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Throughout this manual we use the following notes to make you aware of safety considerations:

**WARNING**

Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

**IMPORTANT**

Identifies information that is critical for successful application and understanding of the product.

**ATTENTION**

Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you:

• identify a hazard
• avoid a hazard
• recognize the consequence

**SHOCK HAZARD**

Labels may be located on or inside the drive to alert people that dangerous voltage may be present.

**BURN HAZARD**

Labels may be located on or inside the drive to alert people that surfaces may be dangerous temperatures.

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Before You Begin

How the lab is organized
This lab is organized into sections that contain a demo and how to showing off some of the features of PanelView™ Plus 7 Performance and FactoryTalk® View Machine Edition.

Who should complete this lab
Anyone who is new to FactoryTalk® View Machine Edition and PanelView Plus 7 to an experienced user.

Tools & prerequisites
To complete this lab you must use the following hardware and software:

- A Microsoft Windows® Server 2008, R2 Standard or higher 64-bit computer
- Ethernet connection between computer and PanelView™ Plus 7 terminal
- FactoryTalk® View Machine Edition Studio v9.00.00
- FactoryTalk® Services Platform 2.90
- RSLinx™ Enterprise v5.90
- RSLinx™ Classic v3.90
- Studio 5000™ Logix Designer v23.00
- SoftLogix 5800 v23.00
- Microsoft Excel® 2013 or newer
- PanelView™ Plus 7 terminal with FactoryTalk® View Machine Edition Station v9.00 and OS v2.50
- Microsoft SQL Server 2012
- FactoryTalk® AssetCentre Server v7.00
- FactoryTalk® AssetCentre Client v7.00

Lab Instructions
Once the lab VM image starts up, it will run a batch file. The batch file copies a PanelView backup file from the SD card of the PanelView Plus 7 terminal to the internal flash of the PanelView Plus 7 terminal. This process restores the backup file and resets the configuration of the terminal for the next lab session. The Command window will close once the backup restoration has been completed – DO NOT close this window manually.

The Demo sections of the lab are instructor led. In order to show the PanelView Plus 7’s screen on the projector, use the TightVNC viewer. Click on the Start menu from within the lab VM image and select TightVNC Viewer. Type the IP Address of the terminal, 192.168.1.20, and click connect.

The Runtime User Management section of the lab demonstrates the use of a RFID card and reader. The RFID reader is attached to the back of the PanelView Plus 7 terminal. RFID cards are provided and can be found in the storage cart for the PanelView Plus 7 terminals.
Document conventions

Throughout this workbook, we have used the following conventions to help guide you through the lab materials.

<table>
<thead>
<tr>
<th>This style or symbol:</th>
<th>Indicates:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Words shown in bold italics (e.g., RSLogix 5000 or OK)</td>
<td>Any item or button that you must select, click on, or a menu name from which you must choose an option or command. This will be an actual name of an item that you see on your screen or in an example.</td>
</tr>
<tr>
<td>Words shown in bold (e.g., Communication Setup)</td>
<td>This is the name of an item that you see on your screen or in an example.</td>
</tr>
<tr>
<td>Words shown underlined and bold (e.g., Controller1)</td>
<td>An entry that you must type in the specified field. This is information that you must supply based on your application (e.g., a variable). <strong>Note:</strong> When you type the text in the field, remember that you do not need to type the quotes; simply type the words that are contained within them (e.g., Controller1).</td>
</tr>
<tr>
<td>This is sample text.</td>
<td>Text that appears inside of a gray box is supplemental information regarding the lab materials or learning goals; the information is not required for you to complete the lab exercises. The supplemental text may provide you with helpful hints that can make it easier for you to use this product.</td>
</tr>
</tbody>
</table>

**Note:** If the mouse button is not specified in the text, you should click on the left mouse button.

FactoryTalk® View Machine Edition

FactoryTalk® View Machine Edition (ME) is a machine-level HMI product that supports both open and dedicated operator interface solutions for monitoring and controlling individual machines or small processes. It provides a consistent operator interface across multiple platforms, including Microsoft® Windows® CE and Microsoft® Windows® 7 and newer solutions.

FactoryTalk® View Machine Edition contains two components:

- **FactoryTalk® View Studio** - This is the development environment containing the tools you need for creating all aspects of a human-machine interface (HMI), including graphic displays, trends, alarm reporting and real-time animation. It also provides tools for testing individual displays and entire applications. When development is completed, a run-time (.MER file) file is created to run on a PanelView™ Plus or personal computer.

- **FactoryTalk® View Machine Edition Station** - This is the run-time environment. FactoryTalk® View Machine Edition Station executes the run-time (.MER file) application. FactoryTalk® View Machine Edition Station is embedded in PanelView™ Plus terminals. Run-time applications may also be executed on a personal computer. Executing run-time applications on a personal computer requires additional software licenses.
PanelView™ Plus 7

The PanelView™ Plus are operator interface terminals designed to optimize system development, performance, and efficiency. The PanelView™ Plus 7 line of terminals is the latest addition to Rockwell Automation’s versatile family of Allen-Bradley PanelView™ operator interface displays for machine level operator terminal applications in industrial environments.

The PanelView™ Plus 7 line extends the portfolio with increased display resolutions while still supporting a known design environment – FactoryTalk® View Machine Edition. Please reference the following tables for more information regarding the PanelView™ Plus 7 Performance and the entire PanelView™ Plus 7 family.
Pre-configuration of the Lab

You will need to perform these steps before starting the lab.

1. Launch **FactoryTalk View Studio** from the **Start** menu.

2. Select the **Partial_CookieDemo_Oven_12W** project from the list and click **Open**.
3. Turn to the PanelView Plus 7 terminal and make sure the Cookie Demo application is running.

The PanelView terminal is configured to run this application at startup.
New – Accessing Logix Extended Properties

New in FactoryTalk View Machine Edition 9.0 is support for the Extended Properties in Logix. Tags can now be assigned in the Machine Edition application that specify these extended properties. The extended property values can be changed in the Logix editor and the Machine Edition application is automatically updated. There is no need to rebuild the Machine Edition application.

The benefits of using the extended properties is that you don’t need additional HMI or Controller tags for these properties. Also, the data is only sent to the HMI on a change as opposed to a poll rate which reduces controller communications.

The following is a list of the Extended Properties:

- Min
- Max
- Engineering Unit
- State 0
- State 1
- Name
- Description

Demo

We will see how some of the Extended Properties have been used on the 07 Misc display. It contains 3 different types of Extended Properties:

Description
Min/Max
State 0 & 1
1. On the PanelView Plus 7 terminal, click on the **Miscellaneous** icon from the **01 Main** display.

The **07 Misc** display is showing 4 different types of Extended Properties – **Description**, **Engineering Unit**, **Min & Max**, and **State 0 & State 1**. These are properties that reside in the controller.
2. Click on the *Language Switch* icon.

![Language Switch Icon]

3. Select the flag for *Mexico*.

![Flag Selection Window]

Notice that the *Description, Engineering Units, and cookie type* changed from English text to Spanish text.

**Extended Properties**

*Description and Engineering Units*

- Zona 1 Detalles Horno 253.7°C
- Zona 2 Detalles Horno 265.0°C

*Min and Max*

- Quantity of cookies to bake: 0
- Quantity of cookies to bake minimum: 10
- Quantity of cookies to bake maximum: 999

*State 0 and State 1*

- Hard or Soft cookie type: Suave

![Cookie Type Selector]
4. Change the language back to *English* by selecting the *English* flag.

5. Close the **08 Languages** display by clicking the **X**.

6. Click the **Multi-State pushbutton** a couple of times and notice the cookie type change from **Hard** to **Soft** or vice versa depending on the state.
7. Now turn to the lab PC and launch **Studio 5000** from the **Start** menu.

8. Select the **CookieLine** ladder file from the **Studio 5000** splash screen. Note, make sure to select the Logix file – has the gears icon in front of the file name.
9. Select **Communications** and then select **Go Online**.

