Kelverion Automation

INTEGRATION MODULE FOR BMC ATRIUM CMDB

FOR KELVERION RUNBOOK STUDIO AND AZURE AUTOMATION

User Guide

Version 2.2

Microsoft Azure

Certified

Kelverion Integration Module for BMC Atrium CMDB

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Installation and Configuration

The following sections outline how to deploy and configure the Kelverion Integration Module for BMC Atrium CMDB.

System Requirements

The Integration Module for BMC Atrium CMDB requires the following software to be installed and configured prior to implementing the integration. For more information on installing Kelverion Runbook Studio, please refer to the Kelverion Runbook Studio User Guide.

- Kelverion Runbook Studio 4.0
- Microsoft .NET Framework 4.6.2
- BMC Remedy AR System 8.x, 9.x, 20.01, 20.02
- BMC Remedy Atrium CMDB 8.x, 9.x, 20.01, 20.02
- WoW64 subsystem installed and enabled.

Supported Environments

The Integration Module for BMC Atrium depends on 32-bit DLLs and as a result cannot run natively in the exclusively 64-bit environment used to run runbooks in Azure Automation. To use the Integration Module for BCM Atrium in your Azure Automation **runbooks you must use Hybrid Workers with the WoW64 subsystem enabled**.

Installing the Integration Module from The PowerShell Gallery

You can use the PowerShell Gallery to directly download and install the Integration Module on your local computer and to your Azure Automation Accounts.

You must deploy the Integration Module to each Azure Automation Account that you plan to use and install it on all Hybrid Workers that will be used to run your runbooks. You must also install the Integration Module on any Runbook Studio host systems that you will be using to build and manage your runbooks.

Install the Integration Module on your local computer or a Hybrid Worker:

1. Confirm you have the latest PowerShellGet module. See online documentation for more information: https://www.powershellgallery.com/
2. Start a PowerShell window as Administrator and run the command:

   ```
   Install-Module -Name Kelverion.BMC.Atrium -Scope AllUsers
   ```

Deploy the Integration Module to an Azure Automation Account:

1. Go to the PowerShell Gallery URL: https://www.powershellgallery.com/packages/Kelverion.BMC.Atrium
2. Click the button "**Deploy to Azure Automation**" and you will be redirected to the Microsoft Azure portal.
3. Select your Automation account and click **OK**.

Installing the Integration Module Manually

Alternatively, you can download the Integration Module from www.kelverion.com and manually install it on your local system and then upload it to your Azure Automation accounts.

You must upload the Integration Module to each Azure Automation Account that you plan to use and install it on all Hybrid Workers that will be used to run your runbooks. You must also install the Integration Module on any Runbook Studio host systems that you will be using to build and manage your runbooks.

Install the Integration Module on your local computer:

1. Copy the **Kelverion.BMC.Atrium.zip** to your computer.
2. Right click on the file and select properties. Unblock the file if it is blocked.
3. Unzip the **Kelverion.BMC.Atrium.zip** file.
4. Copy the **Kelverion.BMC.Atrium** folder to a location in the `%PsModulePath%` path.

Important: When installing the Integration Module on a Hybrid Worker, you must use a location that is accessible to all users of the computer.

Deploy the Integration Module to an Azure Automation Account:

1. Go to your automation account and select **Assets.**
2. In **Assets** select **Modules.**
3. In **Modules** select **Add a module.**
4. In **Upload File** field, select the **Kelverion.BMC.Atrium.zip**.
5. Select **OK** to upload the module.

Licensing the Integration Module

Licenses for Kelverion Integration Modules are managed and deployed using Kelverion Runbook Studio.

Register an Integration Module license with Runbook Studio:

1. Open Kelverion Runbook Studio
2. In the **File** tab, click **About**.
3. Click **License Information**.
4. Click the **Integration Modules** tab.
5. Click **Add License**.
6. Select the integration module license file (*.kaml) and click **Open**.
7. You should see your entitlements displayed in the list.
8. Click **OK**.

