

# Ayehu Next Generation User Guide

# Table of Contents

1. WELCOME TO AYEHU NEXT GENERATION.....	1
1.1. WHAT IS AYEHU NEXT GENERATION.....	1
1.2. WHO SHOULD READ THIS USER GUIDE.....	1
1.3. SETTING UP AYEHU NEXT GENERATION.....	1
1.3.1. HOST SYSTEM PREREQUISITES.....	2
1.3.2. CLIENT SYSTEM PREREQUISITES.....	2
2. ARCHITECTURE OVERVIEW.....	3
2.1. UNDERSTANDING AYEHU NEXT GENERATION'S DATA FLOW.....	3
2.2. FROM EVENT TO INCIDENT.....	5
2.2.1. BACKGROUND.....	5
2.2.2. WHAT IS AN INCIDENT?.....	5
2.2.3. THREE WAYS TO CREATE AN INCIDENT.....	6
3. GETTING STARTED WITH AYEHU NG.....	8
3.1. LOGGING IN TO AYEHU NEXT GENERATION.....	8
3.2. USING THE NAVIGATION MENU.....	10
3.3. A CLOSER LOOK AT THE NAVIGATION MENU.....	12
3.4. THE TITLE BAR ICONS.....	12
3.5. MULTIPLE TABS OR WINDOWS.....	12
4. HOME PAGE.....	14
4.1. AYEHU LIVE.....	14
4.1.1. UNDERSTANDING AYEHU LIVE.....	14
4.1.2. FILTERING INCIDENTS AND WORKFLOW.....	23
4.2. SELF SERVICE PORTAL.....	25
4.2.1. INTRODUCTION TO THE SELF-SERVICE PORTAL.....	25
4.2.2. ACCESSING THE SELF-SERVICE PORTAL.....	25
4.2.3. SELECTING A FORM TO LAUNCH.....	25
4.2.4. VIEWING FOLDER CONTENT.....	27
4.2.5. VIEWING MY REQUESTS.....	31
5. INSIGHT.....	32
5.1. INCIDENTS HISTORY.....	32
5.1.1. VIEWING THE INCIDENT HISTORY.....	32
5.1.2. VIEWING THE INCIDENT UPDATES.....	34
5.1.3. FILTERING INCIDENTS AND UPDATES.....	35
5.2. AUDIT TRAIL.....	37
5.2.1. VIEWING THE AUDIT TRAIL LOG.....	37
5.2.2. VIEWING THE ACTIVITY LOG.....	42
5.2.3. FILTERING EVENTS AND ACTIVITIES.....	43
6. BUILDER.....	45
6.1. WORKFLOW DESIGNER.....	45
6.1.1. WELCOME TO THE WORKFLOW DESIGNER.....	45
6.1.2. WORKFLOW DESIGNER OVERVIEW.....	47
6.1.3. WORKING WITH WORKFLOWS.....	53
6.1.4. BUILDING YOUR WORKFLOW.....	67
6.1.5. NAVIGATING THROUGH YOUR WORKFLOW.....	99
6.1.6. TESTING AND RUNNING YOUR WORKFLOW.....	107
6.1.7. REVIEWING AND SHARING WORKFLOWS.....	113
6.1.8. ACTIVITIES REFERENCE.....	125
6.2. SELF SERVICE DESIGNER.....	172
6.2.1. INTRODUCTION TO THE SELF-SERVICE DESIGNER.....	172
6.2.2. ACCESSING THE SELF-SERVICE DESIGNER.....	172
6.2.3. CREATING A SELF-SERVICE FORM.....	174
6.2.4. FORM FIELDS.....	178
6.2.5. SETTING PERMISSIONS ON A FORM.....	184

6.2.6. ENABLING A FORM.....	185
6.2.7. MOVING A FORM.....	186
6.2.8. EDITING AND DELETING A FOLDER.....	188
6.2.9. CREATING A SELF-SERVICE WORKFLOW.....	188
6.3. ACTIVITY DESIGNER.....	191
6.3.1. INTRODUCTION TO THE ACTIVITY DESIGNER.....	191
6.3.2. ACCESSING THE ACTIVITY DESIGNER.....	191
6.3.3. STARTING A NEW ACTIVITY.....	192
6.3.4. DESIGNING A CUSTOM ACTIVITY.....	194
6.3.5. ACTIONS ON ACTIVITIES.....	197
6.3.6. ACTIONS ON CATEGORIES.....	200
6.3.7. CUSTOM ACTIVITIES IN THE AYEHU NG PLATFORM.....	202
7. REPOSITORY.....	204
7.1. REPOSITORY ENTITIES.....	204
7.1.1. UNDERSTANDING REPOSITORY ENTITIES.....	204
7.1.2. USING ENTITY PANELS.....	204
7.1.3. FILTERING ENTITIES.....	206
7.2. WORKFLOWS AND TEMPLATES.....	207
7.2.1. WORKFLOWS.....	208
7.2.2. MANAGING YOUR TEMPLATES.....	214
7.3. INCIDENT CONFIGURATION.....	215
7.3.1. BACKGROUND.....	215
7.3.2. DEVICES.....	216
7.3.3. SERVICES.....	220
7.3.4. CLASSIFICATIONS.....	222
7.3.5. INCIDENTS.....	224
7.3.6. EVENT PARSERS.....	226
7.3.7. NOTES.....	230
7.4. RECIPIENTS.....	232
7.4.1. WHAT ARE RECIPIENTS.....	232
7.4.2. MANAGING USERS.....	232
7.4.3. MANAGING GROUPS.....	234
7.5. POLICY ACTIONS.....	236
7.5.1. UNDERSTANDING POLICY ACTIONS.....	236
7.5.2. TRIGGERS.....	236
7.5.3. SCHEDULES.....	241
7.6. EXTERNAL DEVELOPMENT.....	244
7.6.1. COMMANDS.....	245
7.6.2. DEVELOPMENT.....	247
7.7. GENERAL.....	249
7.7.1. PRELIMINARIES.....	249
7.7.2. CONDITIONS.....	249
7.7.3. CONDITION OBJECTS.....	252
7.7.4. VARIABLES.....	254
7.7.5. ERROR HANDLING.....	258
7.7.6. ERROR MESSAGES.....	261
7.7.7. MESSAGE TEMPLATES.....	262
7.7.8. TIME FRAMES.....	265
7.7.9. ACCESS RESTRICTION.....	267
8. KNOWLEDGE BASE.....	270
8.1. UNDERSTANDING KNOWLEDGE BASE.....	270
8.2. COMMUNITY FORUMS.....	271
8.3. ONLINE TEMPLATES.....	272
8.4. ONLINE TUTORIALS.....	272
8.5. OPEN SUPPORT TICKET.....	272

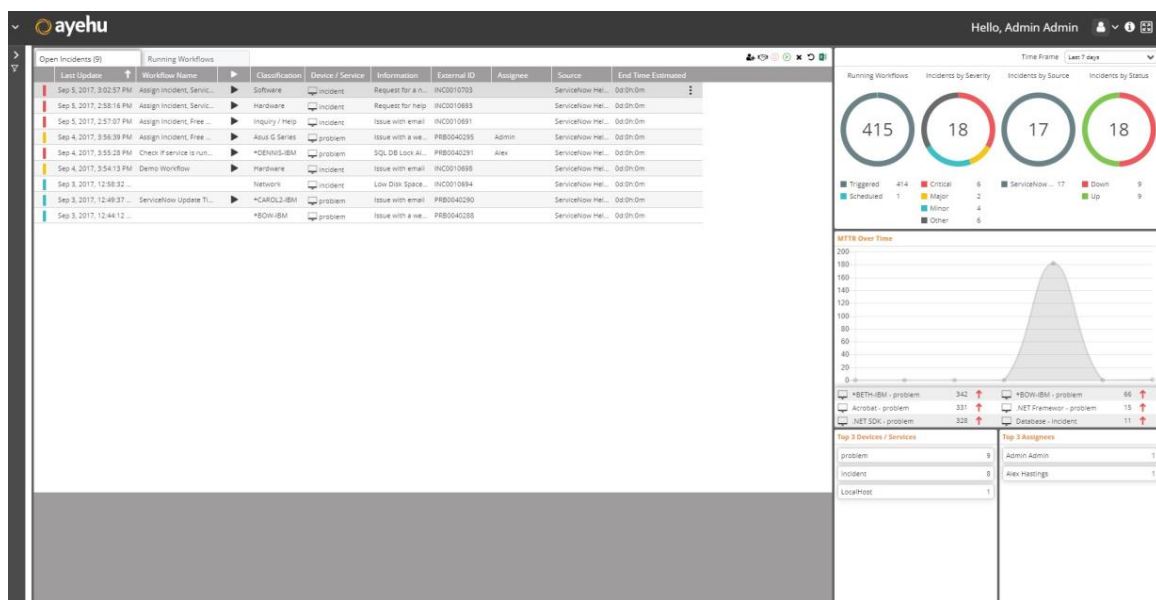
9. CONFIGURATION.....	274
9.1. LICENSE DETAILS.....	274
9.1.1. VIEWING THE LICENSE DETAILS.....	274
9.1.2. ACTIVATING THE LICENSE.....	274
9.2. MODULES.....	275
9.2.1. UNDERSTANDING MODULES.....	275
9.2.2. MANAGING MODULES.....	276
9.2.3. OPERATIONS ON MODULES.....	277
9.2.4. QUEUES.....	279
9.2.5. FILTERING MODULES.....	280
9.2.6. INTEGRATION MODULES.....	281
9.3. LOGINS.....	290
9.3.1. UNDERSTANDING LOGINS.....	290
9.3.2. MANAGING LOGINS.....	291
9.3.3. FILTERING THE LOGIN USERS.....	293
10. TECHNICAL APPENDIXES.....	295
10.1. INSTALLING AYEHU NG.....	295
10.1.1. PRE-INSTALLATION REQUIREMENTS.....	295
10.1.2. INSTALLATION PROCEDURE.....	298
10.1.3. POST-INSTALLATION PROCEDURE.....	311
10.1.4. FIRST TIME LOG IN.....	312
11. COPYRIGHT.....	316



# 1. WELCOME TO AYEHU NEXT GENERATION

## 1.1. What is Ayehu Next Generation

Ayehu Next Generation is an intelligent IT Automation and Orchestration platform built for the digital era. Powered by machine learning algorithms, it acts as a force multiplier, driving efficiency through a simple and powerful web 3.0 automation platform for IT and security operations. Ayehu Next Generation helps enterprises save time on manual and repetitive tasks, accelerate mean time to resolution and maintain greater control over IT infrastructure. As an agent-less platform, it is easily deployed, allowing you to rapidly automate tasks and processes, including inter-operations across disparate solutions and systems, all in one, unified platform.



## 1.2. Who Should Read this User Guide

This User Guide is primarily intended for day to day users of the Ayehu Next Generation software. For the sake of completeness, a technical installation appendix is provided in [Installation Procedure \[298\]](#). There are two types of regular users:

- Managers and operators of existing workflows: These users will need to be familiar with all but the Workflow Designer section of the system. However, a basic familiarity with the Designer is required to effect simple modifications of existing workflows.
- Designers, creators and editors of workflows: In addition to overall skill using the system, these users will also need in depth expertise with the Workflow Designer.

## 1.3. Setting Up Ayehu Next Generation

Setting up contains the following sections:

- [Host System Prerequisites \[2\]](#)

- [Client System Prerequisites \[2\]](#)

### 1.3.1. Host System Prerequisites

The Ayehu Next Generation software is set up on a 64 bit Windows server. The technical details are described in [Installing Ayehu NG](#). This information is not essential from a user's perspective.

### 1.3.2. Client System Prerequisites

The Ayehu Next Generation system requirements for day to day use of are quite modest. Ayehu recommends:

- A PC/MAC workstation or laptop capable of running a 64 bit operating system.  
Any of these will do:
  - Windows 7 or later (Windows 10 recommended)
  - MAC OS X
  - Linux - One of the mainstream releases such as Redhat, openSUSE, Ubuntu etc.
- Browser: You will need
  - Google Chrome release 65 or later for Windows
  - Google Chrome, latest release for MAC or Linux systems



#### TIP

The Ayehu Next Generation is rather heavy on browser usage. For a better work experience, you should consider equipping your PC with 8Gb of memory and a graphics card.

If you intend to use the Workflow Designer, a large video monitor (24" supporting 1920 x 1080 resolution) is a great help.

## 2. ARCHITECTURE OVERVIEW

### 2.1. Understanding Ayehu Next Generation's Data Flow

Ayehu Next Generation functions as an informational pipeline of events.

Every event (an incoming email, a syslog message, an SNMP Alarm, etc.) is retrieved by the **(1) Event Retriever** and then arrives at the **(2) Parsing/Mapping Checkpoint**. See [Figure 1, "Event processing pipeline" \[4\]](#) below.

Traditionally, events which originate from an integrated module (for example: ServiceNow, McAfee, BMC Remedy etc.) are mapped, and events which originate from the built-in components are parsed, but it is also possible to parse events from the integrated modules. Whatever the case, by the end of the parsing/mapping process the event may be classified as an **Incident**. An incident is an event with several additional characteristics:

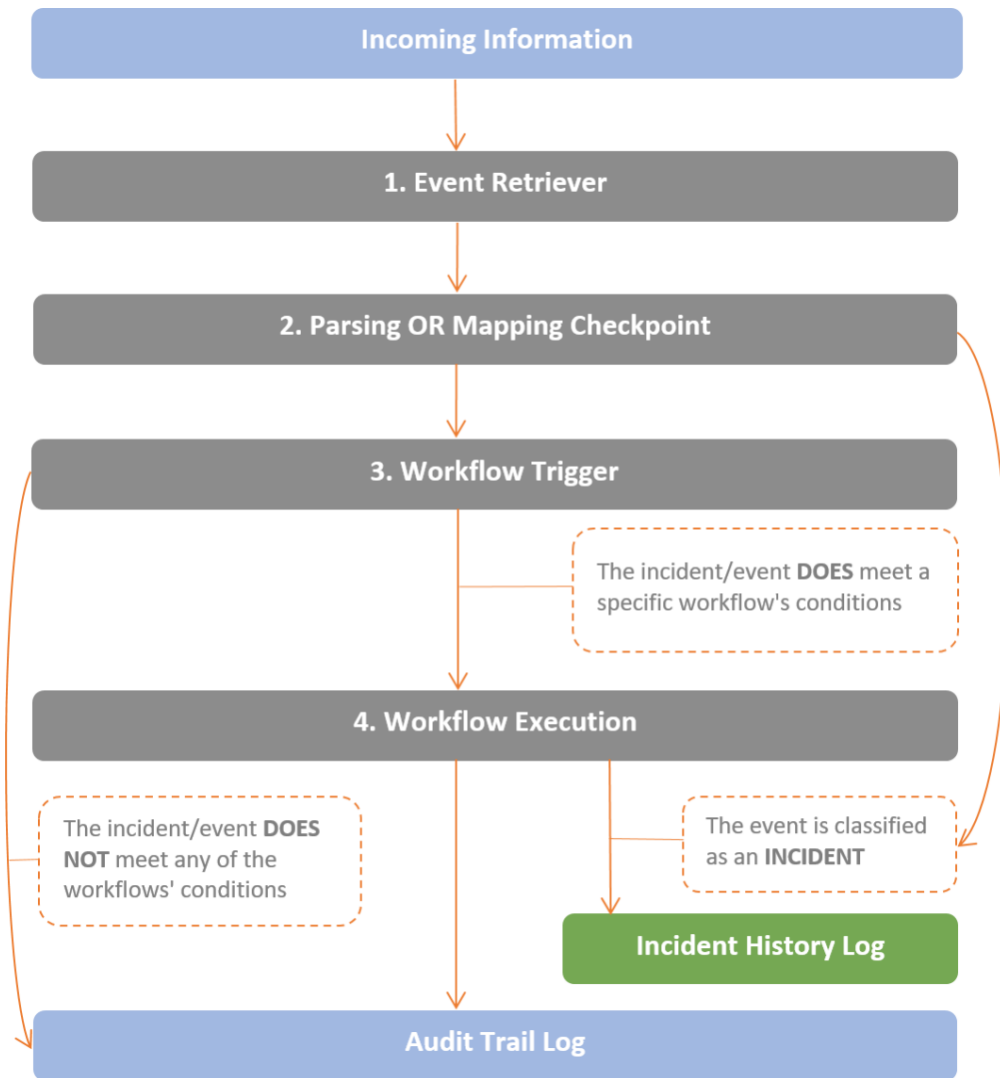
1. Incidents provide Ayehu Next Generation with their originating device, their duration and their classification. This information may be broken down and used in reports, in conditions and within running workflows.
2. Incidents have a current state - **up/down**. Workflows may be invoked upon a change of state.
3. Incidents are counted and registered to the Incident History Log.

After the parsing/mapping checkpoint, events are checked by the **(3) Workflow Trigger [236]**. If certain conditions apply, the event (basic or incident) will invoke a procedural workflow at the **(4) Workflow Execution Point**. Regardless of whether a workflow is invoked, each event (basic or incident) is registered to the **Audit Trail Log [37]**. Events classified as Incidents are also registered to the **Incident History Log [32]**.

The pipeline uses four handlers:

1. The **Event Retriever** - retrieves information from the pipeline
2. The **Parsing/Mapping Checkpoint** - classifies the event as an incident or a basic event
3. The **Workflow Trigger** - decides whether or not to invoke a workflow
4. The **Workflow Execution Point** - executes the workflow

The pipeline is illustrated in the following figure:



In subsequent chapters in this User Guide, you will be shown where you are in the pipeline with a diagram like this:



**Figure 1. Event processing pipeline**

## 2.2. From Event to Incident

### 2.2.1. Background

As explained in [Understanding Ayehu Next Generation's Data Flow \[3\]](#), when an event is retrieved by Ayehu Next Generation:

1. The incoming event arrives at the parsing/mapping checkpoint, where it is determined whether the event qualifies as an incident or is handled as a basic event.
2. The event/incident is checked by the Workflow Trigger, and if certain conditions apply, the event (or incident) invokes a workflow.



#### NOTE

In case of an incident, such conditions may refer to variables that were produced during the parsing/mapping procedure.

3. Regardless of workflow execution, if an Incident was created, it is displayed in the Ayehu LIVE dashboard

### 2.2.2. What is an Incident?

An incident is an event that was parsed, resulting in the creation of the following variables:

1. **State:** Down/Up. **Down** implies the incident is active and may trigger a workflow (if it complies with a certain trigger). **Up** implies that the incident is a recovery and may trigger a recovery workflow (if it complies with a certain trigger).



#### NOTE

Events (which are not incidents) may also trigger a workflow.

2. **Classification:** the type of the problem implied by the incoming event.
3. **Eventname:** Device or Service.
4. **Severity:** (optional): the severity of the incoming event. The valid values are: Critical, Major, Minor, Warning and Info.
5. **Information:** (optional): a short description of the event.

#### Example:

The monitoring system generates the following alert:

**70% of Disk C on server SRV1 is used**

After parsing this event, an incident is generated with the following variable values:

**Table 1. Incident Variables - First Alert**

Variable Name	Value
<b>State</b>	Down
<b>Classification</b>	Disk Full
<b>Device</b>	SRV1
<b>Severity</b>	Major
<b>Information</b>	70% of Disk C on server SRV1 is used

If after some time, the problem is not handled, the monitoring system generates another alert:

### 80% of Disk C on server SRV1 is used

After parsing the new event, an additional instance of the **same incident** is created, with the following variable values:

**Table 2. Incident Variables - Second Alert**

Variable Name	Value
State	Down
Classification	Disk Full
Device	SRV1
Severity	Critical
Information	80% of Disk C on server SRV1 is used

The reason for not creating a new incident is the unique Classification + Device combination, which indicates that this is another instance of an existing incident.

After clearing some disk space, the monitoring system generates a recovery message:

### 50% of Disk C on server SRV1 is used

After parsing this event, the incident will be recovered, and the variable values will be as follows:

**Table 3. Incident Variables - Third Alert - Recovery**

Variable Name	Value
State	Up
Classification	Disk Full
Device	SRV1
Severity	Critical
Information	50% of Disk C on server SRV1 is used

Still, the combination of Classification + Device did not change, therefore Ayehu Next Generation recovers the incident and does not create a new incident (or incident instance).

## 2.2.3. Three Ways to Create an Incident

Incidents are created in one of three ways:

### 1. **Event Parsing [226]:**

Event parsing is the mechanism for examining incoming messages and extracting relevant information from them (such as server name and the related event's nature). By using a short VB or C# program, events may be converted to incidents and displayed in the [Ayehu LIVE \[14\]](#) dashboard.

When Ayehu Next Generation receives an event, the list of event parsers is scanned to determine whether the event matches the criteria of one of them. The first that matches the event parses it; therefore, the order of event parses in the list is highly significant.



#### **NOTE**

To learn more about creating event parsers refer to [Understanding Event Parsing \[226\]](#)

After the event is parsed and the incident is created, it will go through the [trigger \[236\]](#) list to determine whether it should invoke a workflow.

The new incident will be displayed in the Ayehu LIVE dashboard whether or not it invoked a workflow.

### 2. **Mapping:**

When an event is created by an external integration it must be mapped to an event in the Ayehu format.

Mapping configuration is performed during [module configuration \[276\]](#). In real-time, it replaces the event parsing.

### 3. **New Incident Activity:**

You can create a workflow that will create a new incident. To do this, include the New Incident activity in the workflow. An incident will be created using the data that was entered into the New Incident activity.

The main difference between the previous two methods and this one, is that with the workflow activity, the workflow is triggered before the incident. The new incident will go through the the list of triggers. If a matching trigger is found, another workflow will be executed. If not - the new incident will be dropped.

## 3. GETTING STARTED WITH AYEHU NG

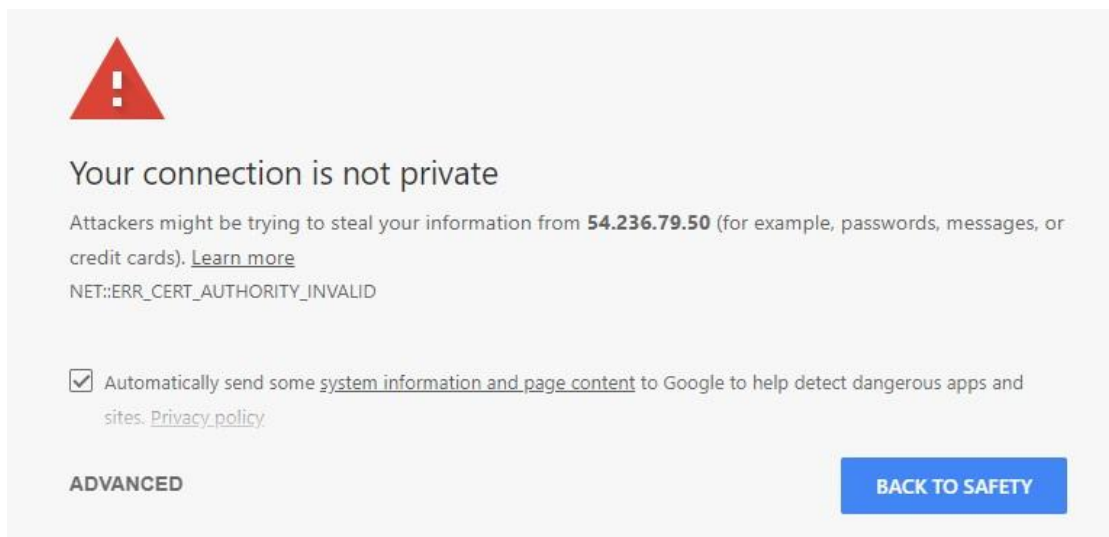
### 3.1. Logging in to Ayehu Next Generation

Your IT Manager will provide a login URL that you should bookmark in your browser. The following URL is a private example but it illustrates a common situation:

1. Open the Chrome browser:

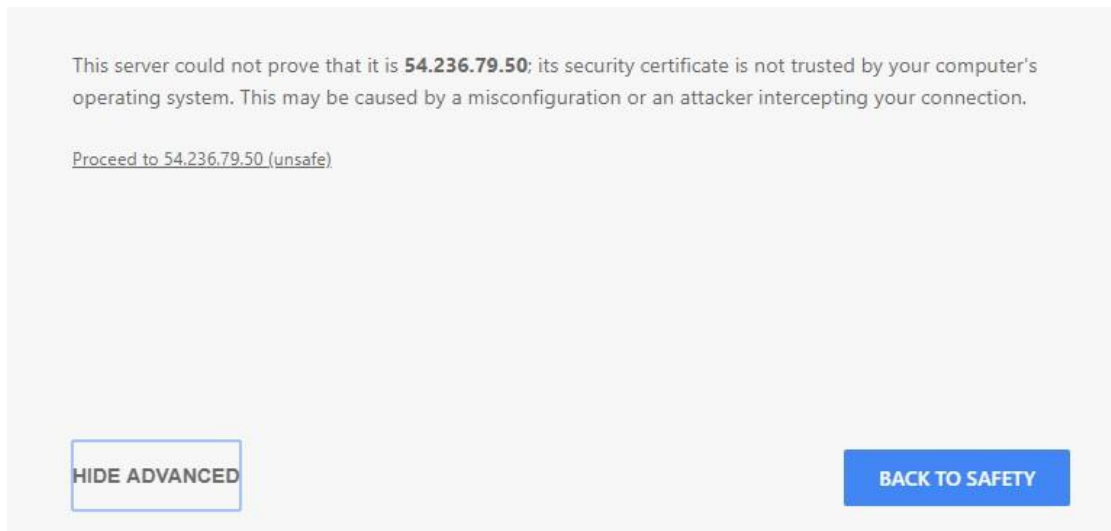


2. Enter the URL. In our example, `https://54.236.79.50:8442/login`. You get a response like this:

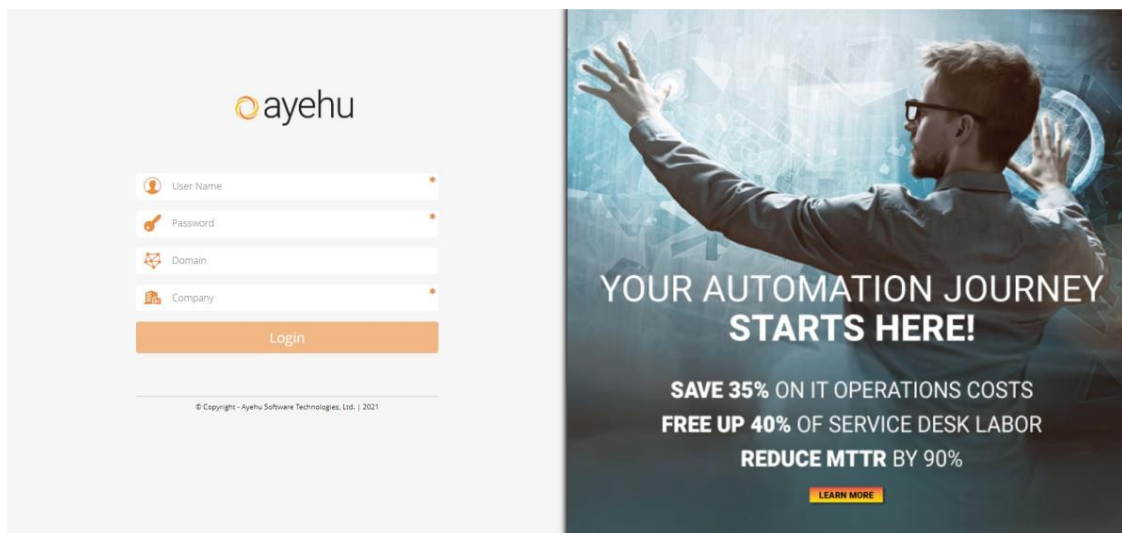




3. Click on **ADVANCED**:

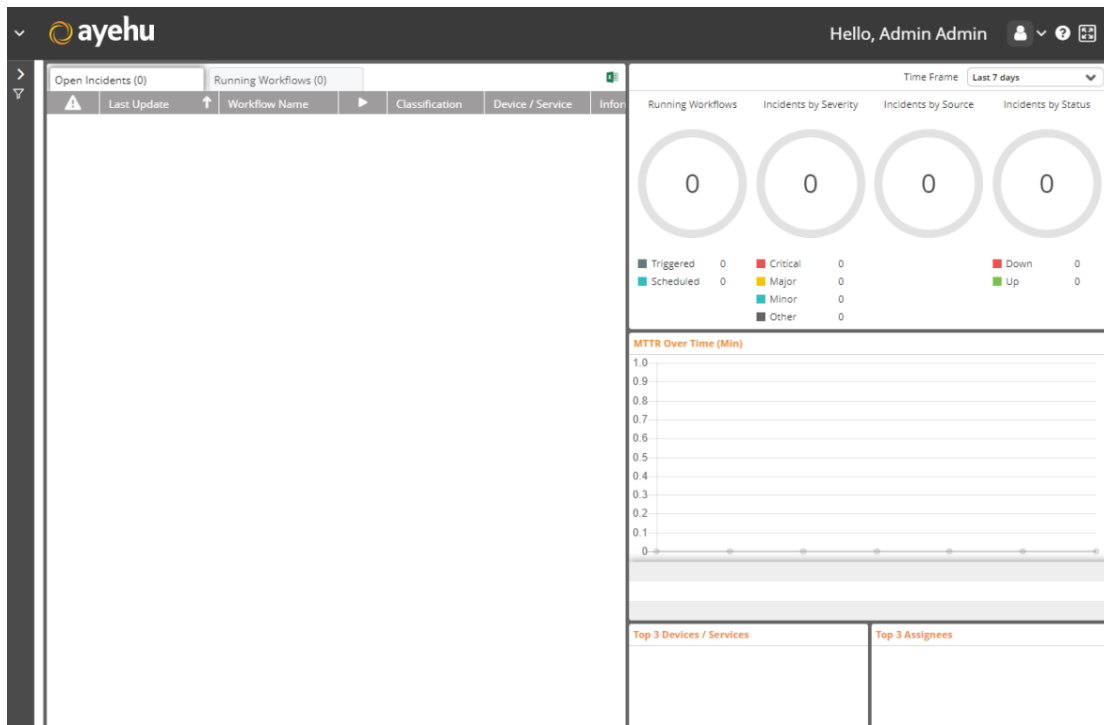


4. Click on the Proceed to .....(unsafe) link:

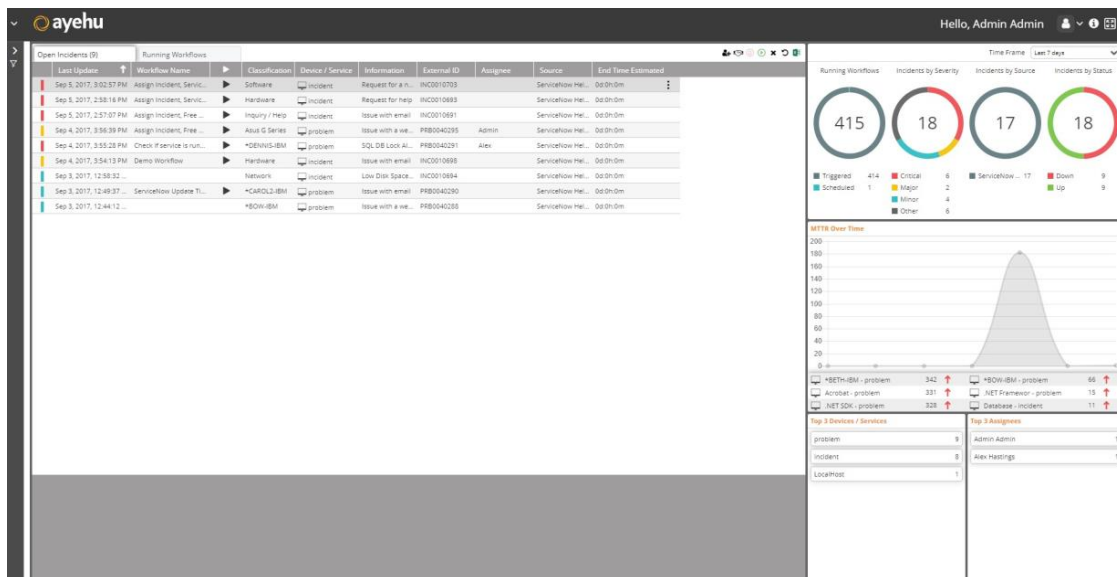


You can now enter your login credentials. The **Company** field refers to the tenant entity to which you wish to log in. To login with your AD credentials, enter your **Domain**. Otherwise, to login as a local user, leave it blank.

- Click the **Login** button to enter the system. The dashboard will be displayed:



This is the dashboard for a first-time login on a new system. If you login to an existing system you will see something more like this:



The dashboard elements will be explained in detail in the [Home Page \[14\]](#) section.

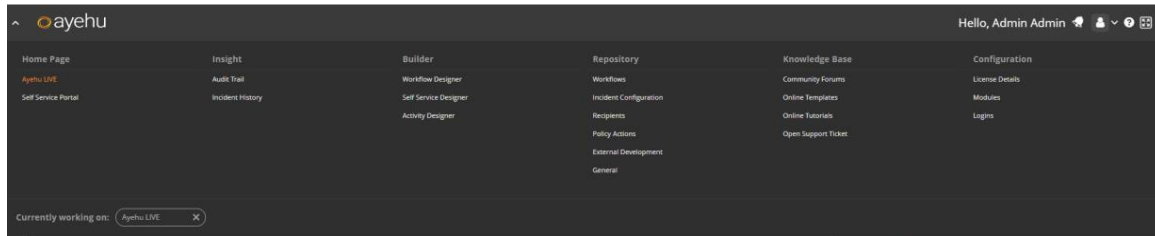
## 3.2. Using the Navigation Menu

Open the navigation menu by clicking the left hand down arrow on the Ayehu title bar:




**Figure 2. Ayehu - Common Title bar**

This in turn drops down the navigation menu:



**Figure 3. Ayehu - Navigation Menu**

 **NOTE**  
The title bar is common to all Ayehu top level displays making the navigation menu available from any where in the system.

The navigation menu shows a topic choice-list for each section of the system and along the bottom, a history bar of visited topics, for example:



**Figure 4. Current and Visited Topics**

At any point, you can close any or all the topics in the list or re-visit a topic by clicking inside its topic bubble.

### 3.3. A Closer Look at the Navigation Menu






The following table summarizes the navigation menu with links to individual topic descriptions:

**Table 4. Navigation Menu**

Menu section	Topic	Description
<b>Home Page</b>	<a href="#">Understanding Ayehu LIVE [14]</a>	View real-time incidents, workflows and KPIs
	<a href="#">Self Service Portal [25]</a>	View and submit self-service forms
<b>Insight</b>	<a href="#">Incident History [32]</a>	View a report of the detected incidents
	<a href="#">Audit Trail [37]</a>	View a report of the detected events
<b>Builder</b>	<a href="#">Workflow Designer [53]</a>	Create and edit automated workflows
	<a href="#">Self Service Designer [172]</a>	Create and edit self-service forms
	<a href="#">Activity Designer [191]</a>	Create and edit custom activities
<b>Repository</b>	<a href="#">Workflows [207]</a>	Manage your workflows
	<a href="#">Incident Configuration [215]</a>	Define <a href="#">devices [216]</a> , <a href="#">services [220]</a> , <a href="#">classifications [222]</a> , <a href="#">incidents [215]</a> , <a href="#">event parsing [226]</a> and <a href="#">notes [230]</a> .
	<a href="#">Recipients [232]</a>	Manage recipient <a href="#">users [232]</a> and <a href="#">groups [234]</a>
	<a href="#">Policy Actions [236]</a>	Compose <a href="#">triggered [236]</a> and <a href="#">scheduled [241]</a> workflows
	<a href="#">External Development [244]</a>	Insert user written code modules in .net VB or C#
	<a href="#">General [249]</a>	This section is used to create <a href="#">conditions [249]</a> , <a href="#">condition objects [252]</a> , <a href="#">error handling [258]</a> , <a href="#">messages templates [262]</a> , <a href="#">error messages [261]</a> , <a href="#">time frames [265]</a> and <a href="#">access restrictions [267]</a>
<b>Knowledge Base</b>	<a href="#">Community Forums [271]</a>	Ayehu user community discussions
	<a href="#">Online Templates [272]</a>	Supplied both by Ayehu and users
	<a href="#">Online Tutorials [272]</a>	Includes manuals and release notes
	<a href="#">Open Support Ticket [272]</a>	Get problem solving support from Ayehu
<b>Configuration</b>	<a href="#">License Details [274]</a>	Review your purchased license details
	<a href="#">Modules [275]</a>	Define integration modules
	<a href="#">Logins [290]</a>	Manage the users' login credentials

### 3.4. The Title Bar Icons

**Table 5. Title Bar Icons**

Icon	Function
	Logs out the current session
	Get online help
	Toggles full screen mode
	Open a feature such as expand the navigation menu
	Close a feature such as collapse the navigation menu

### 3.5. Multiple Tabs or Windows

You may want to open multiple sessions using new tabs or new windows. This may be useful if you are doing development in the Workflow Designer and you require another navigation item without leaving the Designer. To open another session, just copy the URL that you

used to login (see [Logging in to Ayehu Next Generation \[8\]](#)). Use your browser's New Tab or New Window facility with the copied URL. It will open up a tab/window at the main navigation menu without the necessity of logging in again.

## 4. HOME PAGE

### 4.1. Ayehu LIVE

#### 4.1.1. Understanding Ayehu LIVE

Ayehu LIVE is the Ayehu Next Generation dashboard page. It displays events and alerts from the control and monitoring systems. The dashboard is a dynamic environment responding to changes in real time.

The Ayehu LIVE dashboard is illustrated in the following figure:

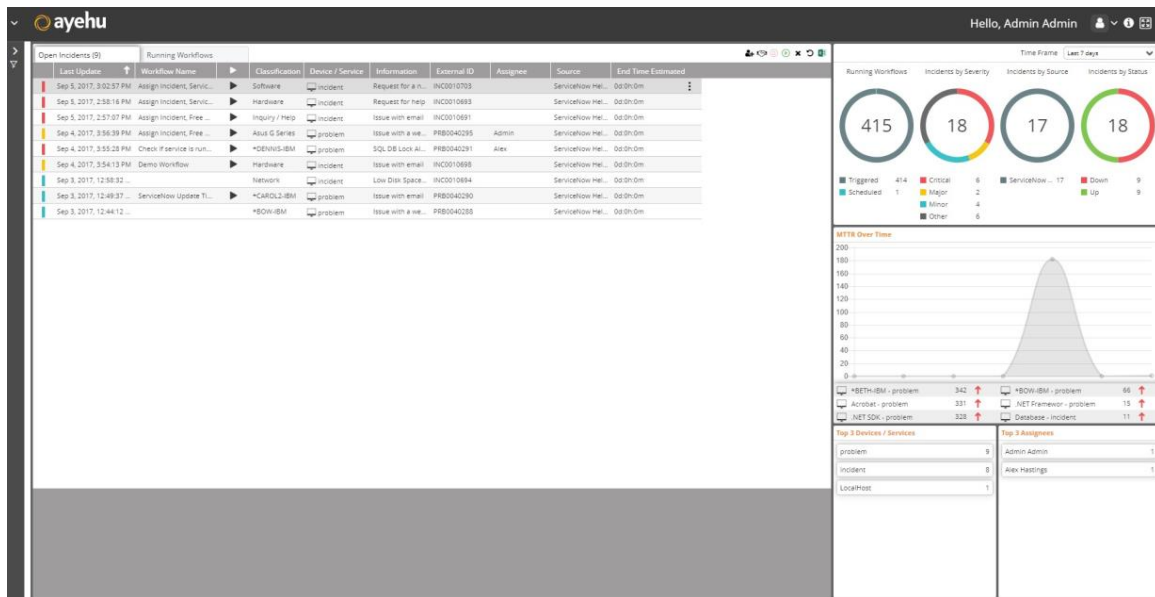


Figure 5. Ayehu LIVE Dashboard

It provides a central display of changes - open incidents, running workflows, real-time KPIs and statistics. You also use it to manage critical events and take action to prevent degradation of critical operations and services.

In the dashboard, two real time displays are accessible from the two top left hand tabs, **Open Incidents** and **Running Workflows**.

Gauges and graphs are displayed on the right hand side of the window. They provide cumulative statistics about Ayehu Next Generation's performance.

## 4.1.1.1. Open Incidents

### 4.1.1.1.1. Understanding the Open Incidents List

Severity	Last Update	Workflow Name	Classification	Device / Service	Information	External Id	Assignee	Source
Critical	May 6, 2018, 12:46:23 PM	Dani-170	Software	incident	Issue with networking	INC0031298		SNOW
Critical	May 6, 2018, 12:31:05 PM	Dani-170	Software	incident	Issue with networking	INC0031297		SNOW
Critical	May 6, 2018, 12:16:23 PM	Dani-170	Software	incident	Issue with networking	INC0031296		SNOW
Critical	May 6, 2018, 12:01:13 PM	Dani-170	Software	incident	Issue with networking	INC0031295		SNOW
Critical	May 6, 2018, 11:46:11 AM	Dani-170	Software	incident	Issue with networking	INC0031294		SNOW
Critical	May 6, 2018, 11:31:09 AM	Dani-170	Software	incident	Issue with networking	INC0031293		SNOW
Critical	May 6, 2018, 11:16:09 AM	Dani-170	Software	incident	Issue with networking	INC0031292		SNOW

Figure 6. The Open Incident list

The following table explains the list columns:

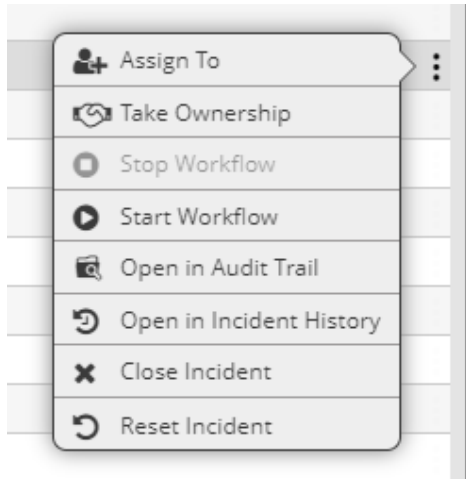
Table 6. Open Incidents Fields

Column	Description
	Severity of the incident (red=critical, yellow=major, blue=minor)
Last Update	Last update date and time
Workflow Name	The assigned workflow
	An indication of a trigger (workflows which were triggered by an incoming event are indicated by this).
Classification	Incident classification
Device/Service	The incident originates from this device or service
Information	Incident description
External Id	<p> <b>NOTE</b></p> <p>For incidents that are parsed using the <a href="#">Event Parsing [226]</a> mechanism or created using the workflow New Incident activity, the external ID is created automatically. For incidents that were created by Mapping (using one of the built-in integrations), the external ID is the value mapped by Ayehu Next Generation into the module configuration. It is an internal procedure that assigns a unique ID to every incident.</p> <p>For example:</p> <p>If the integration is a ticketing system, the external ID can be mapped to the ticket ID. In this way, every time a new ticket is created, a new incident will also be created regardless of the Device/Service and Classification combination.</p>
Assignee	The user assigned to handle the incident
Source	The source (for example: any of the integration modules)

### 4.1.1.1.2. Managing Open Incidents

To choose an open incident for management, click it anywhere in its line in the list. In the figure [Open Incidents List \[15\]](#), the fourth item has been selected for management. Notice

that the icon is visible. Clicking it opens an actions list:



The same actions can be accessed from the icons on the top right of the Open Incidents list:



The icons operate on the selected open incident. Their use is described in the following table:

**Table 7. Open Incident Action Icons**

Icon	Description
	Assign the incident to another user [16]
	Take ownership of the incident [17]
	Stop the assigned workflow
	Start the assigned workflow [17]
	Open the incident in the Audit Trail
	Open in the Incident History
	Close the incident
	Reset the incident
	Export the incident to an Excel file

### Assign the Incident to Another User

Clicking this icon opens the **Assign to** dialog box:



**Assign To** ✕





**User\***  📄 + ✎

**Communication\***  ▼

**Template\***  ▼ + ✎

**Timeout (Min)**

**To assign an incident to another user:**

1. Select the **User** to which the incident will be assigned. Choose an existing user by selecting a user from the drop-down list. You can also search for a user by typing part of the user name. Having selected a user, you can edit the entry by clicking . Click  to add a new user.
2. Select the **Communication** method. The choices are Email or SMS.
3. Select the **Template** of the message that will be sent to the user. Choose an existing message template by selecting a template from the drop-down list. You can also search for a template by typing part of its title. Having selected a template, you can edit the entry by clicking . Click  to create a new message template. Message templates are created and managed in [Understanding Message Templates \[262\]](#).
4. Enter the number of minutes within which the assigned user must respond (**Timeout**) and click **OK**.

**Take Ownership of the Incident**

Clicking this icon opens the **Take Ownership** dialog box:

**Take Ownership** ✕

**Communication**

▼

- Select the Communication method. The choices are Email or SMS.

**Start the Assigned Workflow**

Clicking this icon opens the **Start Workflow** dialog box:

**To start the assigned workflow:**

1. Select the **Workflow** name.



**NOTE**

Once variables have been set (see [Setting Variables in Workflows \[108\]](#)), selecting the workflow from the **Workflow** dropdown will display the **Set Values & Run** window. Users with editing permissions have the option to select which variables to be used during the workflow execution while users without editing permissions must insert values for all of the required variables to execute the workflow.

2. Select one of the available options:

**Move to Audit Trail:** After running the workflow, the Audit Trail window opens so that you can watch its progress.

**Stay in current:** After running the workflow, you remain in the current Workflows window. Use this option to concurrently run several workflows.

**4.1.1.1.3. Open Incidents Gauges**

The gauges and graphs display the relevant information according to the selected **Time Frame**. You may choose one of the items in the Time Frame list:



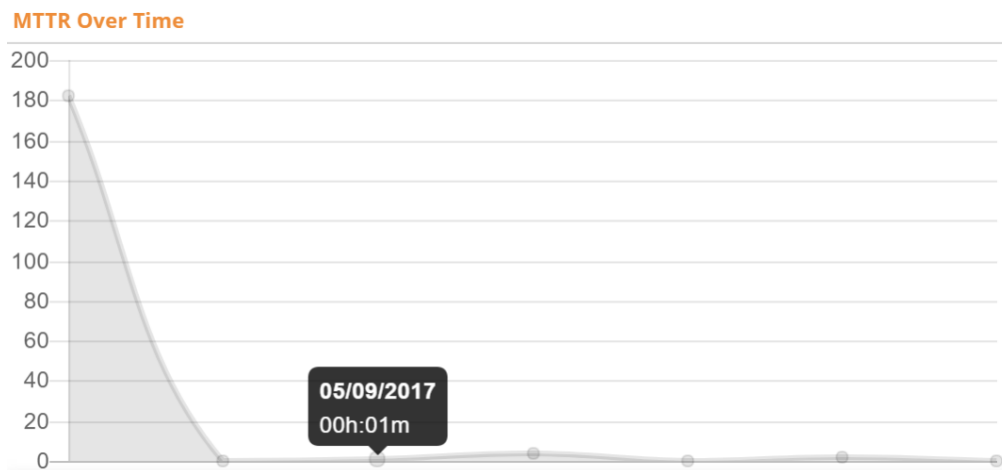
The top section shown above displays the **running workflows** (segmented by trigger/schedule), **incidents** (segmented by severity), **incidents** (segmented by source and by status):

The **MTTR Over time** graph displays the mean time to recover at different points in time, according to the selected time frame.

**TIP**

Hovering over an individual point will display the specific date and time of the measurement.

For example, in the following illustration the selected time frame is **Last 7 days** and the points on the horizontal axis represents days.



Below the **MTTR Over Time** graph is a list of incidents in respect of which the MTTR was the highest (within the selected time frame). The arrow symbol next to each incident name

indicates whether the MTTR increased or decreased (compared to the previous period). In the illustrated example, the MTTR of the displayed incidents was higher than the MTTR in the preceded period:

*BETH-IBM - problem	342	↑	*BOW-IBM - problem	66	↑
Acrobat - problem	331	↑	.NET Framewor - problem	15	↑
.NET SDK - problem	328	↑	Database - incident	11	↑

The bottom section displays the most common devices and services that were involved in the incidents, and the most common assignees (in the selected time frame):

Top 3 Devices / Services		Top 3 Assignees	
incident	20	Admin Admin	1
problem	9	Alex Hastings	1

## 4.1.1.2. Running Workflows

### 4.1.1.2.1. Understanding the Running Workflows List

Start Time	Workflow Name	Policy Type & Name	Current Activity	Running Time	Source
May 6, 2018, 2:54:33 PM	eyeShareTempWorkflowRun	Admin Admin	wait1	0d 00:00:45	Manual

Figure 7. Running Workflows List


The following table explains the list columns:

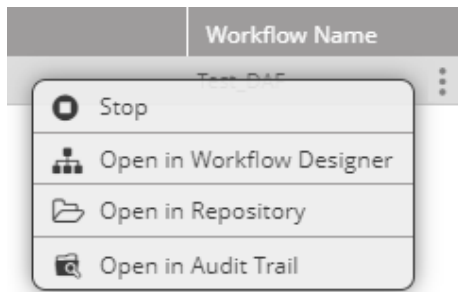
Table 8. Running Workflows Fields

Column	Description
Start Time	The workflow's starting time
Workflow Name	The workflow's name
Policy Type & Name	The policy type - indicates whether the workflow was triggered by an event or scheduled
Current Activity	Workflow activity being currently performed
Running Time	Workflow running duration
Source	Indicates how the workflow was invoked - manually or from another workflow activity

### 4.1.1.2.2. Managing the Running Workflows





To choose a running workflow for management, click it anywhere in its line in the list. In the figure [Running Workflows List \[20\]](#), the only listed item has been selected for manage-

ment. Notice the  icon is visible. Clicking it opens an actions list:



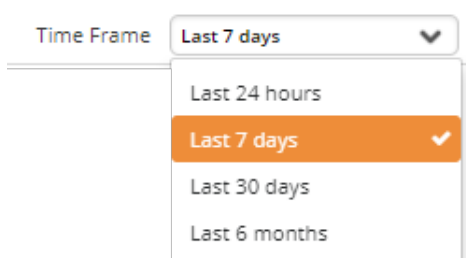
Further details are in the following table:

**Table 9. Running Workflows Actions Icons**

Menu item	Description
	Stop the workflow
	Open the workflow in the Workflow Designer
	Open in the Repository
	Open in the Audit Trail

#### 4.1.1.2.3. Running Workflows Gauges

The gauges and graphs display the relevant information according to the selected **Time Frame**: the last 24 hours, last 7 days, last 30 days or last six months.

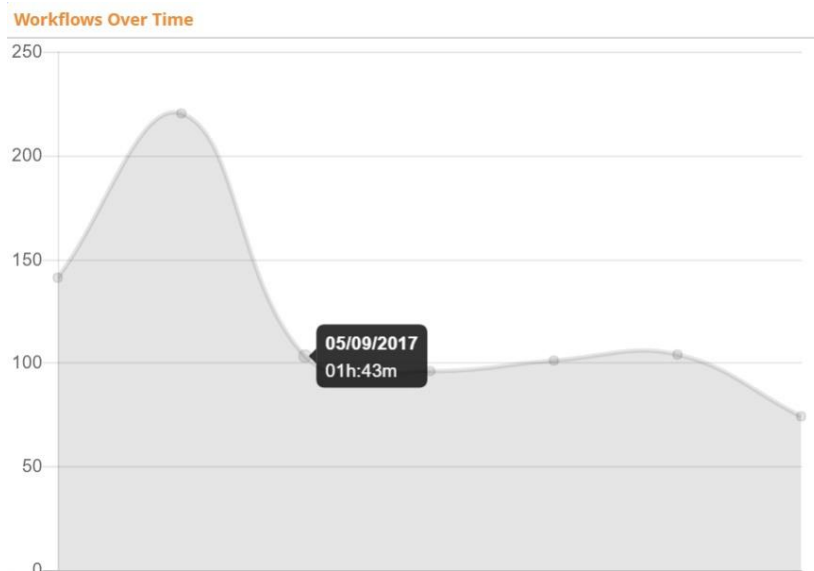




The **Workflows Over time** graph displays the duration of running workflows at different points in time, according to the selected time frame.

**TIP**  
 Hovering over an individual point will display the specific date and time of the measurement.

For example, in the following illustration the selected time frame is **Last 7 days**, and the points on the horizontal axis represents days.



Below the **Workflows Over Time** graph is a list of the most frequently run workflows. The counts shown are the number of times the workflow has been run during the defined time

period. The arrow symbol next to the count indicates whether the number of times the workflow has been run during the current period increased or decreased compared to the preceding period. In the above example, the counts of all workflows were higher than in the preceding period:

 Assign Incident	422	↑	 Check if service is running	1	↑
 ServiceNow Update Ticket	419	↑	 Demo Workflow	1	↑
 Free up disk space on list ...	2	↑	 Find top 5 CPU processes	1	↑


The bottom section displays the most frequent workflows and the workflows of which the duration was the longest (in the selected time frame):

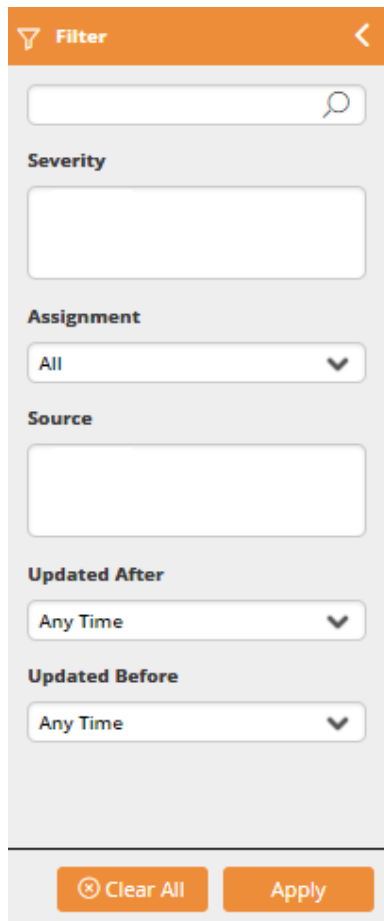
Top 3 Frequent Workflows		Top 3 Workflows Duration	
Assign Incident	422	Find top 5 CPU processes	00h:00m
ServiceNow Update Ticket	419	Demo Workflow	00h:00m
Free up disk space on list of s...	2	Check if service is running	00h:00m

## 4.1.2. Filtering Incidents and Workflow

The Filter panel allows you to easily locate incidents and workflows.

**To filter the list of incidents/workflows:**

1. From the left side of the screen, click . The filter pane will appear:




**NOTE**

The available filtering criteria will vary according to the selected tab - open incidents or running workflows. The latter only has first search field.

2. In the top edit box, enter your filter text.



**TIP**

In the running workflows tab, the free text search field applies to workflow names. In the open incidents tab, the free text search field applies to device/service names, classification names, information, workflow names, assignee and external ID.

Complete the filtering procedure by filling out the rest of the fields.

3. Click **Apply** to filter the list of entities



## 4.2. Self Service Portal

### 4.2.1. Introduction to the Self-Service Portal

The Self-Service Portal is a user-friendly web UI that enables your organization's end-users to fulfill requests independently while utilizing processes and workflows that you have set up for them in the [Self-Service Designer \[172\]](#).

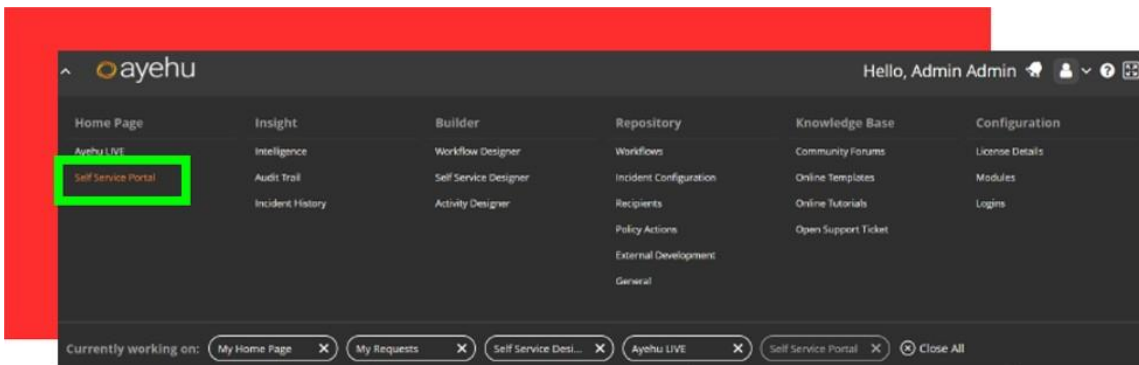
For example, you can create a self-service Form to enable provisioning a Virtual Machine (VM). The Form includes fields for the user to enter all relevant information, guided by a workflow you have set up to support this process. The user enters all information and launches the Form. The Form triggers the Workflow to run with the information given and returns the desired result to back to the user; this way, you have saved time, money, and effort while maintaining control over the process.

### 4.2.2. Accessing the Self-Service Portal

To display the Self-Service Portal, open the top navigation pane by clicking the down arrow in the top left corner.



Under **Home Page**, click the **Self Service Portal** link.

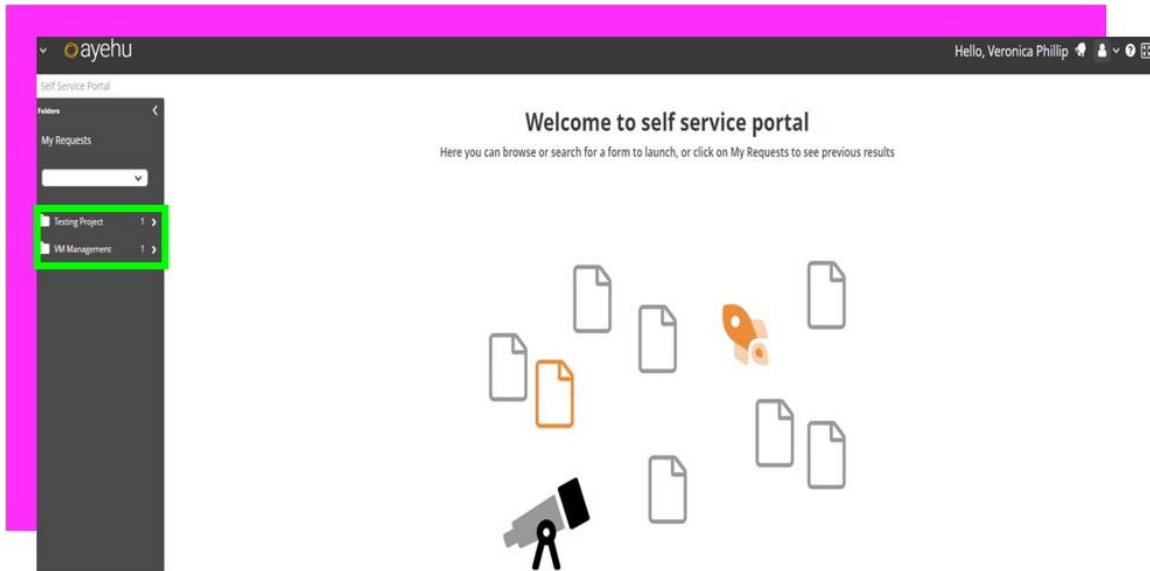


#### NOTE

Any role can see the Self-Service Portal. For details about permissions, see [Understanding Logins \[290\]](#).

### 4.2.3. Selecting a Form to Launch

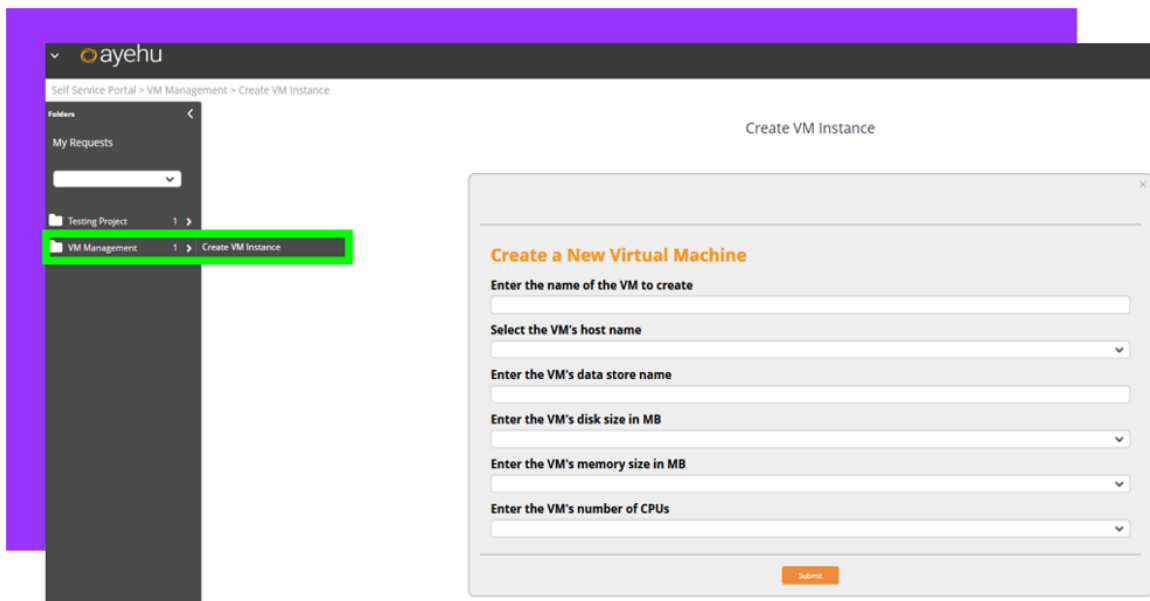
1. From the left navigation pane, select the relevant folder.



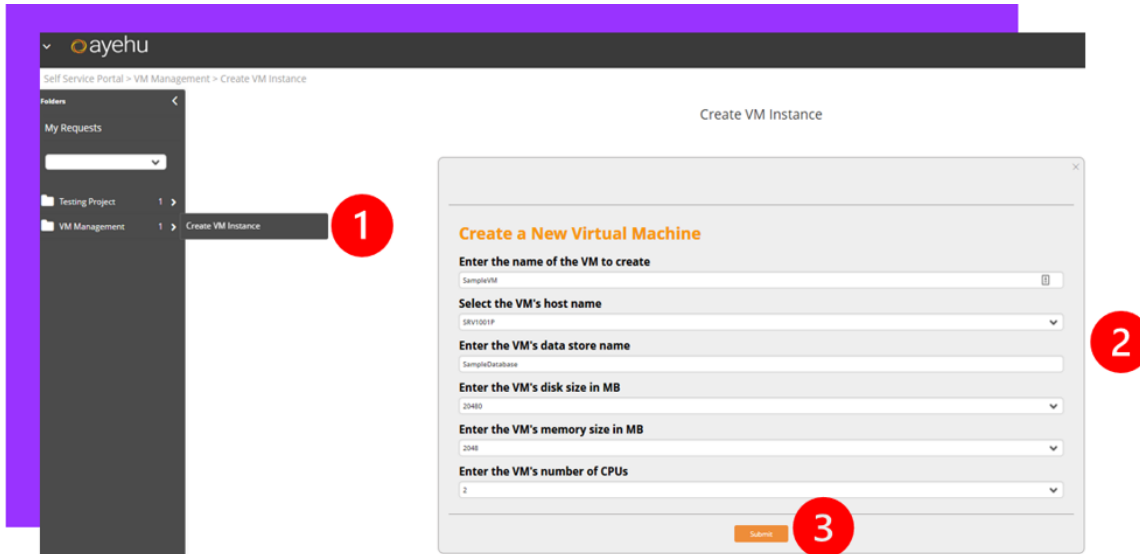
### NOTE

All forms you have permission to see will be visible on the right. For details about permissions, see [Setting Permissions on a Form \[184\]](#).

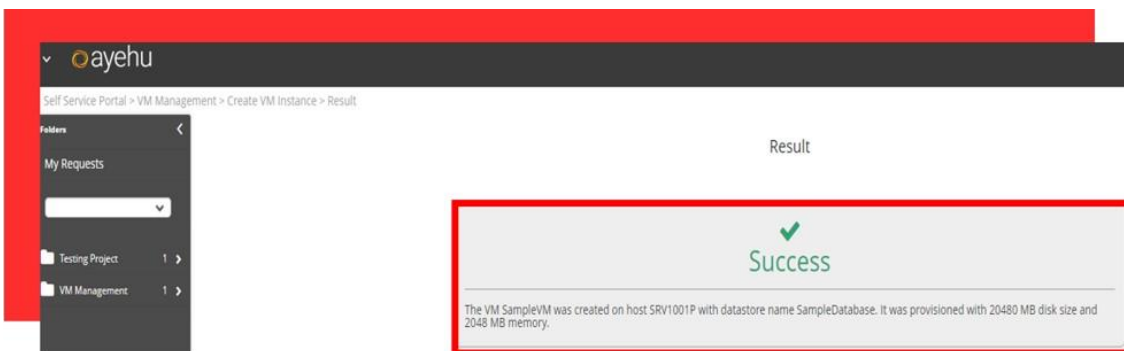
2. Select the appropriate Form.



3. Populate each field with your input.



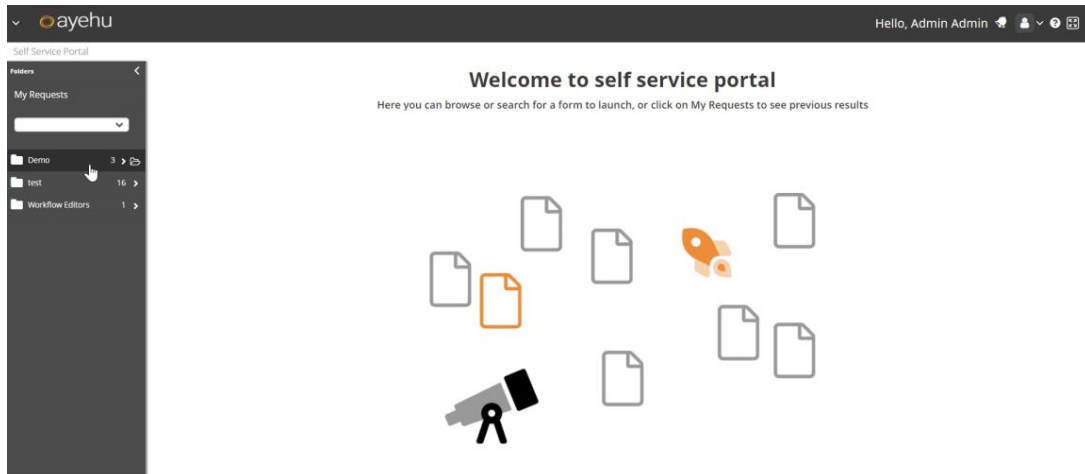
4. Click the **Submit** icon to launch the Form.



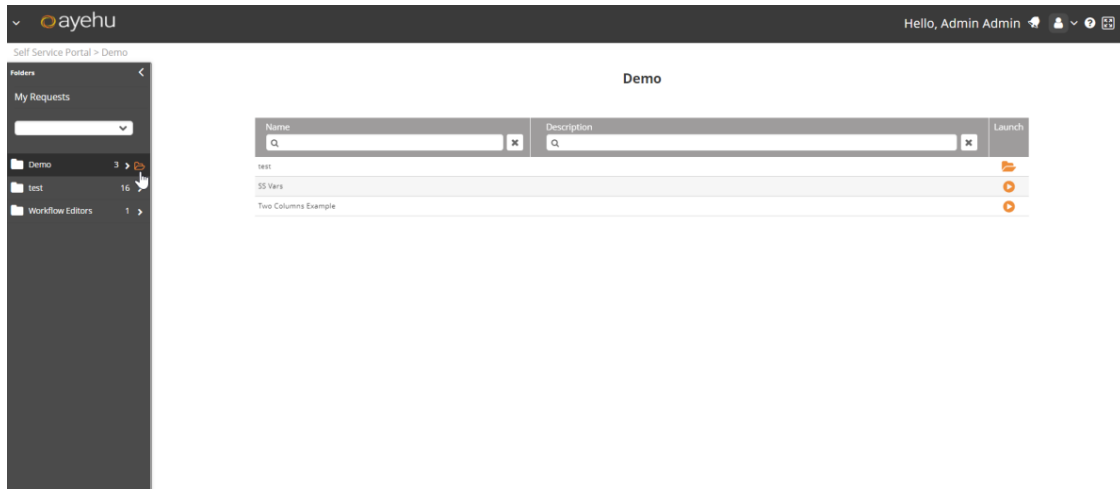
## 4.2.4. Viewing Folder Content

This feature is available starting in NG 1.9.

1. From the left navigation pane, hover over the relevant folder.

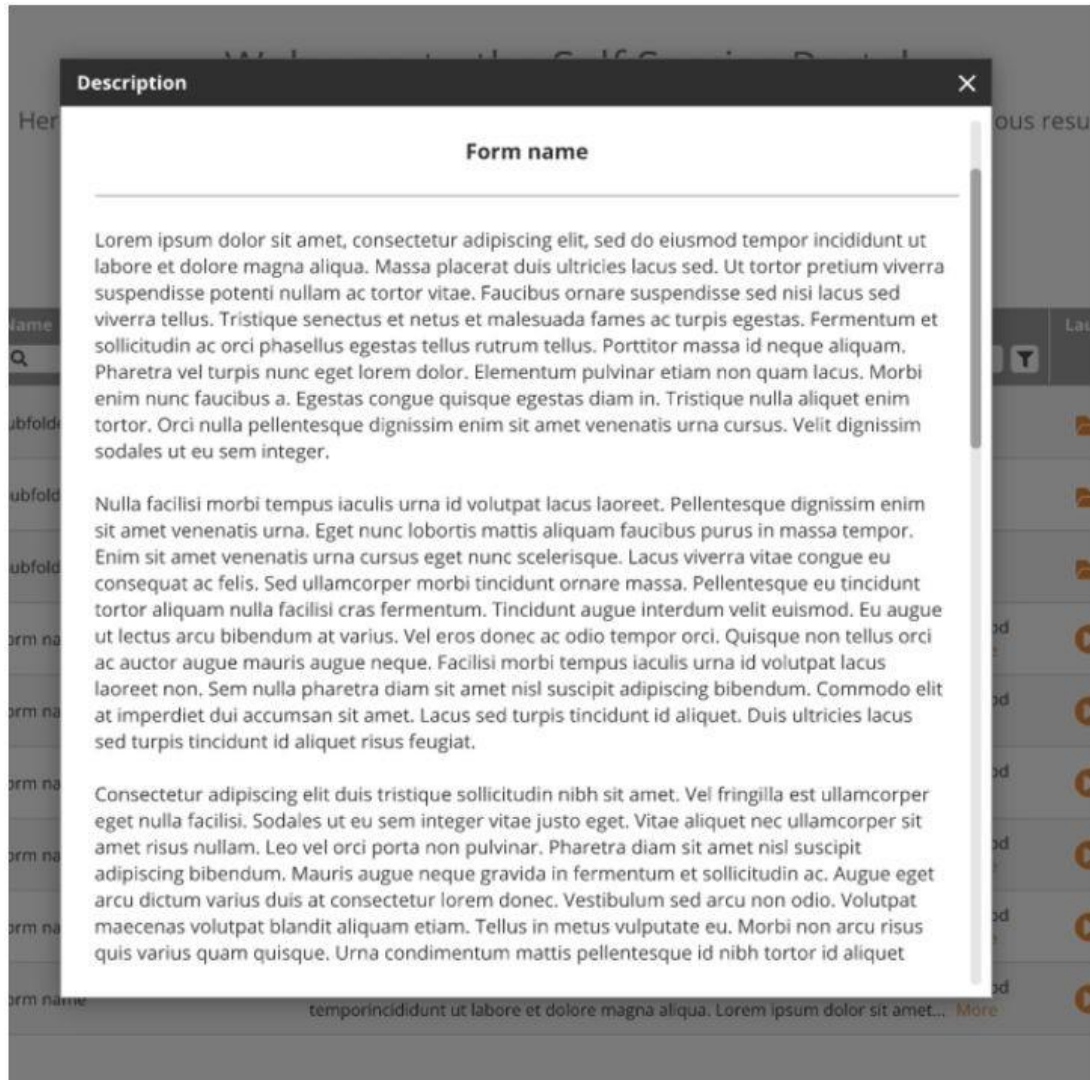


- Click on the folder icon to open its content.

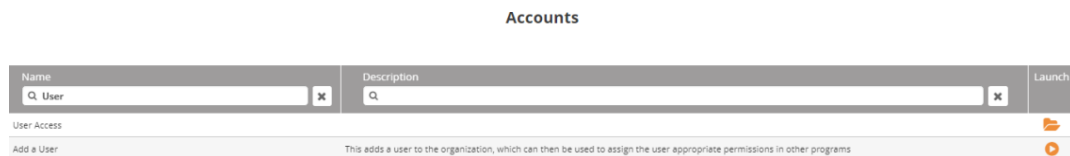


The contents of the folder, including forms and any sub-folders, will be visible on the page. Contents are shown with sub folders listed first in alphabetical order, followed by forms listed in alphabetical order.

The first line of the description will be shown in the table. If the description is longer than one line, a **more** link will be shown. Click the link to open a new window with the entire form description.

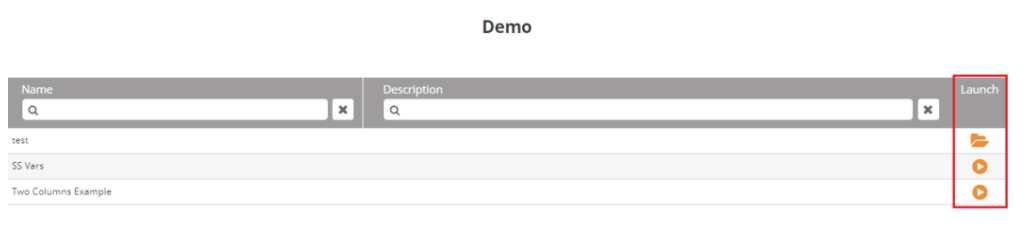


- Click on the **X** to close the modal and view the entire contents of the folder again.
- You can filter the Forms/sub folders by **Name** and/or **Description**. Enter the desired search term in the appropriate field and press **Enter** to filter the displayed results by this term. Searching in the **Name** field will apply the filter to the name of the sub-folder or form. Searching in the **Description** field will apply the filter to the description of the form. Both fields can be used together to further refine results.



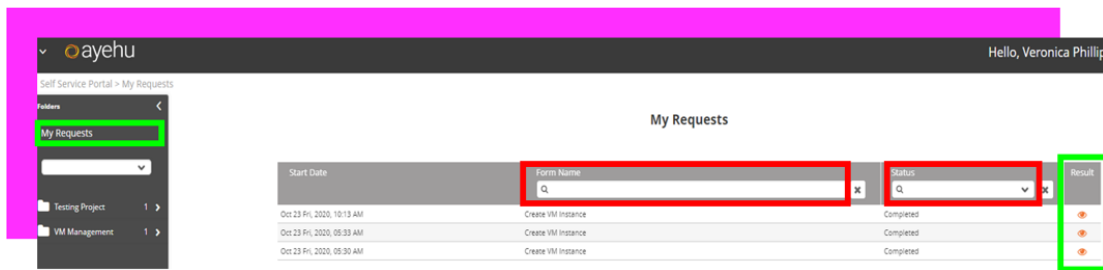
To clear the search results and see all sub-folders and forms again, click on the **X** icon next to the search field.

- Click on the **Launch** button to the right of the Form to open the Form or on the **Folder** button to the right of the Sub Folder to open its content.

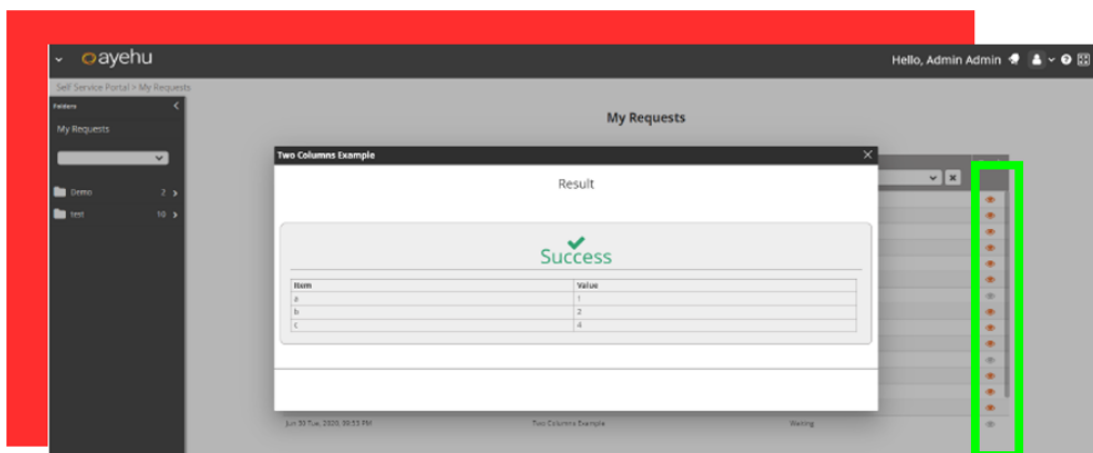


## 4.2.5. Viewing My Requests

- From the left navigation pane, click the **My Requests** button.  
**Result:** All Form requests you have permission to see displays.



- You can filter each request by the following:
  - Start Date
  - Form Name - type the form name and hit the **Enter** key to display the desired form.
  - Status (Completed/Waiting) - click the down arrow to select the desired status.
  - Result
- Click on each Result to the right of the request to open the **Result** window, which contains results.



## 5. INSIGHT

### 5.1. Incidents History

#### 5.1.1. Viewing the Incident History



The Incident History screen displays the list of events that were classified as incidents by Ayehu Next Generation. The incidents are registered to the Incident log along with their type, classification, workflows that were invoked as a result and other useful information.

The Incident History screen is divided into two: the upper table displays the list of Incidents, and the lower table displays their updates.

##### 5.1.1.1. Displaying the Incident Update Log

From the top menu, go to **Insight > Incident History**. The list of incidents will appear in the upper table.

Severity	State	Last Update Date	Classification	Device/Service Type & Name	Information	Workflow Names	Date Opened	Ttr	External ID	Assignee
Critical	↓	Sep 4, 2017, 8:02:59 AM	Software	Incident	Request for a new service	Assign Incident, ServiceNow Update...	Sep 3, 2017, 2:02:53 PM	0d 0h 0m	INC0010703	
Critical	↓	Sep 4, 2017, 7:36:18 AM	Hardware	Incident	Request for help	Assign Incident, ServiceNow Update...	Sep 3, 2017, 1:58:13 PM	0d 0h 0m	INC0010693	
Critical	↓	Sep 4, 2017, 7:37:07 AM	Inquiry / Help	Incident	Issue with email	Assign Incident, ServiceNow Update...	Sep 3, 2017, 1:56:53 PM	0d 0h 0m	INC0010691	
Warning	↑	Sep 3, 2017, 7:28:35 PM	*BETH-IBM	problem	Manually incident closer		Sep 3, 2017, 1:46:23 PM	0d 0h 42m	PRB0040289	
Critical	↓	Sep 3, 2017, 7:28:07 PM	.NET SDK	problem	Manually incident closer	ServiceNow Update Ticket	Sep 3, 2017, 1:39:43 PM	0d 0h 28m	PRB0040294	
Minor	↑	Sep 3, 2017, 7:27:50 PM	Arobot	problem	Problem Solved	Assign Incident	Sep 3, 2017, 1:56:13 PM	0d 0h 31m	PRB0040293	
Critical	↓	Sep 3, 2017, 3:10:37 PM	*BOW-IBM	problem	Approved by DBA	Assign Incident, ServiceNow Update...	Sep 3, 2017, 2:04:13 PM	0d 1h 6m	PRB0040296	
Info	↑	Sep 3, 2017, 2:10:50 PM	Database	Incident	Manually incident closer		Sep 3, 2017, 1:58:53 PM	0d 0h 11m	INC0010686	
Info	↑	Sep 3, 2017, 2:10:33 PM	.NET Framework	problem	Manually incident closer		Sep 3, 2017, 1:55:32 PM	0d 0h 15m	PRB0040292	
Major	↓	Sep 3, 2017, 2:04:45 PM	Asus G Series	problem	Issue with a web page	Assign Incident	Sep 3, 2017, 2:02:23 PM	0d 0h 0m	PRB0040295	Admin



State	Date Created	Information	Workflow Name	Event Number	Rules
↓	Sep 3, 2017, 2:02:53 PM	Request for a new service	ServiceNow Update Ticket	399201711032381PQHM	✓
↓	Sep 3, 2017, 4:03:07 PM	Request for a new service	ServiceNow Update Ticket	39920171103207521WQJ	✓
↓	Sep 3, 2017, 6:02:52 PM	Request for a new service	ServiceNow Update Ticket	39920171103202189WSD	✓
↓	Sep 3, 2017, 8:02:57 PM	Request for a new service	ServiceNow Update Ticket	399201711032061482PV	✓
↓	Sep 3, 2017, 10:03:01 PM	Request for a new service	ServiceNow Update Ticket	399201711032013158NBK	✓
↓	Sep 4, 2017, 12:02:56 AM	Request for a new service	ServiceNow Update Ticket	3992017210252277HJD	✓
↓	Sep 4, 2017, 2:02:50 AM	Request for a new service	ServiceNow Update Ticket	39920172302502416PV	✓
↓	Sep 4, 2017, 4:02:55 AM	Request for a new service	ServiceNow Update Ticket	4092017010254568BMA	✓
↓	Sep 4, 2017, 6:02:49 AM	Request for a new service	ServiceNow Update Ticket	4092017030246378HL	✓
↓	Sep 4, 2017, 8:02:53 AM	Request for a new service	ServiceNow Update Ticket	4092017050253419TDOE	✓

Figure 8. Incident History and Updates

The top list provides the following information on each incident as follows:



**Table 10. Incident History Fields**


Column	Description
Severity	One of Info, Minor, Warning, Major, Critical
State	 - Up,  - Down
Last Update	The last time the incident was updated
Classification	Incident type
Device/Service Type & Name	Incident source - device or service and name
Information	A brief explanation of the nature of the incident
Workflow Names	A list of workflows invoked as a result of the incident
Date Opened	The date on which the incident commenced
Ttr	Time to Recover - displayed for recovered incidents
External ID	
Assignee	Name of user if incident assigned to another user

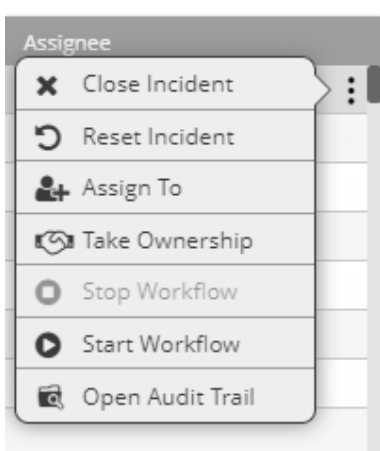


**NOTE**

- You can drag and drop the column headers to rearrange the list
- Clicking a column sorts the list of updates according to the column chosen

**5.1.1.2. Managing the Incidents Log**

To chose an Incident update for management, click it anywhere in its line in the list. Notice that the  is visible. Clicking it opens an actions list:



The same actions can be accessed from the icons on the top right of the Incident History list:



The icons operate on the selected Incident. Their use is described in the following table:

**Table 11. Incident Log Action Icons**

Icon	Description
	Close the incident
	Reset the incident
	Assign the incident to another user
	Take ownership of the incident
	Start the workflow assigned to the incident.
	Open the incident in the Audit Trail
	Export the log to an Excel file

## 5.1.2. Viewing the Incident Updates

The Incident Updates table displays a detailed list of updates related to the selected incident.

### 5.1.2.1. Displaying the Incident Updates

From the upper table, click the incident's row. The updates table will display the updates of the selected incident:

State	Date Opened	Information	Workflow Name	Event Number	Rules
↓	Sep 3, 2017, 2:02:53 PM	Request for a new service	Serviceflow Update Ticket	309201711025381PQHM	✓
↓	Sep 3, 2017, 4:03:07 PM	Request for a new service	Serviceflow Update Ticket	3092017130307521WGI	✓
↓	Sep 3, 2017, 6:02:52 PM	Request for a new service	Serviceflow Update Ticket	3092017150252189WGD	✓
↓	Sep 3, 2017, 8:02:57 PM	Request for a new service	Serviceflow Update Ticket	3092017170256914PZPV	✓
↓	Sep 3, 2017, 10:03:01 PM	Request for a new service	Serviceflow Update Ticket	309201719030131SRNBK	✓
↓	Sep 4, 2017, 12:02:56 AM	Request for a new service	Serviceflow Update Ticket	309201721025727HJO	✓
↓	Sep 4, 2017, 2:02:50 AM	Request for a new service	Serviceflow Update Ticket	309201723025241KPPV	✓
↓	Sep 4, 2017, 4:02:55 AM	Request for a new service	Serviceflow Update Ticket	409201701025458XBMA	✓
↓	Sep 4, 2017, 6:02:49 AM	Request for a new service	Serviceflow Update Ticket	409201703024937BHL	✓
↓	Sep 4, 2017, 8:02:53 AM	Request for a new service	Serviceflow Update Ticket	4092017050253419TDOE	✓

**Figure 9. Incident History Updates**


The list provides the following information:

**Table 12. Incident Updates Field**


Column	Description
State	Resolved:  - Up, Pending:  - Down
Date Opened	The date and time of the update
Information	Details about the update
Workflow Name	The name of the workflow that was triggered by the incident
Event Number	Provide by the system
Rules	Rules indicates that the incident went through the <a href="#">trigger [236]</a> list.

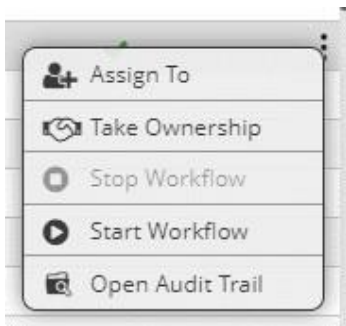


**NOTE**

- You can drag and drop the column headers to rearrange the list
- Clicking a column sorts the list of updates according to the column chosen
- On the right of the title bar, there is an Excel button  that you can use to save the displayed list to an Excel file





**5.1.2.2. Managing the Incident Updates**

To chose an Incident update for management, click it anywhere in its line in the list. Notice that the  is visible. Clicking it opens an actions list:



The menu is described in the following table:


**Table 13. Incident Log Action Icons**

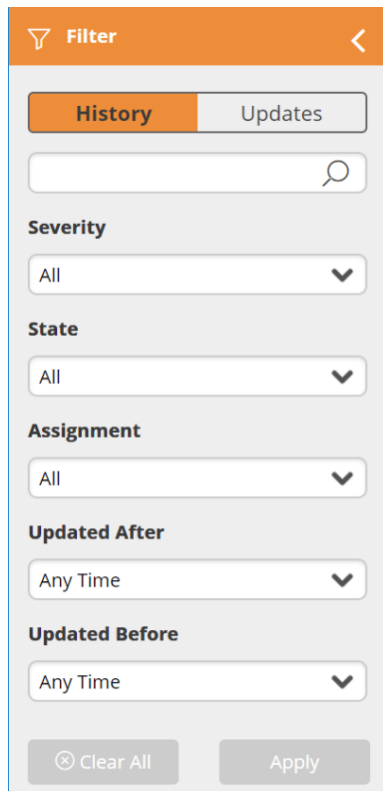
Icon	Description
	Assign the incident to another user
	Take ownership of the incident
	Start the workflow assigned to the incident.
	Open the incident in the Audit Trail

**5.1.3. Filtering Incidents and Updates**


The Filter panel allows you to easily locate incidents and updates from the Incident History log.

**To filter incidents and updates:**

1. From the left side of the screen, click . The filter pane will appear:



2. Click **History** to filter the incident list, or **Updates** to filter the list of updates.
3. You may filter the incident history list by the severity, state, assignment and update time of the incident. You can filter the update log with free text.

