

blueprism[®]

Blue Prism 6.2

Microsoft Intelligent Services User Guide

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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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Introduction

Robotic Process Automation (RPA) is an ever-expanding market which allows for back end office automation via intelligent robots. With the addition of a Blue Prism® Artificial Intelligence offering, the list of use cases for RPA will increase dramatically.

This document focuses on the design of the integration between Blue Prism and Microsoft's Cognitive Services. Microsoft provides these in the form of web services, which are consumed via RESTful APIs.

- Text Analytics
- Text and speech translation
- Language Understanding
- Computer Vision
- Face recognition
- Emotion recognition
- Academic knowledge
- And others

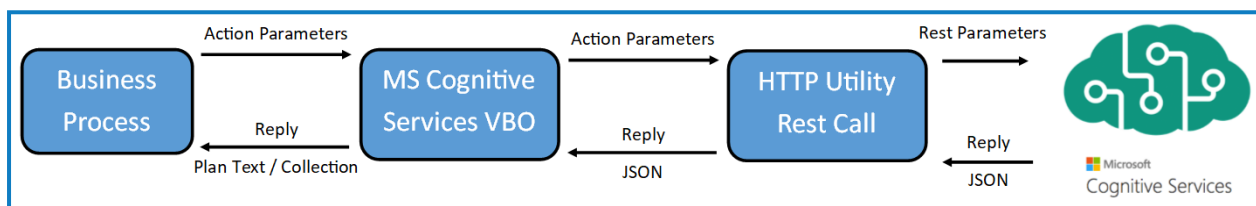
Microsoft breaks down these services into multiple functionalities which can be called separately. As an example, the Text Analytics service consists of sentiment analysis, key phrase extraction, topic detection and language detection. The rest of this document focuses on describing the design of such integration.

Solution Overview

The basic design is to provide one or more VBOs that encapsulate the different AI Cognitive services offered by Microsoft. These VBOs can then be offered as an easy bridge to connect a client's processes to the different AI services by Microsoft.

The Blue Prism's VBOs interact with the Microsoft Cognitive Services by using the HTTP Utility to send a REST call. Then, the response given back is handled in the original VBO action which was created for the specific purpose of supporting the interaction with Microsoft's Cognitive services.

All of Microsoft's services require a subscription key, which is given to each party as part of their contract with Microsoft. When subscribing to a service, Microsoft grants two keys, but only one key is needed to call each API listed in this document. Data Flow would be as such:



Limitations

The following limitations should be understood before attempting to use these integrations:

- The customer or partner is responsible for the configuration and maintenance of the relevant cloud subscriptions and services. Blue Prism can not provide any support on the configuration of the cloud environment itself.
- Use of the APIs may incur additional costs, depending on usage
- There is always a possibility with external services that the APIs will change. The VBOs are provided as-is without warranties and support is provided by Blue Prism on a best endeavours basis and are not subject to formal SLAs

Pre-Requisites and Environment Configuration

This section outlines the pre-requisites that are required to use the integrations. Note that Blue Prism is not able to provide any support in configuring the Microsoft Cloud Services themselves.

Microsoft Cloud Services Prerequisites

To implement Microsoft Cognitive Services integration, the following components are required:


- Subscription to Microsoft Azure
- Create an MS Cognitive service for Translation, Vision and Natural Language Processing
- Obtain service subscription keys for all API's

Blue Prism Configuration

First, import the bprelease file. Before using the VBOs, it is necessary that the following environment variables be defined, as well as their appropriate values set. These values link up to Credentials in BluePrism which hold the subscription keys.

Environmental Variables

VBO	Variable Name	Description
Computer Vision	Microsoft Cognitive – Computer Vision	URL of the Handwriting Recognition service, part of the MS Cognitive Computer Vision Service
Text Analytics	Microsoft Cognitive – Text Analytics	URL of the Detect Language service, part of the MS Cognitive Text Analytics Service
Translation	Microsoft Cognitive - Translator	URL of the Detect Language service, part of the MS Cognitive Translation Service

 All are of the type Text.

Credentials

The credential manager holds the API key in relation to each Microsoft Cloud Platform API. Each credential name will be the same as the environmental name. This section shall explain how to add a new credential for all three of the above VBOs

Creating a Credential

This example will be for setting up the Microsoft Cognitive – Computer Vision API.

1. In Blue Prism, click the **System** tab and select **Security > Credentials** from the navigation tree.
2. Click **New** from the Credentials menu. The Credential Details dialog displays.

