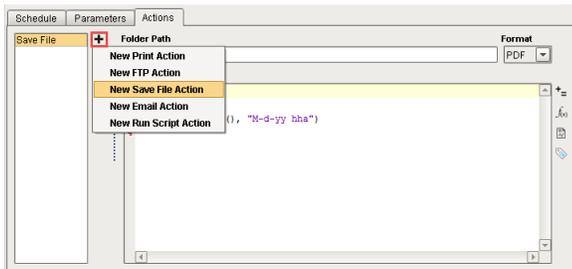# Scheduling Actions

Scheduling Actions

Actions can be configured to run once the report has generated at the scheduled time. Each action has its own custom configuration interface to make adding and editing Actions simple. The Actions you can perform following report generation are Print, FTP, Save, Email, and Run Script. You can even have multiple actions on the same schedule. So you can save the report to the hard drive, as well as email it out to multiple users.

Before creating any Scheduling Actions, you must first create a schedule.

To create an Action, click the **Actions** tab, click the plus icon ➕ and select an **Action**. Actions can be deleted using the trash can button 🗑, and executed immediately using the double arrow button ⏩.
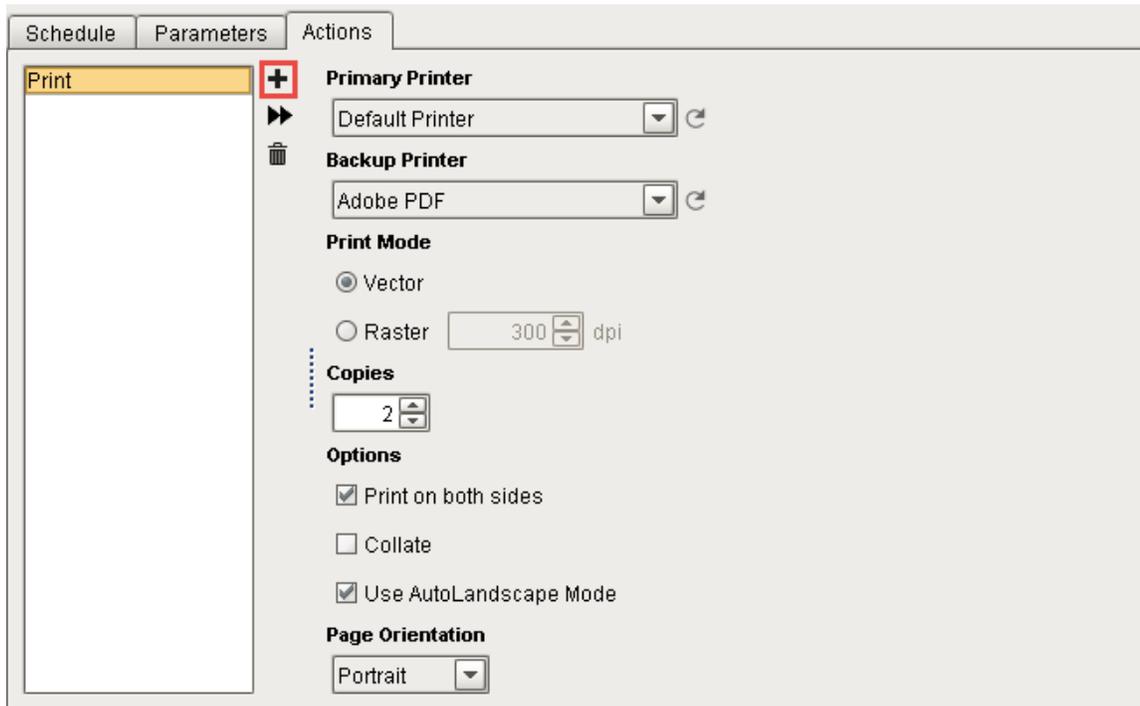
Print Action

The Print Action is used to send a report to a printer that is accessible from a computer Ignition is installed on. Here are a list of property descriptions for the **Print Action.**

Property Name	Description
Primary Printer	The primary method of printing the report.
Backup Printer	A backup method of printing the report. Will print using this option if the Primary Printer fails. [Optional]
Print Mode	The mode to print the report in. Can be either Vector or Raster. | Print Mode	Description
Vector	Uses math to draw shapes using points, lines, and curves.The most common types of vector graphics are fonts and logos. PDF is a popular vector type. Vector based graphics like SVG image files show images with no pixelation when the size is changed.
Raster	Are composed of thousands of pixels or dots. Set the dpi (dots per inch). Common raster file format extensions are jpg, jpeg, png, tiff, bmp, and gif.	
Copies	The number of copies of the report that will print.
Print on both sides	Will attempt to print on both sides of a sheet of paper, if supported by the printer.
Collate	Orders the pages so that a complete report prints before the next copy prints, if applicable.
Use AutoLandscape Mode	Evaluates the page dimensions and determines portrait or landscape orientation.

|	
Page Orientation	The orientation of the page. Can either be Portrait or Landscape.