 **NOTE**

The free text field in the incidents filter pane searches within the following fields: Device/Service Name, Classification, Information, Workflow Name, Assignee and External ID.

The free text field in the updates filter pane searches within the following fields: Information and Workflow Name.

4. Click **Apply** to filter the list of records.

## 5.2. Audit Trail

### 5.2.1. Viewing the Audit Trail Log



The Audit Trail screen displays the list of events (external events, scheduled actions, triggers, self service requests and manual workflow executions) audited by Ayehu Next Generation. The events are registered to the Audit Trail log along with the source module which triggered them, the workflow that was invoked as a result and other useful information.

The Audit Trail log is divided into two: the upper table displays the list of events (external events, scheduled actions, triggers, self service requests and manual workflow executions), and the lower table displays the activity log of each event: the event's starting time and the execution of each activity in the triggered workflow.

#### 5.2.1.1. Displaying the Event Log

From the top menu, go to **Insight > Audit Trail**. Open the Audit trail log. The list of events will appear in the upper table.

Start Date	Policy Type/Name	Source Module	Device Name	Workflow Name	Source	Subject	Message
May 30, 2018, 1:58:07 PM	Incoming event	eyeShare Server		eyeShareTempWorkflowRun	Admin@Dashboard	Manual workflow request	
May 30, 2018, 11:14:32 AM	Incoming event	eyeShare Server		Demo Workflow	Admin@Dashboard	Manual workflow request	
May 30, 2018, 11:12:36 AM	Incoming event	eyeShare Server		eyeShareTempWorkflowRun	Admin@Dashboard	Manual workflow request	
May 17, 2018, 2:30:07 PM	Incoming event	eyeShare Server		Test_DAF	Admin@Dashboard	Manual workflow request	
May 17, 2018, 2:17:52 PM	Incoming event	eyeShare Server		Test_DAF	Admin@Dashboard	Manual workflow request	
May 17, 2018, 12:37:25 PM	Incoming event	eyeShare Server		eyeShareTempWorkflowRun	Admin@Dashboard	Manual workflow request	
May 17, 2018, 10:46:03 AM	Incoming event	eyeShare Server		Test_DAF	Admin@Dashboard	Manual workflow request	
May 17, 2018, 9:54:16 AM	Incoming event	eyeShare Server		eyeShareTempWorkflowRun	Admin@Dashboard	Manual workflow request	
May 17, 2018, 9:47:05 AM	Incoming event	eyeShare Server		eyeShareTempWorkflowRun	Admin@Dashboard	Manual workflow request	
May 17, 2018, 9:43:34 AM	Incoming event	eyeShare Server		Test_DAF	Admin@Dashboard	Manual workflow request	


  

Start Date	Type	Activity Name	Status	Result	Workflow	Branch	Full Name	Module	Subject	Message
May 17, 2018, 2:30:...	Incoming event				Test_DAF					Manual workflow re...
May 17, 2018, 2:30:...	MemorySet	CreateTable	Executed	Success	Test_DAF	Workflow Root				Memory Workflow Se...
May 17, 2018, 2:30:...	CreateMemoryTable	createMemoryTable1	Executed	Success	Test_DAF	Workflow Root				Create a memory tab...
May 17, 2018, 2:30:...	GetRowCount	TotalServers	Executed	4	Test_DAF	Workflow Root				Get rows count for S...
May 17, 2018, 2:30:...	GetCellValue	ServerName	Executed	Server1	Test_DAF	sequenceActivity1				Get cell value for Ser...
May 17, 2018, 2:30:...	ProcessCounter	IsProcessRunning	Error	Unknown host	Test_DAF	sequenceActivity1				Process counter rtvs...
May 17, 2018, 2:30:...	MemorySet	UpdateTable	Executed	Success	Test_DAF	sequenceActivity1				Memory Workflow Se...
May 17, 2018, 2:30:...	GetCellValue	ServerName	Executed	Server2	Test_DAF	sequenceActivity1				Get cell value for Ser...
May 17, 2018, 2:30:...	ProcessCounter	IsProcessRunning	Error	Unknown host	Test_DAF	sequenceActivity1				Process counter rtvs...
May 17, 2018, 2:30:...	MemorySet	UpdateTable	Executed	Success	Test_DAF	sequenceActivity1				Memory Workflow Se...

Figure 10. The Event Log

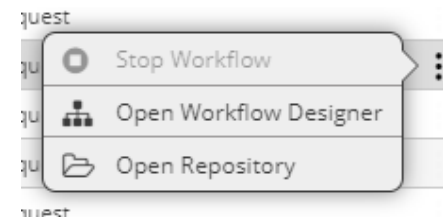
The top list provides the following information about each event:

**Table 14. Audit Trail Fields**

Column	Description
Start Date	Event start date and time
Policy Type/ Name	Type of event: incoming event, scheduled, etc.
Source Module	The source module when the event originates from a module
Device Name	The name of the mapped device/service if the event was classified as an incident
Workflow Name	The name of the workflow that was triggered by the event (if one was triggered)
	<div style="border: 1px solid #ccc; padding: 10px; background-color: #f9f9f9;">  <p><b>NOTE</b> The name <b>eyeShareTempWorkflowRun</b> indicates that the workflow execution was done manually from the Designer and not triggered by an external event.</p> </div>
Source	The address of the mailbox from which the event was invoked
Subject	The subject of the email that invoked the event
Message	The incoming information that was retrieved (by email or any other method) that invoked the event

### 5.2.1.2. Managing the Event Log

To choose an event for management, click anywhere in its line in the list. Notice that the event is visible. Clicking it opens an actions list:






These actions can be accessed from the icons on the top right of the Audit Trail list:



The icons operate on the selected Incident. Their use is described in the following table:

**Table 15. Audit Trail Action Items**

Icon	Description
	Open the parent workflow in the Workflow Designer
	Open the parent workflow in the Repository
	Export the log to an excel file



**NOTE**

When no workflow was invoked, the first two options are disabled.

### 5.2.1.3. Managing Audit Trail Folders

You may filter the Audit Trail events and activities by [using the filtering panel \[43\]](#). However, to add another level of categorization and filtering to the display, you should use Audit Trail folders. After creating the Audit Trail folders you may associate incoming events to the folders and then, when viewing the Audit Trail log, filter out any events that are not associated with them.

**To create an Audit Trail Folder:**

1. From the top bar, click . An edit box will appear:



2. Enter the name of the new folder (for example: "Scheduled Events") and click **Create**. you may now apply scheduled events to the new folder.



## NOTE

This feature is used in Repository > Policy Actions > [Schedules \[241\]](#), and in Policy Actions > [Triggers \[236\]](#), as shown respectively, in the following figures:

> Schedule - New Schedule
📄 ⋮

**Name\***

**Description**

**Enabled**

**Workflow\***

**Log**

**Log Folder**

**Recurrence Pattern** 
[Select All](#)   [Deselect All](#)

**Hourly** Rules

Schedules

**Run At**

**Recur Every**  Minutes

**Settings**  Stop Workflow if it is running more than

Skip Execution if the Previous Execution is Still Running

**Validity**

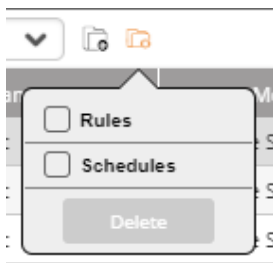
**Valid From**

**Valid Until**



**To remove an Audit Trail folder:**

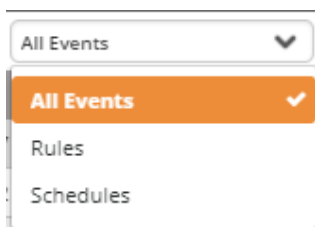
1. From the top bar, click . A list will appear:



2. Check the folder you wish to delete and click **Delete**.

**To filter the Audit Trail display using folders:**

1. From the top bar, click . The list of folders will appear:



2. Select the folder you wish to display. Log entries linked to events which are not stored in the selected folder will be filtered out from the display.

## 5.2.2. Viewing the Activity Log

### 5.2.2.1. Understanding the Activity Log

The Activity Log table displays a detailed list of activities related to the selected event: the event's starting time and the execution of each activity in the triggered workflow.

### 5.2.2.2. Displaying the Activity Log



From the upper table, click the row of an event. The activity log table will display the activities for the selected event:

Start Date	Type	Activity Name	Status	Result	Workflow	Branch	Full Name	Module	Subject	Message
May 17, 2018, 2:30...	Incoming event				Test_DAF				Manual workflow re...	
May 17, 2018, 2:30...	MemorySet	CreateTable	Executed	Success	Test_DAF	Workflow Root				Memory Workflow Se...
May 17, 2018, 2:30...	CreateMemoryTable	createMemoryTable1	Executed	Success	Test_DAF	Workflow Root				Create a memory tab...
May 17, 2018, 2:30...	GetRowCount	TotalServers	Executed	4	Test_DAF	Workflow Root				Get rows count for S...
May 17, 2018, 2:30...	GetCellValue	ServerName	Executed	Server1	Test_DAF	sequenceActivity1				Get cell value for Ser...
May 17, 2018, 2:30...	ProcessCounter	IsProcessRunning	Error	Unknown host	Test_DAF	sequenceActivity1				Process counter rtis...
May 17, 2018, 2:30...	MemorySet	UpdateTable	Executed	Success	Test_DAF	sequenceActivity1				Memory Workflow Se...
May 17, 2018, 2:30...	GetCellValue	ServerName	Executed	Server2	Test_DAF	sequenceActivity1				Get cell value for Ser...
May 17, 2018, 2:30...	ProcessCounter	IsProcessRunning	Error	Unknown host	Test_DAF	sequenceActivity1				Process counter rtis...
May 17, 2018, 2:30...	MemorySet	UpdateTable	Executed	Success	Test_DAF	sequenceActivity1				Memory Workflow Se...

Figure 11. Activity Log


The list provides the following information about the activities:

Table 16. Activity Log Fields

Column	Description
Start Date	Event start date and time
Type	The type of event: incoming, scheduled, etc.
Activity Name	The name of the activity
Status	The status (indicates whether the activity was successfully invoked).
Result	Some workflow activities produce an output result: True/False, Success/Failure, a numeric value, a textual value, a code fragment, an output message or a table. If the resulting text exceeds the field size, the button  will appear and a dialog box will display the activity's result.
Workflow	The name of the workflow that was triggered by the event
Branch	If the activity was initiated in a n if/else branch, it will be noted here
Full Name	If the activity belongs to the Communication category, this field will display the full name of the user who received the notification
Module	The origin module (if the event originated from a module)
Subject	The subject of the email that invoked the event
Message	The content of the email that invoked the event. If the message text exceeds the field size, the button  will appear and a dialog box will display the activity's result.




#### NOTE

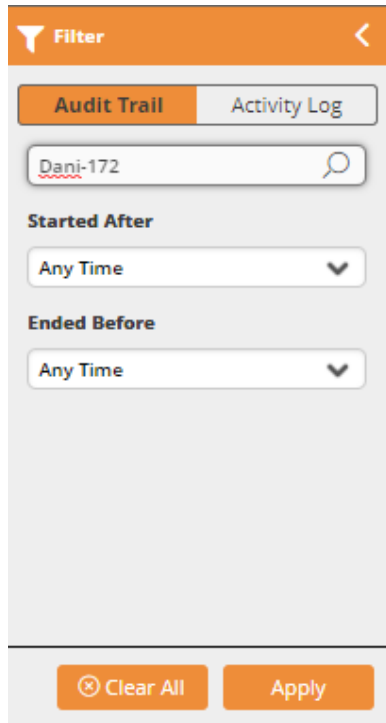
- Clicking a column sorts the list of updates according to the column chosen.
- Click  to export the log to an excel file.


### 5.2.3. Filtering Events and Activities

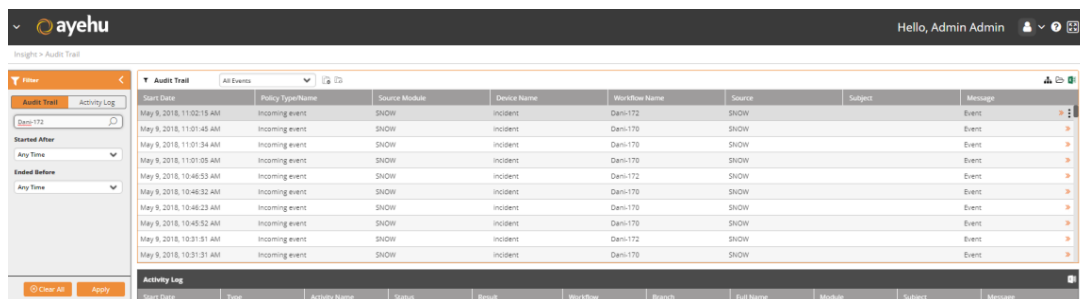
The Filter panel allows you to easily locate events and activities from the Audit Trail log.

**To filter events and activities:**

1. From the left side of the screen, click . The filter pane will appear:



Each of the two filter tabs allows filtering one of the two tables in the Audit Trail screen. When the filter pane is open, the relevant table is surrounded by an orange frame. A filtered table is indicated by the  icon as shown in the following figure:



2. Click **Audit Trail** to filter the event list, or **Activity Log** to filter the activity list.



#### NOTE

Not every event will run a workflow, but every event will appear in the audit trail log.



#### NOTE

The activity log can either:

Indicates that an event was dropped (since it did not qualify to run a workflow)

or

Display the full details of each activity that was executed by the workflow.

3. You may filter the event list by the starting and ending time, and the activity log by status, activity type and source module.



#### NOTE

The free text field in the audit trail filter pane searches for the following fields: Workflow Name, Policy Name (trigger or schedule name), Source Module, Message Source, Message Subject, Message Body and Event Number.

The free text field in the activity log filter pane searches for the following fields: Activity Name, Branch, Workflow Group, Workflow, and Result.

4. Click **Apply** to filter the list of entities.

## 6. BUILDER

### 6.1. Workflow Designer

#### 6.1.1. Welcome to the Workflow Designer

##### 6.1.1.1. Introduction to the Workflow Designer

The Workflow Designer is a powerful, easy to use tool that enables you to design and execute a variety of IT and business processes. Through a simple drag-and-drop interface, the processes created can be set to run automatically either in response to a specific event, alert or incident, or as part of regularly scheduled tasks. The process automation and coordination provided by the Workflow Designer greatly increases efficiency, saving you valuable time and freeing you from continually dealing with routine and repetitive tasks.

To help you get started and create workflows quickly, the Workflow Designer has an extensive collection of built-in categorized activities and contains a large library of pre-built workflow templates. These resources, together with the intuitive drag-and-drop interface, allow you to easily build any scenario required by organizational policies.

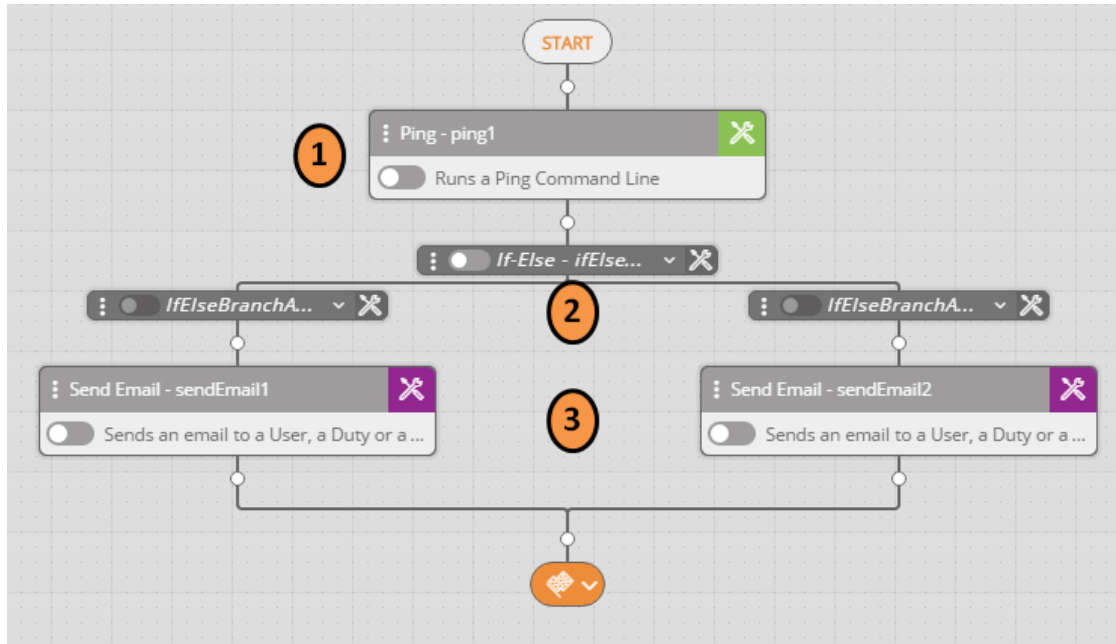
##### 6.1.1.2. Concepts and Terms

The table below explains terms with which you should become familiar before you start using the Workflow Designer.

Term	Definition/Notes	For More Information/ Examples
<b>Activity</b>	An operative or logical action. Activities may be simple or complex, and they can vary greatly in nature and purpose. Examples of activities are copying a file, sending an email, creating a new user, or retrieving current CPU information.	<ul style="list-style-type: none"> <li>• <a href="#">Sample Workflow [45]</a></li> <li>• <a href="#">Adding Activities [69]</a></li> </ul>
<b>Control</b>	A decision point that determines how the workflow will proceed. Examples of controls are conditions such as if/else decisions.	<ul style="list-style-type: none"> <li>• <a href="#">Sample Workflow [45]</a></li> <li>• <a href="#">Workflow Structure and Common Controls [75]</a></li> </ul>
<b>Workflow</b>	A sequence of activities performed in response to a specific event/alert/incident.	<ul style="list-style-type: none"> <li>• <a href="#">Sample Workflow [45]</a></li> <li>• <a href="#">Workflow Structure and Common Controls [75]</a></li> </ul>
<b>Incident</b>	An event that indicates a system fault, malfunction or security threat. You can configure the system so specific incidents invoke one or more relevant workflows.	
<b>Tag</b>	A keyword that is applied to a workflow. Tags are useful for organizing a collection of workflows and for helping users search for a workflow more effectively.	<a href="#">Adding New Tags [54]</a>

##### 6.1.1.3. Sample Workflow

The following workflow, which sends a status email after running a ping check, provides an example of the typical design and progression of a sequence of activities configured in the Workflow Designer. Each step of the workflow is explained in the table below the diagram.



Step	Activity/Control Name	Actions
1	Ping activity	A ping command is executed to check the status of a server. The relevant IP address is defined in the <a href="#">activity settings [86]</a>
2	If/Else control	At this point, the workflow proceeds in one of two directions, depending whether the ping command returns <i>Success</i> or <i>Failure</i>
3	Send Email activity	An email is sent to inform one or more administrative users about the server status. The body of the email varies according to which workflow branch is running: <ul style="list-style-type: none"> <li>• <b>Success:</b> Server is up</li> <li>• <b>Failure:</b> Server is down. Please check</li> </ul>


#### 6.1.1.4. Opening the Workflow Designer

Log into Ayehu Next Generation and open the Navigation menu:

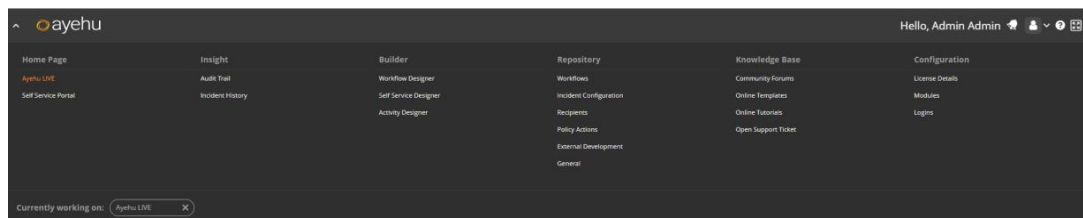
**To open the Workflow Designer:**

1. At the upper left side of the top bar,

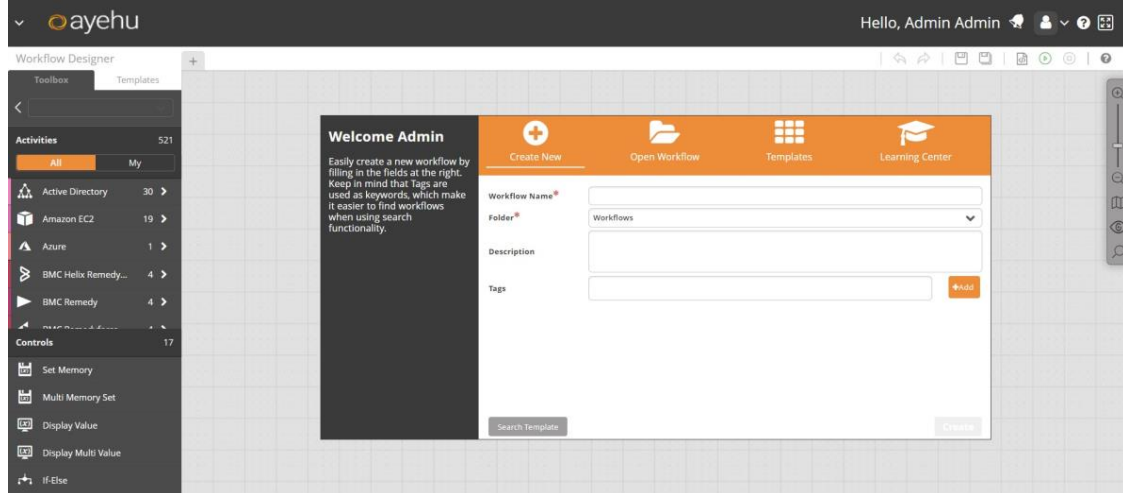


next to the logo, click .

The Navigation menu opens:



- From the **Builder** column, click **Workflow Designer**.  
The Workflow Designer opens with a **Welcome** window:

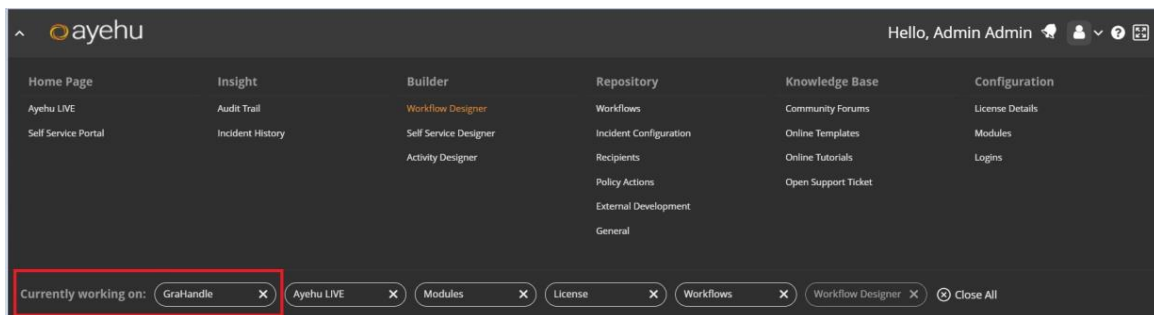


## NOTE

For a short video tutorial on using the Workflow Designer, at the upper right corner of the Welcome screen, click **Learning Center**.

### 6.1.1.5. Re-opening the Workflow Designer

If you last quit the Workflow Designer without closing the workflow(s) you were building, a **Currently working on** quick start bar appears when you next access the Designer from the Navigation menu. To launch the Designer and open a specific workflow at the same time, select the workflow from the quick start bar.

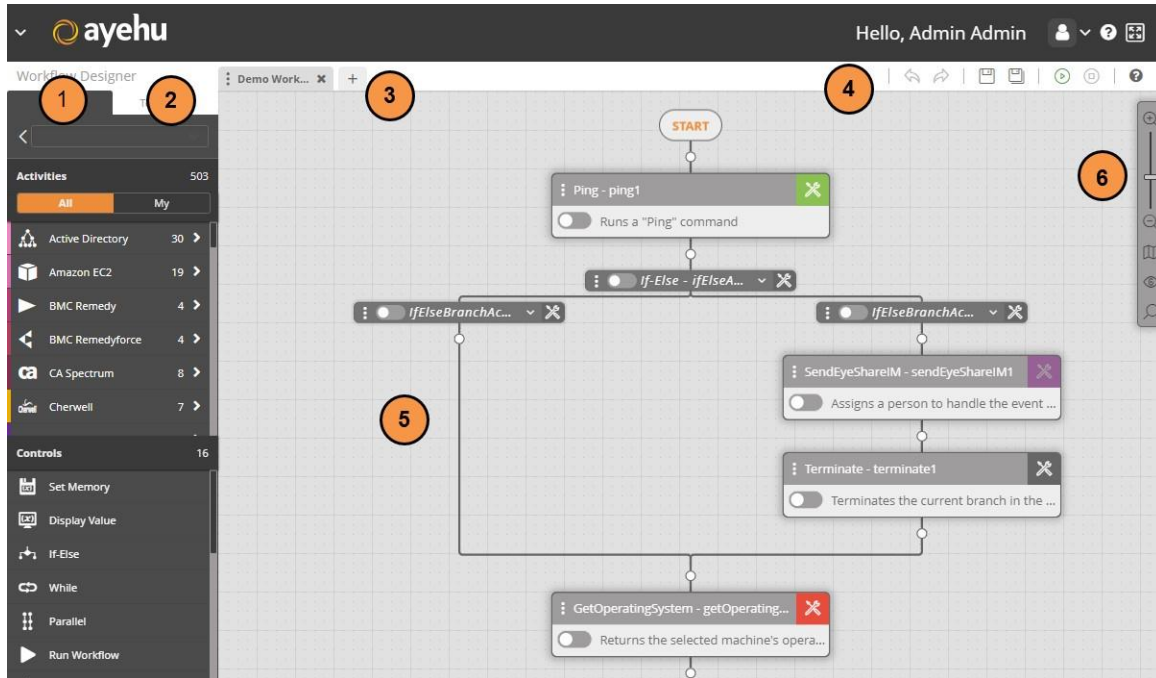




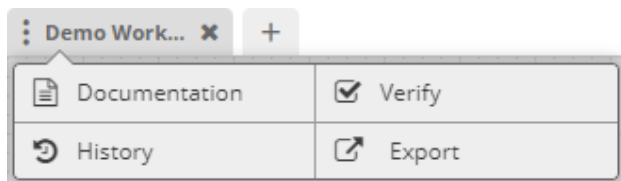
If you do not use the quick start bar and launch the Designer by clicking **Workflow Designer** (from the navigation menu), the Designer automatically opens with all previously open workflows displayed.

## 6.1.2. Workflow Designer Overview

### 6.1.2.1. Workflow Designer Main Window

This section presents the main components of the Workflow Designer main window and explains how to use them. In the figure below, the main components are numbered. A key is provided in the table following the figure.



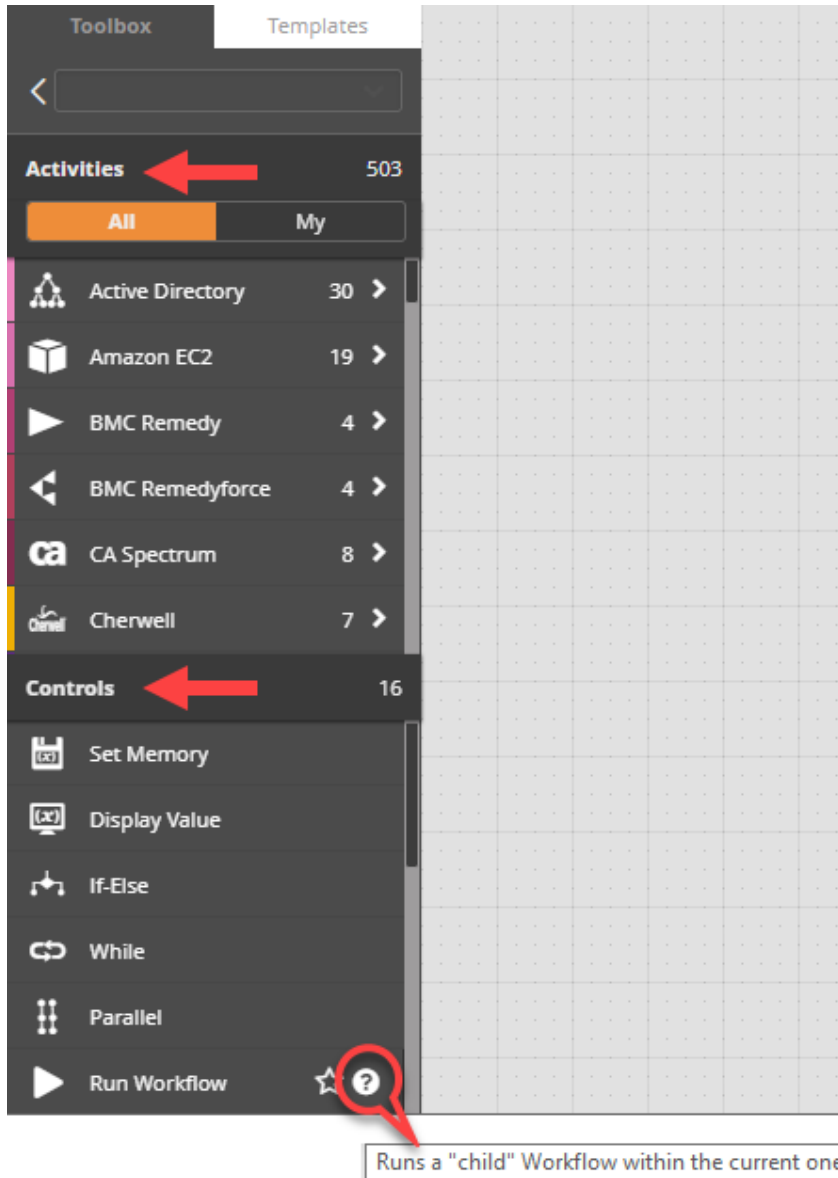
Component Number	Component Name	Description										
1	Toolbox	Lists all the activities and controls that you can use in your workflow. For more information, refer to <a href="#">Understanding the Toolbox [49]</a> .										
2	Templates	Lists all the templates that you can add to your workflow. For more information, refer to <a href="#">Using the List of Templates [50]</a> .										
3	Workflow tabs	<p>List the names of the workflows that are currently open. Clicking  opens the <a href="#">Welcome screen [53]</a>, from which you can create or open an additional workflow.</p> <p>Clicking  opens a further menu:</p> <div data-bbox="576 1291 1193 1470" style="border: 1px solid gray; padding: 5px; margin: 10px 0;">  </div> <p>It allows you to perform the following actions:</p> <table border="1" data-bbox="565 1558 1360 1701"> <thead> <tr> <th>Menu item</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Documentation</td> <td><a href="#">View and update description, tags and notes [122]</a></td> </tr> <tr> <td>Verify</td> <td><a href="#">Verify the workflow [107]</a></td> </tr> <tr> <td>History</td> <td><a href="#">View revision history [119]</a></td> </tr> <tr> <td>Export</td> <td><a href="#">Export the workflow [125]</a></td> </tr> </tbody> </table>	Menu item	Description	Documentation	<a href="#">View and update description, tags and notes [122]</a>	Verify	<a href="#">Verify the workflow [107]</a>	History	<a href="#">View revision history [119]</a>	Export	<a href="#">Export the workflow [125]</a>
Menu item	Description											
Documentation	<a href="#">View and update description, tags and notes [122]</a>											
Verify	<a href="#">Verify the workflow [107]</a>											
History	<a href="#">View revision history [119]</a>											
Export	<a href="#">Export the workflow [125]</a>											
4	Designer toolbar	Provides one-click access to common actions related to building a workflow. For details, refer to <a href="#">The Designer Toolbar [52]</a> .										
5	Canvas	The drawing board of the Workflow Designer.										
6	Reference toolbar	Provides viewing tools (such as resizing) the workflow layout and searching for workflow components. For more information, refer to <a href="#">Navigating Through Your Workflow [99]</a> .										






### 6.1.2.2. Understanding the Toolbox

The Toolbox offers two classes of resources that you can use to build your workflows:

- **Activities** are operative actions that make up the workflow process. An activity can be deleting a folder, adding a user, retrieving CPU data, and so on. In the Toolbox, activities are grouped according to category. Each category is represented by an icon (on the left side of the activity row).
- **Controls** are functions or logic expressions that determine the direction in which the workflow progresses. Examples of are conditions and If-else controls.



When you hover over an activity or a control, the following icons appear:



Icon	Description
	Toggle. Indicates that the activity or control has been removed from your Favorites list. For more information, see <a href="#">Building a Favorites List [50]</a> (below).
	Toggle. Indicates that the activity or control has been added to your Favorites list. For more information, see <a href="#">Building a Favorites List [50]</a> (below).
	Hovering over this icon displays a tool-tip describing the activity or control.

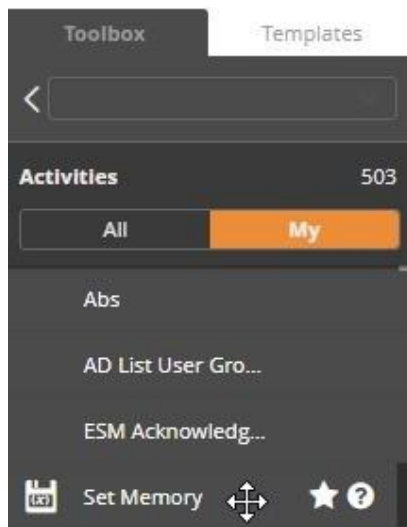
Both activities and controls can be added to the workflow by dragging and dropping them onto the canvas. For more information, refer to [Adding Activities \[69\]](#).


### 6.1.2.3. Building a Favorites List

For convenience, you can create a Favorites list in the Workflow Designer, so you can quickly access the activities and controls that you use most frequently.

**To build a Favorites list:**

- From the Toolbox, hover over the relevant activity or control and click . The icon changes to , and the resource is designated as a Favorite.
- To view your Favorites list, at the top of the Activities list, click **My**. Your Favorites are listed in alphabetical order.



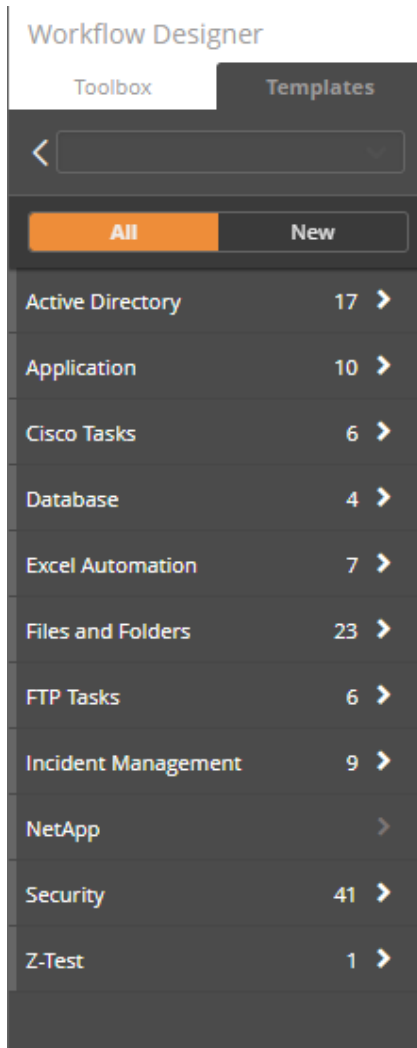
- To remove a resource from the Favorites list, hover over the resource and click . The selected resource is deleted from the Favorites list.

### 6.1.2.4. Using the List of Templates

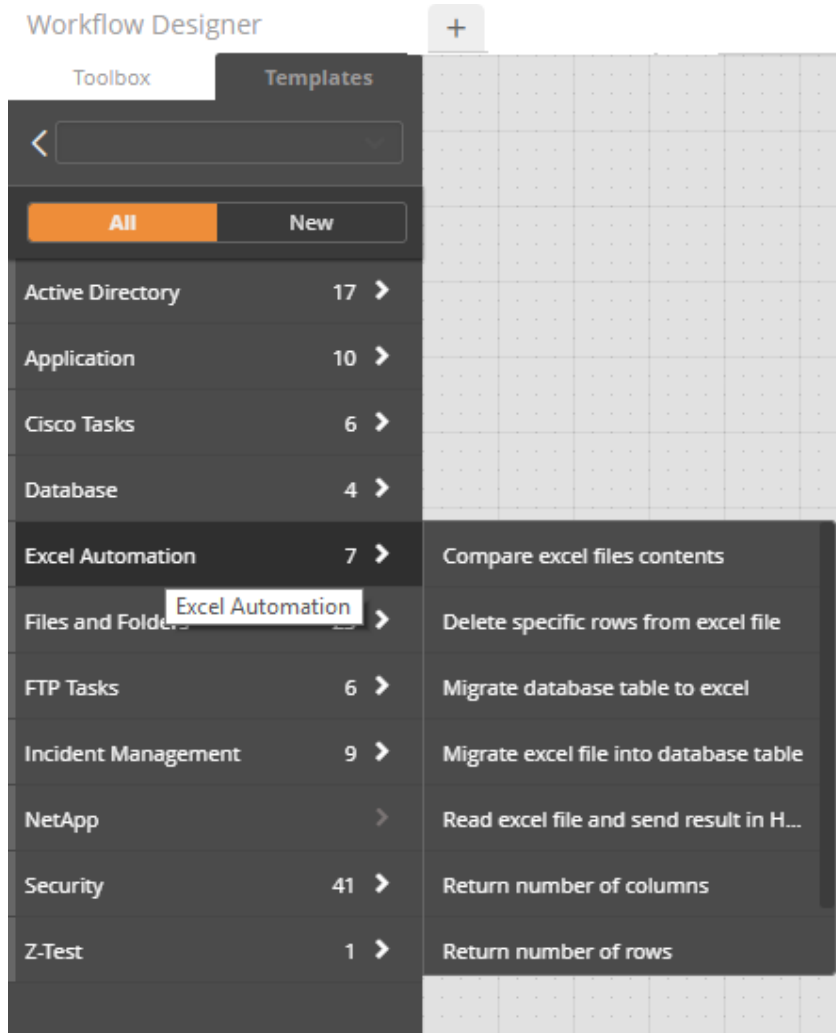
Templates are sample workflows that provide a foundation for building workflows for specific scenarios. All available templates (both pre-built and those you customize) are listed in the **Templates** tab of the Workflow Designer.

Open the list of templates by clicking the **Templates** button at the upper left corner of the Designer. The list is organized according to category. The numbers at the right side of each row indicate the number of templates in that category.

Clicking **New** displays a list of templates that you created in the last 30 days. New pre-built templates included in recent Ayehu version updates also appear in this list.











Expanding a category opens a list of the templates included in that category. You can add a template to your workflow by dragging and dropping it onto the canvas. If for example, in the above figure, you clicked Excel Automation, you would see this:



### 6.1.2.5. The Designer Toolbar

This toolbar provides one-click access to actions that are frequently performed when building a workflow.

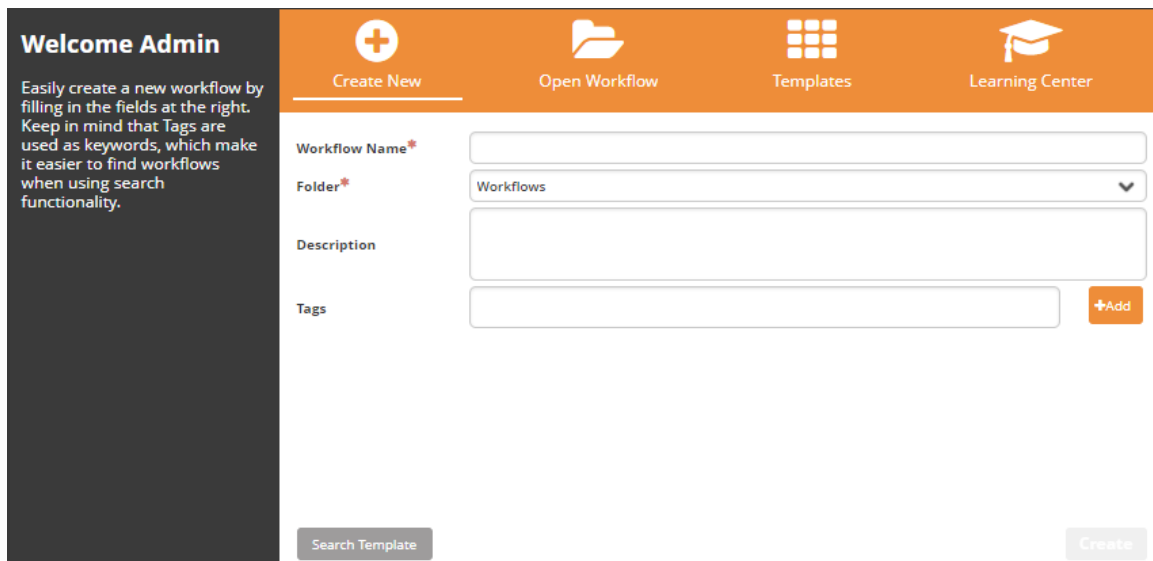



Icon	Action	Description
	Undo	Removes the last edit done to the workflow.
	Redo	Restores the change that was last removed using the Undo action.
	Save	Saves all changes made to the workflow since the last Save action. For details, refer to <a href="#">Saving Your Workflow [113]</a> .
	Save As	Allows you to save the current workflow as an additional workflow or as a template. For more information, refer to <a href="#">Saving Your Workflow [113]</a> .
	Set Variables	Allows you to set variables for the workflow that you're working on to either test or manually run it with actual values. For details, refer to <a href="#">Settings Variables in Workflows [108]</a> .
	Run	Executes the workflow. For more information, refer to <a href="#">Running Workflows [107]</a> .
	Abort	Stops execution of a running workflow.
	Help	Opens the online help for the Workflow Designer.

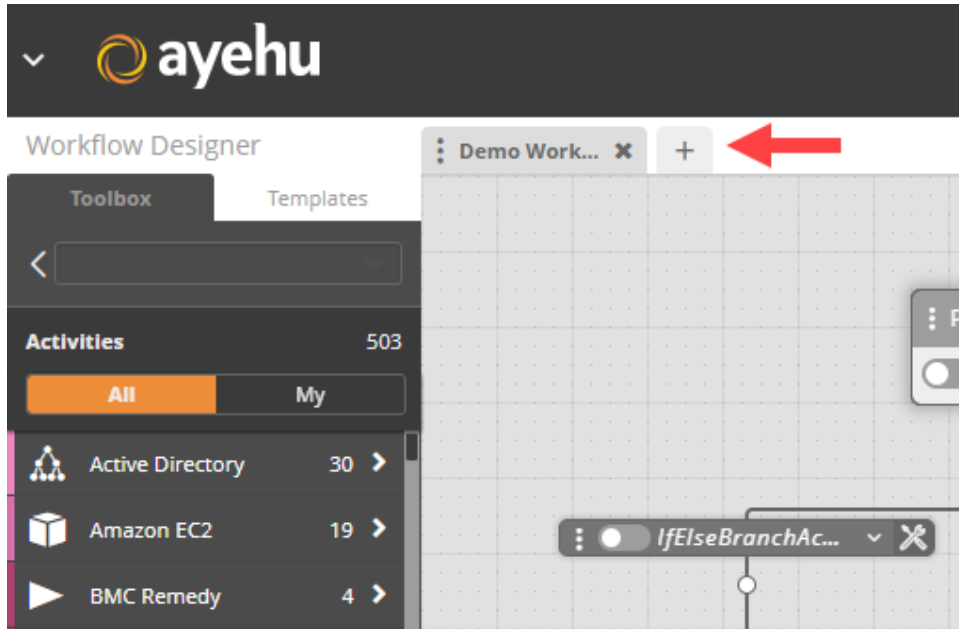
## 6.1.3. Working with Workflows

### 6.1.3.1. Opening a Workflow

The first step in using the Workflow Designer is to open a workflow. The following sections explain how to open a workflow using the options at the top of the **Welcome** screen.



If all workflows were closed when you last quit the Designer, the **Welcome** screen appears by default when you log in. To open the **Welcome** screen when one or more workflows are already open, click  (at the right side of the workflow tabs).



You can open a workflow from the **Welcome** screen using the following options:

- **Create New:** Creates a blank workflow to which you manually add activities. For more information, refer to [Creating a New Workflow \[54\]](#).
- **Open Workflow:** Opens a previously saved workflow so you can continue building or editing it. For more information, refer to [Opening an Existing Workflow \[61\]](#).
- **Templates:** Opens a list of pre-built workflows that can be used as a starting point for building a workflow specific to your requirements. For more information, refer to [Opening a Template \[65\]](#).

### 6.1.3.2. Creating a New Workflow

The **Create New** option adds a blank workflow to the Workflow Designer. A blank workflow is represented on the Designer canvas by a Start element and an End element.

Create your workflow by giving the workflow a name and a description. Although a description is optional, as a best practice it is recommended to always enter some text that provides a brief, high level summary of the automation process(es) involved. This allows other users to quickly understand the purpose of the workflow.

It is also recommended that one or more tags be assigned to a new workflow. Tags are keywords that help to organize and easily search for your workflows.

**To create a new workflow:**

1. At the top of the **Welcome** screen, click **Create New**.


The screenshot shows the 'Create New' workflow form. At the top, there is a navigation bar with four options: 'Create New' (circled in red), 'Open Workflow', 'Templates', and 'Learning Center'. Below the navigation bar, the form consists of the following fields:


- Workflow Name\***: A text input field.
- Folder\***: A dropdown menu currently showing 'Workflows'.
- Description**: A large text area for entering a description.
- Tags**: A text input field with an orange '+Add' button to its right.

At the bottom of the form, there is a 'Search Template' button on the left and a 'Create' button on the right.

2. In the **Workflow Name** field, enter a logical, descriptive name for your new workflow. The name of the workflow must be unique. If you enter a name that is already in use, the system will automatically save the workflow as **<name> (1)**.

3. Enter a folder for your workflow.

The default is Workflows, To see other possibilities, click the  icon to see a drop down list of existing folders. Click one to select it.

 **NOTE**  
You can add additional folders. In the Repository section, see [Workflows \[208\]](#)

4. In the **Description** field, enter a short summary of the workflow, or notes about relevant use cases.



- If desired, select tags to be associated with the workflow:  
Click in the **Tags** field, and select one or more tags from the list.

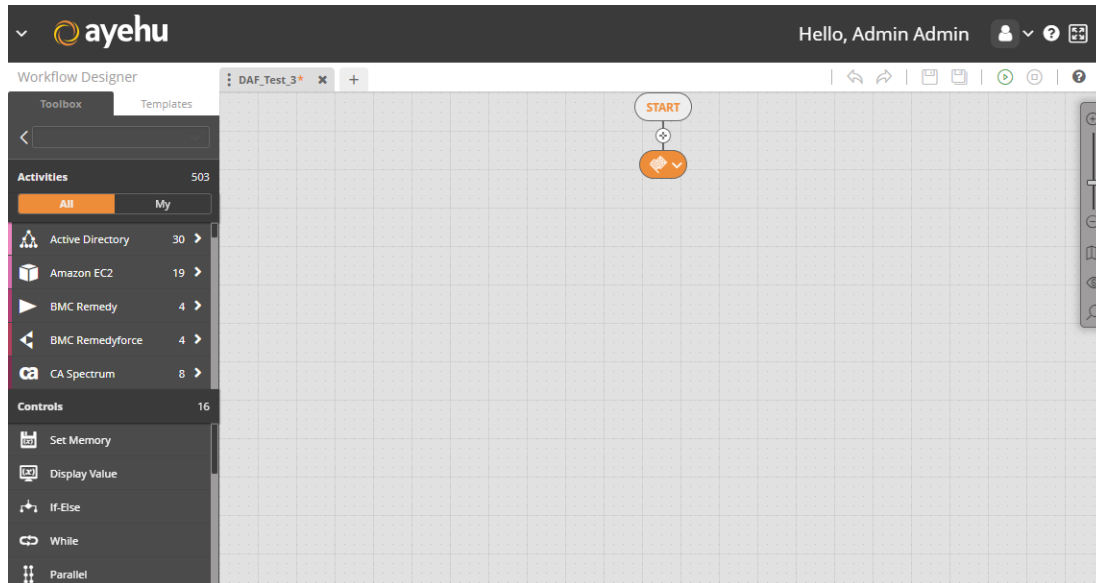
The screenshot shows the workflow creation interface. At the top, there are four navigation buttons: 'Create New', 'Open Workflow', 'Templates', and 'Learning Center'. Below these, the 'Workflow Name' field contains 'DAF\_Test\_3'. The 'Folder' dropdown is set to 'Workflows->My Test Workflows'. The 'Description' field contains the text 'This is a Test workflow to illustrate some basic activities and controls'. The 'Tags' field is empty, and a dropdown menu is open, displaying a list of tags: 'Active Directory', 'Admin', 'AntiVirus', 'Application', 'Archive', 'Backup', 'Backup Management', 'Block', 'CAB', 'Cisco', and 'Classification'. The dropdown menu has 'Select All' and 'Deselect All' links at the top. A 'Search Template' button is on the left, and a 'Create' button is on the right.

You may filter the Tags list by entering part of the tag name in the **Tags** field. For example:

This screenshot shows the 'Tags' field with the text 'ac' entered. The dropdown menu is open, displaying a filtered list of tags: 'Active Directory', 'Backup', and 'Backup Management'. The 'Select All' and 'Deselect All' links are still visible at the top of the dropdown.

In addition, you may create new tags as necessary. For more information, refer to [Adding New Tags to a Workflow \[58\]](#).

6. Click **Create**.  
The new workflow is displayed on the Designer canvas.



### 6.1.3.3. Adding New Tags to a Workflow

Tags are keywords that are applied to a workflow. They are useful for organizing your collection of workflows and for helping users to quickly find a workflow.

Generally, tags are actions or categories that are relevant to a workflow. For example, appropriate tags for the workflow Monitor Windows Event Log would be Monitoring, Windows, Logs, and so on.

For convenience, the Workflow Designer offers a large selection of preconfigured tags. However, if you need tags that are not provided, you can easily create new tags and add them to the Tags list.

**To add new tags to a new workflow:**

1. At the right side of the **Create New** screen, click **Add**.

The screenshot shows the 'Create New' workflow screen. The top navigation bar has four items: 'Create New' (with a plus icon), 'Open Workflow' (with a folder icon), 'Templates' (with a grid icon), and 'Learning Center' (with a graduation cap icon). Below the navigation bar are four input fields: 'Workflow Name\*' (empty), 'Folder\*' (dropdown menu showing 'Workflows'), 'Description' (empty), and 'Tags' (empty). A red arrow points to an orange '+Add' button located to the right of the 'Tags' input field. At the bottom of the form are two buttons: 'Search Template' and 'Create'.

The Add Tag popup opens.

The screenshot shows the 'Add new tag' popup. The popup has a dark header with the text 'Add new tag' and a close button (X). Below the header is a text input field and an orange 'Add' button. Below the input field is a large empty rectangular area. At the bottom center of the popup is a 'Save' button.


2. Enter a name for the new tag in the field. Then, click **Add**.  
The new tag is listed below the field.

The screenshot shows a modal dialog titled "Add new tag". At the top right is a close button (X). Below the title bar is a text input field containing "my Tag1" and an orange "Add" button. Below the input field is a larger container area that currently holds one tag: "my Tag1" with a small grey box containing an "x" to its right. At the bottom center of the dialog is an orange "Save" button.

3. Add additional new tags by repeating Step 2 as required.

The screenshot shows the "Add new tag" dialog box after two more tags have been added. The input field now contains "my Tag3" and the "Add" button is still present. The list area below now contains three tags: "my Tag1", "my Tag2", and "my Tag3", each with a small grey box containing an "x" to its right. Below the list area is a blue link labeled "Clear All". At the bottom center of the dialog is an orange "Save" button.

4. Click **Save**. The new tags are saved in the system and added to the Tags list.

 **NOTE**

- At any point, you can remove a new tag by clicking the x its display box. You can remove them all using the Clear all button.
- You will have the opportunity to add or remove tags when you save your workflow. See [Using the Save As Option \[114\]](#)

## 6.1.3.4. Opening an Existing Workflow

### 6.1.3.4.1. Locating Existing Workflows

Opening a workflow involves displaying a previously saved workflow in the Designer so you can continue to build or edit it. You can open a saved workflow using any of the following methods:

- **Re-open a recently opened workflow:** Involves selecting a workflow from a list on the **Welcome** screen. For details, refer to [Re-opening a Recently Opened Workflow \[61\]](#)
- **Open a workflow from the Repository:** Involves selecting a workflow from the collection of all previously saved workflows. For more information, refer to [Opening a Workflow from the Repository \[61\]](#).
- **Import a workflow into the Workflow Designer:** Involves selecting a previously exported workflow that is saved as an XML file. For more information, refer to [Importing a Workflow \[64\]](#).

### 6.1.3.4.2. Re-opening a Recently Opened Workflow

The Workflow Designer automatically tracks the workflows that you have been working on. When you click the **Open Workflow** tab of the **Welcome** window, information about the workflows that you have opened most recently is displayed. Up to 10 workflows can be listed.

*To re-open a recently opened workflow:*

- From the **Open Workflow** tab of the **Welcome** screen, select the row of the required workflow, double-click it or just click **Open**.

Name	Description	Last Modified	
Test 3 for DAF	Another Test	01/08/2018 11:05:12	[Action Icons]
Test_DAF (2)	Test for DAF	19/07/2018 06:33:24	[Action Icons]
Test (1)	Testing 1 2 3	05/06/2018 01:30:44	[Action Icons]
Test_DAF (1)	Test for DAF	04/06/2018 01:23:30	[Action Icons]
Test_DAF	Test for DAF	03/06/2018 06:20:49	[Action Icons]
Test	Testing 1 2 3	03/06/2018 06:19:51	[Action Icons]
Check if service is running	Check if service is running ... >	22/03/2018 09:59:34	[Action Icons]

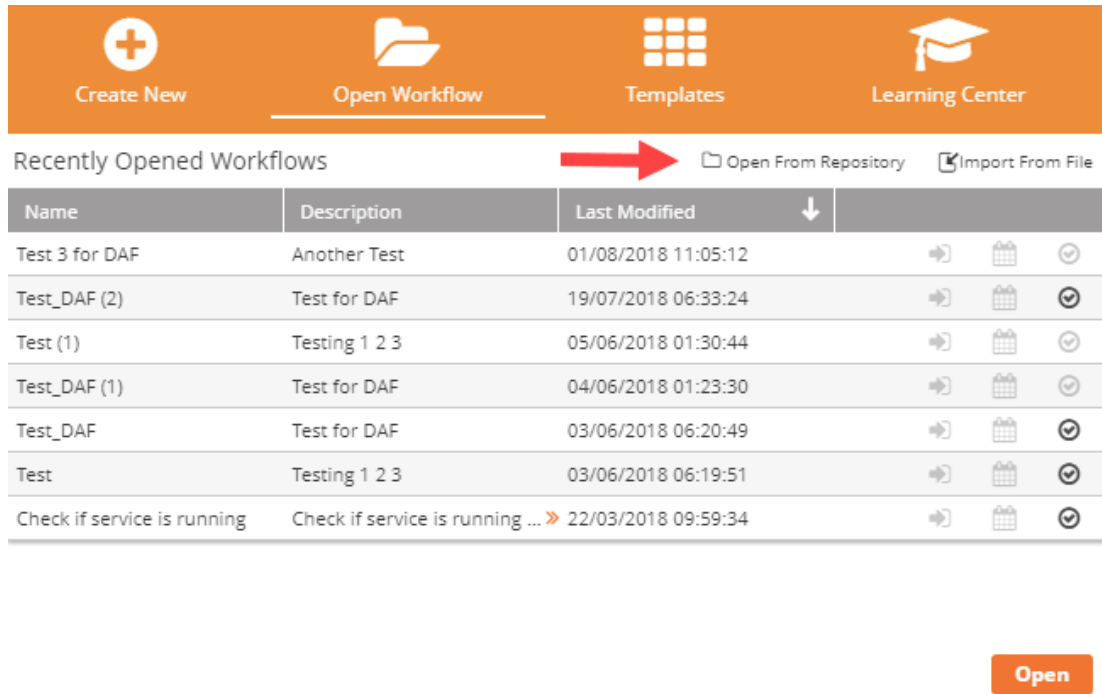
The **Welcome** screen closes, and the selected workflow is displayed in the Workflow Designer.

### 6.1.3.4.3. Opening a Workflow from the Repository

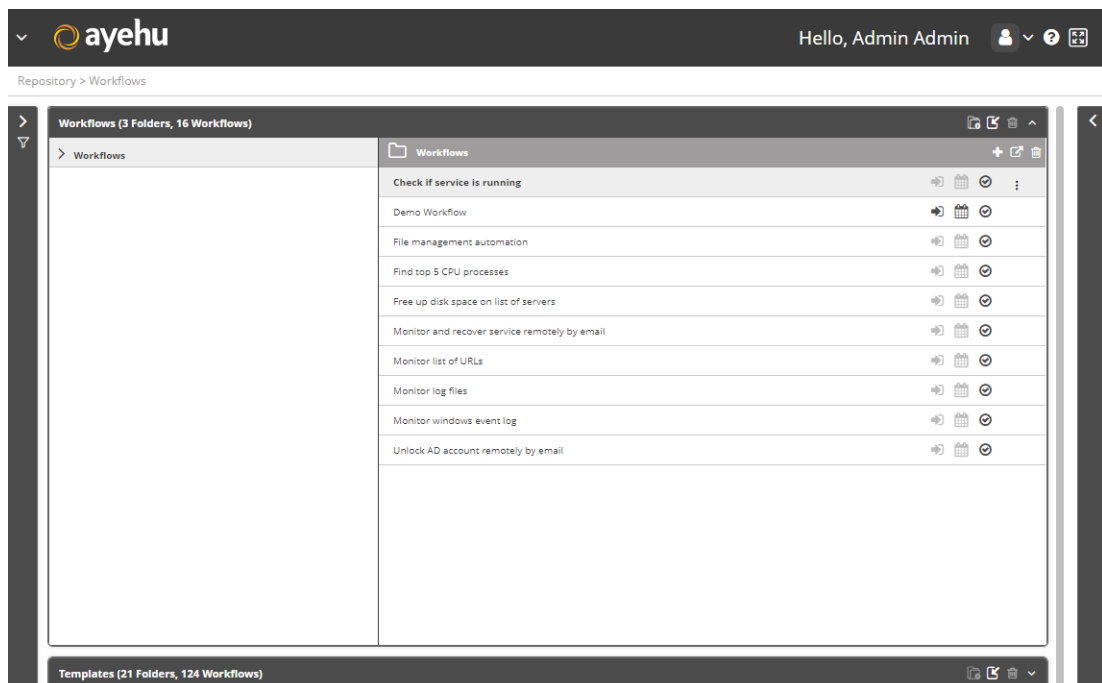
The Repository lists all previously saved workflows, regardless of who last saved them or when they were last opened. Use the following procedure to access a workflow from the Repository.

**To open a workflow from the Repository:**

1. At the top of the **Open Workflow** tab of the **Welcome** screen, click **Open From Repository**.

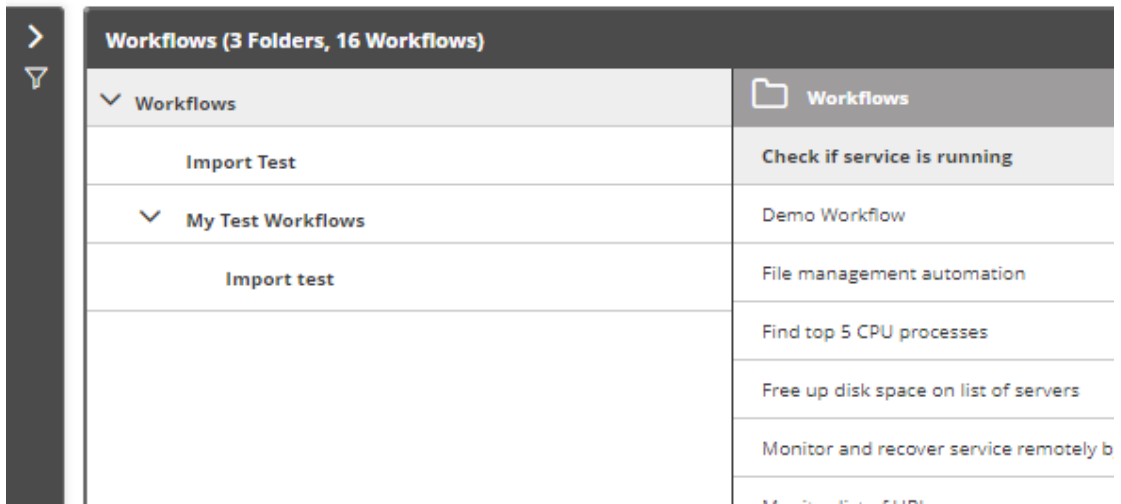


The **Workflows** frame of the Repository opens:



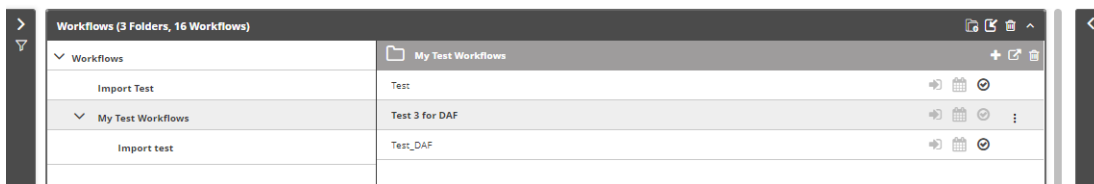
- If you have folders under Workflows, you can open them here:


Repository > Workflows

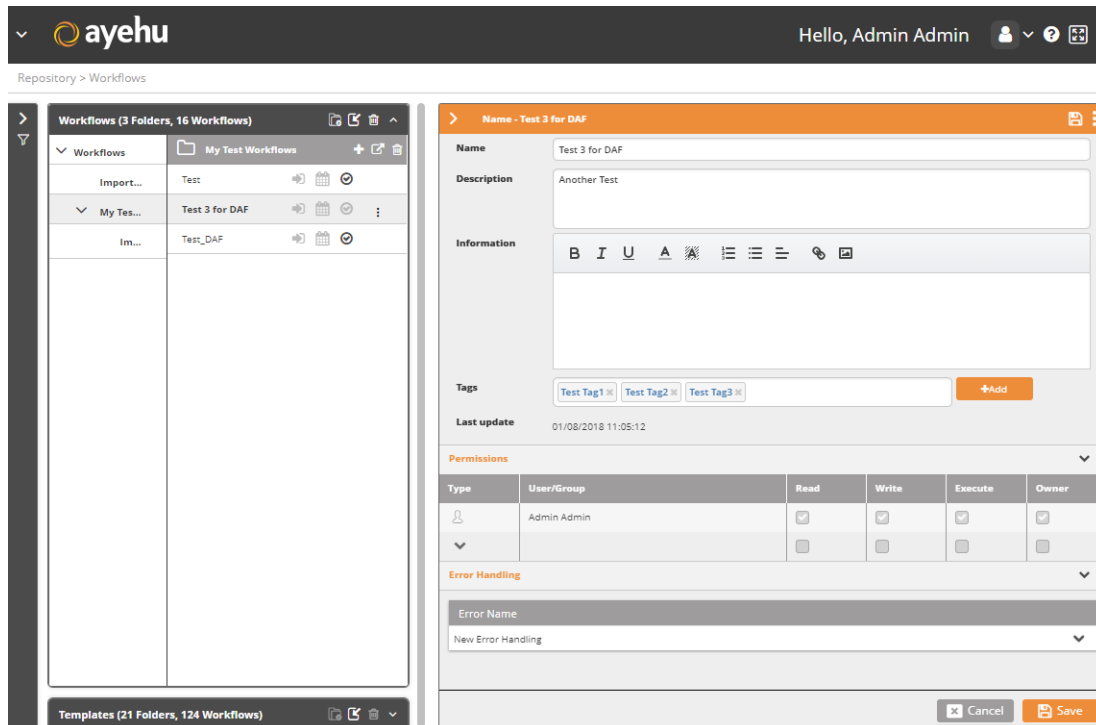



- Choose a folder and select a workflow to open:

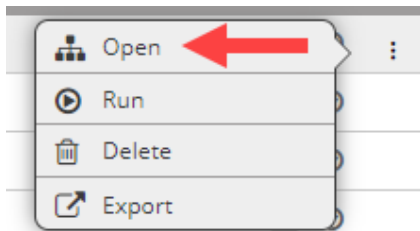
Repository > Workflows



- Click the  icon to see its Details and settings, They are displayed in the panel to the right of the **Workflows** list.



- At the upper right corner of the screen, click  to display its action menu. Then, select **Open**.



The selected workflow is displayed in the Workflow Designer.

#### 6.1.3.4.4. Importing a Workflow

Workflows can be exported to XML files, so you can back up or share your work. Importing a workflow involves opening a previously exported workflow in the Workflow Designer.



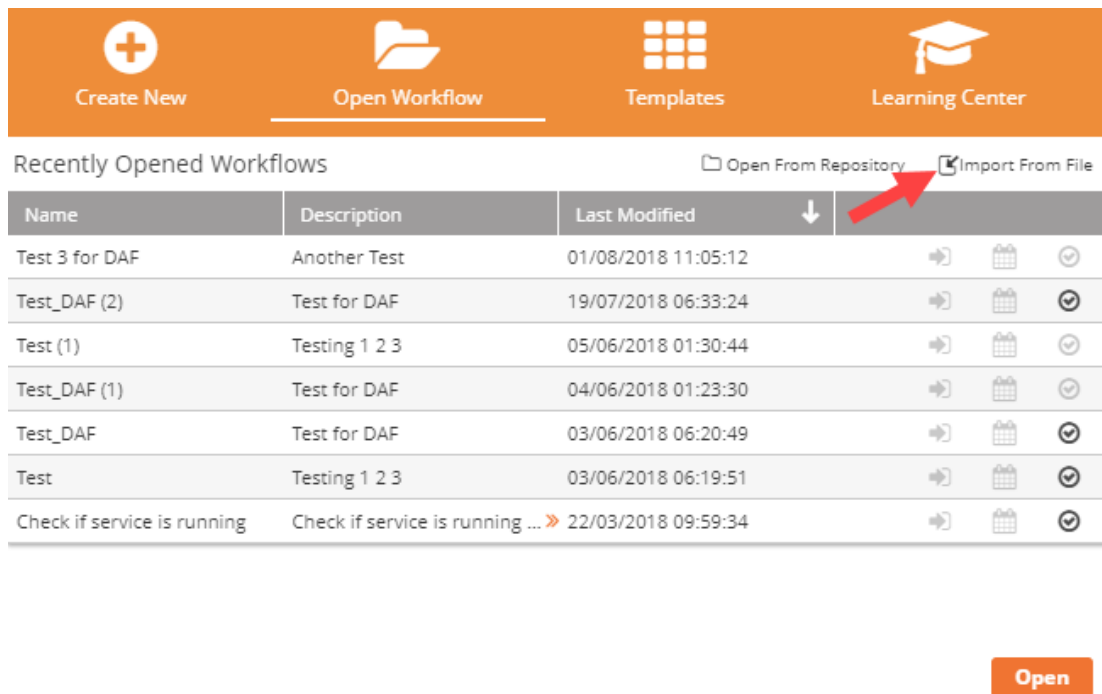
#### NOTE

When multiple workflows are exported simultaneously, they are automatically exported as a compressed (.zip) file. Before importing a workflow, you must extract it from the .zip file.



**To import a workflow:**

1. Verify that the workflow you want to open has been exported and in XML file format.
2. At the top of the **Open Workflow** tab of the **Welcome** screen, click **Import from file**.



- The standard operating system **Open** dialog is displayed.
3. Choose the required XML file, and then click **Open**.  
The selected workflow is displayed in the Workflow Designer.

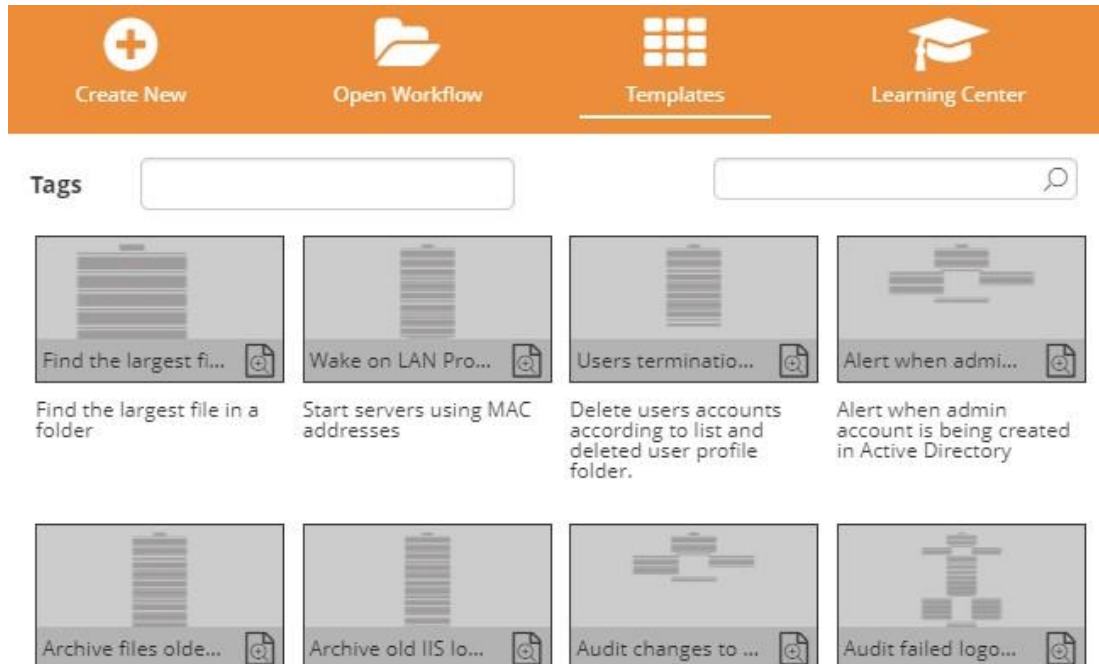
**6.1.3.5. Opening a Template**

Templates are pre-built, customizable workflows that provide a foundation for building workflows for specific scenarios. The Workflow Designer offers a wide selection of templates, including suggested automation workflows for file management activities, service restarts, event log monitoring, and many other common processes. You may use a template as a starting point for designing your own version of a workflow, or you can include one or more templates as part of a larger workflow.

This section explains how to open a template from the **Welcome** screen of the Workflow Designer.

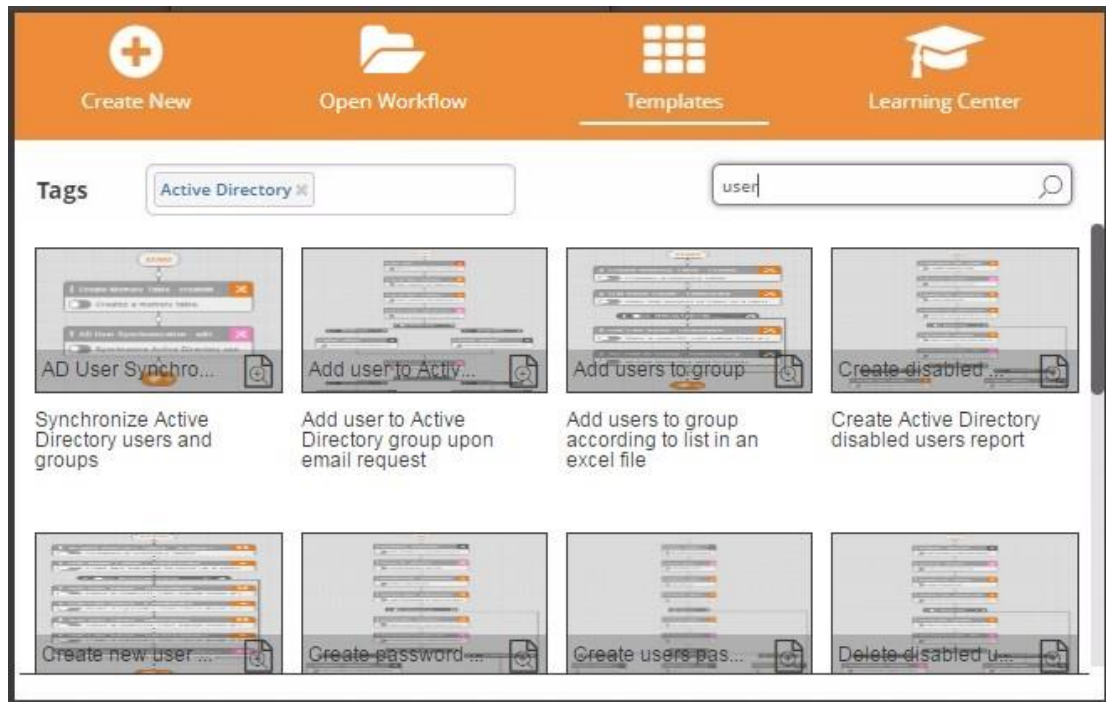
**To open a template:**

1. At the top of the **Welcome** screen, select the **Templates** tab. Alternatively, at the bottom of the [Create New \[54\]](#) tab, click **Search Templates**.  
The **Templates** tab opens, listing all defined templates.



2. If desired, filter the Templates list using one or both of the following techniques:
  - **Filter by tag:** Click in the **Tags** field and select tags that are relevant to the template you are looking for. For more information about tags, refer to [Adding New Tags \[54\]](#).
  - **Filter by search term:** In the **Search** field, enter a term related to the template you are looking for, and then press **Enter**.

The following example shows a Templates list that is filtered according to both the Active Directory tag and the search term *user*.



3. From the Templates list, select the desired template.  
The selected template is displayed in the Workflow Designer.

## 6.1.4. Building Your Workflow

### 6.1.4.1. Basic Concepts

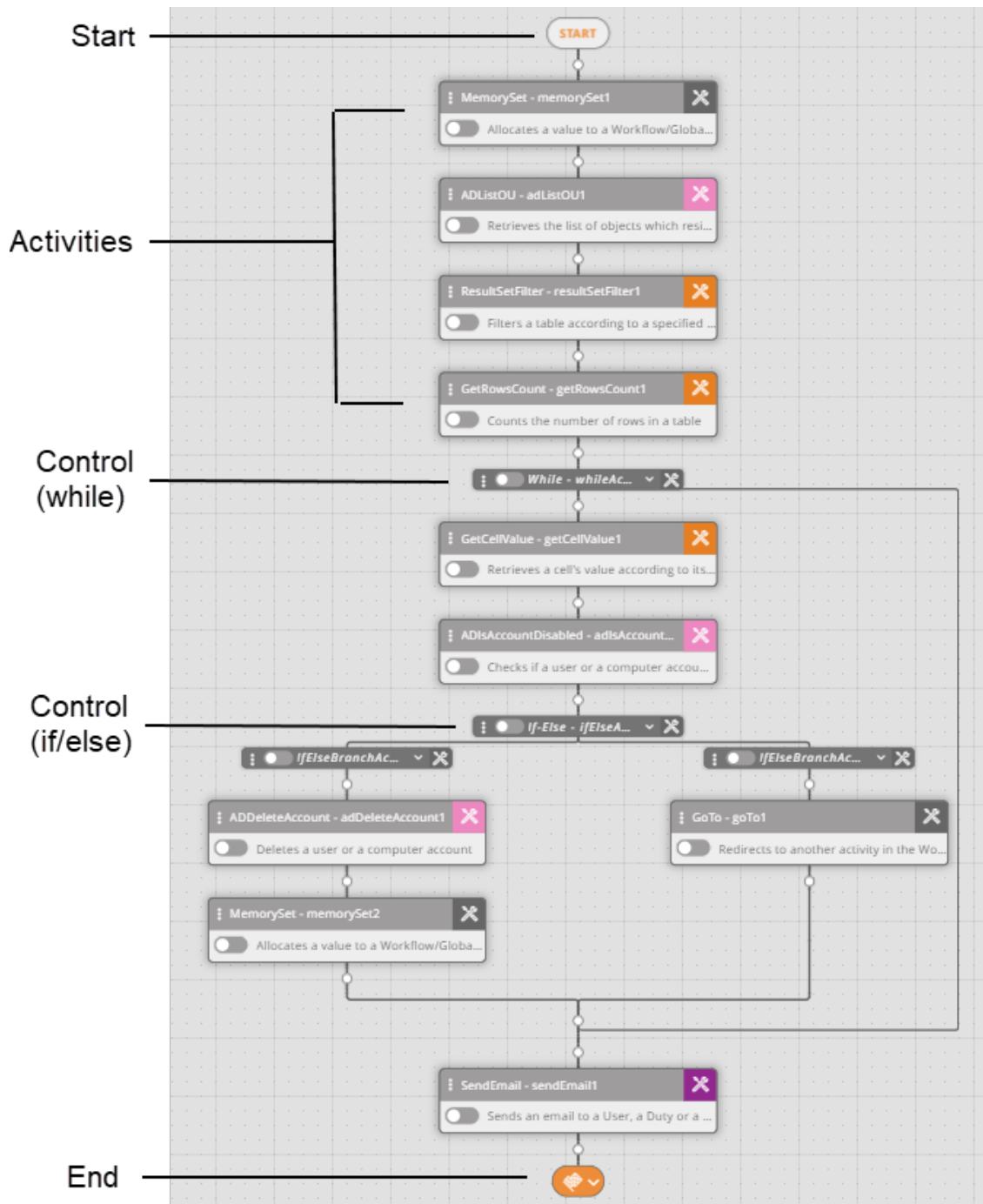
A workflow is a sequence of activities performed according to a logical flow. In most cases, a workflow represents a series of events carried out in response to a specific event or incident. When you design a workflow, build it according to how you would normally handle the incident in your organization, and select the activities that best match your policies and procedures.

On the canvas of the Workflow Designer, a workflow is made up of all the components between the Start and End elements. These components fall into two categories:

- **Activities:** Operative actions that are the building blocks of the workflow process. Every activity returns a value (i.e., integer, string or ResultSet). For example, a Get Disk Space activity returns an integer. An activity's returned value is generally used to determine the next step(s) in the workflow. For example, if Get Disk Space returns a low value, you may want to clear some disk space.
- **Controls:** Special types of activities that are usually (but not always) logic functions or decisions that determine how the workflow will proceed. For more information and examples, refer to [Understanding Common Controls \[75\]](#).

The diagram below shows the typical structure of a workflow. Activities are distinguished by a description and a color-coded symbol corresponding to the color of the relevant activity category in the [Activities Tree \[69\]](#)). Controls are not color coded, and those that have no configurable settings lack a description.

Note that the structure of a workflow is linear, with the exception of If/Else controls that send the workflow in one of two or more paths.



The following sections present more detailed information on how to build your workflow:

- [Adding Activities \[69\]](#)

- [Understanding Common Controls \[75\]](#)
- [Editing Activities \[86\]](#)
- [Performing Actions on Activities \[93\]](#)
- [Building Workflows: Best Practices](#)

## 6.1.4.2. Adding Activities

### 6.1.4.2.1. Where to Find Activities

Adding activities is an intrinsic part of creating workflows. You can add an activity to your workflow using any of the following methods:

- [Adding an Activity from the Activities Tree \[69\]](#)
- [Pasting a copied activity into the workflow \[71\]](#)
- [Choosing an activity from the Suggested Activities list \[72\]](#)
- [Adding Activities Using the Search Tool \[74\]](#)



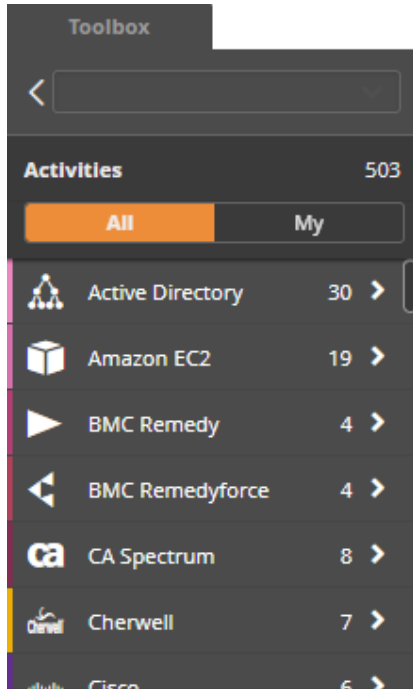
#### NOTE

After adding an activity, make sure to define settings for it so your workflow will run as expected. For more information, refer to [Editing Activities](#).

### 6.1.4.2.2. Adding an Activity from the Activities Tree

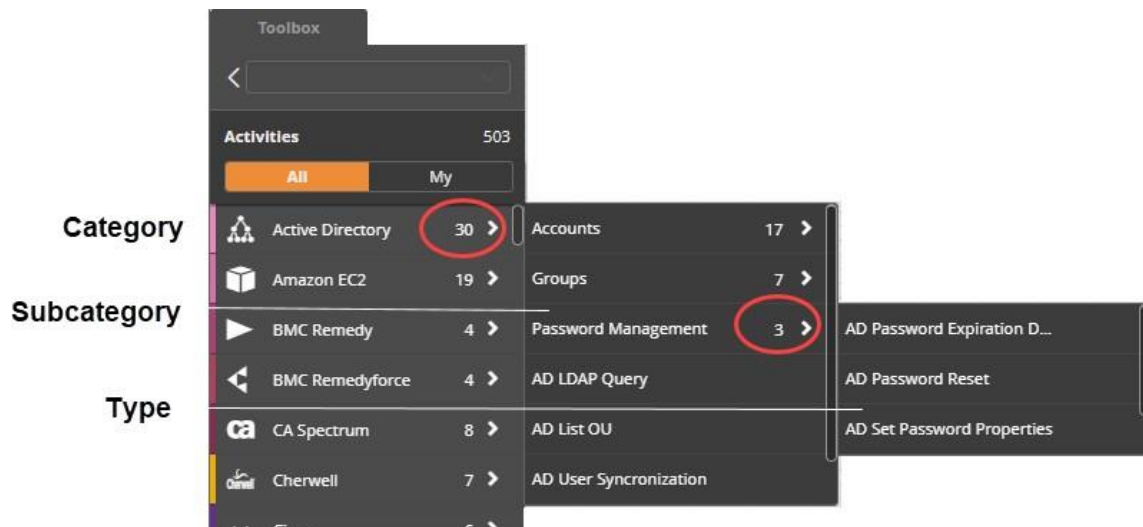
The Activities tree, at the upper left corner of the Workflow Designer, lists all the categories of activities, in alphabetical order. The number of activity types in the category is displayed to the right of each category name.

Each category is represented by a unique icon, which is displayed to the left of the category name. In addition, each category has its own color code (shown to the left of the icon). When an activity is added to a workflow, the relevant color appears in the upper right corner of the activity element on the canvas, helping you to easily identify the activity's category.




Most categories contain several subcategories. Subcategories aid in managing categories with large numbers of activities by organizing the activities according to type. Activity types that are similar are grouped together into a specific subcategory.

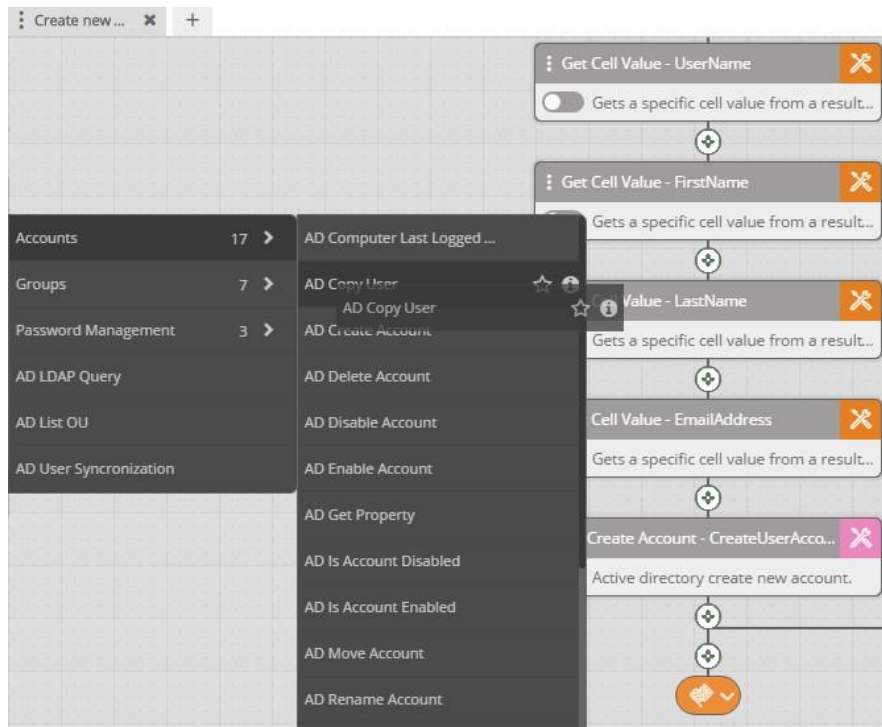
In the example below, the Active Directory category, which contains 30 activity types, is divided into several subcategories. The Password Management subcategory contains three activity types, all of which involve password operations.




Adding an activity from the Activities tree involves expanding the relevant category, and then adding the desired activity type by dragging and dropping it onto the canvas.

**To add an activity from the Activities tree:**

1. From the Activities tree, expand the relevant category (and subcategory, if relevant), until the required activity type is shown.
2. Position the mouse pointer over the activity type until a cross-hair appears. Then, hold the mouse button down and drag the activity type to the appropriate position in the workflow. Target positions are indicated by crosshair nodes .



The selected activity type is added to the workflow.

 **NOTE**  
If you inadvertently add the activity to the wrong place in the workflow, you may move it to the correct position by dragging and dropping.

3. Define settings for the new activity. For details, refer to [Editing Activities \[86\]](#)

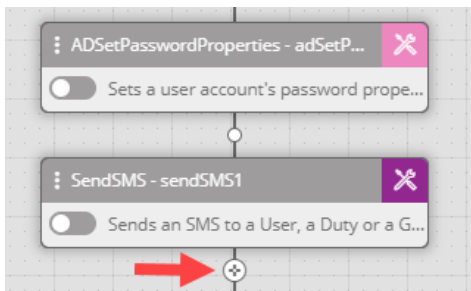
**6.1.4.2.3. Pasting Copied Activities**

The Paste option lets you easily insert a duplicate of an activity or group of activities to your workflow. The activity can be copied from the same workflow or a different workflow. For details about how to copy activities, refer to [Performing Actions on Activities \[93\]](#).

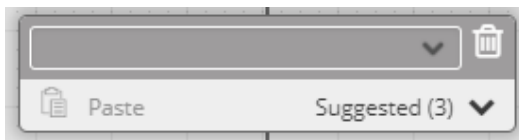
**To paste an activity into a workflow:**

1. Copy the required activity or group of activities.

- Position the mouse pointer over the white node at the point in the workflow where you want to add the activity.  
The white node becomes a cross-hair.



- Click the crosshair.  
A placeholder for a new activity type is added to the workflow.



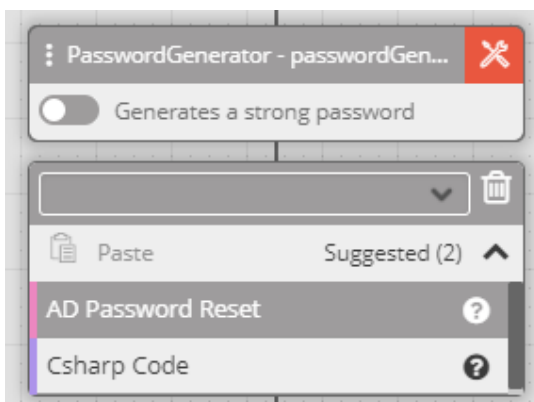
- Click **Paste**.  
The copied activity or group of activities is added to the workflow.

