the same password in the Confirm Password field.
6. Click OK.

   If the password you have entered matches in both fields, the new password is saved to your user account.

If you make a mistake when you are entering the password in the New Password and Confirm Password fields, VTScada will display a dialog box to warn you, then require that you try again.

Note: When you are selecting a password for your application, it is a good idea to use a combination of numbers and letters. Long passwords are strong passwords; a sentence (with the spaces removed) will always be more secure than a single word. You should never disclose your password to others. If you think that someone is aware of your password, you should change it immediately.

### *Related Information:*

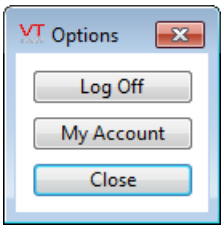
...Security Related Dialogs – Other security messages.

# Log Off From Your Application

If you are finishing a shift or must leave the computer for a period of time, you should log off so that the next operator can logon to his or her account, and so that your workstation is not left unattended with an active user account. Your VTScada developer may have configured your application to automatically log you off after a period of time if you have left your user account idle.

To log off from your application:

1. Click on the Logon button (which now displays your account name).
   The Options menu opens, displaying at least a Log Off button and a Close button. (The Options dialog may contain additional buttons, depending upon your user privileges.)
2. Click on the Log Off button.



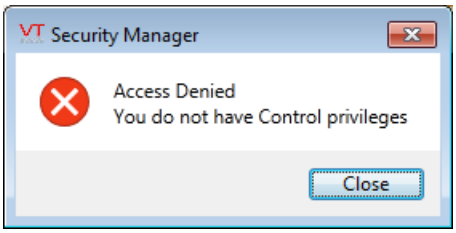

   The Options menu closes, and the Logon button again displays the label "Logon", waiting for you or another user to log on.

# User Accounts and Privileges

When your VTScada developer or security manager set up your user account, a number of privileges or permissions were assigned to you. User privileges are a set of rules that define which options and specific functions of an application are available to you. These user privileges have been arranged according to your specific operational duties. Your VTScada developer can explain which specific privileges you have been assigned, and how they work.

If you have not been granted the full complement of user privileges, you may encounter features that are off-limits. Disabled features appear

grayed-out, or cause an access denied message to appear when you attempt to access the feature.




*Related Information:*

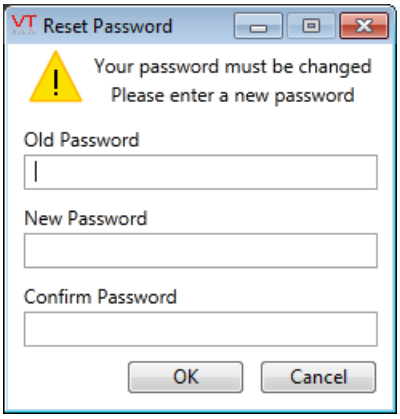
...Security Related Dialogs - Other security messages.

# Security Related Dialogs

There are variety of security-related messages that you may encounter while working with VTScada. Each is explained in the following topics.

***Reset Password***

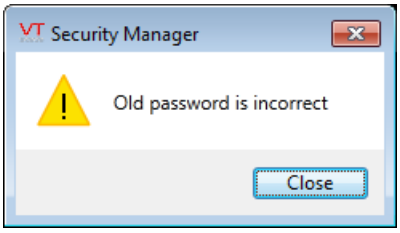
Several situations may force you to change your password: If passwords expire on a set time interval, if a security account manager has changed the minimum password requirements, or if the manager has set an option that requires you to change your password.




Provide your old password to confirm your identity (note that passwords are case-sensitive) and then enter a new one. You are required to type the new password twice in order to minimize the chance of a typo being saved in the new word.

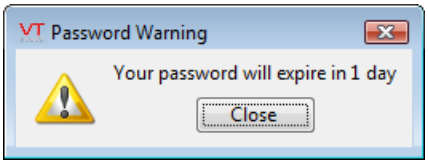
***Old Password is Incorrect Dialog***

The reset password dialog requires the user to verify their identify by typing their current (old) password before entering a new one. If an incorrect word is entered for the old password, the following dialog will appear.




Click on the Close button and type the correct old password in order to proceed.

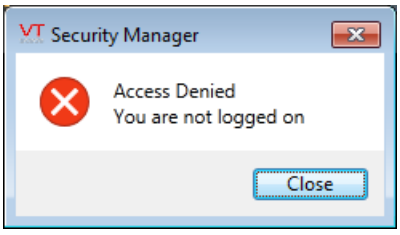
### *Password Warning*




If the application has been configured to warn users that their password will expire in the near future, then every time they logon during the configured warning period the following dialog will appear, showing the number of days until their password expires.

### *Access Denied: Not Logged On*

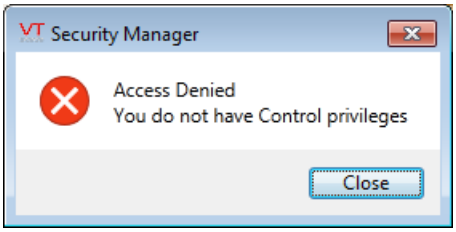
In the event that you are not logged on and you attempt to access a control process (for example, if you attempt to close your VTScada application by clicking the Windows close button at the top of the Display Manager), or try to control machinery, you will receive an access denied message similar to the following:




Under such circumstances, logon to the application using your username and password, and then re-attempt the control process.

### *Access Denied: No Privilege*

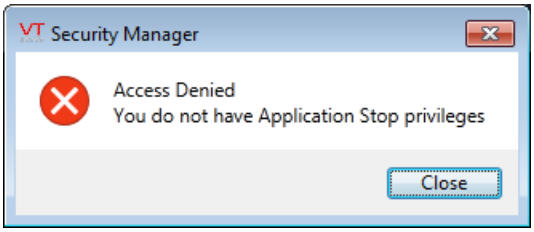
If you are logged on to your application, and attempt to access a control process for which you are not authorized, you will receive an access denied message similar to the following:




The dialog shows that you do not have the privilege appropriate to the action you've just attempted to complete. If you find that the action is necessary to your duties as an operator, please speak with your VTScada developer, or the person in charge of the security for your application so that they can add the appropriate privilege to your user account.

### *Access Denied: No Application Close Privilege*

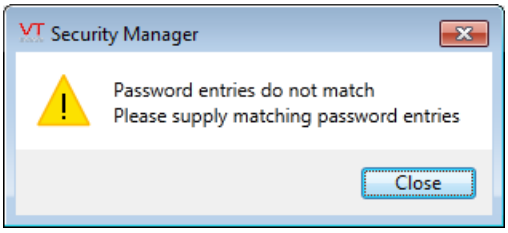
If you have not been granted the appropriate user privilege, and you attempt to close the application using the Windows close button, you will receive the following access denied message:




If you receive the above dialog, you will be unable to close the application using the Windows close button. You must use the VAM to stop the application.

### *Password Entries Do Not Match*

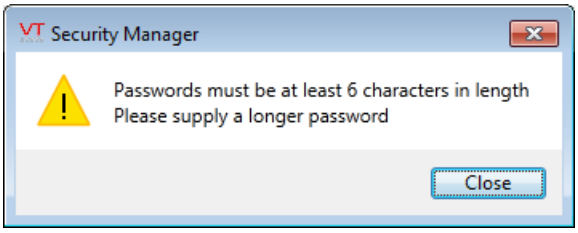
When you are in the process of changing your password, and the password you entered in the New Password and Confirm Password fields does not match, then the dialog opens as shown:



Close the dialog and re-enter your new password in both fields again, ensuring that you spell the password correctly and enter the exact same password in each field.

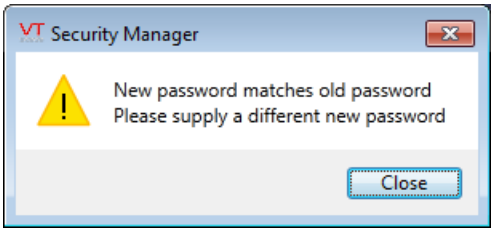
### *Password Too Short*

If you are creating a new password and do not use the number of characters required by the security manager, you will see this dialog. Click the Close button, then create a new password having at least the number of characters stated in the dialog.



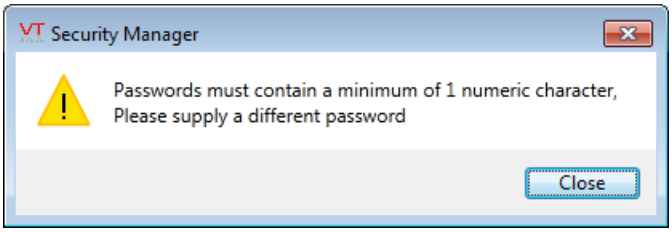

### *New Password Matches Old Password*

VTScada will not allow you to create a new password that is the same as the previous password. When a password is being changed, it must be changed to something new.




### *Password Must Contain...*

Your security manager may have configured the application to require strong passwords . These are passwords that contain numbers or special characters so that they do not match dictionary words. Click the Close button, then create a password having at least the number of special characters listed in the dialog box message.



### *Operation Not Permitted Message*

In extremely rare cases, a message may appear that reads, "Operation Not Permitted, Account Not Modified".

When running a standard VTScada application, you will not see this message. It can happen only if custom code happened to call a security-related function using a malformed user name.

If you do see this message, please contact the developer of your customized application.

This message is not to be confused with the Access Denied message that appears whenever a user attempts to access a function for which they have not been granted privileges.

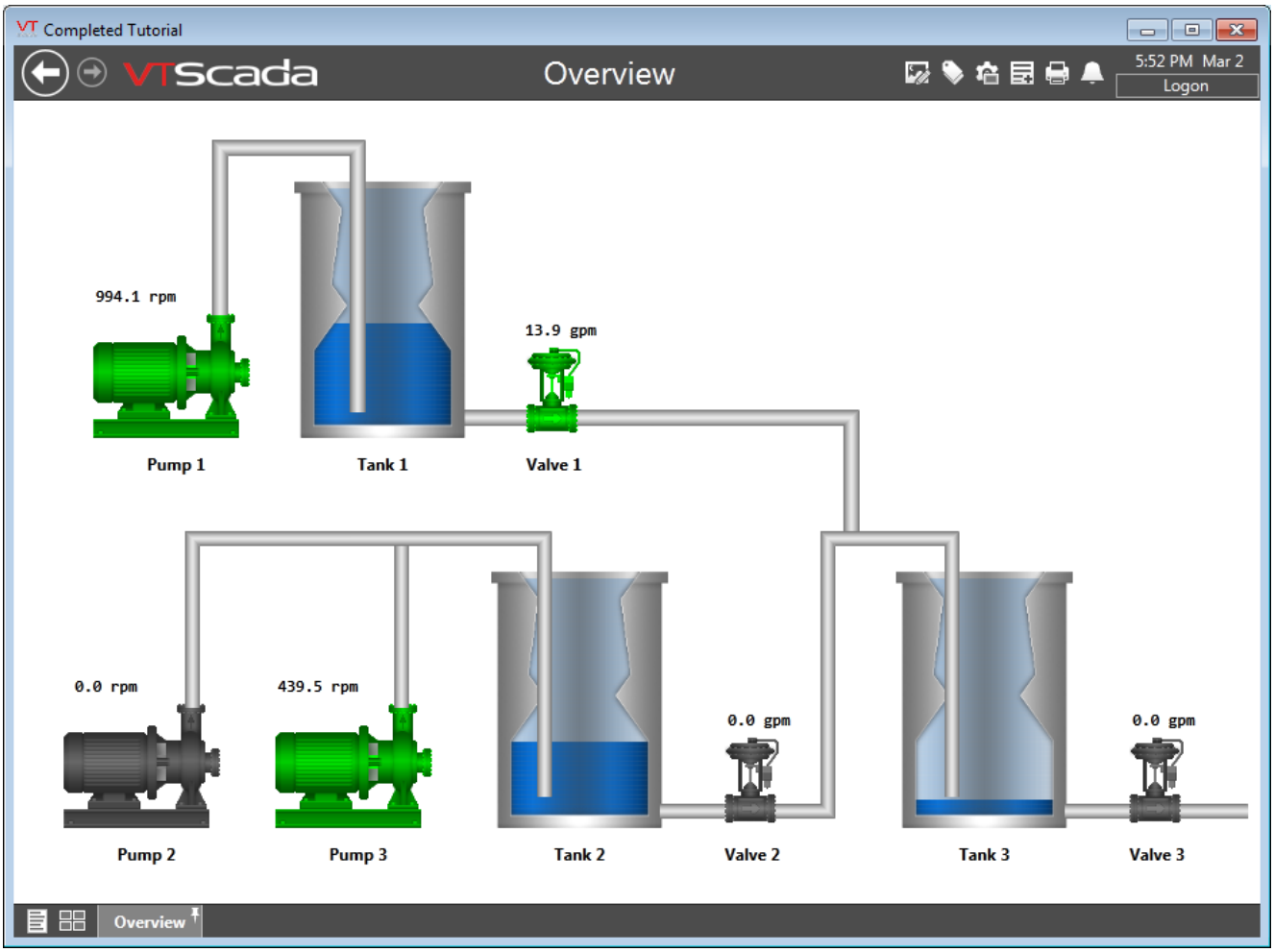
# *Navigating Application Displays*

The following tools can be used to navigate from one page to another.

- Click the VTScada logo at the top of the page to return to the default page menu.
- Use the left and right arrows beside the logo to move back and forward through recently visited pages.
- Use the menu buttons at the bottom left of the screen to open and navigate to pages.
- Click the alarm icon at the top right of the screen to open the alarm page.
- Use any links that the developer of your application placed within pages.

No matter which page is being displayed, the Display Manager and its tools remain the same. The overall display is made up of the following areas, listed from top to bottom:

- The Microsoft Windows™ title bar. Present only if the Developer chose to include it. Many VTScada applications run in a full-screen mode, without this title bar.
- The VTScada title bar – shows the name of the current page and provides access to the most commonly used tools. (Next and previous page arrows, configuration, page notes, alarms, security logon.)
- The page display area. This is the main working area for your application. It will change from one page to another.
- The navigation bar – this includes the page menu and can include links to pages if configured you choose to pin commonly-used pages.




## Application and System Pages

In this guide, the term "application page" is used to refer to any page that developers create to show the processes that make up your system. The term "system page" refers to those pages that are built into VTScada. These include:

- A standard Alarm page.
- The Historical Data Viewer page.
- The Reports page.
- The Operator Notes page.
- Site Maps

The Overview page, although built into VTScada, is considered an application page because it is fully under your control to develop or delete.

*Related Information:*

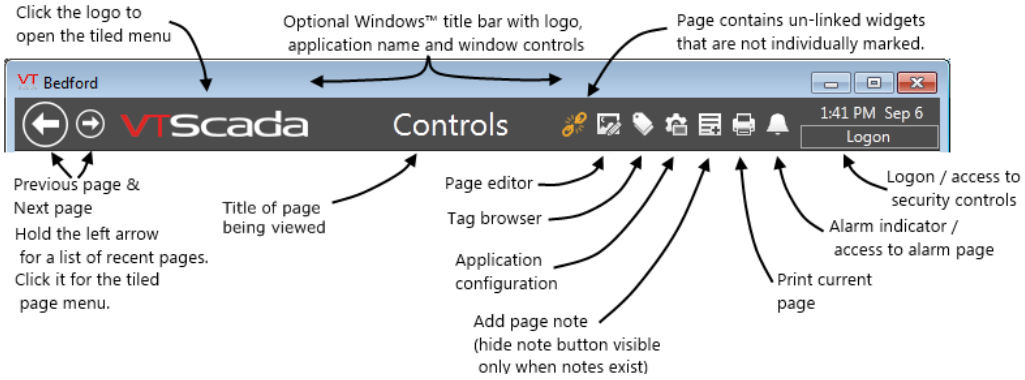
...Title Bar Components - Item by item guide.

...Navigation Bar Components - Item by item guide.

...Change Pages - Many ways to open a page.

# Title Bar Components

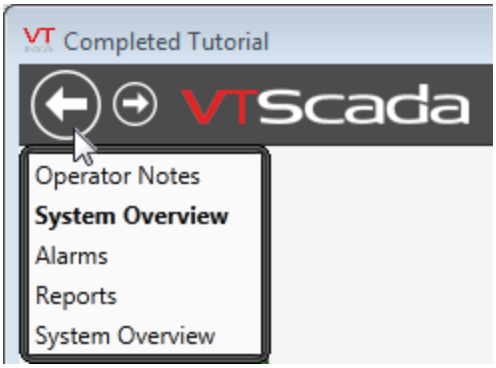
The Display Manager's title bar is located at the top of the screen.




The Display Manager's title bar includes the following components (from left to right):

| Title Bar Item | Description |
|---|---|
| Windows title bar | The Optional Windows Title Bar may or may not be configured for your application. If it is present, it displays the title of your application in the left corner, and includes a minimize, maximize, and close button in the right corner. |
| Previous page | Click to open the previously viewed page. If no page has been viewed previously (this is the first time you are running the application) then the tiled page menu will open.<br><br>Hold for a list of previously visited pages. Note: a page that you can navigate to with the Next button will not |

be included in the list of previous pages.




| | |
|---|---|
| Next page | Click to step forward after using the previous page button.<br>If you navigated several steps back in the list of previously visited pages, then click and hold this button for a list of "next" pages. |
| VTScada Logo | Click to open the tiled page-menu.<br>Developers can set the page to be opened using the property, TitleLogoTarget. |
| Page title | The name of the page you are viewing. |
| Unlinked widgets | Click to toggle individual flagging of unlinked widgets. While individual flagging is off, this button will blink orange as a warning. |
| Page editor | Click to open the editor window, where all development work is done. |
| Application properties | Opens the application properties window, with its many configuration and administrative tools. |
| Add page notes | Click to add a reminder note, resembling a 'yellow sticky' to the page. |
| Hide page notes | Click to temporarily hide (not delete) all page notes.<br>This button is visible only when there are page notes to hide. |

| | |
|---|---|
| Print | Click to print the current VTScada page using the default Windows printer. |
| Alarms | The Alarm button informs you of an alarm condition by flashing red. You can open the Alarm page by clicking this button. |
| Time/Date | The Time/Date displays the current system time and date. |
| Logon button | Click to logon to your account. Once logged on, this button displays your account name, but is still a button. Click again to log out or to access the security dialogs, if your account is authorized to do so. |

### *Related Information:*

...Navigation Bar Components

...About Page Notes - Add notes to pages.

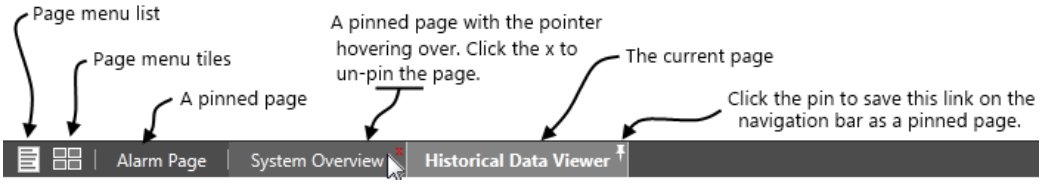
...Print... - Printing a page.

...Alarms - The Alarm Page - Responding to an alarm.

...Logon to Your Account - Logging in and logging out.

# Navigation Bar Components

The navigation bar is located at the bottom of the Display Manager.




It is used for navigating through the pages of your application. The navigation bar includes the following navigation tools (from left to right):

| Navigation Bar Tool | Description |
|---|---|

| | |
|---|---|
| Menu list | When clicked, this opens a customizable menu of the pages for your VTScada application. Selecting an item from the menu opens that page. |
| Menu tiles | Opens a tiled menu of pages. Tiles in the upper portion are recently visited pages. Tiles in the lower portion match the contents of the menu list, with sub-menus shown in folders. A navigation bar between the two portions keeps track of which folder is open in the lower part of the display. |
| Pinned pages | These buttons provide single-click access to different pages in the application. They are under your control and different users can have a different list of buttons. Use the pin icon in the displayed page to pin it to the bar and the "x" icon remove a pinned page. You can change the order of the buttons by dragging left and right. |
| Current page | The name of the current page is highlighted. |

*Related Information:*

...Title Bar Components

*Related Tasks:*

...Change Pages

# Change Pages

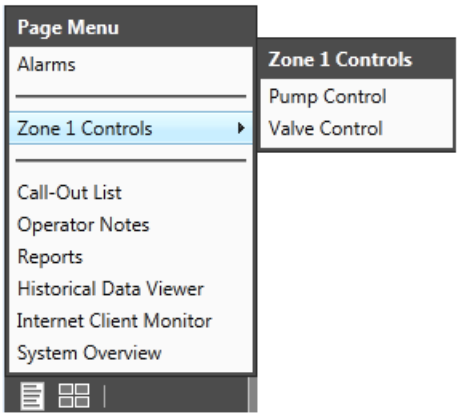
VTScada provides many ways to change pages. Application developers can choose to use any or all of the following. Your application might not include every option listed here.

*Change Pages Using the Menu*

You can change the display from one page to another using the menu, which is accessed using the Menu button on the Display Manager's navigation bar. The menu contains a list of some or all of the available pages for your application, depending on how your application developer

configured it.

To open the menu, click on the Menu button. The menu opens, displaying a list of available pages for your application.




An arrow beside a menu entry indicates that it contains a sub-menu, as shown.

Note: Your menu will have been configured specifically for your VTScada application, so it will contain different pages from those shown here.

To navigate to any page displayed in the menu, click on the page's name. The page opens in the page display area of the Display Manager, or as a pop-up window, according to how it was configured.

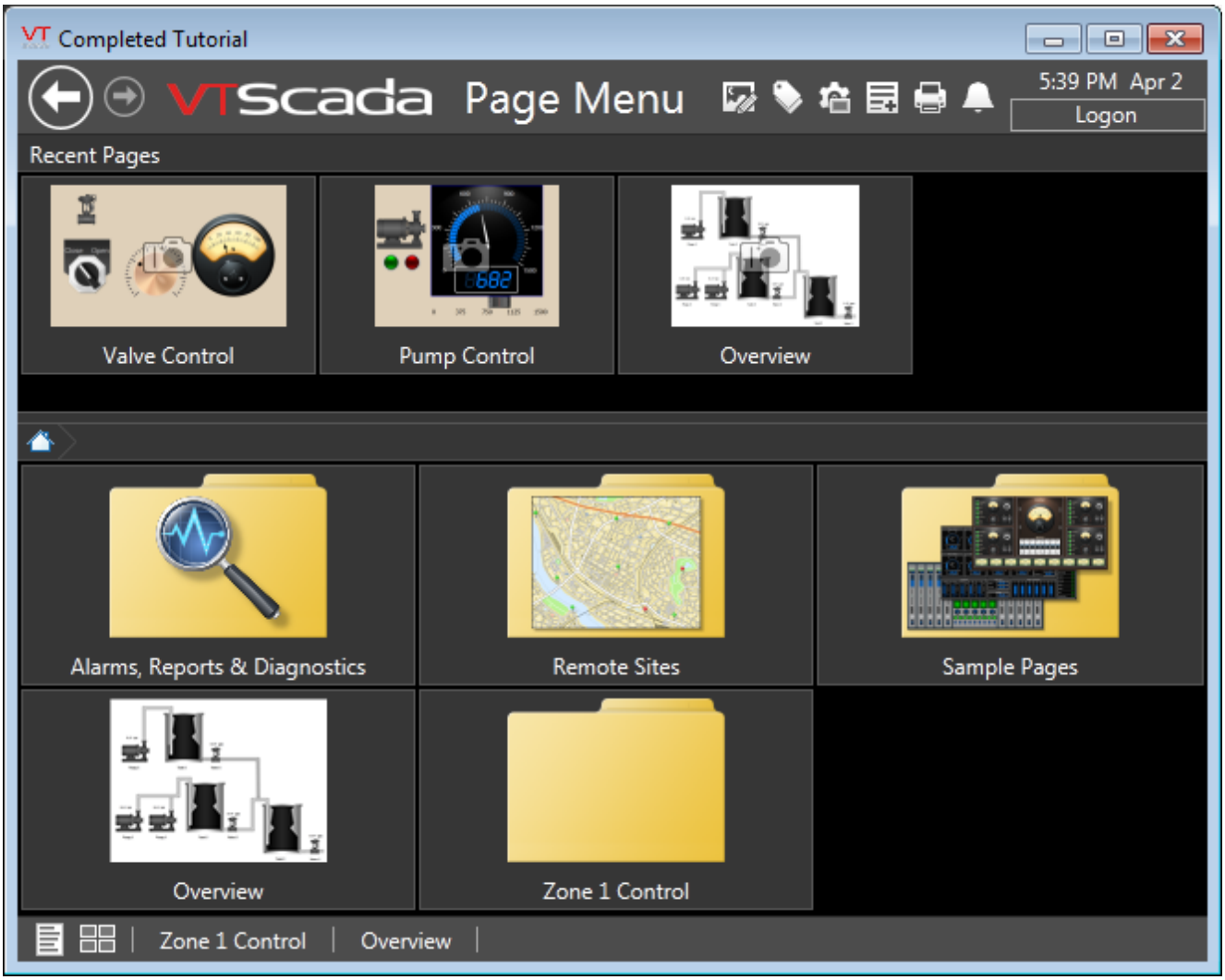
In the event that you need to see two pages simultaneously, you can right-click some menu items to open the page in its own window. Pages built into VTScada can be opened this way – the pages of your application may or may not respond to a right-click depending on how the developer configured them.

Your menu may not have been configured to include all of the pages for your application. If this is the case, you must use an alternate method for changing pages, such as using page change buttons.

### *Change Pages Using the Tile Menu*

The tiled page menu provides both a quick method of navigation and a preview of the pages in your application. The main body of the page shows tiles for only those pages that are part of your configured menu. Sub-menus are displayed as folders, which you can click to open.

The fastest way to open the top level of this tile menu is to click the VTScada logo, at the top, left of the screen.



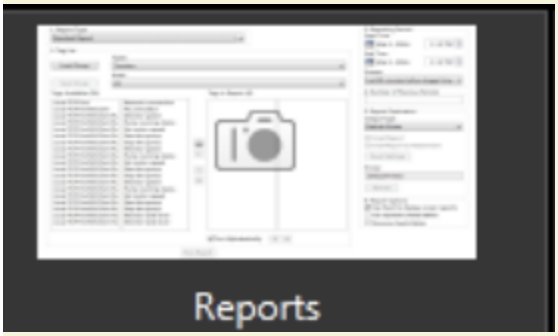

The tiles show a live view of each page[1]. They are loaded in sequence, but you may not notice the lag between each preview being loaded. The tiled menu is itself a page, named PageMenuPage.

If security settings have been applied to pages within your application, those privileges also apply to the display of the page within the tile menu. Thus, you may not see all pages if your security rights do not include the privilege required for a given page.

The tile menu is the first page shown in a new application. If you are starting development, click the Overview page to open it, then follow the directions within it to open the Idea Studio. To erase the welcome

message from the Overview page, once in the Idea Studio use the Select All command in the ribbon to select all parts of the instructions, then press Delete.

Note: (1) The ability to show a live view depends on how many tiles there are. If the number of tiles is large enough that maintaining a live view of each would excessively tax your system resources, then a static "snapshot" view is shown instead. Snapshot views are indicated by a camera image:




The set of tiles in the Recent Pages list, shown across the top of the page, is the list of pages you have visited recently. Click any tile to re-open that page. (Developers can change the maximum number of pages show in this area using the property, NumHistoryItems.)
The home icon in the bar below the list of recently-visited pages is helpful when navigating out of folders. If you have opened a menu folder, then the name of the folder will be displayed on this bar. After navigating down into page folders, you can return to a higher level, or to the top, by clicking in this bar.

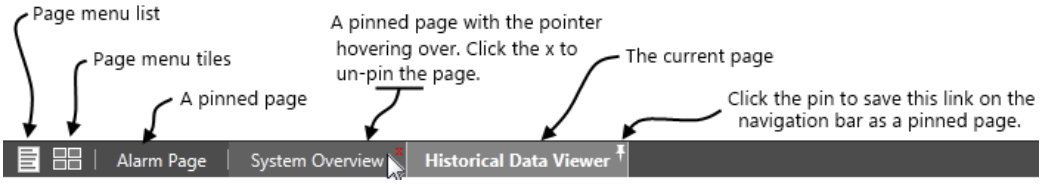
### Tasks:

- To open a page, click its tile.
- To close this page, click a tile or use the menu to open a different page.
- To choose a different set of page tiles, edit the menu. (For developers only.)

#### *Change Pages Using Navigation Bar Links*

Another helpful navigation tool is the set of page change buttons along the navigation bar. You are able to add and remove your own set of page change buttons, regardless of how your application was configured. The

list of buttons here is unique to each person who logs into the application and no one else can change your list.
The page being viewed has a highlight and uses a bold font for the label.




To switch pages, click on the appropriate button.
In the event that you need to see two pages simultaneously, you can right-click any page change button to have the related page open as a small-sized separate page on top of the page you are viewing. The ability to open this way is an option of how each page is configured, so this method may not work with all pages.
You can reposition the small-sized page on the screen simply by dragging its title bar. The Alarm page is the only one which cannot be opened in two windows simultaneously.
You can pin the open page to the navigation bar by clicking the pin icon. VTScada has been designed to store the page change buttons you configure along with your user account information, so that each time you logon to your VTScada application, your page change buttons are loaded. Pinned pages can be removed from the navigation bar by clicking the "x", located in the same place that the pin icon was found.

### Add a Page Change Button

1. Open the page that you wish to connect to a page change button.
   The page must be opened full-screen. You cannot save a link to a dialog-box style of page using the navigation bar.
2. Hover over its tile on the navigation bar. A stick-pin icon appears in the upper-right corner of the button.
3. Click on the stick-pin icon.

If you are logged on to your user account, your page change button configuration will be saved along with your account information so that you

have access to the same page change buttons each time you logon to your application.

### Remove a Page Change Button

1. Hover over the button in the navigation bar. An "x" icon appears in the upper-right corner of the button.
2. Click on the "x".

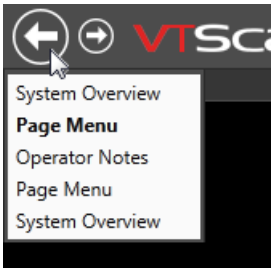
#### *Change Pages with Page History Buttons*

You can quickly navigate between recently viewed pages by using the Previous Page  and Next Page  page history buttons on the Display Manager's title bar. Your VTScada application remembers the last 15 pages that were viewed, even if they were viewed in a previous session. VTScada saves a separate page history for each operator.

Note: The Next Page button works only if you have gone backward a page with the Previous Page button first.

### Recent History List

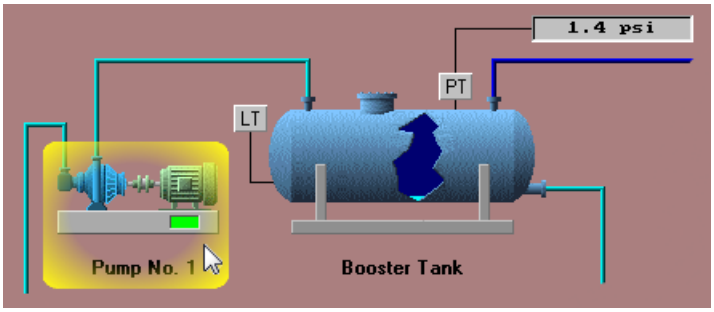
For faster navigation, click and hold the Previous Page button, to open a list of the recently visited pages. You can then select any page from the list to return to.




#### *Change Pages with Hotboxes & Buttons*

A dynamic navigation feature used on VTScada application pages is the hotbox. A hotbox is a hidden, rectangular area on a page that has been configured to reveal itself when the mouse pointer moves over it. A page button performs the same function, but is always visible.
Clicking on a hotbox or button will open another page.

A page change hotbox may open either a new full-sized page, or a control panel or dialog-sized page when it is clicked. The choice depends on how the destination page was configured to open, not on the configuration of the hotbox or button.
Some pages have small images that represent a complex arrangement of equipment. A page change hotbox is often defined around these small images. When such a hotbox is clicked, it can take you to another page that illustrates the complex system in much more detail. This is a space saving approach often used when large and complex systems are represented in VTScada.
Another common use of page change hotboxes is to open a pop-up control panel or dialog box for a specific piece of equipment. A hotbox may be configured around an image or label related to a device. When you click the hotbox, a dialog box with controls for that equipment opens. This system enables controls to be hidden when not needed, and also enables security restrictions to be put into effect by allowing only certain operators to open the control page.



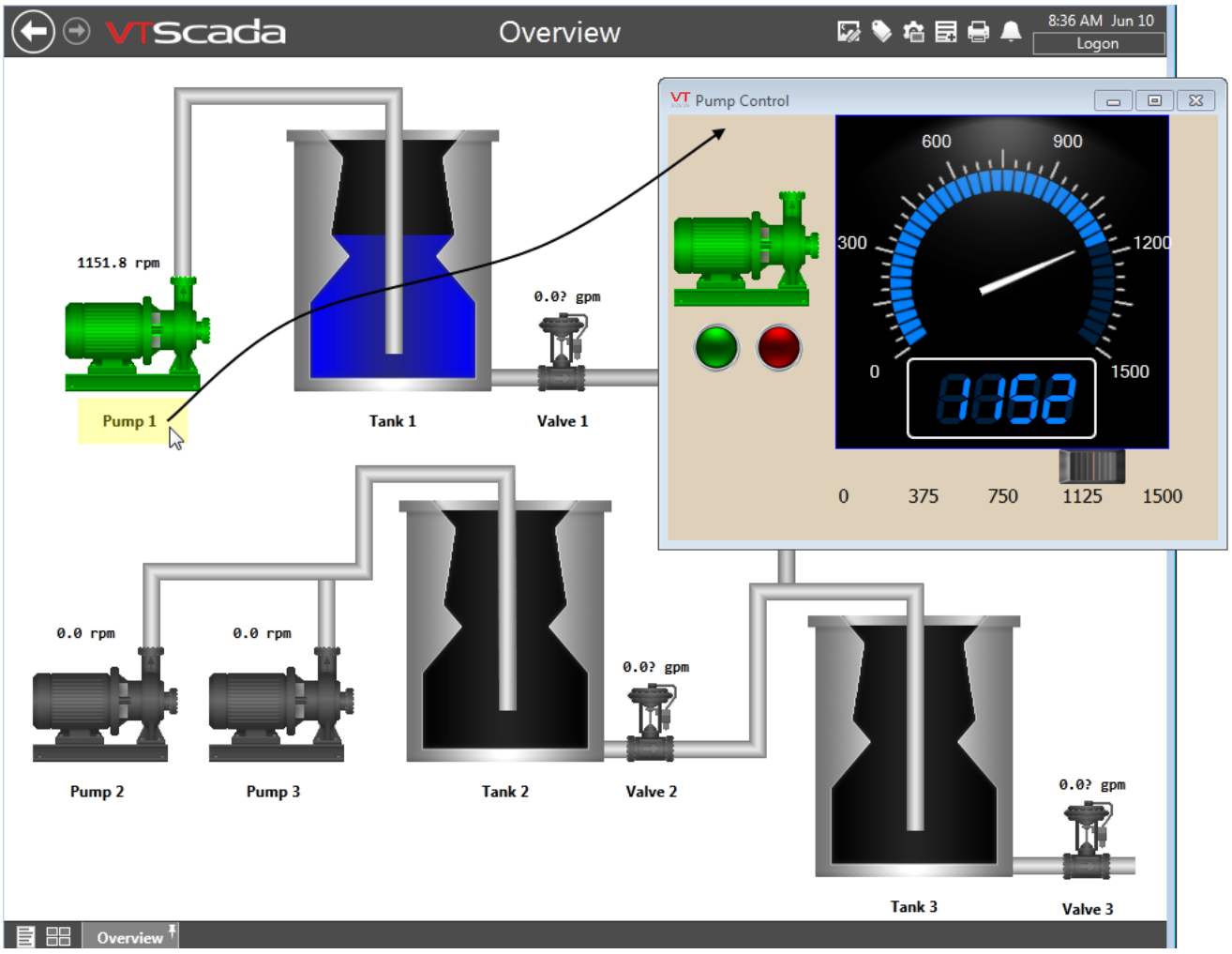

Hotboxes are typically shown as yellow rectangles, although they can be configured in any color your VTScada developer chooses.
A different type of hotbox is Set Value hotbox, which sends a control signal to the equipment. If there are both page change and set value hotboxes in your application, they are likely be configured using two distinct colors. Ask your VTScada developer what colors have been configured for the hotboxes in your application.

### *Related Information:*

...Limits on Pop-up Pages

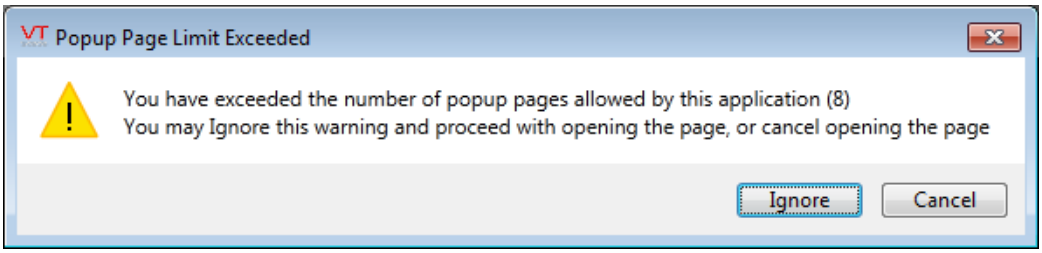
# Limits on Pop-up Pages

Pop-up pages, similar to dialog boxes, are a common part of most applications. Your application might use them to provide controls or detailed displays for equipment.

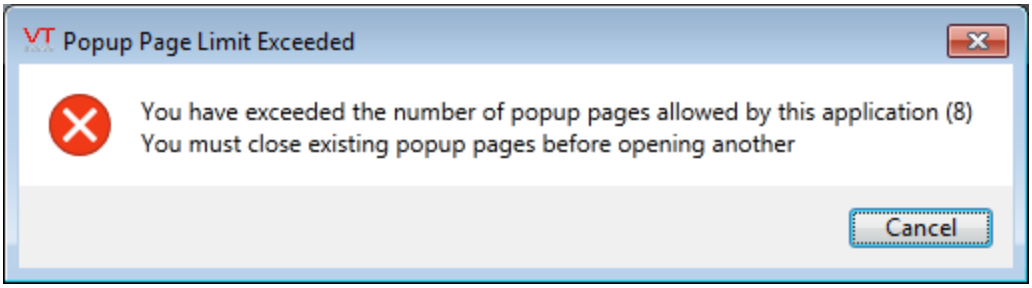



*A pop-up control page.*

By default, only eight pop-up pages can be opened at a time. Your developer may have configured a larger or smaller number. The developer also has control over what will happen when that number is exceeded: Older windows might be closed automatically (oldest or newest first) or you might be permitted to open extra windows after reading a warning message:




Or, extra windows might be denied.




Your application developer might have configured your system to close all pop-up windows whenever you navigate to a new page in the main display.

All of these options will depend on how your developer chose to configure your system.

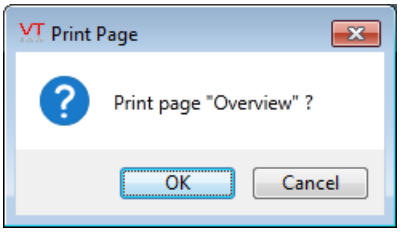
See: "Limit Pop-up Pages" in the VTScada Developer's Guide

# *Print...*

Most of the pages in VTScada can be printed by clicking on the printer icon, found in the title bar.
In addition to the general-purpose print button, you can also print trend graphs, reports and operator notes.

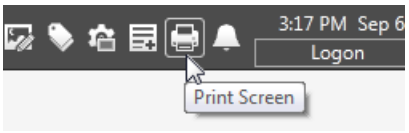
**To print any page:**
There are two methods. The default system printer will be used in every case.
The following instructions apply to all pages.

1. Press the keyboard combination, Ctrl + Prt Scr (Control+PrintScreen)
2. Click OK in the Print Page confirmation dialog.

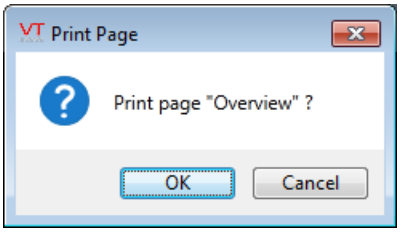



If the page has a title bar that includes the printer icon:

1. Click the Printer Icon at the top of the page.




2. Click OK in the Print Page confirmation dialog.

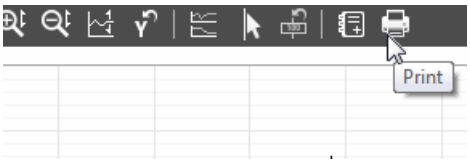



Result: A snapshot of the current page will be sent to the default Windows system printer.

**To print a trend graph:**

These instructions apply to the Historical Data Viewer page.

1. Click the printer icon within the Historical Data Viewer page.




2. Click the OK in the Print Page confirmation dialog.

Result: The current view of the trend graph (plot or grid, including only the displayed data), is sent to the default Windows system printer.

### To print operator notes:

These instructions apply to the Operator Notes page.

### Export for printing.

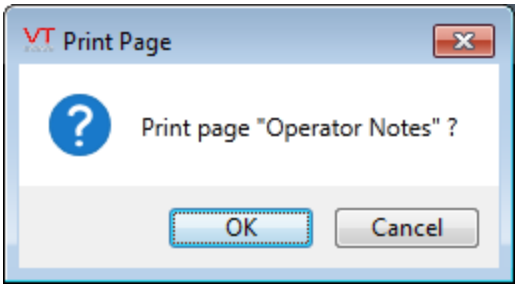
1. Use the search tools to limit the display to the notes that you want to print. All comments on the selected notes will be included in the export.
2. Click the Export button.


   A Windows® dialog will open, prompting for the file name and folder to which to save the data.
3. Accept the default file name and folder, or enter a new destination.
4. Click the Save button.
   If the file already exists, you will be prompted to replace it, or you may return to the previous step and create a new file name.
5. The file will be saved.
   Your default browser will be opened automatically, displaying the contents of the file.
6. Print from your browser.

### Print the current screen.

Note: Comments will be printed only if they are expanded on the screen.

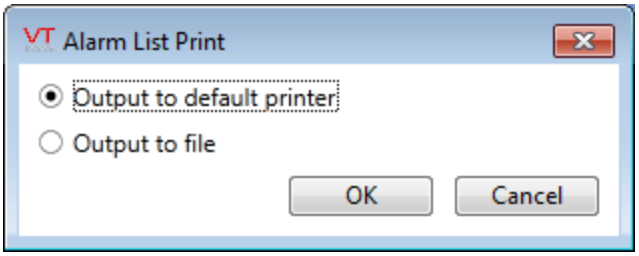
1. Use the search tools to limit the display to the notes that you want to print. Only notes that fit on the screen will be printed using this method.
2. Expand any comments that should be printed.
3. Click the Print button at the top of the screen.
4. Confirm that you want to print the currently displayed list of notes by clicking OK.




The notes will be sent to your default Windows™ system printer.

**To print the alarm list:**

While viewing the alarm page, click the printer icon. The full list of alarms will be included. Note that you may limit this using filters for the alarm list. The prompt dialog will ask you for a destination for the output.




If each alarm must be printed as it occurs, add the application property, AlarmPrintOn and set its value to 1.

**To print a report:**

To print a report, you must first generate a report. Nearly any report format that you create can be printed.

*Related Tasks:*

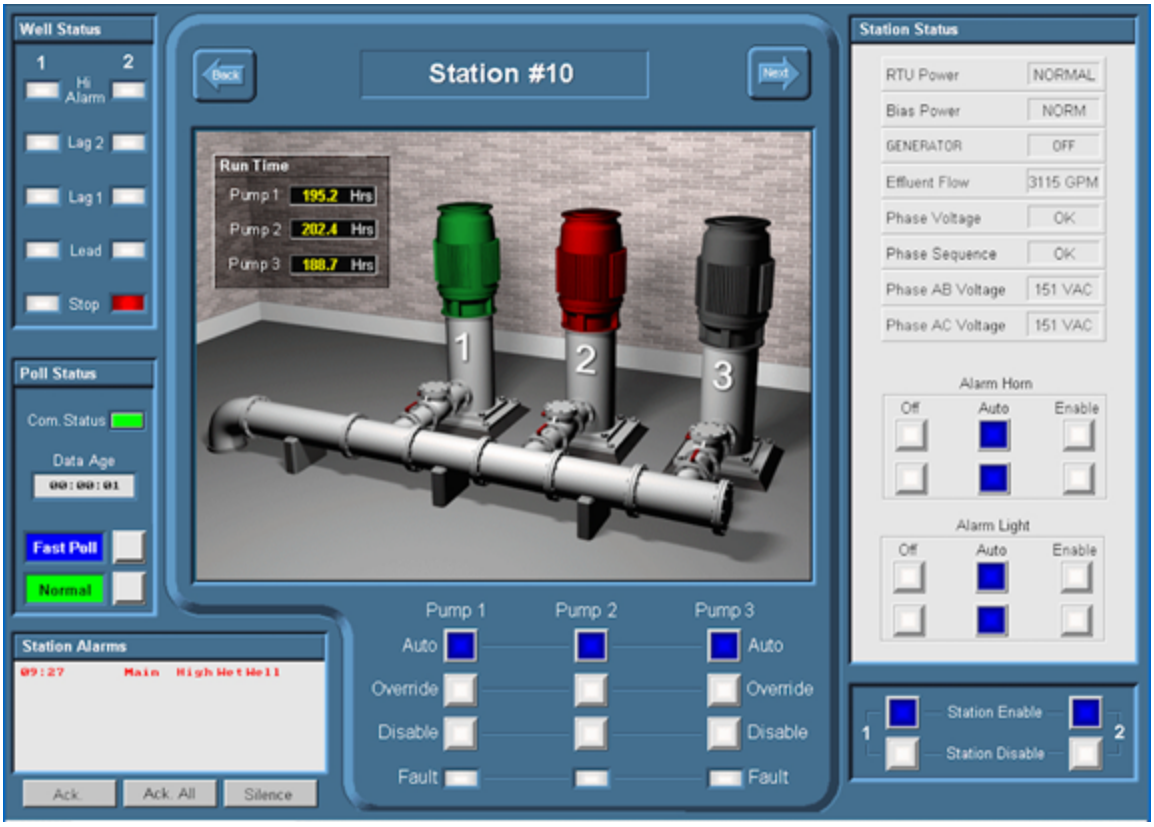
...Steps to Create a Report

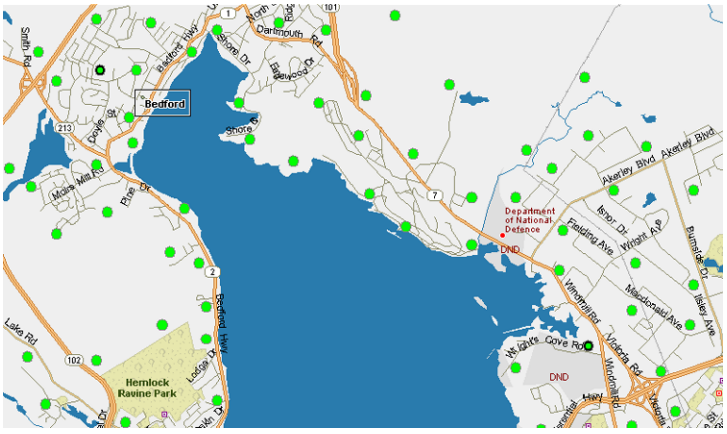
*Related Information:*

...PrintWidth - System property that sets the width of Alarm page and Operator Notes printouts. This is a VTScada configuration property, and is not available through any user interface. Set to 80 characters by default.

# *Use the Operator's Controls*

No two VTScada applications will look quite the same. Each industry will have its own requirements and different developers will use their own style.




These differences are mainly in appearance - VTScada itself will always work the same way from one application to another.

Note: Ask your VTScada developer if a custom Operator's Guide has been created for your application. A custom Operator's Guide explains the exact features of the application pages for your VTScada application and how to use them.

The pages in your application run in real-time. This means that when a change occurs in the equipment, it is automatically and immediately reported by VTScada on your screen.
Information may be presented in many ways, including lists, dialogs, animated graphics, colors, symbols, and numbers. Control and output of data from the application to the equipment is done using buttons, sliders, and data entry fields.

*Related Information:*

...Tags Described - Working with I/O tags.

...Special Symbols for Tags

...Interact with VTScada- Guide to pointer actions.

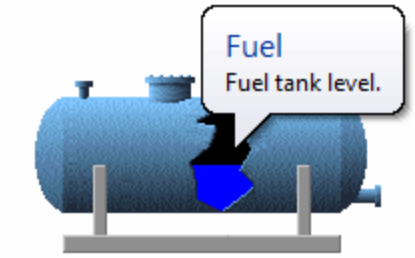
...Tooltips - Tooltip reference.

...Tag Shortcut Menus - Shortcut menu reference.

# Tags Described

Tags are the building blocks of any VTScada application. Tags are software components that represent equipment and equipment processes and states. Tags also are used to represent the port and the driver used to communicate with the equipment, and even the computer upon which VTScada is running.

A useful feature to know is that you can hover the mouse pointer over a tag to learn more about it. A tool-tip showing the name and description will be shown, similar to the following:

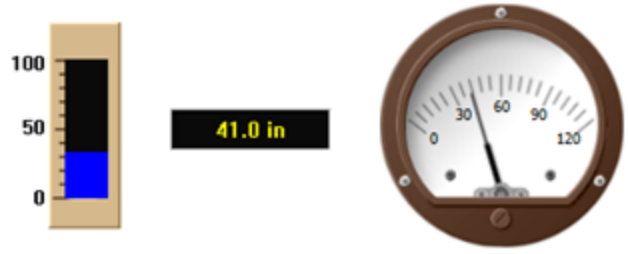



### Incoming Tag Data

Input and Status tags gather incoming data from the equipment. For example, a gauge in a tank provides a level reading. This is passed to the I/O device, which passes the data through the computer's port to the Port tag in VTScada.

