



Kofax RPA

Desktop Automation Service Configuration Guide

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KOFAX

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Preface

This guide describes how to configure the Desktop Automation Service required to use Desktop Automation on a remote computer.

Related Documentation

The documentation set for Kofax RPA is available here:¹

<https://docshield.kofax.com/Portal/Products/RPA/11.4.0-vcsft2fhaw/RPA.htm>

In addition to this guide, the documentation set includes the following items:

Kofax RPA Release Notes

Contains late-breaking details and other information that is not available in your other Kofax RPA documentation.

Kofax RPA Technical Specifications

Contains information on supported operating systems and other system requirements.

Kofax RPA Installation Guide

Contains instructions on installing Kofax RPA and its components in a development environment.

Kofax RPA Upgrade Guide

Contains instructions on upgrading Kofax RPA and its components to a newer version.

Kofax RPA Administrator's Guide

Describes administrative and management tasks in Kofax RPA.

Kofax RPA Help

Describes how to use Kofax RPA. The Help is also available in PDF format and known as *Kofax RPA User's Guide*.

¹ You must be connected to the Internet to access the full documentation set online. For access without an Internet connection, see the *Installation Guide*.

Kofax RPA Best Practices Guide for Robot Lifecycle Management

Offers recommended methods and techniques to help you optimize performance and ensure success while using Robot Lifecycle Management in your Kofax RPA environment.

Kofax RPA Getting Started with Robot Building Guide

Provides a tutorial that walks you through the process of using Kofax RPA to build a robot.

Kofax RPA Getting Started with Document Transformation Guide

Provides a tutorial that explains how to use Document Transformation functionality in a Kofax RPA environment, including OCR, extraction, field formatting, and validation.

Kofax RPA Developer's Guide

Contains information on the API that is used to execute robots on RoboServer.

Kofax RPA Application Programming Interface documentation

Contains information about the Kofax RPA Java API and the Kofax RPA .NET API, which provide programmatic access to the Kofax RPA product. The Java API documentation is available from both the online and offline Kofax RPA documentation, while the .NET API documentation is available only offline.

i The Kofax RPA APIs include extensive references to RoboSuite, the original product name. The RoboSuite name is preserved in the APIs to ensure backward compatibility. In the context of the API documentation, the term RoboSuite has the same meaning as Kofax RPA.

Training

Kofax offers both classroom and computer-based training to help you make the most of your Kofax RPA solution. Visit the Kofax Education Portal at <https://learn.kofax.com/> for details about the available training options and schedules.


Also, you can visit the Kofax Intelligent Automation SmartHub at <https://smarthub.kofax.com/> to explore additional solutions, robots, connectors, and more.

Getting help with Kofax products

The [Kofax Knowledge Base](#) repository contains articles that are updated on a regular basis to keep you informed about Kofax products. We encourage you to use the Knowledge Base to obtain answers to your product questions.

To access the Kofax Knowledge Base:

1. Go to the [Kofax website](#) home page and select **Support**.
2. When the Support page appears, select **Customer Support > Knowledge Base**.

 The Kofax Knowledge Base is optimized for use with Google Chrome, Mozilla Firefox or Microsoft Edge.

The Kofax Knowledge Base provides:

- Powerful search capabilities to help you quickly locate the information you need.
Type your search terms or phrase into the **Search** box, and then click the search icon.
- Product information, configuration details and documentation, including release news.
Scroll through the Kofax Knowledge Base home page to locate a product family. Then click a product family name to view a list of related articles. Please note that some product families require a valid Kofax Portal login to view related articles.

From the Knowledge Base home page, you can:

- Access the Kofax Community (for all customers).
Click the **Community** link at the top of the page.
- Access the Kofax Customer Portal (for eligible customers).
Click the **Support** link at the top of the page. When the Customer & Partner Portals Overview appears, click **Log in to the Customer Portal**.
- Access the Kofax Partner Portal (for eligible partners).
Click the **Support** link at the top of the page. When the Customer & Partner Portals Overview appears, click **Log in to the Partner Portal**.
- Access Kofax support commitments, lifecycle policies, electronic fulfillment details, and self-service tools.
Go to the **General Support** section, click **Support Details**, and then select the appropriate tab.

