Blue Prism

Browser Automation Agent for Manifest V3 Extensions

Document Revision: 2.0

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Blue Prism Limited, 2 Cinnamon Park, Crab Lane, Warrington, WA2 0XP, United Kingdom. Registered in England: Reg. No. 4260035. Tel: +44 370 879 3000. Web: www.blueprism.com

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Installation

The Blue Prism Browser Automation Agent is a complementary application to Blue Prism Enterprise that is launched by a compatible Blue Prism Manifest V3 (MV3) browser extension. This application is provided as a separate installer that:

- Detects the installed version of Blue Prism.
- Removes selected Manifest V2 (MV2) extensions installed on the machine.
- Installs the appropriate MV3 browser extension.

The application provides the ability to insert and invoke JavaScript on web pages using a Chrome or Edge MV3 browser extension; and allows customers using previous versions of Blue Prism to deploy MV3 browser extensions without needing to upgrade their Blue Prism Enterprise installation. There is no additional license required to deploy the Browser Automation Agent.

> ✎ The Blue Prism Browser Automation Agent is not valid for use with the Blue Prism Firefox browser extension as this uses MV2.

Prerequisites

- Before installing the Browser Automation Agent, you must install a compatible version of Blue Prism from 6.4.2 to 7.1.2.

  > ✎ If using BAA version 2.0, the Edge browser extension can only be installed for use with Blue Prism versions 6.8 and later using the installer. The Edge browser extension is not supported in Blue Prism versions earlier than 6.8.
  >
  > If using BAA version 1.0, the Edge browser extension can only be installed for use with Blue Prism versions 6.9 and later using the installer. For Blue Prism versions 6.8.x, the Blue Prism Chrome extension must be installed manually from the Chrome web store to use with Chromium-based versions of Microsoft Edge. For more information, see Upgrade notices for Blue Prism version 6.8.

- Installing the Browser Automation Agent should remove your currently installed extensions if they were installed using the Blue Prism installer. If you downloaded the extensions from the web store or via sideloading, you must remove them manually prior to installation.

- The Insert and Invoke JavaScript functions require the appropriate version of the Chrome or Edge web driver to be installed on the machine on which Blue Prism is installed. For more information, see Install the web drivers on page 9.

- The Browser Automation Agent and associated MV3 browser extensions require version 104 or later of the Chrome and Edge browsers. For more information, see the browser extension compatibility.

Install the Browser Automation Agent using the installer

> ✎ You can either install the Browser Automation Agent with all associated MV3 browser extensions or with selected ones from the Advanced install screen.

Follow the steps below to install the Browser Automation Agent and all associated MV3 browser extensions:

1. Double-click the provided MSI and open the installation wizard.
2. Click **Get started**.
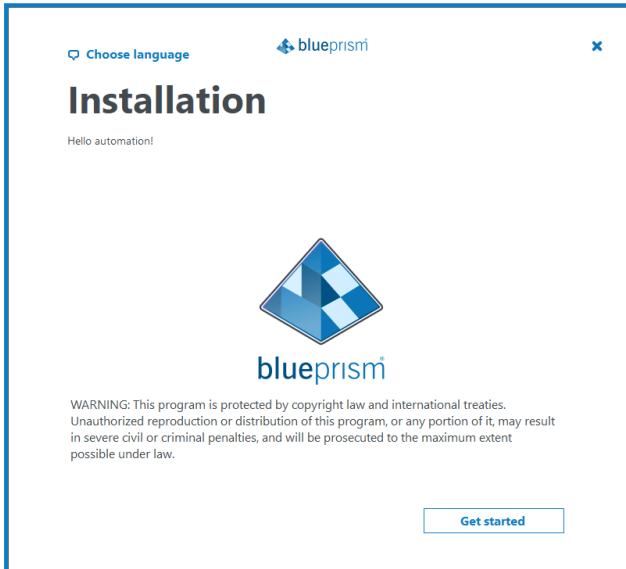
The License agreement screen displays.