FTP Action

The **FTP Action** can be used to automatically upload your reports to a file server for backups or storage. Here are a list of property descriptions for the **FTP Action.**

Property Name	Description
Server Address	The server address where the report file will be transferred.
Port	The port of the file transfer.
Folder Path	The folder path that the report file will be transferred to.
Format	The file format of the report.
Username	The username that will be used to access the FTP server.
Password	The password that will be used to access the FTP server.
SSL	Will use SSL encryption if True.
Filename	The name of the report file. The Filename property is constructed using the expression language.
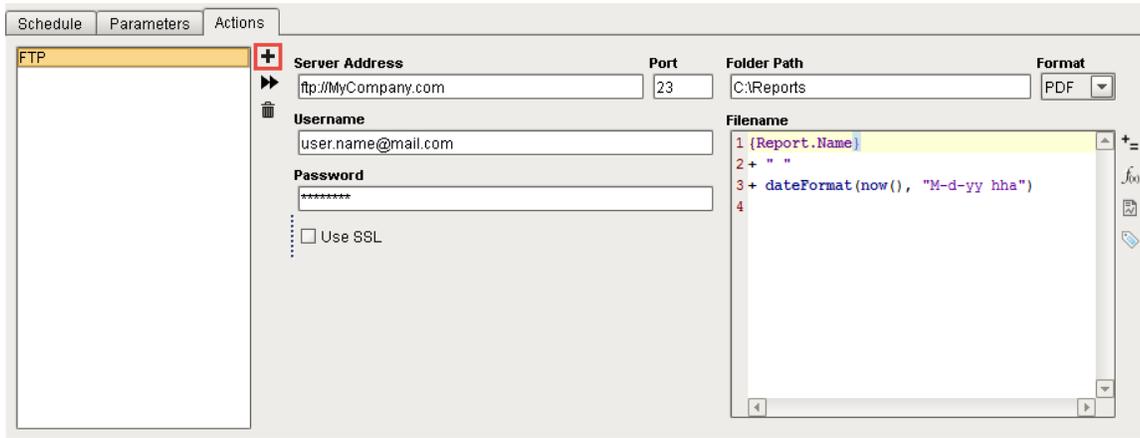
Save File Action

The **Save File Action** will save a copy of the report to any folder the Ignition server has access to, such as a local folder or network shared drive. Here are a list of property descriptions for the **Save File Action.**
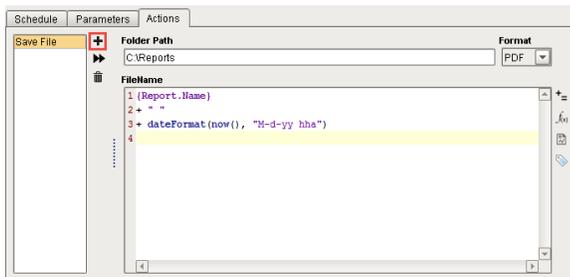
Property Name	Description
Folder Path	The folder path to save the report files to. This folder path is for the Ignition Gateway server.
Format	The file format of the report.
Filename	The name of the report files. The Filename property is constructed using the expression language.

Scheduling Actions - Save

[Watch the Video](#)

Email Action

The Email Action distributes a report via email when the report is finished executing. There is a Recipients Source property that allows you to send emails using either Email Addresses or User Roles. The 'From Address,' 'Subject', 'Body,' and 'Attachment Filename' are all configurable. The Subject, Filename, and Body editors can utilize Expressions to dynamically add content or change names.

Email Server settings must first be configured on the Gateway webpage under **Configure > Networking > Email Settings** page, or in **Email Actions** and clicking the **Create new server** link. Once you create and save an SMTP profile, you can test your email settings for your mail server on the Gateway webpage under **Email Settings**.

Scheduling Actions - Email

[Watch the Video](#)

> ⓘ **Creating an email server**
>
> Before you setup any reports to be emailed, an email server must be configured. To create an email server if one doesn't exist, use the **'Create new server'** link. This link will take you to **Configure > Email Settings** on the Gateway webpage. There, you will be able to create an SMTP server. For more information, refer to Gateway Settings.

