



# RUNBOOK STUDIO

*For Microsoft Azure Automation*

## Release Notes

Version 5.6.1

November 2023



# Introduction

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The Kolverion Runbook Studio is an on-premises design studio for building and adapting Azure Automation graphical runbooks. The target market for this product is to work with Azure Automation as the runtime engine and deliver Cloud Orchestration and cross platform automation as a service solution.

The Studio provides the local design experience of authoring graphical runbooks and managing multiple Azure subscriptions and Automation Accounts, with the benefit of executing runbooks on Microsoft Azure Automation. The Studio works in a full offline mode, so you can author Runbooks and manage Assets without Internet Access and then subsequently go online to upload items to Azure Automation.

The Studio works directly with the native Azure Automation graphical runbooks so what you have in the Studio will be faithfully represented in Azure Automation and runbooks created in the Azure Automation Portal graphical authoring experience can be downloaded and displayed directly in the Studio.

*Kolverion Runbook Studio is Microsoft Azure Certified.*

# Notices

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## *End of Support Notice for Azure Automation Agent-based Hybrid Workers*

Microsoft is ending support for Azure Automation Agent-based Hybrid Workers (Windows and Linux) on August 31, 2024. You must complete migrating existing Agent-based Hybrid Workers to Extension-based Hybrid Workers before August 31, 2024. Moreover, starting October 1, 2023, you will no longer be able to create new Agent-based Hybrid Workers.

Runbook Studio 5.5 introduces support for Extension-based Hybrid Workers. You must upgrade if you are currently using Extension-based Hybrid Workers or planning to start your Agent-based Hybrid Worker migration. Runbook Studio 5.5 will continue support for Agent-based Hybrid Workers, but we cannot guarantee support will continue to August 31, 2024.

For more information see [Migrate existing agent-based hybrid workers to extension-based hybrid workers](#).

## *End of Support Notice for Azure Active Directory Authentication Library (ADAL)*

Microsoft is ending support for Azure Active Directory Authentication Library (ADAL) in June 2023. Runbook Studio 5.4 and all previous versions are dependent on ADAL to authenticate with Azure Automation. Keverion has added support for Microsoft Authentication Library (MSAL) in Runbook Studio 5.5. We strongly recommend upgrading to Runbook Studio 5.5+ to ensure that Runbook Studio uses security fixes beyond June 2023.

Starting with Runbook Studio 5.5 you must register Runbook Studio in the Azure portal (in previous versions, this was optional). If you have already registered Runbook Studio in the Azure portal, you must update the redirect URI and add permissions to access the **Azure Service Management**, **Azure Automation** and **Microsoft Graph** web APIs.

For more information on creating and App Registration for Runbook Studio or upgrading your existing [Connecting to Microsoft Azure Automation](#).

## *Federated Subscriptions Update*

We resolved an issue where subscriptions that are managed by multiple tenants were not being displayed in the resource panel. **Important:** If you are updating from a previous version of Runbook Studio, the first time you start Runbook Studio 5.6 after upgrading you will not see any resources in the left resource panel. To resolve this issue, just Sign-In to Azure normally from Runbook Studio.

# System Requirements

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The Keverion Runbook Studio has the following system requirements:

- Windows 11, Windows 10, Windows Server 2022, or Windows Server 2019
- Microsoft .NET Framework 4.8
- Azure Subscription containing one or more Automation accounts.
  - Supported Access Control Roles: Owner and Contributor
- 2 GB of disk space
- 4 GB RAM

**Important:** These system requirements are based on a stand-alone deployment of Runbook Studio for a single user. If you intend to deploy Runbook Studio to a server, so that multiple users can access it concurrently, you should scale your system accordingly.

## Installing Runbook Studio

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1. Launch the Keverion Runbook Studio installer (Keverion.RunbookStudio.msi). The **Keverion Runbook Studio Setup Wizard** appears.
2. Click **Next**.
3. On the **End-User License Agreement** page, click **I accept the terms in the License Agreement** and then click **Next**.
4. Click **Next** to install Runbook Studio to the default folder.
5. Click **Install**.
6. Click **Yes** to allow the files to be installed.
7. Click **Finish** to exit the installer.

## Sending Feedback

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If you encounter a problem while working with Runbook Studio or have an idea for making Runbook Studio even better, we would like to hear from you.

