

GETTING STARTED

PACE Suite 4.7





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1 Introduction

1.1 About This Document

The Getting Started document describes how to perform common application packaging tasks with the help of PACE Suite.

1.2 Glossary

MSI MSI is an installer package file format used by Windows. Its name comes from the program's original title, Microsoft Installer, which has changed to Windows Installer. MSI files are used for installation, storage, and removal of programs.

MST MST is a settings file used by Microsoft Windows Installer, a component of the Windows operating system that enables software installations. It contains software configuration options, allows custom parameters for the installation.

APPV Microsoft Application Virtualization (also known as App-V; formerly Softricity SoftGrid) is an application virtualization and application streaming solution from Microsoft.

APPX APPX is the file format used to distribute and install Universal Windows Platform (UWP) apps on Windows 8.x and 10, Windows Phone 8.1, Windows 10 Mobile, Xbox One, HoloLens, and Windows 10 IoT Core.





2 PACE Overview

PACE Suite consists of the following components:

Tool name	Major functions
 MSI GENERATOR	<ul style="list-style-type: none">• Repackage any existing installation into Windows Installer (MSI), UWP app package (APPX) or a virtualization format (Microsoft App-V 5.x, and VMware ThinApp).• Auto-detection of embedded installers.• Create a response transform• Tune any existing Windows Installer package by applying your settings and saving them as a Windows Installer transform (MST).• Include the excluded files/registry back to a package.
 MSI EDITOR	<ul style="list-style-type: none">• Manage the contents of an MSI in a tree view• Import the desired resources• Manage Custom Actions• Integrate Device Drivers• Use a smart and advanced MSI database editor, with formatted string autocompleting, Excel-like formula bar, row reference tracking, and more.• Create patches (MSP)• Manage permission settings for file system and registry• Handle upgrades easily – just let MSI Editor know which MSI you want to be upgraded at runtime.• Publish your applications to Microsoft SCCM 2007, 2012, 2016.• See the estimated complexity of an app right away.• Generate package documentation containing the details about your package and configuration.• Undo-redo any manipulation and see the changes highlighted in the MSI tables
 DOCU GENERATOR	<ul style="list-style-type: none">• Automatically record your on-screen actions into a nice-looking document with screenshots and annotations





2.1 Installation & Activation

2.1.1 Software Prerequisites

Ensure that a target system contains necessary software prerequisites:

OS	<p>Windows 10/8.1/8/7 SP1, Windows Server 2016/2012/2008 R2 SP1</p> <p>NOTE Building Universal Windows Platform app packages (APPX) is available under Windows 10 or Windows Server 2016 or newer.</p>
Middleware	<p>Microsoft .NET Framework 4.6.2 (https://www.microsoft.com/en-us/download/details.aspx?id=53345) or higher.</p> <p>NOTE For building THINAPP packages, ensure that your system contains VMware ThinApp (5.0.0/5.0.1/5.1.0/5.1.1/5.2.0) installed.</p> <p>NOTE For publishing MSI packages to Microsoft SCCM 2007 (SP1/SP2/R1/R2) or SCCM 2012 (SP1/SP2/R2/R2 SP1) server, ensure that your system contains Microsoft Management Framework 3.0 and Windows Remote Management (WinRM) service enabled.</p>
Privileges	Administrative privileges on the system.

2.1.2 Hardware Prerequisites

Ensure that a target system fulfils the minimum hardware conditions:

Processor	<p>32-bit (x86) or 64-bit (x64) processor at 2 GHz or greater</p> <p>NOTE To repackage 64-bit applications or create 64-bit App-V packages, use PACE Suite on a 64-bit Windows operating system.</p>
RAM	2 GB
Hard drive free space	<p>1 GB</p> <p>NOTE Additional storage is required for your projects and packages and depends on their size and quantity.</p>
Display	1280 x 768 resolution or higher.





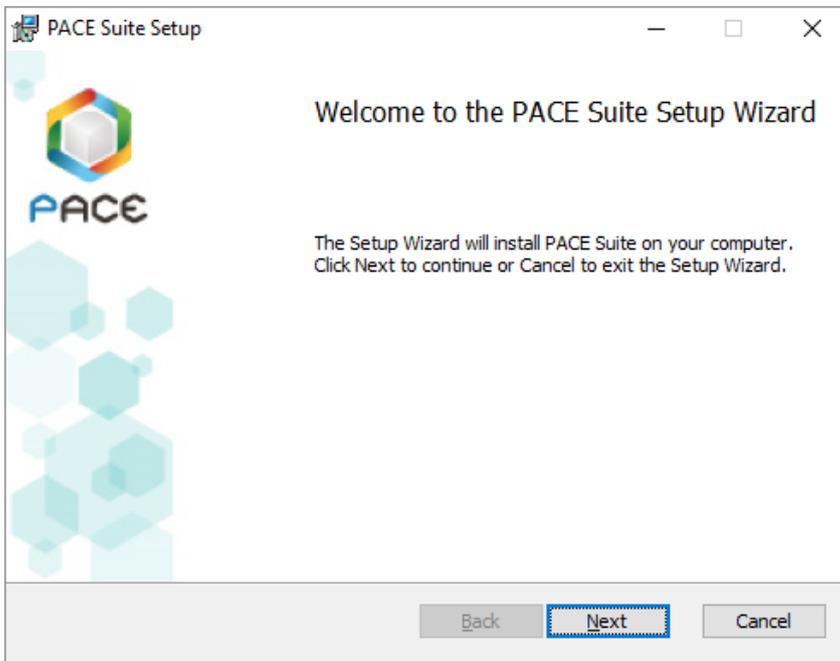
2.1.3 Installing PACE Suite

PACE Suite installation checks whether your license is compatible with the current PACE Suite version and whether your system meets minimum software requirements. Note that the installation requires the administrator privileges.

- [1]. Run the downloaded PACE Suite installer.



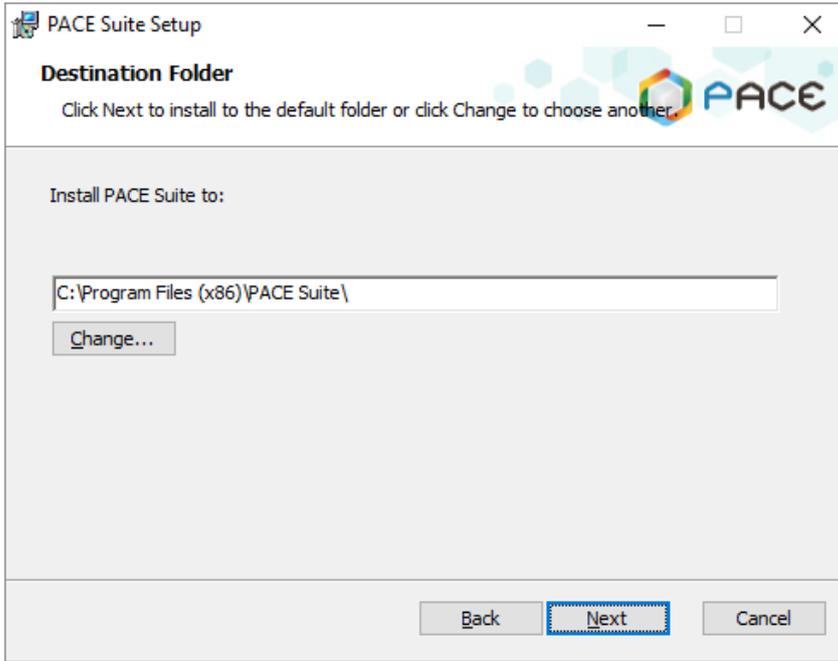
- [2]. Click Next.



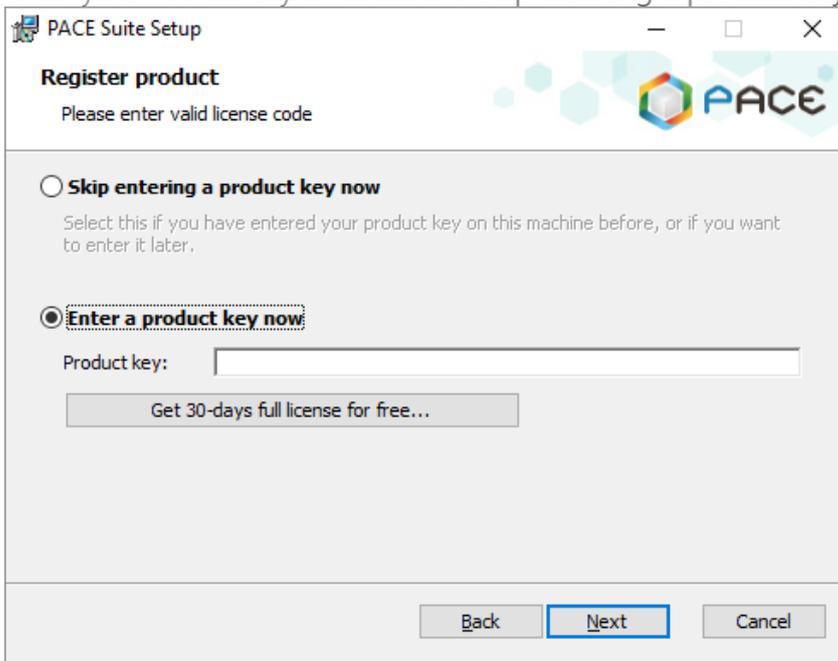
- [3]. Read and accept the END USER LICENSE AGREEMENT and then click Next.



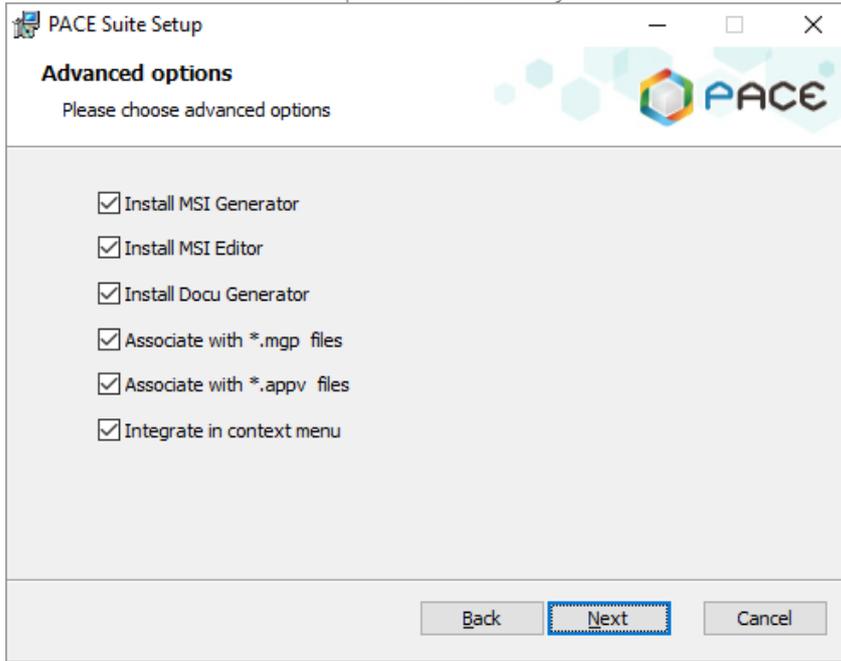
- [4]. Leave the default installation location or choose an alternative one and click Next.



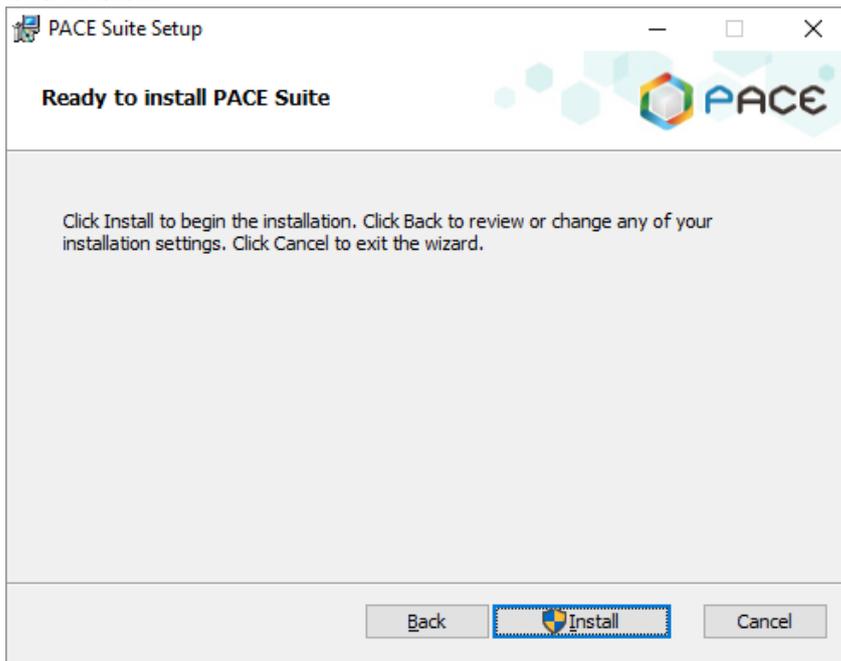
- [5]. Enter your license key or select the Skip entering a product key now option and click Next.



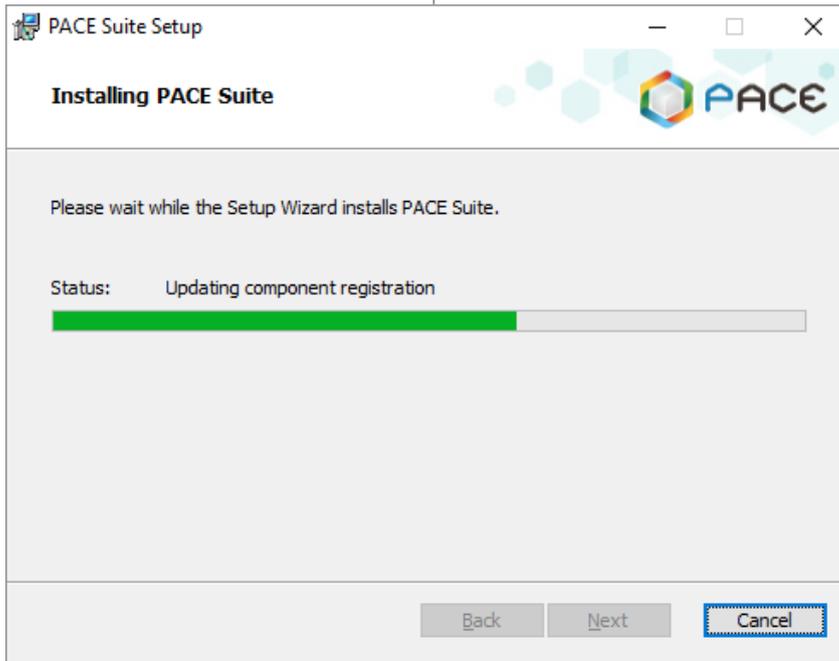
[6]. Uncheck PACE Suite components, which you do not want to install, and click Next.



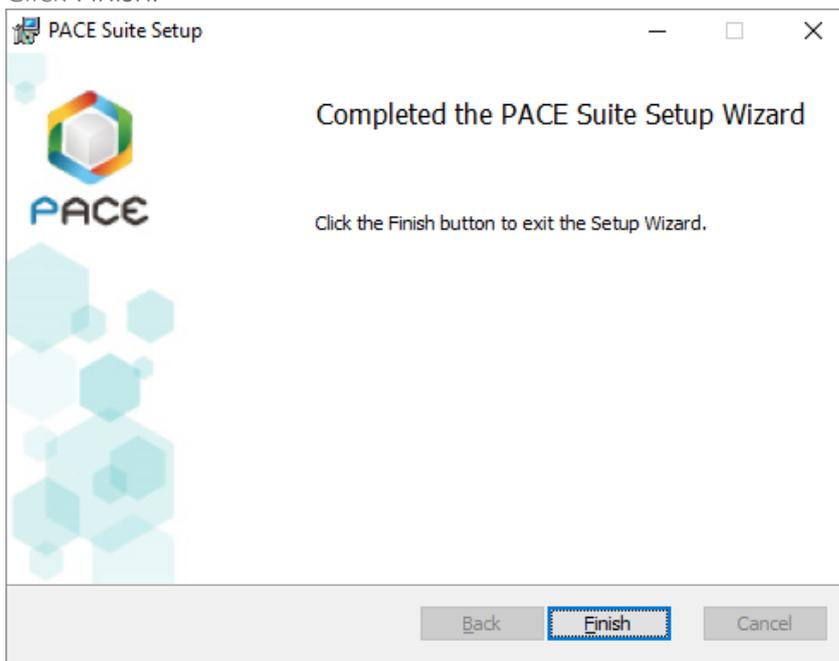
[7]. Click Install.



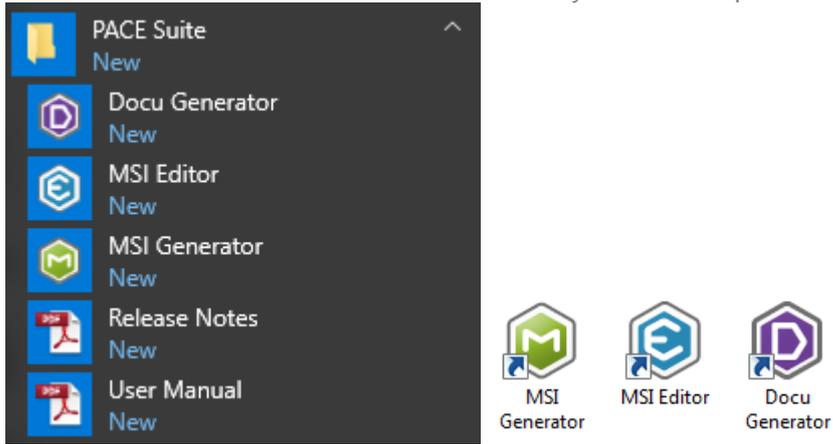
[8]. Wait until the installation is completed.



[9]. Click Finish.



[10]. Find the installed PACE Suite shortcuts on your Desktop and in the Start Menu.



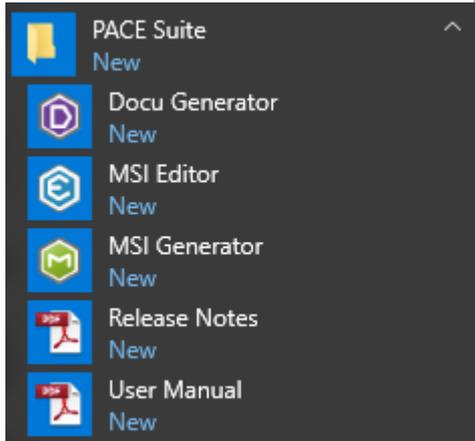


2.1.4 Activating PACE Suite

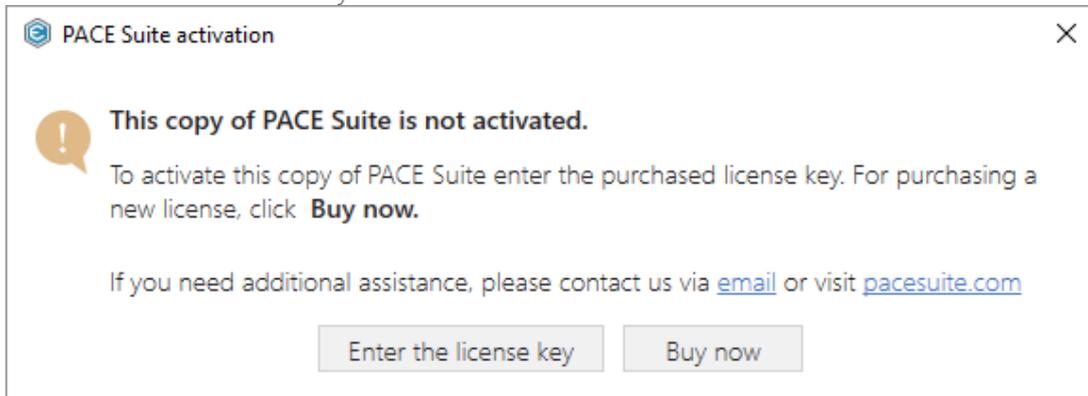
If you have installed PACE Suite with the **Skip entering a product key now** option or your current license is expired, you can activate your copy of PACE Suite with the provided license key.

As PACE Suite consists of MSI Editor, MSI Generator and Docu Generator, you have to activate all these products separately.

- [1]. Launch MSI Editor from the desktop or the start menu shortcut.



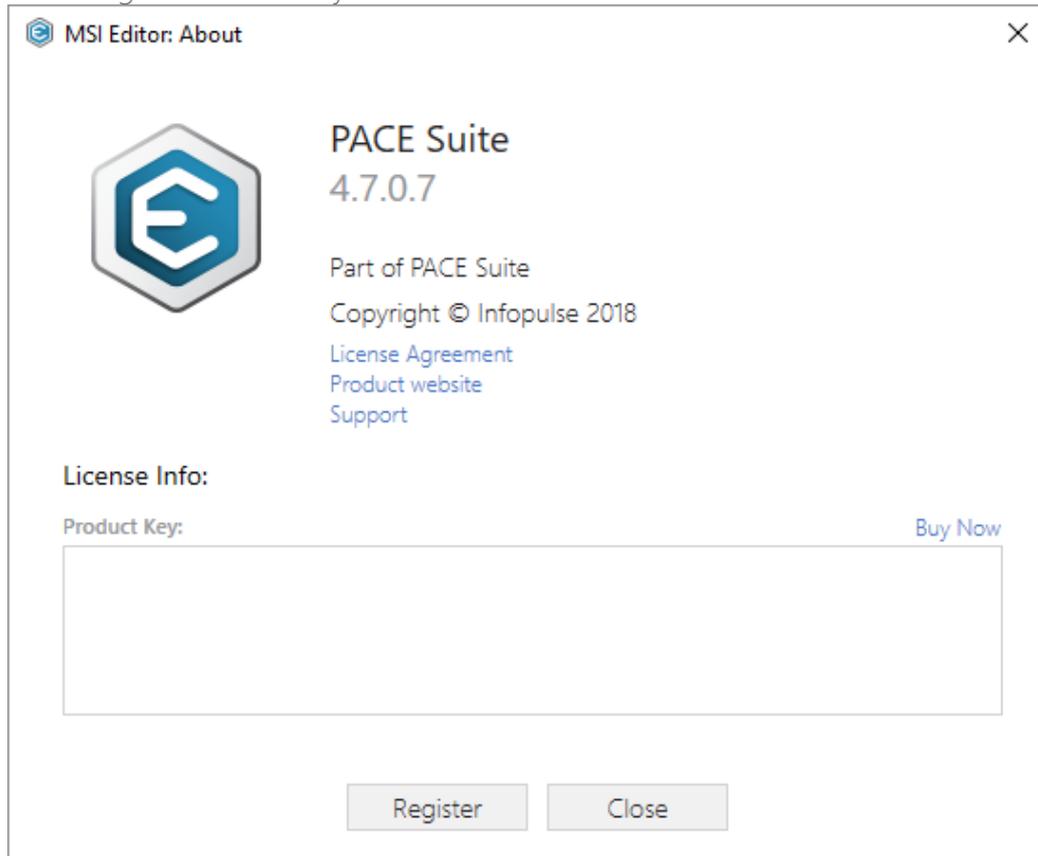
- [2]. Click Enter the license key.



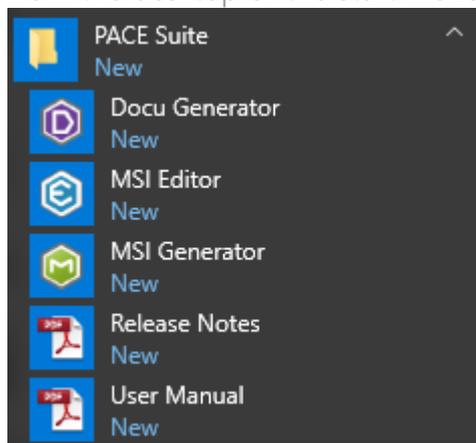
- [3]. Enter your license key and click Register. Note that if you are using the desktop version of Microsoft Outlook, ensure that the [Auto Remove Line Breaks feature](#) is disabled. Otherwise, your keys may be displayed incorrectly, and often that is the cause of



obtaining the "Invalid key" error.



- [4]. Repeat the activation process for MSI Generator and Docu Generator, launching them from the desktop or the start menu shortcut.





3 How-To Manuals

We regularly publish PACE Suite educational videos on YouTube. Please subscribe to our [channel](#).

3.1 New MSI

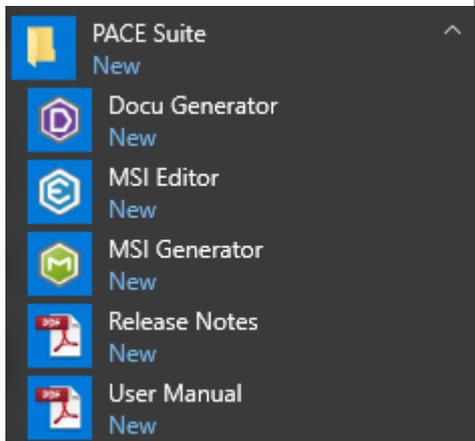
Choose a scenario that better suits your needs:

- **Create Blank MSI**, described in section 3.1.1
Create a new empty MSI database in MSI Editor, add folders, files, registry entries and shortcuts directly to the MSI package.
- **Generate MSI from Scratch**, described in section 3.1.2
Create a new empty project in MSI Generator, add folders, files, registry entries and shortcuts to this project and then generate the MSI package from this project.
- **Convert (Repackage) EXE to MSI**, described in section 3.1.3
Repackage your source installation (EXE, MSI, VBS, CMD, etc.) into MSI package using MSI Generator. Along with files and registry, services and environment variables, you can capture file system and registry permission changes.
- **Capture System Changes to MSI**, described in section 3.1.4
Capture system changes, which were made to the file system and registry, by script, by application or manually and save them into MSI package using MSI Generator. Along with files and registry, services and environment variables, you can capture file system and registry permission changes.

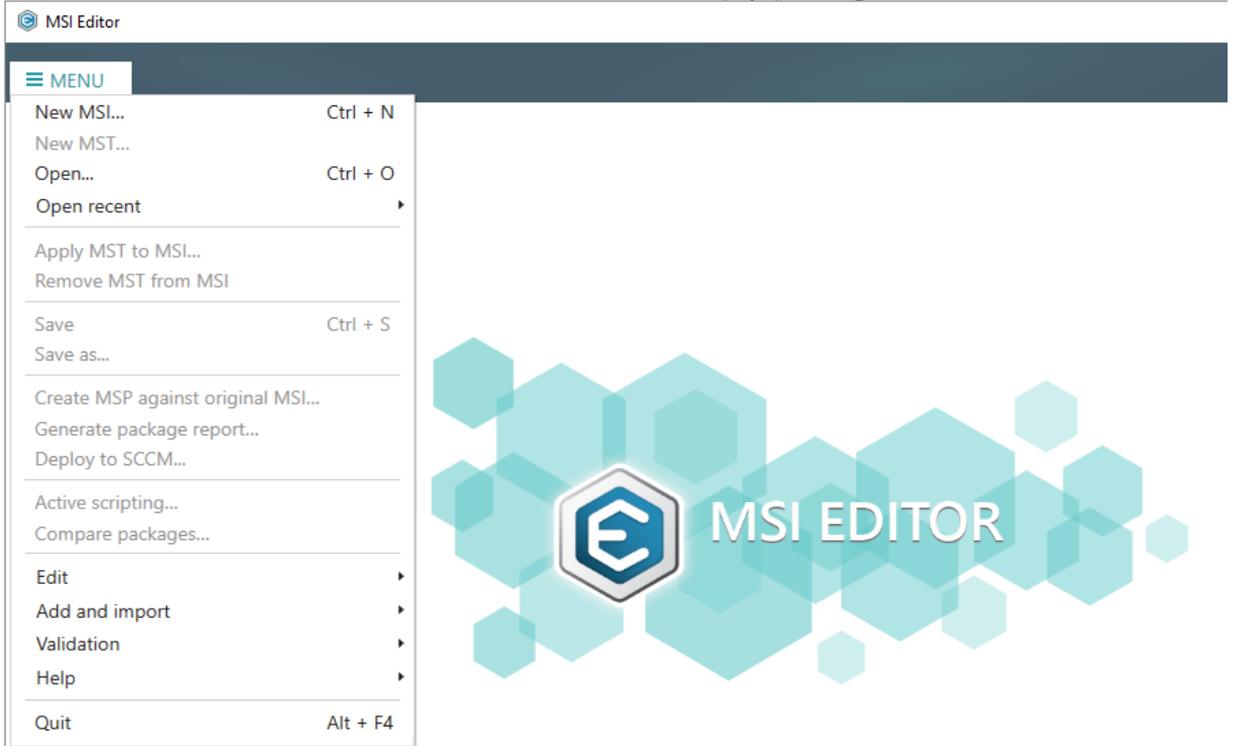
3.1.1 Create Blank MSI

Create a new empty MSI database in MSI Editor, add folders, files, registry entries and shortcuts directly to the MSI package.

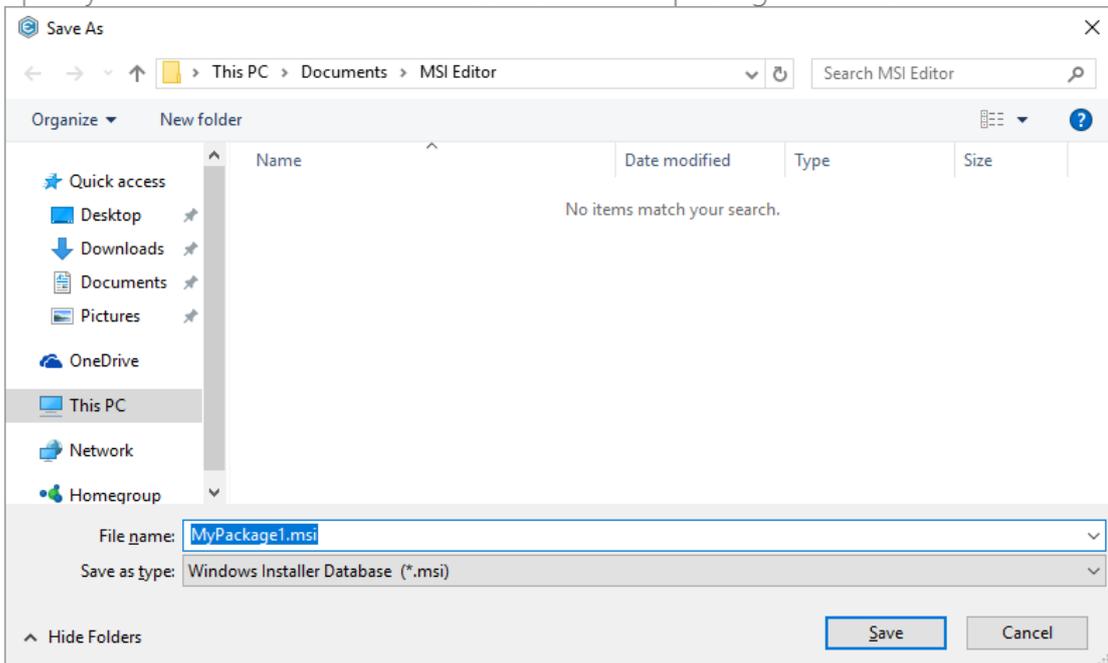
[1]. Launch MSI Editor from the desktop or the start menu shortcut.



[2]. Select New MSI... from the MENU to create a new empty package.

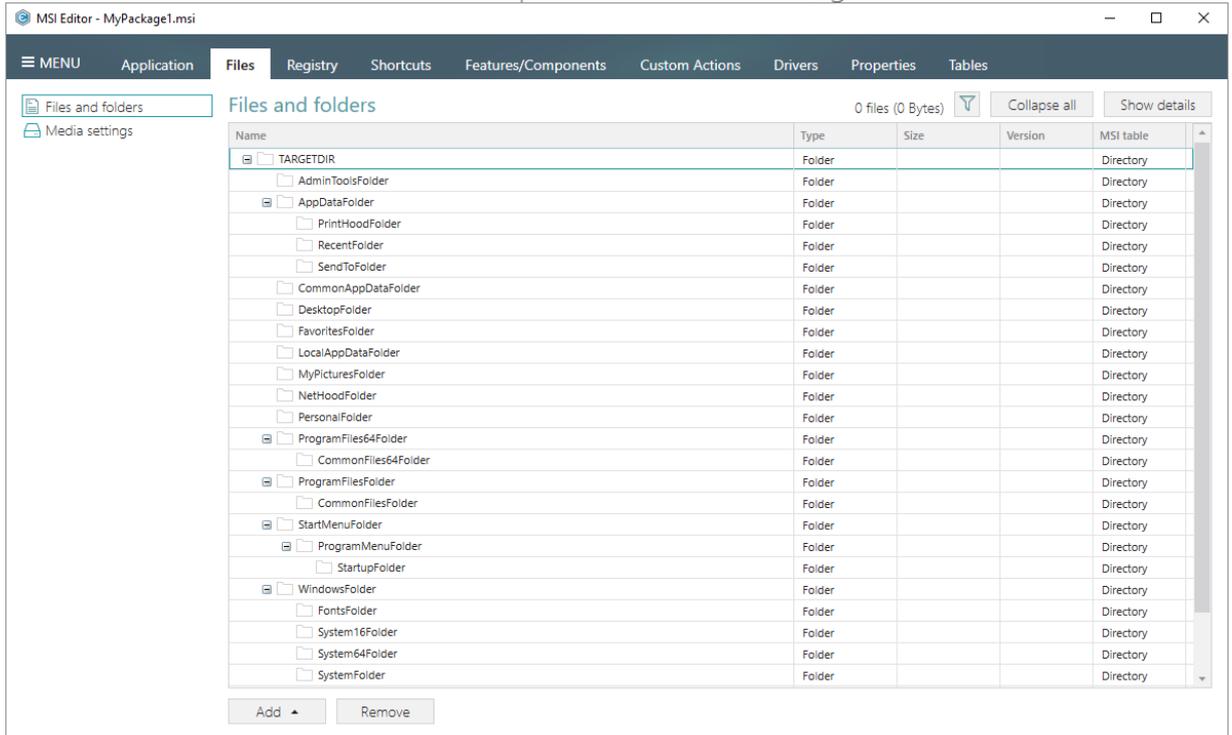


[3]. Specify a name and a destination location for the package and click Save.

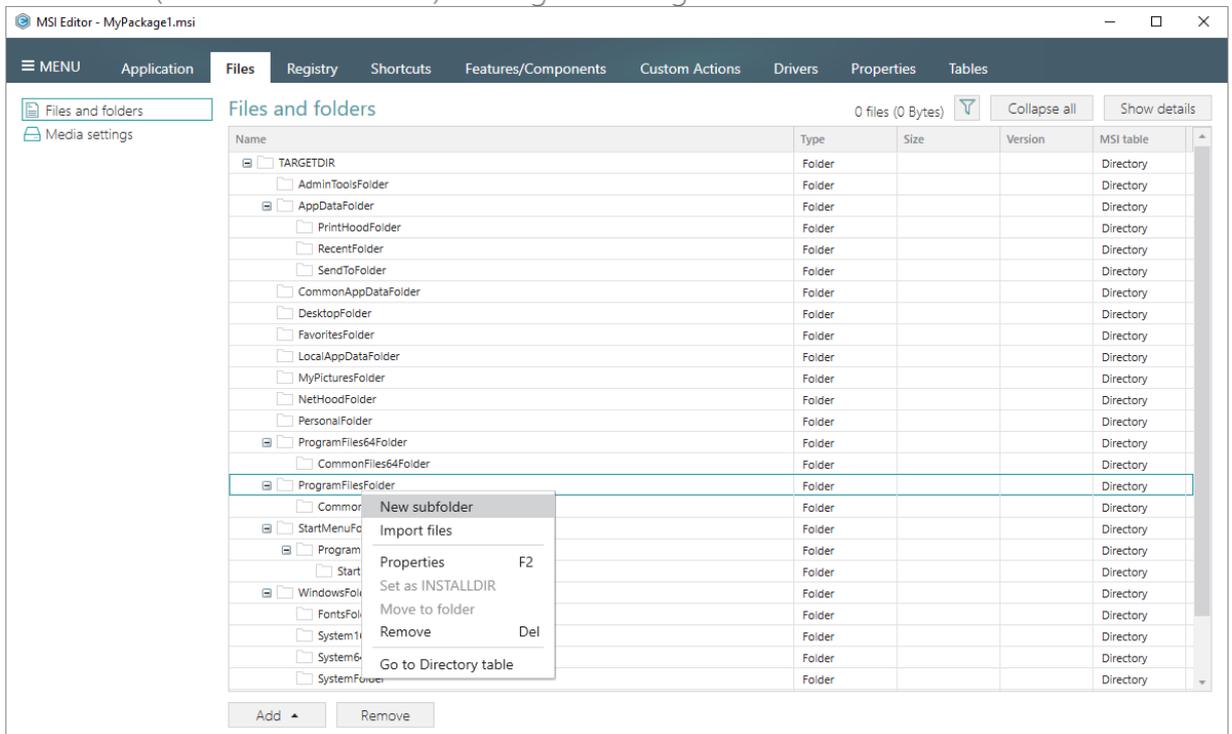


[4]. Once the newly created package is opened automatically, you can start adding the necessary resources using MSI Editor. The steps from [5] to [14] describe how to create a new folder and import files to this folder; the steps from [15] to [23] describe how to create a new registry key, value, and import registry entries from the REG files; the steps from [24] to [30] describe how to create a new and import existing shortcuts to the package; and the last step [31] describes how to save all these changes to the MSI package.