10. Click **Upload**.

11. If prompted to save the file before uploading, select **No**.

The process of uploading the ladder file will begin shortly.
12. Once the upload completes, make sure the controller is back in **Run** mode.

13. Expand **Tasks->MainTask->Oven** and double click the **Program Tags** folder.

14. Browse for **mRecipeTargetProcedure**.

15. Expand it and then expand **mRecipeTargetProcedure[4]**.
16. Select `mRecipeTargetProcedure[4].Qty`.

17. On the right, find the **Max** and **Min** fields in the **Properties** window, under the **Data** category. Notice the value **999** for the **Max** and the value **10** for the **Min**. This is what appears on the **07 Misc** display on the PanelView Plus 7 terminal.

18. Let’s change the value for **Max** from **999** to **900** and press the **Enter** key.
19. Turn to the *PanelView Plus 7 terminal*. Notice, after a few seconds, that the value for the **Quantity of cookies to bake maximum** changed to **900**.

You have just seen a demonstration on Extended Properties. The demo showed that the Extended Properties reside in the PLC and that they support language switching. The next section will show how this demo was configured.
How To
This section will show how to specify an extended property, how to enable the extended properties in the PLC, and explain how to incorporate language switching.

1. In FactoryTalk View Studio, open the 07 Misc display.

2. Right click on a blank area of the display and select Object Explorer.

3. Expand Group 17 and select Group 8.
4. Expand **Group 8** and double click **MultistateIndicator1**.

![Object Explorer]

5. Click on the **Connections** tab.

6. Click on the **Expression editor** button.

![Multistate Indicator Properties]

Notice the controller tag, `{::[Cookie_Demo]Program:Oven.mRecipeTargetProcedure[4].Soft}`, is assigned. State 0 and State 1 of this tag are shown on the **07 Misc** display.

![Expression Editor]

7. Click **Cancel** to close the Expression editor.

Next, we will assign the **State0** Extended Property for this tag.
8. Click on the **States** tab and select **State 0**.

9. Click **Insert Variable** and select **String**.

10. Click the **Tag browser** button.
11. Expand **Cookie_Demo**, **Online**, and **Program:Oven** folders.

12. Underneath the **Program:Oven** folder, find and expand **mRecipeTargetProcedure**.


<table>
<thead>
<tr>
<th>Name</th>
<th>Access Rights</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qty</td>
<td>ReadWrite</td>
<td></td>
</tr>
<tr>
<td>Soft</td>
<td>ReadWrite</td>
<td></td>
</tr>
<tr>
<td>Temp1</td>
<td>ReadWrite</td>
<td></td>
</tr>
<tr>
<td>Temp2</td>
<td>ReadWrite</td>
<td></td>
</tr>
<tr>
<td>Temp3</td>
<td>ReadWrite</td>
<td></td>
</tr>
</tbody>
</table>

15. The **Selected Tag** should appear as shown below. Click **OK**.

16. Add _@State0_ to the end of the tag, inside of the curly bracket.

17. Click **OK**.
The **State0** Extended Property has been added to the tag. When **State 0** is selected during runtime, whatever text is entered for the Extended Property will be displayed.

18. Click **OK**.

19. Using Object Explorer, expand **Group 6**.

20. Expand **Group 16**.
21. Double click *NumericDisplay10*.

![Object Explorer with Group 17 and NumericDisplay10 selected]

22. Click the *Connections* tab and then click the *Expression Editor* button.

![Expression Editor with expression: `@[Cookie_Demo]Program:Over.mRecipeTargetProc4 Qty.@max`]

Notice the `.@max` at the end of the tag. This Numeric Display object will display the value entered for the *Max* Extended Property for this tag.

23. Click *Cancel* twice.

24. Using *Object Explorer*, select and expand *Group 7*.

![Object Explorer with Group 17 and Group 7 selected]
25. Expand **Group 15**.

26. Find and double click **Text9**.

27. Click on the embedded string variable in the **Text** field.

Notice the `.@EngineeringUnit` at the end of the tag. The string variable will display whatever text has been entered for this Extended Property.

28. Click **Cancel**.

29. Using **Object Explorer**, find and double click **Text7**.
30. Click on the embedded string variable in the **Text** field.

![Text Properties](image)

Notice the **@Description** at the end of the tag. The string variable will display whatever text has been entered for this Extended Property.

31. Click **Cancel** and close **Object Explorer**.

We have just seen how to configure the HMI application to use the State0, State1, Engineering Unit, and Description Extended Properties. We will now see how the Extended Properties are applied in the ladder file.

1. Now go back into **Studio 5000** which was left open from the **Demo** section.

2. Expand **Tasks->MainTask->Oven** and double click the **Program Tags** folder.

3. Browse for the **mOvenUDT** User Defined Data type and expand it.

4. Select **mOvenUDT[0]**.
5. On the right, find the **Description** field in the **Properties** window, under the **General** category. Notice the text **Zone 1 Oven Details**. This is what appears on the **07 Misc** display during runtime.

6. Expand **mOvenUDT[0]** and select **mOvenUDT[0].TempZone**.

7. On the right, find **Extended Properties** and click the down arrow.

Notice that **Engineering Unit**, **Max** and **Min** have been selected. These need to be selected in order to include them in the ladder file and be able to access them in the HMI application.
8. Find *Engineering Unit* under the **Data** category. Notice the letter **F** has been entered to indicate Fahrenheit.

<table>
<thead>
<tr>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
</tr>
<tr>
<td>Name</td>
</tr>
<tr>
<td>Description</td>
</tr>
<tr>
<td>Usage</td>
</tr>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Alias For</td>
</tr>
<tr>
<td>Base Tag</td>
</tr>
<tr>
<td>Data Type</td>
</tr>
<tr>
<td>Scope</td>
</tr>
<tr>
<td>External Access</td>
</tr>
<tr>
<td>Style</td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>Required</td>
</tr>
<tr>
<td>Visible</td>
</tr>
</tbody>
</table>

9. Browse for **mRecipeTargetProcedure**.


12. On the right, find **Extended Properties** and click on the down arrow.

Notice that `State0` and `State1` have been selected. These need to be selected in order to include them in the ladder file and be able to access them in the HMI application.
13. Find the **State0** and **State1** fields in the **Properties** window, under the **Data** category. Notice the text **Hard** for **State0** and the text **Soft** for **State1**. This is what appears on the **07 Misc** display during runtime.

14. Close **Studio 5000** and do not save any changes.

15. Close the **07 Misc** display and **Save** your changes.
Localize the PLC File

This section illustrates how different languages can be incorporated into the ladder file in order to perform language switching on the Extended Properties. Note: these steps have been performed for you in Studio 5000 and are shown here for your reference.

1. Under the Tools menu, there is a Documentation Languages option. This option provides the ability to localize the PLC file.

2. The first step is to associate existing project documentation to a language.
3. Next, is the option to specify a default language. This is the language that will be used when no translated text is specified for a specific language. Then the export process is started by selecting Export.

4. At this point the languages are selected for localization. In our application the following languages were selected:

   - English (United States)
   - French (France)
   - German (Germany)
   - Italian (Italy)
   - Spanish (Mexico)
5. Next, the content of the language export file is specified.

![Configure Content]

- **Configure Content**
  Choose content to include in the localization file.

- **Populate The Localization File With:**
  - All Project Documentation
  - Only Documentation That Has Not Been Fully Localized
  - Only Documentation That Has Changed Since The Last Export

- **Include Project Context**
  Additional columns are added to the localization file designating the type and location of each piece of project documentation when "Include Project Context" is selected.

- **Include Component Names That Have Undocumented Descriptions**

6. Finally, the name and location of the language export file is specified.

![Create Localization File]

- **Create Localization File**
  Specify the name and location of the exported localization file.