Chapter 1

Desktop Automation Service Configuration

This chapter describes Desktop Automation Service configuration. It consists of the following topics:

- [Desktop Automation Prerequisites](#)
- [Configure the Desktop Automation Service](#)
- [Logging for Desktop Automation Service](#)
- [Configure Proxy Servers in Desktop Automation](#)
- [Check Java Access Bridge](#)
- [Change Default OCR Language for Desktop Automation](#)
- [Activate the virtual input driver](#)
- [Enable integration with SAP](#)
- [Manage Remote Desktop](#)

Desktop Automation Prerequisites

All Desktop Automation requirements and prerequisites are listed in the "Dependencies and Prerequisites" chapter of the Kofax RPA *Installation Guide*.

i Desktop Automation service relies on Windows UI Automation API. Do not run any UI Automation API clients on the same computer simultaneously with Desktop Automation Agent.






i There is no hard-coded limit to the number of elements that the Desktop Automation Service can read in the automated application tree. The depth is limited by the stack thread size, while the total number of nodes is limited by the available memory. Use the **Max Depth** and **Max Siblings** settings in the Tree Modes setting to prevent any device issue errors and limit the number of elements to be loaded.

Configure the Desktop Automation Service

Once your computers meet all the necessary requirements for Desktop Automation, you can install and configure the Desktop Automation Agent.

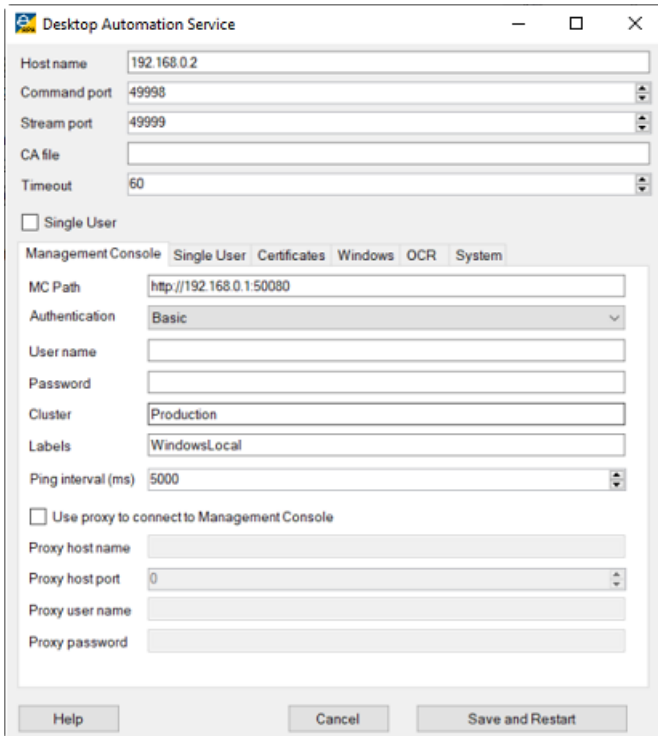
1. If you need to automate Java applications, install Java JRE or JDK on remote devices and check that the Java Access Bridge is enabled on your devices. See [Check Java Access Bridge](#) for details.

2. Download and run the Kofax RPA Desktop Automation installer on your device.
3. Start the Desktop Automation Service from the Start menu. Once the service starts, you can see its status by looking at the icon in the notification area.

Icon	Status
	Desktop Automation Service is starting and trying to connect to the configured Management Console.
	Desktop Automation Service is running and either connected to a Management Console or running in single user mode depending on configuration.
	Desktop Automation Service is running and in use by RoboServer or Design Studio.
	Desktop Automation Service is not running.
	Desktop Automation Service is not running due to an error.