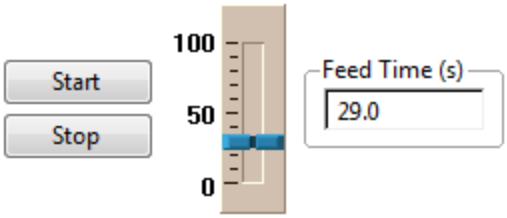
The Port tag passes data onwards to the I/O Device Driver tag, which is able to understand the signals coming from the equipment. The device driver tag translates the information to a format that you can understand, and then passes it along to an Analog Input tag that represents

the tank level. The analog input tag can display this data in the form of a numeral, a meter, an animated color bar, or some other widget[1].




### Outgoing Tag Data

While most equipment control is done by the controller attached to the equipment, a VTScada application can be configured so that operators can write values to the equipment using output tags. For example, an operator can command VTScada to close a valve by clicking a button. That button represents a digital output tag, which will send a value of "0" or "close" to the I/O device driver tag. The I/O device driver tag translates this to a format that the equipment can understand and passes the signal to the port tag, which then relays the signal out to the device. Finally, the I/O device sends a signal to the valve to close.




*Related Information:*

...Special Symbols for Tags - Explanation of the symbols that may be present.

[1] An animated, visual representation of a tag's value or an operator control for setting the tag's value (or, both).

# Special Symbols for Tags

The operating state of a tag is displayed using the symbols described in this topic. These will let you know when a tag is showing manual values (coded test values instead of actual equipment values) or whether there has been an equipment failure.

### Unlinked Widgets

Because developers are able to draw widgets first, then link those widgets to tags, it is possible for unlinked widgets to be left in a page. These will show simulated values.

To avoid the risk of simulated values being mistaken for real process data, the unlinked widget symbol is drawn on all unlinked widgets. If you see this symbol, know that the values being displayed are coming from a simulator, not from equipment.

Note: It is possible to turn off the display of the unlinked widget indicator for individual widgets. If this has been done, a warning indicator will blink orange in the title bar. Developers with configuration privileges can click that indicator to toggle the individual indicator display on and off for all operators.

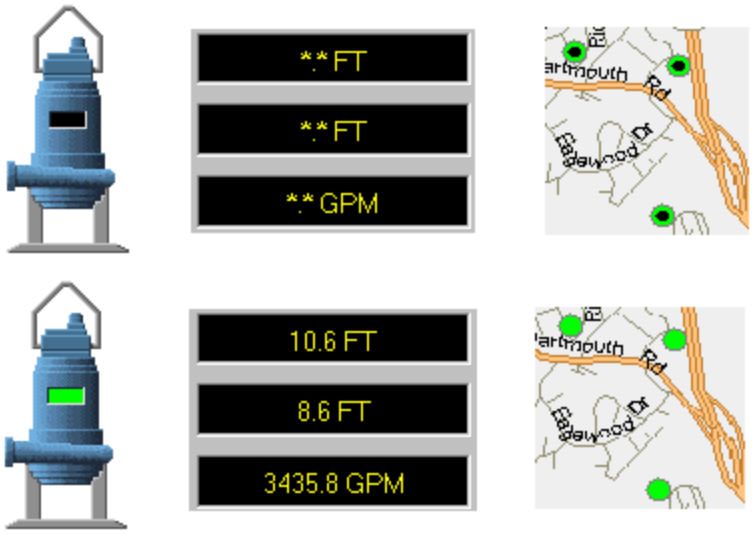

Warning: The title bar version of the unlinked widgets indicator will be visible only while someone is logged on.

### Invalid Data

Whenever your application cannot access equipment values due to a communications error or an equipment failure, it reports invalid data. Invalid data is indicated on-screen using one or both of the following:

- A display of asterisks (*) in place of a value
- Black in an object's indicator area

Note: colors other than black may be used. Ask your VTScada developer about any special colors configured for your application.




In the first row of images, Invalid Data is shown by the black square on the pump, the asterisks in the text fields and the black circles in the center of the station symbols.

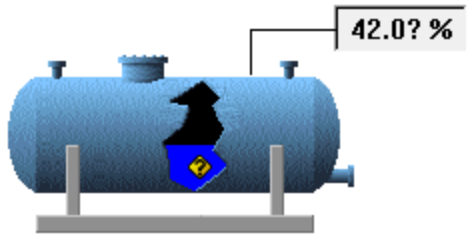
Once the equipment or communications problem is resolved and communications are re-established, the invalid data indicator is removed from the object's display. The second row of images displays the same objects in their normal operating state.

Note: Invalid data is reported for all tags for a few moments while your application begins to run. Once the application has completely loaded and has begun communicating with your equipment, the invalid data indicators are removed.

### Questionable Data

When the value being reported by a piece of equipment is in doubt for any reason, it should be marked as questionable so that operators using the application are aware that the equipment has to be checked and its

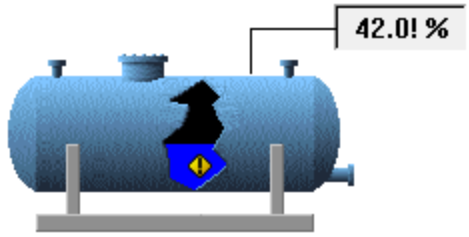
value confirmed against the data being reported. This is normally seen while a new application or equipment within the application is being commissioned. The Questionable Data indicator serves as a check to help keep track of what has been tested and what still needs to be.




Note: The ability to mark data as questionable and to enter manual data are user privileges that may not have been assigned to you. Ask your VTScada developer which user privileges you've been assigned.

### Manual Data

Input tags can be configured to show a constant, manually set value instead of live values coming from equipment. This is often done when an application is being developed and has not yet been connected to a source for live data. It might also be done if a developer wants to test alarm settings by forcing a tag's value into an alarm state.
To ensure that you recognize when manual rather than live data is being used in a tag, an exclamation mark is used.




*Related Tasks:*

...Questionable Data Flag – Set or Clear – Changing the Questionable Data flag.

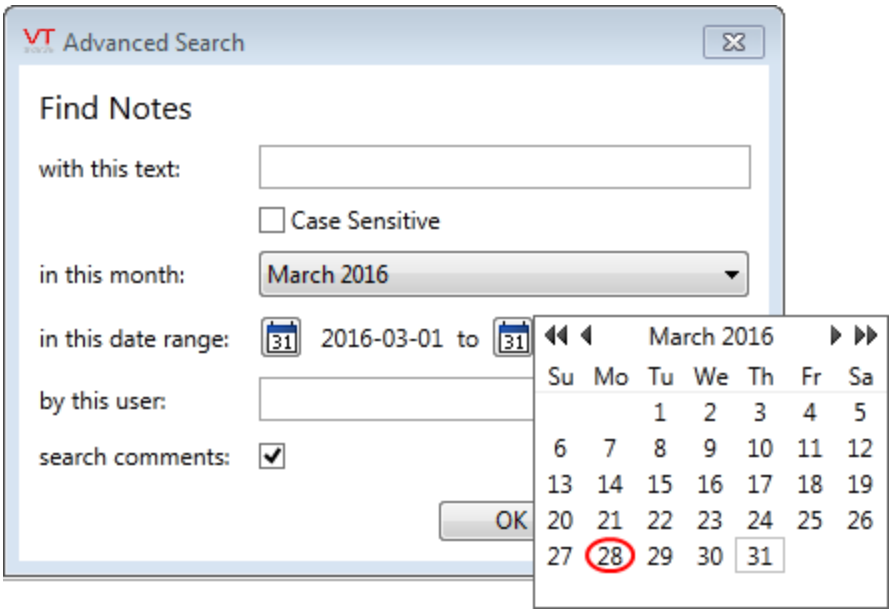
...Adjust the Manual Data Value – Add or remove Manual Data.

# Interact with VTScada

Aside from typing in a value or your logon credentials, most interaction with VTScada is done using a mouse or other pointing device. Most pages and controls are designed to respond in a certain way, depending on whether you left-click, right-click or hover over them. Lists and menus will respond to the scroll-wheel being turned.

Confirmation prompts are built into outputs such as buttons, sliders and text boxes. Whether or not they are enabled is a decision left to the person who built the application. If your application developer chooses to require a confirmation prompt on operator controls, they also have the ability to provide information that will make the prompt descriptive. For example, "Are you sure you want to change the value to On?" as opposed to "Are you sure you want to issue the control action?".

Several pages provide calendar controls if there is a choice of dates for the information you are viewing. (Three examples include the Reports page, HDV trend history and searching Operator Notes.) If you see a calendar control, click to open the calendar date selector:




The various responses you can expect when you right-click or left-click on an object are as follows. Note that if your developer has placed two objects on top of each other, such as a tag-widget and a hotbox, the

click will be recognized by both and you may end up changing pages and opening a pop-up HDV page.

| Page or Object | Mouse Operation | Result |
|---|---|---|
| Widgets showing input tags. | Left-click | A windowed version of the Historical Data Viewer page opens and plots the selected equipment values on a graph. Your VTScada developer may have configured your application to perform this behavior on digital input tags as well as on analog input tags. |
| Control objects for output tags. | Left-click | When a command button or set value hotbox is clicked, it sends a value to the equipment with which it is associated. You should ask your VTScada developer for assistance if the operation of any command button or set value hotbox is unclear. |
| Navigation controls: hotboxes and hot-buttons. | Left-click | When a page change hotbox is clicked, the page associated with it will open. |
| Navigation controls: hotboxes and hot-buttons. | Hover & Right-click | No action. |
| Tags for input or output | Right-click | A shortcut menu with options pertaining to the selected object opens. If you have the Tag Modify security privilege, you may adjust the scaling and other configuration properties of existing tags. |
| Widgets linked to tags for either input or output | Hover | Opens a tool-tip identifying the tag and equipment with which it is associated. |
| Buttons on the Alarm page, Historical Data Viewer page, or in the title bar or navigation bar | Hover | Opens a tool-tip identifying the tool or button and its action. |

### *Related Information:*

...Tag Shortcut Menus – Shortcut menu reference.

...Tooltips – Tooltip reference.

*Related Tasks:*

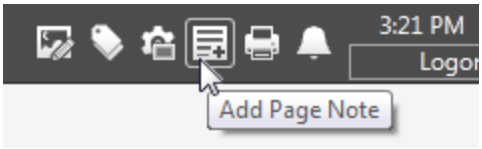
...Questionable Data Flag – Set or Clear – Changing the Questionable Data flag.

...Adjust the Manual Data Value – Add or remove Manual Data.

...Alarm Control Using a Context Menu – Change alarm settings.

# Tooltips

You can easily identify many of the features in your VTScada application by resting the mouse pointer over them. A tooltip will open and display information such as the name or purpose of a tool or button.

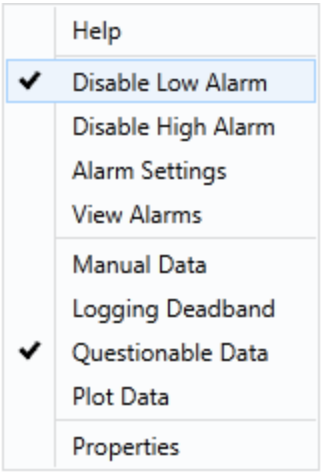



Tooltips are also provided to assist you in identifying those tags and equipment that are associated with specific objects on your pages. In addition, VTScada developers have the ability to add tooltips anywhere at all, in order to provide instructions or context information.

# Tag Shortcut Menus

Shortcut menus allow you to interact with the objects in your application by changing their settings, accessing their properties, and performing specific tasks related to the selected object.
A shortcut menu opens when you right-click any graphic object related to the equipment in your system. Some menu options are standard for all objects, while others are limited to objects of a specific type.

The following image shows an example of the options you might see on a shortcut menu.



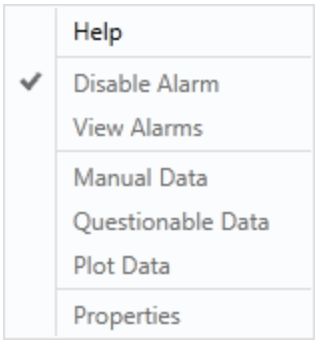

The content of a shortcut menu depends on the object you've selected. Different objects have different options.
Two common options are "Help" and "Properties". These and other options are described, with instructions, in the sections that follow.

Note: You may or may not have access to all the features provided on the shortcut menu. The section that follows discusses disabled shortcut menu options.

***Disabled Shortcut Menu Options***

Shortcut menu options will be disabled (i.e. appear in gray) if any of the following circumstances exist:

- You are not logged on to your user account
- Your user account does not have the appropriate user privileges for the option(s)

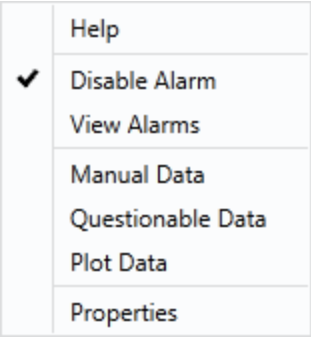



***Check mark Shortcut Menu Symbol***

A check mark symbol may appear beside certain options in the shortcut menu, such as:

- Questionable Data
- Alarm Disable (or Disable Alarm)

The check mark indicates that the menu option has been activated.




Selecting the same option a second time deactivates it and the check mark is removed. Not all menu items can be switched off and on, therefore not all will have a check mark.

*Help Option in tag shortcut menus*

The Help option in the shortcut menu may have been configured to provide you with custom help topics or instructions that apply directly to the object you've selected. If so, clicking the help option causes the custom help file that has been configured especially for your application to open on your screen to a help topic applicable to the selected item.
If a custom help file has not been configured for your application, then a topic from this guide opens and describe the properties pertaining to the type of tag selected.
If the Help option is not available, use the help button on the VAM to access the online help system.

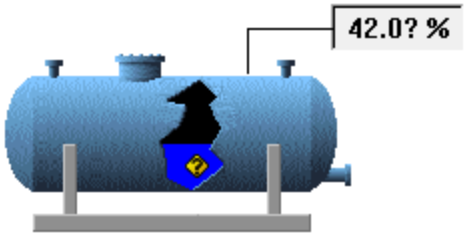
*Manual Data Option*

VTScada enables you to enter data for a piece of equipment manually when data ceases to be reported by VTScada due to an error (for further information, see Invalid Data.) When you enter manual data for a tag associated with a piece of equipment or an equipment process, the system stops reading data from that equipment until the manual data value is removed.

Note: The ability to enter manual data for a tag is a user privilege that may not have been granted to you by your VTScada developer. If you have not been granted the user privilege to enter manual data, the "Manual Data" option of the shortcut menu is disabled.

*Questionable Data Option*

Questionable data is used to indicate that an operator has reason to believe that the data for a piece of equipment is not correct. It is also used when commissioning a system, as a means to keep track of which tags remain to be checked. (Those with the question mark). Selecting the Questionable Data option in the shortcut menu places a question mark in each graphic object representing the tag's data.



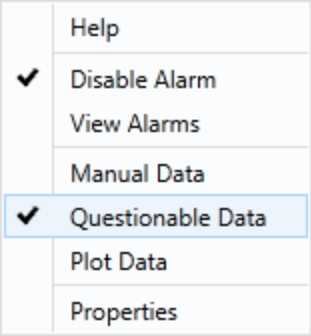

An example of the questionable data indicator.

Clicking the Questionable Data option from the shortcut menu places a question mark in the selected graphic object's display to indicate that the data being reported is in doubt.

This is a toggle option; selecting it once turns Questionable Data on, and selecting it a second time turns Questionable Data off. You will know that the questionable data option is on when a check mark appears beside it in the shortcut menu.

*Disable Alarm Option*

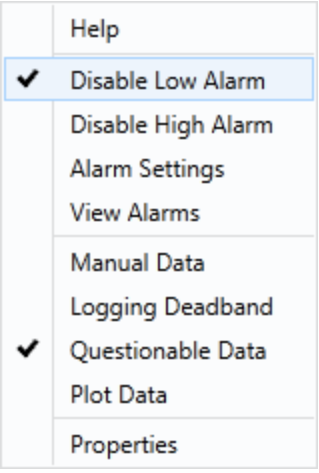
If you possess the required security privilege, you are able to temporarily disable alarms.




Disabling an alarm is different from acknowledging an alarm. When you disable an alarm, you prevent VTScada from signaling to you that the associated equipment is in an alarm state. This feature is useful when an item of equipment must be disconnected or needs to undergo maintenance. In these situations, you should disable the equipment's associated alarm(s) until maintenance is complete.

### *Logging Deadband Option*

You might be required to enter a deadband value for an analog tag. A deadband value tells the system how much change is required in an analog value before a change in value is reported and logged. Because some analog values fluctuate very often, you may choose to adjust the deadband value in order to avoid logging system noise. Data is not reported unless it has changed by at least the deadband amount.




### *Properties Shortcut Menu Option*

The Properties option of the shortcut menu opens the tag properties folder, allowing you to view and modify the properties of the selected

tag.

You must have the appropriate privileges in order to view or modify tag properties.

Properties vary widely by type of tag. For further information:

1. Right-click the object representing the equipment process, and click the Properties shortcut menu option.
   The tag properties folder opens.
2. Select the tab of the tag properties folder for which you require help, and then press the F1 key on your keyboard.
   A help file opens and provides information on the tag type.

*Related Tasks:*

...Questionable Data Flag - Set or Clear - Changing the Questionable Data flag.

...Adjust the Manual Data Value - Add or remove Manual Data.

...Alarm Control Using a Context Menu - Change alarm settings.

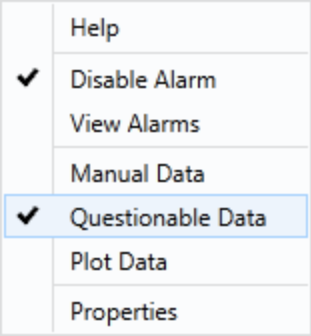
## Questionable Data Flag - Set or Clear

This flag is meant to be used as a place-marker while commissioning a system. As each tag is verified to be working, remove the question mark to separate it from the list of tags yet to be checked.

Note: Your security privileges may not include this ability. Check with your supervisor if the Questionable Data option is not enabled when you right-click on a tag.

### To toggle the Questionable Data flag on a tag:

1. Right-click the graphic object representing the equipment process.
   The shortcut menu opens and displays the options available for the selected object.




2. Click the Questionable Data option.

The Questionable Data flag will be toggled on or off from its previous state. If set, the tag's graphic objects are marked with a question mark until the flag is toggled off. A check mark in the shortcut menu will tell you whether the flag is set or not.

If you possess configuration privileges, you can also change the Questionable Data flag from within a tag's properties dialogs. The result is the same, but the method described above is considered an operational change, while using the dialog box is considered a configuration change. The difference is largely a matter of notation within the version control system.

*Related Tasks:*

...Adjust the Manual Data Value – Add or remove Manual Data.

...Alarm Control Using a Context Menu – Change alarm settings.

## Adjust the Manual Data Value

Note: Your security privileges may not include this ability. Check with your supervisor if the Questionable Data option is not enabled when you right-click on a tag.

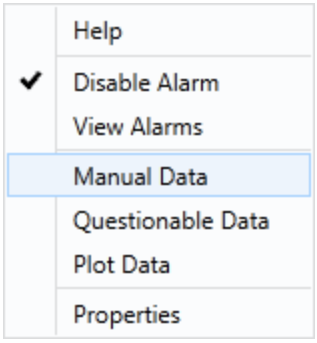
You may be required to enter manual data for an equipment process at some point. Possible reasons to do this include:

- It may be necessary to have some value displayed while the equipment or communication link is offline.
- It may be necessary to force the tag into an alarm state for testing or other purposes.

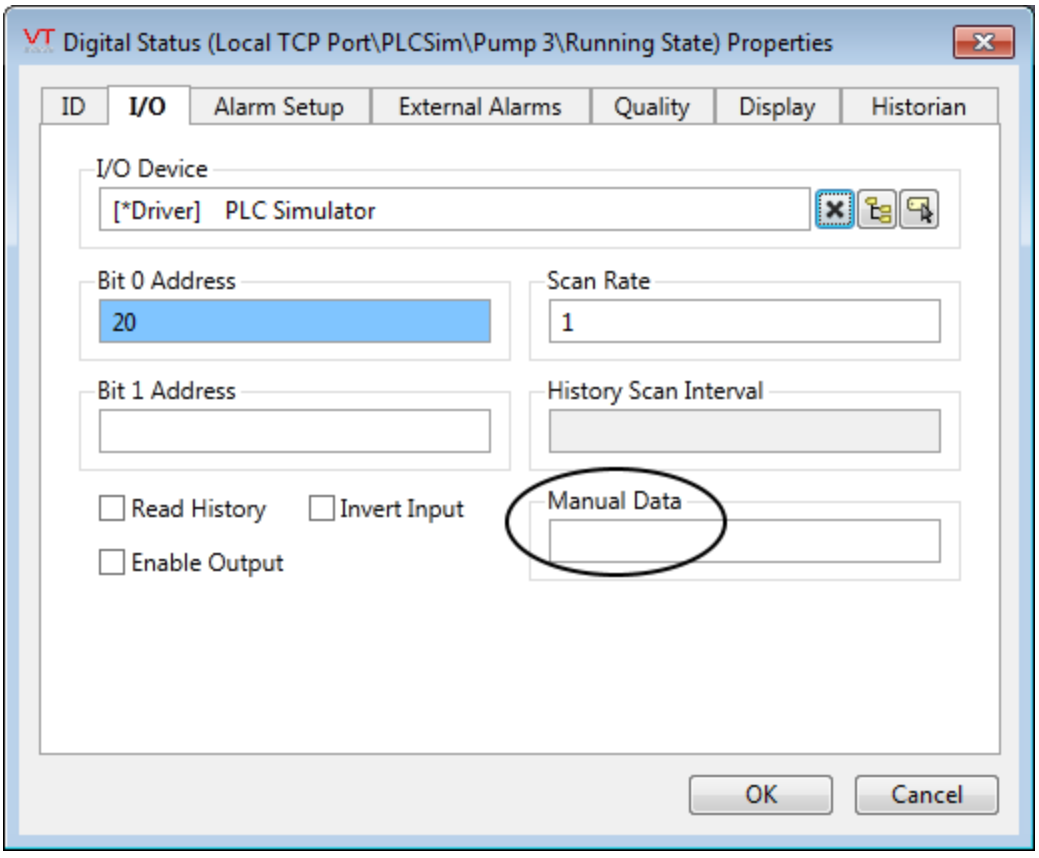
This operation can only be done through a tag's configuration dialog, but you can access that by way of the shortcut menu.

### To enter manual data for a tag:

1. Right-click the graphic object representing the equipment process.
   The shortcut menu opens and displays the options available for the selected object.
2. Click the Manual Data option in the shortcut menu.




3. Enter a value into the Manual Data field. The location may vary slightly depending on the type of tag.



4. Click OK.

The Manual Data value is saved, and is automatically propagated to all workstations running the application. The existence of a manual data setting on an object is signaled by a blinking exclamation point: 

Note: Use the "Manual Data" option with caution. Once a manual data value has been entered for a tag, the tag no longer reports the incoming values from the physical equipment until the field is cleared.

*Related Tasks:*

...Questionable Data Flag - Set or Clear - Changing the Questionable Data flag.

...Alarm Control Using a Context Menu - Change alarm settings.

## Alarm Control Using a Context Menu

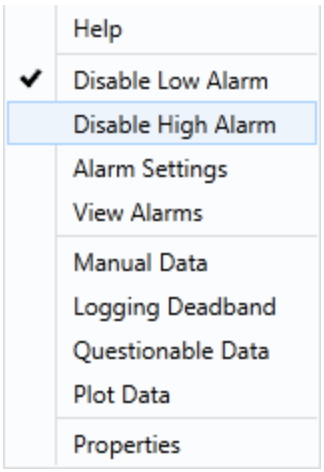
Note: Your security privileges may not include this ability. Check with your supervisor if the alarm-related options are visible but not enabled when you right-click on a tag.
If the options are not present in the right-click menu, it's because they are not supported by the selected tag type.

Many tag types provide a way for you to adjust alarm settings from the right-click context menu. Options may include enabling or disabling the alarm and opening the configuration dialog in order to adjust any of the parameters.

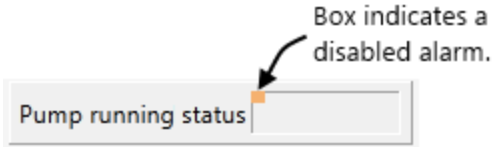
### To disable or enable an alarm:

1. Right-click the graphic object representing the tag.
   The shortcut menu opens and displays the options available for the selected object.
2. Click the Disable Alarm option for the appropriate alarm
   (Tag such as the Analog Status will have both high and low alarm options.)

The option in the shortcut menu will be marked with a check mark if the alarm is disabled.




Some of the graphic objects used to display process equipment will display an orange box to indicate that an alarm is disabled:




### Alarm Settings Option

Tags that have built-in alarms will have an Alarm Settings option in their right-click shortcut menu. A click on this opens the tag's configuration dialog, opened to the Alarms tab. From here, you can adjust any of the alarm's parameters. (Assuming that you possess configuration privileges.)

1. Right-click the graphic object representing the equipment process.
   The shortcut menu opens and displays the options available for the selected object.
2. Click the Alarm Settings option of the shortcut menu.

### *Related Tasks:*

...Disable or Enable Alarms - Complete list of methods.

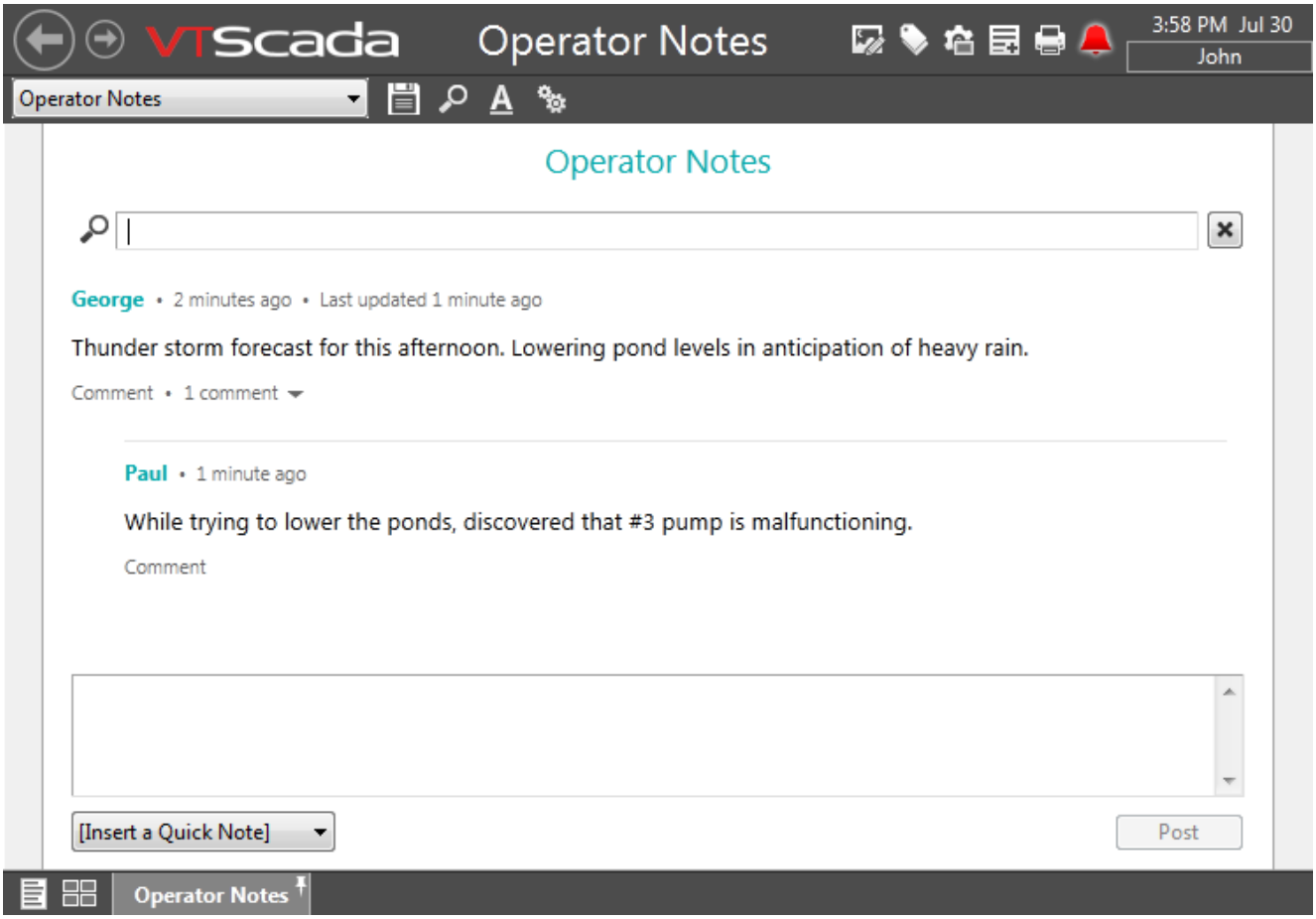
...Questionable Data Flag - Set or Clear - Changing the Questionable Data flag.

...Adjust the Manual Data Value - Add or remove Manual Data.

# *Operator Log and Notes*

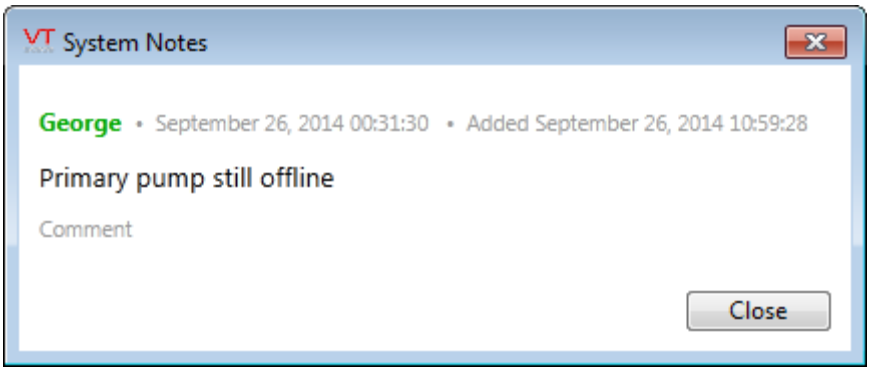
VTScada provides built-in notebooks where you can record observations about your application. The notes that you create are valuable (and permanent) parts of an application's history, recording information that the raw numbers from equipment cannot. They provide context and explanations for changes that happen over time. You can add and view notes from any of the following pages:

The **Operator Notes** page is a built-in part of every VTScada application. This should be treated like a log book, where you and other operators record details of what happened and why. All notebooks are accessible from this page.

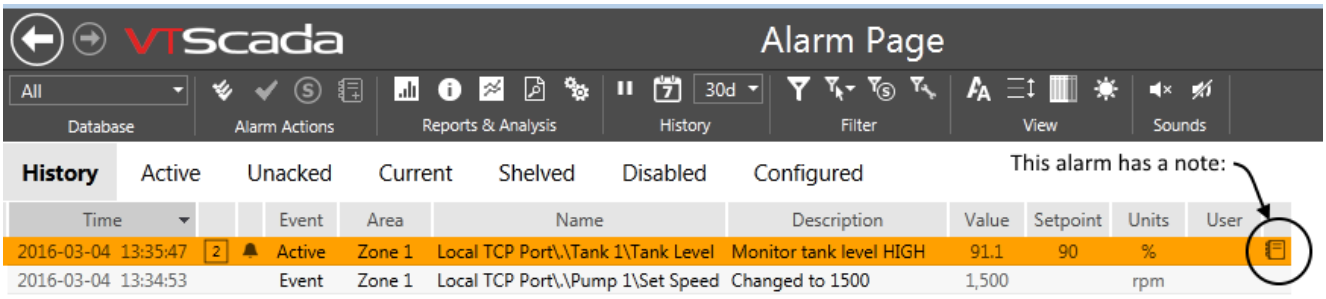



**Historical Data Viewer notes** are added to a graph of a tag's values. Showing up as only a marker on the graph, they can be expanded with a click.

These notes are often used to explain what caused values to change suddenly.

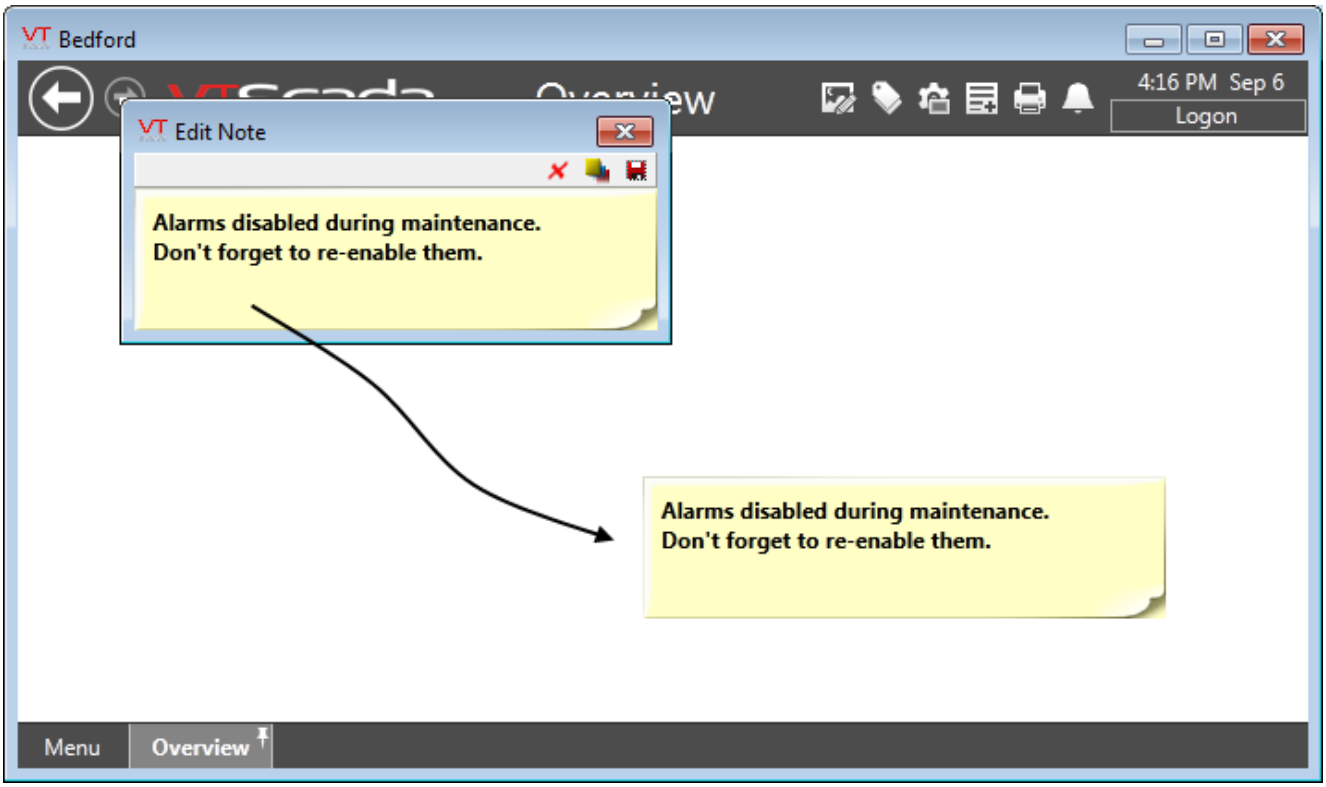



**Alarm Notes** are added to specific alarm records. These are shown as a notebook icon in the alarm list.




## Page Notes

In addition to these permanent records, you can also add **Page Notes** to any VTScada page. These can be edited and erased, but everything about them is recorded to the alarm history page. They are meant to be used as reminders, similar to a sticky note. A note can be configured to be seen on only the current page, or on all pages.




*Related Information:*

...About Page Notes – Page note reference.

...The Operator Notes Page – Operator note reference.

*Related Tasks:*

...Create a Page Note – Create a page note.

...Add Operator Notes – Create an operator note.

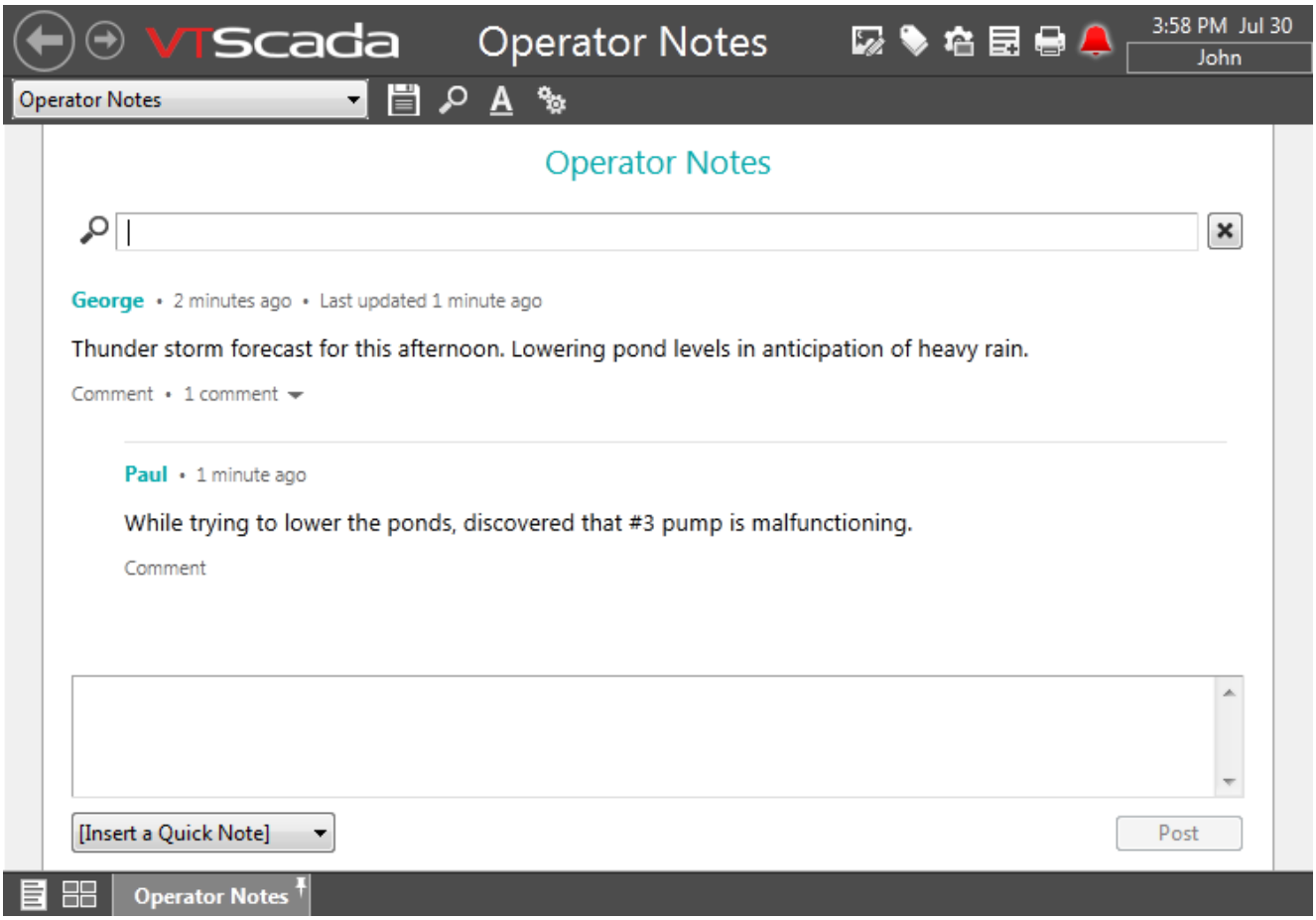
...Alarm Notes – Add notes to alarms.

...Add a Note to the Graph – Create an HDV note.

# The Operator Notes Page

The Operator Notes page is a space for you to enter notes and observations about the application and its equipment.

The time can be displayed either as an age (4 hours ago) or as a time and date (July 1, 2014, 14:01:04). An "update time" for a note shows when the most recent comment was added. (Notes cannot be edited.)
If a note seems to show two ages (4 hours ago * Added 2 hours ago) then it was created within an Historical Data Viewer graph. The first age shows the point on the graph where the note was placed, making it relevant to an event that occurred sometime in the past. The second age shows when the operator created the note.
The Operator Notes are stored in a form that cannot be edited. You can however, add comments to notes to clarify the meaning, correct mis-takes, or add additional information.




Notes from any Notebook can be viewed and created in this page. You can work with only one Notebook at a time.

To add a note, first type it in the data entry field at the bottom of the Operator Notes page, then click the Post button. The button will not be enabled until there is a note to record.

Note: If the property, NoteAddRequiresAuthentication has been set in your application, then everyone will be required prove their identity when saving a note, regardless of whether anyone is logged on to the application. This feature protects you from anyone who might create a note using your account while you are away from your workstation.

If Quick Notes have been created for this notebook, you can select one by clicking the Insert a Quick Note button. These are templates or often-used phrases that you can add to your note, thereby saving the time that it would otherwise take to type. You are free to edit the text until you click the Post button.

Once a note has been saved, it cannot be edited or deleted. Add a comment if a correction is required.

Use the Search field at the top of the page to find all notes that contain matching text or operator name. There is also an Advanced Search dialog, in which you can specify a date range, operator name and other parameters before searching.

Finally, an options dialog provides you with control over the note display, controlling whether the age of note is shown, or its creation time, the sorting of the list and the font sized and display width.

Note: The ability to create notes is controlled by the Note Add security privilege, which may not have been granted to you. Check with your supervisor if you are unable to create notes.

*Related Tasks:*

...Add Operator Notes - Create notes.

...Search for Notes - Find existing notes.

...Print Operator Notes - Print notes or export them to a file.

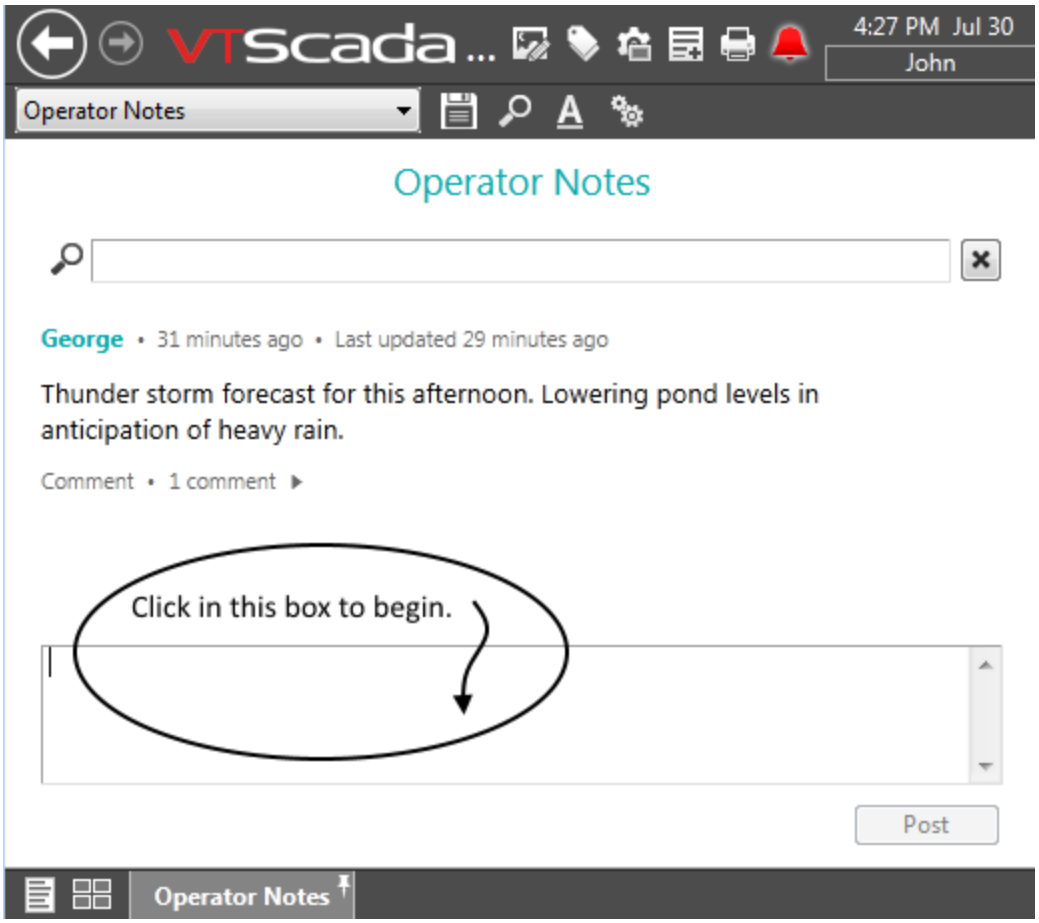
*Related Information:*

...Configuration Options for Notes – Control the appearance and sorting order.

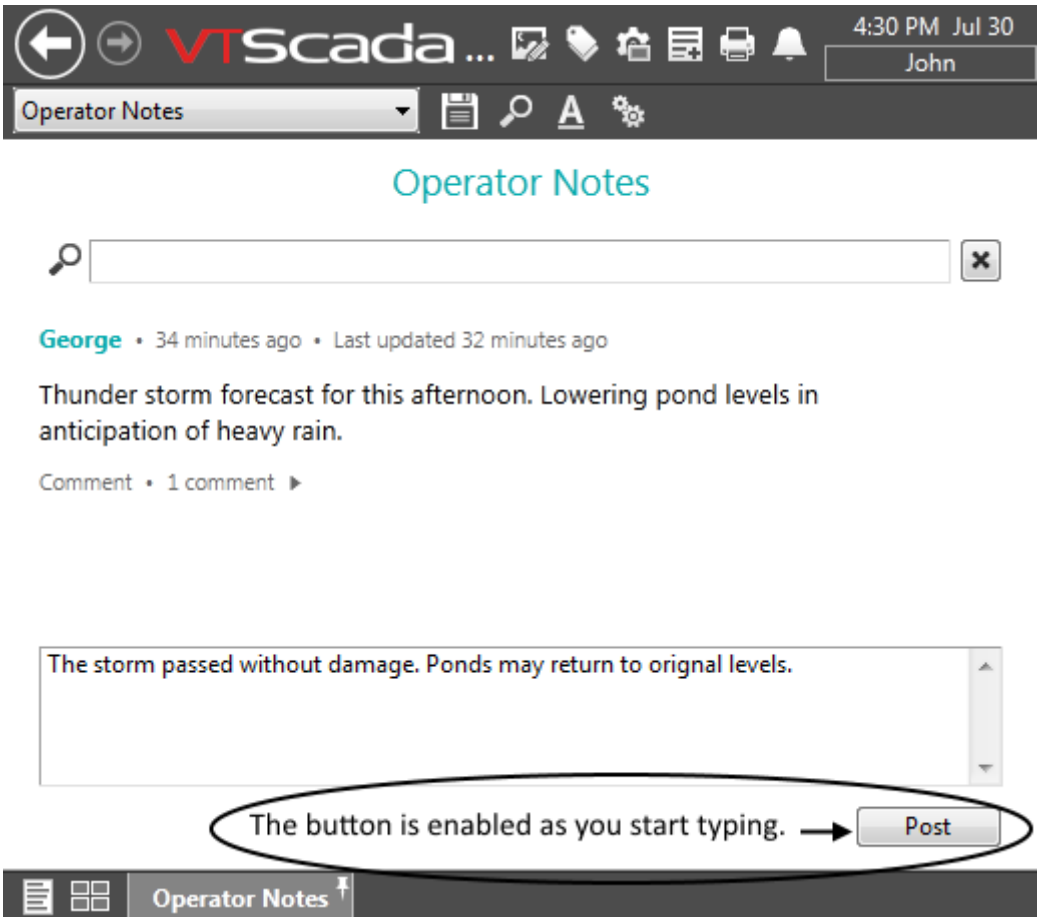
## Add Operator Notes

To add a note to the selected Notebook:

1. Open the Operator Notes page.
2. Click in the editing field, near the lower edge of the page.



3. Type the text for the note.
   There is no limit to the size of a note. The text will wrap to fit the screen.




4. Optionally, use the Insert a Quick Note button to select and copy a pre-defined phrase or template to the editing field.
   Edit the content of the Quick Note if required.
5. Click the Post button to save your work.
6. If prompted, enter your account name and password.
   This will be used to prove your identity, and your account name will be attached to the note. It will not change who is the logged-on user at this workstation.
   The prompt will not appear unless a developer has set the property, NoteAddRequiresAuthentication.

Note: Notes cannot be edited and they cannot be deleted. Once saved, they become a permanent part of the application's history.

Comments can be added later to clarify meaning, add detail or correct mistakes.

*Related Information:*

...Add a Note to the Graph – Notes can also be created in an Historical Data Viewer graph, linked to an event that happened in the past.

...The Operator Notes Page – General information about Operator notes.

...Configuration Options for Notes – Control the appearance and sorting order.

*Next Steps:*

...Print Operator Notes – Print notes, or export them to a file.

...Search for Notes – Find older notes.