- **Localization File Name:**
  `toolcline_en-US.txt`

- **Location:**
  `C:\Users\Labuser\Documents\Studio 5000 Projects`
Below is an example of what the Language file looks like when it is opened in Microsoft Excel.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>English</td>
<td>French</td>
<td>German</td>
<td>Italian</td>
</tr>
<tr>
<td>2</td>
<td>en-US</td>
<td>fr-FR</td>
<td>de-DE</td>
<td>it-IT</td>
</tr>
<tr>
<td>3</td>
<td>KEY:en-US [English (United States)]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.0 -Trigger Transaction Data Valid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>KEY:fr-FR [Français (France)]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0.0 -Trigger Transaction Data Valid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>KEY:de-DE [Deutsch (Deutschland)]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>0.0 -Trigger Transaction Data Valid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>KEY:it-IT [Italiano (Italia)]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>0.0 -Trigger Transaction Data Valid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>KEY:es-MX [español (México)]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This is the KEY section and contains the language code for each language that was selected to be translated.

This is the English text for the items that are shown on the 07 Misc display during runtime.

<table>
<thead>
<tr>
<th>Line</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1910</td>
<td>Oven.mOvenUDT[0] Zone 1 Oven Details</td>
</tr>
<tr>
<td>1911</td>
<td>Oven.mOvenUDT[0].TempZone.@EngineeringUnit F</td>
</tr>
<tr>
<td>1912</td>
<td>Oven.mOvenUDT[1] Zone 2 Oven Details</td>
</tr>
<tr>
<td>1913</td>
<td>Oven.mOvenUDT[1].TempZone.@EngineeringUnit F</td>
</tr>
<tr>
<td>1914</td>
<td>Oven.mPerMixGas Gas Usage per Mix</td>
</tr>
<tr>
<td>1915</td>
<td>Oven.mPerMixGas_KWh Gas Usage per Mix Converted to KWh</td>
</tr>
<tr>
<td>1916</td>
<td>Oven.mRecipeActualProcedure Actual Oven Procedure</td>
</tr>
<tr>
<td>1917</td>
<td>Oven.mRecipeTargetProcedure Target Oven Procedure Recipe</td>
</tr>
<tr>
<td>1918</td>
<td>Oven.mRecipeTargetProcedure[4].Soft.@State0 Hard</td>
</tr>
<tr>
<td>1919</td>
<td>Oven.mRecipeTargetProcedure[4].Soft.@State1 Soft</td>
</tr>
</tbody>
</table>

This is the translated text for those same items. Each translation is entered under the appropriate language code header found in the KEY section.

Once the translations are complete, the text file is imported back into the PLC file. The file is then downloaded to the PLC.

You have seen how to specify the Extended Properties in an HMI application, how to enable them in the PLC file, and how to localize the PLC file.
Runtime User Management

This section demonstrates how application security can be managed at the terminal. This capability was introduced in FactoryTalk® View version 8.0. Prior to this capability, anytime a FactoryTalk® Security user was added or deleted, or the password needed to be changed for an account, the change was done offline, using View Studio. Then a new runtime file was generated and redeployed. This caused unnecessary downtime.

Additionally, this section demonstrates how a RFID reader can be used to log into the application. The reader has single sign-on capability so that the operator can log into the application with a single swipe of the card. The RFID reader saves time and eliminates frustration when logging into the HMI application because the operators no longer need to type in their user names and passwords.

The RFID reader used in this lab is from a company called RFIDeas.

Demo

Create a RFID User Account and Log into the Application using the RFID reader

1. From the 01 Main display on the PanelView™ Plus 7 terminal, click the Login icon in the title bar.
   Login using the Supervisor account:
   User name: supervisor
   Password: pvp7
   The Logout icon will appear and SUPERVISOR will display as the current logged in user.

2. Click on the User Administration icon to bring up the 04 User Management display.

3. Swipe the RFID card across the reader. The RFID user account is now added to FactoryTalk® Security.
Next we need to add the individual user account to an existing group that is part of the configured runtime security. Our application uses the following groups for runtime security:

- Operators
- Supervisors

4. Click the **Modify Group Membership** icon.

5. Click **Select User/Group**, select the RFID user account you just added (users **ADMIN**, **OPERATOR**, and **SUPERVISOR** were created offline), and click **Select [Enter]**. **Note:** your RFID user account will be unique.
6. Click **FactoryTalk Group** and select the **Operators** group.

7. Click **Add to Group**.

The **Result** text field should indicate that your RFID card user was added to the **Operators** group.

Result: **Added user '43101' to user group 'Operators'**.
8. Click *Cancel* to close the pop-up display.

9. Click the X to close the **04 User Management** display.

10. Click the *Logout* icon in the title bar to log **SUPERVISOR** out of the application.

11. Swipe the RFID card.

   The *Logout* icon should reappear and the RFID user should display as the current logged in user.

12. Click the *Logout* icon to log out of the application.
Reset a Password

1. Click the **Login** icon and login again with the Supervisor account.
   
   **User name:** supervisor  
   **Password:** pvp7

2. Click the **User Administration** icon to bring up the User Management popup.

3. Click the **Change User Password** icon.

4. Click **Select User**, select **OPERATOR**, and then click **Select**.

   ![Change User Password](image)

   **Note:** the **Change User Password** feature could also be configured to only change the current logged in user's password.
5. Click **New Password** and enter **123**.

6. Click **Confirm Password** and enter **123**.

7. Finally, click **Change Password**.

The **Result**: text box should indicate that the password was changed.

8. Click **Cancel** to close the pop-up display.

9. Click the **X** to close the **04 User Management** display.

10. Click the **Logout** icon to log out of the application.

11. Click the **Login** icon and log in using the Operator account.
    
    User name: **operator**
    
    Password: **pvp7**
Notice that the original Operator account has changed and that you are unable to login.

12. This time login using the following information:
   
   User name: **operator**
   
   Password: **123**
   
   You should now be successfully logged in as **OPERATOR**.

13. Click the **Logout** icon to log out of the application.

You have seen how easy it is to manage users during runtime and how a RFID reader can be used instead of having to manually enter the login information.
How To
This section will show how the demo was configured.

As of FactoryTalk® View 8.0 a new sub category called User Management was added to the Objects main category. This is where the new runtime user management objects have been added.
Assign Function Keys to User Management Buttons

In this section, we will assign function keys to the User Management buttons that are used by the RFID reader. The RFID reader sends these function keys, along with other data, everytime a RFID card is swiped. The function key assignments in the application will bring up the appropriate text entry fields.

1. In FactoryTalk View Studio, expand the Graphics folder and the Displays container. Double click the 04 User Management display to open it.

We used 4 new user management objects and Images were added to the objects instead of using text to describe their function.

- Add User/Group
- Delete User/Group
- Modify Group Membership
- Change User’s Password
2. Using **Object Explorer** (right click on the display), expand **Group7** and double click **PasswordButton4**.

There is an additional configuration option called **Mode**. This option allows either just the current logged in user to change their own password or an Administrator (an account with Administrators group membership) to change any user password. The demo was configured to change any user password.
3. Close the **Password Button Properties** window.

4. Using **Object Explorer**, find **AddUserGroupButton1**.

5. Right click **AddUserGroupButton1**, and select **Key Assignments**...
6. Select **12 – F12** from the **Select a key assignment** drop down list, and click **OK**.

This key assignment will cause the Add User/Group popup to come up and therefore accept the key strokes that are sent by the RFID reader. This adds the user to FactoryTalk Security.

7. Close the **04 User Management** display and **Save** your changes.

8. Open the **01 Main** display by double clicking it.

![Object Explorer screenshot]

10. Right click *LoginButton1*, and select **Key Assignments...**

![Object Explorer with Key Assignments]

11. Select **11 – F11** from the **Select a key assignment** drop down list, and click **OK**.

![Key Assignment Properties]

This key assignment will cause the Login popup to come up and therefore accept the key strokes that are sent by the RFID reader.
12. Close the **Main** display, and **Save** the changes when prompted.

