



GE VERNOVA

Asset Performance Management

APM Classic

V4.6.11.0.0

R Scripts

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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 5001 - 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.

R Scripts

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

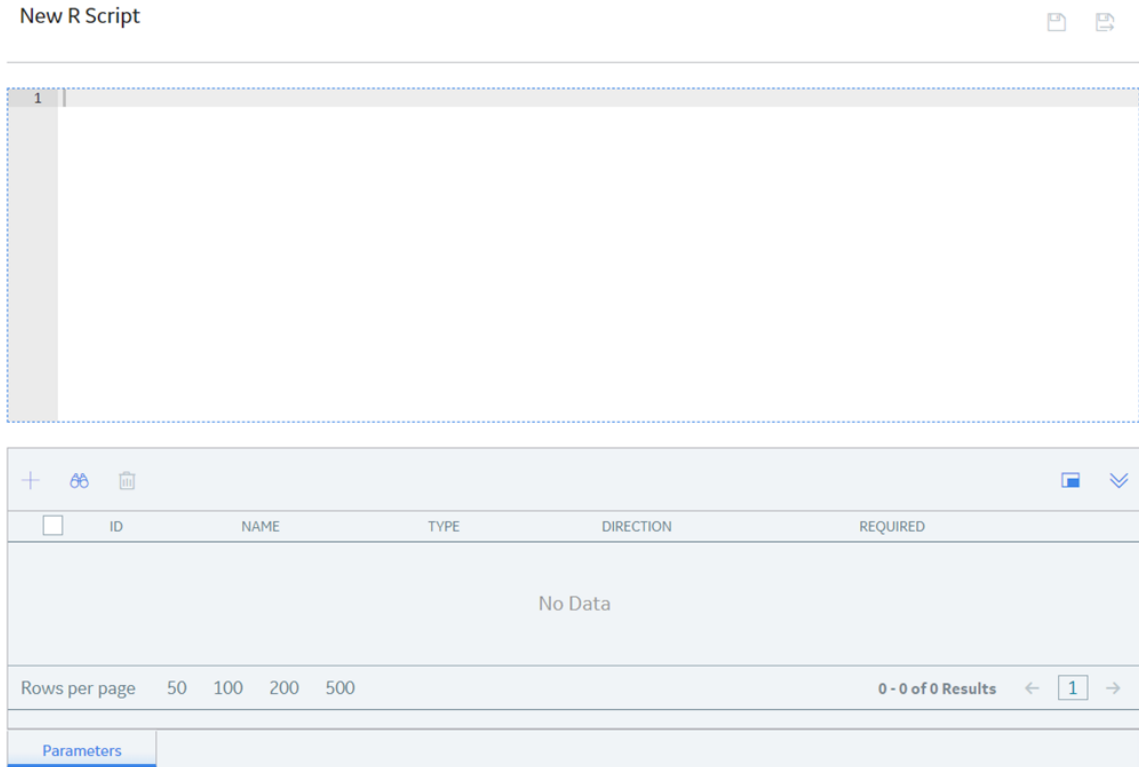
🔍

NAME	PATH	CREATOR	DATE
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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

```


<input type="checkbox"/>	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


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

Delete Parameters in R Scripts

Procedure


1. [Access the R script](#) containing the parameter that you want to delete.
2. At the bottom of the page, select the **Parameters** tab.
The **Parameters** pane appears.
3. On the left side of the **Parameters** pane, select the check boxes in the rows for the parameters you want to delete.
4. 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.