3. Read the End User License Agreement and if you agree to the terms, select the check box and click **Next**.
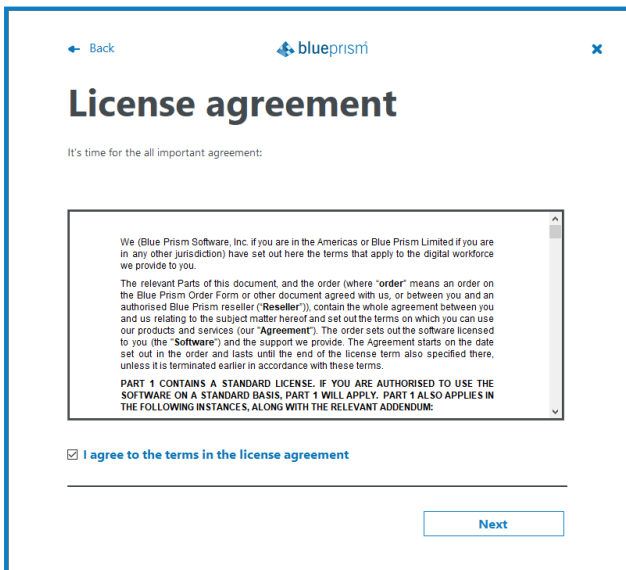
The Install location screen displays.

4. Click **Install**.
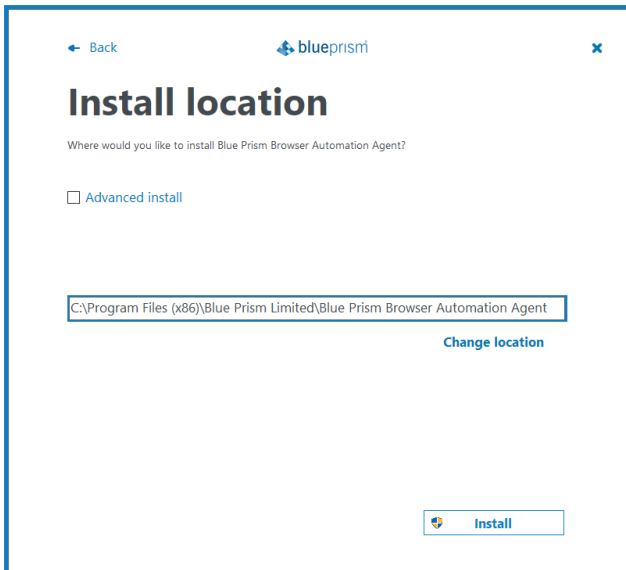
5. Click **Yes** on the User Account Control (UAC) prompt screen.

The installation is complete and the Chrome and Edge browser extensions are installed by default.

> ✎ The availability of the Edge browser extension is dependent upon the version of Blue Prism and the version of the Browser Automation Agent you are using:
> - With BAA 2.0, the Edge browser extension can only be installed for Blue Prism 6.8 or later.
> - With BAA 1.0, the Edge browser extension can only be installed for Blue Prism 6.9 or later.
>
> For more information, see Prerequisites on page 4.

6. Click **OK** to close the installation wizard.

Advanced installation

1. If you want to install only one of the browser extensions, on the Install location screen select the **Advanced install** option and click **Next**.

   The Advanced install screen displays.

2. Clear the selection for the browser extension you do not want to install, and click **Install**.

   The availability of the Edge browser extension is dependent upon the version of Blue Prism and the version of the Browser Automation Agent you are using:

   - With BAA 2.0, the Edge browser extension can only be installed for Blue Prism 6.8 or later.
   - With BAA 1.0, the Edge browser extension can only be installed for Blue Prism 6.9 or later.

   For more information, see Prerequisites on page 4.

3. Click **Yes** on the User Account Control (UAC) prompt screen.

   The installation is complete.

4. Click **OK** to close the installation wizard.

Install the Browser Automation Agent from the command line

The following command line options can be used to install the Browser Automation Agent and set the registry key for the Chrome and Edge Manifest V3 extensions. The example below assumes the MSI name to be `BluePrism.BrowserAutomationAgent`.