The key assignments that were just made are what the RFID reader passes along with other keys and text to allow the addition of the RFID user ID and the single sign on login. See the next couple of sections for information on the User Management objects as well as the full string that the RFID reader passes to the FactoryTalk View Machine Edition application.
New User Management objects

- Add User/Group - use this button to add a FactoryTalk® Security user, Windows-linked user, or Windows-linked group to the running application.
- Delete User/Group - use this button to delete a FactoryTalk® Security user, Windows-linked user, or Windows-linked group from the running application.
- Modify Group Membership - use this button to add or remove a FactoryTalk® Security user, Windows-linked user, or a Windows-linked group to or from a FactoryTalk® Group.
- Unlock User - use this button to unlock a FactoryTalk® user account that has been locked.
- Enable User - use this button to enable a disabled FactoryTalk® user account.
- Disable User - use this button to disable a FactoryTalk® user account.

In addition, the Login button configuration has been changed to include the ability to make the domain name visible in the login window at runtime.

Tips:

- The DEFAULT user cannot use these new User Management buttons.
- Only FactoryTalk® Security and Windows-linked users and groups can be managed using these buttons.
- Important: Users and Groups added at runtime will not have any security codes configured until they are added to pre-existing Groups that have been configured with access codes.
- Removing a Windows-linked user or group at runtime will not remove the user from the Active Directory. This action will only remove the user or group from the application.
- You can’t manage a Windows-linked account from the runtime such as change password, disable the account, etc. This is done within Active Directory.

- When adding a Windows-linked user or group to an application on a PanelView™ Plus 6 or PanelView™ Plus 7 terminal, user will be prompted to enter an authorized user name and password. The user will then have a 5 minute window during which Windows-linked users or groups can be successfully added. When 5 minutes has passed, the user will be asked to log in again.

- Any changes made to users and groups during runtime are contained within the runtime file. It is highly suggested that the runtime file be transferred and restored on a computer with FactoryTalk® View Studio in order to be retained and maintained.

- It is recommended that access to these buttons be limited in the application to reduce unplanned modifications.

- Text on the above management windows will be included in string exports for Language Switching purposes.

This information is contained in AID 613707.

These new runtime management objects allow security –adding new users, deleting users, changing passwords, etc. - to be changed at the terminal, during runtime. You no longer have to go back to the HMI project file, make the changes there, create a new runtime file, and then redeploy the new runtime file. However, if you want to apply the user account changes you make at the terminal to other terminals, you will need to upload the runtime file and restore the application.
How the RFID Card Reader Works

The RFID reader acts like a keyboard and passes its data to text entry fields. The Login and User Management popups in the application provide these text entry fields. The reader is configured to send Function Keys that are part of a custom string. The F11 key is assigned to the Login button in the Machine Edition application. The F12 key is assigned to the Add User button in the Machine Edition application – this button performs the FactoryTalk® Security enrollment function.

RFIDeas is an Encompass partner and they offer RFID reader catalog numbers that are specific to Rockwell Automation. The following functions are performed by the Rockwell Automation reader: Single Factor Logon, Two-Factor Logon, and Enrollment (adding the RFID user to FactoryTalk® Security during runtime). All you have to do is assign the appropriate function keys in your application – F10, F11, or F12.

Every time the RFID card is swiped, the reader sends the following:

F12
F3
<user id>
Enter
F4
<password>
Enter
F5
<password>
Enter
Enter
Esc
F11
F2
<user id>
Enter
F3
<password>
Enter
Enter
F10
F2
<user id>
Enter
F3

So, depending on which display has focus and which function key is assigned (F10, F11, or F12) will launch the appropriate text entry popups. See AID 677180 for part number and configuration information.
Using Electronic Signature to authorize changes

This section illustrates a feature that was introduced with FactoryTalk® View Machine Edition 8.20 called E-signature. This feature provides the ability to authorize certain actions during runtime and to capture who initiated the action and who authorized the action, if authorization was enabled. The next section on auditing will show how we can capture an audit log. The following objects support E-signature:

- **Advanced:**
  - Control List Selector
  - Goto Configure Mode button
  - Macro button
  - Piloted Control List Selector
  - Shutdown button

- **Alarm:**
  - Acknowledge Alarm button
  - Acknowledge All Alarms button
  - Clear Alarm History button
  - Reset Alarm Status button

- **Numeric and String:**
  - Numeric Input Cursor Point
  - Numeric Input Enable
  - String Input Enable

- **Push Button:**
  - Interlocked Push button
  - Latched Push button
  - Maintained Push button
  - Multistate Push button
  - Ramp button

- **User Management:**
  - Add User/Group button
  - Delete User/Group button
  - Modify Group Membership button
  - Unlock User button
  - Enable User button
  - Disable User button
  - Password button
  - Change User Properties button

- **RecipePlus**
  - RecipePlus buttons
Demo

Capture Audit Messages using Electronic Signature

Let’s perform some E-Signature actions on the PanelView™ Plus terminal and then view the audit log in FactoryTalk® AssetCentre Client.

1. On the PanelView Plus 7 terminal, click the Recipe icon to navigate to the 05 Recipe display.

2. Click the Display Recipe button to load the Butter recipe file.

![Select Recipe]

The Selected Recipe should indicate Butter and the numeric displays should have values.

![Selected Recipe]

Selected Recipe: BUTTER

QTY: 48
Zone 1 Temp: 276
Zone 2 Temp: 325
3. Click the Numeric display for QTY. There is a transparent Numeric Input Enable button on top.

![Selected Recipe: BUTTER](image)

- Notice the popup message.

![Action Not Allowed](image)

- DEFAULT user cannot perform the action.
  You must login.

4. Click OK to close the popup display.

5. Click the Login icon and log in using the Operator account.
   
   User name: operator
   
   Password: pvp7 or 123 if the password reset was performed in the Runtime User Management lab section.
6. Click on the Numeric display for **QTY** again. Now you are able change the quantity.

7. Change the quantity from **48** to **50** using the soft numeric keypad and click the **Enter** key.

![Numeric Display](image)

An **Electronic Signature** popup display appears.

8. Click **Accept**.
Notice in the **Result** field that a comment must be entered. This is because we did not check the option to allow a blank comment.

9. Enter the following comment by clicking the **Comment** button and using the onscreen keyboard.

   **Changed the quantity for the Butter recipe**

10. Click **Accept**.

    Notice now that the value for the **QTY** has changed to **50**.
11. Click the **Download to PLC** button.

Notice that another Electronic Signature popup has appeared. This time there is an additional step required before the action is performed. The password for the **OPERATOR** account must be entered.

![Electronic Signature popup](Image)

12. Perform the following steps.
   - Enter **pvp7** or **123** for the **Password**
   - Enter **downloaded the Butter recipe** for the **Comment**
   - Click **Accept**.

Notice that the **Running Recipe** should indicate **Butter** and that the **QTY** is **50**.
13. Click the **Save to CSV File** button.

Notice that another **Electronic Signature** popup has appeared. This time, in addition to the password, there is a **Counter Signatory** tab.

14. Enter the following:
   - Enter *pvp7* or **123** for the **Password**
   - Enter **increased the qty of the Butter recipe** for the **Comment**
   - Click **Accept**
Now you are automatically taken to the **Counter Signatory** tab.

![Electronic Signature Window](image)

15. Enter the following on the **Counter Signatory** tab:
   - Enter **supervisor** for the **Name**
   - Enter **pvp7** for the **Password**
   - Enter **approved the qty change for the Butter recipe** for the **Comment**
   - Click **Approve**

Now the **Recipe Status** should display **Save successful**.

![Select Recipe Window](image)
View the Audit Log in an AssetCentre Client

The audit log can presently only be viewed with FactoryTalk AssetCentre. Turn to the PC and follow the steps below to view the audit log.

