



# R Scripts



# Contents

<b>Chapter 1: Overview</b>	<b>1</b>
Overview of the R Script Module	2
Access an R Script	2
R Script Workflow	3
<b>Chapter 2: Manage R Scripts</b>	<b>4</b>
Create an R Script	5
Define Parameters in R Scripts	6
Delete Parameters in R Scripts	7
Delete an R Script	8
<b>Chapter 3: Deployment</b>	<b>9</b>
Deployment and Upgrade	10

# Copyright Digital, part of GE Vernova

© 2024 GE Vernova and/or its affiliates.

GE Vernova, the GE Vernova logo, and Predix are either registered trademarks or trademarks of GE Vernova. All other trademarks are the property of their respective owners.

This document may contain Confidential/Proprietary information of GE Vernova and/or its affiliates. Distribution or reproduction is prohibited without permission.

THIS DOCUMENT AND ITS CONTENTS ARE PROVIDED "AS IS," WITH NO REPRESENTATION OR WARRANTIES OF ANY KIND, WHETHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF DESIGN, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. ALL OTHER LIABILITY ARISING FROM RELIANCE UPON ANY INFORMATION CONTAINED HEREIN IS EXPRESSLY DISCLAIMED.

Access to and use of the software described in this document is conditioned on acceptance of the End User License Agreement and compliance with its terms.



# Chapter 1

---

## Overview

### Topics:

- [Overview of the R Script Module](#)
- [Access an R Script](#)
- [R Script Workflow](#)

## Overview of the R Script Module

The R script tool in APM provides a way for you to utilize the R programming language to create scripts that can receive data from inputs, make calculations, and then return one or more outputs. These R scripts can then be used within Policy Designer to expand the functionality of policies.

R scripts can be as simple or as complex as you need them to be, depending on the data that you want the script to calculate. For instance, a simple R script may calculate and return a value based only on two inputs. A more complex R script might utilize ten inputs, and have ten different output values. This documentation does not cover the process of developing R code.

### R Scripts in Policies

R scripts can be used within Policy Designer to expand the functionality of policies. After you create and save an R script, you can use the R Script nodes in Policy Designer to pass values into the R script, and receive calculated values out of the R script.

The parameters that you define in the R script determine how the R Script node in Policy Designer will behave. Each parameter that you specify as an input appears as a field in the **Properties** window for the R Script node. You can then use standard policy options to provide values to the parameters in the R script. Each parameter that you specify as an output determines what values subsequent nodes in the policy model can use for additional calculations or actions.

**Note:** Before you can execute or validate a policy that includes an R node, you must complete the R server installation and configuration steps.

## Access an R Script


### Procedure

1. In the module navigation menu, select **Tools > R Scripts**.

The **R Scripts** page appears.

# R Scripts

[Browse](#)[Create New](#)



NAME	PATH	CREATOR	DATE
Generic Failure Frequency	Public\Meridium\Modules\Generation Mana...	Super User, Baseline	Monday, August 26, 2019 2:27 AM
RScript - DateTime VectorPro...	Public\Meridium\Modules\Generation Mana...	Super User, Baseline	Monday, August 26, 2019 2:26 AM
CreateRScriptWithDFInputs	Public\Meridium\Modules\Generation Mana...	Super User, Baseline	Monday, January 07, 2019 3:02 AM
RScript-DF as input and output	Public\Meridium\Modules\Generation Mana...	Super User, Baseline	Monday, January 07, 2019 3:05 AM
CalculatePerformance	Public\Meridium\Modules\Generation Mana...	Administrator, Mer...	Monday, August 28, 2017 4:12 PM

Rows per page 50  200 500


1 - 5 of 5 Results   

**Note:** Only R scripts created or accessed from the **R Scripts** page appear in this list. The 25 most recently accessed R scripts will appear in the list.

2. Choose one of the following:

- Select an R script from the grid.
- Browse the Catalog to select an R Script. To do so:
  - a. Select **Browse**.  
The **Select a rscript from the catalog** window appears.
  - b. Select an R script.
  - c. Select **Open**.

A new page appears, displaying the selected R script.

**Tip:** If you want to modify the script, make any required changes, including updating the values in the **Parameters** pane, and then select .

## R Script Workflow

This workflow provides the basic, high-level steps for using this module. The steps and links in this workflow do not reference every possible procedure.

1. [Create a new R script](#).
2. Enter R code in the R script editor.
3. [Define each parameter in the R script](#).
4. Save the R script.
5. Create a policy containing the R Script node in order to execute the R script.