#### 6.1.4.2.4. Adding a Suggested Activity

The Suggested Activities list displays recommended activity types to add to your workflow. Suggested Activities are context sensitive, so the activity types that are shown vary according to the activity that the new activity will follow. The list contains up to six activity types that most commonly follow the previous activity in the workflow.

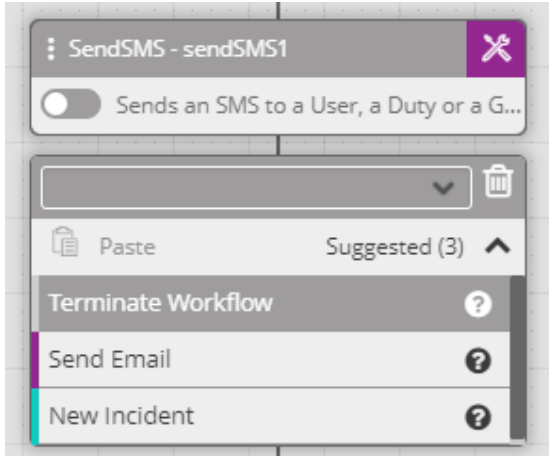
The following example shows how suggested activities change according to the previous activity.

Password Generator offers two suggested activities:



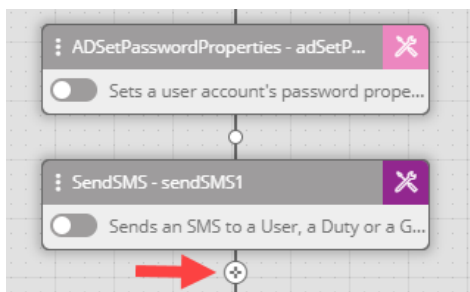
Send SMS offers three suggested actions:



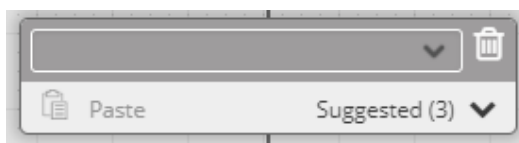


**To add a suggested activity:**

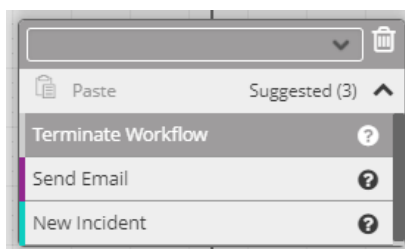
1. Position the mouse pointer over the white node at the point in the workflow where you want to add the activity.  
The white node becomes a crosshair.



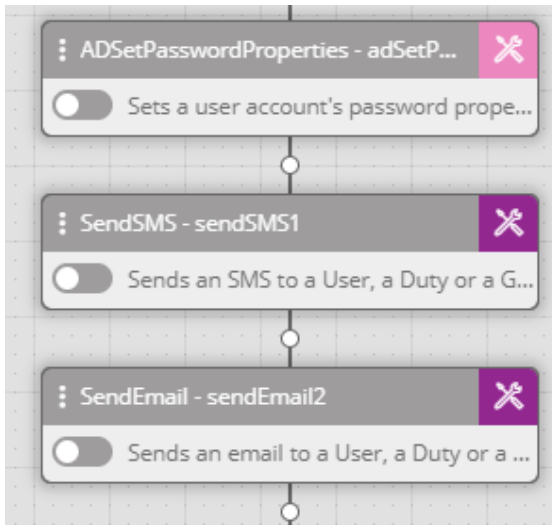
2. Click the crosshair.  
A placeholder for a new activity type is added to the workflow.



3. Click **Suggested**.  
The Suggested Activities list opens.



4. Select the activity that you want to add, for example, Send Email.



The selected activity is added to the workflow.

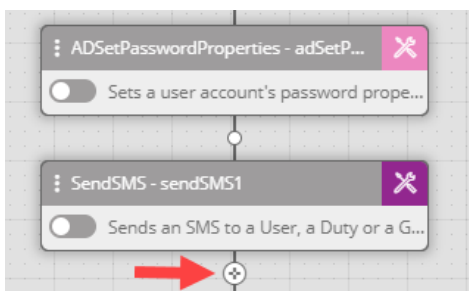
#### 6.1.4.2.5. Adding Activities Using the Search Tool

The Search tool returns a list of activities that match a provided search term. Both categories and types of activities that contain the search term are included in the search results.

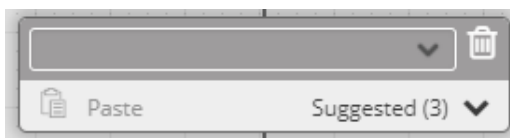
You can then select an activity from the search results list and add it to your workflow.

##### ***To add an activity using the Search tool:***

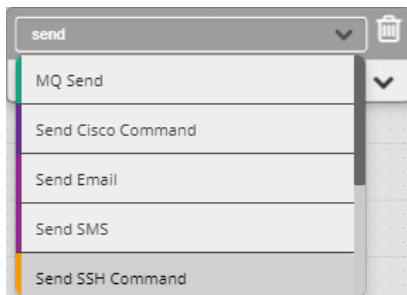
1. Position the mouse pointer over the white node at the point in the workflow where you want to add the activity.  
The white node becomes a crosshair.



2. Click the crosshair.  
A placeholder for a new activity type is added to the workflow.



- In the Search field at the top of the placeholder, enter a search term.  
As you type, categories and activity types matching the search term are listed below the Search field.



- Select the activity that you want to add to the workflow.  
The selected activity is added.

### 6.1.4.3. Understanding Common Controls

#### 6.1.4.3.1. The Six Common Controls

Controls are activities that influence or determine the progression of a workflow by means of conditions, logic functions, or navigation instructions. The list of available controls is displayed at the left side of the Workflow Designer, under the [Activities tree \[47\]](#). You can add controls to your workflow using most of the methods used to add activities. For more information, refer to [Adding Activities \[69\]](#).



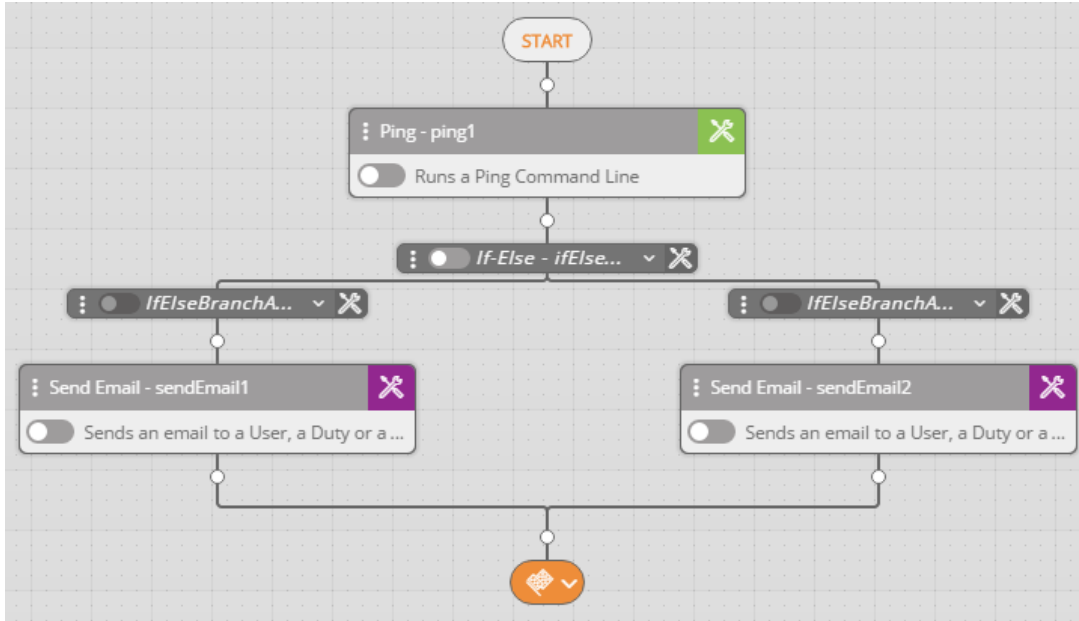
The following topics explain how to use and create common controls:

- [If/Else \[76\]](#): Defines two or more conditions which are evaluated to determine the activity sequence that will take place next.
- [Parallel \[80\]](#): Defines two or more activities (or sets of activities) that are executed simultaneously.
- [While \[82\]](#): Designates one or more activities to be part of a loop.
- [Condition \[84\]](#): Evaluates a predefined system condition.
- [Run Workflow \[84\]](#): Inserts a nested (child) workflow into the main workflow.
- [Goto \[85\]](#): Designates a shortcut to a selected activity in the workflow.

#### 6.1.4.3.2. If/Else: Evaluating Multiple Conditions

An If/Else control is made up of two or more branches, each of which defines a condition. When the workflow is run, each condition is evaluated, and the workflow then continues according to the sequence of activities specified by the matching branch.

In the following example, an If/Else control follows a ping command activity. If the ping is successful, the system sends an email with the message *Server Up*. If the ping fails, the system sends an email with the message *Server Down. Please Check*.

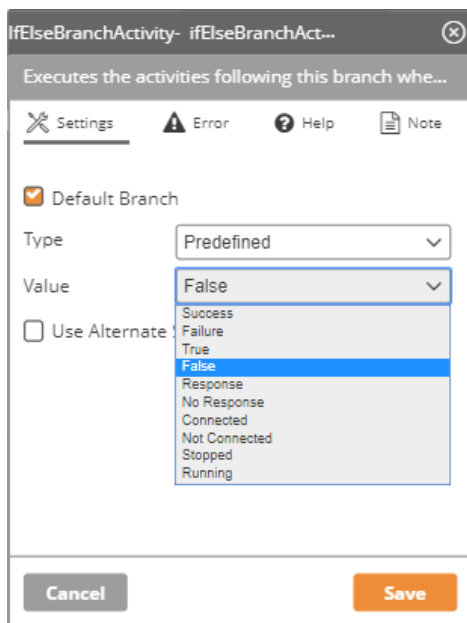


When workflows are executed, If/Else branches are checked sequentially, from left to right. As soon as a matching condition is found, the workflow progresses according to that branch, and the remaining branches are left unchecked. One branch, usually the right-most branch, is always designated as a default. If none of the conditions match, the workflow continues by executing the activities within the default branch.

### 6.1.4.3.3. If/Else Branch Types

You can create three types of If/Else branches in the Workflow Designer. The branches differ from one another in the nature of the conditions they define. The branch types are:

- **Predefined:** This type lets you choose from a list of common yes/no values, such as True, False, Response, No Response, and so on.



- **User Defined:** This type lets you select a condition category (Equals, Contains, etc.) and then define your own value. The value can be hard-coded or it can be a variable defined by another activity.

The screenshot shows the 'IfElseBranchActivity' dialog box. The title bar reads 'IfElseBranchActivity- ifElseBranchAct...'. Below the title bar, it says 'Executes the activities following this branch whe...'. There are four icons: Settings, Error, Help, and Note. The 'Default Branch' checkbox is checked. The 'Type' dropdown is set to 'User Defined'. The 'Condition Type' dropdown is open, showing a list of options: Equals, Not Equals, Contains, Not Contains, >, >=, <, <=, Regex, and Formula. The 'Value' field is empty. The 'Use Alternate' checkbox is unchecked. At the bottom, there are 'Cancel' and 'Save' buttons. A red error message at the bottom left reads: 'Condition Type cannot be empty. Value cannot be empty.'

- **Condition:** This type lets you select from a list of predefined system conditions, or create a new system condition.


The screenshot shows the 'IfElseBranchActivity' dialog box. The title bar reads 'IfElseBranchActivity- ifElseBranchAct...'. Below the title bar, it says 'Executes the activities following this branch whe...'. There are four icons: Settings, Error, Help, and Note. The 'Default Branch' checkbox is checked. The 'Type' dropdown is set to 'Condition'. The 'Condition' dropdown is open, showing a list of options. The 'Use Alternate Setting' checkbox is unchecked. At the bottom, there are 'Cancel' and 'Save' buttons. A red error message at the bottom left reads: 'Condition was not selected.'

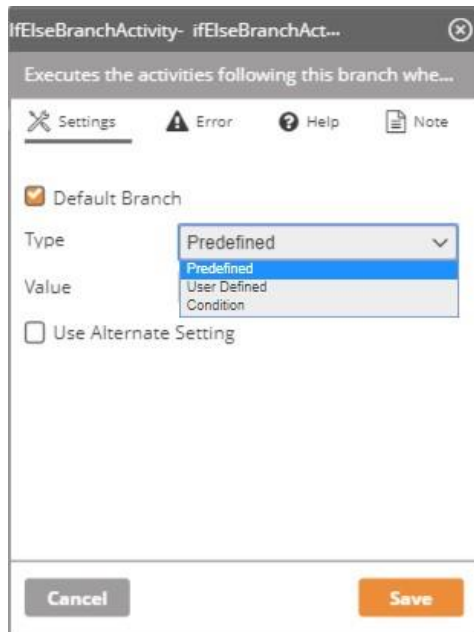
**To create an If/Else control:**

1. From the list of controls on the left side of the Workflow Designer, select the If/Else control and drag it to the desired position in the workflow. For more details, refer to [Adding Activities \[69\]](#).


The control is added to the canvas containing two branches.

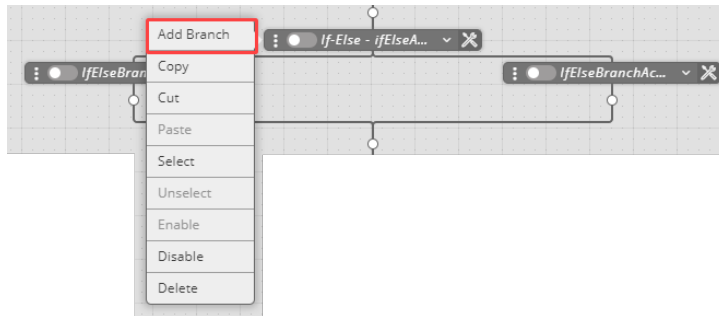


2. From the upper right corner of one of the branches, click  to open the **Settings** dialog. Then, from the **Type** drop-down, select the required type.




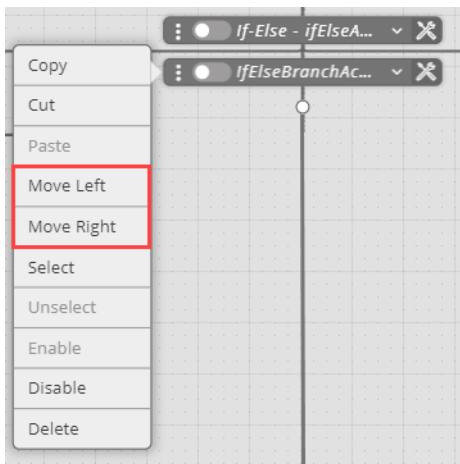
3. In the **Value** and/or **Condition** field(s), specify the required value or condition, according to the selected type.
4. Click **Save**.  
The **Settings** dialog closes.
5. Repeat steps 2-4 to define settings for the second branch of the control.

- To add another branch to the control, at the left side of the control, click , and then select **Add Branch**.



Repeat steps 2-4 to define settings for the new branch.

- To rearrange the order of the branches, at the left side of a branch, click , and then select **Move Left** or **Move Right**, as required.



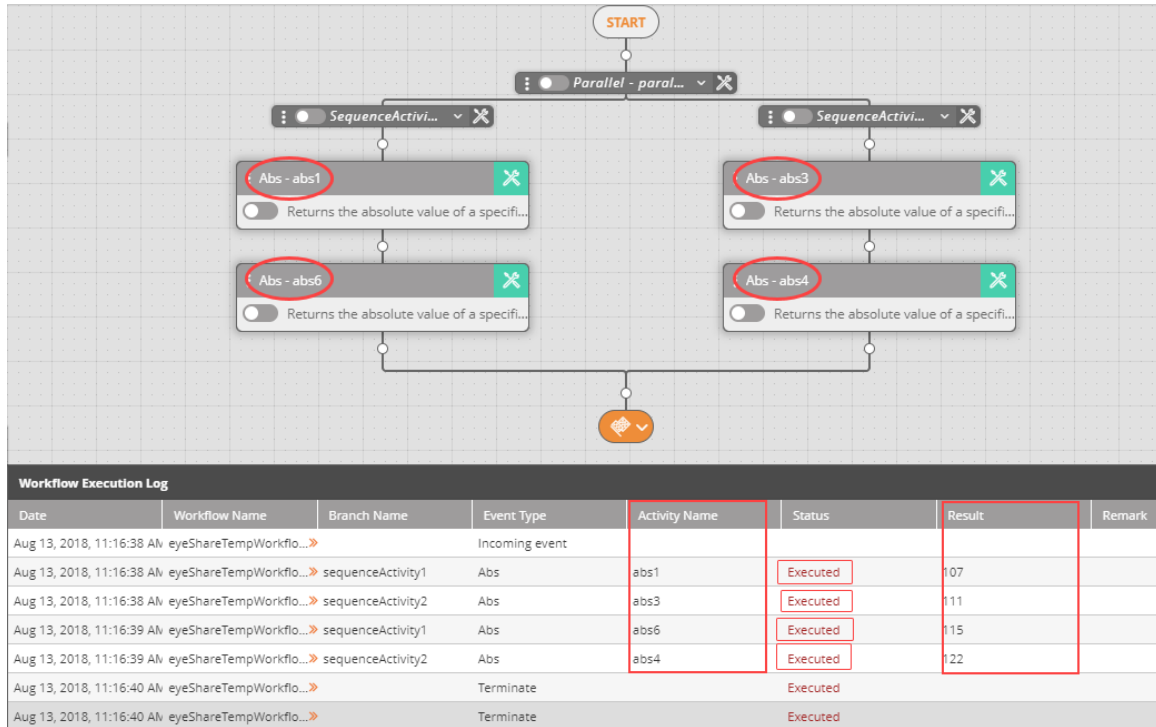
#### 6.1.4.3.4. Executing Activities in Parallel

Like an *If/Else* control [75], a Parallel control is made up of two or more branches. However, the controls differ in two fundamental ways:

- The branches of a Parallel control are usually made up of sequences of activities. They do not normally evaluate conditions.
- Unlike an *If/Else* control, whose branches run sequentially from left to right, all branches of a Parallel control run simultaneously (in parallel). A Parallel control is therefore a useful time saver when the order of performing multiple activities is not significant (e.g., checking the status of devices).

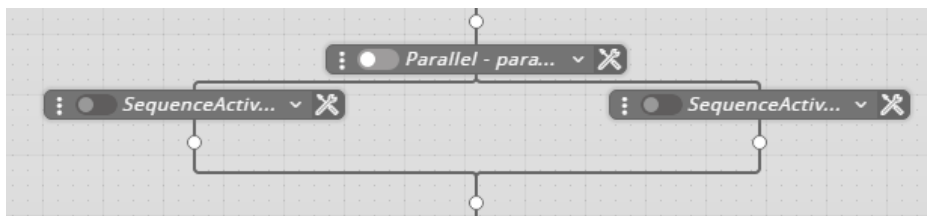
The following example shows a Parallel control whose branches return the values of numbers. Note that when the workflow runs, each activity within a branch runs in sequence. However, the branches all run at the same time.





**To create a Parallel control:**

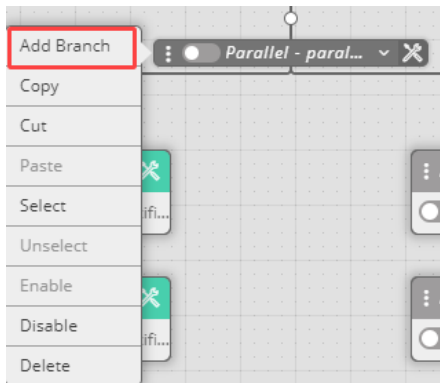
- From the list of controls on the left side of the Workflow Designer, select the Parallel control and drag it to the required position in the workflow. For more details, refer to [Adding Activities \[69\]](#).  
The control is added to the canvas together with two branches.



- Build the activity sequence of the first branch by [adding the relevant activities \[69\]](#) to the canvas and [defining their settings \[86\]](#). An activity sequence can be as short or as long as necessary (i.e., from one activity to many activities).
- Repeat Step 2 to build the activity sequence of the second branch.

- If necessary, add more branches to the Parallel control:

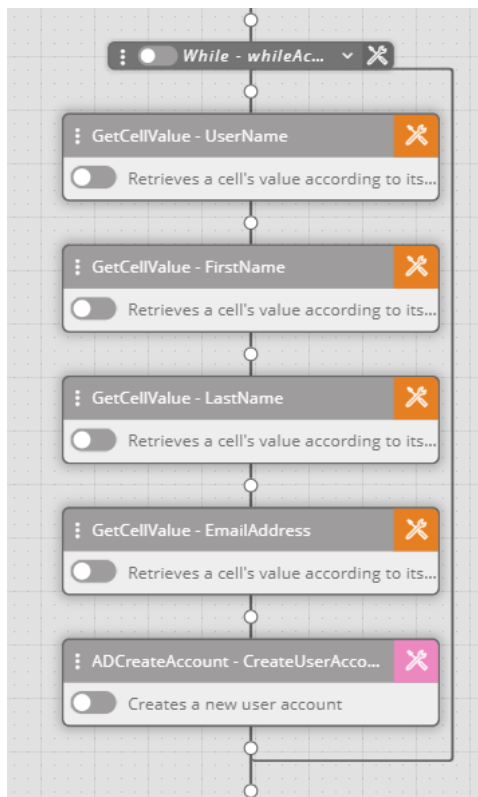
At the left side of the control, click , and then select **Add Branch**.



Then, build the activity sequence(s) of the additional branch(es).

#### 6.1.4.3.5. While: Inserting a Loop in Your Workflow

A While control starts a loop in the workflow. The loop can be as short or as long as necessary (i.e., from one activity to many activities). The following example shows a loop that is made up of five activities.




The counter for the loop, which determines how many times the loop runs, is defined in the settings for the While control.

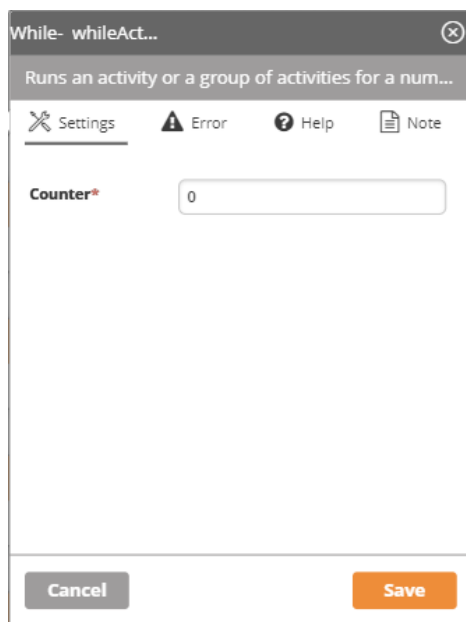
**To create a While control:**

1. From the list of controls on the left side of the Workflow Designer, select the While control and drag it to the required position in the workflow. For more details, refer to [Adding Activities \[69\]](#).

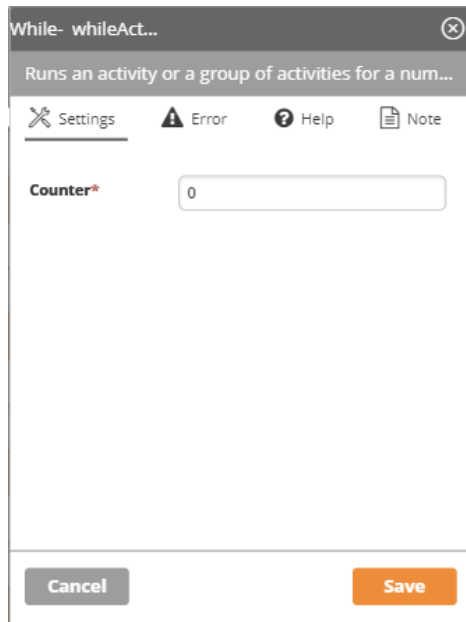
The control is added to the canvas, together with a line that represents the exit point of the loop (indicated by the arrow in the figure below). Activities added above this line are included in the loop. Activities added below the line are not part of the loop.



2. Build the activity sequence of the loop by [adding the relevant activities \[69\]](#) to the canvas and [defining their settings \[86\]](#).
3. At the right side of the While control, click  to open the **Settings** dialog.



- In the **Counter** field, enter the value of the counter. The value can be hard-coded or it can be a variable defined by another activity. For example:



- Click **Save**.  
Changes are saved in the system.

#### 6.1.4.3.6. Evaluating a System Condition

\*\*\* TBD \*\*\* Missing from original PDF

#### 6.1.4.3.7. Calling a Nested Workflow

The Run Workflow control inserts a nested (child) workflow into the workflow. This control is useful for quickly and easily incorporating frequently used processes into your main workflows. In addition, you can run the nested (child) workflow with variables, which is ideal when the variable in the parent workflow is dynamic – as is the case when running a loop – and those changes need to be captured and used in the child workflow as it runs in the background.

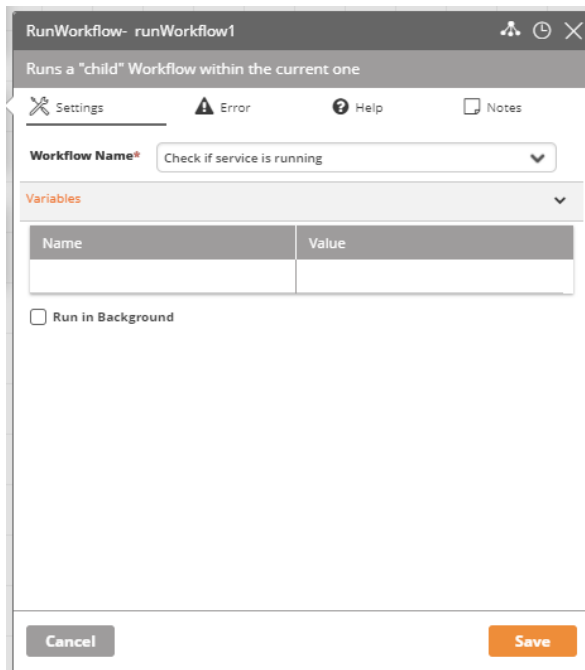
**To create a Run Workflow control:**

- From the list of controls on the left side of the Workflow Designer, select the Run Workflow control and drag it to the required position in the workflow. For more details, refer to [Adding Activities \[69\]](#).

The control is added to the canvas.



- From the upper right corner of the control, click  to open the **Settings** dialog.



RunWorkflow- runWorkflow1

Runs a "child" Workflow within the current one

Settings Error Help Notes

Workflow Name\* Check if service is running

Variables

Name	Value

Run in Background

Cancel Save

- Click in the **Workflow Name** field, and select the required child workflow.
- If you want to run the child workflow with variables, enter the variables under the **Variables**. The **Name** is the variable's name to be referenced (the name must differ from the activity's name and must start with a letter and contain only the A-Z, a-z, 0-9 characters). The **Value** is the variable's value - a constant value or another variable (variable names must follow the convention %Variable%). Note that it is not possible to send both text and a variable in the same field (i.e., `getrowscount(%tablename%)`).



#### NOTE

The variable passed to the child workflow is a copy of the variable in the parent workflow, meaning that changes made to the variable in the child workflow will not be reflected in the parent workflow.

- If you want to run the child workflow asynchronously (i.e., the main workflow continues while the child flow is running), select the **Run in Background** checkbox.
- Click **Save**.  
Settings are saved in the system.

#### 6.1.4.3.8. Goto: Setting a Navigation Shortcut

The Goto control interrupts the normal linear progression of a workflow by redirecting the flow to a specific activity elsewhere in the workflow. Once that activity is completed, the flow does not return to the point of interruption, but progresses linearly from the activity to which it was redirected.

The activity to which the flow is redirected may be at any location in the workflow. If the activity is located before the point of redirection, a portion of the workflow is repeated. If it is located after the point of redirection, a portion of the workflow is skipped.

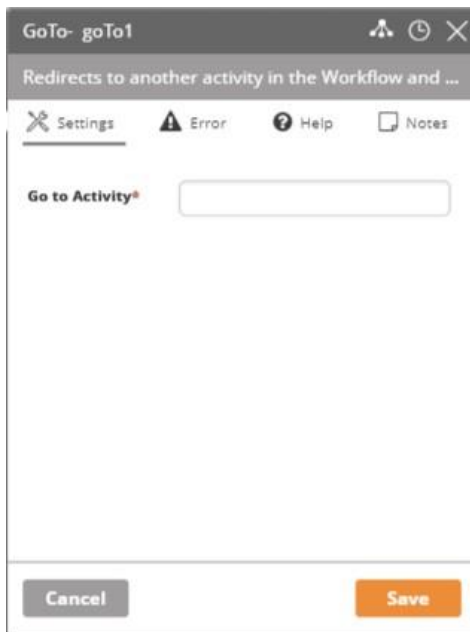
**To create a Goto control:**

1. From the list of controls on the left side of the Workflow Designer, select the Goto control and drag it to the required position in the workflow. For more details, refer to [Adding Activities \[69\]](#).

The control is added to the canvas.



2. From the upper right corner of the control, click  to open the **Settings** dialog.

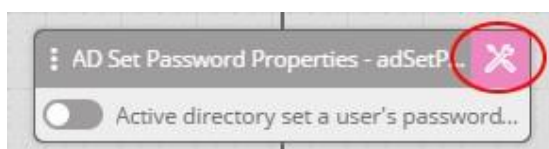


3. Click in the **Go to Activity** field, and select the activity to which the flow should redirect.
4. Click **Save**.  
Settings are saved in the system.

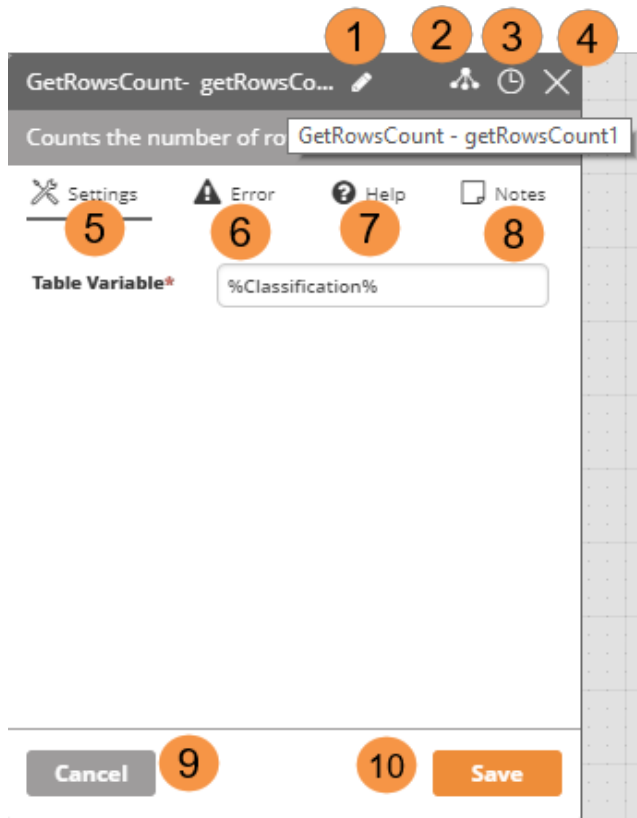
## 6.1.4.4. Defining and Editing Activity Parameters

### 6.1.4.4.1. About Activity Parameters

Clicking the color-coded icon at the upper right corner of an activity on the Workflow Designer canvas opens a Details dialog for the activity.



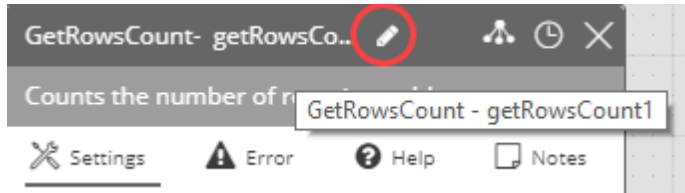
The Details dialog allows you to define and update various parameters for the activity, such as implementation settings, timeouts, and error handling. Features of the dialog are described in the table below the diagram.



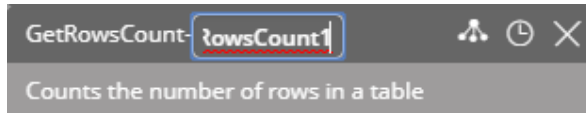
Number	Feature	Description
1	Activity name editor	Allows you to change the name of the activity. For details, refer to <a href="#">Updating the Activity Name [87]</a> .
2	Executor Module selection	Allows you to select the Executor module with which the activity interfaces. See <a href="#">Selecting an Executor Module [88]</a> .
3	Timeout setting	Allows you to define the period of time after which the activity will automatically abort. For more information, refer to <a href="#">Setting the Activity Timeout [88]</a> .
4	Close	Closes the Details dialog without saving changes.
5	Settings	Allows you to configure implementation directions for the activity. Settings are displayed by default when the Activity Details dialog opens. For more information, refer to <a href="#">Configuring Activity Implementation Settings [89]</a> .
6	Error	Allows you to select error handling directions for the activity. For more information, refer to <a href="#">Defining Error Handling [90]</a> .
7	Help	Displays more detailed information about the purpose of the activity and how to use it.
8	Note	Enables you to compose free text comments about the activity. For details, refer to <a href="#">Adding Notes [92]</a> .
9	Cancel	Closes the Details dialog without saving changes.
10	Save	Saves changes and closes the Details dialog.

#### 6.1.4.4.2. Updating the Activity Name

When hovering over the activity name, a tooltip displays the full activity type and name, and an Edit icon appears.




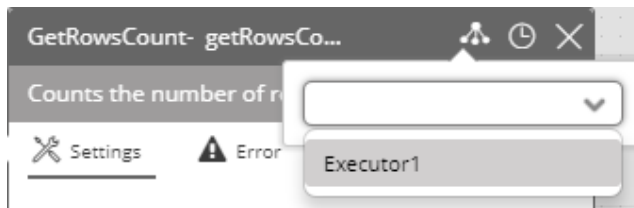
Clicking the Edit icon makes the activity name editable. Update the name as required, and then, at the bottom of the Details dialog, click **Save**.



#### 6.1.4.4.3. Selecting an Executor Module

Executors help workflow performance and scalability by providing load balancing among the servers. An executor can be made up of Ayehu servers, third party servers, or both.

Clicking the  icon, at the top of the Activity Details dialog, opens a list of all defined executors. If you would like the activity to interface with a specific executor, select the executor from the list, and then click **Save**.




#### NOTE

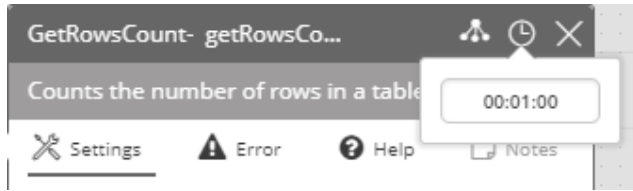
Selecting an executor is not mandatory. If no executor is selected for an activity, a default configuration is used.

#### 6.1.4.4.4. Setting the Activity Timeout

Every activity has a timeout setting. If the activity is not executed within the defined timeout period, it automatically aborts. The default timeout setting is one minute.

Clicking the  icon, at the top of the Activity Details dialog, displays the currently configured timeout value in hours:minutes:seconds. When necessary, update the value as required, and then, at the bottom of the Details dialog, click **Save**.

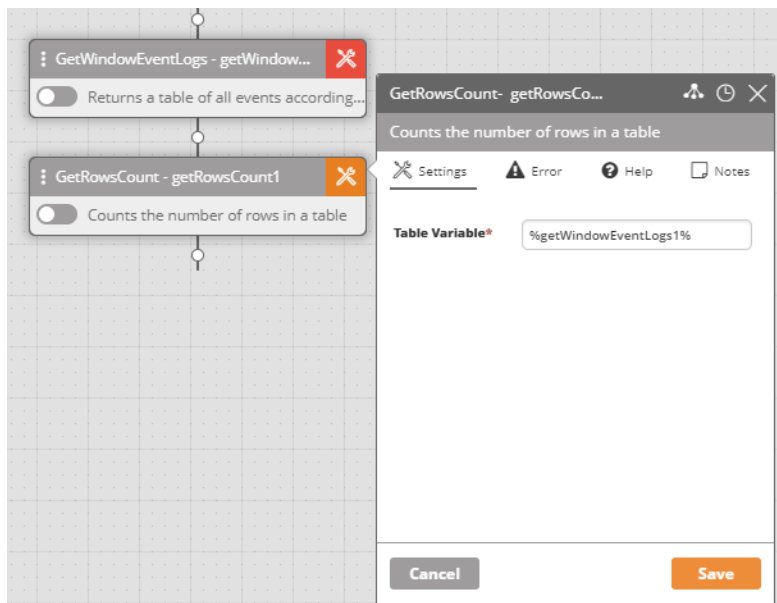




#### 6.1.4.4.5. Configuring Activity Implementation Settings

Activity settings contain values, parameters and/or instructions that determine how the activity is carried out. Settings can vary greatly, depending on which activity type is involved. For example, Copy File activity settings include the source and destination path of the file. Settings for an Active Directory Reset Password activity, however, contain the relevant username, previous password and new password.

The following figure shows an example of an activity that retrieves the number of rows in a table. Its settings include only a single value that specifies the relevant table. In this case, the table is the one returned by the previous activity.

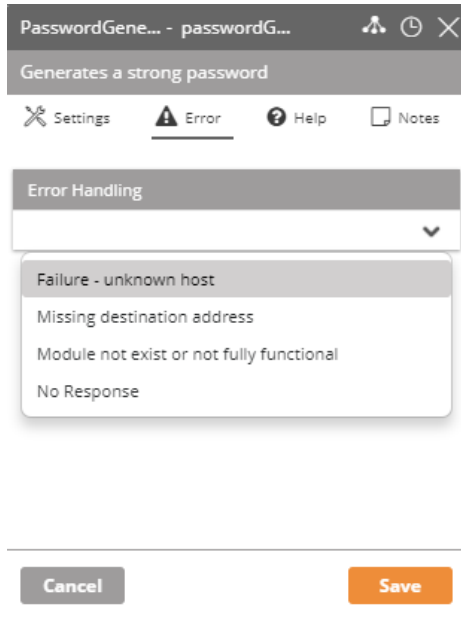


In contrast, the next example shows an activity (Send Email) that has multiple and more complex settings. These settings define the recipients of the email, the text of the email, attachments, and more.

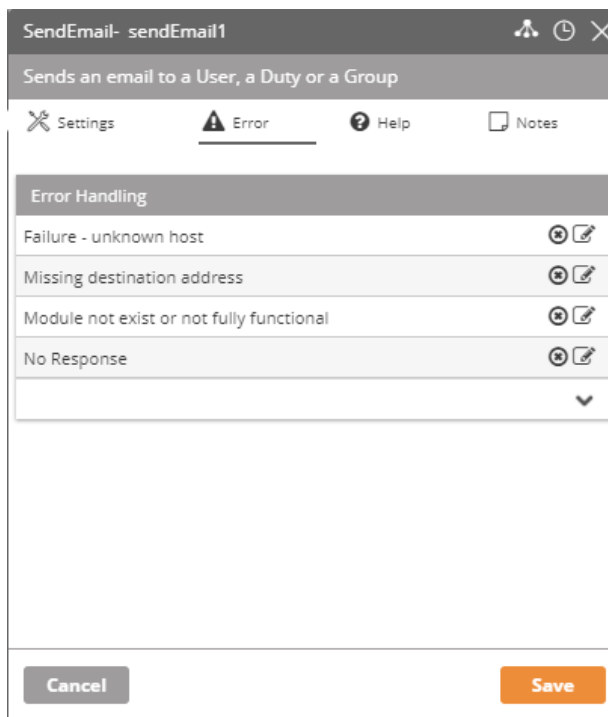
It is recommended to always define implementation settings immediately after [adding an activity to the workflow \[69\]](#). If settings are not defined, or not configured properly, your workflow will not run as expected.

#### 6.1.4.4.6. Defining Error Handling

The **Error** tab of the Activity Details dialog enables you to specify actions that are taken in the event that the activity fails to be executed. The Workflow Designer supports four general error handling categories, which you can select from a dropdown list on the **Error** tab. The actual error handling methods are configured elsewhere in Ayehu.



To define multiple error handling categories, re-open the dropdown list and select an additional option. Error handling is carried out in the order of the selected options. For example:



It is recommended to specify an error handling method for every activity, and particularly for activities that occur before critical junctures in your workflow. For more information and guidelines about error handling, refer to [Building Workflows: Best Practices](#).

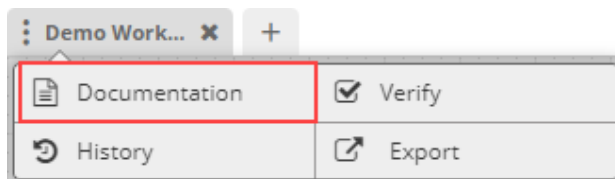
#### 6.1.4.4.7. Adding Notes

The **Notes** tab of the Activity Details dialog lets you write comments about the activity. It is recommended that notes be entered about each activity. Notes can contain a description of the activity, a summary of its logical place in the workflow, and any other relevant information that would be valuable to share.

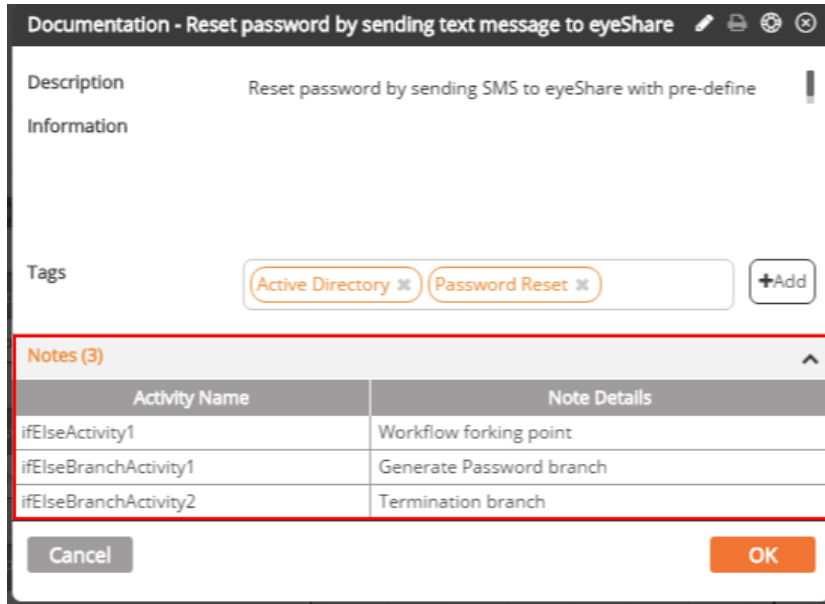
To create or update a note, enter the text in the field, and then click **Save**.



All notes created for a workflow are displayed at the bottom of the **Documentation** dialog for that workflow. For more information about the **Documentation** dialog.



Refer to [Reviewing Workflow Metadata \[122\]](#).



## 6.1.4.5. Performing Actions on Activities

### 6.1.4.5.1. About Actions on Activities

The Workflow Designer provides several activity management actions to help you easily build and control your workflow. The options include:

- [Disabling Activities \[93\]](#)
- [Pasting Activities \[94\]](#)
- [Deleting Activities \[94\]](#)




#### NOTE

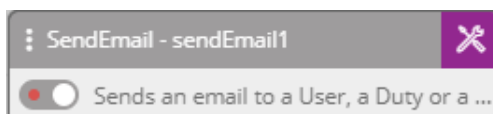
This article explains how to perform actions on individual activities. For information about working with multiple activities simultaneously, refer to [Working with Selection Mode and Groups \[95\]](#).


### 6.1.4.5.2. Disabling Activities

By default, all activities in the workflow are enabled, meaning that they are active and they run when the workflow is executed. During workflow design, you might want to prevent one or more activities from running, so you can test specific portions of the workflow. Disabling an activity blocks it from running during execution.

**To disable and enable an activity:**

1. At the left side of the activity that you want to disable, click . A red dot appears in the icon, and the activity is disabled.




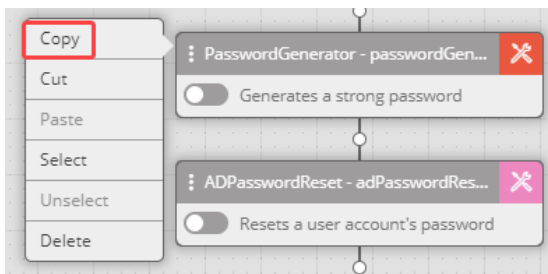
- To re-enable the activity, click . The red dot disappears, and the activity is enabled.


### 6.1.4.5.3. Pasting Activities

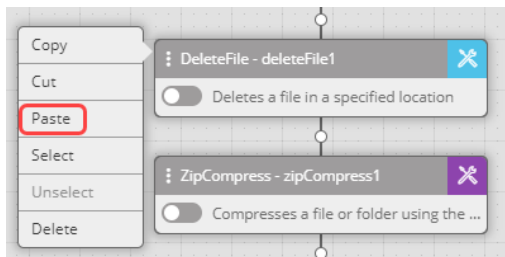
The time-saving Paste action lets you transfer an activity to another portion of the same workflow, or to a different workflow. You can move an activity to a different place by cutting the activity and pasting it in the new location. Alternatively, you may copy an activity, and then place the duplicate activity in another location.

**To paste an activity:**

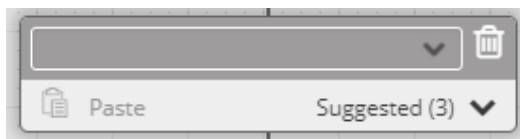
- At the upper left corner of the activity you want to paste, click . Then, from the list of actions, click **Copy** (to create a duplicate of the activity) or **Cut** (to transfer the original activity).



- Transfer the activity to the required location using one of the following methods:
  - At the upper left corner of the activity above the location where you want to paste the activity, click . Then, from the list of actions, click Paste.



- Click the node at the point in the workflow where you want to paste the activity. Then, from the activity placeholder that appears, click Paste. For more details, refer to [Pasting Copied Activities \[69\]](#).




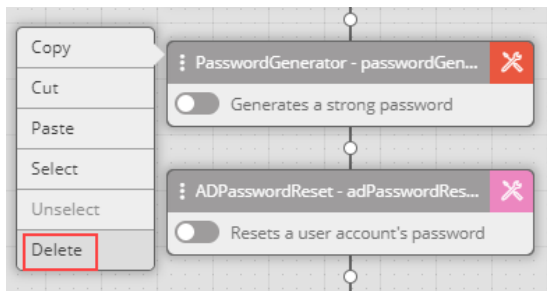
The activity is transferred to the selected location.

### 6.1.4.5.4. Deleting Activities

The Delete action lets you remove activities that are no longer needed in the workflow.

**To delete an activity:**

- At the upper left corner of the activity that you want to remove, click . Then, from the list of actions, click **Delete**.



The activity is removed from the workflow.

**6.1.4.5.5. Working with Selection Mode and Groups**

**About Selection Mode and Groups**


To maximize efficiency, the Workflow Designer is equipped with the following features that allow you to consolidate actions and divide your workflow into logical sections:

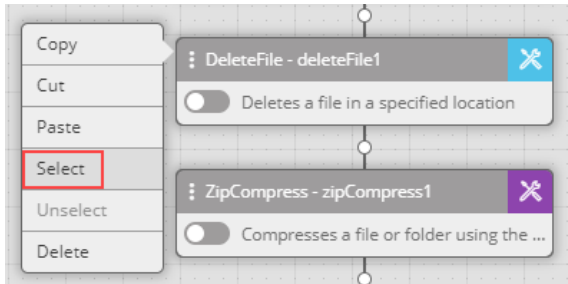
- **Selection mode:** Lets you select one or more activities in a workflow. Selection mode enables you to perform actions on multiple activities simultaneously. You can also designate a set of consecutive selected activities as a Group.
- **Groups:** Sets of consecutive activities on which you can perform collective operations and write notes. A group can also have its own set of error handling rules. For more information, refer to [Working with Groups \[97\]](#).


**Using Selection Mode**

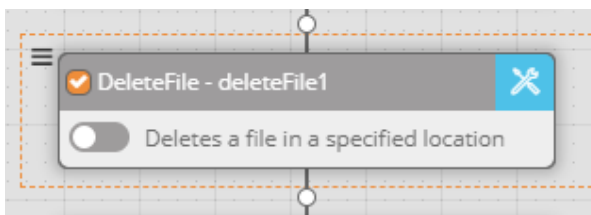
The Workflow Designer's Selection mode allows you to [perform actions \[93\]](#) on multiple consecutive activities simultaneously. Working in Selection mode is useful when you need to disable, copy or delete a portion of your workflow.

**To select activities:**

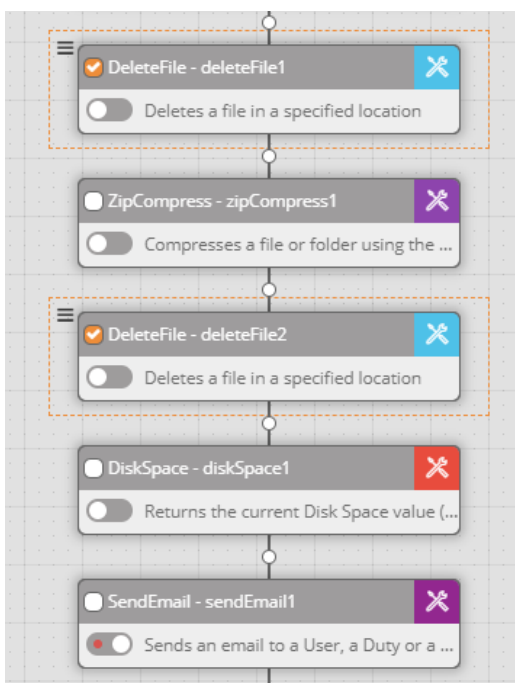
1. At the upper left corner of the activity that you want to select, click . Then, from the list of actions, click **Select**.



The Workflow Designer enters Selection mode. The  icons of all activities in the workflow are replaced by checkboxes. A broken orange border appears around the selected activity, and its checkbox is orange and selected.




2. To select additional activities, check the checkboxes of the relevant activities. For example:





## Performing Actions on Selected Activities

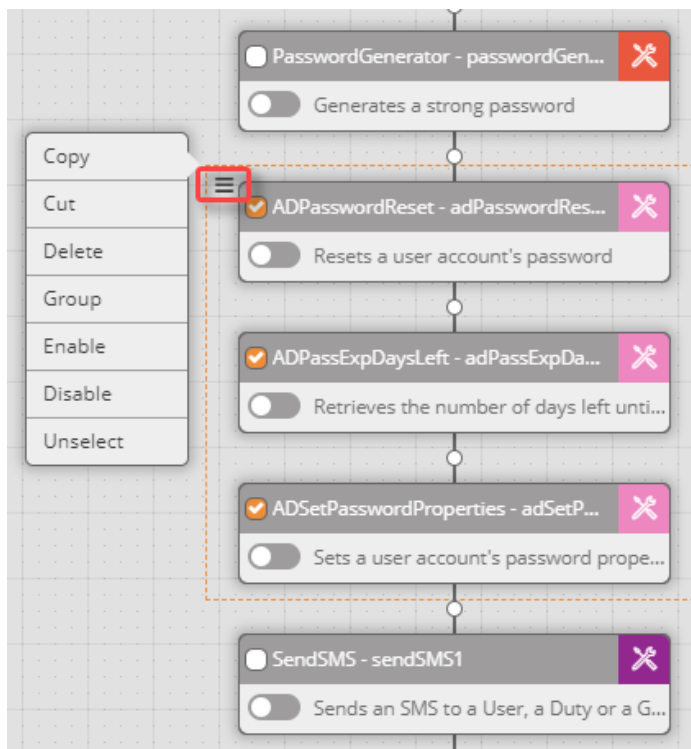
Clicking the  icon to the left of a selected activity opens a list of actions that you can perform on the activity. For details about performing actions, refer to [Performing Actions on Activities \[93\]](#).



### NOTE

When working in Selection mode, you may perform actions on selected activities only.

When two or more consecutive activities are selected, one broken orange border surrounds all the activities, and the activities share one icon for opening the actions list. Any action you perform affects all the activities in that set.

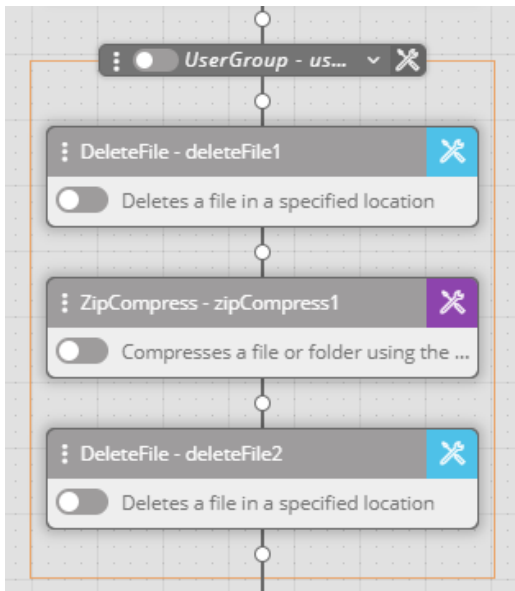


## Working with Groups

A group is a designated set of consecutive activities within a workflow. Groups are independent entities that have their own names and for which you can [write notes \[86\]](#) and [define error handling rules \[86\]](#). Unlike a set of selected activities, where all performed actions affect every activity in the set, in a group you may perform either collective actions or actions on an individual activity within the group.

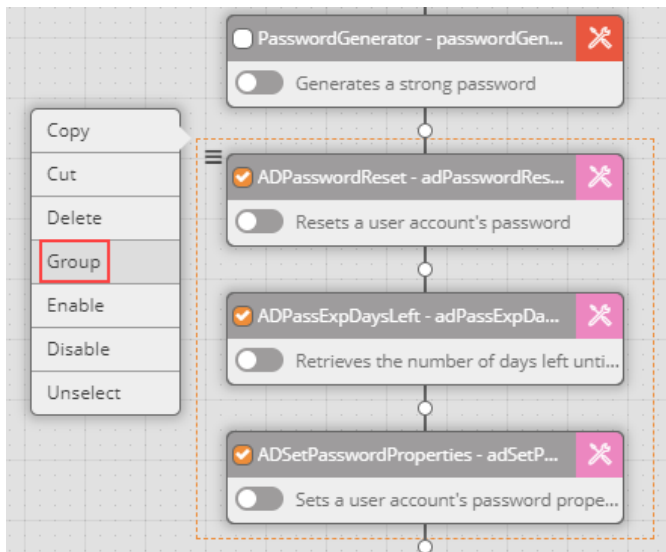
The Workflow Designer has several predefined group types, such as [If/Else controls \[75\]](#), [Parallel controls \[75\]](#) and [While controls \[75\]](#). You can also create your own groups using any relevant set of consecutive activities. It is recommended to divide your workflow into logical groups to enhance manageability.

Every group has a title bar from which you can [perform operations on the group \[95\]](#). The name of the group is displayed in the center of the title bar. User-defined groups are surrounded by a solid orange border.



**To create a group:**

1. Enter [Selection mode \[95\]](#), and select all the activities that you want to include in the group. The activities must be in consecutive order within the workflow.
2. At the upper left corner of the first activity in the set, click . Then, from the list of actions, click **Group**.




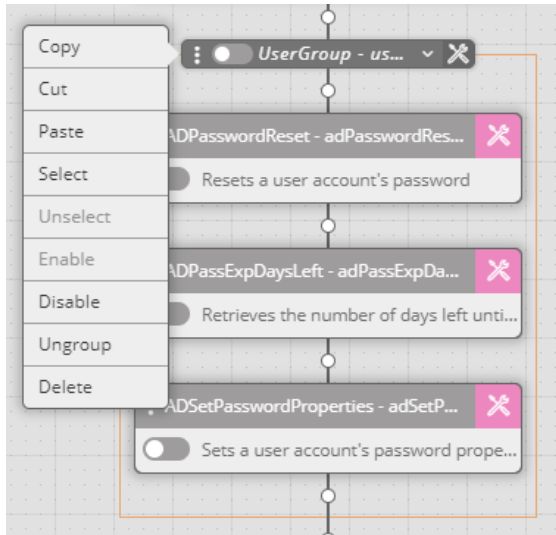
The group is created.




## Performing Operations on a Group

The icons in the title bar of the group allow you to perform operations on the group. To perform these operations on an individual activity within the group, click the corresponding icon in the relevant activity.



- : Opens a [list of actions \[93\]](#) that can be performed on the group.




- : Toggling this icon [disables/enables \[93\]](#) all activities in the group.
- : Toggling this icon hides/displays the activities in the group.
- : Opens the Group Details dialog, from which you can select [error handling rules \[86\]](#) for the group and [add notes \[86\]](#) about the group.

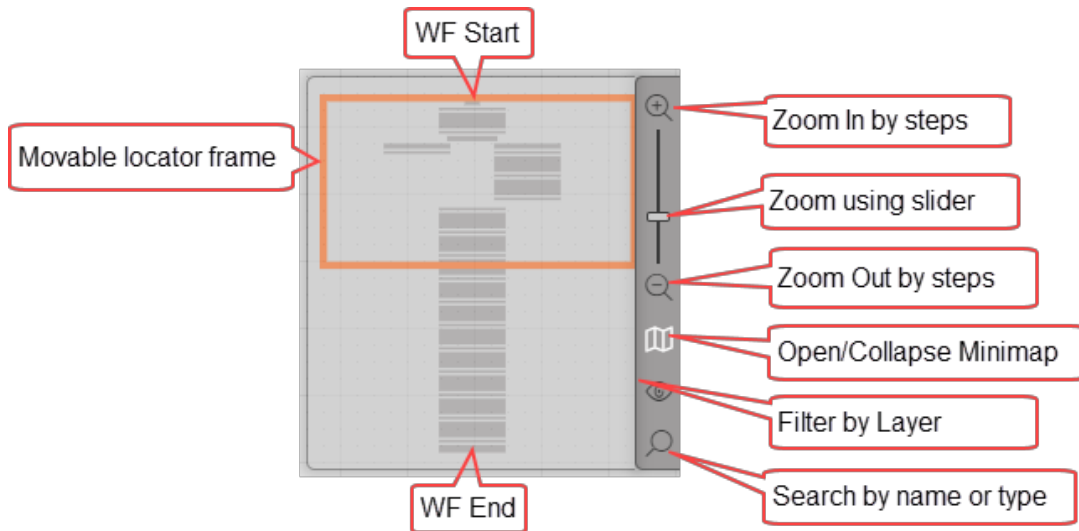
## 6.1.5. Navigating Through Your Workflow

### 6.1.5.1. Navigation Tools

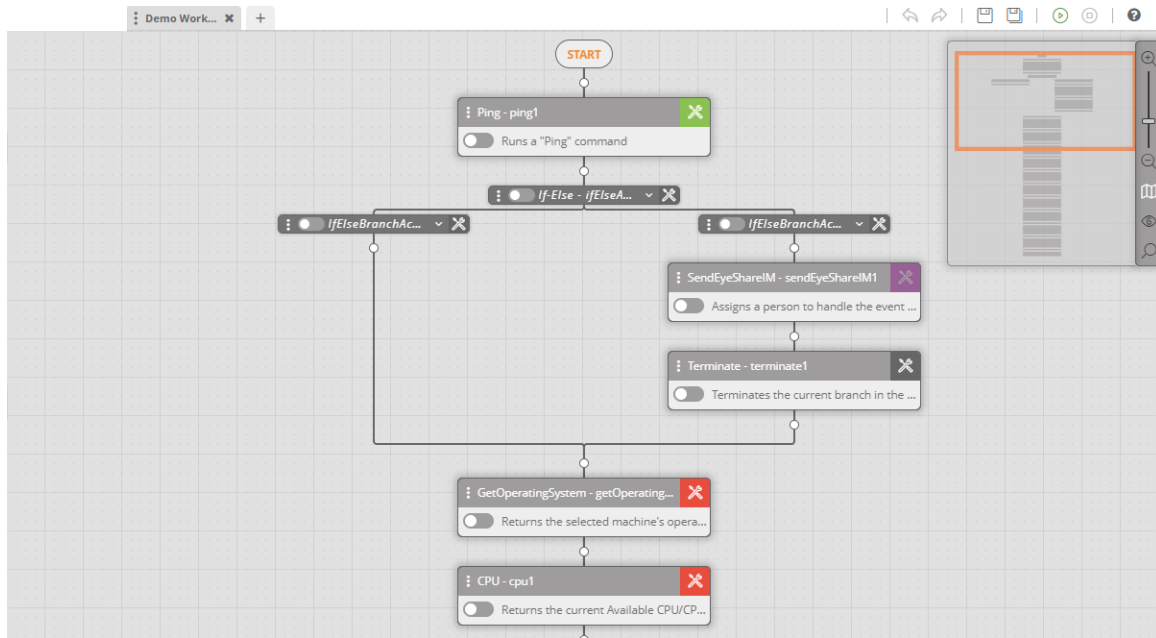
The Reference toolbar, at the upper right side of the Workflow Designer, provides tools for easily viewing your workflow layout and locating workflow components. Under normal operations mode it looks like this:



A particularly important variation is obtained by clicking the Minimap icon :



It uses a movable locator frame to focus on an extract of a full workflow:



You can grab the orange box in the Minimap with your mouse and move it around. The displayed section of the workflow will follow the Minimap. (Mouse-over to anywhere in the box, and with the left button down, continue moving the mouse.) For a workflow too large to view on a monitor screen, it provides a quick way of moving about in the workflow.

The Reference toolbar includes the following tools:

Icon	Tool	Description
	Zoom In / Zoom Out	Adjusts the view by enlarging or reducing the size of workflow components on the canvas in discrete steps. For more information, refer to <a href="#">Adjusting the View Using Zoom [101]</a> .
	Minimap	Shows and hides a diagram of the entire workflow. The Minimap indicates which workflow components are currently displayed on the canvas, and enables you to easily navigate to a different part of the layout. For details, refer to .
	Filter By Layer	Differentiates workflow components for which error handling and/or notes have been defined. For more information, refer to <a href="#">Filtering Workflow Components [104]</a> .
	Search Activity	Allows you to locate an activity within the workflow through a keyword search. For details, refer to <a href="#">Loading Activities [105]</a> .

### 6.1.5.2. Adjusting the View Using Zoom

The zoom tool lets you adjust the view of the workflow by enlarging or reducing the size of the components on the canvas. To focus on a small section of the workflow or on a single component, increase the zoom by clicking . To view a larger portion of the workflow, decrease the zoom by clicking .

To increase or decrease the zoom quickly, drag the slider in the appropriate direction.



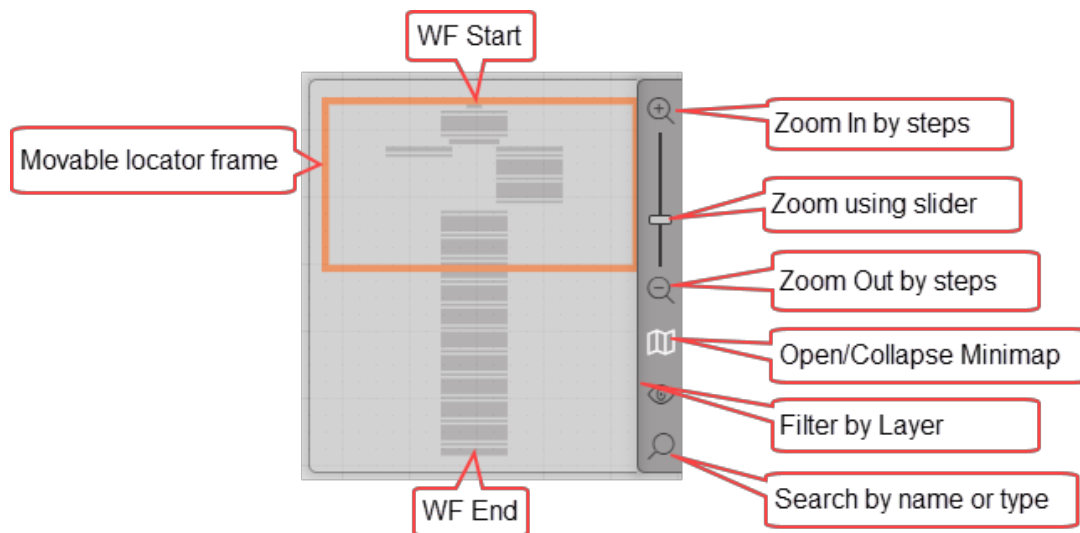
#### NOTE

You can also control the zoom by placing the mouse pointer inside the [Minimap \[99\]](#) and scrolling until the desired zoom is achieved.

### 6.1.5.3. Working with the Minimap

When you are building large and complex workflows, it can become a challenge to keep track of the entire sequence and understand the larger context of the individual components you are editing. The Minimap keeps you oriented and helps you quickly navigate to the sections that you need to work on.

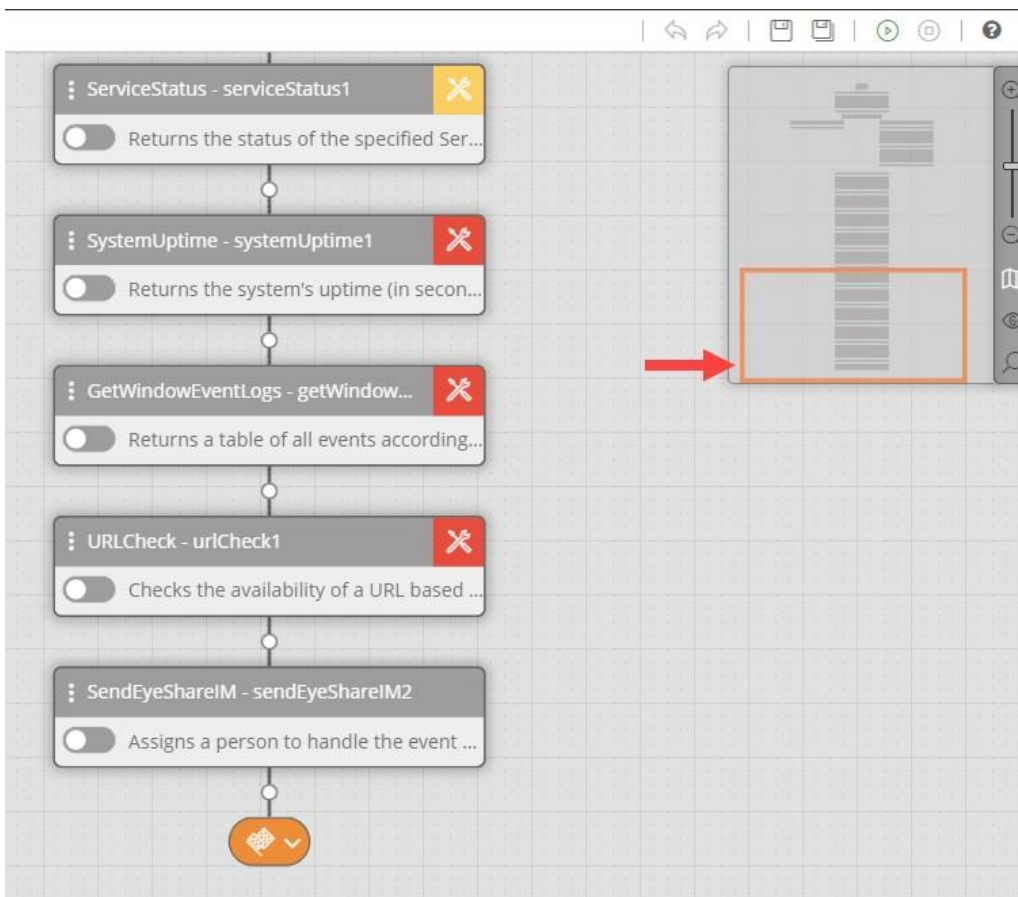
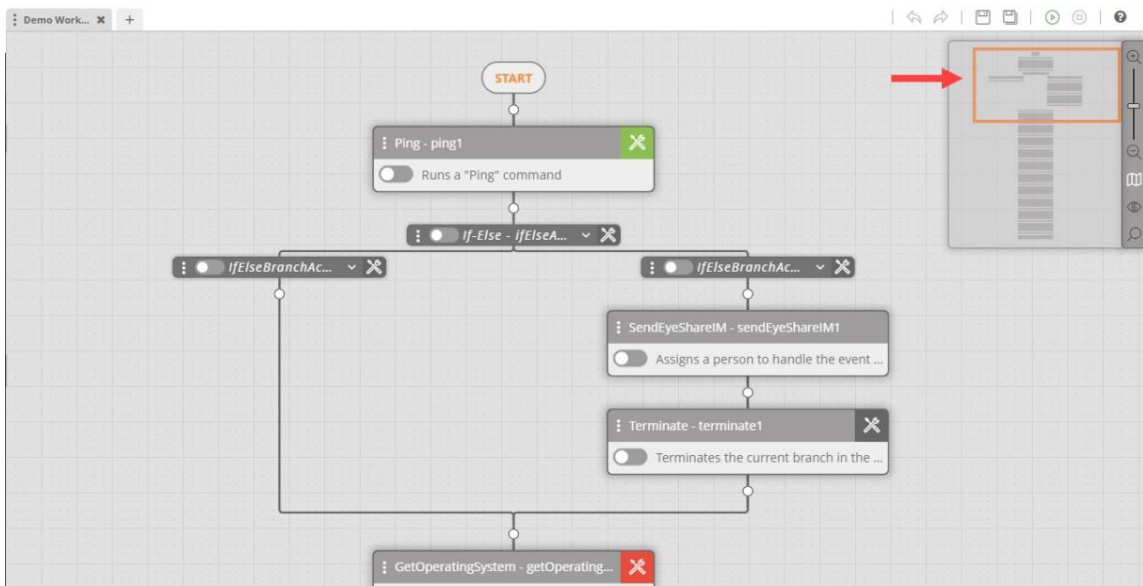
The Minimap shows a small diagram of the entire workflow. The portion of the workflow that is currently displayed on the canvas of the Workflow Designer is surrounded by an orange frame known as the Locator Frame.



You can navigate to a different part of the workflow using either of the following techniques:

- Click inside the Minimap and drag the mouse until the Locator Frame is positioned around the components that you want to view. As you drag, the workflow on the canvas is repositioned.
- Click on the canvas of the Workflow Designer and drag the workflow until the required view is achieved. As you drag, the Locator Frame of the Minimap is repositioned to match the current canvas view.

The following figures show an example of how the canvas and the Minimap look before and after a user navigated from the beginning to the end of a workflow. Note the change in position of the Locator Frame in the Minimap.





## NOTE

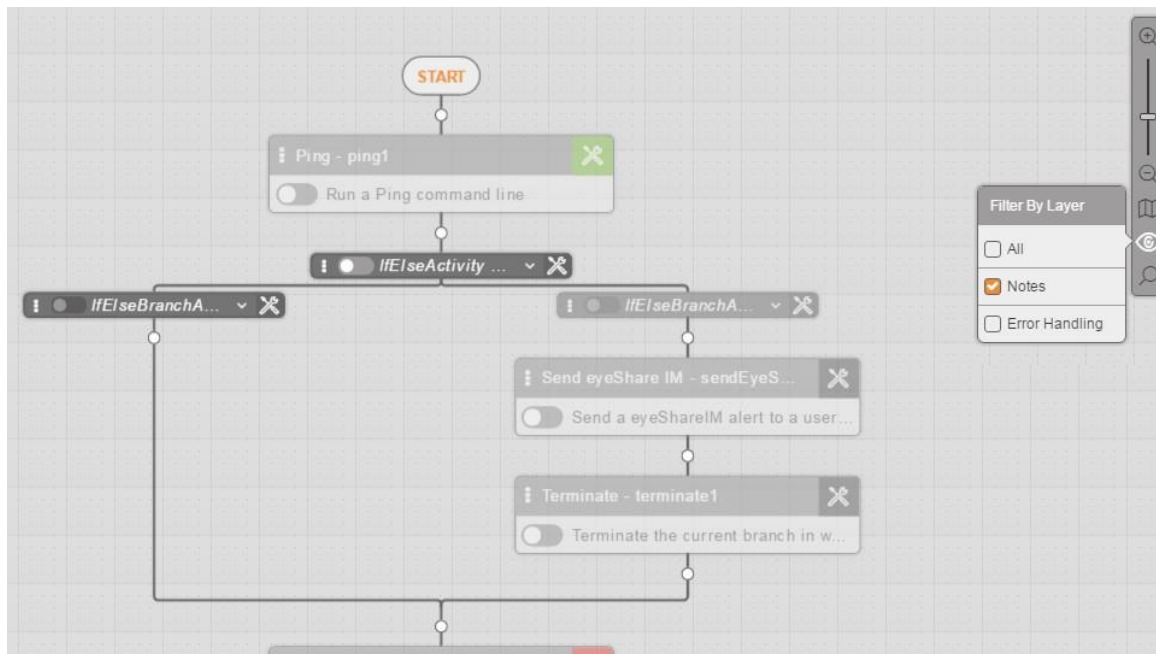
To hide the Minimap at any time, click .

### 6.1.5.4. Filtering Workflow Components

The Filter By Layer feature lets you easily identify and locate workflow components to which the following elements have been added:

- **Notes:** Free text comments, generally providing additional information about the component.
- **Error Handling:** Instructions about actions to take if the activity or control does not behave as expected.

The following example shows a workflow that is filtered for components that contain notes. The two controls with notes are emphasized, while the other workflow components appear grayed out.



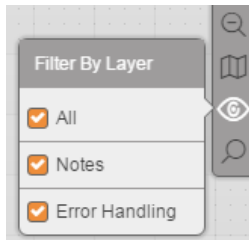
## NOTE

In a filtered view, components that appear grayed out are not disabled. You may update their parameters and perform any other actions on them as you normally would. In addition, they are executed when you run the workflow.



**To filter your workflow:**

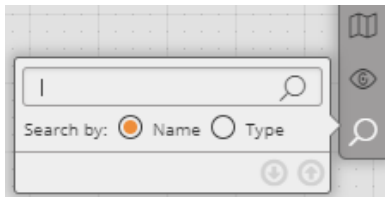
1. From the Reference toolbar, click .  
The **Filter By Layer** popup opens.



2. Clear the **All** checkbox. Then, define the filtering settings by selecting or clearing the **Notes** and the **Error Handling** checkboxes.  
The selected filtering is applied to the workflow.

**6.1.5.5. Locating Activities Using the Search Tool**

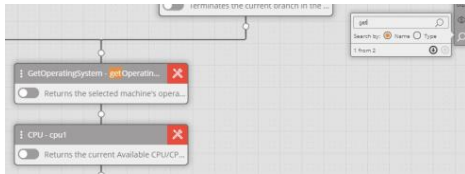
The Search tool of the Reference toolbar lets you locate one or more activities within a workflow by performing a keyword search. The keyword may contain all or part of an activity name or an activity type.



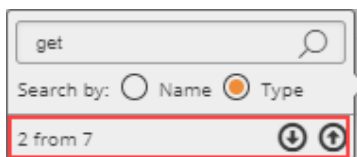
**To locate activities using the Search tool:**

1. From the Reference toolbar, click .  
The **Search Activity** popup opens.

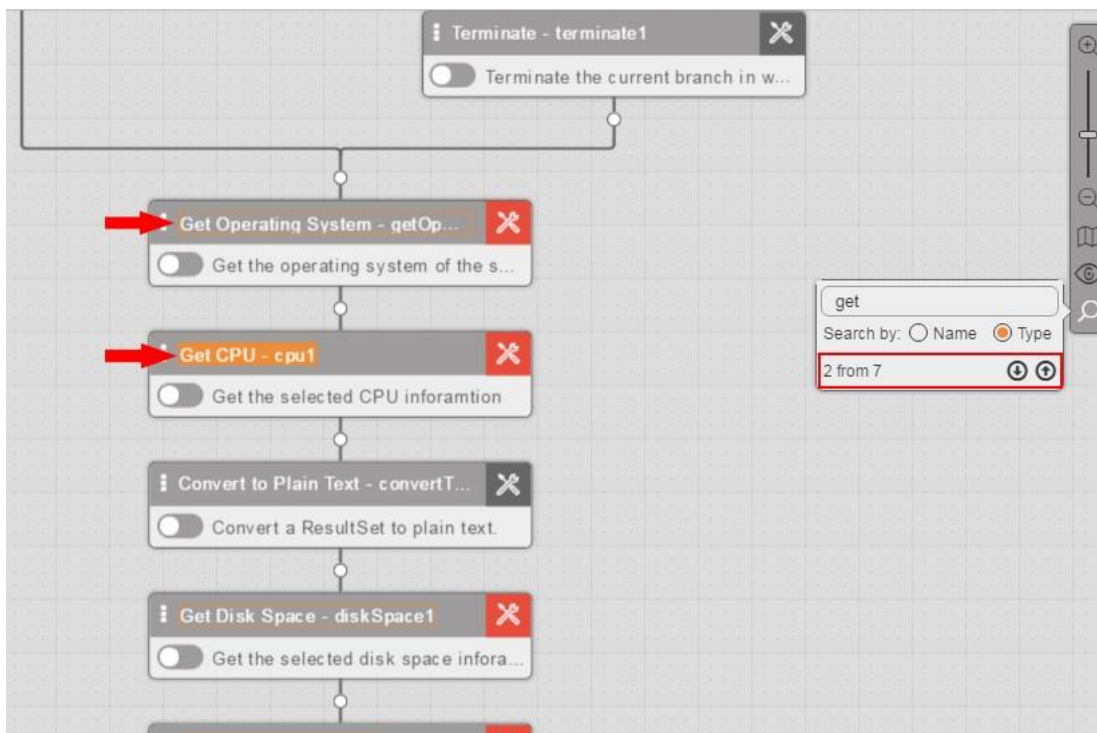
2. Select the relevant **Search by** radio button. Then, enter your keyword in the field above the radio buttons. As you type, the name and type of the first component in the workflow that matches the keyword is highlighted in orange. For example:



If more than one component in the workflow matches the keyword, the total number of matches is listed at the bottom of the **Search Activity** popup, and you can jump to the next or previous match by clicking the Up/Down arrows.



In the following example, seven components match the keyword `get`. The name and type of the currently selected match is highlighted in orange. The names and types of the other matching components are surrounded by an orange frame.



## 6.1.6. Testing and Running Your Workflow

### 6.1.6.1. About Testing and Running Your Workflow

The Workflow Designer provides the following options for validating your workflow and verifying that it will run as expected:

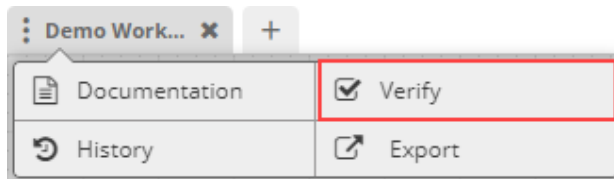
- **Verification:** Performs a logic check on the workflow to determine if all components are valid. For details, refer to [Verifying Workflows \[107\]](#).
- **Execution:** Runs the workflow and displays a log providing details related to the execution of each activity. For more information, refer to [Running Workflows \[107\]](#).

### 6.1.6.2. Verifying Workflows

The Verify function runs a validity check on a workflow to determine if all the components are defined correctly (e.g., activity settings are present and configured as expected). It is recommended to perform a verification check before saving or executing your workflow.

**To verify a workflow:**

- At the left side of the relevant [workflow tab \[47\]](#), click  and select **Verify**.



If all workflow components are valid, a confirmation message appears at the top of the screen.




If one or more components are invalid, an Error Log appears at the bottom of the screen. Each row of the Log displays the name of the component that failed verification and a description of the error involved.



Activity Name	Activity Type	Branch Name	Group Name	Error Type	Error Message
getWindowEve...	GetWindowEv...				activity "getWindowEventLogs1" is invalid.
getRowCount1	GetRowCount				activity "getRowCount1" is invalid.
sendEmail1	SendEmail				activity "sendEmail1" is invalid.


### 6.1.6.3. Running Workflows

The Execute function runs a workflow and then displays a log providing information related to the execution of each activity. You can change the settings of the log to display more (or less) detail, as needed.


**To run a workflow:**

- From the Designer toolbar, click  .  
The workflow is executed, and the execution log is displayed at the bottom of the screen.

 **NOTE**  
To abort execution while the workflow is running, from the Designer toolbar, click .

 **NOTE**  
To run the workflow with variables that have been set by using the **Set Variables** function, see [Running Workflows with Variables \[112\]](#).

#### 6.1.6.4. Working With the Execution Log

The Execution Log, which is displayed at the bottom of the screen, shows the execution status and result of each activity in the workflow. The Log can be sorted according to any column, in either ascending or descending order. To hide the Log, at the upper right corner of the Log, click .

Date	Workflow Name	Branch Name	Event Type	Activity Name	Status	Result	Remark
Aug 15, 2018, 6:03:14 PM	eyeShareTempWorkflow...		Incoming event				
Aug 15, 2018, 6:03:14 PM	eyeShareTempWorkflow...	Workflow Root	Ping	ping1	Executed	Success	
Aug 15, 2018, 6:03:15 PM	eyeShareTempWorkflow...	Workflow Root	GetOperatingSystem	getOperatingSystem1	Executed	Microsoft Windows Serve...	
Aug 15, 2018, 6:03:16 PM	eyeShareTempWorkflow...	Workflow Root	CPU	cpu1	Executed	96	
Aug 15, 2018, 6:03:18 PM	eyeShareTempWorkflow...	Workflow Root	ConvertToPlainText	convertToPlainText1	Executed	96	
Aug 15, 2018, 6:03:18 PM	eyeShareTempWorkflow...	Workflow Root	DiskSpace	diskSpace1	Executed	23937.39	
Aug 15, 2018, 6:03:19 PM	eyeShareTempWorkflow...	Workflow Root	Memory	memory1	Executed	3229	
Aug 15, 2018, 6:03:20 PM	eyeShareTempWorkflow...	Workflow Root	ServiceStatus	serviceStatus1	Error	Service not found	
Aug 15, 2018, 6:03:21 PM	eyeShareTempWorkflow...	Workflow Root	SystemUptime	systemUptime1	Error	Argument not specified f...	
Aug 15, 2018, 6:03:22 PM	eyeShareTempWorkflow...	Workflow Root	GetWindowEventLogs	getWindowEventLogs1	Executed	Result	

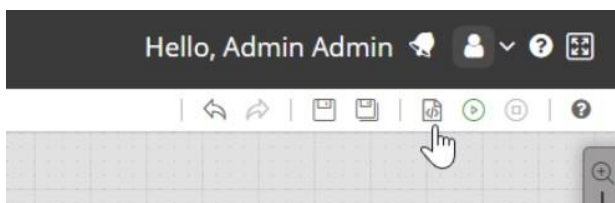
Clicking the orange link in the **Result** column opens a popup displaying complete result details. For example:



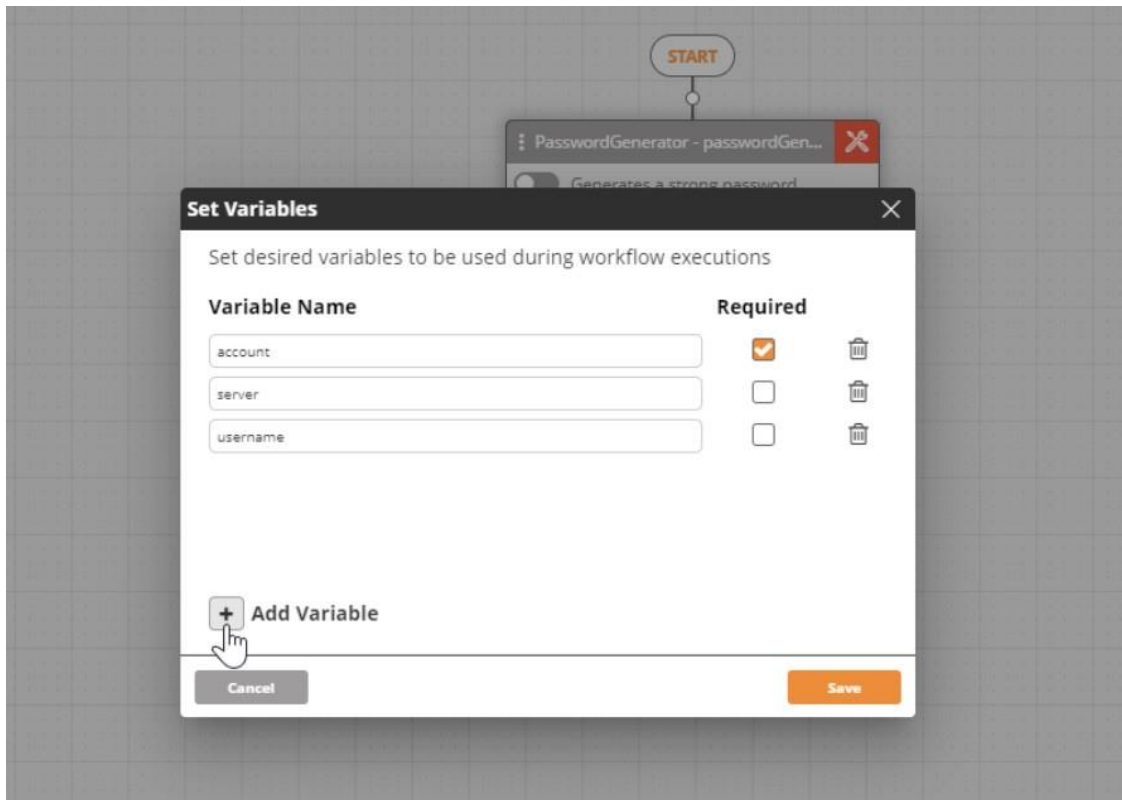
The **Result** may be more complex even including a complete table.

#### 6.1.6.5. Setting Variables in Workflows

When creating a workflow, variables are entered into activities where input values are expected. Once the workflow is created, the workflow editor can **Set Variables** for that workflow by clicking on the **Set Variables** button in the workflow toolbar:



Variables will be automatically detected and added to the variable list that appears in the **Set Variables** window:

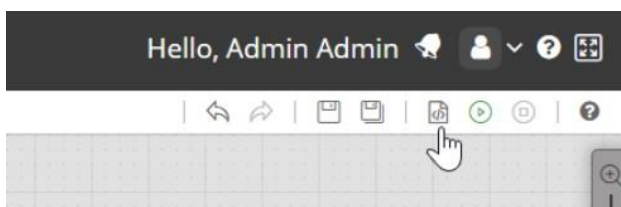


Here you can choose which variables are required and must be entered for the workflow to run, and which are optional but should still be presented. You can add additional variables that were not automatically detected from the workflow. You can also delete any variables that are not necessary at this point. Deleting a variable will not delete it from the workflow, it will only keep it from appearing in the list during manual workflow execution.