1. Turn to the lab PC and launch the **AssetCentre Client** from the **Start** menu.

2. Click on **Logs**.

3. Then click on **Audit Log**.
Notice the **Electronic Signature** captures in the **Message** field.

4. Select the **Electronic Signature Action** entries for the recipe save function to view the log details.

   ![Log item details](image)

   **Logged at:** 8/30/2017 3:29:27 PM  
   **Location:** PVP20512  
   **Occurred at:** 8/30/2017 3:29:27 PM  
   **Username:** OPERATOR  
   **Source:** FactoryTalk View ME Station  
   **Resource:** <<Resource>>  
   **Attachments:** 0  
   **Message:**         
   **Electronic Signature Action: Proposed Execute the macro 'Save_Recipe', Approved by 'supervisor'. Comment: changed the qty of the Butter recipe**

   ![Log item details](image)

   **Logged at:** 8/30/2017 3:29:27 PM  
   **Location:** PVP20512  
   **Occurred at:** 8/30/2017 3:29:27 PM  
   **Username:** OPERATOR  
   **Source:** FactoryTalk View ME Station  
   **Resource:** <<Resource>>  
   **Attachments:** 0  
   **Message:**         
   **Electronic Signature Action: Proposed Execute the macro 'Save_Recipe', Approved by 'supervisor'. Comment: changed the qty of the Butter recipe**

Feel free to explore the other entries.

5. Close the **FactoryTalk AssetCentre Client** when finished.

FactoryTalk® AssetCentre provides you with a centralized tool for securing, managing, versioning, tracking and reporting automation related asset information across your entire facility. It can do this automatically, with limited additional management oversight or work from employees. FactoryTalk® AssetCentre can impact uptime, productivity, quality, employee safety or regulatory compliance to save time and money.

You have just seen the 3 different types of E-signature and the benefits each provide. You have also seen how to view the audit log within AssetCentre. The next section will show how the demo was configured.
How To

This section will show how to enable the three different types of E-Signature and how to configure the Remote log capability.

Enable E-signature on Supported Objects

Let's configure some objects for E-signature and explore the options within E-signature itself.

1. In FactoryTalk View Studio, double click the **05 Recipe** display to open it.

2. Using Object Explorer expand **Group1**.

3. Double click **NumericInputEnable1**.
4. Select the **E-signature** tab and check **Require Electronic Signature**. Click **OK**.

Once the operator selects a button with **Require Electronic Signature** applied, the operator will be prompted to enter a comment, unless **Allow blank comment** is checked, and to accept the requested action. If accepted, the requested action will occur.

5. Double click **MacroButton1**.

6. Select the **E-signature** tab and check both **Require Electronic Signature** and **Require re-authentication**. Click **OK**.

When the operator selects a button with both **Require Electronic Signature** and **Require re-authentication** checked, the operator will need to enter his password. Then the operator will need to enter a comment, unless **Allow blank comment** is checked, and to accept the requested action. Once these have been successfully completed, the requested action will occur.
7. Double click **MacroButton2** to open its Properties.

8. Select the **E-signature** tab and check both **Require Electronic Signature** and **Require re-authentication**.

9. In addition, check **Require counter signature** and select **Supervisors** from the **Authorized Group** drop down. Click **OK**.

When the operator selects a button with **Require Electronic Signature**, **Require re-authentication**, and **Require counter signature** all checked, first the operator will need to enter his password. Then the operator will need to enter a comment, unless Allow blank comment is checked, and to accept the requested action. Then a prompt for a password from a user that is a member of the specified **Authorized Group** will appear. This authorized user has the option to accept or reject the requested action. If the authorized user accepts the requested action, then the action will occur.

10. Close the **05 Recipe** display and **Save** the changes.
PanelView™ Plus Auditing Capabilities

While most FactoryTalk® software components require the FactoryTalk® AssetCentre client to collect audit messages, it is not possible to install this client component on a PanelView™ Plus. Fortunately, the PanelView Plus™ can be configured to send its audit messages to a remote FactoryTalk® computer, which can then collect the audit messages and forward them on to the FactoryTalk® AssetCentre server. The FactoryTalk® computer is also capable of forwarding the PanelView™ Plus’ events, in addition to the audit messages.

AID 58977 contains more information on sending audit messages from a PanelView™ Plus terminal.

Configure FactoryTalk® Diagnostics on the PC to accept Remote Logging

Note: the following steps were performed for you and are shown here for reference.

1. The FactoryTalk Administration Console was launched.

2. The Local FactoryTalk® Directory was selected.
3. The **FactoryTalk Diagnostics Setup** was launched

4. On the **Destination Setup** property, the option **Enable this computer to receive messages broadcast from Windows CE devices or MobileView** was checked. The default port number of 4445 was left unchanged.

5. On the **Message Routing>Secured** property, the option **Accept messages from Windows CE devices or MobileView** was checked as well as the **Secure** and **Audit** options shown.
1. **Terminal Settings** was selected.

   Current application:

   ![Terminal Settings Selection](image)

   Device: PVP20244
   IP Addr: 192.168.1.20
   Subnet: 255.255.255.0

2. **Diagnostics Setup** was selected.

   ![Diagnostics Setup Selection](image)

   [Close [F8]]
3. Then the **Remote Log** property was chosen.

4. IP address **192.168.1.1** was entered for the Address property. The default port number of **4445** was left unchanged. This is the IP address of the PC that will accept the remote messages from the PanelView™ Plus terminal. This PC is also the FactoryTalk® AssetCentre Client.
5. Next, **Message Routing** was chosen.

![Diagram of Message Routing selection](image1.jpg)

6. Then, **Remote Log** was chosen.

![Diagram of Remote Log selection](image2.jpg)
This section explored the 3 options available with Electronic Signature and the types of audit information they provide. Presently, there is no means to store the audit log locally on the PanelView Plus terminal. Therefore, the audit information is written to a remote PC during runtime. The audit information is then viewed within FactoryTalk AssetCentre.
Exploring Design Time Improvements

This lab section illustrates two features that were introduced with FactoryTalk® View 8.20 – language switching during application development and a visibility control feature that was added to the Object Explorer tool. These features help improve efficiency during application development.

Language Switching during Development

FactoryTalk View Machine Edition provides the ability to switch languages during runtime. Prior to v8.20, you would have to create a runtime file and deploy it to the PanelView™ Plus terminal in order to see how your language translations fit on a text object. This new feature allows you to switch between languages during application development so you can see how the translated text looks on your display, saving you development time.

The Spanish (Mexico) es-MX language was added to the application for you. The application strings were then translated using a web translation utility and imported back into the application. Note: the translated strings are a gist translation and may not have the appropriate meaning – they are for demonstration purposes only.
1. In FactoryTalk View Studio, open the 01 Main display by double clicking on it.

![Screenshot of FactoryTalk View Studio with a list of menu options including Graphics, Displays, [ALARM], [DIAGNOSTICS], [INFORMATION], 01 Main, 02 Chart, and 03 Alarm]

Notice the English text on the display.

2. Click the **Change Application Language** button on the toolbar or select **Application>Change Application Language**.

![Screenshot of FactoryTalk View Studio with a menu showing Application options including Test Application, Create Runtime Application, Change Application Language, and Application Properties]
3. Select *Spanish (Mexico), es-MX* using the drop down menu and click *OK*.

The display will close and then re-open. Notice that the text has changed to Spanish and you can see how the translated text looks on the display. Now, you can make adjustments to the text objects if any of the characters are cutoff prior to generating a runtime file.

4. Once you are finished examining the display, change the language back to *English* and leave the display open.
Object Explorer Visibility Feature

This feature provides the ability to only show certain objects on a display. This helps to more quickly and easily find and make changes to the objects.

1. Leave the 01 Main display open, right click on the display and select *Object Explorer*.

2. Scroll to the very top of the list and find *Display*. Uncheck the box.
Notice that all the objects have disappeared from the display.

3. Click the **Display** check box to make all the objects re-appear.
4. Now, let’s find Group 14 and expand it. This is the bar graph group.

Object Explorer does a good job on helping to find a specific group or item within a group. However, if there are a lot of objects on a display or within a group, it can be difficult to view them. The ability to display only a specific object would be beneficial.

5. Uncheck some of the checkboxes under Group14 to better see what objects make up the group.

6. Once you are finished exploring, go back to the top of the list and uncheck the Display checkbox again to remove all of the objects.