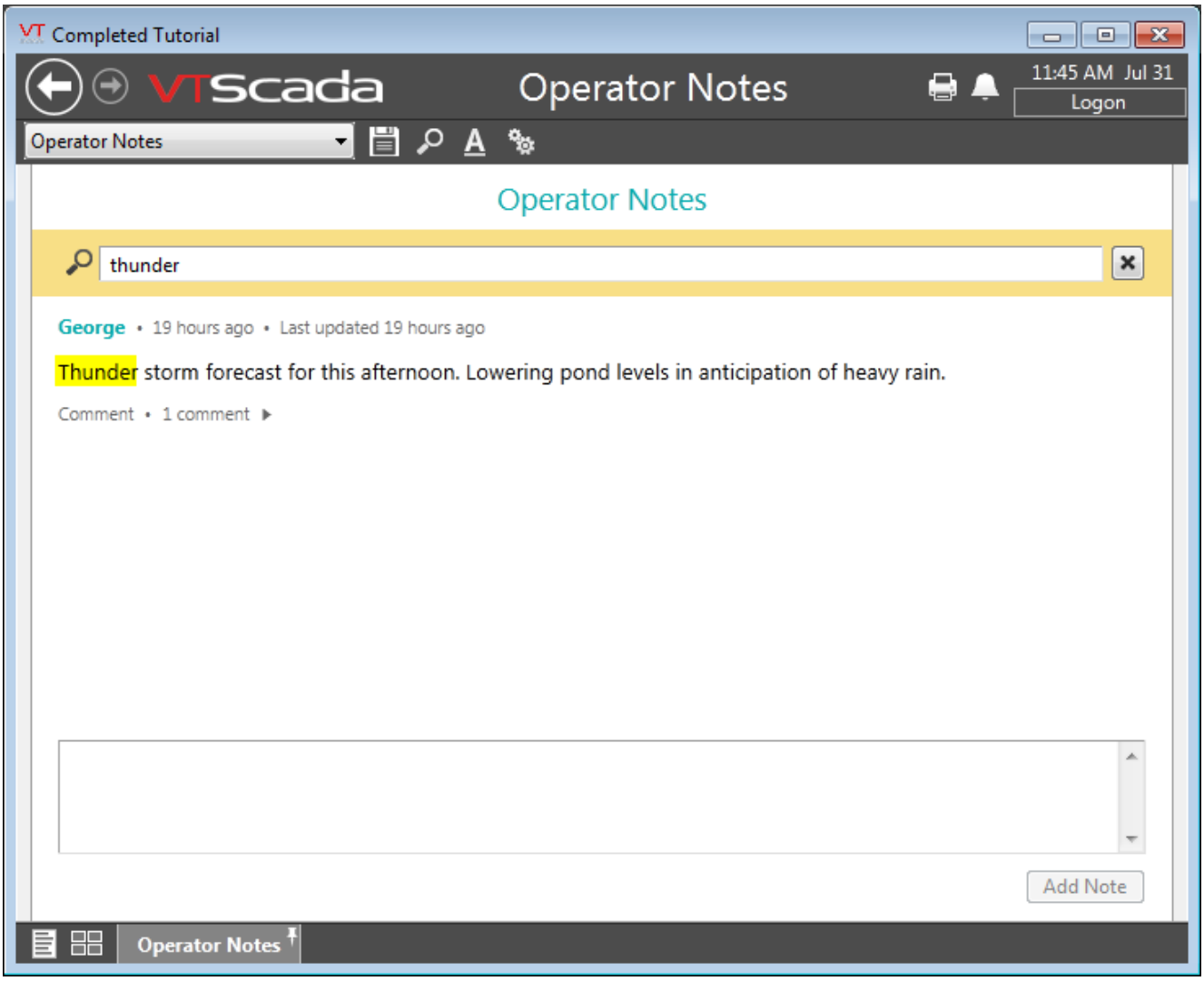
## Search for Notes

There are several ways to search for and view existing notes. The search will be limited to the selected Notebook.

### Basic Search

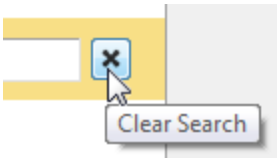
Type any known word, phrase, or operator name into the search field, then press the Enter key on the keyboard. All notes and comments containing that text or created by that operator will be returned. Words from the search will be highlighted in the results.

Note: Comments will be shown with an option to view the entire thread, which includes the original note and any other comments attached to it. This option is shown with the same highlight used to mark the search words.



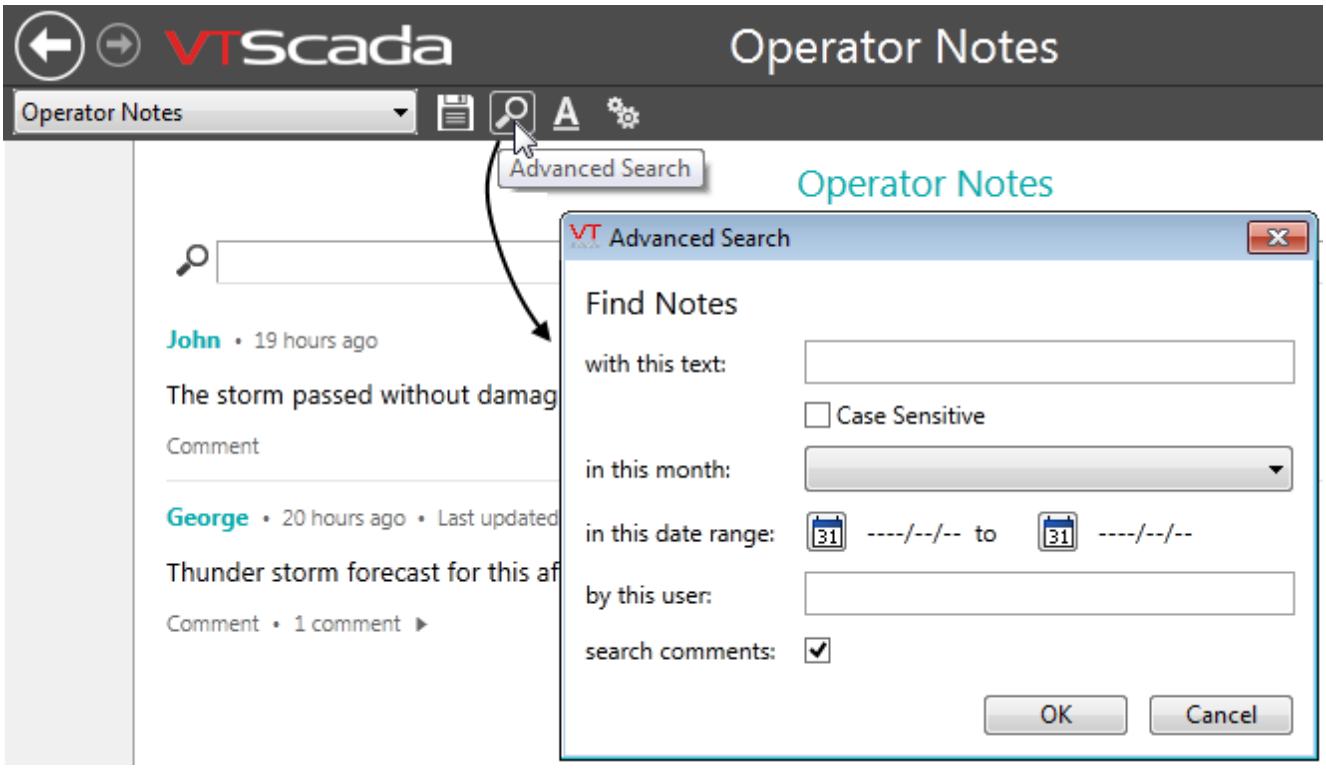

## Clear the Search Results

To return to the standard Operator Notes screen, which shows the most recent notes, click the X to the right of the search field.




## Advanced Search

To search by date, operator name or other property, start by clicking the Advanced Search button:




Each option that you specify in the Advanced Search dialog is treated as a requirement for the search. The result must have the text provided, *and* have been written in the specified date range *and* have been written by the specified user. Leave fields blank if you do not want to limit the search.

**With this text:**

Only notes that exactly match the text provided will be found. If you enter a series of words to search for, no notes will be found unless they contain exactly those words in exactly that order.

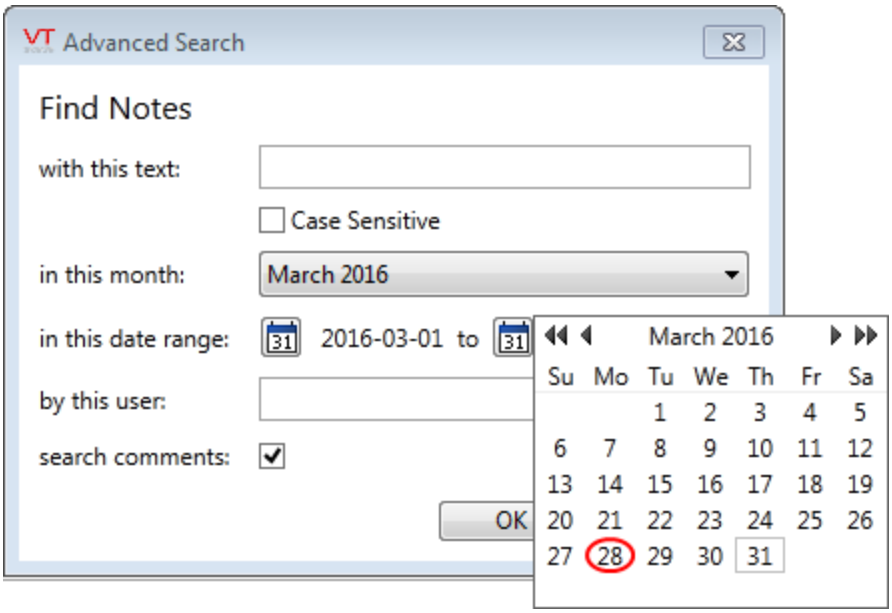
Spaces count. If searching for a phrase, and if the operator typed a double space between two words, your search must also have the double space in the same location.

You have the option of making the search case-sensitive. This can be useful if looking for only those notes that use the word at the beginning of a sentence.

**In this month:**

Provides a drop-down list of months within years. The list will extend to the date that the application first became operational. It is possible that some months will not contain notes, but they will still be included in the list.

**In this date range:**
Click the calendar icons to open date selectors. The date values are shown using the format YYYY-MM-DD.
The search option, "in this month:" will display the word [Custom] while you are searching a multi-month date range, unless you choose start and end dates within one month.




**By this user:**
Type the account name of the author of the notes you are looking for. You can search for notes and comments by only one user at a time.

***Related Information:***

...The Operator Notes Page - General information about Operator notes.

...Configuration Options for Notes - Control the appearance and sorting order.

***Next Steps:***

...Print Operator Notes – Print notes, or export them to a file.

## Print Operator Notes

There are two options for printing Operator Notes: You may use the print button at the top of the VTScada screen to print the displayed portion of the screen, or you can export a range of notes to an HTML format for printing.

### Export for printing.

1. Use the search tools to limit the display to the notes that you want to print. All comments on the selected notes will be included in the export.
2. Click the Export button.

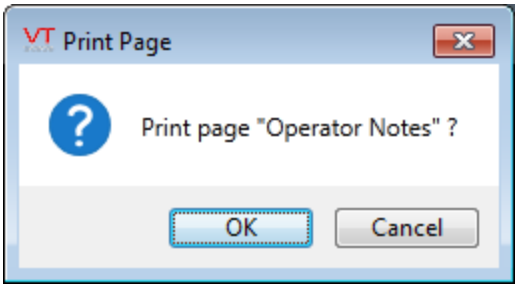

   A Windows® dialog will open, prompting for the file name and folder to which to save the data.
3. Accept the default file name and folder, or enter a new destination.
4. Click the Save button.
   If the file already exists, you will be prompted to replace it, or you may return to the previous step and create a new file name.
5. The file will be saved.
   Your default browser will be opened automatically, displaying the contents of the file.
6. Print from your browser.

### Print the current screen.

Note: Comments will be printed only if they are expanded on the screen.

1. Use the search tools to limit the display to the notes that you want to print. Only notes that fit on the screen will be printed using this method.
2. Expand any comments that should be printed.
3. Click the Print button at the top of the screen.

4. Confirm that you want to print the currently displayed list of notes by clicking OK.




The notes will be sent to your default Windows™ system printer.

*Troubleshooting:*

- Nothing shows up at the printer.
  Check your Windows™ print control settings to ensure that the correct printer is set as default.
  Review the screen to ensure that there are notes.

*Related Information:*

...The Operator Notes Page – General information about Operator notes.

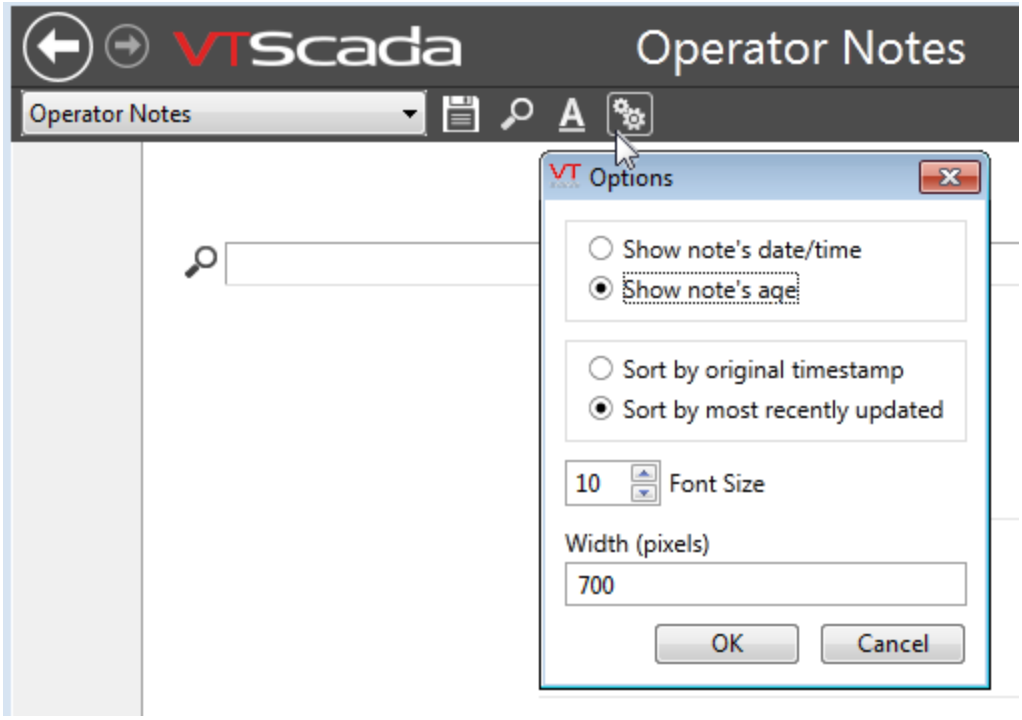
...Configuration Options for Notes – Control the appearance and sorting order.

*Related Tasks:*

...Search for Notes

## Configuration Options for Notes

You can control how notes are displayed and in what order. Click the gear icon at the top of the Operator Notes page to open the options dialog.




Rather than limit the display to a given number of characters, the limit is for the number of pixels. The font size that you select, and the width of the characters within your note, will determine how many characters fit into that space.


You also have control over the color key used for the note. This will be used on the page for the title of the notebook, the name of the operator who created each note abd comment, and for note markers in the Historical Data Viewer (HDV). Notebook color can also be controlled from the pen legend of the HDV.

Notes cannot be edited, but comments can be attached. The option to sort by most recently updated means that the date of the most recent comment on any note is used in place of the date of the original note itself. If a note does not have a comment, its original date is used.

### *Related Information:*

...The Operator Notes Page – General information about Operator notes.

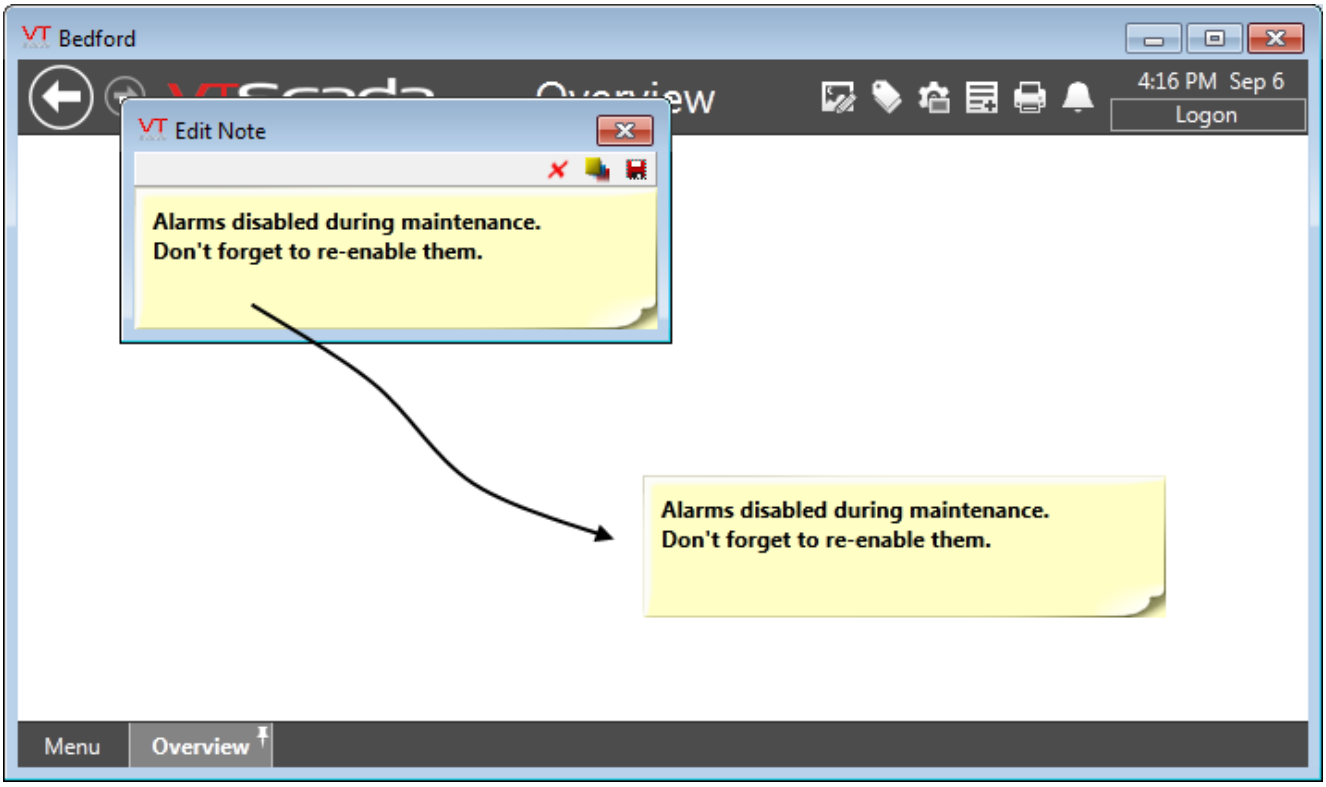
### *Related Tasks:*

...Print Operator Notes – Print notes, or export them to a file.

...Search for Notes – Find older notes.

## About Page Notes

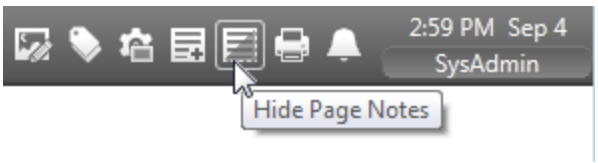
Page Notes are used to add reminders on any VTScada page.




Page Notes are unique in that they can be added to any page, including the VTScada system pages such as Alarms and Reports. Nothing else in VTScada is so flexible in its location. Optionally, a note can be configured so that it is displayed on every page, throughout the application. Also, unlike the text added to the Operator's Notes page or the Historical Data Viewer, Page Notes can be edited and deleted. (A permanent record is kept in the Alarms history, of who added, edited or deleted every note, and of what that note said.)

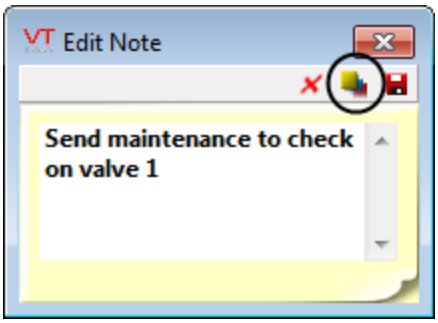
If you hover the mouse over a note, you will see a tooltip telling you when the note was created and who wrote it.

Notes and their background color cannot be made transparent and are always in the foreground of a page. This means that they will always hide whatever else was on the page, behind the note. A button at the top of the screen will hide or display all the notes on a page.




Hiding a page note is a temporary action. The act of switching to a different page, then coming back to the current one will cause all hidden page notes to be displayed. VTScada assumes that the note exists to be read.

The appearance of Page Notes can be adjusted in several ways: You can change the color of the text, the color of the background, the choice of text font, the size of the note and the style of the note border. These are all accessed by the properties button in the note editor.




### *Related Information:*

...Change the Look of a Page Note – Change the color and shape of the note.

### *Related Tasks:*

...Create a Page Note – Create a note.

...Edit a Page Note – Change the note.

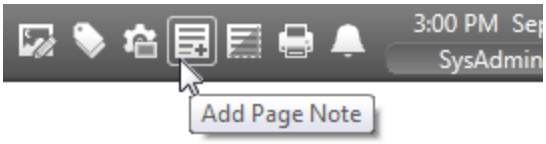
...Delete a Page Note – Remove a note.

...Hide a Page Note – Hide notes, or display hidden notes.

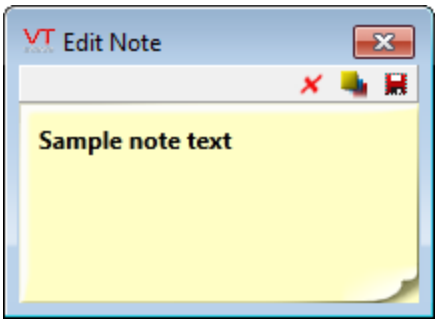
## Create a Page Note

The following steps will guide you through the process of creating a page note.

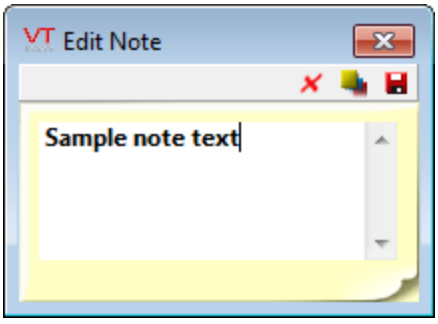
1. Click on the Add Page Note button:



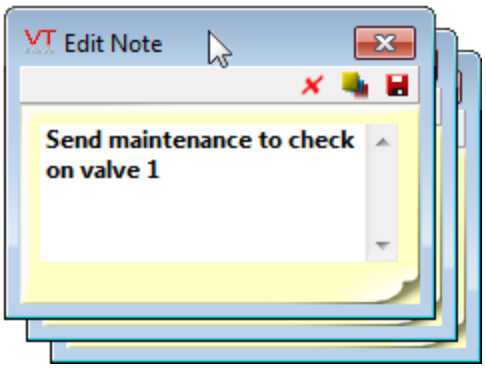

The Edit Note dialog will open as shown:




2. Click on the words "Sample note text" to activate the editing window.
3. Click a second time to position the cursor on the sample text.




4. Use the backspace or delete key to remove the sample text.
5. Type your own note. The enter button will start a new line.
6. Drag the note into position on the screen.
   Do this by clicking on, and then dragging the dialog box's title area. You can also drag the edges of the dialog box to change the note's width or height.




Note: Page Notes must be fully inside a page. If you attempt to save a note with any part of the dialog box outside the page area, a warning message will be displayed instead.

7. Save the note by clicking on the Save button:

*Troubleshooting:*

- VTScada will not save an empty note. Attempting to do so will result in the display of a warning, and the original text that was in the Edit Note dialog being re-inserted into the note.
- In a networked application, when a note is saved, that page will be updated on all workstations. If someone on a different workstation saves a note to the same page that you are in the process of editing a note for, you will lose your edits as all notes are updated.

*Related Information:*

...About Page Notes - Page Note reference.

*Next Steps:*

...Change the Look of a Page Note - Change the color and shape of the note.

...Edit a Page Note - Change the note.

...Delete a Page Note - Remove a note.

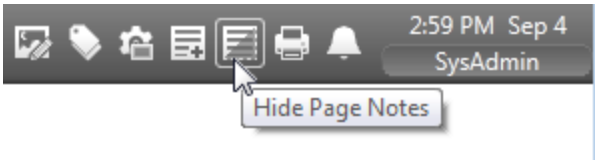
...Hide a Page Note - Hide notes, or display hidden notes.

## Hide a Page Note

With one click of a button, you can hide all the notes on a page. This may be very useful when notes cover system controls or other display items.

The Hide button is not visible when there are no page notes.

1. Click on the Hide Page Note button.
2. Click a second time to reveal the notes.




If you hide the notes on page A, then switch to page B for a moment, upon returning to page A your notes will again be visible. It's assumed that page notes are present for a reason – hiding them is meant to be a temporary action.
The Hide Page Note button will only be displayed if there are Page Notes on the current page. If no notes are visible on the current page, this feature provides an easy way for you to know whether the page has hidden notes.

*Troubleshooting:*

- The Hide Note button is disabled.
  a) There are no Page Notes on the current page.
  b) You do not have the security privilege required to hide the note. Check with your supervisor.

*Related Information:*

...About Page Notes - Page Note reference.

*Next Steps:*

...Change the Look of a Page Note - Change the color and shape of the note.

...Edit a Page Note - Change the note.

...Delete a Page Note - Remove a note.

## Edit a Page Note

Pages notes are edited the same way that they are created – with the Edit Note dialog.
To open this dialog for an existing note, double-click on the note you want to edit. With the Edit Note dialog open, you can:

- Move the note to a new location by dragging the dialog box.
- Re-size the width and height of the note by dragging one edge of the dialog box.
- Change the text of the note by clicking on the existing text, then typing a new message. A record of your new text will be saved in the VTScada events history.
- Change the appearance of the note. See: Adjusting the Appearance of a Page Note for instructions.

Save your changes by clicking on the Save button: 

Note: VTScada will not save an empty note. Attempting to do so will result in the display of a warning, and the original text that was in the Edit Note dialog being re-inserted into the note.

*Troubleshooting:*

- You are unable to access the properties, or delete the note.
  Your security privileges do not include this ability. Check with your supervisor.
- You erased the note text and now cannot save it.
  VTScada will not save an empty note. Attempting to do so will result in the display of a warning, and the original text that was in the Edit Note dialog being re-inserted into the note.
- Your work vanished.
  In a networked application, when a note is saved, that page will be updated on all workstations. If someone on a different workstation saves a note to the same page that you are in the process of editing a note for, you will lose your edits as all notes are updated.

### *Related information that you may need:*

...About Page Notes - Page Note reference.

### *Next Steps:*

...Change the Look of a Page Note - Change the color and shape of the note.

...Create a Page Note - Create a note.

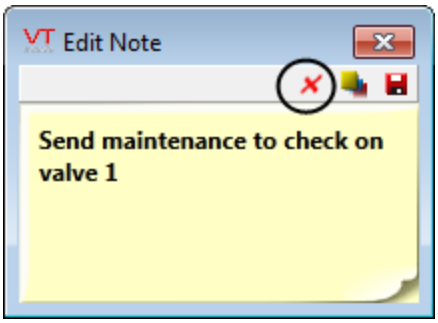
...Delete a Page Note - Remove a note.

...Hide a Page Note – Hide notes, or display hidden notes.

## Delete a Page Note

Page notes are different from operator notes in that they can be deleted.

1. Double-click on the note you wish to delete.
   The Edit Note dialog opens, providing you with a delete button.
2. Click once on the delete button to immediately and permanently delete the note from the system.




Note: A record of this action, including the text of the note that was deleted, will be added to the VTScada events history.

*Troubleshooting:*

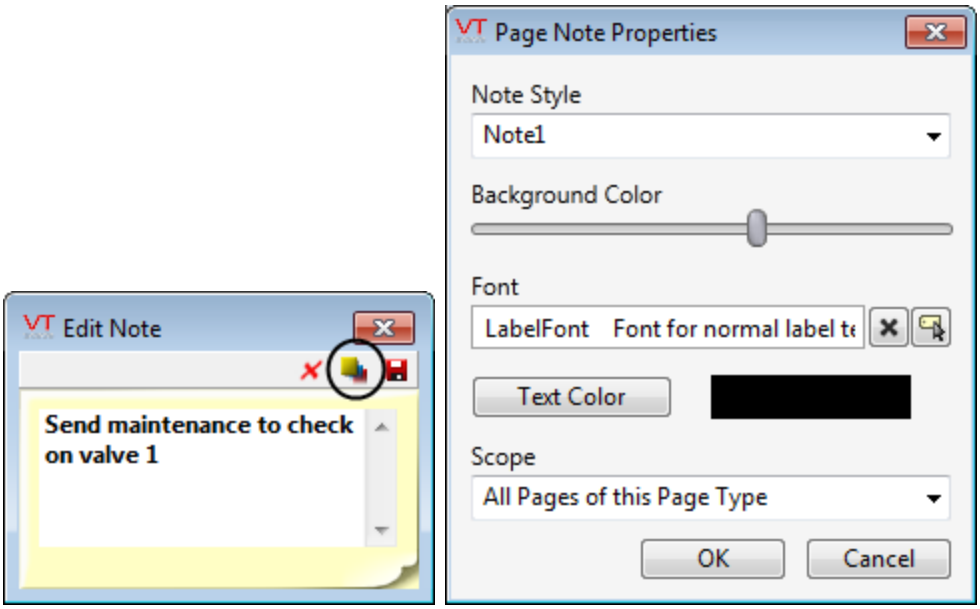
- You are unable to access the properties, or delete the note.
  Your security privileges do not include this ability. Check with your supervisor.

*Related Information:*

...About Page Notes – Page Note reference.

## Change the Look of a Page Note

When you create page notes, each new note will have the same colors and other properties as the last unless you choose otherwise. This is done using the Page Note Properties dialog.
The Page Note Properties dialog is opened from within the Edit Note dialog:




### Note Style

Select one of two styles: *Note1* or *Beveled*.


Note 1, with its curled corner, is often the favorite choice.

### Background Color

The background color is adjusted with a horizontal slider. Move the Properties dialog away from the note in order to see the background color being applied as you move the slider. There are 6 available colors. Moving the slider from left to right will set the color to one of: Purple, pink, red, yellow, green or blue.

### Font

The appearance of the text in the note is controlled by a font tag. The default is LabelFont. Click on the tag browser button to select one of the other fonts that have been configured for your application.

### Text Color

Clicking on the Text Color button will open the VTScada Select Color dialog. Use this to set any color you want for the lettering of the note.

### Scope

You have the following three options for the scope of the note:

| | |
|---|---|
| This Page | The note appears only on the current page. |
| All Pages of this Page Type | The note appears on all instances of this parametrized page. |
| All Pages | The note appears on all pages. |

*Related Information:*

...About Page Notes - Page Note reference.

*Next Steps:*

...Create a Page Note - Create a note.

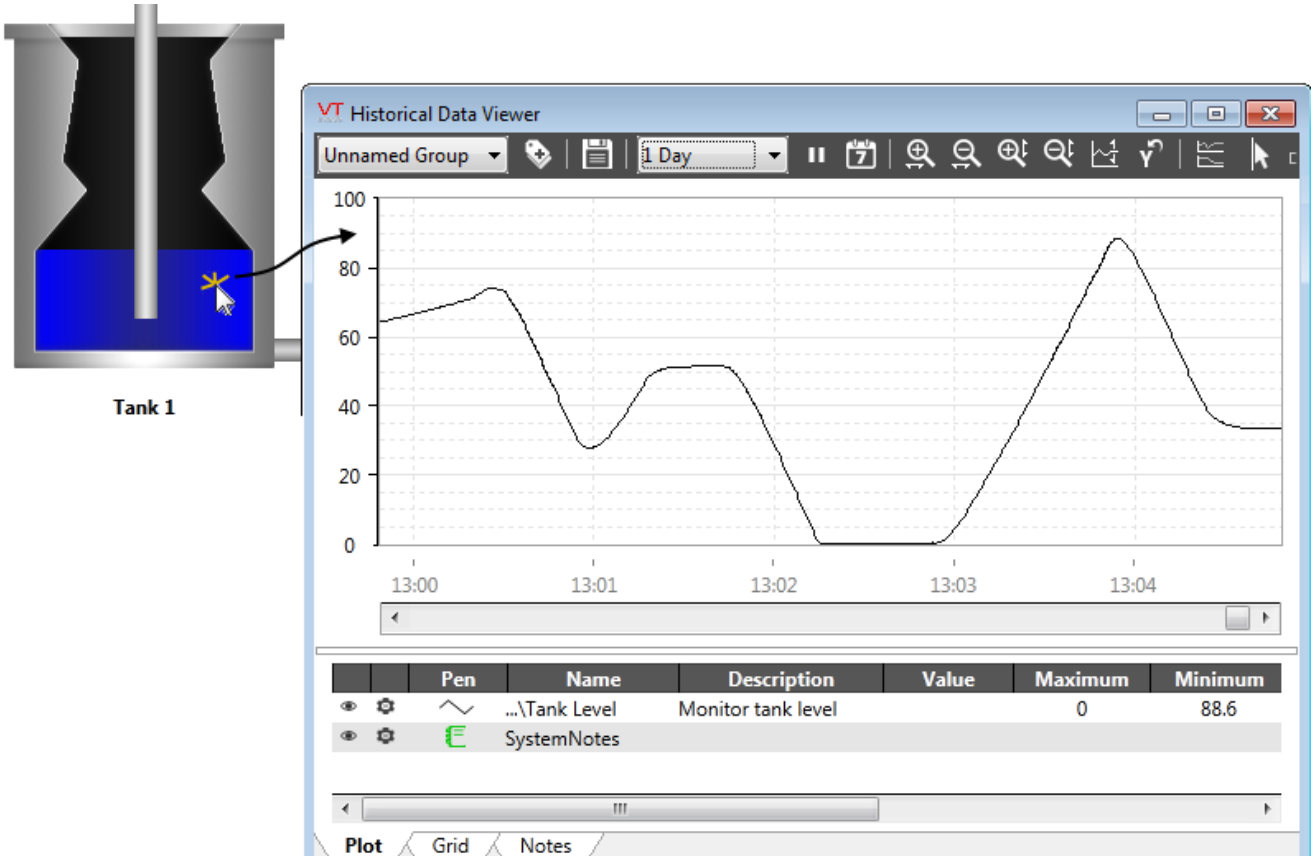
...Edit a Page Note - Change the note.

...Delete a Page Note - Remove a note.

...Hide a Page Note - Hide notes, or display hidden notes.

# *Historical Data Viewer: Trends and Graphs*

VTScada makes it easy for you to view a plot of a tag's values over time. At its most simple, you need only click on an object that represents an input tag (analog or digital) and a trend graph will be shown.




If the tag is being logged, the graph can be scrolled to show historical information. If there isn't a log, then the graph will show only new values as they are being collected.

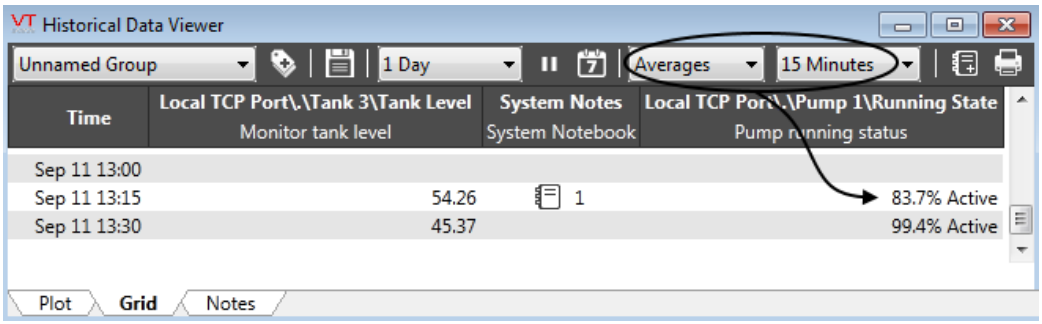
The pen legend, across the lower edge of the window, provides a color-key to the plot lines, value statistics for the time span shown and controls to hide a plot line or change its display characteristics. The Value column tracks the cursor position across the graph, showing the matching values as you move the cursor across the chart.

The page containing the graph is called the Historical Data Viewer (HDV), and it is a standard part of every VTScada application. Besides being opened by a click on a widget, the page can usually be found in the

menu. Your application may also have shortcut buttons that link to the HDV, loading a preset group of pens.
When opening the HDV directly from the menu, you will need to select a set of tags to plot after the page opens. The list of related tasks (following) includes instructions for making that selection.
The HDV's features include the ability to plot multiple tags, save named groups for easy selection later, adjust the color, size and style of the graph lines (called "pens"), add notes, superimpose lines to mark alarm levels, view a table of the values, export, and much more.
Certain tasks described in this chapter require that you first select a pen. You can do so either by clicking the pen name in the legend, or by clicking once on a value in its scale legend, to the right or left of the graph.

### Graphed Lines versus Logged Values

The Historical Data Viewer's plot display cannot show more data than there are pixels on your computer screen. For example, your display might have 1024 pixels across its width, of which 1000 or so are devoted to the display of the graph. If you are viewing a week's history for a tag that is logged every 10 seconds, there are 60480 records in the log file for the week. Each pixel on the graph must therefore represent approximately 60 logged values.
The following techniques are used to deal with this:
**Analog Pens: Peaks and Averages.** If the Plot Averages option is selected for a pen (tag) then for each pixel on the graph, the average of the logged values represented by that time span will be shown. If the Plot Peaks option is selected, then the minimum and the maximum values for the time span will both be shown, resulting in a banded plot. You can choose to plot Peaks and Averages at the same time.
**Digital Pens:** In the grid view, when viewing averages over a time span that is greater than the logging rate, a % active value will show you what percentage of the logged values within that time span had a value of 1.




To view the history of actual on and off cycles, select the Raw Data option from the menu.

### *Related Information:*

...HDV User Interface Elements Features of the Historical Data Viewer.

...Make the HDV Plot Look Better - Options for the display.

### *Related Tasks:*

...Choose Tag Sets to Plot

...Show All, or Best-Fit Scales

...Grid View - Display a Table of Values

...Quick-Plot Tag Values

...Add a Note to the Graph

...Change the Displayed Time Span

...Change the Vertical Scale

...Shift a Pen Up or Down

...Separate Graphs

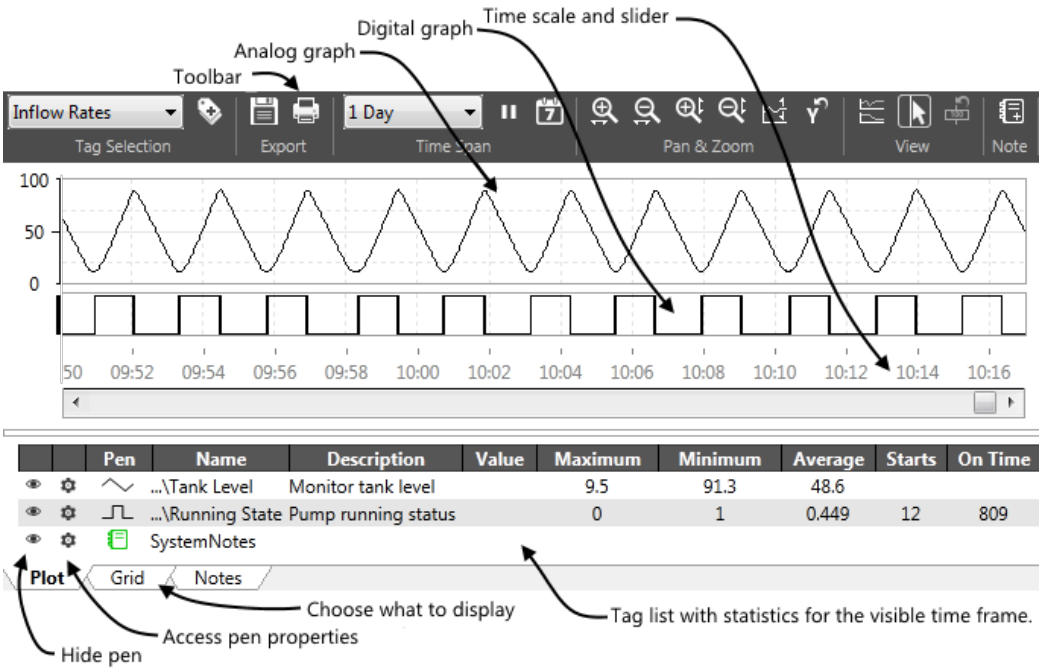
...Reset the Scale and Position

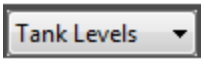
...Add Value Labels to the Graph

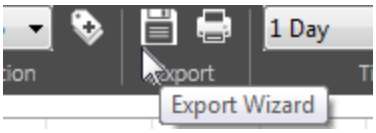
...Export Historical Data Viewer Values

# HDV User Interface Elements

Overview of the Historical Data Viewer (HDV) features.




- The Tool Bar. In order from left to right this provides access to the following tools.
  - Retrieve named pen groups. 

  - Select what is to be plotted. 
  - Export the displayed data. 

  - Display a different length of time. 

  - Display a different day. 
  - Zoom in on a particular duration of the time frame. 
  - Zoom out from the time frame. 
  - Zoom in on the plot amplitude. 
  - Zoom out from the plot amplitude. 
  - Move one or more plots vertically. 
  - Reset the vertical axis. 

  - Separate Graphs. 
  - Display a marker line at the cursor. 
  - Hide Data Value – removes data value labels that you have added to the display. 
  - Add a note (select a Notebook pen first). 
  - Plot the displayed data. 
- The Pen Legend.
  Displays information about the pens being plotted on the graph, including the plotted value at any selected point in time.
  - Click the gear icon to open that pen's properties dialog.
  - Click the eye icon to hide or reveal that pen in the graph.
- The View Tabs.
  Select whether to view the data in a graph or a table. The Notes tab contains the Operator Notes page.
- Analog Plot Area.
  Displayed only when analog tags are selected.
- Digital Plot Area.
  Displayed only when digital tags are selected.
- Date/Time Scroll Bar.
  Use the slider to view the graph for an earlier or later time frame.

### *Related Information:*

...Make the HDV Plot Look Better Options to adjust the display.

### *Related Tasks:*

...Choose Tag Sets to Plot

...Grid View – Display a Table of Values

...The Operator Notes Page – View and create notes.

...Add a Note to the Graph

...Change the Displayed Time Span

...Change the Vertical Scale

# Live versus Historical Data

Live data (data that is being transmitted to your application from the physical equipment in real time) can be plotted for all I/O tags. For example, a well's level can be viewed on the graph or table of the Historical Data Viewer (HDV) page while the water rises and falls. The graph will scroll from right to left to show new values as they arrive.
Historical data (data that has been collected and saved to your hard drive) can be plotted for any I/O tag, provided that your VTScada developer has configured the application to store that tag's values.
The HDV makes it clear whether the plot is of live (current) or of historical values. While you are viewing live data, the pause button at the right of the slider will look like any other button. While you are viewing historical data, the button will be an arrow surrounded by a red border.


The times shown at either end of the slider are those for the minimum and maximum range of the current display. They will change continuously while you are watching live data (depending on the time scale being displayed).

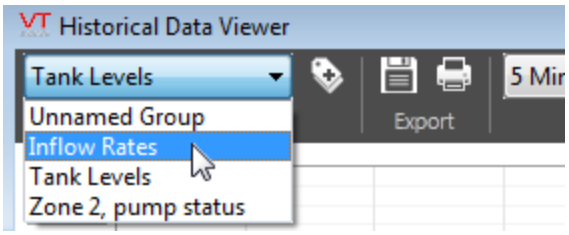
***Related Tasks:***

...Change the Displayed Time Span

...Change the Vertical Scale

# Choose Tag Sets to Plot

Your application developer may have created named selection groups that contain the tags you need to plot. If so, you can find these groups in a drop-down menu at the upper-left corner of the Historical Data Viewer.




When you click on a group name from the menu, a pre-selected set of tags will be plotted on the graph.
The same feature may be available as buttons on a page.


Both of these systems depend on having someone create and save the lists.
If there are no named groups of tags, either in the drop-down menu or as buttons, you will need to create your own.

*Next Steps:*

...Grid View - Display a Table of Values

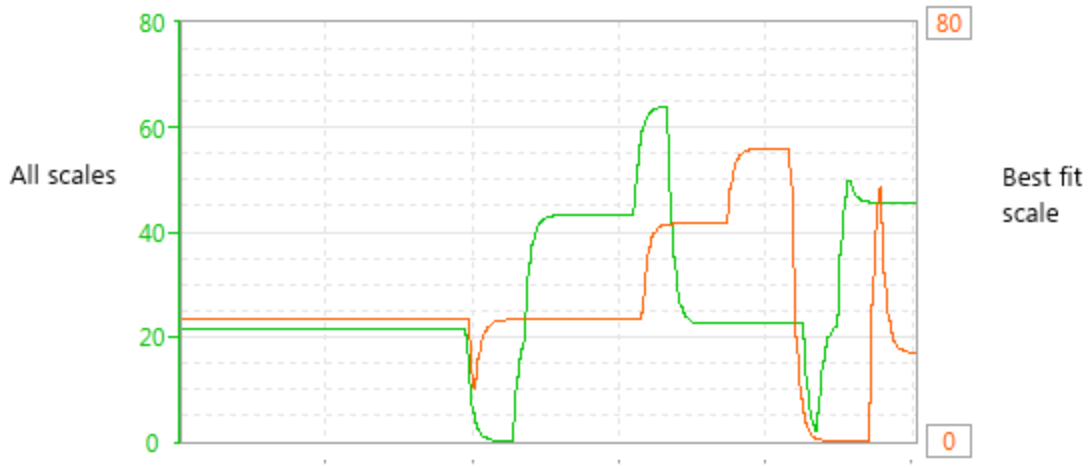
...Add a Note to the Graph

...Change the Displayed Time Span

...Change the Vertical Scale

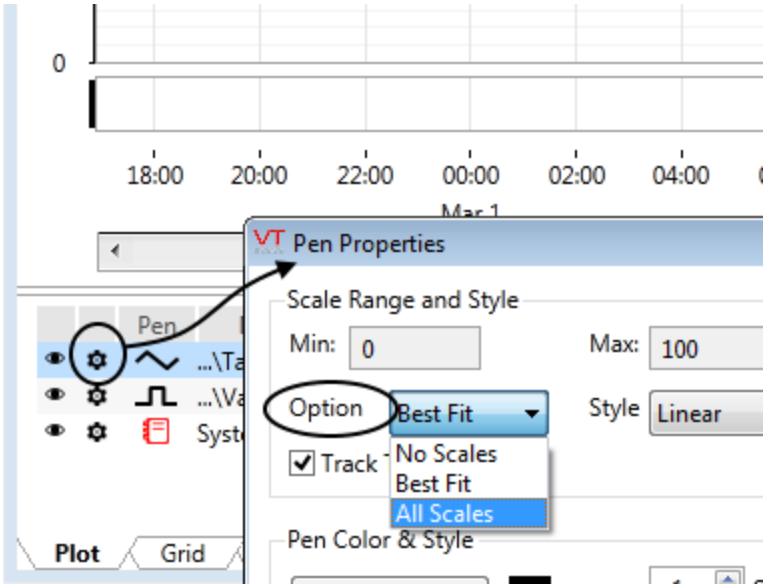
## Show All, or Best-Fit Scales

You can control the scales shown on a pen-by-pen basis. By default, a full scale will be shown when there is only one analog pen in the graph. When two or more are displayed together, the display will switch to a best-fit option.
When the HDV must try to display more than just one full scale, it will automatically move some to the right side of the graph.



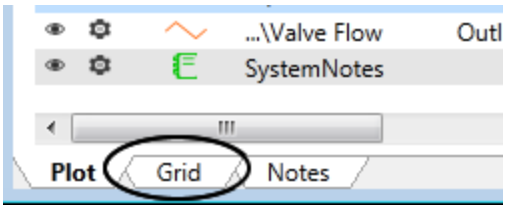

**To control the scale displayed, by pen: (Analog pens only.)**

1. Open the Properties dialog by clicking the gear icon in the legend.
2. In the Analog Properties dialog, expand the Options list.
3. Select between All, None or Best Fit.



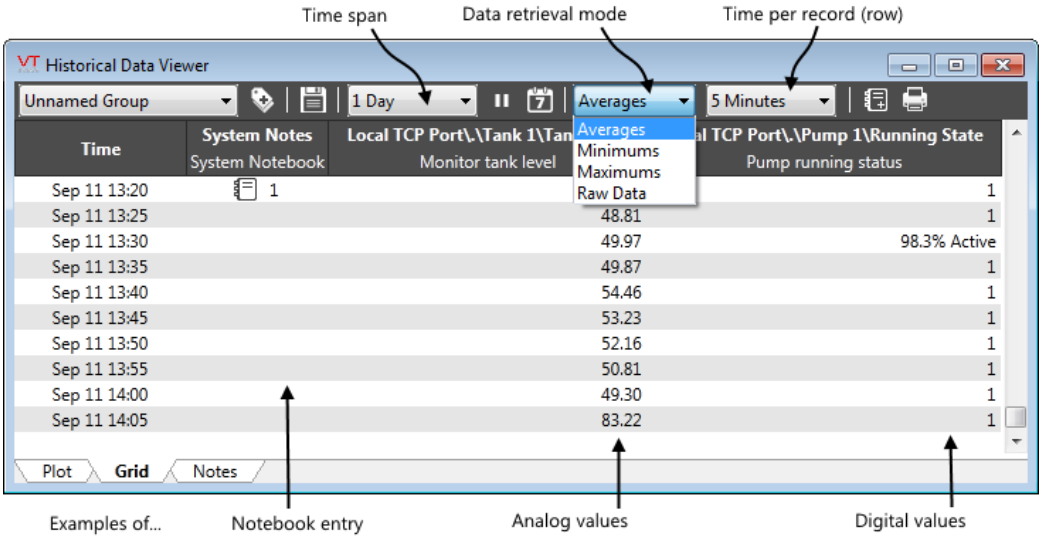

# Grid View – Display a Table of Values

Values that make up the Historical Data Viewer (HDV) graph can be viewed in a table by clicking the Grid tab at the bottom of the page.




The grid is a powerful tool for viewing a report of process values. You may choose to view raw values as logged or you can select averages, minimums or maximums over a given amount of time per record (row). Note that the list of available Time Per Record options will not include a value larger than the selected time span of the grid.

As an example, you might can configure the grid to display of table of maximum values as recorded in each fifteen-minute time span for the past day. For a finely-detailed report, you might configure the grid to show average values for each one-minute time span (or less) over the past week. Any combination that you configure may then be exported to a file for use in a report.