# Chapter 2

---

## Manage R Scripts

### Topics:

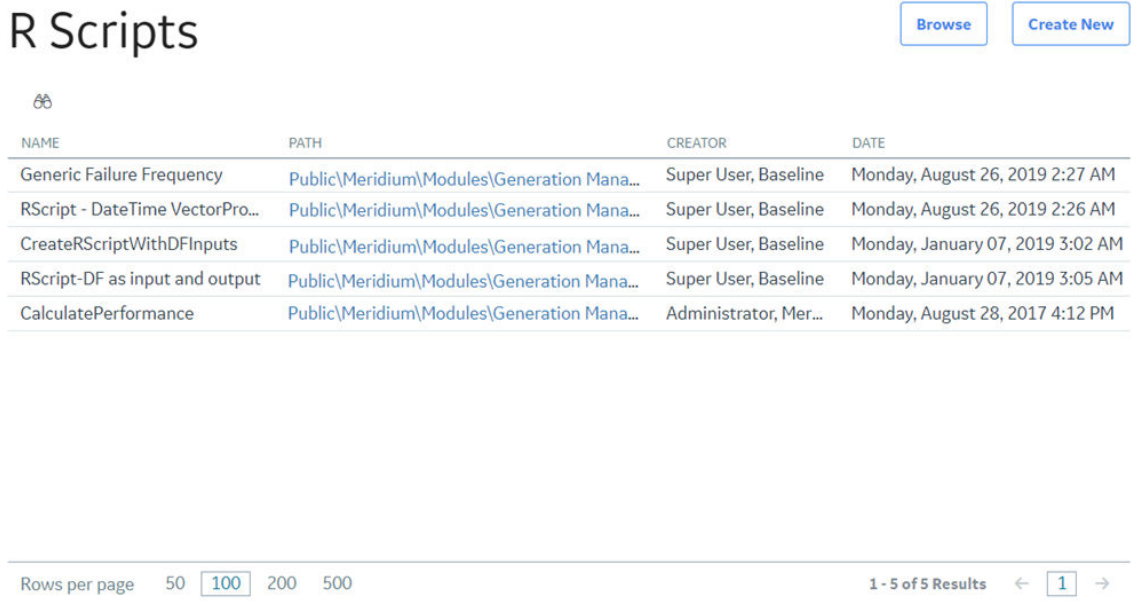
- [Create an R Script](#)
- [Define Parameters in R Scripts](#)
- [Delete Parameters in R Scripts](#)
- [Delete an R Script](#)



# Create an R Script

## Procedure

1. On the left navigation menu, select **Tools**, and then select **R Scripts**.  
The **R Scripts** page appears.

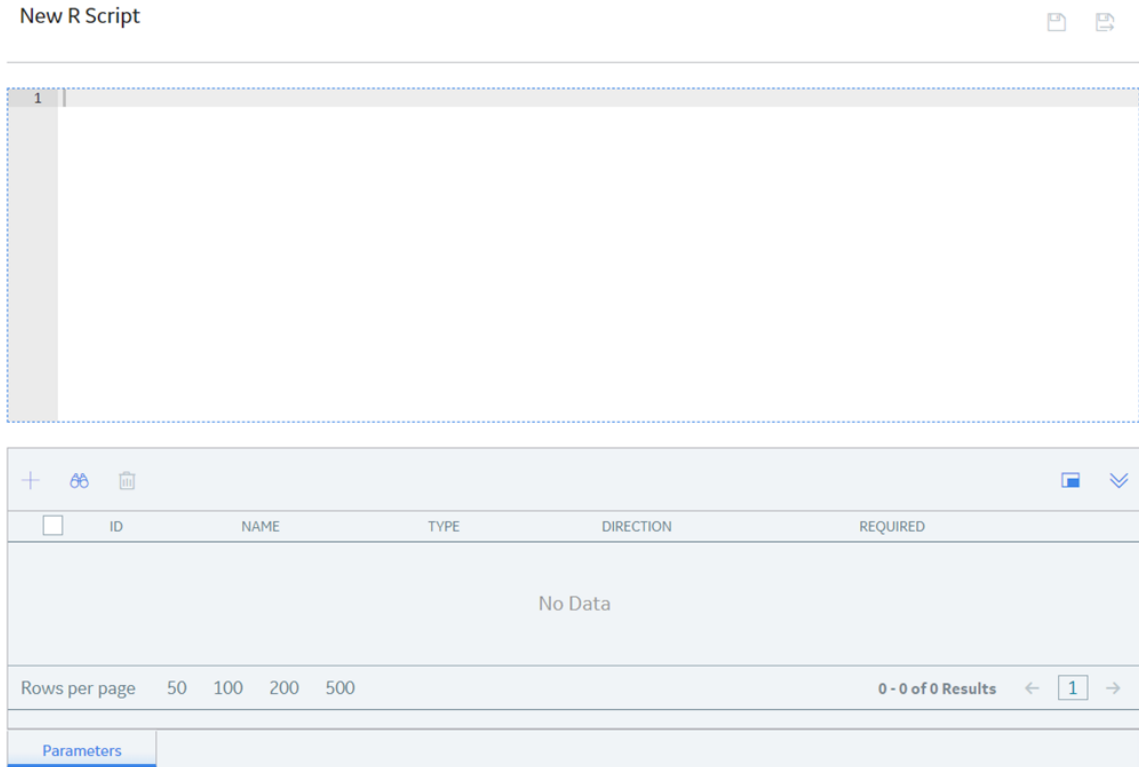


The screenshot shows the 'R Scripts' page. At the top right, there are two buttons: 'Browse' and 'Create New'. Below the title is a search icon. A table lists five existing R scripts with columns for NAME, PATH, CREATOR, and DATE. At the bottom, there is a pagination control showing 'Rows per page' with options 50, 100, 200, and 500. The current page is 1 of 5 results, with navigation arrows and a page number input field.