4. To edit the Desktop Automation Service parameters, right-click the Desktop Automation Service icon in the notification area and click **Configure**. This action opens the Desktop Automation Service window. After changing the options, click **Save and Restart**.
To manually edit the options, open the `server.conf` file on your automation desktop. The file is located in Users > UserName > AppData > Local > Kofax RPA 11.4.0 folder, where UserName is the name of the user the service is running under.
5. Check that the device is registered in the Management Console under the **Admin > Devices** section.

The following is a Desktop Automation Service configuration window. Refer to the table later in this section for detailed information on the available Desktop Automation Agent options.



As soon as the Desktop Automation Service connects to the Management Console, the Management Console tests the connection to the Desktop Automation Service. If it is successful, the status "ready" is shown.


Configuration Window Option	server.conf Option	Value and Description
Single User	"singleUser"	Empty (default) Select for direct connection to the automation desktop from Design Studio or when using the RDP connection. Leave empty to automatically register the Desktop Automation Agent with the specified Management Console.
Host Name	"hostName"	Name or local IP address of the computer running the Desktop Automation Agent. If a computer has multiple names or IP addresses, specify the one that RoboServers and Design Studio contact this Desktop Automation Agent with. That is, the host name or IP address must be reachable from RoboServers and Design Studio.

Configuration Window Option	server.conf Option	Value and Description
Command port	"commandPort"	49998 (default) If the Desktop Automation Service is started without being manually configured, it uses the default configuration and listens on the default 49998 port. Reassign this port to the automation desktop if necessary.
Stream port	"streamPort"	49999 (default) This port is used to send data between Design Studio and the Desktop Automation Agent. If set to "0", the Desktop Automation Agent selects a random port number. You might need to assign the stream port if there is a firewall between Design Studio and the automation desktop.
CA file	"caFile"	Empty (default) Specify the path to the file with the exported certificate. You can communicate with the Management Console using SSL. If the default certificate in <code>node.js</code> is not used, specify a path to another certificate file using this parameter. Note that you need to have a root certificate for this to work. To save a root certificate in a file from a Google Chrome browser, do the following: <ol style="list-style-type: none"> 1. Right-click the lock icon in the address bar, then click Certificate (valid). 2. On the Certificate Path tab, select the top most (root) certificate and click View Certificate. 3. On the Details tab, click Copy to File then complete the wizard to export the root certificate as a base-64 encode X.509 certificate.

Configuration Window Option	server.conf Option	Value and Description
timeout	"commandTimeout"	<p>This option specifies the timeout for command execution in seconds. A command is an instruction sent to the automation desktop, such as <i>click mouse button</i>, <i>open application</i>, <i>add a location found guard</i>, and so forth. If a command cannot be completed in a specified time, the service sends a notification and execution of the robot stops.</p> <p>Note that in case of a Guarded Choice step, this setting applies to invoking the guard in the workflow, but waiting for the guard to be satisfied is not bound to this timeout setting and can wait forever. A similar situation occurs when using the Move Mouse and Extract steps. The commands must be invoked on the device with the timeout specified in this field, but the robot waits for up to 240 seconds for the commands to complete.</p> <p>The command timeout for automating terminals or browsing websites in Robots is set either on the Desktop Automation tab of the Design Studio Settings window for executing the workflow in Design Studio, or in the Automation Device section on the Security tab of the RoboServer Settings window for RoboServer execution.</p>
Token on Single User tab	"token"	<p>Empty (default)</p> <p>If you selected Single User for direct connection to the automation desktop from Design Studio or an RDP connection, specify a token. It can be any token you define.</p> <p>Leave empty if Single User is empty.</p>