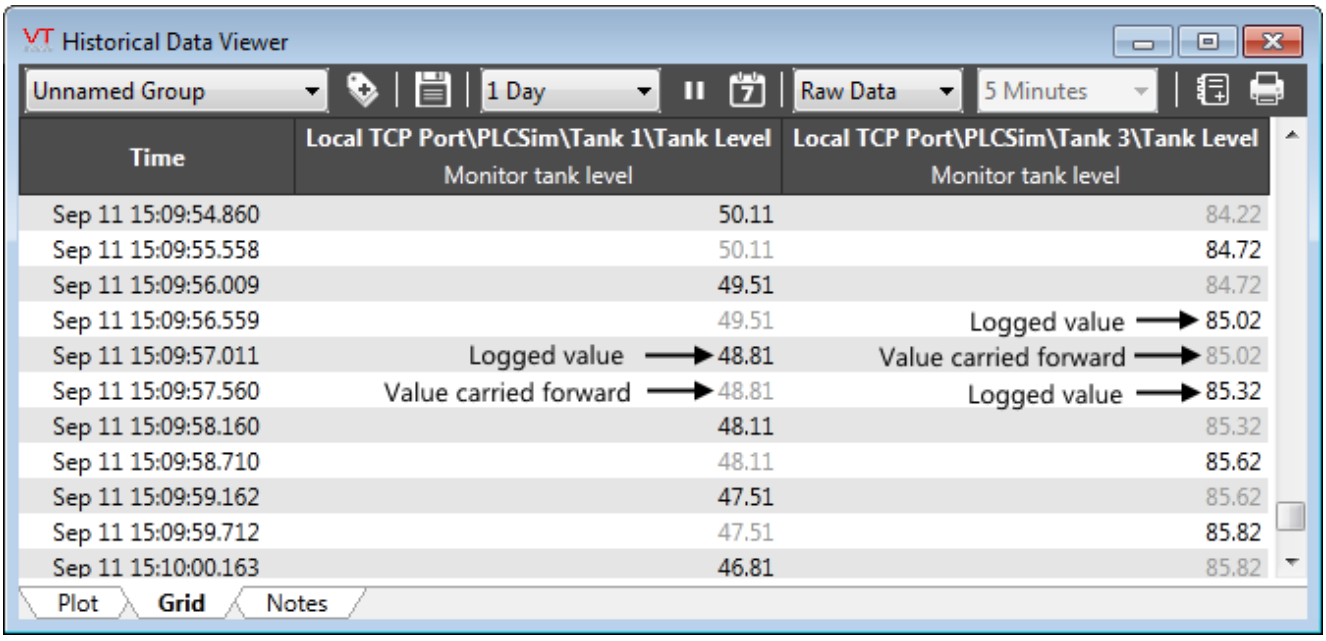

Toolbar entries not labeled here are described in HDV User Interface Elements.

There is one column for every tag that was plotted in the HDV. Columns can be re-sized by clicking and dragging on the edges of their titles. Whenever the window is re-sized, all the columns will also re-size automatically in an attempt to display as much of each tag name as possible.

A horizontal scroll bar may be added if any portion of the columns does not fit within the window area.
To re-order the columns, change their order in the tag selector.

### Raw Values Data Retrieval Mode

If viewing raw values for more than one tag, you might notice that some entries are gray and some are black. Values tend to be logged a few milliseconds apart and sorting of the rows is done by timestamp. For each row, there will be at least one entry in black, showing the value logged at that timestamp. Rather than leave other columns blank, their last logged value is carried forward, but shown in gray.




### Average, Minimum or Maximum Data Retrieval Mode

For each tag, all logged values within the chosen Time per Record will be used for the selected calculation. The result will be evenly-spaced time intervals with a calculated value for every tag at each time interval.

### Averaged Values and Digital Tags

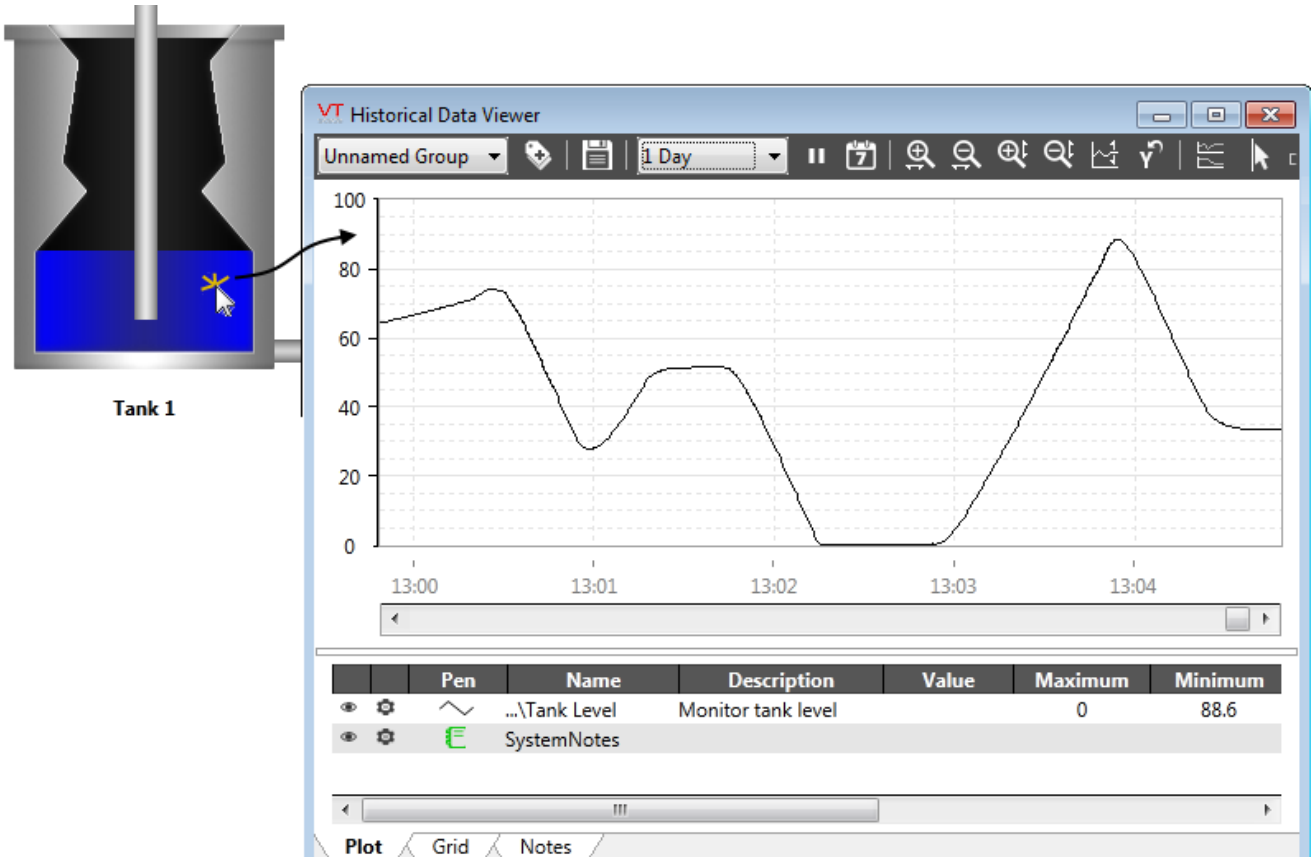
When viewing averaged values, Digital tags will periodically display a message such as "99.8% Active". This is telling you the percentage of the non-zero, logged values for the time period covered by that row.

*Related Information:*

...HDV User Interface Elements

# Quick-Plot Tag Values

The Historical Data Viewer has a quick-plot feature to allow you to view data from any tag in your system. Click the widget representing an analog tag, digital tag, or calculation in your system and the HDV page will open, showing only that tag's data. If the tag does not have an attached logger, then the graph will show only values starting at the moment when you opened it.




While the Historical Data Viewer window is open, you can click on other tags in order to add their pen[1] to the graph.

[1] 1) The line showing a tag's values in a graph within the Historical Data Viewer. 2) Private Enterprise Number

*Troubleshooting:*

- The Historical Data Viewer doesn't open.
  - The developer may have disabled the trends feature for this tag. Check with your supervisor.
  - The item you clicked upon is not an input tag.
  - The ability to see the HDV is controlled by a security privilege that you may not have.
  - The HDV is already open, but moved off to the side of the screen.
- Another window opened in addition to the HDV, perhaps blocking your view.
  - Every object in the location where you click, will respond - not just the top-most tag. - Ask your developer to adjust the screen layout, or use the full Historical Data Viewer window rather than clicking on this tag.

*Related Information:*

...HDV User Interface Elements - HDV tools.

...Live versus Historical Data

*Next Steps:*

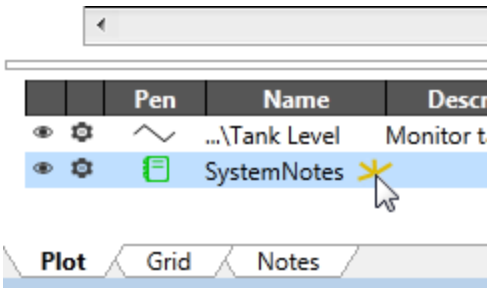
...Make the HDV Plot Look Better

# Add a Note to the Graph

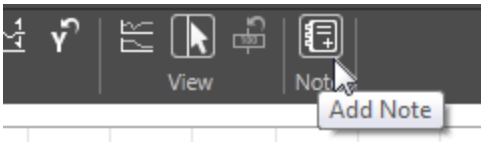
Notes added the graph, can provide context for the values displayed. For example, someone looking at a graph of a holding pond's level may wonder why it suddenly rose three weeks earlier. If the operator on duty at the time had added a note about the thunderstorm that filled the pond, then the mystery would be solved.
Notes added to the graph are linked to whatever point in time you choose and a marker is added to that graph at that point. Use this to link notes to events, for example explaining why a level suddenly rose. Within the Notes database, the actual time of creation is also stored in addition to the apparent time. On the Operator Notes page, both the time that the note is linked to, and the time of creation will be displayed.

You can also choose to open the Notes tab of the HDV, which is simply another view of the Operator Notes page with its full range of features. Notes are saved in a notebook – a pen (notebook tag) that must be selected before the Post button can be used. If the Grid View is open rather than the Plot View, then you will skip step 1 (since the pen legend won't be visible) and in step 3, click on the notebook grid cell where the note is to be located, rather than on the graph.
If one, and only one notebook pen is included in the legend, then it is not necessary to select it before adding a note. Skip to step 2.

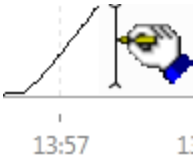
1. In the pen legend, select a notebook pen.
   If there is no notebook pen, you will need to add one, using the Tag Selector.



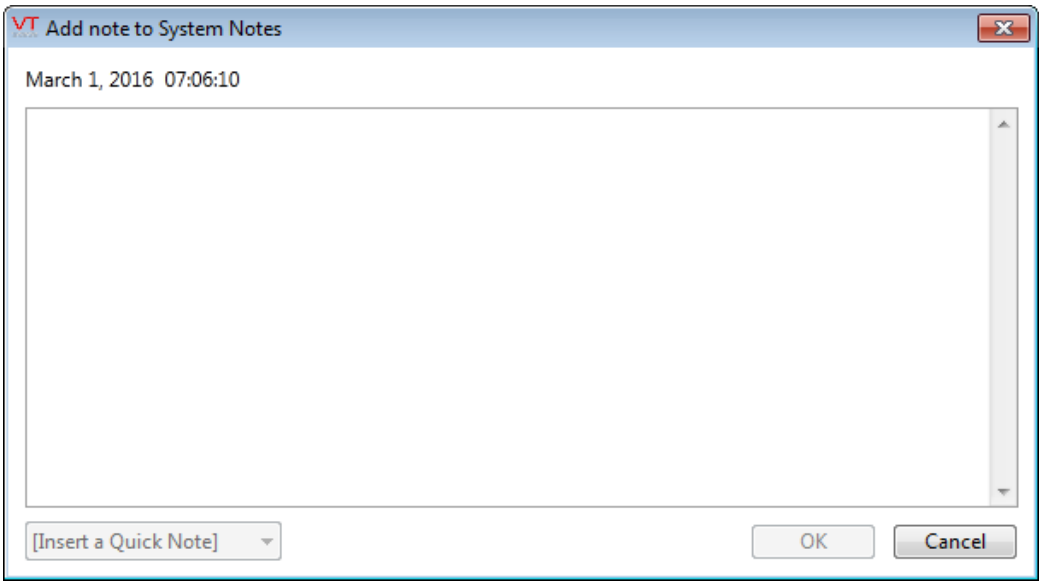

2. Click the Post button in the tool bar on the Historical Data Viewer page.
   If you have shrunk the window, tools will vanish from right to left. You may need to widen the HDV window again to see the Post button.




3. Click on the graph, at the date and time location for which the note will be relevant.



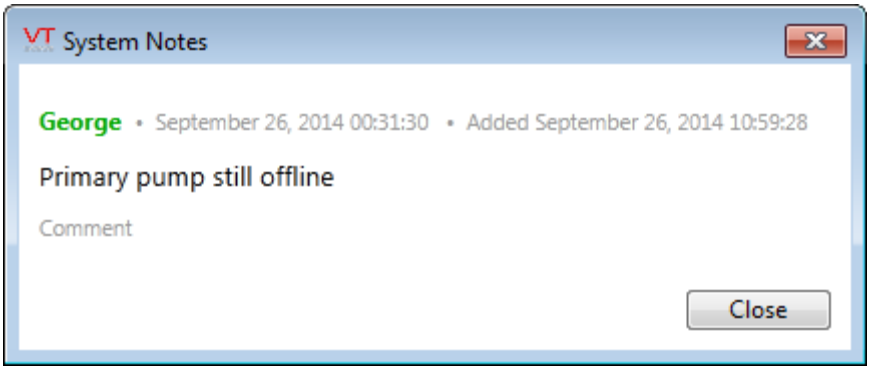

   The Add Note dialog will open and identify the time.




4. Enter the text for the note in the Note area.
5. Click OK.

The Add Note dialog will close, and a marker will be placed on the graph at the selected date and time, to show that a note has been added.


To read a note, click its marker on the graph. If there are two notes for the same time marker, both will be displayed. If viewed in the graph, rather than on a plot, single notes will be written in the graph. Multiple notes for the same time marker can be opened by clicking a provided link.




The note will always include the date and time matching the note's location on the graph, the timestamp of when the note was recorded, the

name of the user, and the text of the note itself. The note cannot be edited or deleted, but comments may be added at any time.

*Troubleshooting:*

- An error message tells you to select a Notebook pen.
  Choose a notebook tag from the legend. This tag provides the mechanism to save and retrieve notes.
- There is no notebook pen to select in the pen legend.
  Use the Tag Selector button to find and add a Notebook tag to the list.

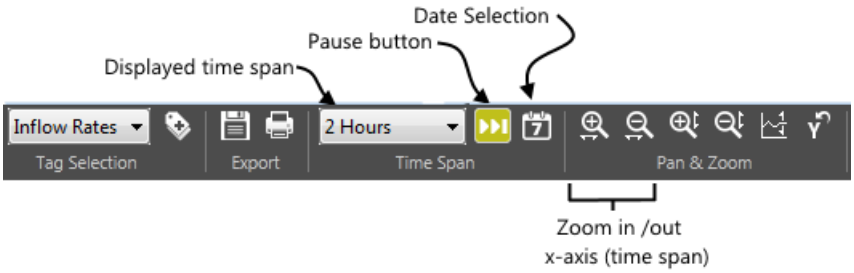

*Related Information:*

...List of Notebook Pen Properties – Notepad pen properties.

...The Operator Notes Page

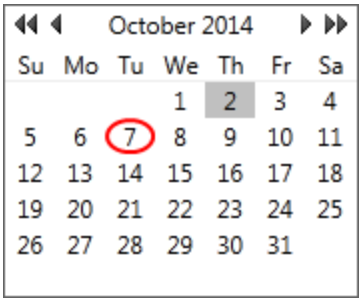
# Change the Displayed Time Span

When the Historical Data Viewer (HDV) opens and tags are selected, the display is of live data – that is, a constantly updating display of values as they are being collected.
You may wish to adjust the displayed time span to show a greater or shorter length of time. If the values are being logged, then you can also change the displayed time to review historical values. Most of the tools that you will need can be found in the toolbar at the top of the HDV page.



### Change the displayed start date:

1. Click the Set Start Date button.
2. Use the arrow buttons to move backwards and forwards through the months (single arrow) and years (double arrow).




3. Click on the date for which you want to start viewing logged data.

The calendar closes, and the date you selected is displayed below the graph.

### Change the span of time displayed (method 1):

1. Click the duration drop-down list. (To the immediate left of the Select Start Date button.)


2. Select a time duration from the list

### Change the span of time displayed (method 2):

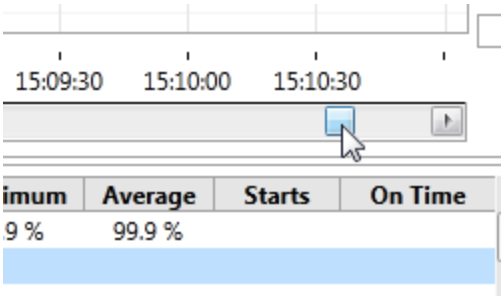
The Zoom in X-axis and the Zoom out X-axis buttons combine two steps in one. The first is exactly the same as using the time span selector - each change in time span made using these buttons is the same as selecting the next duration from the list. The second function is that they scroll the history display to center the time that you click within the time span window.

1. Click either the Zoom in X-axis or Zoom out X-axis button to active the control.

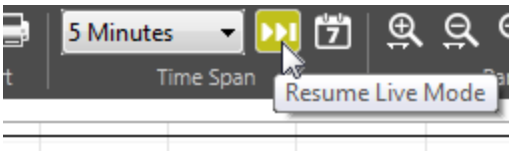
2. Click on the graph to change the displayed duration and re-center the graph.

### Scroll to view earlier or later dates:

The scroll bar below the graph can be used to view earlier or later dates. Click on the left and right arrows, or drag the indicator.




**Reset the graph to the current date:**
If you are not viewing current / live values, then the indicator to the left of the calendar button will be highlighted. Click the button to return the graph to the current time and live updates.




*Related Information:*

...Make the HDV Plot Look Better - Options for changing the display characteristics.

*Next Steps:*

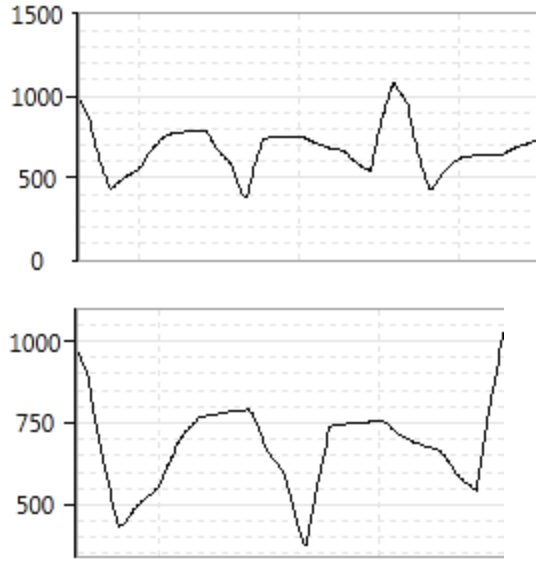
...Change the Vertical Scale

...Shift a Pen Up or Down

# Change the Vertical Scale

(Does not apply to digital tags.)
For a given time span, an analog tag's value may not change significantly compared to the full scale range. By changing the displayed scale ("zoom-in" or "zoom-out"), you can increase the amount of information available.

For example, the following two images show the same information, but in the second, the displayed vertical scale has been adjusted to show values from 500 to 1000 instead of 0 to 1500.




For the following instructions, if a tag is selected in the legend, the action will apply only to its **pen**[1]. Otherwise, the action will apply to all the pens.

### To change the vertical scale:

1. Decide whether to scale one pen or all pens
   - If one pen, select that pen in the legend.
   - If all pens, select no pens in the legend. Click on any that are selected, to deselect them.
2. Decide whether you want to view a smaller scale range (zoom in) or a greater scale range (zoom out).
   - If a smaller scale range, click the Zoom In Y-Axis button.
   - If a larger scale range, click the Zoom Out Y-Axis button.

[1] 1) The line showing a tag's values in a graph within the Historical Data Viewer. 2) Private Enterprise Number

3. Click on the analog graph.
4. Each click on the graph while the Zoom In or Zoom Out button is selected will take you one step further in or out.

*Troubleshooting:*

- You have zoomed too far and lost the pen.

  Click the Reset Y button. 

*Related Information:*

...Make the HDV Plot Look Better - Options for changing the display characteristics.

*Next Steps:*

...Reset the Scale and Position - Reset the position.

# Shift a Pen Up or Down

(Does not apply to digital tags.)
When plotting several tags, you may want to shift the position of one or more of the pens in order to either separate the graphs for clarity, or to superimpose them for comparison.

**To shift a pen position:**

1. Decide whether to shift one pen or all pens.
   - If one pen, select that pen in the legend.
   - If all pens, select no pens in the legend. Click on a selected pen to deselect it.
2. Click on the Shift Y-Axis button. 
3. Click on the graph and, while holding the left mouse button down, drag the pen display up or down.

*Troubleshooting:*

- You have shifted too far and lost the pen.

  Click the Reset Y button. 

*Related information that you may need:*

...Make the HDV Plot Look Better

*Next steps:*

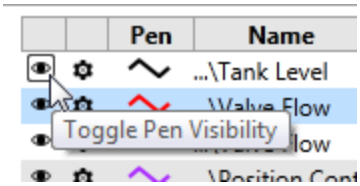
...Reset the Scale and Position

# Hide Pens in the HDV

When several pens are plotted on the same graph, you may want to hide one or more temporarily so that you can better view the remaining pens.

**To hide a pen:**

1. Click the eye icon beside that pen's entry in the legend.
   The pen will be removed from the graph and the legend entry will turn gray to indicate that the pen is hidden.




**To reveal a hidden pen:**

1. Click the eye icon a second time.

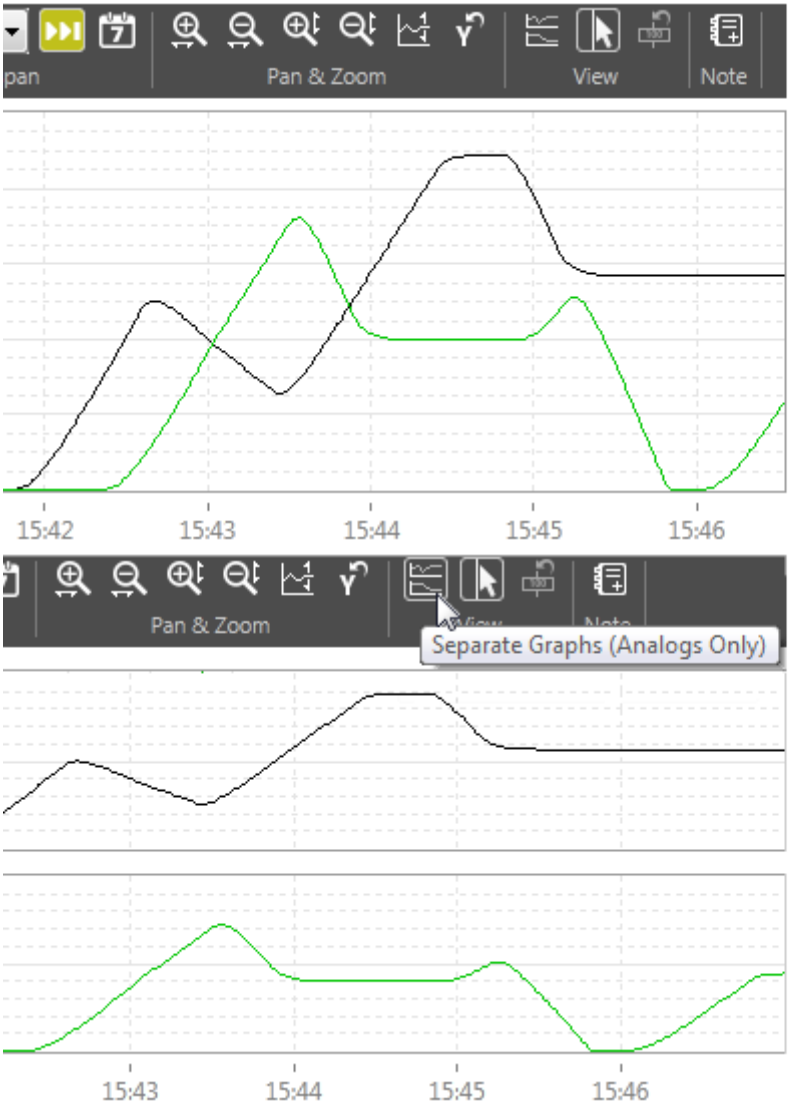
*Related Tasks:*

...Separate Graphs

...Shift a Pen Up or Down

# Separate Graphs

When more than one pen is being plotted, the overlapping lines may be difficult to see. While you can shift a pen up or down, you can also separate the pens into their own graphs at the click of a button. Note that this applies to only analog plots.




Merged graphs

Separated graphs.

**To separate analog graphs:**

1. Click the Separate Graphs button. 
2. Click again to merge the pens into a single graph.

Note that separating a large number of graphs may result in a very small display area for each.

***Related Tasks:***

...Shift a Pen Up or Down

# Reset the Scale and Position

(Does not apply to digital tags.)
If you have adjusted the graph's scale or vertical position, you may decide that you want to return to the default display. This can be done for either a single pen, or for all pens using the Reset Button.
This operation applies only to vertical adjustments. There is no default for the horizontal scale (displayed time span) of the graph. Also, changes that you have made to color, line style and other properties are not affected.

**To reset the scale range:**

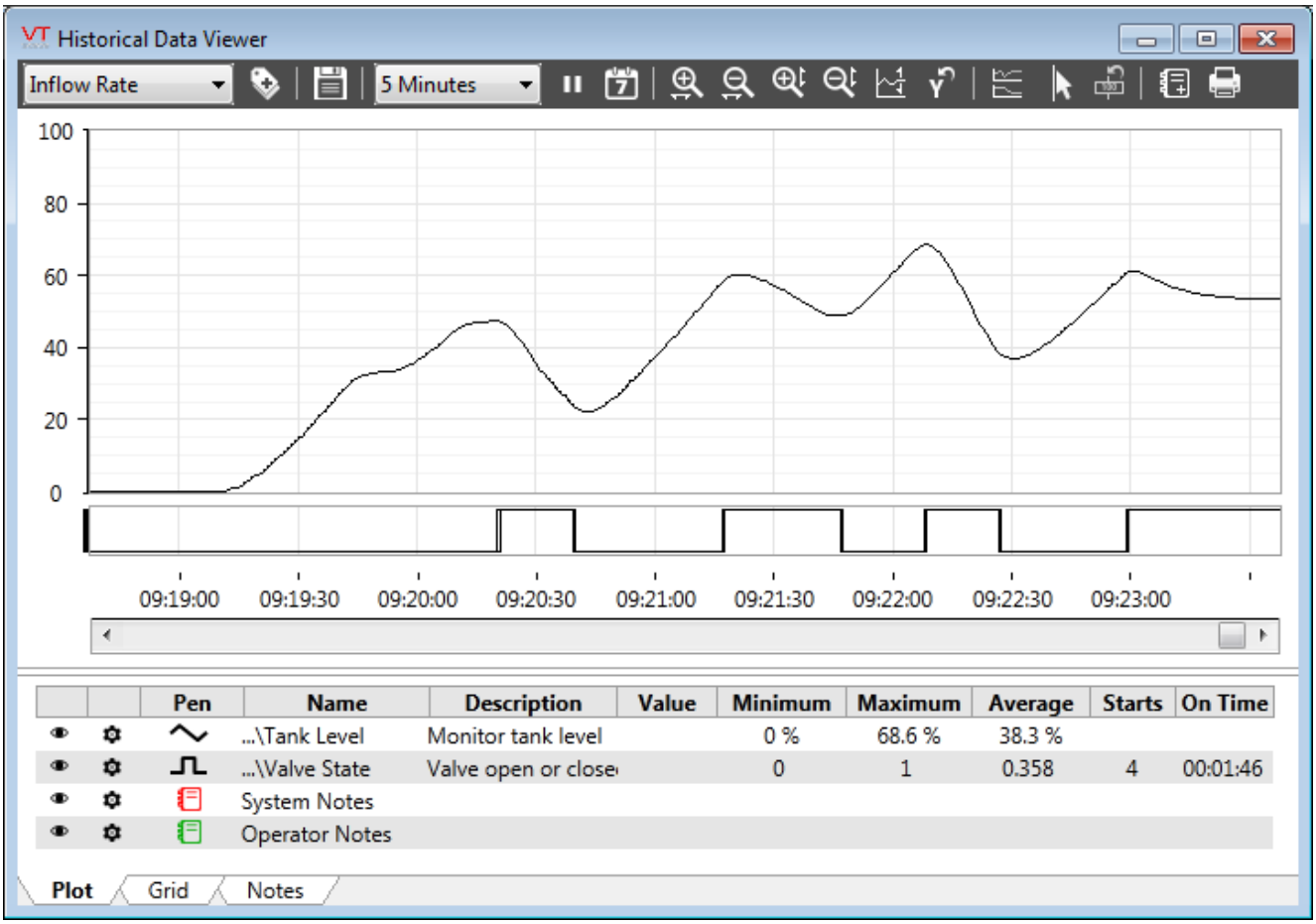
1. Decide whether to reset one pen or all pens
   - If one pen, select that pen in the legend.
   - If all pens, select no pens in the legend.
2. Click on the Reset button. 

*Related Tasks:*

...Make the HDV Plot Look Better - Options for changing the display characteristics.

# Add Value Labels to the Graph

Since the Historical Data Viewer's vertical scale shows only the minimum and maximum values, it can sometimes be difficult to read a value between these limits. Adding value labels to the graph removes this problem by showing exactly the value(*) at the selected point in time.
(*) Note that this is the graphed value, not necessarily a logged value.




### To add a label:

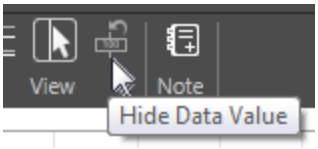
1. Select an analog pen by clicking on it in the legend area.
2. Click on the graph, lining up the cursor with the moment in time at which you want to display the tag's value.

A label will be displayed, with a line marking the point in time.

### To remove a label:

There are three ways to remove labels. Each is a one-step process.

- Click on an existing label. It will be removed from the plot.
- Click the Hide Data Value button. All labels will be removed from the plot.



- Close the HDV window and re-open it. Labels are temporary markers, not permanent additions to the plot. All are removed when the page is closed.

*Troubleshooting:*

- The label does not appear.
  - An analog pen must be selected in the legend before a label can be added.
  - Control buttons at the top of the HDV such as Zoom-Out or Shift-Y-Axis will interfere with this process. Ensure that none of these are selected.

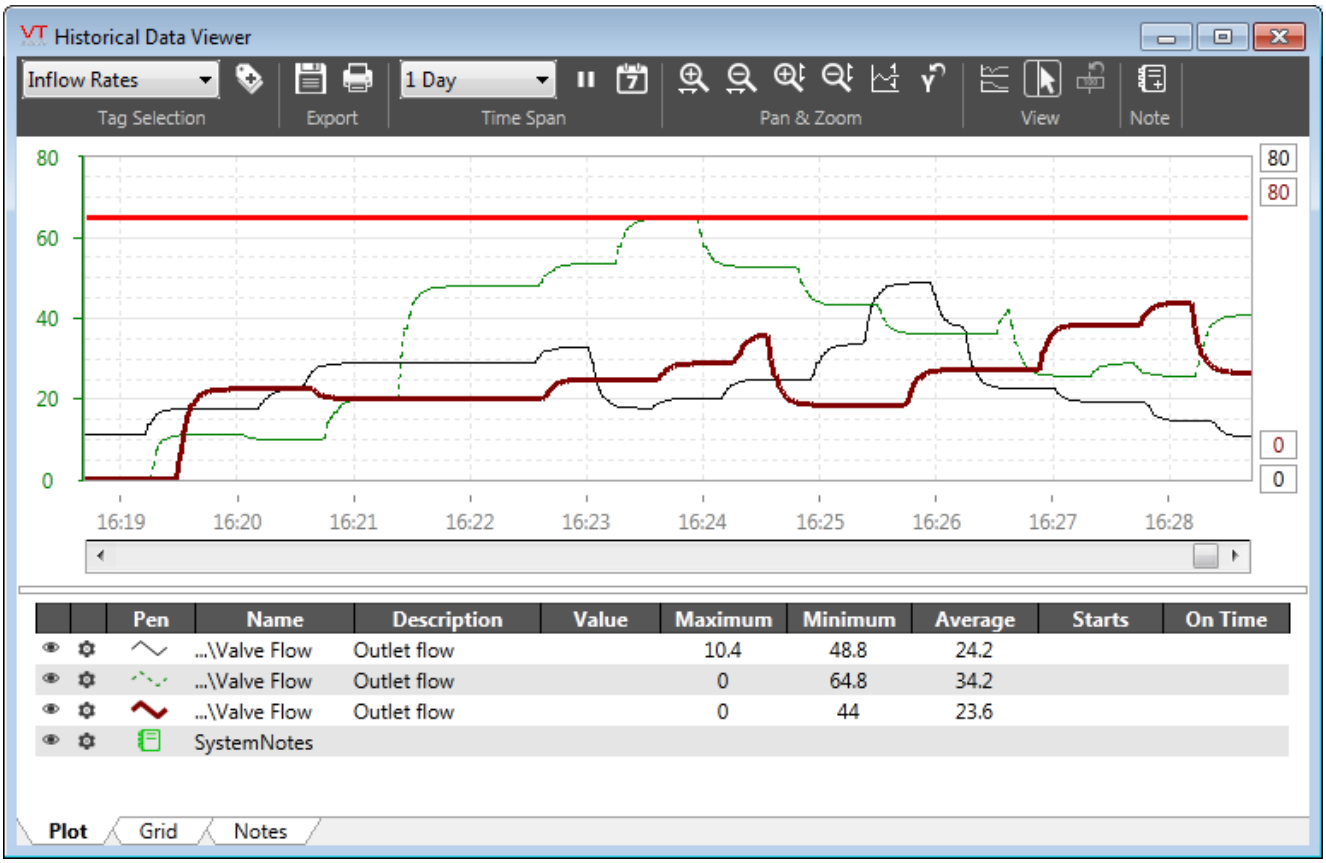
*Related Tasks:*

...Make the HDV Plot Look Better - Options for changing the display characteristics.

# Make the HDV Plot Look Better

The Historical Data Viewer (HDV) chooses a unique color for each **pen**[1] used to plot a tag's values. Thin, solid lines are used, and each tag's plot will be adjusted so that the full range of scaled values fits within the window - with no regard to how that might overlap another tag's plot.
You may decide to emphasize one or more pens by selecting a color with greater contrast, setting a thicker line width or a different line style.
You can include more information in a plot by adding lines to show alarm set points - and thereby emphasize when the tag's values went into an alarm state. You can include peaks and averages, add value labels at key positions, scale the display, select extra information to include in the legend, and even change the graph's scale to be logarithmic.

[1] 1) The line showing a tag's values in a graph within the Historical Data Viewer. 2) Private Enterprise Number




In all cases, adjustments are made by opening the pen's Properties dialog, which gives access to the full set of pen configuration controls. The legend configuration for each pen is remembered and used each time the associated tag is plotted in any instance of the Historical Data Viewer, regardless of how that instance is opened.

To open the properties dialog, do either of the following:

- Double-click the pen's entry in the legend.
- Click the gear icon for that pen's entry in the legend.

Detailed instructions for the various configuration options are provided in the following topics.

### *Related Information:*

...List of Analog Pen Properties – Analog pen adjustments, including alarm lines.

...List of Digital Pen Properties – Adjusting digital pens.

...List of Notebook Pen Properties – Adjusting notebook pens

*Related Tasks:*

...Add Value Labels to the Graph

...Change the Vertical Scale

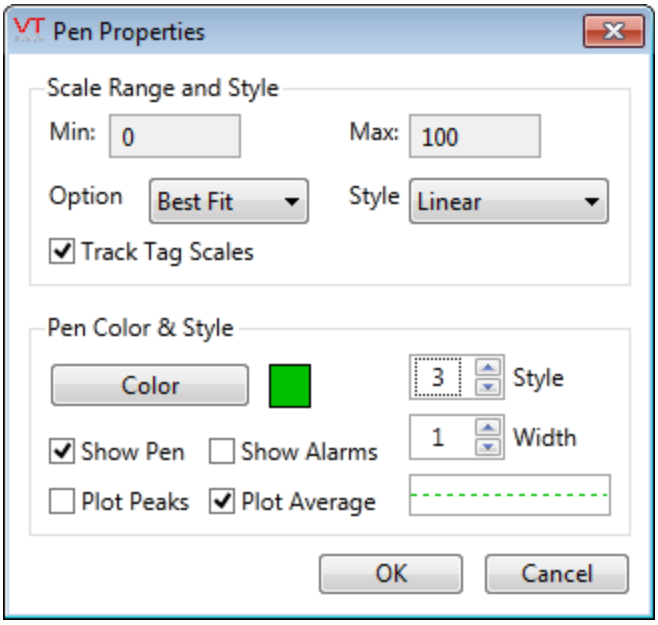
...Shift a Pen Up or Down

...Reset the Scale and Position

## List of Analog Pen Properties

The appearance of the pens that are used to display analog plots can be adjusted as follows:

- Double-click the entry, or click the gear icon to open the properties dialog.




| Analog Pen Properties Element | Description |
|---|---|
| Min & Max | The range of the displayed scale. If the Track Tag Scales check box is not selected, then you can use these fields to provide your own scale ranges for the tag. |
| Scale Option | Choose whether to display a full scale (all scales), a best fit scale or no scale. |
| Track Tag Scales | When selected, the scales configured for the associated tag are used for the scale range (see: Min & Max). If not selected, you can provide your own values for the scale range. |

| | |
|---|---|
| Scaling Style | Select one of the three possible graph types: Linear, Logarithmic, Square Root |
| Color | Opens the Select Color palette, which you can use to select a new color for the pen. |
| Pen Style | A spin-box that you can use to change the line style (solid, dashed, etc.). Affects the choice of width, in that you cannot select a wide line for any style other than solid. |
| Width | A spin-box that you can use to set the width of the pen. Affects the choice of style, in that choosing a wider line forces the line style to be solid. |
| Show Pen | Hides this tag's pen when not checked. |
| Show Alarms | Add horizontal lines to the graph that show the current value of alarm set-points associated with this tag. |
| Plot Peaks | When each pixel represents several logged values, the graph is normally an average of the values represented by each pixel. If Plot Peaks is selected, then two lines will be drawn - one for the maximum of those values covered by a pixel and one for the minimum. See also, Plot Average |
| Plot Average | The normal graph through for a pen - each pixel shows the average of the logged values represented by a pixel since there are usually more logged values than displayed pixels over a time span. See also, Plot Peaks. |

*Related Information:*

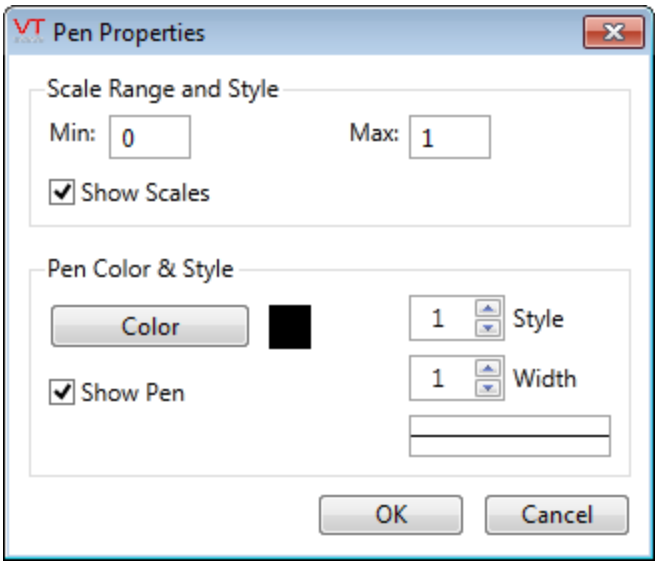
...List of Digital Pen Properties

...List of Notebook Pen Properties

## List of Digital Pen Properties

The appearance of the pens that are used to display digital plots can be adjusted as follows:

- Double-click the entry, or click the gear icon to open the properties dialog.




| Digital Pen Properties Element | Description |
|---|---|
| Min & Max | The range of the displayed scale. 0 and 1 for most digitals, but may be set 0 to 3 for two-bit digital inputs. |
| Show Scales | Select whether the minimum and maximum scale values are to be displayed along the Y-axis of the graph. |
| Color | Opens the Select Color palette, which you can use to select a new color for the pen. |
| Style | A spin-box that you can use to change the line style (solid, dashed, etc.). Affects the choice of width, in that you cannot select a wide line for any style other than solid. |
| Width | A spin-box that you can use to set the width of the pen. Affects the choice of style, in that choosing a wider line forces the line style to be solid. |
| Show Pen | Hides this tag's pen when not checked. |
| Average | Affects the legend display. If checked, the average of all plotted values across the displayed time span will be calculated for the tag. |

*Related Information:*

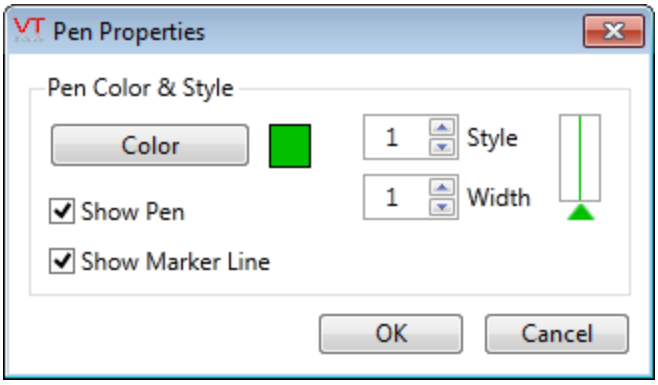
...List of Analog Pen Properties

...List of Notebook Pen Properties

## List of Notebook Pen Properties

The appearance of the markers, placed on the graph when you add a note, can be adjusted as follows:

- Double-click the entry, or click the gear icon to open the properties dialog.




| Digital Pen Properties Element | Description |
|---|---|
| Show Pen | Hides this tag's pen when not checked. |
| Show Marker Line | When checked, the note's placement on the graph is shown with both an arrow and a vertical line. Deselect to remove the vertical line. |
| Color | Opens the Select Color palette, which you can use to select a new color for the pen. |
| Style | A spin-box that you can use to change the line style (solid, dashed, etc.). Affects the choice of width, in that you cannot select a wide line for any style other than solid. |
| Width | A spin-box that you can use to set the width of the pen. Affects the choice of style, in that choosing a wider line forces the line style to be solid. |

*Related Information:*

...List of Digital Pen Properties

...List of Analog Pen Properties

# Export Historical Data Viewer Values

The export button will send values displayed in the graph or grid to a file type of your choice. What is exported depends on what you are viewing, as per the following note.

Note: Graphed values are not necessarily the same as logged values - Live versus Historical Data.
If exporting from the plot, values will be averages for each plotted point.
If exporting from the grid, values will be averages, minimums, maximums or raw data depending on your choice of data retrieval mode.

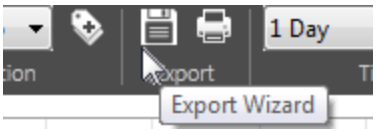
Adjust the time span to change the range of dates included in the export. Only the values in the current HDV display are exported.
The values can be exported to any of the following formats.

- Access Database.
- Excel Spreadsheet.
- CSV File (Comma separated values in an ASCII text file.)
- ODBC Compliant Data Source
  Details will depend on the destination.

If exporting more than one tag, you will have the choice of exporting each to separate worksheets / database tables / files, or to merge all together.
If merging several tags to a single file or worksheet, and if exporting raw values from the grid view, the result will be a sparse table. There will be a row for every logged timestamp, but not every tag will have been logged at that exact moment in time.

### To export values from the HDV:

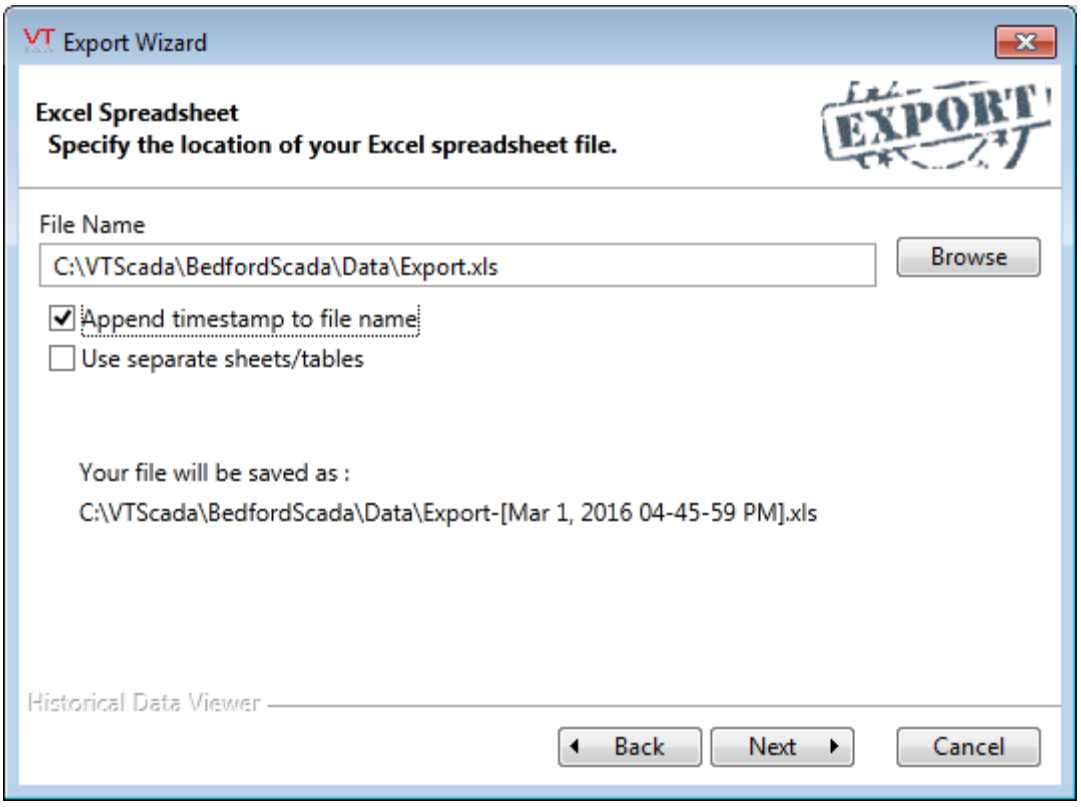
1. Ensure that you are viewing the tags you are interested in, and that the time span covers the values that you want to include in the export.
2. Click the Export Wizard button.




The Export Wizard will open and display its welcome screen.

3. Click the Next button.
   The Export Format screen will be displayed.
4. Select the format for your exported data from the drop-down list.
5. Click the Next button.
6. Accept the suggested file name and directory for the export file or create your own.

- If you have chosen to export to an Access, Excel or CSV file, you can use the Browse button to navigate to a directory where you wish to save the file and type the file name.
- The Access and Excel formats also allow you to append a timestamp to the file name(see image).




- If you have selected an ODBC export, you can select an existing ODBC data source associated with an existing database or spreadsheet into which you

wish the data exported. There is no option to append a timestamp when selecting the ODBC data source.

7. Click the Next button
8. Click the Finish Button

*Troubleshooting:*

- Error "General warning. Unable to open registry key 'Temporary (volatile) Jet DSN ..."

  VTScada is running in an account that does not have sufficient permissions for the ODBC process. Adjust permissions for this account, or use an account with a greater permission level.

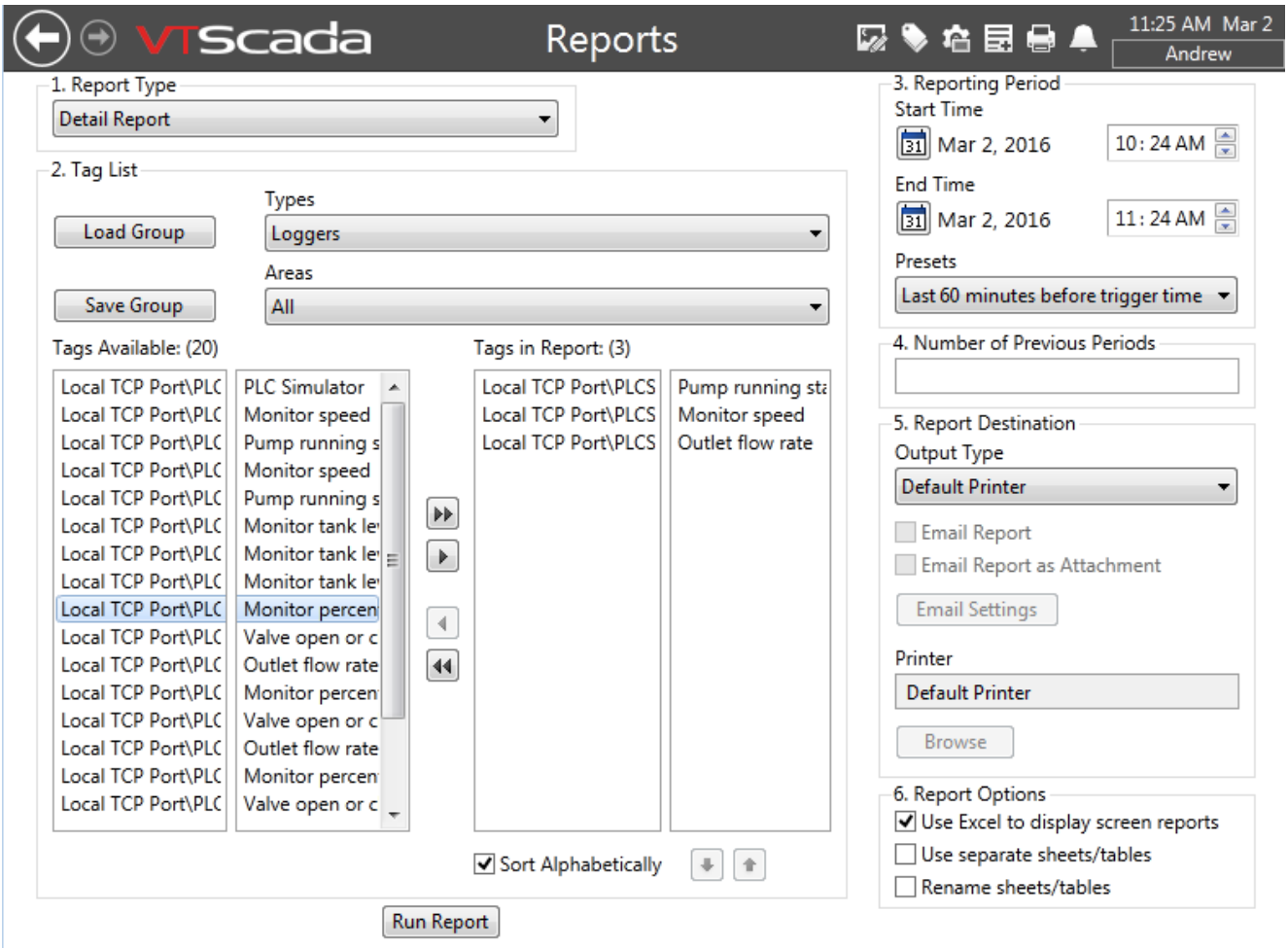
# *Create Reports - The Reports Page*

You can generate reports using a variety of reporting formats, provided with VTScada. In most cases, you will use the Reports page (a standard part of every VTScada application), but your application may have been created to generate reports automatically, or there may be buttons that you can press in order to create a predefined report on demand. This chapter describes how to use the Reports page. If other options exist, they will have been customized for your application - see your supervisor or VTScada Developer for more information about them.