> The availability of the Edge browser extension is dependent upon the version of Blue Prism and the version of the Browser Automation Agent you are using:
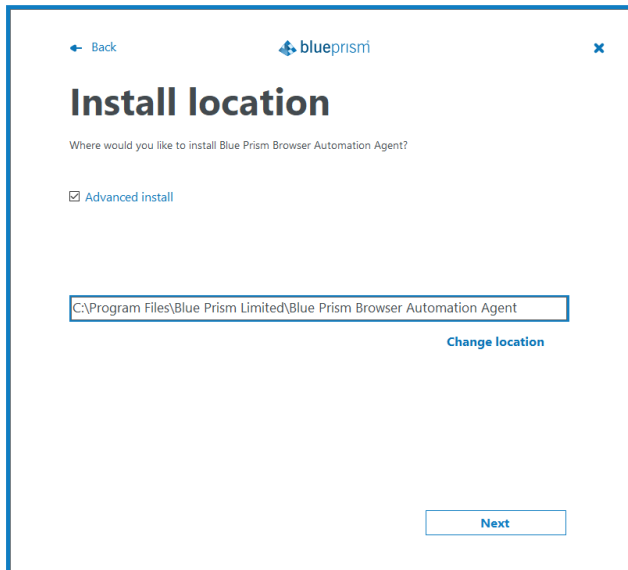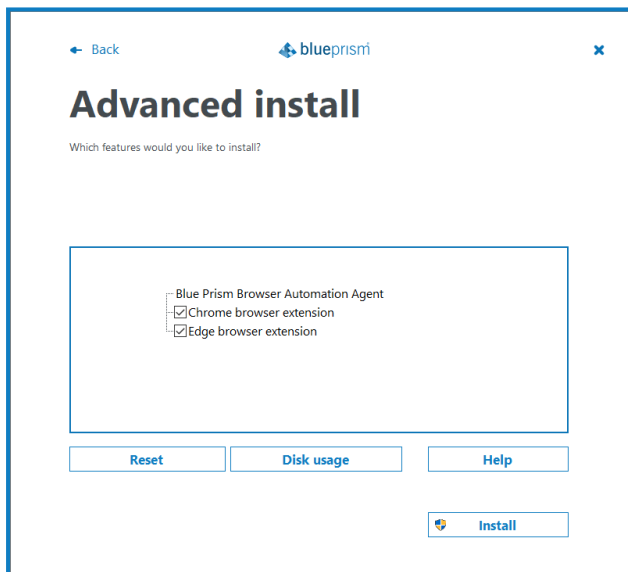>
> - With BAA 2.0, the Edge browser extension can only be installed for Blue Prism 6.8 or later.
> - With BAA 1.0, the Edge browser extension can only be installed for Blue Prism 6.9 or later.
>
> For more information, see Prerequisites on page 4.

Command	Description
`msiexec /i BluePrism.BrowserAutomationAgent_x64 /qn` `msiexec /i BluePrism.BrowserAutomationAgent_x86 /qn`	Installs the Browser Automation Agent and sets the MV3 extension registry key.
`msiexec /i BluePrism.BrowserAutomationAgent_x64 ADDLOCAL=BrowserAutomationAgent /qn` `msiexec /i BluePrism.BrowserAutomationAgent_x86 ADDLOCAL=BrowserAutomationAgent /qn`	Installs the Browser Automation Agent without setting the MV3 extension registry key.

`msiexec /i BluePrism.BrowserAutomationAgent_x64 ADDLOCAL=ChromePlugin /qn`
`msiexec /i BluePrism.BrowserAutomationAgent_x86 ADDLOCAL=ChromePlugin /qn`
`msiexec /i BluePrism.BrowserAutomationAgent_x64 ADDLOCAL=EdgePlugin /qn`
`msiexec /i BluePrism.BrowserAutomationAgent_x86 ADDLOCAL=EdgePlugin /qn`
	Adds the MV3 extension registry key to an existing installation of the Browser Automation Agent.

The ADDLOCAL property can also be used to install multiple Blue Prism components by separating them with a comma. The following command installs 64-bit versions of the Blue Prism Automation Agent, plus the Chrome and Edge extensions:

```
msiexec /i BluePrism.BrowserAutomationAgent_x64
ADDLOCAL=BrowserAutomationAgent,ChromePlugin,EdgePlugin /qn
```

Install the web drivers

The Insert and Invoke JavaScript functions rely on having the appropriate version of the Chrome or Edge web driver installed on the machine on which Blue Prism is installed. The web drivers are browser and version specific.

