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# Using an individual project's tab

In addition to the Projects tab, each individual project will have a tab when the project is opened. When you open a project you will see all the triggers associated to the project. The project tab does not have to be opened to allow triggers to execute.
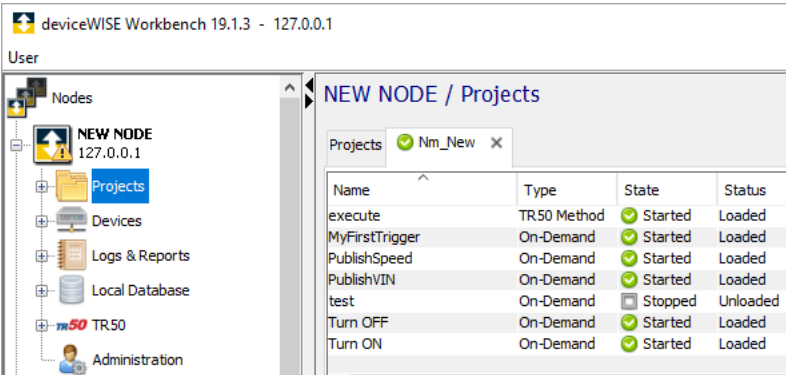
When a project's tab is displayed in the foreground in the **Projects** window, you can manage the triggers within the project.

Follow these steps to display a project's tab:

1. From the Workbench left hand pane, select and then expand the node you want to work with.

   An expanded tree view of the selected node appears.

2. Select the **Projects** icon.

   The **Projects** window appears as the right hand pane with the **Projects** tab listing all of the defined projects.
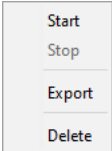
3. Double click the project.

   Alternatively, you can select the project and then click the **Open** button at the bottom of the **Projects** tab.

   The name of the project appears on its tab along with an indication of the project's state, either *Started* or *Stopped*.



## A project's tab pop-up menu

If you right-click on a individual project tab, a pop-up menu with options is displayed:



The options from this project pop-up menu are:

| Option | Description |
|---|---|
| **Start** | Starts the selected project.<br>Alternatively, the project can be selected on the **Projects** tab and the **Start** button at the bottom of the **Projects** tab can be used.<br>This option is only available if the selected project is in a stopped state. |
| **Stop** | Stops the selected project.<br>Alternatively, the project can be selected on the **Projects** tab and the **Stop** button at the bottom of the **Projects** tab can be used.<br>This option is only available if the selected project is in a started state. |
| **Export** | Displays the export window, allowing the selection of the items in the project (its triggers) and any of the triggers' dependencies to be exported. |
| **Delete** | Deletes the selected project and all of the project's triggers.<br>Alternatively, the project can be selected on the **Projects** tab and the **Delete** button at the bottom of the **Projects** tab can be used.<br>This option is only available if the selected project is in a stopped state. |

## A project tab's triggers

When a project's tab is displayed in the foreground, it provides a table displaying its triggers with these columns:

| Column | Description |
|---|---|
| **Name** | The name of the trigger. |
| **Type** | The trigger event type, such as **Data**, **Scheduled**, **On-Demand** and so forth. |
| **State** | The trigger's state: <br><br>• ✅ **Started** - The trigger is ready to execute. In order for a trigger to execute, its status must also be **Loaded**. <br><br>• ▣ **Stopped** - The trigger is not ready to execute, its status is **Unloaded**. <br><br>• ⚠ **Disabled** - The trigger is disabled by a fatal error when processing an event or action during execution. The system will periodically attempt to start triggers that are **Disabled**. <br><br>• **Starting** - A temporary transition state while going from stopped to started. <br><br>• **Stopping** - A temporary transition state while going from started to stopped. |
| **Status** | The trigger's status: <br><br>• **Loaded** - The trigger is loaded into memory within the trigger component and ready to execute when the trigger event condition occurs. The project must be **Started** and the trigger must be **Started** for the trigger's status to be **Loaded**. <br><br>• **Unloaded** - The trigger is currently not loaded into memory because the project is stopped or the trigger is stopped or disabled. <br><br>• **Loading** - The trigger is in the process of loading its actions and registering the trigger event within the trigger component. <br><br>• **Unloading** - The trigger is in the process of releasing its resources. A trigger will not complete unloading until all execution instances listed as **In Progress** have completed. |
| **Last Triggered** | The date and time the trigger last executed. |
| **Last Failure** | The date and time the last execution failure of the trigger occurred. |
| **User** | The user that last changed the trigger's state and status. All security requests that must be evaluated by the trigger are based on the access privileges of this user. |
| **Successes** | The number of times the trigger has ended its execution with an end success indication. |
| **Failures** | The number of times the trigger has ended its execution with an end failure indication. |
| **In Progress** | The number of instances of the trigger that are currently executing. The **Max in Progress** parameter in the trigger definition defines the maximum number of concurrent trigger executions allowed for this trigger. If more than this number are scheduled to execute concurrently, the trigger instances will be queued for later execution based on the **Queue Size** parameter. |
| **In Queue** | The number of trigger executions that are queued waiting to be executed. |
| **Overflow** | The number of triggers execution instances that could not be executed because the number of trigger execution instances that are in the **In Queue** reaches the **Queue Size** parameter in the trigger definition. An increase in a trigger's **Overflow** counter may mean that the **Max in Progress** and **Queue Size** parameters need to be adjusted based on the trigger's event frequency and the trigger's execution time. |
| **Avg Time** | The average execution time of the trigger for the last 10 executions. This value is in milliseconds. |

## Summary of trigger characteristics and status

When a trigger is from the table of trigger, a summary of the trigger's characteristics and status is displayed on the bottom half of the project's tab. You can see at a glance the characteristics of the trigger and its execution statistics:

```
Name:                   MyFirstTrigger          Last Modified:              2013-05-03 09:49:35
State:                  Started                 Last State Change:          2013-05-03 12:54:19
Status:                 Loaded                  Last Triggered:             2013-05-03 12:54:24
Successes:              1                       Average Execution Time:     5095 ms
Failures:               0                       Last Execution Time:        5095 ms
In Progress:            0                       Max Execution Time:         5095 ms
Max in Progress:        1                       Min Execution Time:         0 ms
In Queue:               0                       Queue Watermark:            0
Queue Size:             0                       Queue Watermark Timestamp:  n/a
Overflow Count:         0


Event Type: On-Demand


Actions:
1. Log Message: Write message Hello World to EXCEPTION Log                      Success: 2
2. Wait: 5000 ms                                                                Success: 3   Failure: 5
3. Log Message: Write message Good Bye from Macros.$TRIGGER in project Macros.$PROJECT to EXCEPTION Log   Success: 4
4. End Execution (Success)
5. End Execution (Failure)
```
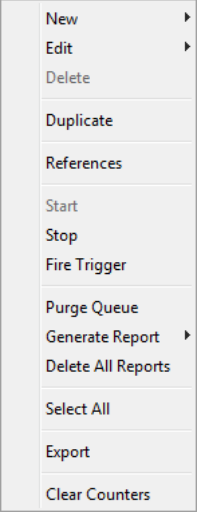
The additional fields beyond what is displayed in the table of triggers include:

| Name | Description |
|---|---|
| Max in Progress | The Max in progress parameter from the trigger definition. |
| Queue Size | The Queue Size parameter from the trigger definition. |
| Event Details | One or more characteristics of the trigger event type. For example: a data event type trigger will display the device variable, a scheduled event type trigger will display the frequency. |
| Last Modified | The date and time the trigger last modified. |
| Last State Change | The date and time the trigger last changed its state. |
| Last Execution Time | The last instance execution time in milliseconds. |
| Max Execution Time | The maximum instance execution time in milliseconds. |
| Min Execution Time | The minimum instance execution time in milliseconds. |
| Queue Watermark | The maximum value that the In Queue parameter contained. |
| Queue Watermark Timestamp | The date and time that the Queue Watermark is updated to its maximum value. |
| Actions | A summary of the trigger's actions, the actions' parameters and the actions' routes. |