Note: VTScada provides an extensive set of tools for reporting, of which the Reports page is only one. Please refer to the relevant chapter in the "Build..." section of this manual.

If the output uses a Microsoft Excel™ file, and you have an older version of that program using the XLS file format, you may be limited to 255 columns (tags) in your report. Modern versions of Excel, using the XLSX format will support up to 16383 columns.
VTScada will automatically detect the installed version and produce an output file using the format it supports, XLS or XLSX

### Report Page Features




Referring to the numbered sections...

1) Selection of report type.

2) Tag List. Filters and other tools for choosing the tags that will be reported on.

3) Reporting Period. Choose one of the predefined periods, or use the controls to set a specific start and end time.

4) Number of consecutive periods. After setting a report period, you can generate a series of reports, each for the same length of time, but for consecutive periods extending back in time.

5) Report Destination. Select from ten options for where the report will be sent or displayed once it has been generated.

6) Other Report Options. Refinements that may be applied to some of the report destination choices.

*Related Information:*

...Report Types Described - List of built-in reports.

...Report Formats and Destinations - Output options.

...Alarm Reports - Reports available in the Alarms page. See also, Alarm Analysis

*Related Tasks:*

...Steps to Create a Report

# Steps to Create a Report

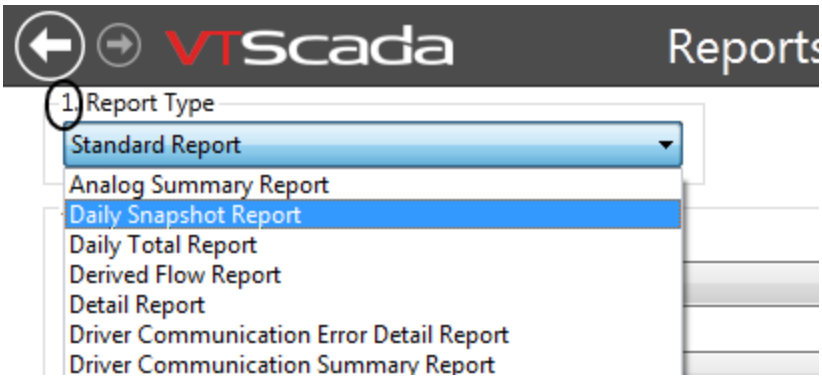
The report page is organized into numbered sections, indicating the steps required to configure and run a report. For each step, there are several decisions to make.

If the output uses a Microsoft Excel™ file, and you have an older version of that program using the XLS file format, you may be limited to 255 columns (tags) in your report. Modern versions of Excel, using the XLSX format will support up to 16383 columns.

VTScada will automatically detect the installed version and produce an output file using the format it supports, XLS or XLSX

The generalized steps are as follows:

***1. Select the type of report to create.***

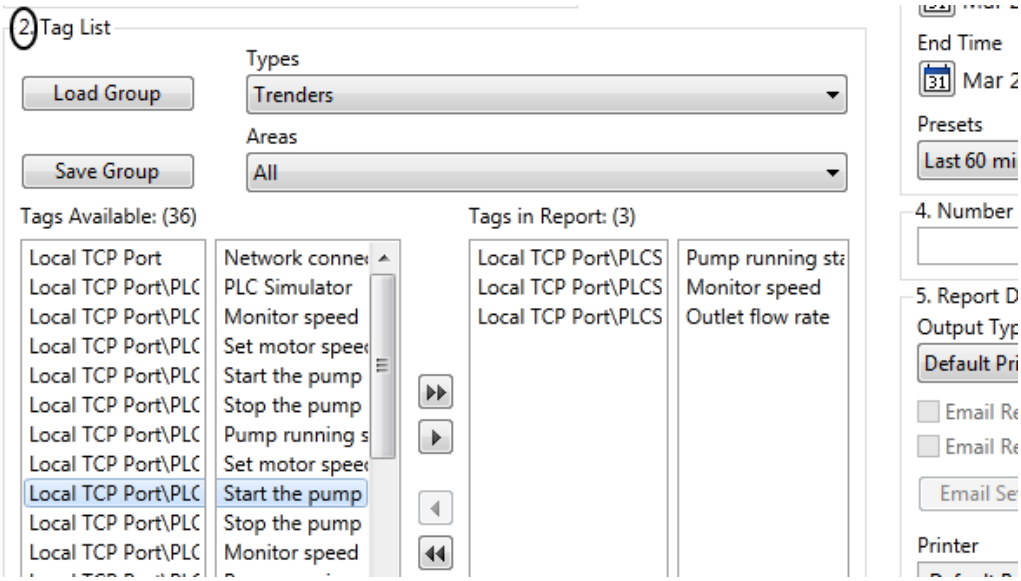



For the list of options, see: Report Types Described

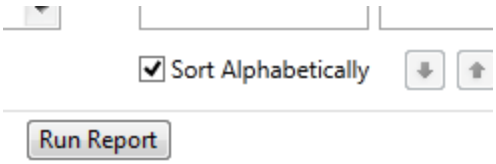
***2. Select the tags to include.***

The types of tag available for selection will be limited by your choice of

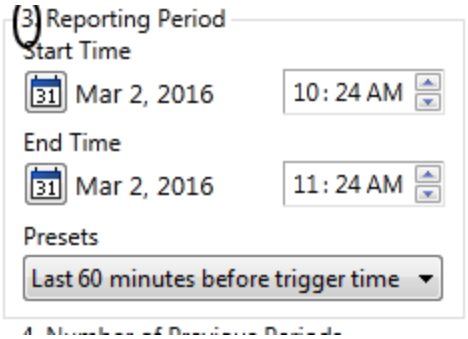
report type. You can use the Areas selector to further filter the list.
Use the arrow buttons to move tags from the list of those available to the list of those selected.
This task is much easier if the tag selection is saved, to be loaded the next time the report is run. See: Save and Load Tag Groups.




Tags are sorted in alphabetic order, but you have the option to change the order as desired by deselecting the Sort Alphabetically option, then using the arrows to move selected tags up or down in the list.



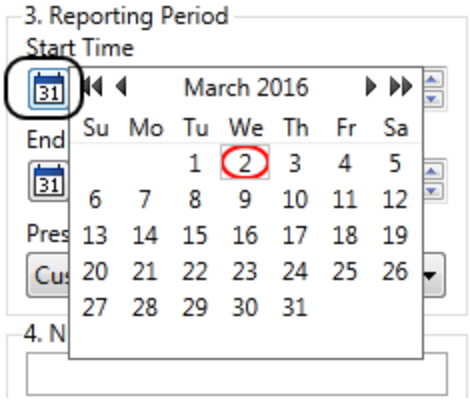

***3. Select the time span to report upon.***



An extensive list of preset time-periods is available. In almost all cases, you will be able to find one that matches what is required for the report. For a list, see: List of Preset Time Periods for Reports.

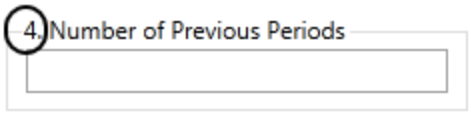
Note: Presets set the start and end time, relative to when you *change* the choice of preset. If you run a report for the "Last 4 hours before trigger time", then wait an hour and run the report again, the start and end times will not change.

In the case that there isn't a preset for the time span required, you can generate your own using the Start Time and End Time controls provided.
a) Click the calendar button to open a date-selection calendar. (If you wish to report on a time span prior to today.)




b) Use the up-down arrows in the time fields to set the hour and minutes, or type directly in the time fields.
Note that you cannot set an end prior to the start.

***4. Choose whether to repeat the report for multiple iterations of that time span.***




Leaving this field blank is the same as specifying "1 time period". Any larger value will cause the report to repeat for consecutive time periods of the same length set in step 3, where each iteration is for an earlier (previous) span of time.

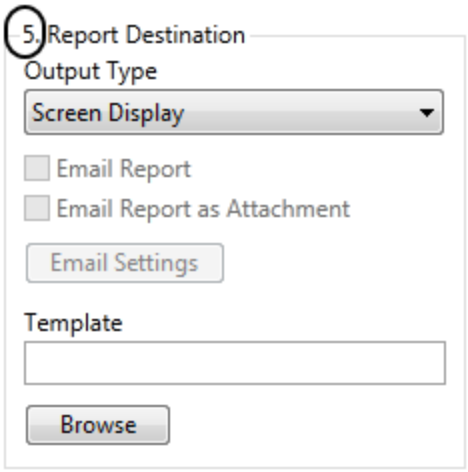
Options in step 6 allow you to control how these iterations are included in the report output.

***5. Select the output format and destination.***

The drop-down list provides the main list of output formats and destinations. Both format and destination are controlled here, where the list includes combinations of each.

Formats include text file, Excel-compatible spreadsheet, Access database file, or other ODBC database. Destinations include screen, printer, email and file on disk.

The choice of destination affects the choice of format and vice-versa.

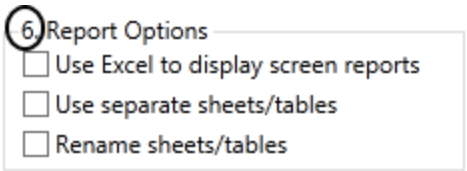



If an email server has been defined, you can choose to send most formats by email. The settings dialog will prompt for a From address, a Subject and a To address. Email addresses may be in the basic form, Name@Company.Com" or you may use either of the following longer forms. Multiple addresses may be entered, separated by semi-colons or commas. Do not add spaces within the angle brackets.

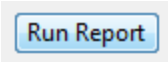
"Full Name" <Name@company.com>

Full Name <Name@company.com>

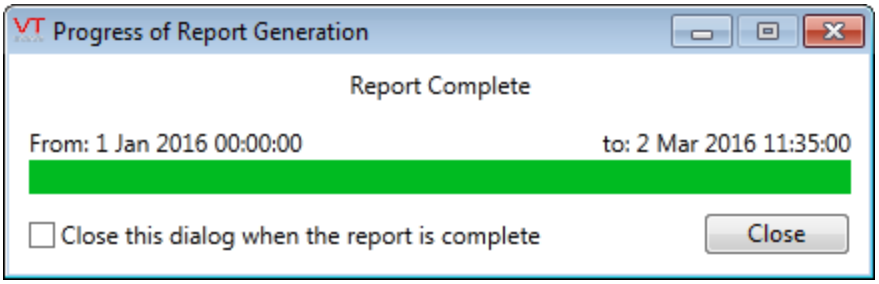
***6. Optionally, fine-tune the output format.***



The first option applies if you have chosen to output the report to the screen. If not checked, a plain ASCII text file format is used.
The second and third apply if previous periods are being generated (step 4) and the output is going to either Excel or Access format. Using separate sheets or tables for each iteration keeps the consecutive periods independent. If the Rename option is selected, you will be prompted for names when the report runs.
7. Click the Run button to generate the report.




A progress dialog will be shown while the report is being generated. In most cases, you will likely want to check the option, "Close this dialog when the report is complete" so that you do not need to close it after every report runs.



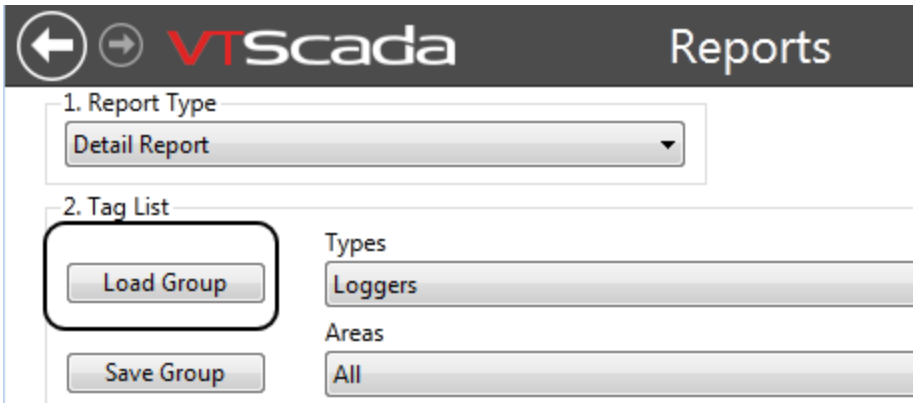

*Related Information:*

...Report Types Described - List of built-in reports.

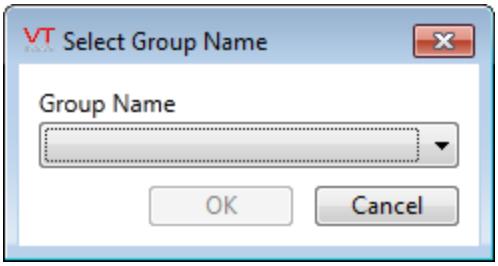
...Report Formats and Destinations - Output options.

## Save and Load Tag Groups

A set of logged tags must be selected to provide the data for a report. Your VTScada Developer may have saved named groups of tags that you can select for your reports. If so, you will find these groups by clicking on the Load Group button in the Reports page. If not, you can save your own groups for future use.




Both the Save Group and the Load Group buttons will open the Provide Group Name dialog.




## Save a Tag Group

***Steps:***

1. Select the tags to be included by moving them from the Tags Available list to the Tags In Report list.
2. Click the Save Group button.
   The Provide Group Name dialog opens.
3. Either type a descriptive name for the tag group in the Group name field, or select an existing group name to update with the new tag selection.
4. Click OK.

## Load a Tag Group:

***Steps:***

1. Click the Load Group button on the Reports page.
   The Provide Group Name dialog opens.
2. Select the tag group you wish to load.
3. Click on the down arrow in the Group Name area, or start typing the name of

the group you want.

4. Click OK.
   The tags belonging to the tag group are placed in the Tags In Report list.

Note: When you load a tag group, those tags replace any that were already in the "Tags In Report" list.

## List of Preset Time Periods for Reports

The Reporting Period section of the Reports page includes a Presets drop-down list, containing the following time periods:

| Preset | Description |
|---|---|
| Last 60 minutes before trigger time | The report will include all data that has been collected over the last hour time period, ending with the current time. |
| Last 2 hours before trigger time | The report will include all data that has been collected over the last two-hour time period, ending with the current time. |
| Last 4 hours before trigger time | The report will include all data that has been collected over the last four-hour time period, ending with the current time. |
| Last 12 hours before trigger time | The report will include all data that has been collected over the last twelve-hour time period, ending with the current time. |
| Last 24 hours before trigger time | The report will include all data that has been collected over the last twenty-four-hour time period, ending with the current time. |
| Last 2 days before trigger time | The report will include all data that has been collected over the last forty-eight-hour time period, ending with the current time. |
| Last 4 days before trigger time | The report will include all data that has been collected over the last ninety-six-hour time period, ending with the current time. |
| Last 7 days before trigger time | The report will include all data that has been collected over the last week, ending with the current time. |
| Previous calendar day | The report will include all data that has been collected for the previous day, starting at midnight yesterday, and ending at midnight on the current date. |
| Previous calendar week | The report will include all data that has been collected for the previous week, starting at midnight seven days previous, and ending at midnight on the current date. |

| | |
|---|---|
| Previous calendar month | The report will include all data that has been collected for the previous month, starting at midnight on the first day of the previous month, and ending at midnight on the first day of the current month. |
| Previous calendar quarter | The report will include all data that has been collected for the previous four months, starting at midnight on the first day four months previous, and ending at midnight on the first day of the current month. |
| Previous calendar year | The report will include all data that has been collected for the previous year, starting at midnight on the first day of the previous year, and ending at midnight on the first day of the current year. |
| Current Day | The report will use all data collected from midnight until the current time today. |
| Current Week | The report will use all data collected from Midnight Sunday of this until the moment that the report is run. |
| Current Month | The report will use all data collected so far during the current calendar month. |
| Current Quarter | The report uses all data collected so far during the three months making up the current quarter of the year. |
| Current Year | The report uses all data collected so far this year. |
| Custom | Automatically set when you use the date or time selectors. |

# Report Types Described

VTScada provides a variety of predefined report types, which you can use to analyze the performance of the equipment comprising your physical system. Your application might also have been created with additional, customized report types. Ask your VTScada Developer for details.
Use the Report Type drop-down list at the top of the Report page to select one of the options listed here. After you choose a report type, the filters in section (2) of the Report page will automatically adjust to dis-

play only the type of tags that can be included in the selected report type.

*Analog Summary Report*

An Analog Summary Report displays the average, minimum, maximum, and total values for a set of selected analog tags within a configured time period.

When using this report to summarize flow data, set the Application Property, AnalogSummaryReportTimeUnits to the time unit used to measure the flow. If flow is measured in units per second, the property must be set to 1.If flow is measured in units per minute, the property must be set to 60.

When this report is selected, the tag list will be filtered to include only Analogs.

The Analog Summary Report includes the following information:

- The station number associated with each tag in the selected set.
- The description configured for each tag in the selected set.
- The Data Flow RTU address for each tag in the selected set.
- The average of the tag's data within the duration set for the report.
- The minimum tag data reading within the duration set for the report.
- The maximum tag data reading within the duration set for the report.
- The total tag data reading within the duration set for the report.

*Daily Snapshot Report*

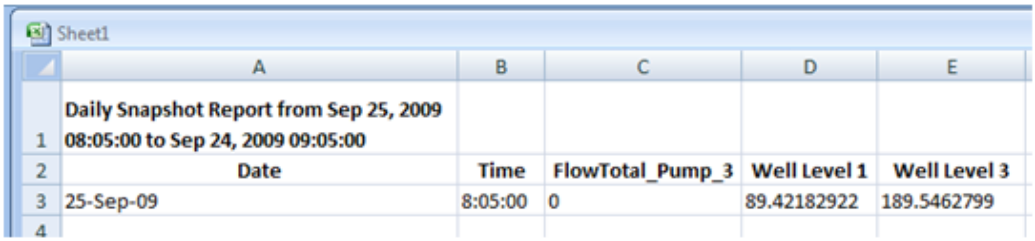
A daily snapshot report displays a "snapshot" of the value of each included tag, at the time you specify, on the dates you select.

When a daily snapshot report is generated, it contains a report header that identifies the report as a daily snapshot report, and indicates the duration or time period you configured for the report. For example, if at 2:00 pm you select a series of tags, set the time period to Last Week, and run the report, the daily snapshot report will display the value of each tag at 2:00 pm for the last 7 days.

The daily snapshot report will include:

- The date at which the data for each tag was read
- The time at which the data for each tag was read
- The subsequent columns provide a snapshot of the value for the tags you selected for inclusion in this report at the corresponding date and time

For example:



Sheet1

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | Daily Snapshot Report from Sep 25, 2009 08:05:00 to Sep 24, 2009 09:05:00 | | | | |
| 2 | Date | Time | FlowTotal_Pump_3 | Well Level 1 | Well Level 3 |
| 3 | 25-Sep-09 | 8:05:00 | 0 | 89.42182922 | 189.5462799 |
| 4 | | | | | |

*Daily Total Report*

A daily total report displays the sum of the values accumulated for a each of a selected set of tags within the time period you specify. Do not use with analogs that measure fluctuating values such as flow rates or levels. This report is to be used with values that are incrementing over a time period. For example, where the RTU or PLC includes a counter that increments whenever an event occurs such as a pump start or rain-gauge tip. These counters are finite and will reset to zero when the maximum value is reached on the device. This report will recognize a reset event and calculate for it.

When a daily total report is generated, it contains a report header that identifies the report as a daily total report, and indicates the duration or time period you configured for the report. For example, if at 2:00 p.m. you select a series of tags, set the time period to Last Week, and run the report, the daily total report will display the value accumulated for each tag by 2:00 p.m. for the last 7 days.

Information included in the report includes:

- The date on which the data for each tag was read
- The time at which the data for each tag was read
- The subsequent columns display the total data accumulated for each tag you selected for inclusion in this report at the corresponding date and time

*Derived Flow Report*

A Derived Flow Report displays the number of cycles for a driver, along

with the inflow, outflow, and total flow for the station.
For this report, the tag selection area will be filtered to include drivers. The report must be run on a Polling Driver or Data Flow RTU, with at least one Pump Status tag. Tied to the Polling Driver, there must be an Analog Status with a description of "Well Volume," measured in gallons, that the well pumps in each cycle. This is usually the volume between the lead and stop float switches. This data must be entered in the manual data field of the Analog Status tag.
Information in the Derived Flow Report includes:
The station number associated with each VTScada driver tag.
The description configured for each VTScada driver tag.
The number of cycles for each VTScada driver tag.
The inflow for each station.
The outflow for each station.
The total flow for each station.
The Derived Flow report requires a measurement of the volume of the station (i.e. the total volume (in gallons) that the well pumps in each cycle.

### *Detail Report*

A Detail Report shows the values recorded for each selected tag, within the given time period.
For this report, the tag selection area will be filtered for the type, Loggers.
The Detail Report includes the following information:

- A date and time stamp for each tag's data.
- The name of each tag.
- The value of each tag.
- The description of each tag.

### *Driver Communication Error Detail Report*

A driver communication error detail report show driver error activity, recorded over a specified time period.
Information included in this report includes:

- The date at which the error was read.
- The time at which the error was read.
- The % quality of data for each driver within the specified time period.
- The delta success for each driver within the specified time period.
- Any error values for each driver within the specified time period.
- Any error messages for each driver within the specified time period.

Note that this report does not allow you to select multiple time periods. If you select multiple tags, the report for each will be saved to a separate sheet if Excel is used for the output format.
Further information about these values is included elsewhere in this guide, see Communication Driver Log-Enabled Variables. in the VTScada Developer's Guide.

*Driver Communication Summary Report*

A driver communication summary report provides a history of driver activity for a specified time period.
For this report, the Types drop-down list filters to display Drivers.
This report includes three groups of information:

- Driver quality information
  - The % minimum quality of data for each driver within the specified time period.
  - The % maximum quality of data for each driver within the specified time period.
  - The % start quality of data for each driver within the specified time period.
  - The % end quality of data for each driver within the specified time period.
  - The tag name for each driver tag included in the report.

  Quality is calculated based on a weighted time interval. Communications closer to the present have more importance than those further in the past. The quality is a running analog value that can be trended on the historical data viewer. Sudden dips in the graph indicate periods where problems occurred. By comparing the % start quality to the % end quality for a given

time frame, you can determine whether events that occurred during that time improved or damaged communication quality.

- Communication timing information.
  These three values provide an indication of communications lag time and can be used to identify bandwidth issues that may be present.
  - The average Response time (i.e. the time between successive messages) for each driver within the specified time period.
  - The minimum Response time for each driver within the specified time period.
  - The maximum Response time for each driver within the specified time period.
- Communication count information.
  These four values are actual counts recorded during the time frame. Unlike the quality information, these values ignore communications that occurred before the time frame.
  - The number of failed data transmissions for each driver within the specified time period.
  - The number of failed reattempts at data transmissions for each driver within the specified time period.
  - The number of successful attempts at data transmissions for each driver within the specified time period.
  - The % success for each driver within the specified time period. This is calculated as: (success counts) / (failed counts + success counts). The counts begin at the start of the given time frame, thus this value can be useful for hour to hour or day to day comparisons.

  Note: The Delta time is typically used to determine how fast data is being transferred for drivers that request data at regular intervals.

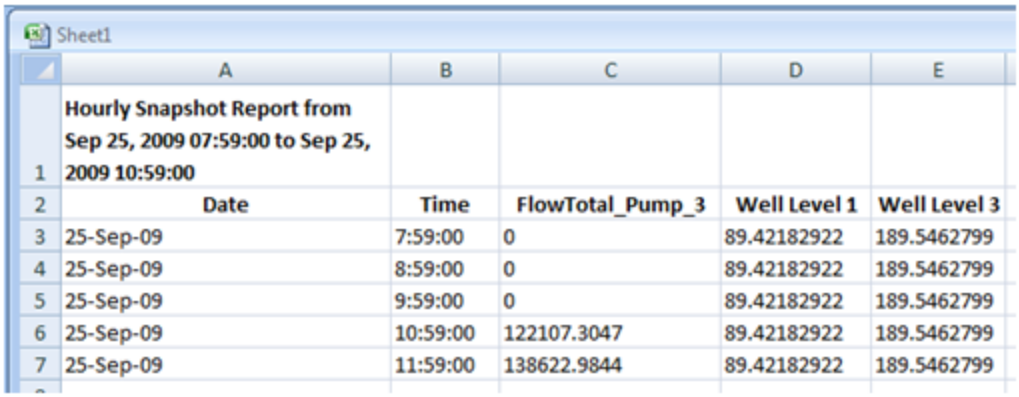
*Hourly Snapshot Report*

An hourly snapshot report displays a "snapshot" of the value of each included tag, repeated every 60 minutes within the time period you specify.

Information included in the report is as follows:

- The date at which the data for each tag was read
- The time at which the data for each tag was read
- The subsequent columns indicate a "snapshot" of the value for the tags you selected for inclusion in this report at the corresponding date and time

For example:



Sheet1

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | Hourly Snapshot Report from Sep 25, 2009 07:59:00 to Sep 25, 2009 10:59:00 | | | | |
| 2 | Date | Time | FlowTotal_Pump_3 | Well Level 1 | Well Level 3 |
| 3 | 25-Sep-09 | 7:59:00 | 0 | 89.42182922 | 189.5462799 |
| 4 | 25-Sep-09 | 8:59:00 | 0 | 89.42182922 | 189.5462799 |
| 5 | 25-Sep-09 | 9:59:00 | 0 | 89.42182922 | 189.5462799 |
| 6 | 25-Sep-09 | 10:59:00 | 122107.3047 | 89.42182922 | 189.5462799 |
| 7 | 25-Sep-09 | 11:59:00 | 138622.9844 | 89.42182922 | 189.5462799 |

*Hourly Total Report*

An hourly total report shows the sum of the values accumulated hourly for a selected set of tags within the time period you specify. Do not use with analogs that measure fluctuating values such as flow rates or levels. This report is to be used with values that are incrementing over a time period. For example, where the RTU or PLC includes a counter that increments whenever an event occurs such as a pump start or rain-gauge tip. These counters are finite and will reset to zero when the maximum value is reached on the device. This report will recognize a reset event and calculate for it.

The hourly total report includes:

- The date on which the data for each tag was read
- The time at which the data for each tag was read
- The subsequent columns display the total data accumulated hourly for each tag you selected for inclusion in this report at the corresponding date and time

*Rainfall Report*

The Rainfall Report provides a per-tag summary of totals within the time period configured for the report, enabling you to determine the total rainfall for selected tags in a given period.

The most common configuration is to use a Pulse Input tag where each pulse recorded from the rainfall measuring equipment signifies a pre-defined depth measurement.
A Rainfall Report includes:

- The station number associated with each tag.
- The description given each tag.
- The total rainfall for each tag.

*Pump Activity Report*

The Pump Activity Report displays summarized values for the Pump Status tags in your application, enabling you to determine overall pump activity.
When you select Pump Activity Report, the list of tags available will include only the Pump Status tags in your application.
Information included in the Pump Activity Report includes:
The station to which the pump belongs.

- A description of the pump.
- The number of times the pump started for the duration set for the report.
- The average time the pump ran within the duration set for the report.
- The total time the pump ran within the duration set for the report.

*Pump Discrepancy Report*

The Pump Discrepancy Report is designed to help you spot instances of pumps that should be identical in behavior, but are not. This report shows only the pumps that have a 20% or greater difference in running time or have more than 1 start count difference.
When this report is chosen, the Types drop-down list is filtered to include only Pump Status tags.
Information included in the Pump Discrepancy Report:

- The station to which the pump belongs.
- A description of the pump.
- The number of times the pump started for the duration set for the report.
- The average time the pump ran within the duration set for the report.
- The total time the pump ran within the duration set for the report.

*Standard Report*

A standard report shows all the values logged for a tag over a chosen time span.

When using this report, it is important to choose only one tag at a time. The reason has to do with the difference between how the information is stored (a database) and how the report presents it (a spreadsheet format). For example, given two tags, A and B: values will always be logged a few milliseconds apart. The report will include a row for each unique timestamp found. However, it will not leave the column for tag A blank when showing the value logged for tag B and vice-versa. When displaying the value logged for tag A, the last value known for tag B will also be included at that timestamp. When displaying the value logged for tag B, the last value known for tag A will be included at that timestamp. For any given tag, it can be very difficult to separate the actual logged values from the carry-over to the other tag's row.

You avoid this problem by running the standard report for only one tag at a time.

Included information:

- The date on which the value for each tag was read.
- The time at which the value for each tag was read.
- The raw timestamp for when the tag was read.
- The value logged.

*Related Information:*

...Report Formats and Destinations - Output options.

# Report Formats and Destinations

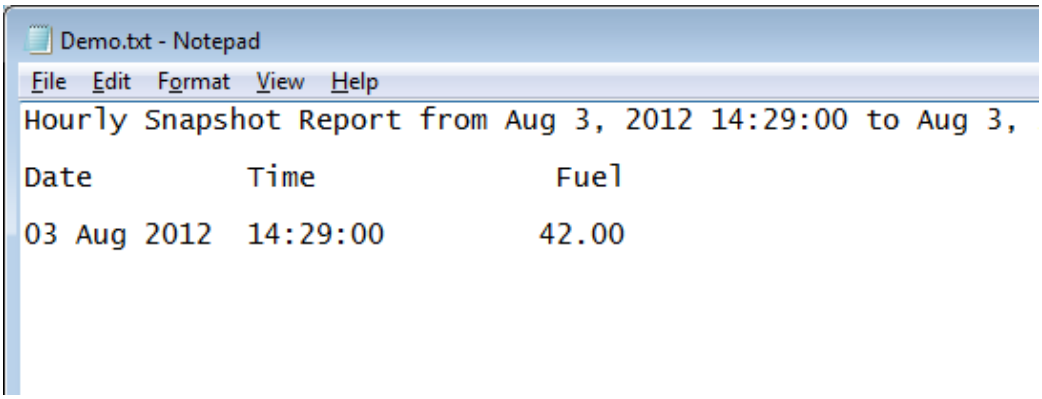
VTS gives you the ability to create your reports in many different formats, and to send those reports to a variety of output destinations. The output selector in the Reports page combines both formats and destinations.

If the output uses a Microsoft Excel™ file, and you have an older version of that program using the XLS file format, you may be limited to 255 columns (tags) in your report. Modern versions of Excel, using the XLSX format will support up to 16383 columns.
VTScada will automatically detect the installed version and produce an output file using the format it supports, XLS or XLSX
For each combination, there are a number of options, and decisions to make.

### Report Formats:

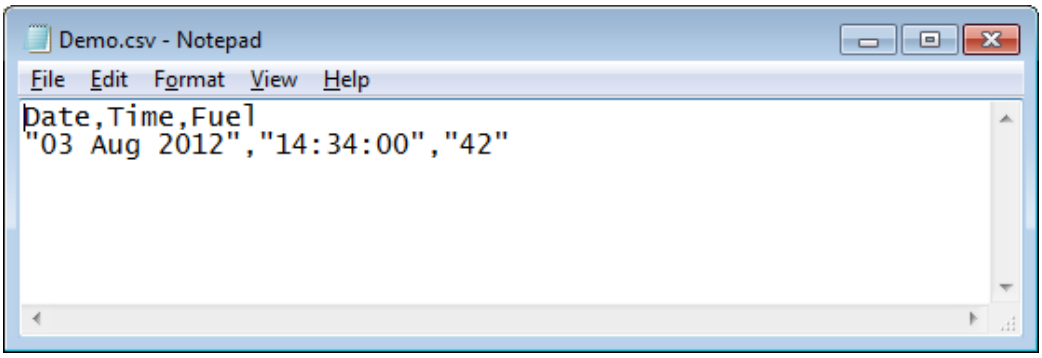
*Text file*

- Formatting is plain but easily read.
- Will be saved to a file on disk. You must provide the name and folder location for the file.
- May also be sent to an email address, either included in the body of the email, or as an attachment.



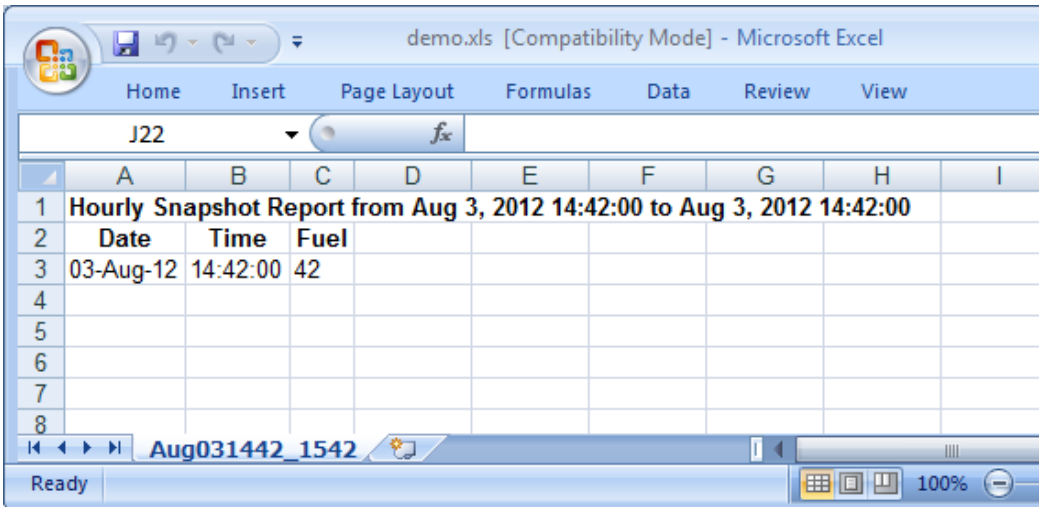

*CSV file*

- CSV = Comma Separated Values.
- The first row contains titles, remaining rows are enclosed in quotation marks and separated by commas. The formatting is designed to be imported into a spreadsheet or other program rather than read directly.
- Will be saved to a file on disk. You must provide the name and folder location for the file.
- May also be sent to an email address, as an attached file.




*Formatted Excel™ spreadsheet file*

- A header row is included in addition to the title row.
- Formatting consists of the header & title rows being displayed with a bold font.
- The worksheet will be named automatically using a timestamp.
- Will be saved to a file on disk. You must provide the name and folder location for the file.
- May also be sent to an email address, as an attached file.

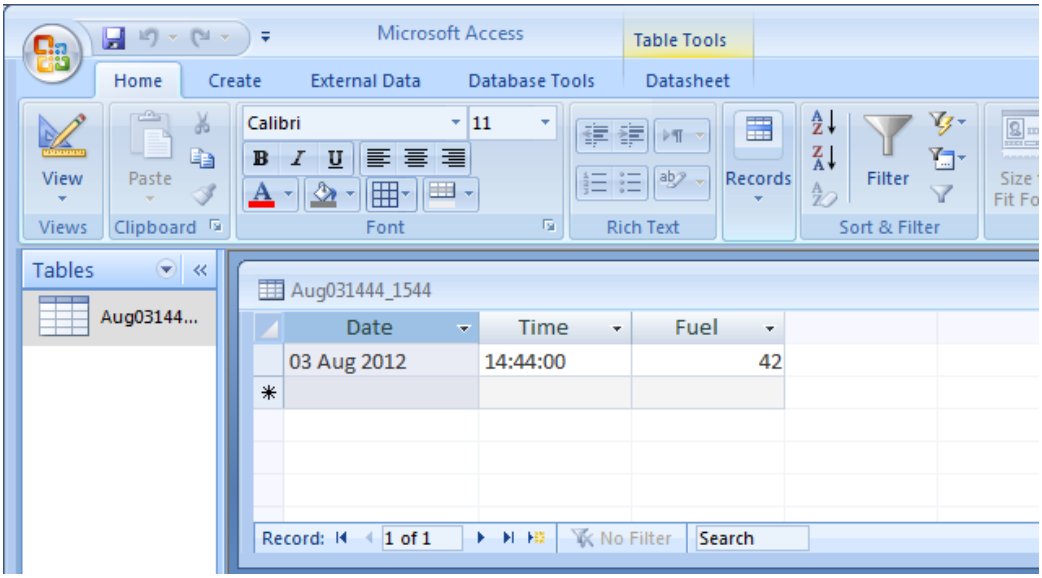



*Plain Excel™ spreadsheet file*

- Title row uses the same font as the rest of the report.
- The worksheet will be named automatically using a timestamp.
- Will be saved to a file on disk. You must provide the name and folder location for the file.
- May also be sent to an email address, as an attached file.

*Access™ MDB database file*

- The table name within the database is created automatically using a timestamp.
- Will be saved to a file on disk. You must provide the name and folder location for the file.
- May also be sent to an email address, as an attached file.




*An ODBC database, as specified in your Windows™ configuration*

- You must provide a DSN - Data Source Name for your ODBC connection. This is configured in the Microsoft Windows™ ODBC Manager tool, outside of VTScada. Ask your local IT department for details.
- Cannot be sent by email.
- The storage location is determined by your ODBC-compatible program.
- Formatting and appearance is similar to that of the Excel or Access output.

### Report Destinations:

Format and Destination are overlapping concepts. Your choice of one will affect the options available in the other.

*Screen display*

If the report is being sent directly to your screen, it may be formatted as plain text (see Text File above in Report Formats), Microsoft Excel™ or a formatted Excel spreadsheet. The last is of particular interest.

When the destination is Screen Display, you may choose your own Excel Template to use for formatting. This opens the possibility of applying

customized formatting and using macros within Excel to perform any calculation that might be useful.

*A file on disk*

This is the inevitable result of choosing any of CSV File, Formatted (or not) Excel XLS file, Access MDB file, or Text File. You will be prompted for the folder and filename to use for storing the file.

*A printer*

All report formats may be sent to a printer. By choosing the explicit, "Printer" output type option, you save a step in the process of generating a Text File output type, and then sending that to the printer.
The only way to avoid having the option of printing a report is to select the Screen Display destination, and not use the Excel option for viewing it.

*An email address*

Any output format that involves the creation of a file can also be sent via email. Before you are able to use this option, your system administrator must have configured an email server for VTScada to use.

*Related Information:*

...Report Types Described - List of built-in reports.

*Related Tasks:*

...Steps to Create a Report - Generating a report.

# *Alarms - The Alarm Page*

Every VTScada application has an Alarm Page, where you can view alarms, events and Alarm Manager transactions. What you are able to do with that page depends on the security privileges granted to your account.

**Alarm:**

> A notification that an operating condition has, or is about to, exceed a design limitation. An operator must take action to acknowledge the alarm and to fix the problem. The priority of the alarm indicates the urgency of action.

**Event:**

> A record that something has occurred. No acknowledgment or action is required. An event is recorded for every time that you log on, log off, and send a control action to equipment using the SCADA system. Other events may have been created for your application.

**Transaction:**

> An entry in the alarm or event database. Each time that an alarm or event occurs, changes status, or is reconfigured, shelved, unshelved, etc. a new transaction will be added to the history. A single alarm may have many transactions as it activates, is acknowledged, then returns to normal as correct operating conditions are restored.

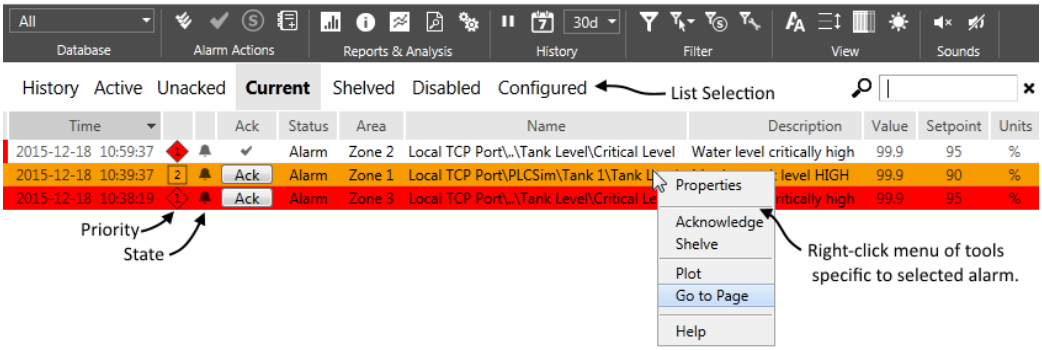
In addition to the standard Alarm Page, many applications will include alarm lists on other pages. These lists can have some or all of the features of the one found on the Alarm Page, and may be filtered to match the other contents of the page.

Note: Your application may have been configured so that, when an alarm occurs, a page where the matching tag has been drawn will open automatically. In effect, the Go To Page feature of the alarm list can be made to happen automatically after short delay

## Open the Alarm Page


Open the Alarm page by clicking the alarm icon at the top of the screen, or through the menu system. A right-click on any menu link other than the alarm icon will open the page as a secondary or pop-up window. Other navigation tools may be provided - ask your VTScada developer for more information.

You can choose to view alarms from all databases, or from only one at a time. If your system has multiple databases, your developer may have configured named groups of databases, which you can select for viewing.




(Some details may vary from your application, depending on configuration.)

The list can be filtered and sorted as needed. Alarms may be acknowledged using the buttons in the Alarm Actions section of the ribbon, but in most cases it will be easier to use the button provided within the list for each alarm.

A right-click on any alarm opens a context menu of controls. In particular, you may find the Plot and the Go To Page entries to be especially useful. The right-click menu will not show the option, "Copy", but this is available. Use the keyboard combination, Ctrl+C to copy the entire con-

tents of the displayed list, then paste that information into a spreadsheet.

Note: A maximum of 1000 records will be displayed in an Alarm List unless otherwise configured using the property, AlarmPageHistoryRecordLimit.
If there are more than this number of records within the current time frame, a Load More button will be available. You can load successive groups of alarm records up to the maximum of 100,000 (or current value of AlarmPageHistoryHardLimit).

*Related Information:*

...List Options for Alarms -Choosing what list to display.

...Alarm List View and Fields - Fields included in the lists.

*Related Tasks:*

...Acknowledge Alarms -To acknowledge alarms.

...Silence or Mute Alarms -To deal with alarm sounds.

...Alarm Notes - Add notes to alarms.

...Disable or Enable Alarms - To disable alarms.

...View the Related Tag - See the alarm in context by going to a page that shows the associated tag.

...Plot Trends From the Alarm Page - Open the Historical Data Viewer.

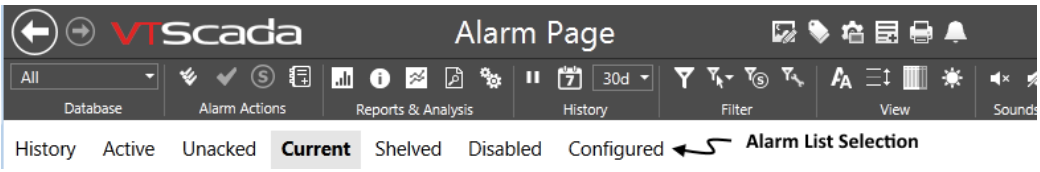
...Print the Alarm List - Send the alarm list to the system printer.

...Sort and Filter the Alarm List - Organize the alarm list.

# List Options for Alarms

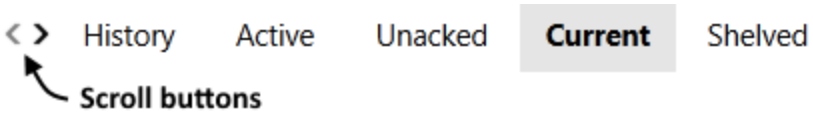
The purpose and contents of the Alarm List will vary according to the list option selected. The selected database also has an effect, as the System Event database contains different information from other alarm databases. Most VTScada applications will have two alarm databases: System

Alarms DB and System Events DB. All alarms, such as water levels rising too far, will be found in the System Alarms DB, unless your system has been configured to use multiple alarm databases. The events database shows actions that have occurred such as system control actions, people logging in or out, reports being generated and more.




Note: By default, shelved alarms are excluded from all lists except the one where they are the only type of alarm shown. Use the button shown here to include or exclude shelved alarms in your lists. When selected, the button will be outlined with a rectangle.


If you have resized your display so that there isn't enough room for all six of the list options to be shown, a set of scroll buttons will be added. Use these to step through the options to find any that were removed from the smaller display space.




*Alarm History List*

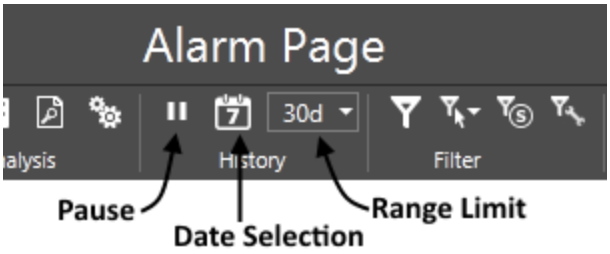
The History alarm list displays all the alarms and events that have occurred. The span of time shown in the history will be limited to your selection of one of the following Range Limits.

- 10 days
- 30 days
- 90 days

You can view items in the history that are more than 90 days old by opening the calendar control (Date Selection in the following image) to select

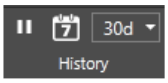
any date you wish. But, for whatever date you are viewing, no more than 90 days worth of records will be shown in the list. The purpose is minimize the amount of time required to refresh the list.

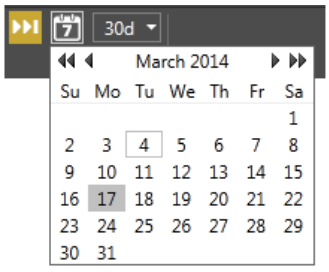
Note: A maximum of 1000 records will be displayed in an Alarm List unless otherwise configured using the property, AlarmPageHistoryRecordLimit.
If there are more than this number of records within the current time frame, a Load More button will be available. You can load successive groups of alarm records up to the maximum of 100,000 (or current value of AlarmPageHistoryHardLimit).

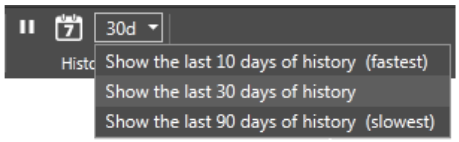



Tools for the History display.

The History list is sorted always and only by date, with newest entries being added to the top of the list.
The list will continuously update as new alarms and events are added. You can use the pause button to freeze the list at any time. While paused, the button will change to both notify you that new events are not being added to the list, and to allow you to release the pause.
The pause button will activate automatically when you use the date selection calendar to view older alarm events.




The range limit exists for efficiency. You may view alarm history for any date into the past, but in most cases you will not want to view an excessive number of alarms before or after the selected date. By selecting a

smaller date range, you increase the speed with which the list is drawn and reduce clutter.

The History list provides far more than just a review of when tags were in an alarm condition. This list is the primary tool within VTScada for viewing the operational events including:

- Security events - a record of operator logons and security management activities
- Control actions - every time an operator uses a VTS output control to write a value to the equipment, a record is kept of who did what and when.
- Alarm Notification System events - phone calls, emails and text messages sent. Other phone and modem events.
- Report generation - if reports are configured to be generated automatically at scheduled times, you can check the alarm history to verify that they did indeed run.
- A record of when alarms were acknowledged (including, who acknowledged them) and when they were cleared (meaning that the equipment condition that caused the alarm returned to normal).
- A record of when alarms were disabled or enabled
- A record of when page notes were created, edited and deleted, including the text of the notes and the name of the operator.

Versions of VTScada (VTS) prior to release 11.2, stored log information into separate files for set time spans (usually one month). Those versions included two buttons, Prev Log File and Next Log File to allow you to step through the log files. History is now stored using the Historian, and those buttons are now obsolete.

### *Active Alarm List*

Active alarms are those for which the condition that caused them to trigger still exists, whether the alarm has been acknowledged or not.

Note: Trip alarms are not included in the list of active alarms.

Only one instance for each alarm can be active at once, therefore entries cannot exceed the number of alarms that have been configured for the application.

### *Unacknowledged Alarm List*

The unacknowledged alarm list displays all alarms that have not yet been acknowledged, whether the condition that caused the alarm to trigger still exists or not.

Note: Alarms that are unacknowledged will also be displayed in the current list (see following).

If the alarm remains unacknowledged, and the alarm trigger or condition has been resolved, but then occurs a second time, the time will be updated for that alarm's entry in the Unacknowledged list.

*Current Alarm List*

Any alarm that qualifies as either Active, or Unacknowledged, will be included in the list of Current alarms.

*Shelved Alarm List*

Shows all alarms that have been marked as shelved. Shelved alarms do not indicate when the associated equipment is in an alarm condition (although an event will still be added to the Alarm History). Operators should monitor this list to ensure that no alarm remains shelved longer than necessary.

*Disabled Alarm List*

Shows all configured alarms in the application that are marked, Disabled. Because disabled alarms will not indicate when the associated equipment is in an alarm condition, operators should monitor this list to ensure that no alarm remains disabled longer than is necessary.
If you have the required privileges, you can right-click on any alarm in this (or any other) list and use it's properties to change the Disabled status.