Configuration Window Option	server.conf Option	Value and Description
<p>Certificates tab</p> <p>Remote hub</p> <p>Private Key File <input type="text" value="kofax.remote.das.pem"/></p> <p>Public Key File <input type="text" value="kofax.remote.das.cert.pem"/></p> <p>Folder with own CA files <input type="text" value="/serverCa"/></p> <p>Local hub</p> <p>Private Key File <input type="text" value="kofax.local.das.pem"/></p> <p>Public Key File <input type="text" value="kofax.local.das.cert.pem"/></p>	<p>"tlsServerConfig"</p>	<p>Kofax RPA provides TLS communication between the automation desktop and the RoboServer or Design Studio. The communication uses certificates for encrypting the communication. The following is a server.conf file code extract. For more information, see "Use TLS Communication" in the Kofax RPA Help.</p> <pre> "tlsServerConfig": { "key": "kofax.remote.das.pem", "cert": "kofax.remote.das.cert.pem", "ca": "./serverCa" }, </pre>
<p>Windows tab</p>	<p>"automationnative"</p>	<ul style="list-style-type: none"> • Use legacy Java-Access-Bridge In some situations, the Java Access Bridge does not work and it can help to switch to legacy mode. By default, the option is not selected. • Installed packages Lists Desktop Automation Service packages installed on this computer. Starting from version 10.7.0, new version packages are installed automatically if the Lock package option below is not selected. The packages in ZIP files are installed to C:\ProgramData\Kofax RPA on the automated computer. The appropriate package is selected automatically depending on the RoboServer version. If you want to specify only one version package to be used, select Lock package and select one of the installed packages. • Lock package When selected you can choose a version package as the only one to work with. A RoboServer with a different version cannot connect to this service. By default, the option is not selected. Select this option or change the setting to <code>true</code> in the server.conf file to run robots with triggers. • Map RFS share to drive letter The Windows drive that the Robot File System file share is available in. When the file share is mapped to a Windows drive, other Windows applications can also access this file share.

Configuration Window Option	server.conf Option	Value and Description
OCR	"ocrConfig"	<p>Specifies one or more languages and an engine to perform an OCR operation on the automated desktop. You can choose from Tesseract (default) and OmniPage OCR engines. To use the OmniPage engine, select Use Kofax OmniPage OCR (only for packages version 11.1 or later) on the OCR tab. Specify OCR languages in the Enabled OCR languages field. For example, if you want to use the Japanese language, either replace <code>eng</code> (default) with <code>jpn</code> or, if you want to use more than one language, add <code>jpn</code> using the plus sign, such as <code>eng+jpn</code>.</p> <p>For Tesseract, Kofax RPA installs only the English language. See Change Default OCR Language for Desktop Automation below for language installation instructions.</p>

Configuration Window Option	server.conf Option	Value and Description
<p>System tab</p>		<p>This tab helps you open and examine the log file for any errors, or to view the version and location of the service file.</p> <p>Using this tab, you can check whether Java Access Bridge is properly installed on the computer where the service is running. See Check Java Access Bridge for details.</p> <p>If you need to restart your computer frequently, but you cannot use the automatic login feature of Windows, click the Configure Screen Lock on Startup button to enable the Desktop Automation Service to automatically create a session and lock the screen after the computer is restarted.</p> <p>After clicking the button:</p> <ol style="list-style-type: none"> 1. The system requests elevation. You may get an UAC elevation prompt. The elevation may require entering the credentials for another account that has administrative privileges. 2. You must provide the credentials of the user account used to log in and create a session after a computer restart. The user field in the credentials dialog is pre-filled with the currently logged in user. Note that it is not necessarily the user account that is used for the elevation. 3. A Task Scheduler, which will execute the Lock Screen a minute after the computer is (re)started, is created. This task is created under the folder <code>Kofax/RPA</code>. <p>To delete the lock on restart, go to the folder <code>Kofax/RPA</code> in the Task Scheduler and delete the task "Lock screen after boot."</p> <div style="background-color: #e1f5fe; padding: 5px; border: 1px solid #cfcfcf;"> <p> Each time you change the user's account password, update it directly in the Task Scheduler or click the Configure Screen Lock on Startup again.</p> </div>
<p>Management Console Options</p>		