- Chrome: https://chromedriver.chromium.org/downloads
- Edge: https://developer.microsoft.com/en-us/microsoft-edge/tools/webdriver/

> The web driver major version must match the web browser major version, however, the final version number may be different. For example, for Microsoft Edge v111.0.1661.**62**, you may be able to use web driver v111.0.1661.**54**, or for Google Chrome v73.0.3683.**01**, you may be able to use web driver 73.0.3683.**20**. However, if the web drivers do not behave as expected, you should install the matching driver for your browser.
>
> Edge recommends that you use the same version of the web driver as your web browser (see the Edge WebDriver download page). For more information on Chrome web driver compatibility, see ChromeDriver's information on Version Selection.

Download the required drivers as ZIP files. Extract the web driver executables and save them either in the Blue Prism Browser Automation Agent installation folder (default location is C:\Program Files\Blue Prism Limited\Blue Prism Browser Automation Agent) or in a folder under your PATH environment variable.

Launch a browser from Blue Prism

Prerequisites

Perform the following before starting any browser automation:

- In an Edge browser, navigate to Settings > System and Performance and ensure that the following settings are disabled:
    - **Startup Boost**
    - **Continue running background extensions and apps when Microsoft Edge is closed**
- After installing the web drivers as described above, open Task Manager and check that no instances of browsers are currently running. If any browser instance is running, terminate the browser tasks before attempting any automation. This will ensure a fresh launch for browser automation with the latest settings.

> This must be carried out on all machines on which a browser will be launched by Blue Prism.

Enable JavaScript functionality

To enable JavaScript functionality, the browser must be launched with remote debugging enabled. This can be done on the Application Modeller main page (not in the wizard) by adding the following parameter to the URL field:

```
--remote-debugging-port
```

A commonly used port is 9222, for example:

```
--remote-debugging-port=9222
```

However, any valid, unused port can be used. The Browser Automation Agent detects that the port is available and will launch the BluePrism.JavaScriptInvoker when the browser is launched.

> This must be carried out every time you launch a browser from Blue Prism.
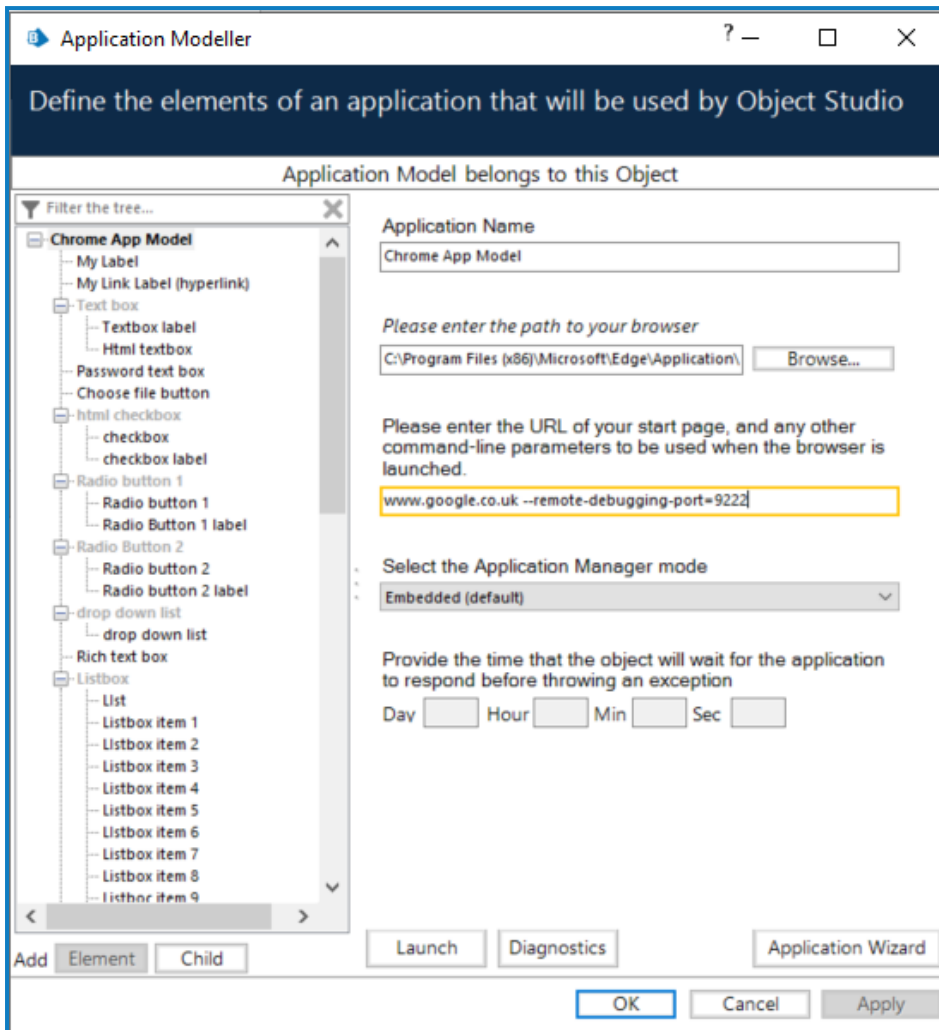
> The functionality for using Insert and Invoke JavaScript functions has not changed and should work with no further changes in the majority of cases. If using Blue Prism Browser Automation Agent version 1.0, some processes may need to be updated to invoke JavaScript functions following an insert, see this upgrade notice for more details.