*Configured Alarm List*

Simply, the list of all configured alarms in the application, including shelved and disabled alarms. This list will not tell you whether any particular alarm is active or unacknowledged.

*Related Information:*

...Alarm List View and Fields - Reference.

...Sort and Filter the Alarm List - Display options.

...AlarmPageHistoryRecordLimit - Controls the maximum number of records to display in the list.

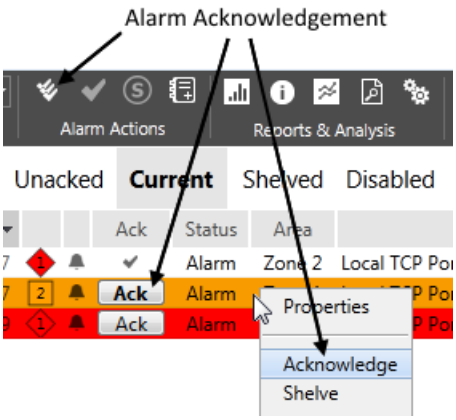
# Acknowledge Alarms

Note: The ability to acknowledge alarms is controlled by a security privilege that might not have been granted to your account. Check with your manager.
You may be required to create a note when acknowledging alarms. If so, your application developer will likely have also set a minimum length for each note.

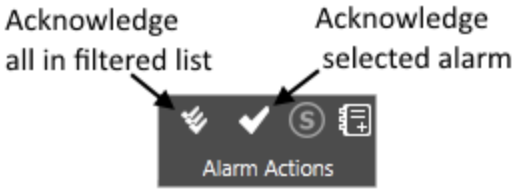
You acknowledge alarms in order to silence the warnings, and to add a record in the application's history of who dealt with which alarm and when.
The steps vary according to how you are working with VTScada. The first set applies to alarm lists shown within VTScada, whether the alarm page, a VTScada station page, or customized alarm page that is unique to your application.
Alarms that arrive by email, phone call, or text message can be acknowledged the same way they were sent. Instructions follow.

***Acknowledge an alarm within VTScada or the VTS Internet Client:***

1. Open the alarm page.
   Use the alarm button, the menu, or any other navigational tool provided in your application.
2. Ensure that you can see the alarm.
   The list may have a filter in effect that hides the alarm.
3. Select the alarm that you want, then click the acknowledge button - either within the alarm row, or the button in the toolbar.

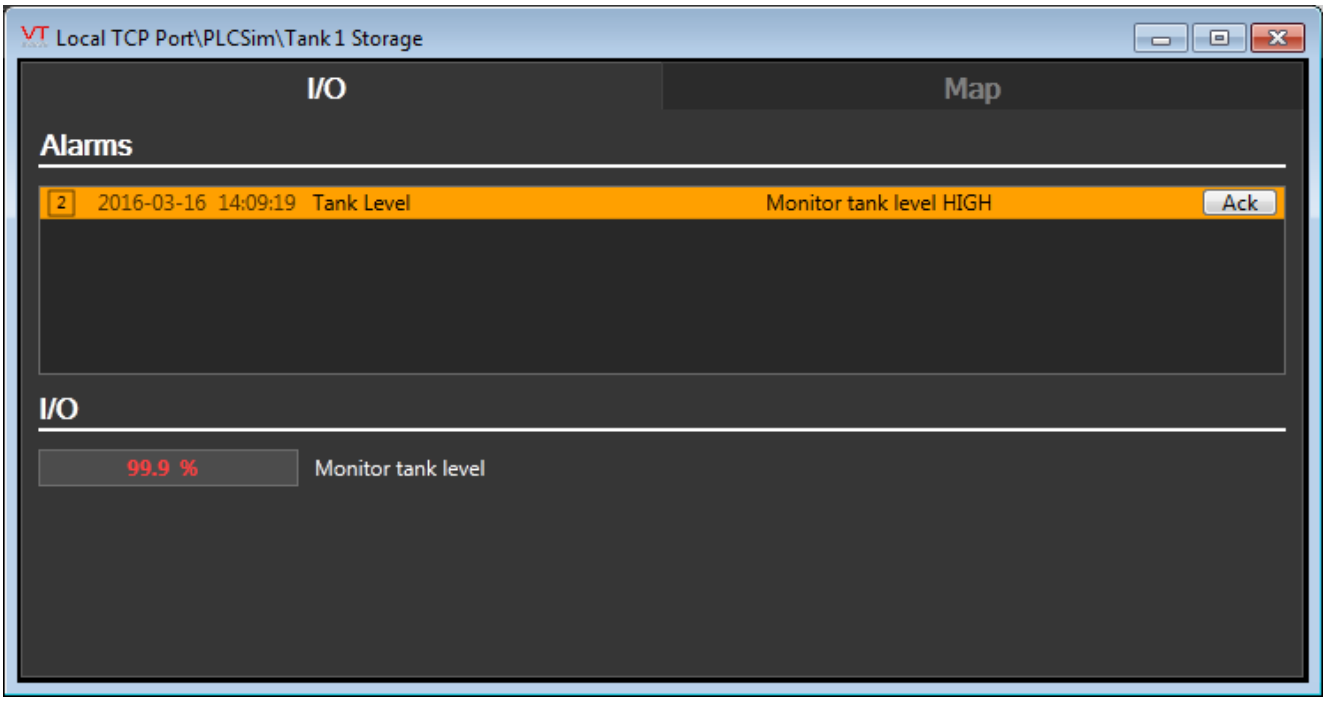



Alternatively, you can click the Acknowledge All button to clear all the alarms shown in the filtered list, but this may be discouraged at your location – check with your supervisor.




**Variation for Site Pages:**

The Site page for polling drivers, station tags, and other types will have alarm notifications. These will not look like the alarm page, but will show alarms and will include an Acknowledge button.




*Acknowledge an alarm via email or text message*

If your system is configured to send alarms by email or by text message, and if you are authorized to respond in kind, then you can acknowledge those alarms as follows.

You will know that the alarm can be acknowledged if it contains an acknowledgment code. This code is unique to you, and to the exact instance of the alarm. Codes cannot be re-used, or given to another operator to use.

Use the Reply feature of your email program, or SMS text message device to send the code back to VTScada. If this is successful in acknowledging the alarm, you will shortly receive a confirmation message. In the Alarm History, the words "by email" will be appended to your name to show that the alarm was acknowledged via email.

Note: The developer of your application may have chosen to set a property so that confirmation messages are not sent.

The alarm message will be similar to the following:

```
From: The VTScada System [mailto:The VTScada System]
Sent: December-14-11 10:43 AM
To:
Subject: The VTScada System: 1 alarm
12/14/2011, 10:42 AM. Default. Default Test Alarm.
```

```
Code: XXXX
To acknowledge the alarm, reply with ACK*XXXX, where XXXX is the
alarm code in this email.
```

*Troubleshooting:*

- The alarm is not shown in the list.
  A filter is in effect. The line behind the filtering tools will be orange if this is the case. Remove the filter.
- The "Ack" button in the Actions list is disabled.
  The alarm hasn't been selected.
- You acknowledged the alarm, but the sound restarts later.
  This may be by design. VTScada managers can configure alarm indicators to re-activate after a period of time if the cause of the alarm has not been removed. You will need to acknowledge the alarm again.
- There is no acknowledgment code in the email.
  Roster entries must contain security account names in order to permit acknowledgment by email or SMS-text message.

*Related Information:*

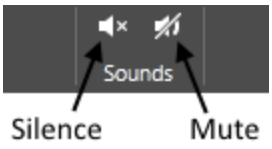
...List Options for Alarms - View active, unacknowledged or current alarms.

...Dialing-in. The Alarm Notification System Menu - Hear and respond to alarms, using a telephone.

# Silence or Mute Alarms

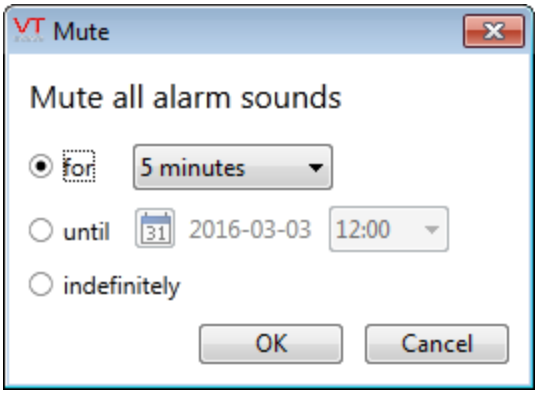
Note: The ability to silence or to mute an alarm is controlled by a security privilege that might not have been granted to your account. Check with your manager.

Alarm warning tones are designed to attract attention. They tend to be loud and unpleasant, and usually continue to sound until the alarm is acknowledged.
There may be situations where you either cannot or must not acknowledge an alarm immediately. You may wish to stop the alarm sound until then.




The Silence command applies to currently sounding alarms. Their audible warning will stop and will not re-start. New alarms coming in will be audible. To silence all current alarm sounds, click the indicated button.
The Mute command blocks all alarm notification from your computer's speaker. You can unmute the alarms at any time and the sound will resume. New alarms are also muted - the button applies to all current and future alarms equally.
While the mute option is in effect, the alarm indicator at the top of the VTScada screen will have a slash to indicate that audible warnings are disabled.


### To mute alarm sounds:




Muting turns off all alarm sounds, including for any new alarms that come in while muting is in effect.

1. Open the alarm page.
2. Click the Mute button to block all alarm sounds.
3. Select the duration of time for which muting will be in effect.

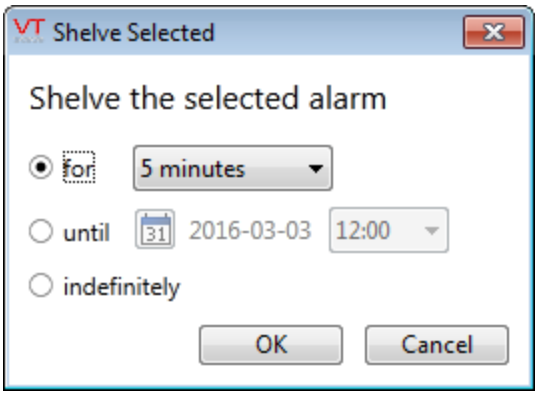
### Note for VTScada Developers:

By default, silence and mute affect only the logged-on user on the current workstation. Two application properties control whether silence and mute should affect all users or all workstations.
Possible combinations of these properties:

| ApplyMuteSilencePerUser | ApplyMuteSilencePerComputer | Result |
|---|---|---|
| 1 | 1 | (default) Silence and mute affect only the logged-on user on the current computer. |
| 0 | 1 | Changes to silence and mute will affect only the current workstation, but will remain in effect for all users until changed. |
| 1 | 0 | Changes to silence and mute affect only the current user, but will follow a user who logs out from one computer and in on another. |
| 0 | 0 | Changes to silence and mute will affect all users on all workstations. |

# Shelve Alarms

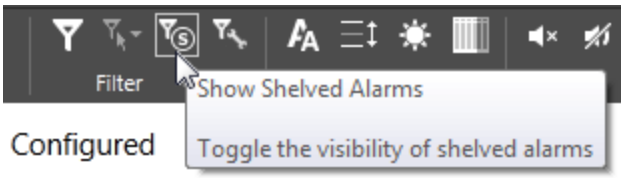
Shelving an alarm is one step short of disabling an alarm. Shelving should be used to deal with so-called 'nuisance' alarms such as those that result from expected maintenance operations rather than those that signal a dangerous situation.



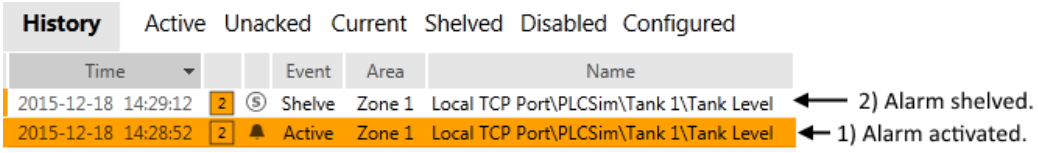

Note: The ability to shelve an alarm is controlled by a security privilege that might not have been granted to you. See your VTScada manager. You may be required to create a note when shelving or unshelving alarms. If so, your application developer will likely have also set a minimum length for each note.

A shelved alarm remains enabled, and new alarms will be logged, but nearly all notifications will be disabled. If the tag that is in an alarm condition has been drawn using a widget that changes color to indicate an alarm, then that color change will still occur.

By default, shelved alarms will not be included in lists other than the one designed to display them - Shelved Alarms. You can choose to view shelved alarms in any list by toggling the visibility control:




The act of shelving or unshelving an alarm will be shown as an alarm event in the History list. If your installation includes the Alarm Notification System, no messages will be sent by phone, email or SMS text message from a shelved alarm.




This view of an alarm history shows an alarm monitoring a tank's level. The lower line shows the alarm being activated. The upper line, with a

time stamp several seconds later, shows the same alarm being shelved. All notifications related to that alarm will stop.

Note: Alarm shelving is an operational task. No alarm can be configured to be shelved.

The steps to shelve or unshelve an alarm are the same. If the alarm is not shelved, the menu or button will allow you to shelve it. If the alarm is shelved, the same menu or button will allow you to unshelve it.

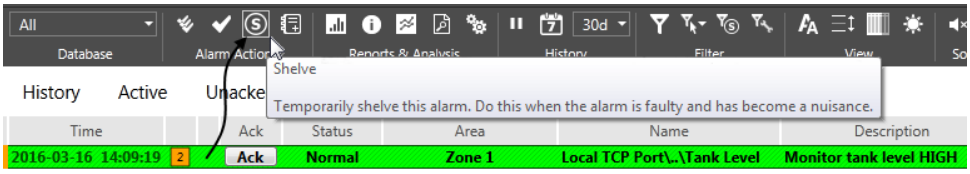
### To shelve an alarm:

There are two methods:

1. Open the Alarm Page, or any page that contains an alarm list.
2. Right-click on a displayed alarm.
3. Select Shelve from the menu that opens.

Or:

1. Open the Alarm Page, or any page that contains an alarm list with a toolbar.
2. Click on an alarm entry in the list, selecting it.
3. Click the Shelve button in the toolbar.




### To view a list of all shelved alarms:

1. Open the Alarm Page.
2. Click the "Shelved" label in the set of List Options.

Shelved alarms will be included in this list regardless of whether they are also disabled.

*Troubleshooting:*

- You are unable to use these functions.
  These features are protected by security privileges. Check with your VTScada manager.

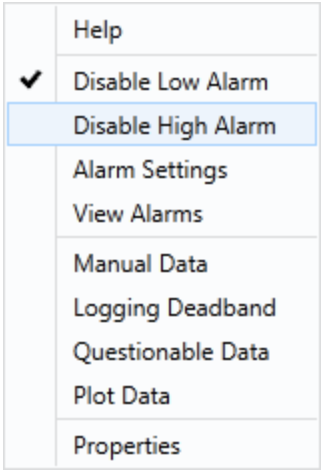
# Disable or Enable Alarms

In every SCADA system, there will be times when equipment must be taken offline. Rather than have alarms occur as a result, you may prefer to disable the associated alarms. The Alarm Page includes a list option to show all disabled alarms, thus making it easy for you to find all the alarms that need to be re-enabled when the time comes.
See also: Silence or Mute Alarms - Shelving is one step short of disabling an alarm. Procedures at your location may require that alarms be shelved rather than disabled.

Note: The ability to disable or enable an alarm is controlled by a security privilege that might not have been granted to you. See your VTScada manager.
Disabling or enabling an alarm is a tag configuration change, not an operational change. It cannot be done with the tools in any alarm list.

### To disable or enable an alarm directly from the tag

1. Right-click on the widget representing the tag that has an alarm.
   A Navigator menu opens.
2. Click the appropriate line to enable or disable the alarm.
   The same line is used for both enabling and disabling. You are adding or removing a check mark to set which option is selected.



Developers who have tag configuration rights may also enable or disable an alarm using the tag's configuration panel. This method is the only option for disabling Alarm Tags.

*Troubleshooting:*

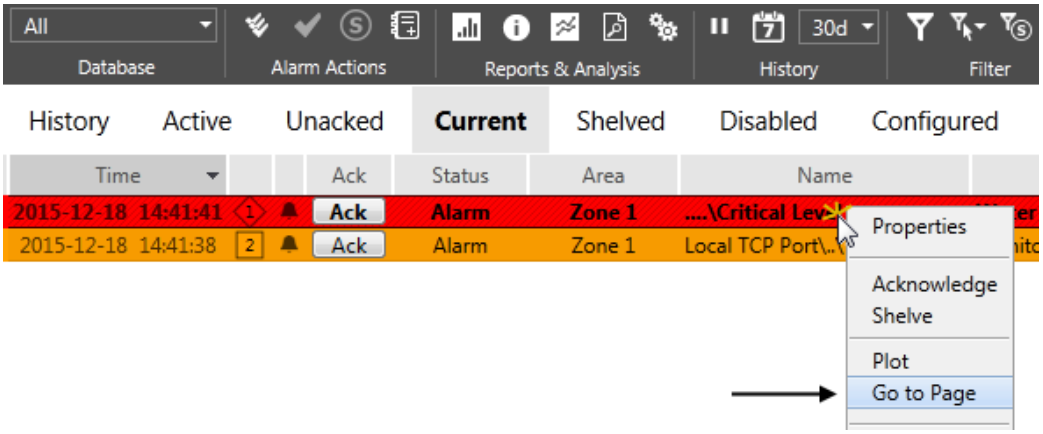
- The navigator menu does not open when the widget is right-clicked.
  The navigator menu can be enabled or disabled by developers. It is likely disabled for this instance of the tag's widget.

*Related Tasks:*

...Shelve Alarms - Shelving is one step short of disabling an alarm.

# View the Related Tag

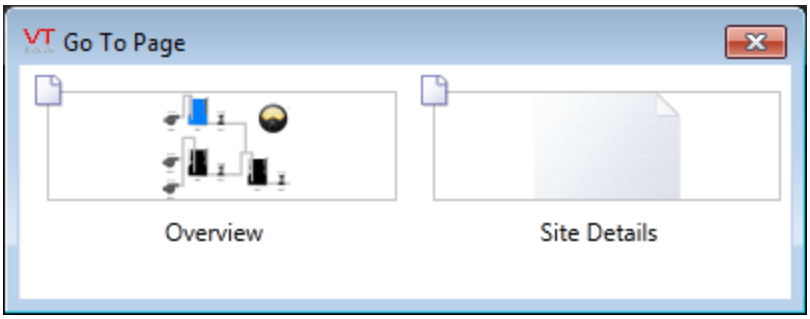
You can learn more about an alarm situation by viewing the linked tag as it was drawn on a page. In many cases, controls that you can use to deal with the alarm situation will also be available on the same page. Naturally, this depends on whether or not the linked tag was drawn on any page within the application.




1. For any alarm in the list, right-click to open a context menu.
2. Click, "Go To Page" in the menu.

Alternatively, left-click on the alarm, then click the Go to Page button in the ribbon:


If the tag linked to that alarm was drawn on a single page, that page will open.
If the tag linked to that alarm was drawn on several pages, then a menu of choices will be displayed. A Site Details page option will be available if the tag can contain other tags.




*Troubleshooting:*

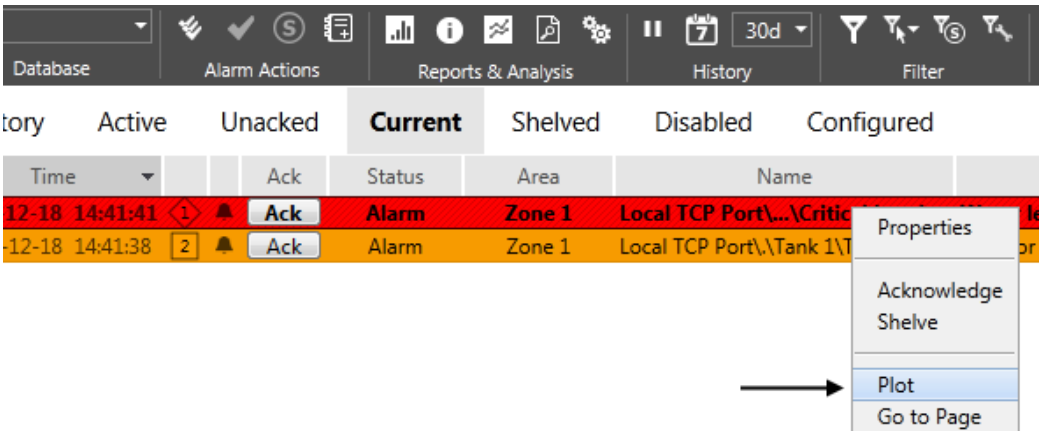
- A message tells you, "No pages that you have access to display the tag(s)".
  Either there are no pages that display that tag, or your security privileges do not permit access those pages.
- The Go To Page entry is not enabled.
  Your developer has disabled this feature as a security measure.

# Plot Trends From the Alarm Page

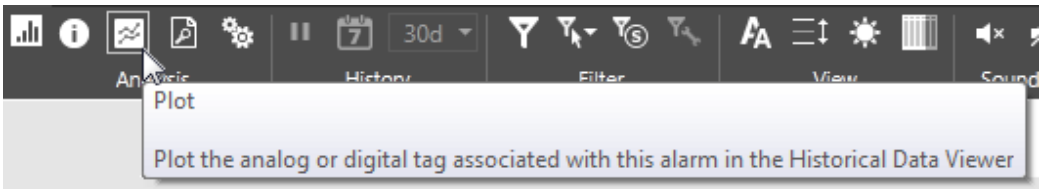
If the tag that triggered an alarm can be viewed in the Historical Data Viewer (HDV), then you can open the HDV for that tag directly from the alarm list.

**To plot from the alarm list:**

1. Ensure that only one alarm entry is selected.
2. Right-click on that entry in the alarm list.
   A context menu opens.
3. Click, Plot.
   The HDV page opens as a pop-up window, showing the trend plot of whatever tag triggered the alarm.




Alternatively, left-click on the alarm, then click the Plot button in the tool-bar:




### *Troubleshooting:*

- The plot entry is disabled.
  The trigger associated with this alarm cannot be plotted in the HDV.
  Your account does not have permission to view the Historical Data Viewer page.

### *Related Information:*

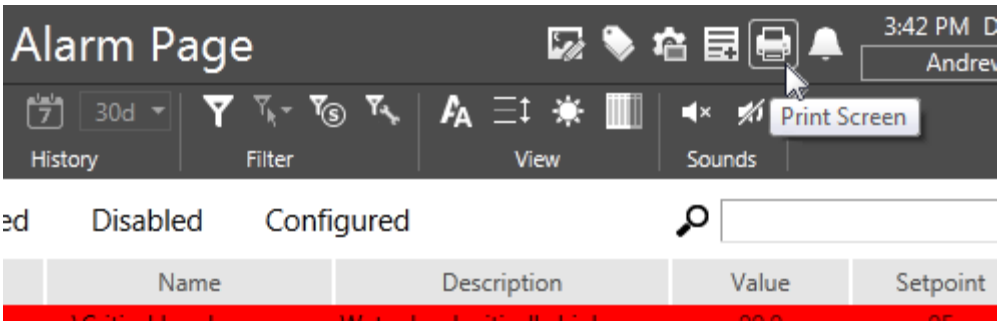
...Historical Data Viewer: Trends and Graphs

# Print the Alarm List

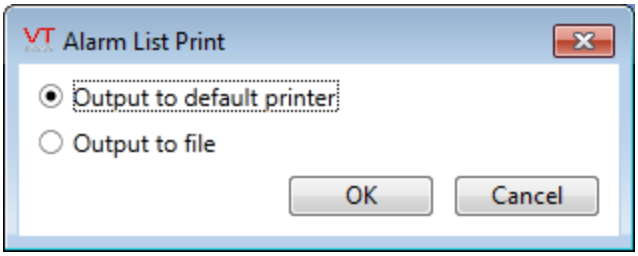
You can print sections of the alarm list if you want to retain a paper copy of its contents.
The displayed list will be used. You will not be prompted for a time range, therefore you should filter the list before printing if you do not want to send the entire list to the printer.

**To print the current alarm list:**

1. If the Alarm Page is open as a full-screen page, click the printer icon at the upper right of the screen.




2. Choose whether to send the list to the default printer, or to a printer file that can be copied to a printer at a later date.




If you chose Output to file, you will be prompted for a file name and location. Otherwise, the alarms will be sent to the default Windows system printer.

*Troubleshooting:*

- Nothing is printed.
  No alarms match the current list option, filtering options and selected time range.
  The default Windows system printer for your computer may not have been the one you expected.

*Related Information:*

...List Options for Alarms - Choosing what alarm list to view / print.

...Sort and Filter the Alarm List - Filters that can be applied to the list.

...Print... - How to print anything in VTS

# Sort and Filter the Alarm List

The History list is always and only sorted by date, with the newest entries at the top of the list. All other lists can be sorted by any column, excepting State and Value. Click on the column header to sort the list by that attribute. Click a second time to reverse the sorting order.

Two filter controls are provided. Use the Filter by Selection tool to build a filter that uses some or all of the properties of any alarm that you first select in the list. Use the Advanced Filter Dialog to filter the list based on any combination of properties.

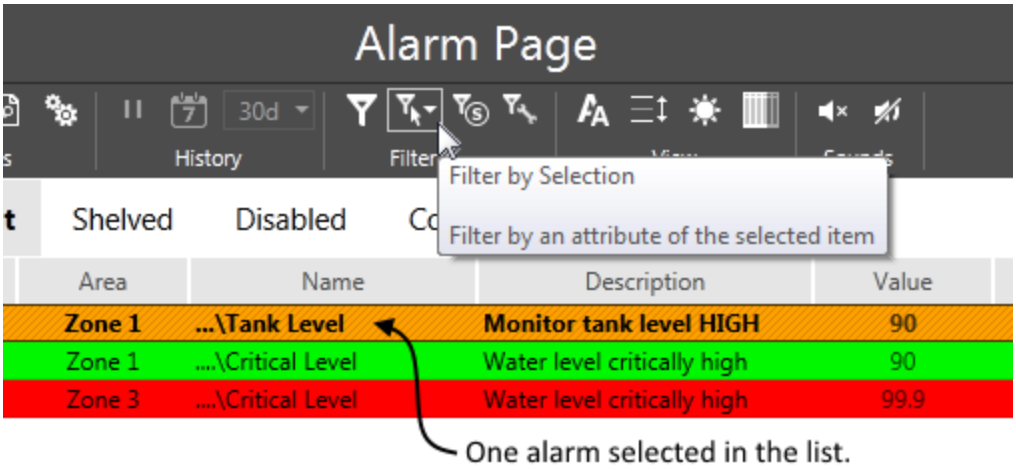
Note: Filters are user-specific in the Alarm Page. The filter that you create will not apply to any other user's view of an alarm list.
Filters do not affect notification sounds.
Developers should note that filters can be saved with Alarm Lists that are drawn on other pages.

### Filter by Selection

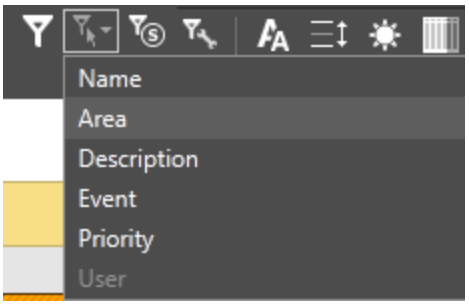
Use this when you want to find all the alarms and events that have at least one property matching some existing entry in the list. For example, you might see an alarm in the area, Zone 1, and want to find all other alarms in the same zone. Or, you might want to see all the alarms in the History list that were acknowledged by a particular operator. You can filter for several properties (area is X, user is Y, and priority is Z) but each filter is added one at a time.

1. Start by clicking to select one alarm in the list.
   This should be an alarm that has at least one property that you want to match

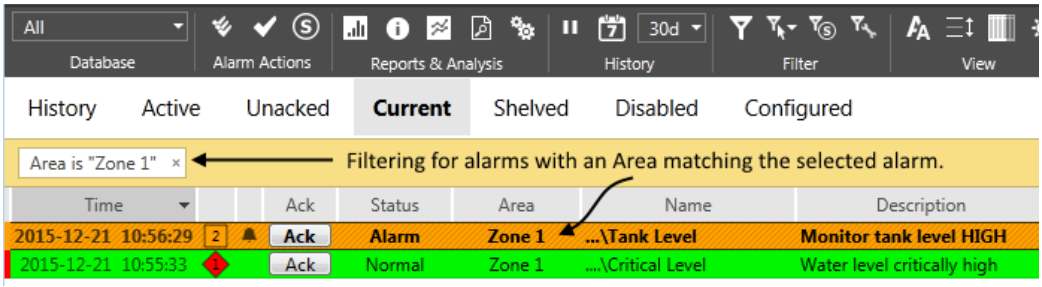
in the filter.



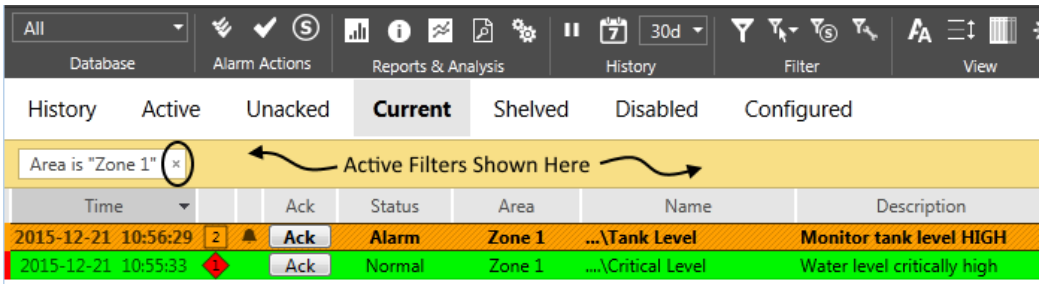

2. Click the Filter by Selection button.
   A list of properties will expand.




3. Select one property from this list.
   You can add more later by repeating these steps.
   User is available only when viewing the History list.
4. The current list will be filtered for alarms that have the selected property in common with the original selection.




Active filters are always shown below the list selection bar. You can disable filters one at a time by clicking the X (shown circled).

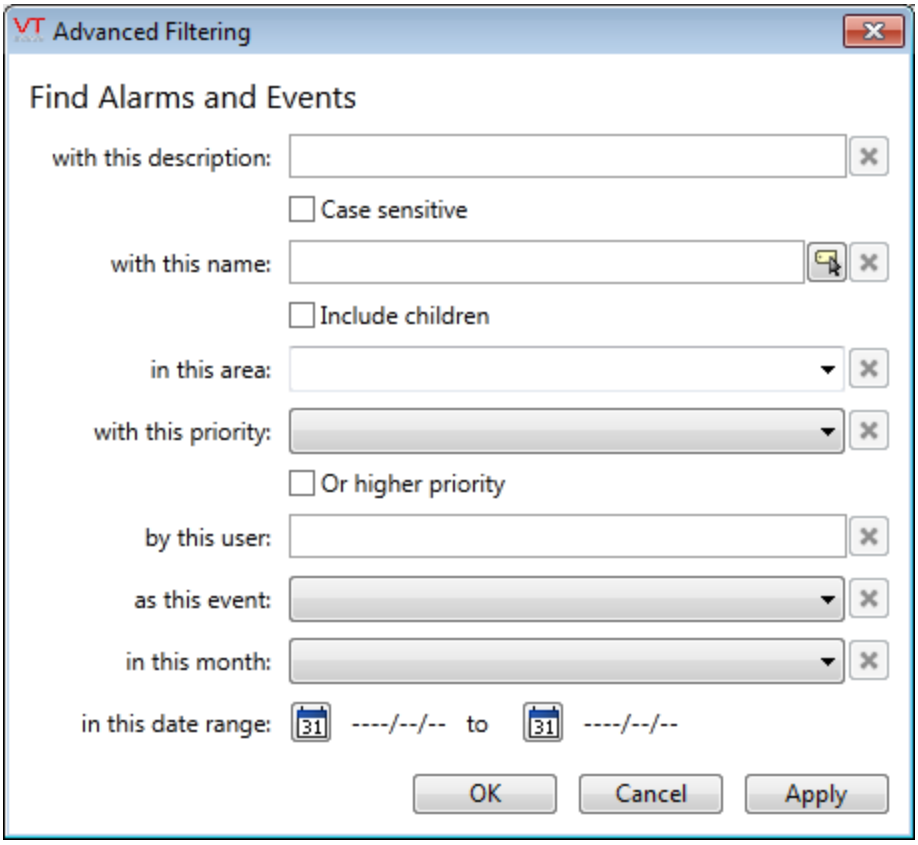



*Troubleshooting*

- The Filter by Selection button is not enabled.
  One alarm must be selected before you can filter by selection. Click on a list entry that has at least one property that you want to look for with your filter.

## Advanced Filtering

If the Filter by Selection tool does not provide sufficient options, use this dialog to filter for exactly the alarms you need to see. This filter may be used with any of the display lists.

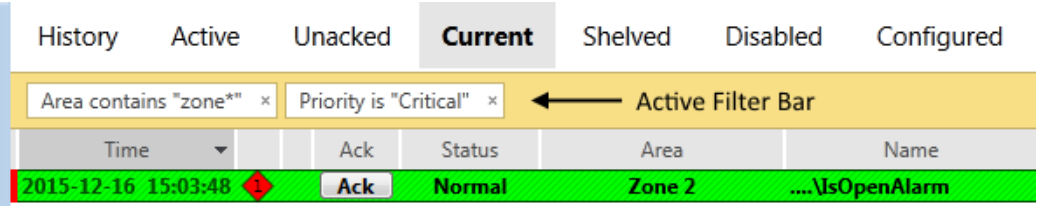



While it is possible to clear fields in the Advanced Filtering dialog by editing out the value provided earlier, you are advised to use the X beside

the field. This habit will ensure that you do not accidentally create a filter for a blank space, " ".

Note: Wildcards are assumed for the description field, but no others. A filter that contains a single word for the description will find all alarms that contain that word anywhere within the description.
A filter that contains a single word for the name, area or user field will return only alarms that exactly match the word. For those fields, you must add the * wildcard if you want to filter for matches that contain the supplied text, rather than for only exact matches.

Upon clicking "Apply" or "OK", the active filters bar of the Alarm List will appear, showing the filters in effect. You may remove filters using that bar, rather than re-opening the Advanced Filtering dialog.




### Description

Filter using the text of the alarm's description field. For the description field only, the filter will include all alarms that include the text you provide, not just those that match the text exactly.
This filter can be made case sensitive.

### Name

Filter using the name (or unique id) of the alarm tag. This will find only tags with an exact match for the name. Use leading or trailing wildcards to expand the filter to names that include the provided text.

Select the option, Include children, to filter for a parent tag name and populate the list with all alarms in all child tags of that parent.

### Area

Use the drop-down list to select one area property for the field. You may type an area value if you would like to expand the filter using wildcards. For example: Zone* will filter for alarms in Zone 1, Zone 2 and Zone 3.

### Priority

The priority option creates a filter matching alarm priority values. Use this to filter the list to show only Critical or High alarms. By selecting the "Or higher priority" option, you can filter for High and also include Critical alarms in the list.

### User

Enter the account name of an operator, to filter for alarms and events attributed to that operator. It is not possible to filter for more than one operator at a time.
All operator actions including setting output values and shelving alarms, are attributed to the operator logged in at the workstation where the action occurred. Each alarm is attributed to the operator who acknowledges it. Unacknowledged alarms will not be included in this filter.

### Event

Select one of the predefined event types from the list to filter for all alarms or events matching that type. Event types are described in the topic, Alarm Event Reference

### Month

Provides a quick selection of any month in the current year. Use the following option, Date range, for complete control over the start and end dates of the filter.

### Date range

Click the calendar icon for the start and end in order to select any date range desired. You cannot set an end date that is earlier than the start date. Attempting to do so will not result in an error; the dates will simply be switched so that the new earlier date becomes the start of the range, and the existing later date becomes the end of the range.

*Related Information:*

...List Options for Alarms - Choosing which list to display.

## Alarm List View and Fields

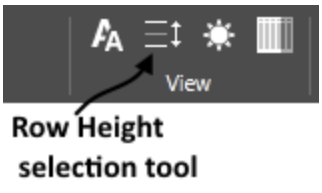
The columns that are included in any list will depend on:

- Which list you are viewing.
- The configuration of the Alarm Database to which the entries belong.
- Whether you have chosen to view the full set of possible columns.

Note that you can change the alarm list background to your preference of black (nighttime) or white (daytime). You may find one or the other will cause less eye-strain.


If there are too many columns to fit on the screen, you can:

- Increase the row height. This tool will combine several sets of two adjacent columns into one, stacking the information:



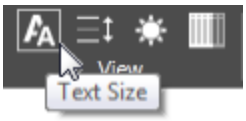

**Standard display**

| Time | | | Ack | Status | Area | Name | Description | Value | Setpoint | Units |
|---|---|---|---|---|---|---|---|---|---|---|
| 2015-12-21 10:56:29 | 2 | | Ack | Alarm | Zone 1 | Local TCP Port\..\Tank Level | Monitor tank level HIGH | 90 | 90 | % |
| 2015-12-21 10:55:33 | 1 | | Ack | Normal | Zone 1 | Local TCP Port\...\Critical Level | Water level critically high | 90 | 95 | % |

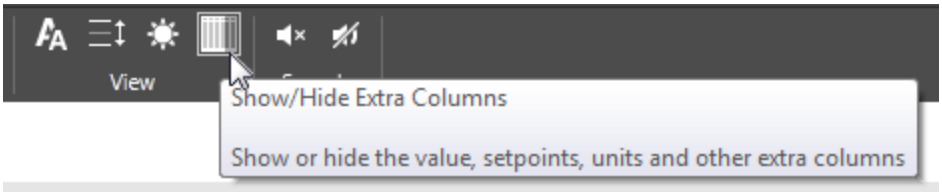
**Columns stacked after using the Row Height button**

| Date<br>Time | | Status<br>Ack | Area | Name<br>Description | Value | Setpoint |
|---|---|---|---|---|---|---|
| 2015-12-21<br>10:56:29 | 2 | Alarm<br>Ack | Zone 1 | Local TCP Port\PLCSim\Tank 1\Tank Level<br>Monitor tank level HIGH | 90<br>% | 90<br>% |
| 2015-12-21<br>10:55:33 | 1 | Normal<br>Ack | Zone 1 | Local TCP Port\PLCSim\Tank 1\Tank Level\Critical Level<br>Water level critically high | 90<br>% | 95<br>% |

- Ensure that the text size is set to the smallest of the three possible options. Click the toolbar button to cycle through the sizes.




- Decrease the number of columns shown. The tooltip shows which columns will be hidden.




## Information that can be found in the various Alarm Lists.

Notes:

- The set of columns displayed in any list will vary according to the selected database and the selected list.
- Alarm Lists added to other pages, may use customized column formats.

| Column | Content & Purpose |
|---|---|
| Time | The time and date when the alarm event occurred.<br>Note: for shelved alarms, this is the date of the last significant alarm event, not the date when the alarm was shelved. |
| Priority | The priority of the alarm will be shown with the configured symbol. |

| | |
|---|---|
| | These will normally be one of Event, Critical, High, Warning, or Notice. These are the default priorities as configured for the Alarm Priority tags in your application. If you have modified the default Alarm Priority tags or have created your own Alarm Priority tags, the priority of alarms may differ. |
| State | The state is also shown using a symbol and may be any of:<br>  - acknowledged<br>  - active<br>  - shelve<br>  - disabled<br>  - configured |
| Event | History list only. Shows the transaction that occurred to add this to the list. Often matches the state. |
| Status | The status is also shown using a symbol and may be any of:<br>*Normal/Ack* - non-active alarms that have been either have been acknowledged, or have never been active and therefore do not need to be acknowledged.<br>*Normal/UnAck* - non-active alarms that have not been acknowledged.<br>*Alarm* - active alarms, whether acknowledged or not.<br>*Disabled* - configured alarms that are not enabled. |
| Ack | Contains the Acknowledge Alarm (Ack) button, if the alarm has not yet been acknowledged. |
| Area | The area configured for the Alarm tag (i.e. the text configured for the Alarm tag's Area property). |
| Name, Description | Properties of the tag that is in an alarm state. |
| Value | If viewing the History list, this is the value recorded when the alarm occurred, or when it returned to the Normal status.<br>If viewing the Current list, this is the current value of the tag and will change as the tag changes. |
| Setpoint | The current setpoint of the alarm.<br>The history list will show the setpoint that was in effect when the item was added to the list. |
| Units | The engineering units configured for the tag that is in an alarm state. |
| Operator | History list only. |

| | |
|---|---|
| | The username of the operator who acknowledged the alarm. Will be blank until the alarm is acknowledged. |
| Notes | A note icon will be displayed if there is a note attached to this alarm. |

*Related Information:*

...List Options for Alarms - Types of list available.

...Sort and Filter the Alarm List - Display options.

# Alarm Analysis

The alarm page contains four tools that you can use to learn more about a selected alarm in the list, or alarm statistics in general. One of these can also be used to modify the configuration of a selected alarm, provided that your account has the tag modification security privilege.


### Alarm Reports

Opens a dialog with four alarm reports: Bad Actors, Alarm Flood, History, and Distribution of Priorities. Use these to spot trouble-prone hardware or possible improvements in the alarm configuration.

### Show Details

The dialog that will open contains four tabs: Details, Configuration, Statistics and Notes.
The Details and Configuration tabs will seem to duplicate eleven properties, but there is a significant difference between them: The Details tab shows information about the alarm event

as recorded at the time it was occurred, whereas the Configuration tab shows information about the alarm as it is *currently* configured. An authorized user can change the alarm configuration at any time, but that will have no effect on the details of a particular alarm event as recorded.

### Plot

Opens the Historical Data Viewer trend graph as a pop-up page, filtered to show only the tag whose value triggered the alarm. The Plot button will not be enabled if the alarm trigger uses an expression rather than a tag value. Restricted to user accounts that are permitted to view the HDV page.

### Go To Page

Opens a page where the alarm, or the tag whose value triggered the alarm, can be seen. If that tag was drawn on more than one page, you will be given a choice of which page to view. Page access may be restricted based on your security privileges.

### Properties

Opens the tag configuration dialog for the alarm. Restricted to user accounts that have tag modification privileges.

*Related Information:*

...Alarm Details Dialog - Learn more about specific alarms.

...Alarm Notes - Add notes to alarms.

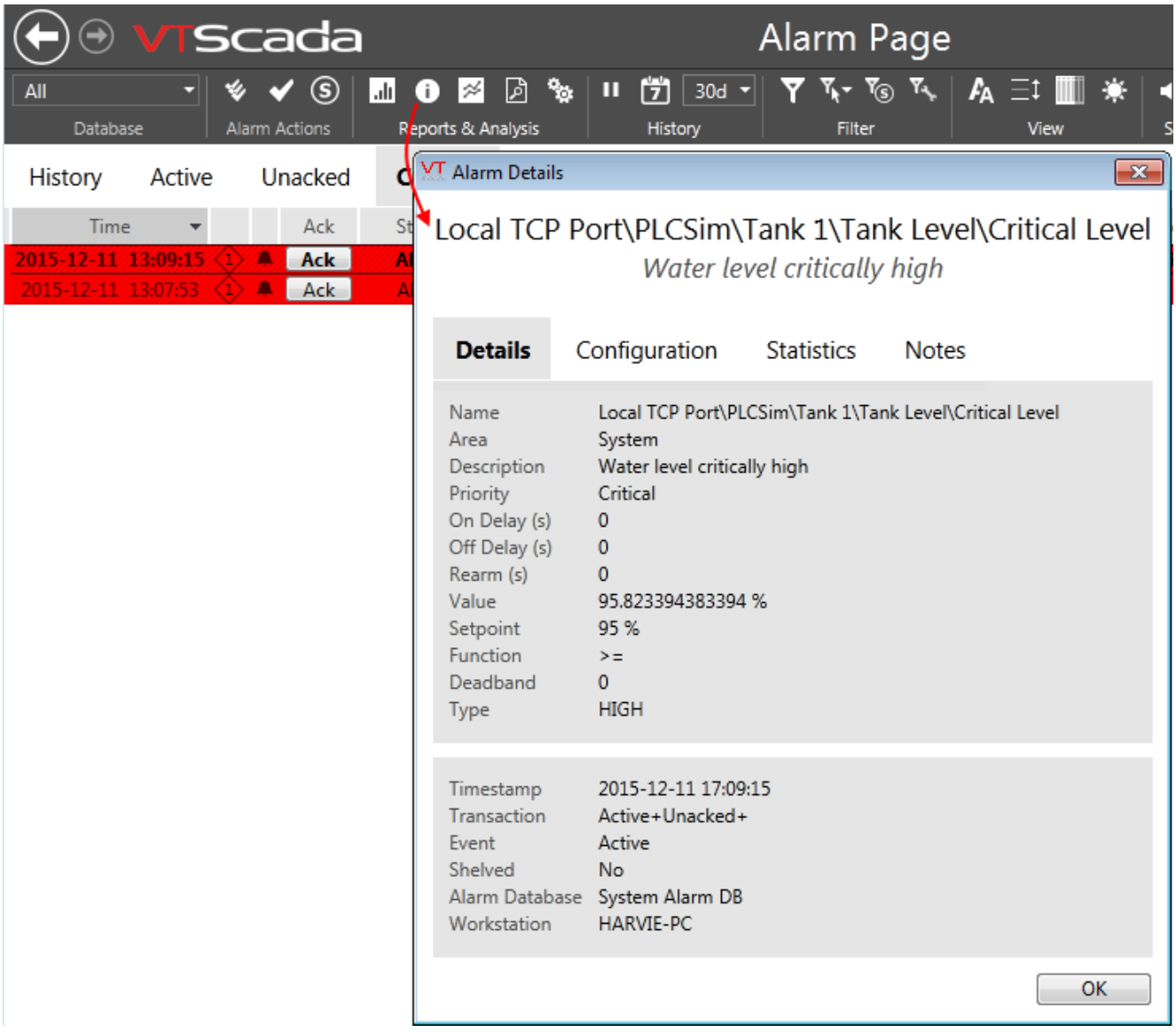
...Alarm Reports - Learn more about alarm history and trends.

## Alarm Details Dialog

This dialog can be opened from the Alarm Page for any selected alarm. Use it to view all the available information about that alarm in one

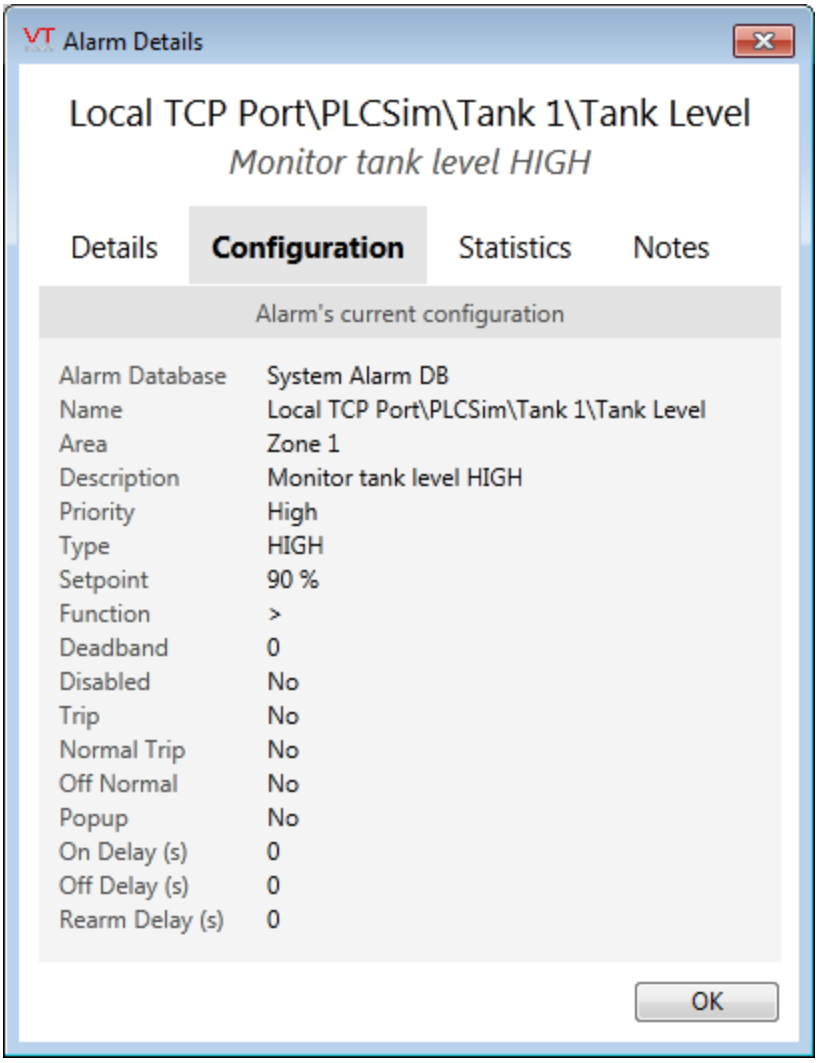
screen. This dialog provides more information than is available in the Alarm Page display, including configuration details for the alarm and statistics for how often it has occurred.