Note: Entitlements will not display until after the Integration Module has been installed on the Runbook Studio computer.

License keys are distributed to Azure using connection assets. To create a Connection Asset with a license key and upload it to Azure, do the following:

1. In the **Home** tab, click **Sign In**.
2. Select the Azure Automation Account that will contain the connection.
3. Click **New Asset** and click **Connection**.
4. In the **Name** field, enter a name to identify the connection.
5. In the **Connection Type** field, select the desired connection type.
6. Enter the appropriate connection information in the provided fields.
7. Click **OK**.

To update all Connection Assets to use the latest license key and upload it to Azure, do the following:

1. In the **Home** tab, click **Sign In**.
2. Click **Azure (Online)**.
3. Right-click the Azure Automation Account that contains the connection assets you would like to update.
4. Click **Update License Keys.**
5. A summary dialog is displayed, listing all updated connection assets.

Connecting Kelverion Runbook Studio to BMC Atrium CMDB

In Kelverion Runbook Studio, you can configure one or more Smart Connections in order to establish reusable links between Runbook Studio and a specific BMC Atrium CMDB instance. You can create as many Smart Connections as you require, specifying links to multiple instances. You can also create multiple Smart Connections to the same instance to allow for differences in security privileges for different user accounts.

Adding a Smart Connection to Kelverion Runbook Studio:

1. Click **Smart Connections**  , on the **Quick Access Toolbar**, or press CTRL+SHIFT+C.
2. In the **Smart Connections** dialog, click **New.**
3. In the **Name** box, enter a name for the configuration. This could be the name of the instance or a descriptive name to distinguish the type of configuration.
4. In the optional **Description** box, enter a description of the Smart Connection.
5. From the **Connection type** menu, select *Kelverion.BMC.Atrium.*
6. In the **AtriumServer** box, type the URL of the BMC Atrium CMDB instance. Example: 192.168.10.100
7. In the **UserName** and **Password** boxes, type the credentials that activity will use to connect to the BMC Atrium CMDB instance.
8. Optionally, in the **Authentication** box, type the authentication text used to connect to connect to the AR System server.
9. Click **OK** to close the configuration dialog box, an then click **OK**.

Azure Global Connection Assets

The activities in the Kelverion Integration Module for BMC Atrium CMDB require connection information to connect to instances of BMC Atrium CMDB.

The recommended way to pass connection information to your activities in your runbooks is to use Global Connection Assets. Global connection assets let you securely define connection information in Azure which can then be retrieved on demand using either the *Get-AutomationConnection* cmdlet or Connection Asset Data Source.

Adding a global connection asset to your Azure Automation Account:

1. In Kelverion Runbook Studio, click the **Azure** panel
2. Select your Azure subscription and Automation Account
3. Select **New Asset** in the main toolbar and select **Connection**
4. In the **Name** box, enter a name for the connection asset
5. In the optional **Description** box, enter a brief description describing the connection.
6. From the **Connection type** menu, select *Kelverion.BMC.Atrium.*
7. In the **AtriumServer** box, type the URL of the BMC Atrium CMDB instance. Example: 192.168.10.100
8. In the **UserName** and **Password** boxes, type the credentials that activity will use to connect to the BMC Atrium CMDB instance.
9. Optionally, in the **Authentication** box, type the authentication text used to connect to connect to the AR System server.
10. Click **OK** to close the New Connection dialog box.

Working With Activities in Runbook Studio

The following sections outline some of the common configuration options that are available to you when working with the activities in the Kelverion Integration Module for Microsoft BMC Atrium CMDB.

Activity Properties

All activities in the Kelverion Integration Module for BMC Atrium CMDB have the following properties:

Property	Description
Label	A unique label that identifies the activity in the runbook. Runbook Studio will provide a default name for each activity, but you can provide your own labels to make their role in the runbook more obvious.
Description	An optional description of the activity. Providing a description is a great way to let everyone understand the function of the activity in the runbook.
Checkpoint	Indicates whether a checkpoint is set in the runbook workflow after the activity runs. Checkpoints are only available for Graphical PowerShell Workflow runbooks. If the runbook uses Azure cmdlets, you should follow best practices and follow a check-pointed activity with an *Add-AzureRMAccount* in case the runbook is suspended and restarts from this checkpoint on a different worker.