**To send feedback to Keverion:**

1. On the **File** tab click **About**.
2. Click **Send Feedback**.

Or you can also email us directly at [studiofeedback@keverion.com](mailto:studiofeedback@keverion.com)

## Known Issues

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- PowerShell 7.1 and Python 3 runbooks may be displayed as type **Unknown** if the runbooks were created before deploying Runbook Studio 4.8. This can be resolved by editing the runbook and republishing it.
- In some regions, you may observe **404: Not Found** errors when starting a runbook **test job** in Runbook Studio. This appears to be an Azure issue and has been escalated to both Microsoft and the Azure SDK team.

## Version History

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### Version 5.6.1

- Fixed an issue that prevented very large numbers from being configured in a constant value data source.
- Fixed an issue where Publishing a runbook would not always update the state displayed in Studio.

### Version 5.6

- Added new Starter and Professional License types for server deployment.
- Improved handling of failures when synchronizing automation resources with Azure.
- Fixed issue in which subscriptions that are managed by multiple tenants may not be displayed in the resource panel. **Important:** If you are updating from a previous version or Runbook Studio, the first time you start Runbook Studio after upgrading you will not see any resources in the left resource panel. To resolve this issue, just Sign-In to Azure normally from Runbook Studio.
- Fixed an issue where resources are displayed under subscriptions and automation accounts that have been disabled.
- Improved Smart Connection management for deployments with multiple tenants.
  - Made it possible to assign a tenant when creating a smart connection.
  - More options for handling duplicate connections when importing from a file.
  - The ability to export connections for all tenants or for a specific tenant.
  - The ability to import and export tenants to/from a JSON file.

### Version 5.5

- Updated Azure authentication to use Microsoft Authentication Library (MSAL).
- Added support for Extension-based Hybrid Runbook Workers.
- Automatically display horizontal scrollbar as necessary when editing code in Code activities.
- Automatically align an activity after changing its label.
- Fixed issue with auto-scrolling activity parameter list when selecting data sources that have additional options.
- Fixed issue with opening empty PowerShell runbooks.

## Version 5.4

- Fixed an issue with synchronizing Azure Automation accounts which would prevent new Automation accounts from being displayed.
- Fixed an issue with the confirmation dialog that is displayed when removing a tenant configuration.

## Version 5.3

- Fixed an issue with activity output data sources, where field properties are not displayed if there is a sequence link in any path from the ancestor activity.
- Fixed an issue when adding new smart connections from the Discovery Pane.

## Version 5.2

- Improved default link type selection when connecting a smart activity to other activities in a graphical runbook.
- Fixed an issue with displaying activity icons for new Keverion integration modules.
- Fixed an issue where constant values data sources for DateTime parameters defaulting to 0001-01-01.
- Fixed an issue with importing runbooks where the runbook contains references to modules that cannot be found on the current system. An error was being displayed, but it was not clearly describing the root problem.

## Version 5.1

- Fixed an issue with intermittent exceptions being reported when uploading runbooks to Azure Automation.
- Fixed an issue with intermittent exceptions being reported when alignment activities in graphical runbooks.

## Version 5.0

- New visual appearance for displaying graphical runbooks.
- New graphical link condition and retry exit condition editors.
- Improved parameter set selection panel for command activities.
- Automatically reposition link connection points when moving activities.
- Removed default link color. Now, links initially take the color of their parent activity.
- Added the ability to take a screenshot of a runbook and save it as an image file.
- Added the ability to configure time span values when using constant value data sources.
- Added the ability to start a runbook job and view the results.
- When linking activities, automatically select the most appropriate link type (pipeline or sequence) based on the parent activity's output type, and other factors.
- Fixed a rare issue where Runbook Studio fails to start due to an unexpected Access Violation exception.
- Fixed an issue where the selected link disappears when keyboard arrow keys are pressed.

- Fixed an issue with the context menu for code editors where it displayed incorrect insert options for upstream activities.
- Fixed an issue with automatically selecting link type based on whether an activity is outputs.
- Fixed issue with the zoom moving to its smallest setting when switching between runbooks.
- Fixed an issue with synchronizing connection assets that have boolean fields.
- Fixed an issue with synchronizing connection assets that have encrypted connection fields that are empty.

## Version 4.8

- Added support for viewing and running PowerShell 7 runbooks.
- Added support for viewing and running Python 3 runbooks.
- Improved status bar, with source control and license information.
- Added support for Server based licensing using fully qualified domain names.
- Streamlined License request process.
- Fixed an issue with grouping recently opened runbooks in the File menu.
- Fixed an issue with displaying the Active Repository pane after closing a repository.
- Fixed an issue with displaying colors for distinct types of outputs streams in the Runbook Job Test dialog.
- Fixed an issue that was preventing the Microsoft.PowerShell.Core cmdlets from being displayed in the Toolbox pane.