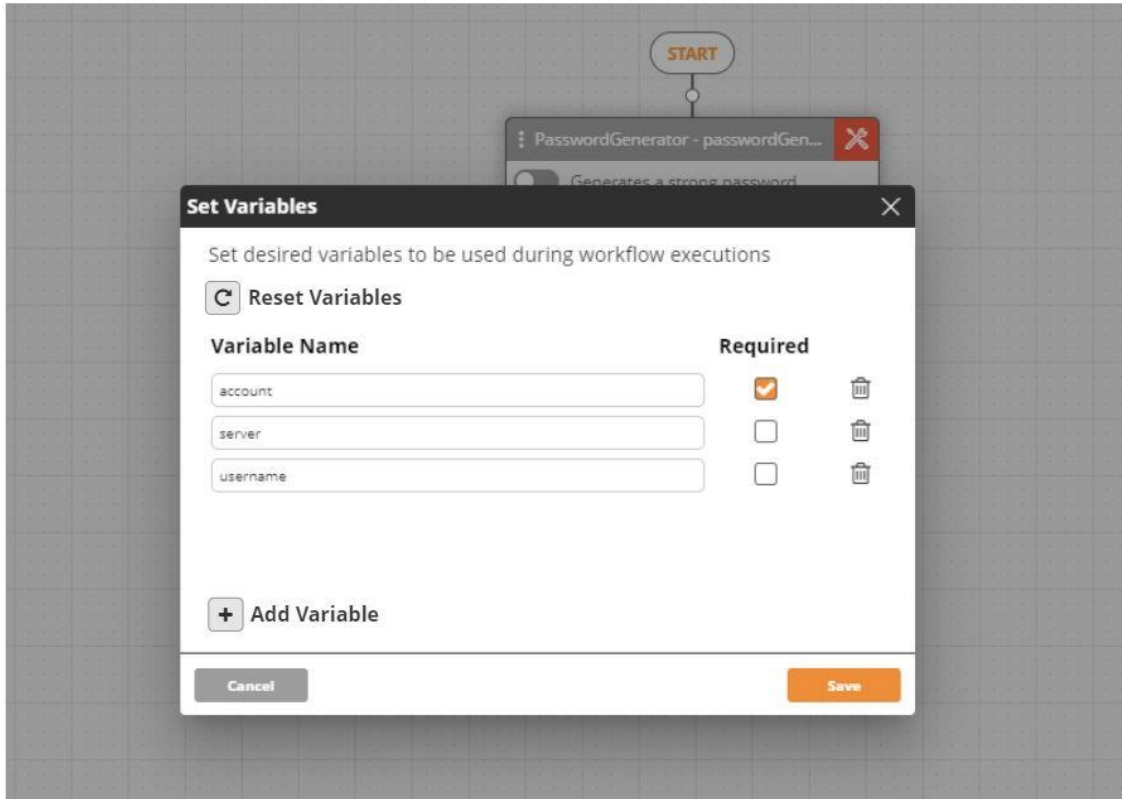
Once variables have been set, you can run the workflow with values for each of the variables, which will be automatically inserted into the appropriate activities when they run. You can enter these variables when running the workflow from the [Workflow Designer \[112\]](#), from the [Workflow Repository \[213\]](#), as well as from [Ayehu LIVE \[15\]](#).

#### 6.1.6.5.1. Resetting Variables in Workflows

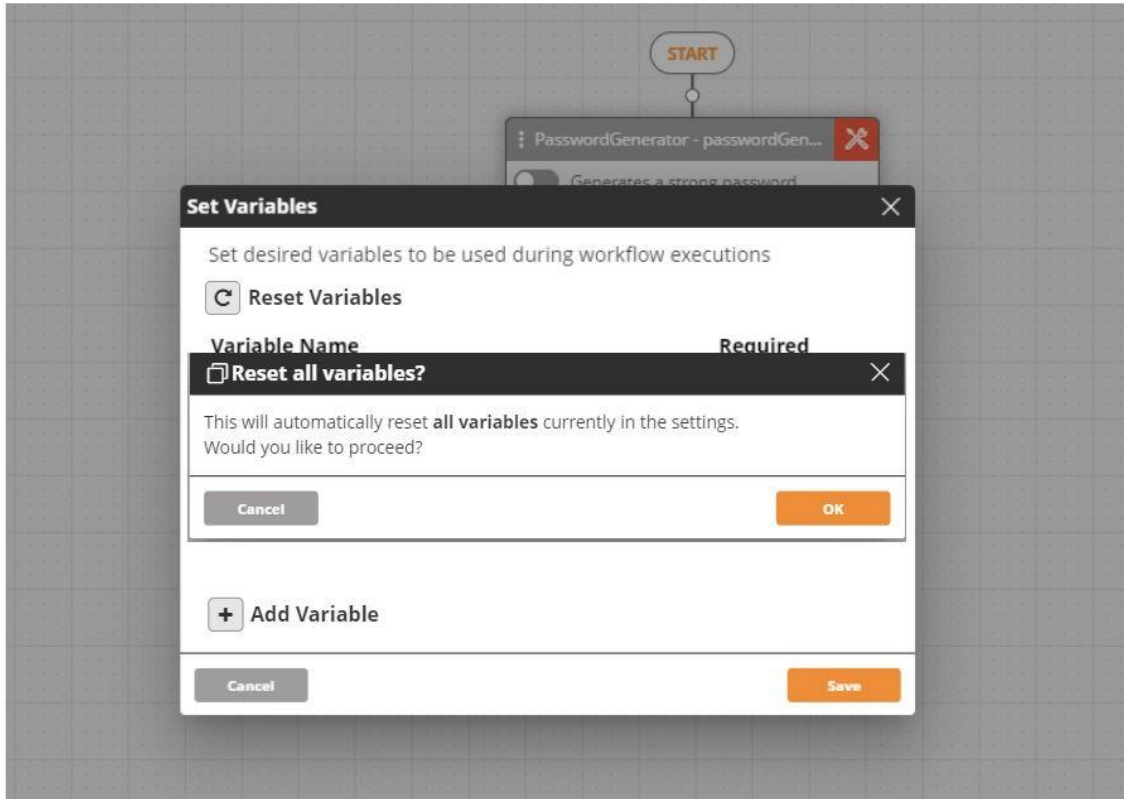
Once variables have been set (see [Settings Variables in Workflows \[108\]](#)), the workflow editor can **Reset Variables** for that workflow by clicking on the **Set Variables** button in the workflow toolbar:



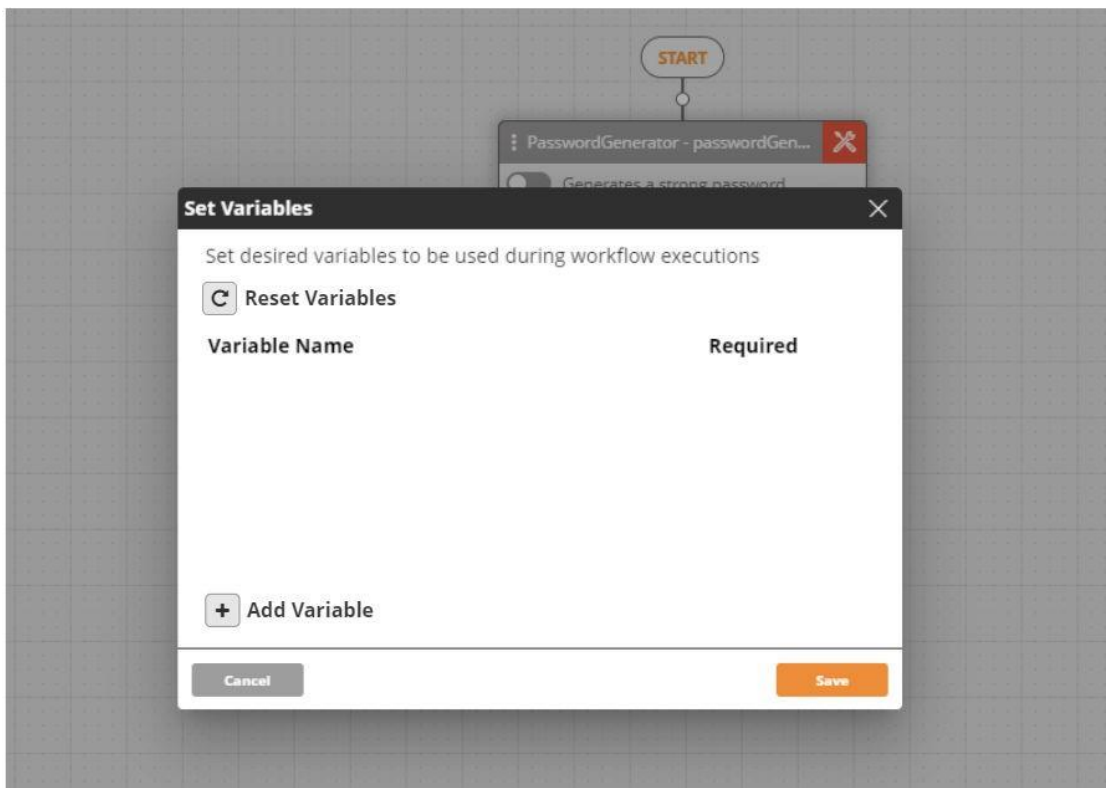
The existing setting will be displayed in the **Set Variables** window:



Here you can perform any of the available add/edit/delete actions (see [Setting Variables in Workflows \[108\]](#)), as well as reset all variables currently in the settings by clicking on the **Reset Variables** button. Once you click on the **Reset Variables** button, a warning will be displayed:

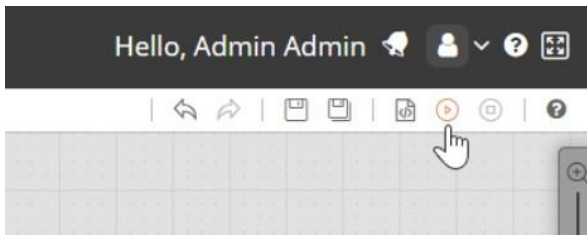


Once you confirm, the **Set Variables** window will be reset:



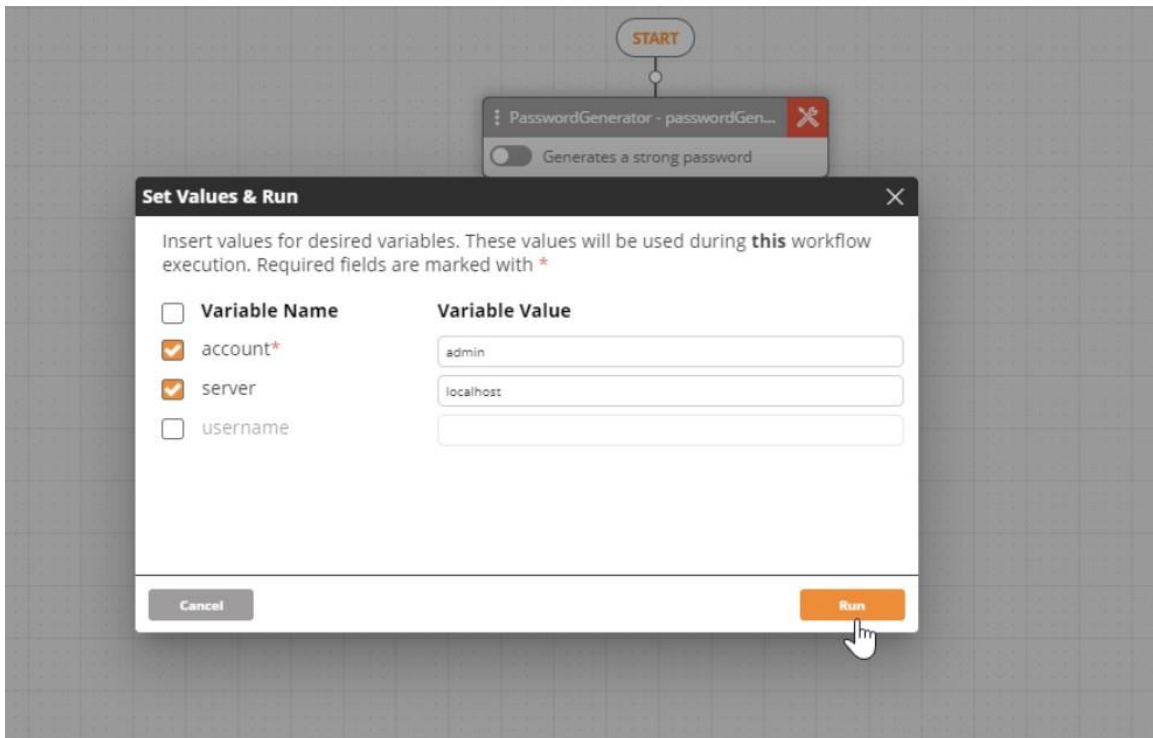
### 6.1.6.6. Running Workflows with Variables

Once variables have been set (see [Setting Variables in Workflows \[108\]](#)), clicking on the **Run** button from the **Workflow Designer** will display the **Set Values & Run** window:



Users with editing permissions have the option to select which variables to be used during the workflow execution while users without editing permissions must insert values for all of the required variables to execute the workflow.

#### Users with Editing Permissions

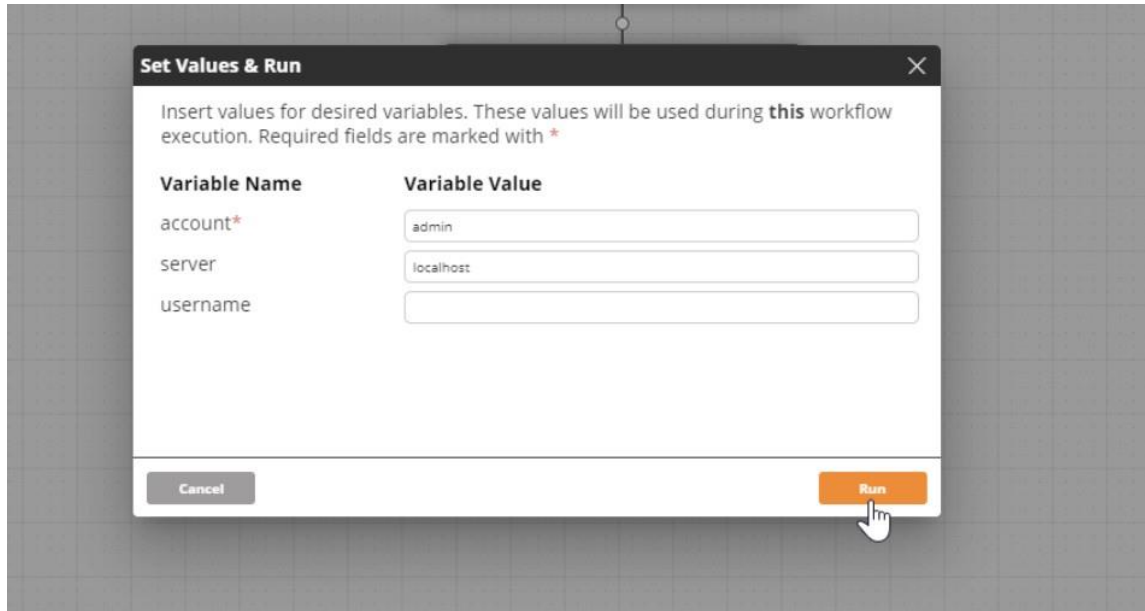


User can use the checkboxes on the left side to select which variables will be used during the workflow execution. Variables that have been set as required (marked with \*) can be unchecked if desired.

Clicking on **Run** executes the workflow using the selected variables with their inserted values.

#### Users without Editing Permissions





User must insert values for the variables that have been set as required (marked with \*). Variables that have not been set as required can be left empty.

Clicking on **Run** executes the workflow using the variables with their inserted values.

## 6.1.7. Reviewing and Sharing Workflows

### 6.1.7.1. About Reviewing and Sharing

The following sections present options that help you save workflows efficiently, access the revisions you need, and keep track of workflow metadata:

- [Saving Your Workflow \[113\]](#): Explains the options for saving workflows and creating new revisions.
- [Viewing Revision History \[119\]](#): Describes how to view the revisions of a workflow and open the required revision.
- [Reviewing Workflow Metadata \[122\]](#): Describes the **Documentation** dialog, which lets you review workflow descriptions, tags and notes.
- [Exporting Workflows \[125\]](#): Explains how to download a workflow in XML format.

### 6.1.7.2. Saving Your Workflow

#### 6.1.7.2.1. Save Options

The Workflow Designer provides the following options for saving your work:

- **Save**: Saves all changes you did to the workflow/template since the last Save action. For more information, refer to [Using the Save Action \[113\]](#).
- **Save As**: Saves the workflow/template you are working on as an additional workflow or template. For details, refer to [Using the Save As Option \[114\]](#)

Both options are available from the icon action bar of the Workflow Designer.



#### 6.1.7.2.2. Using the Save Action

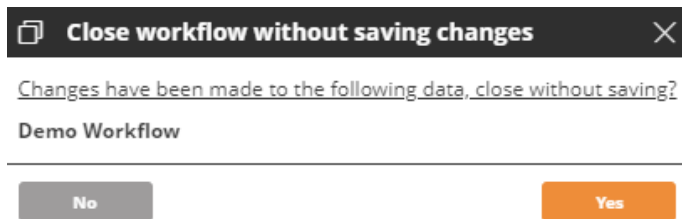
The Save action saves all changes done to the workflow since the last save.



## NOTE

As the Workflow Designer does not have an automatic save feature, it is recommended to save your work at frequent intervals.

If you close a workflow without saving it, the following message is displayed, prompting you to save your changes:



### To use the Save action:

- From the Workflow Designer's shortcut bar, click  .

While your changes are being saved, the following icon appears on the screen: 


### 6.1.7.2.3. Using the Save As Option

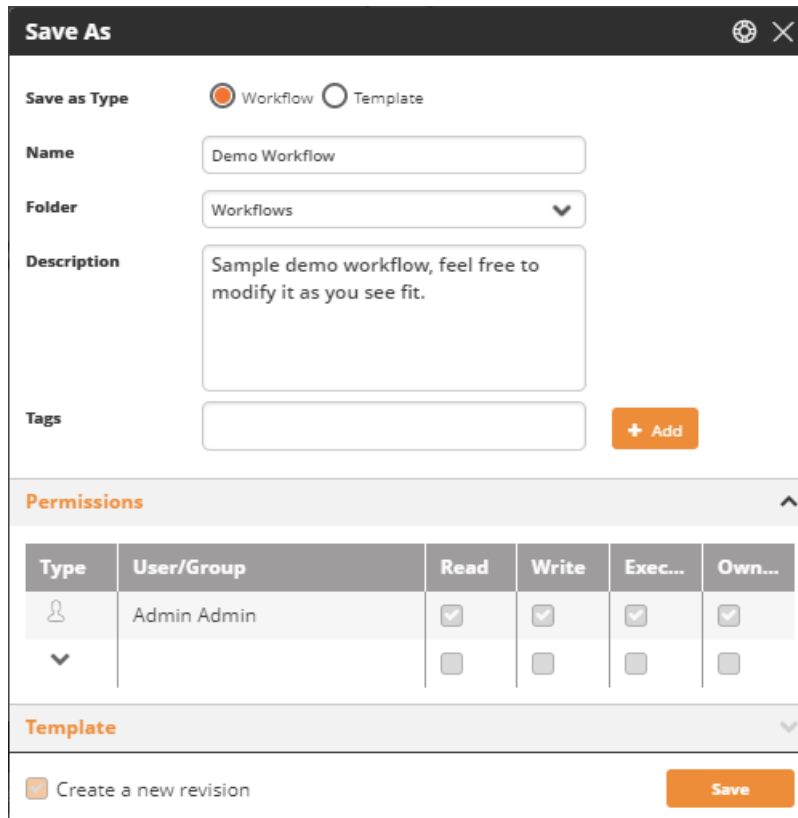
This option creates a copy of the workflow or template you are building. The Save As option is useful when you want to:

- Create another workflow that is based on, or similar to, the current workflow.
- Save a template as a workflow, or vice versa.

When you use the Save As action, you have the option of creating a new revision of the copied workflow or template. When you create a new revision, the system automatically creates an additional revision of the workflow/template each time you save it. When the New Revision option is not selected, the original workflow is overwritten with the new changes, and no additional revisions are saved.

**To use the Save As option:**

1. From the Workflow Designer's shortcut bar, click . The **Save As** dialog opens.



**Save As**

Save as Type:  Workflow  Template

Name: Demo Workflow

Folder: Workflows

Description: Sample demo workflow, feel free to modify it as you see fit.

Tags:


**Permissions**

Type	User/Group	Read	Write	Exec...	Own...
	Admin Admin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
▼		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Template**

Create a new revision

2. At the top of the dialog, select the relevant radio button (**Workflow** or **Templates**). Templates may be saved as workflows, and vice versa.
3. If desired, modify the name and/or description of the workflow/template: Change the **Name** and **Description** fields as required.
4. If required, add and/or remove tags. For details about tags and how to create them, refer to [Adding New Tags \[54\]](#).
5. If you selected the **Workflow** radio button (in Step 2), assign the appropriate permissions for the workflow. For more information, refer to [Assigning Permissions to a Workflow \[113\]](#).
6. If you selected the **Templates** radio button (in Step 2), you may replace the current image used for the template. For more information, refer to [Selecting an Image for a Template \[113\]](#).
7. Select or clear the **Create a new revision** checkbox, as required.

 **NOTE**  
In some circumstances, e.g., when the workflow is being used in production, the checkbox is pre-selected, and you will not be able to clear it.

8. Click **Save**.

While the copy is being saved, the following icon appears on the screen: 

#### 6.1.7.2.4. Assigning Permissions to a Workflow

Every workflow has one or more Owners and a set of permissions associated with it. An Owner is a user who manages permissions for the workflow. The set of permissions defines which users are allowed to access the workflow, and what actions they are authorized to perform on it.

The **Permissions** frame of the **Save As** dialog enables workflow Owners to manage the permissions set for the workflow. Users/Groups that have permissions to access the workflow are listed on the left side of the frame. The permissions categories for which they are authorized are indicated on the right side of the frame.

**Save As**
⚙️ ✕

**Save as Type**     Workflow    Template

**Name**   

**Folder**     ▼

**Description**

Sample demo workflow, feel free to modify it as you see fit.

**Tags**     + Add

**Permissions** ^

Type	User/Group	Read	Write	Exec...	Own...
	Admin Admin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
▼		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Template** ▼

Create a new revision Save

**NOTE**  
Permissions are not relevant for templates.

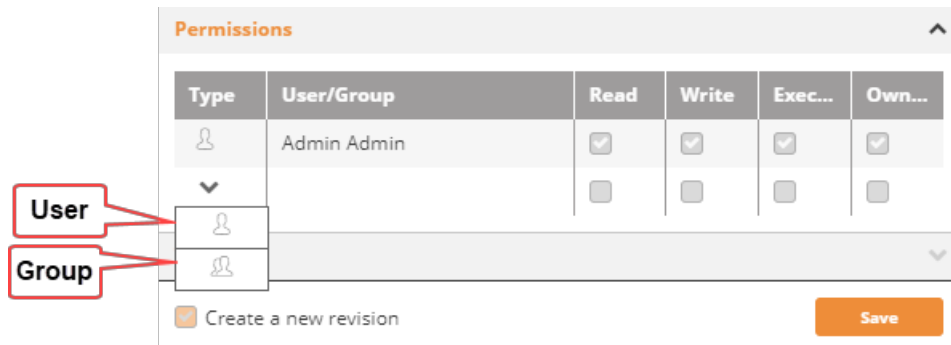
Permissions categories are named according to actions. The categories are:

Category	Description/Notes
Read	Users are authorized to view the workflow in read-only format.
Write	Users are authorized to view and modify the workflow.
Execute	Users are authorized to execute the workflow. By default, these users are also automatically granted Read privileges, but not Write privileges.  If an Owner removes Read permissions from a user with Execute permissions, that user may execute the workflow only from outside the Workflow Designer.
Owner	By default, Owners have Read, Write and Execute privileges. They also may manage the permissions set and delete the workflow. By default, the creator of a workflow is the Owner.  An Owner may add and remove additional Owners and remove Owner permissions from other Owners. A workflow must have at least one Owner at any given time.

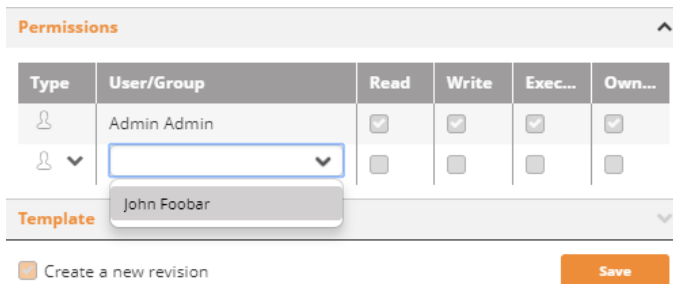
The following procedures explain how to manage the permissions set from the **Save As** dialog. Only Owners are authorized to manage the permissions set.

**To add users/groups to the permissions set:**

1. From the **Type** dropdown, select the relevant icon (User or Group).



2. In the **User/Group** column, select the required user or group from the dropdown list.




3. Select the checkbox(es) of the permission(s) to be granted to the user or group. A workflow may have more than one Owner.



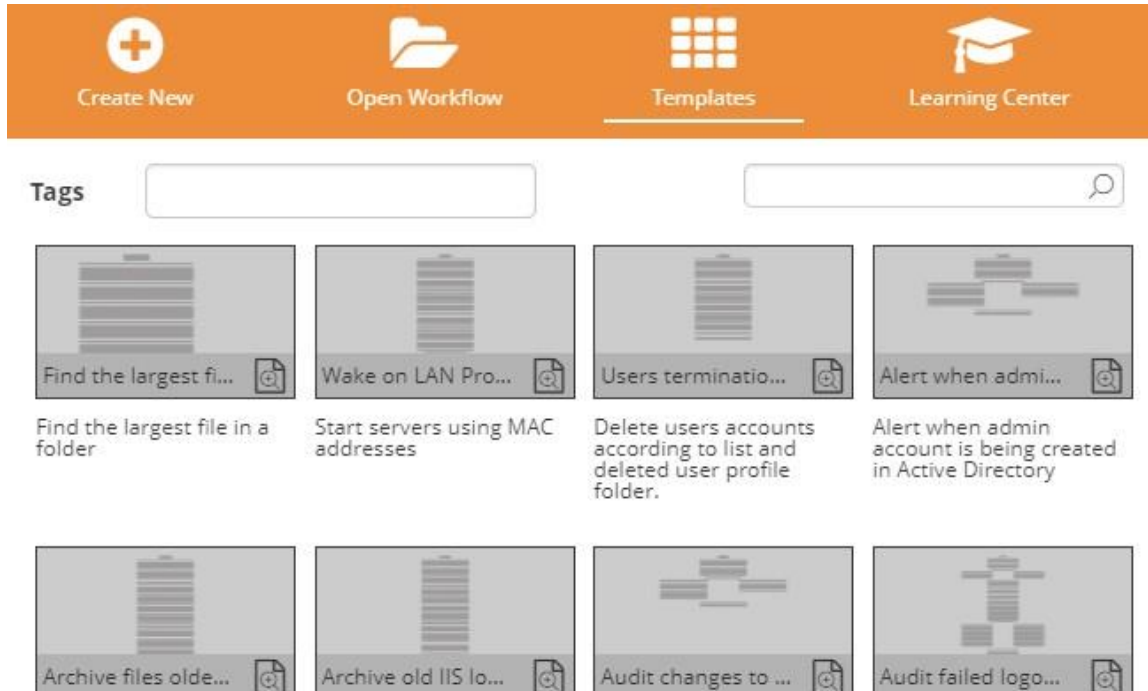
**NOTE**

Keep in mind that permissions granted to a user can be direct (permissions granted to the individual user) or indirect (permissions granted to groups of which the user is a member). For example, if a group has Write privileges, and User A (a member of that group) is added and assigned only Read privileges, User A will have both Read and Write privileges.

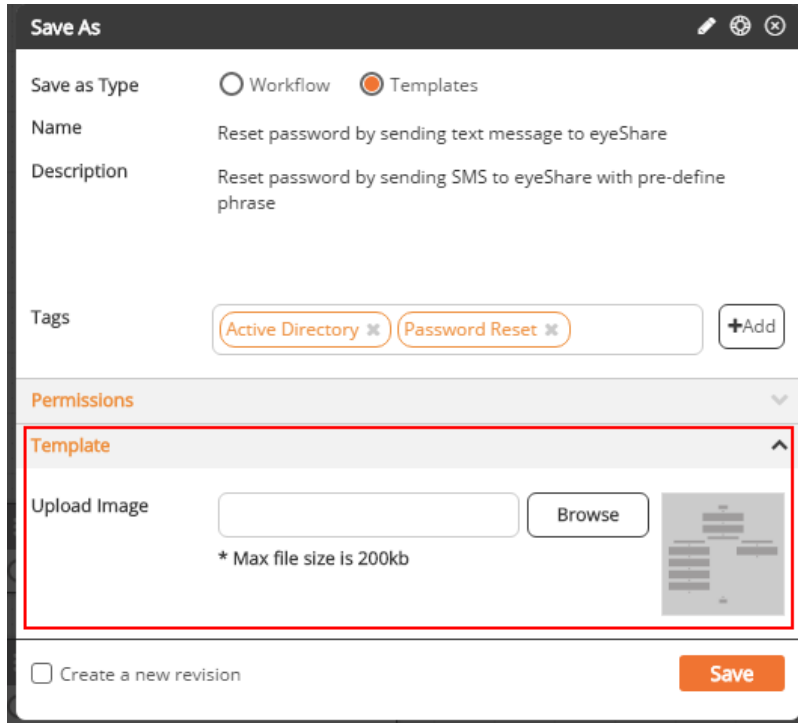
1. To add another user or group, repeat Steps 1-3.
2. In the row of the user or group you want to remove, click . The selected user/group is deleted from the permissions set.
3. To remove another user or group, repeat Step 1.

#### 6.1.7.2.5. Selecting an Image for a Template

Every template has an identifying image associated with it. These images appear in the thumbnails displayed on the [Templates tab of the Welcome screen \[65\]](#). By default, a template's image is a representation of its [Minimap \[99\]](#).



The **Template** frame of the **Save As** dialog displays the currently selected image for the template, and allows you to replace the current image with one of your choice.



**To select a new image for a template:**


1. At the right side of the **Template** frame, click **Browse**.  
The **Open** dialog is displayed.
2. Navigate to and select the required image. Then, click **Open**.  
The **Open** dialog closes, and the image in the **Template** frame is replaced with the selected image.

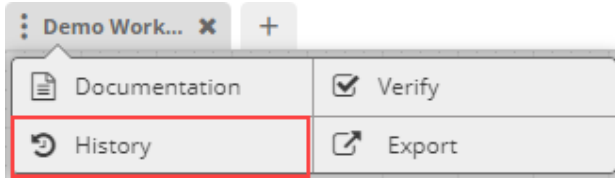


### 6.1.7.3. Viewing Revision History

#### 6.1.7.3.1. About Revision History

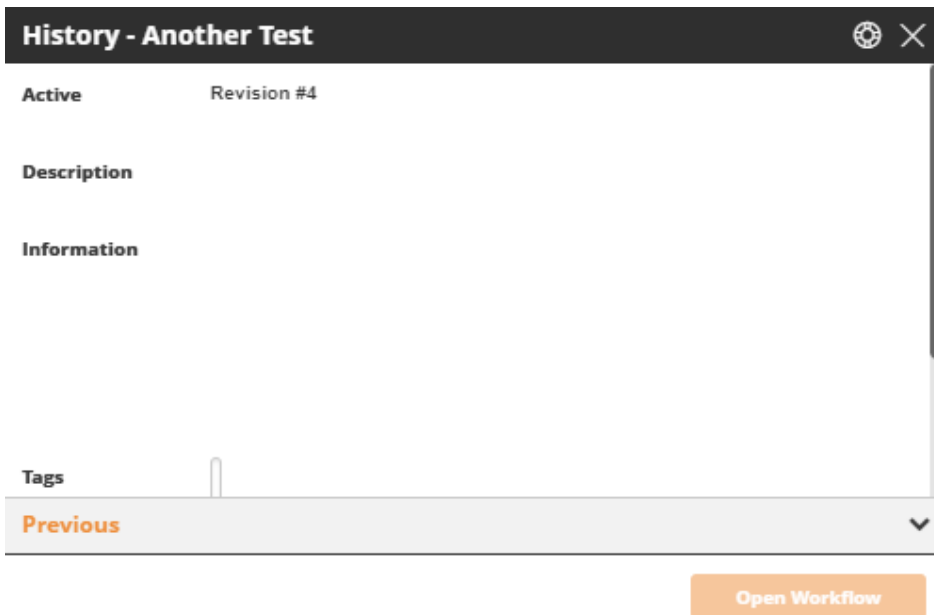
The Workflow Designer provides version control by letting you create and save multiple revisions of workflows and templates. (For more information about creating new revisions, refer to [Saving Your Workflow \[113\]](#).) The **History** dialog provides information about all revisions of a workflow or template, and allows you to open an earlier revision in the Workflow Designer.

To open the **History** dialog, at the left side of the selected workflow, click  and choose **History**.


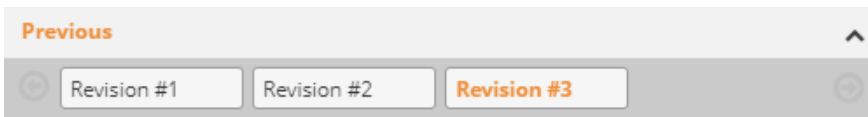


### 6.1.7.3.2. Understanding the Latest Revision

The upper portion of the **History** dialog always lists data about the most recently created revision. This revision is also known as the Active revision, regardless of whether or not it is currently open in the Workflow Designer.



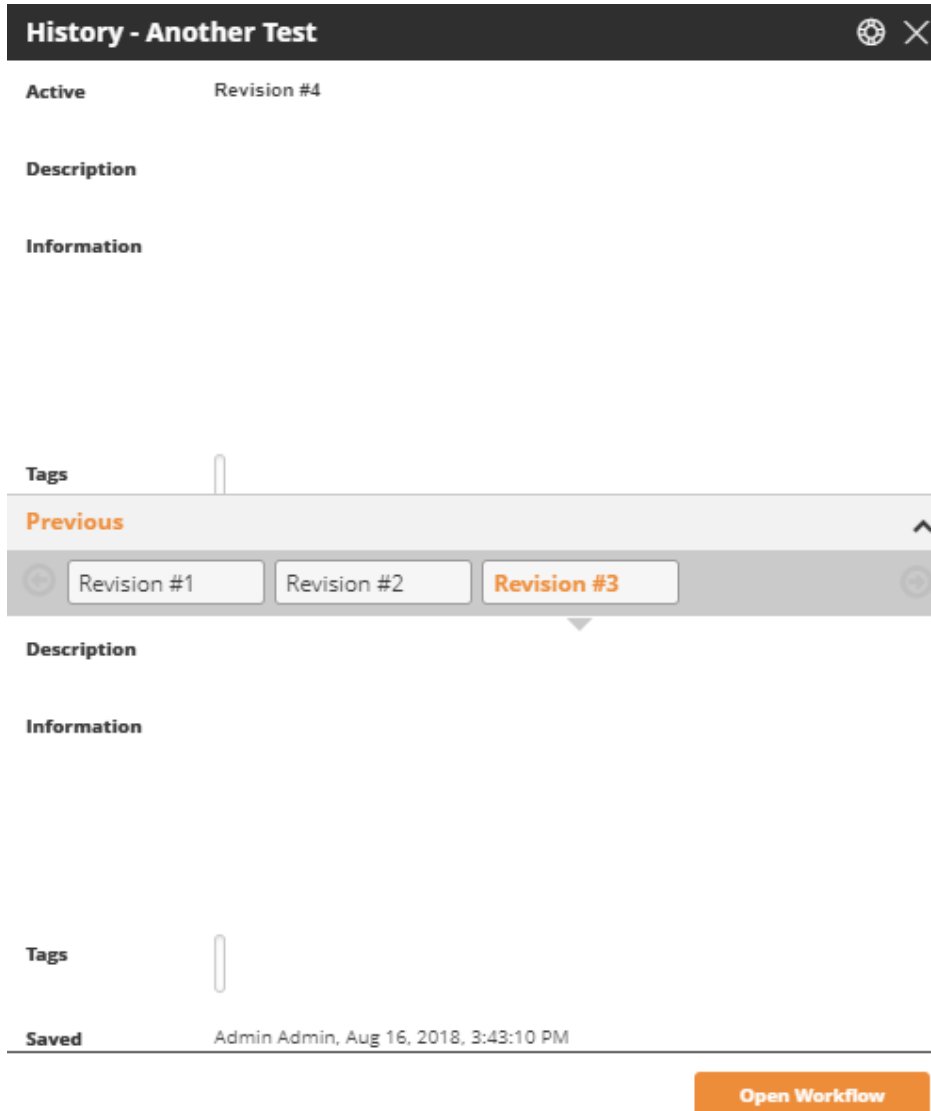
The following data about any active revision is provided:

Data	Description
Name	Name of the Active revision.
Active	Revision number of the Active revision.
Description	A summary of changes, or other useful information about the revision.
Information	An additional message written in Rich Text Format (RTF).
Tags	Keywords to facilitate organization and search operations.
Saved	Date and time when the Active revision was last saved.
Previous (Click  )	

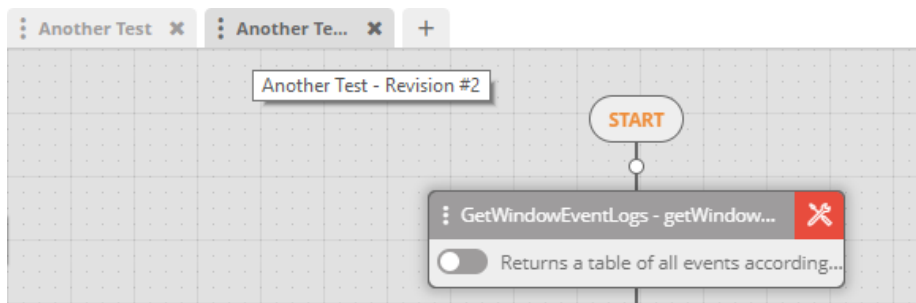
### 6.1.7.3.3. Viewing and Opening Previous Revisions

To view a list of earlier revisions, expand the **Previous** frame at the bottom of the **History** dialog. Clicking on a revision number displays data about the selected revision in the frame below.





To open a previous revision in the Workflow Designer, select the required revision, and then click **Open Workflow**. Note that when a revision other than the Active revision is open in the Designer, the revision number is displayed as part of the name in the workflow tab.





## NOTE

If you have closed the Active revision, you may not re-open it from the History tab. Open it by selecting it from the [list on the Welcome screen \[61\]](#).

## 6.1.7.4. Reviewing Workflow Metadata

### 6.1.7.4.1. About Workflow Metadata

The **Documentation** dialog displays the following data about a workflow:

- [Description and information text \[123\]](#): Workflow summary or other useful messages about the workflow
- [Tags \[123\]](#): Keywords that enable users to easily categorize and locate workflows
- [Notes \[124\]](#): Information relevant to a specific activity in the workflow

**Documentation - Demo Workflow**

Description: Sample demo workflow, feel free to modify it as you see fit.

Information: [Rich text editor with toolbar: B, I, U, A, [color], [background color], [bulleted list], [numbered list], [link], [image]]

Tags: Active Directory, Password Reset, +Add

Activity Name	Note Details
ping1	Runs Ping
cpu1	Return CPU Info
memory1	Available memory

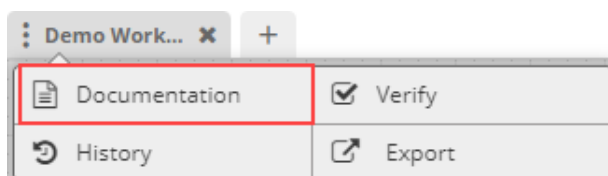
Buttons: Cancel, OK

### 6.1.7.4.2. Accessing the Documentation Dialog

To open the **Documentation** dialog, at the left side of the relevant [workflow tab \[47\]](#), click



and select **Documentation**.



### 6.1.7.4.3. Reviewing Description and Information Text

The upper portion of the **Documentation** dialog shows the following data (if it has been defined):

- **Description:** Generally summarizes the workflow purpose and provides use cases or other relevant information
- **Information:** An additional message about the workflow written in HTML.

*To modify the description and/or information text:*

1. Just click the information area and type freely.

2. Update or add text as desired. Use the standard Information icon bar to provide local formatting.
3. To save your changes, click **OK**.

### 6.1.7.4.4. Managing Tags

Tags are keywords that help to organize and easily search for workflows. You may add and delete tags for a workflow from the **Documentation** dialog.

**Documentation - Demo Workflow**
⚙️ ✕

**Description**

Sample demo workflow, feel free to modify it as you see fit.

**Information**

B I U A 🔍 ☰ ☰ ☰ 🔗 🖼️

**Tags**

Active Directory ✕

Password Reset ✕


+Add

**Notes (3)** ▾

Cancel

OK

For more information about tags and how to create them, refer to [Adding New Tags \[54\]](#).



**NOTE**

After managing tags, be sure to click OK to save your changes.

#### 6.1.7.4.5. Viewing Notes

A note is supplementary information written for a specific activity or control within a workflow. For details about how to add and work with notes, refer to [Editing Activities \[86\]](#).

The lower portion of the **Documentation** dialog is a record of all notes contained in a workflow. The number to the right of the **Notes** frame title indicates the total number of notes in the workflow (**3** in the example below). The grid that follows lists the activities that contain notes (in the order in which the activities appear in the workflow), and the actual text of each note.

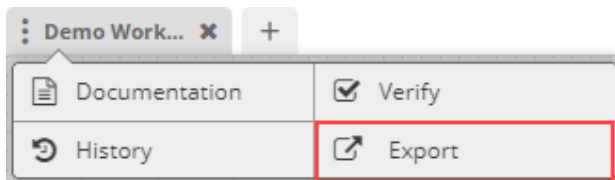
Notes (3)	
Activity Name	Note Details
ping1	Runs Ping
cpu1	Return CPU Info
memory1	Available memory

### 6.1.7.5. Exporting Workflows

The Export feature lets you download a workflow in XML file format. Use this feature to review the XML structure, share the file with others, or keep a backup of the workflow.

**To export a workflow:**

- At the left side of the relevant workflow tab, click  and select **Export**.



The workflow is exported to your **Downloads** folder in XML format.

## 6.1.8. Activities Reference


### 6.1.8.1. About the Activities Reference

The Activities Reference provides an overview of some of the standard Activities and Controls provided by Ayehu Next Generation for use in your Workflows. The Reference is divided into three sections reflecting available activity types:

- Controls
- Active Directory
- Database

Each activity item has its own Reference section structured in the following way:

**Table 17. Reference Section Structure**

Paragraph Heading	Purpose
Name	The <b>precise default name</b> of the activity as it appears in its Workflow Designer widget. Note that you can change the activity name. See <a href="#">Updating the Activity Name [87]</a> .
Function	A brief description of what the activity does
Widget	A picture of the activity widget as it appears in the workflow. If its context menu (click  ) does not obscure something important, it is shown open. Otherwise it is shown separately. See <a href="#">About Activity Parameters [86]</a> .
Parameters	The activity parameters appear in the widget context menu. Where there is no more than one, it is listed in a Parameters section. For two or more parameters, a parameter description table is provided. Mandatory parameters are indicated by an asterisk following their names like this:  <div style="border: 1px solid #ccc; padding: 2px; display: inline-block;">Value*</div> <input style="width: 100px; height: 15px; margin-left: 5px;" type="text"/>
Output	The activity output if any, is described. Pay close attention to the Output paragraph, as it is used by controls such as IfElse.
Additional Notes	As required. A cross reference to the activity usage may be provided. Cross references to related Reference sections are also provided.

In general, see [Defining and Editing Activity Parameters \[86\]](#).

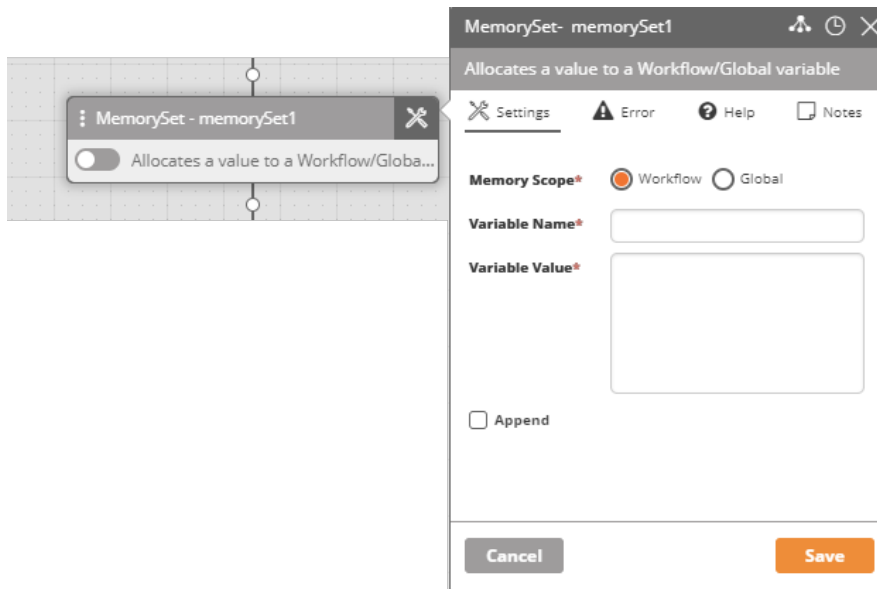
## 6.1.8.2. Controls

### 6.1.8.2.1. Set Memory

**Name:** MemorySet

**Function:** Allocate memory storage for a variable: Numeric/textual/date etc.

**Widget:**



**Table 18. Parameters for MemorySet**

Parameter	Description
Memory Scope *	<b>Workflow:</b> The variable is accessible only by this Workflow <b>Global:</b> The variable is accessible by all Workflows
Variable Name *	The global variable's name (the name must differ from the Activity's name)
Variable Value *	The variable's initial value - a constant value or another variable (variable names must follow the convention %Variable%)
Append	The new value will be added to the existing one (relevant only for text values)

**Output:** None

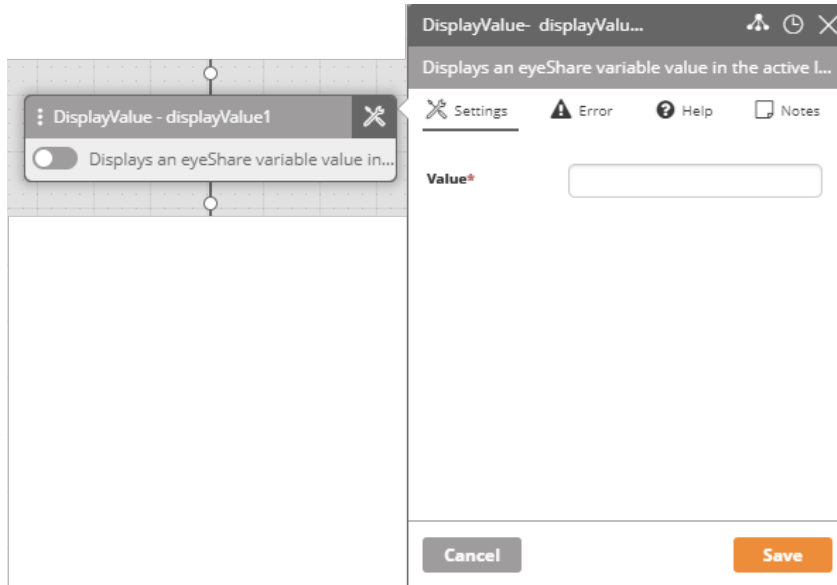
**Additional Notes:** See [Memory Clean \[138\]](#).

### 6.1.8.2.2. Display Value

**Name:** DisplayValue

**Function:** Displays a constant or an Ayehu Next Generation variable's value (table or simple text) in the audit trail.

**Widget:**



**Parameters:** **Value** is a constant or a variable value (variable names must follow the convention %Variable%).

**Output:** None

**Additional Notes:** None

### 6.1.8.2.3. If-Else

**Name:** If-Else

**Function:** Invokes one of several Activity branches depending on the outcome of a previous Activity. The outcome may be a returned result or a variable value.

**Widget:**

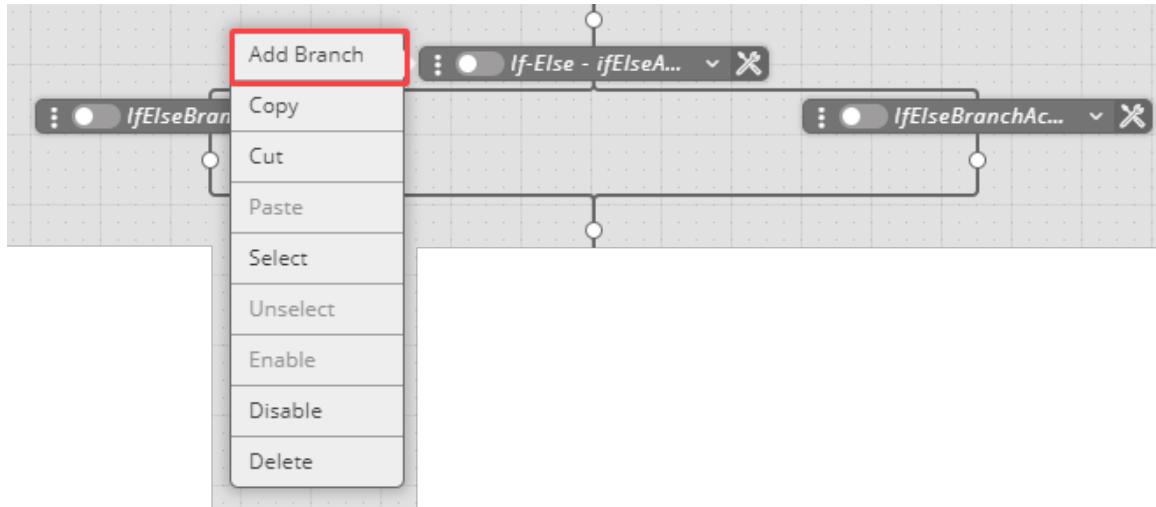


#### NOTE

This is partially covered in [If/Else: Evaluating Multiple Conditions \[76\]](#) and [If/Else Branch Types \[77\]](#). Because of its importance, we add extra information here.

#### Adding a Branch

Click  and then **Add Branch** to add additional branches:

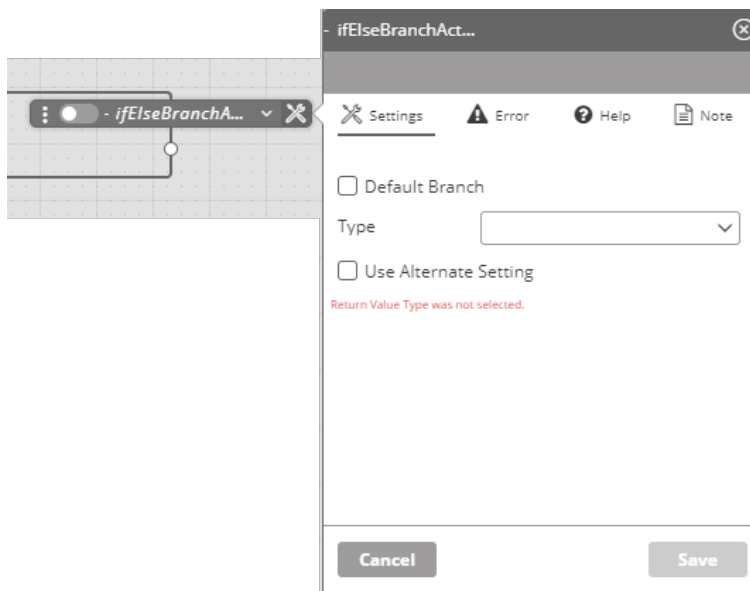


Here is the outcome:




### Choosing the branch for execution

Each branch offers a context menu:

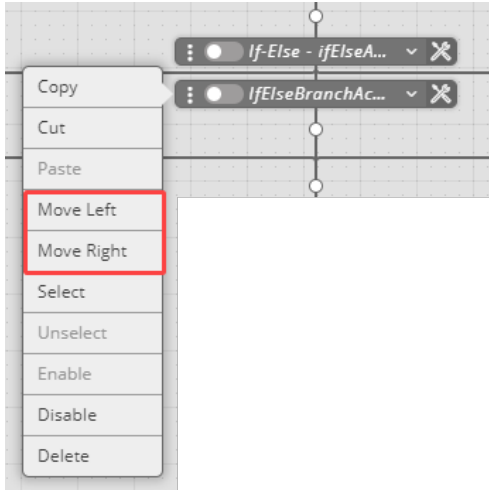


Define on branch only as the **Default Branch**.

Branches are evaluated by default from left to right. The default branch will be taken if no other branch matches the required **Type** condition or if all of them do.

A branch may be moved left or right by clicking its  icon and then **Move Left** or **Move Right** as appropriate:

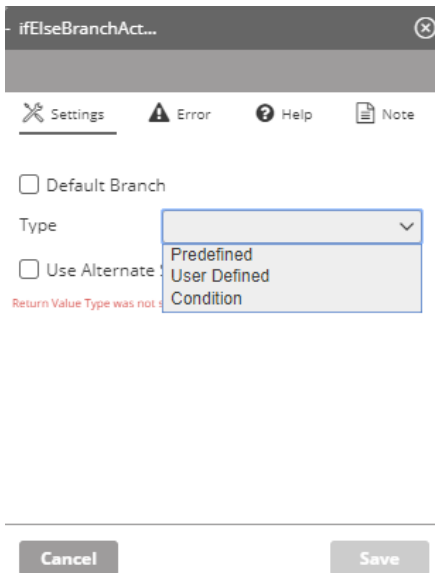




## Setting the Type Condition

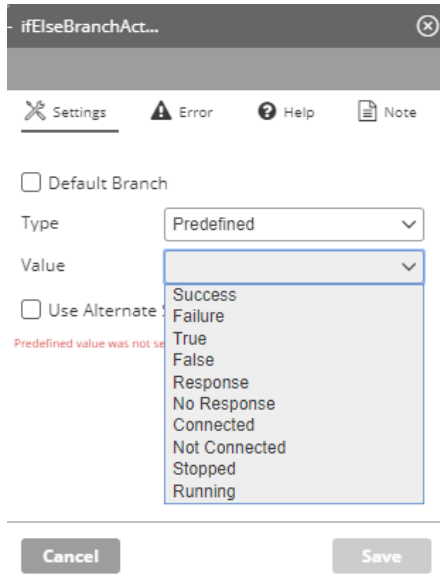
### Available Types

For each branch context menu, choose a condition Type:



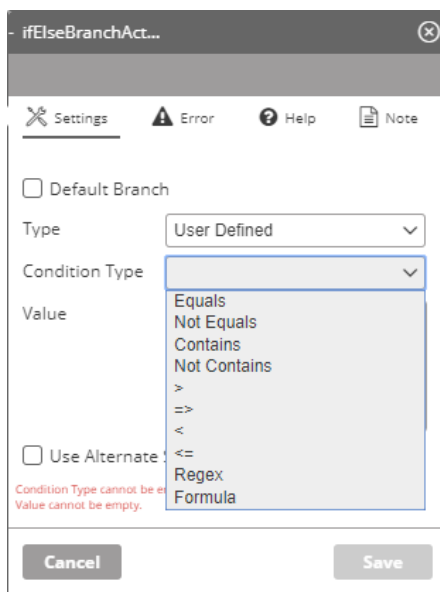
### Predefined

The **Predefined** conditions are:



### User Defined

A **User Defined** condition requires that you supply a condition **Type** -



and a **Value**:

The screenshot shows a dialog box titled "ifElseBranchAct...". It has a toolbar with "Settings", "Error", "Help", and "Note" icons. Below the toolbar, there is a checkbox for "Default Branch". The "Type" dropdown menu is set to "User Defined". The "Condition Type" dropdown menu is set to "Equals". The "Value" text input field contains the number "3". There is another checkbox for "Use Alternate Setting". At the bottom, there are "Cancel" and "Save" buttons.

## Condition

You can set a predefined **Condition** type that must be met to invoke the branch:

The screenshot shows the same dialog box, but with "Type" set to "Condition". The "Condition" dropdown menu is open, displaying a list of predefined conditions: "Demo Condition", "Is the Email Urgent?" (which is highlighted in blue), and "Test Condition". A red error message "Condition was not selected." is visible below the dropdown. The "Save" button is currently disabled.

## Alternate Setting Type

**Use Alternate Setting Type** Optionally, set alternate setting to the branch, without deleting the content of the current settings. The available settings are **Predefined**, **User Defined** and **Condition** as above.

**Output:** None

**Additional Notes:** See [If/Else: Evaluating Multiple Conditions \[76\]](#) and [If/Else Branch Types \[77\]](#).

### 6.1.8.2.4. While

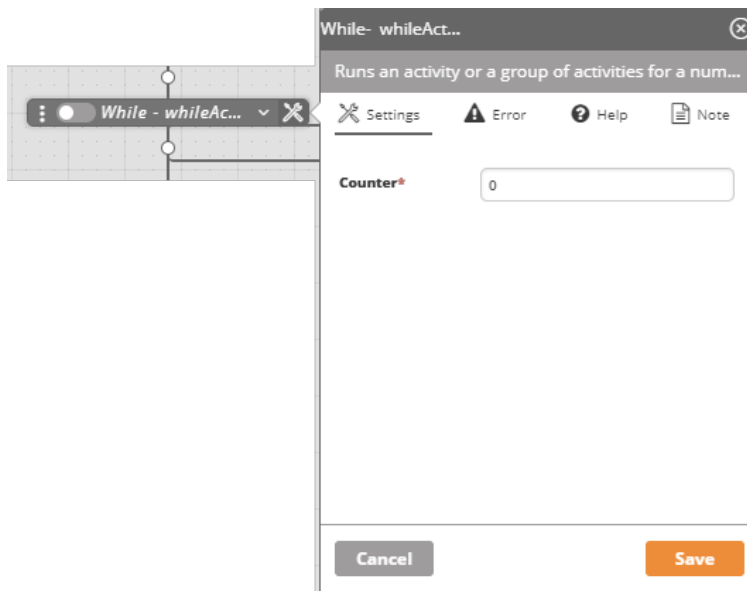
**Name:** While

**Function:** Runs an Activity (or several Activities) for a predefined number of iterations.

**Widget:**



The context menu has one parameter:



**Parameter:** **Counter** is the number of iterations.

**Output:** None

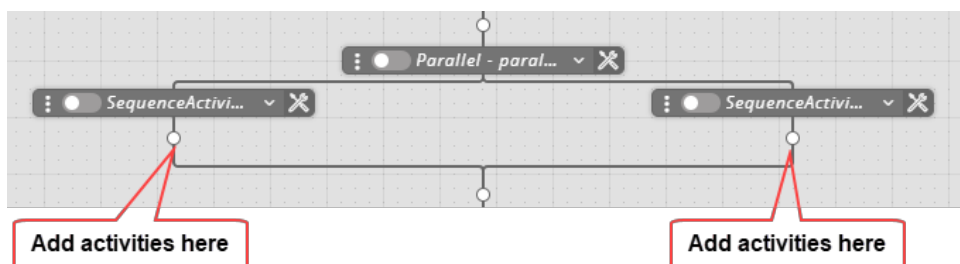
**Additional Notes:** Setting/Leaving **Counter** at 0, prevents execution of the activities. See [While: Inserting a Loop in Your Workflow \[82\]](#)

#### 6.1.8.2.5. Parallel

**Name:** Parallel

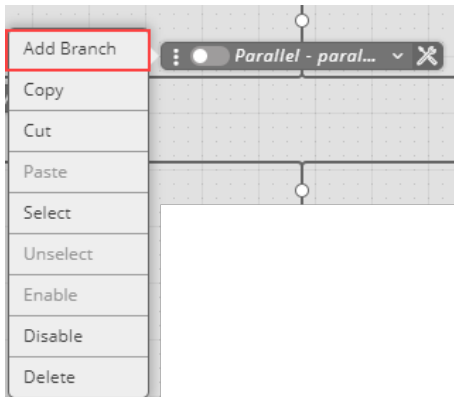
**Function:** Invokes two or more parallel branches, simultaneously. It is typically used to run parallel Workflows.

**Widget:**



Each branch opens an independent workflow. By default, if the independent Workflow is not terminated it leads to the parent workflow and therefore performed again. To avoid the repetition, place a **Terminate** activity at the end of each branch.

To add a branch to the Parallel Activity, click its context menu, and select **Add Branch**:



**Output:** None

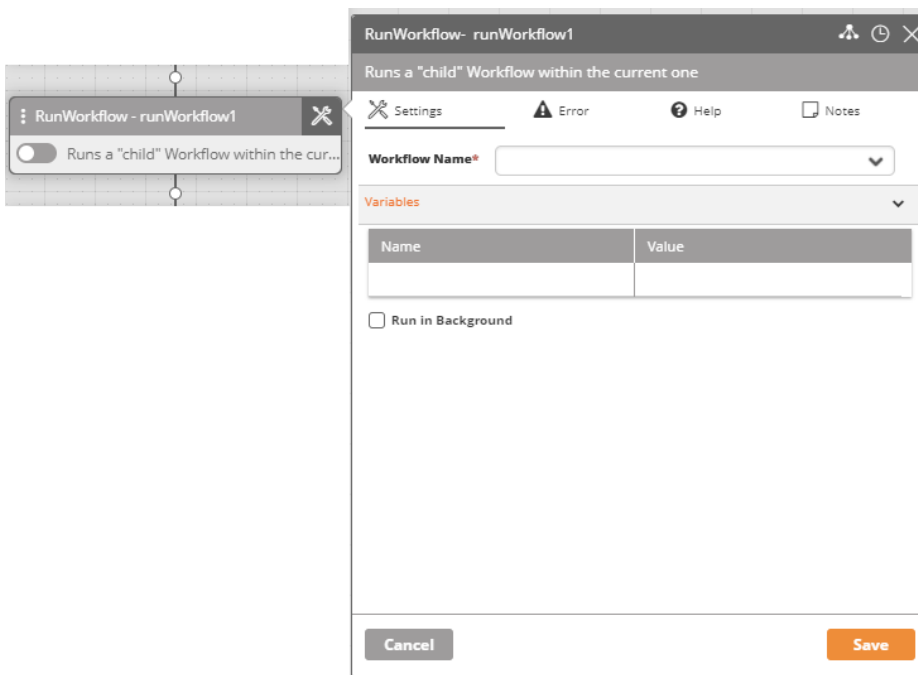
**Additional Notes:** See [Executing Activities in Parallel \[80\]](#)

#### 6.1.8.2.6. Run Workflow

**Name:** RunWorkflow

**Function:** Runs a child Workflow within the current one.

**Widget:**



**Parameters:**

**Workflow Name** The child Workflow to run (the name of the Run Workflow Activity cannot be identical to the name of the Workflow executed by the Activity). The drop-down list shows your saved workflows.

**Variables** If desired, set variables to be used when the selected child workflow is executed. The **Name** is the variable's name to be referenced (the name must differ from the activity's name and must start with a letter and contain only the A-Z, a-z, 0-9 characters). The **Value** is the variable's value - a constant value or another variable (variable names

must follow the convention %Variable%). Note that it is not possible to send both text and a variable in the same field (i.e., getrowscount(%tablename%)).



## NOTE

The variable passed to the child workflow is a copy of the variable in the parent workflow, meaning that changes made to the variable in the child workflow will not be reflected in the parent workflow.

**Run in Background** Check to run both Workflows at the same time. Uncheck for the parent Workflow to wait for the child Workflow's termination before continuing to the next Activity.

**Output:** None

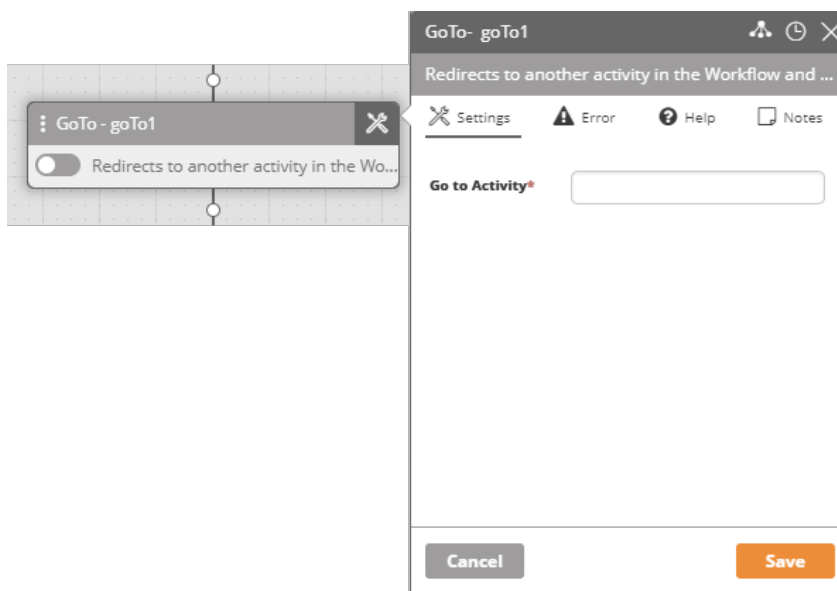
**Additional Notes:** See [Calling a Nested Workflow \[84\]](#)

### 6.1.8.2.7. Go To

**Name:** GoTo

**Function:** Redirects the Workflow to another Activity (typically used in cases of failure, to repeat the Activity that failed to execute).

**Widget:**



**Parameter: Go To Activity** The name of the Activity to which the Workflow is redirected. The activity name is your instance of the the activity. For example, the instance of the Go-To widget is goTo1. Further instances in your workflow would be labeled goTo2 and so on. More precisely, the GoTo target is the name of the Activity to which the Workflow is redirected (the actual name of the Activity and NOT the reference to the Activity's variable, i.e., %activity\_name%).

**Output:** None

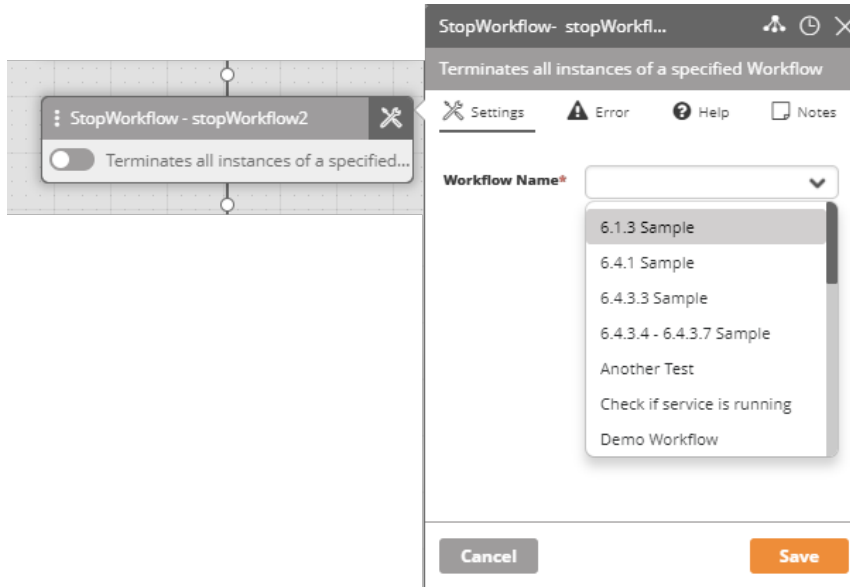
**Additional Notes:** See [Goto: Setting a Navigation Shortcut \[85\]](#).

### 6.1.8.2.8. Stop Workflow

**Name:** StopWorkflow

**Function:** Terminates all instances of a specific workflow.

**Widget:**



**Parameter: Workflow Name** - from the drop-down list.

**Output:** None

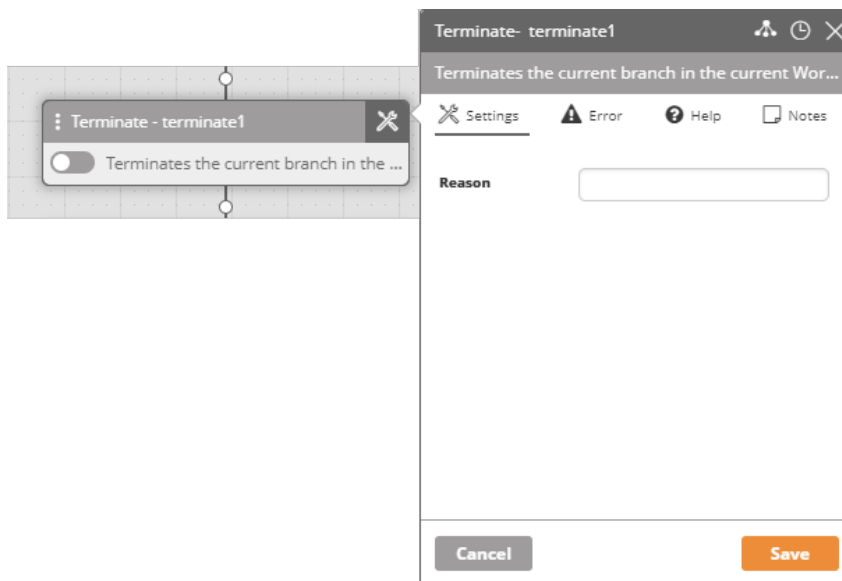
**Additional Notes:** See [Terminate \[136\]](#) and [Terminate Workflow \[135\]](#).

### 6.1.8.2.9. Terminate Workflow

**Name:** TerminateWorkflow

**Function:** Terminates the entire current workflow (all running branches).

**Widget:**



**Parameter: Reason** The reason for terminating the workflow. It is registered to the workflow log.

**Output:** None

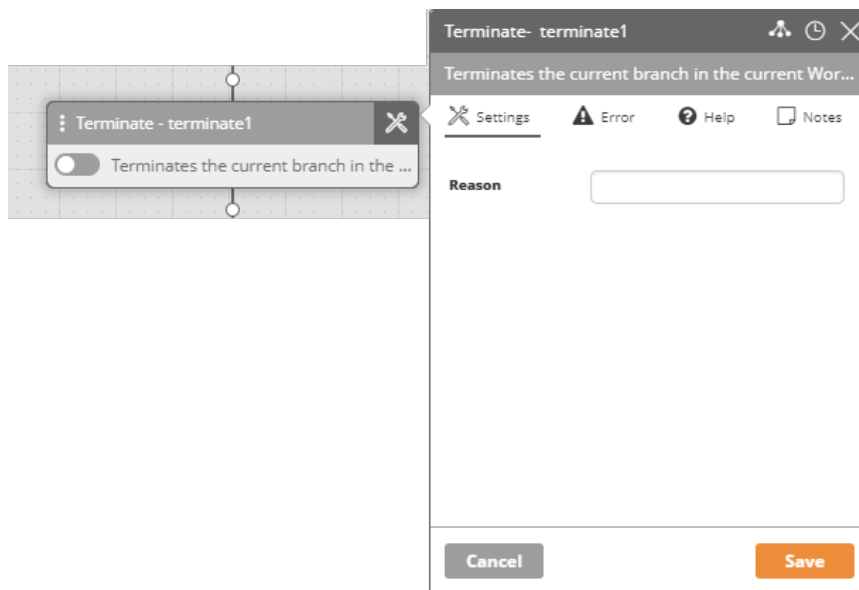
**Additional Notes:** See [Terminate \[136\]](#) and [Stop Workflow \[135\]](#).

#### 6.1.8.2.10. Terminate

**Name:** Terminate

**Function:** Terminates the current branch in the current Workflow. Typically used when two parallel Workflows are run via one Workflow or to return a value from the Workflow to an Ayehu Next Generation Web Service request.

**Widget:**



**Parameter: Reason** The reason for terminating the branch (registered to the Workflow's log or returned to the Ayehu Next Generation Web Service).

**Output:** None

**Additional Notes:** See [Terminate Workflow \[135\]](#) and [Stop Workflow \[135\]](#).

#### 6.1.8.2.11. Exit While

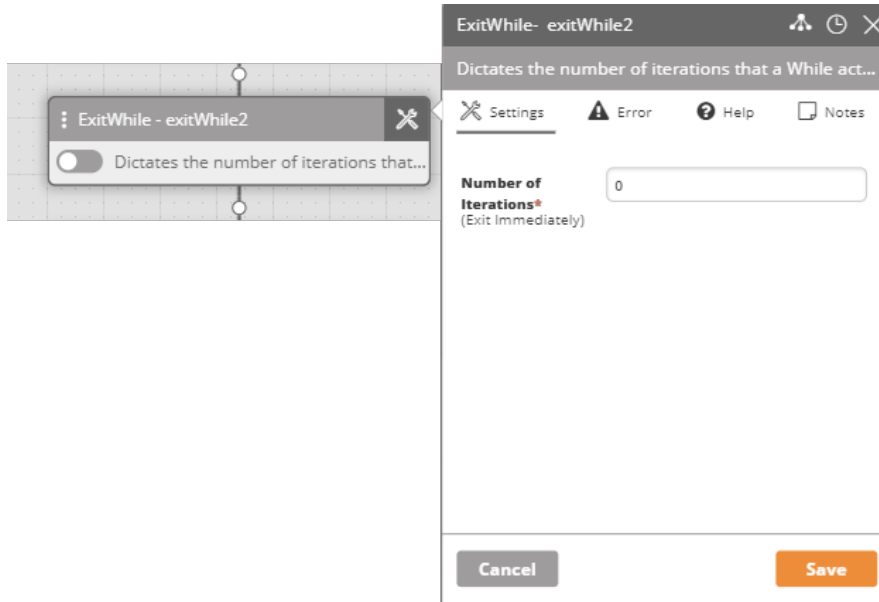
**Name:** ExitWhile

**Function:** Exit from a While activity overriding the number number of while iterations. Setting the ExitWhile iteration count to 0, causes an immediate exit.

The exit here is not absolute like [Terminate \[136\]](#): If the While activity is embedded in another While activity, it will pass control to the the next activity in the outer While activity. If the exited While is the top level of the workflow, it will pass control to the next activity following the exited While in the workflow.

**Widget:**





**Parameter: Number of Iterations**

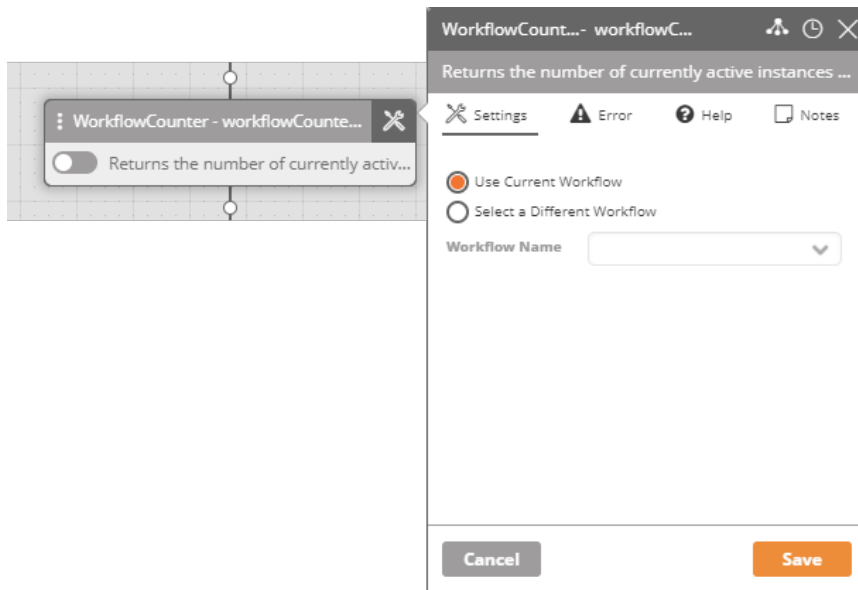
**Additional Notes:** Setting/Leaving **Number of Iterations** at 0,causes immediate exit. See [Terminate \[136\]](#).

**6.1.8.2.12. Workflow Counter**

**Name:** Workflow Counter

**Function:** Returns the number of currently active instances of a selected workflow

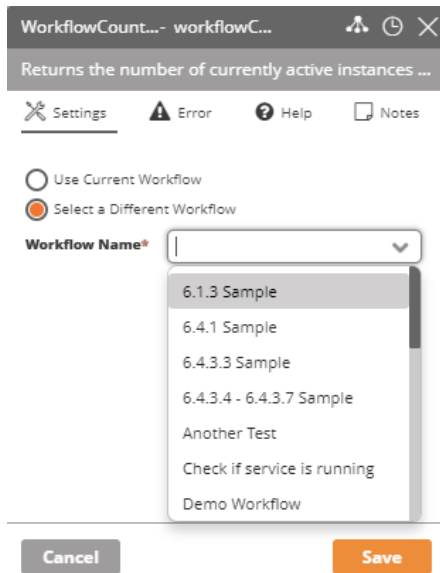
**Widget:**



**Parameters:**

If you check **Use Current Workflow**, it will return the number of running instances of the current workflow.

If you check **Select a Different Workflow**, you must choose one from the drop-down list of your workflows:



**Output:** The number of workflows is loaded into the activity result.

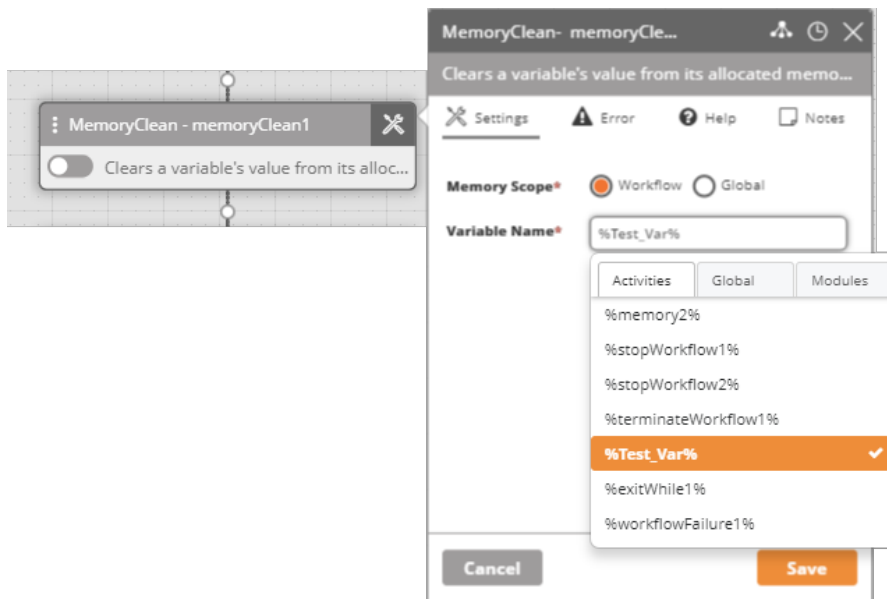
**Additional Notes:** None

### 6.1.8.2.13. Memory Clean

**Name:** MemoryClean

**Function:** Clears a variable.

**Widget:**



**Table 19. Parameters for MemoryClean**

Parameter	Description
Memory Scope *	<b>Workflow:</b> The variable is accessible only by this Workflow <b>Global:</b> The variable is accessible by all Workflows
Variable Name *	The global variable's name (the name must differ from the Activity's name)

**Output:** None

**Additional Notes:** See [Set Memory \[126\]](#)

### 6.1.8.3. Understanding Ayehu Next Generation Database Support

Ayehu Next Generation provides a common user interface to supported databases. Currently supported databases are

- DB2
- MySQL
- Oracle
- TSQL

For each database you may perform a **query** or execute a **statement**. A query returns a table. A statement returns **Success** or **Failure**. In the event of Failure, you can check the log to ascertain the cause. The user interfaces for both a query and a statement are the same and generic.