7. Close the 01 Main display and then reopen it.

Notice that you were not prompted to save the display and that all the objects are shown again. The Object Explorer visibility feature does not physically remove objects from the display.
Plot two or more Variables against each other using the Chart ActiveX

In this lab section you will learn about the Chart Control ActiveX. This ActiveX provides the ability to plot two or more variables against each other. The existing Trend object only provides the ability to plot against time. The Chart Control ActiveX uses two User Defined data Types - Chart and DataSeries - to contain the data and datasets used to draw the chart at runtime. AID 769049 contains more information about the ActiveX - the UDT’s needed, a sample application, and sample ladder file. Most of the information contained in the AID is shown in this lab section.

AID 772292 contains information and tips to obtain the best performance from the Chart Control ActiveX.

Demo

1. On the PanelView Plus 7 terminal, click the Chart icon to navigate to the 02 Chart display. Wait a few seconds for the chart to draw.

The left side shows the traditional trend objects that are plotting Temperature versus time. On the right are the Chart Control ActiveX objects that are plotting Temperature versus Humidity.
The Chart ActiveX has some diagnostic capabilities – it provides various error messages or error codes. The error messages can be displayed by assigning a string tag to the Error Message property in the ActiveX.

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Error Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No error</td>
</tr>
<tr>
<td>1000</td>
<td>Error, Visible element of all DataSeries is set to false (zero)</td>
</tr>
<tr>
<td>1001</td>
<td>Error, Visible element of DataSeries_FixedAxis is set to false (zero)</td>
</tr>
<tr>
<td>1002</td>
<td>Error, Visible element of DataSeries_1 through DataSeries_8 is set to false (zero)</td>
</tr>
<tr>
<td>1003</td>
<td>Error, NumberofDataPoints element is greater than 500</td>
</tr>
<tr>
<td>1010</td>
<td>Error, X-axis minimum value is greater than maximum value</td>
</tr>
<tr>
<td>1011</td>
<td>Error, Y-axis minimum value is greater than maximum value</td>
</tr>
<tr>
<td>1100</td>
<td>Warning, all data points in the DataSeries_N (N being the first data series number with the error) are greater than the X-axis maximum</td>
</tr>
<tr>
<td>1101</td>
<td>Warning, all data points in the DataSeries_N (N being the first data series number with the error) are less than the X-axis minimum</td>
</tr>
<tr>
<td>1102</td>
<td>Warning, all data points in the DataSeries_N (N being the first data series number with the error) are greater than the Y-axis maximum</td>
</tr>
<tr>
<td>1103</td>
<td>Warning, all data points in the DataSeries_N (N being the first data series number with the error) are less than the Y-axis minimum</td>
</tr>
</tbody>
</table>
How To

This section shows how the demo was configured.

1. In **FactoryTalk View Studio**, open the **02 Chart** display by double clicking on it.

2. Double click on the **untitled chart** to open its properties. This is the chart on the upper right.

![Chart Control Properties](image)

The Chart title can either be obtained from a tag or be assigned a literal string. The refresh rate of the Chart called **Redraw mode** can also be controlled by a tag or be assigned an automatic refresh rate. The Chart orientation can be fixed to either the X-axis (horizontal chart) or the Y-axis (vertical chart).
3. On the **General** tab, change the following options:
   a. Check the box for **Display Chart title**
   b. Click the radio button for **Fixed Value** and enter the text **Temperature vs. Humidity Zone 1**
   c. Change the Maximum tag update rate from 1 second to **10** seconds using the menu drop down.

The settings on the **General** tab should now appear as shown below

4. Click **Apply**.

We have specified a fixed Title for the chart as well as to update the tags assigned to the ActiveX every 10 seconds. The faster this update rate, the more system performance will be impacted. Set this update rate to the slowest rate needed for your application.
5. Select the **Pens** tab.

Here we can set various pen attributes such as color, line width, line style or to use a marker instead of a line.

When running the Chart Control ActiveX on a PanelView™ Plus terminal, only solid or dashed pen styles are supported.

6. Select the **X-Axis** tab.

The **X-Axis** tab defines the minimum and maximum values for the axis, the axis label, and the axis scale.
7. Select the **Y-Axis** tab.

![Image of Y-Axis tab settings](image)

The **Y-Axis** tab defines the minimum and maximum values for the axis, the axis label, and the axis scale.

8. Select the **Connections** tab and assign the tag `::{::Cookie_Demo]Program:Chart.Chart_Zone1}` to the **Data_Source** property per the steps below.

![Image of Connections tab settings](image)
9. Click **OK**. The tag assignment should appear as shown below.

10. Click **OK** again to apply the connection assignment.

11. Close the **02 Chart** display and **Save** the changes.
The ladder file was configured for you. The Chart and DataSeries UDT’s were imported into the file. These contain the properties that are used by the Chart Control ActiveX. A Program tag called Chart_Zone1 was created and assigned the Chart data type. This is the tag that was assigned to the Chart Control ActiveX’s Data Source. The Program tag Chart_Zone1.NumberOfDataPoints was assigned a value of 100. This value would be how many individual data points are contained in each data series. Each data series can contain a maximum of 500 points. However, to maintain optimal performance, it is recommended to not exceed a total number of 1000 data points. In this lab, four data series were used – DataSeries_FixedAxis, DataSeries_1, DataSeries_2, & DataSeries_3 - and each contained 100 points for a total of 400.

Additionally, to see the plot on the chart, each data series has a visibility tag that must be set to 1. The Visible element was set to 1 for all 4 data series in the lab.
The lab showed an example of plotting Temperature data against Humidity data. The example showed the actual plot versus a maximum and minimum. Humidity data was loaded into data series `DataSeries_FixedAxis`. The three sets of Temperature data were loaded into data series `DataSeries_1` through `DataSeries_3`. The FFL (FIFO Load) instruction was used to load the data.
Then using a CONTROL data type tag, once the data series was loaded with all 100 data points, the FIFO was reset.

You have seen how to configure the Chart Control ActiveX. You have also seen how to configure the ladder file and how to use the FFL instruction, Control.DN, and Control.POS to load the data to plot on the Chart Control ActiveX.
New - Advanced Alarm Topics

This section will show how an alarm filter can be used so that only the desired alarm events will be displayed at runtime. This section will also show how using an embedded variable in an alarm message can record current values at the time of an alarm event or other information that can change at runtime. Finally the new alarm identifier feature introduced with FactoryTalk View 9.0 will be used to show how more information can be viewed for a particular alarm.

Demo

Alarm Filter

1. On the PanelView Plus 7 terminal, click the Alarm icon to navigate to the 03 Alarm display.

The Alarm List display may have alarms that have already been triggered, similar to what you see above. The state of each alarm is dependent on the current values in the controller.
2. Click the **Alarm Low Low** button.

Notice the screen is displaying alarms that are pertaining to Low Low level alarms only.

3. Click the **RETURN** button to return to the **Alarm History** display.
4. Navigate to the other alarm list screens to explore any other active alarms, then return to the Alarm History display.

![Alarm Filter Buttons](image)

Note that filtering is working to display only those alarms specific to the alarm severity selected. Feel free to manage the alarms using the Ack Alarm, Ack All and Clear All buttons. Again, note that the Ack All and Clear All buttons apply only to each alarm list.

5. Click the Miscellaneous icon to navigate to the 07 Misc display.

6. Press and hold the Generate Fault button next to Bearing Fault until the alarm banner appears.

![Generate Alarms](image)

7. Close the alarm banner by clicking the Close button.

8. Press and hold the Generate Fault button next to Drive Fault until the alarm banner appears.
9. Close the alarm banner by clicking the **Close** button.

10. Click the **Alarm** icon to navigate to the **Alarm History** display.

Notice the numeric display in the lower right. This is the unique alarm identifier for that alarm message. Note: the **Alarm Identifier** value may be different than what is shown.

11. Navigate down the list by using the **Down** arrow until **Oven Drive Fault Alarm** is highlighted. Notice that the numeric display’s value changes as you navigate through the alarm messages. The unique alarm identifier for this alarm message is **101**. Also, notice that some text has appeared in the lower right corner of the display.

12. Click on the underlined text, **PowerFlex Troubleshooting Guide**, for at least 1 second. Note: there is no visual feedback of a press.