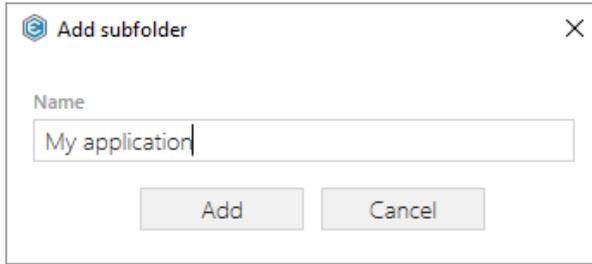
[5]. In order to create a new folder and import files to this folder, go to the Files tab.



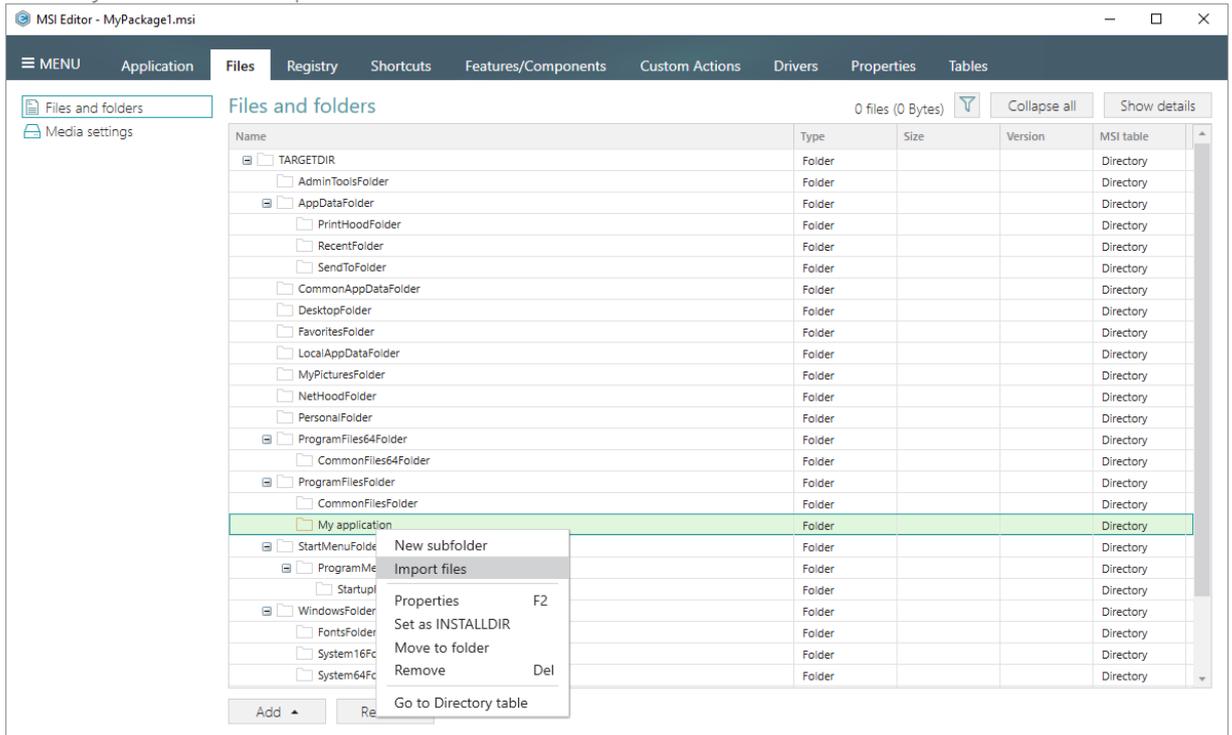
[6]. Select New subfolder from the context menu of a folder, where you want to create a new subfolder. Note that system folders are displayed using the grey folder icon and the subfolders (user-defined folders) – using the orange folder icon.



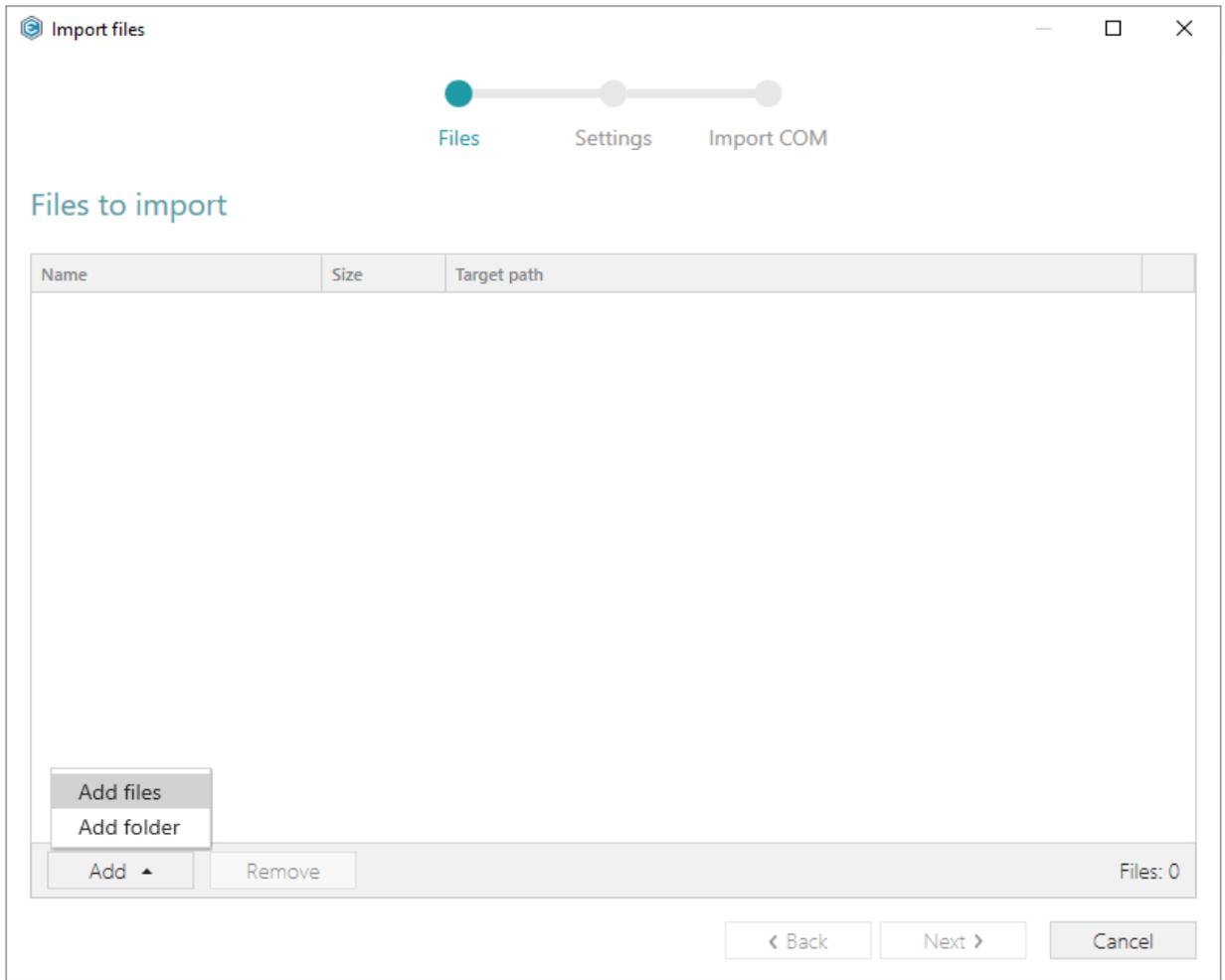
[7]. Enter a folder name and click Add.



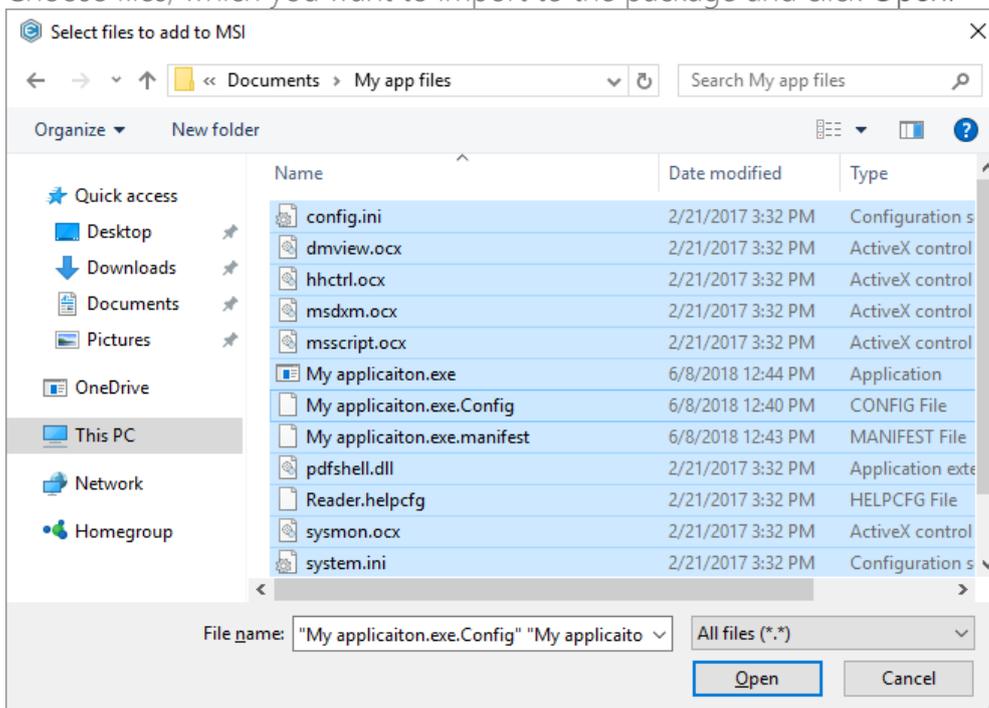
[8]. For adding files to your package, select Import files from the context menu of a folder, to which you want to import files.



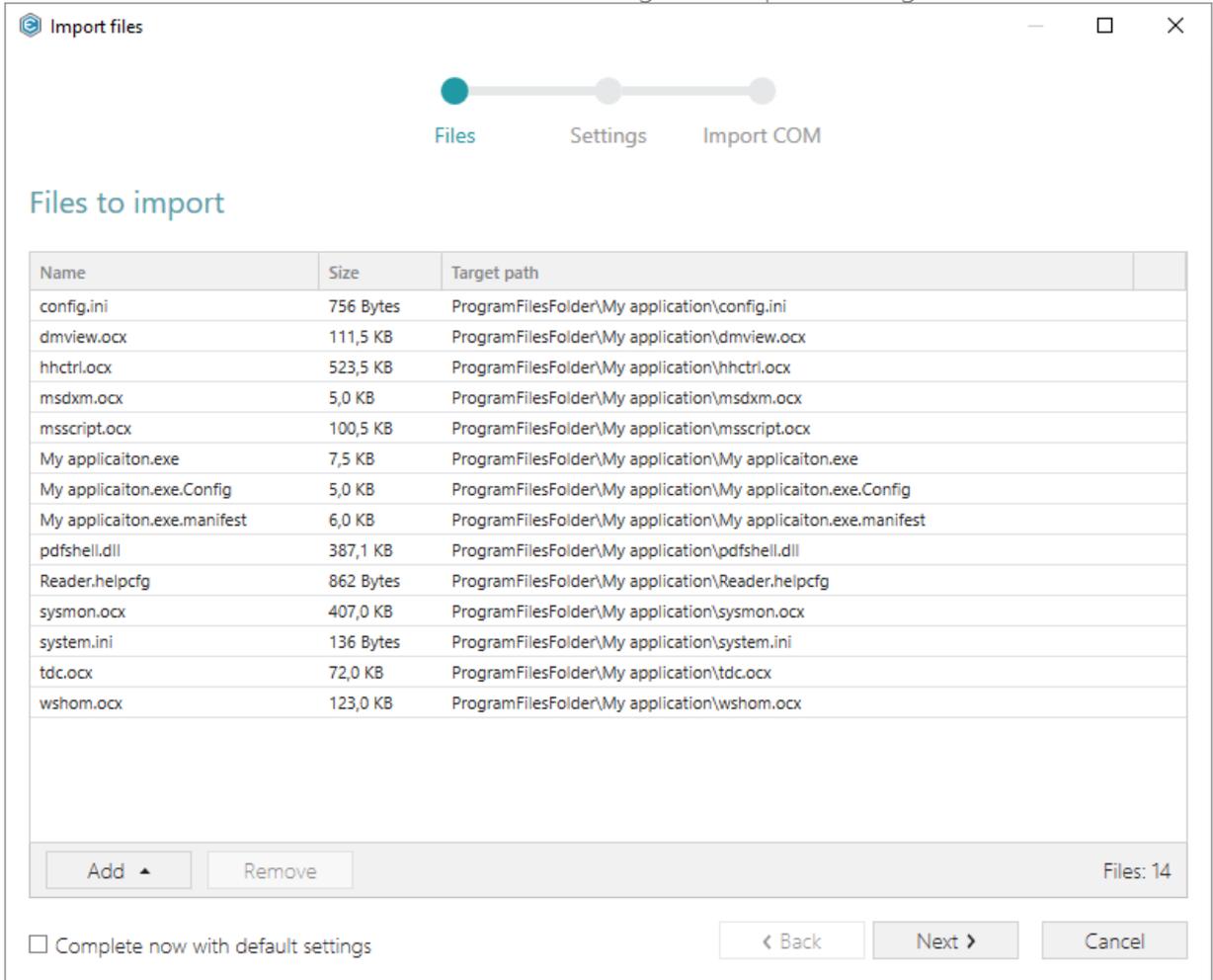
- [9]. Click Add -> Add files to choose files in a folder or Add -> Add folder to choose a folder with subfolders and files.



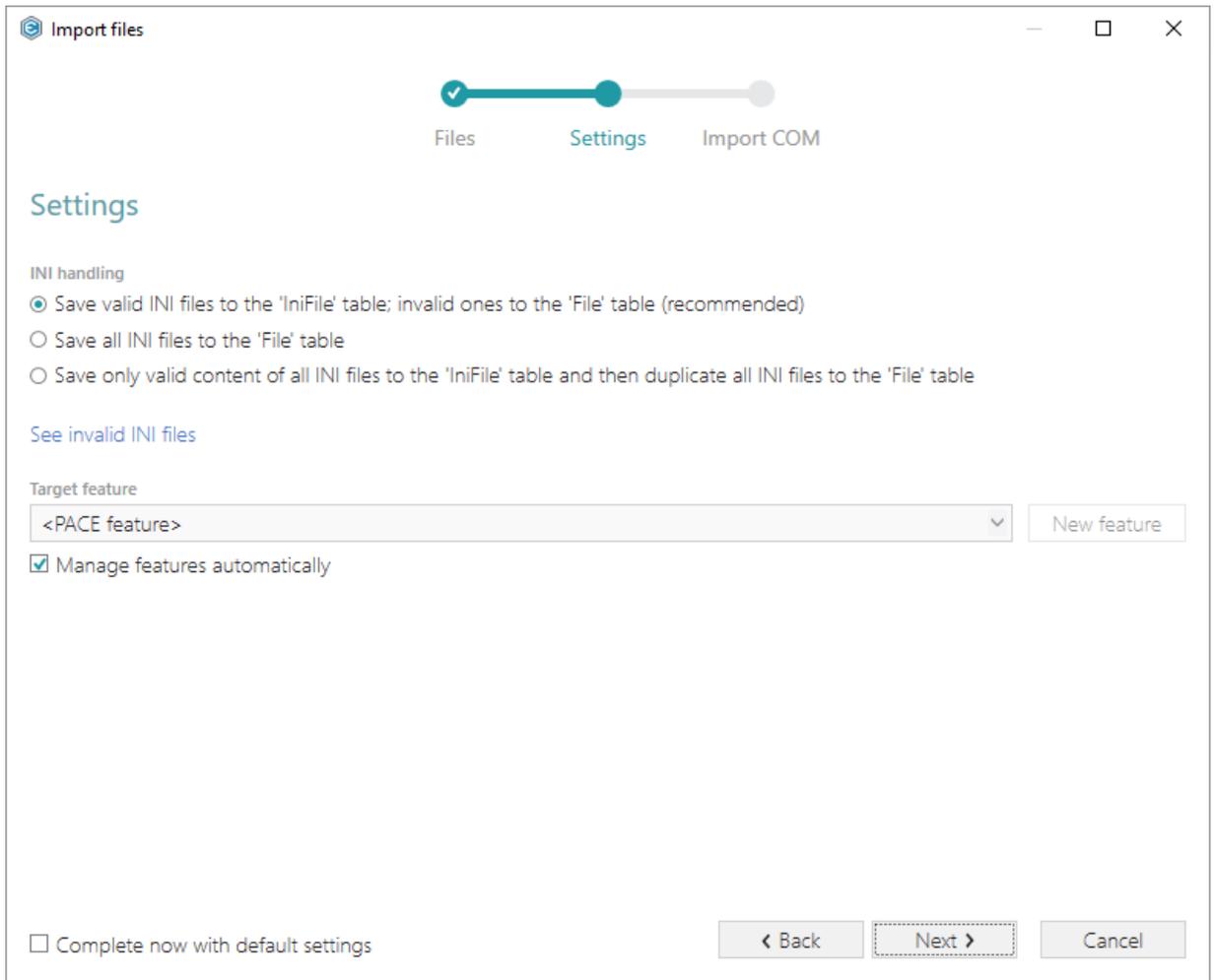
- [10]. Choose files, which you want to import to the package and click Open.



[11]. Review the selected files and click Next to manage the import settings.



[12]. At this step, you can manage how to save INI files, select an MSI Feature, to which components with files will be assigned. Below, in the tables, you will find the detailed description of these settings. Note that files compression types and other Media settings are represented in the Media settings section of the Files tab. Choose the desired settings and click Next to continue.



INI handling

Save valid INI files to the 'IniFile' table; invalid ones to the 'File' table (recommended)

INI files, which comply with the INI file format, will be saved to the 'IniFile' table. All other INI files, which contain unsupported data, will be saved to the 'File' table as binary files.

Save all INI files to the 'File' table

All INI files will be saved only to the 'File' table as binary files.

Save only valid content of all INI files to the 'IniFile' table and then duplicate all INI files to the 'File' table

A valid content of all INI files will be saved to the 'IniFile' table, and then all INI files will be saved to the 'File' table as binary files. This allows installing INI files to the target system keeping their original structure with unsupported data, and update the necessary INI file values.

Target feature

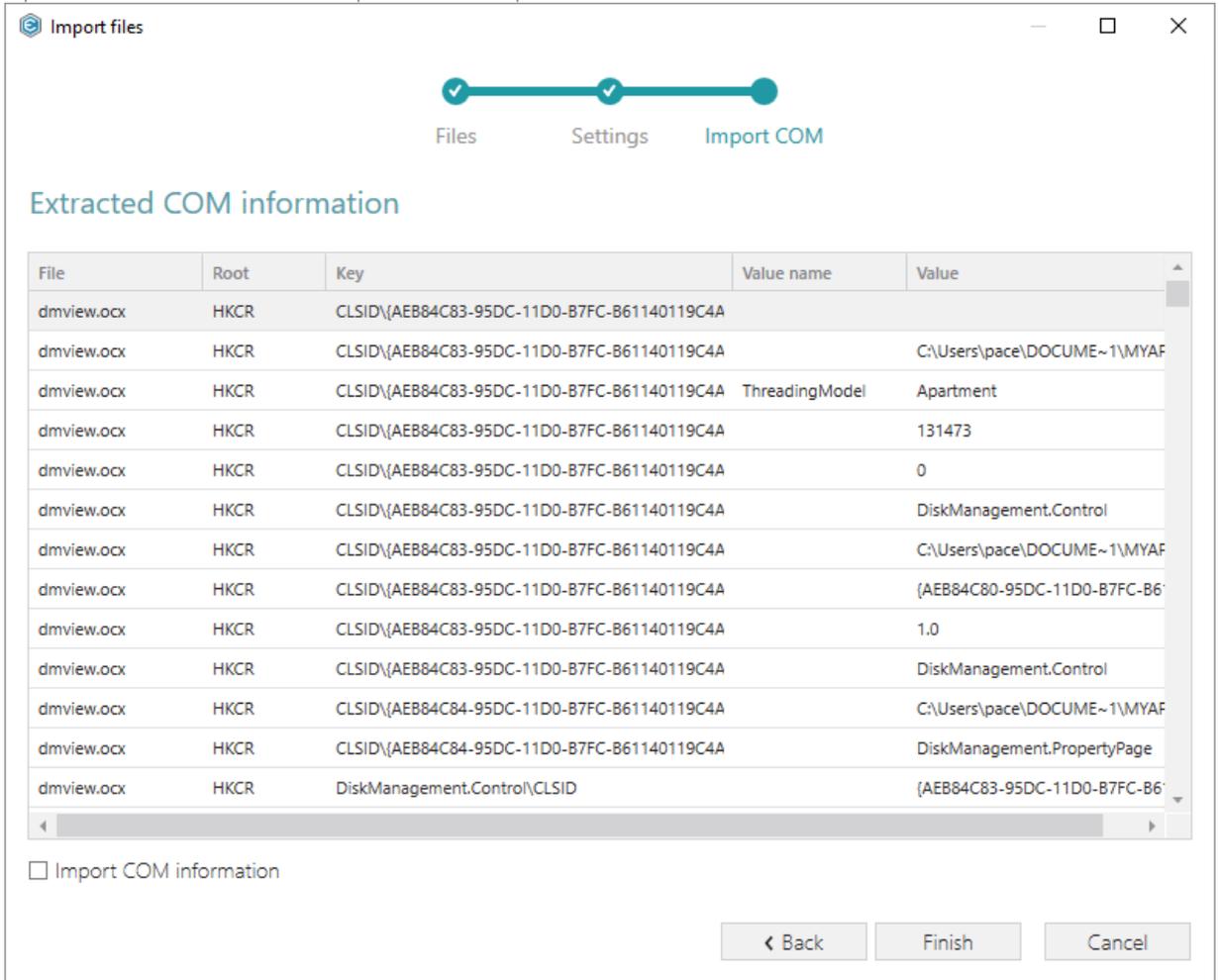
Manage features automatically

The specific PACE features will be created (or used if they exist) for the components, containing the imported files. Feature structure is based on the packaging best practices and depends on the destination location of files.

<a feature, selected from the list>

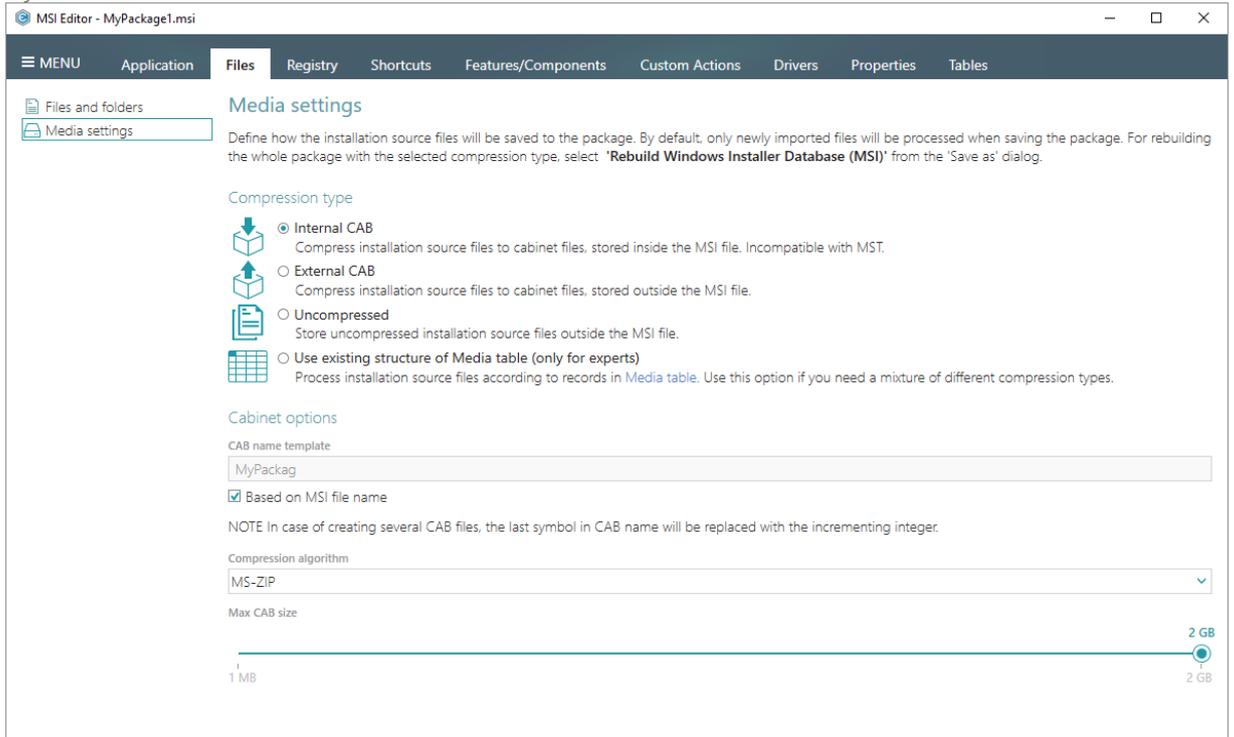
Components with files will be assigned to a feature, selected from the list.

- [13]. On the last step you can review COM information, extracted from the selected files. For importing this COM information along with files, select the Import COM information option. Click Finish to complete the import.

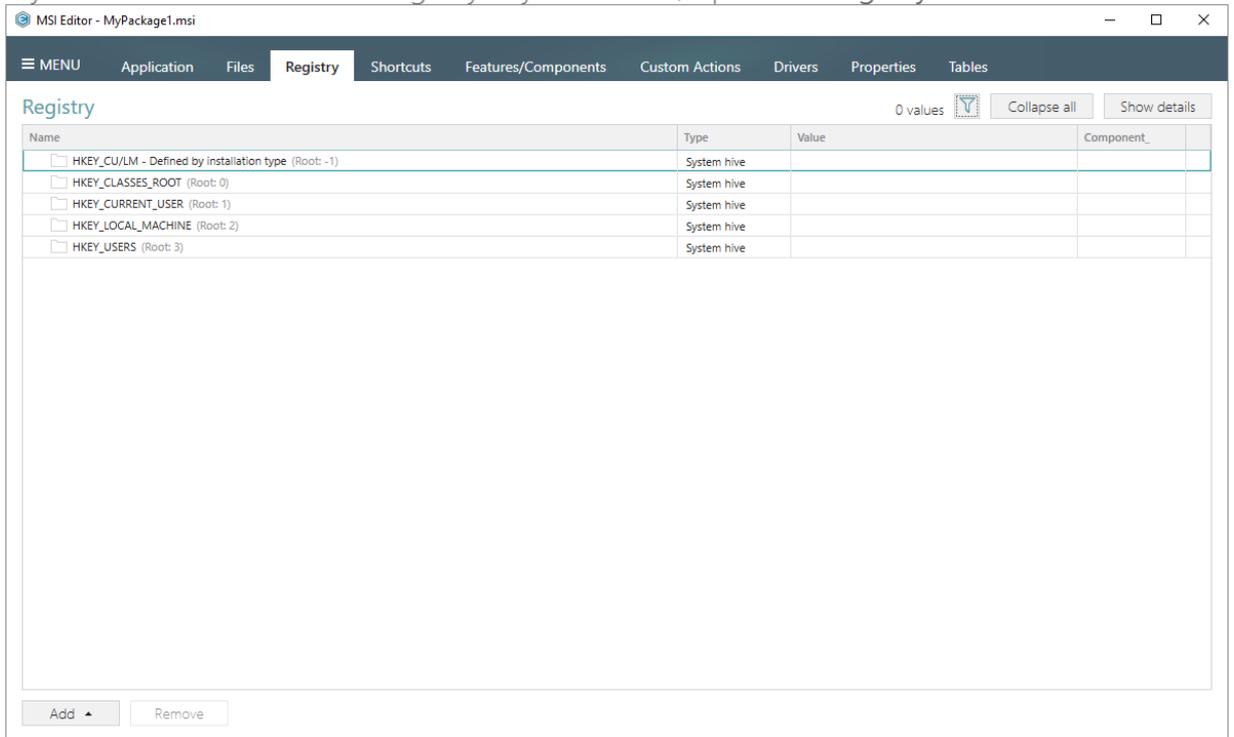


- [14]. Go to the Media settings section of the Files tab and choose the necessary compression type for the imported files. For the compressed files you can manage cabinet options such as CAB name, compression algorithm and maximum CAB size. Cabinets will be spit

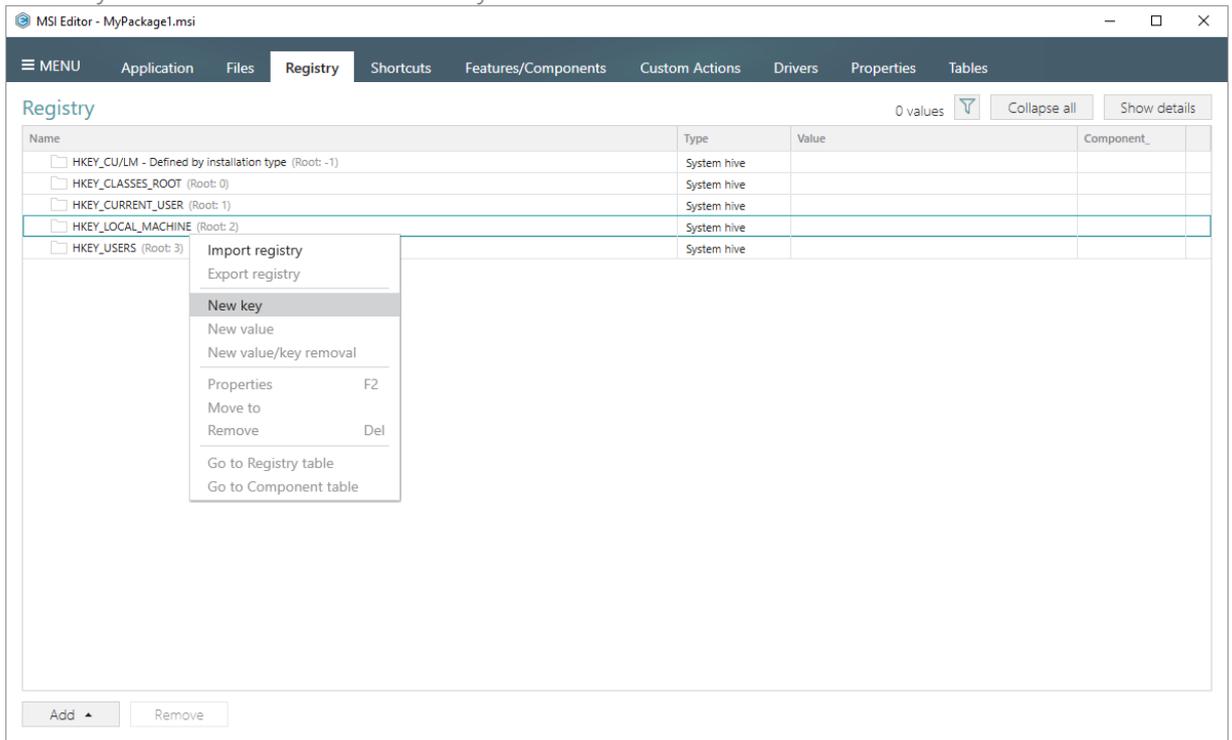
by the selected maximum size.



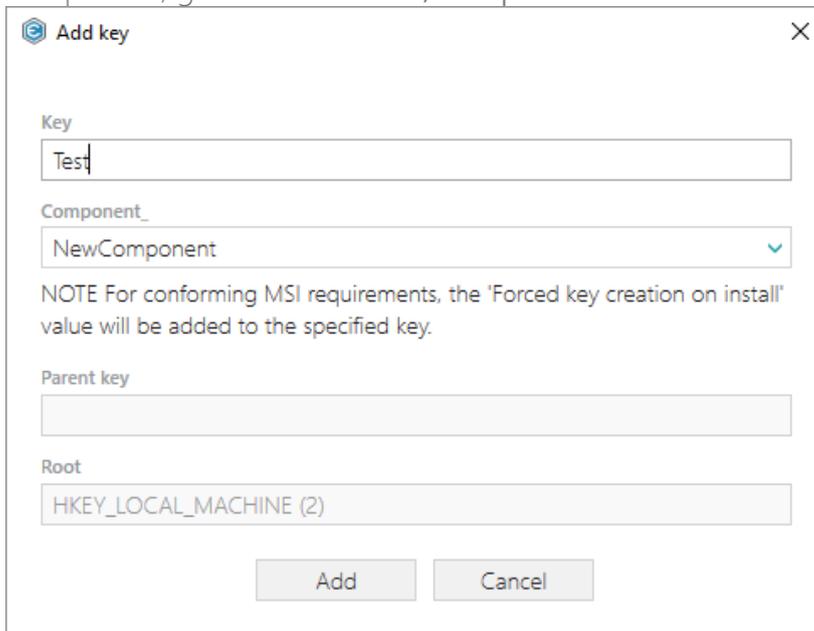
[15]. If you need to create a new registry key or a value, open the Registry tab.



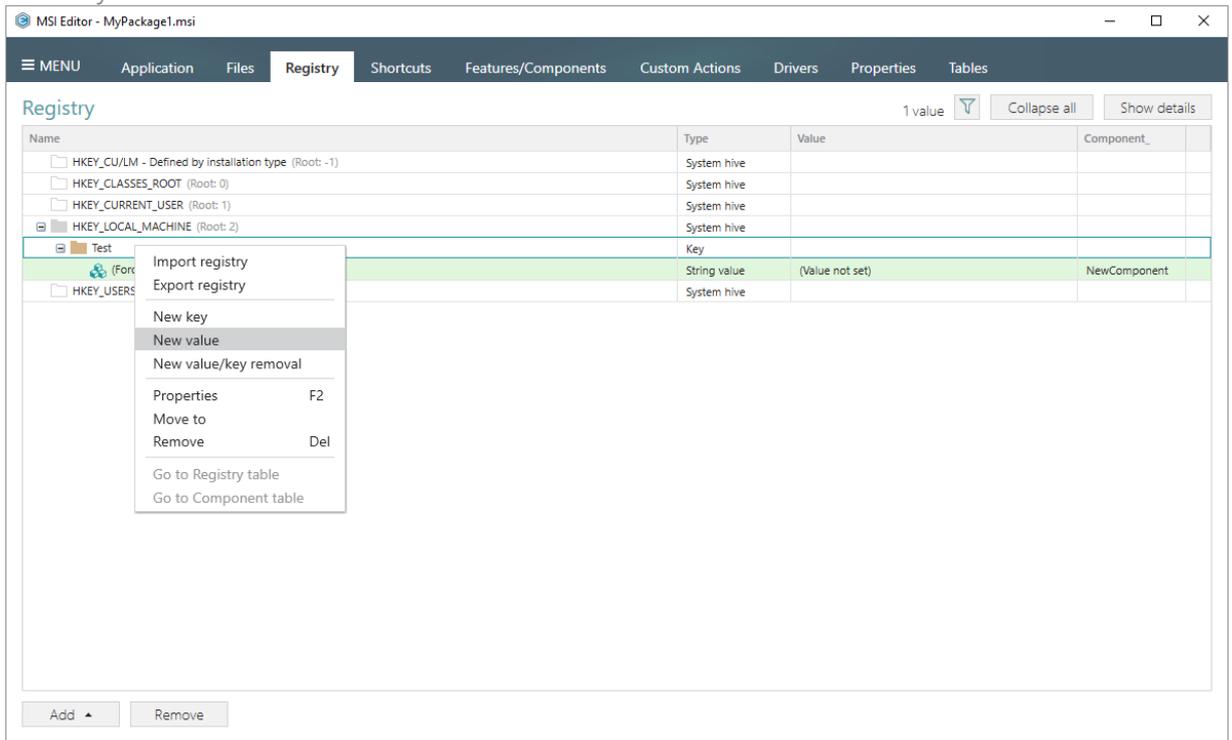
[16]. Select **New key** from the context menu of a root hive (e.g. HKEY_LOCAL_MACHINE), where you want to create a new key.