To verify that everything works as expected, open Task Manager and make sure you see the following:

- If launching the browser without a debugging port, you should see BluePrism.BrowserAutomationAgent.exe.

- If launching the browser with a debugging port enabled, and the appropriate web driver is correctly installed, you should see BluePrism.BrowserAutomationAgent.exe and BluePrism.JavaScriptInvoker.exe.

Any errors will show in: C:\ProgramData\Blue Prism Limited\Blue Prism\Logs\BluePrism.BrowserAgent.txt. Errors can be viewed in NLog if configured, otherwise they display in the Windows Event Log.

Uninstall the Browser Automation Agent

Follow the steps below to uninstall the Browser Automation Agent and all associated MV3 browser extensions:

1. Close all browser windows.
2. Open **Control Panel** > **Programs and Features**.
3. Right-click **Blue Prism Browser Automation Agent** and select **Uninstall** from the shortcut menu.
4. Click **Yes** in the confirmation message and follow the on-screen instructions.

If you have manually installed any browser extension from the web store or by sideloading, you must manually remove these after uninstalling the Browser Automation Agent. For details on how to manually remove an extension, see the Chrome, Edge, and Firefox integration guide for the relevant extension.

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Blue Prism | Browser Automation Agent for Manifest V3 Extensions
Blue Prism Browser Automation Agent 2.0: March 2023

Blue Prism Browser Automation Agent 2.0: March 2023

About this release

The Blue Prism Browser Automation Agent is a complementary application to Blue Prism Enterprise that is launched by a compatible Blue Prism Manifest V3 (MV3) browser extension. This application is provided as a separate installer that will detect the installed version of Blue Prism and install the appropriate MV3 browser extension while removing selected Manifest V2 (MV2) extensions installed on the machine.

The application provides the ability to insert and invoke JavaScript on web pages via a Chrome or Edge MV3 browser extension and it can be used with any Blue Prism version from 6.4.2 to 7.1.2. The Blue Prism Browser Automation Agent is not valid for use with the Blue Prism Firefox browser extension because this uses MV2.

Applying this patch release

This component release must be installed on runtime resources and interactive clients within a Blue Prism environment to allow the automation of Chrome and Edge browsers with continued support of Insert and Invoke JavaScript functionality, after the removal of MV2 support for browser extensions. Unlike Blue Prism product releases, this update can be applied to individual runtime resources and interactive clients in an environment without installing it across the entire estate.

Secure development policy

Blue Prism's secure development process is a market-leading, embedded security culture, focused on delivering security excellence through four key principles:

- Education – Providing up-to-date knowledge, information, and training to the development team.
- Evaluation – Carrying out regular reviews of our products using industry standard frameworks and security tools.
- Elimination – Removing potential threats through the evaluation of standards, compliance, and performance.
- Evolution – Continued improvement of our security program, ensuring alignment with our product technologies and by reacting effectively to new and emerging threats.

Blue Prism secure development is based on OWASP ASVS, ISO 27034 and GDPR Article 25 standards and practices. For more information, see Blue Prism's comprehensive secure development process.