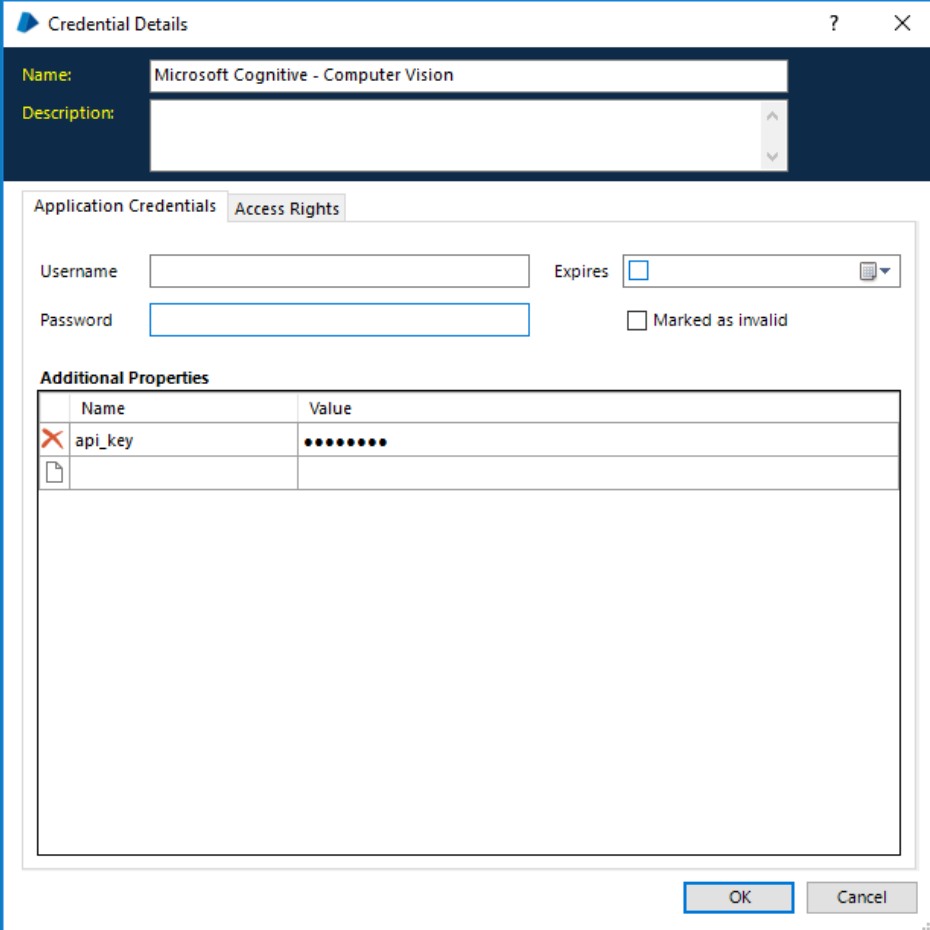
The screenshot shows the 'Credential Details' dialog box. It has a title bar with a question mark and a close button. The main area is divided into two sections: 'Application Credentials' and 'Access Rights'. The 'Application Credentials' section contains the following fields:

- Name:** A text input field.
- Description:** A text input field with a scroll bar.
- Username:** A text input field.
- Password:** A text input field.
- Expires:** A date picker field with a calendar icon.
- Marked as invalid:** A checkbox.

Below the 'Application Credentials' section is the 'Additional Properties' section, which contains a table with the following structure:

Name	Value

3. Enter a name for the credential - in this example, *Microsoft Cognitive - Computer Vision*. This exact name will be used for the Environmental Variable.
4. Leave the Username and Password fields blank.
5. In the Additional Properties, enter *api_key* in the Name column and set a value the same as the subscription key generated in the Microsoft Azure Cloud Panel.



Credential Details

Name: Microsoft Cognitive - Computer Vision

Description:

Application Credentials | Access Rights

Username Expires

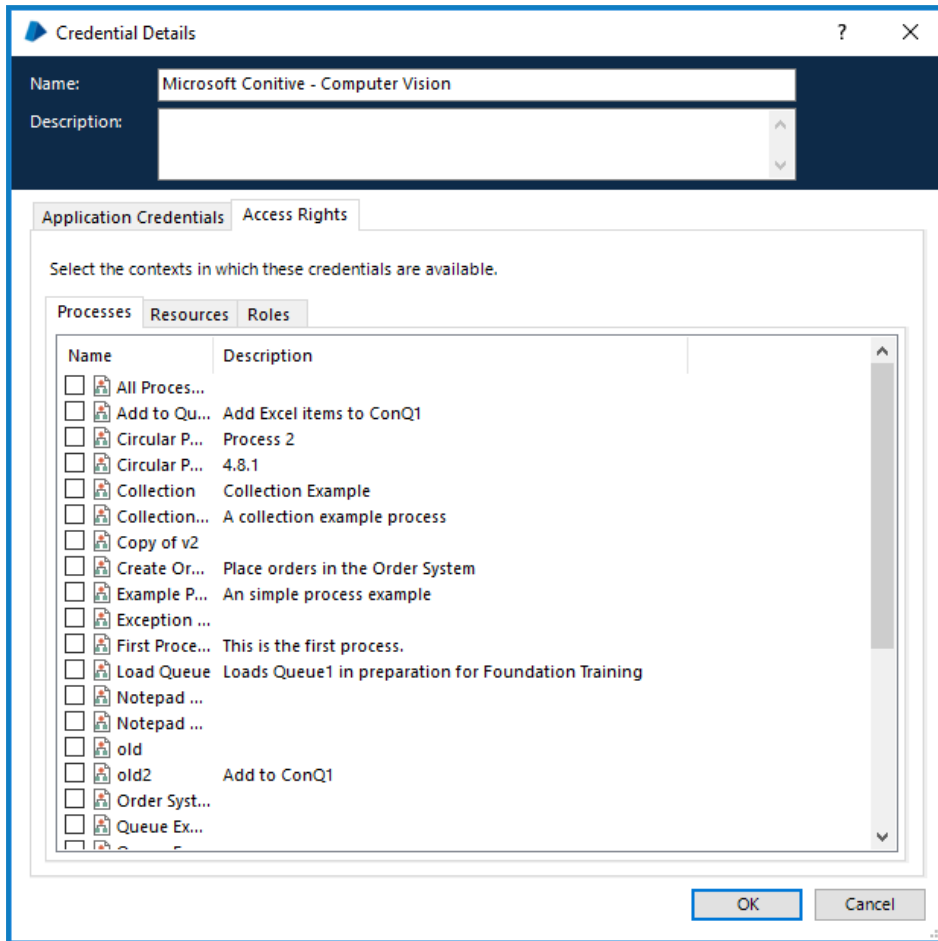
Password Marked as invalid

Additional Properties

Name	Value
api_key

OK Cancel

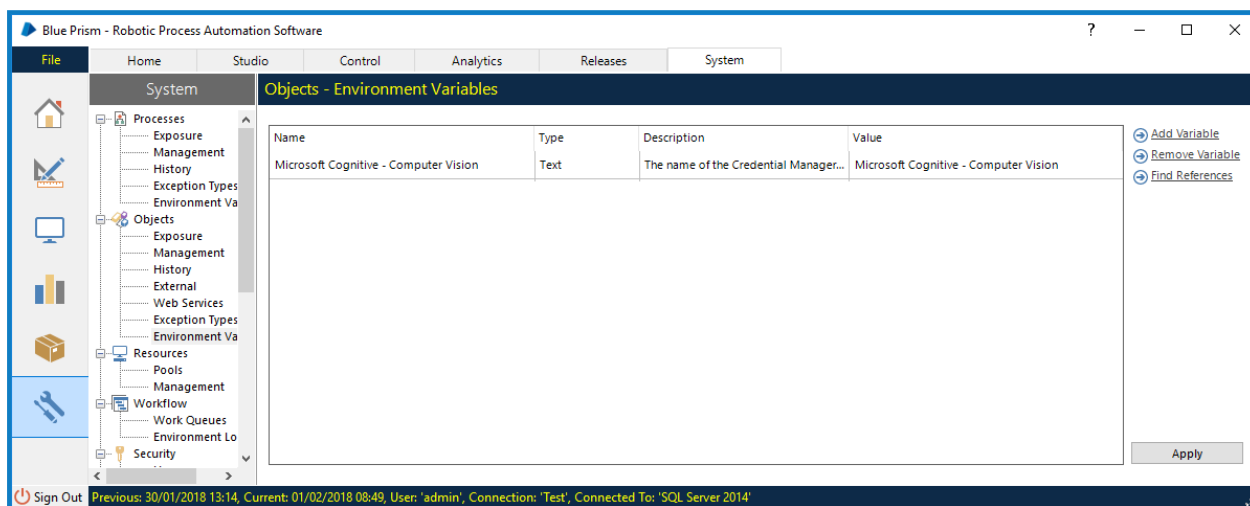
6. Select the **Access Rights** tab. Access rights must be configured before these new credentials can be used in a process to determine which processes, resources, and roles can use these credentials.



7. Apply the required access rights in the **Processes**, **Resources**, and **Roles** tabs.
8. Click **OK**.

9. Select **Objects > Environment Variables** from the Navigation tree.
10. Click **Add Variable** to create a new line in the table.
11. Give the variable the same name as the credential - *Microsoft Cognitive - Computer Vision*.