## A trigger's pop-up menu

If you right-click on a individual trigger in the trigger table, a pop-up menu with options is displayed:

| New | ▸ |
|---|---|
| Edit | ▸ |
| Delete | |
| Duplicate | |
| References | |
| Start | |
| Stop | |
| Fire Trigger | |
| Purge Queue | |
| Generate Report | ▸ |
| Delete All Reports | |
| Select All | |
| Export | |
| Clear Counters | |

Some menu options will not be available depending on the trigger's state and the event type. The following describes the menu options available from the pop-up menu:

| Option | Description |
|---|---|
| **New** | Displays a New Trigger window to define a new trigger. The option includes selecting either the List Editor or the Canvas Editor. |
| **Edit** | Displays a Trigger window to view and edit the trigger's definition. The option includes selecting either the List Editor or the Canvas Editor. When editing a trigger, keep the following in mind:<br><br>• When editing and then saving a started trigger, the trigger is reloaded upon save, causing all static variables to be reset to their default value.<br><br>• When editing and then saving a started trigger, any trigger execution instances that are currently in progress will be completed before the new trigger definition changes take effect.<br><br>• If the trigger is being edited by another person, you will receive a message indicating the trigger is locked but still available for view only access. |
| **Delete** | Deletes the trigger. The trigger must be in a Stopped state to allow deleting. |
| **Duplicate** | Duplicates (copies) the trigger definition. The option allows entering a new name for the copy of the trigger and selecting the project for the new trigger. |
| **References** | Displays a list of items that have a reference to the trigger and a list of items that are referenced by the trigger. |
| **Start** | Starts the trigger. The trigger must be in a Stopped state to allowing starting. |
| **Stop** | Stops the trigger. The trigger must be in a Started or Disabled state to allowing stopping. |
| **Fire Trigger** | Executes an On-Demand event type trigger.<br>Also can be used to execute a Schedule event type trigger. In the case of executing a Schedule event type trigger, manually selecting the **Fire Trigger** option does not impact the trigger's schedule for being executed (Periodic, Hourly, etc.). |
| **Purge Queue** | Removes all pending trigger execution instances. The number of pending trigger executions is indicated in the trigger's **In Queue** value. |
| **Generate Report** | Generates a trigger report for the next execution of the trigger. The options are:<br><br>• **Selected Triggers** - a trigger report is generated for the next execution of the trigger.<br><br>• **Selected Triggers Including SubTriggers** - a trigger report is generated for the next execution of the trigger and all subtriggers "called" with the **Execute SubTrigger** action. This one time generation of the trigger report applies to all levels of called subtriggers. For example: trigger 1 calls subtrigger 2, which calls subtrigger 3 and subtrigger 4.<br><br>You can view the report using the Reports tab. |

| Option | Description |
| --- | --- |
| **Delete All Reports** | Deletes all trigger reports generated by the trigger. |
| **Select All** | Selects all of the triggers in the project. If you want to exclude one or more triggers from your selection, after using select all, press and hold down the Ctrl key, and then click on the trigger's row in the table. |
| **Export** | Displays the Export window with the selected trigger and allows the trigger and its dependencies to be selected for export to a file on the Workbench's computer. For more information on the Export function, see Exporting a project or trigger. |
| **Clear Counters** | Clears the execution counters from the trigger table. |

## Trigger table and option considerations

- A trigger's state must be **Started** and the trigger's status must be **Loaded** in order for the trigger to be executed. If the trigger's status is **Unloaded**, then the project needs to be **Started**.

- The triggers **Successes** and **Failures** counts are based on the trigger ending its execution with an end success or an end failure indication. The counts are not determined based on a trigger action having a failure.

- When editing and then saving a started trigger, the trigger is reloaded upon save, causing all static variables to be reset to their default value.

- When editing and then saving a started trigger, any trigger execution instances that are currently in progress will be completed before the new trigger definition changes take effect.

- If the trigger is being edited by another person, you will receive a message indicating the trigger is locked but still available for view only access.

- Some of the options can be used when multiple triggers are selected. You can use Ctrl-A, Select All, Shift-click, Ctrl-click, or press and hold the mouse button while swiping multiple rows to select multiple triggers. Then right-click to display the pop-up menu and selecting an option will attempt to apply the option to the multiple selected items. If the option can not be applied, a message window will indicate the selections that will be applied.
  For example, select three stopped triggers and then select **Start**.

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