**Alarm Details – Details display.**



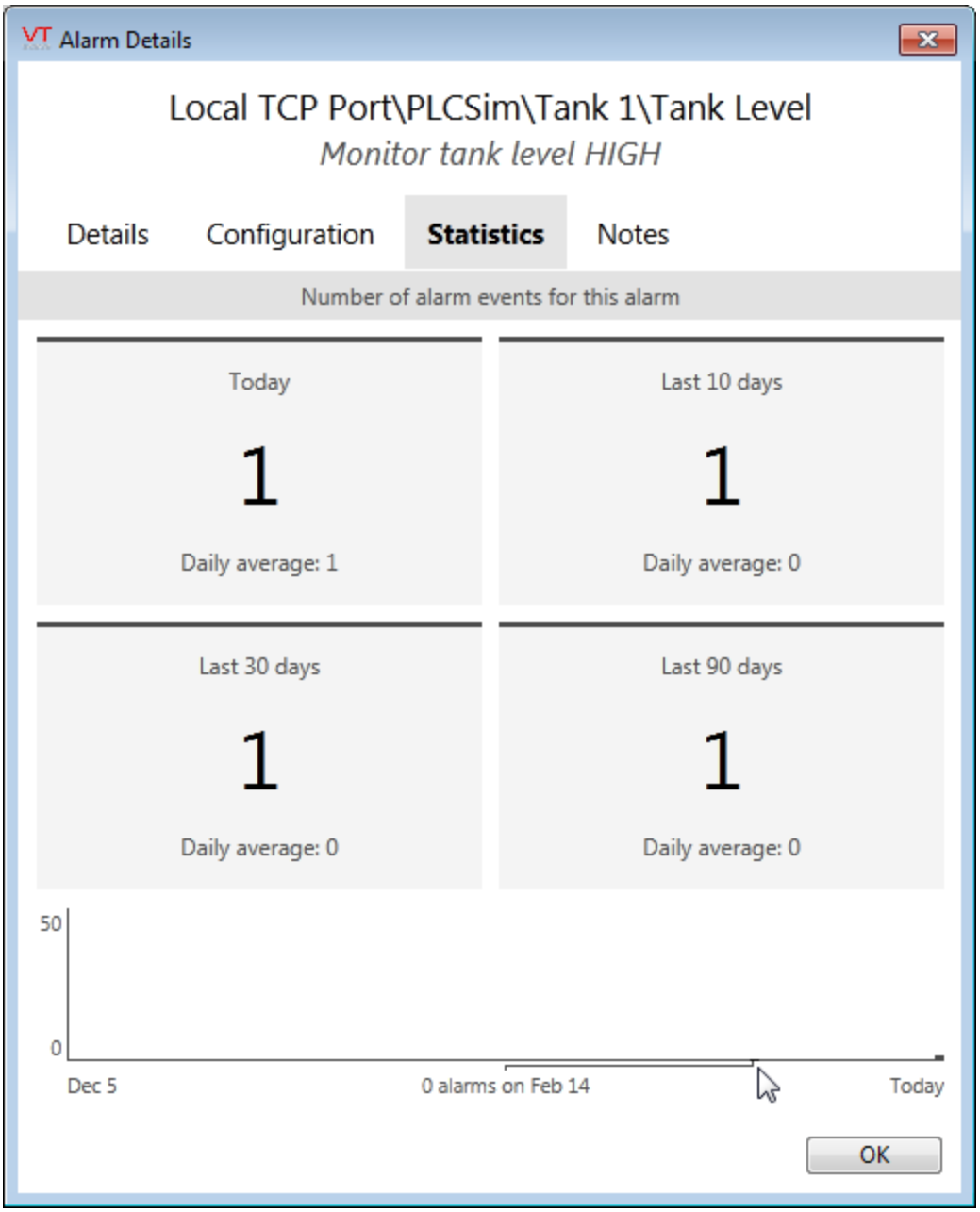

The details display shows fundamental information about the alarm including the configuration details that were in effect at the time the alarm occurred. Also included is the value of the trigger at the time that the alarm was activated, the database that the alarm is a part of, and related information as shown in the example.

### Alarm Details - Configuration display




The configuration display shows the alarm's current configuration values. Note that these may have changed since the occurrence of the alarm being examined.

### Alarm Details - Statistics display.



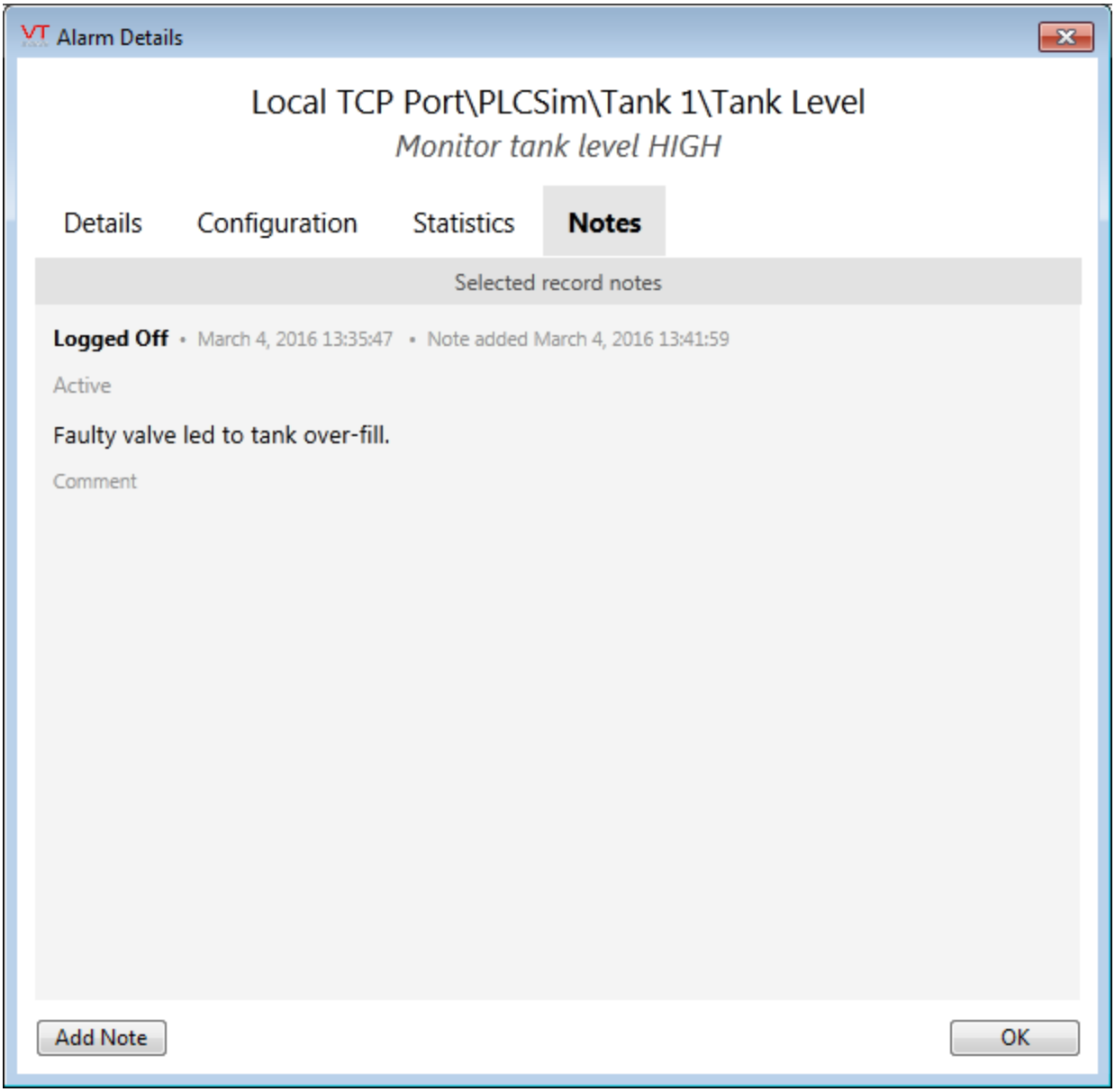

This tab shows the number of times that the alarm has been activated during each of four user-configurable time ranges. The average per day over each time range is also calculated and displayed.

Use the slider at the bottom of this screen to examine the number of alarms on each day of the display range.

VTScada Application developers are able to change the number of days shown in each of the four windows.

See: AlarmStatRange0 - AlarmStatRange3 in the VTScada Manager's Guide

### Alarm Details - Notes display




If any notes have been attached to this alarm, or if you wish to add notes or comments, use this tab of the Alarm Details page.

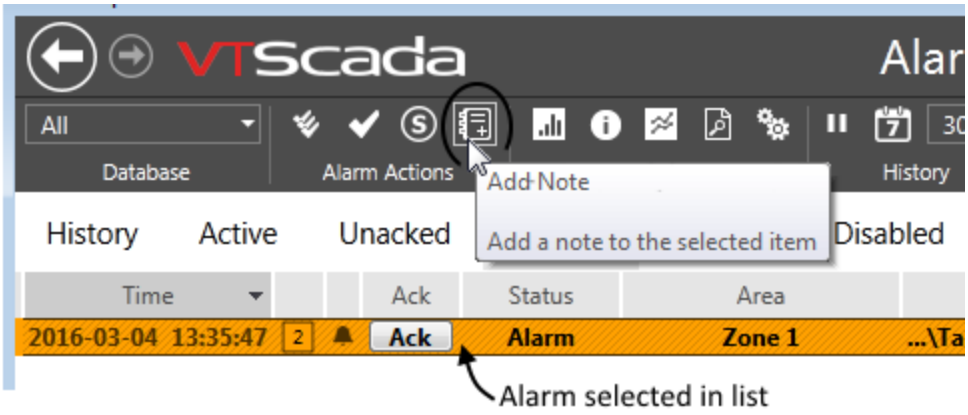
*Related Information:*

...Alarm Notes

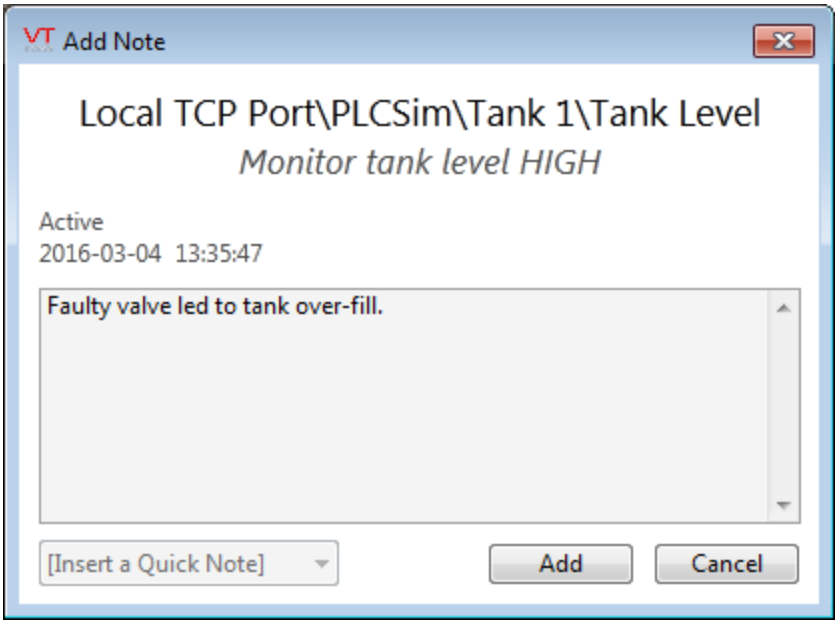
## Alarm Notes

There are two ways to add a note to any alarm. The easiest is to use the Add Note button:

1. Select that alarm in a list, then click the Add Note button:



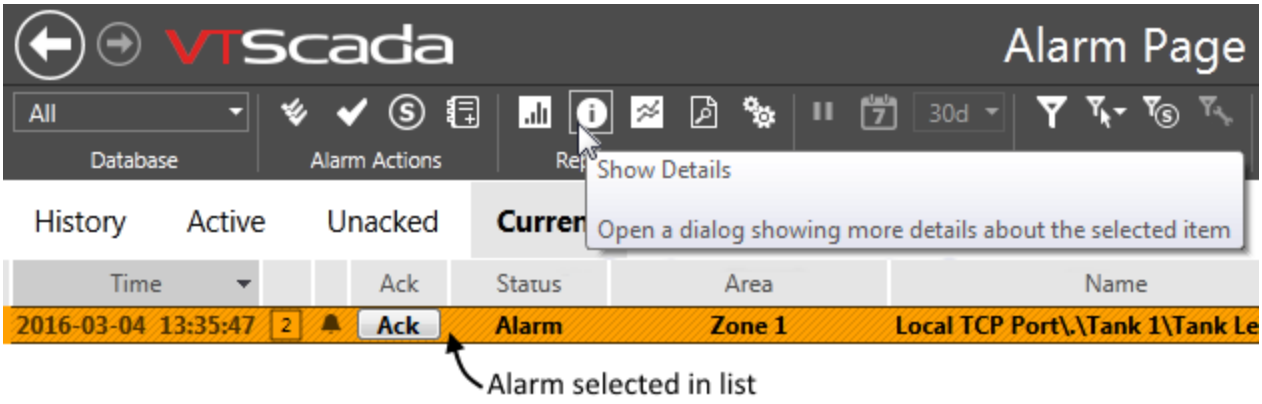

This method opens the Add Note dialog within its own window:



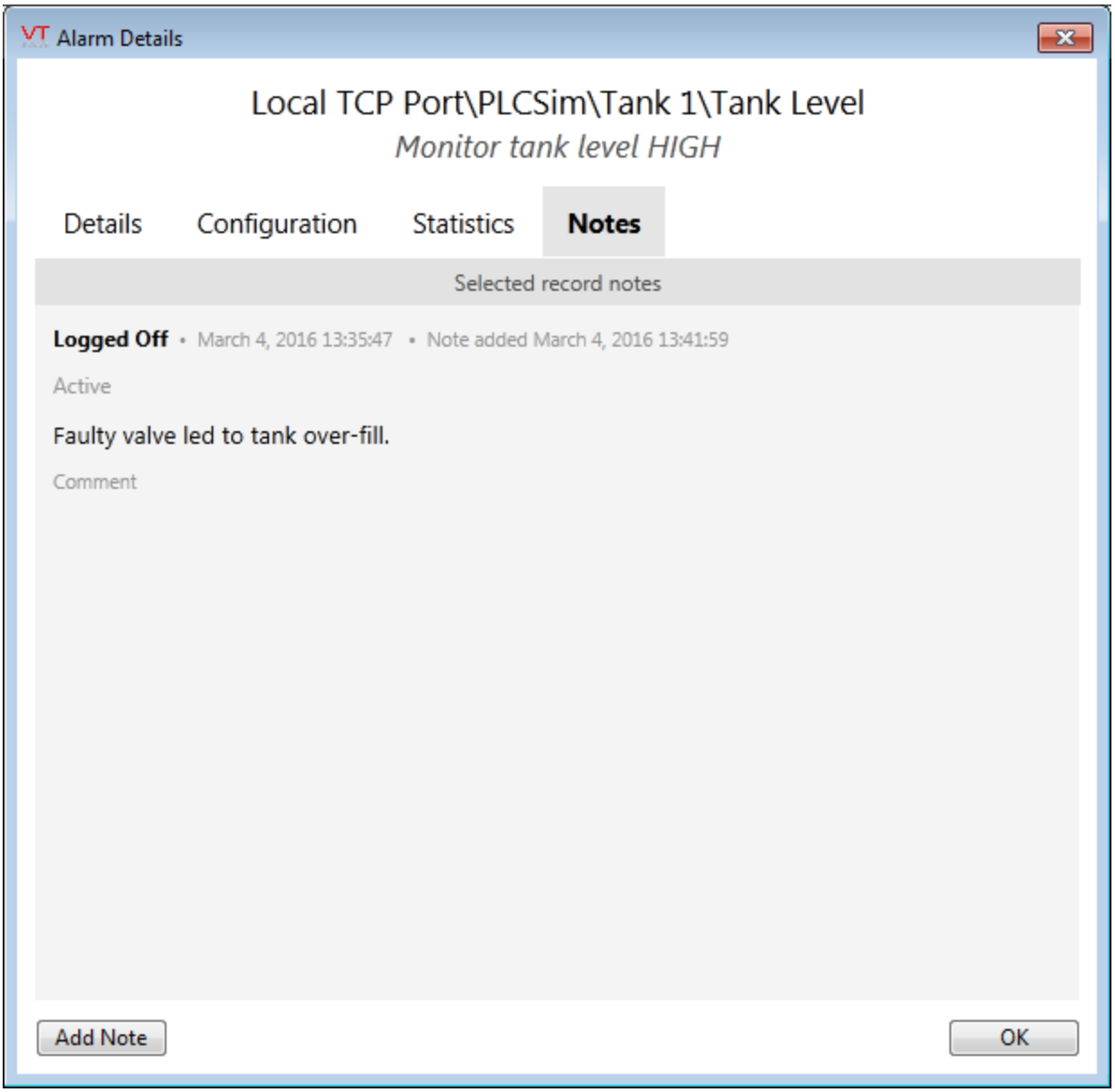

*The Add Note dialog with a sample note:*

You can also create new notes from the Alarm Details dialog as follows:

1. Select the alarm in a list, then click the Show Details button.

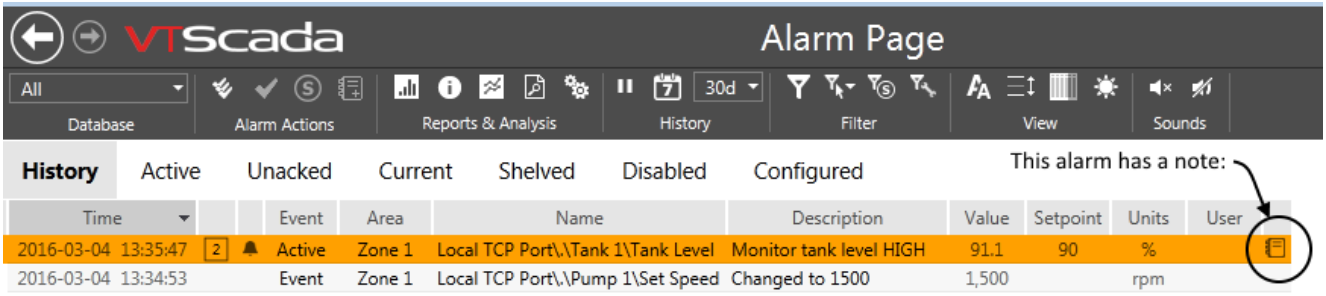



2. Open the Notes tab.



3. Click Add.
   The Add Note dialog will open.

As with any other form of operator note, you may type in a new note or select a predefined note from the Quick Note list.




*An alarm with a note.*

Click the note icon in the alarm list to open the Alarm Details page, opened to the Notes tab. You may add new notes or comments to the alarm at any time.

Note: For VTScada Developers: Every alarm database will have a child Notebook tag. Notes created for alarms in a particular database will be stored in the notebook matching that database.

## Alarm Reports

Alarm reports help you to identify trouble spots, whether the cause of the trouble is in the physical system or in the configuration of your application.

Many of the tools available in the Alarms Page for adjusting the display are also available in the Alarm Reports dialog. In particular, you should note that all of the filtering options are available and can be used to limit any report to a specific database, time frame, tag-area or other property. By default, each report shows a 30-day time period, but you may adjust this as needed. Reports show only Active and Trip alarm events unless explicitly filtering on other events.

Note: Any filter that you select will remain in effect while you switch from one report to the next. This can be helpful for gathering more information about an event. For example, you might start by identifying a day on which an alarm flood occurred in the Alarm Flood report.

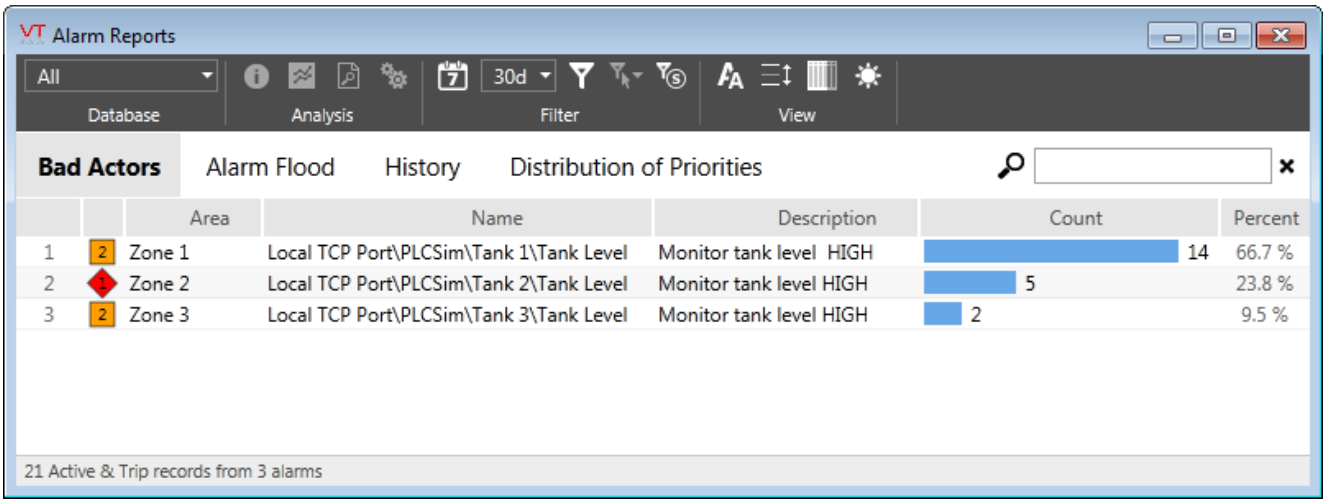
Clicking on that bar in the graph filters the display to one day. You might then view the History report of alarms for that day to see which ones were part of the flood. You might then add name filters to view all the occurrences of one alarm at a time on that day.

The Alarm Reports dialog also contains the same view options that are available in the Alarm Page, and you can select any line in a report then open tools from the Analysis section of the toolbar to gain more information about a particular alarm.

Note: As with any alarm list, you can use the keyboard combination, Ctrl+C to copy all information shown in the list, then paste that information into a spreadsheet.

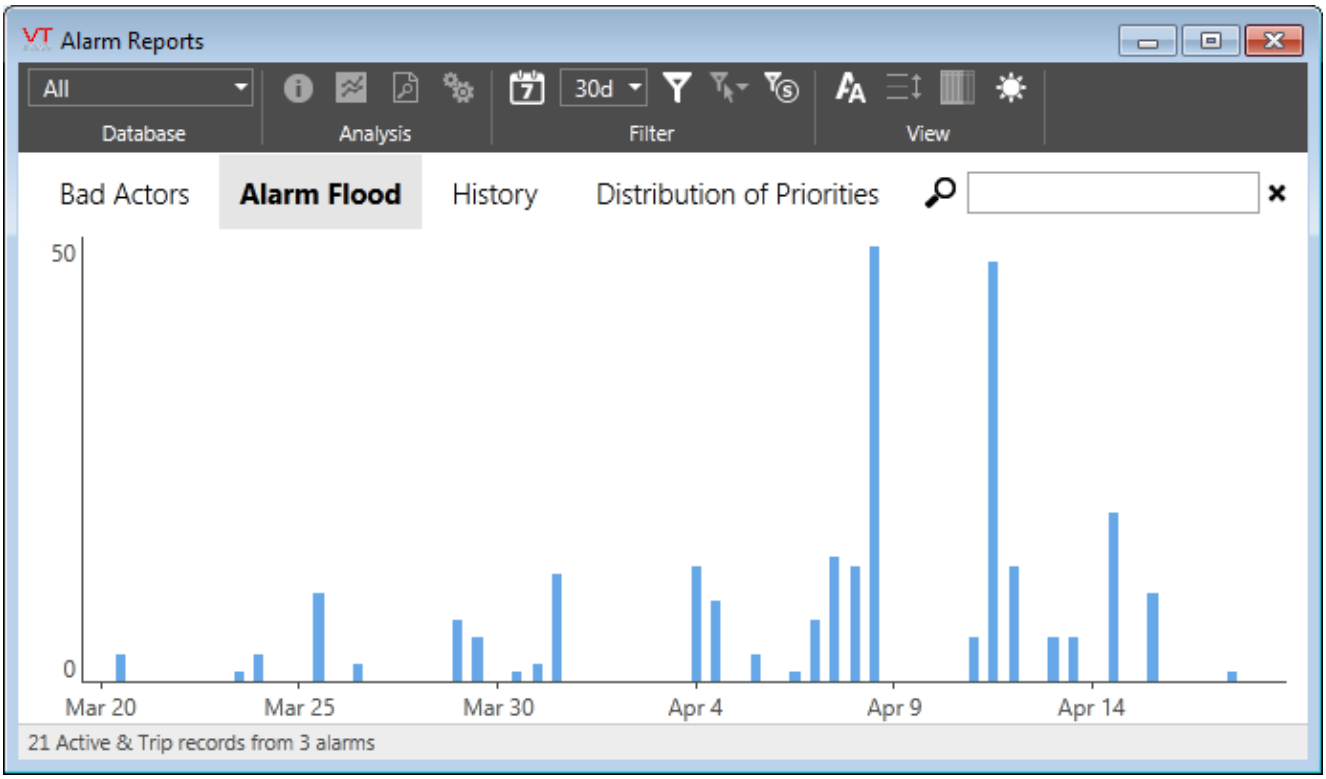
### Bad Actors Report

A bad actor is an alarm that is activated or tripped an excessive number of times within a time period. This may indicate a problem with equipment, with a process, or with the configuration of that alarm.
The report shows all alarms that occurred within the time period, sorted by the number of times they were activated or tripped. This does not imply that all the alarms listed are bad actors. The purpose of the report is to help you find those that might be classified as such.




### Alarm Flood Report

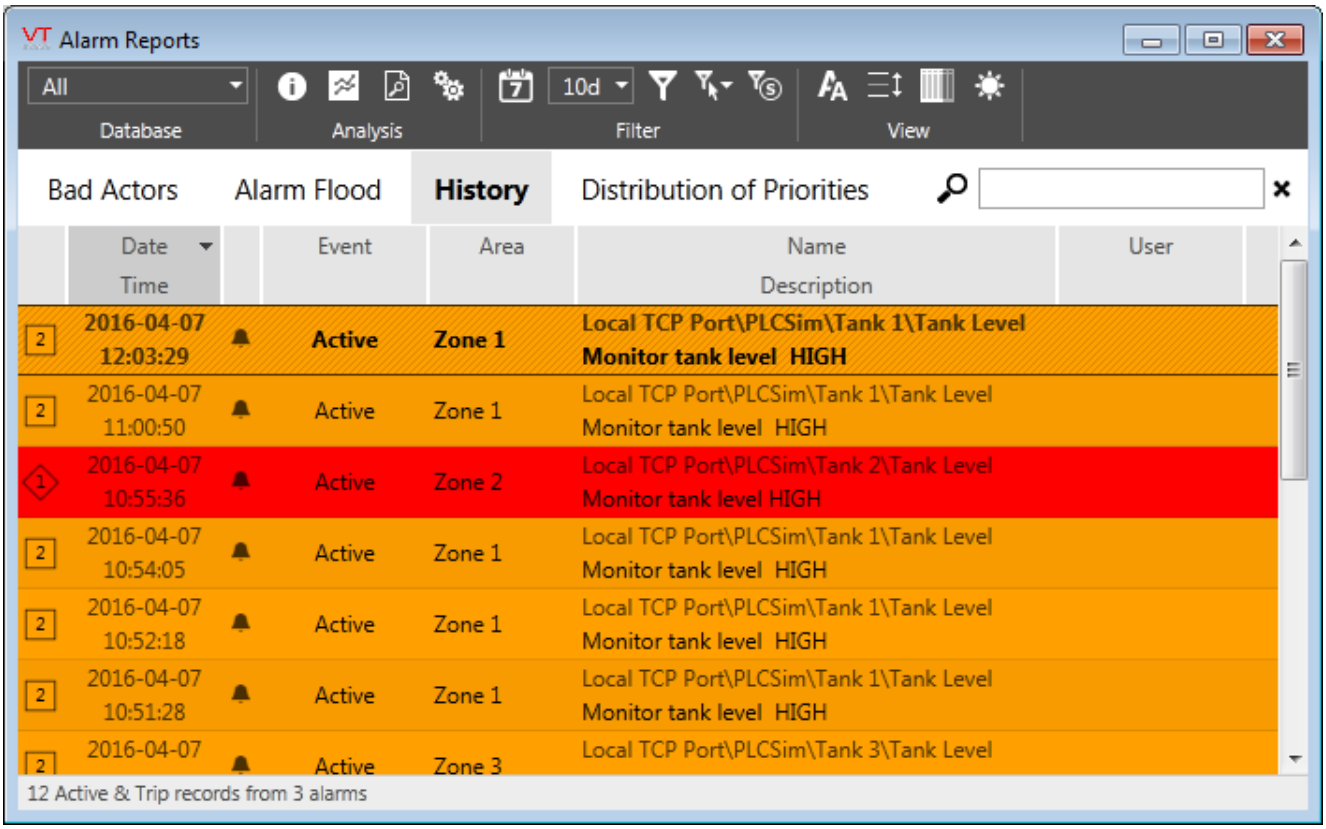
The Alarm Flood report shows a bar graph of the number of alarm occurrences within the selected time period. The information shown in this report is not restricted to alarm flood events, but will help you to identify any that may have occurred.
The time covered by each bar in the graph varies depending on the length of the selected time period; each bar may represent a day or may represent only a portion of a day.




As you move the pointer over the graph, it will appear as a crosshair, with a vertical highlight matching the selected time slice. A tooltip window will follow the crosshair, identifying the date range of the selected time slice and the number of alarms that were activated or tripped within it.
You can left-click on the graph to change the displayed range to a single day, within which each bar / time slice shows a half-hour interval. Right-click to return to the previous time range.

### History Report

The History Report is identical to the History list from the Alarm Page, except that it is pre-filtered to show only Active and Trip alarm events.



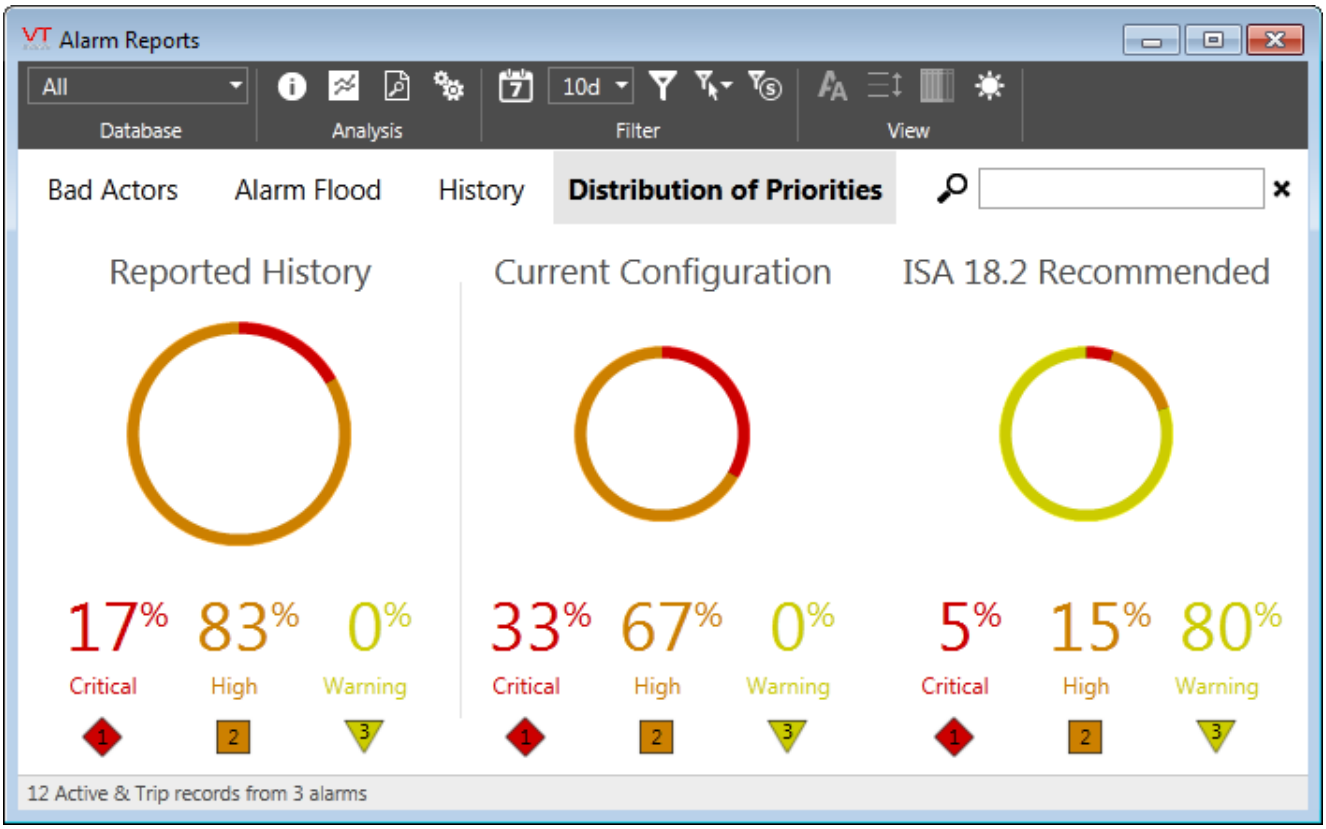

Select any alarm event in the list then use the tools from the Analysis portion of the toolbar to gather more information about it.

### Distribution of Priorities

This report can be used by VTScada developers to help them design the application's alarm system to follow the ISA 18.2 standard.

The left-most graph shows the number of alarms activations and trip events within the selected time period, grouped by priority. This reflects the reality of current operations.

For those who are interested in ISA 18.2 compliance, the middle graph and the right-most graph should be used together. The standard recommends that only five percent of configured alarms be critical priority, and fifteen percent be high priority. The alarm configuration of your application is shown in the middle graph.




A description of the ISA 18.2 standard, including the reasons for these recommendations is available from the ISA website at: https://www.isa.org/standards-and-publications/isa-publications/intech-magazine/white-papers/pas-understanding-and-applying-ansi-isa-18-2-alarm-management-standard/

# Dialing-in. The Alarm Notification System Menu

Note: This information applies only to VTScada installations that include the optional Alarm Notification System. If your application has this feature, and you are one of the operators on the callout roster, then the following will help you to work with the Alarm Notification System menu.

The VTScada Alarm Notification System will begin each phone call by announcing itself and requesting your authorization code, which is the

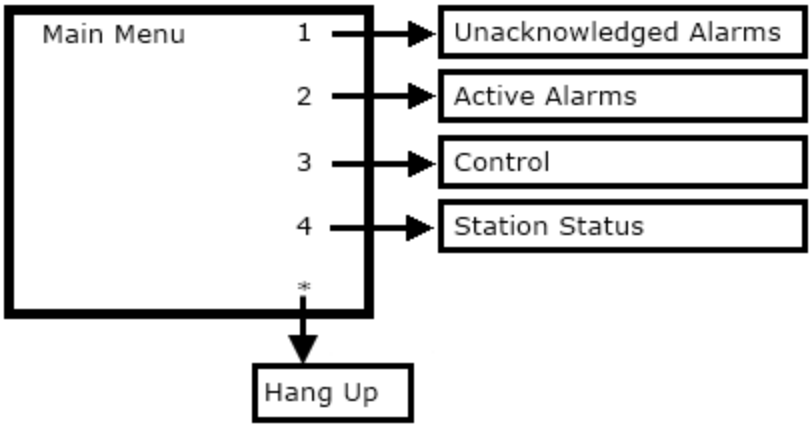
Alternate Identification Value that your manager defined for you in the security Accounts dialog. The wording of the announcement is controlled by your VTScada Developer, but typically begins with the words "This is the VTScada system at <your company>."
What happens after you have entered your Alternate ID depends on how your developer has configured the system. You may begin with the Main Menu, or the developer may have configured the system to go directly to one of:

- The list of unacknowledged alarms.
- The list of active alarms.
- The control menu.
- The station status menu.

The following sections describe your options in each of these menus.

### *The Alarm Notification System Main Menu*

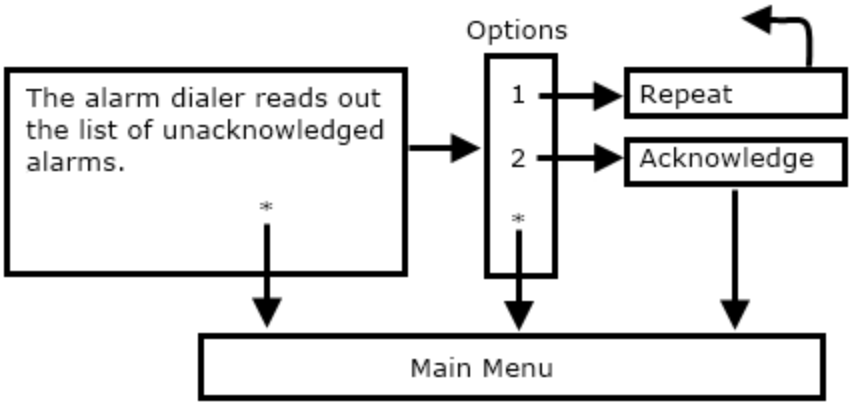
From the main menu, you may press a number from 1 to 4 to access any of the other menus, or you may press star (*) to hang up.




### *The Alarm Notification System Unacknowledged Alarms Menu*

The list of unacknowledged alarms spoken depends on two things: First, only alarms in the area you are permitted to view will be spoken. Second, if the Alarm Notification System initiated the call, then only the alarm(s) that caused that call to be made will be spoken. If you called the VTScada Alarm Notification System, then all unacknowledged alarms in areas that you are permitted to see will be spoken.

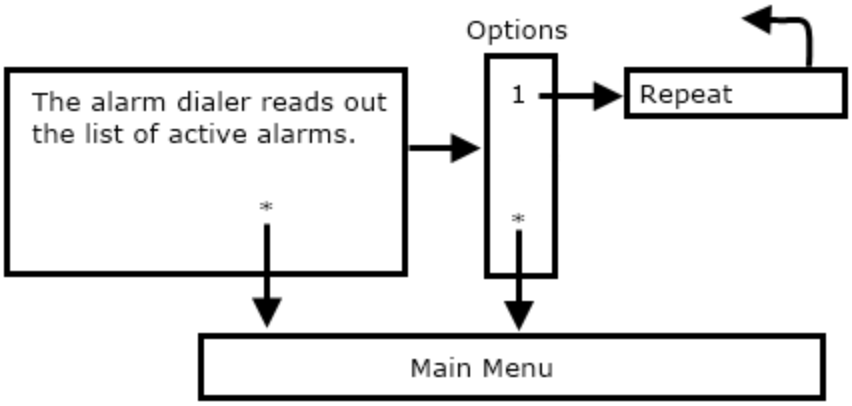
After the list is read, you can press 1 to repeat, 2 to acknowledge, or * to return to the main menu.




*The Alarm Notification System Active Alarms Menu*

The list of active alarms, in areas that you are permitted to view, will be read.

You can press 1 to repeat the list or * to return to the main menu.

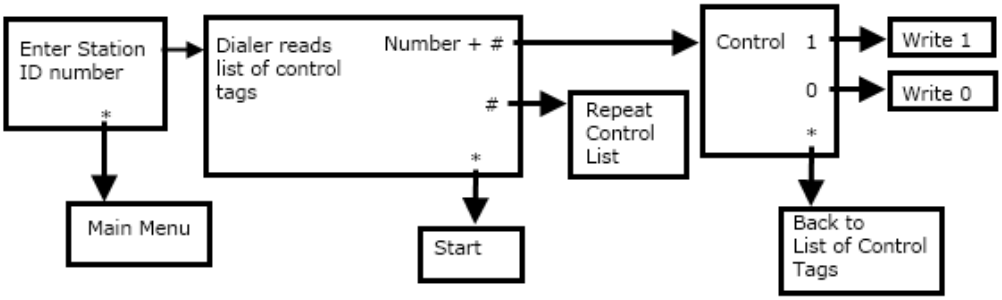



*The Alarm Notification System Control Menu*

Start the control menu by entering the ID number of the station whose tags you want to control.

The alarm notification system will read the list of control tags in this area. Enter the number of the output tag that you want to control, followed by the # key. Entering just the # key at this point causes the list to repeat.

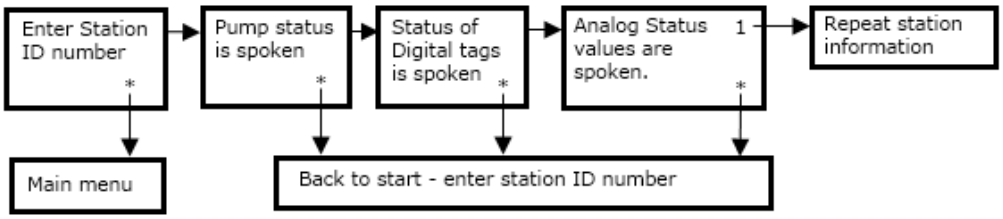
You can control the tag by pressing 1 to write a 1 or "ON" value, or you can press 0 to write a 0 or "OFF" value. Pressing the * key will take you back to the list.




*The Alarm Notification System Station Status Menu*

Start this menu by entering the ID number of the station whose tags you want to learn about. For the given station, the system will read the current values of the Pump Status tags followed by the Digital Status tags, followed by the Analog Status tags.

You can press 1 to repeat the information or * to return to the beginning.




# Alarm Event Reference

Acknowledge

Recorded when an operator acknowledges an alarm.

Active

The triggering condition for the alarm is valid, and the alarm

is not configured as a trip alarm.

Active Ack

An alarm is activated and acknowledged in the same transaction. This event type is included for compatibility with alarm standards, but will not occur within VTScada.

Commission

Recorded when an alarm is created. Also recorded when the tag that has the alarm is re-enabled after having been disabled.

Decommission

The tag containing the alarm has been disabled or deleted.

Disable

The disable option has been set in the alarm's configuration.

Enable

An alarm that had been disabled has been re-enabled.

Event

Used only for VTScada events such as operator control actions.

Modify

A transaction in which the alarm was reconfigured.

Normal

The triggering condition for the alarm is no longer valid (and the alarm is not a trip alarm), but the alarm has not yet been acknowledged.

Normal Ack

An alarm is cleared and acknowledged in the same transaction. This event type is included for compatibility with alarm standards, but will not occur within VTScada.

Notify

A phone call, email or text message was sent by the VTScada Alarm Notification System.

Off Normal

An alarm that is activated without becoming unacknowledged. This event type is included for compatibility with alarm standards, but will not occur within VTScada.

Purge

Orphaned alarm events are purged automatically. These records are not deleted, but are marked as purged and hidden unless you choose to view them using the control in the alarm list toolbar.

Rearm

The alarm was acknowledged, but left in an active state long enough to be rearmed. (Automatic rearming is an optional configuration property of alarms.

Recommission

Moving or renaming an alarm tag will always cause a Decommission / Recommission pair as the old name is decommissioned and the alarm is recommissioned under the new name.

Rename

Records the event of an alarm being renamed.

Shelve

Recorded when an operator shelves the alarm.

Trip

The triggering condition has occurred for an alarm configured with the Trip flag.

Unshelve

Recorded when an operator deselects the shelve option for the alarm, or when the preset time for which the alarm will be shelved has expired.

# *Mobile and Internet Connections*

VTScada provides a way for operators to use the Internet to connect to an application from a remote computer or mobile Internet client. The availability of this feature depends on your VTScada license and on whether your VTScada developer has configured a VTScada Internet Server with the necessary options.

There are three ways to connect. Your manager or developer will tell you which is the recommended method for your site, usually by providing the address (**URL**[1]) that you should use.

- If the address looks like: https://YourCompany.com/RealmName/anywhere, then you are using the VTScada Anywhere Client. This will work on most devices and operating systems. The screens will be nearly identical to those at a VTScada run-time installation.
- If the address looks like https://YourCompany.com/RealmName/mobile, then you are using the VTScada Mobile Client (**MIC**[2]). This has been optimized for use on mobile devices in order to minimize your connection charges. With the MIC, you have the option of switching to full display screens when needed, but most often you will probably prefer to use the optimized display.
- If the address looks like https://YourCompany.com/RealmName, then you are using the VTScada Internet Client (**VIC**[3]). This uses an ActiveX application that must be installed on your computer, either automatically by using Microsoft's Internet Explorer® or by using the VTSX program that is included with VTScada.

---

[1]Uniform Resource Locator. The address of a web page.

[2]Mobile Internet Client. Allows you to connect to a minimalized version of the application, suitable for mobile devices.

[3]VTScada Internet Client. Allows you to connect to an application over the Internet with many of the features of a full VTScada workstation.

Each of the clients has its own advantages, as described in the following topics. All allow operators to monitor and control the application.
If you have more than one VTScada Internet Server, then upon the loss of one server, both the VTScada Anywhere client and the VIC will fail-over automatically to the backup server. The mobile client does not have this ability, and must be directed to connect to the backup server.

*Related Tasks:*

...Connect Using the Anywhere Client

...Connect Using a Mobile Device - Instructions for tablets and smart phones.

...Connect to the VIC Using a Browser

...Connect Using the VTSX Program - A stand-alone substitute for using Internet Explorer

# Connect Using the Anywhere Client

The VTScada Anywhere Client is a JavaScript-based technology that enables you to view and operate your application on any device, using any of the major browsers. The Anywhere Client has been tested on Windows, iOS, OS X, and Android operating systems and will work using Chrome, Internet Explorer version 11 or later, Edge, FireFox, Opera and Safari browsers.

*(Not all combinations of operating systems and browsers have been tested. The Anywhere Client will not work on IE 10 or earlier.)*

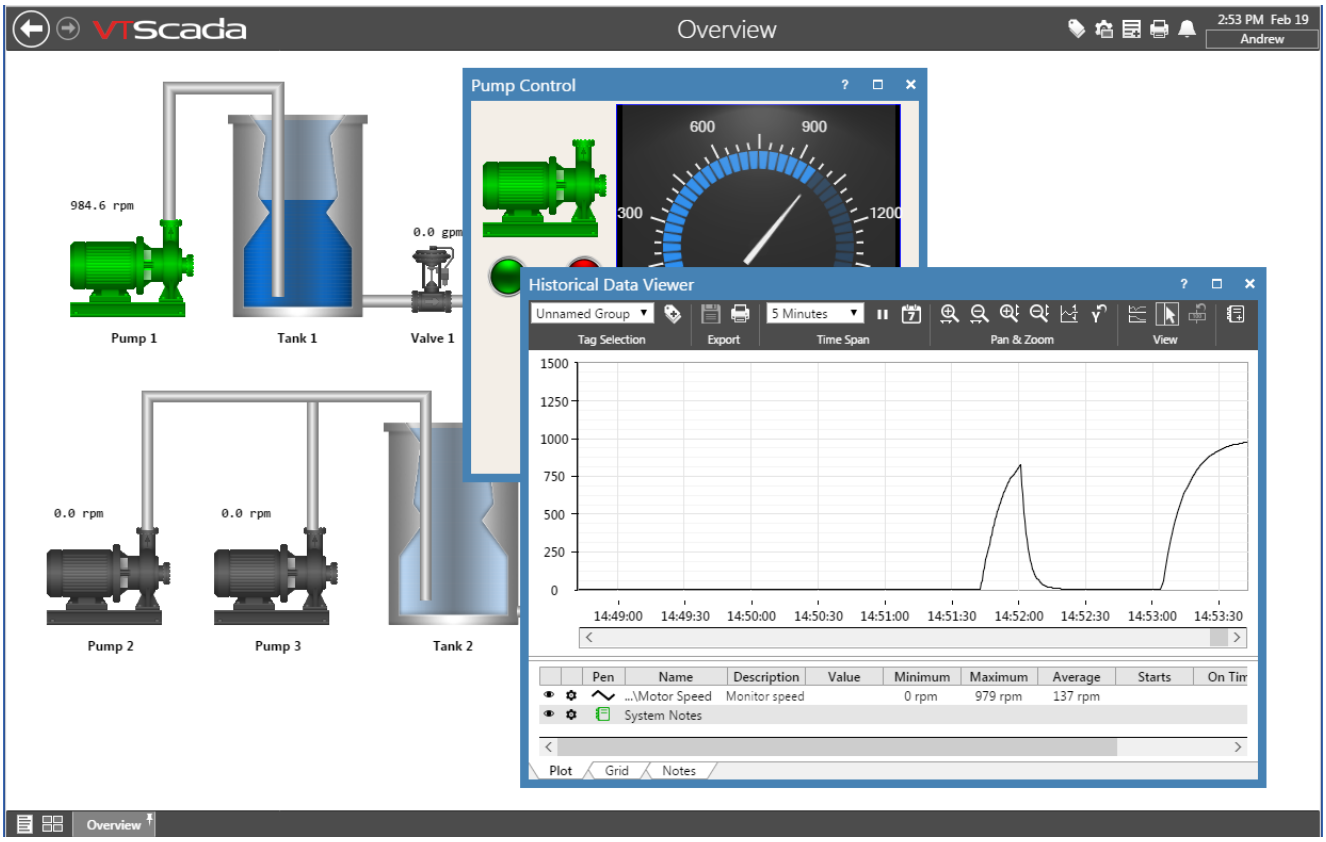
The client is zero-footprint, meaning that no code and no applications are installed on your computer. Everything runs within the browser.
The Anywhere Client enables you to store your logon credentials temporarily using the Remember Me check box on the logon screen. This will remain in your browser's cache for the time specified by the application

property, RememberLoginDuration. This defaults to 20160 minutes (14 days).