Enhancements and improvements

The following enhancements and improvements are included in this release:

Description of change	Reference
The Blue Prism Browser Automation Agent installer now provides the ability to insert and invoke JavaScript on web pages via a Chrome or Edge MV3 browser extension for Blue Prism versions 6.4.2 to 7.1.2. For more information, see the Blue Prism Browser Automation Agent installation guide.	BP-10808 BP-10032 BP-12392

Description of change	Reference
Insert and Invoke JavaScript functionality can be used by downloading version and browser-specific web drivers and installing them locally. To enable JavaScript functionality, the browser must be launched with remote debugging enabled. This now also applies to fixed ports in versions 6.4.2 to 6.4.5, and to the native messaging host in versions 7.0 to 7.1. For more information, see the Blue Prism Browser Automation Agent installation guide.	BP-11236
Users can now invoke a JavaScript statement directly by providing the statement in the function name and leaving the arguments empty. When invoked in this way, any stored scripts are ignored to avoid unintended invocations. Previously, if the arguments were left as an empty string, parentheses "()" were appended to represent an empty set of arguments, which caused exceptions in the JavaScript Invoker when automations were run. If JavaScript functions need to be inserted into a page context, these must be refactored to insert the functions fully and then invoke the function with arguments.	BP-12457
The use of Insert and Invoke Javascript functions against iFrames using Selenium is now supported from Blue Prism 6.4.2 onwards. The Blue Prism 6.4 and 7.0-7.1 MV3 extensions have been updated to include the frame URL in the Insert and Invoke JavaScript functions.	BP-12569 BP-12438
An issue has been fixed, where the JavaScript invoker only matched on the host part of the URL and could target an incorrect tab or window. The method of identifying whether a tab or window is a possible match has been updated, so by default the JavaScript invoker matches on the full URL (AbsoluteURI) of the invoking window.	BP-12664
System timeout parameters used in browser automations can now be configured in the Chrome and MV3 browser extension settings. This allows system administrators to optimize automations on a particular machine. Configurable timeout parameters are only available if using the Browser Automation Agent with Blue Prism version 7.1.2 or later.	BP-12301
The process of disconnecting web pages and applications following a browser automation carried out using the Browser Automation Agent in a Blue Prism version 7 deployment has been improved. Such web pages and applications are now disconnected by the service worker as soon as the automation has finished, so users can continue to automate applications without an impact on performance.	BP-11869
When using a Blue Prism 7.1.2 deployment with the Browser Automation Agent, Blue Prism now remains attached to a web page even if the window title changes. Previously, when the window title of a browser instance changed, the browser extension could not be detected and an error message displayed.	BP-12585 (BP-12246)
The performance of ephemeral ports when used with MV3 browser extensions has been improved. The browser extensions will not attempt to connect at all when the Browser Automation Agent is not able to start.	BP-12730
When installing the Browser Automation Agent and clicking **No** in the User Account Control prompt, the confirmation message now indicates that nothing has been installed. Previously, it incorrectly stated that the installation had been successful.	BP-12229

Description of change	Reference
Nlog configuration has been added for the Browser Automation Agent and JavaScript Invoker so that when there is no Nlog configuration present in Blue Prism, the Browser Automation Agent and JavaScript Invoker will fall back to using the Nlog configuration in the Browser Automation Agent install folder. All Nlog logs are output to the C:\ProgramData\Blue Prism Limited\Blue Prism\Logs directory.	BP-12717
An issue has been fixed where browser automations running on Blue Prism versions 7.0.0 to 7.1.1 would fail if a user opened one page then navigated to another page with a different title.	BP-13874
All previously installed browser extensions are now automatically removed following the installation of the Browser Automation Agent 2.0. Previously, the Blue Prism 7.1.2 extensions were not automatically removed as expected.	BP-13742

Browser extensions

The table below shows when each Blue Prism extension compatible with this release was introduced and the browser version against which they were evaluated. See the browser compatibility matrix for the latest browser versions evaluated.

Browser	Blue Prism extension versions	Date available
Chrome	Blue Prism BAA v2 Extension 6.4 Blue Prism BAA v2 Extension 6.5 - 6.10 Blue Prism BAA v2 Extension 7.0 - 7.1	March 2023
Edge Chromium	Blue Prism BAA v2 Extension 6.8 - 6.10* Blue Prism BAA v2 Extension 7.0 - 7.1	March 2023
Firefox	N/A	N/A

*The Edge browser extension can only be installed for use with Blue Prism versions 6.8 and later using the installer. The Edge browser extension is not supported in Blue Prism versions earlier than 6.8.