[17]. Enter a key name, select a component from the list, then click **Add**. For creating a new component, go to the Features/Components tab.



[18]. In order to create a new registry value, select **New value** from the context menu of a key, where you want to create this value.



[19]. For creating an ordinary registry value, specify a name and its value, choose a component from the list, to which this value will be assigned, and click **Save**.

For creating a Default key value, or securing a key creation and/or removal, select a respective option from the **Value processing method** field.

The **Parsed value** option serves easier creation of a registry value of the proper value type. However, the **Raw MSI value** option gives ability to manage what exactly will be

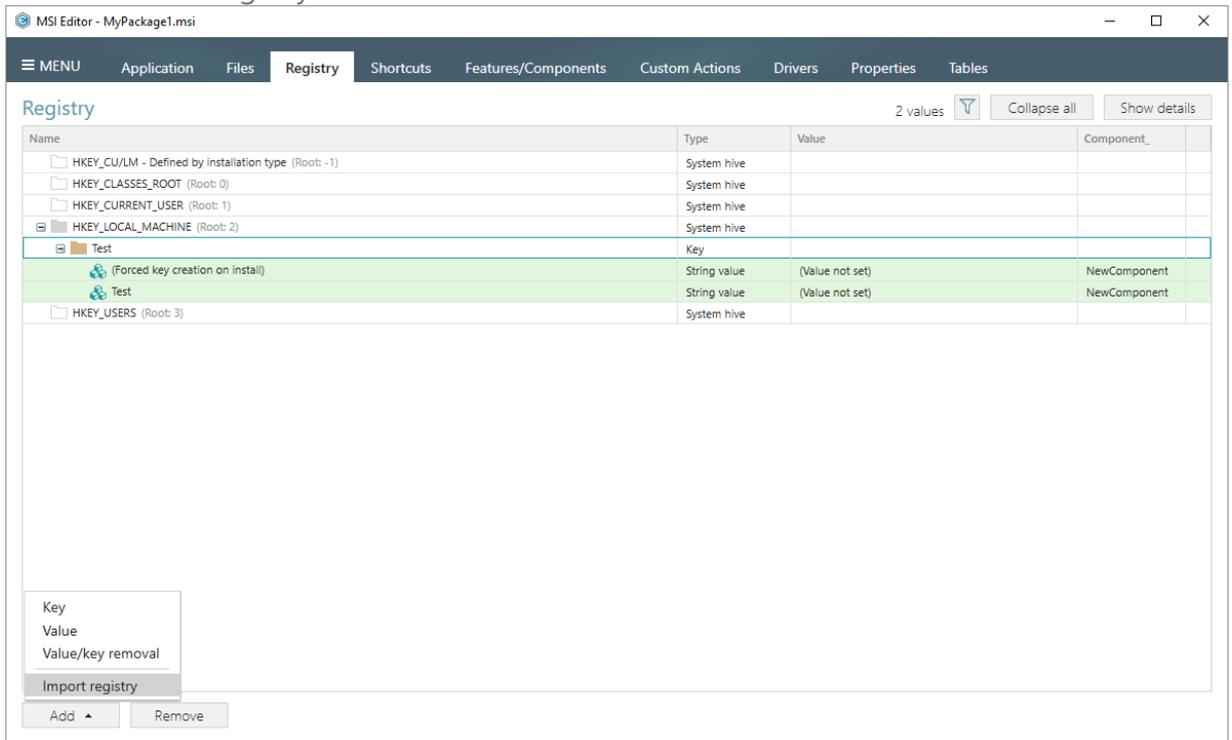
saved to the opened MSI database.

The screenshot shows a 'Properties' dialog box for an MSI table named 'Registry'. The dialog is titled 'Properties' and contains the following fields and options:

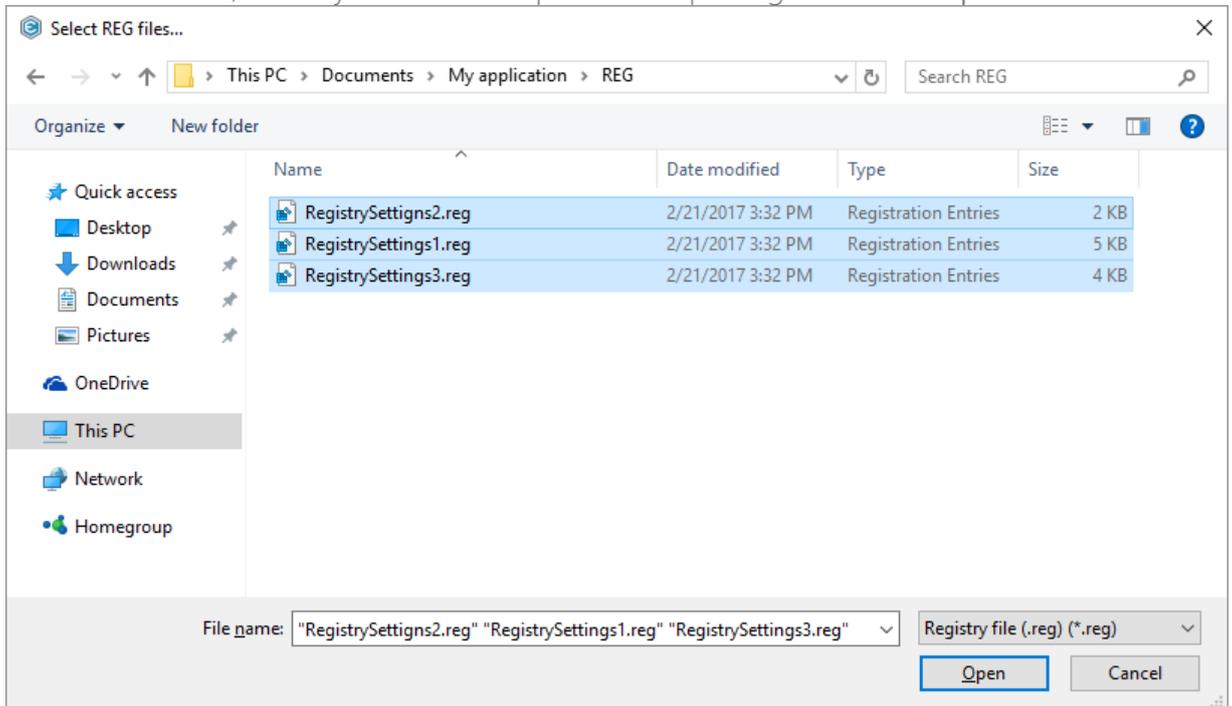
- Value processing method:** A dropdown menu set to '1. Set both name and value'.
- Name:** An empty text input field.
- Identifier:** A text input field containing 'reg_050dd2e9'.
- Value:** A section with two radio buttons:
 - Parsed value:** Selected. Below it is a 'Type' dropdown menu set to 'String value (REG_SZ)' and a 'Value' text input field.
 - Raw MSI value:** Unselected. Below it is an empty text input field.
- Key:** A text input field containing 'Test' and a 'Browse...' button.
- Root:** A dropdown menu set to 'HKEY_LOCAL_MACHINE (2)'.
- Component_:** A dropdown menu set to 'NewComponent'.

At the bottom of the dialog are 'Save' and 'Cancel' buttons.

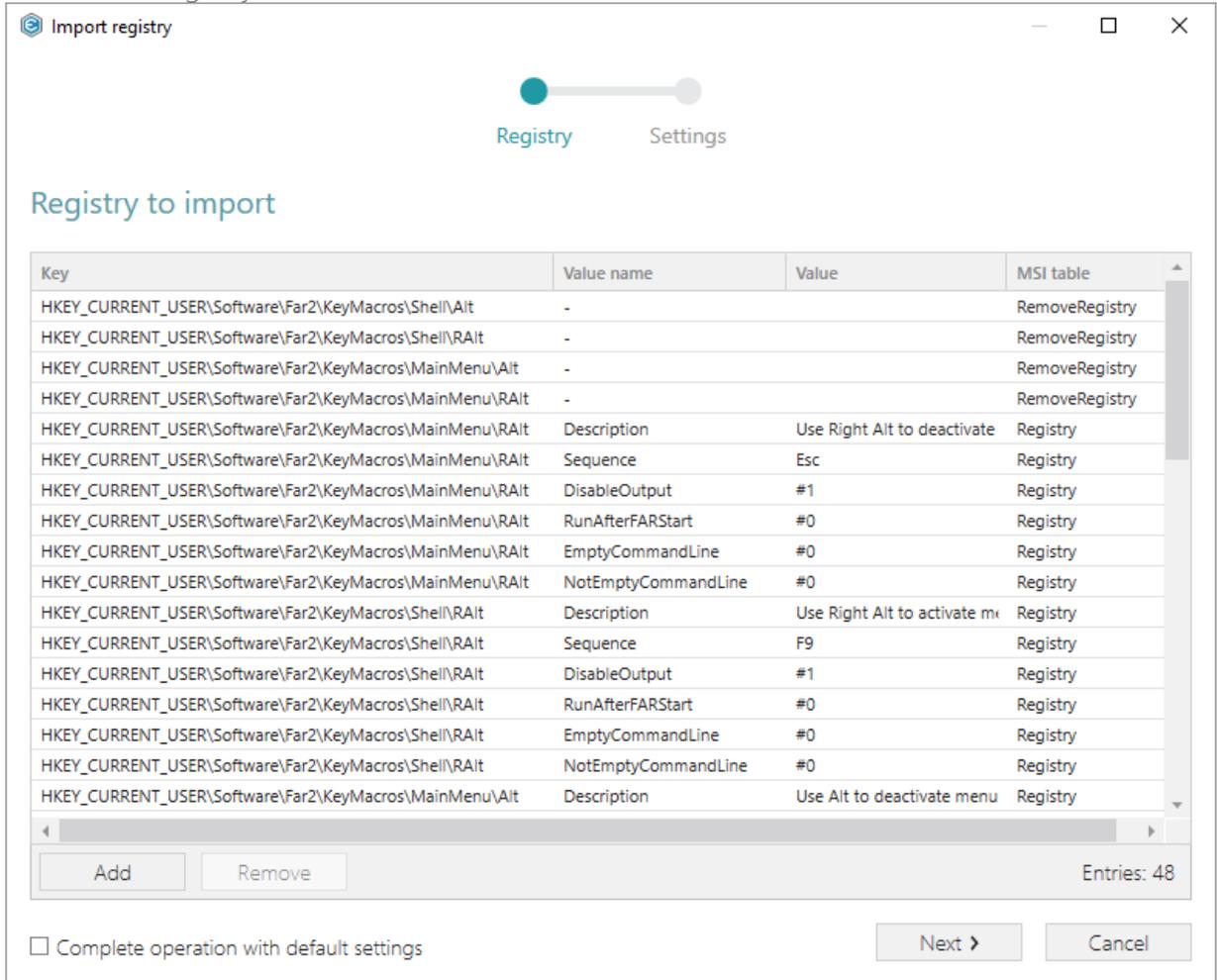
[20]. In order to import registry from the REG file, select Add -> Import registry from the toolbox of the Registry tab.



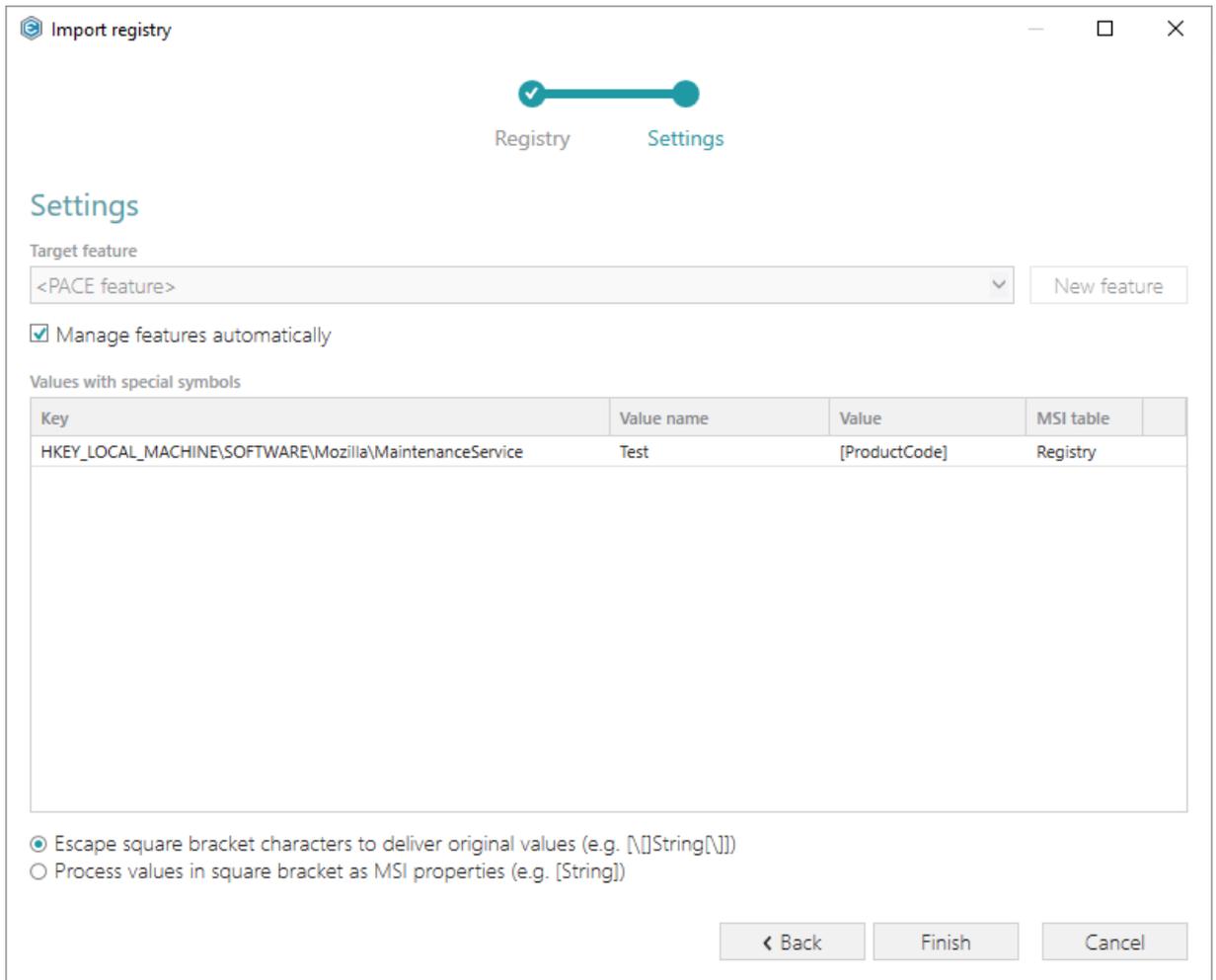
[21]. Choose REG files, which you want to import to the package and click Open.



[22]. Review the registry entries, read from the selected REG files, and click Next.



[23]. At the Settings step, you can select an MSI Feature, to which components with the registry entries will be assigned. If the registry entries, which have been read, contain values in square brackets, you can select how these values will be processed – as MSI properties or as ordinary registry values. Below, in the tables, you will find the detailed description of these settings. Click Finish to complete the import.



Feature settings

Manage features automatically

The specific PACE features will be created (or used if they exist) for the components, containing the imported registry. Feature structure is based on the packaging best practices and depends on the registry key location.

<a feature, selected from the list>

Components with registry will be assigned to a feature, selected from the list.

Values with special symbols

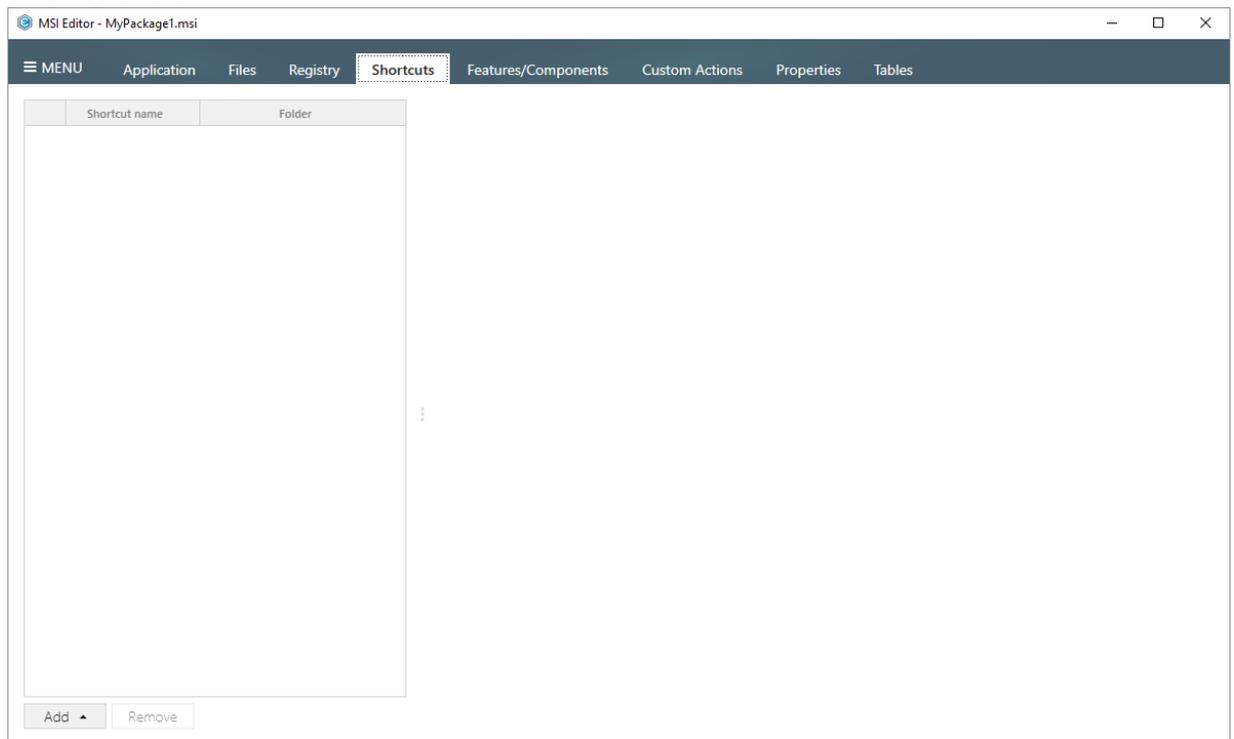
Escape square bracket characters to deliver original values

Values in square brackets, displayed in the list, will be saved to MSI as ordinary strings using the general rules for escaping the special characters. This approach guarantees the delivery of the imported registry entries to the target system with their original values.

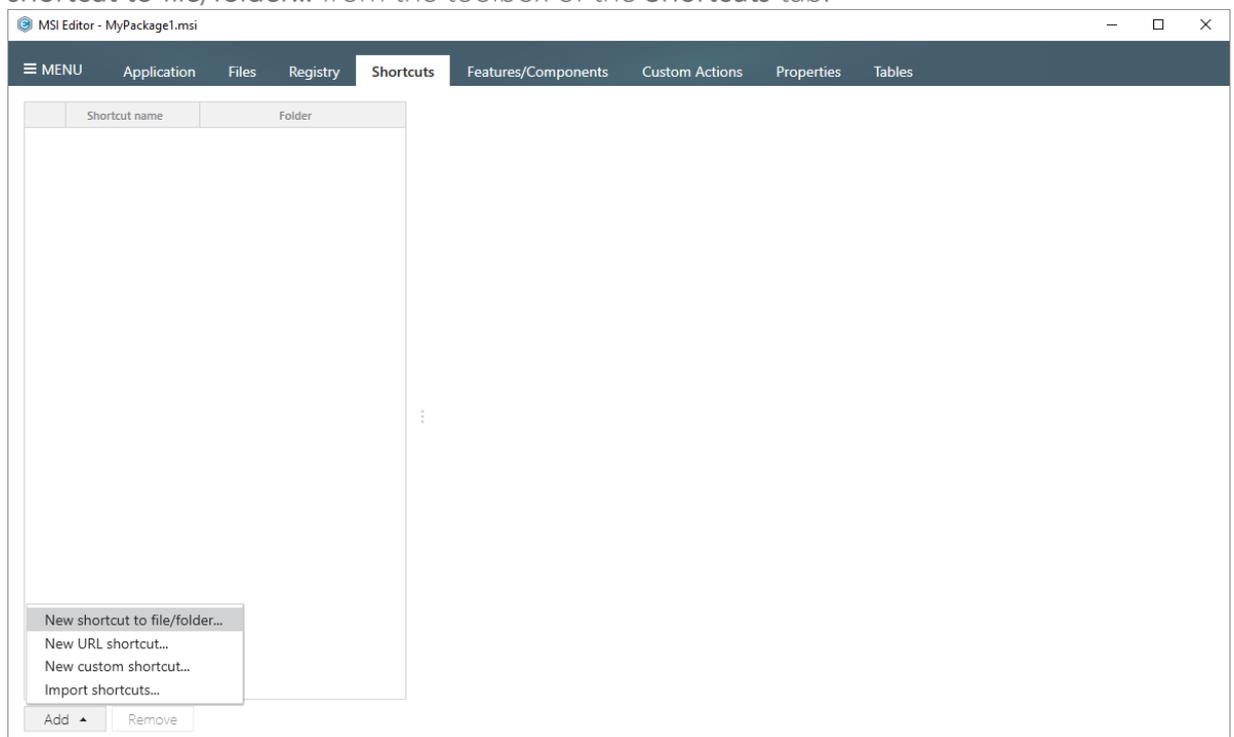
Process values in square brackets as MSI properties

Values in square brackets, displayed in the list, will be saved to MSI as MSI properties. Thus, each MSI property will be replaced with its value during the MSI installation. If a property does not exist in MSI during the installation, it will be replaced with the blank value.

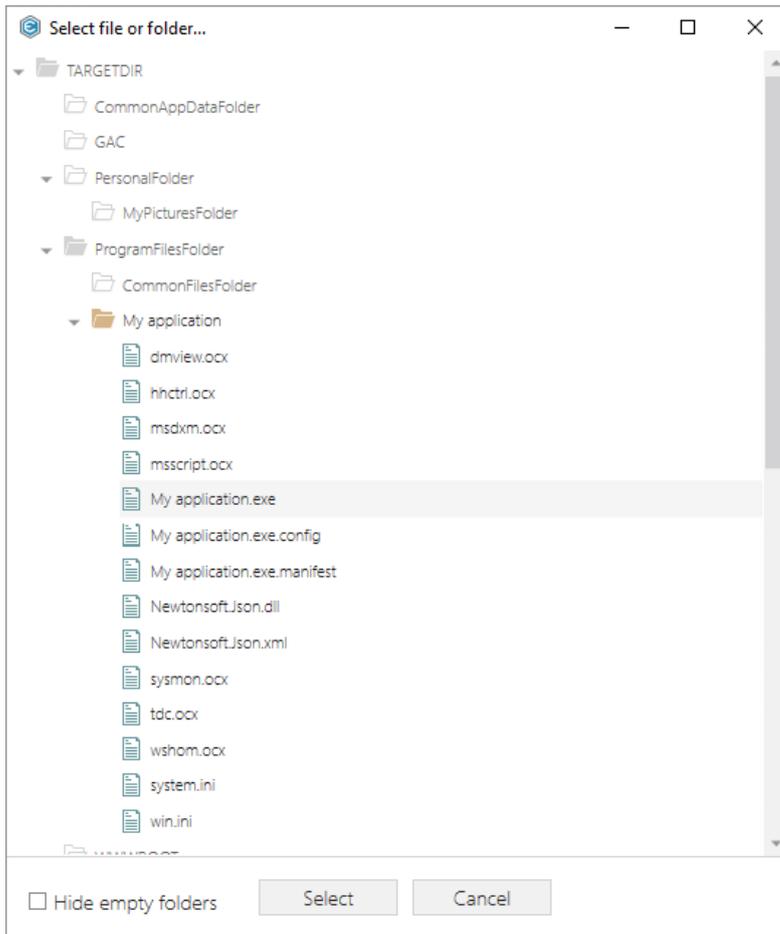
[24]. If you need to create a new or import the existing shortcuts to the package, go to the Shortcuts tab.



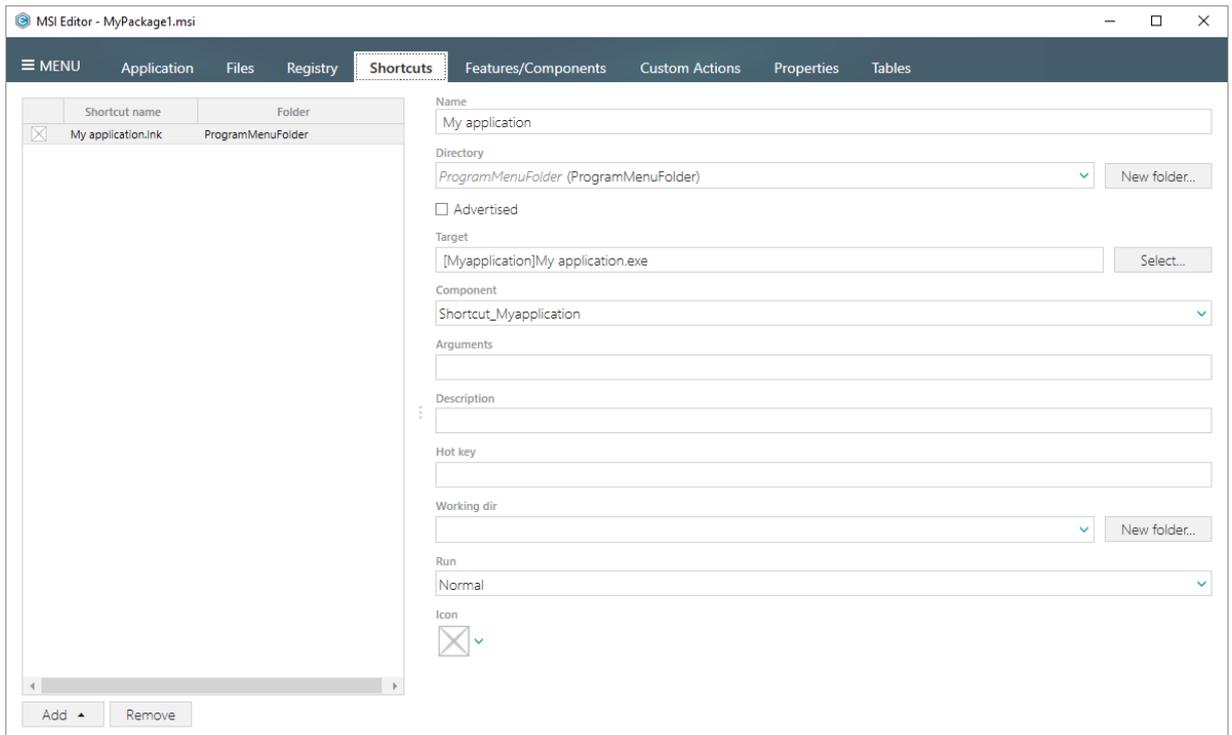
[25]. For creating a new shortcut that points to a file inside the package, select Add -> New shortcut to file/folder... from the toolbox of the Shortcuts tab.



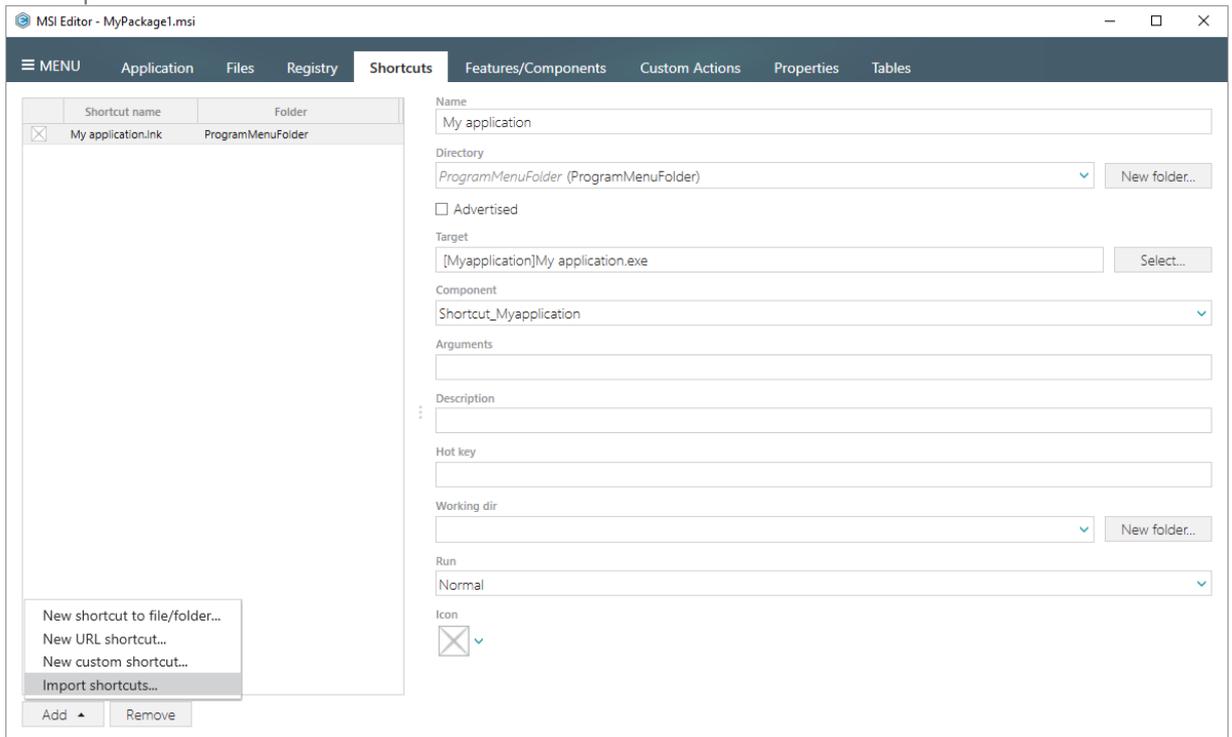
[26]. Select a file (e.g. My application.exe), which will be launched by this shortcut, and click Select.



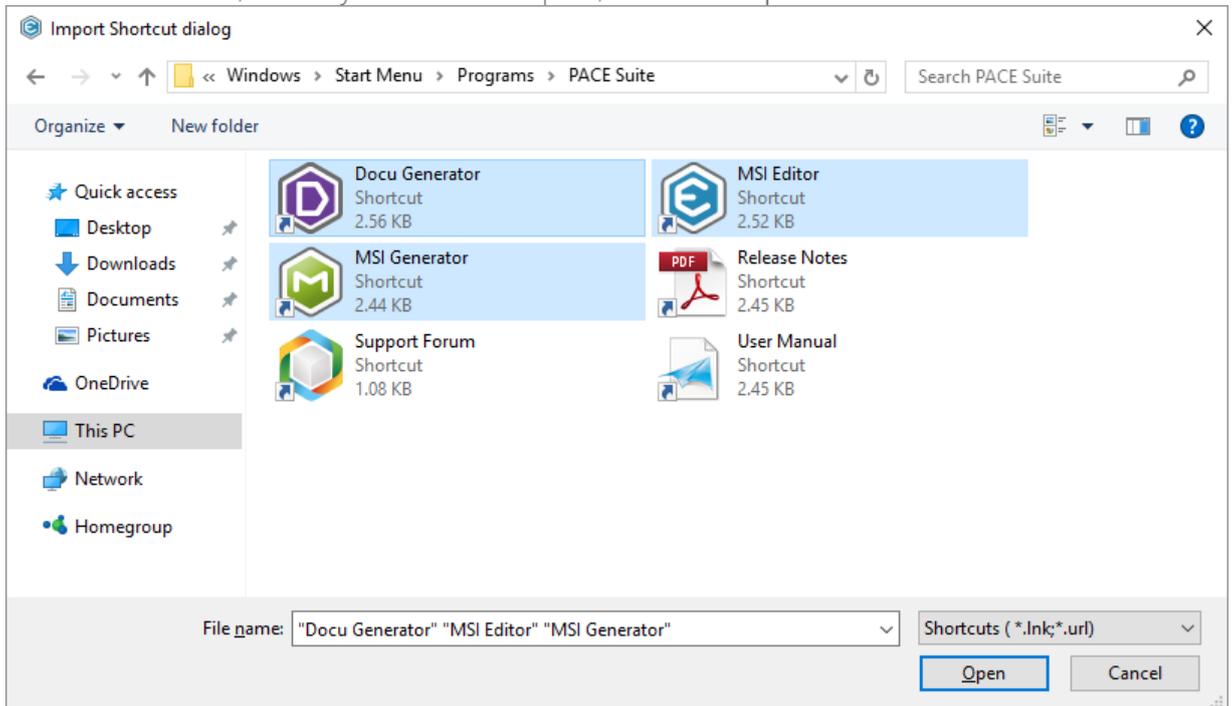
[27]. Using the details pane, you can update the shortcut name, destination location, target, icon and so on. Select the **Advertised** option to convert the created regular shortcut to the advertised one.



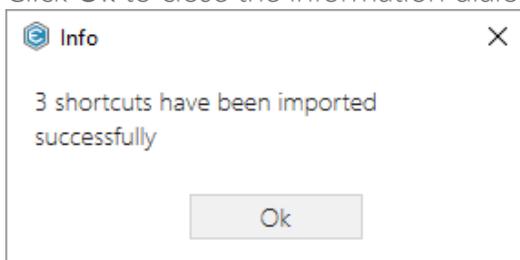
[28]. In order to import LNK and URL shortcuts to the package from the file system, select Add -> Import shortcuts... from the toolbox of the Shortcuts tab.



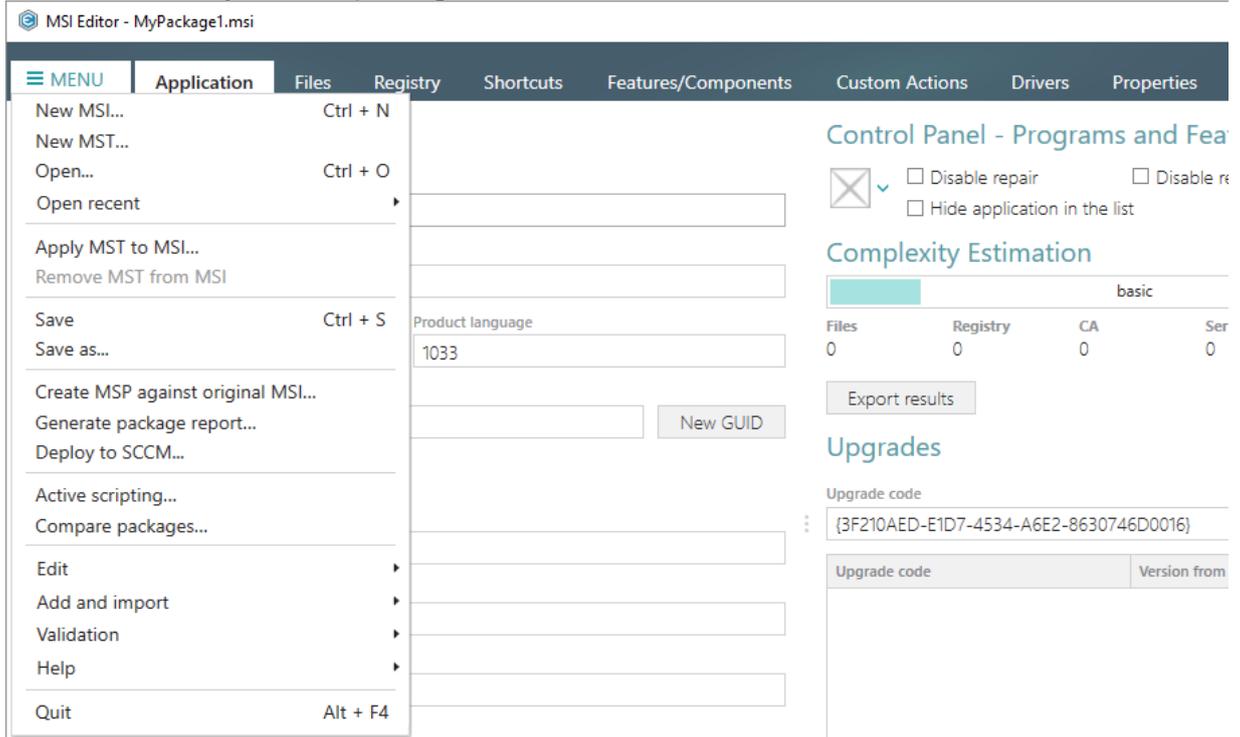
[29]. Choose shortcuts, which you want to import, and click Open.