### 6.1.8.4. Active Direcotry

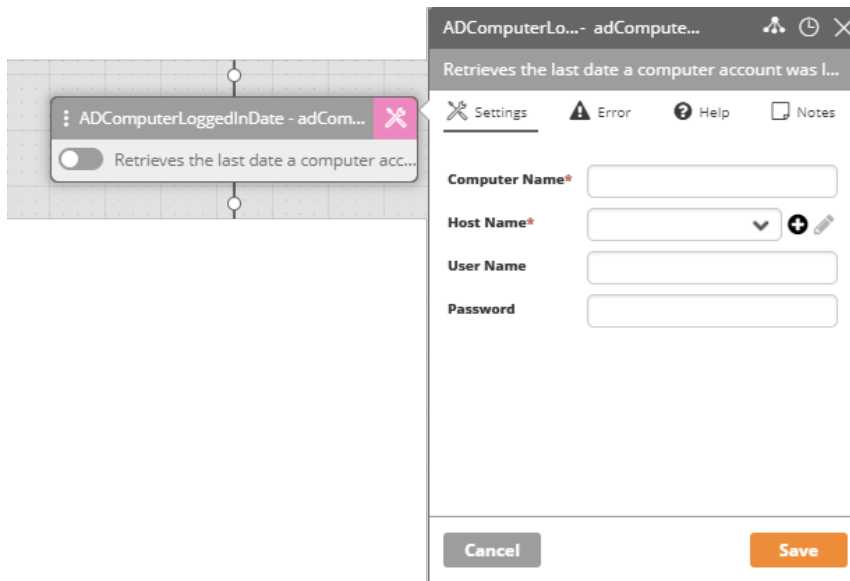
#### 6.1.8.4.1. Accounts

##### AD Computer Loggedin Date

**Name:** ADComputerLoggedInDate

**Function:** Retrieves the last date that a computer account was logged in.

**Widget:**



**Table 20. Parameters for AD Computer Loggedin Date**

Parameter	Description
Computer name *	Computer name as seen in network
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output:** Date string \*\*\* TBD \*\*\*

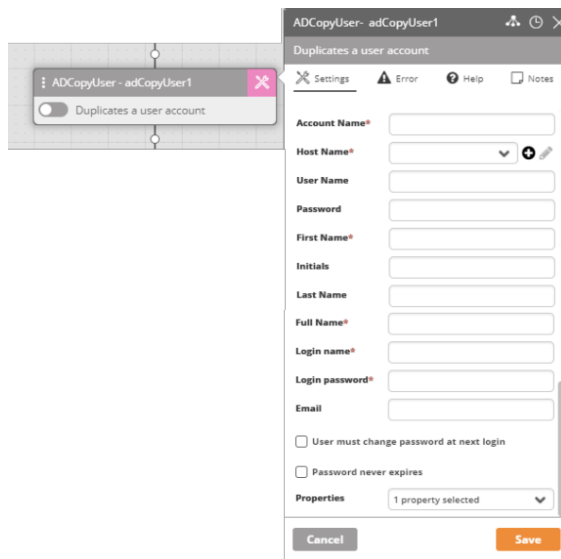
**Additional Notes:** None

### AD Copy User

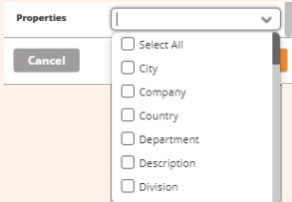
**Name:** ADCopyUser

**Function:** Duplicates a user account on a specific host

**Widget:**



**Table 21. Parameters for AD Copy User**

Parameter	Description
Account Name *	Name of account to be duplicated
Host Name *	Name of the Active Directory's server
User Name	AD user name e.g, LittleJohn
Password	AD user password
First name *	User's first name e.g. John
Initials	User's initials e.g JMF
Last name	User's last name e.g. Foobar
Full name *	User's full name e.g. John Michael Foobar
Login name *	User's login name e.g. Jofo13
Login password *	User's login password
Email	User's email address
User must change password at next login	Check if required
Password never expires	Check if required
Properties	Select as many as required: 

**Output: Success or Failure**

**Additional Notes: None**

## AD Create Account

**Name:** ADCreateAccount

**Function:** Creates a new Active Directory account

**Widget:**

**Table 22. Parameters for AD Create Account**

Parameter	Description
First name *	User's first name e.g. John
Last name	User's last name e.g. Foobar
Initials	User's initials e.g. JMF
Full name	User's full name e.g. John Michael Foobar
Email	User's email address
Login name *	User's login name e.g. Jofo13
Login password *	User's password
Path *	The path where the new account is created. The path follows the conventions:  OU = <OU Name 1>, OU = <OU Name 2>  <OU Name 1>\<OU Name 2>  /<OU Name 1>/<OU Name 2>  Type in "all" or "\\" to scan the entire Active Directory.
Host Name *	Name of the Active Directory's server
User Name	AD user name e.g. LittleJohn
Password	AD user password
User must change password at next login	Check if required
Password never expires	Check if required

**Output:** Success or Failure

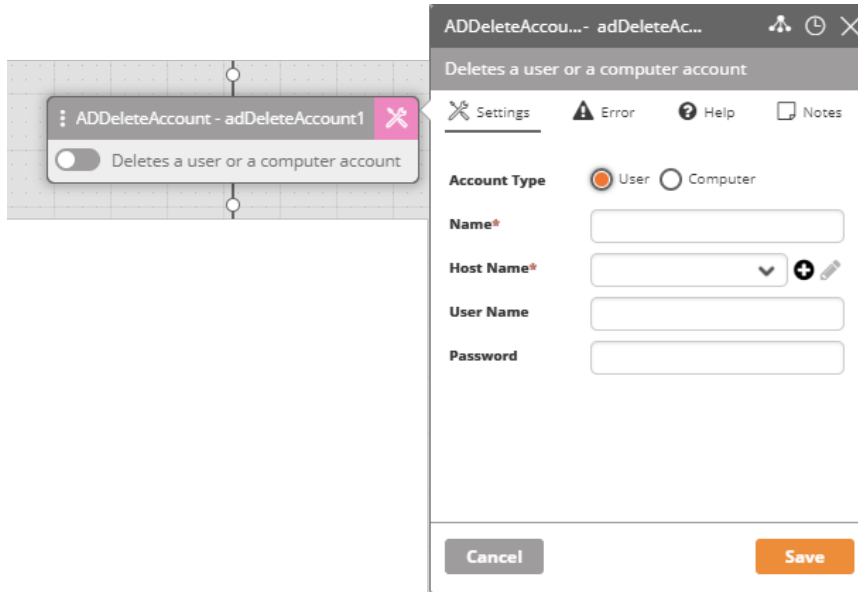
**Additional Notes:** None

## AD Delete Account

**Name:** ADDisable Account

**Function:** Disables a user account from the Active Directory

**Widget:**



**Table 23. Parameters for AD Delete Account**

Parameter	Description
Account Type	User or Computer
Name *	User or Computer name
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output: Success or Failure**

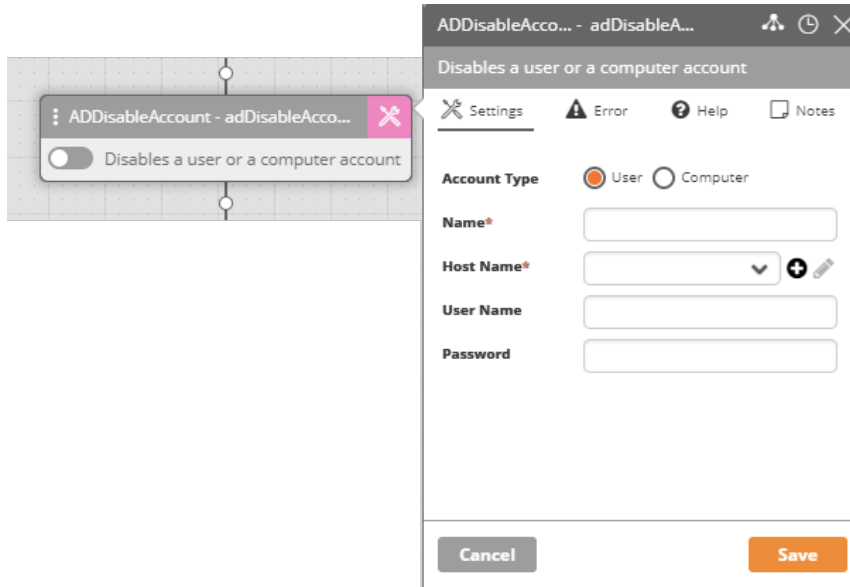
**Additional Notes:** None

### AD Disable Account

**Name:** ADDisable Account

**Function:** Disables a user account from the Active Directory

**Widget:**



**Table 24. Parameters for AD Delete Account**

Parameter	Description
Account Type	User or Computer
Name *	User or Computer name
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output: Success or Failure**

**Additional Notes:** None

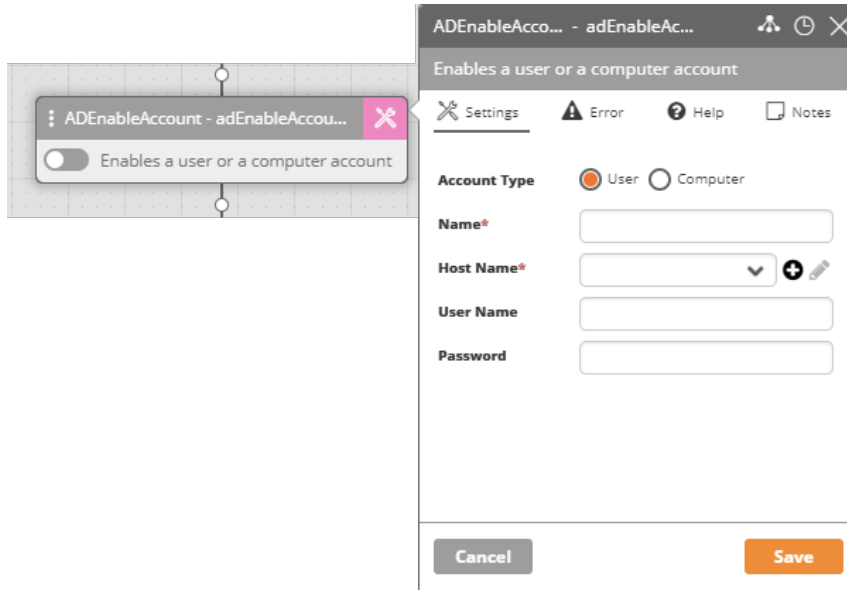
### AD Enable Account

**Name:** ADEnable Account

**Function:** Enables a user account from the Active Directory

**Widget:**





**Table 25. Parameters for AD Enable Account**

Parameter	Description
Account Type	User or Computer
Name *	User or Computer name
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output: Success or Failure**

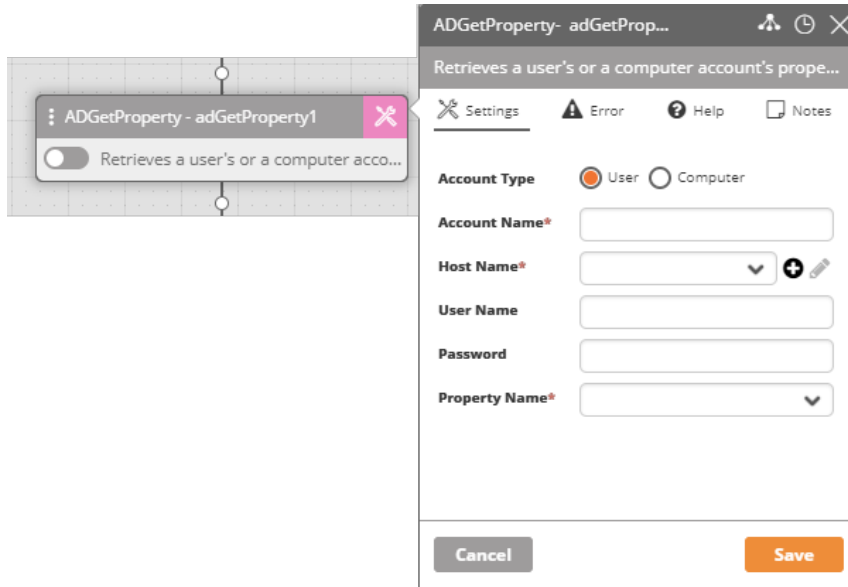
**Additional Notes:** None

### AD Get Property

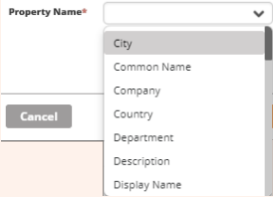
**Name:** ADGetProperty

**Function:** Retrieves the account property for a user or computer

**Widget:**



**Table 26. Parameters for AD Get Property**

Parameter	Description
Account Type	User or Computer
Account Name *	User account name
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password
Property Name *	

**Output:** The requested property value

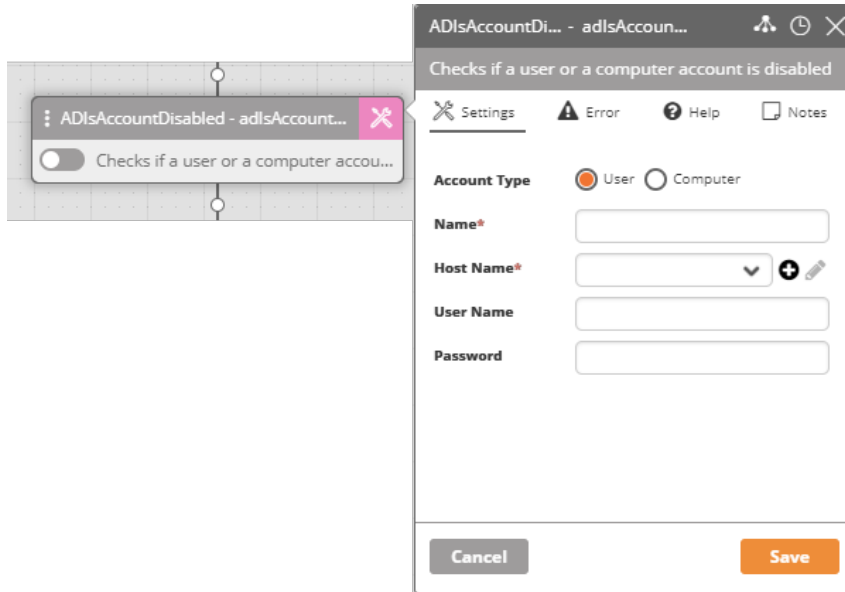
**Additional Notes:** None

**AD Is Account Disabled**

**Name:** ADIsAccountDisabled

**Function:** Check if the account of a computer or user is disabled

**Widget:**



**Table 27. Parameters for AD Is Account Disabled**

Parameter	Description
Account Type	User or Computer
Name *	User or Computer name
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output:** Returns **True** if disabled or **False** if not

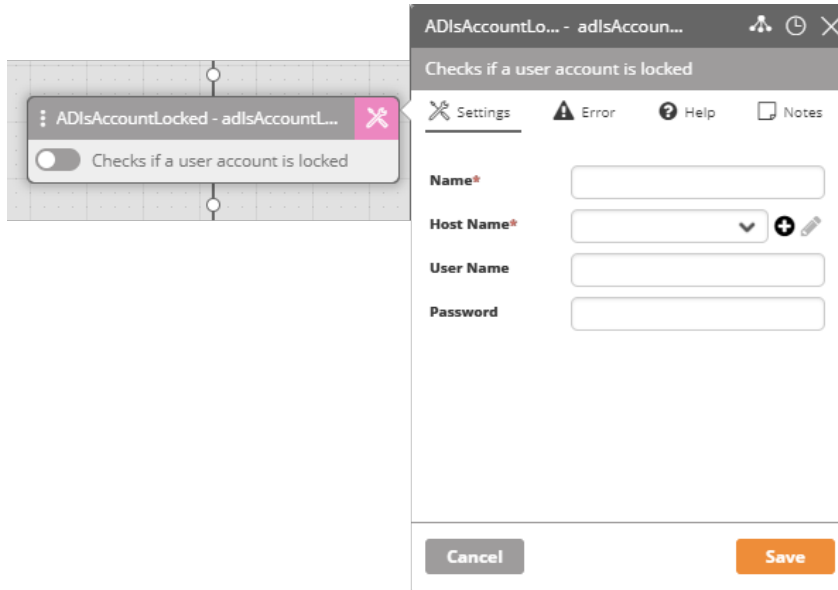
**Additional Notes:** None

### AD Is Account Locked

**Name:** ADISAccountLocked

**Function:** Check if the account of a computer or user is locked

**Widget:**



**Table 28. Parameters for AD Is Account Locked**

Parameter	Description
Name *	Account name
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output:** Returns **True** if locked or **False** if not

**Additional Notes:** None

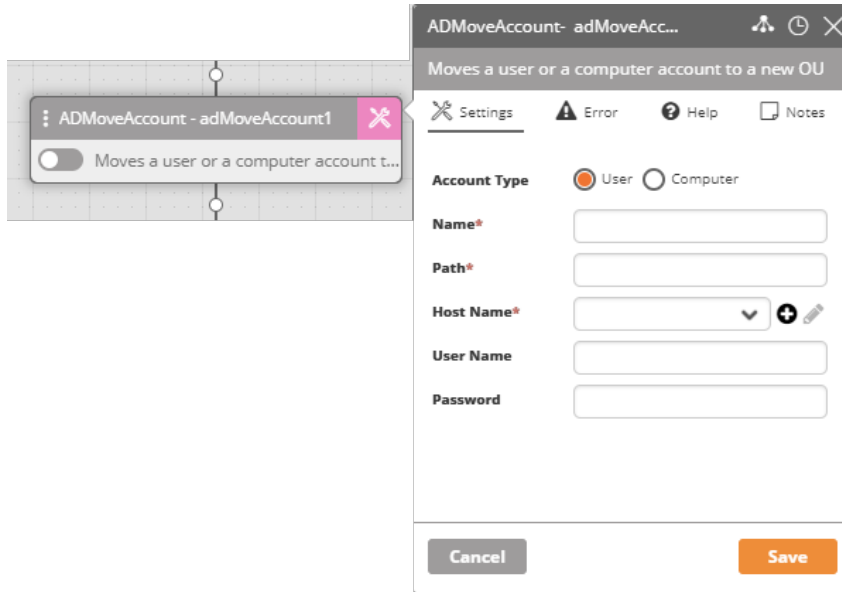
### AD Move Account

**Name:** ADMoveAccount

**Function:** Moves a user account from one OU to another

**Account Type** The account's type (user/computer).

**Widget:**



**Table 29. Parameters for AD Move Account**

Parameter	Description
Account Type	User or Computer
Name *	User or Computer name
Path *	The path where the new account is created. The path follows the conventions: OU = <OU Name1>, OU = <OU Name 2> <OU Name1>\ <OU Name2> / <OU Name1>/ <OU Name2> Type in "all" or "*" to scan the entire Active Directory.
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output: Success or Failure**

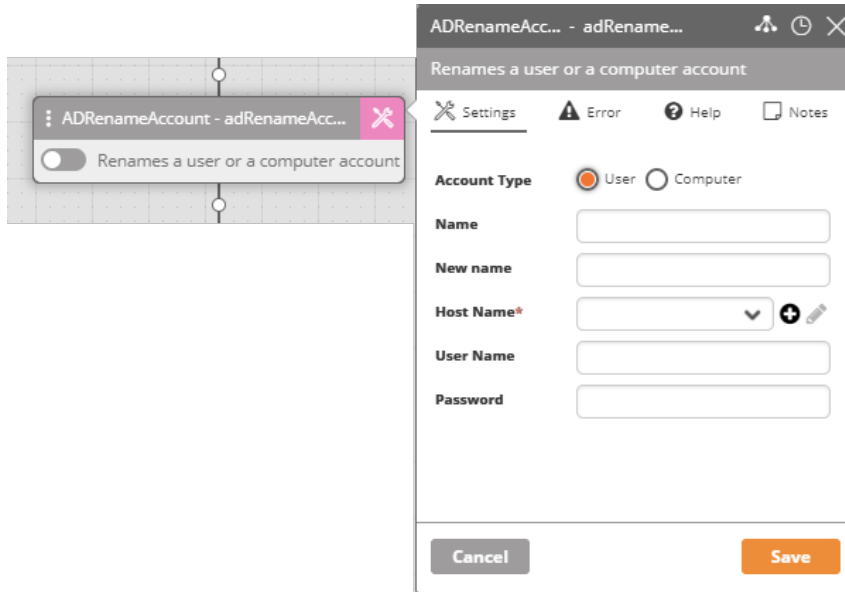
**Additional Notes:** None

### AD Rename Account

**Name:** ADRenameAccount

**Function:** Renames an Active Directory account

**Widget:**



**Table 30. Parameters for AD Rename Account**

Parameter	Description
Account Type	User or Computer
Name	Name of account to rename
New name	New account name
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output: Success or Failure**

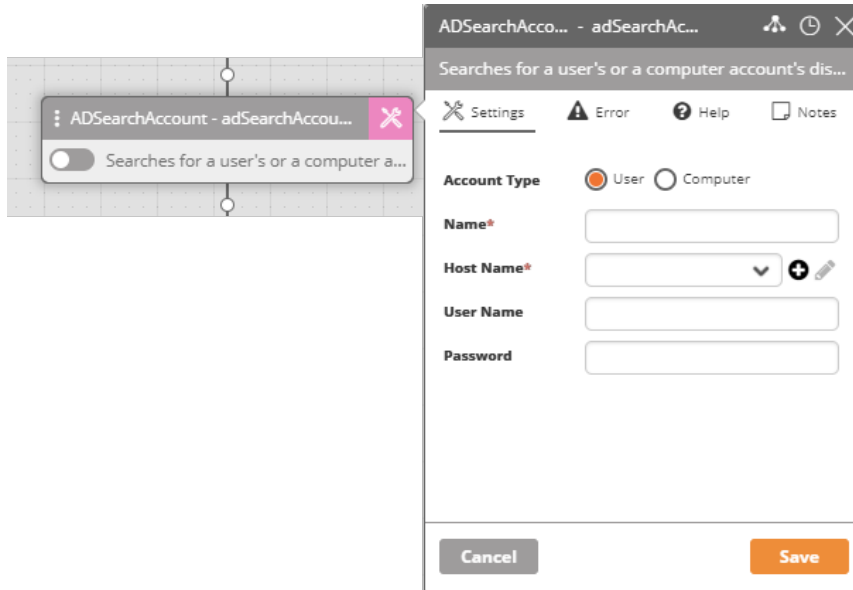
**Additional Notes:** None

### AD Search Account

**Name:** ADSearchAccount

**Function:** Searches for an account in the Active Directory and returns the account's distinguished name.

**Widget:**



**Table 31. Parameters for AD Search Account**

Parameter	Description
Account Type	User or Computer
Name *	Name of account to search
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output:** Account name string \*\*\*TBD \*\*\*

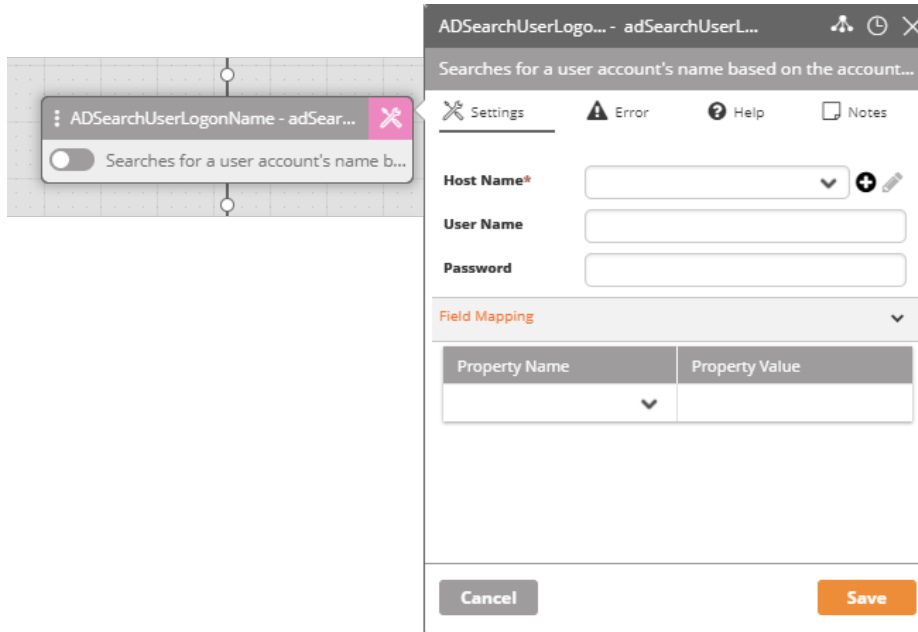
**Additional Notes:** None

### AD Search User Logon Name

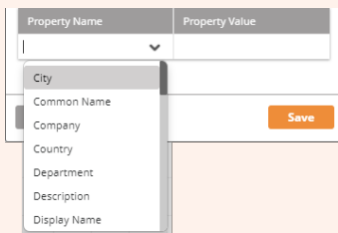
**Name:** ADSearchUserLogonName

**Function:** Search for a user account based on the account's properties

**Widget:**



**Table 32. Parameters for AD Search User Logon Name**

Parameter	Description
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password
Property Name	Select one of: 

**Output: Success or Failure**

**Additional Notes:** None

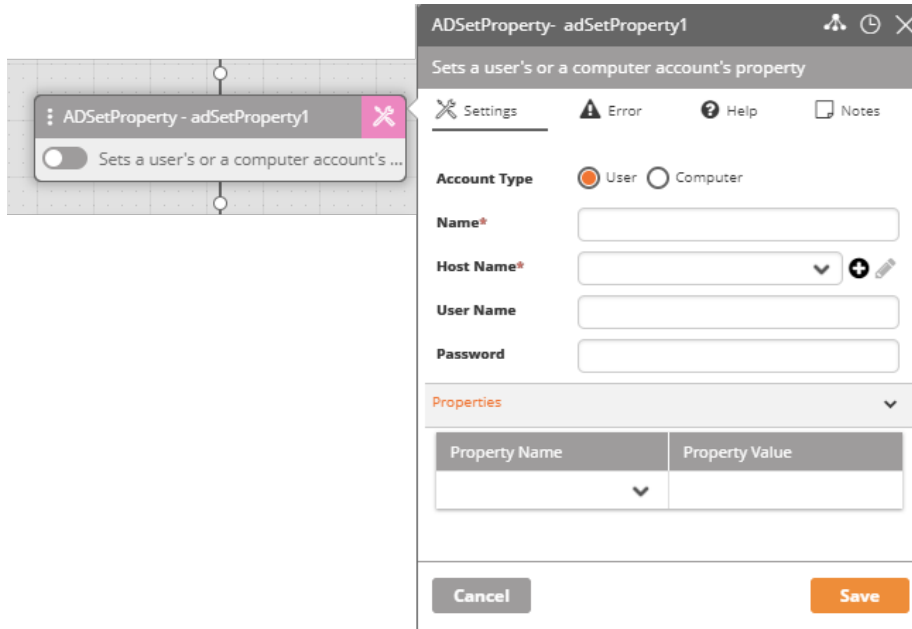
### AD Set Property

**Name:** ADSetProperty

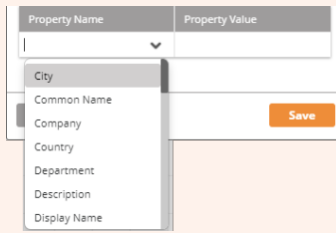
**Function:** Sets the property for a computer or user account.

**Widget:**





**Table 33. Parameters for AD Set Property**

Parameter	Description
Account Type	User or Computer
Name *	Name of user or computer
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password
Properties	Select one of: 

**Output: Success or Failure**

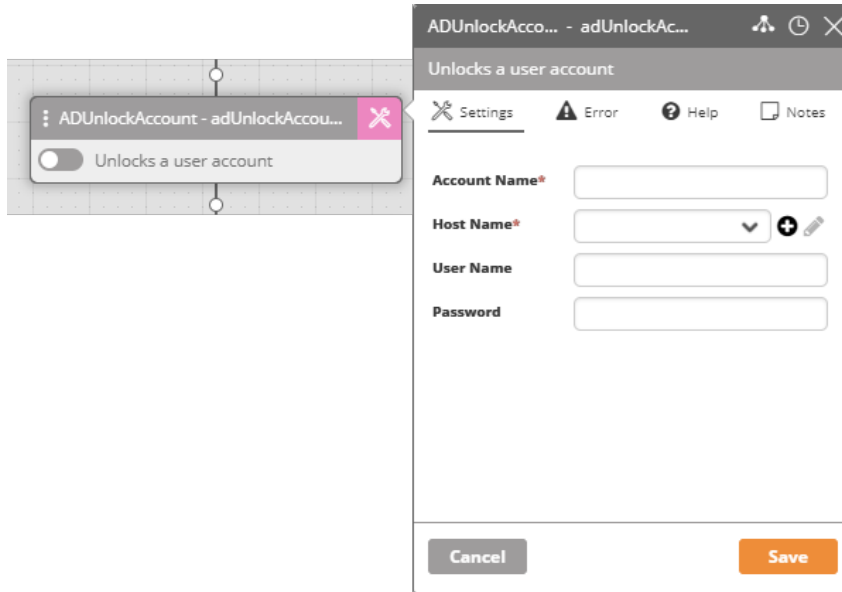
**Additional Notes:** None

### AD Unlock Account

**Name:** ADUnlockAccount

**Function:** Unlocks an Active Directory user account

**Widget:**



**Table 34. Parameters for AD Unlock Account**

Parameter	Description
Account Name *	Name of account to unlock
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output: Success or Failure**

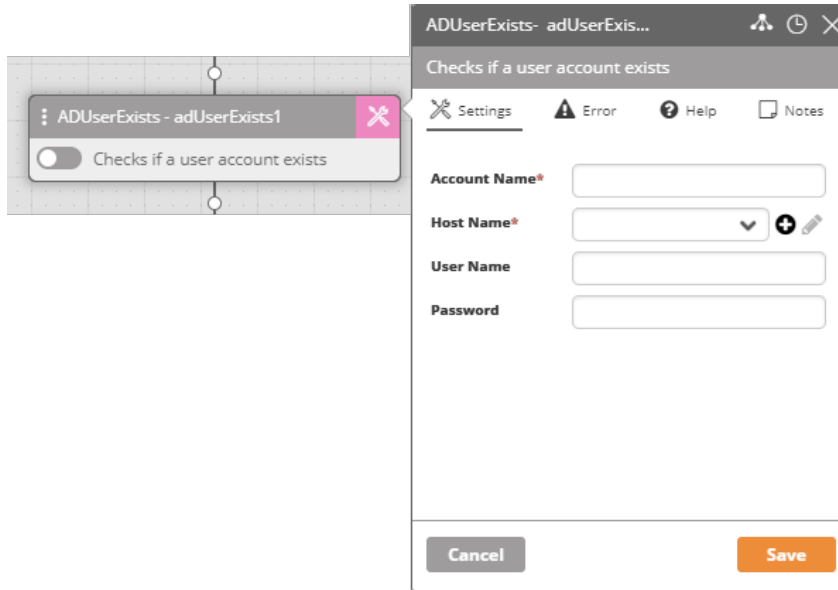
**Additional Notes:** None

### AD User Exists

**Name:** ADUserExists

**Function:** Checks whether a user account exists in the Active Directory

**Widget:**



**Table 35. Parameters for AD User Exists**

Parameter	Description
Account Name *	Name of account to check
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output:** **True** if the account exists, **False** otherwise.

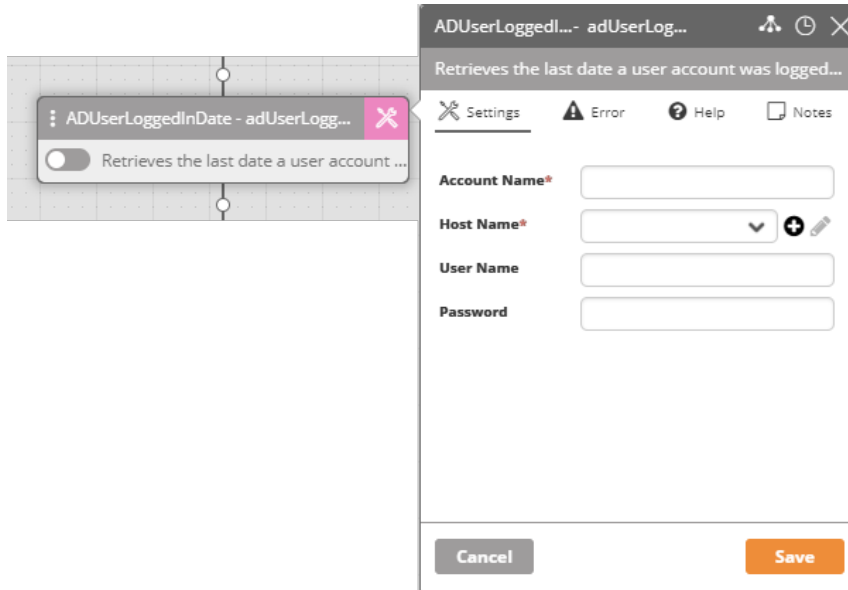
**Additional Notes:** None

### AD User Last Logged In Date

**Name:** ADUserLastLoggedDate

**Function:** Returns the last login date of an Active Directory user

**Widget:**



**Table 36. Parameters for AD User Last Logged in Date**

Parameter	Description
Account Name *	Name of account to check
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**User Logon Name** The user's logon name.

**Host Name** The name of the Active Directory's server.

**Output:** Date string \*\*\* TBD \*\*\*

**Additional Notes:** None

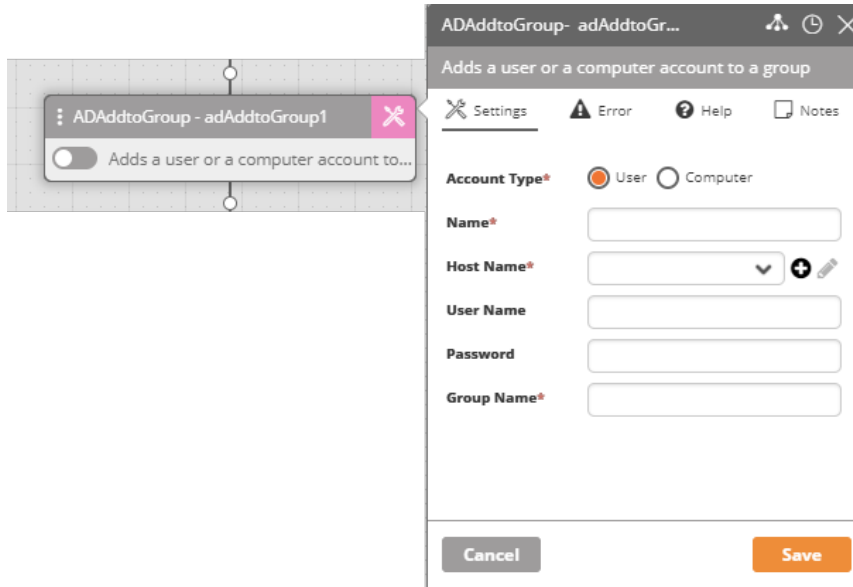
#### 6.1.8.4.2. Groups

##### AD Add to Group

**Name:** ADAddto Group

**Function:** Adds a user or a device to a group in the Active Directory

**Widget:**



**Table 37. Parameters for AD Add to Group**

Parameter	Description
Account Type	User or Computer
Name *	User or computer name to be added
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password
Group Name *	The name of the Group

**Output: Success or Failure**

**Additional Notes:** None

**AD Create Group**

Creates a new Active Directory group (output: Success/Failure).

**Path** The path of the new group.

The path may follow the conventions:

OU= <OU Name1 >, OU= <OU Name 2 >

<OU Name1 >\ <OU Name2 >

/ <OU Name1 >/ <OU Name2 >

Type in "all" or "\\*" to scan the entire Active Directory.

**Group Name** The name of the group.

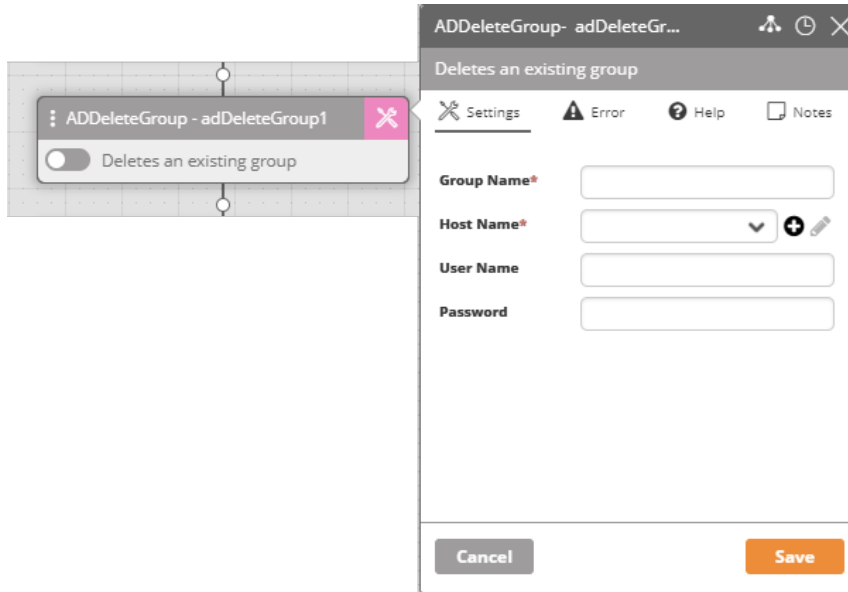
**Host Name** The name of the Active Directory's server.

**AD Delete Group**

**Name:** ADDEleteGroup

**Function:** Deletes an Active Directory group

**Widget:**



**Table 38. Parameters for AD Delete Group**

Parameter	Description
Group Name *	Name of the group to be deleted
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output: Success or Failure**

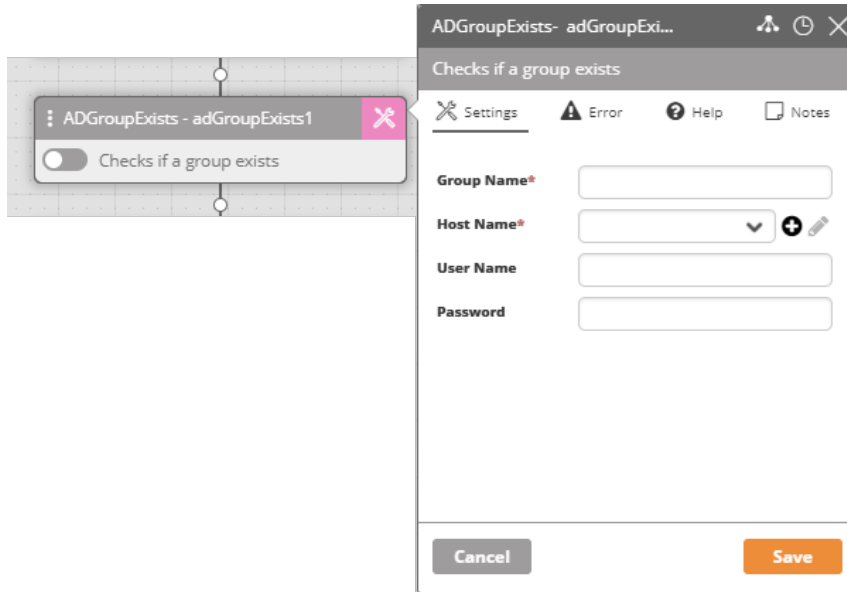
**Additional Notes:** None

### AD Group Exists

**Name:** ADGroupExists

**Function:** Checks whether a group exists in the Active Directory

**Widget:**



**Table 39. Parameters for AD Group Exists**

Parameter	Description
Group Name *	Name of group to check
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output:** True if the group exists or or False otherwise

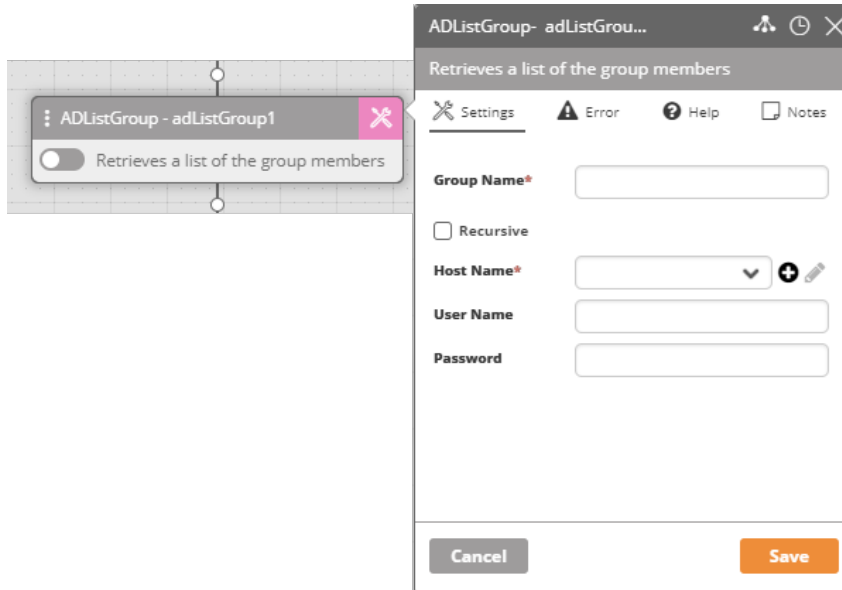
**Additional Notes:** None

### AD List Group

**Name:** AD\_ADListGroup

**Function:** Lists the content of a group in the Active Directory - users, groups and OU's

**Widget:**



**Table 40. Parameters for AD List Group**

Parameter	Description
Group Name *	Name of group to list
Recursive	Check to list all sub-groups within a group
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output:** A list \*\*\* TBD \*\*\*

**Additional Notes:** None

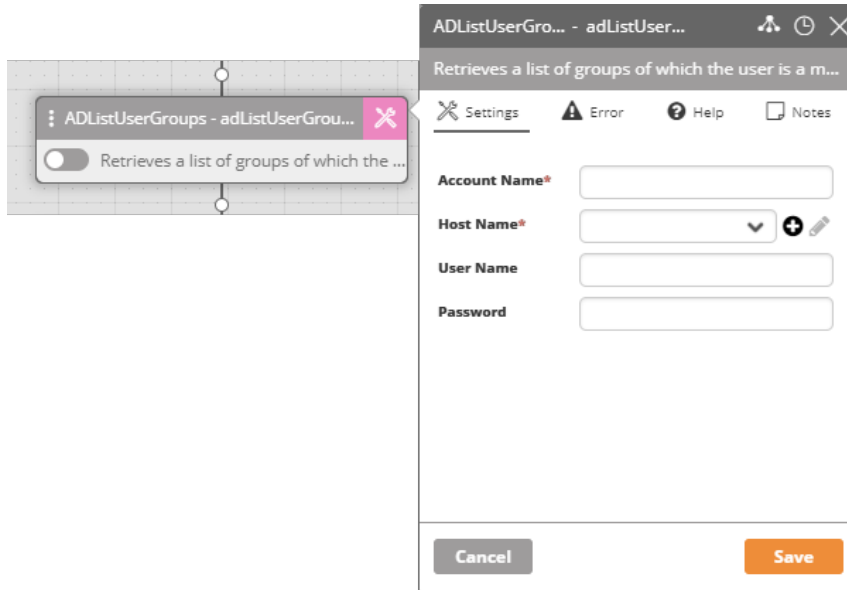
### AD List User Groups

**Name:** ADListUserGroups

**Function:** Lists the groups of which the user is a member

**Widget:**





**Table 41. Parameters for AD List User Groups**

Parameter	Description
Account Name *	Name of account to find in groups
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output:** A list of groups containing the account

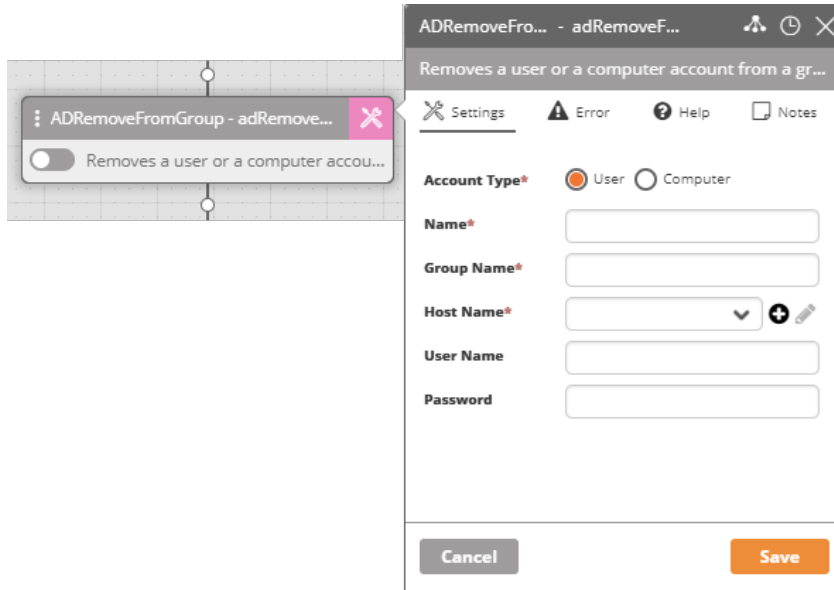
**Additional Notes:** None

### AD Remove From Group

**Name:** ADRemoveFromGroup

**Function:** Removes a user account from an Active Directory group

**Widget:**



**Table 42. Parameters for AD Delete Group**

Parameter	Description
Account Type	User or Computer
Name *	Name of user or computer
Group Name *	Name of group to delete
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output: Success or Failure**

**Additional Notes:** None

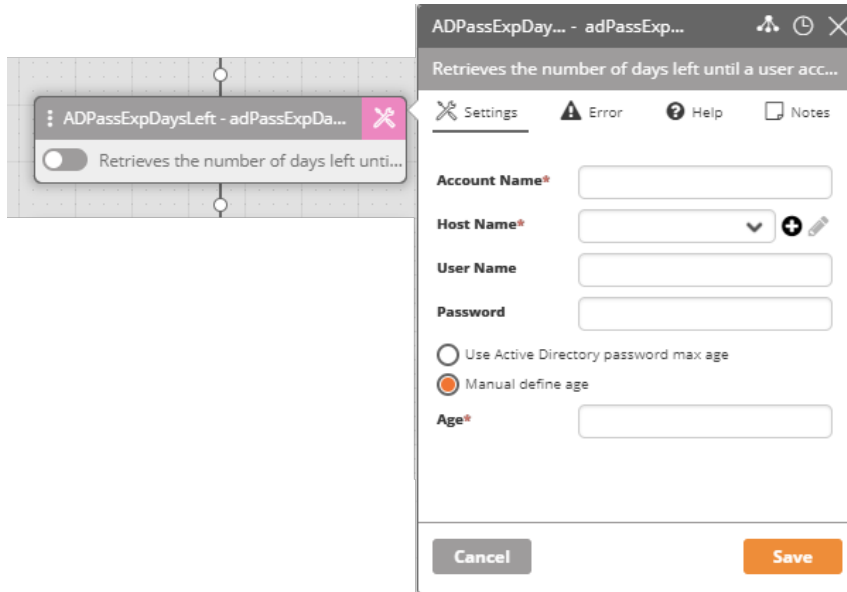
#### 6.1.8.4.3. Password Management

##### AD Password Expiry Days Left

**Name:** ADPassExpDaysLeft

**Function:** Retrieves the number of days left until a user account password expires.

**Widget:**



**Table 43. Parameters for AD Password Expiry Days Left**

Parameter	Description
Account Name *	Name of account to be queried
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password
Age *	Manually defined maximum age. Uncheck <b>Manual Define Age</b> to use the Active Directory maximum password age.

**Output:** The number of days

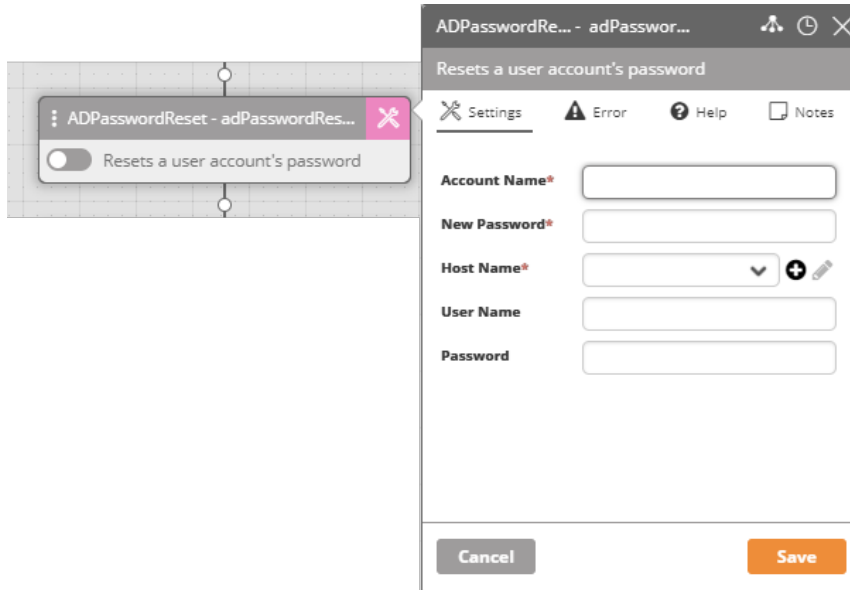
**Additional Notes:** None

### AD Password Reset

**Name:** ADPassPaswordReset

**Function:** Resets a user's password

**Widget:**



**Table 44. Parameters for AD Password Reset**

Parameter	Description
Account Name *	Name of account for password reset
New Password *	Must be different from current password. To reset to a random password, see Generate Password Activity
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output: Success or Failure**

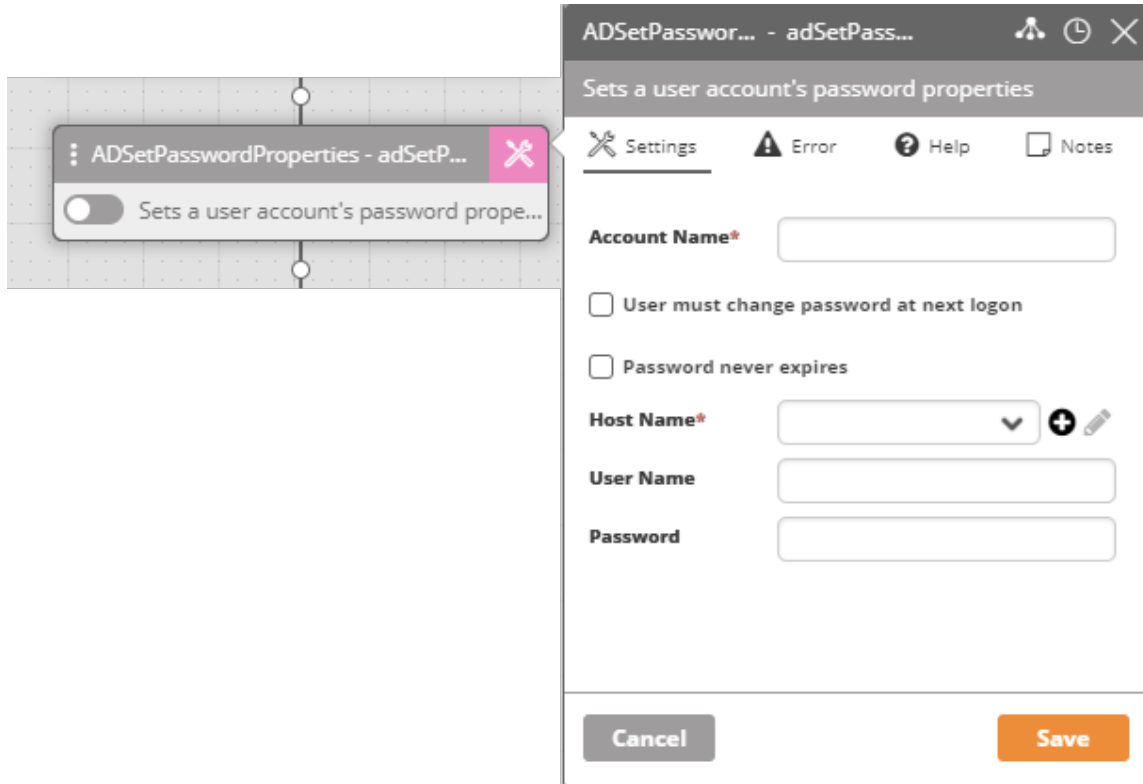
**Additional Notes:** None

### AD Set Password Properties

**Name:** ADSetPasswordProperties

**Function:** Changes a user password's attributes

**Widget:**



**Table 45. Parameters for AD Set Password Properties**

Parameter	Description
Account Name *	Name of account to set properties
User must change password at next logon	Check this to enforce password change at next logon
Password never expires	Check this to give the user a permanent password
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output: Success or Failure**

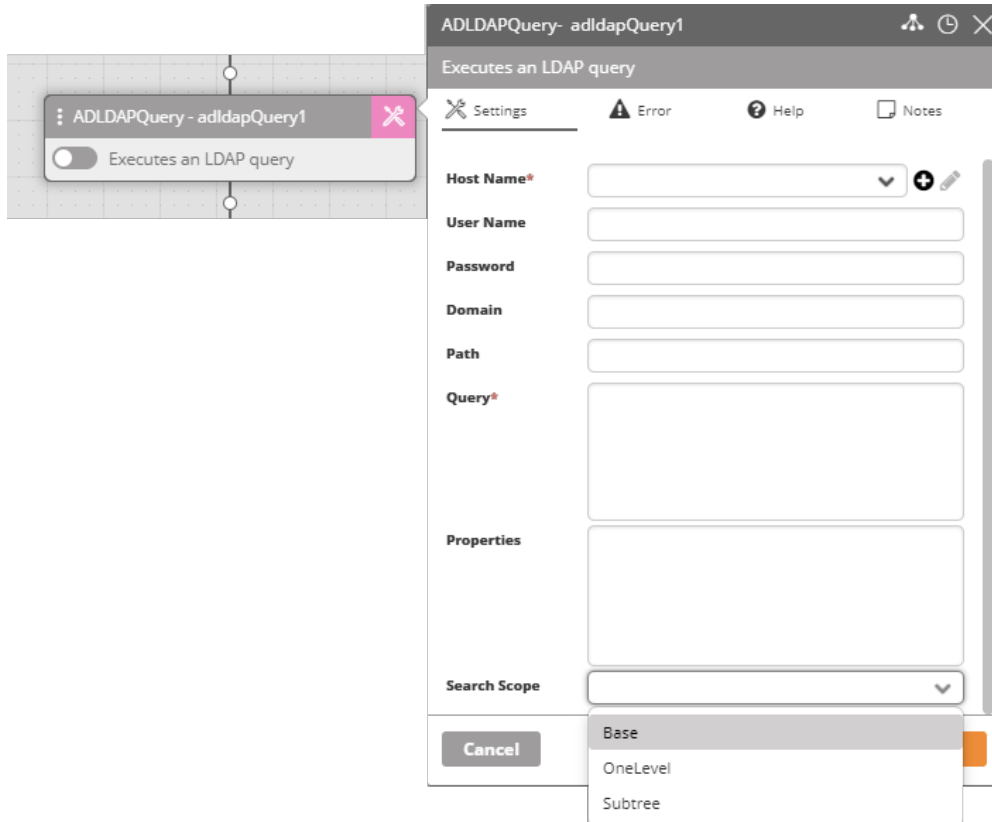
**Additional Notes:** None

#### 6.1.8.4.4. AD LDAP Query

**Name:** ADLDAPQuery

**Function:** Queries the Active Directory (output: a table of the query's result).

**Widget:**



**Table 46. Parameters for AD LDAP Query**

Parameter	Description
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password
Domain *	The Active Directory's domain
Path	The path where the query is executed
Query	LDAP query's text
Properties	The properties to return
Search Scope	The level of search to perform (Base/OneLevel/SubTree)

**Output:** A table of the query results

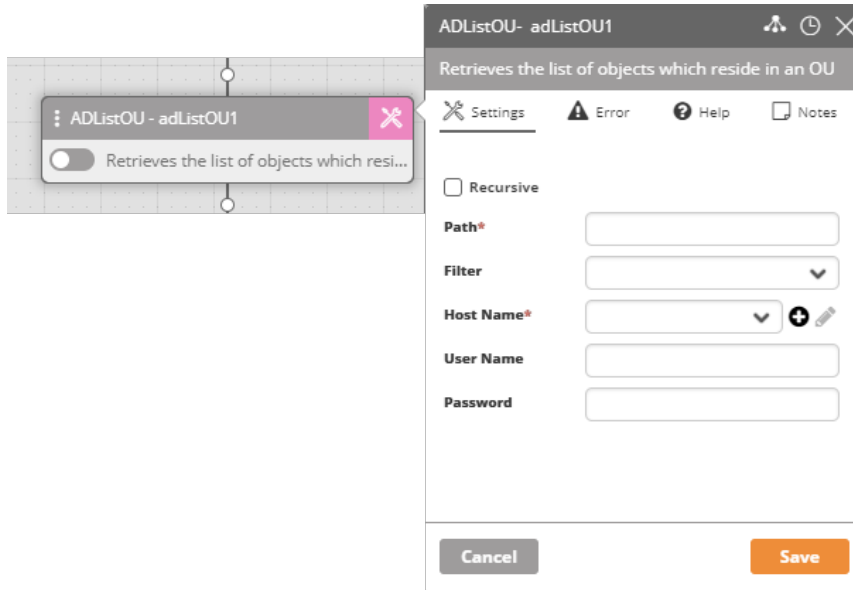
**Additional Notes:** None

#### 6.1.8.4.5. AD List OU

**Name:** ADListOU

**Function:** Lists the content of an organizational unit in the Active Directory - users, OU's and groups.

**Widget:**



**Table 47. Parameters for AD List OU**

Parameter	Description
Recursive	Check to list all sub-OU's within an OU
Path *	The path where the new account is created. The path follows the conventions: OU = <OU Name1>, OU = <OU Name 2> <OU Name1>\ <OU Name2> / <OU Name1>/ <OU Name2> Type in "all" or "" to scan the entire Active Directory.
Filter	The Criteria of the listed OU's
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password

**Output:** Returns a list

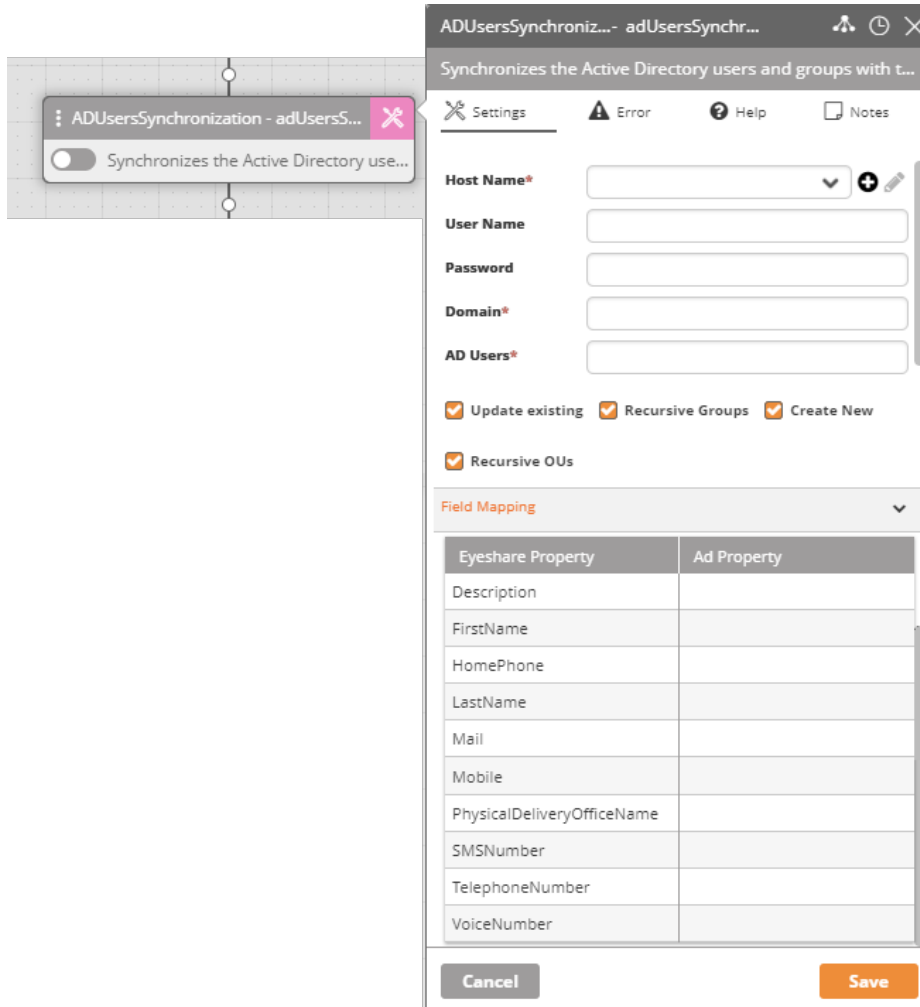
**Additional Notes:** None

#### 6.1.8.4.6. AD User Synchronization

**Name:** ADUser\_Synchronization

**Function:** Synchronize the Active Directory users and groups with the Ayehu NG database

**Widget:**



**Table 48. Parameters for AD Users Synchronization**

Parameter	Description
Host name *	The name of the Active Directory's server
User Name	Logged in user name
Password	Logged in user password
Domain *	The Active Directory's domain
AD Users *	*** TBD ***
Update existing	*** TBD ***
Recursive Groups	*** TBD ***
Create New	*** TBD ***
Recursive OUs	*** TBD ***
Field Mapping	*** TBD ***

**Output: Success or Failure**

**Additional Notes:** None



## 6.1.8.5. Database

### 6.1.8.5.1. Understanding Ayehu Next Generation Database Support

Ayehu Next Generation provides a common user interface to supported databases. Currently supported databases are

- DB2
- MySQL
- Oracle
- TSQL

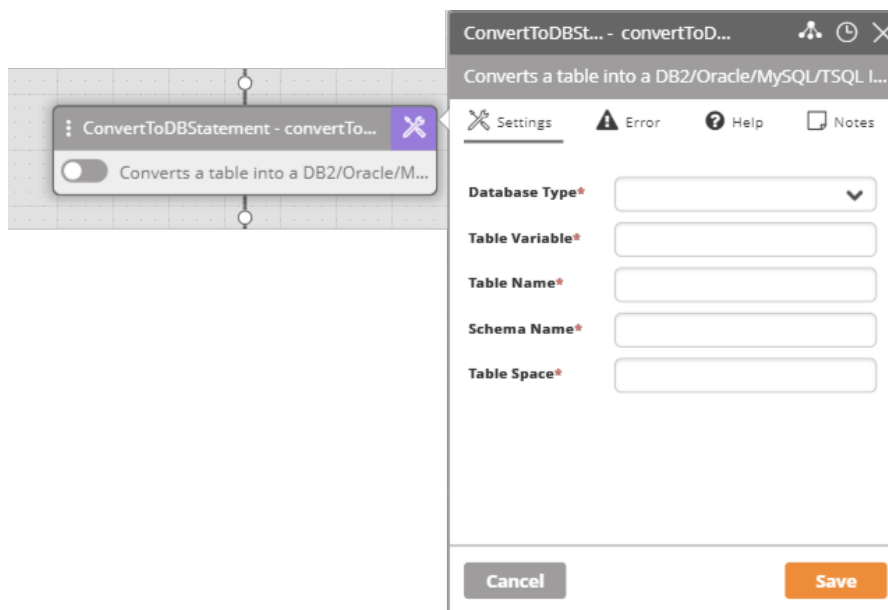
For each database you may perform a **query** or execute a **statement**. A query returns a table. A statement returns **Success** or **Failure**. In the event of Failure, you can check the log to ascertain the cause. The user interfaces for both a query and a statement are the same and generic.

### 6.1.8.5.2. Convert to DB Statement

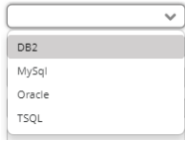
**Name:** ConvertToDBStatement

**Function:** Convert a Ayehu Next Generation table variable into a DB2/Oracle/MySQL/TSQL **Insert** statement.

**Widget:**



**Table 49. Parameters for Convert to DB Statement**

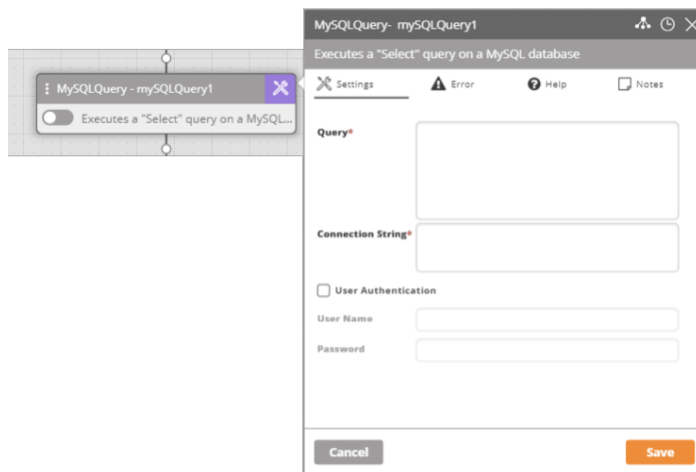
Parameter	Description
Database Type *	Select one of: 
Table Variable *	Table for the <b>Insert</b>
Table Name *	SQL Table name
Schema Name *	SQL Schema
Table Space *	SQL Table Space

**Output: Success or Failure**

**Additional Notes:** None

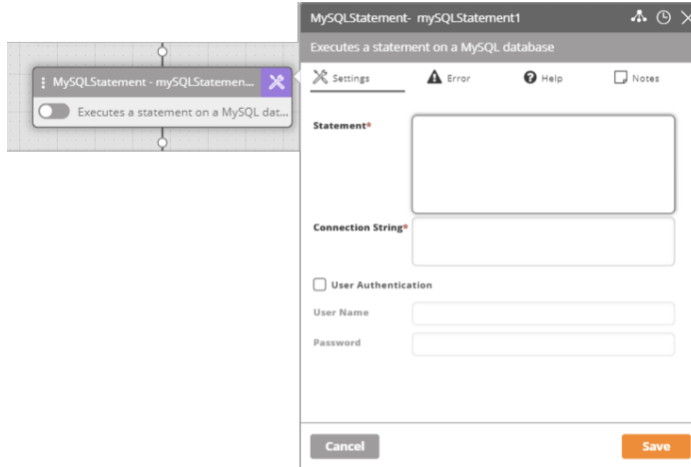
### 6.1.8.5.3. SQL Query and Statement: Examples

Before proceeding to a detailed description of setting up an SQL Query or Statement, here is an example of each:



You will see the same layout for the other supported databases.

**Figure 12. MySQL Query Interface**



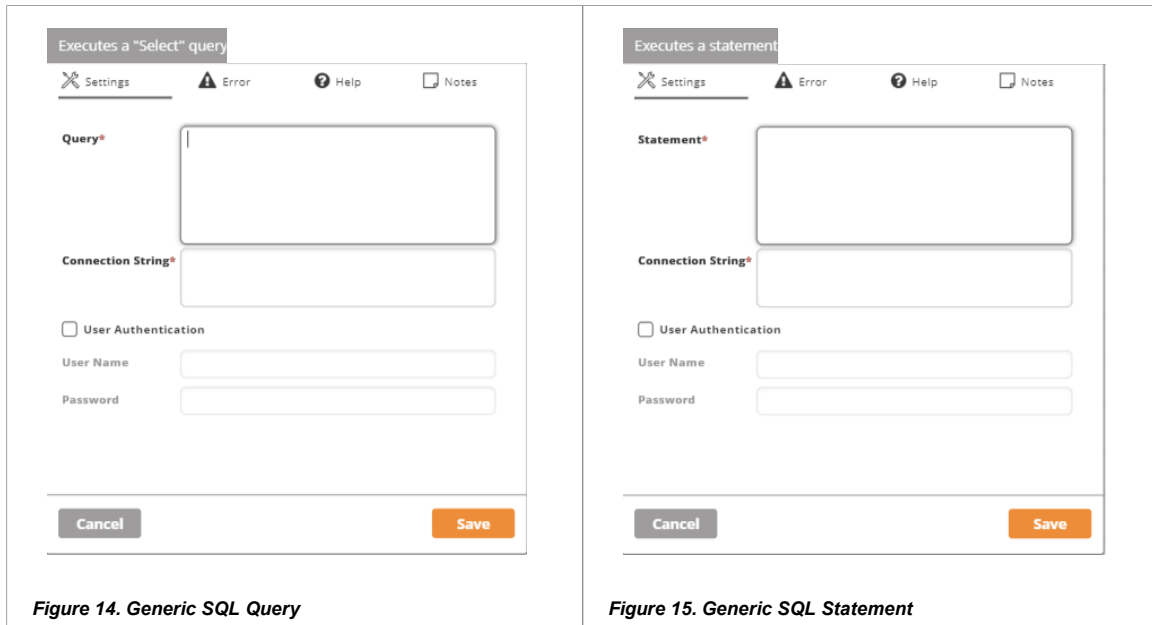
Again, the same layout is used for all supported databases.

**Figure 13. MySQL Statement Interface**

Notice that for both the Query and the Statement, the input field are the same. Both **Query** and **Statement** expect valid SQL.

#### 6.1.8.5.4. SQL Query and Statement: Details

The user interface for both cases is generic across supported databases:



**Figure 14. Generic SQL Query**

**Figure 15. Generic SQL Statement**

The **Query** and **Statement** fields must be set with a valid SQL query and executable statement respectively.

**NOTE**

To avoid translation of %TEXT% (in case TEXT is not a variable name), add “@” before the percentage character. For example: Select \* From TableName Where ColumnName LIKE '@%TEXT%'

The **Connection String** is required for a database **connect** and is database dependent. Typically (but not necessarily) it also contains the user name and password in clear text.

If the **Connection String** does not contain user credentials, then check **User Authentication** and enter a **User Name** and **Password** by hand.

To run the **Query** or execute the **Statement**, click **Save**.

**Output:** A successful query will return a non-null table. A statement will result in **Success** or **Failure**.

**Additional Notes:** None

## 6.2. Self Service Designer

### 6.2.1. Introduction to the Self-Service Designer

The Self-Service Designer is a simple and efficient tool that enables you to design forms by integrating workflows while exposing relevant automated tasks and processes to your end-users.

Designated Self-Service Designer users have the following Admin privileges:

- Administrators
- Developers
- Specialists
- Operators
- Workflow Editors

### 6.2.2. Accessing the Self-Service Designer

This table explains the roles and their access to Self-Service Designer.

**Table 50. SSD Roles**

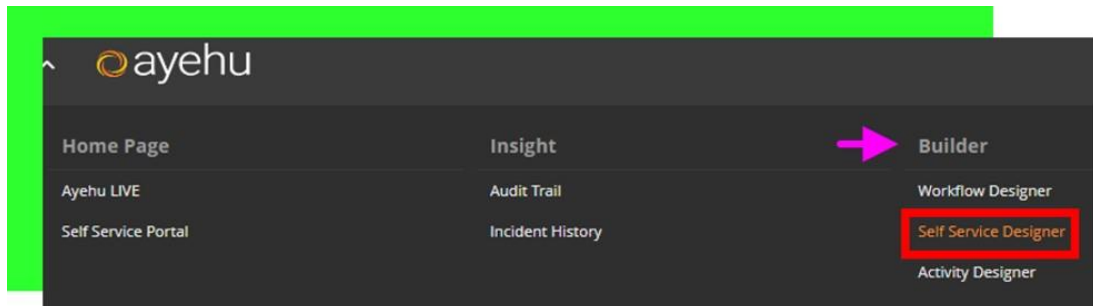
Role	Access
Administrator	View and work with the following: <ul style="list-style-type: none"> <li>Home Page</li> <li>Insight</li> <li>Builder</li> <li>Repository</li> <li>Configuration</li> <li>Knowledge Base</li> </ul>
Developer	View and work with the following: <ul style="list-style-type: none"> <li>Home Page</li> <li>Insight (except Intelligence)</li> <li>Builder (including Activity Designer)</li> <li>Repository</li> <li>Knowledge Base</li> </ul>
Workflow Editor	View and work with the following: <ul style="list-style-type: none"> <li>Home Page</li> <li>Insight (except Intelligence)</li> <li>Builder (except Activity Designer)</li> <li>Repository</li> <li>Knowledge Base</li> </ul>
Specialist	View and work with the following: <ul style="list-style-type: none"> <li>Home Page</li> <li>Insight (except Intelligence)</li> <li>Builder (except Activity Designer)</li> <li>Repository</li> <li>Knowledge Base</li> </ul>
Operator	View and work with the following: <ul style="list-style-type: none"> <li>Home Page</li> <li>Insight (except Intelligence)</li> <li>Builder (except Activity Designer)</li> <li>Repository</li> <li>Knowledge Base</li> <li>License Details</li> <li>Login Users</li> </ul>

Follow these instructions to access the Self-Service Designer

1. In the top left corner, click the down arrow to open the top navigation pane.



2. Under the **Builder** section, click the **Self Service Designer** link.

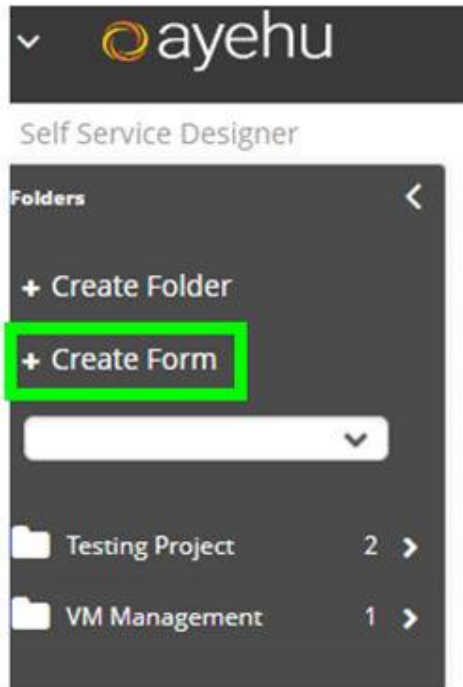


3. Click **Self Service Designer** and start creating your Form

### 6.2.3. Creating a Self-Service Form

The New Form window appears the first time you enter the Self-Service Designer when there are no forms already present.

You can also open the form creation window by clicking **Create Form**.



#### Entering Form Metadata

Start creating a Form by adding the following metadata

- Name (required)
- Folder (required)
- Description
- Tags

Welcome Admin

Easily create a new form by filling in the fields at the right. Keep in mind that Tags are used as keywords, which make it easier to find forms when using search functionality.

Create New

Create a New VM

Name\*

Folder\* Virtual Machines Add Folder

Description

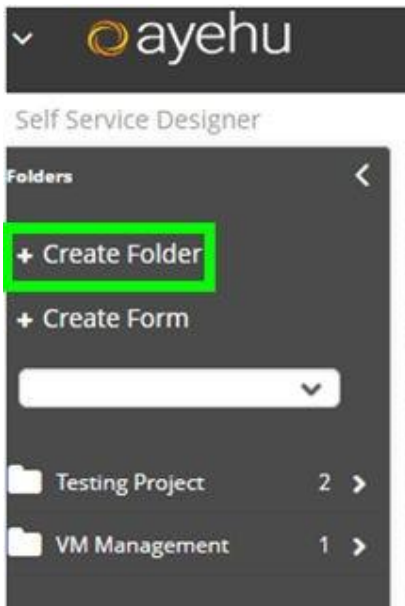
Provision a new virtual machine

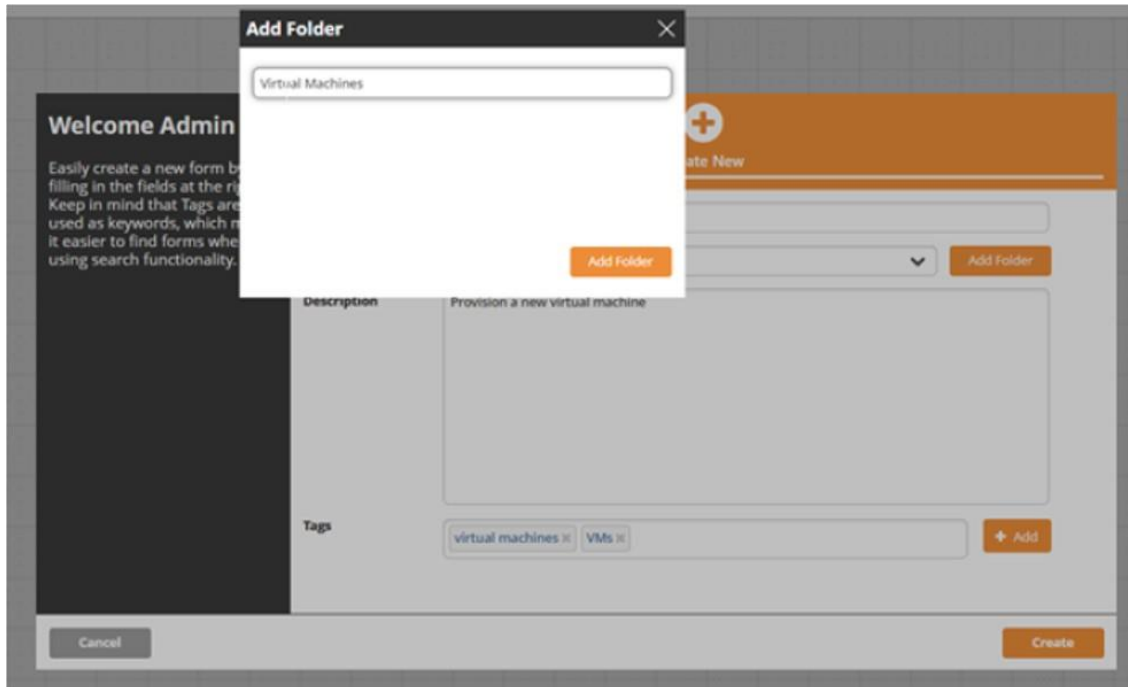
virtual machines VMs + Add

Cancel Create

If no folder exists, do one of the following to create a new folder. Click the:

- **Add Folder** button
- **Create Folder** link





## NOTE

A description is particularly important because it will allow your users to know the purpose of the Form and when to use it.

## Adding Fields to a Form

There are two ways to add fields to a Form

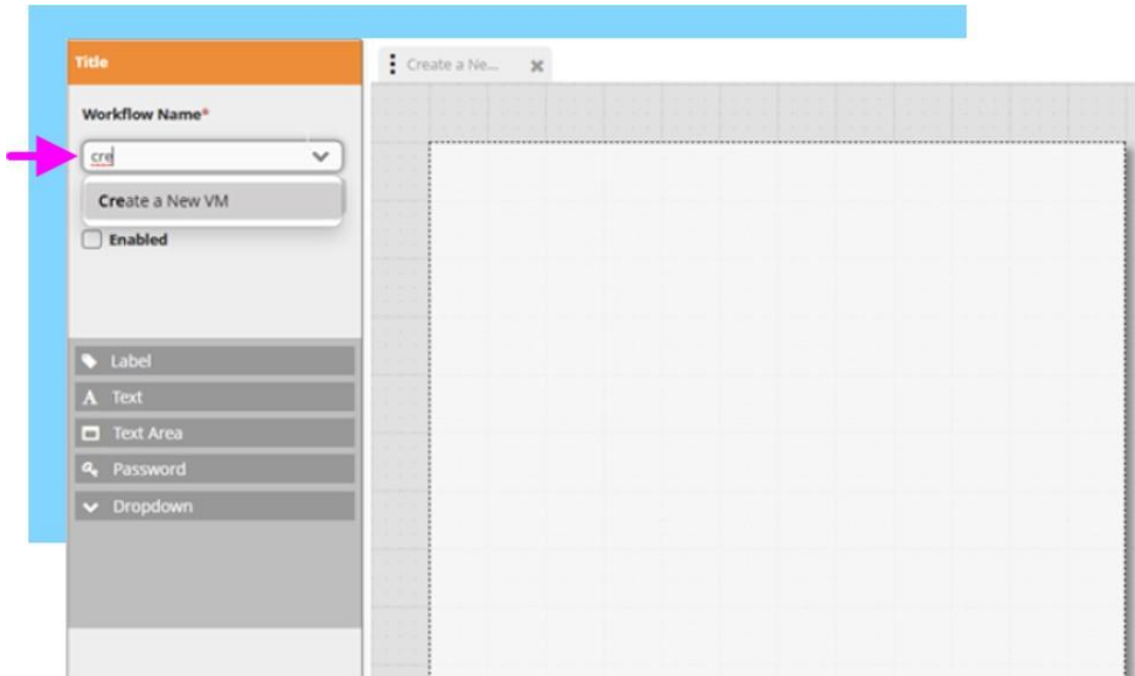
1. Choose a Workflow and generate blocks from that Workflow
2. Manually drag and drop fields onto the Form

## Generating Blocks from a Workflow

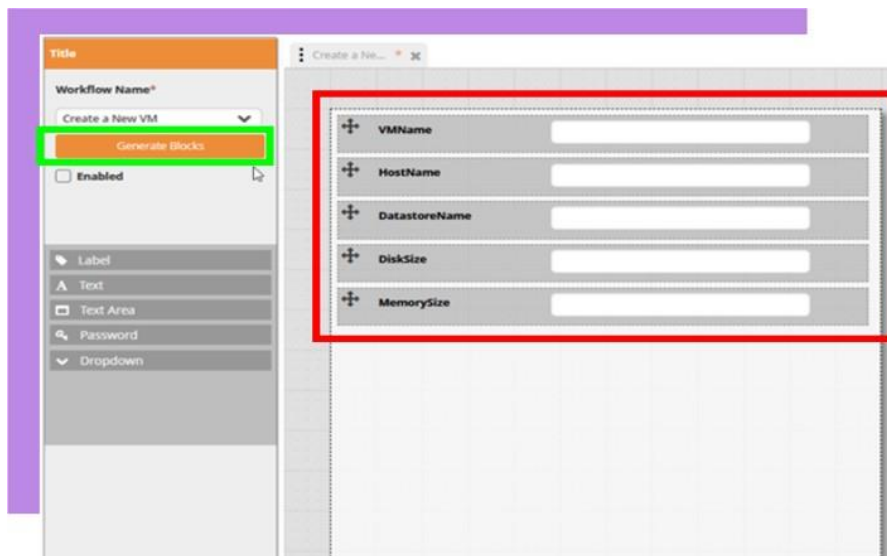
To automatically create blocks (fields) from a Workflow (see [Creating a Self-Service Workflow \[188\]](#))

- From the **Self Service Designer** Control Panel, click the down arrow or start typing a workflow's name.
- Select the Workflow from the pop-up list of workflows





Click **Generate Blocks**



**Result:** In the Workflow, Self-Service variables appear as Text fields and is automatically added to the left column of the Form. The field label is the variable name.



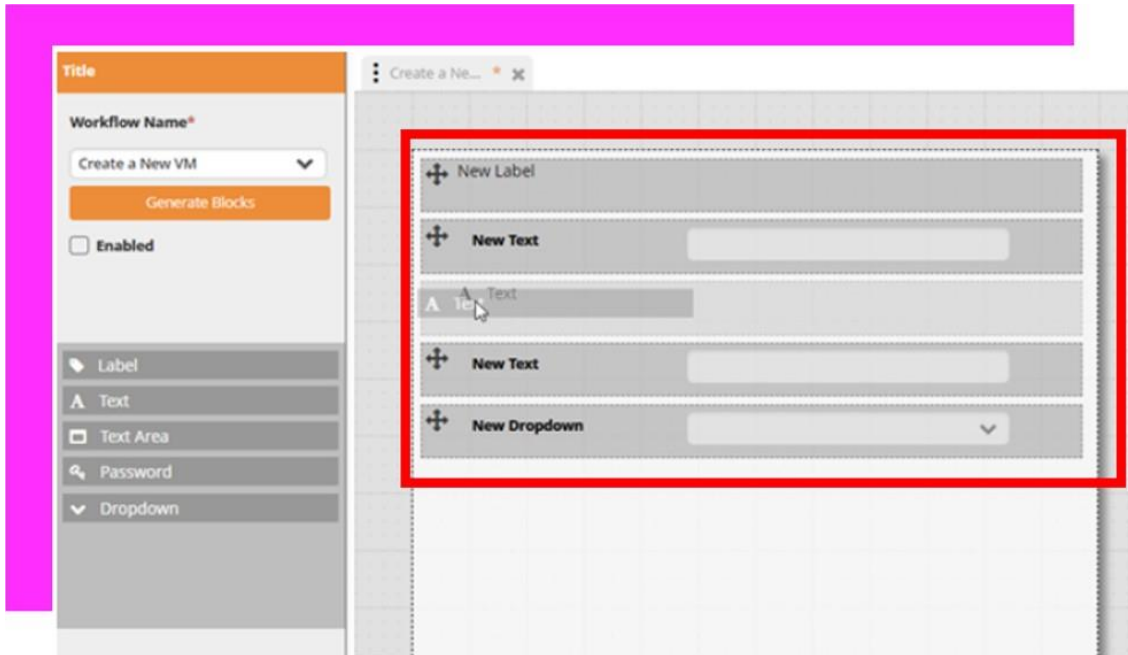
**NOTE**

You can add new fields, remove generated fields, or move fields around. Controls are generated as Text by default; to change the default, delete the current control and drag and drop a new control.

## Manually Adding Fields to a Form

If you don't want to use the Generate Blocks feature, you can manually drag desired fields to the Form.

1. From the Control Panel, click and hold the desired field type and drag it onto the Form.
2. You can also drag fields to either column in the Form



## 6.2.4. Form Fields

There are several different types of fields and various ways to modify them to suit your needs.

**Table 51. Field Types**

Label	<p>A read-only field, with no variable input presented to the User.</p> <p>Use this field to give a Title to your Form or to differentiate different sections of the Form.</p>
Text	<p>A short text field where the User can type text to populate a variable.</p> <p>Use this field for short variables such as:</p> <ul style="list-style-type: none"> <li>• Username</li> <li>• Hostname</li> <li>• Other short texts</li> </ul>
Text Area	<p>A larger text field where the User can type text to populate a variable.</p> <p>Use this field for longer variables such as:</p> <ul style="list-style-type: none"> <li>• Note</li> <li>• Reason</li> <li>• Journal entry</li> <li>• Other long texts</li> </ul>
Password	<p>A password field where the User can type a password, and the system will mask the text.</p>
Dropdown	<p>A dropdown list, where the User can pick a variable from a designated list.</p> <p>The list can be populated from a fixed list of items entered in the Self Service Designer or another workflow that will run when the Form is launched and return a response with all available options.</p>

## Field Properties

Each field has specific properties that can be modified to change how it looks and behaves. Hover over a specific field and click the pencil icon to display field properties.



## Label Properties

<b>Right to Left</b>	<p>Choose the field orientation.</p> <p>If the language you are writing is right to left, select <b>Yes</b>.</p> <p>Otherwise, leave as <b>No</b>.</p>
<b>Label</b>	<p>Change the text in the text box to update the name of the field.</p> <p>Format the text with bold, italics, underline, and strikethrough.</p> <p>You can change the text color and font size, align the text, and choose from several font options.</p> <p>You can also leave the label field empty. Leaving the field empty will create a space in the Form rather than displaying a real label.</p>
<b>Workflow Name</b>	<p>Selecting a workflow is optional; you can either enter a label or run a Workflow when the Form is launched, and display its result (table or text) in the Form.</p>

**Label Properties**

Right To Left: No

Label: **Create a New VM**

Font: Sans Serif, Size: 24

Workflow Name: Name

Buttons: Cancel, Save

1. In the **Workflow Name** field, click the down arrow to select a name of type a name.
2. Click **Save** to save the changes OR **Cancel** to revert to the previous version



**NOTE**

Step 1 is optional for those wishing to use a Workflow instead of entering a static label.

**Text, Text Area, and Password Properties**

<b>Label</b>	For Text fields, when using Generate Blocks, the label will automatically be the variable's name, which you can edit to be more friendly.
<b>Variable Name</b>	<p>The variable that this field references.</p> <p>When the User enters a value in the portal, this field will forward the value to the Workflow.</p> <p>For Text fields, when using Generate Blocks, the variable name will automatically be the variable listed in the Workflow.</p> <p>You can choose a different variable if desired. However, you cannot use the same variable twice in the same Form. A duplicated variable will cause an error when saving.</p>

### Dropdown Properties

There are two ways to populate the dropdown list so that users can select the correct dropdown property value.

1. Select a workflow that will run when this Form launches.
2. Create a static list of items.



#### NOTE

This is not the same Workflow used for the Form we are building, but a different one specifically for populating this field. This Workflow will return a two-column table with this table variable in a Self-Service Response activity.

The first column is the ID. The ID is the actual value used in the activity, and the second value is the Name, which appears on the list.

## Select a Workflow

1. Select the **Name** radio button

The screenshot shows the 'Dropdown Properties' dialog box. At the top, there are settings for 'Right To Left' (set to 'No'), 'Label' (with formatting options like Bold, Italic, Underline, Strikethrough, and Font Color), and 'Variable Name' (set to 'Variable Name'). Below these is a text input field containing 'Select a Host'. The main section has two radio buttons: 'Name' (selected) and 'List Items'. The 'List Items' dropdown is open, showing 'List of Available Hosts' as the selected item. Below the dropdown is a search bar with the placeholder text 'Type here...'. At the bottom, there are 'Cancel' and 'Save' buttons. A red box highlights the 'Name' radio button and the 'List Items' dropdown menu.

2. Type the name of the desired Workflow to find it in the list
3. Select the desired Workflow

**Result:** When the Form launches, the Workflow selected will run first, and the Result of that Workflow will populate the dropdown list available to the user.



### NOTE

Use this option if the list you want to generate is dynamic and subject to change.

## Create a static list of items

1. Select the **List Items** radio button

The screenshot shows the 'Dropdown Properties' dialog box. At the top, there's a title bar with 'Dropdown Properties' and a close button. Below that, there are several sections:
 

- Right To Left:** A dropdown menu set to 'No'.
- Label:** A rich text editor with buttons for Bold (B), Italic (I), Underline (U), Strikethrough (ABC), and Text Color (A). The font is 'Sans Serif' and the style is 'Normal'. Below this is a text input field containing 'Select a Host'.
- Variable Name:** A dropdown menu set to 'HostName'.
- Dynamic Generation:** A section with a heading 'Select Workflow Name to dynamically generate list items from the named workflow. Select List Items to create a static list of items.' Below this are two radio buttons: 'Name' (unselected) and 'List Items' (selected and highlighted with a red box).
- List Items:** A list of items: 'SRV1001P', 'SRV1002P', 'SRV1003P', 'SRV2001D', and a text input field 'Type here...'. Each item has a red 'X' delete icon to its right.
- Instructions:** A paragraph below the list: 'Type the name of the list item then click the enter icon or press Enter to add it. To delete a list item click the delete icon or select the item and press Delete.'
- Buttons:** 'Cancel' and 'Save' buttons at the bottom.

2. Type the option names that you want on the list
3. Press **Enter** or click the enter icon to add the item to the list
4. If you wish to delete the item, click the **Delete** icon.



### NOTE

Use the static list option when you do not expect the list to change and do not want to rely on an additional workflow to populate it.

### Moving a Field

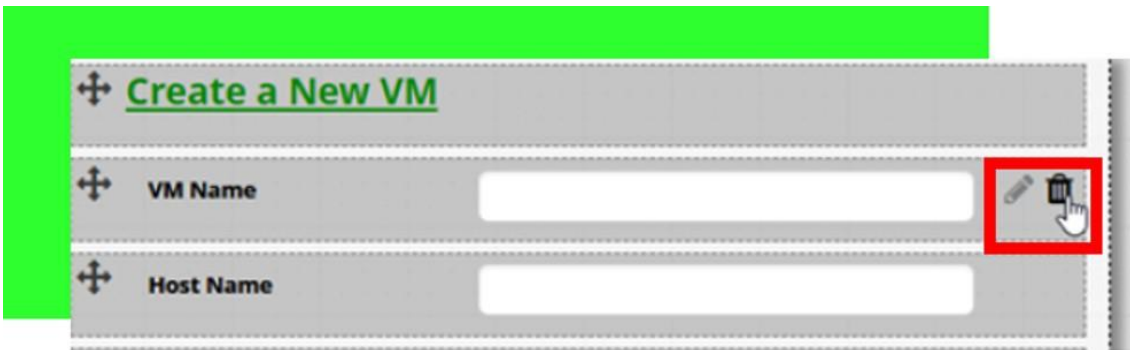
Click and hold the **Crosshairs** icon to move a field.



You can move a field up or down in the field list or to the other column of the Form.

### Deleting a Field

To delete a field, hover over the field, and click the **Trash** icon



### NOTE

Ensure you are deleting the correct field, as there is no confirmation warning, and you cannot undo the action.

## 6.2.5. Setting Permissions on a Form

Setting permissions on a form will define who is permitted to see the Form in the Self-Service portal.

By default, Forms do not have defined permissions, which means Forms are available to everyone. Form permissions have no impact on who can view or edit the Form in the Self-Service Designer.

Follow these instructions to add Form permissions.

1. Click the **Save As** button in the top bar or the three dots in the Form tab.



- In the **Permissions** table, choose whether to select the **Type**, **User**, or **Group** in each line – which displays a list of all users/groups in the Login section of Ayehu NG

**Save As**

Name: Create a New VM

Folder: Virtual Machines

Description: Provision a new virtual machine

Tags: virtual machines x VMS x + Add

Type	Name
	jdoe
	Logged In Users

Save

- Select who you want to be able to see the Form, and click **Save**.

## 6.2.6. Enabling a Form

You must enable a Form before it can display in the [Self-Service Portal \[25\]](#).

To enable a Form, put a checkmark in the **Enabled** checkbox

- An enabled form is visible in the [Self-Service Portal \[25\]](#) to all users with permission to see it.
- Forms that are not enabled (checkbox unchecked) are not visible to anyone
- The **Confirm before form submission** checkbox asks users to confirm a submission when they click the Submit button in the Portal.



#### NOTE

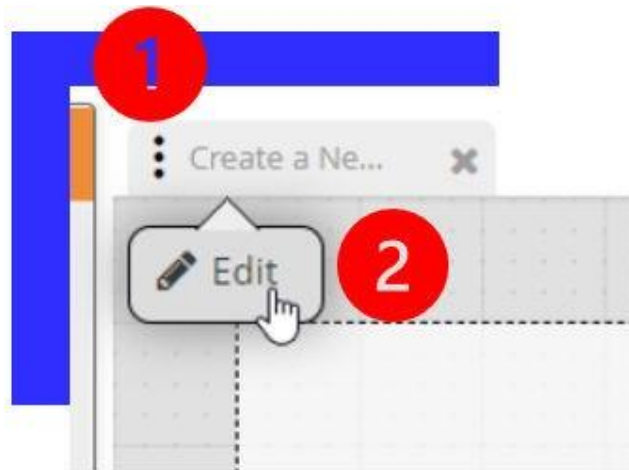
The **Confirm before form submission** is an optional setting for those who wish to see a confirmation screen every time they click Submit (before submitting).

### 6.2.7. Moving a Form

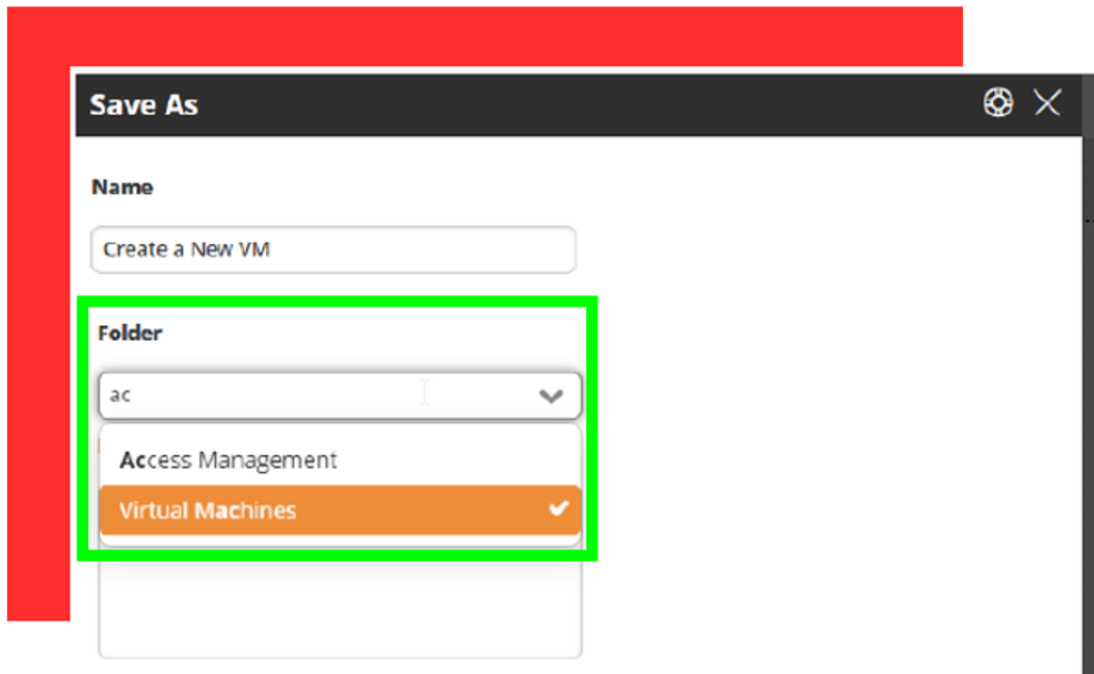
It is possible to change the folder where a form resides without re-saving the Form as a new version (Save As).