Here are a list of property descriptions for the **Email Action.**

Property Name	Description
From Address	The Email address from which the report is sent from.
Mail Server	The mail server to use to email the report. If one doesn't exist, click on the **Create new server** link. Refer to Email Settings for more information on that page.
Format	The file format of the report.
Retries	The number of retry attempts if the email that was sent failed to be delivered the first time.
Address Source	Will decide how email addresses are collected. Can be either Email Addresses or User Roles. ⓘ **This feature is new in Ignition version 7.9.8** **Click here** to check out the other new features There is a new 'ReplyTo' Email function that allows you to reply to email actions using the Email Address and User Roles. This simply adds those emails to the "ReplyTo" header of the email sent to the recipient list, so that if recipients choose to reply to that email, their reply is sent to those email addresses as well. A table of email addresses with a method that determines how those addresses will be used. Click the plus icon ➕ on the right side of the window to add additional rows. <table><tr><th>Property Name</th><th>Description</th></tr><tr><td>Addresses</td><td>A list of email addresses.</td></tr><tr><td>Method</td><td>The corresponding method of what to do with the email addresses. Options are **To**, **CC**, **BCC**, and **ReplyTo**.</td></tr></table> A list of roles where anyone with the given role in the specified user source with an email address will receive an email. <table><tr><th>Property Name</th><th>Description</th></tr><tr><td>Recipient User Source</td><td>The User Source to pull users from that match the Recipient Roles to get an email.</td></tr><tr><td>Recipient Roles</td><td>A list of roles to match with users. Any user that has any of the listed roles will get an email.</td></tr><tr><td>ReplyTo User Source</td><td>The User Source to pull users from that match the ReplyTo Roles that will be listed in the reply to of the email.</td></tr><tr><td>ReplyTo Roles</td><td>A list of roles to match with users. Any user that has any of the listed roles will have their email listed in the reply to of the email that gets sent out.</td></tr></table>
Subject	The subject of the Email. The Subject property is constructed using the expression language.
Attachment Filename	The name of the attached report. The Attachment Filename property is constructed using the expression language.
Body	The body of the email. The Body property is constructed using the expression language.

Configuring an Email Action

1. In the **Schedule panel**, create a **Schedule** to automatically email a report by clicking on the plus icon ✚, if you don't already have one.
2. Next, click on the **Actions** tab.
3. Click on the plus icon ✚, and select the **New Email Action** from the dropdown list.
4. Enter the sender's email address in the **From Address** field.
5. Select the **Mail Server** from the dropdown list. If one does not exist, click the **'Create new server'** link to create one.
6. Select the **Format** from the dropdown list.
7. Enter the number of **Retry** attempts in the event the email failed to be delivered the first time.
8. You can send emails to users using either Email Addresses or User Roles. Under **Address Source** enter either **Email Addresses** or **User Roles**.
   Note, email recipients can choose to reply to the email if they prefer, since the email address is added to the 'Reply To" header of the email.
   a. **Email Addresses** - enter individual email addresses under in the **Recipient and ReplyTo Emails** area. To add multiple addresses, click the plus icon ✚ on the right side of the window. Next, specify the **Method** of how to send the email: **To, CC, BCC,** or **ReplyTo**
   b. **User Roles** - select the User Source from the dropdown in the **Recipient User Source** field.
      i. In the **Recipient Roles** field, begin typing a configured role and Ignition will validate it.
      ii. In the **Reply to User Source**, select the User Source from the dropdown. (Optional)
      iii. In the **RepyTo Roles** field, enter the role(s) you want listed in the 'ReplyTo' header of the email. (Optional)
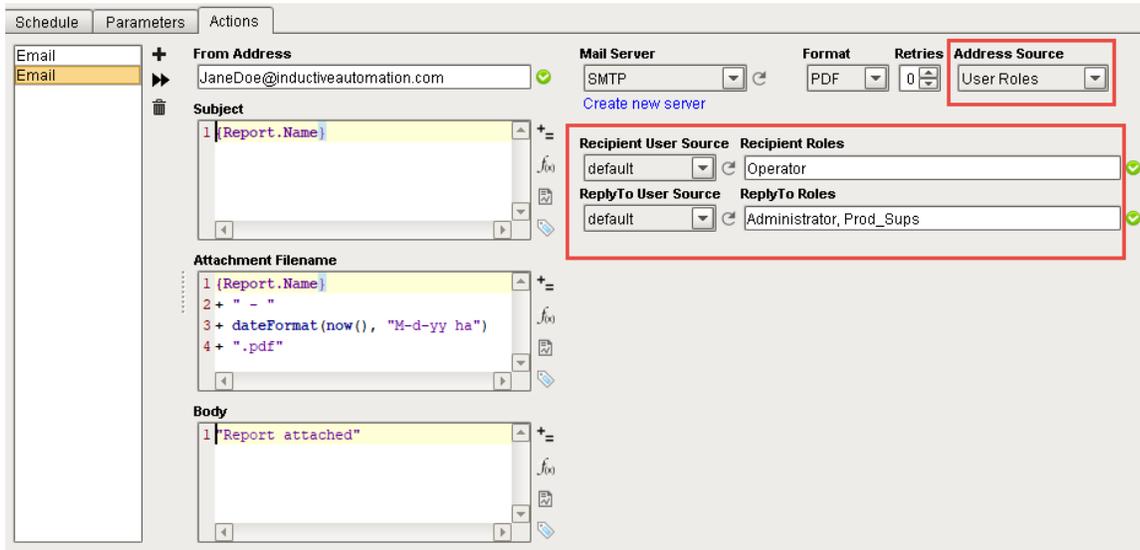9. Enter in values for the **Subject**, **Attachment Filename**, and **Body** fields, or use the defaults.