[30]. Click Ok to close the information dialog.



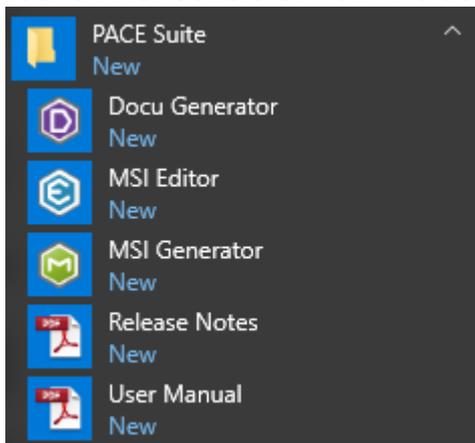
[31]. In order to save your MSI package, select Save from the MENU.



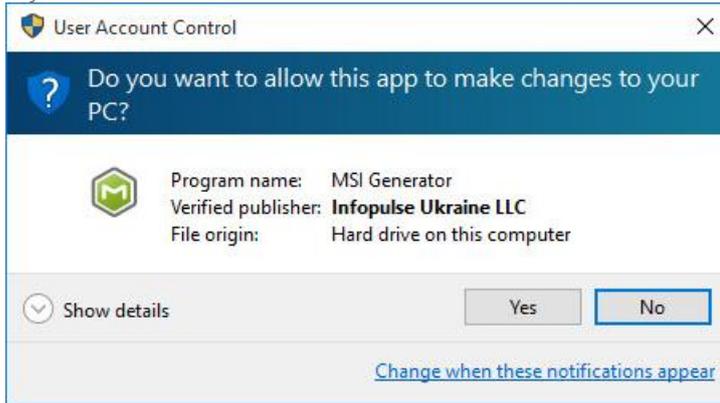
3.1.2 Generate MSI from Scratch

Create a new empty project in MSI Generator, add folders, files, registry entries and shortcuts to this project and then generate the MSI package from this project.

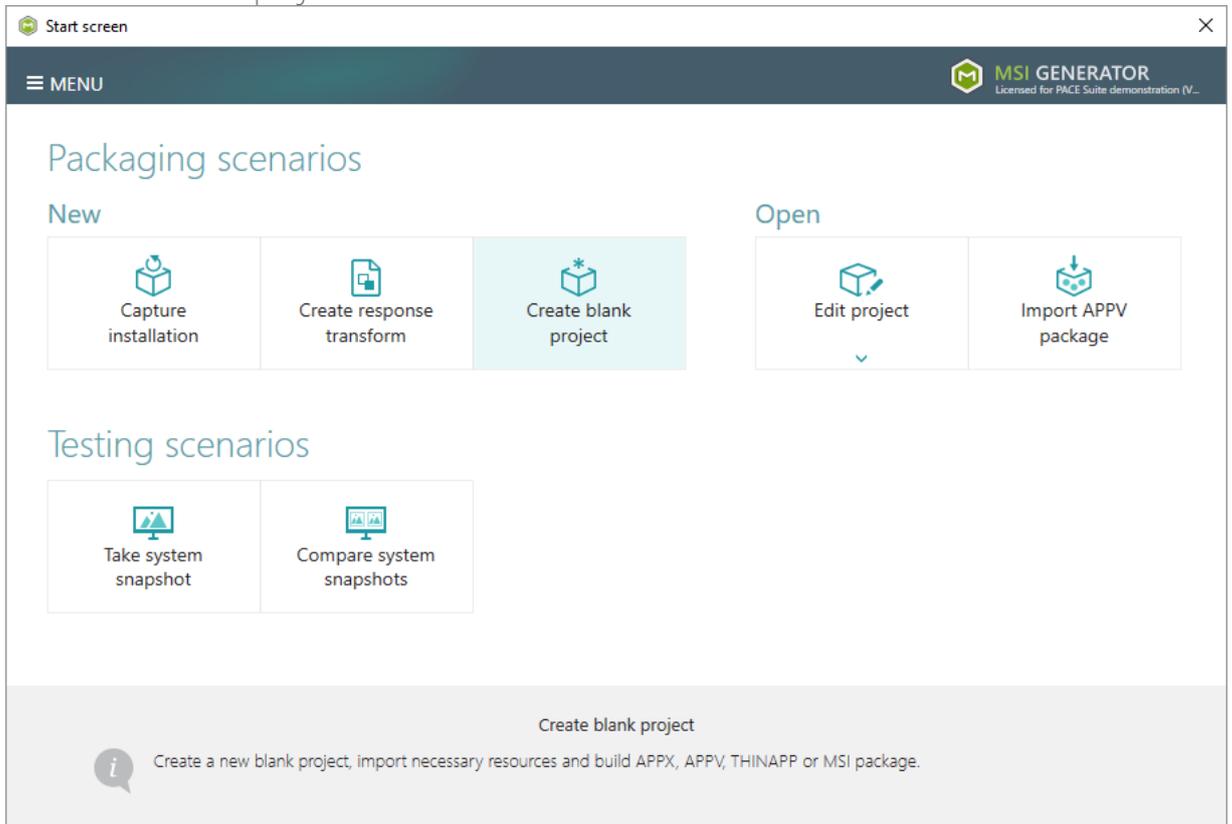
[1]. Launch MSI Generator from the desktop or the start menu shortcut.



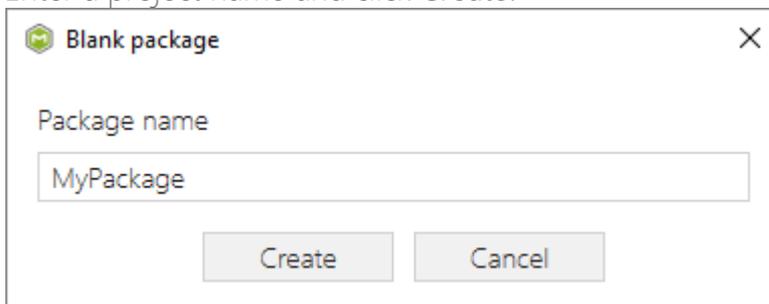
- [2]. If you have User Account Control enabled, click Yes in the opened window.



- [3]. Click Create blank project.



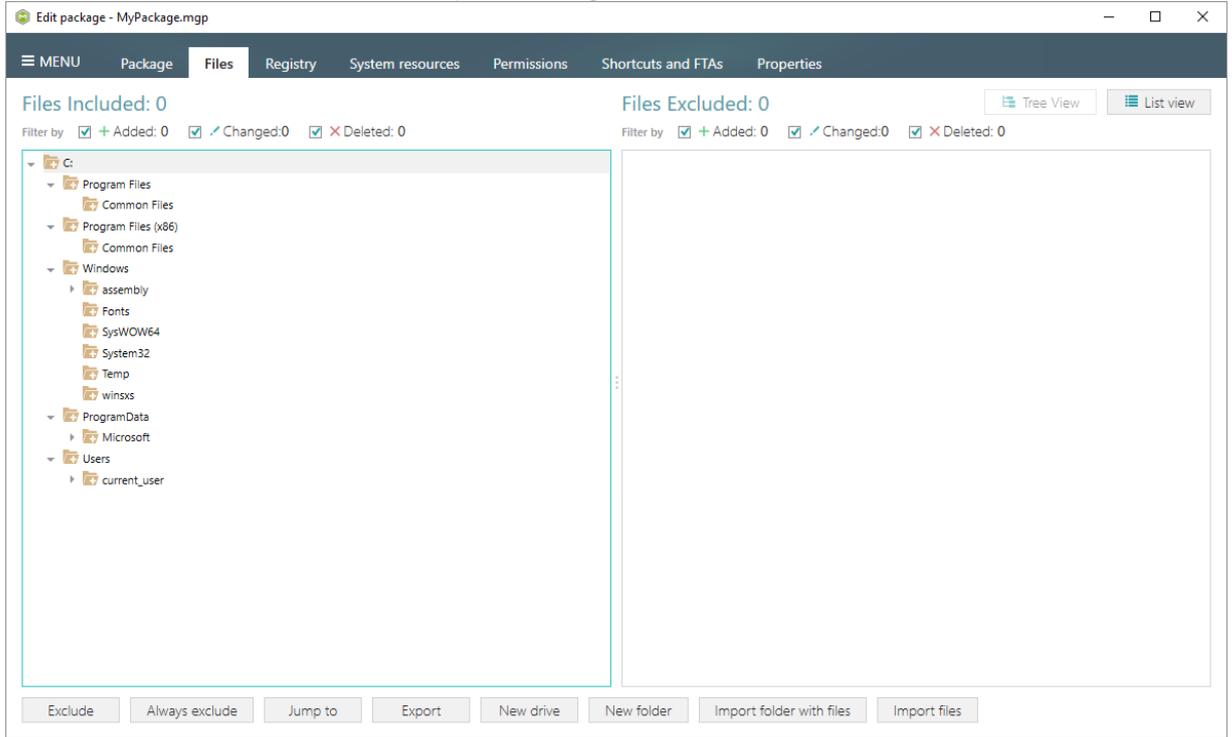
- [4]. Enter a project name and click Create.



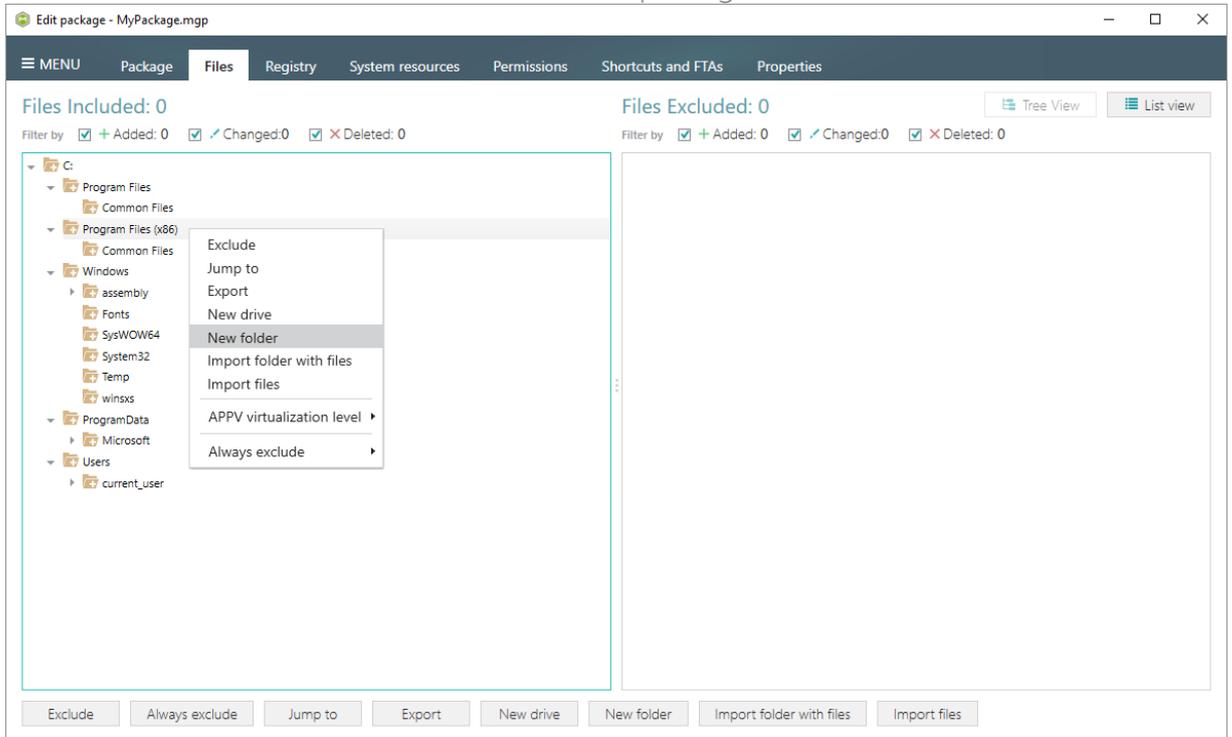
- [5]. Once the newly created project is opened automatically, you can start adding the necessary resources using MSI Generator. The steps from [6] to [10] describe how to create a new folder and import files to this folder; the steps from [11] to [13] describe how to import registry entries from the REG file; the steps from [14] to [17] describe how to

import shortcuts to the project; and two last steps [18] and [19] describe how to build MSI package from the prepared project.

[6]. In order to create a folder and import files, go to the Files tab.

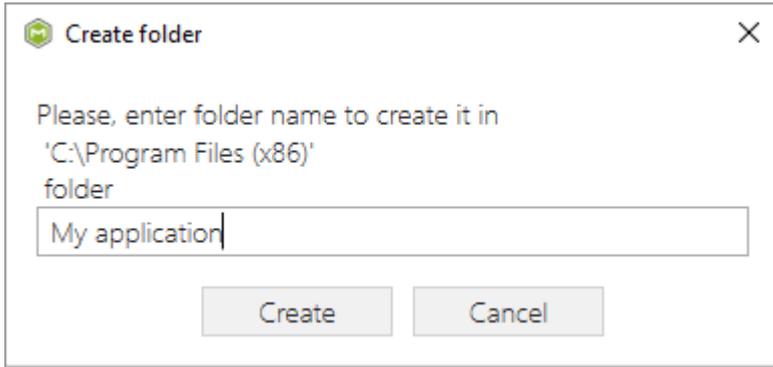


[7]. In the left pane, select **New folder** from the context menu of a folder, where you want to create a new empty folder. Note that the left 'Files Included' pane displays files and folders, which will be a part of your package, and the right 'Files Excluded' pane displays files and folders, which will not be saved to the package.

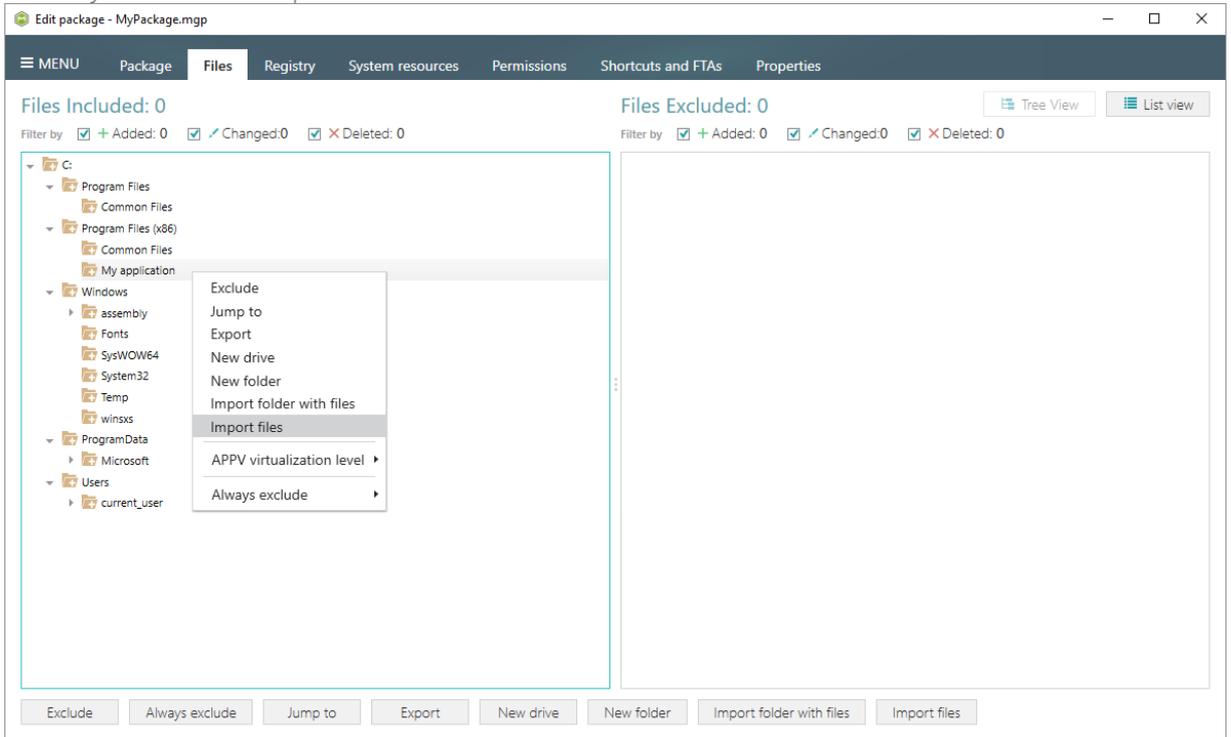




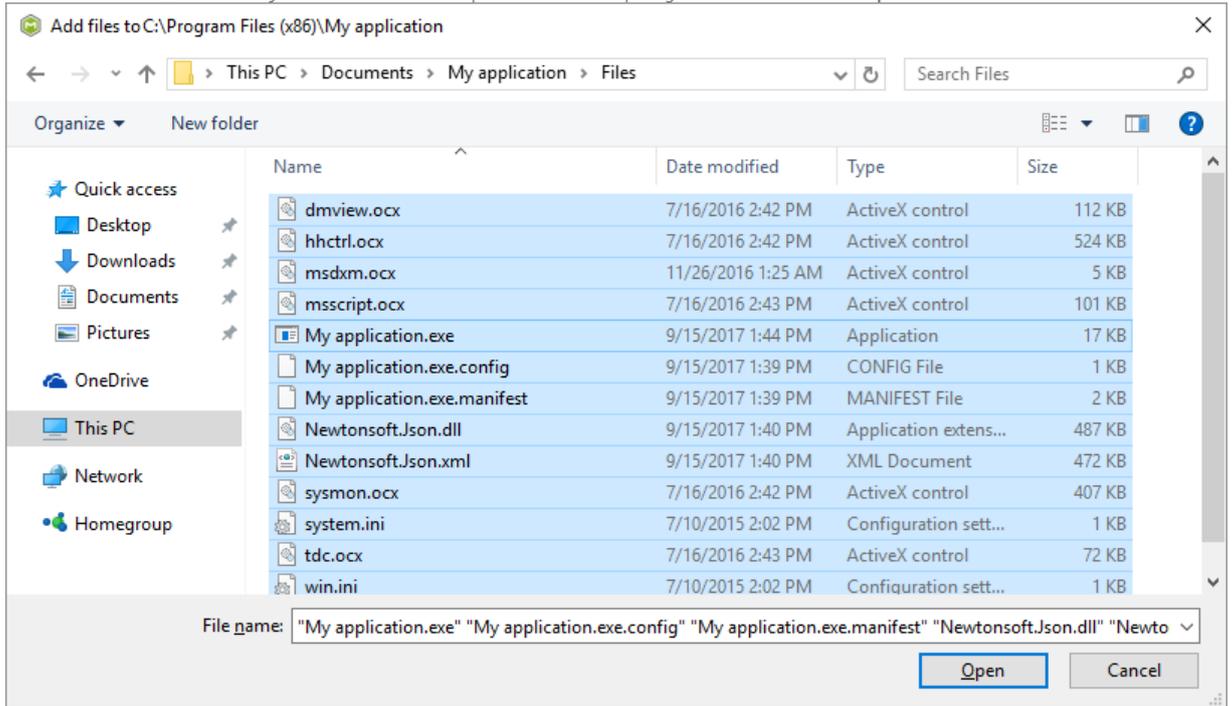
[8]. Enter a folder name and click Create.



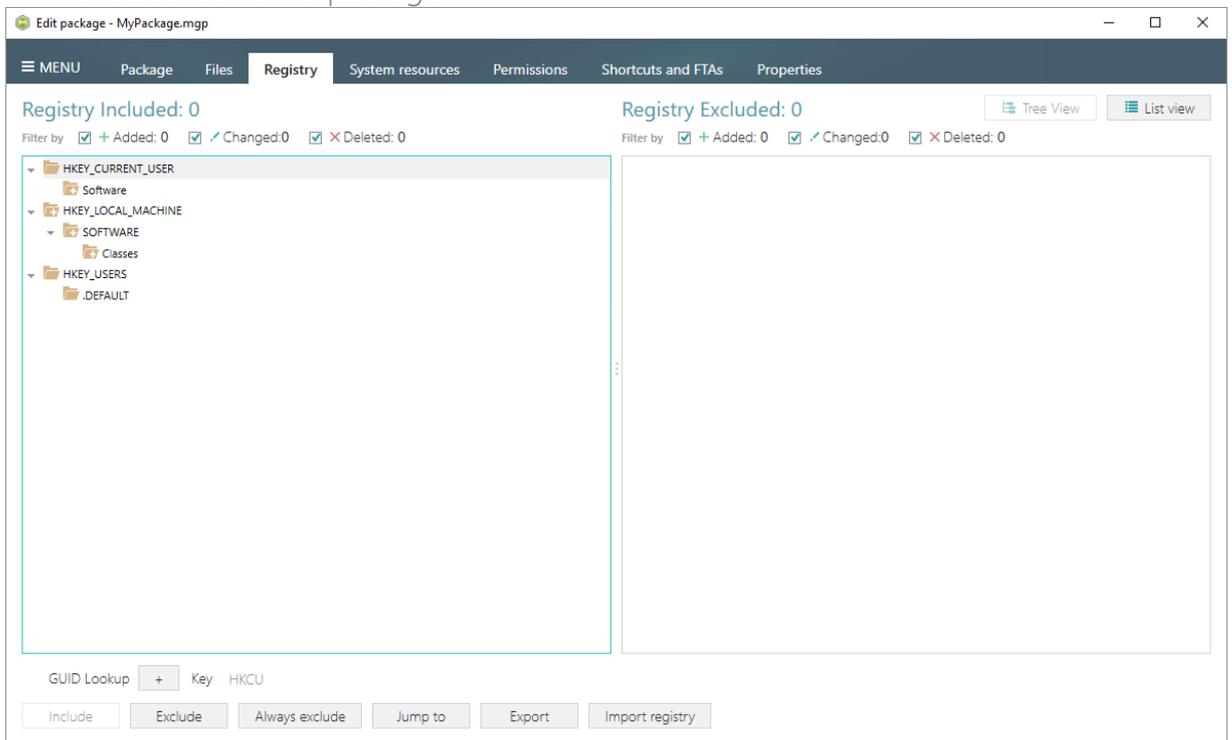
[9]. For adding files to your project, select Import files from the context menu of a folder, to which you want to import files.



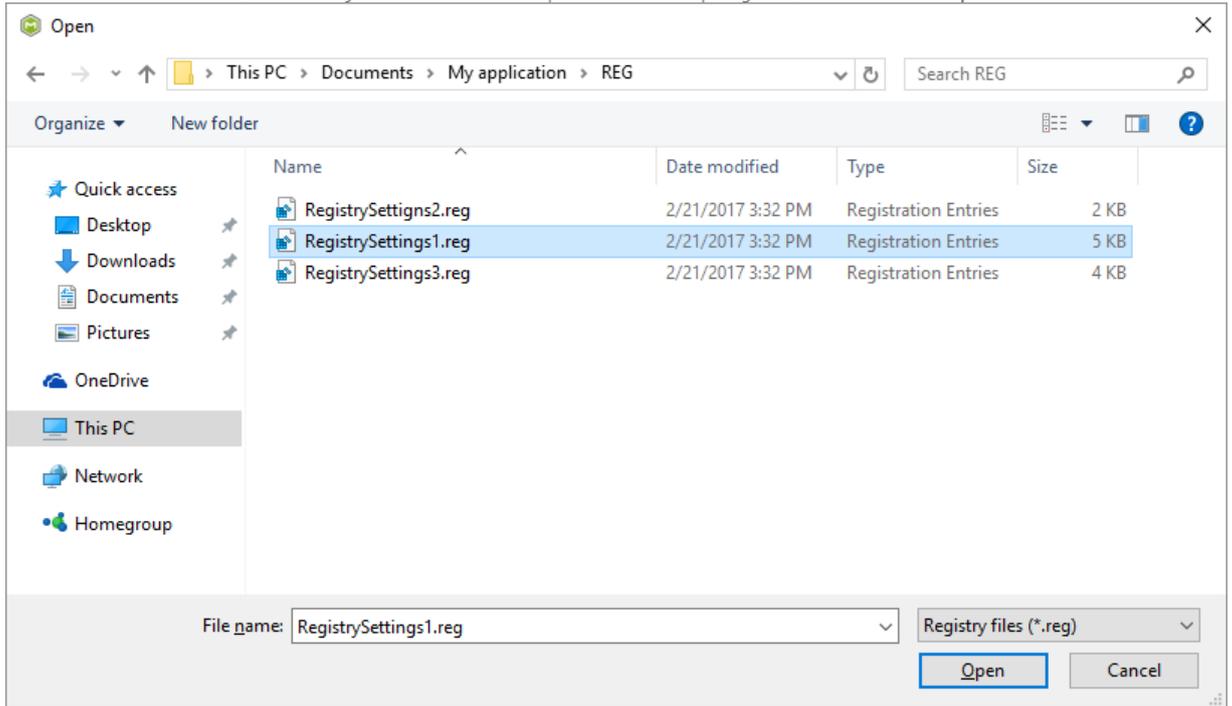
[10]. Choose files, which you want to import to the project and click Open.



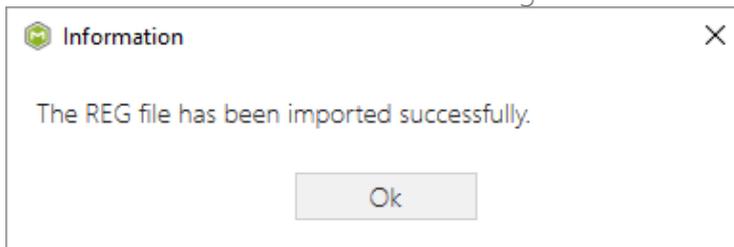
[11]. In order to import registry entries from the REG file, go to the Registry tab and click the Import registry button, located in the bottom part of the window. Note that the left 'Registry Included' pane displays registry keys and values, which will be a part of your package, and the right 'Registry Excluded' pane displays registry keys and values, which will not be saved to the package.



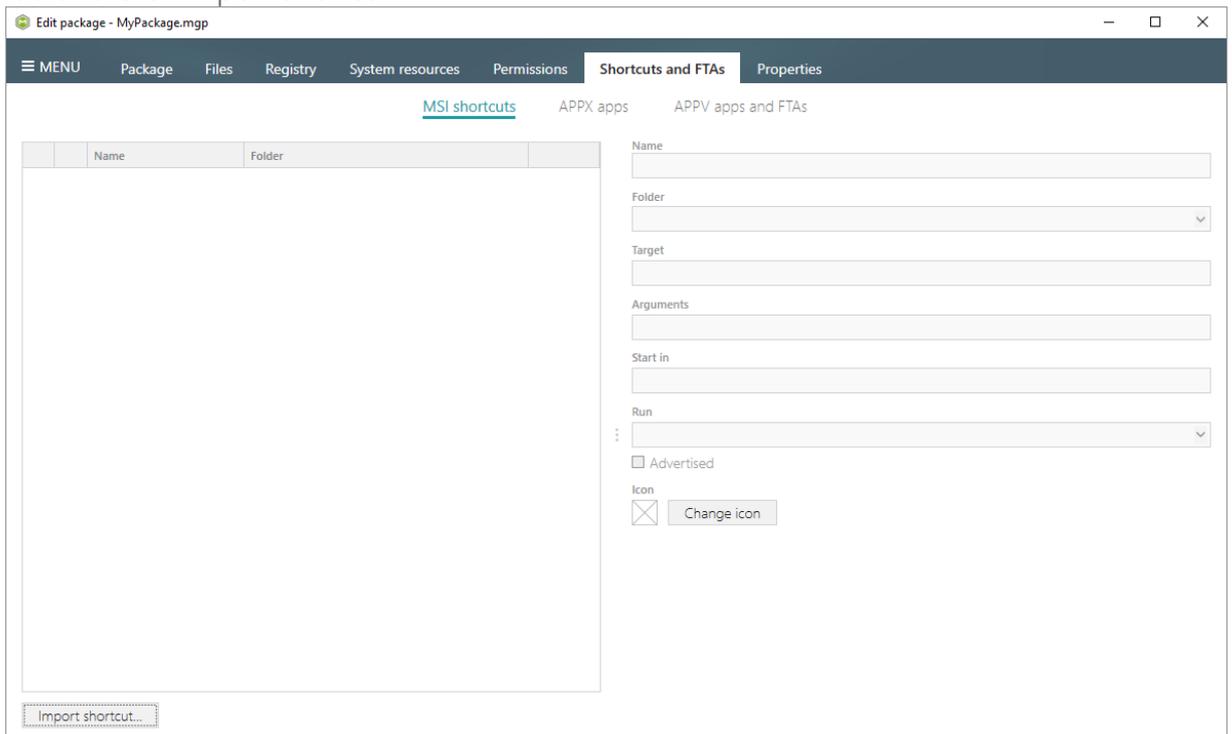
[12]. Choose a REG file, which you want to import to the project, and click Open.



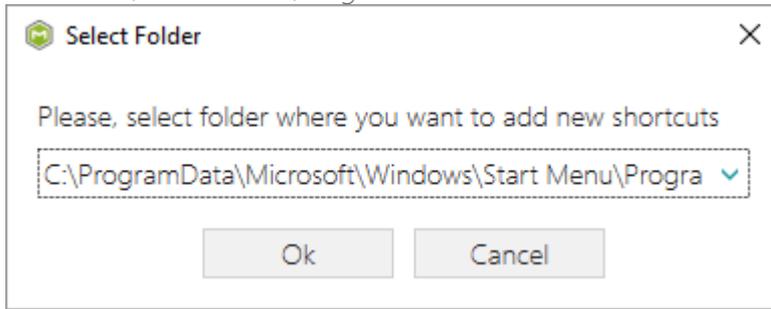
[13]. Click Ok to close the information dialog.



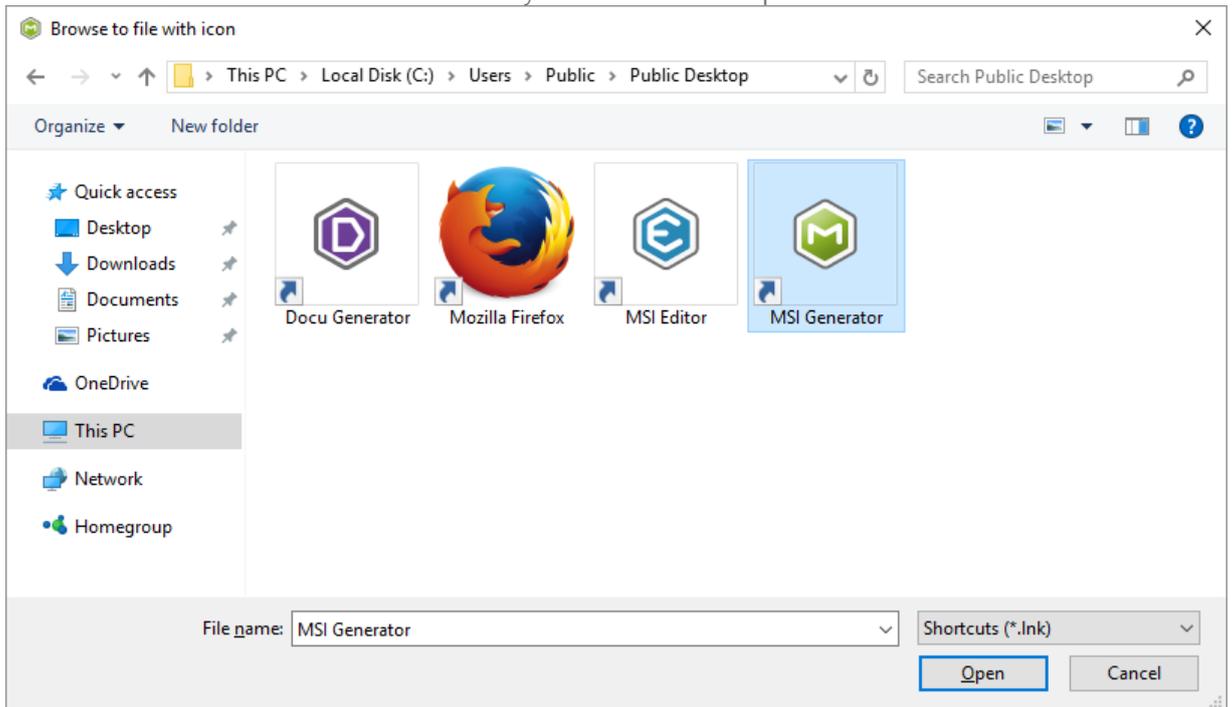
[14]. If you need to add shortcuts to the project, go to the Shortcuts and FTAs -> MSI shortcuts tab and click Import shortcut...



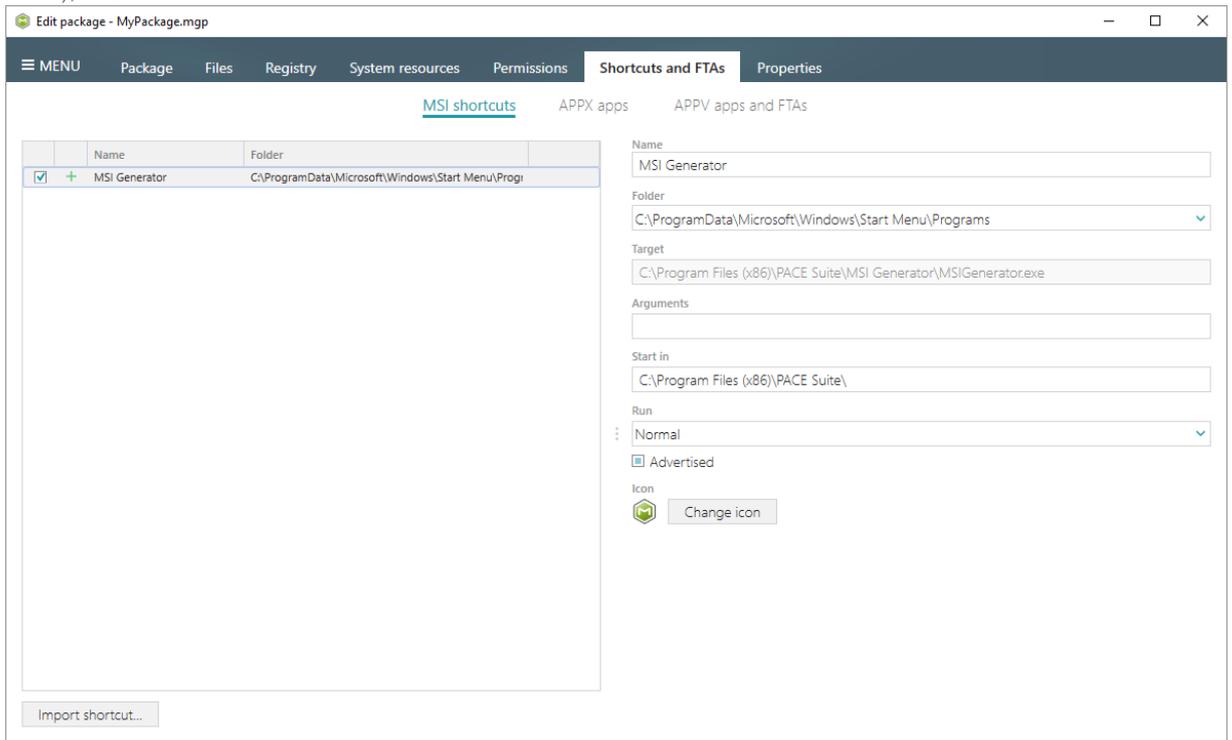
- [15]. Select a folder from the list, where your newly imported shortcut will be installed, and click Ok. Note that the Start menu shortcuts are located at "C:\ProgramData\Microsoft\Windows\Start Menu\Programs" folder.