1. Click the three dots in the form tab.

2. Select **Edit**



**Result:** A window opens with the Form's metadata, including the folder where the Form resides.



3. Select a new folder from the dropdown menu, or start typing to narrow down a list of relevant folders.
4. Click **Save** to move the Form into the new folder.



**NOTE**

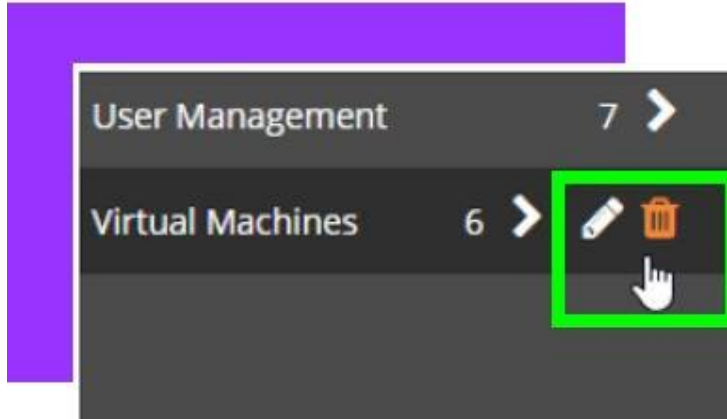
This is useful if you want to delete a folder but not all the forms in that folder.

## 6.2.8. Editing and Deleting a Folder

Follow these instructions to delete or change the name of a folder.

1. Hover your mouse over the folder name.

**Result:** The **Edit** (pencil) and **Delete** (Trash bin) icons appear.



2. Click the **Edit** icon to change the folder name.



### NOTE

Folder names must be unique across all folders.

3. Click the **Delete** icon to delete the folder.



### NOTE

Deleting a folder will also delete all forms in that folder. If you do not want to delete the forms, move them before deletion.

## 6.2.9. Creating a Self-Service Workflow

Creating a Self-Service Workflow to use with a [Self-Service Form \[174\]](#) is identical to creating any workflow, with two additional steps; the Self-Service Workflow must contain:

- [Self-Service Variables \[188\]](#)
- [Self-Service Response Activity \[188\]](#)

### Self-Service Variables

Self-Service variables are visible to the user who launches the Form and are unique because they are not referenced anywhere else in the Workflow. They must get their value from the Form.

Any variable that is not the Activity name and not created with Memory Set, Multi Memory Set, or Create Memory Table is a Self-Service variable and will populate automatically.

If the workflow refers to Global Variables or the specific self-service references to user/form (%SelfServiceID%..) they will also be populated, and these controls can be deleted.

For example:

This activity creates a VM - the following fields are self-service variables:

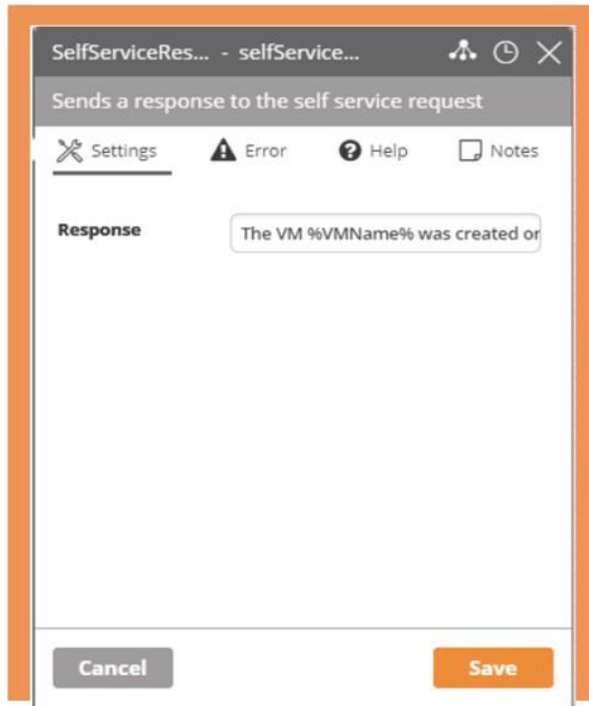
- Host: %HostName%
- VM Name: %VMName%
- Datastore Name: %DatastoreName%
- Disk Size: %DiskSize%
- Memory Size: %MemorySize%

The user who launches the Form is prompted to enter these self-service variables into the Form.

The variables will populate the activity and continue the Workflow to create the VM as specified.

**Self-Service Response Activity:**

The Response activity is formatted to return the relevant response to the user who launched the Form.



### NOTE

You can launch the Form without a Response activity, but the Form will not return expected results.

For example:

The above activity is the Self-service Response activity to match the Create VM activity

- The VM %VMName% was created on host %HostName% with datastore name %DatastoreName%. It was provisioned with %DiskSize% MB disk size and %MemorySize% MB memory.
- Variables are taken from the Create VM activity and shown to the User so that they have a clear understanding of what happened.



### NOTE

The Self-Service Response activity can either return text, as shown above, or a table (using a variable), but not both.

### Referencing Form ID or Name in a Workflow:

If you would like to refer to the ID or Name of a form in your Workflow, you can do so by using one of the following variables

- Form Name: %SelfServiceName%
- Form ID: %SelfServiceID%

### Referencing User Submitting Form in a Workflow:

To see details of the user submitting the Form, use one of the following variables:

- User ID: %SelfServiceUserID%
- Username: %SelfServiceUserName%
- Full Name: %SelfServiceUserFullName%

## 6.3. Activity Designer

### 6.3.1. Introduction to the Activity Designer

The Activity Designer is a straightforward way to create custom activities that are suited to your company's specific needs, without need for Ayehu involvement. Using the Activity Designer you can create activities that have a variety of uses, based on your requirements, and completely independently.

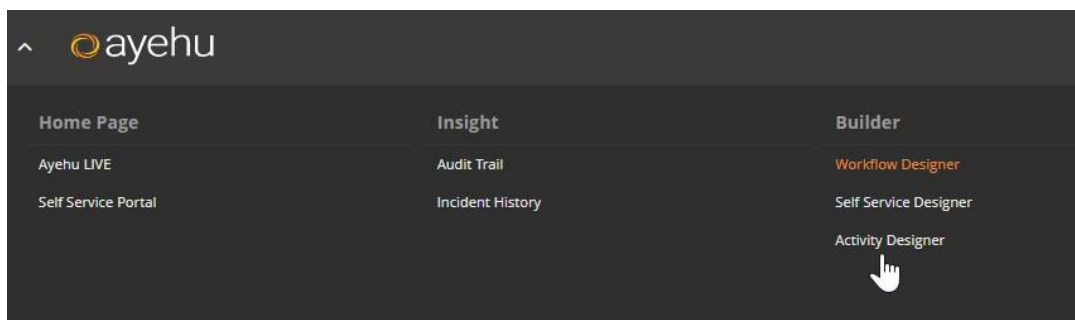
### 6.3.2. Accessing the Activity Designer

#### Permissions

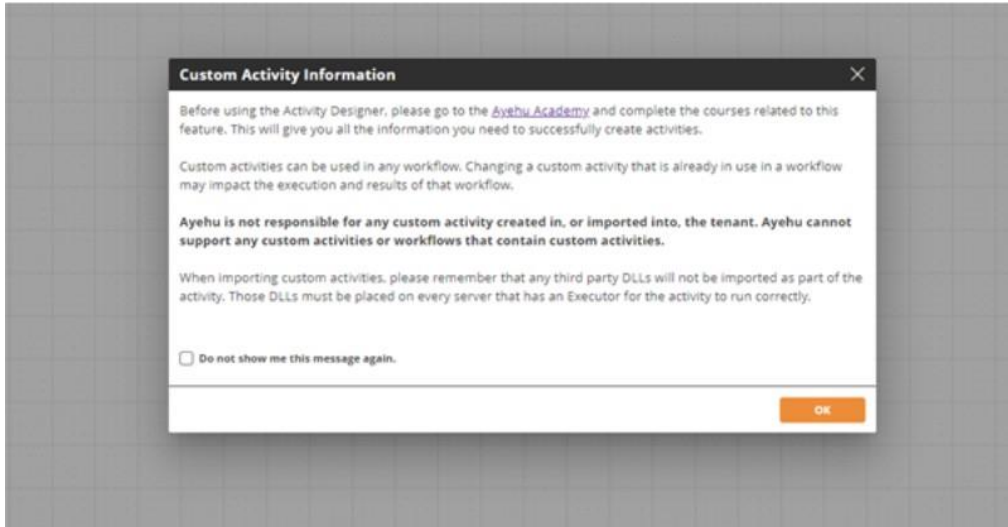
The Activity Designer is only available to users with the **Administrator role**, or the newly created **Developer role**. The Developer role has all the rights of the Workflow Editor role with the addition of being able to see the Activity Designer.

#### Navigation

Log into your Ayehu NG tenant and from the navigation menu click on **Activity Designer** in the **Builder** section



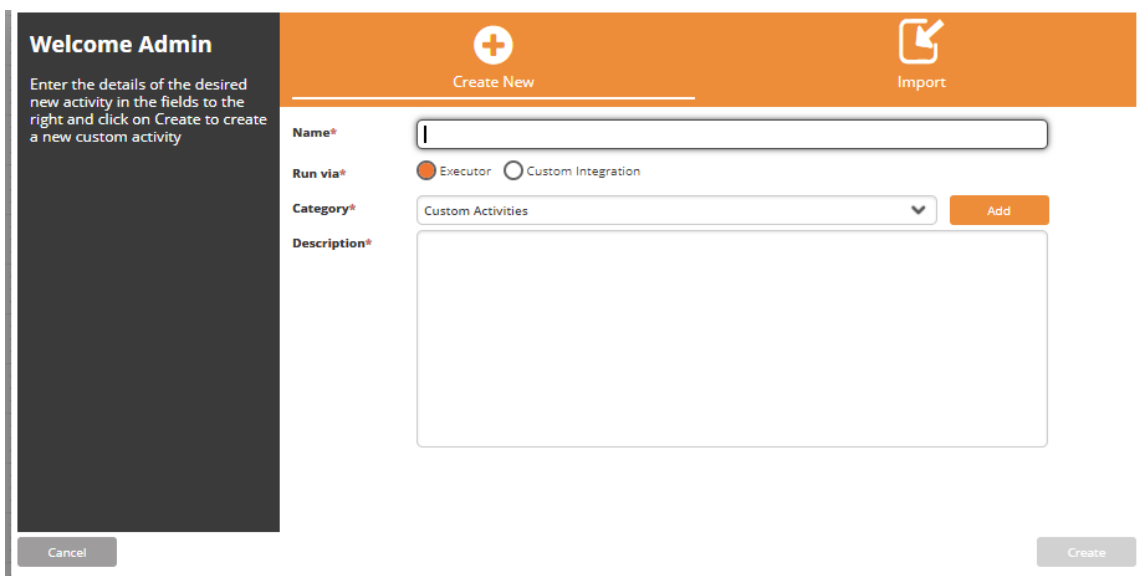
The first time you access the Activity Designer, you will be presented with a window that outlines usage of the tool.



This window will be presented every time you enter the Activity Designer unless the “Do not show this message again” checkbox is checked. Click OK to close the window.

### 6.3.3. Starting a New Activity

If this is your first time entering the Activity Designer, or there are no activities already created, the New Activity modal will automatically be shown



From here you can create and/or import custom activities for your tenant.

#### Create New

The **Create New** tab will be shown by default. Here you can enter:

**Name:** The name of the activity. This name will be visible in the activity itself when viewed in the Workflow Designer canvas

- Name must be unique to all other activities in the system.
- Activities can contain only alphabetical characters.



- There is a limit of fifty characters including spaces
- **Important Note:** It is possible to change activity display name (e.g. New Activity) after the activity is created. However the activity internal name (e.g. NewActivity) and activity internal value (e.g. NewActivity1) will not be updated even when the display name is changed.

**Category:** The custom category under which this activity will appear

Category names must be unique

- Custom activities can only be created under custom categories, not existing standard categories
- Only one category level is allowed at this time, no sub categories
- All custom categories share the same icon



- **To add a new category:** Click on the Add button to the right of the Category field and in the window enter a new category name

- It is recommended that category names be short, so they are clearly visible in the Activity Designer and in the Workflow Designer
- Category names must be unique
- New categories can also be created by clicking on the **+ New Category** link in the Activity Designer canvas

**Description:** The description of the activity. This will be visible in the activity settings when the activity is viewed in the Workflow Designer canvas.

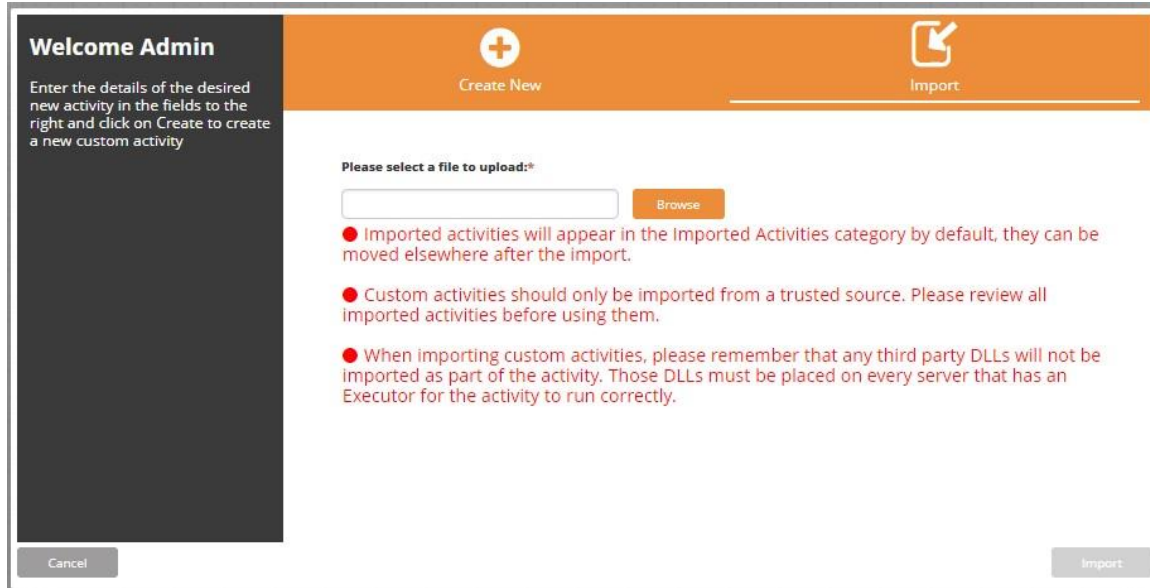
- It is recommended that the activity description be short and concise so that it could be easily read when looking at the activity in the Workflow Designer Canvas.

Once all fields have been filled in, click on **Create** to create the new activity.

### Import

If you have a custom activity that was created in a different environment (e.g. dev, test, or QA environments) you can import it into your current environment (e.g. prod).

When you click on the Import tab you will have the ability to select the file to upload



Imported files must be the .ayh file that was exported from the source system.

- The .ayh folder must contain a code file (.cs, .vb, or .py), a JSON file (.json) and a meta-data file (.xml) for the activity to be successfully imported and used
- Imported activities will appear in the Imported Activities folder. They can be moved to other folders as desired.
- Custom activities should only be imported from trusted sources, and be reviewed prior to use in a workflow.
- When importing custom activities, any third party DLLs will not be imported as part of the activity. These DLLs must be placed on every server that has an Executor for the activity to run correctly.

Click on **Browse** to select a file, then click on **Import** to import the activity

- The name of the imported activity cannot match any existing activities in the tenant
- Imported activities will by default be created in the Imported Activities categories. They can be moved to other categories after the import is complete.

### 6.3.4. Designing a Custom Activity

Once you click on Create or Import to create the new activity the Activity Designer canvas will display.

#### Displaying Imported Activities

When importing an activity, the code and JSON of the imported activity will display. The code and JSON can be edited as desired.

Imported activities are automatically imported with the **Enabled** checkbox unchecked. This means that these activities will not show in the Workflow Designer. To see activities in the Workflow Designer, check the **Enabled** checkbox.

#### Displaying New Activities

New activities will automatically open with a default template for JSON visible.

```

1 {
2   "innerCode": 200,
3   "data": {
4     "name": "Display Value",
5     "description": "Display a value to the log",
6     "timeout": null,
7     "class": [],
8     "rootSettings": {
9       "isCollapse": false,
10      "activitySettings": [
11        {
12          "value": "",
13          "required": true,
14          "key": "ValueToDisplay",
15          "label": "Value",
16          "labelKey": "DISPLAY_VALUE_VALUE",
17          "baseType": "control",
18          "controlType": "textbox"
19        },
20        {
21          "value": "DisplayValue",
22          "key": "DisplayName",
23          "label": "Value",
24          "labelKey": "DISPLAY_VALUE_VALUE",
25          "baseType": "control",
26          "controlType": "hidden"
27        }
28      ],
29      "index": "1",
30      "label": "main",
31      "labelKey": null
32    }
33  },
34  "message": "SUCCESS"
35 }

```

The activity design canvas includes the header section:



Here you will see the activity **name** and **description** as you entered them in the previous window. There is also a checkbox to **enable** your activity. If the box is checked, the activity is enabled and will be available in the Toolbox of the Workflow Designer for use in workflows. If the box is unchecked, the activity is not enabled and thus won't be visible in the Workflow Designer Toolbox for use.

The other section of the design canvas is the coding section:

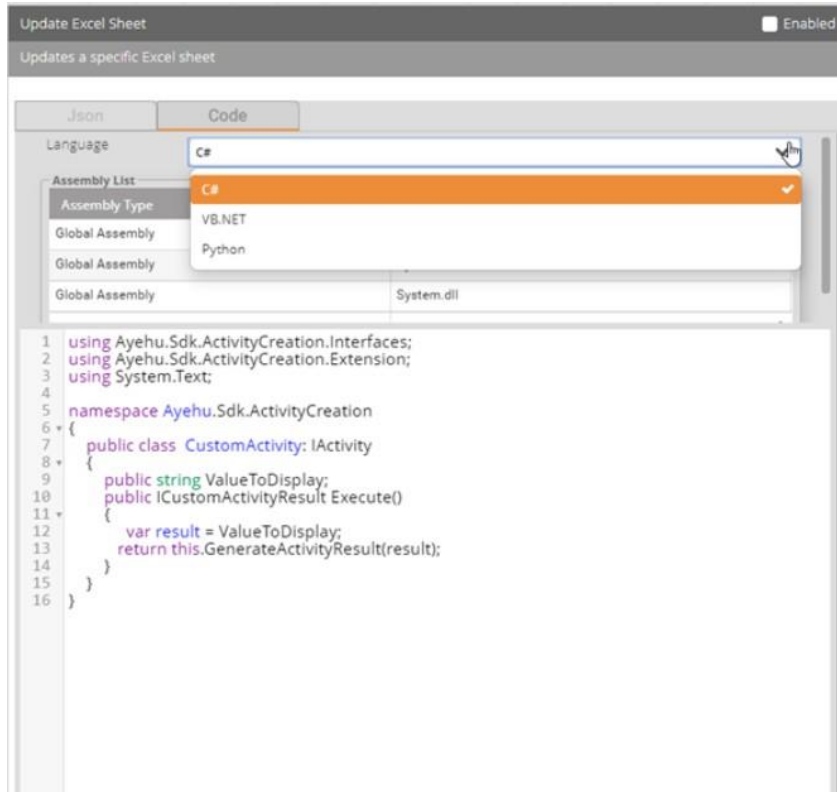
```

1  {
2  "innerCode": 200,
3  "data": {
4    "name": "Display Value",
5    "description": "Display a value to the log",
6    "Timeout": null,
7    "class": [],
8    "rootSettings": {
9      "isCollapse": false,
10     "activitySettings": [
11       {
12         "value": "",
13         "required": true,
14         "key": "ValueToDisplay",
15         "label": "Value",
16         "labelKey": "DISPLAY_VALUE_VALUE",
17         "baseType": "control",
18         "controlType": "textbox"
19       },
20       {
21         "value": "DisplayValue",
22         "key": "DisplayName",
23         "label": "Value",
24         "labelKey": "DISPLAY_VALUE_VALUE",
25         "baseType": "control",
26         "controlType": "hidden"
27       }
28     ],
29     "index": "1",
30     "label": "main",
31     "labelKey": null
32   },
33 },
34 "message": "SUCCESS"
35 }

```

The Json tab shows the Json of the activity which will be translated to its GUI. Here you can write any valid Json you want to make the activity look as desired. Upon initial opening, the Json tab of the coding section will display a template for an activity (the Display Value activity) as an example to use when creating your custom activity. This default template shows you the syntax that needs to be used and some possible parameters for fields.

The Code tab shows the code for the activity. Upon initial opening, the Code tab of the coding section will display a template to use for coding activities. This includes the required assemblies that must be part of the activity package.



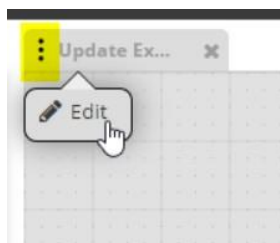
For more information on how to create custom activities, please refer to the [Activity Designer Technical Documentation](#)

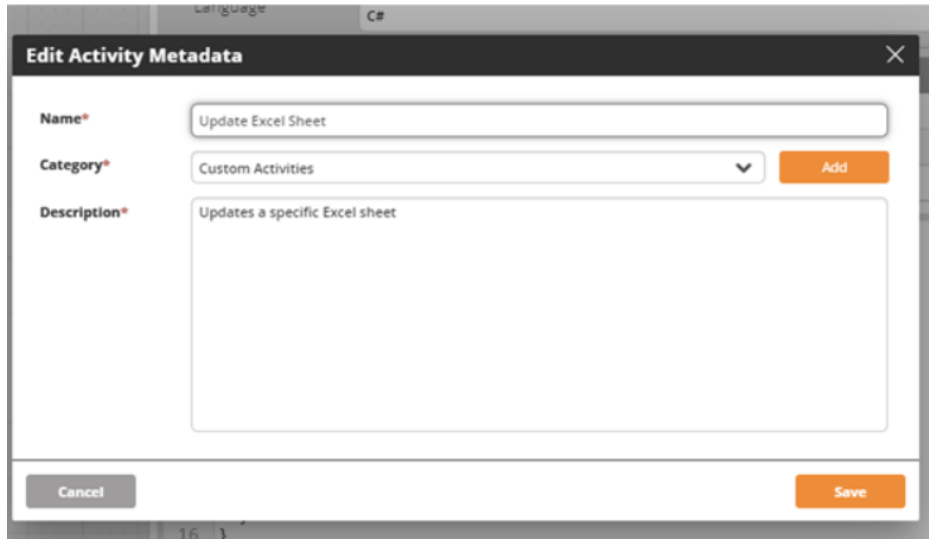
### 6.3.5. Actions on Activities

The top toolbar provides a variety of functions that can be done on the activity displayed in the canvas. Only one activity at a time can be displayed in the canvas.



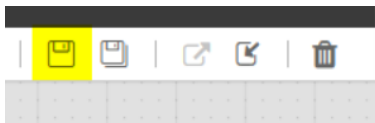
#### Activity Metadata





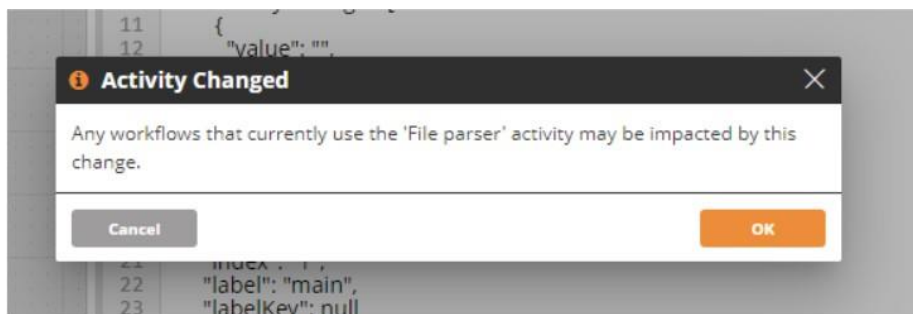
Here you can change the activity name, category, and/or description. This will change the metadata on the existing activity.

### Save

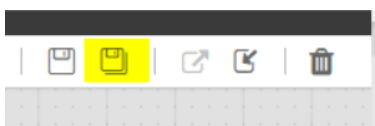


This will save the existing activity as shown in the canvas. If this is the first time saving a newly created/imported activity, Save will be the same as Save As.

Changing an activity that is currently used in a workflow will impact any workflow that contains this activity.



### Save As





**Save As** will save a new version of the activity with a new name, if the activity name is changed. The existing version of the activity will remain with the old name, a new copy will be saved with a new name.

### Export



Exports the activity currently open in the canvas.

- Activities can only be exported after they are saved at least once.
- If changes are made since the last save, only the last saved version will be exported without any of the unsaved changes
- Exports will be in .ayh file format and be a zipped folder which includes a code file (.CS, .VB, or .PY depending on code), a JSON file (.json), and a metadata file (.XML).

### Import

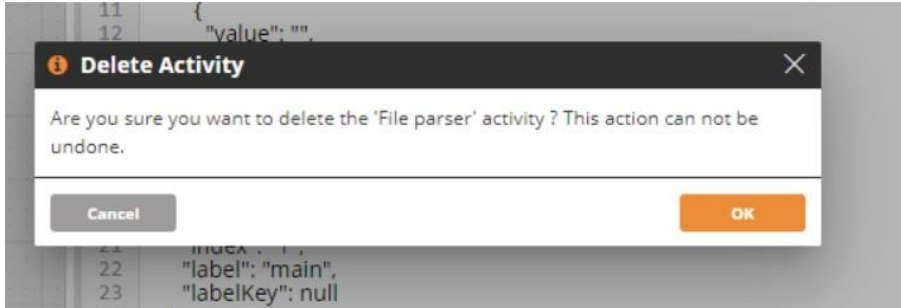


Imports a custom activity in the form of a .ayh file. Refer to the Import section for more information on imported activities.

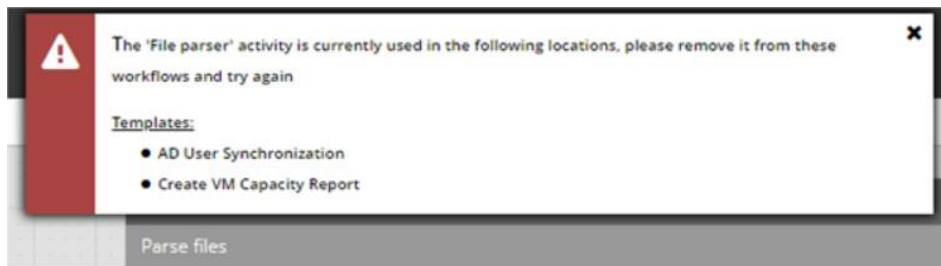
### Delete



A custom activity can be deleted only if it is not currently used in any workflow.



If an activity is being used in any workflows, the following message will be displayed, and the activity will not be deleted



The activity must be deleted from any workflow that contains it, and then it can be deleted from the Activity Designer.

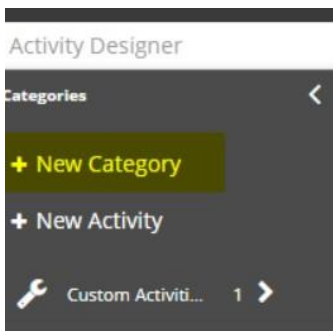
Deleted activities cannot be restored, so please take care to delete only activities that are no longer needed.

### 6.3.6. Actions on Categories

New categories can be created, and existing categories can be deleted or edited.

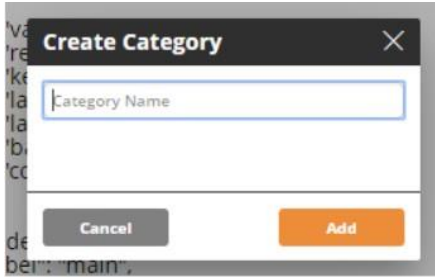
#### Create a Category

In addition to creating a new category from the New Activity Modal, new categories can be created by clicking on the + New Category link in the left bar



Once clicked, a New Category modal will pop up where a category name can be entered.

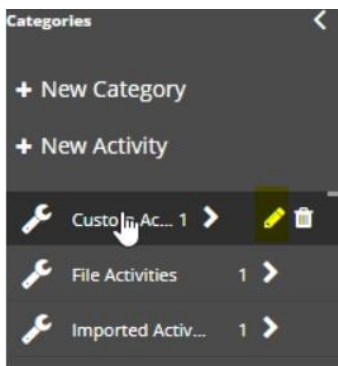




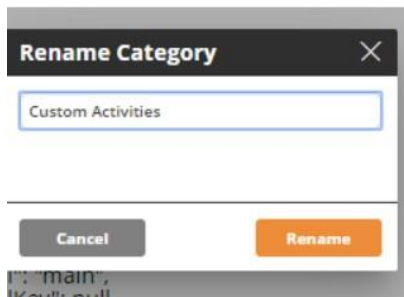
For more information about categories, see the [Starting a New Activity \[192\]](#) section.

### Edit a Category

A category can be edited by hovering over the category label and then clicking the **Pencil** icon

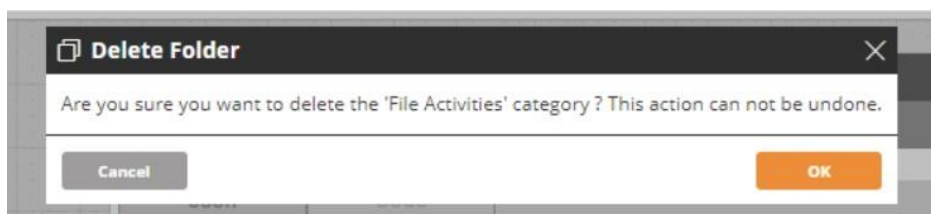


The **Rename Category** modal will open, where you can change the category name to another unique name.



### Deleting a Category

A category can be deleted by hovering over the category label and then clicking the **Trash** icon



Only empty categories can be deleted.



To delete a category that has activities in it, use the Edit Metadata option in the activity to move the activity to another categories until the desired category is empty.

### 6.3.7. Custom Activities in the Ayehu NG Platform

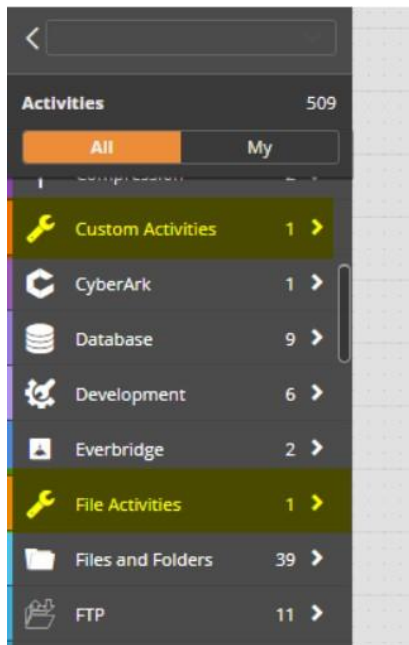
Custom activities can be used in any workflow in exactly the same manner as the out of the box Ayehu activities. Additionally, these activities have several distinguishing characteristics to make it easier to see that the activity is a custom one.

#### In the Workflow Designer

A custom activity is marked as such in several places in the Workflow Designer

#### In the Toolbox

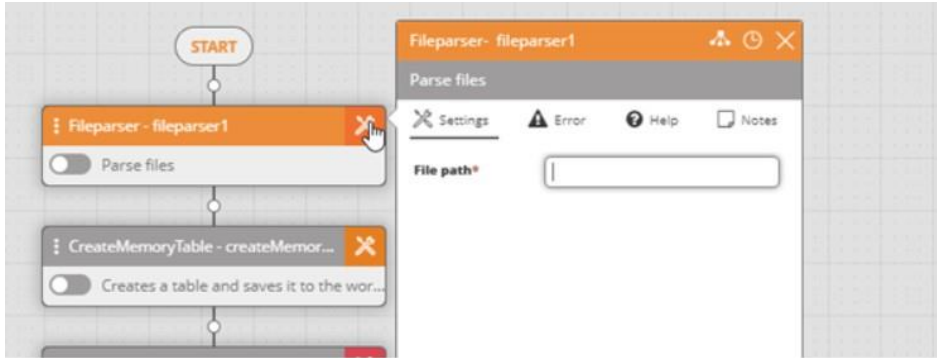
Custom activity categories will all be denoted by an orange category color and a wrench icon



It is important to note that if a custom activity category does not have any **enabled** activities in it, the category itself will not show in the Workflow Designer.

#### In the Canvas

A custom activity added to the workflow designer canvas will show the activity with a distinct orange color across the top of the activity block and activity settings



### In the Execution Log

When running a workflow in the workflow designer, any custom activities included in that workflow will show a **(custom)** label next to their **Activity Name** in the **Execution Log**.

### In the Audit Trail

When viewing the workflow **Activity Log** in the **Audit Trail**, the **Activity Name** will be followed by **(custom)** for all custom activities.

### In the Workflow Export

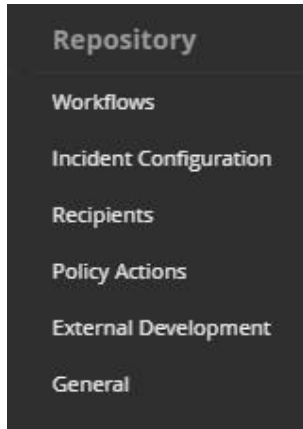
When exporting a workflow, the XML will note any custom activities included in that workflow.

## 7. REPOSITORY

### 7.1. Repository Entities

#### 7.1.1. Understanding Repository Entities

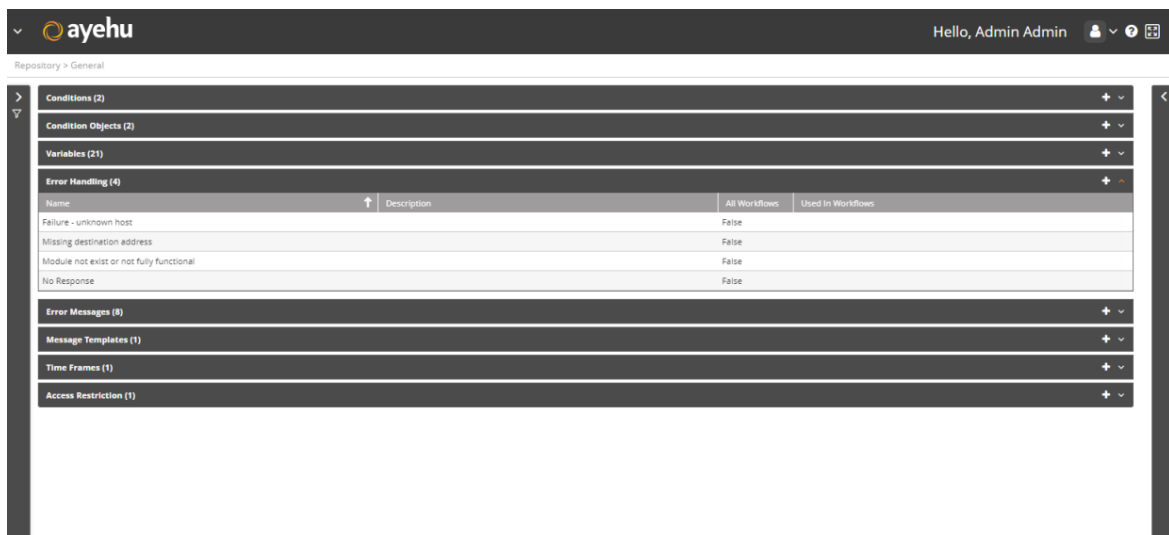
The **Repository** section in the Navigation menu covers a relatively large number of **entities**:



The Repository makes use of similar looking **entity panels** to define a variety of parameters.


#### 7.1.2. Using Entity Panels

The following example from **Repository > General**, is a typical entity panel:







The entity panel (open) displays the available objects in each sub-category window.

**To display the available entities:**


1. From the upper right corner any entity panel, click . A list of available entities will open:

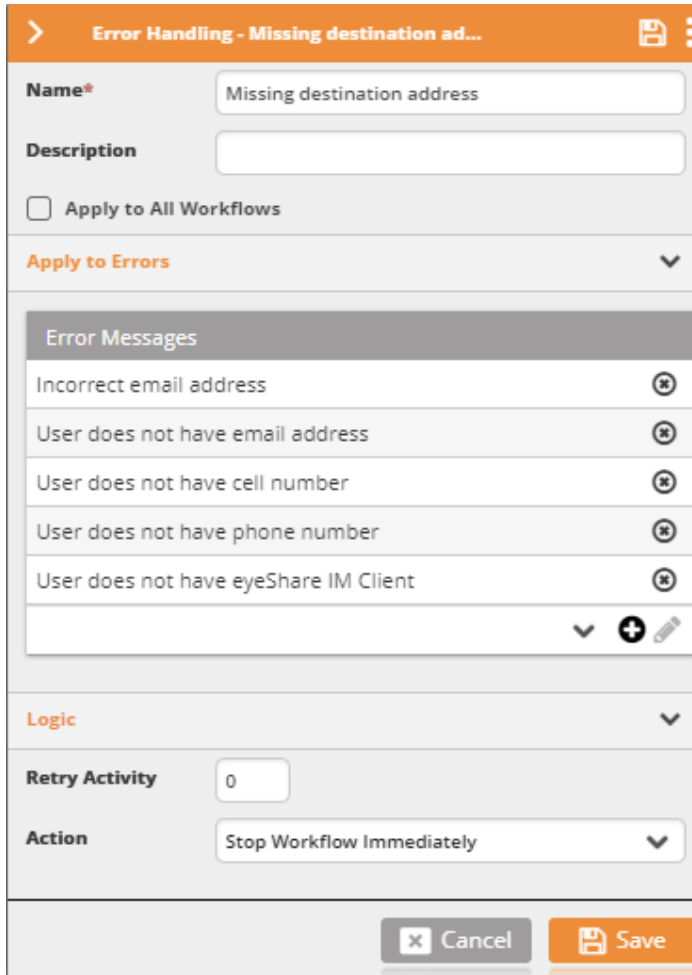
Error Handling (4)			
Name	Description	All Workflows	Used In Workflows
Failure - unknown host		False	
Missing destination address		False	
Module not exist or not fully functional		False	
No Response		False	

2. Click any column to sort the list by it.
3. Drag and drop the column headers to rearrange the table.
4. Click  to create a new object or  to remove one. Alternatively, click  and click  Delete. Multiple selection is also available.

**To display the properties of an entity:**

1. Select the entity by clicking its row.


- From the upper right corner, click . The properties of the entity will then appear on the right side of the screen:



- Perform any change to the entity and click **Save**.




### NOTE

The  icon often appears in choice fields. It is a convenience feature enabling you to create a new entity of the type in the selection list. We will not refer to it further, since using it just links you to another function in the system without requiring you to leave what you are doing.

## 7.1.3. Filtering Entities

The Filter panel allows you to easily locate entities from any window.

**To filter an entities list:**

1. From the left side of the screen, click . The filter pane will appear:



**NOTE**

The available filtering criteria will vary according to the selected screen.

2. In the top edit box, enter your filter text.  
Complete the filtering procedure by filling out the rest of the fields as needed.



**NOTE**

None of the **Conditions**, **Condition Object** and **Error Messages** fields are mandatory.

3. Click **Apply** to filter the list of entities

## 7.2. Workflows and Templates


The **Workflows** section under **Repositories** provides facilities to manage both your workflows and your templates. If you only use prepared workflows, then this section will provide a catalog of available workflows. You will probably not need the Templates section. If however, you prepare or modify workflows, this section will show you how to catalog your workflows into folders. It will also show you how to catalog your templates.

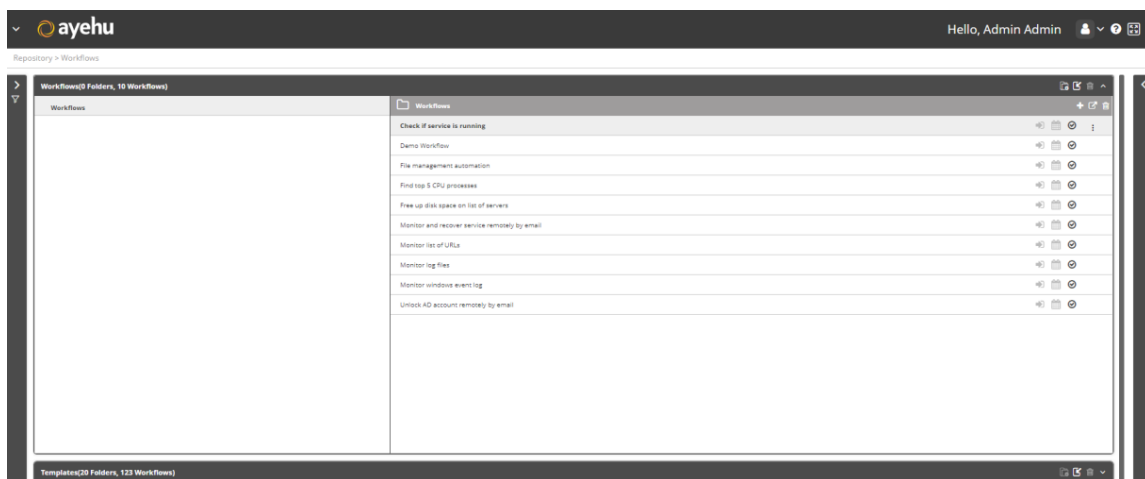
## 7.2.1. Workflows


### 7.2.1.1. Managing your Workflows

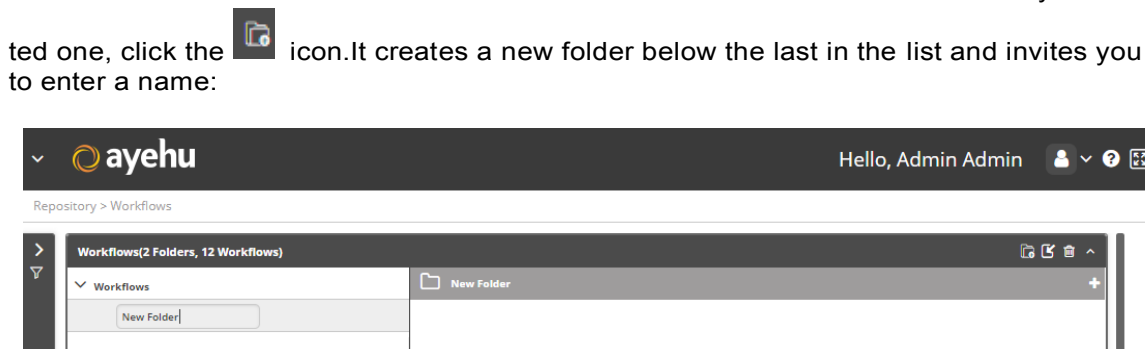
Navigate to **Repository>Workflows**. You will be offered the following display:



Open the Workflows entity bar by clicking the  icon. You will always see a list like this:

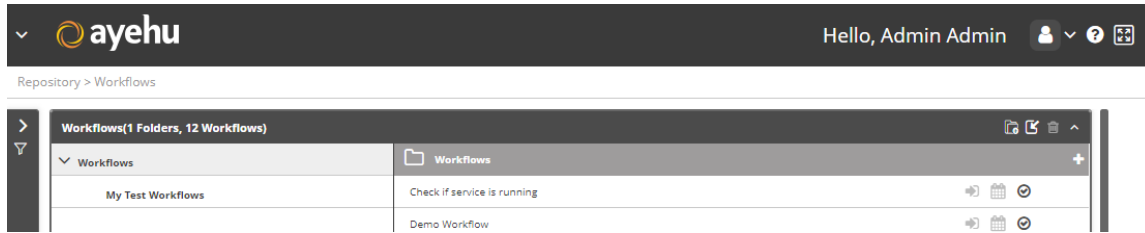


In a new system, the list contains pre-installed workflows. An existing system will also include any that you have added. If you create workflows, consider adding your own folder structure under the default **Workflows**. To create a new folder under the currently selected one, click the  icon. It creates a new folder below the last in the list and invites you to enter a name:



Here is the result:





### 7.2.1.2. Moving and Copying Workflows

**NOTE**  
The treatment here is brief since it requires familiarity with the [Workflow Designer](#) where it is covered in detail.

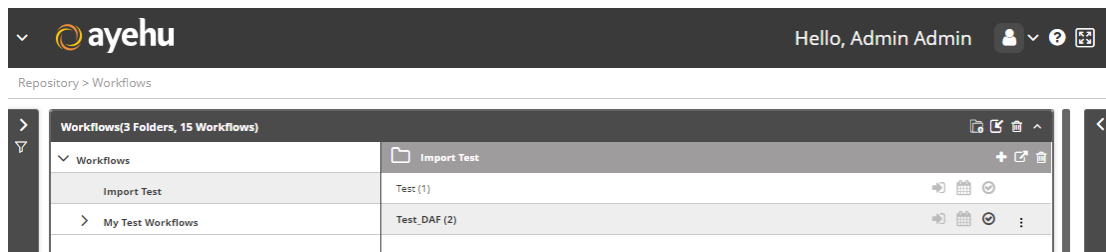
So far, the workflow catalog behavior is similar to a familiar computer file system. You cannot however, drag and drop workflows between folders. There are two ways to move or copy a workflow to another folder:

**To move a workflow to a different folder:**

1. Load it into the Workflow Designer.
2. Use the **Save As** option to save the workflow into the required folder. See [Saving your workflow \[113\]](#). The workflow is moved to the required folder.

**To copy a workflow to a different folder:**

1. Export the workflow. It will be downloaded by your browser as an XML file.
2. Import it back to the required folder. It will show with the validation icon grayed out:

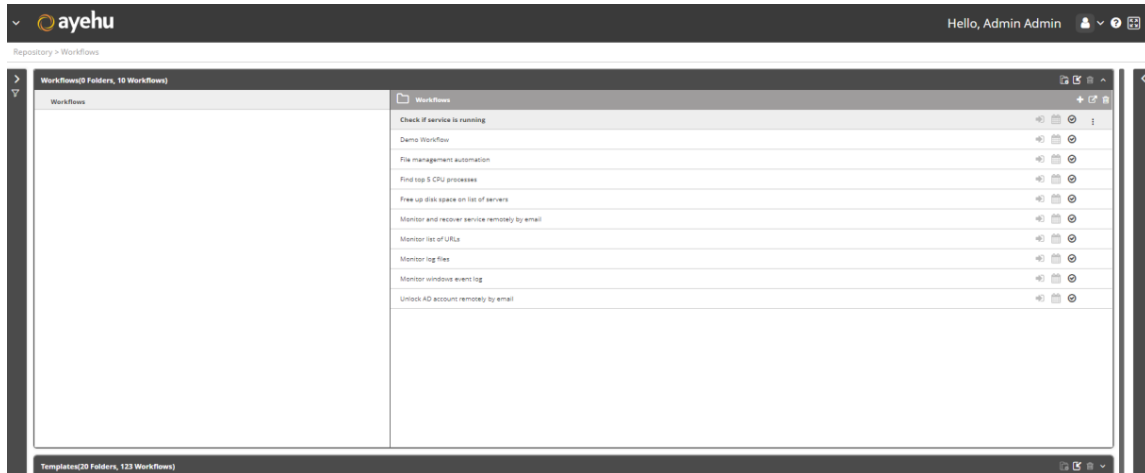


**Figure 16. Imported Workflows**

3. From the action list in ([Operations on Workflows \[209\]](#)), open the workflow in the Workflow Designer and **Save**. The Save action will also validate the workflow and enable the validated indicator icon.

### 7.2.1.3. Operations on Workflows

Here again is the Workflows main folder:







The following action icons are available:

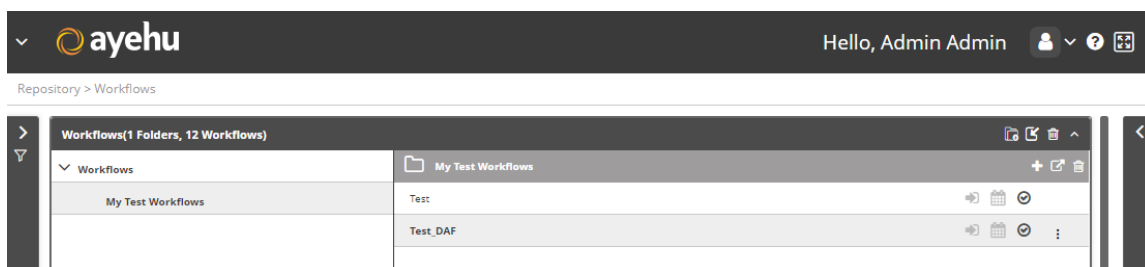


They are described in the following table:

**Table 52. Workflow Management Action Icons**

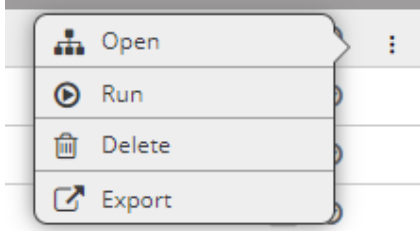
Icon	Description
	Add a new folder (see previous section)
	Import a workflow to the selected folder. (This applies to a workflow exported from the Workflow Designer or from the workflow list as shown below.)
	Delete the selected folder. It is grayed out for the root Workflow folder, but is available for user-defined folders.

Selecting a workflow enables its  icon.



**Figure 17. Selected Workflow Actions**

Clicking the icon opens an actions list:








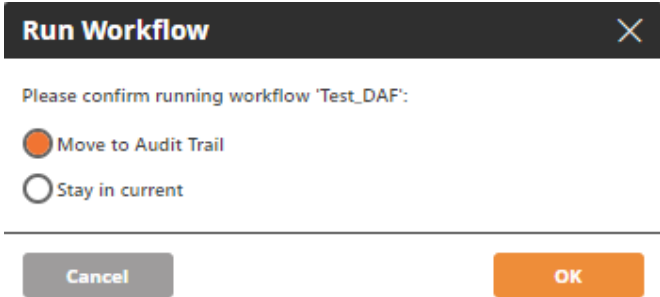


**Figure 18. Actions List**

Some of the actions can be accessed from the icons on the top right of the selected workflow:



Details are in the following table:




**Table 53. Selected Workflow Actions**

Icon	Description
	Add an existing workflow to the catalog
	Export the selected workflow
	Remove the workflow from the catalog. The workflow is not deleted.
	Open the workflow in the Workflow Designer
	<p>Run the workflow. Two options are available:</p>  <p><b>NOTE</b>   <b>Move to Audit Trail</b> : After running the workflow, the Audit Trail window opens so that you can watch its progress</p> <p><b>Stay in current</b>: After running the workflow, you remain in the current Workflows window. Use this option to concurrently run several workflows.</p> <p><b>NOTE</b>   To run the workflow with variables that have been set by using the <b>Set Variables</b> function, see <a href="#">Running Workflows with Variables [213]</a>.</p>

Finally, at the end of the each workflow line are three indicator icons:



**Table 54. Workflow Indicators**

Icon	Description
	Black: Triggered
	Black: Scheduled
	Black: Valid Gray: Invalid. Check in the Workflow editor

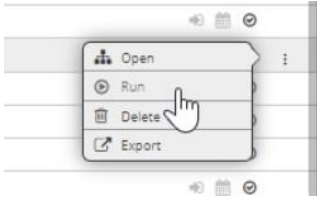


## NOTE

For any workflow entry, you may see additional properties by clicking the icon as described in [Using Entity Panels \[204\]](#).

### 7.2.1.4. Running Workflows with Variables

Once variables have been set (see [Setting Variables in Workflows \[108\]](#)), clicking on the **Run** button from **Workflows Repository** will display the **Set Values & Run** window:



Users with editing permissions have the option to select which variables to be used during the workflow execution while users without editing permissions must insert values for all of the required variables to execute the workflow.

#### Users with Editing Permissions

Variable Name	Variable Value
<input checked="" type="checkbox"/> account*	admin
<input checked="" type="checkbox"/> server	localhost
<input type="checkbox"/> username	

Please confirm running workflow 'Example':

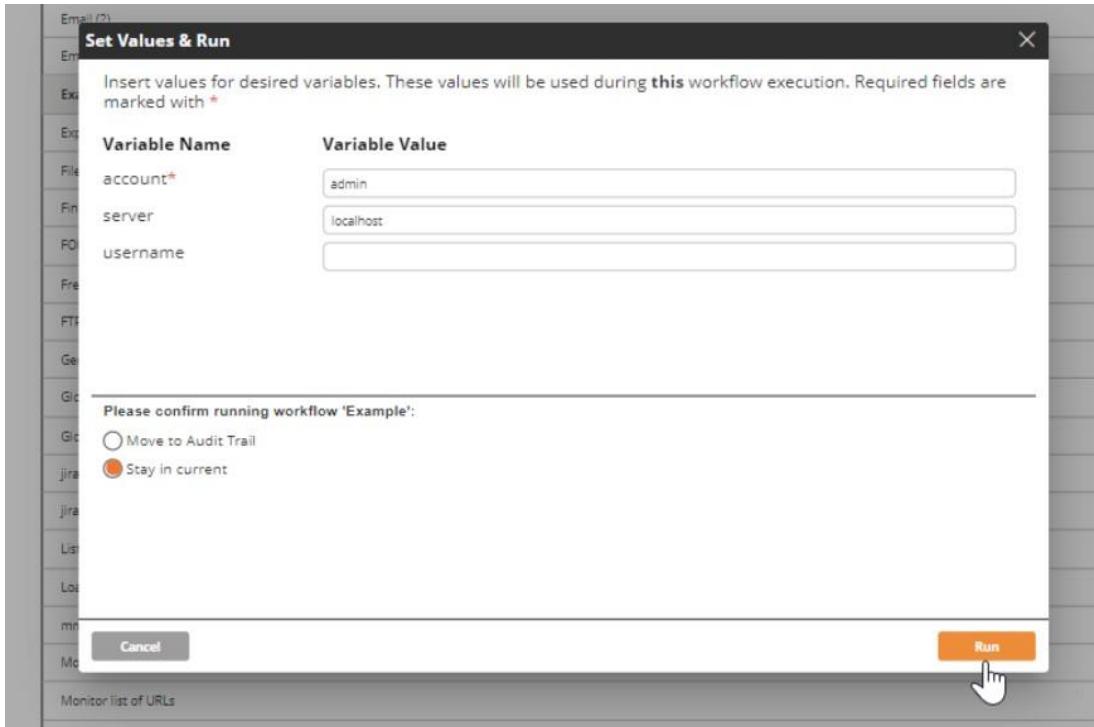
Move to Audit Trail  
 Stay in current

Buttons: Cancel, Run

User can use the checkboxes on the left side to select which variables will be used during the workflow execution. Variables that have been set as required (marked with \*) can be unchecked if desired.

Clicking on **Run** executes the workflow using the selected variables with their inserted values.

#### User without Editing Permissions



User must insert values for the variables that have been set as required (marked with \*). Variables that have not been set as required can be left empty.


Clicking on **Run** executes the workflow using the variables with their inserted values.

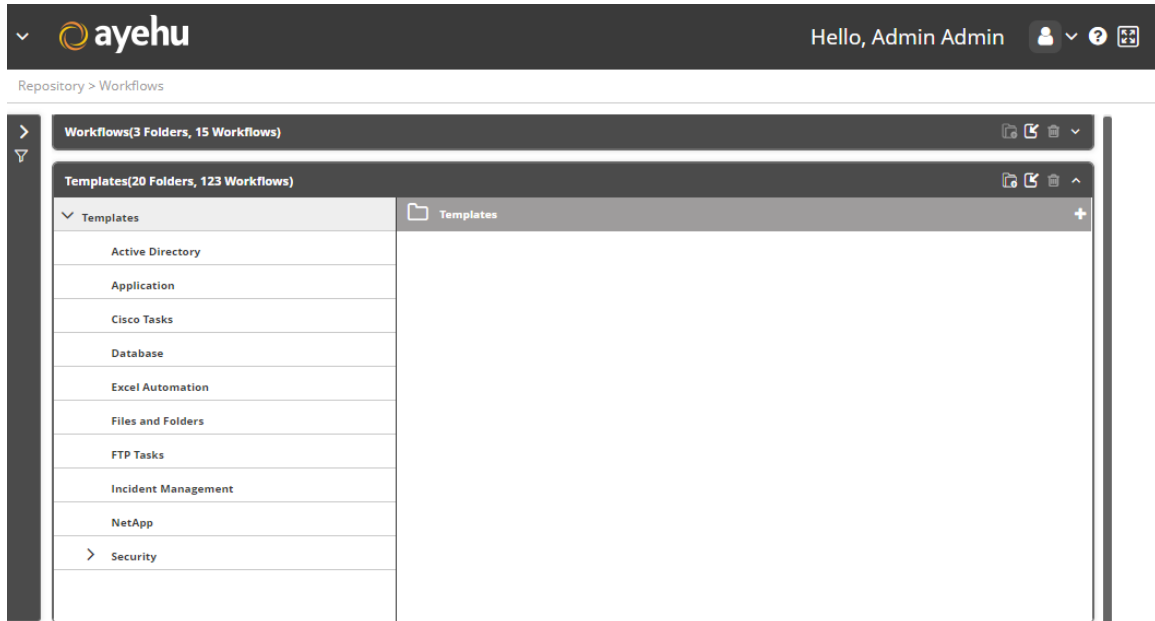
## 7.2.2. Managing your Templates



### NOTE

The treatment here is very brief. Manipulating templates require familiarity with the [Workflow Designer](#) where their management is covered in detail.

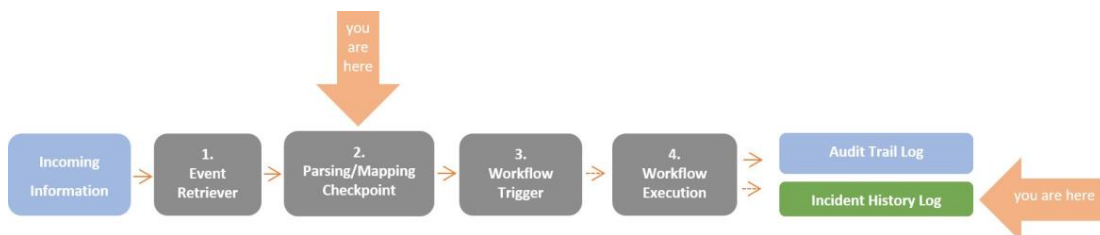
Open the Templates entity bar by clicking the  icon. You will see a list like this:



- For a new system you are presented with a catalog of pre-installed folders and templates. Notice that the last item, **Security**, contains sub-folders.
- The icons and drop-down action lists are functionally the same as those for workflows.
- Moving and copying templates follows the same patterns as workflows. Copying to a new folder by export import works as expected. You will also need to validate an imported template through the Workflow Designer.
- In an existing system, your own templates will appear in the catalog under your own folders.
- The icons and drop-down action lists are functionally the same as those for workflows.
- Moving and copying templates follows the same patterns as workflows. Copying to a new folder by export import works as expected. You will also need to validate an imported template through the Workflow Designer.

## 7.3. Incident Configuration

### 7.3.1. Background



At the end of the parsing/mapping process some **events** are classified as **incidents**. Events in Ayehu Next Generation are defined by a device/service and a classification. A wide range of activities may be performed on an incident:

1. Incidents provide Ayehu Next Generation with their originating device, their duration, their classification. Incidents also have a current state - up/down. This information may be analyzed and used in reports, in conditions and within running workflows. Workflows may also be invoked upon state change.
2. Incidents are counted and registered to the Incident History Log.

Choosing **Repository > Incident Configuration** from the Navigation menu opens the following window:

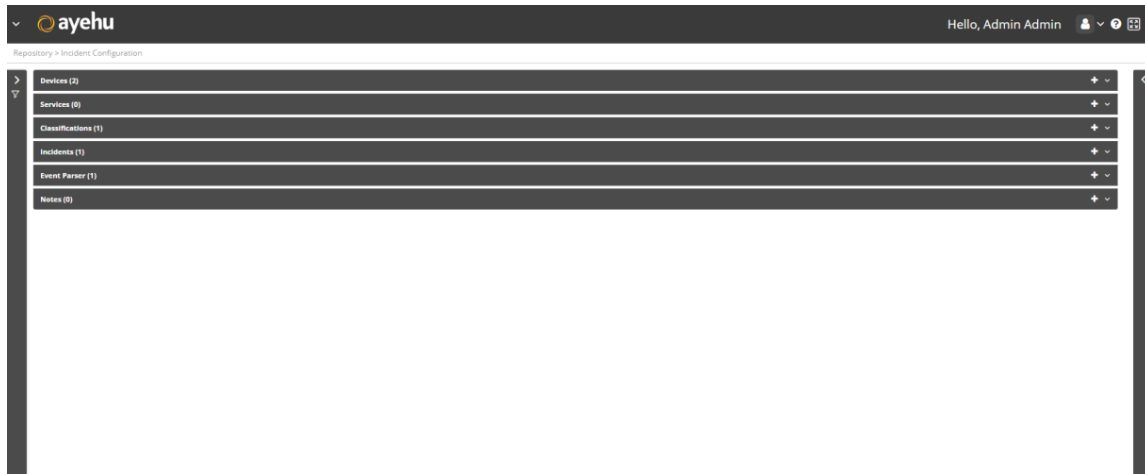


Figure 19. Incident Configuration - main menu

## 7.3.2. Devices

### 7.3.2.1. Understanding Devices



In events that are classified as incidents, devices are used to indicate, during the parsing/mapping procedure, the specific server on which the incident occurred. An Ayehu Next Generation device is a server on which incidents may occur.

Devices may also be created manually and used in workflow activities. For example: you may create a device and then use it in a [Ping](#) activity.



#### NOTE

To learn more about Ayehu Next Generation's data flow, refer to [Understanding Ayehu Next Generation's Data Flow \[3\]](#). To learn more about incidents, refer to [Incident Configuration \[215\]](#)






Choose **Repository > Incident Configuration** and open the **Devices** list. The following window is displayed:



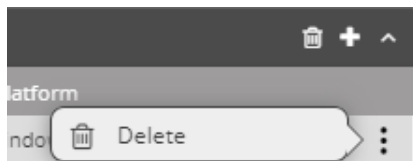
### 7.3.2.2. Managing Devices

The Devices list provides the following information:


**Table 55. Devices Fields**

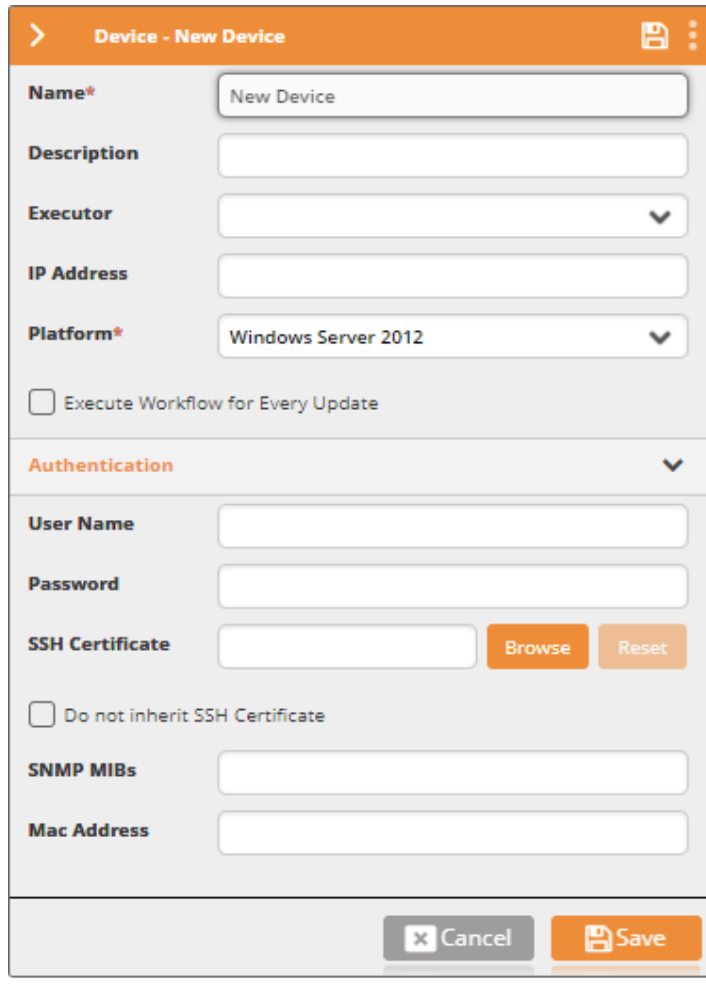
Column	Description
Name	Name of the service
Description	Description of the service
Executor	The Executor through which activities associated with this device will run. If no Executor is defined, the default Executor (first in the modules list) will be used.
IP Address	Device's IP address
	 Every time an incident that is associated with this device or service is updated, run a check to see if any triggers match that event and have any associated workflows that must be run to act on the incident
	Created automatically as a result of an incoming incident, or manually by the user
Platform	Device's platform e.g. Windows Server 2003

The only available icons are as follows:



**To add a device:**

1. Click the  icon.  
The Notes properties window appears:



2. In the **Name** field, enter the actual name of the device.
3. In the **Description** field, enter a description for the device. For example: "mail server".
4. From the **Executor** field, select the Executor of the workflow to which the device belongs:



5. In the **IP Address** field, enter the IP address of the device.
6. From the **Platform** field, select the the server's platform:



#### NOTE

Specifying the device's platform allows Ayehu Next Generation to determine the command type to execute (Windows based or UNIX based) when operating any workflow activity on the device.

7. Check **Run Workflow for Every Update** to execute the workflow upon each update of an incident related to this device, or leave it unchecked in case you wish to run the workflow only upon the first instance of the incident.
8. Under **Authentication**, enter the credentials of the user who will access the device. Alternatively, Next to the **SSH Certificate** field, click **Browse** and look for an SSH certificate. To remove the selected certificate click **Reset**.



#### NOTE

The credentials/SSH certificate will be used by workflow activities to access the device.

9. Check **Do not Inherit SSH Certificate** if you do not wish to inherit the SSH details.

10. If this device sends SNMP traps to Ayehu Next Generation, enter the name of the MIB file in the **SNMP MIBs** field.



**NOTE**

The MIB file should be stored under: C:\Program Files\Ayehu NG\Ayehu NG SNMP Server\MIBs.

11. In the **Mac Address** field, enter the device's MAC address (it can be used, for example, to turn on the device via Wake on LAN workflow activity if it has been shut down for any reason,).
12. Click **Save**.

### 7.3.3. Services

#### 7.3.3.1. Understanding Services



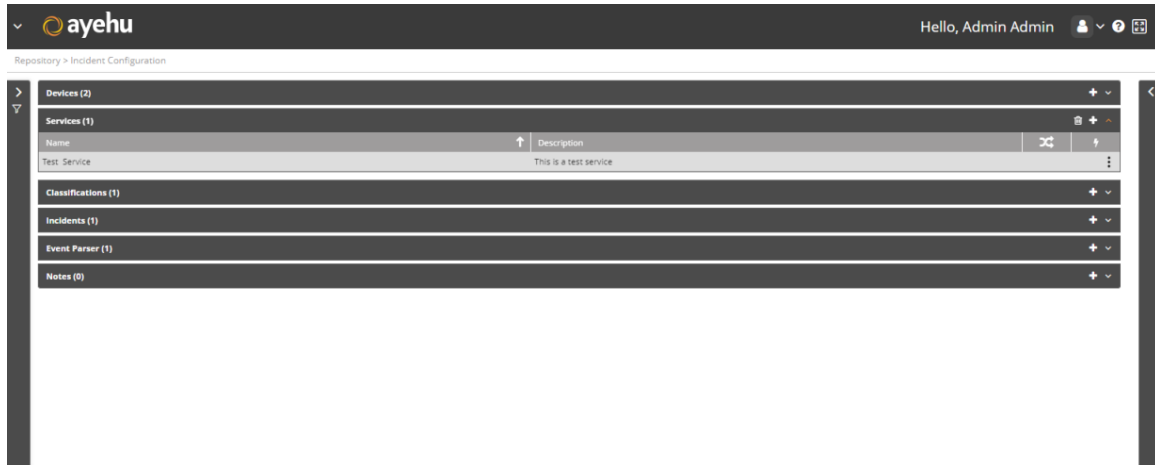
In events that are classified as incidents, services are used to indicate, during the parsing/mapping procedure, the specific function on which the incident occurred. An Ayehu Next Generation service is its component in which incidents may occur.



**NOTE**

To learn more about Ayehu Next Generation's data flow, refer to [Understanding Ayehu Next Generation's Data Flow \[3\]](#). To learn more about incidents, refer to [Incident Configuration \[215\]](#)




Choose **Repository > Incident Configuration** and open the **Services** list. The following window is displayed:



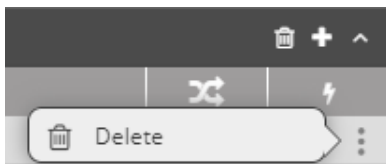
### 7.3.3.2. Managing Services

The Services list provides the following information:


**Table 56. Services Fields**

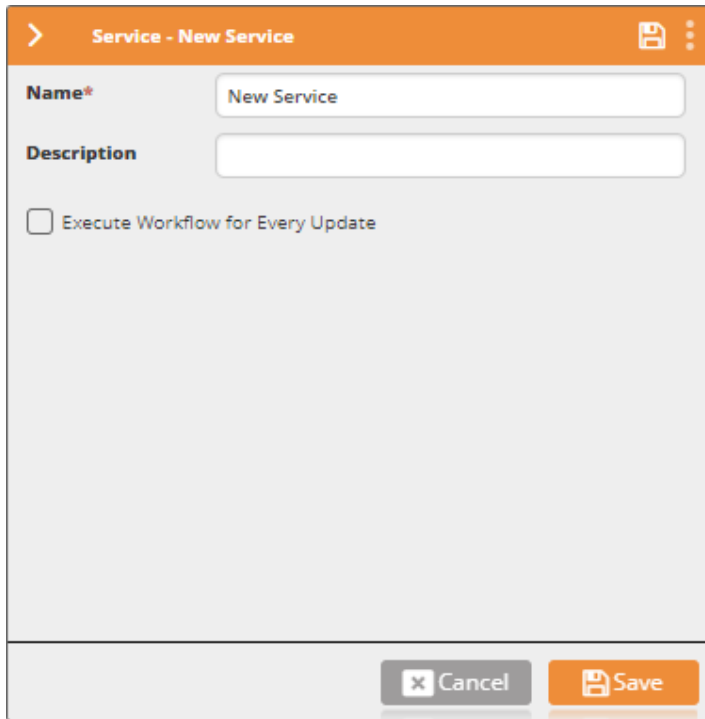
Column	Description
Name	Name of the service
Description	Description of the service
	 Every time an incident that is associated with this device or service is updated, run a check to see if any triggers match that event and have any associated workflows that must be run to act on the incident
	Created automatically as a result of an incoming incident, or manually by the user

The only available icons are as follows:



**To add a service:**

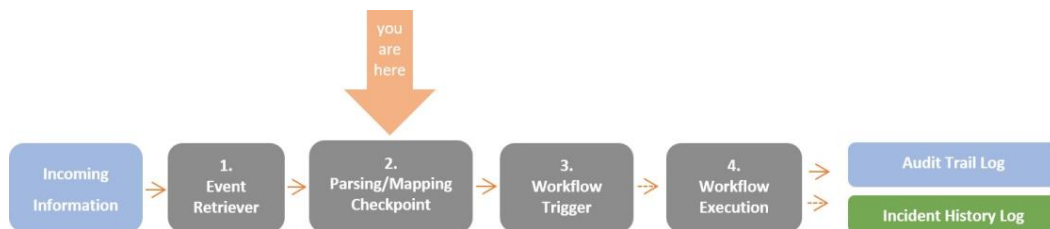
1. Click the  icon.  
The Notes properties window appears:



2. In the **Name** field, enter the name of the service. For example: mail service.
3. In the **Description** field, enter a description for the service.
4. Check **Run Workflow for Every Update** to execute the workflow upon each update of an incident related to this service, or leave it unchecked in case you wish to run the workflow only upon the first instance of the incident.
5. click **Save**.

### 7.3.4. Classifications

#### 7.3.4.1. Understanding Classifications



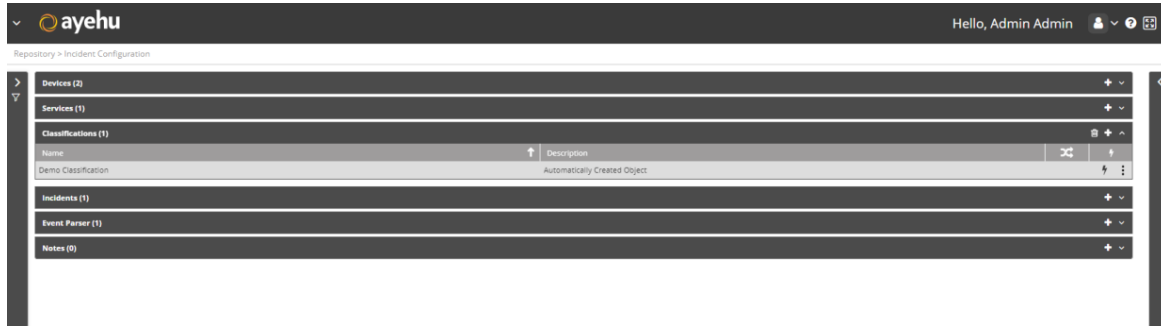
In events that are classified as incidents, classifications are used to indicate, during the parsing/mapping procedure, the type of the incident.



**NOTE**

To learn more about Ayehu Next Generation's data flow, refer to [Understanding Ayehu Next Generation's Data Flow \[3\]](#). To learn more about incidents, refer to [Incident Configuration \[215\]](#)



Choose **Repository > Incident Configuration** and open the **Classifications** list. The following window is displayed:



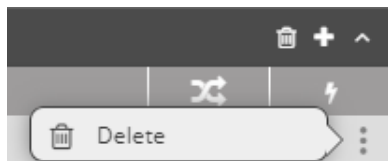
**7.3.4.2. Managing Classifications**

The classifications table provides the following information:


**Table 57. Classifications Fields**

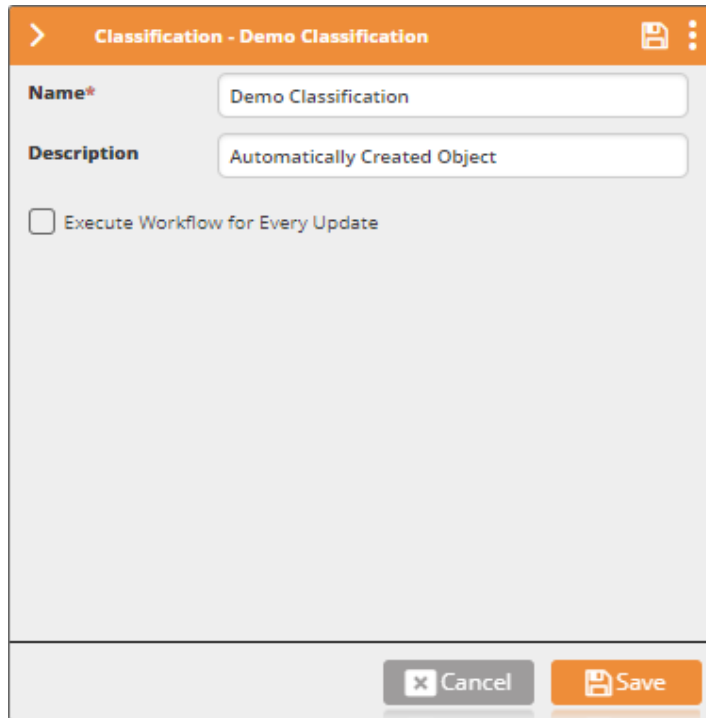
Column	Description
Name	Name of the classification
Description	Description of the classification
	Execute workflow to execute the workflow upon each update of an incident related to this classification
	Created automatically as a result of an incoming incident, or manually by the user

The only available icons are as follows:



**To add a classification:**

1. Click the  icon.  
The Notes properties window appears:



2. In the **Name** field, enter the name of the classification. For example: "disk space incidents".
3. In the **Description** field, enter a description for the classification.
4. Check **Run Workflow for Every Update** to execute the workflow upon each update of an incident related to this classification, or leave it unchecked in case you wish to run the workflow only upon the first instance of the incident.
5. click **Save**.

## 7.3.5. Incidents

### 7.3.5.1. Understanding Incidents

Choose **Repository > Incident Configuration** and open the **Incidents** list. The following window is displayed:






### 7.3.5.2. Managing Incidents

The Incidents list provides the following information:

**Table 58. Incidents List Fields**

Column	Description
Severity	Critical, Info, Warning
State	↑ - Up, ↓ - Down
Classification	The classification of the incident
Device/Service	The device/service which gave rise to the incident
Information	Additional information
External ID	An external ID of the incident.  <div style="border: 1px solid #ccc; padding: 10px; background-color: #f9f9f9;"> <p><b>NOTE</b></p> <p>For incidents that are parsed using the <a href="#">Event Parsing [227]</a> mechanism or created using the workflow New Incident activity, the external ID is created automatically. For incidents that were created by Mapping (using one of the built-in integrations), the external ID is the value mapped by Ayehu Next Generation into the module configuration. It is an internal procedure that allows applying a distinctive ID to every incident.</p> <p>For example: if the integration is a ticketing system, the external ID can be mapped to the ticket ID. By doing so - every time a new ticket is created, a new incident will be created too, regardless of the Device/Service and Classification combination.</p> </div>
	Execute workflow for every update




### 7.3.5.3. Operations on Incidents


For a selected incident, the following action icons are available:

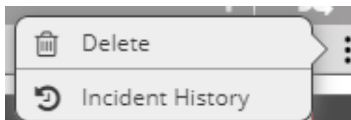


They are described in the following table:


**Table 59. Selected Incident Actions**

Icon	Description
	Delete the incident
	Open the incident history
	Add a new incident

In addition, the  icon is available. Clicking it opens the actions list:



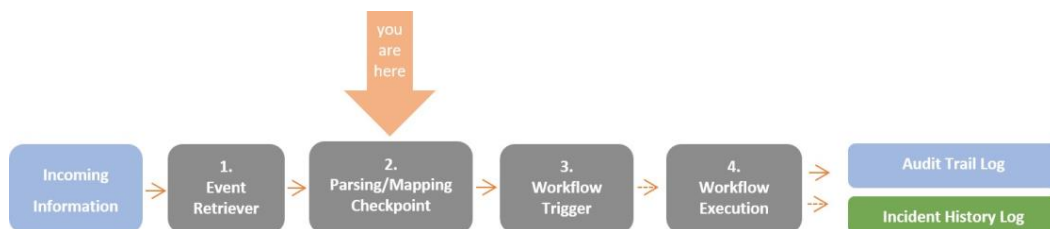
**To add an Incident:**

1. From the top right corner of the incident list, click . The incidents properties screen appears:

2. From the **Device/Service** field, determine whether the incident is related to a [device \[216\]](#) or a [service \[220\]](#).
3. In the **Name** field, enter the name of the device or the service. For example: "Web\_SRV" or "Mail Service", respectively.
4. In the **Description** field, enter a description for the incident.
5. From the **Classification** field, select the classification to which the incident belongs.
6. Check **Run Workflow for Every Update** to execute the workflow upon each update of the incident, or leave it unchecked if you wish to run the workflow only upon the first instance of the incident.
7. Click **Save**.


## 7.3.6. Event Parsers

### 7.3.6.1. Understanding Event Parsing



When an event is retrieved by Ayehu Next Generation it arrives at the Parsing/Mapping Checkpoint, where it is decided whether it qualifies as an incident. Traditionally, events which originate from an integrated module (for example: ServiceNow, McAfee, BMC Reme-

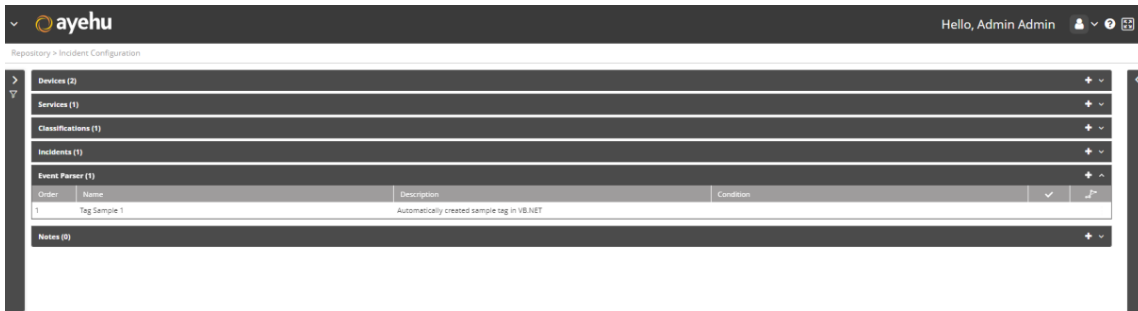
dy etc.) are mapped, and events which originate from the built-in components are parsed. The event parser object allows you to create code (C# or VB.NET) according to which events are parsed.



**NOTE**

To learn more about Ayehu Next Generation's data flow, refer to [Understanding Ayehu Next Generation's Data Flow \[3\]](#). To learn more about incidents, refer to [Incident Configuration \[215\]](#)





Choose **Repository > Incident Configuration** and open the **Event Parser** list. The following window is displayed:



### 7.3.6.2. Managing Event Parsers

The event parser list provides the following information:

**Table 60. Event Parser Fields**

Column	Description
Order	The order in which the parser is applied. Parsers may be moved up or down in the parser list.
Name	Name of the event parser
Description	Description of the event parser
Condition	Condition (if any) set in the parser
	The check icon,  means that it is a valid event parser. In this case, valid means that during the creation of the event parser you clicked on Test Parsing and got the desired result with no errors. If a parser isn't valid, it will be ignored by the system.
	The bypass icon,  is to bypass incident creation when an event arrives that matches this parser. Use this when you don't want to create an incident that matches the event, but you do want to create variables from the event that can be used in workflows.







### 7.3.6.3. Operations on Event Parsers

For a selected event parser, the following action icons are available:



They are described in the following table:


**Table 61. Selected Parser Actions**

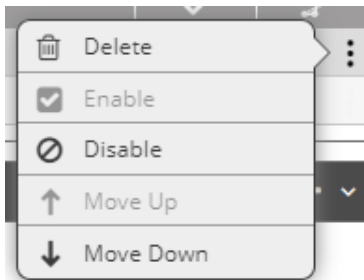
Icon	Description
	Move one place up in the parser list
	Move one place down in the parser list
	Disable the parser
	Enable the parser
	Delete the parser
	Add a new parser




**NOTE**

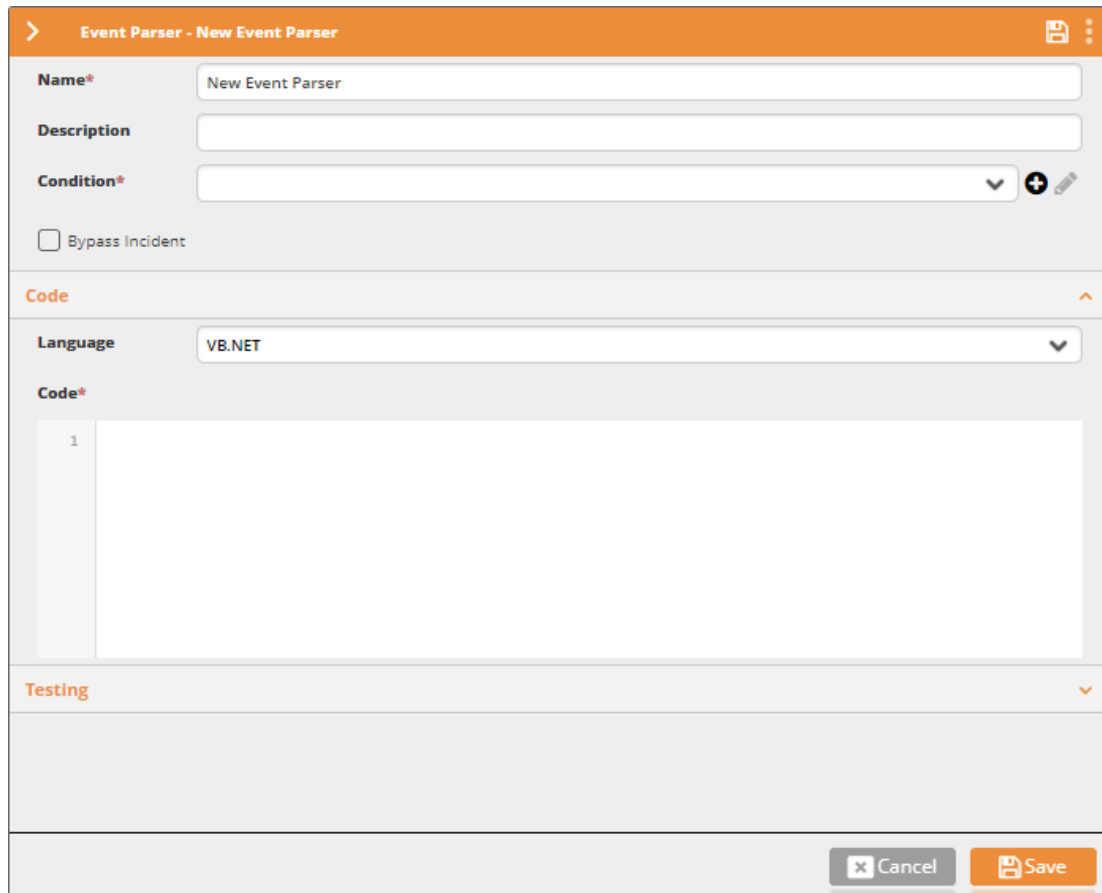
Unavailable icons are grayed out.

In addition, the  icon is available. Clicking opens the action list:



**To add an event parser:**


1. From the top right corner of the parser list, click . The parser properties screen appears:



2. In the **Name** field, enter the name of the event parser.
3. In the **Description** field, enter a description for the event parser.
4. In the **Condition** field, select a [condition \[249\]](#).



You must choose a condition. Selecting **Any** effectively says "use the parser unconditionally". The items following **Any** are user defined. To add a new condition, click

the  icon. For further details about adding conditions, see [Managing Conditions \[250\]](#).

5. Check **Bypass Incident** to parse incoming events into global variables.
6. Under **Code**, select the coding language and compose your parsing code.
7. Under **Test Parsing** you may illustrate an incoming event and test your code.
8. click **Save**.

## 7.3.7. Notes

### 7.3.7.1. Understanding Notes

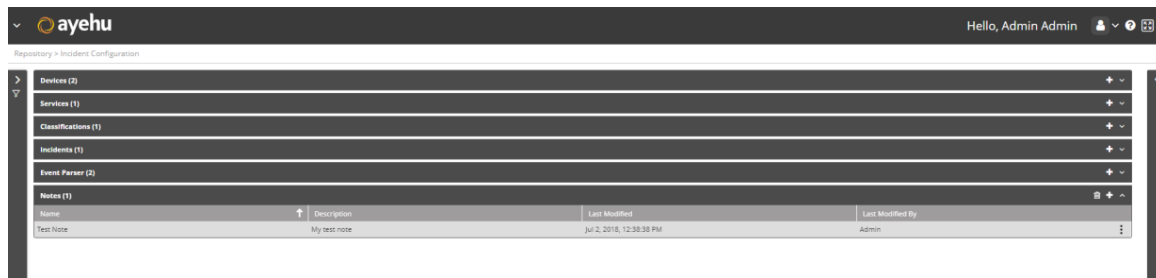
Notes are used to store the best practices on how to handle an event or an incident. You may assign notes to [devices \[216\]](#) or [services \[220\]](#).