Discovery

When designing runbooks in Kelverion Runbook Studio, you will notice that the activities in the Kelverion Integration Module for BMC Atrium CMDB include a **Discovery** panel instead of the **Parameter Sets** panel that is present for standard command activities. This is because the activities in the Kelverion Integration Module for BMC Atrium CMDB support interactive discovery of the BMC Atrium CMDB assets in your environments.

All activities in the Kelverion Integration Module for BMC Atrium CMDB have a **Connection** option on the **Discovery** panel which lets you specify how Runbook Studio should connect to BMC Atrium CMDB.

When connected to BMC Atrium CMDB, Runbook Studio will provide additional discovery options, such as **Application** and **Form**, which can be used to specify the resources that you want to integrate with. Once you have filled in the discovery options Runbook Studio will provide additional parameters and, in some cases, filters which can be used to configure the activity.

Parameters

Unlike standard command activities, whose parameters are determined by the Parameter Set that is selected, the parameters in the Kelverion Integration Module for BMC Atrium CMDB are determined by the Discovery options that you specify.

For example, when using the **New-AtriumInstance** activity, the Discovery panel will contain options for selecting a BMC Atrium CMDB Namespace and Class. Once you have selected a Class, Runbook Studio will provide you with parameters that coincide with the attributes in the class. If you select another class, Runbook Studio will automatically provide you with a different set of parameters.

You must configure all mandatory parameters. To view the optional parameters that are associated with an activity, click **Optional** at the top of the Parameters tab.

In addition, all activities in the Kelverion Integration Module for BMC Atrium CMDB include a **Connection** parameter which is used to specify information that the activity will use to connect to BMC Atrium CMDB when it is executed as part of a runbook running on a Hybrid Worker. Typically, you will assign a Connection Asset data source to this parameter so that the activity can securely use connection information stored in Azure.

The Connection parameter should not be confused with the similarly named Connection option on the Discovery panel which is used to specify how Runbook Studio connects to BMC Atrium CMDB to provide design-time configuration options.

Several factors determine the data sources that are available when configuring a parameter. They include: the parameter's data type, whether it is linked to another activity and whether the runbook has any input parameters.

Runbook studio supports the following data sources.

Data Source	Description
Activity output	Specify activity whose output will be assigned to the parameter. You may also provide an optional Path to select a specific property of the output objects that are generated by the activity. Available when the activity is linked to a source activity.
Not configured	Clears any value that was previously configured. You must configure all mandatory parameters.
Certificate asset	Specify the name of the global certificate asset that will be used to provide a value for the parameter. If you have connected to Azure and selected a Subscription and Automation Account on the toolbar, the data source will provide the names of the certificates that are available.
Credential asset	Specify the name of the global credential asset that will be used to provide a value for the parameter. If you have connected to Azure and selected a Subscription and Automation Account on the toolbar, the data source will provide the names of the credentials that are available.
Constant	Specify a constant value to assign to the parameter. Available for parameters that have the following data types:

	• String • DateTime • Timespan • Decimal • Double When assigning a constant DateTime and Time values, Runbook Studio assumes the value is in UTC.
Connection asset	Specify the name of the global connection asset that will be used to provide a value for the parameter. If you have connected to Azure and selected a Subscription and Automation Account on the toolbar, the data source will provide the names of the connections that are available.
Empty string	An empty string will be assigned to the parameter. Available when the parameter is type *System.String*
Null	A null ($null) value will be assigned to the parameter. Available when the parameter type is a reference type.
PowerShell expression	Specify a *simple* PowerShell expression whose output will be assigned to the parameter. You can use variables in the expression to access the output of an activity or a runbook parameter.
Runbook input	Specify the name of the runbook input parameter whose value will be assigned to the parameter. Available when the runbook has one or more input parameters.
Variable asset	Specify the name of the global variable asset that will be used to provide a value for the parameter. If you have connected to Azure and selected a Subscription and Automation Account on the toolbar, the data source will provide the names of the variables that are available.