Configuration Window Option	server.conf Option	Value and Description
MC Path Connection protocol, name or IP address, port number, and path of the Management Console the device must register with. The format is as follows: http://10.10.0.136:50080.	"hostName"	Name or IP address of the Management Console the device must register with.
	"port"	Connection port of the specified Management Console.
	"schema"	Connection protocol of the specified Management Console.
	"path"	Empty (default) The part of the path to the standalone Management Console after the port number. For example, if your Management Console is deployed on Tomcat at http://computer.domain.com:8080/ManagementConsole/, specify "/ManagementConsole/" in this parameter. Leave this parameter empty for the embedded Management Console installation.
Authentication Specifies the method of authentication with the Management Console.	"authType": "Basic"	Select Basic to authenticate using user name and password.
	"authType": "OAuth"	Select OAuth2 to authenticate using Management Console client secret.
User Name	"user"	Empty (default) User name to authenticate on the specified Management Console.
Password	"password"	Empty (default) Password to authenticate on the specified Management Console.
MC client secret	"clientSecret"	Enter the client secret copied from the OAuth Server section of the Management Console.
Cluster	"cluster"	Production (default) Cluster name on the specified Management Console.
Labels	"labels"	Empty (default) Labels to distinguish the automation devices.
Ping interval (ms)	"pingInterval"	5000 (default) Time interval for the Desktop Automation Service to ping the Management Console.

Configuration Window Option	server.conf Option	Value and Description
Use proxy to connect to Management Console	"useProxy"	<p>Select this option for the Desktop Automation Service to use proxy when connecting to Management Console. All necessary parameters are specified in the following fields.</p> <p><input checked="" type="checkbox"/> Use proxy to connect to Management Console</p> <p>Proxy host name <input type="text" value="proxyhost.com"/></p> <p>Proxy host port <input type="text" value="9000"/></p> <p>Proxy user name <input type="text" value="username"/></p> <p>Proxy password <input type="password" value="●●●"/></p> <p>Under Linux, you can set up proxy parameters in the <code>managementConsole</code> section of the <code>server.conf</code> file.</p> <pre>"useProxy": true, "proxyHostName": "proxyhost.com", "proxyPort": 9000, "proxyUserName": "username", "proxyPassword": "pwd"</pre>

* The direct connection to the automation desktop is recommended only for creating and debugging a robot in Design Studio as well as for using with an RDP connection. See "Use RDP Connection" in Kofax RPA Help.

Logging for Desktop Automation Service

Kofax RPA collects usage information on specific Desktop Automation Service events, which may be useful to improve the service performance.

- If the Desktop Automation Service is connected to a Management Console, the events are stored in the RoboServer Log Database of the Management Console. To view the events, on the **Log view** page, select **DAS messages**.

i When the connection parameters for the Management Console are specified in the Desktop Automation Service configuration window, the events are always logged to the Management Console, even if the Single User mode is selected, that is, the connection to the automation desktop is established directly, without the Management Console.

- If the Desktop Automation Service cannot connect to a Management Console (as Management Console is not configured), it writes the events to the **Desktop Automation Service Usage.csv** log file, which resides in: `{path}\AppData\Local\Kofax RPA\<version number>\Logs\`
The file location can be configured in the **log4net.xml** file.


The information for each event includes:

- Time that the event occurred (in UTC).

- Type of event: start, stop, connect, disconnect, suspend, or lock screen.
- Identification of Desktop Automation Service, consisting of an ID in the form `host:port`, the user account running the service, and the labels defined for the service.
- Name of the robot and the execution ID (only for connect and disconnect).
- Severity indication (always "Info").
- Message (always empty).

Configure Proxy Servers in Desktop Automation

All Desktop Automation Service robots can use the Kofax RPA global proxy settings. The Desktop Automation Service uses the same proxy settings as Design Studio and Management Console. There are two ways to configure proxy server settings.

 The local proxy settings of the built-in browser in the Desktop Automation Service have a higher priority than the Kofax RPA global proxy settings configured in Design Studio > Design Studio Settings. Make sure that the robot uses the Kofax RPA global proxy settings, unless the task requires it to use local proxy settings. For more information, see *Kofax RPA Help*.

Also, the `cef.cfg` file should not be used to configure proxy settings, but if it is used, it has a higher priority than all of the above proxy settings.