#### NOTE

To learn more about Ayehu Next Generation's data flow, refer to [Understanding Ayehu Next Generation's Data Flow \[3\]](#). To learn more about incidents, refer to [Incident Configuration \[215\]](#)

Choose **Repository > Incident Configuration** and then open the **Notes** list. The following window is displayed:



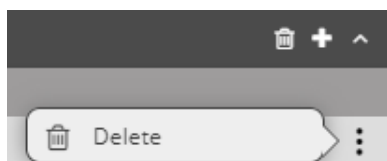
### 7.3.7.2. Managing Notes

The notes list provides the following information:


**Table 62. Notes List Fields**

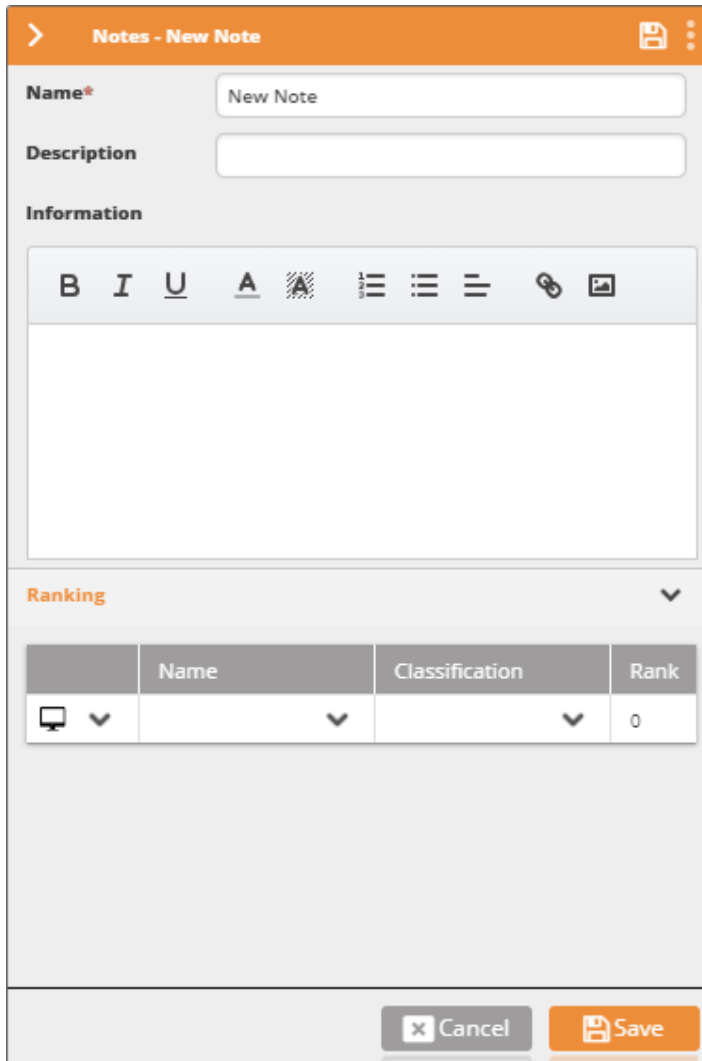
Column	Description
Name	The name of the note
Description	Description of the note
Last Modified	Last modification time
Last Modified By	User responsible for the last modification

The only available action icons are as follows:



**To add a note:**

1. Click the  icon.  
The Notes properties window appears:



**Notes - New Note**


**Name\***

**Description**

**Information**



B I U A [background color] [bulleted list] [numbered list] [indent] [link] [image]


**Ranking** ▼


	Name	Classification	Rank
 ▼	▼	▼	0




2. In the **Name** field, enter the name of the note. For example: "Disk Space Clean Up".
3. In the **Description** field, enter a description for the note. For example: "How to regularly free hard drive space".
4. Under **Information** document the best practice/procedure. For example: "1. Empty recycle bin 2. Delete temp folder 3. Delete old log files". You may edit the text formatting.

5. Under **Ranking**:

- Select whether to assign the note to a device (  ) or a service(  ).
- Select the [device \[216\]](#) or [service \[220\]](#).
- Select the relevant [classification \[222\]](#).
- Set a ranking for the note.

 **TIP**  
An incident can match more than one note. The note with the highest ranking will be displayed first.

- Repeat steps a-d for any other device or service you wish to add to the list. To remove an item, select it and click  .

Ranking			
	Name	Classification	Rank
	LocalHost	Demo Classification	0
	Any	Any 	0
			0

6. Click **Save**.

## 7.4. Recipients

### 7.4.1. What are Recipients

Recipients are receivers of messages and notifications. They can be grouped into recipient groups. Recipients are not login users, as defined in [Logins \[290\]](#)

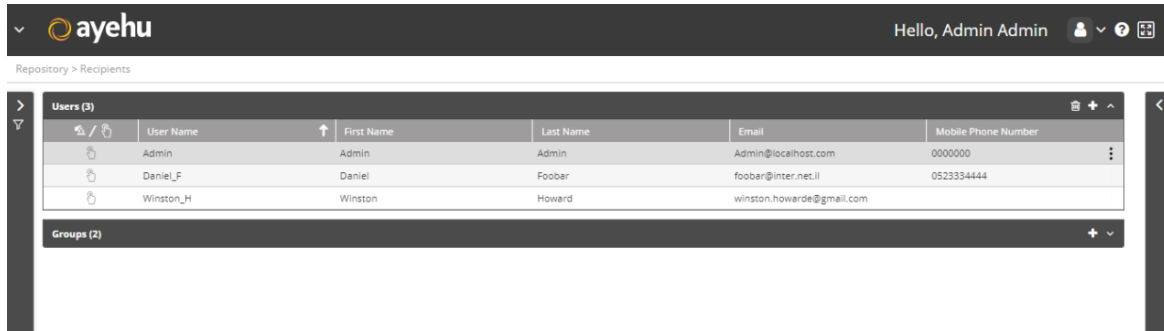
Choosing **Repository > Recipients** from the Navigation menu opens the following window:



### 7.4.2. Managing Users




Choose **Repository > Recipients** and open the **Users** list. The following window is displayed:






The Users list provides the following information:

**Table 63. Recipients User Fields**

Column	Description
	Imported from active directory  or manual 
User Name	User display name
First Name	User first name
Last Name	User last name
Email	User email (not validated here)
Mobile Phone Number	User mobile phone number

**To manually create a user:**

1. From the top right corner of the incident list, click . The users properties screen appears:

- Enter the user name, email address, mobile phone number and employee ID.



**NOTE**




The user email address and mobile phone number will be used when Ayehu Next Generation contacts the recipient.

- Under **Group Membership**, you may add the user to groups.



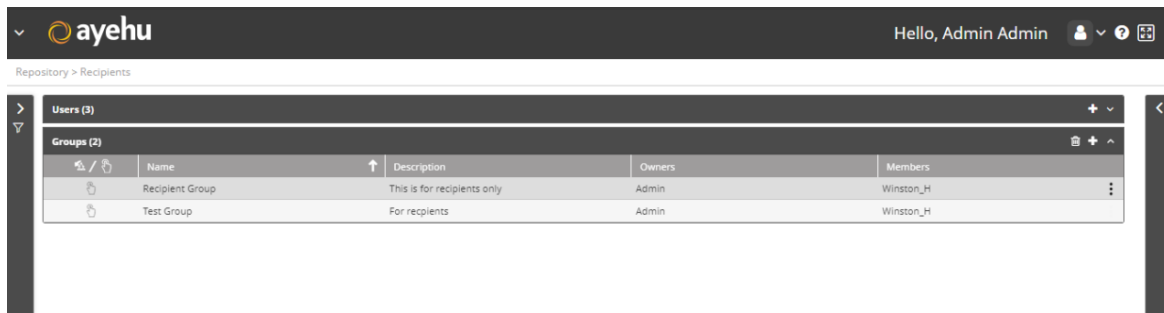
**NOTE**

You may also add the user to a group by [editing the group \[234\]](#)

- Under **Name** select the group to which the user will be added. Use the  icon to add a new group. For further details about adding a new group, see [Managing Groups \[234\]](#). The imported/manual  field is set to manual if the group was created inside Ayehu Next Generation or imported otherwise.
- To remove the user from the group, select the group from the group membership list and click  .




### 7.4.3. Managing Groups

Choose **Repository > Recipients** and open the **Groups** list. The following window is displayed:




The Group list provides the following information:


**Table 64. Recipients Group Fields**

Column	Description
	Imported from active directory  or manual 
Name	Name of the group
Description	Group description
Owners	The group may have several owners shown in a comma separated list
Members	Group members


**To add a new group:**

1. From the top right corner of the incident list, click . The users properties screen appears:


2. Enter the group name and description.
3. Set the group owner/s.


 **NOTE**  
Group owners are the only users other than the administrators who are allowed to edit or delete the group.


4. Set the group members.

 **NOTE**  
A group member may be a user or another group.

- a. Under **Type**, select **User** to add a user to the group or **Group** to add a sub-group to the group.

- b. Under **Name** select the user or group to be added. Use the  icon to add a new user or group. For further details about adding a new user, see [Managing Users](#)

[232]. The imported/manual  field will be set from the user or group selected.

5. To remove any member - user or group - from the group, select it from the list and click 
6. Click **Save**.

## 7.5. Policy Actions

### 7.5.1. Understanding Policy Actions



Policy Actions are used to initiate workflows in two ways: conditional triggers and scheduled actions.

When an event is retrieved by Ayehu Next Generation, the list of triggers is scanned. If the event matches the criteria of a specific trigger, the workflow assigned to it is initiated.

In addition, workflows may be initiated periodically, according to specific time slot. For example: the workflow "Clean log file folder" can be set to run every Sunday at 2:00 AM.



#### NOTE

For more information on workflows refer to [Welcome to the Workflow Designer \[45\]](#)

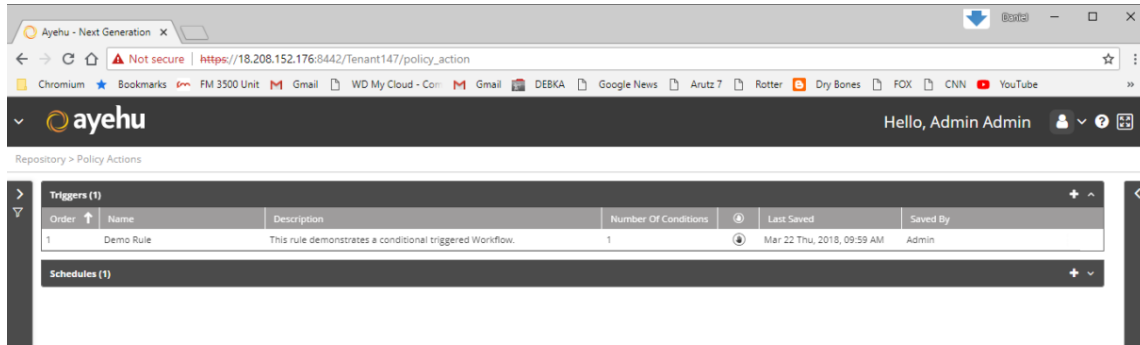
Choosing **Repository > Policy Actions** from the Navigation menu opens the following window:



### 7.5.2. Triggers




#### 7.5.2.1. Managing Triggered Workflows

Choose **Repository > Policy Actions** and open the **Triggers** list. The following window is displayed:



The triggers list provides the following information:

**Table 65. Policy Actions Trigger Fields**

Column	Description
Order	The order in which the trigger is applied. Triggers may be moved up or down in the triggers list.
	<div style="border: 1px solid #ccc; padding: 10px; background-color: #f9f9f9;">  <p><b>NOTE</b> Triggers are checked and performed according to the order in which they are listed. As some events may match the criteria of several triggers, it is important to situate triggers in the requested operation order.</p> </div>
Name	Name of the trigger
Description	Description of the trigger
Number of Conditions	The number of conditions in the trigger's condition table (at least one must apply to execute the selected workflow).
	Terminating action -  or not - Blank
Last Saved	Last save (modification) time
Saved By	User responsible for the last save (modification)



**TIP**

In the triggers list, you may delete a trigger, enable/disable it and move it up/down (triggers are checked in the their listing order).







**7.5.2.2. Operations on Triggers**

For a selected trigger, the following action icons are available:



They are described in the following table:


**Table 66. Selected Triggers Actions**

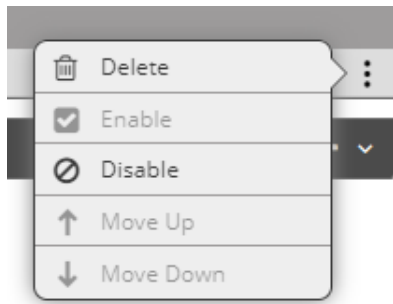
Icon	Description
	Move one place up in the triggers list
	Move one place down in the triggers list
	Disable the trigger
	Enable the trigger
	Delete the trigger
	Add a new trigger




**NOTE**

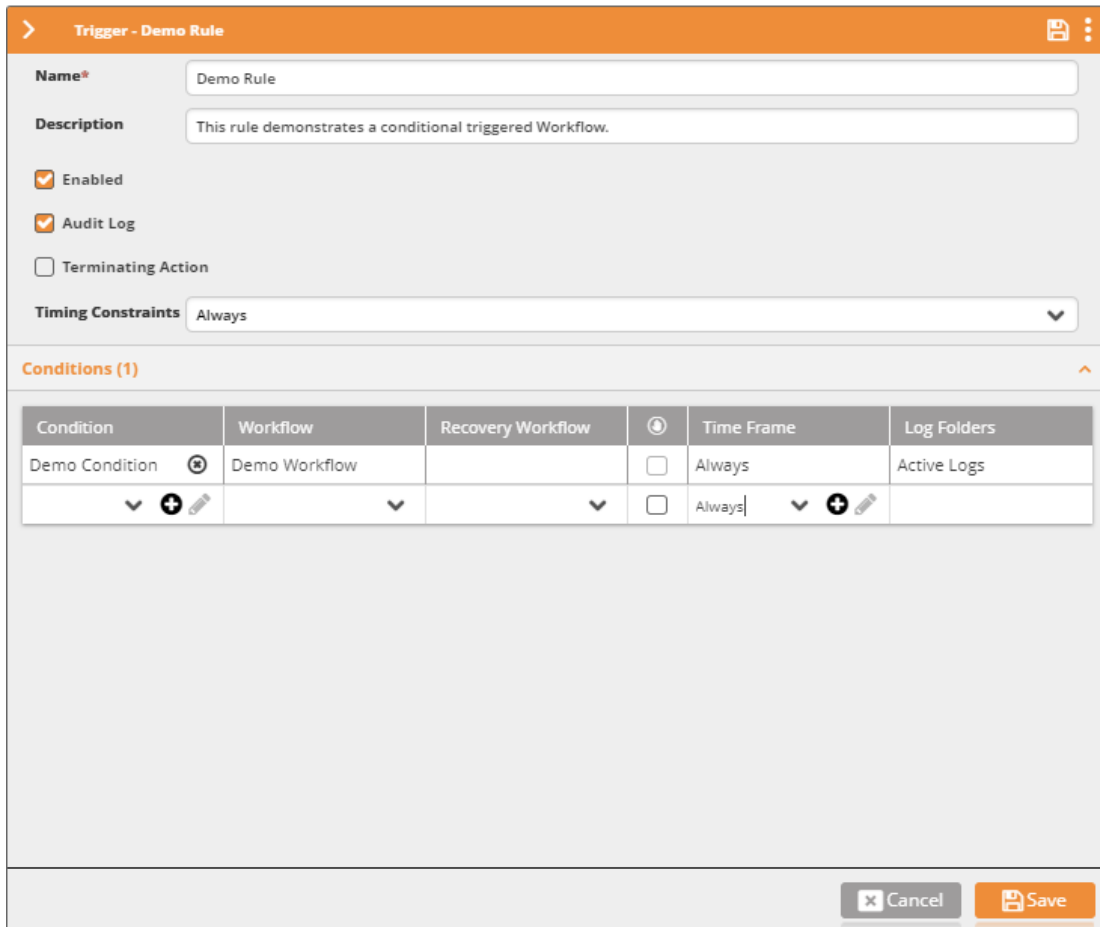
Unavailable icons are grayed out.

In addition, the  icon is available. Clicking opens the action list:



**To add a trigger:**

1. From the top right corner of the trigger list, click . The schedules properties screen appears:



**Trigger - Demo Rule**

**Name\*** Demo Rule

**Description** This rule demonstrates a conditional triggered Workflow.











Enabled

Audit Log

Terminating Action

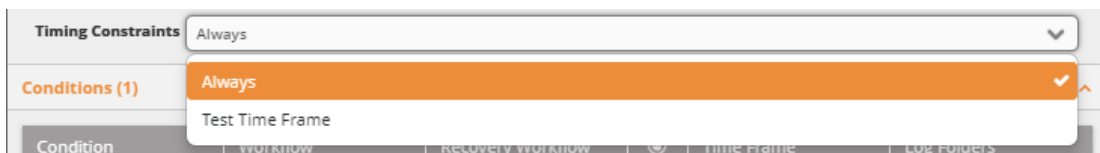
**Timing Constraints** Always

**Conditions (1)**

Condition	Workflow	Recovery Workflow		Time Frame	Log Folders
Demo Condition 	Demo Workflow		<input type="checkbox"/>	Always	Active Logs
  			<input type="checkbox"/>	Always   	

Cancel Save

2. In the **Name** field, enter the name of the trigger. For example: "Web Portal Recovery"
3. In the **Description** field, enter a description for the trigger.
4. Clear **Enable** to currently disable the trigger.
5. Clear **Audit Log** do avoid the triggered workflow to register to the [Audit Trail \[37\]](#).
6. Check **Terminating Action** if you wish to terminate the trigger list check when the current trigger is activated.
7. Next to **Timing Constraints**, select the [Time Frame \[265\]](#), in which the trigger is active, or select **Always**.



**Timing Constraints** Always

**Conditions (1)** Always

Test Time Frame

8. Under **Conditions**:

- a. Under **Condition**, select a [condition \[249\]](#) checked from the drop-down list or select **Any** if you wish to initiate the workflow upon any incoming event.

Condition	Workflow	Recovery Workflow		Time Frame	Log Folders
Demo Condition	Demo Workflow		<input type="checkbox"/>	Always	Active Logs
			<input type="checkbox"/>	Always	

Any

Demo Condition

Test Condition



**NOTE**

To catch any incoming events that were dropped by the listed triggers, it is recommended to use the **Any** option in the last trigger. The workflow activated by this trigger can notify the administrator of any unhandled event.

- b. Under **Workflow**, select the [workflow \[47\]](#) that will be activated when the condition applies.

Condition	Workflow	Recovery Workflow		Time Frame	Log Folders
Demo Condition	Demo Workflow		<input type="checkbox"/>	Always	Active Logs
			<input type="checkbox"/>	Always	

Check if service...

Demo Workflow

File managem...

Find top 5 CPU ...

Free up disk sp...

Monitor and re...

Monitor list of ...

- c. Under **Recovery Workflow**, select the workflow to run after recovery from the incident.

Condition	Workflow	Recovery Workflow		Time Frame	Log Folders
Demo Condition	Demo Workflow		<input type="checkbox"/>	Always	Active Logs
			<input type="checkbox"/>	Always	

Check if service...

Demo Workflow

File managem...

Find top 5 CPU ...

Free up disk sp...

Monitor and re...

Monitor list of ...

- d. Under **Time Frame**, select the time frame in which the condition applies.



Condition	Workflow	Recovery Workflow		Time Frame	Log Folders
Demo Condition	Demo Workflow		<input type="checkbox"/>	Always	Active Logs
			<input type="checkbox"/>	Always	

Always

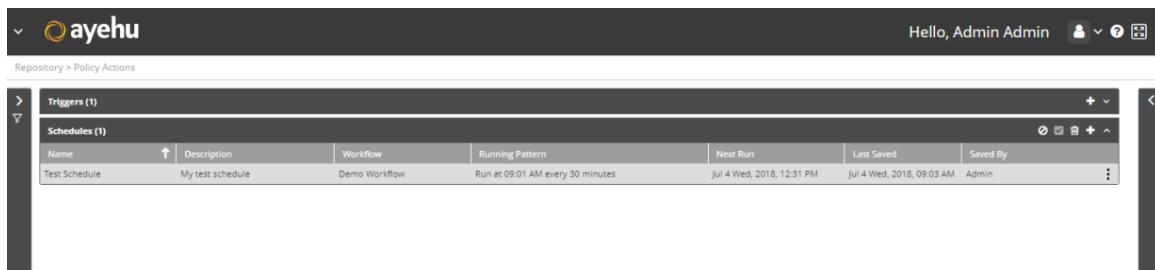
Test Time Frame

- e. Under **Log Folder** select the [log folder \[39\]](#) to which this workflow run will be registered.
  - f. Repeat the steps a to e for each additional workflow you wish to add to the trigger.
9. Click **Save**.

### 7.5.3. Schedules

#### 7.5.3.1. Managing Scheduled Workflows

Choose **Repository > Policy Actions** and open the **Schedules** list. The following window is displayed:



The schedules list provides the following information:

**Table 67. Policy Actions Schedules Fields**

Column	Description
Name	Name of the schedule
Description	Description of the schedule
Workflow	The workflow to run
Running Pattern	Running or recurrence pattern of the scheduled workflow
Next Run	Time of the next run due
Last Saved	Last save (modification) time
Saved By	User responsible for the last save (modification)





#### 7.5.3.2. Operations on Schedules

For a selected schedule, the following action icons are available:



The icons are described in the following table:

**Table 68. Selected Schedule Actions**

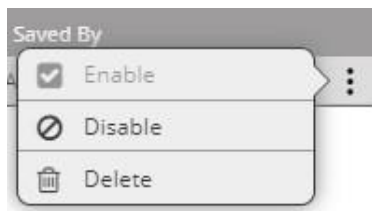
Icon	Description
	Disable the schedule
	Enable the schedule
	Delete the schedule
	Add a new schedule




**NOTE**

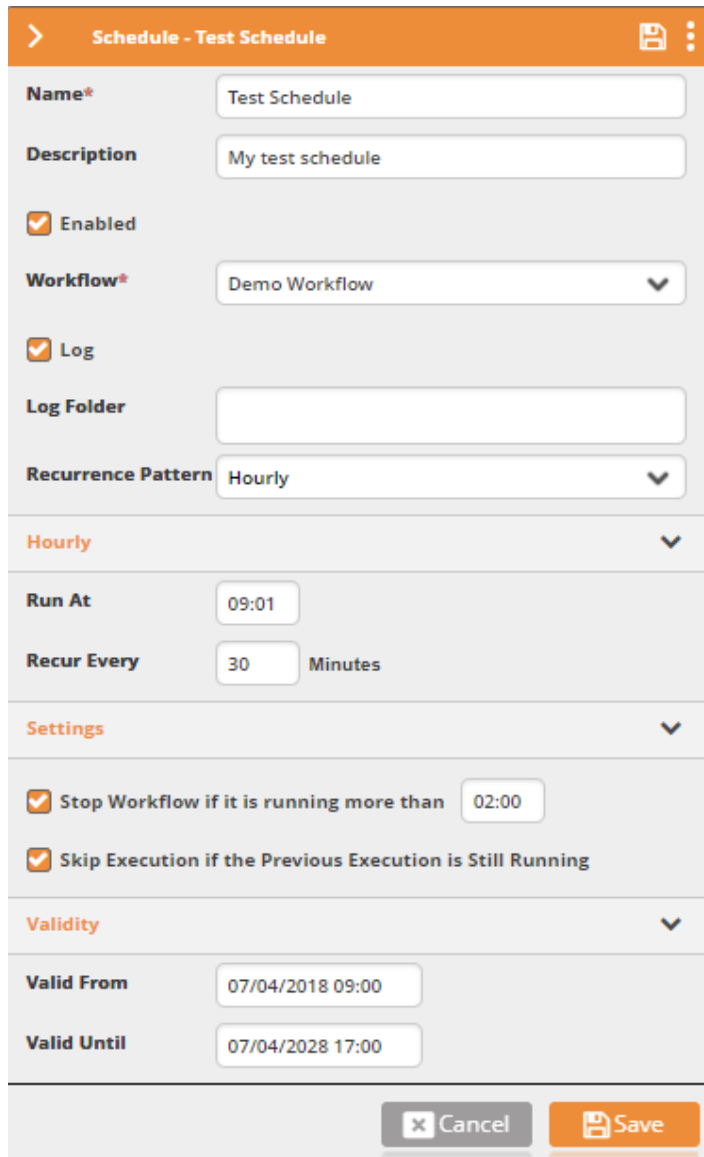
Unavailable icons are grayed out.

In addition, the  icon is available. Clicking opens the action list:



**To add a schedule:**

1. From the top right corner of the schedules list, click . The schedules properties screen appears:



**Schedule - Test Schedule**

**Name\*** Test Schedule

**Description** My test schedule

Enabled

**Workflow\*** Demo Workflow

Log

**Log Folder**

**Recurrence Pattern** Hourly

**Hourly**

**Run At** 09:01

**Recur Every** 30 Minutes

**Settings**

Stop Workflow if it is running more than 02:00

Skip Execution if the Previous Execution is Still Running

**Validity**

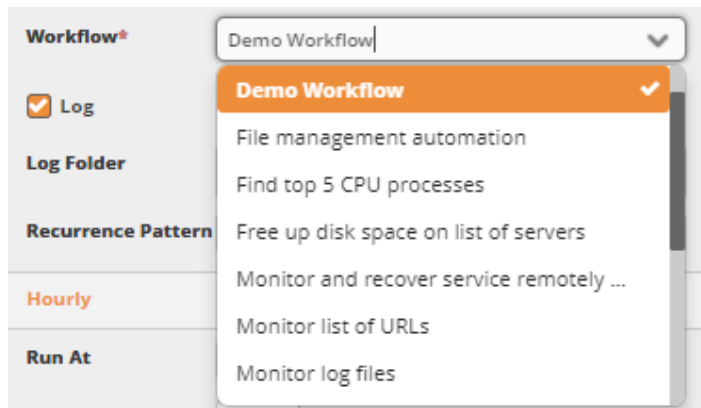
**Valid From** 07/04/2018 09:00

**Valid Until** 07/04/2028 17:00

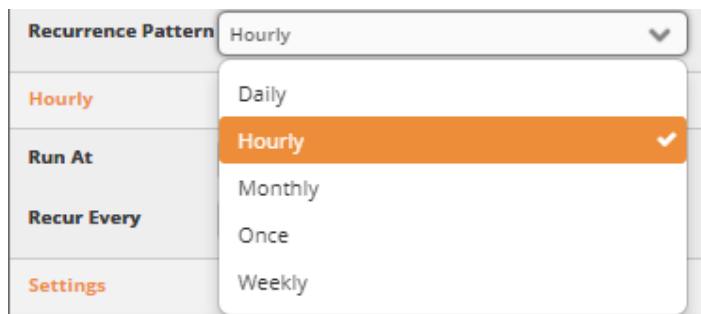
Cancel Save

2. In the **Name** field, enter the name of the schedule. For example: "Daily Backup".
3. In the **Description** field, enter a description for the scheduled workflow.
4. Clear **Enabled** to disable the schedule.

- From the **Workflow** field, select the workflow to be run.



- Clear **Log** if you do not wish to display each running of the selected workflow in the Audit Trail log. Otherwise specify the **Log Folder**.
- In the **Recurrence Pattern** field, determine whether the workflow is repeated hourly, daily, weekly, monthly, or is simply performed once.



- According to your selection in the previous step, select the workflow's running time frame and the frequency.
- Check **Stop Workflow...** to specify the timeout of the scheduled workflow and set it.
- Check **Skip Execution...** to avoid re-running the workflow if the previous scheduled workflow has not yet ended.
- In **Valid From** and **Valid Until**, set the validity date frame of the scheduled workflow.
- Click **Save**.

## 7.6. External Development

External Development offers the ability to inject named commands or code routines into the system. Choosing **Repository > External Development** opens the following window:



## 7.6.1. Commands

Choose **Repository > External Development** and open the **Commands** list. The following window is displayed:.




The Commands list provides the following information:

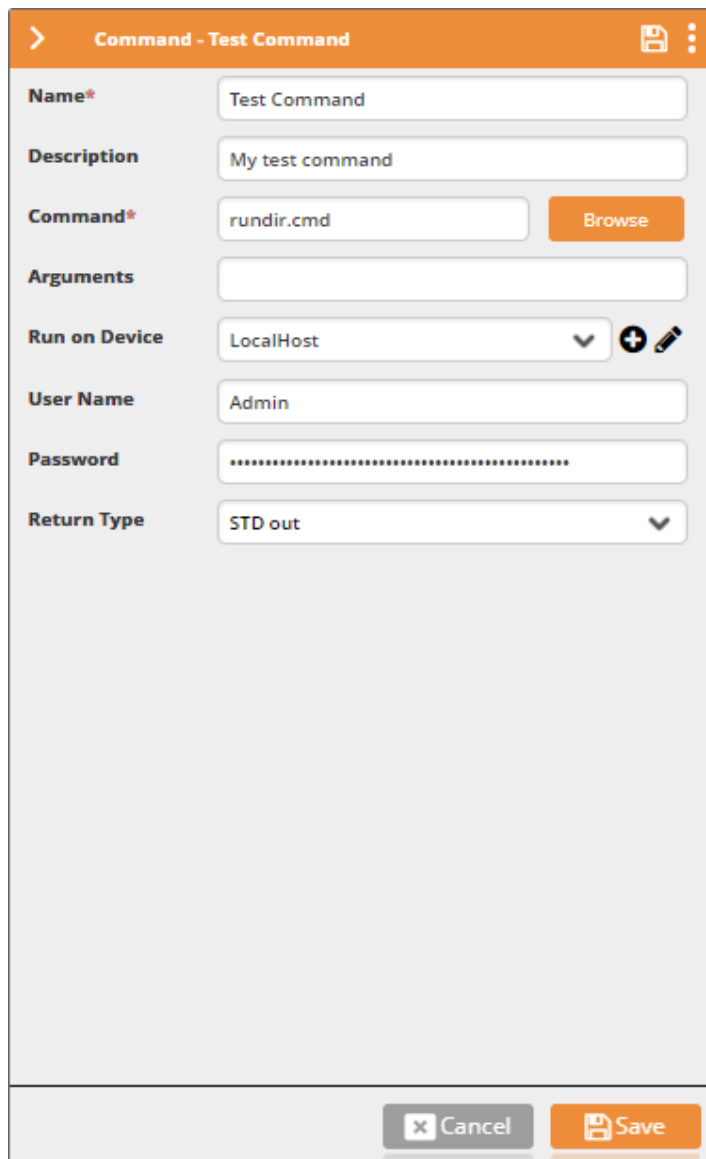
**Table 69. External Development Commands Fields**

Column	Details
Name	Command name.
Description	Command description
Command	Command file name

The only available action icons are **New** and **Delete**.

**To add a Command:**

1. From the top right corner of the schedules list, click . The commands properties screen appears:



2. In the **Name** field, enter the name of the command.
3. In the **Description** field, enter a description for the command.
4. In the **Command** field, enter the file name of the command. You can use **Browse** to locate a command file on your local computer.
5. In the **Arguments** field, enter any arguments for the command.

- Choose a target device for the command from the **Run on Device** field.

- Enter your name and password in to the **User Name** and **Password** fields.
- Choose the **Return Type** from the list:



### NOTE

These are standard POSIX destinations. Typically, **STD out** and **STD err** are directed to the console device (your monitor). Use the **Exit Code** if your command is part of a chain of actions needing the exit code of the previous action.

- Click **Save**.

## 7.6.2. Development

Choose **Repository > External Development** and open the **Development** list. The following window is displayed:




The Development list provides the following information:

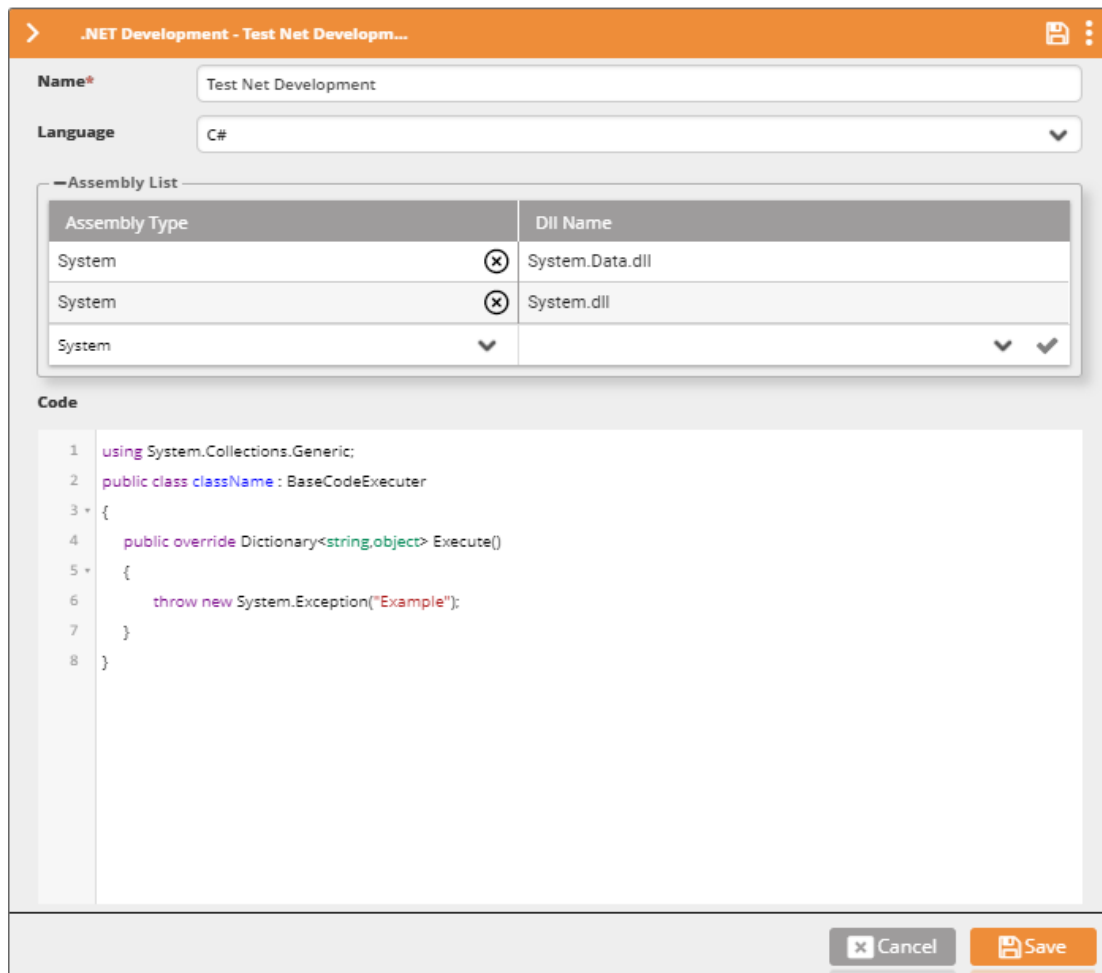
**Table 70. External Development Fields**

Column	Details
Name	Program name
Language Type	C#, VB.NET, or Python
Description	Program description

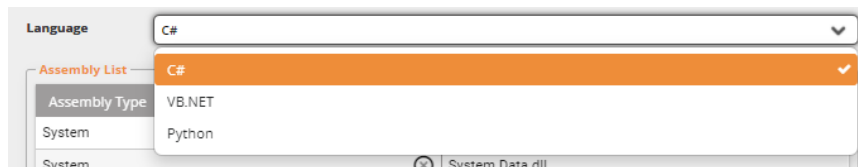
The only available action icons are **New** and **Delete**.

**To add a development program:**

1. From the top right corner of the schedules list, click . The commands properties screen appears:



2. In the **Name** field, enter the name of the command.
3. In the **Language** field, enter a description for the command.



For this example we used C#.

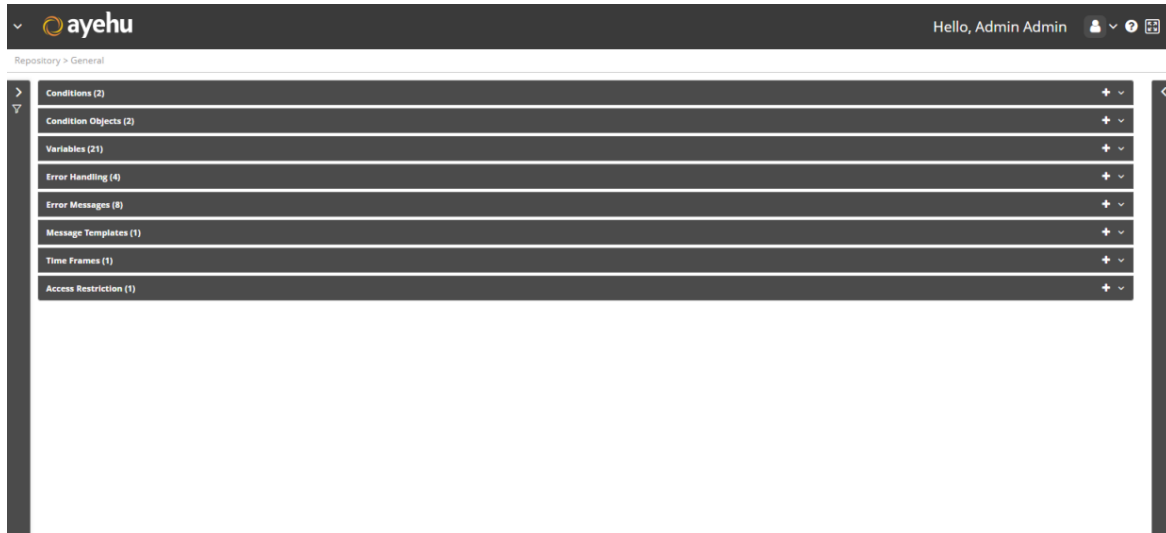
4. In the **Assembly List table** you will need to add the relevant DLL files required by your program.
5. In the **Code** area, you can write your code or paste it from an external tool.
6. When you click **Save**, the compiler will run. The Save will only work if you have a error-free compile.



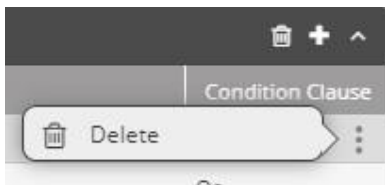
## 7.7. General


### 7.7.1. Preliminaries

This sections covers configuration of some of the the basic objects of the Ayehu Next Generation system. Choosing **Repository > General** from the Navigation menu opens the following window:



The available actions for each of the General items are add and delete:



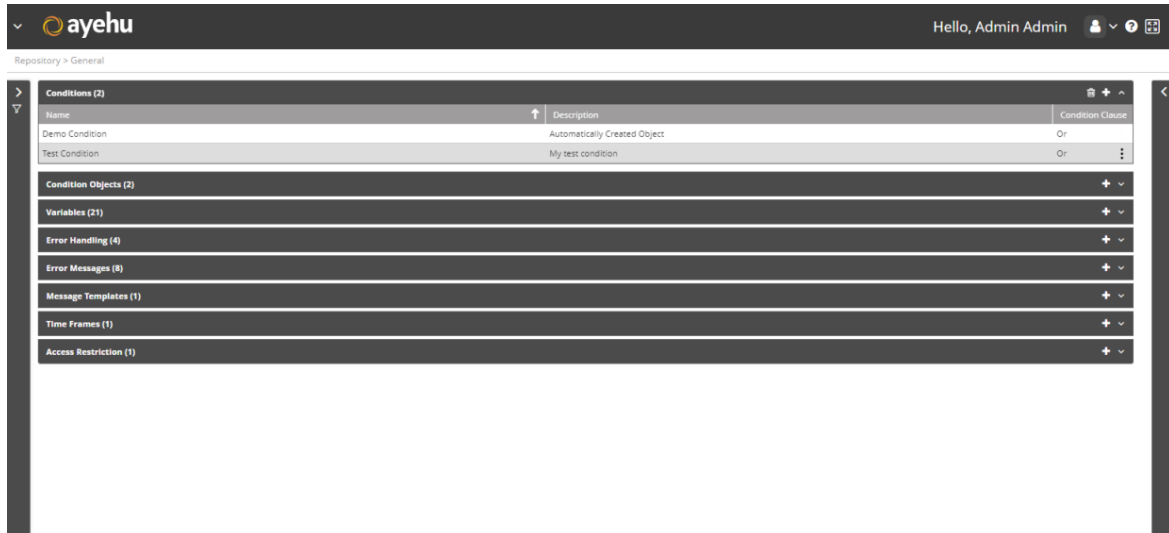
To avoid repetition, we will not refer to these icons again in the description of the General items. In each case, we will look in detail at the add  function.

### 7.7.2. Conditions

#### 7.7.2.1. Understanding Conditions

Conditions are logical states that assist in defining Ayehu Next Generation's reaction to incoming events. A Condition may be based, for example, on a message property (source, body, etc.). When conditions are met a workflow may be triggered and other actions may automatically be performed.

Choose **Repository > General** and open the **Conditions** list. The following window is displayed:




### 7.7.2.2. Managing Conditions

The condition list provides the following information:

**Table 71. Conditions Fields**

Column	Description
Name	Name of the condition
Description	Description of the condition
Condition Clause	And/Or

**To add a condition:**

1. Click the  icon.

The Conditions properties window appears:

2. Enter the condition's **Name**. For example: "Is the email urgent?".
3. In the **Description** field, you may enter the condition's description. For example: "Checks the origin and the content of the triggering email to determine its urgency".
4. Under **Condition Logic**, set the condition. In the following example, the condition is composed of two arguments (with an OR clause): one argument checks whether the incoming email address is "david.smith@ayehu.com" and the other checks whether the email's body contains the phrase "ASAP".

> Condition - Is the Email Urgent?
📄 ⋮

**Name\***

**Description**

**Condition Clause** Or ▼

**Condition Logic** ▼

Type	Module Form	Object	Operator	Value
Global Varia... ⓧ		Body	Contains	ASAP
Global Varia... ⓧ		Subject	Contains	ASAP
▼	▼	▼	▼	

✕ Cancel 📄 Save

5. The list of arguments can of course be longer. To add an argument to the condition:
  - a. Under **Type**, Select **Global Variable** to select one of the built-in or customized variables; **Standard Object** to select any of the hard-coded elements of Ayehu Next Generation or any of the integration modules to select properties from the module's form (in the example provided above global variables were selected).




#### NOTE

For more information on Variable's refer to [Understanding Variables \[254\]](#). For more information on modules, refer to [Modules \[275\]](#)

The following table shows the available **Standard Objects**:

**Table 72. Standard Objects**

Object Name	Description
Classification	The <a href="#">classification [222]</a> (type) of the incoming event
Condition	Another condition:  <div style="border: 1px solid #ccc; padding: 10px; background-color: #f9f9f9;">  <p><b>TIP</b> Use Condition Standard Object to link rules or merge <b>AND</b> conditions with <b>OR</b> conditions.</p> </div>
Destination	The recipient of the triggering message
Device	The <a href="#">device [216]</a> (server) on which the reporting event occurred
Incident	The current <a href="#">incident [215]</a>
Message Body	The text of the triggering message
Service	the <a href="#">service [220]</a> in which the event occurred
Source	The source of the triggering message
Subject	The subject of the triggering message
Time Frame	The <a href="#">time frame [265]</a> during which the condition applies

- b. If a specific integration module was selected in the previous step, under **Module Form** select the property to check.
  - c. Under **Object**, select the variable, standard object or property to check (in the example given above - **Source** and **Body** were selected).
  - d. Under **Operator**, select the relevant logic operator (in the example given above - **equals** and **contains**)
  - e. Under **Value**, set the comparison value value to compare with
6. Click **Save**.

## 7.7.3. Condition Objects

### 7.7.3.1. Understanding Condition Objects

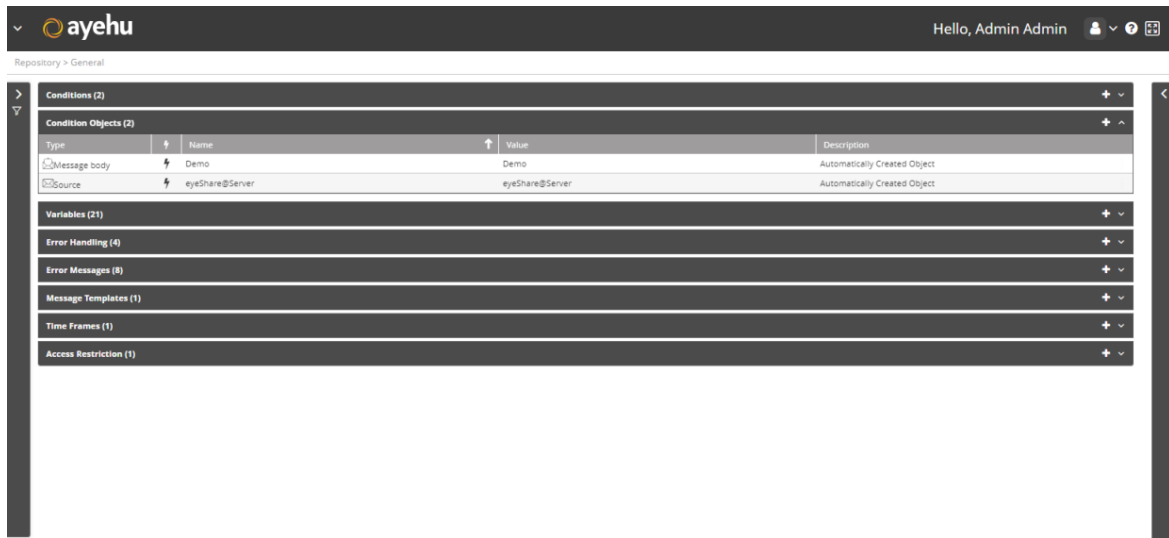
Condition objects are constant values which represent an incoming event's segments (an email, a text message, an integrated module event, etc.). They are used to assemble a condition: You may compare the value of a variable against the value of a condition object to create a condition.



#### NOTE

To learn more about conditions refer to [Understanding Conditions \[249\]](#)




Choose **Repository > General** and open the **Condition Objects** list. The following window is displayed:




### 7.7.3.2. Managing Condition Objects

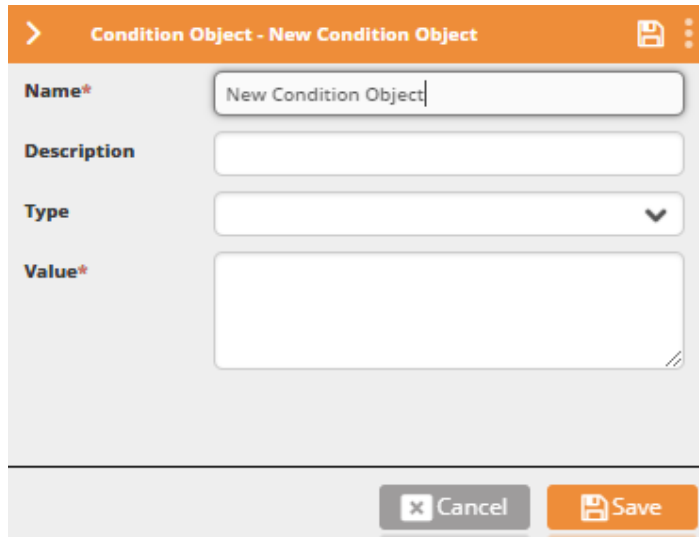
The condition object list provides the following information:

**Table 73. Condition Objects Fields**

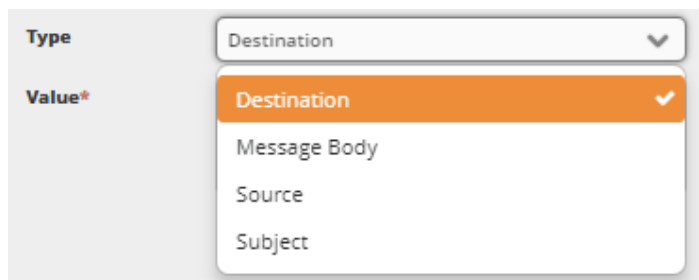
Column	Description
Type	Condition Object type (Destination, Message Body, Source, Subject)
	Created automatically -  or manually - 
Name	Condition Object name
Value	Value assigned to the Condition Object
Description	Condition Object description

**To add a condition object:**

1. Click the  icon.  
The Condition Object properties window appears:



2. Enter the condition object's **Name**. For example: "John's cell number".
3. In the **Description** field, you may enter the condition object's description. You may repeat the name.
4. In **Type**, select one of Destination, Message Body, Source or Subject.



5. In **Value**, type in the object's default value (for example: john's phone number).
6. Click **Save**.

## 7.7.4. Variables

### 7.7.4.1. Understanding Variables

Variables are system parameters used to represent a dynamic value.

Some variables, such as **Classification** or **Body**, which will hold, respectively, the [classification \[222\]](#) of the current incident or the text of the message that triggered an event, are built-in. You may customize your own list of variables to comply with your own system requirements and use the parsing mechanism to set the variable values as a new event is retrieved by Ayehu Next Generation. The variables may then be used by workflow activities. Their values may be updated upon every new instance of an [incident \[215\]](#), or only upon the first instance. The value may also be changed using the workflow [Set Memory \[126\]](#) activity, by selecting the Global type variable.



## NOTE

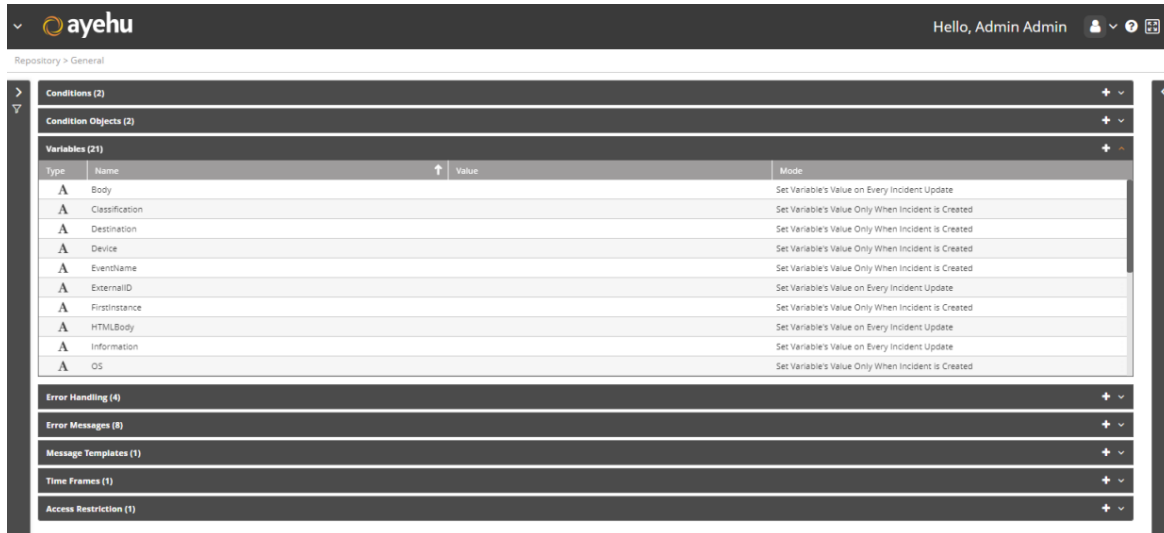
To learn more about events, incidents and parsing refer to [Understanding Ayehu Next Generation's Data Flow \[3\]](#)

The following table sets out Ayehu Next Generation's built-in variables:

**Table 74. Built-In Variables**

Variable	Description	Update Method
Body	The body of the triggering message	Every new instance
Classification	The classification (type) of the new Incident	The first instance
Destination	The recipient of the triggering message	The first instance
Device	The originating device of the incident	The first instance
EventName	The device or service of the incident	The first instance
ExternalID	The external application event ID	Every new instance
FirstInstance	Indicates whether or not it is the incident's first instance.	The first instance
HTMLBody	The HTML body of the triggering message	Every new instance
Information	The information of the triggering message	Every new instance
OS	Operating system of the device	Every new instance (this variable is set by default. If an invalid OS is reported then it will be set to <b>Windows 2003 Server</b> ).
Process	The process of the new Incident	The first instance
ReturnValue	The returned Value of the last workflow activity	Every new instance
Service	The service of the new incident	The first instance
Severity	The severity of the new incident	The first instance
Site	The site of the new incident	Every new instance
Solution	The solution of the new incident	Every new instance
Source	The source of the triggering message	Every new instance
State	The state of the triggering message	Every new instance
Subject	The subject of the triggering message	Every new instance
System	The system of the new incident	Every new instance



Choose **Repository > General** and open the **Variables** list. The following window is displayed:



### 7.7.4.2. Managing Variables


The variables list provides the following information:

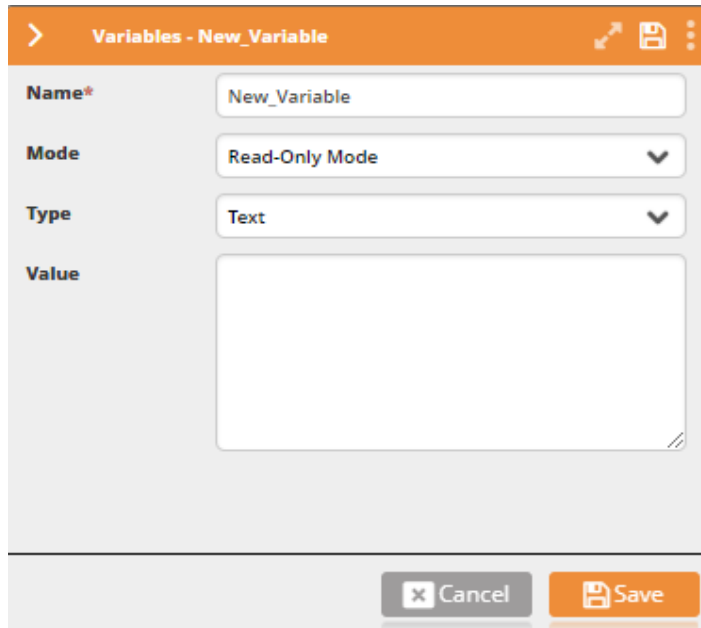
**Table 75. Variables Fields**

Column	Description
Type	Variable type: Text -  or table - 
Name	Variable name
Variable value	String value or Table indicator
Mode	Update method

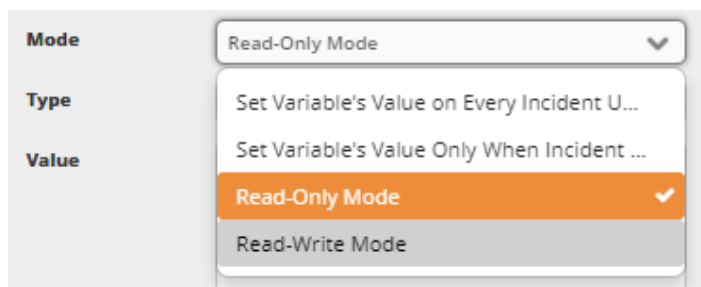


**To add a variable:**

1. Click the  icon.  
The Variables properties window appears:



2. Enter the variable's **Name**. For example: "Counter".
3. In the **Value** field, you may enter the variable's initial value. This value will or will not change according to its usage.
4. From the **Mode** field:



Choose one of:

- a. Set the variable's value on every incident's update.
  - b. Set the variable's value only when incident is created.
  - c. Read-Only Mode - the variable is a constant that cannot be changed.
  - d. Read-Write Mode - the variable can be modified during a workflow run.
5. In **Type**, determine whether the format of the variable is a simple text or a table.



**TIP**

Table formatted variables are typically used by workflow activities from the Tables Category.

6. If the variable holds a table, the table properties will appear:

7. Set the number of rows and columns and, optionally, the names of the columns.  
8. Click **Save**.

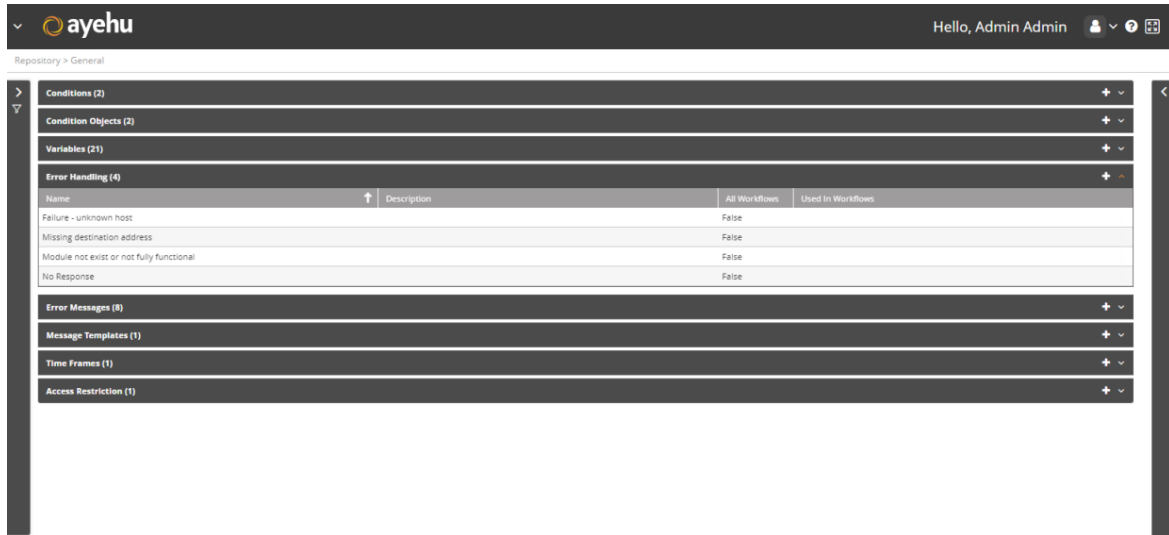
## 7.7.5. Error Handling

### 7.7.5.1. Understanding Error Handling

An error handling object is a rule activated upon an activity's error status during workflow execution. In the error handling rule you may decide how the workflow continues upon error detection:

- Continue to the next activity
- Go to a specific activity in the current workflow
- Return an error message
- Run the workflow in the background
- Stop the workflow immediately
- Stop the workflow immediately and run another workflow in the background

Choose **Repository > General** and open the **Error Handling** list. The following window is displayed:




### 7.7.5.2. Managing Error Handling Rules

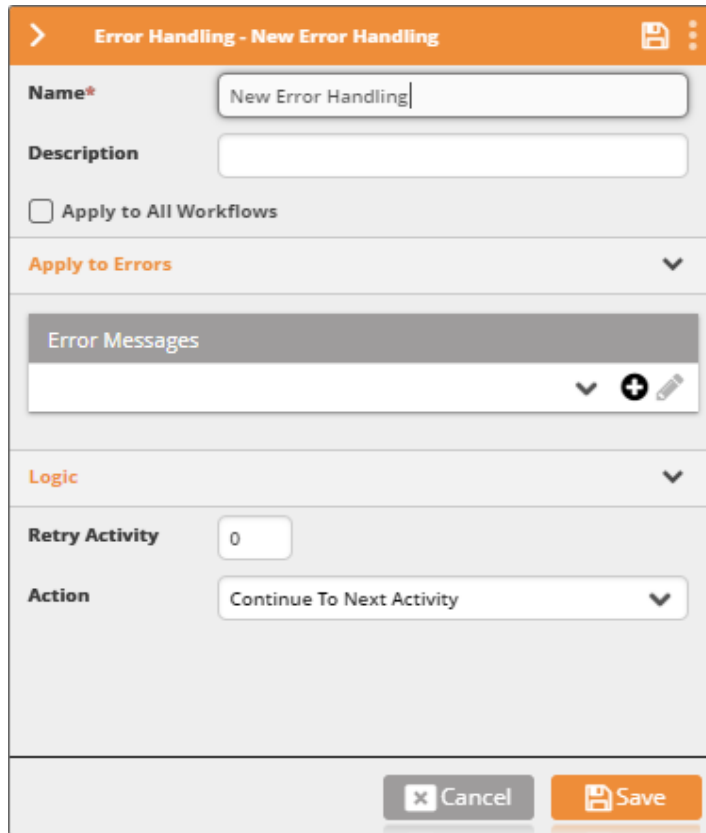
The error handling rule list provides the following information:

**Table 76. Error Handling Fields**


Column	Description
Name	Name of the error handling object
Description	Description of the error handling object
All Workflows	
Used in Workflows	

**To add an error handling rule:**


1. Click the  icon.  
The Error Handling properties window appears:



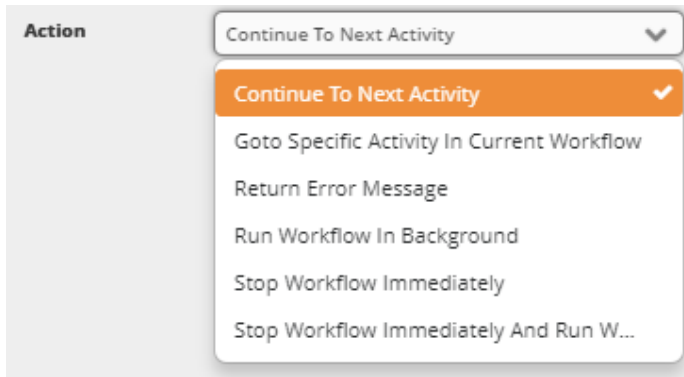
2. Enter the error handling rule's **Name**. For example: "Unknown Host".
3. In the **Description** field, you may enter the description of the error handling rule. You may repeat the name.
4. Check **Apply to All Workflows** to apply the rule to all workflows.
5. Under **Error Messages**, select the messages that will be sent when this error rule is activated.

 **NOTE**  
To create new Error Messages refer to [Managing Error Messages \[261\]](#).

6. In the **Retry Activity** field, set the number of attempts to run the failing activity before handling the error.

 **NOTE**  
This parameter does not apply to communication activities.

7. In **Action**, select the error handling method:



- Continue to the next activity following the one which indicated the error
- Go to a specific activity in the current workflow (and skip the activities following the one that indicated the error). In this case select the activity
- Return an error message. In this case compose a message
- Run a workflow in the background. In this case select the workflow to run
- Stop the workflow immediately
- Stop the workflow immediately and run the selected workflow (in this case select an alternative workflow to run)

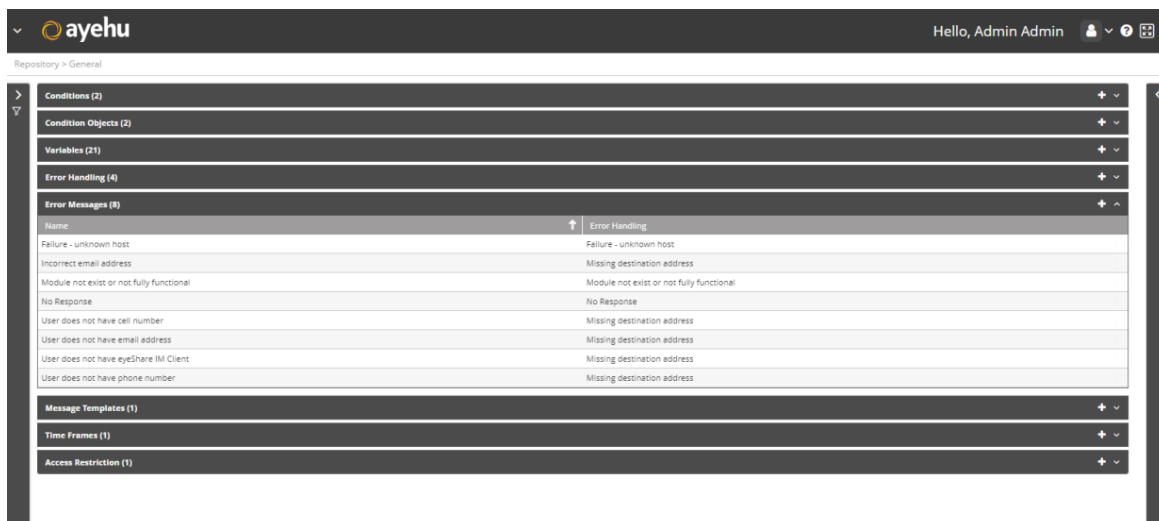
8. Click **Save**. The new error handling rule is added to the list.

## 7.7.6. Error Messages

### 7.7.6.1. Understanding Error Messages

Error Messages are the texts displayed or logged by Error Handling objects.

Choose **Repository > General** and open the **Error Messages** list. The following window is displayed:




### 7.7.6.2. Managing Error Messages

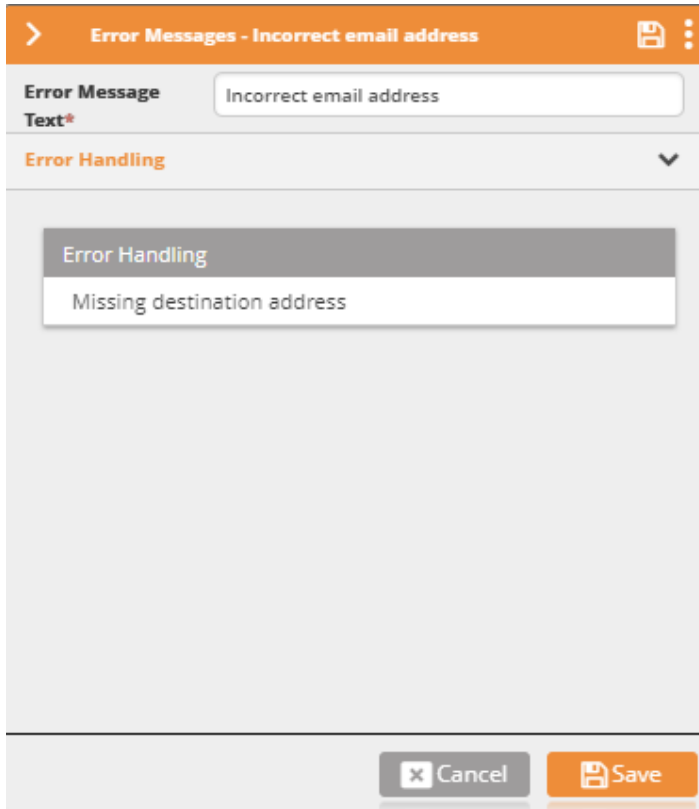
The error message list provides the following information:

**Table 77. Error Messages Fields**

Column	Description
Name	The error message text
Error Handling	The error handling rule to which the message is assigned

**To add an error message:**

1. Click the  icon.  
The Error Messages properties window appears:



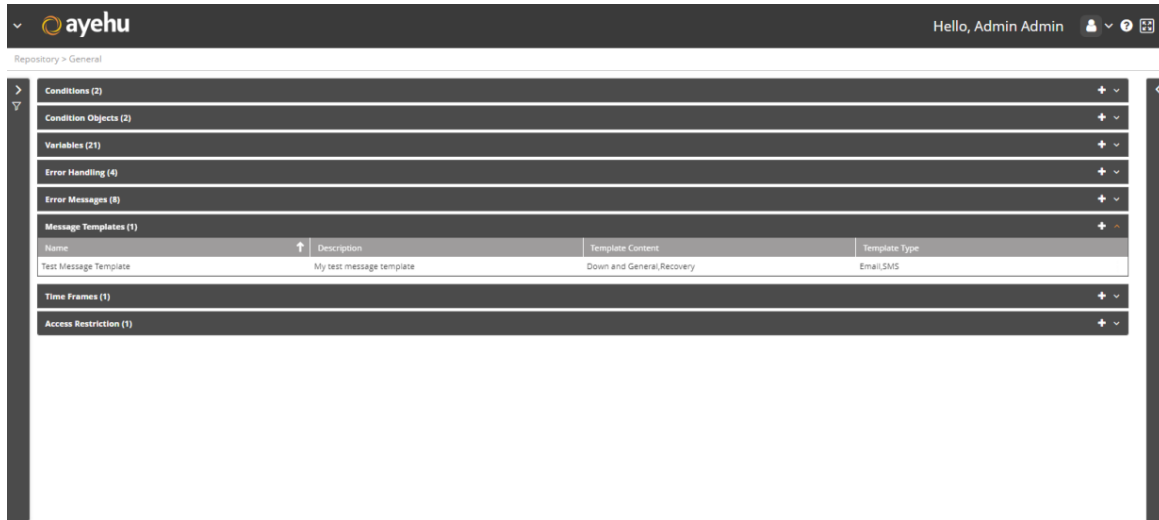
2. In the **Error Message Text** field, enter the message's display text. For example: "Missing destination address".
3. Click **Save**. The error message may now be used to [manage error handling](#). [259]

## 7.7.7. Message Templates

### 7.7.7.1. Understanding Message Templates

Messages are used to contact recipients via Communication workflow activities. Message templates are generic message formats which present dynamic content by making use of variables for text replacement.

Choose **Repository > General** and open the **Conditions** list. The following window is displayed:




### 7.7.7.2. Managing Message Templates

The message template list provides the following information:

**Table 78. Message Templates Fields**

Column	Description
Name	Message template name
Description	Message template description
Template Content	Message template content. Currently only <b>Down/General Message</b> and <b>Recovery Message</b> . You can define different message content for email and SMS delivery methods, within the same template.
Template Type	Message template type. Currently only Email, SMS

**To add a message template:**

1. Click the  icon.  
The Message Templates properties window appears:

2. In the **Name** field, enter the name of the message template. For example: "Server X is out of service".
3. In the **Description** field, enter a description for the message template.
4. Under **Down/General Message**, compose and design the message that will be sent (via email or SMS) upon incident detection. To create a dynamic text use the following convention: %variable name%, for example: "%hostname% is down. %Device% will be shut down within the next hour".
5. Under **Recovery Message**, compose and design the message that will be sent (via email or SM) upon incident recovery. To create a dynamic text use the following convention: %variable name%, for example: "%hostname% is back on"



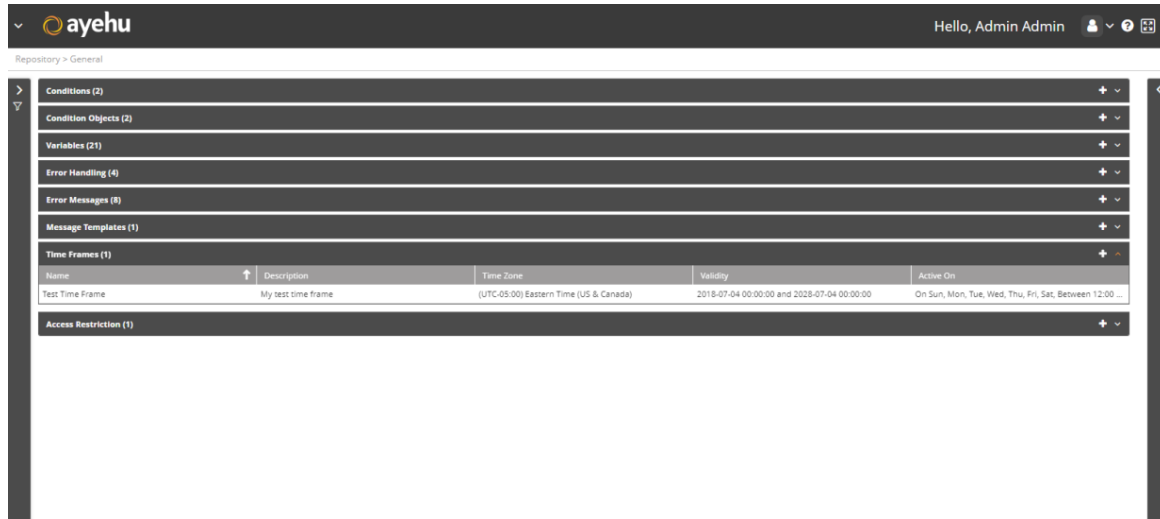
6. Click **Save**.

## 7.7.8. Time Frames

### 7.7.8.1. Understanding Time Frames

Time frames are designated time slots used to define the timing validity of [conditions \[249\]](#), [policy actions \[236\]](#), and to condition by time-slots, the activities of workflows.

Choose **Repository > General** and open the **Time Frames** list. The following window is displayed:




### 7.7.8.2. Managing Time Frames

The time frame list provides the following information:

**Table 79. Time Frames Fields**

Column	Description
Name	The name of the time frame object
Description	The description of the time frame object
Time Zone	The selected international Time zone
Validity	The period in which the time frame object is valid: The beginning and end time of the time frame
Active On	Active days of the week for the time frame object

**To add a time frame:**

1. Click the  icon.  
The Time Frames properties window appears:

2. In the **Name** field, enter the time frame object's name. For example: "Weekend".
3. In the **Description** field, enter a description for the time frame object.
4. Select the **Time Zone**.

- In **Valid From** and **Valid Until**, set the date range in which the time frame will be valid. You can select both dates from the Calendar widget;

- Select the **Days** in which the time frame is valid:

- Use the **Between** spin wheels to set its starting time and ending time:

You can also select each time field and type in the times in hh:mm 24 hour format.

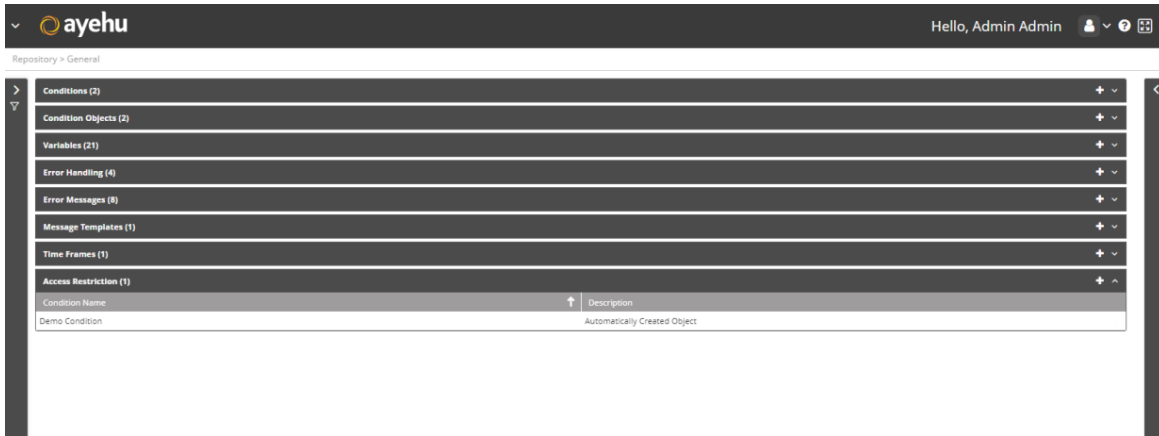
- Click **Save**.

## 7.7.9. Access Restriction

### 7.7.9.1. Understanding Access Restriction

If you are a Ayehu Next Generation administrator, you may wish to block some of the arriving events and prevent them from appearing in the [Audit Trail \[37\]](#) log. Access restriction objects allow you to do so. When an incoming event matches the [condition \[249\]](#) selected by one of the access restriction objects, it is dropped and ignored and no log entry is registered to the Audit Trail log.

Choose **Repository > General** and open the **Access Restrictions** list. The following window is displayed:




### 7.7.9.2. Managing the Access Restrictions

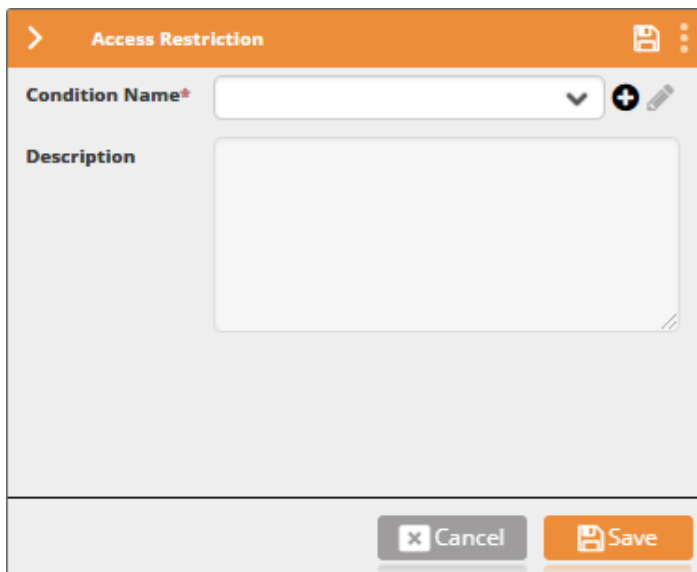
The access restriction list provides the following information:

**Table 80. Access Restriction Fields**

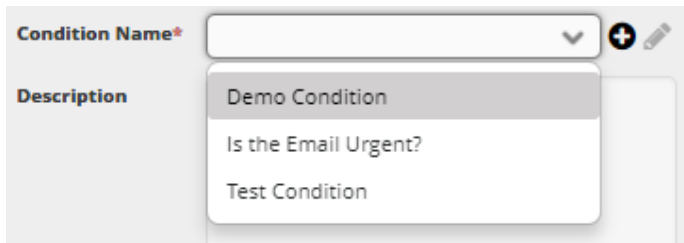
Column	Description
Condition Name	The name of the condition to be use to restrict incoming events.
Description	Description of the access restriction object

**To add an access restriction object:**

1. Click the  icon.  
The Access Restrictions properties window appears:



2. In the **Condition Name** field, select the condition that an incoming event must meet to be restricted from the audit trail log.



The screenshot shows a form with two fields: 'Condition Name\*' and 'Description'. The 'Condition Name\*' field is a dropdown menu with a plus icon and a pencil icon. The dropdown menu is open, showing three options: 'Demo Condition', 'Is the Email Urgent?', and 'Test Condition'. The 'Description' field is empty.



#### NOTE

You may only apply a “Simple” [condition \[249\]](#) to the Access Restriction; that is, a condition that combines one or more of the following objects: Body, Subject, Source, Destination, and another Condition object.

3. In the **Description** field, enter a description for the access restriction object.
4. Click **Save**.

## 8. KNOWLEDGE BASE

### 8.1. Understanding Knowledge Base

Ayehu offers a compendium of resources to help you create and manage your workflows. They are accessed through the Ayehu Support Portal.

If you choose any of the topics under **Knowledge Base**, you will be first asked to login to your support account or create one:

Sign in to Ayehu Support

Stay signed in

Your credentials will be sent over a secure connection

Cancel

Forgot my password

New to Ayehu Support? [Sign up](#)

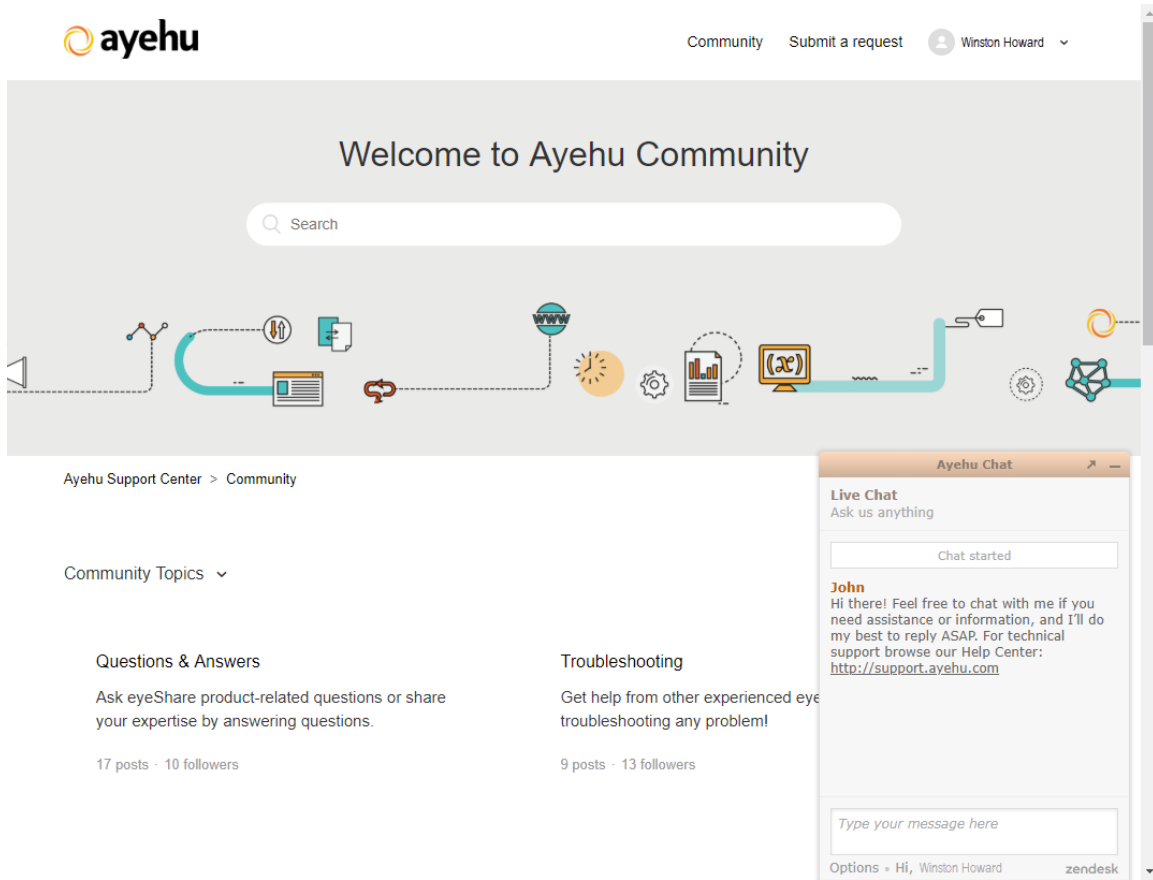
Have you emailed us? [Get a password](#)

If you've communicated with our support staff through email previously, you're already registered. You probably don't have a password yet, though.

Once you are logged in you may switch between Knowledge Base topics without having to log in again during your current session.

In each case you will be offered an assistant Chat Bot. Some examples are shown below.

## 8.2. Community Forums



This is a straightforward community page with content that will vary from time to time.

## 8.3. Online Templates

Ayehu Support Center > Workflow Templates

### Workflow Templates

**Active Directory**

- Password Expiration Notification
- Find Zombie Users

**Cisco Tasks**

- Backup Cisco Configuration

**Excel Automation**

- Migrate Excel file into a Database table

**FTP Tasks**

- Delete File older than 30 days from an FTP Server

**Application**

- Find top 5 CPU consuming Processes
- Check if a service is running

**Database**

- Email SQL Query Results

**Files and Folders**

- Archive Files older than 30 days and delete original
- Replace specific characters in a text file
- Compare DLL versions

**Incident Management**

- Response Actions Menu
- Change Manager

Online - Welcome! Click here to chat

You can download the templates on this page. They are submitted by both Ayehu and Ayehu users. If you make frequent use of the Workflow Designer you should visit this page from time to time. Notice that on this screen capture, the Chat Bot was removed to its own window (not shown) so as not to obscure the content.

## 8.4. Online Tutorials

At the moment, this page only provides links to several User Guides and Release Notes.

## 8.5. Open Support Ticket

Use this page to open a support ticket.





[Ayehu Support Center](#) > [Submit a request](#)

## Submit a request

Please choose your issue below

## 9. CONFIGURATION

### 9.1. License Details

#### 9.1.1. Viewing the License Details

To see your license and related details, navigate to **Configuration > License Details**.

The license details screen provides the following information:



#### TIP

The information is available in the table view and in the right hand properties pane.

#### 1. Product Details:

- Ayehu Next Generation's Database location
- The date of the license loading
- The product key
- Ayehu Next Generation version

#### 2. General License Details:

- The expiration date
- The license model
- The license type (paid/trial period)
- The company to which the license is registered
- The license's status
- The support expiration date
- The support level (none/gold/silver/bronze)
- The number of licensed workflows
- The number of used workflows
- The workflow package - the list of purchased workflow categories.

#### 3. Core Component and Integrations:

In this section, you will find each licensed integration module along with its expiration date, licensed instances and used instances.

#### 9.1.2. Activating the License

At the top right of the **Product Details** panel there are three action icons:



**Table 81. License Management Icons**

Icon	Description
	Send the product key to Ayehu support
	Apply a new license
	Reset the product key

## 9.2. Modules



### 9.2.1. Understanding Modules

Ayehu Next Generation modules are used for communication, remote execution, and systems integration with external services. Each module serves as an interface to its equivalent service - a mail service, telecommunication, or command executor. Each module is configured individually according to its parameters. Multiple instances of the same module can be defined by using the module instance table in the module configuration window, allowing for high availability and redundancy.

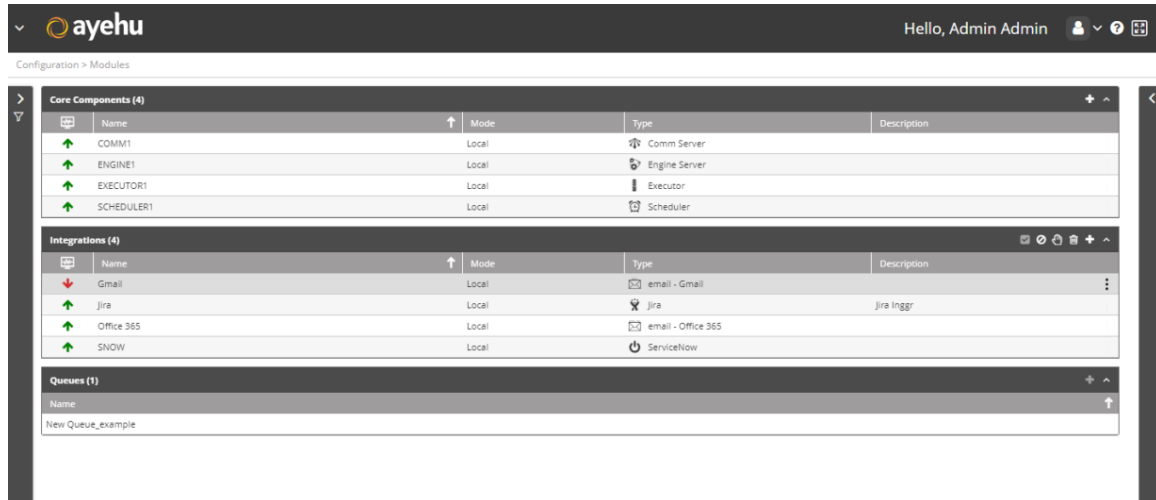
Each module is subject to the [license \[274\]](#) agreement.

When switching between the modules, the related service must be restarted. The following table describes a sample of Module types:

**Table 82. Module Types**

Module	Description
BMC - Remedy	Integrates Ayehu Next Generation with BMC Remedy
Caller Modules	Dial-up servers for incoming and outgoing phone calls. Caller Modules are responsible for performing all IVR and telephone related workflow activities.
Email Modules	Email components that perform email related workflow activities such as sending and receiving emails. Similar to MS outlook or MS outlook express accounts.
Everbridge	Integrates Ayehu Next Generation with Everbridge
MS Operations Manager	Integrates Ayehu Next Generation with MS Operations Manager
HP Service Manager	Integrates Ayehu Next Generation with HP Service Manager
IBM Tivoli Omnibus	Integrates Ayehu Next Generation with IBM Tivoli Omnibus
Text Message Modules	Cellular components that send text messages to Ayehu Next Generation <a href="#">recipients [232]</a>
Executor	<p>Runs any type of command, batch file, or exe file on a local or remote machine.</p> <div style="background-color: #f0f0f0; padding: 10px; margin: 10px 0;">  <p><b>NOTE</b> The executor module may be installed locally or separately on each machine from which commands are executed.</p> </div> <div style="background-color: #f0f0f0; padding: 10px; margin: 10px 0;">  <p><b>NOTE</b> The communication between the Ayehu Next Generation Server and the executor module is unidirectional and is encrypted by 3DES using port 11006.</p> </div>
SYSLOG	A connector to SYSLOG Daemon
NetApp	Integrates Ayehu Next Generation with NetApp
Message Queue Modules	Connectors to a Microsoft/IBM MQ components (used to manage queues of messages and requests).
ServiceNow	Integrates Ayehu Next Generation with ServiceNow
SNMP Modules	Receive SNMP traps sent from external devices to Ayehu Next Generation


Choose **Configuration > Modules** and open the **Core Components** or **Integrations** lists. A window similar to the following is displayed:



## 9.2.2. Managing Modules











The module lists (both Core Components and Integrations) provide the following information:

**Table 83. Modules Fields**

Column	Description
	Module status indicator. See <a href="#">Module Status Indicators [276]</a> below.
Name	Module name
Mode	Local or remote
Type	Operational type
Description	Module description

The available status icons and their meanings is shown in the following table:

**Table 84. Module Status Indicators**

Status symbol	Meaning	Additional Indication
	Module is up and running correctly	
	Module is down. Nothing goes through it even though it is connected.	
	Technical error: Any communications error other than credentials.	
	Connection error due to credentials problem	
	Module in the process of shutting down	Blinks while shutting down
	Module is ready to shut down. It is has stopped handling activities.	
	Module powered off. Final status.	
	Module disabled	
	Module waiting for initialization, before power up	Blinks during the wait
	Initializing - Module in the process of starting up.	