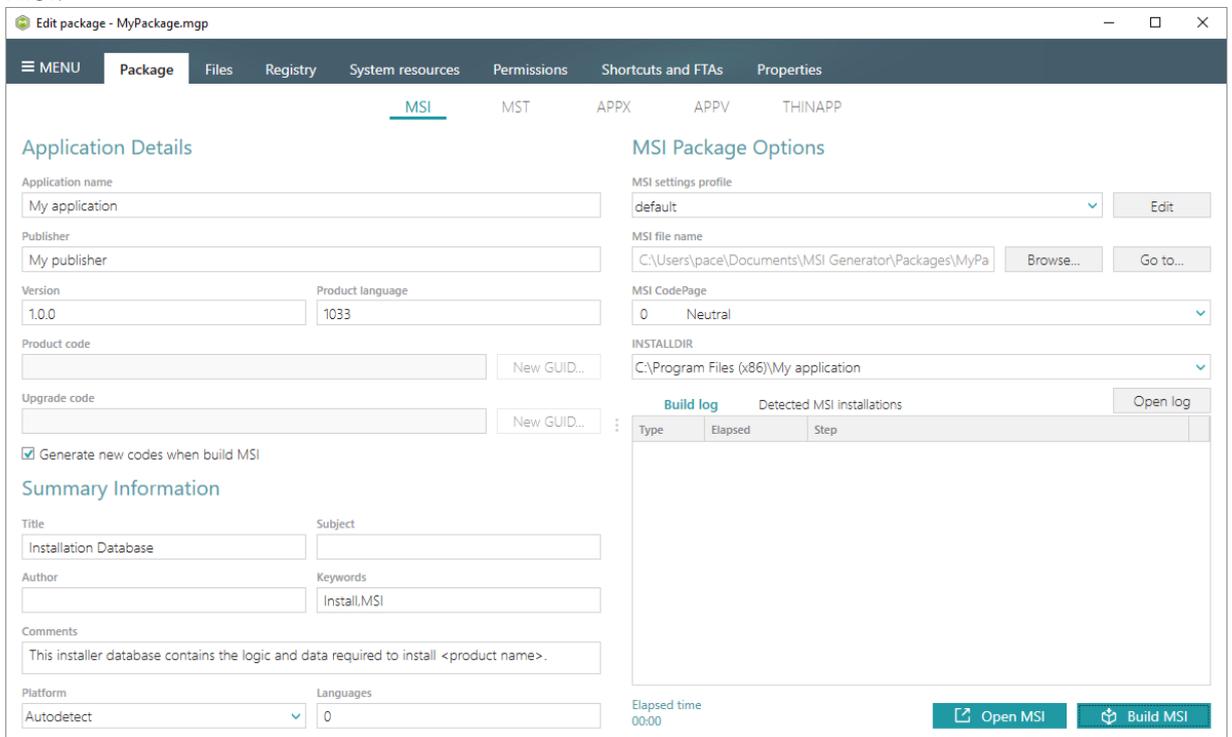
- [16]. Choose an LNK shortcut from the file system and click Open.



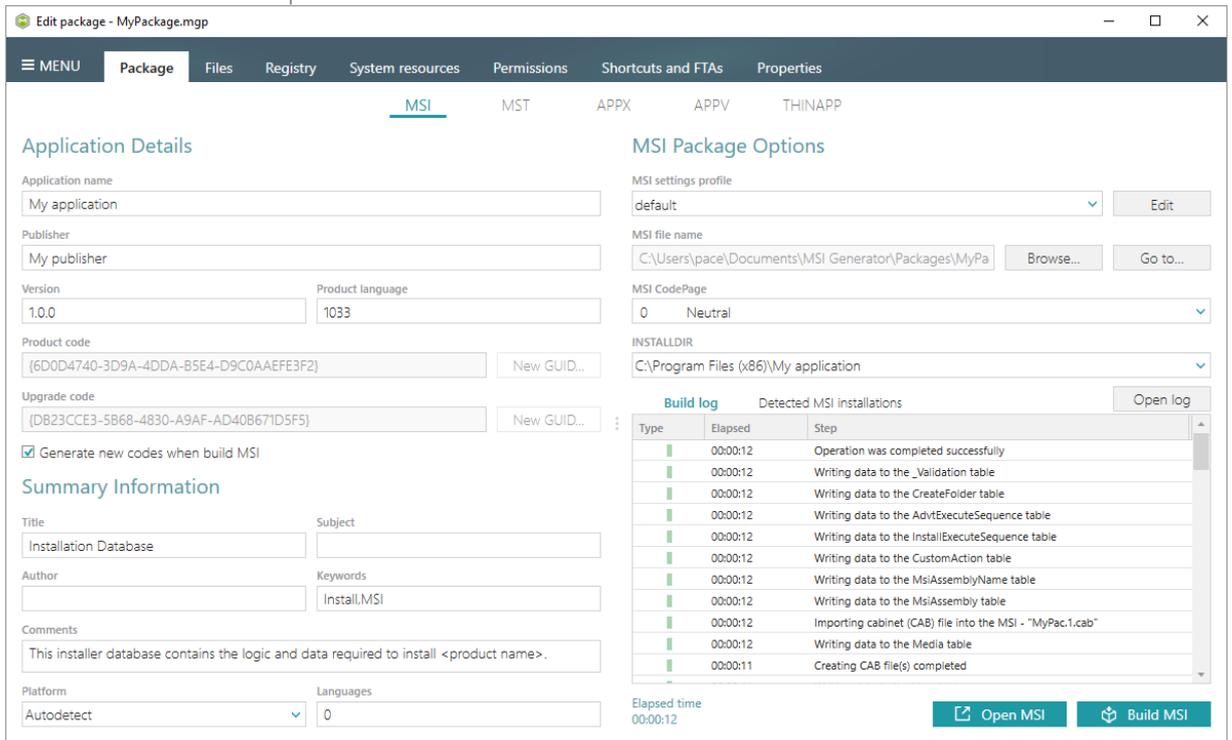
[17]. Using the details pane, you can update the shortcut name, destination location ("Folder" field), icon and so on.



[18]. In order to build MSI package from your project, navigate to the Package -> MSI tab, update Application Details like name, publisher, version, select INSTALLDIR and click Build MSI.



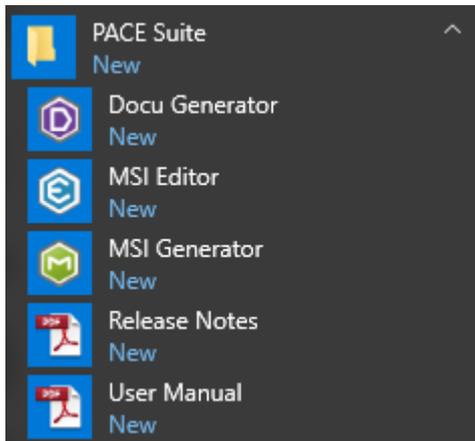
[19]. Click Go to..., located next to the MSI file name field, to open the package containing folder in Windows Explorer.



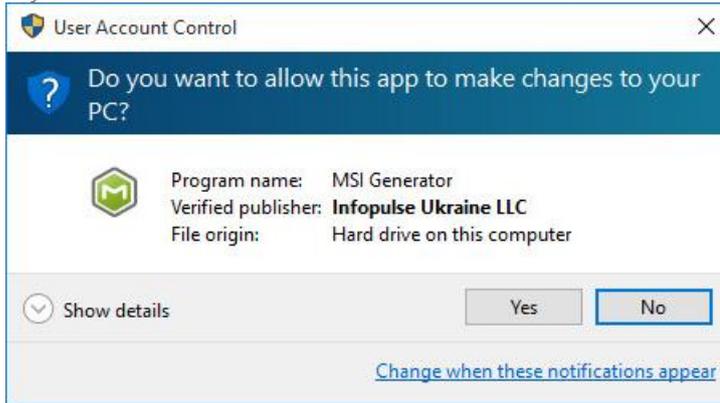
3.1.3 Convert (Repackage) EXE to MSI

Repackage your source installation (EXE, MSI, VBS, CMD, etc.) into MSI package using MSI Generator. Along with files and registry, services and environment variables, you can capture file system and registry permission changes.

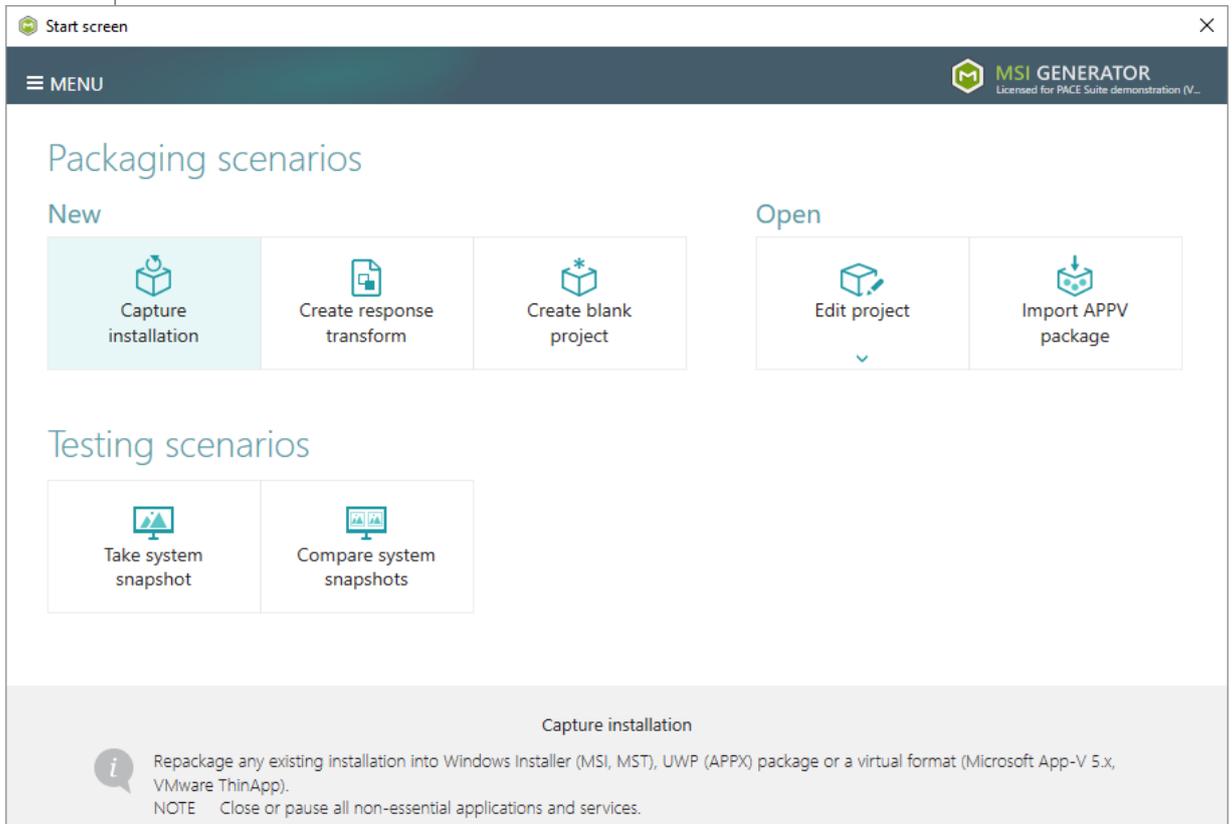
[1]. Launch MSI Generator from the desktop or the start menu shortcut.



[2]. If you have User Account Control enabled, click Yes in the opened window.



[3]. Click Capture installation.



- [4]. Review the issues, which were detected on your system, and try to resolve them by closing the non-essential applications and stopping services. Thereafter, click **Next >**.

Capture installation

Prepare computer Capturing method Settings Installation Completion

Prepare the computer for capturing

It is strongly recommended to perform capturing on a clean virtual machine with all non-essential processes stopped in order to avoid capturing data, which is not related to your source installation. Also, in case of any failure, you will be able to restore the virtual machine to the previous state.

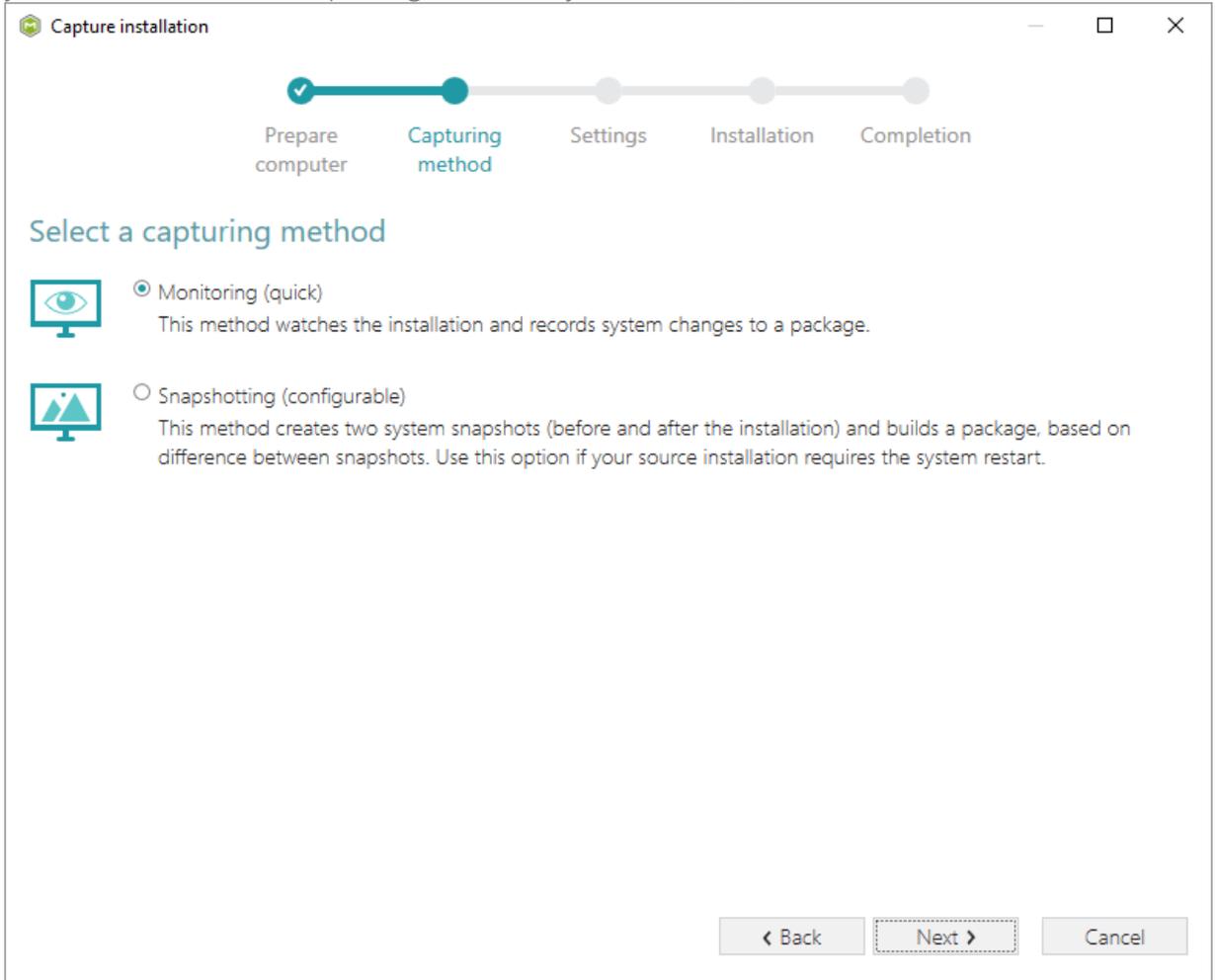
The following issues were detected on your system:

Description	Resolution
⚠ Diagnostic Policy Service is active.	Stop this service before capturing.
⚠ Windows Defender Service is active.	Stop this service before capturing.
⚠ Security Center is active.	Stop this service before capturing.
⚠ Windows Defender is running.	Close your antivirus software before capturing.

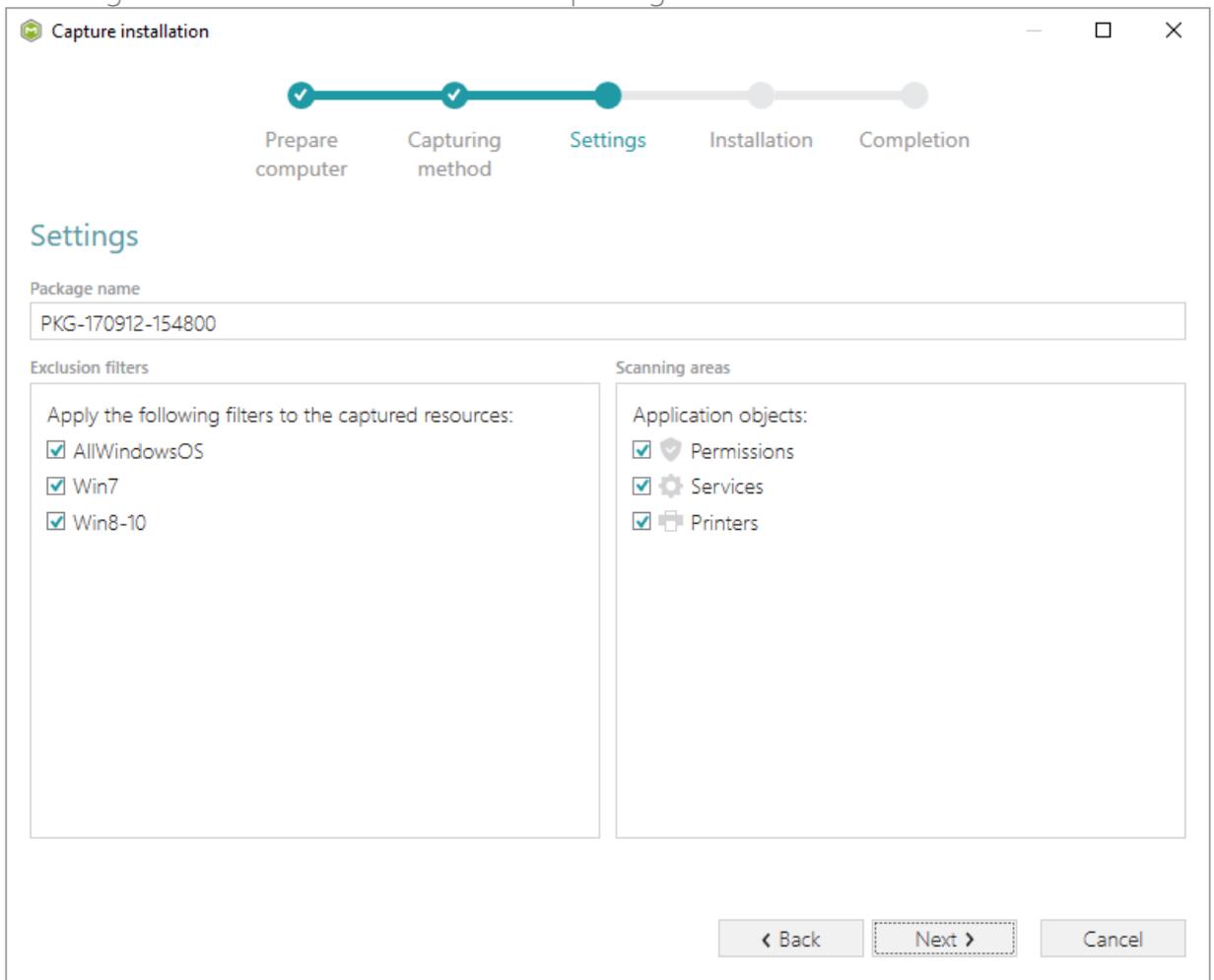
Refresh [Review the capturing recommendations...](#)

< Back Next > Cancel

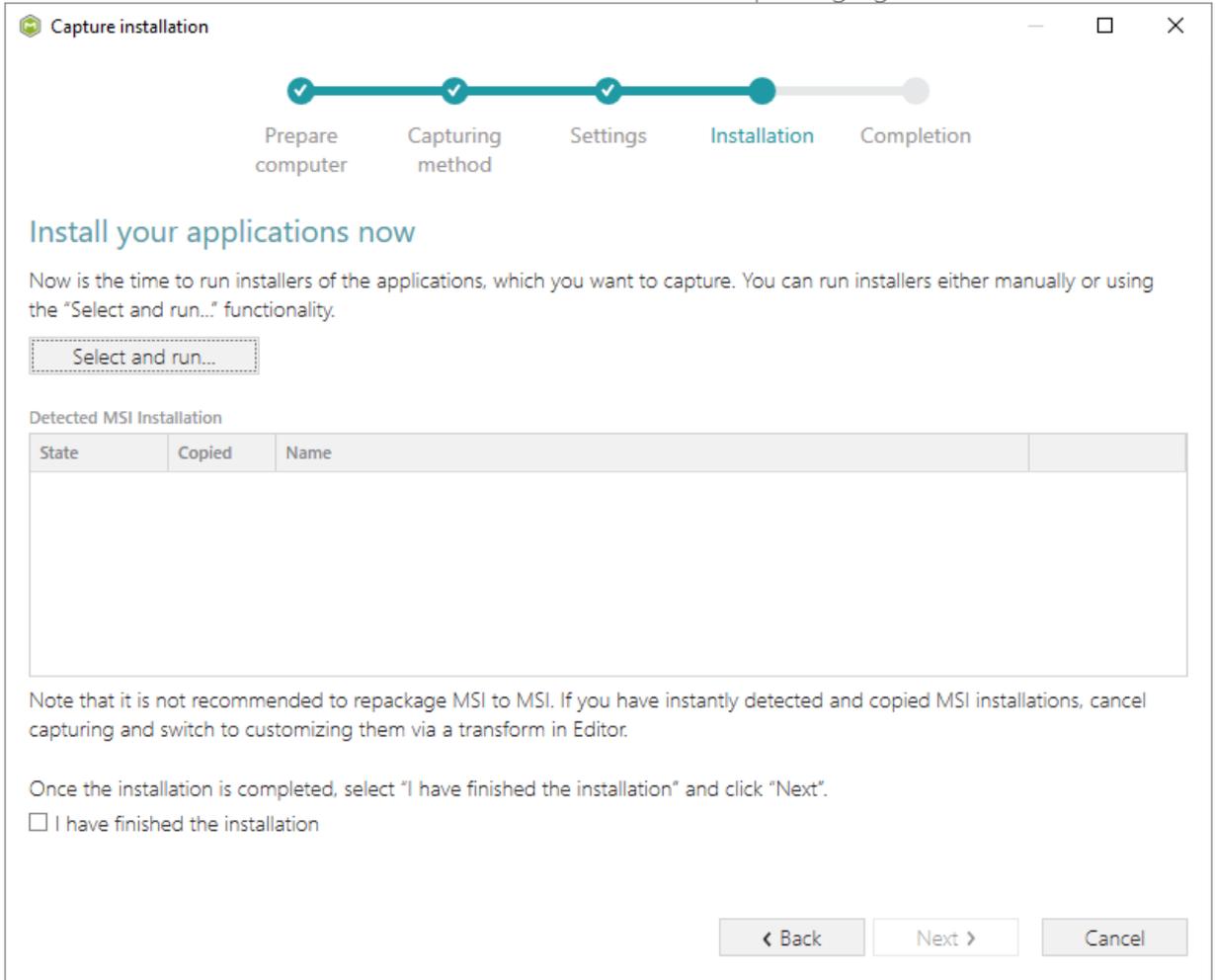
[5]. Select the **Monitoring** method for the quicker capturing (or use the **Snapshotting** one if you need to continue capturing after the system restart) and click **Next >**.



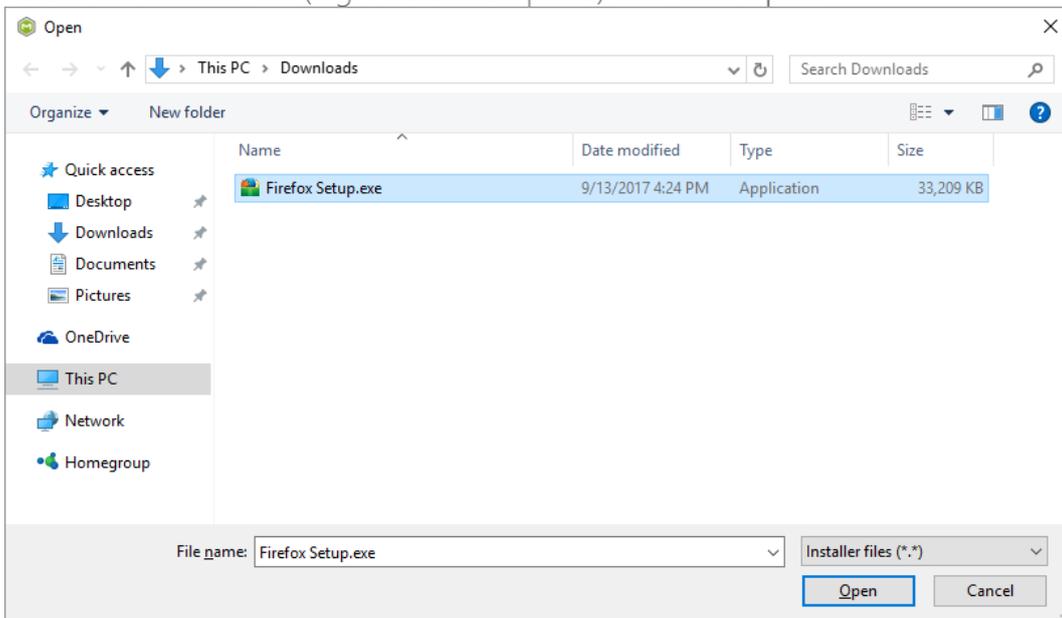
[6]. Here you can review and update package name, disable needless exclusion filters and scanning areas. Click **Next >** to start the capturing.



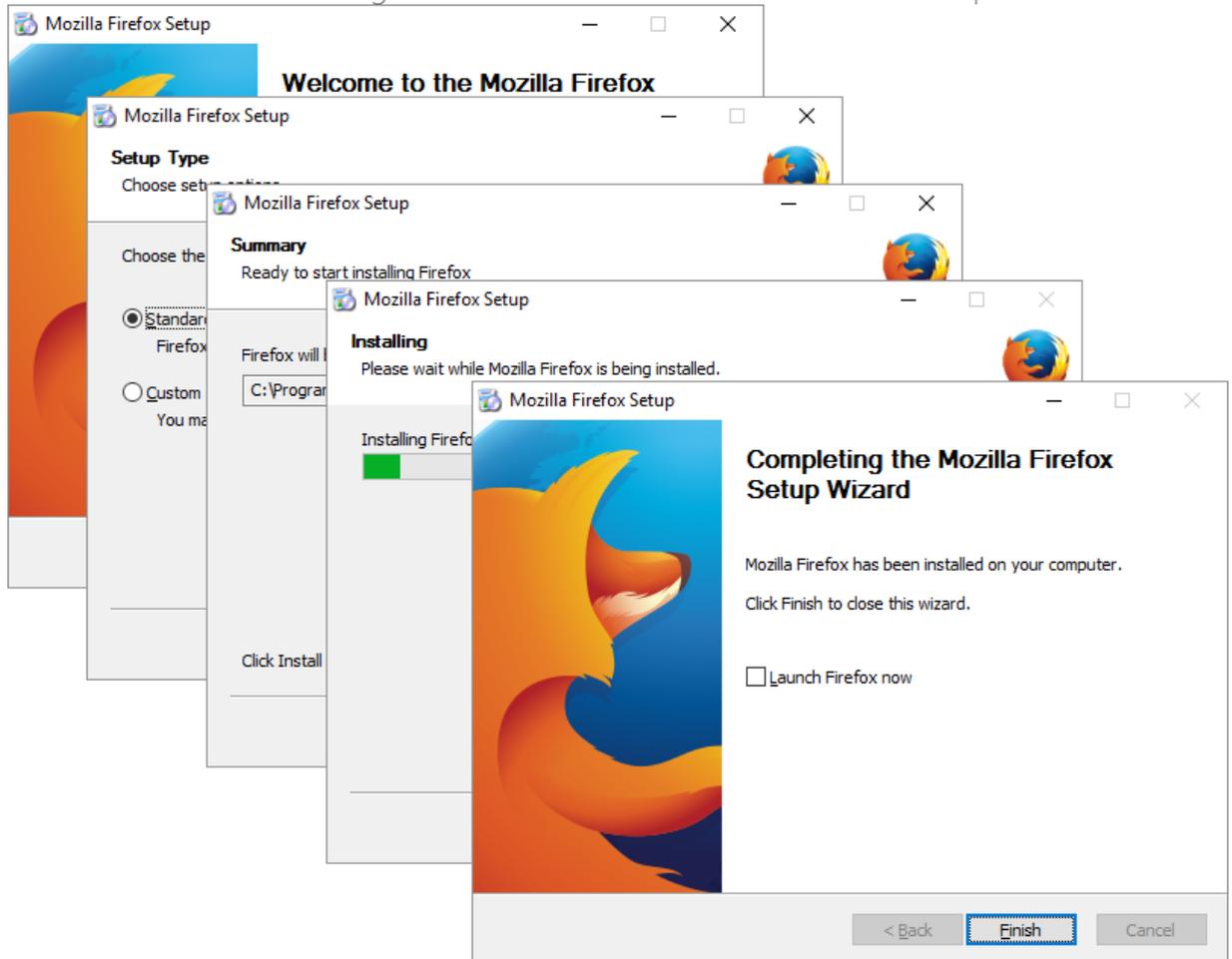
[7]. Click Select and run... to choose source installation for repackaging.



[8]. Select the installer file (e.g. Firefox Setup.exe) and click Open.

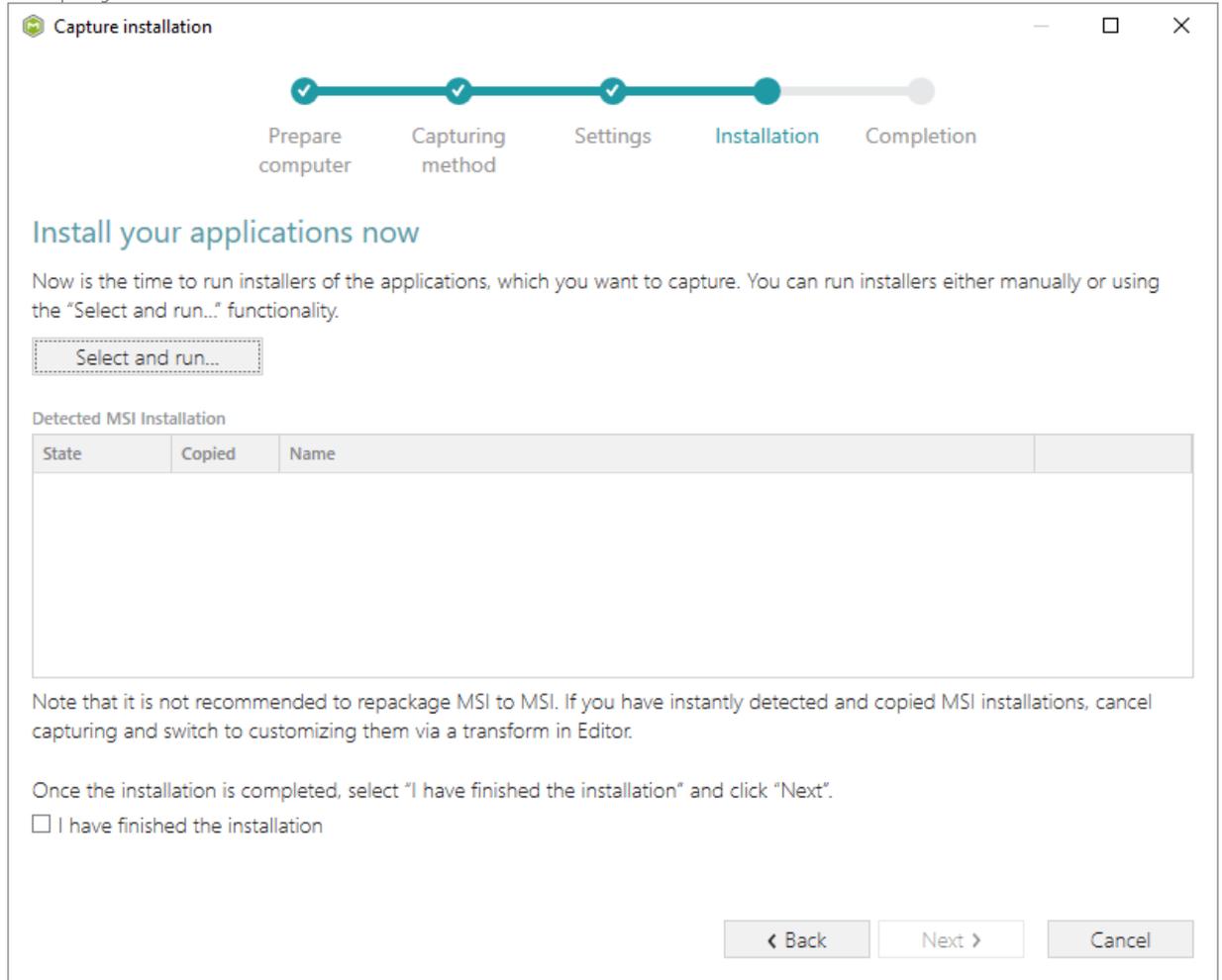


- [9]. Follow the installation dialogs of the launched source installation to complete it.



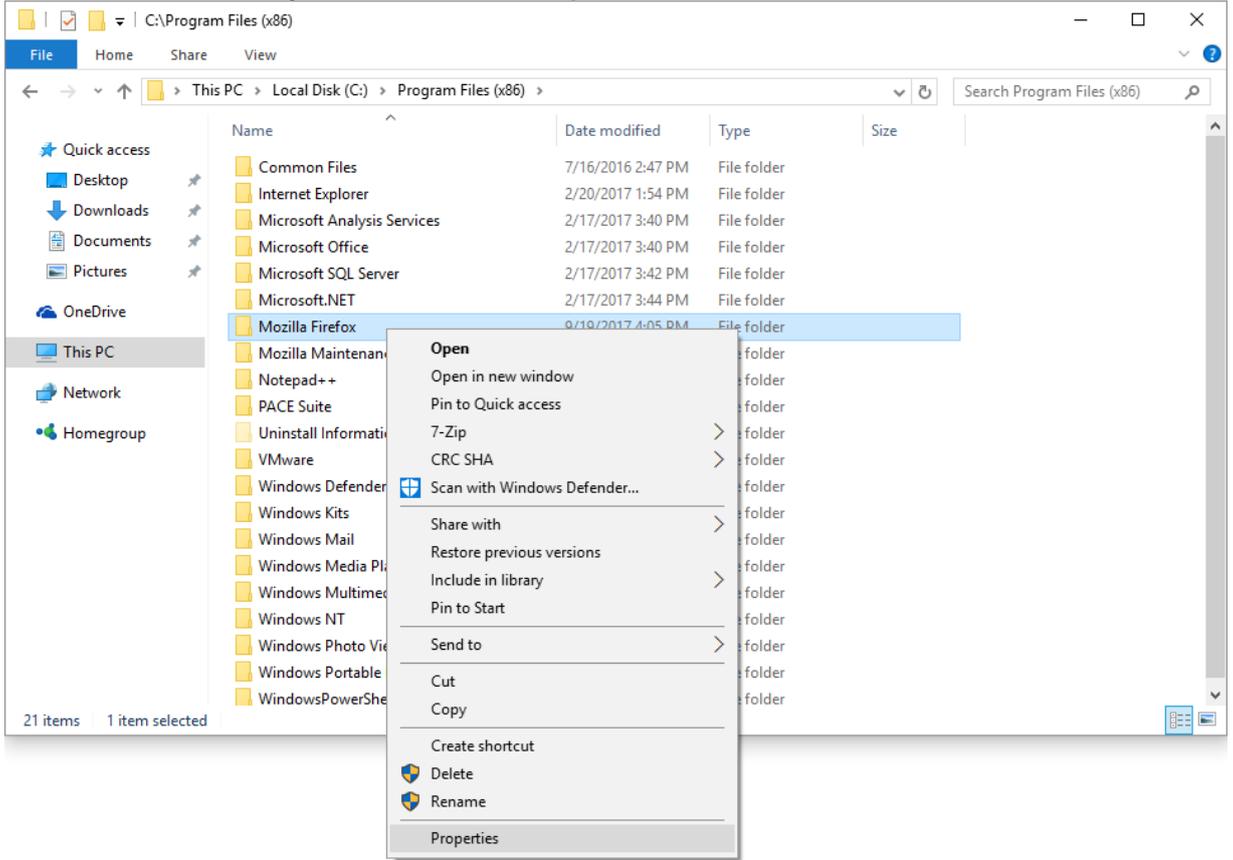
- [10]. Once the source installation is completed, we recommend to check if the **Detected MSI installations** tab does not contain found MSI installers. Even if your sources installation is an EXE file, it could contain embedded MSI installers, launched hidednly. As you may know, repackaging existing vendor MSI installers into MSI is against Microsoft best practices.
- Thus, if the **Detected MSI installations** tab contains a found MSI installer, consider canceling this capturing (repackaging) process and switching to editing it in MSI Editor (Edit MSI/MST is described in section 3.7). Note that the found MSI installers are copied to

the project folder.