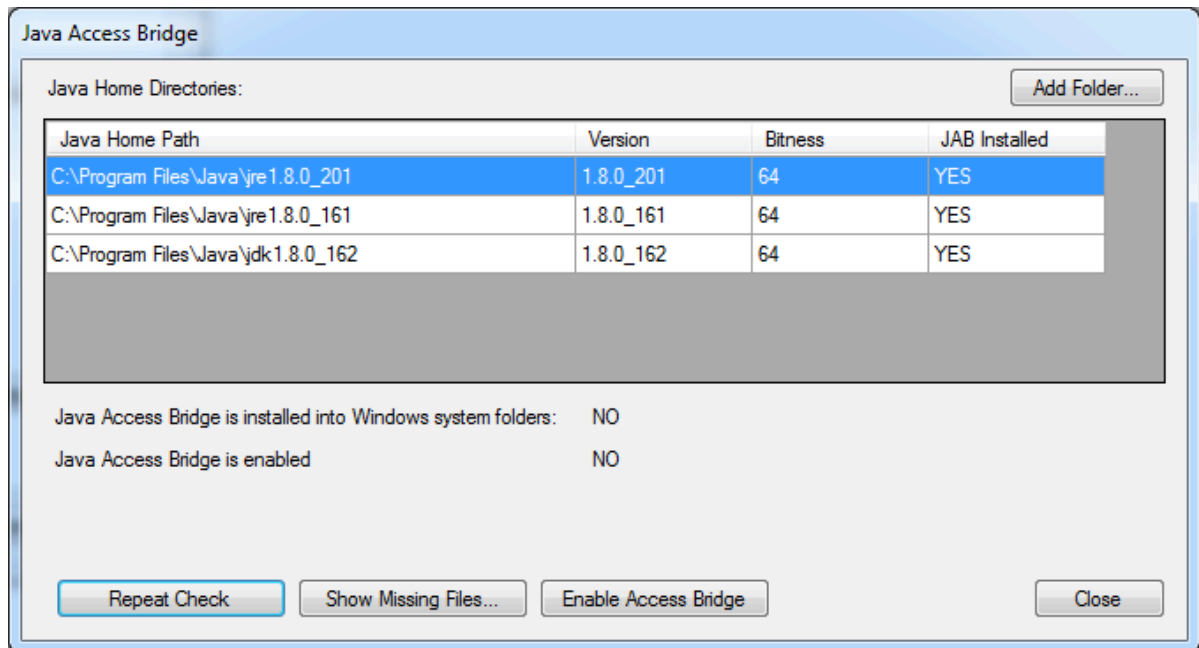
1. For all robots running in the Desktop Automation Service, in the Design Studio Settings dialog box, on the Proxy Servers tab, complete the following Proxy Server details.
 - Host
 - Port number
 - Username
 - Password
 - Excluded hosts
2. For all deployed robots, on the Management Console > Admin > RoboServers > Cluster settings > "Proxy servers" tab, select New proxy and complete the following proxy server details.
 - Host name
 - Port number
 - User name
 - Password
 - Excluded host names

Check Java Access Bridge

Java Access Bridge is an essential component to automate your Java applications. Depending on the Java version, some necessary files may be missing in system folders and Java Access Bridge may be disabled on the computer where the Desktop Automation Service is installed. To check your Java Access Bridge installation, perform the following steps.

1. Right-click the Desktop Automation icon in the notification area and select **Configure**.
2. Click the **System** tab and click **Check Java Access Bridge files**.

The **Java Access Bridge** dialog box opens showing installed Java versions and Java Access Bridge installation status for each version. If **JAB Installed** column, **Java Access Bridge is installed into Windows system folders**, and **Java Access Bridge is enabled** show **Yes**, Java Access Bridge is properly installed and enabled on the computer.



3. If your implementation of Java is not listed under **Java Home Directories**, click **Add Folder** and specify a home folder with installed Java files.
4. If any of the files are missing, such as **JAB Installed** column shows **No**, click **Show Missing Files**.
The **Java Access Bridge Missing Files** dialog box shows files that must be copied to specified folders.
5. If **Java Access Bridge is enabled** shows **No**, click **Enable Access Bridge**.