Recipients and ReplyTo Emails

Recipients Source - User Roles

Run Script Action

This **Run Script Action** allows you to store your report in a database, provide special email code, or anything else you can think of. Run Script exposes the function **handleFinishedReport()** which gives you the report name and path, a mapping of the report parameters and datasets, and the bytes in whatever format you want.

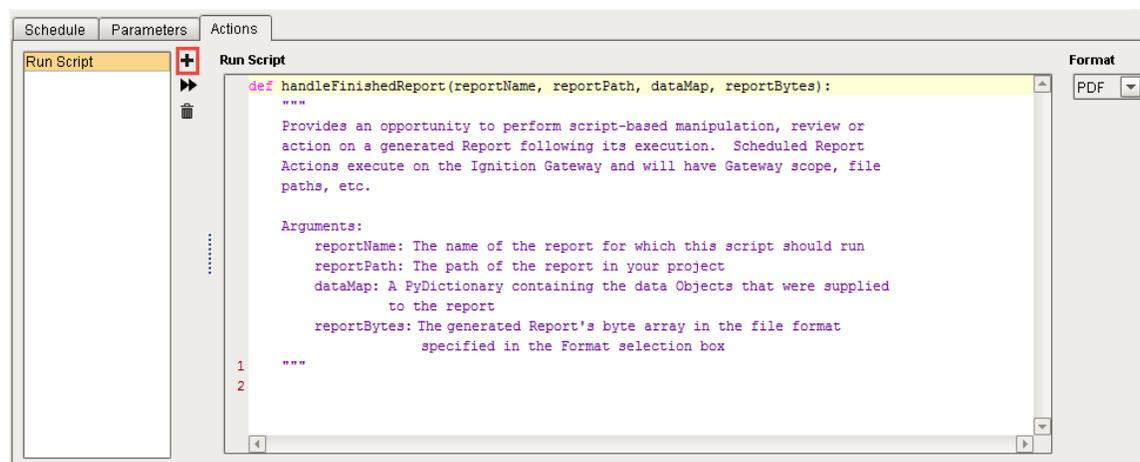Here are a list of property descriptions for the **Run Script Action.**

Property Name	Property Description
Run Script	An area where a script can be created to do something at the scheduled time.
Format	The file format that the reportBytes parameter should be.

Scheduling - Run Script

[Watch the Video](#)

Arguments

The handleFinishedReport function has the following arguments:

- String **reportName** - The name of the report for which this script should run.
- String **reportPath** - The path to the report in your project.
- PyDictionary **dataMap** - The Python Dictionary containing the Parameters and Data Sources that were supplied to the report. This argument allows you to directly access Parameters and Data Sources in the report. **Note** that once handleFinishedReport() has been called, the report has already been generated, so changing the parameters from this function will not alter the resulting report. Instead, parameters should be altered from the **Parameters** tab.

- byte[] **reportBytes** - The report, presented in a byte array. The format of the report depends on the format specified in the **Format** dr opdown list.

The dataMap Argument

There is a special argument in the RunScript Action called **dataMap** that may be used to review the raw data that was used to generate the report. Below is a demonstration of using dataMap.

<div align="center">

Using dataMap

</div>

```
# The dataMap argument is simply a Python Dictionary with the name of each Parameter and Data Source
acting as a key.

# Assuming a Report Parameter named 'shift', the value of 'shift' may be accessed with the following
dataMap['shift']

# Similar syntax may be used to extract the value from a Data Source.
data = dataMap['myDataSource']

# Rows objects, while similar in nature to a dictionary, are different objects.

# Individual rows in the Data Source may be accessed by index.
firstRow = data[0]

# getKeys() may be called on a row to list all of the column headers in the row.
firstHeader = firstRow.getKeys()[0]

# getKeyValue() may be used to access the value of a column in the row.
firstColumnInRow = firstRow.getKeyValue(firstHeader)
```

Related Topics ...

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