*The Anywhere Client logon screen, showing the Remember Me option.*

The user interface is nearly identical to a full VTScada workstation installation, allowing for minor differences in font and window details that may occur from one browser to another. All the features of a run-time VTScada installation are enabled with the exception of:

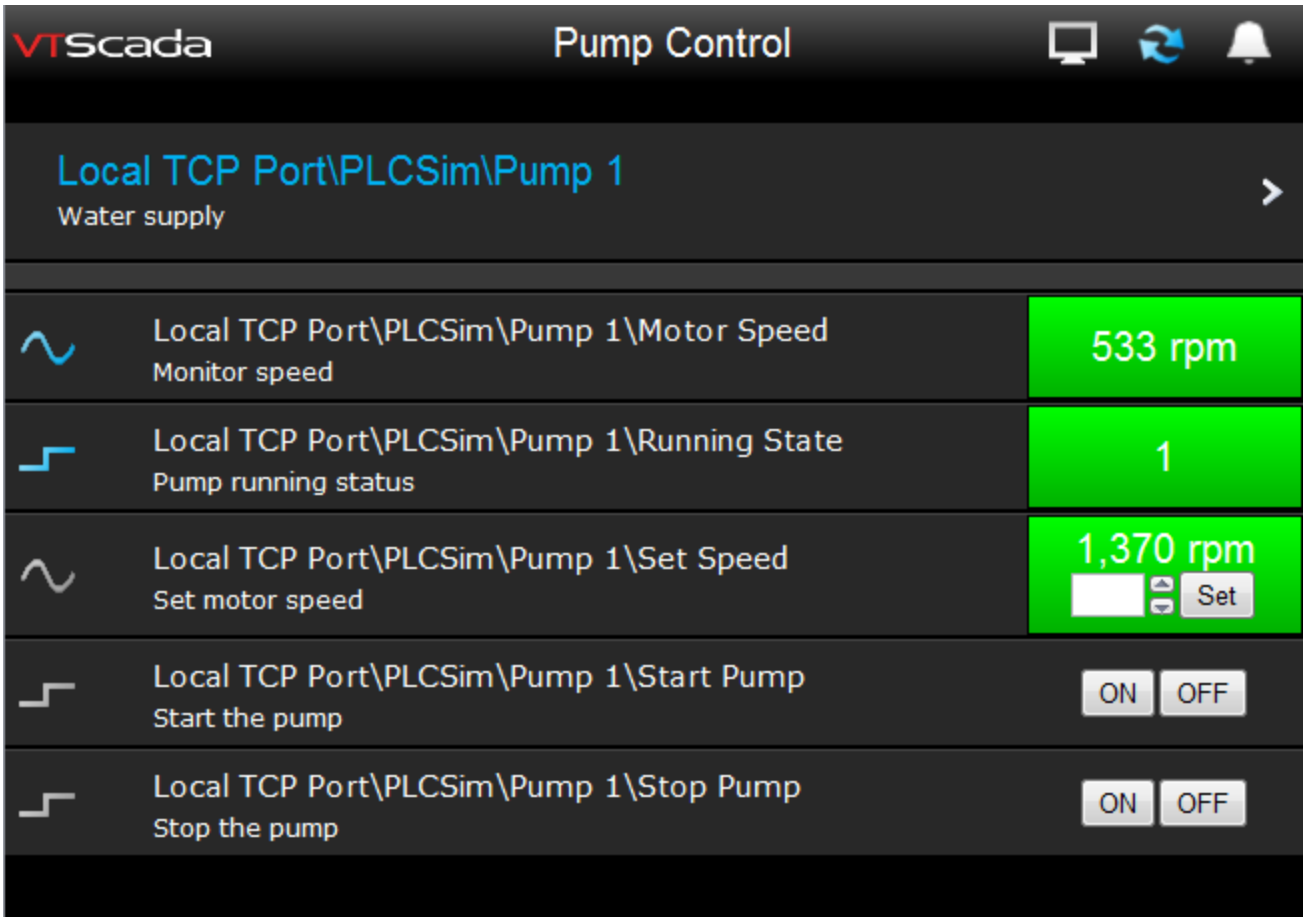
- The Select Color dialog has limited functionality. The color-picker eye-dropper tool will not work.
- No client-side reading or writing, therefore...
  - Not able to export either reports or HDV data to files.
  - Not able to create or apply a ChangeSet.
  - Not able to manage types.
  - Not able to export/sync tags.
  - No access to the Lexicon dialog.
- Internet Explorer version 11 does not support sound with the Anywhere Client.




*The Completed Tutorial application, with a pop-up window and a trend, running in Chrome using the Anywhere Client.*

# Connect Using a Mobile Device

The Mobile Internet Client (MIC) provides functional access to an application in a format that is optimized for use on mobile devices such as smart phones.




The following browsers (and later versions) are supported. Note that JavaScript must be enabled in all cases.

- iOS™ (iPhone™ and iPad™) (iOS 4.3.5+)
- Android™ 2.1+
- Blackberry™ 6.0+

You can also access the "mobile view" from desktop browsers using any operating system. Supported browsers include the following:

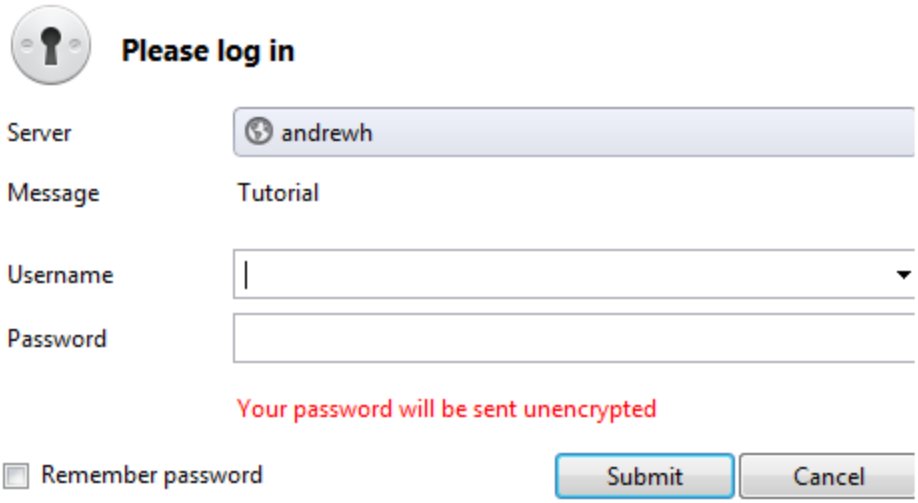
- Firefox™ 3.6+
- Opera™ 11+
- Internet Explorer™ 9+
- Safari™ 5.1+

Others may also work.

The syntax of the request is as follows (note: use HTTPS instead of HTTP if connecting to a server that uses SSL security). The only difference between this and the VIC connection URL is the addition of "/Mobile".

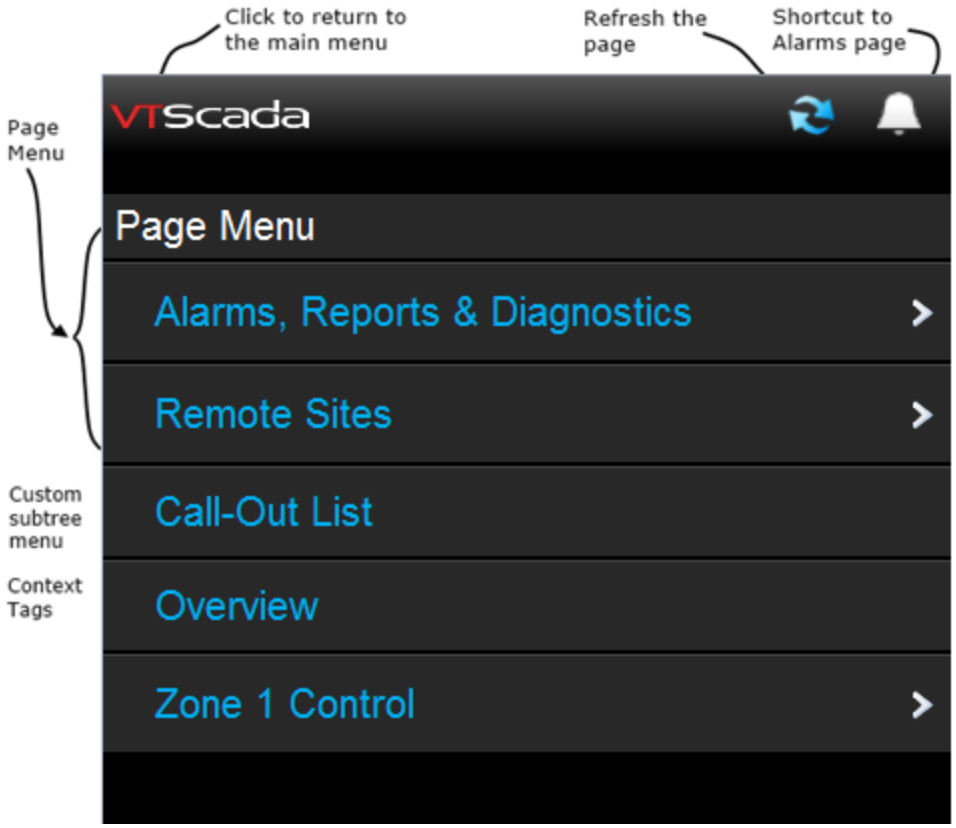
```
http://Your.ServerName.Com/YourRealmName/Mobile
```

Upon establishing a connection, you will be prompted to log in:




The mobile client will open. Note that the screen does not update continuously, but will refresh automatically based on the value set for the application property MobileBrowserAutoRefreshPeriod, which defaults to 60 seconds. A graphic display (actual page view) will refresh based on the property MobileBrowserSnapshotRefreshPeriod, which defaults to 600 seconds.

You can force the display to update at any time by touching the Refresh button. Note that each refresh of a graphic display may result in a significant amount of data being transferred to your device.




The word "Sites", found in the Remote Sites sub-menu, is controlled by the application property, ContainerTerm. Your developer may have chosen a different word to use.

Note: The alarm display of the Mobile Internet Client is limited to a maximum of the 100 most recent alarms and does not display alarms from previous days.

*Troubleshooting*

- No connection is made.
  - Ensure that you are providing a fully qualified domain name, beginning with HTTP://. Use HTTPS:// if SSL security used by your server.
  - There may be issues related the configuration of your company's fire-wall. Check with your IT department.
- It seems to create a connection, but access is denied.
  - You may not have Internet Access privileges. Check with your man-ager.

Error messages: VTScada Internet Server Error Messages

*Related Information:*

...Mobile Internet Client – Alarms Page

...Mobile Internet Client – Application Pages

...Mobile Internet Client – Application Control

...Mobile Internet Client – Site Pages

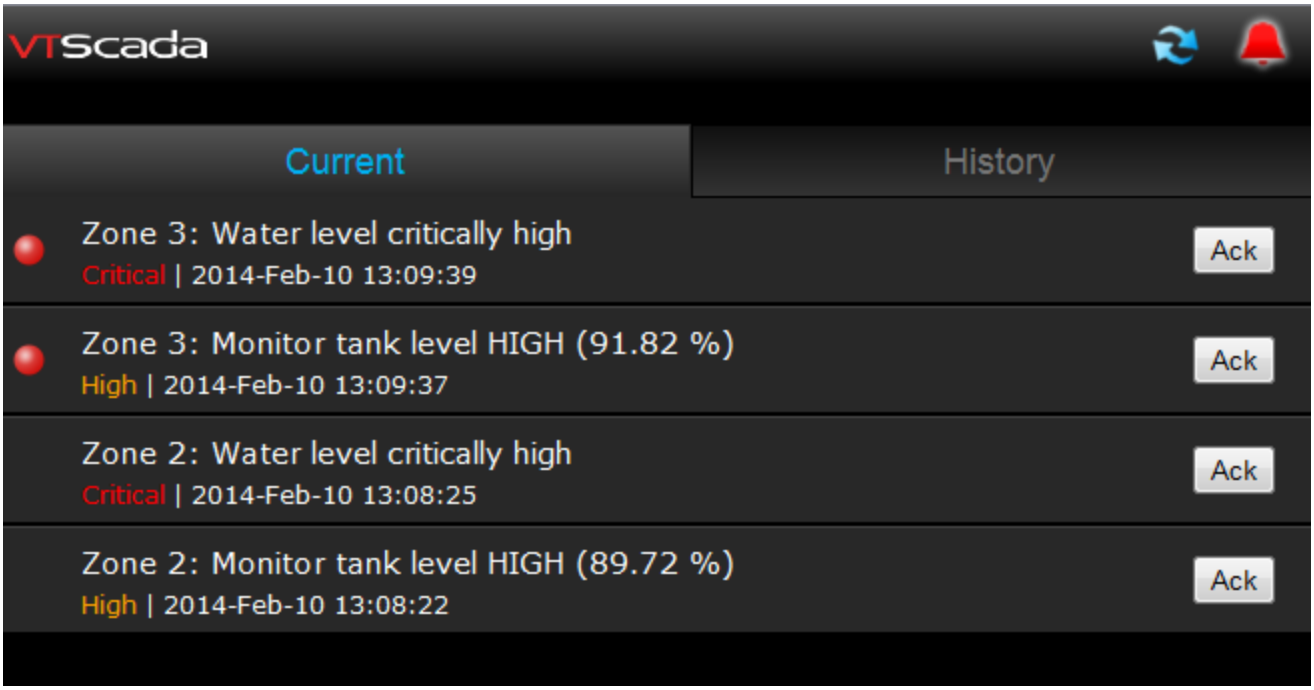
...Connect Using the Anywhere Client – For almost any platform.

...Connect to the VIC Using a Browser

...Connect Using the VTSX Program

## Mobile Internet Client – Alarms Page

The Alarms page will show current alarms in the system. "Current" alarms are those that are either active (the condition that caused the alarm still exists), or unacknowledged.




Note: The alarm display of the Mobile Internet Client is limited to a maximum of the 100 most recent alarms and does not display alarms from previous days.

Active alarms are indicated by a red dot. Unacknowledged alarms can be acknowledged by touching on the Ack button.

If your Developer has applied Realm Area Filtering, then the list will be restricted to those alarms that match the filter.
The text shown on each line is:

- The description of the alarm tag. If no description is available, the name of the tag will be shown.
- The alarm status (critical, high, etc.).
- If the alarm is built into a Status tag type, the current value of the tag will be shown. Also, for Analog Status tags, the word "HIGH" or "LOW" will be shown to indicate which of the two alarms this is.
- The time and date when the alarm was activated.

You can touch the History tab to view a history of the last 100 alarms recorded in the system. Note that this includes all alarms, including event-level operator actions.

*Related Information:*

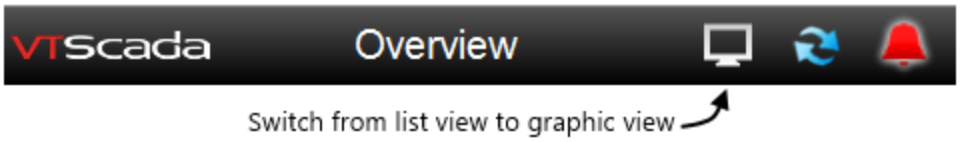
...Mobile Internet Client - Application Pages

...Mobile Internet Client - Application Control

...Mobile Internet Client - Site Pages

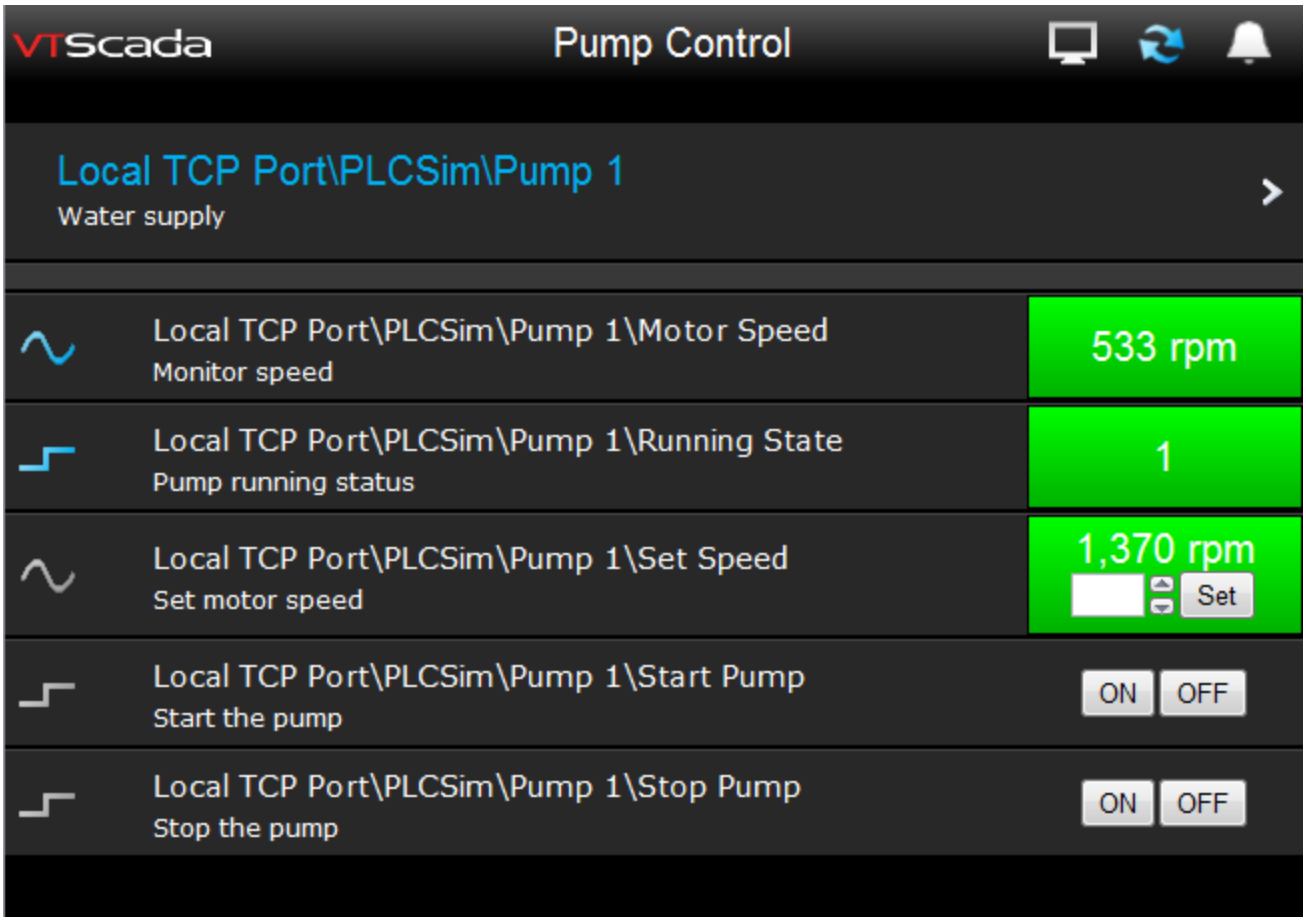
## Mobile Internet Client - Application Pages

Application pages can be viewed in either of two formats: A list designed for minimal bandwidth, or a graphic view of the application page, scaled to fit your device's display.

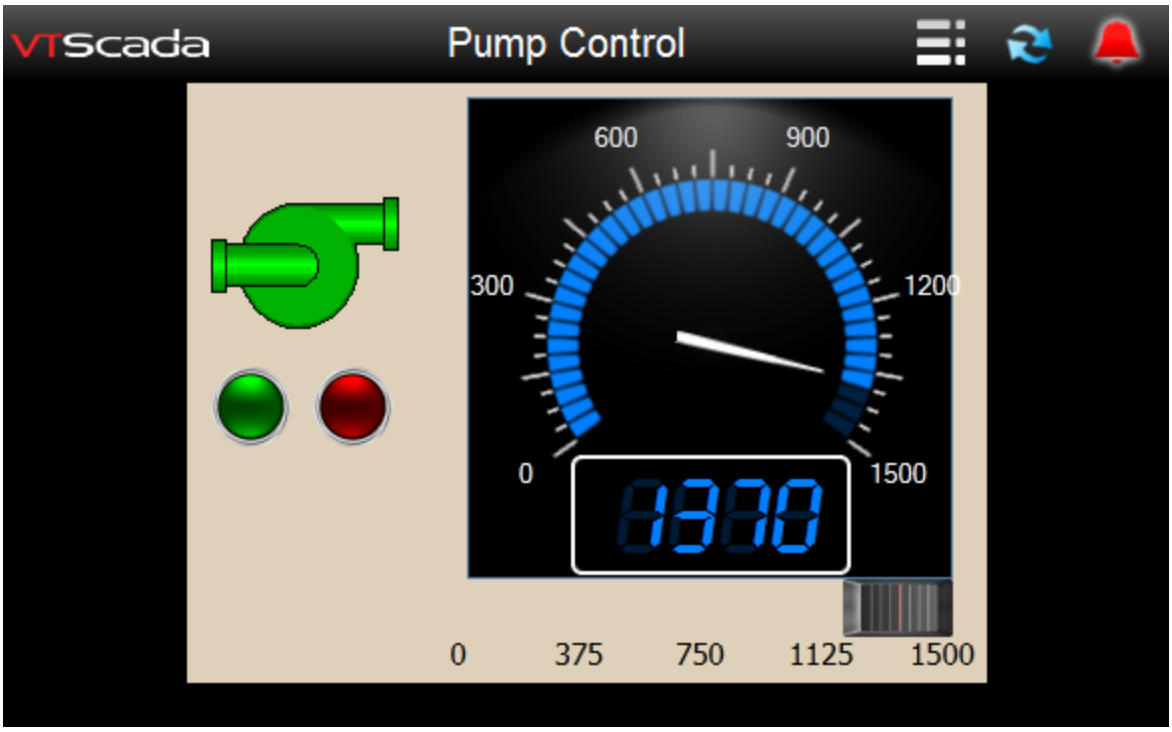

Note: To return to the main menu from any page, touch the VTScada logo at the top left corner of the display.

**List View:**

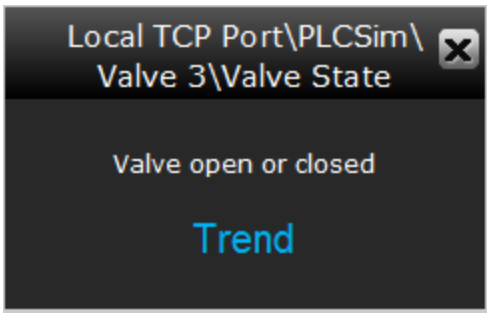



Tag values, as of the last browser-refresh, are shown to the right of each tag name. If a tag is in an alarm state, the value will be shown in red.

**Graphic View**:

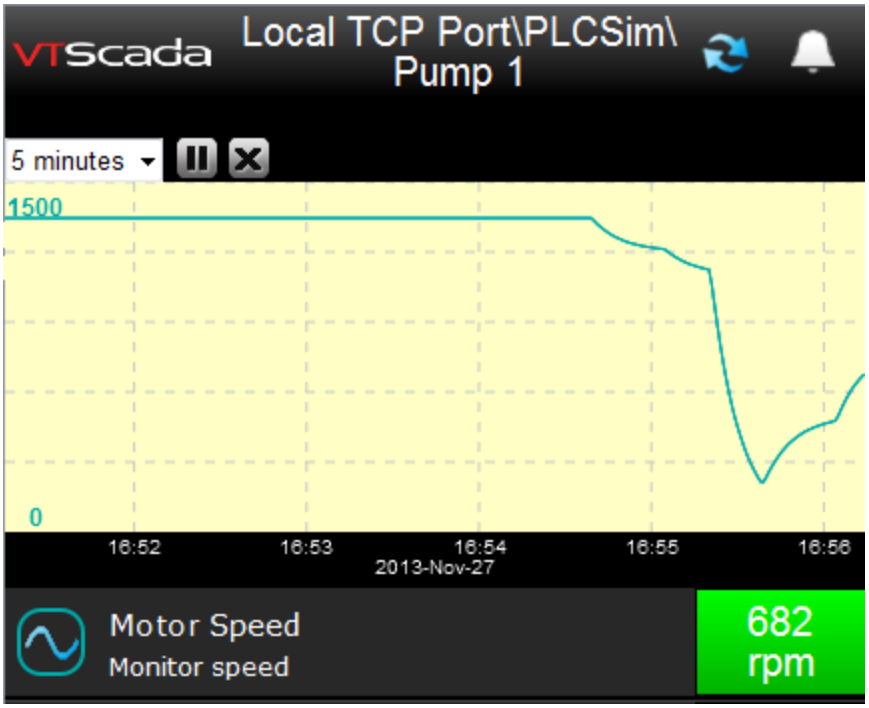



The graphic view matching the preceding list view. (Taken from the Completed Tutorial Application.) All widgets are fully functional, but page hotboxes may not be visible on every device and touching a slider opens a data entry field rather than sliding the control to a new value. As with other MIC pages, this view is not updated continuously.
A touch on a widget in the graphic view will cause a dialog window to open. If the tag can be viewed in the HDV, a link will offer the option of opening a trend window. If a control tag is clicked, the window will provide an output control for that tag.




Note: Updating a graphic view that contains many widgets can involve a significant data transfer to your mobile device.

In the list view, analog tags are indicated by a sine wave symbol. Digital tags are indicated by a square wave.
If the symbol is blue, the tag's values can be plotted. You can touch anywhere on the tag row to open a trend graph, just as you can click on a tag on a VTScada page to do the same. Touch a second tag in order to view multiple pens on the same graph. Each tag will be plotted in a different color, as indicated by a matching highlight color around the tag's row in the display.
Touch on the tag symbol a second time to remove the pen from the graph. When the last pen has been removed, the trend graph will close, or you can click the X at the top of the graph to close it immediately for all pens.




In the graphic view, the trend graph works much like it would on a VTScada workstation. Touching a tag will open a full-screen trend graph. (You will be prompted as to whether you meant to open that graph.)
You can drag the graph left and right to change the displayed time period. If your device supports the "pinch" user interface, drag two fingers together or apart to change the scale of the display. Use the control

at the top of the graph to display a time frame other than the default of one hour.
Controls at the top of the display allow you to change the amount of time displayed.

*Related Information:*

...Mobile Internet Client – Alarms Page

...Mobile Internet Client – Application Control

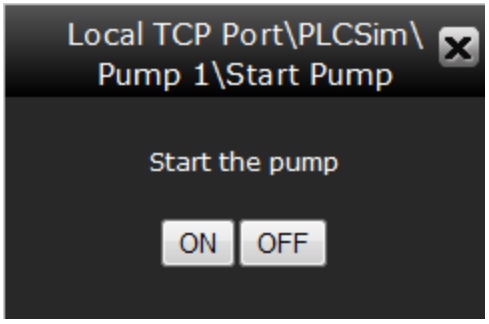
...Mobile Internet Client – Site Pages

## Mobile Internet Client – Application Control

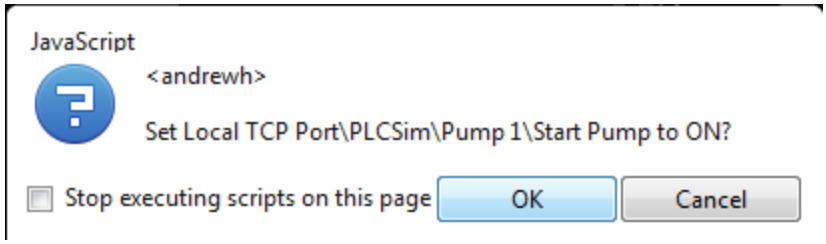
You can use your Mobile Internet Client to change the value of Control and Output tag types (provided that your user account is authorized to do so).
Analog Output and Analog Control tag types will show a user interface similar to the following. *This display is browser-specific* – your device may show only a simple input field and not the up-down buttons.


The current value, as of the last browser-refresh will be shown. Use the up and down arrows to select a new value to write or type directly into the data entry field. Touch the Set button when you are ready to write the value. This is done as a two-step process in order to minimize the chance of accidentally setting an incorrect value.
Note that, a slider control widget, when touched in the page view mode, will not actually slide, but will open a similar value input field.
Digital Output and Digital Control tag types will show a user interface similar to the following:

Touch the On or Off button to write a 1 or a 0 to the tag. Note that this does not allow for a pulsed-type output. The mobile interface will write only a steady 1 or 0.
If the widget has been configured to prompt for confirmation, a dialog similar to the following will open:




Depending on your device, you may also see a JavaScript confirmation prompt:




*Related Information:*

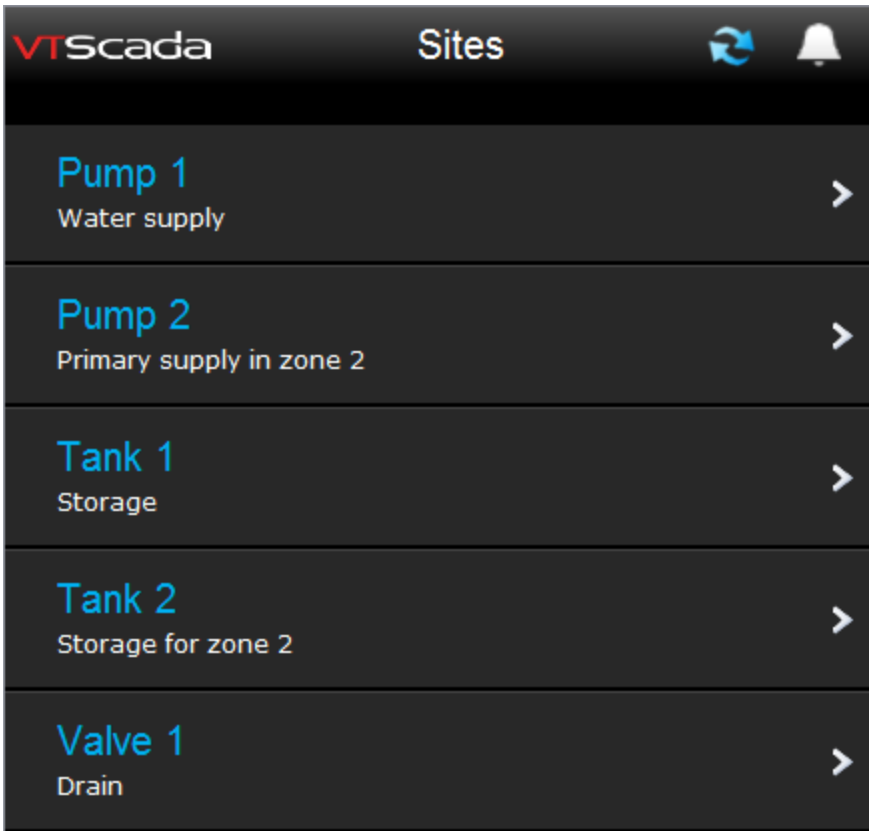
...Mobile Internet Client – Alarms Page

...Mobile Internet Client – Application Pages

...Mobile Internet Client – Site Pages

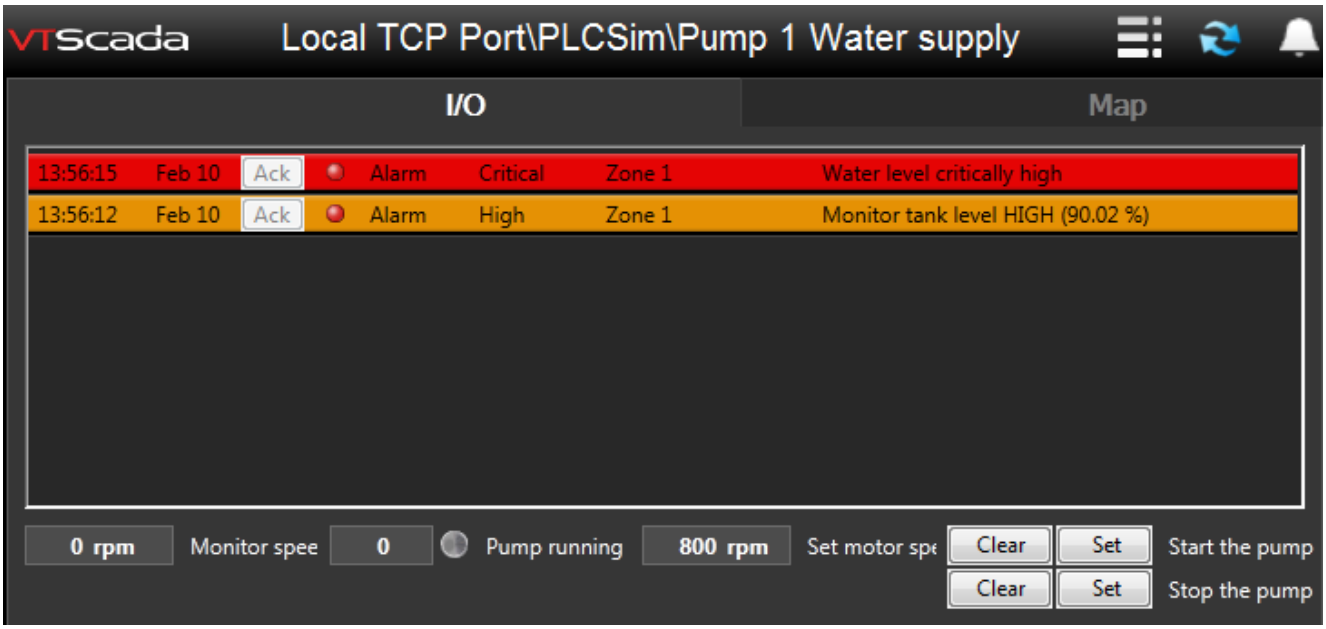
## Mobile Internet Client – Site Pages

Some applications will have tags organized into hierarchies. These are used to group all the I/O tags within a pumping station, well or other component. A common example is the use of the MultiSmart tag or one of the MPE station tags.
If this is the case for your application, then the mobile browser interface will include a Sites(*) entry in the menu.




You can use this to browse into these tag hierarchies to view or control the various I/O tags within the structure. The following illustration is taken from the VTScada tutorial - the tags you see on your own screen will match the contents of your application.

Note: (*) The word "Sites" is controlled by an application property, ContainerTerm. Your developer may have chosen a different word to use.




Viewing a map may require a very large data transfer to your device.

*Related Information:*

...Mobile Internet Client – Alarms Page

...Mobile Internet Client – Application Pages

...Mobile Internet Client – Application Control

# Connect to the VIC Using a Browser

The following instructions assume that your application is available on a properly licensed and configured VTScada Internet Server.
Only Internet Explorer provides the ActiveX support required. If you attempt to connect using a browser other than Internet Explorer, you will be given an option to download the installation file for the VTSX program, which does not require any browser. Or, you can use either the Anywhere Client or the Mobile Internet Client.

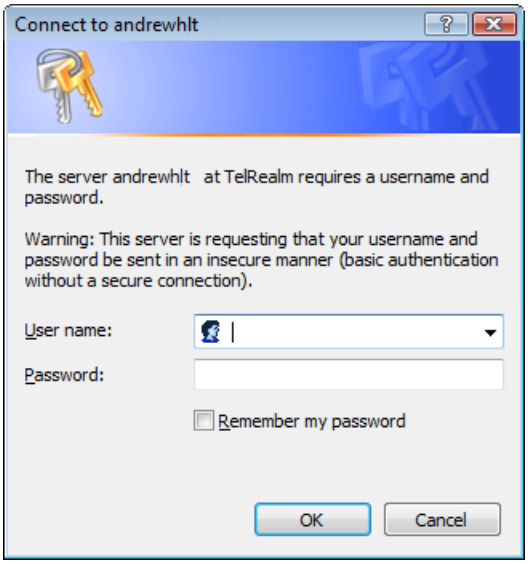
Note: In Windows 8™, Internet Explorer runs as a mobile browser by default. This will not open the VTScada Internet Client. (But, it does support the mobile browser interface.)

To connect using Internet Explorer if your operating system is Windows 8, you must run the browser in desktop mode.

On the first connection from any given computer, the ActiveX program will be downloaded and installed using a pop-up window. It is likely that your default security settings will block both. When prompted, allow the pop-up and check the option to trust content from Trihedral Engineering Ltd..

**To connect:**

1. Start Internet Explorer.
2. In the address field, provide the URL for your server and application.
   Your manager or VTScada developer must provide this. It will be similar to: http://vts.trihedral.com/waterdemo.
3. When prompted, enter your account name and password.




4. Click OK.

If the connection is authenticated, the first application in the realm will open in a new window. The original Internet Explorer window may be closed.

If the realm contains more than one application, you will be given a choice of which to use.

***Troubleshooting:***

- No connection. The message is "Internet Explorer cannot display the

webpage"
There is no VTScada Internet Server at this URL. Ensure that the server is running and that you have typed the correct address. If SSL security is in use, the URL must start with "https://" instead of "http://".

- Error 403 = Request forbidden -- authorization will not help
  There is a VTScada Internet Server at this address, but a properly-configured application is not available. Ensure that the realm includes an application, that the application is running, and that there is at least one security account with the Internet Client Access privilege.
- The VIC session runs. The Establishing Connection dialog remains.
  No user account has the Internet Connection privilege. Security must be enabled and at least one account must have the Internet Client Access privilege.
- Error code 401 - No permission
  Three failed attempts to logon have been made. Check with your VTS manager to confirm your account permissions, and to confirm that you are connecting to the correct realm name for your account.

### *Related Information:*

...Connect Using the Anywhere Client - For almost any platform.

...Connect Using the VTSX Program - Connecting without Internet Explorer.

...Connect Using a Mobile Device - For tablets and smart phones.

...Syntax of Internet Client Requests - Advanced connection options.

...VTScada Internet Server Error Messages - Reference.

...Uninstall the ActiveX Component

## Syntax of Internet Client Requests

The following applies to connections made using either the VTSX program, or Internet Explorer™.

The address that you use to make the VIC[1] connection is termed a Uniform Resource Locator (URL).
The general format of a URL is defined as:

```
{Protocol}Server{:Port}/Realm{/Verb}{/Application or GUID}{/Page}
{?Parameters}
```

where curly braces {} enclose optional components of the URL.
Forward slash (/) characters, the colon (:) character, and the question mark (?) character are to be typed as shown, since they serve as delimiters between components of the URL. If an optional component is omitted, the delimiter immediately preceding it is also omitted.

| URL Component | Description |
|---|---|
| Protocol | The {Protocol} component is optional when using Internet Explorer, but mandatory when using the VTSX program.<br>If specified, it must be either:<br>**http**:// or **https**://<br>The "s" specifies that an SSL connection is to be made. You cannot arbitrarily choose which to use. The choice is determined by how your VTScada Internet Server was configured. |
| Server | The Server component is mandatory, and specifies the name or IP address of the VTS/IS. The Server component may be as simple as just a host name, if operating over a company intranet, or it may take the form of a fully qualified host and domain name, if operating over a wide area network or the Internet. |
| :Port | If the server uses a port number other than the default of 80, then a colon and the configured port number must be provided. |
| Realm | The name used for a connection. If only one realm has been configured on the server, it will be found automatically, and therefore need not be included in the URL. If more than one realm exists, then you must specify the one you intend to connect to. |
| Verb | A command that may be provided. The following may be used: |

[1] VTScada Internet Client. Allows you to connect to an application over the Internet with many of the features of a full VTScada workstation.

| | | | |
|---|---|---|---|
| | Verb | Parameters | Description |
| | AppsList | None | Generates a list of available applications within the specified realm. |
| | ViewApp | Application name or GUID | View application - this is the default verb and therefore is not usually provided. |
| | VTS-Bin | Application name or GUID followed by "/SomeModuleName" | Invokes the specified VTScada module. Should be used only by experienced VTScada programmers. |
| /Page | May be used to specify which page is to be opened initially. | | |
| Parameters | Parameter are preceded by a question mark and follow the format Name=Value. Pairs of parameter names and values are separated by ampersands. Four are commonly used, to specify the location and size of the screen: ?x=10&y=10&w=800&h=600 | | |
| /Path/File.ext | Use to explicitly specify a file to be opened.<br>Path is restricted to the application's folder and sub-folders. File.ext is restricted to VTScada page files (*.SRC) and image file formats. | | |

*Related Information:*

...VTScada Internet Server Error Messages - Reference.

## VTScada Internet Server Error Messages

The HTML server embedded within VTS/IS can generate error messages under certain conditions. All error messages are generated using the standard HTML error reporting method, giving an error number and explanatory text.
An example of an error response:


| Error Code | Message |
|---|---|
| 400 | Protocol not "HTTP" or request header malformed.<br>PageList request issued for a non-VTScada application. |
| 401 | Any of:<br>• Originating IP address is on a DENY list or is not on an ALLOW list.<br>• AppsList request issued, but user not authenticated by the VTScada Security Manager.<br>• PageList request issued, but user not authenticated by the VTScada Security Manager.<br>• VTS-BIN request issued, but user not authenticated by the VTScada Security Manager.<br>Note:You may receive a 401 error code if no VTScada application is running (i.e. the VTScada Security Manager cannot authenticate against any user accounts), or if the application you are requesting is not running. |
| 403 | This request would exceed the number of licensed connections. |
| 404 | GUID or application name in request specifies an unknown application.<br>A request was received for a file that could not be located. |
| 500 | Unused. |
| 501 | The HTTP request specified an unimplemented method (only "Get" is implemented). |

# Connect Using the VTSX Program

The VTSX program, provided with the VTScada installation as VIC-setup.EXE, provides VIC[1] access without the need for Microsoft Internet Explorer or any other program.
The default installation folder will be **C:\Program Files (x86)\Trihedral**. You will probably want to create a desktop shortcut to the executable file, VTSX.EXE, but note that the user interface itself contains an option to create that shortcut for you. The steps are provided in the next topic.
Assuming that a VTScada Internet Server has been configured to make your application available over the Internet, then the connection process is as follows:

1. Run the VTSX program.
   The VTScada Server Login dialog appears.


2. Enter the Server address and realm name. The protocol portion, "HTTP://" is optional.
   If using an SSL connection, you must use the protocol specification, "HTTPS://"
   For example: http://vts.trihedral.com/waterdemo

[1] VTScada Internet Client. Allows you to connect to an application over the Internet with many of the features of a full VTScada workstation.

3. Enter the username and password for an account that has been granted the Internet Client Access privilege.
   The Connect button will be enabled.
4. Click on Connect.

The "Establishing Server Connection" dialog will be displayed while the application opens on your computer. In the case that a connection cannot be made, an error dialog will be displayed to describe the source of the problem.

The Save As... button can be used to store a link to the VTSX program, including the server address, as a shortcut on your desktop. Double-click the shortcut to create a new connection to your application.

### Optional items to include in the server address:

Page Name: Following the realm name, you might choose to include a page name. If so, add it following the realm.

> Example: http://vts.trihedral.com/waterdemo/it dashboard

Parameters: If directly opening a parametrized page, you will need to include a value for each parameter. If there is more than one parameter, then each name=value pair should be separated by a comma. Start the parameter list with a question mark.

> Example: http://vts.trihedral.com/waterdemo/it dashboard?parm1=val1

#### *Troubleshooting*

- No connection is made.
  - Ensure that you are providing a fully qualified domain name, beginning with HTTP://. Use HTTPS:// if SSL security used by your server.
  - There may be issues related the configuration of your company's firewall. Check with your IT department.
- It seems to create a connection, but access is denied.
  - You may not have Internet Access privileges, or you may not be allowed to connect to the named realm. Check with your manager.

*Next Steps:*

...Save the VTSX Connection Information - Save a shortcut link on your desktop.

*Related Information:*

...VTScada Internet Server Error Messages - Reference.

...Syntax of Internet Client Requests - Connection syntax for advanced options.

...Connect Using the Anywhere Client - For almost any platform.

...Connect to the VIC Using a Browser - Using Internet Explorer.

...Connect Using a Mobile Device - Using a tablet or smart phone.

## Save the VTSX Connection Information

To simplify the process of making future connections to a VTS/IS, you can save the connection information as a shortcut. After filling in the connection information fields of the VTScada Server Login dialog, click the "Save As..." button.


A shortcut (.lnk) file will be saved to your computer. This will be saved in your "My Documents" folder by default, but you may use the browse button to select a preferred location, such as the desktop.
Double-click on the shortcut to re-open the VTScada Server Login dialog, pre-configured with the saved information

### Security Notes for Saved Passwords

If you choose to save the password for your account in the shortcut file, then anyone who has access to your Windows account on this computer may access the application.

Passwords are saved using the standard Windows™ password caching policy. Under this policy, saved passwords are protected by the user authentication credentials for the Windows user account. That is, once a user has logged in to a workstation, any passwords saved for that user on that workstation are automatically filled in for dialog boxes requiring them. Password theft is mitigated by encrypting the stored passwords using a key unique to that user and that workstation. Any other user on that workstation cannot use saved passwords for another user on that workstation and cached encrypted passwords cannot be transferred to another workstation.

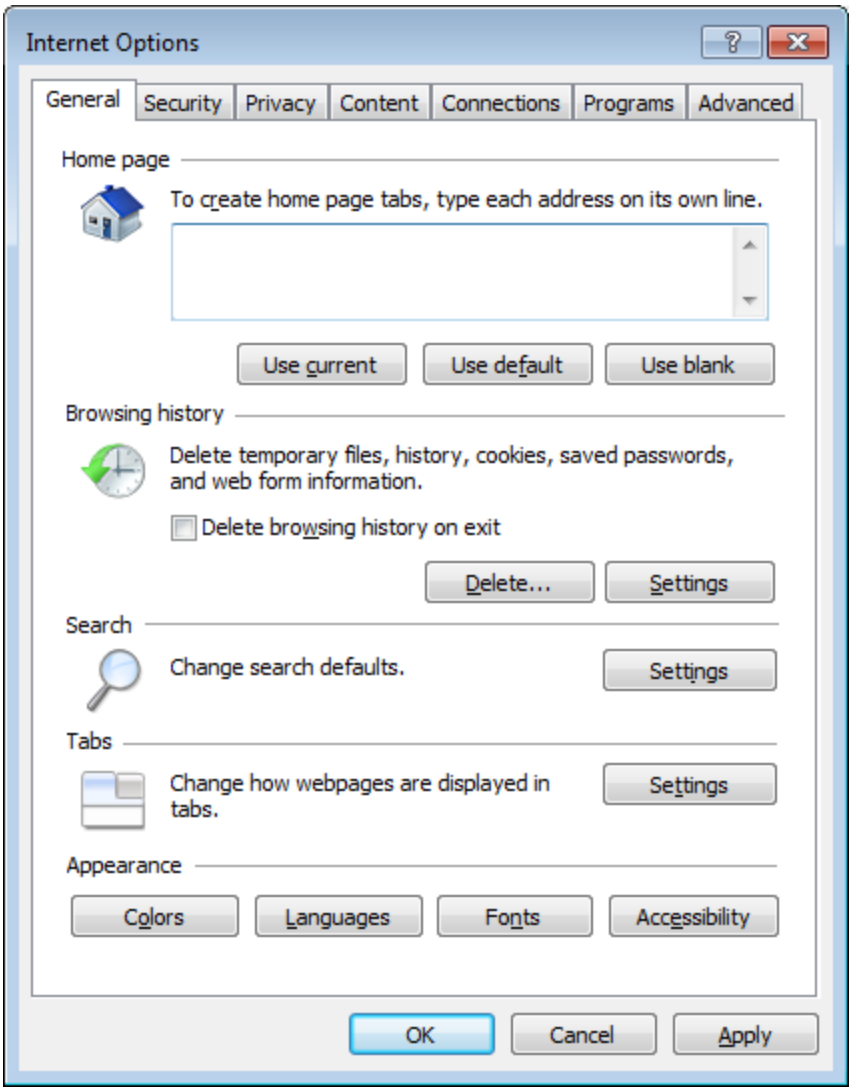
## Uninstall the ActiveX Component

If you have installed the stand-alone VTSX program, there will be an Uninstall utility in the program folder. For example, "C:\Program Files\Trihedral\UNINSTAL.EXE". Run this program to uninstall the VTSX program. This removes only the VTSX ActiveX control, not the VTScada program if that is also installed on the computer.

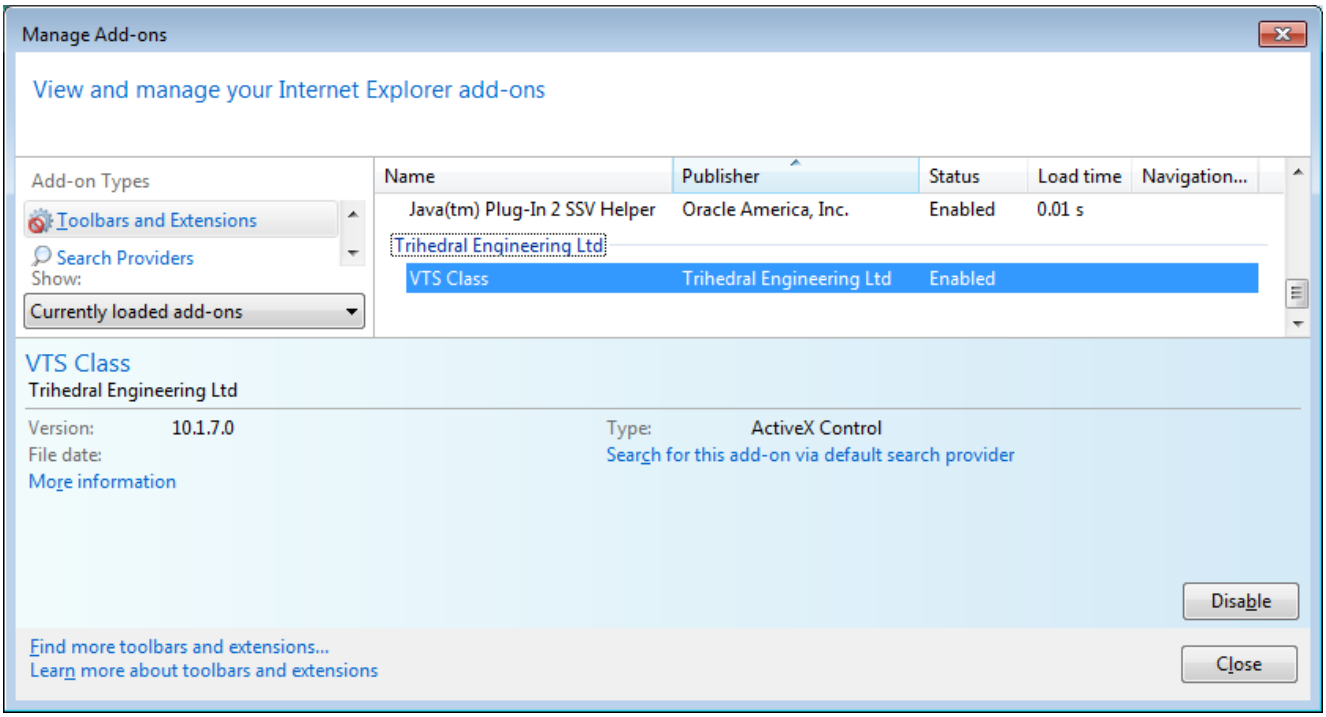
If using Internet Explorer™, the process is somewhat more complicated. The Microsoft Internet Explorer Component Download does not provide automated support for uninstalling ActiveX components. To completely remove the ActiveX component from a VIC:

(Instructions and screens may vary by Windows™ version.)

1. In Microsoft Internet Explorer, click "Tools" in the menu, and choose "Internet Options".




2. Open the "Programs" tab.
3. Click the Manage Add-ons button.
4. Select the VTScada Class add-on from the list.




5. Click the Disable button in the lower right of the dialog.
6. Close the dialogs, applying your changes.

# Index