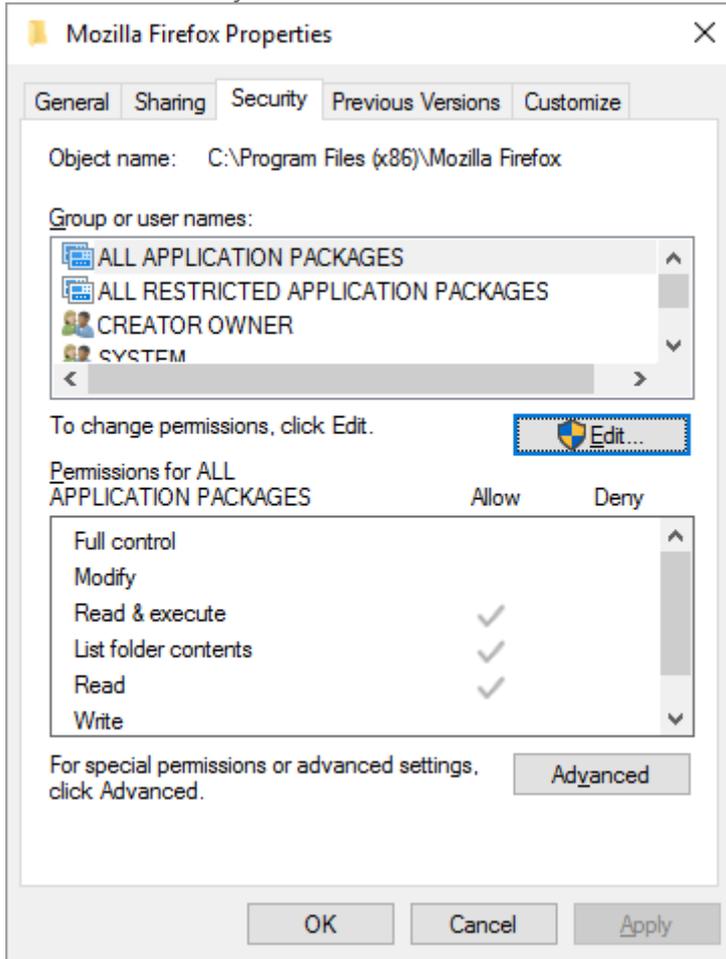


- [11]. Now you can make any changes to the file system and registry, which you want to capture and include to the package. For instance, you can create new or copy-paste existing files, import REG file to the system registry, changes permission settings, or launch the installed application in order to capture the necessary application configurations, like disabling updates and so on.
- [12]. If you additionally need to change the default permission settings on a folder or a file and include them to the package, select **Properties** from the Windows Explorer context menu

of a folder, on which you want to set new permissions.

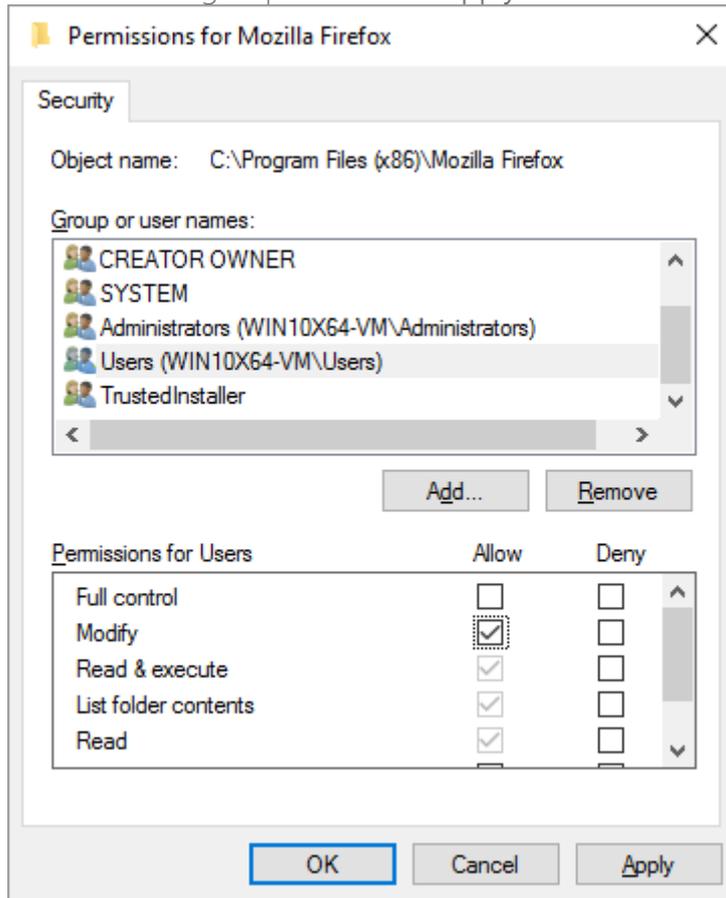


[13]. Go to the Security tab and click Edit.

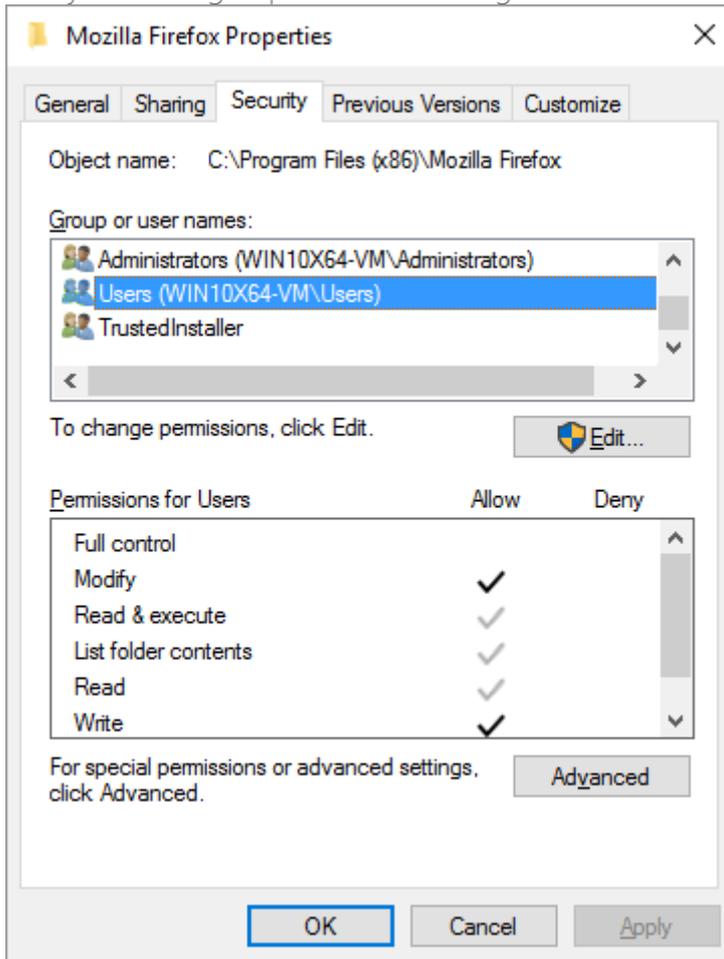


[14]. Select a group or a user, for which you want to change the permissions and then select the necessary access rights. For example, let's set the 'Write' and the 'Modify' access rights

for the 'Users' group. Then click Apply and OK.



[15]. Verify the changed permission settings and click OK to close the window.



[16]. Finally, to complete the capturing, select I have finished the installation and click Next >.

Capture installation

Prepare computer Capturing method Settings **Installation** Completion

Install your applications now

Now is the time to run installers of the applications, which you want to capture. You can run installers either manually or using the "Select and run..." functionality.

Select and run...

Detected MSI Installation

State	Copied	Name
-------	--------	------

Note that it is not recommended to repackage MSI to MSI. If you have instantly detected and copied MSI installations, cancel capturing and switch to customizing them via a transform in Editor.

Once the installation is completed, select "I have finished the installation" and click "Next".

I have finished the installation

< Back **Next >** Cancel

[17]. Wait a little, while the capturing process is finishing, filtering captured data and creating the project.

Capture installation

Prepare computer Capturing method Settings **Installation** Completion

Install your applications now

Now is the time to run installers of the applications, which you want to capture. You can run installers either manually or using the "Select and run..." functionality.

Select and run...

Detected MSI Installation

State	Copied	Name
-------	--------	------

Note that it is not recommended to repackage MSI to MSI. If you have instantly detected and copied MSI installations, cancel capturing and switch to customizing them via a transform in Editor.

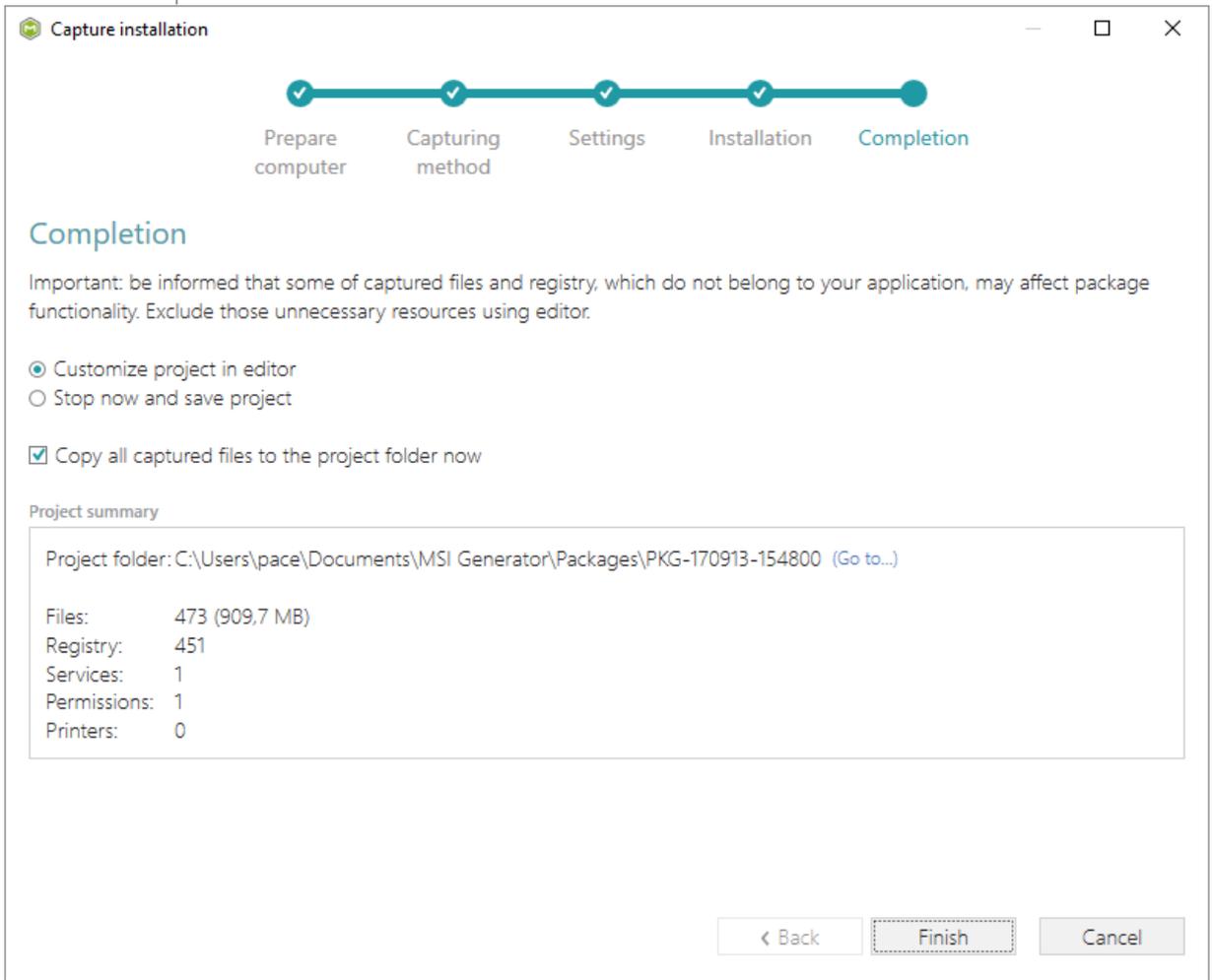
Once the installation is completed, select "I have finished the installation" and click "Next".

I have finished the installation

00:08 Scanning Services

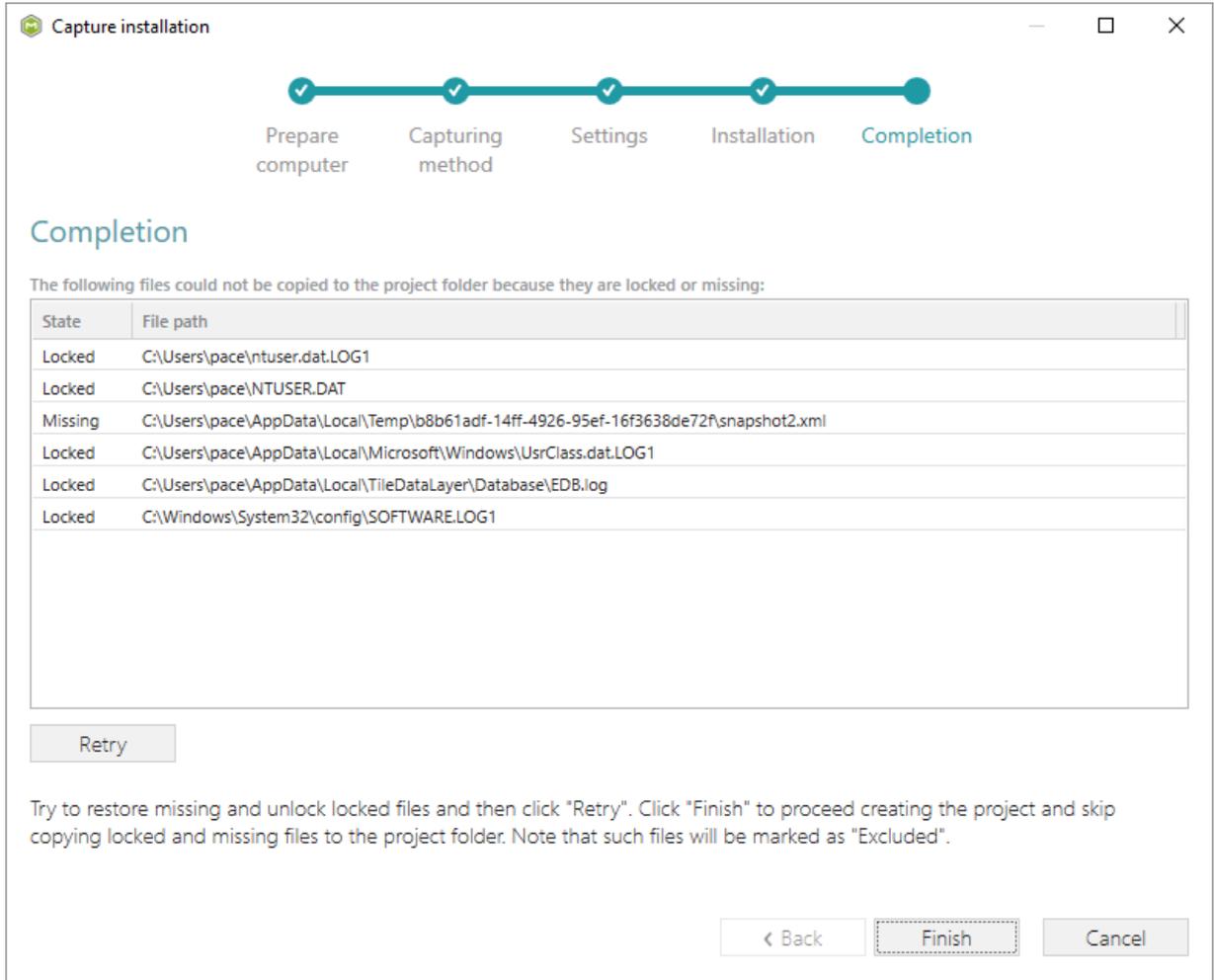
< Back Next > Cancel

[18]. Leave selected the Customize project in editor and Copy all captured files to the project folder now options are selected and click Finish.



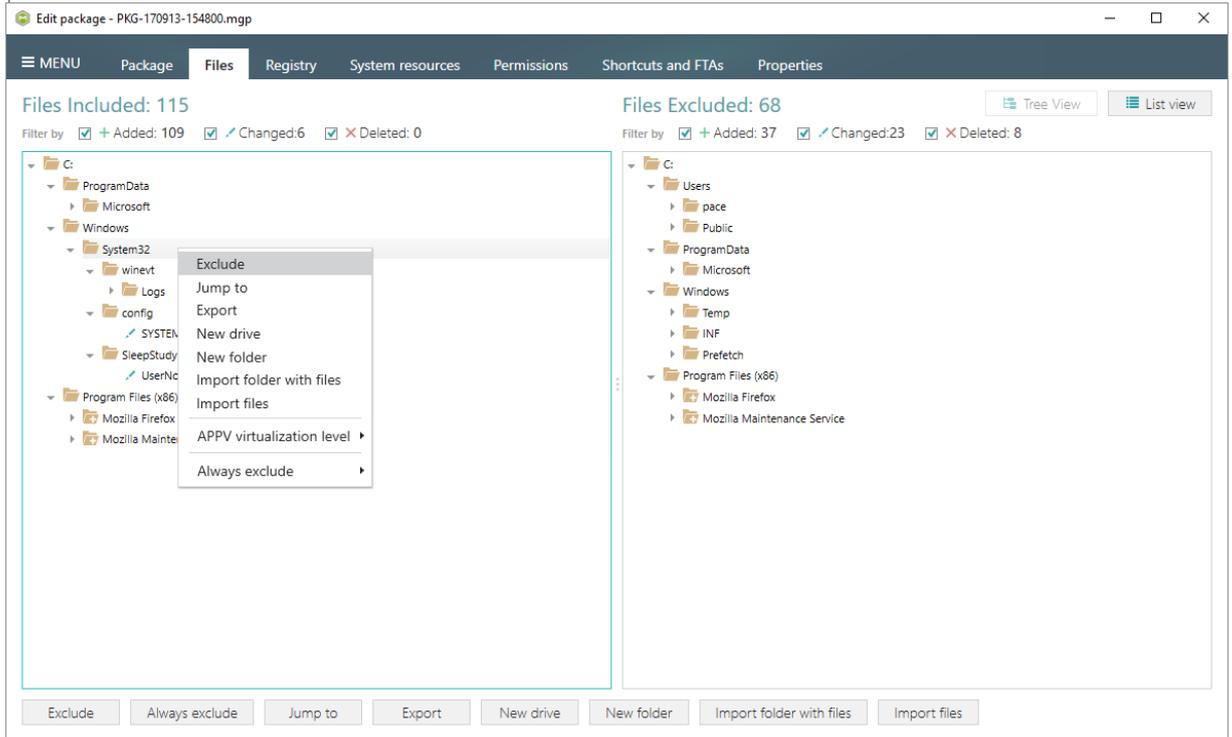
[19]. The following dialog displays captured files, which could not be copied to the project folder because they do not exist anymore or locked by the system or by an application. Try to resolve these issues and then click Retry. Click Finish to skip copying the missing

and locked files and mark them as Excluded resources.

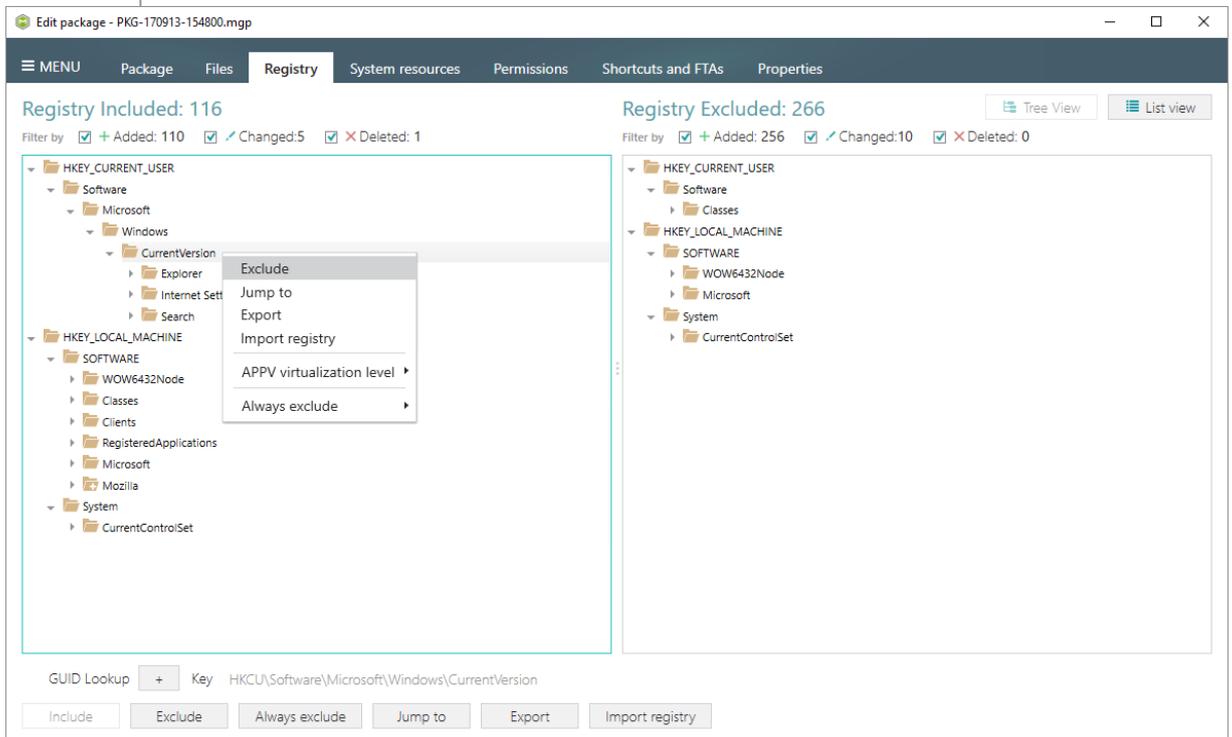


- [20]. Once the project is opened in the project editor, review the captured resources at the Files, Registry, System resources, Permissions, and Shortcuts and FTAs tabs and exclude unnecessary ones from the project. Unnecessary resources are files, registry entries, which are usually created or modified in the result of operating system work, and such resources could not be a part of your captured application. Unfortunately, there is no universal rule to discover which of captured files or registry entries should be excluded, so exclude only those ones, which almost 100% do not refer to your captured application (e.g. NOD32 antivirus files couldn't be a part of Firefox application).
- [21]. In order to review and exclude unnecessary files or folders, go to the Files tab, and select Exclude from the context menu of an item, which is located in the left 'Files Included'

pane.

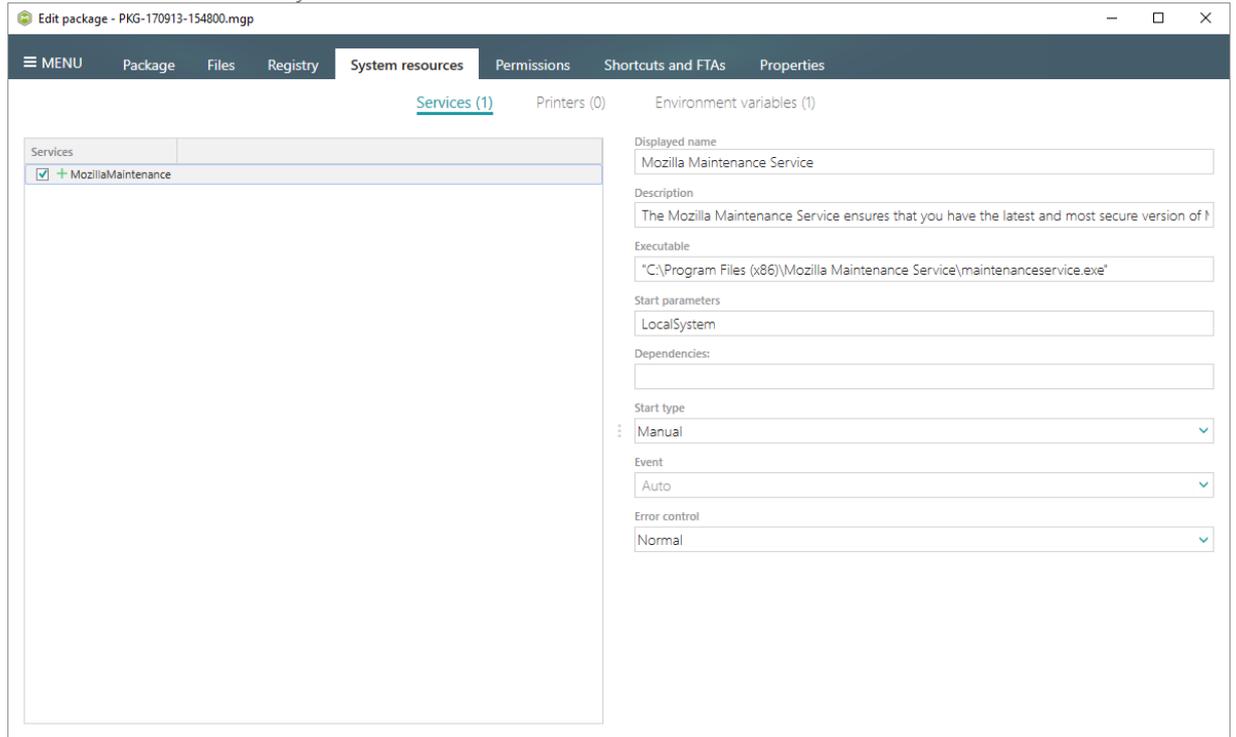


[22]. In order to review and exclude unnecessary registry keys or values, go to the Registry tab, and select Exclude from the context menu of an item, which is located in the left 'Registry Included' pane.

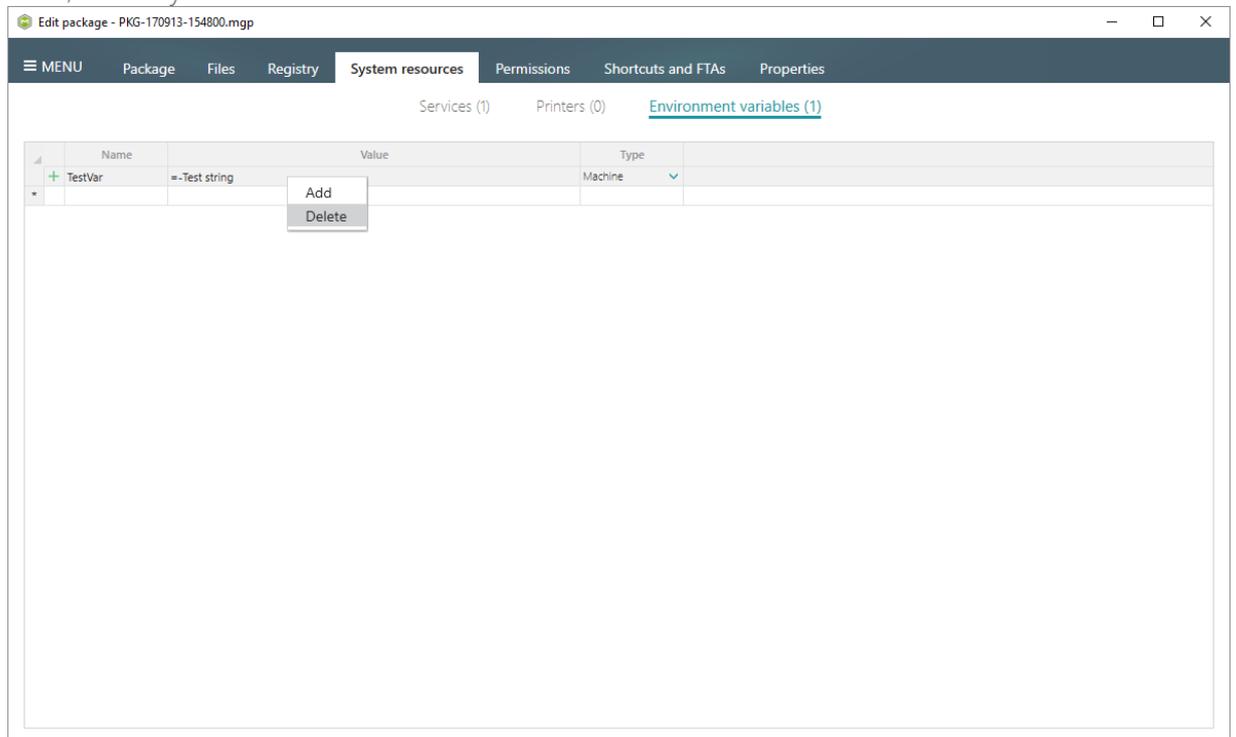


[23]. In order to review and exclude unnecessary services, go to the System resources -> Services tab, and uncheck the checkbox, located before the service name in the list, for

those services, which you want to exclude.

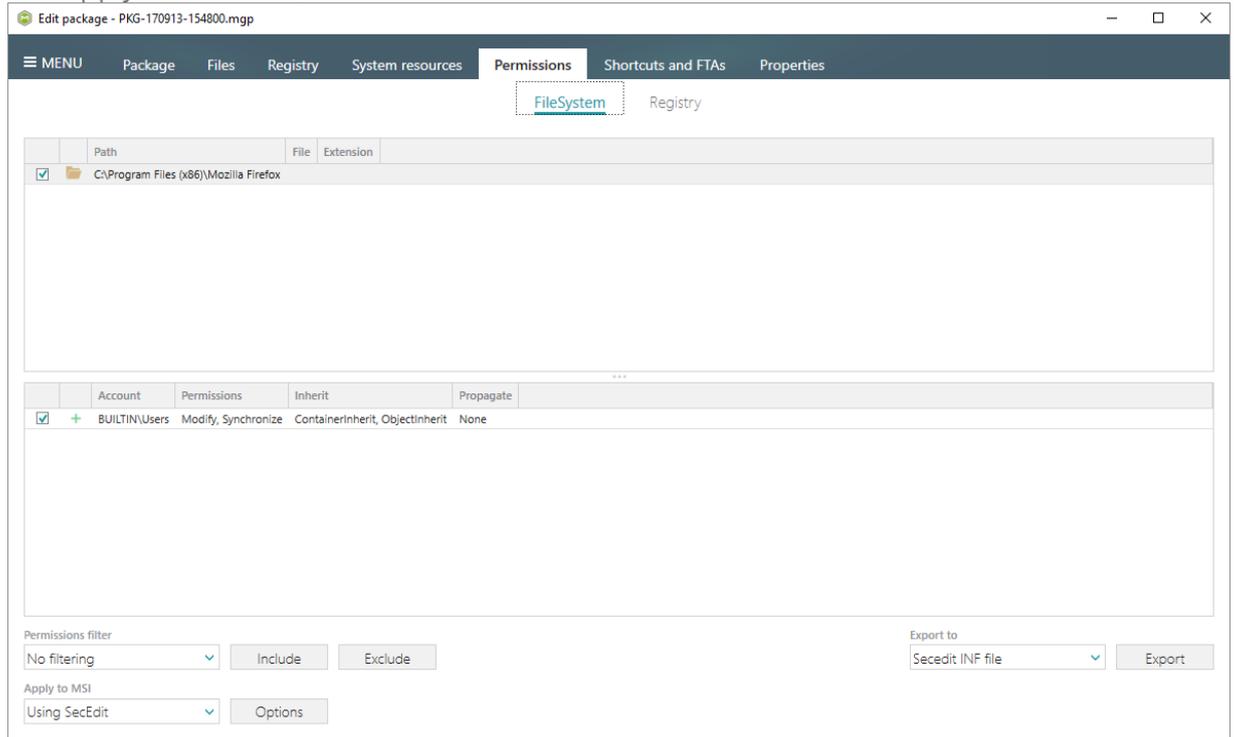


[24]. In order to review and remove unnecessary Environment variables, go to the System resources -> Environment variables tab, and select Delete from the context menu of an item, which you want to remove.

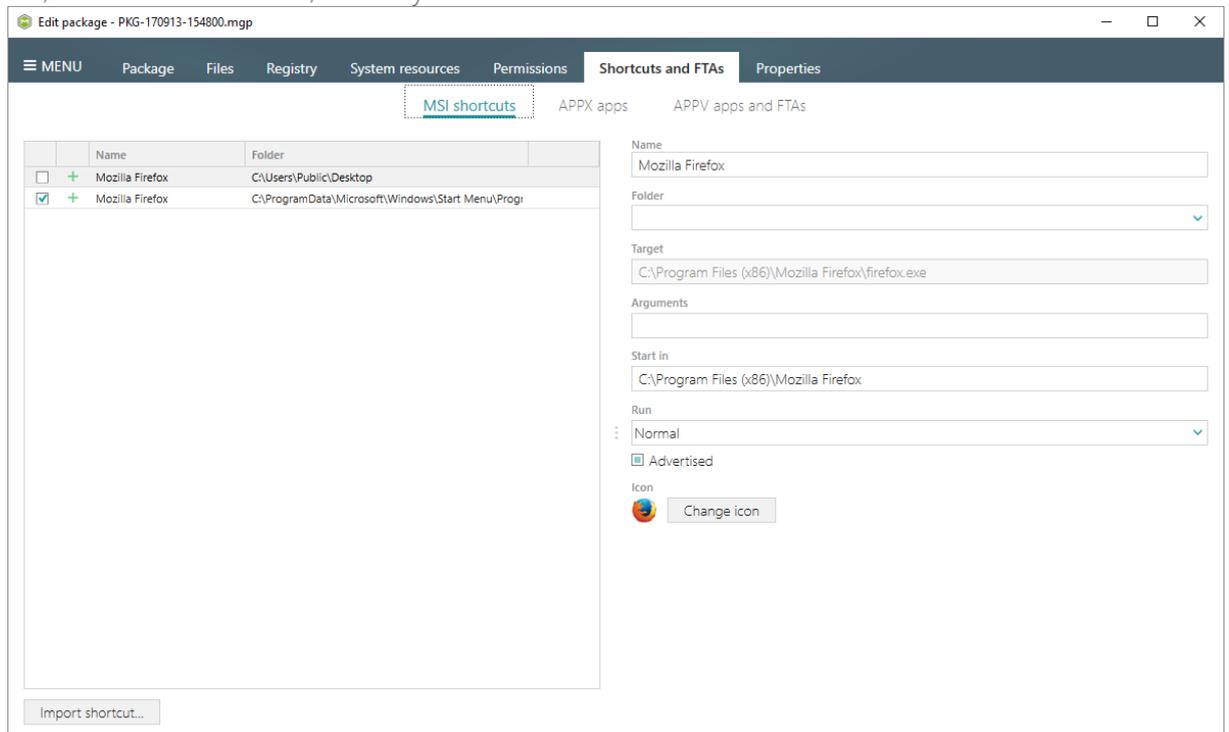


[25]. On the Permissions tab you will find captured permissions for the file system and registry. For excluding unnecessary permission changes, either uncheck the checkbox, located before the path, for which permission changes were detected, or select Do not apply in

the Apply to MSI field, located in the bottom of the window.