A PDF will launch after a few seconds. This is just a sample to show that a PDF with information about a particular alarm can be viewed. This is using a new feature in ME 9.0 called **Hyperlink Animation**. You will learn more about this in the How To section. In addition, the PDF can also be launched and opened to a specific page. See the PanelView Plus 7 user manual for more information on the available switches for the Foxit PDF reader.
13. Close the PDF reader by clicking the X.

14. Navigate down to the next alarm message. This time the Alarm Identifier is equal to 1. Notice that a button has appeared in the lower right corner of the display and the text has disappeared.

15. Press and hold the More Info button for at least 1 second. This time a popup display has appeared.

![Popup Display](image)

16. Close the pop up display by clicking the X.

You have seen how Alarm Filters can help an operator focus on a specific set of alarms and how embedded variables can capture the value of the tag being monitored when it goes into alarm. You have also seen how the new Alarm Identifier feature can be used to display more information about a particular alarm.
How To
This section shows how the demo was configured.

Configure an Alarm Trigger that can be filtered

Although FactoryTalk® View Machine Edition does not support FactoryTalk® Alarms and Events, the built-in alarm system can create alarm triggers for the ALMA and ALMD device based alarms. Follow the steps below to configure an alarm filter and to see how a trigger for one of these device based alarms was set up. In addition, you will see that an embedded variable was also implemented.

1. In FactoryTalk View Studio, open *Alarm Setup* by double-clicking it.

2. Scroll down the list of triggers and select `{::[Cookie_Demo]Program:Oven.OV_Temperature_Alarm.LLInAlarm}`. Enter *Alarm_Lo_Lo* in the *Trigger label:* field for this trigger.

   The *Trigger label:* will be used later to provide alarm filtering.

   ![](image)

   Alarm events that occur for this trigger can now be filtered using the value *Alarm_Lo_Lo*. 
3. Select the **Messages** tab.

4. Find the \{::[Cookie_Demo]Program:Oven.OV_Temperature_Alarm.LLInAlarm\} trigger in the **Trigger** column. You may need to widen the Trigger column to show the full trigger names. Notice that the trigger is assigned to the various ALMA and ALMD InAlarm outputs. This is how FactoryTalk View Machine Edition can support the device based alarms.

5. Then scroll to the right to view the alarm message.

Notice that the alarm message contains an embedded variable. The use of the embedded variable here captures the value of Oven Temperature when it goes into a Low, Low alarm condition.
**Embedded variables** allow you to show values that change dynamically at run time. Placeholders are used within strings where the embedded variable will be shown. At run time, the placeholder is updated with the real-time values of the variables.

There are two types of embedded variables:

A tag is read to provide the run-time value. Use tags, to embed tag values (Numeric or String), date values, and time values. The tag is read at run time and the current value is shown.

A tag is not read. Use this type to embed literal strings and numbers that will be shown at run time as they were entered.

You can use one or more embedded variables in text captions on graphic objects, in display title bars, and in message text.

Embedded variables can consist of:

- Numeric (analog or digital) tags
- String tags
- Tag placeholders
- Time
- Date
- Literal strings or literal numbers

6. Scroll to the right again until the **Alarm Identifier** column is visible. Enter the value **12**.
7. Click the *Background* color cell and then click *Other*.

8. Select the *purple color* from the *Custom colors* palette and click *OK*.
Advanced Alarm Settings including embedded variable server update rate

Examine and modify runtime alarm behavior configurations using the steps below.

1. Select the **Advanced** tab.

![Advanced Alarm Settings](image)

**Display Current alarms** – This display will appear when an alarm is triggered. Default: [ALARM].

**History Size** – Up to 10,000 alarms can be stored in the alarm history. When that limit is reached, the oldest alarms are deleted when new alarms occur. Default value: 128. Only 128 alarms will be retained in the alarm history (also referred to as the alarm log file).

**Maximum update rate (second)** – Select the maximum rate at which data servers will supply data to the trigger tags specified in the Triggers tab. This rate also applies to any tags used in trigger expressions, remote tags or expressions, and tags in trigger message embedded variables. By default, the update rate is 1 second.

**Embedded server update rate** – Select the embedded server update rate at which the data server will supply data to the tags in the trigger message embedded variables. The default update rate is set to match the alarm update rate. The embedded server update rate cannot be set to be larger than the maximum update rate.

At run time, all of these tags are updated immediately upon startup, no matter what the update rate is.

To ensure that the embedded variables used within the alarm messages contain the current value at the time of the alarm event it is a good practice to set the **Embedded Server update rate** faster than the alarm **Maximum update rate**.
2. Select the drop down list next to the Embedded Server update rate (second): field.

![Alarm Setup dialog](image1.png)

3. Select an update rate of 0.25 from the drop down list.

![Alarm Setup dialog](image2.png)

4. Click OK to close the Alarm Setup dialog and save the changes.
Add and configure an Alarm List object

Follow the steps below to add an Alarm List object to an existing display, and configure it for the application.

1. Double click the 03 Alarm display.

This display has been preconfigured with objects in order to save time.
2. Select the **Objects > Advanced > Alarm > Alarm List** object.

3. Click and drag the mouse from the upper left corner of the display under the **Login** information down to the bottom right corner of the display, above the **Alarm Identifier** information.

   Be careful not to cover any existing objects on the display.

   The **03 Alarm** display should look similar to the one below:
4. On the **General** tab, make the following edits:
   a. change the **Border width** to 4
   b. uncheck **Border uses back color**
   c. change the **Back color** to black
   d. change the **Border color** to dark gray
   e. change the **Header back color** to light gray
   f. change the **Selection back color** to black
   g. change the **Font Size** to 12
   h. check the box for **Use Alarm Identifier**
5. On the **Display** tab, select each **Alarm condition** and check the box for **Use alarm colors**.

This will display the background color that was assigned to each alarm message in the Alarm Editor rather than the default color of the Alarm List.

6. Select the **Active and unacknowledged** Alarm condition and check the box for **Blink**.

7. Select the **Connections** tab and then click the **Tag browser** button for the **AlarmIdentifier** property.
8. Click on the HMI Server, *Partial_CookieDemo_Oven_12W*.

9. Select *Alarm_Identifier* from the list of HMI tags and click *OK*.

10. Click *OK* again to accept the tag assignment.

11. Close and save the *03 Alarm* display.

The *Alarm Identifier* feature will be explained in more detail in an upcoming section titled *Using the New Alarm Identifier Feature*. 
Configure a Filter for an Alarm List object

Four displays have been preconfigured so that they show information for each Alarm severity. Follow the steps in the section below to configure an Alarm List object to filter alarms for Low Low level only.

1. Double click 11 Alarm Lo_Lo to open it.

The 11 Alarm Lo_Lo display will open, containing some preconfigured objects.
2. Double click on the **Alarm List** object to open its properties.

3. Select the **Alarm** tab on the **Alarm List Properties** dialog box.

4. Click the **ellipses** button next to the **Filtered triggers:** field.
5. Click the **checkbox** next to the **Alarm_Lo Lo** trigger label item, and click **OK**.

The **Alarm List** object has now been configured to display only those alarm events whose triggers have a label of **Alarm Lo Lo** specified in the Alarm Setup.

6. Click **OK** to save the settings configured for the **Alarm List** and **close** the properties dialog box.

7. **Close** the display and **Save** the changes.

You have now seen how to implement an alarm filter which can be used to show a subset of the alarms.
Using the New Alarm Identifier Feature

The **Alarm Identifier** is a new feature in FactoryTalk View Machine Edition 9.0. This feature is enabled in the **Alarm Setup** editor. Once enabled, a sequential number is automatically assigned to alarm messages as they are entered into the editor. Or, the alarm identifier can also be entered manually. Additionally, the same alarm identifier can be used for multiple alarm messages.

The **Alarm Banner** and **Alarm List** objects have an **Alarm Identifier** enable and an **Alarm Identifier** connection property. The tag assigned to this connection gets the alarm identifier value written into it. Now, when an alarm message appears on the **Alarm Banner** or is selected from the **Alarm List**, it can be used to display more information about the alarm.