Change Default OCR Language for Desktop Automation

Kofax RPA uses either the Tesseract or OmniPage OCR engines to capture text from images. For Tesseract, Kofax RPA installs only the English language, while OmniPage includes all supported languages in the installation. When your robot performs text recognition in the Extract Text From Image Step using Desktop Automation Service, the service uses the language selected on the **OCR** tab of the Desktop Automation Service window. To change the default language for OCR, perform the following steps.

1. Right-click the Desktop Automation icon in the notification area and select **Configure**.
2. Click the **OCR** tab and type the language code of the language you want to use for OCR in the **Enabled OCR languages** field. The language code must be in ISO 639-3 or ISO 639-1 format. To use more than one language, add another language using the plus sign, such as `eng+jpn`.

i Using more than one language simultaneously for screen recognition slows down robot execution and deteriorates recognition results.

3. Click **Save and Restart**.

If you use Tesseract for text recognition of the language other than English, you must first download and copy necessary language packs as follows.

- Download the `.traineddata` file for the required language from the <https://github.com/tesseract-ocr/tessdata>. For example, the file for the French language is `fra.traineddata`.
- Copy the downloaded trained data file to `Kofax RPA\<version>\lib\tessdata` in the **ProgramData** folder. Example:

```
C:\ProgramData\Kofax RPA\11.4.0.0.110\lib\tessdata
```

You can train Tesseract to recognize your character set using either TTF fonts or UI screen shots. See the *Train Tesseract* topic in *Kofax RPA Help* for more information.

Activate the virtual input driver

Virtual input driver is a Windows device driver capable of simulating a hardware keyboard. For the operating systems supported by the driver, see the *Kofax RPA Technical Specifications* document available on the documentation site: <https://docshield.kofax.com/Portal/Products/RPA/11.4.0-vcsft2fhaw/RPA.htm>. See the *Kofax RPA Installation Guide* for information on installing the driver.

i The virtual input drivers do not function when the desktop of the automated computer is being locked, such as by the Lock Screen function or an RDP step.

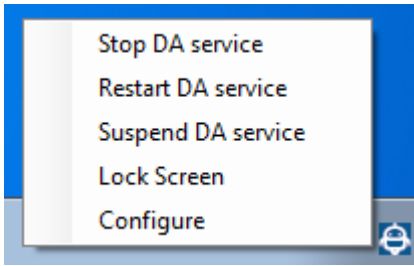
To use the driver, set the environment variable "KAPOW_KEYBOARD_INPUT_METHOD" to "VIRTUAL_KEYBOARD" on the automated device. To cancel the virtual input driver usage, remove the environment variable.

Enable integration with SAP

To work with the SAP application in Robots, from the product installation files, download and save the `RegSAPS surrogate.reg` file on the computer running the Desktop Automation Service. Run it accepting any warnings and then restart the Desktop Automation Service agent. The file resides in the `{path}\DesktopAutomationService\bin` folder.

Manage Remote Desktop

You can perform the following actions using the Desktop Automation Service shortcut menu.



Manage the Desktop Automation Service

The following commands help you manage the Desktop Automation Service running on a remote computer.

- **Stop DA service:** Stops the service, which makes the remote device unavailable. The computer running the Desktop Automation Service is removed from the list in the Management Console.
- **Restart DA service:** Stops and starts the service. A robot or Design Studio loses the connection to the device and must be reloaded to restore it.
- **Suspend DA service:** Suspends the device. If suspended, the service is displayed as suspended in the Management Console. To restore the service operation, a user or an administrator needs to manually start the Desktop Automation Service on the device.

The suspended state makes the DA service unavailable for robots to use, but the state information is sent to the Management Console via the ping mechanism and the device is displayed in the **Admin > Devices** section. This command is useful if for some reason the service or the computer running it needs some configuration changes.

- **Lock Screen:** Locks the screen on the remote device.
- **Configure:** Opens the Desktop Automation Service configuration dialog box.