### 9.2.3. Operations on Modules

For a selected module, the following action icons are available:

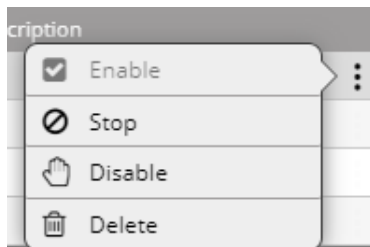


They are described in the following table:


**Table 85. Selected Module Actions**

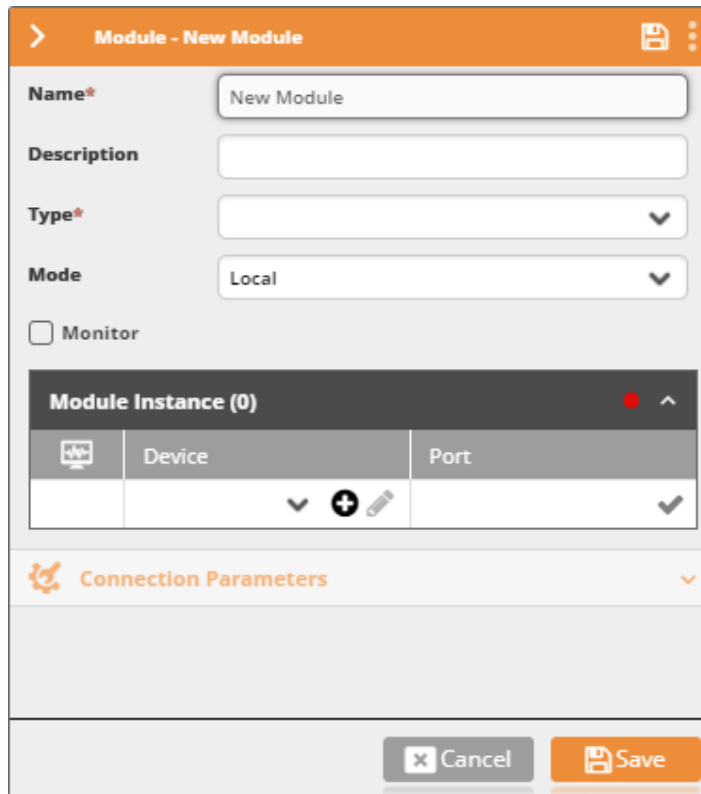
Icon	Description
	Enable. Grayed out when unavailable.
	Stop the module
	Disable the module
	Delete the module
	Add a new module

In addition, the icon is available. Clicking it opens the actions list:

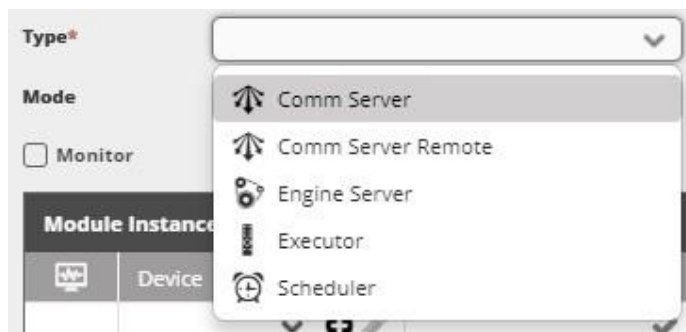


**To add a Core Component (or Integration) module:**

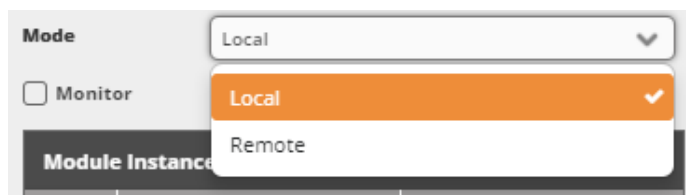
1. From the top right corner of the core components list, click . The modules properties screen appears:



2. In the **Name** field, enter a name for the new module.
3. In the **Description** field, enter a description for the module.
4. From the **Type** field, select the module type.



5. Enter the Mode. It will be Local or Remote.



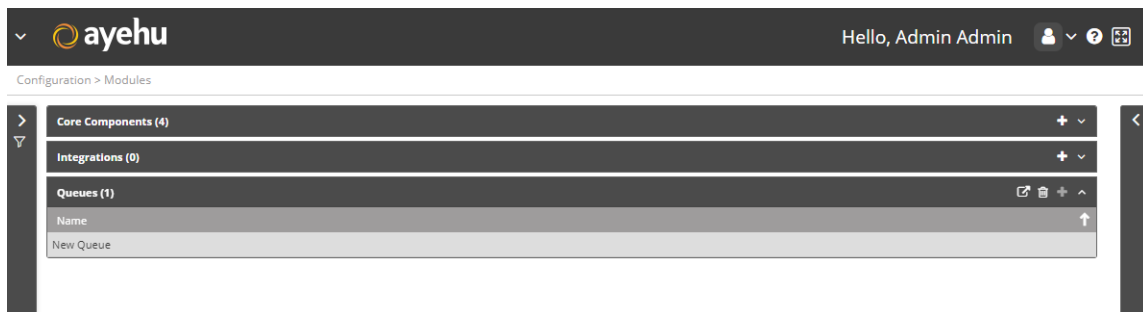
6. Check **Monitor** to determine that Ayehu Next Generation will monitor the module. By selecting this option, a new incident is created when the module is down.
7. Set the **Module Instance**. Here is a completed example:'

The icons have the same meaning as above. The green light indicates that the module is online. It will go red if it is disabled or otherwise offline.

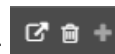
8. Enter any required **Connection Parameters**.
9. Click **Save**.

## 9.2.4. Queues

Queues are a special class of module.



The only available actions on a queue are export, delete and add:



### Exporting a Queue

An exported queue configuration includes the data for the Remote Comm server, that later allows the Ayehu NG installed on the remote environment to connect to the Message Queuing system obtaining data about the other module processes it needs to handle.

## Adding a Queue

Adding a queue follows the usual pattern. Here is the properties menu for the above example:

The screenshot shows a dialog box titled "Queue - New Queue\_example". It contains the following fields and controls:

- Queue name\***: Text input field containing "New Queue\_example".
- Internal Host\***: Text input field containing "LocalHost".
- Internal Port\***: Text input field containing "2323".
- External Host\***: Text input field containing "89898".
- External Port\***: Text input field containing "22222".
- User Name\***: Text input field containing "Administrator".
- Password\***: Password input field with masked characters.
- SSH Certificate**: Text input field, followed by "Browse" and "Reset" buttons.
- Test Connection**: A large orange button.
- Cancel** and **Save**: Buttons at the bottom of the dialog.



### NOTE


By default, you are limited to one queue per system.

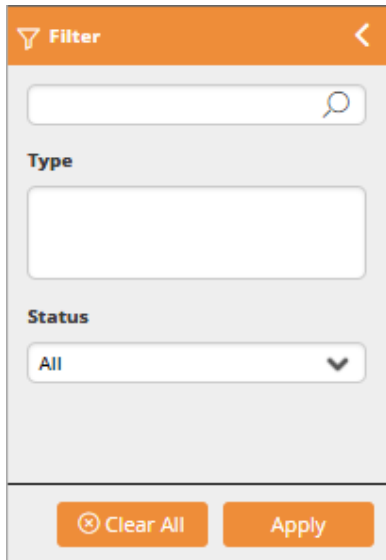
## 9.2.5. Filtering Modules

The Filter panel allows you to easily locate modules.

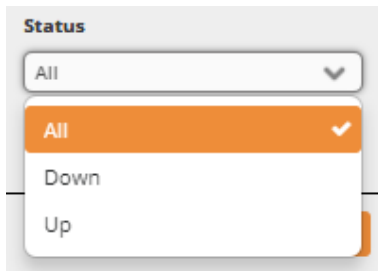


**To filter the list of modules:**

1. From the left side of the screen, click . The filter pane will appear:



2. In the top edit box, enter your filter text.
3. Select the status from the list.



4. Click **Apply** to filter the list.


## 9.2.6. Integration Modules

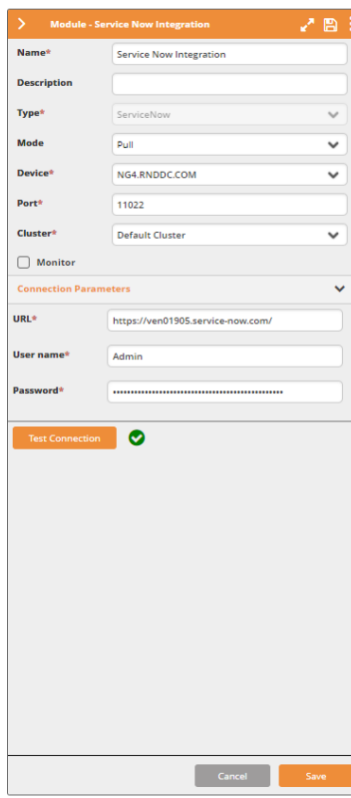
### 9.2.6.1. ServiceNow Integration Module

The ServiceNow Module provides a communication channel between ServiceNow and Ayehu Next Generation. Once the Module is defined and available, Ayehu Next Generation pulls new submitted alerts and tickets, translates them into incidents and displays them in Ayehu LIVE. Records closed in the ServiceNow console trigger incident closure in Ayehu Next Generation.

**To configure the ServiceNow integration module:**

1. Click **Connection Parameters**.
2. In the URL field, type in the ServiceNow **URL**.
3. Enter the **User Name** and **Password** of an Admin user authorized to access the server.

- Click **Test Connection** to verify your connection with the server. A valid connection is indicated with .



Module - Service Now Integration

Name\* Service Now Integration

Description

Type\* ServiceNow

Mode Pull

Device\* NG4.RNDDC.COM

Port\* 11022

Cluster\* Default Cluster


Monitor

Connection Parameters


URL\* https://ven01905.service-now.com/

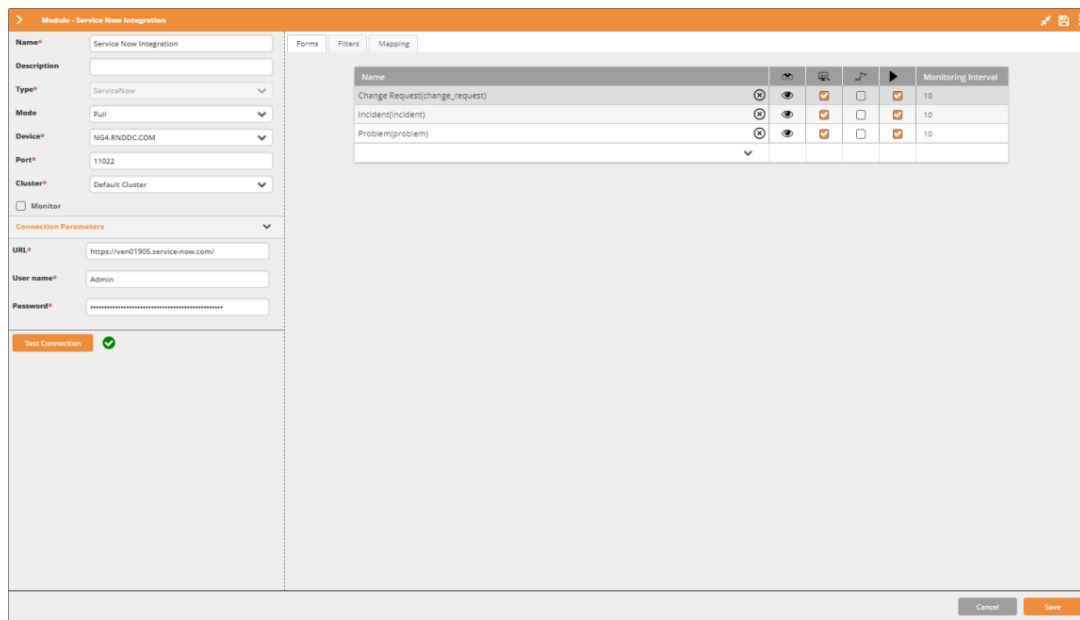
User name\* Admin

Password\*

Test Connection 

Cancel Save

- Click the expand button () . The **Forms**, **Filters** and **Mapping** tabs will appear, displaying the built-in ServiceNow forms and properties.



Module - Service Now Integration

Name\* Service Now Integration

Description

Type\* ServiceNow

Mode Pull

Device\* NG4.RNDDC.COM

Port\* 11022

Cluster\* Default Cluster


Monitor

Connection Parameters













URL\* https://ven01905.service-now.com/

User name\* Admin

Password\*

Test Connection 


Forms Filters Mapping


Name					Monitoring Interval
Change Request(change_request)					10
Incident(incident)					10
Problem(problem)					10



Cancel Save



6. **Forms:**

New ServiceNow alerts and tickets are pulled according to the form list and the defined filters. Records of forms that do not appear in list are not pulled.

- a. For each form, click **discover** ()

 **NOTE**

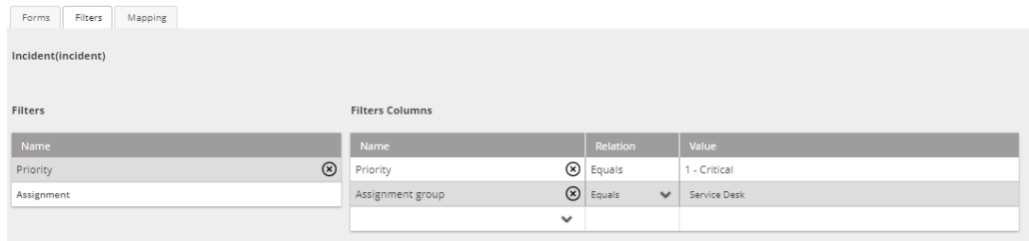
Once a form is discovered () , the form is monitored () and information is pulled from it.

- b. Check **Bypass Incident** () to process alerts and tickets without creating incidents.
- c. Check **Execute Workflow on Every Update** () to run the corresponding workflow upon each update of the incident, or clear to run it only upon the first instance.

7. **Filters:**


Filters determine which alerts and tickets are forwarded from ServiceNow to Ayehu Next Generation. To get all alerts and tickets of a specific form do NOT create any filters.

- a. Under **Name**, type in the name, type in the name of the form and click enter. The names of the fields discovered in the selected form are now displayed.
- b. Compose your filter rule. For example: you may want to pull the critical requests assigned to a group named Service Desk, as depicted in the following image:



## 8. Mapping:

Mapping is the translation of ServiceNow properties and fields into Ayehu Next Generation variables, severities, and states. Each form is assigned a default mapping, as depicted in the following image:



**NOTE**

ServiceNow forms can be created and configured by users, therefore the mapping tab will not contain all pre-configured ServiceNow properties, but only the common ones.

Forms Filters Mapping

Incident(Incident)

Fields

Ayehu	Integration
Classification	Category
EventName	Task type
ExternalID	Number
Information	Short description

Severity

Static severity ▼  
 Customized severity Priority ▼

Ayehu Severity	Integration Severity
Critical	1 - Critical
Info	5 - Planning
Major	2 - High
Minor	3 - Moderate
Warning	4 - Low


State

Static state ▼  
 Customized state \_State ▼

Ayehu State	Integration State
Down	New, Active, Awaiting Problem...▼
Up	Resolved, Closed

To change the default mapping:


- a. Next to each Ayehu Next Generation's variable, select the corresponding integration property.
- b. To open all incidents originating from this form with a selected static severity, select **Static Severity** and set it. Otherwise select **Customized Severity** and map the corresponding integration properties to the Ayehu Next Generation severities.



**TIP**


You may map multiple ServiceNow properties into a single severity.

- c. To open all incidents originating from this form with a selected static state, select **Static State** and set it. Otherwise select **Customized State** and map the corresponding integration properties to the Ayehu Next Generation states.



**TIP**

You may map multiple ServiceNow properties into a single state.



**NOTE**

When using a static state, closing the request in ServiceNow does not close the Ayehu Next Generation incident, and vice versa.



### NOTE


When more than one mapping option is selected for the “Up” state, closing the incident from Ayehu LIVE changes the selected property to the first option in the list.

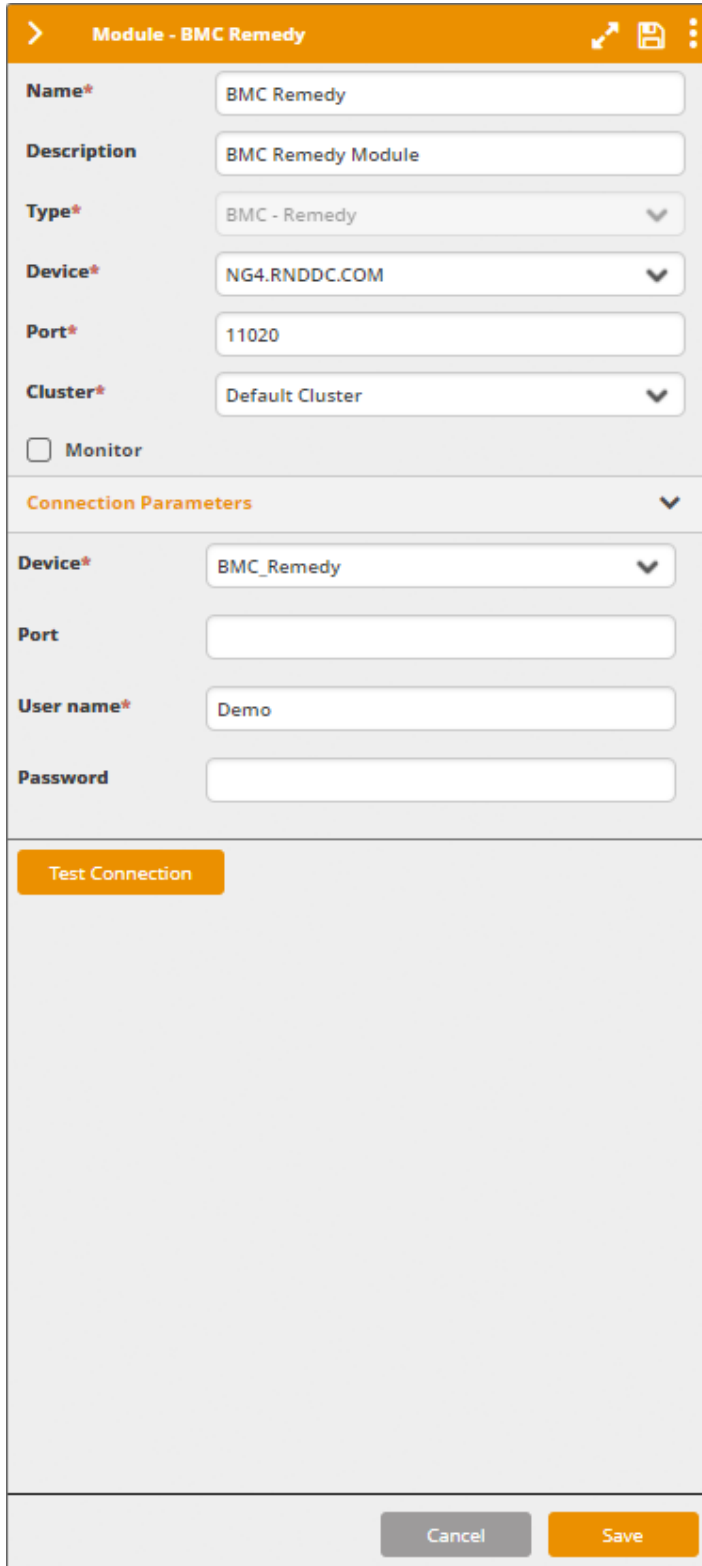
#### 9.2.6.2. BMC Remedy Integration Module

The BMC Remedy Module provides a communication channel between BMC Remedy and Ayehu Next Generation. Once the Module is defined and available, Ayehu Next Generation pulls new submitted records and updates, translates them into incidents and displays them in Ayehu LIVE. Records closed in the BMC Remedy trigger incident closure in Ayehu Next Generation.

*To configure the BMC Remedy integration module:*


1. Click **Connection Parameters**.
2. In the URL field, type in the BMC Remedy **URL**.
3. Enter the **User Name** and **Password** of an Admin user authorized to access the server.

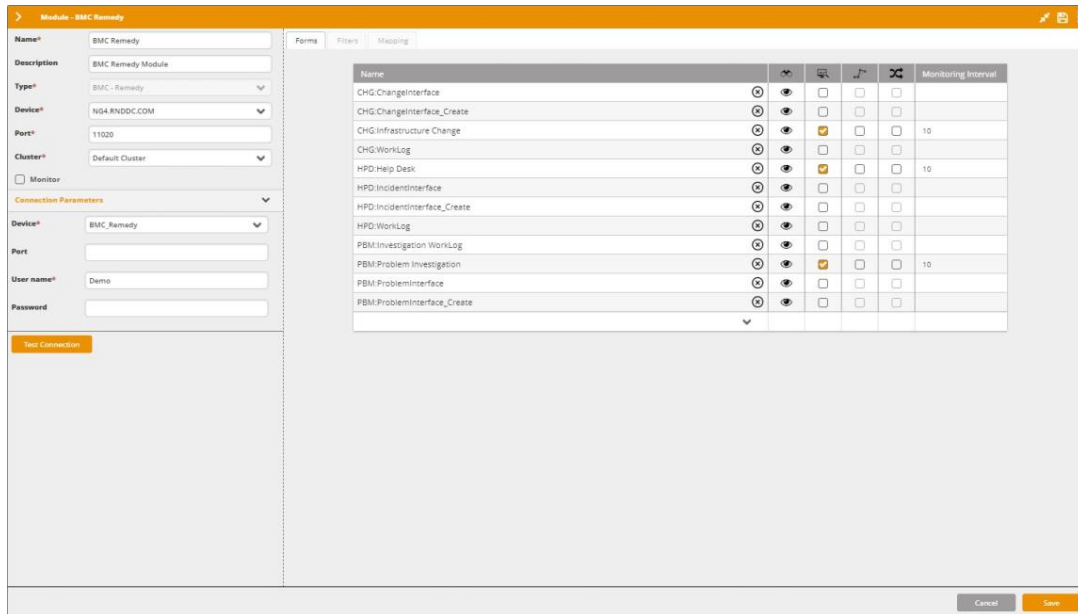
4. Click **Test Connection** to verify your connection with the server. A valid connection is indicated with .



The screenshot shows a configuration form titled "Module - BMC Remedy". The form contains the following fields and sections:

- Name\***: Text input field containing "BMC Remedy".
- Description**: Text input field containing "BMC Remedy Module".
- Type\***: Dropdown menu showing "BMC - Remedy".
- Device\***: Dropdown menu showing "NG4.RNDDC.COM".
- Port\***: Text input field containing "11020".
- Cluster\***: Dropdown menu showing "Default Cluster".
- Monitor**: A checkbox that is currently unchecked.
- Connection Parameters**: A section header with a dropdown arrow, containing:
  - Device\***: Dropdown menu showing "BMC\_Remedy".
  - Port**: Empty text input field.
  - User name\***: Text input field containing "Demo".
  - Password**: Empty text input field.
- Test Connection**: A prominent orange button.
- Cancel** and **Save**: Buttons at the bottom right of the form.


5. Click the expand button (  ). The **Forms**, **Filters** and **Mapping** tabs will appear, displaying the built-in BMC Remedy forms and properties.



The screenshot shows the 'Module - BMC Remedy' configuration window. On the left, there are fields for Name, Description, Type, Device, Port, Cluster, and Connection Parameters. The main area is divided into 'Forms', 'Filters', and 'Mapping' tabs. The 'Forms' tab is active, displaying a table of forms with columns for Name, Discover, Monitor, Bypass Incident, Execute Workflow on Every Update, and Monitoring Interval.



Name	Discover	Monitor	Bypass Incident	Execute Workflow on Every Update	Monitoring Interval
CHG.ChangeInterface	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CHG.ChangeInterface_Create	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CHG.Infrastructure Change	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10
CHG.WorkLog	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HPD.Help Desk	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10
HPD.IncidentInterface	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HPD.IncidentInterface_Create	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HPD.WorkLog	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PBM.Investigation WorkLog	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PBM.Problem Investigation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10
PBM.ProblemInterface	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PBM.ProblemInterface_Create	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

6. **Forms:**  
New BMC Remedy records and updates are pulled according to the form list and the defined filters. Records of forms that do not appear in list are not pulled.

- a. For each form, click **discover** (  ).

 **NOTE**

Once a form is discovered (  ), the form is monitored (  ) and information is pulled from it.

- b. Check **Bypass Incident** (  ) to process records and updates without creating incidents.
- c. Check **Execute Workflow on Every Update** (  ) to run the corresponding workflow upon each update of the incident, or clear to run it only upon the first instance.

7. **Filters:**

Filters determine which records and updates are forwarded from BMC Remedy to Ayehu Next Generation. To get all records and updates of a specific form do NOT create any filters.

- a. Under **Name**, type in the name, type in the name of the form and click enter. The names of the fields discovered in the selected form are now displayed.
- b. Compose your filter rule. For example: you may want to pull the critical records, as depicted in the following image:


The screenshot shows the configuration interface for a BMC Remedy module. The left sidebar contains fields for Name, Description, Type, Device, Port, Cluster, and Connection Parameters. The main area is titled 'HPD:Help Desk' and contains a 'Filters' section with a table for defining filter rules.

Filters		Filters Columns	
Name	Value	Name	Value
Priority		Priority	Equals Critical



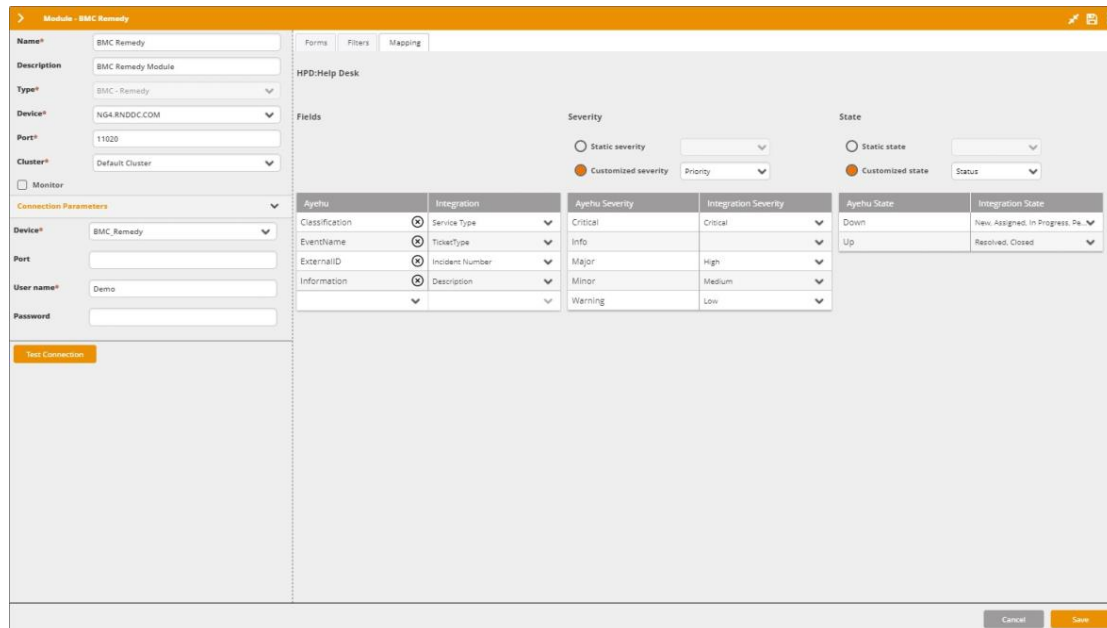
## 8. Mapping:

Mapping is the translation of BMC Remedy properties and fields into Ayehu Next Generation variables, severities, and states. Each form is assigned a default mapping, as depicted in the following image:



**NOTE**

BMC Remedy forms can be created and configured by users, therefore the mapping tab will not contain all pre-configured BMC Remedy properties, but only the common ones.



Ayehu	Integration	Ayehu Severity	Integration Severity	Ayehu State	Integration State
Classification	Service Type	Critical	Critical	Down	New, Assigned, In Progress, Re...
Eventname	TicketType	Info		Up	Resolved, Closed
ExternalID	Incident Number	Major	High		
Information	Description	Minor	Medium		
		Warning	Low		

To change the default mapping:

- a. Next to each Ayehu Next Generation's variable, select the corresponding integration property.
- b. To open all incidents originating from this form with a selected static severity, select **Static Severity** and set it. Otherwise select **Customized Severity** and map the corresponding integration properties to the Ayehu Next Generation severities.



**TIP**

You may map multiple BMC Remedy properties into a single severity.

- c. To open all incidents originating from this form with a selected static state, select **Static State** and set it. Otherwise select **Customized State** and map the corresponding integration properties to the Ayehu Next Generation states.



**TIP**

You may map multiple BMC Remedy properties into a single state.



#### NOTE

When using a static state, closing the request in BMC Remedy does not close the Ayehu Next Generation incident, and vice versa.



#### NOTE

When more than one mapping option is selected for the “Up” state, closing the incident from Ayehu LIVE changes the selected property to the first option in the list.

### 9.2.6.3. Using Integration Module Variables

When the ServiceNow Module is available, related variables are discovered in Ayehu Next Generation and can be used to define conditions or workflow activities.

#### *To use integration module variables in a condition:*

1. In the condition properties, under **Variable Type**, select the relevant integration module.
2. Under **Module Form**, from the available list of forms, select the relevant form.
3. Under **Object**, select the mapped variable.
4. Complete the condition.

#### *To use integration module variables in activities:*

- Use the convention %variable\_name%.



#### NOTE

In Ayehu Next Generation, the names of “State” and “Severity” integration variables are “\_State” and “\_Severity”.

## 9.3. Logins

### 9.3.1. Understanding Logins

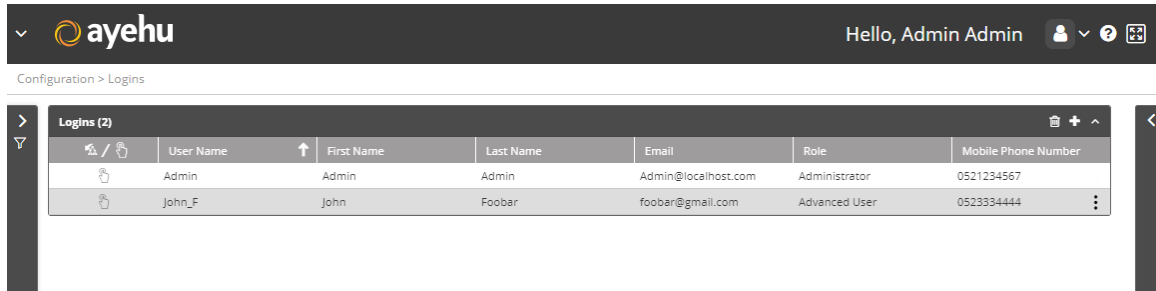
The login window allows you to manage users who login to Ayehu Next Generation and apply different permissions to each of them.



#### NOTE

Recipients of Ayehu Next Generation are created in Repository > [Recipients \[232\]](#).

Choose **Configuration > Logins**. The following window is displayed:



The login list provides the following information:

**Table 86. Logins Fields**

Column	Description
	Imported from active directory  or manual
User Name	User display name
First Name	User first name
Last Name	User last name
Email	User email (not validated here)
Role	The user's role, indicates his permissions: <ol style="list-style-type: none"> <li>Administrators may view Home Page, Insight, Builder, Repository, Knowledge Base, and Configuration.</li> <li>Developers may view Home Page, Insight (with the exception of Intelligence), Builder (including the Activity Designer), Repository, and Knowledge Base.</li> <li>Workflow Editors may view Home Page, Insight (with the exception of Intelligence), Builder (with the exception of Activity Designer), Repository, and Knowledge Base.</li> <li>Specialists may view Home Page, Insight (with the exception of Intelligence), Builder (with the exception of Activity Designer), Repository, and Knowledge Base.</li> <li>Operators may view Home Page, Insight (with the exception of Intelligence), Builder (with the exception of Activity Designer), Repository, Knowledge Base, License Details, and Login Users.</li> <li>Advanced Users may view Home Page.</li> <li>Self Service Users may view only Self Service Portal.</li> </ol>
Mobile Phone Number	User mobile phone number




**NOTE**

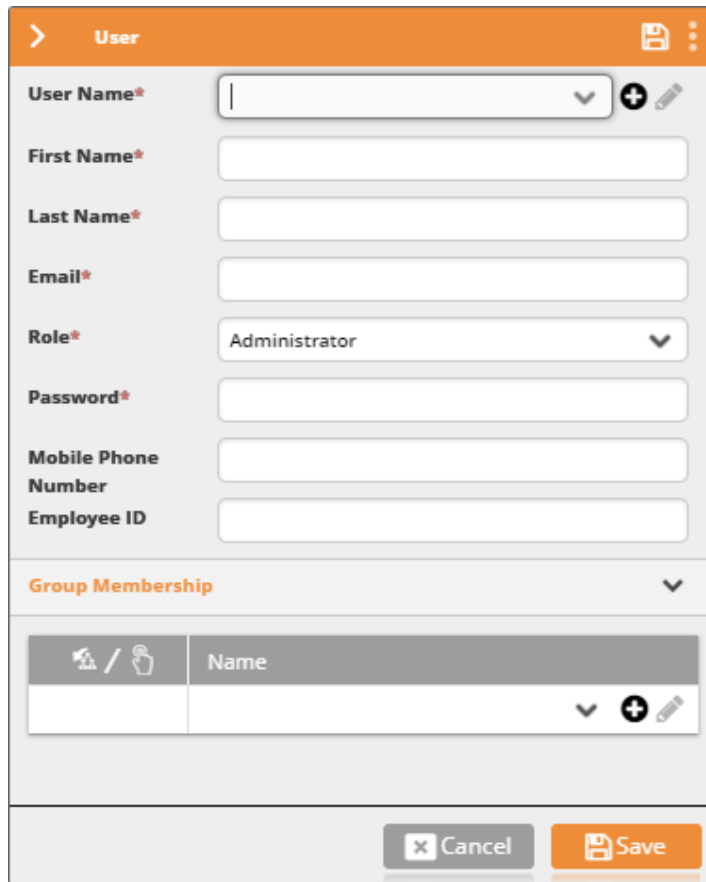
The only action icons are delete and add.

### 9.3.2. Managing Logins

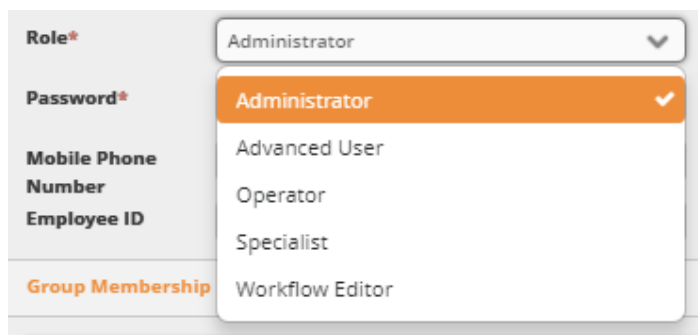
**To Add a user to the login list:**

1. From the top menu, go to **Configuration > Logins**.

- From the upper-right corner of the login table, click . The user properties screen will appear:



- Enter the user's name, first and last name, email address.
- The **Role** may be of the following:




- Enter the password, mobile phone number and employee ID.



### CAUTION


- The Admin user can change any existing password here
- A regular user can change his own password here
- There is no confirmation dialog, so take care when using this feature

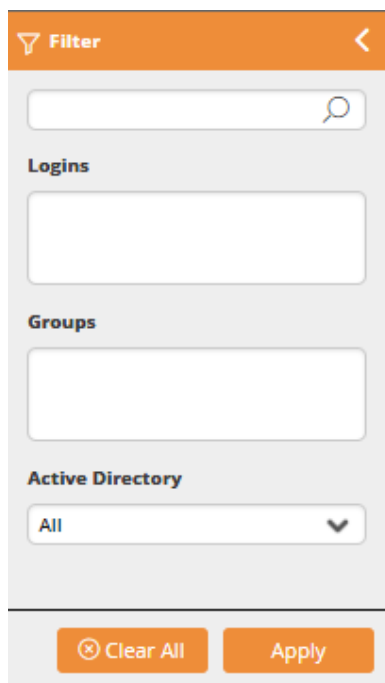
6. Under **Group Membership**, you may add the user to [groups \[234\]](#).
  - a. Under **Name**, select the group to which the user will be added.
  - b. To remove the user from the group, select the group from the group membership list and click  .
7. Click **Save**.

### 9.3.3. Filtering the Login Users

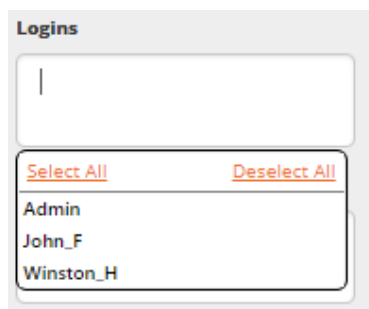
The Filter panel allows you to easily locate login users.

**To filter the list of login users:**

1. From the left side of the screen, click  . The filter pane will appear:

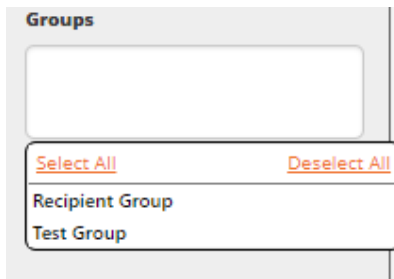


2. In the top edit box, enter your filter text.
3. Click the **Logins** box to see Logins matching your filter.



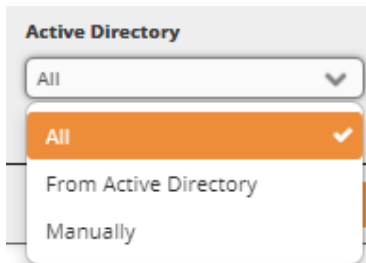
Choose one.

- Click the **Groups** box to see Groups matching your filter from the list.



Choose one.

- Open the Active Directory list.



Choose the required source or **All**.

- Click **Apply** to filter the list of logins.

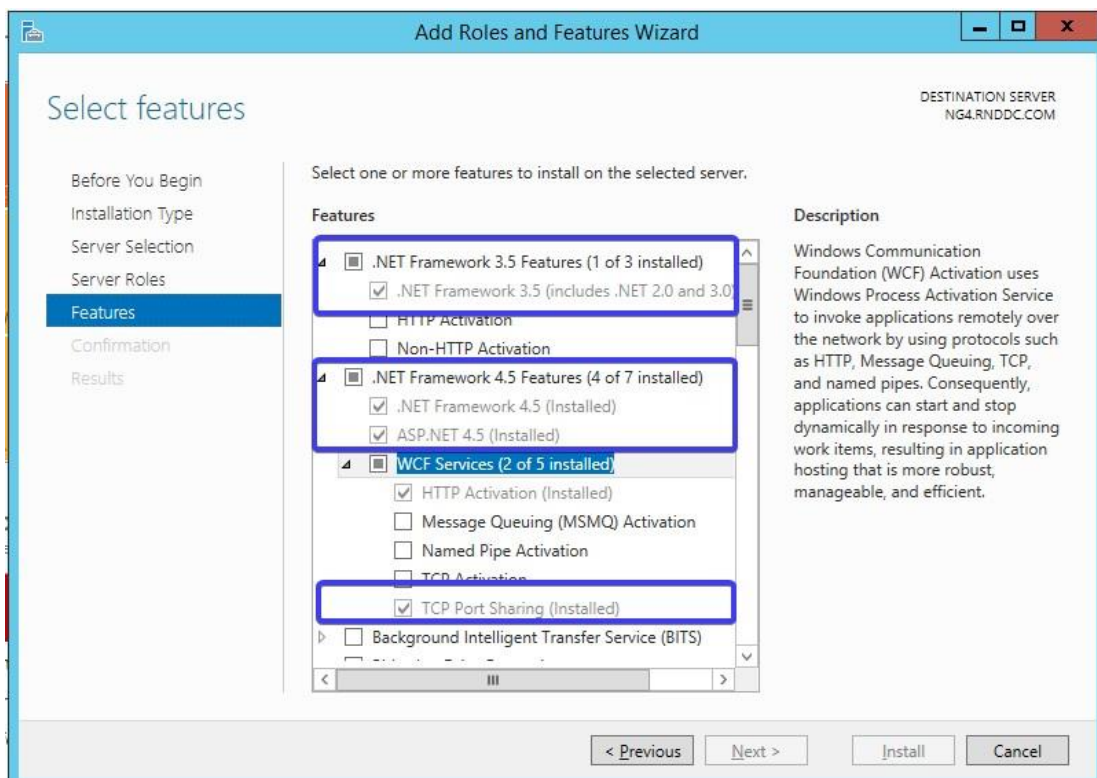
## 10. TECHNICAL APPENDIXES

### 10.1. Installing Ayehu NG

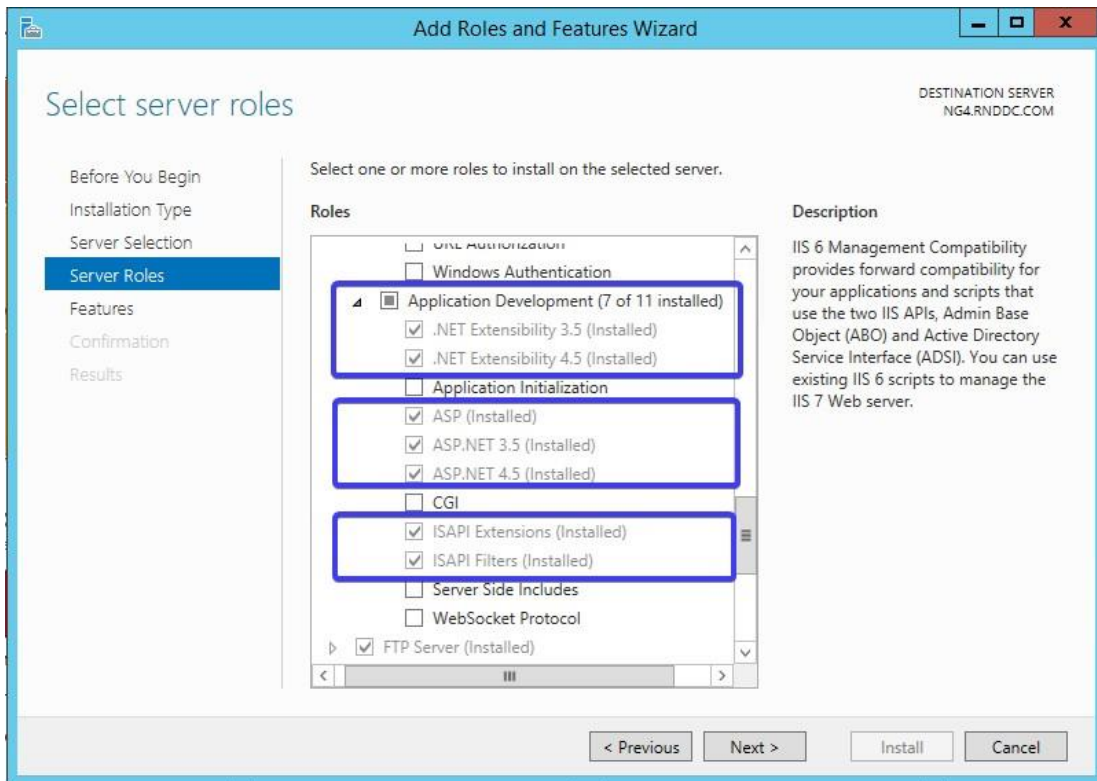
#### 10.1.1. Pre-Installation Requirements

Before installing Ayehu Next Generation, check the following:

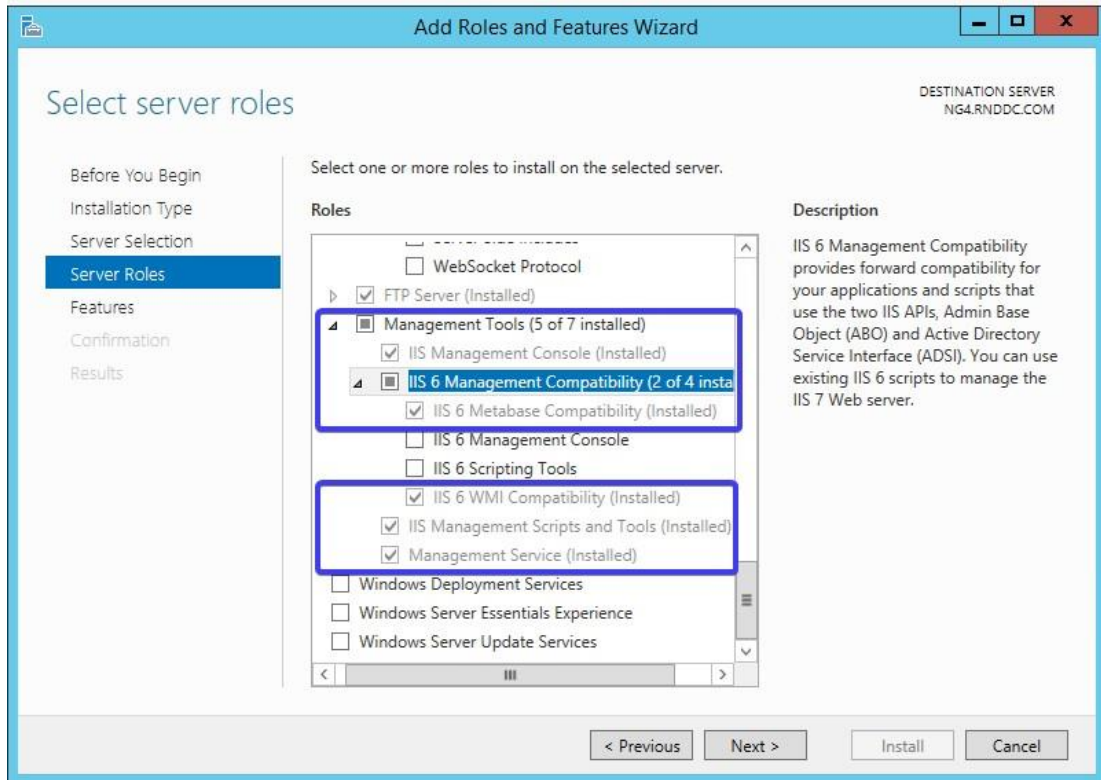
1. Port 1433 is open between the Ayehu Next Generation server, engine, comm server and the Ayehu Next Generation database server.
2. If you are installing Ayehu Next Generation on a remote server, open port 1433 to the database server, and port 11000 to the Ayehu Next Generation server.
3. You are installing Ayehu Next Generation on a 64-bit Windows Server. The following features must be enabled.



- To install the Web component, install the web Server roles (IIS) on the designated server prior to the Ayehu Next Generation installation from **Server Manager > Server Roles**, as depicted below:

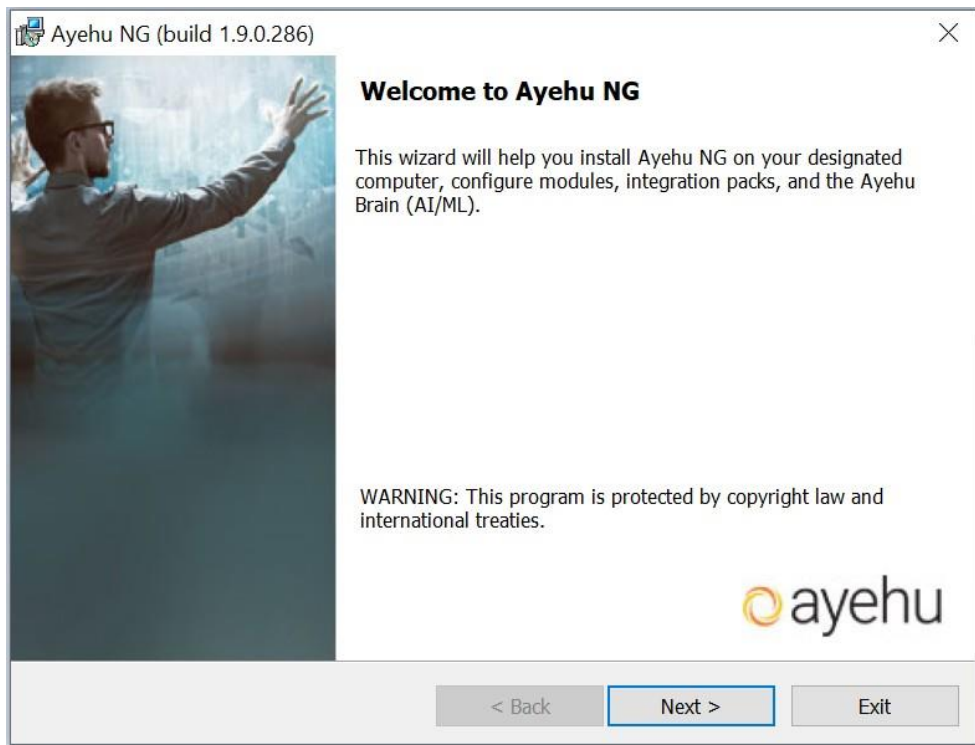






## 10.1.2. Installation Procedure

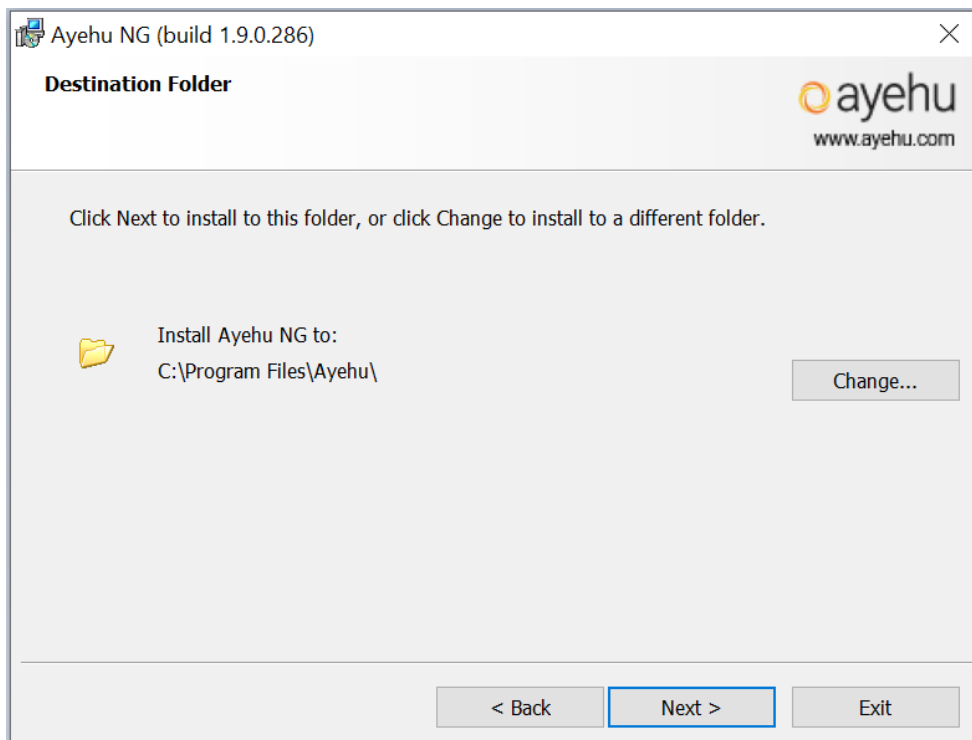
1. Execute the installation file, **Ayehu NG.exe** as an administrator. On the welcome page click **Next**.



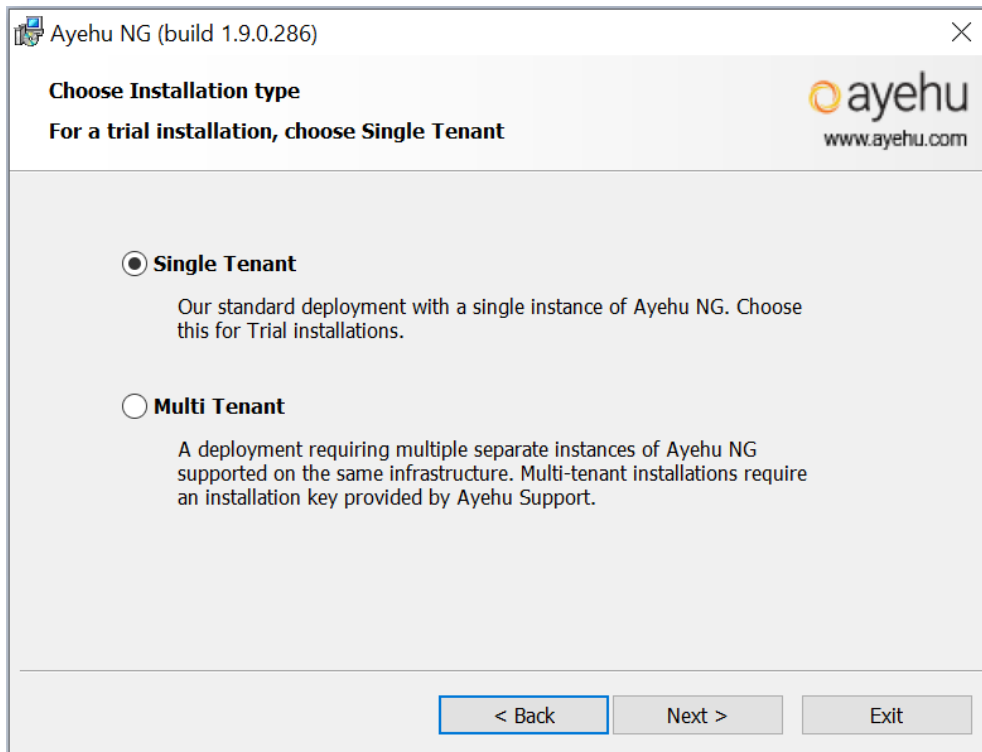
2. Read Ayehu's License Agreement, select **I accept the terms in the license agreement** and click **Next**.



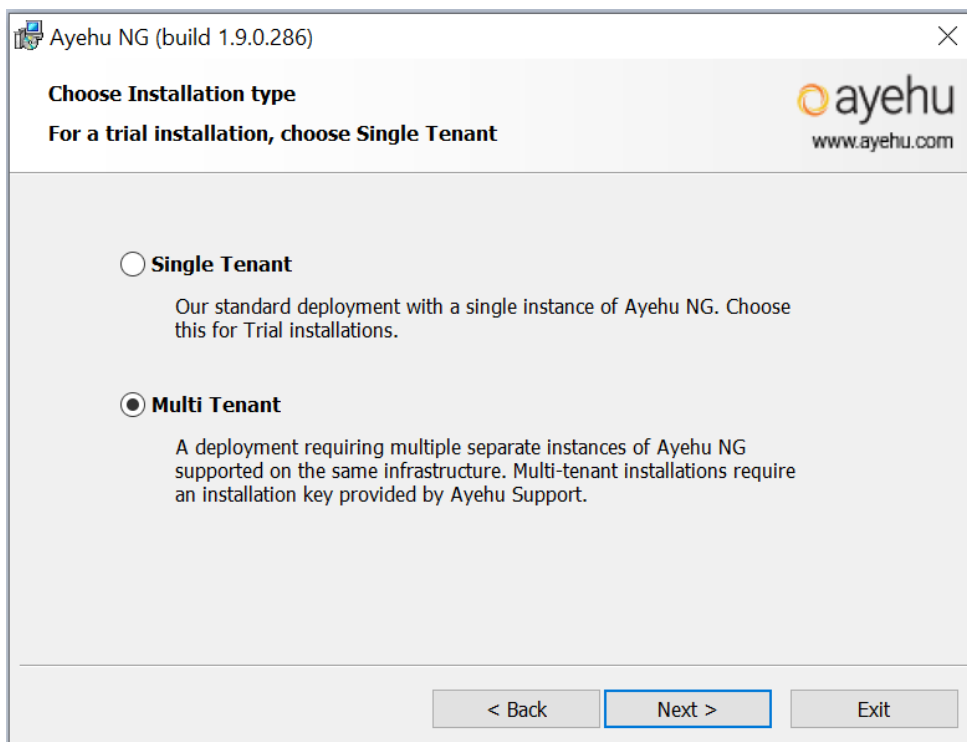
3. Select the installation path and click **Next**.

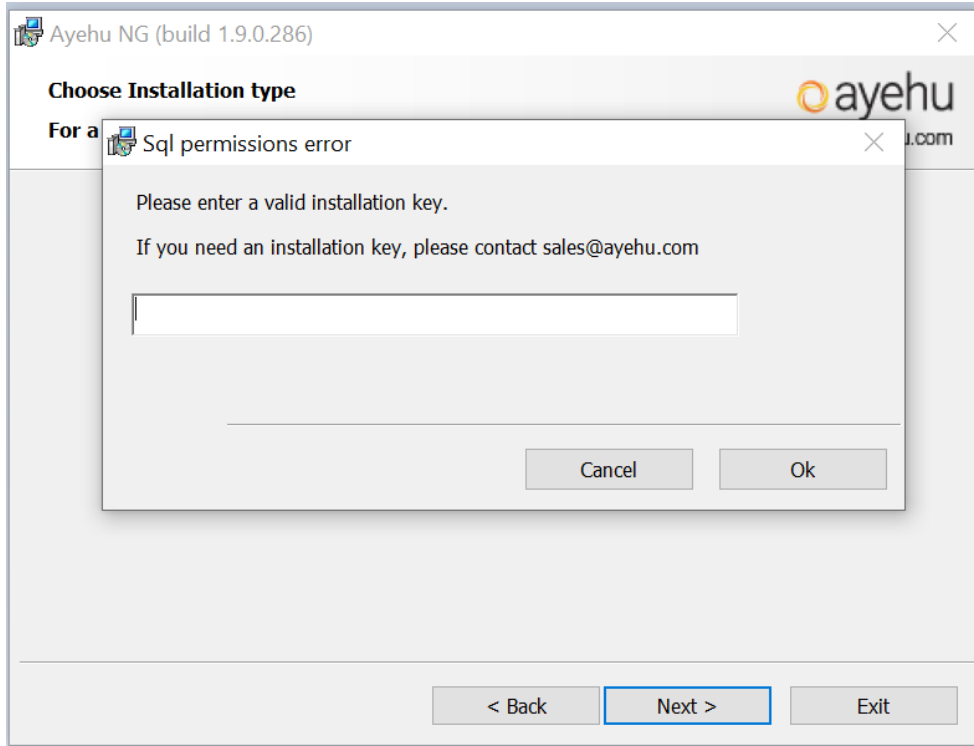


4. Choose the **installation type** you wish to install. For a standard deployment or a trial environment, select **Single Tenant**

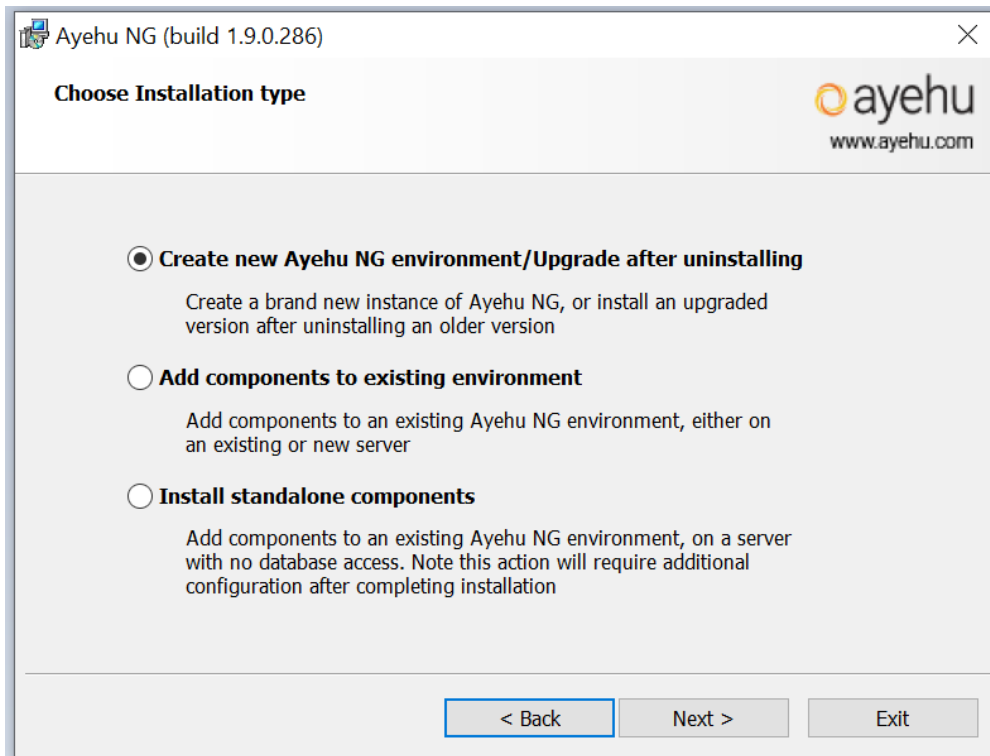


For multi-tenant installations select **Multi Tenant**. Multi tenant installations require an installation key that can be provided by Ayehu Support

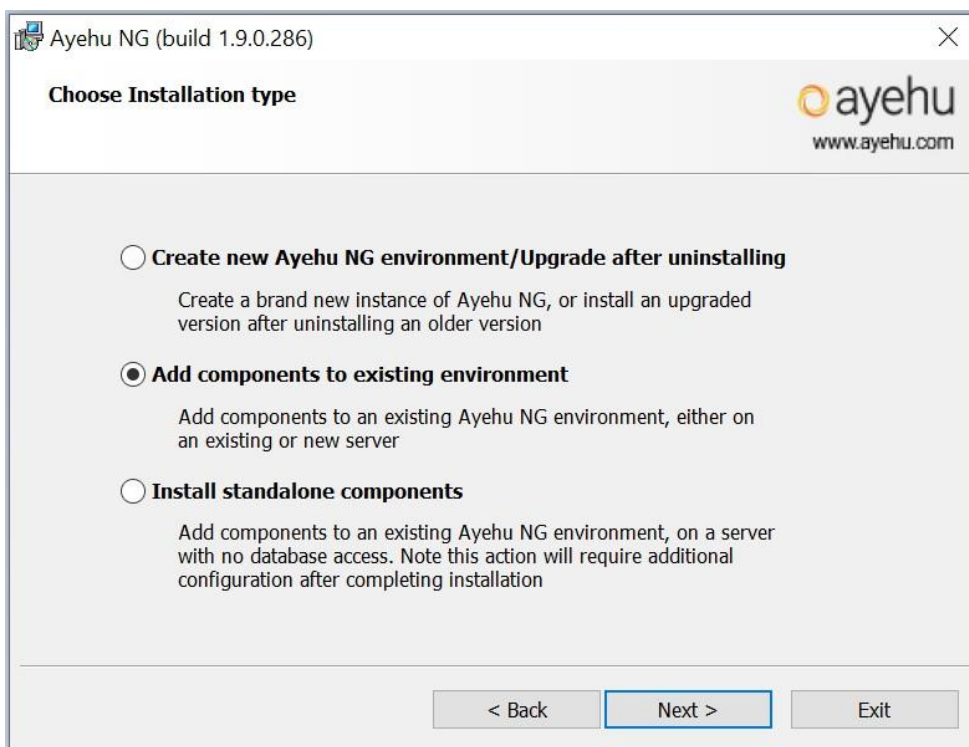




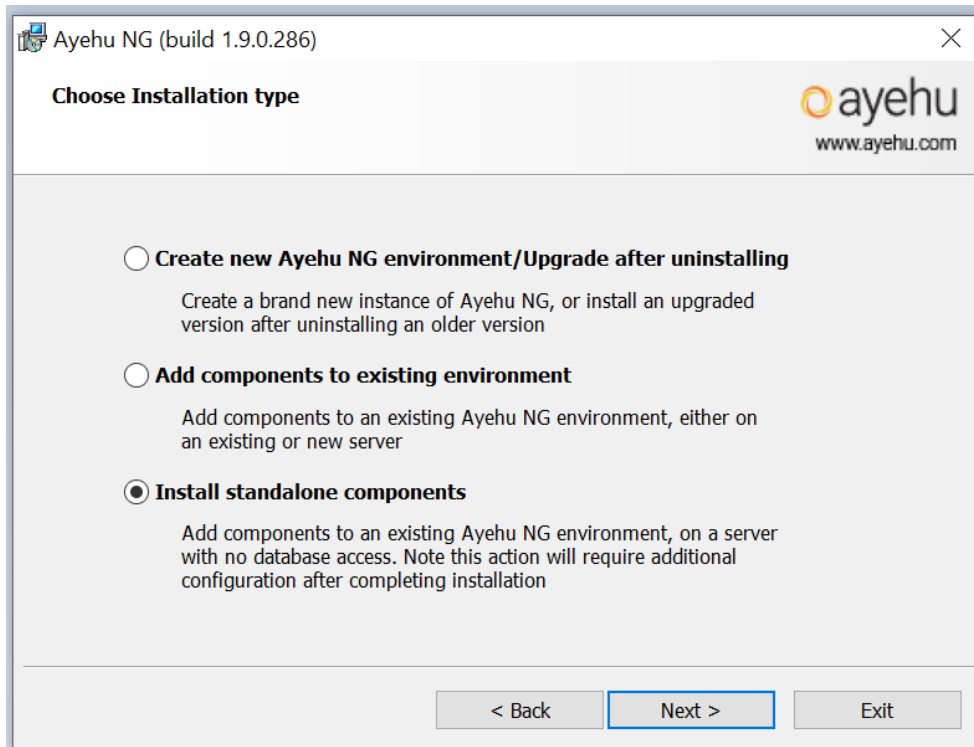
5. You can now select to **Create a new Ayehu NG environment** if this is a first time installation



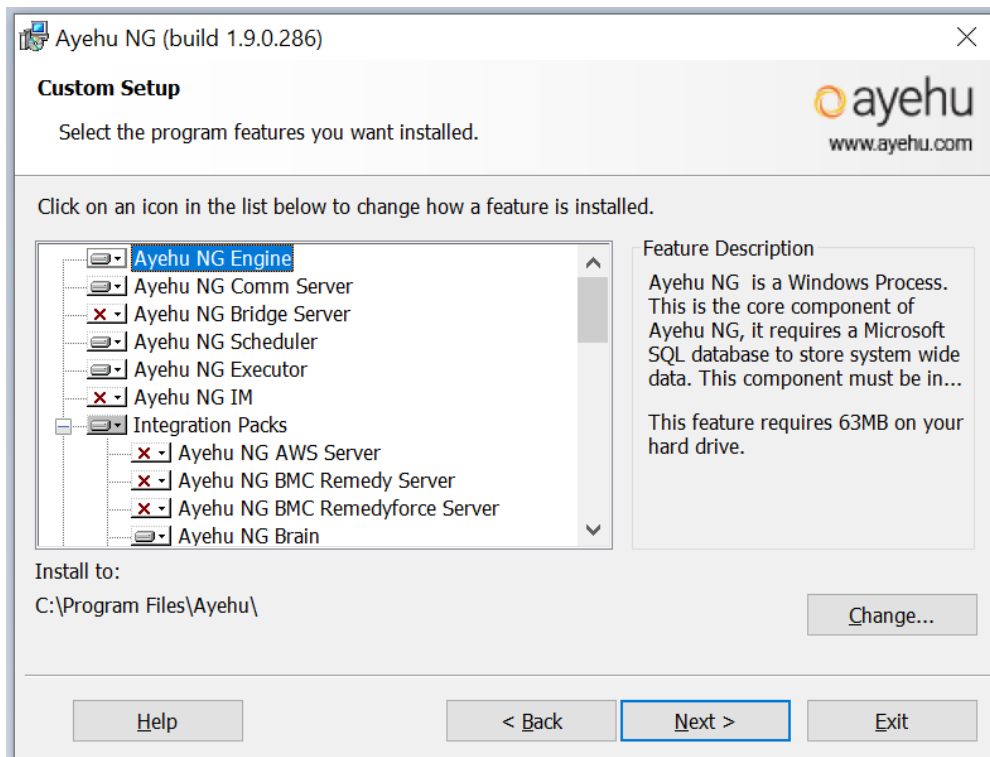
Select **Add components to existing environment** if you wish to add modules to an existing Ayehu NG environment



Select **Install standalone components** if you wish to install a module on a server that doesn't have DB connectivity (such as a DMZ). Additional configurations will be required after installation to complete this setup.



6. Select which components you'd like to install from the **Component Selection** tree.



Some components are selected by default. Any component selected by default will be automatically installed in your Ayehu NG environment at the end of the installation process. The **Ayehu NG Brain** integration will be automatically installed **and** configured. If this is not your desired result, you can de-select any integration by clicking on the arrow next to it and then selecting the **this feature will not be available** option.



7. Configure database connectivity:
  - a. If you do not have a database server, select **I don't have a database server...** and the installation will also install an SQL Express database server.

Ayehu NG (build 1.9.0.286)

**Create Ayehu Database**  
Select database server and authentication method

ayehu  
www.ayehu.com

I don't have a database server, install Microsoft SQL Express 2012 SP4 on this machine  
 I already have a Microsoft SQL server 2012 SP1 - 2019

Database server that you are installing to:  
\_\_\_\_\_

DB Name: Ayehu

Connect using:  
 Windows authentication credentials of current user  
 Server authentication using the Login ID and password below

Login ID: \_\_\_\_\_  
Password: \_\_\_\_\_

< Back    Next >    Exit

- b. If you do have a database server, select **I already have a Microsoft SQL server...** and configure the server name and the authentication method as follows:

Ayehu NG (build 1.9.0.286)

### Create Ayehu Database

Select database server and authentication method

ayehu  
www.ayehu.com

I don't have a database server, install Microsoft SQL Express 2012 SP4 on this machine

I already have a Microsoft SQL server 2012 SP1 - 2019

Database server that you are installing to:

DB Name: Ayehu

Connect using:

Windows authentication credentials of current user

Server authentication using the Login ID and password below

Login ID:

Password:

< Back   Next >   Exit

Use the full name or the IP address of the server where the database is located. Use the same name in every other Ayehu installation (for example, when installing a remote engine). Never use (local) or Localhost\Instance Name. When defining a server name, it should be in the form of: Servername\Instance. When defining specific ports, it should be in the form of: Servername\Instance,Port-Number

8. For a first time installation, the provided user must have Sysadmin role on the database server, or must be a custom user set up with the permissions defined [here](#). This role can be revoked after the installation is completed; however, the user must maintain a DB\_Owner role.

You can change the credentials that are used to communicate between the components and the server.

**Database Connection**  
Select how Ayehu components login to the Ayehu database

Name of database catalog:

Database server that you are installing to:

Connect using:

Windows authentication credentials of current user

Server authentication using the Login ID and password below

Login ID:

Password:

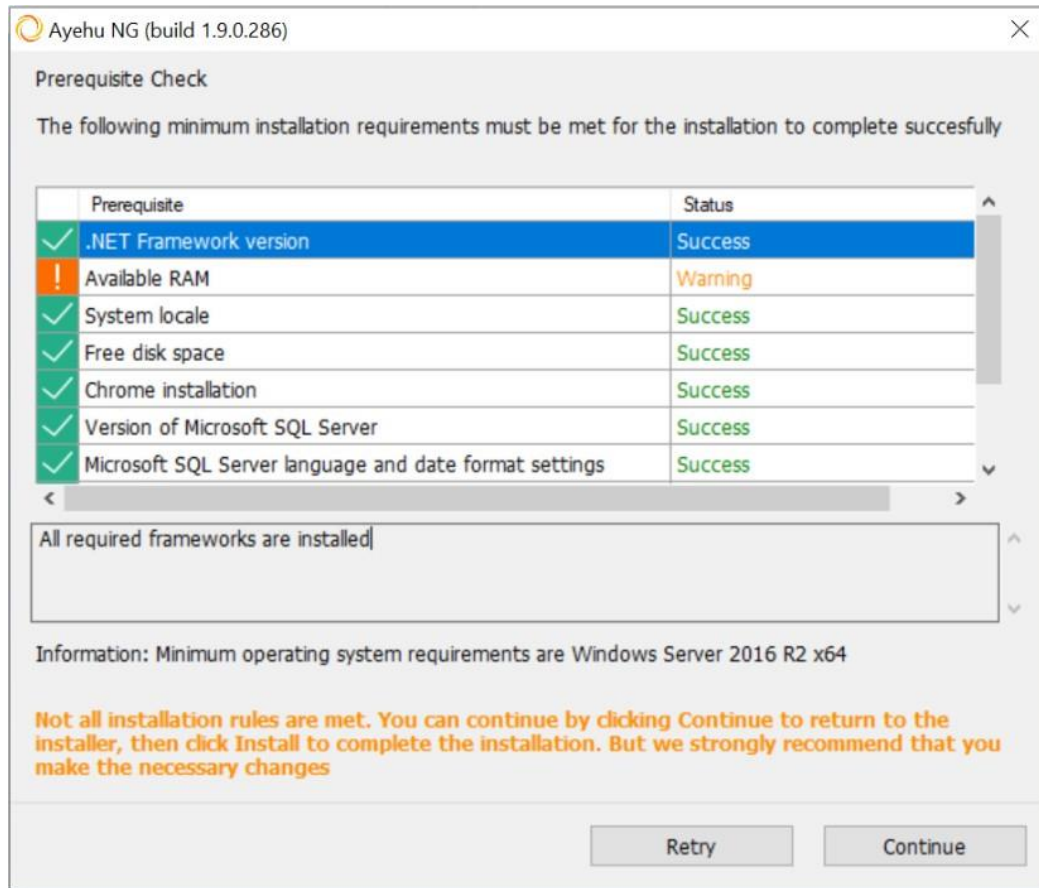
< Back    Next >    Exit

Do not cancel the SQL Setup, as it will terminate installation.

If you selected to use Windows Authentication method, follow the instructions in the [Post Installation \[311\]](#) section.

Click **Next** to continue.

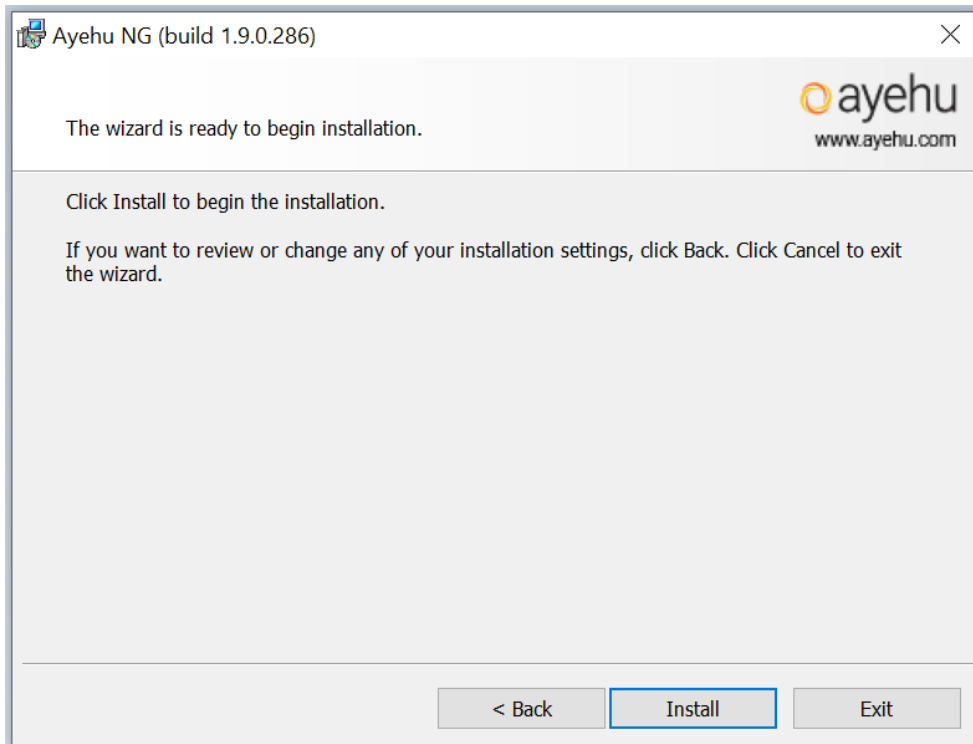
- The next screen presented will be the **pre-requisites check** screen. This process will review all parameters needed for your installation and verify that everything is properly configured for you to install and run Ayehu NG



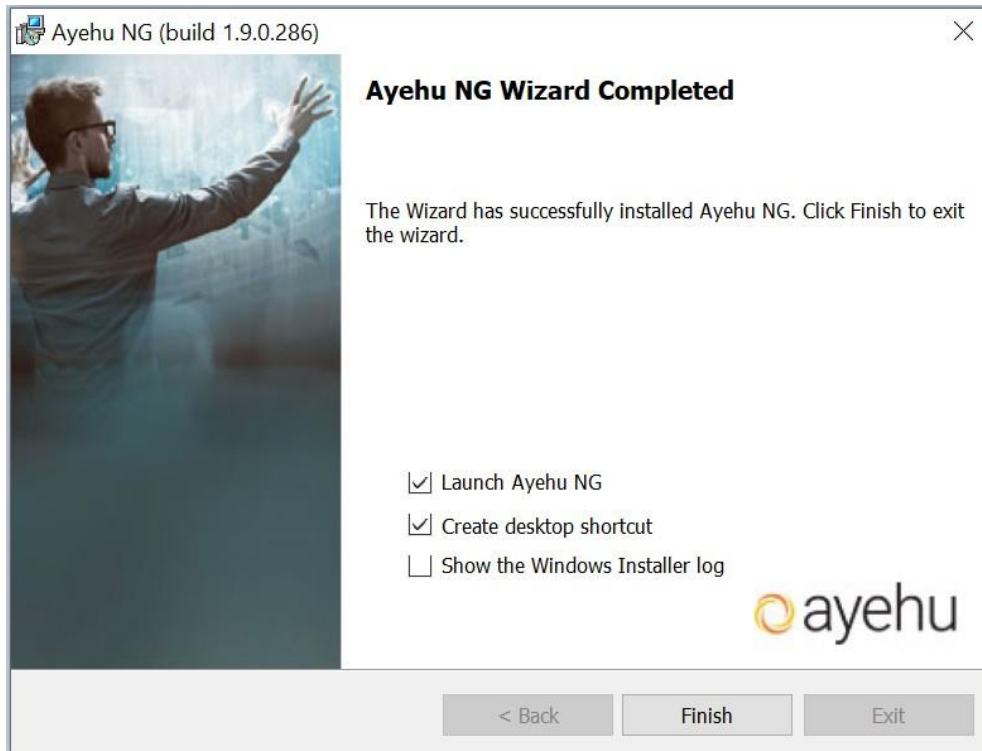
There are some pre-requisites - such as available RAM - which will be presented as a warning that can be bypassed if the risks are understood. Refer to the information window to see more about each line item.

For some changes - such as modifying IIS features - it is possible to make the necessary changes and then click **Retry** to run the pre-requisites scan again and get updated results. For issues that cannot be bypassed - such as insufficient version of SQL server - you will have to **Close** the pre-req screen, make the necessary changes, and then try again. If all conditions have been met, click on **Continue** to go to the next step.

10. Click on **Install** to install Ayehu NG



11. Once the installation is complete, the **Finish** screen will be presented



Here you will see two checkboxes selected by default. One to **Launch Ayehu NG**, which will open your Chrome browser to your Ayehu NG environment URL. The other is to **Create desktop shortcut** which will place a shortcut to the Ayehu NG tenant (in a single tenant install) or to the Ayehu NG Master (in a multi-tenant install)

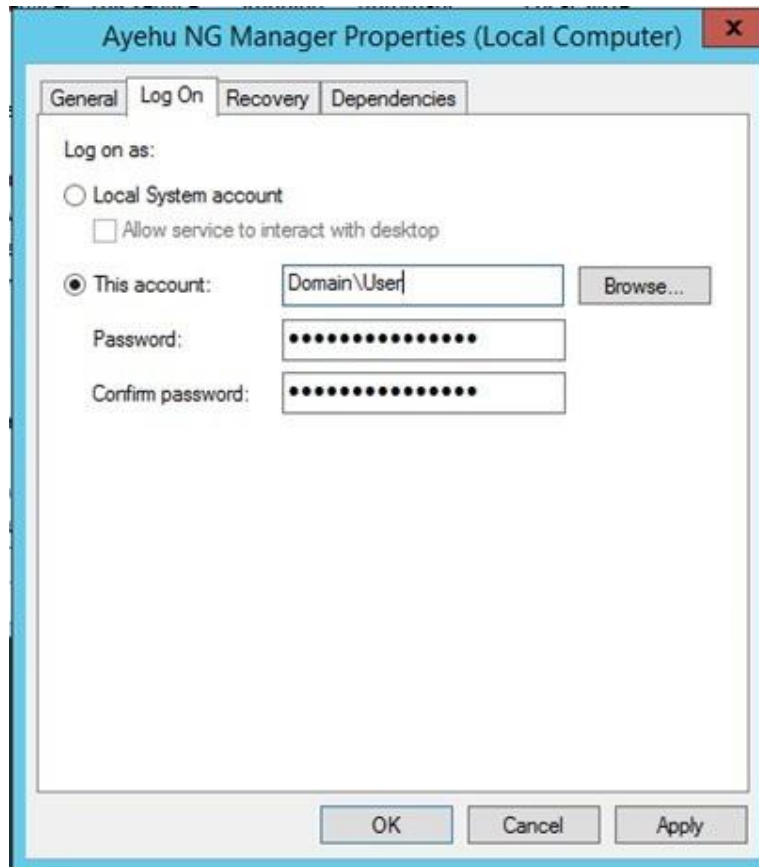


12. Installation is now complete. Please make sure to reference the [Post-Installation Procedure \[311\]](#) as well as the [Super Admin Registration and First Time Login \[312\]](#) sections for more important information.

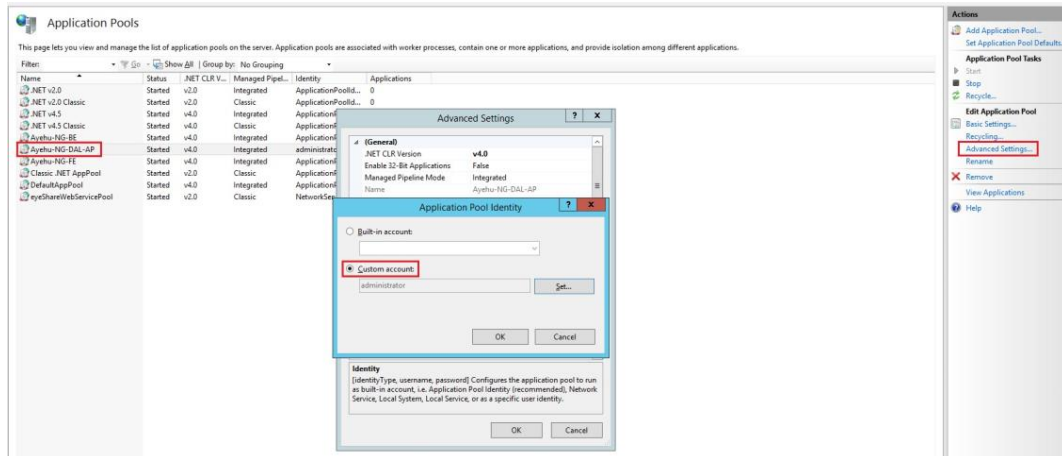
### 10.1.3. Post-installation Procedure

**After complementing the Installation procedure:**

- If you selected the **Windows Authentication** method in the database configuration window during the installation:
  - a. For the **Logon Account** of the **Ayehu NG Manager** service, select an account that has **DB\_Owner** privileges to Ayehu Next Generation and on the Ayehu Next Generation Master databases. To edit the Logon Account for both services, open the Service Management console on the Ayehu Next Generation server, right click each service and select **Properties**. Edit the account in the **Log On** tab, and restart the service.



- b. Set the Identity of the **Ayehu-NG-DAL-AP** application pool to an account that has DB\_Owner privilege on the Ayehu Next Generation and Ayehu Next Generation Master databases: open **IIS > Application Pools** and select **Ayehu-NG-DAL-AP**. Select **Advanced Settings**, click **Identity** and Select **Custom**.



### 10.1.4. First Time Log In

Before proceeding with the super admin registration process, if you selected **windows authentication** during the installation process please refer to the **post installation requirements** section for critical information.

To log into your Ayehu Next Generation tenant for the first time, follow the following steps:

1. Open a Chrome browser, the latest Chrome version is recommended
2. Navigate to the URL where your instance resides. The URL will be `https://<Ayehu NG Server>:8442`
3. If you receive a certificate error, click Advanced and then click on Proceed to <URL> (unsafe)

Upon initial entry to the page, if this is a first time installation and no admin user has previously been created, you will see the **Super Admin Registration Page**. This process will create a super admin user that will have access to every aspect of the system, please ensure to use proper credentials here.



**Welcome to Ayehu NG**

**Let's get started!**

Please define the details for the Super Admin account, this account will have full system access.

Password must be between 8-32 characters and include at least one upper case letter and one number or special character.

All fields are mandatory.

**User Name**

**Password**

**Confirm Password**

**First Name**

**Last Name**

**Email**

**Phone Number**

**Company**

Automatically register to receive a trial license

I'm not a robot

reCAPTCHA  
Privacy - Terms

**Next**

Enter all details of the desired user here. Note that all fields are required, as is a certain password complexity that is explained in the form. The “Automatically register to receive a trial license” is checked by default, and should be used if you are starting a trial of Ayehu NG. Note that an internet connection is required if you wish to proceed with this checkbox selected. If you wish to use Ayehu NG in a production environment, uncheck this box and submit a license request in our Support Portal after you log into your instance.

Once this user is created, they will become the **initial super admin** user in the system. Click **Next** when all details are filled in (CAPTCHA checkbox must be checked if the "Automatically register to receive a trial license" checkbox is selected).

**Welcome to Ayehu NG**  
**Let's get started!**

Please define the details for the Super Admin account, this account will have full system access.

Password must be between 8-32 characters and include at least one upper case letter and one number or special character.

All fields are mandatory.

**User Name** Administrator

**Password** .....

**Confirm Password** .....

**First Name** Jane

**Last Name** Doe

**Email** jdoe@acme.com

**Phone Number** +1-541-754-3010

**Company** Acme

Automatically register to receive a trial license

I'm not a robot

reCAPTCHA  
Privacy - Terms

Next

If you choose to proceed with the "Automatically register to receive a trial license" checkbox selected, you will be asked to activate your license by entering the activation code that has been sent to your email. Once you do so, the Ayehu NG Login page will be presented. If you choose to proceed with the checkbox unselected, the Ayehu NG Login page will be promptly presented. Enter the credentials of the user that was created in the previous step.

ayehu

Administrator \*

\*\*\*\*\* \*

Domain

Acme \*

Login

© Copyright - Ayehu Software Technologies, Ltd. | 2020

Click **Login** to log into your Ayehu NG instance. If you have not automatically registered to receive a trial license, you will be directed to the product license page, where you can copy the product key and submit a license request to our Support portal. For instructions on how to do this, see [this Support article](#).

## 11. COPYRIGHT

Copyright © 2021 Ayehu Software technologies LTD (“Ayehu”). All Rights Reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form or by any means without the written permission of Ayehu Software Technologies LTD., or its suppliers or affiliate companies.