NAME	PATH	CREATOR	DATE
Generic Failure Frequency	Public\Meridium\Modules\Generation Mana...	Super User, Baseline	Monday, August 26, 2019 2:27 AM
RScript - DateTime VectorPro...	Public\Meridium\Modules\Generation Mana...	Super User, Baseline	Monday, August 26, 2019 2:26 AM
CreateRScriptWithDFInputs	Public\Meridium\Modules\Generation Mana...	Super User, Baseline	Monday, January 07, 2019 3:02 AM
RScript-DF as input and output	Public\Meridium\Modules\Generation Mana...	Super User, Baseline	Monday, January 07, 2019 3:05 AM
CalculatePerformance	Public\Meridium\Modules\Generation Mana...	Administrator, Mer...	Monday, August 28, 2017 4:12 PM


Rows per page 50  200 500 1 - 5 of 5 Results <  >

2. Select **Create New**.  
The **New R Script** page appears, which contains the script editor.



3. In the editor, enter your R code.

**Note:** When you use R scripts with policies, the policy execution engine sends date inputs to the R script in UTC. If your R script performs any calculations based on dates, the date output must also be in UTC and use the standard date format yyyy-MM-dd hh:mm:ss.fff.

4. [Define each parameter](#) in the R script using the **Parameters** pane.
5. Select .  
The **Save As** window appears.
6. In the **Catalog** pane, navigate to the location at which you want to save the R script.
7. Enter values in the **Name**, **Caption**, **Description**, and **Of type** boxes.
8. Select **Save**.  
The R script has been saved.

## Define Parameters in R Scripts

### About This Task

When you define a parameter, you are specifying whether each parameter in the R script is an input or output parameter, whether it is required, and what type of data it requires.

### Procedure

1. [Access the R script](#) for which you want to define parameters.
2. At the bottom of the page, select **Parameters**.  
The **Parameters** pane appears.



```

1 Unit_Data <- ip_Unit_Data
2 Event_Data <- ip_Event_Data
3 Performance_Key <- ip_Performance_Summary_Key
4 Performance_Indexes_Data <- ip_Performance_Indexes_Data
5
6 Num_Of_Units = nrow(Unit_Data)
7 Performance_list <- vector("list", Num_Of_Units)
8
9 Performance_Key_NMC <- c(-1)
10 Performance_Key_GMC <- c(-1)
11 Performance_Key_NDC <- c(-1)
12
13 CreateEmptyPerformanceDataFrameFN <- function()
14 {
15   return(data.frame())
16 }
17
18 Performance_Summary <- CreateEmptyPerformanceDataFrameFN()
19 Performance_Indexes <- CreateEmptyPerformanceDataFrameFN()
20
21
22 # CalculateFactorsFN function - Time and Energy Factors
23 CalculateFactorsFN <- function(numerator, denominator)
24

```


ID	NAME	TYPE	DIRECTION	REQUIRED	
<input type="checkbox"/>	ip_Unit_Data	ip_Unit_Data	Data Frame	Input	<input checked="" type="checkbox"/>
<input type="checkbox"/>	ip_Event_Data	ip_Event_Data	Data Frame	Input	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Performance_Summary	Performance_Summary	Data Frame	Output	<input type="checkbox"/>


Parameters

- Select . A new row is added to the grid.
- In the **ID** cell, enter the parameter ID exactly as it appears in the R script.
- In the **Name** cell, enter a name for the parameter as you want it to appear to the Policy Designer user.
- In the **Type** list, select the data type of the parameter.
- In the **Direction** list, specify whether the parameter represents an input or an output to the R script.
- If the parameter is an input and is required, select the **Required** check box.
- For each parameter in the R script, repeat steps 3 through 8.
- Select . The R script parameters are defined.

## Delete Parameters in R Scripts


### Procedure

- Access the R script containing the parameter that you want to delete.
- At the bottom of the page, select the **Parameters** tab. The **Parameters** pane appears.
- On the left side of the **Parameters** pane, select the check boxes in the rows for the parameters you want to delete.
- In the upper-left corner of the pane, select . The parameter is removed from the **Parameters** pane.

5. Select .  
The R script parameters are deleted.

## Delete an R Script

### Procedure

1. Access the **Catalog** page for the folder that contains the R script that you want to delete.
2. Select the check box that corresponds to the R script that you want to delete.
3. In the upper-right corner of the page, select .  
A confirmation message appears, asking if you really want to delete the R script.
4. Select **OK**.  
The R script is deleted.

# Chapter 3

---

## Deployment

### Topics:

- [Deployment and Upgrade](#)

## **Deployment and Upgrade**

Deployment and Upgrade content for various APM modules has been consolidated into a single document. For more information, refer to the module-specific information in the APM Module Deployment and Upgrade document.