Filters

Some of the activities in the Kelverion Integration Module for BMC Atrium CMDB include a **Filters** panel which lets you specify filters that can be used to retrieve specific instances in BMC Atrium CMDB.

To add a filter to your activity, select the **Filters** panel and click **Add.** Filters have the following properties.

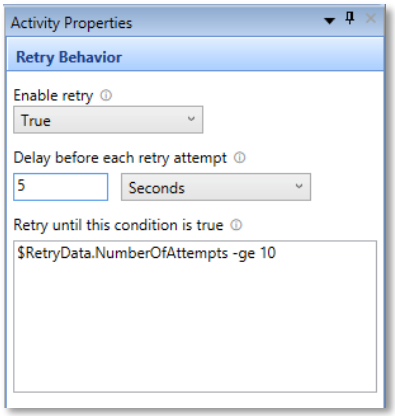
Property	Description
Filter	The name of the filter.

Operation	The operation used to evaluate the filter. Different operators will be provided based on the filter that is selected. Possible filter operators include: • Equals • Does not equal • Is less than • Is less than or equal to • Is greater than • Is greater than or equal to • Contains • Does not contain • Matches • Does not match • Starts with • Ends with
Value	The data source used to retrieve the value to use to evaluate the filter. The value used to evaluate the filter will be obtained. For more information on data sources, please refer to the Parameters section for more information on configuring data sources.

Retry Behaviour

The activities in the Kelverion Integration Module for BMC Atrium CMDB can be configured to run multiple times until a condition, which you specify, is satisfied. You can use the retry behavior options to configure activities that should run multiple times, that are error prone or may need more than one attempt for success.

When you enable retry for an activity, you can configure the runbook to wait a specified number of minutes or seconds before running the activity again. If no delay is specified the runbook will run the activity again, immediately after it completes.



The retry condition lets you specify a PowerShell expression that the runbook will evaluate after each time the activity runs. If the result of the expression is true the activity does not run again, and the runbook moves on to the next child activity in the runbook.

When defining the retry conditions for your activity you can take advantage of a global variable called **$RetryData**. Specific information about the last time the activity ran can be accessed using the following properties.

Property	Description
NumberOfAttempts	Number of times that the activity has ran
Output	Output that was generated by the activity the last time that it ran
TotalDuration	Time elapsed since the activity was started
StartedAt	Time in UTC when the activity was first started

The following are some examples of activity retry conditions

```
# Run the activity exactly 5 times
$RetryData.NumberOfAttempts -eq 5

# Run the activity until it produces some output
$RetryData.Output.Count -ge 1

# Run the activity until at least 2 minutes has elapsed
$RetryData.TotalDuration.TotalMinutes -ge 2
```

Additional Parameters

The activities in the Kelverion Integration Module for BMC Atrium CMDB let you specify additional PowerShell parameters that you can use to control the behavior of the activity.

For example, to output detailed information about the operation performed by an activity you would specify **`-Verbose:$True`**

Activity Reference

The following sections describe how to configure the activities in the Kelverion Integration Module for BMC Atrium CMDB in conjunction with Kelverion Runbook Studio.

The advanced discovery capabilities provided by the activities in this integration module are only supported when authoring runbooks in Kelverion Runbook Studio.

When you publish your runbooks from Kelverion Runbook Studio to Azure Automation or when you generate PowerShell code snippets for Service Management Automation, Runbook Studio will automatically convert the dynamically generated parameters and filters of Smart activities into the parameters provided by the underlying command activities.

The Kelverion Integration Module for BMC Atrium CMDB supports the following activities.