Blue Prism Browser Automation Agent 1.0: September 2022

About this release

The Blue Prism Browser Automation Agent is a complementary application to Blue Prism Enterprise that is launched by a compatible Blue Prism Manifest V3 (MV3) browser extension. This application is provided as a separate installer that will detect the installed version of Blue Prism and install the appropriate MV3 browser extension while removing selected Manifest V2 (MV2) extensions installed on the machine.

The application provides the ability to insert and invoke JavaScript on web pages via a Chrome or Edge MV3 browser extension and it can be used with any Blue Prism version from 6.5 to 6.10.5. The Blue Prism Browser Automation Agent is not valid for use with the Blue Prism Firefox browser extension as this is using MV2.

Applying this patch release

This component release must be installed on runtime resources and interactive clients within a Blue Prism environment to allow the automation of Chrome and Edge browsers with continued support of Insert and Invoke JavaScript functionality, after the removal of MV2 support for browser extensions. Unlike Blue Prism product releases, this update can be applied to individual runtime resources and interactive clients in an environment without installing it across the entire estate.

Upgrade notices

Processes may need to be updated to invoke JavaScript functions following an insert

When launching a browser from Blue Prism after installing the Browser Automation Agent and attempting to use the Insert and Invoke JavaScript functionality, in some scenarios a process using the Insert function may need to be updated.

When using the **Insert JavaScript** action in a Navigate stage in Blue Prism versions using a MV2 extension, if a JavaScript statement was inserted instead of a function definition, then this may have been evaluated immediately by the browser and executed. Due to the changes in MV3, a JavaScript statement is no longer inserted directly into the browser to be immediately evaluated and invoked, but it is stored inside the Browser Automation Agent to be used with an Invoke function instead.

When attempting to use the **Insert JavaScript** action to evaluate JavaScript statements, users will need to refactor these statements to be functions which can then be invoked using the **Invoke JavaScript** action. If the functions do not require arguments, then an empty set of arguments in the format "[{}]" should be entered in the **Arguments** input field of the Navigate stage.

Known issues

A list of any prominent issues with this release is maintained in the knowledge base – click here for more information.

Secure development policy

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- Education – Providing up-to-date knowledge, information, and training to the development team.
- Evaluation – Regular reviews of our products using industry standard frameworks and security tools.

- Elimination – Remove potential threats through the evaluation of standards, compliance, and performance.
- Evolution – Continued improvement of our security program, ensuring alignment with our product technologies and by reacting effectively to new and emerging threats.

Blue Prism secure development is based on OWASP ASVS, ISO 27034 and GDPR Article 25 standards and practices. For more information, see Blue Prism's comprehensive secure development process.

Enhancements

The following enhancements are included in this release:

Description of change	Reference
A new Blue Prism Browser Automation Agent installer provides the ability to insert and invoke JavaScript on web pages via a Chrome or Edge MV3 browser extension for Blue Prism versions 6.5 to 6.10.5 for Chrome and 6.9 to 6.10.5 for Edge. For more information, see the Blue Prism Browser Automation Agent installation guide.	BP-9857 BP-10922 BP-10551 BP-10808 BP-10027 BP-11236
For Blue Prism versions earlier than 6.9, the Edge browser extension will not be installed by default during a simple install and will not be available on the Advanced install screen. For Blue Prism versions 6.8.x, the Blue Prism Chrome extension must be installed manually from the Chrome web store to use with Chromium-based versions of Microsoft Edge. For more information, see Upgrade notices for Blue Prism version 6.8.	BP-11894
Insert and Invoke JavaScript functionality can be used by downloading version and browser-specific web drivers and installing them locally. To enable JavaScript functionality, the browser must be launched with remote debugging enabled. This applies to fixed ports in versions 6.5 to 6.7 and ephemeral ports in versions 6.8 to 6.10.5. For more information, see the Blue Prism Browser Automation Agent installation guide.	BP-10359 BP-10743
An error message displays in the Windows Event Log when the web driver is not present, or does not match the Chrome or Edge browser extension version.	BP-11595

Browser extensions

The table below shows when each Blue Prism extension compatible with this release was introduced and the browser version against which they were evaluated. See the browser compatibility matrix for the latest browser versions evaluated.