## Version 4.7

- New and improved Changes pane for committing changes to your Git repository.
- Fixed an issue with smart filters where the set of filter operations is not updated correctly when changing the filter.
- Fixed an issue where you may receive a 'Sequence contains no elements' exception after adding a new Smart Connection from the properties pane.
- Fixed an issue where the right-side properties pane may not update when opening a new runbook.

## Version 4.6

- Fixed an issue with testing runbook drafts that have one or more input parameters.
- Fixed an issue that can cause the default value for an optional runbook parameter to be overwritten with zero when testing runbook drafts in Azure.
- Fixed an issue that could cause activity parameters to be truncated when resizing the properties pane.
- Fixed an issue with adding/updating Git profiles.

## Version 4.5

- Added support for viewing and managing runbook tags.
- Added line numbering to the Code Activity's code editor.
- Added validation to prevent using reserved keywords when creating runbook inputs.

- Updated the layout of the runbook overview panel.
- Updated Runbook Tester to use fixed-width Consolas font.
- Added Git profile selector to the Version Control Tab in the ribbon bar.
- Updated how disabled Azure Subscriptions and Automation accounts are displayed in the Resource panel.
- Fixed an issue with loading commands from modules where multiple versions exist on the local system.
- Fixed an issue with displaying options for Automation connection asset fields.
- Fixed an issue with synchronizing job schedule details.
- Fixed an issue in which the line numbers in scripted runbooks were not lined up with the text in the runbook.

## Version 4.4

- Fixed an issue with that would reset the tags assigned to a runbook when uploading a draft to Azure Automation.

## Version 4.3

- Fixed an issue with saving graphical runbooks where a value assigned to a Boolean property of a smart activity was cleared.
- Fixed an issue with cloning from Azure DevOps using the <https://dev.azure.com> host domain.
- Fixed issues with using keyboard shortcuts to cut, copy, paste and select all in a graphical runbook.
- Fixed an issue with adding new runbooks from the repository file viewer when an active Git profile has not been specified.
- Fixed an issue with saving runbook properties (description, logging, and tracing) for scripted runbooks.
- Fixed an issue with graphical runbooks, where inserting a runbook using the context menu could have it rendered off-screen.
- Fixed an issue with adding a runbook.
- Added Python files to the list of files that are supported when using a browser to open runbook files.
- Prevent users from updating a runbook webhook that has expired as this is not supported by Azure Automation.

## Version 4.2

- New active repository file explorer.
- Reduced runbook files sizes.
- Added support for new Git providers, including:
  - GitHub Enterprise
  - BitBucket



- GitLab
- Improvements to the Git history dialog:
  - View commits for different branches.
  - Create a branch from a commit.
  - Create a tag from a commit.
  - Cherry-pick a commit.
  - Checkout a commit.
- Fixed a bug with saving the Exit Condition of an activity's retry behavior.
- Fixed a bug with saving smart filter data source selections.
- Fixed a bug with displaying the context menu for Git history items.
- Fixed a bug with Save All not clearing changed indicator.
- Fixed a minor UI bug with variable assets data sources.
- Fixed an issue in the runbook tester in which runbook output could be truncated.
- Fixed an issue with creating and updating date/time variable assets in which the time was offset by the difference between the local time zone and UTC.
- When running test jobs in the Runbook Tester, runbook output is now displayed when the job is completed and not in real time. For performance reasons, only the first one hundred job streams are displayed. To view additional job streams the user can click the new 'Refresh job streams' button.
- runbook output is now displayed when test job completes and not in real time.

## Version 4.1

- Added new Free Version license. The free version license does not support version control, is limited to single automation account and maximum of twenty-five runbooks.
- Fixed an issue with selecting the empty asset data source when configuring smart filters.
- Fixed an issue with generating PowerShell when no filters are specified for a smart activity.

## Version 4.0

- Added support for version control using Git with support for initializing and cloning repositories, committing changes, branching, collaboration and much more.
- New diagnostic report that can be used to resolve issues with Runbook Studio.
- Changed the default format used to save graphical runbooks to one that is directly compatible with Azure Automation. Saving runbooks as .graphrunbook files makes it easier to synchronize them with Azure Automation using Git based version control. Do not worry, you can still use all your existing .runbook files.
- Improved context menu for graphical runbooks lets you access the runbooks and assets in your automation accounts.
- Improved context menu for link conditions, retry behavior and PowerShell data source expressions lets you access activity output, runbook parameters and error information.
- Improved PowerShell generation with support for splatting.
- Improved license notifications.