Activity	***Description***
Get-AtriumInstance	Retrieves CI or relationship instances from the CMDB
New-AtriumInstance	Inserts a new CI or relationship instance in CMDB
Remove-AtriumInstance	Removes CI or relationship instances from the CMDB
Set-AtriumInstance	Updates the values of one or more attributes in specified CI or relationship instances

Get-AtriumInstance

The **Get-AtriumInstance** activity retrieves CI or relationship instances from BMC Atrium CMDB. This activity can be configured to search for instances using filters or by BMC Remedy encoded query.

Discovery Options

You can use the following discovery options to connect to BMC Atrium and configure the activity:

Connection	The name of the Smart Connection used to connect Runbook Studio to BMC Atrium CMDB.
Namespace	The name of the namespace that contains the class from which to retrieve instances
Class ID	The unique ID of the class for which to retrieve the instances
Search By	Specifies whether to retrieve instances using custom filters or by encoded query. The default is to search by filters.

Required Parameters

You must configure the following parameters:

Connection	A hashtable containing connection information. This is typically obtained using a Connection Asset data source or Get-AutomationConnection activity.
Query	The BMC Remedy query used to determine which instances to retrieve. For example: 'Name' = "Sandbox" or 'ResetLimit <= 10
Dataset ID	The unique identifier for the dataset from which to retrieve the instances

Optional Parameters

You can use the following optional parameters to limit and order the results:

Ascending	Specifies whether to output the instances in ascending order.
Offset	The index of the first instance to retrieve. The default is 0.
Order By	The name of the attribute that should be used to order the output.
Limit	The maximum number of instances to retrieve.

Output

The activity generates an object that represents the CI or Relationship instance that was retrieved. The properties of the object will be determined by the CI or Relationship class.

New-AtriumInstance

The **New-AtriumInstance** activity adds a new CI or relationship instance into the Atrium CMDB using the provided attribute values.

Discovery Options

You can use the following discovery options to connect to BMC Atrium and configure the activity:

Connection	The name of the Smart Connection used to connect Runbook Studio to BMC Atrium CMDB.
Namespace	The name of the namespace that contains the class from which the instance is created
Class ID	The name of the class from which the class is created

Required Parameters

You must configure the following parameters, and any additional parameters based on the CI or Relationship class that you selected:

Dataset ID	The unique identifier for the dataset
Name	The name of the instance

Optional Parameters

The activity will provide additional parameters based on the CI or relationship class that you selected.

Output

This activity outputs the unique ID of the CI or Relationship instance that was created.

Remove-AtriumInstance

The **Remove-AtriumInstance** activity removes the specified CI or relationship instance(s) from the CMDB.

Discovery Options

You can use the following discovery options to connect to BMC Atrium and configure the activity:

Connection	The name of the Smart Connection used to connect Runbook Studio to BMC Atrium CMDB.
Namespace	The name of the namespace that contains the class to which the instance to remove belongs
Class ID	The name of the class to which the instance to remove belongs

Required Parameters

You must configure the following parameters:

Connection	A hashtable containing connection information. This is typically obtained using a Connection Asset data source or Get-AutomationConnection activity.
Dataset ID	The unique identifier for the dataset that contains the instance to remove
Instance ID	The unique identifier of the instance(s) to remove

Output

This activity outputs the unique ID of the CI or Relationship instance that was removed.

Set-AtriumInstance

The **Set-AtriumInstance** activity sets modifies attribute values one or more CI or relationship instances of the specified class.

Discovery Options

You can use the following discovery options to connect to BMC Atrium and configure the activity:

Connection	The name of the Smart Connection used to connect Runbook Studio to BMC Atrium CMDB.
Namespace	The name of the namespace that contains the class to which the instance(s) belong
Class ID	The name of the class to which the instance(s) belong

Required Parameters

You must configure the following parameters:

Connection	A hashtable containing connection information. This is typically obtained using a Connection Asset data source or Get-AutomationConnection activity.
Dataset ID	The unique identifier for the dataset that contains the instances
Instance ID	The unique identifier of the instances(s) to modify.

Optional Parameters

This activity provides optional parameters based on the CI or Relationship class that you selected.

Output

This activity outputs the unique ID of the CI or Relationship instance that was updated.