Browser	Blue Prism extension versions	Date available
Chrome	Blue Prism Extension 6.5 - 6.10.5 Manifest V3	29 September 2022
Edge Chromium	Blue Prism Extension 6.8 - 6.10 Manifest V3*	29 September 2022
Firefox	N/A	N/A

*The Edge browser extension can only be installed for use with Blue Prism versions 6.9 and later using the installer. For Blue Prism versions 6.8.x, the Blue Prism Chrome extension must be installed manually from the Chrome web store to use with Chromium-based versions of Microsoft Edge. For more information, see Upgrade notices for Blue Prism version 6.8.

Improvements in Blue Prism when using the Prism Browser Automation Agent

The following table outlines the fixes and minor improvements that can be leveraged by users of the Blue Prism Browser Automation Agent when paired with specific Blue Prism Enterprise versions:

Description of change	Reference	Browser Automation Agent version	Affected Blue Prism version
Browser extensions installed using the Blue Prism Desktop installer can now be successfully launched.	BP-12774	2.0	7.1.2, 7.2
The browser extension upgrade page ID for Blue Prism 7.1 is no longer exposed in the console.	BP-12581	2.0	7.1.0 > 7.1.1
A web page that was previously spied using a Chrome or Edge browser extension can now be highlighted or spied again after a file has been downloaded from the web page.	BP-12070	2.0	7.1.0 > 7.1.1
The presence of a proxy native messaging host ensures the service worker is kept active under normal conditions in Chrome versions 103 and earlier.	BP-10245	1.0	7.1.x
Performance degradation in processes that include Chrome, Edge, and Firefox browser automations IDs no longer occurs.	BP-12244	1.0	6.10.5
Spying using a Chrome browser is now possible if ephemeral ports are enabled.	BP-1673	1.0	6.9.0 > 6.10.5
A fix has been applied to ensure that when entering data into web elements in a Chrome, Edge, or Firefox browser, the necessary underlying input event is triggered and the native value setters are used to ensure the event works as expected. The behavior in the application should now be the same both when the web page is interacted with by a digital worker or by a human, even in situations where the developers of the web page have programmatically overridden the event.	BP-310	1.0	6.5.0 > 6.10.2
The connection between Blue Prism and the browser extensions has been improved.	US-9269	1.0	6.5.0 > 6.8.3
Firefox version 52 is now supported.	US-4083	1.0	6.4.2 > 6.5.2

Blue Prism® Browser Automation Agent 2.0 Third-Party Licenses

The Blue Prism® Browser Automation Agent 2.0 includes a number of third-party classes which are referenced by the platform and this topic records the items that are included and their respective licenses. Open source components will only be adopted on a permissive license basis and there are no copyleft licenses as part of our third-party arrangements.

There are a number of sections in this topic that differentiate the components that are used in the main product, trial version, and separate optional components that cater for particular scenarios.

This document contains the following sections:

- Third-party components below
- Referenced licenses on page 21

Third-party components

Autofac

Version	5.2.0
Copyright	Copyright © 2015 Autofac Contributors
License	MIT License on page 24

MessageFormat

Version	3.0.1
Copyright	Copyright © Jeff Hansen 2017 to present. All rights reserved.
License	MIT License on page 24

Microsoft.Bcl.AsyncInterfaces

Version	1.1.0
Copyright	© Microsoft Corporation. All rights reserved.
License	MIT License on page 24

Newtonsoft.Json

Version	13.0.1
Copyright	Copyright © James Newton-King 2008
License	MIT License on page 24

NLog

Version	4.7.2
Copyright	Copyright © James Newton-King 2008
License	BSD 3-Clause License on page 23

NLog.Config

Version	4.5.11
Copyright	Copyright © 2016, Nlog
License	BSD 3-Clause License on page 23

NLog.Schema

Version	4.5.11
Copyright	Copyright © 2016, Nlog
License	BSD 3-Clause License on page 23

Selenium.WebDriver

Version	4.2.0
Copyright	Copyright © 2020 Software Freedom Conservancy
License	Apache License, Version 2.0 on the next page

System.Runtime.CompilerServices.Unsafe

Version	4.5.3
Copyright	© Microsoft Corporation. All rights reserved.
License	MIT License on page 24

System.Threading.Tasks.Extensions

Version	4.5.4
Copyright	© Microsoft Corporation. All rights reserved.
License	MIT License on page 24

crypto-js

Version	3.1.9
Copyright	Copyright © 2009-2013 Jeff Mott, Copyright © 2013-2016 Evan Vosberg
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Apache License

Version 2.0, January 2004

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