- Fixed issues with cutting, copying, and pasting activities and links.
- Fixed issues with opening Runbook Studio by clicking on runbook files in Windows Explorer.
- Separated smart modules into their own group to make them easier to access.
- Automatically align activities when linking them together.
- Added warning when your Runbook Studio license is about to expire.
- Fixed an issue in which the URL associated with a webhook is invalid.
- Fixed issues with creating and modifying schedule assets.
- Fixed an issue with constant value data sources and nullable types.
- Fixed an issue with displaying the correct runbook image type.
- Fixed issues with displaying runbook names that contain underscore characters.
- Fixed issues with generating PowerShell for activities with quotes in their labels.
- Various bug fixes
- Backwards compatible with runbook files created in 3.X.

## Version 3.4

- Updated endpoints used to connect to Azure.
- Fixed a bug with generating invalid PowerShell code for constant value data sources that have been assigned a number value.
- Fixed a bug with generating PowerShell code for switch parameters.

## Version 3.3

- Fixed an issue where links between activities in graphical runbooks could become detached after adding an activity to the runbook.

## Version 3.2

- Improved Smart Connection and Discovery user experience.
  - Smart activity configuration is maintained, where relevant, when changing the activity's connection in the Discovery pane.
  - Add support for refreshing an activity from the Discovery Pane when configuring a Smart Activity.
  - Add support for Adding a new connection from the Discovery Pane when configuring a Smart Activity.
  - Add support for drop down lists and default values when configuring connection assets that are associated with Smart Integration modules.
  - Changes to the way smart activities reference smart connections to make it easier to share runbooks and resolve missing or incorrect connections. (Smart activities now reference the Smart Connection Name field instead of an internal ID)

**Note:** Due to this change runbooks saved in 3.2 will no longer open in 3.1. Please upgrade all instances of Runbook Studio at the same time.

- Improved performance when switching back and forth between the Toolbox and Azure panes.

- Improved Azure session token handling, allowing Studio to stay connected without any further prompts.
- Improved the PowerShell code that is generated for constant value data sources that are associated with numeric type parameters.
- Improved input validation to minimize errors when configuring constant value data sources that are associated with integer type parameters.
- Fix issue that intermittently made smart activity output properties unavailable when configuring the path in an activity output data source.
- Fix issue with displaying input fields when starting a test job for a runbook that has several input parameters.
- Various bug fixes
- Backwards compatible with runbook files created in 3.0 and 3.1.

## Version 3.1

- Significantly decreased the size of runbook files.
- Support for maintaining smart runbook specific information (discovery, colors, etc.) when uploading to and downloading from Azure Automation.
- Support for enabling/disabling runbook elements.
- Support advanced searching of PowerShell cmdlets and Azure Automation assets.
- Support for disabling/enabling synchronization of specific Azure subscription and automation accounts.
- Support for inline editing of Smart Filters and runbook output types.
- Improved runbook, activity and link error and warning notification.
- Improved user interface for creating and manipulating smart filters.

## Version 3.0

- New and improved graphical user interface.
- New File menu with improved support for runbook document management.
- Added support for multiple tenants.
- Added support for managing Smart Integration Module licenses.
- Added support for PowerShell, PowerShell Workflow and Python runbooks.
- Added the ability to edit existing schedule assets.
- Added the ability to drag and drop automation assets from one automation account to another.
- Added the ability to view runbook draft and published content when working offline.
- Added the ability to align and arrange runbook activities and links.
- Added the ability to assign a color to multiple runbook elements.
- Added the ability to upload and start a test job with a single click.
- Added the ability to specify the runbook output types.
- Added Notices section to the Activity and Link tabs to notify users of configuration warnings and errors.
- Added the ability to open multiple runbooks at once.

- When opening a runbook document, the canvas automatically scales to fit the runbook.
- Improved theme experience and polish
- Various bug fixes
- When making changes to the expiry date of a runbook webhook, you may get an error indicating that the expiry date is not valid (even though it is). This is a problem with Azure Automation that we are hoping to be fixed soon.
- Runbooks that are open in Runbook Studio are not automatically reloaded when making changes with an external Git client.
- When generating PowerShell code snippets for an activity the resulting code may not be compatible with PowerShell Workflow based runbooks running in Service Management Automation. This can occur when a parameter is assigned a global asset data source, such as a *Connection Asset* data source, or when using a *PowerShell Expression* data source. Service Management Automation runbooks that use native PowerShell or runbooks in Azure Automation are not affected by this issue.