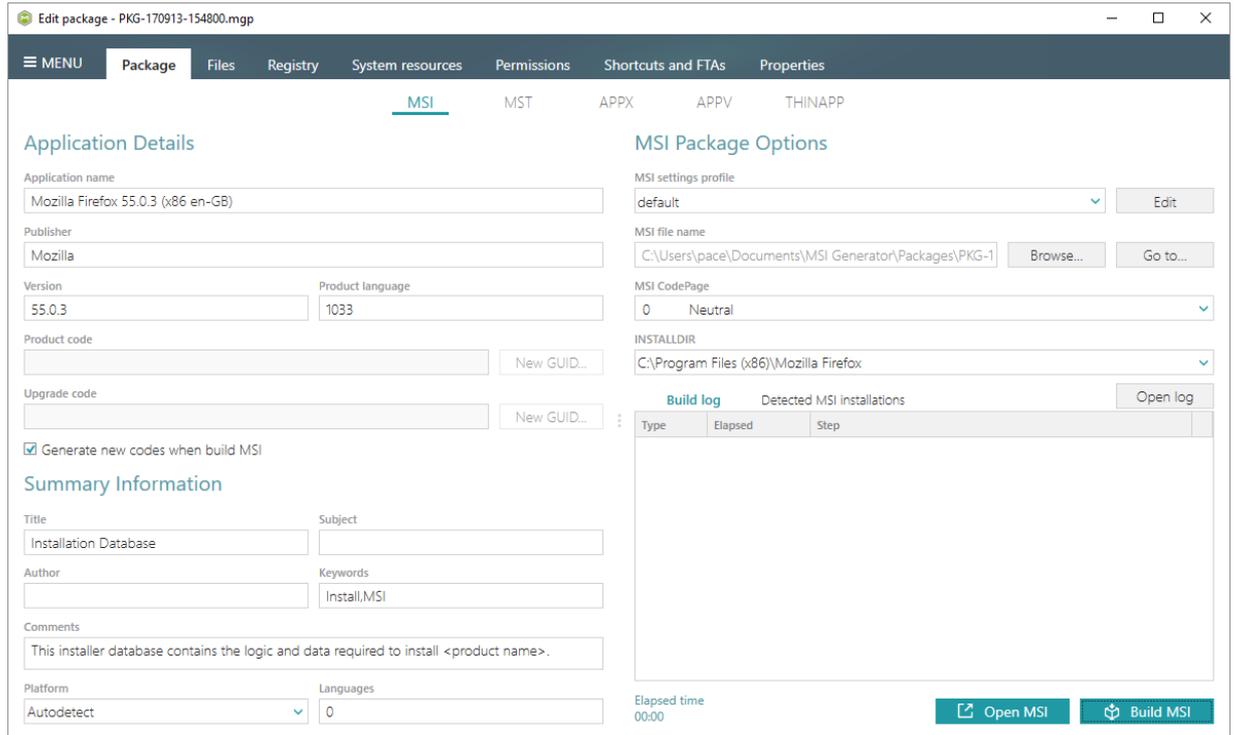


[26]. In order to review and exclude unnecessary shortcuts, go to the Shortcuts and FTAs -> MSI shortcuts tab, and uncheck the checkbox, located before the shortcut name in the list, for those shortcuts, which you want to exclude.

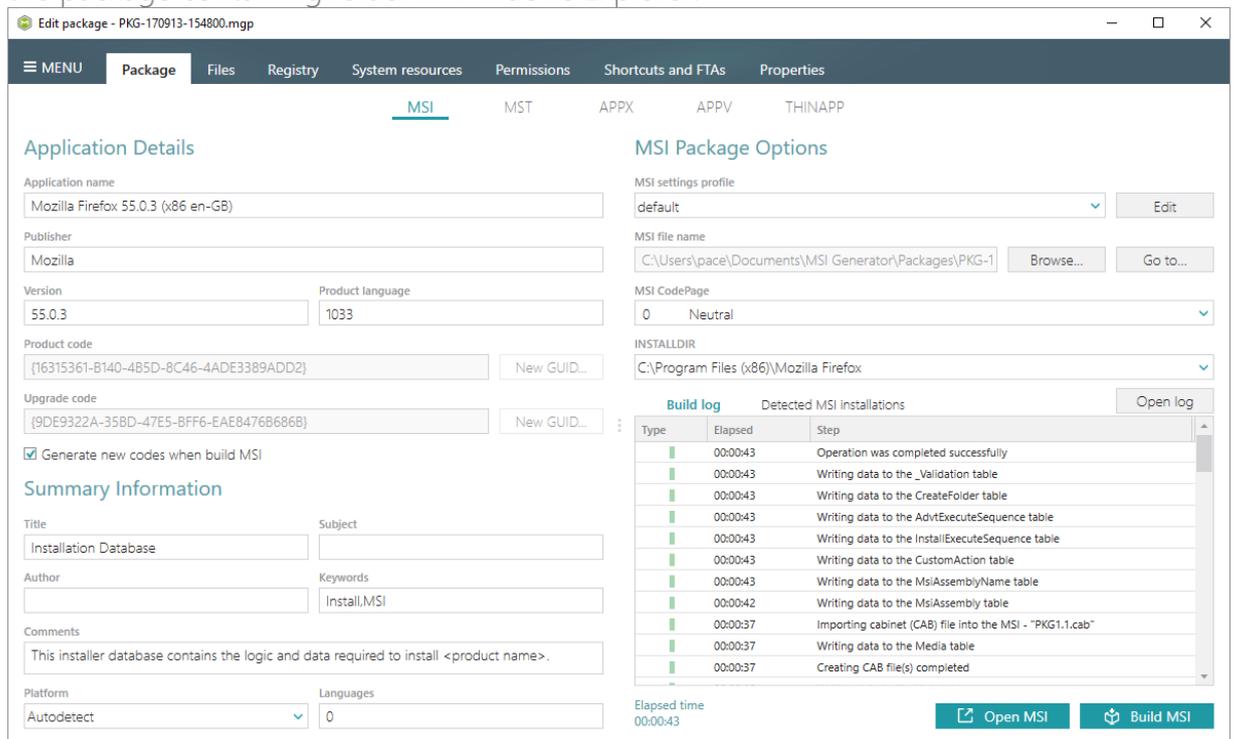


[27]. Finally, to build an MSI package from the project, navigate to the Package -> MSI tab, update Application details such as name, publisher, version, language, select INSTALLDIR

and click Build MSI.



[28]. Once the package is built, click Go to..., located next to the MSI file name field, to open the package containing folder in Windows Explorer.

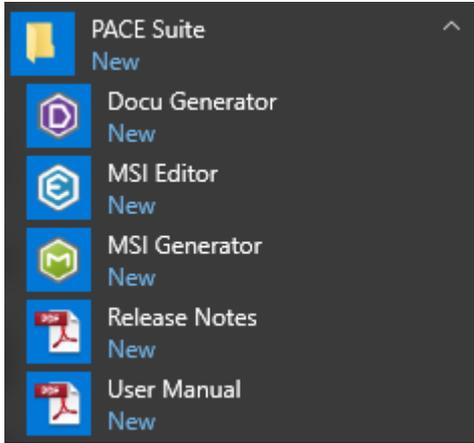




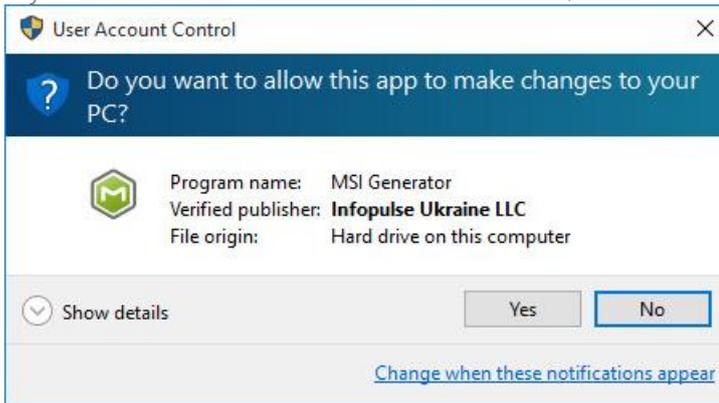
3.1.4 Capture System Changes to MSI

Capture system changes, which were made to the file system and registry, by script, by application or manually and save them into MSI package using MSI Generator. Along with files and registry, services and environment variables you, can capture file system and registry permission changes.

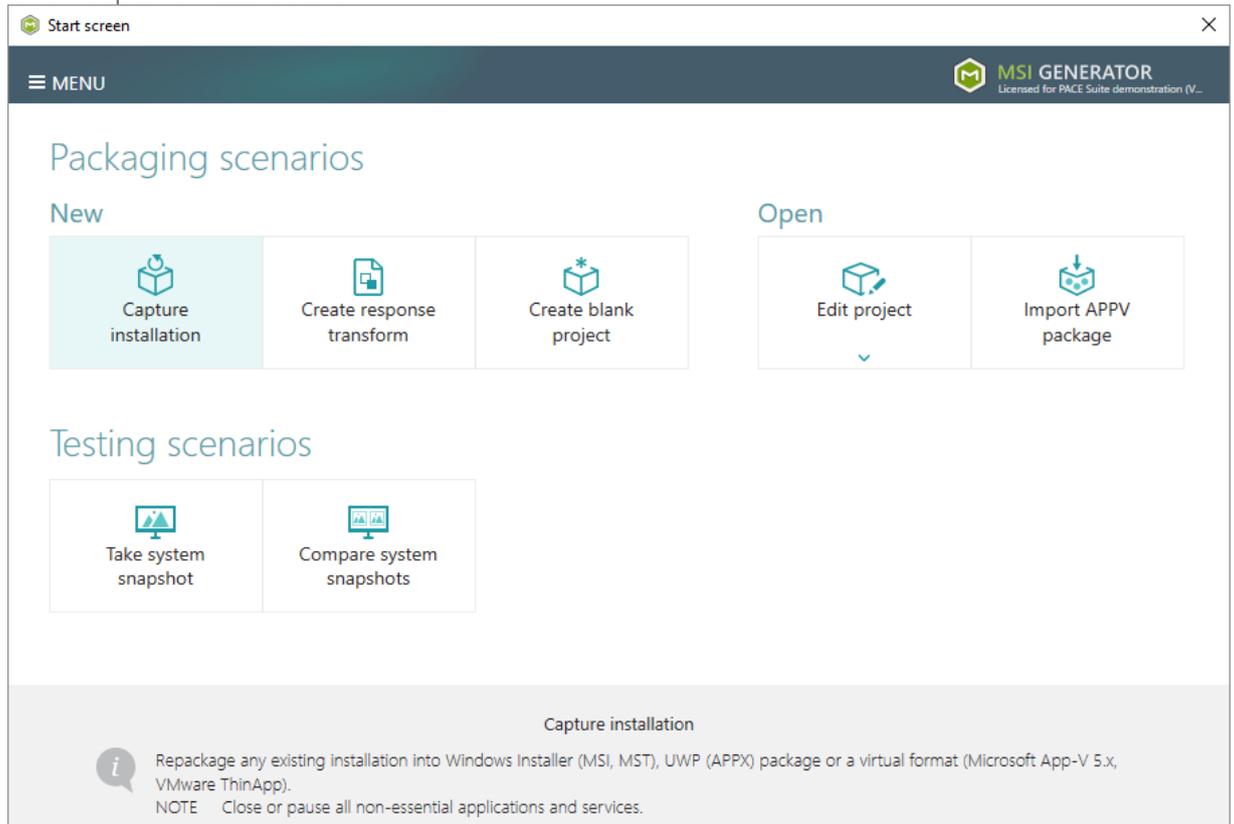
- [1]. Launch MSI Generator from the desktop or the start menu shortcut.



- [2]. If you have User Account Control enabled, click Yes in the opened window.



[3]. Click Capture installation.



- [4]. Review the issues, which were detected on your system, and try to resolve them by closing the non-essential applications and stopping services. Thereafter, click **Next >**.

Capture installation

Prepare computer Capturing method Settings Installation Completion

Prepare the computer for capturing

It is strongly recommended to perform capturing on a clean virtual machine with all non-essential processes stopped in order to avoid capturing data, which is not related to your source installation. Also, in case of any failure, you will be able to restore the virtual machine to the previous state.

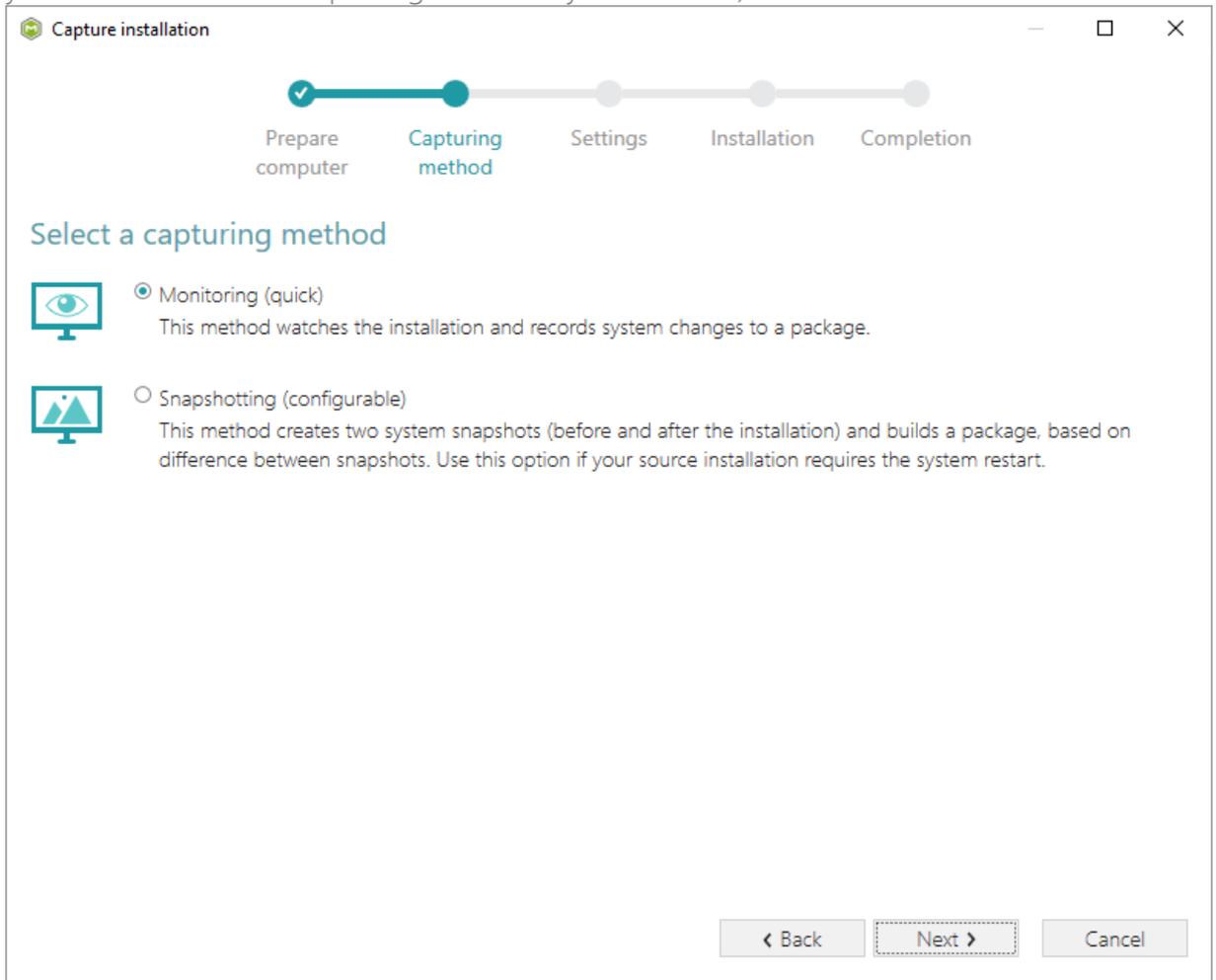
The following issues were detected on your system:

Description	Resolution
Diagnostic Policy Service is active.	Stop this service before capturing.
Windows Defender Service is active.	Stop this service before capturing.
Security Center is active.	Stop this service before capturing.
Windows Defender is running.	Close your antivirus software before capturing.

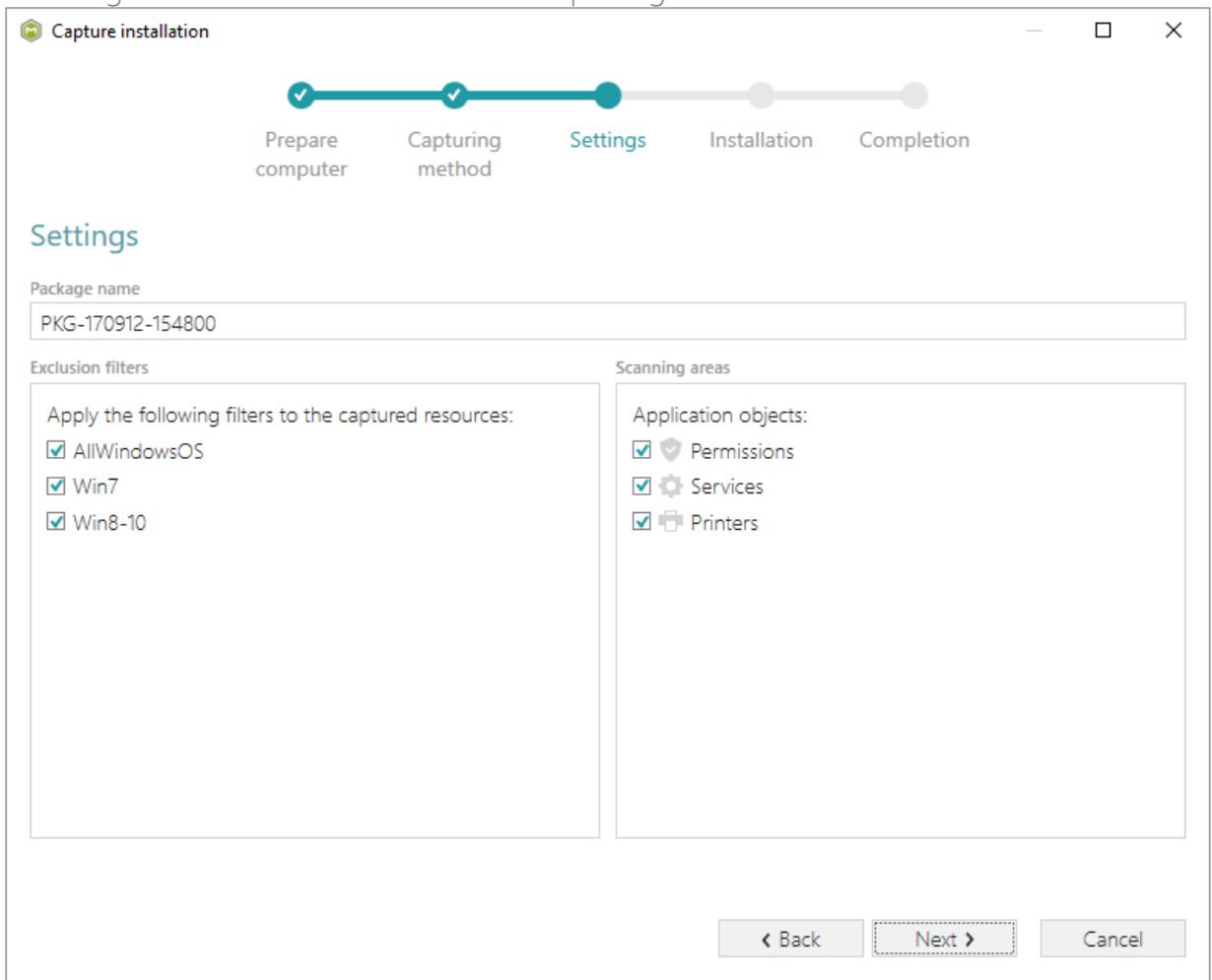
Refresh [Review the capturing recommendations...](#)

< Back Next > Cancel

[5]. Select the **Monitoring** method for the quicker capturing (or use the **Snapshotting** one if you need to continue capturing after the system restart) and click **Next >**.

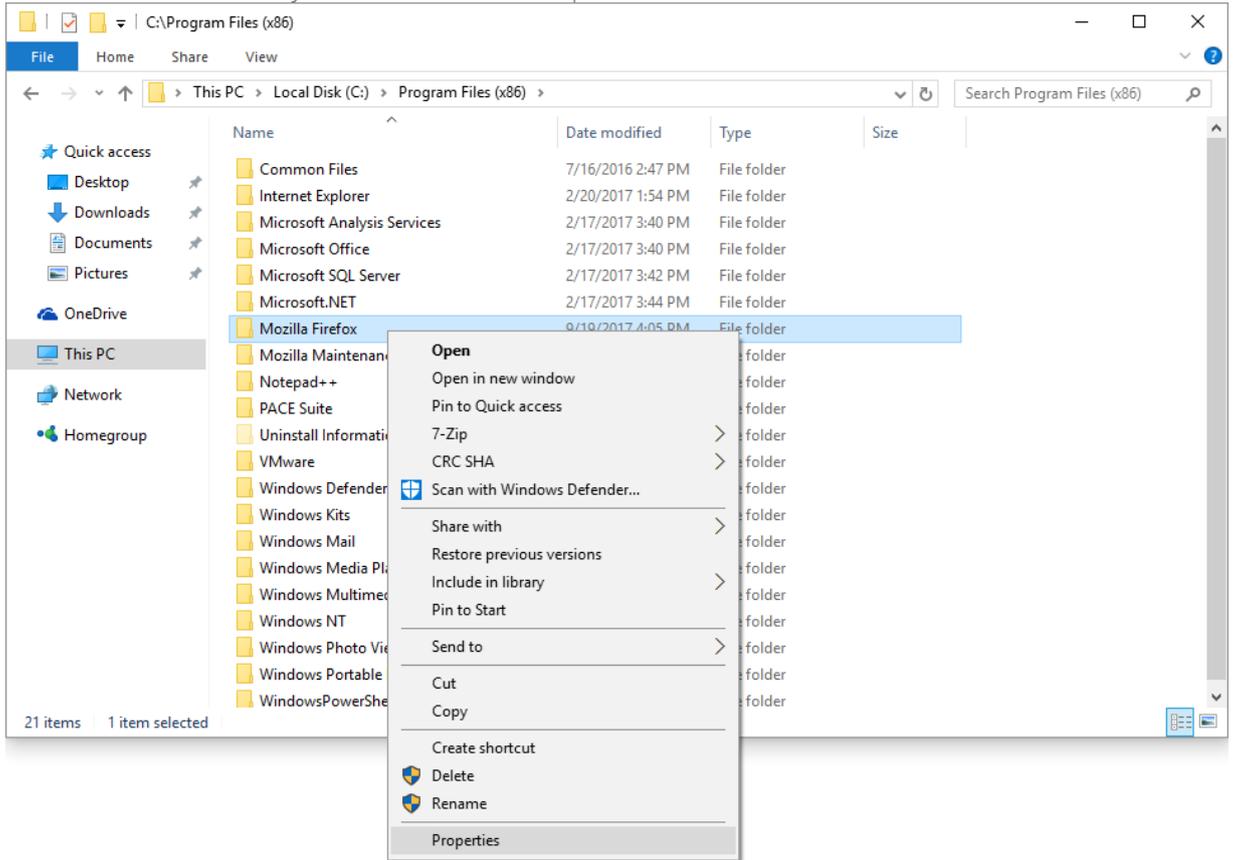


- [6]. Here you can review and update package name, disable needless exclusion filters and scanning areas. Click **Next >** to start the capturing.

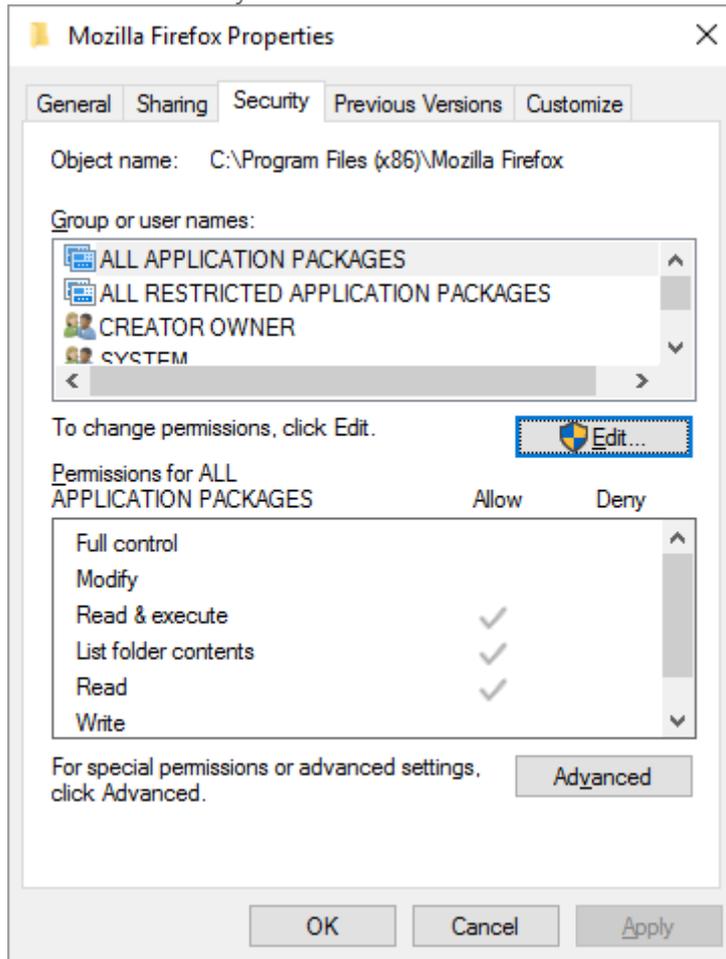


- [7]. Now you can make any changes to the file system and registry, which you want to capture and include to the package. For instance, you can create new or copy-paste existing files, import REG file to the system registry, changes permission settings, or launch the installed application in order to capture the necessary application configurations, like disabling updates and so on.
- [8]. If you additionally need to change the default permission settings on a folder or a file and include them to the package, select **Properties** from the Windows Explorer context menu

of a folder, on which you want to set new permissions.

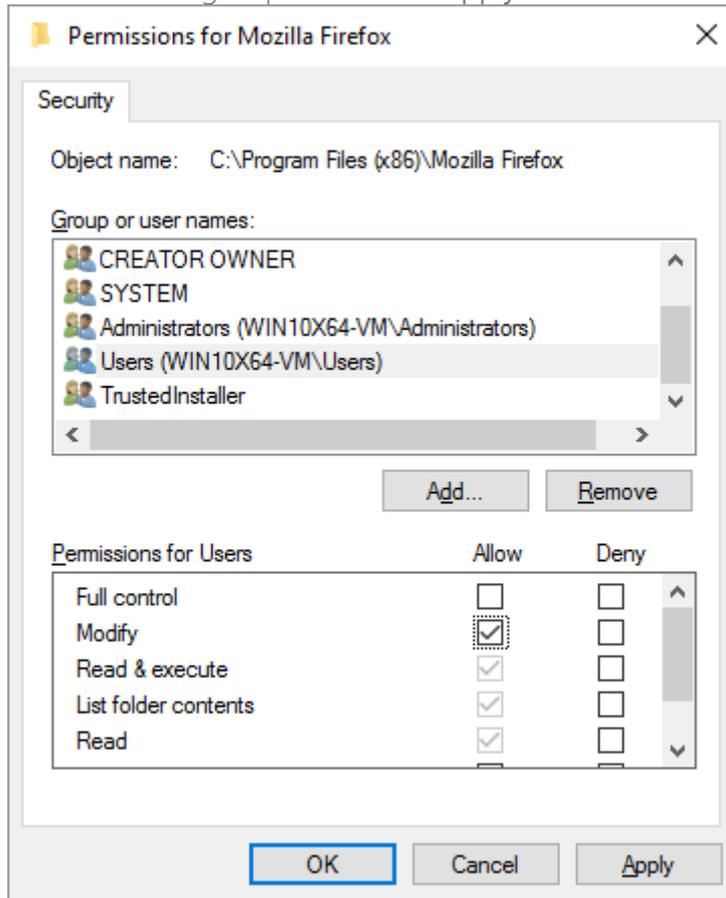


[9]. Go to the Security tab and click Edit.

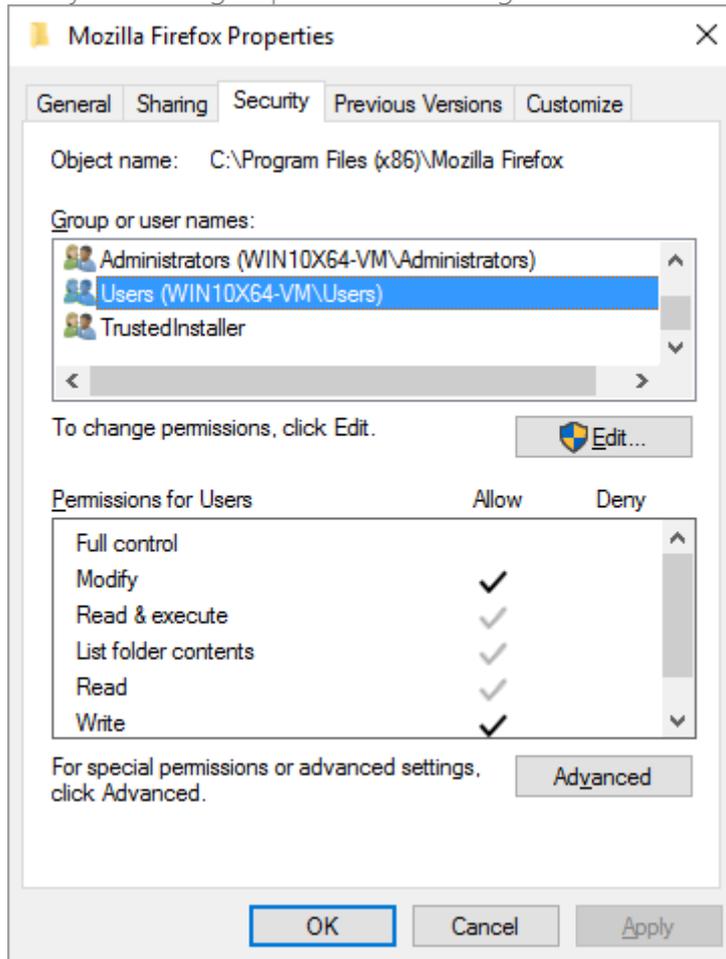


[10]. Select a group or a user, for which you want to change the permissions and then select the necessary access rights. For example, let's set the 'Write' and the 'Modify' access rights

for the 'Users' group. Then click Apply and OK.



[11]. Verify the changed permission settings and click OK to close the window.



[12]. Finally, to complete the capturing, select I have finished the installation and click Next >.

Capture installation

Prepare computer Capturing method Settings **Installation** Completion

Install your applications now

Now is the time to run installers of the applications, which you want to capture. You can run installers either manually or using the "Select and run..." functionality.

Select and run...

Detected MSI Installation

State	Copied	Name
-------	--------	------

Note that it is not recommended to repackage MSI to MSI. If you have instantly detected and copied MSI installations, cancel capturing and switch to customizing them via a transform in Editor.

Once the installation is completed, select "I have finished the installation" and click "Next".

I have finished the installation

< Back Next > Cancel

[13]. Wait a little, while the capturing process is finishing, filtering captured data and creating the project.

Capture installation

Prepare computer Capturing method Settings **Installation** Completion

Install your applications now

Now is the time to run installers of the applications, which you want to capture. You can run installers either manually or using the "Select and run..." functionality.

Select and run...

Detected MSI Installation

State	Copied	Name
-------	--------	------

Note that it is not recommended to repackage MSI to MSI. If you have instantly detected and copied MSI installations, cancel capturing and switch to customizing them via a transform in Editor.

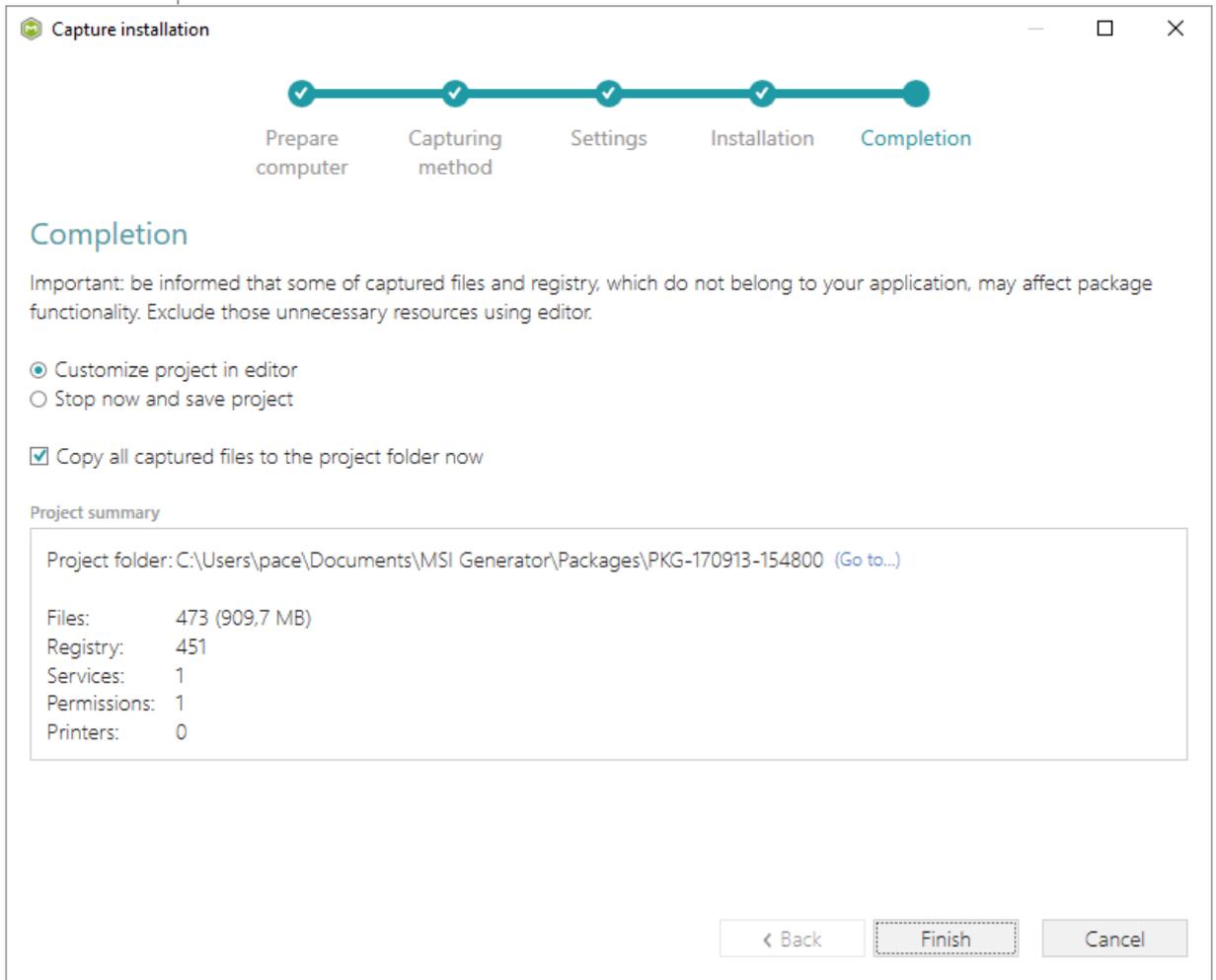
Once the installation is completed, select "I have finished the installation" and click "Next".