By linking the environment variable to the credential in this way, the Microsoft Cognitive Services VBO can access the API Key securely.



The Microsoft Cognitive – Computer Vision VBO is now configured.

Using the VBOs

The following section outlines the individual configuration and usage of each Microsoft API and the supported actions within the VBO.

Text Analytics VBO

Microsoft's Text Analytics service easily analyzes sentiment, extracts key phrases in a text, detect topics, and detects language for any kind of text. BluePrism's Text Analytics VBO connects to this service and offers the following functionality.

- Detect Language
- Key Phrases
- Text Sentiment

Detect Language

This action analyzes the text received and returns the detected language as plain text

Parameter	Direction	Data Type	Description
Text to Analyze	In	Text	The text to perform sentiment analysis on

Parameter	Direction	Data Type	Description
Detected Language	Out	Text	The detected language result of the analysed text

Key Phrases

This action analyzes the text received and returns a JSON result with the list of key phrases detected.

Parameter	Direction	Data Type	Description
Text to Analyze	In	Text	The text to perform sentiment analysis on
Language	In	Text	Optional - Language the text to analyze is written in

Parameter	Direction	Data Type	Description
Key Phrases	Out	Collection	A collection of key phrases found in the given text. This collection alters in size depending on how many phrases are found in the text.

Text Sentiment

This action analyzes the text received and returns a collection with the sentiment scores detected.

Parameter	Direction	Data Type	Description
Text to Analyze	In	Text	The text to perform sentiment analysis on
Language	In	Text	Optional - Language the text to analyze is written in

Parameter	Direction	Data Type	Description
Sentiment Field 1: Sentiment Value	Out	Collection	A collection of sentiment values found in the analysed document.

Text Translator

Microsoft's Text Translator service provides multi-language user experiences by providing functionality to detect a text's language or perform language translation.

It is important to note that Microsoft's text translation service requires the creation of an Access Token prior to being called. Each Access Token has a life of 10 minutes and as such, it needs to be regenerated if the services will continue to be called for longer periods of time.

BluePrism's Text Translation VBO connects to this service and offers the following functionality.

- Get Access Token
- Detect Language
- Translate

Get Access Token

All translator calls require an access token which is provided through this service. No inputs are needed.

Detect Language

This action connects to Microsoft AI Services and calls the Detect Language service.

Parameter	Direction	Data Type	Description
Text to Translate	In	Text	The text to translate
Language From	In	Text	A language code which states the original language of the text
Language To	In	Text	States what language the text needs to be translated too
Content Type	In	Text	The type of content (HTML, Plaintext etc.)

Parameter	Direction	Data Type	Description
Detected Language	Out	Text	Returns the detected language in the original text.

Translate

This service connects to Microsoft AI Services and calls the Translate service. NOTE: This service replies with XML format

Parameter	Direction	Data Type	Description
Text to Translate	In	Text	The text to translate
Language From	In	Text	The language to translate from
Language To	In	Text	The language to translate to
Content Type	In	Text	Either "text/plain" or "text/html". Default: text/plain

Parameter	Direction	Data Type	Description
Translated Text	Out	Text	Returns the result of the translation API call in clear text.

Computer Vision

This object utilizes Microsoft's Computer Vision AI Service offering AI-based OCR as well as handwriting recognition

OCR

This action performs Optical Character Recognition on an image provided utilizing Microsoft Cognitive OCR service.

Parameter	Direction	Data Type	Description
File or URI	In	Text	Path to the file on which to perform OCR
Proxy URL	In	Text	OPTIONAL: URL of proxy if one is to be used
Proxy User	In	Text	OPTIONAL: Proxy username
Proxy Password	In	Password	OPTIONAL: Proxy password

Parameter	Direction	Data Type	Description
OCR Result	Out	Text	Returns the result of the Optical Character Recognition API call in plain text.

Recognize Handwriting

This is the 1st step in the handwriting recognition process. This action submits an image that contains handwritten text and provides an operation location as part of the reply headers. The operation location must be used when the user attempts to get the results.

Parameter	Direction	Data Type	Description
File or URI	In	Text	Path to the file on which to perform OCR
Proxy URL	In	Text	OPTIONAL: URL of proxy if one is to be used
Proxy User	In	Text	OPTIONAL: Proxy username
Proxy Password	In	Password	OPTIONAL: Proxy password

Parameter	Direction	Data Type	Description
Handwriting Recognition Result	Out	Text	Returns the result of the Handwriting Recognition API call in plain text.