1. Open the **Alarm Setup** editor.

2. Select the **Messages** tab and notice the checkbox next to **Use Alarm Identifier**.

3. Scroll over to the right until the **Alarm Identifier** column is visible. Notice the values assigned for each alarm message.

4. Click **OK** to close the **Alarm Setup** editor.
5. Open the 03 Alarm display.

6. Double click the Macro Multiplexer OCX to open its properties.

7. Select the Connections tab.

8. Click the Tag browser button for the Index property.
9. Click on the HMI Server, *Partial_CookieDemo_Oven_12W*.

![Tag Browser]

10. Select *Alarm_Identifier* from the list of HMI tags and click **OK**.

![Contents of /]

11. Click **Apply** to accept the tag assignment.

![ME Macro/Muxler Control Properties]
12. Click the **Tag browser** button for the **Macro_1** property.

13. Click on the HMI Server, **Partial_CookieDemo_Oven_12W**.

14. Select **Macro1_String** from the list of HMI tags and click **OK**.
The tag assignments should appear as shown below.

The HMI string tag, **Macro1_String**, has an **Initial Value** of **BearingPopup** assigned to it. This is the name of a macro.

We are using the Macro Multiplexer to select a specific macro to run –**BearingPopup** - for a particular alarm message.

The Macro Multiplexer can be used to launch a pdf, play a video, or to launch a specific popup display.

15. Click **OK** to apply the changes to the **ME MacroMultiplexer Control** properties.
16. Double click the **MORE INFO** momentary pushbutton to open its properties.

![Power Flex Troubleshooting Guide](image)

17. Select the **Connections** tab. Notice the **MacroMux_Trigger** HMI tag has been assigned.

![Momentary Push Button Properties](image)

This momentary pushbutton is used to trigger the Macro Multiplexer OCX.

18. Click **Cancel** to close the **Momentary Push Button Properties**.

19. Double click macro **BearingPopup** to open its properties.

![Logic and Control](image)

20. Enter the following literal value in the **Expression** column for **Tag 1**: **30**

![BearingPopup - /Partial_CookieDemo_Oven_12W/ (Macros)](image)

21. Close the **BearingPopup** macro and **Save** the change.

When this macro is triggered, display **30 Bearing Fault** will appear (the display number assigned to this display is 30). This is a popup display that contains information about the alarm. The display can contain a schematic, diagrams, pictures, etc. that can help the operator troubleshoot the alarm.
22. Right click on the underlined text, **PowerFlex Troubleshooting Guide**, and select **Animation > Visibility**.

23. Use the **Expression Editor** to enter the information shown. Use the **Tags** and **Relational** buttons to help with the entry or you can manually type in the information.

24. Click **OK** and then click **Apply**.

The text will now only be shown when the **Alarm Identifier** is equal to 101.

25. Select the **Hyperlink** tab.
26. Use the **Expression Editor** to enter the following text including the double quotes “My Documents\Manuals\PF750_Troubleshooting_Guide.pdf”

![Expression Editor](image)

27. Click **OK**. Then click **Apply** and click **Close**.

This is the new **Hyperlink** Animation feature in FactoryTalk View Machine Edition 9.0. You have assigned the path to the pdf file that will be launched during runtime when the hyperlink is pressed.

The new **Alarm Identifier** feature can be used to launch a PDF, a video, or a display. These can all be used to provide more information about an alarm. Additionally, the alarm identifier can be used by a multi-state indicator to show images – as an example an image showing a location of a possible machine jam.
# Lab Setup and Configuration Information

## Lab Information

<table>
<thead>
<tr>
<th>Lab Name</th>
<th>PanelView™ Plus 7 Performance and FactoryTalk View Machine Edition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Description</td>
<td>Users will perform a Demo and How To section to learn about some of the FactoryTalk® View Machine Edition and PanelView™ Plus features that can help expand the capabilities of an HMI application to help operators perform more efficiently.</td>
</tr>
<tr>
<td>Lab Creator</td>
<td>Wil Mattheis</td>
</tr>
<tr>
<td>Date Created</td>
<td>09-07-2017</td>
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<tr>
<td>Updates:</td>
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## Hardware Configuration

<table>
<thead>
<tr>
<th>Qty</th>
<th>Demo Cat.# / Description</th>
<th>Communication</th>
<th>Location</th>
<th>Firmware</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2711P-T12W22A9P PanelView™ Plus 7 12”W terminal</td>
<td>Ethernet</td>
<td></td>
<td>9.00 w/ 2.50 OS or newer</td>
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<tr>
<td>1</td>
<td>Ethernet cable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>SoftLogix virtual Ethernet module</td>
<td>Ethernet</td>
<td>Slot 3</td>
<td></td>
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</table>

## Computer/Host Settings

<table>
<thead>
<tr>
<th>Location</th>
<th>Files</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Name</td>
<td>SERVER-BASE</td>
</tr>
<tr>
<td>IP Address</td>
<td>192.168.1.1</td>
</tr>
<tr>
<td>Operating System</td>
<td>Windows Server 2008 R2</td>
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</table>
### Application/Programming

<table>
<thead>
<tr>
<th>Location</th>
<th>Files</th>
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<tbody>
<tr>
<td>C:\Lab Files\FTView ME</td>
<td>CookieDemo_Oven_12W.apa &amp; Partial_CookieDemo_Oven_12W.apa</td>
</tr>
<tr>
<td>C:\Lab Files\SoftLogix</td>
<td>CookieLine.ACD &amp; No_Language_CookieLine.ACD</td>
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### Additional Equipment Required

<table>
<thead>
<tr>
<th>Qty</th>
<th>Items</th>
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### RSLinx - DDE/OPC Topic Configuration

<table>
<thead>
<tr>
<th>Topic Name</th>
<th>Path to Hardware</th>
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<tbody>
<tr>
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### RSLinx - Driver Configuration

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<th>Topic Name</th>
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<tbody>
<tr>
<td>AB_VBP-1 (no topic required)</td>
<td>Virtual Backplane driver to access the SoftLogix processor</td>
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### RSLinx Enterprise - Shortcut Configuration

<table>
<thead>
<tr>
<th>Topic Name</th>
<th>Path to Hardware</th>
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<tbody>
<tr>
<td>Cookie_Demo</td>
<td>Through SoftLogix Ethernet IP module in slot 3 to SoftLogix processor in slot 2 Ethernet, Ethernet &gt; 3, 192.168.1.1 &gt; Backplane &gt; 2, 1789-L60 v23</td>
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### Application Versions

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Software</th>
<th>Version</th>
<th>Service Pack</th>
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<tbody>
<tr>
<td></td>
<td>FactoryTalk® View Machine Edition Studio</td>
<td>9.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FactoryTalk® Services Platform</td>
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<td>RSLinx Enterprise</td>
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<td>RSLinx Classic</td>
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<tr>
<td></td>
<td>Studio 5000</td>
<td>23.00</td>
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</tr>
<tr>
<td></td>
<td>SoftLogix 5800</td>
<td>23.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PanelView™ Plus 7 terminal, 12” wide</td>
<td>V9.00 &amp; OS v2.50</td>
<td></td>
</tr>
</tbody>
</table>
Hardware Setup Diagram

The only hardware needed for the lab is a PanelView™ Plus 7 12 inch, wide terminal and the Lab PC. The virtual machine running on the Lab PC is using SoftLogix as the controller. The PanelView™ Plus 7 terminal also has an RFIDeas RFID reader attached to the USB port for the RFID reader portion of the lab.

Once the VM Ware image starts up, it will run a batch file that will “reset” the PanelView Plus 7 terminal to the start of the lab state. It does this by restoring the PanelView’s backup file.
Required Pre-Lab Configuration

Configure the Virtual Network

Select Virtual Network Editor from the Edit menu to open the Virtual Network Editor dialog.

The dialog below will appear.
Select the Host Virtual Network Mapping tab.

For VMnet0 select the physical Ethernet adapter that will be connected to the PanelView™ Plus terminal.

Click the OK button to commit the changes that have been made.