I have finished the installation

00:08 Scanning Services

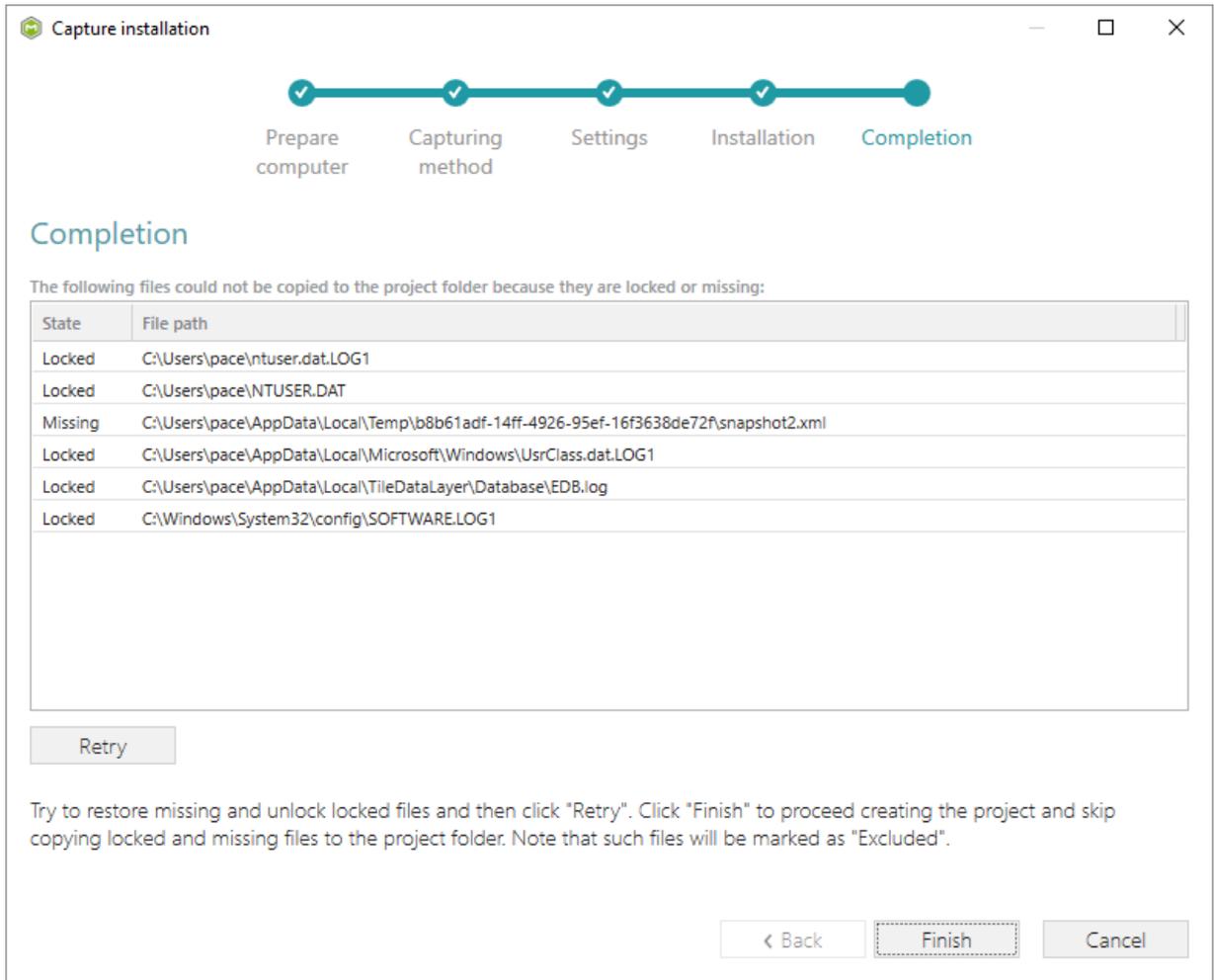
< Back Next > Cancel

[14]. Leave selected the Customize project in editor and Copy all captured files to the project folder now options are selected and click Finish.



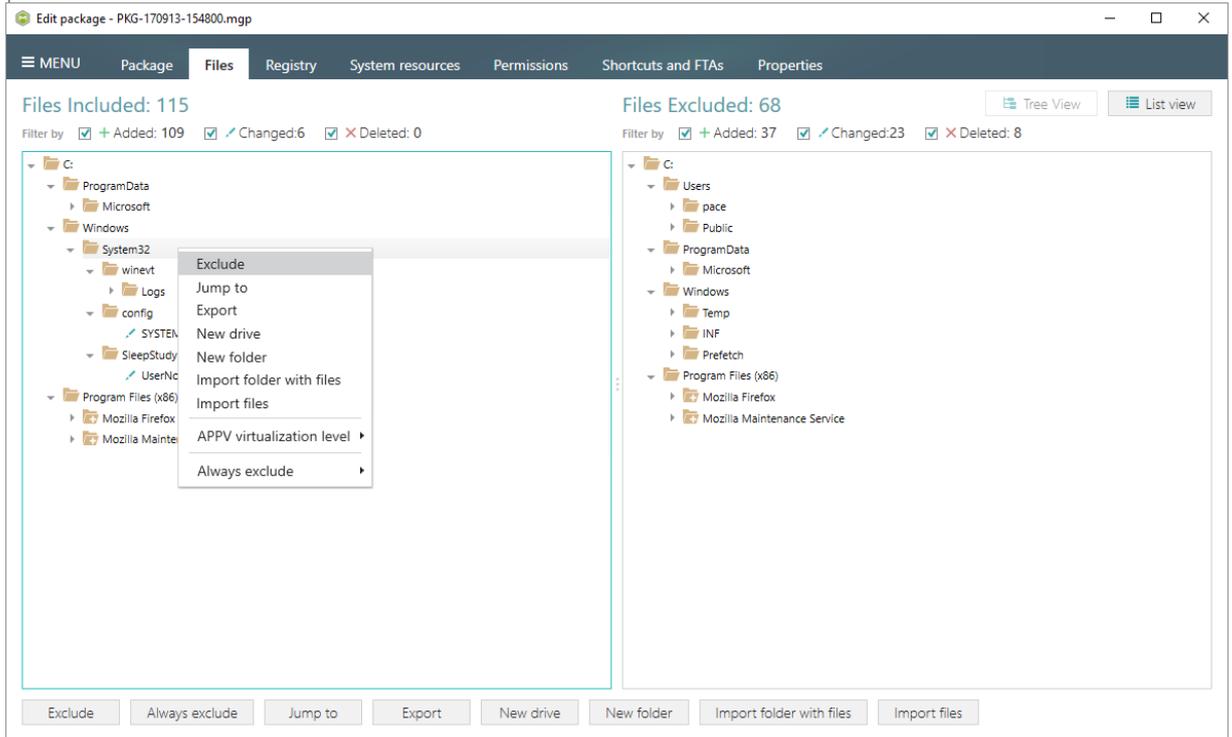
[15]. The following dialog displays captured files, which could not be copied to the project folder because they do not exist anymore or locked by the system or by an application. Try to resolve these issues and then click Retry. Click Finish to skip copying the missing

and locked files and mark them as Excluded resources.

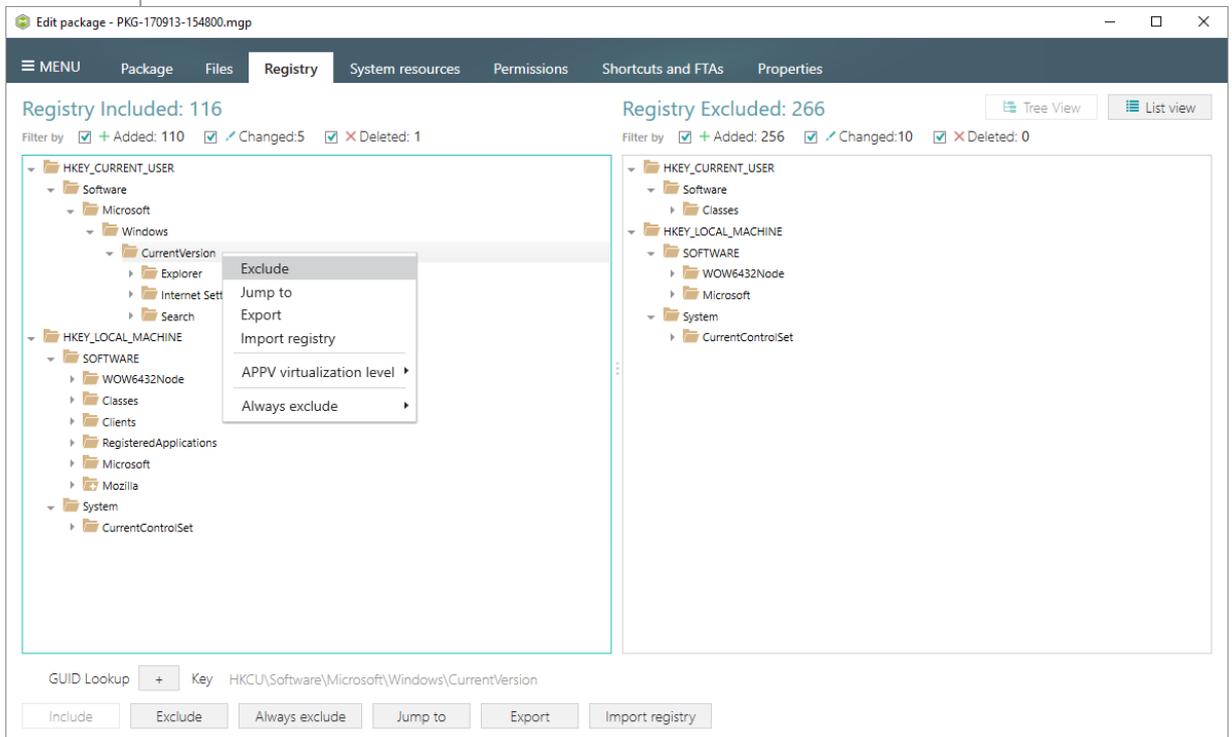


- [16]. Once the project is opened in the project editor, review the captured resources at the Files, Registry, System resources, Permissions, and Shortcuts and FTAs tabs and exclude unnecessary ones from the project. Unnecessary resources are files, registry entries, which are usually created or modified in the result of operating system work, and such resources could not be a part of your captured application. Unfortunately, there is no universal rule to discover which of captured files or registry entries should be excluded, so exclude only those ones, which almost 100% do not refer to your captured application (e.g. NOD32 antivirus files couldn't be a part of Firefox application).
- [17]. In order to review and exclude unnecessary files or folders, go to the Files tab, and select Exclude from the context menu of an item, which is located in the left 'Files Included'

pane.

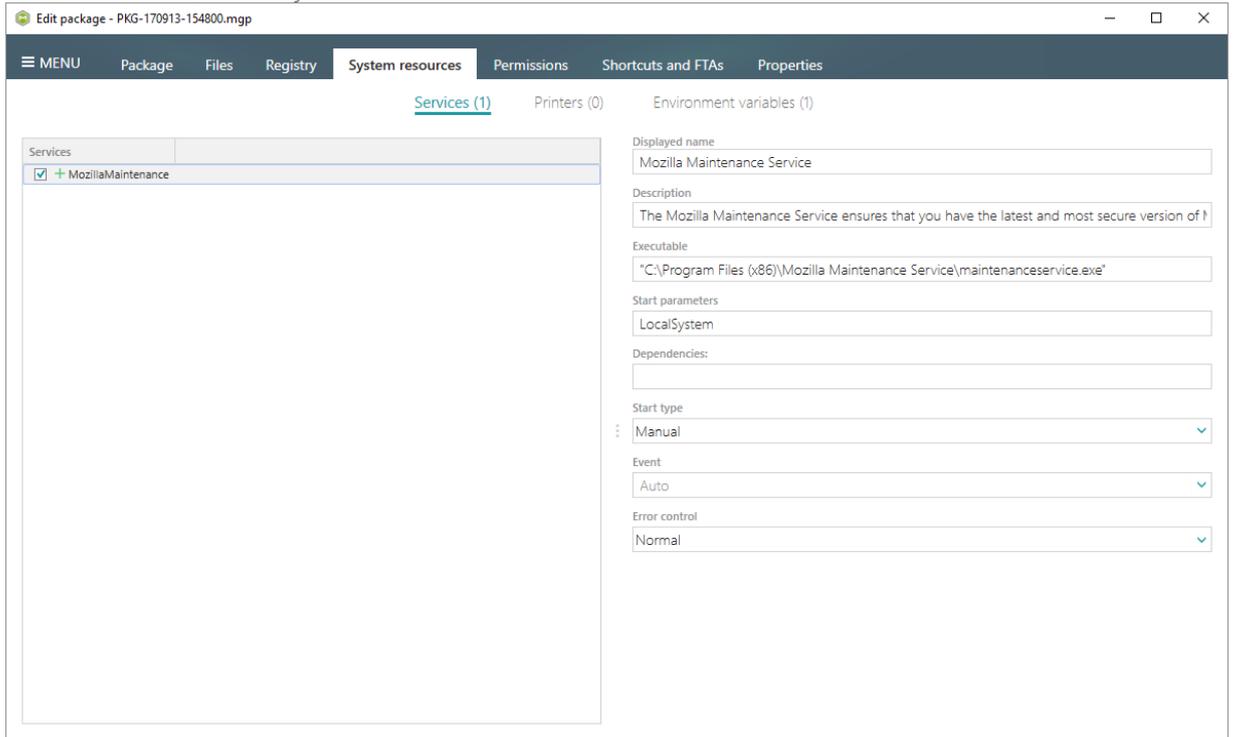


[18]. In order to review and exclude unnecessary registry keys or values, go to the Registry tab, and select Exclude from the context menu of an item, which is located in the left 'Registry Included' pane.

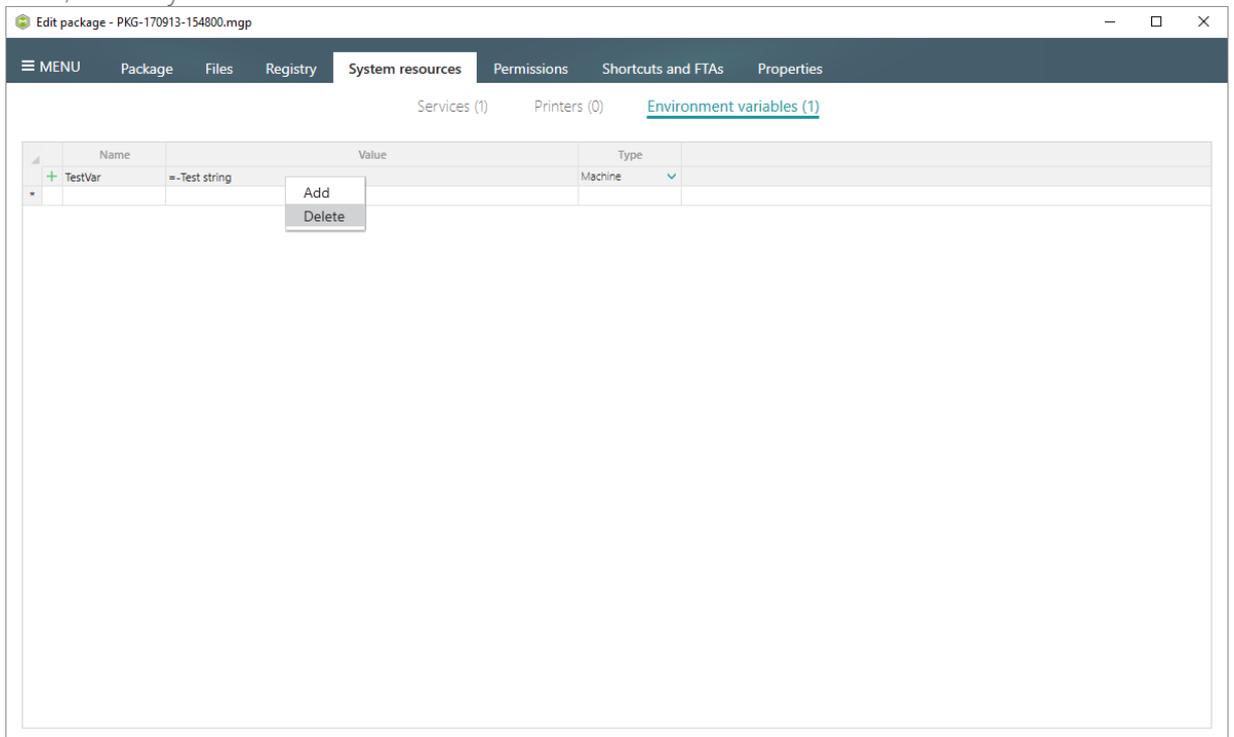


[19]. In order to review and exclude unnecessary services, go to the System resources -> Services tab, and uncheck the checkbox, located before the service name in the list, for

those services, which you want to exclude.

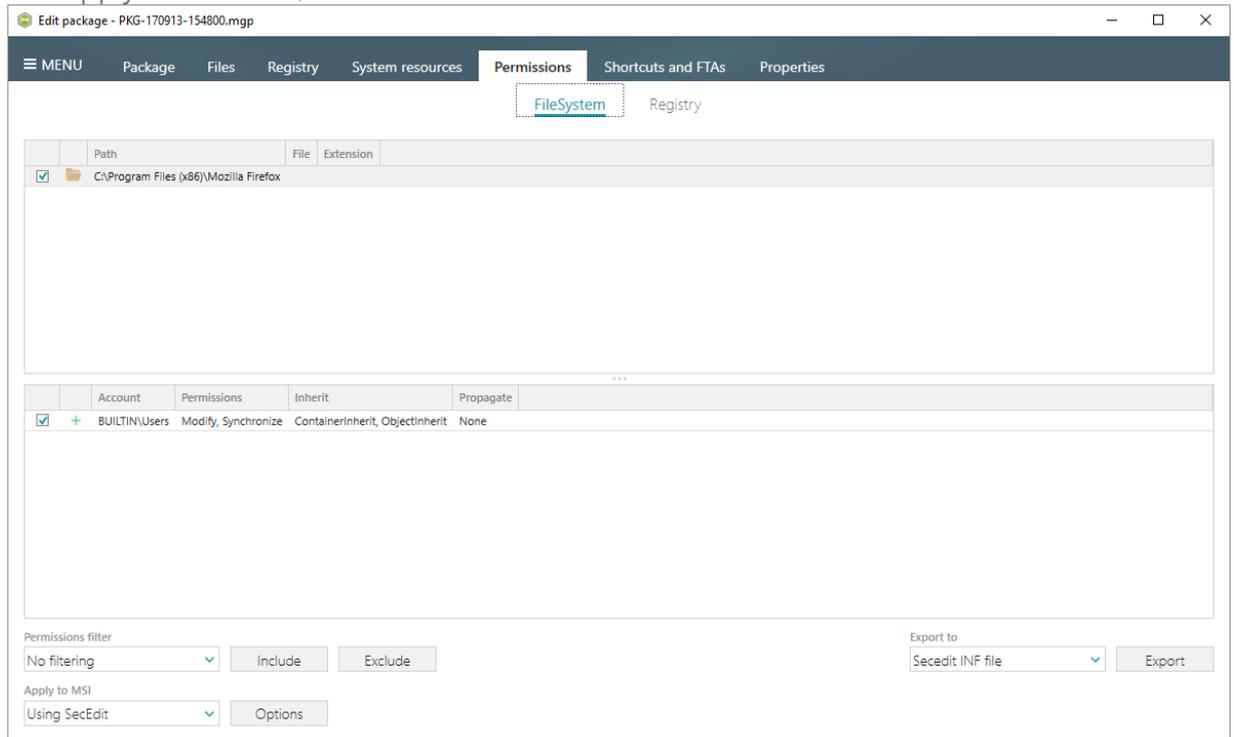


[20]. In order to review and remove unnecessary Environment variables, go to the System resources -> Environment variables tab, and select Delete from the context menu of an item, which you want to remove.

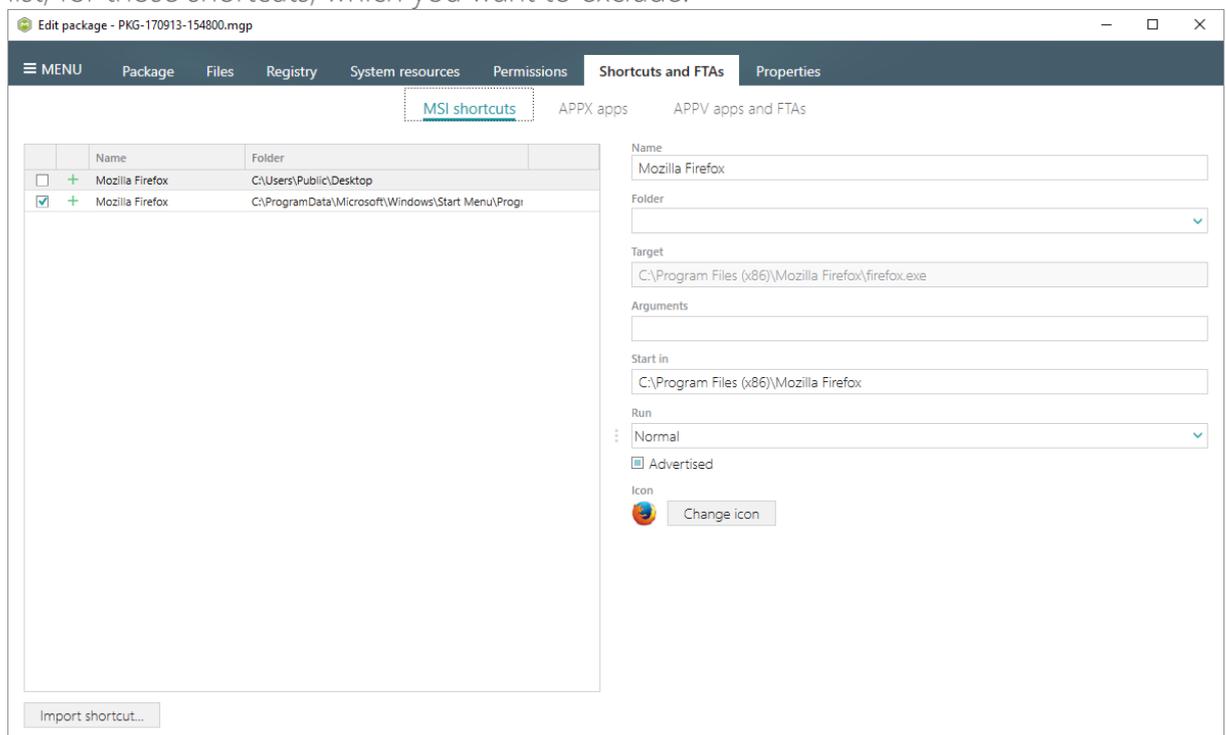


[21]. On the Permissions tab you will find captured permissions for the file system and registry. For excluding unnecessary permission changes, either uncheck the checkbox, located before the path, for which permission changes were detected, or select Do not apply in

the Apply to MSI field, located in the bottom of the window.

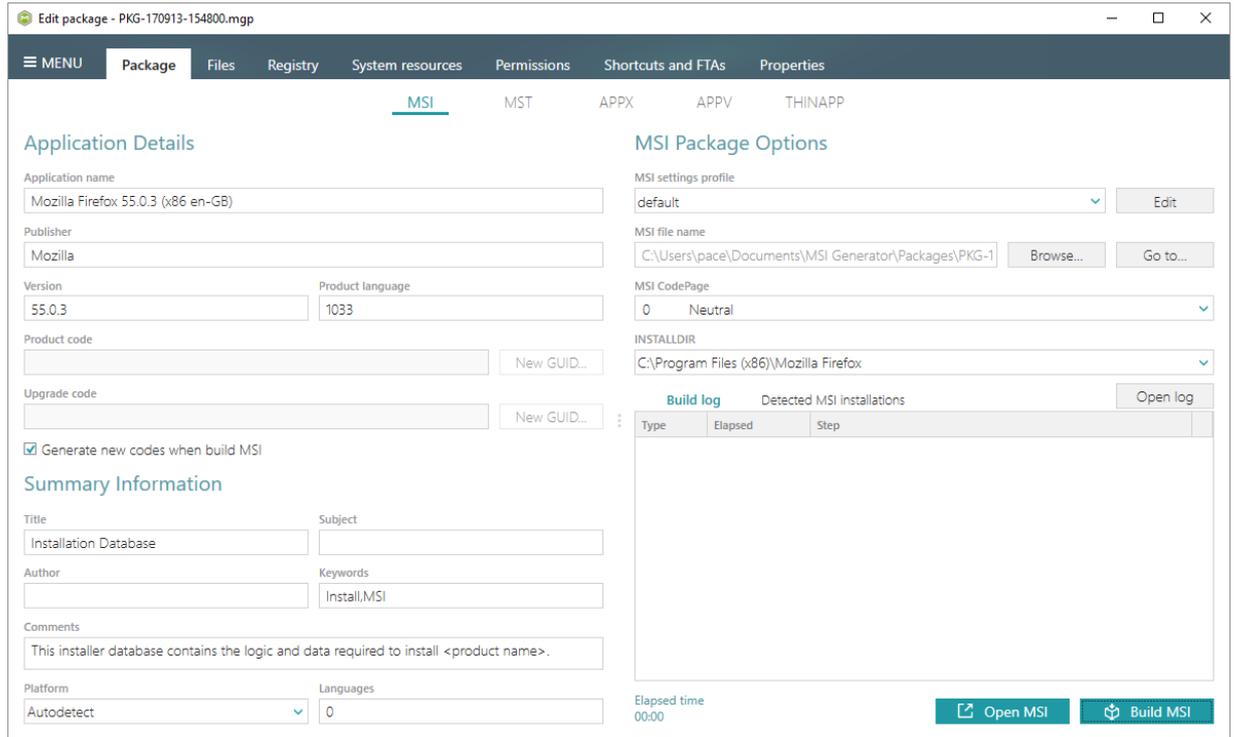


[22]. In order to review and exclude unnecessary shortcuts, go to the Shortcuts and FTAs -> MSI shortcuts tab, and uncheck the checkbox, located before the shortcut name in the list, for those shortcuts, which you want to exclude.

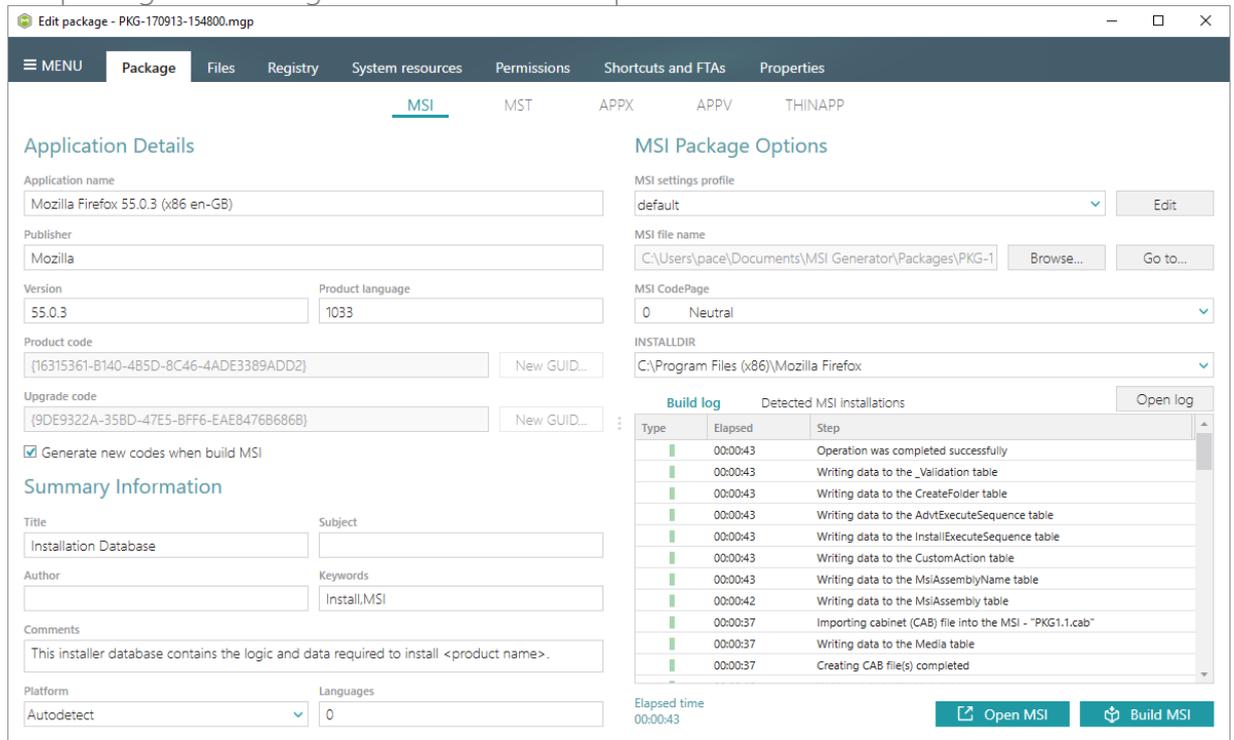


[23]. Finally, to build an MSI package from the project, navigate to the Package -> MSI tab, update Application details such as name, publisher, version, language, select INSTALLDIR

and click Build MSI.



[24]. Once the package is built, click Go to..., located next to the MSI file name field, to open the package containing folder in Windows Explorer.





3.2 New MST

Choose a scenario that better suits your needs:

- **Create Blank MST**, described in section 3.2.1
Create a new empty transform file (MST) for your MSI package in MSI Editor. All changes, made to the opened MSI database, will be saved to the MST.
- **Create Response MST**, described in section 3.2.2
Capture all your inputs and changes, made to the Windows Installer UI dialogs of the MSI installation, and save them to the MST file using MSI Generator. The MSI installation will be simulated, which allows capturing all necessary changes very promptly and without affecting your real system.
- **Capture System Changes to MST**, described in section 3.2.3
Capture system changes, which were made to the file system and registry, by script, by application or manually and save them into MST file, generated against the selected MSI package using MSI Generator. Along with files and registry, services and environment variables you, can capture file system and registry permission changes.

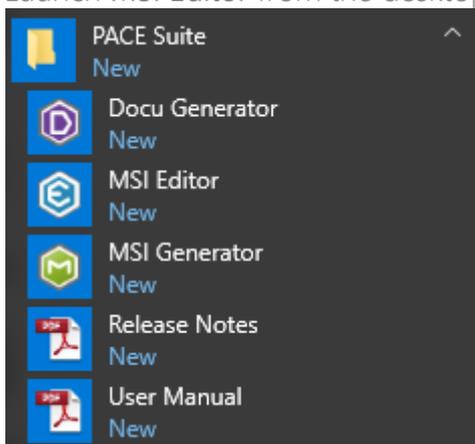
3.2.1 Create Blank MST

Create a new empty transform file (MST) for your MSI package in MSI Editor. All changes, made to the opened MSI database, will be saved to the MST.

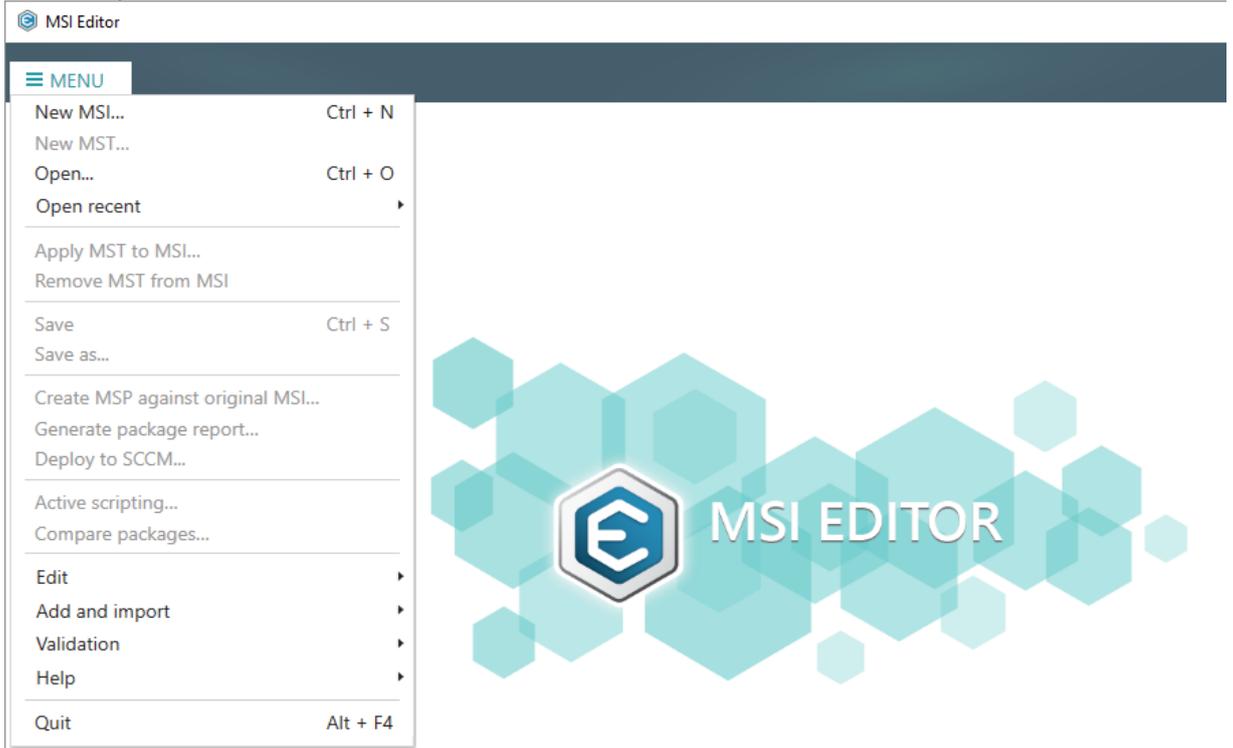
NOTE PACE Suite supports two scenarios of saving changes to MST:

1. Open MSI -> **create MST** -> change MSI resources -> save (described below)
2. Open MSI -> change MSI resources -> **save changes as MST**

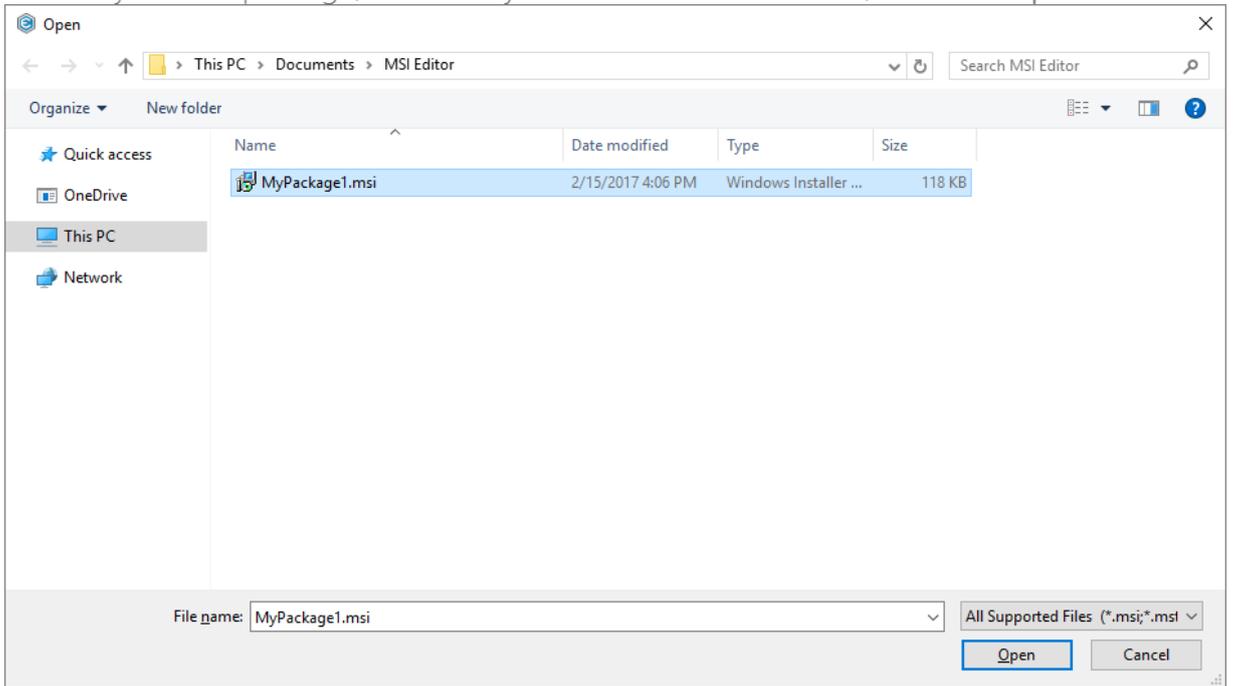
[1]. Launch MSI Editor from the desktop or the start menu shortcut.



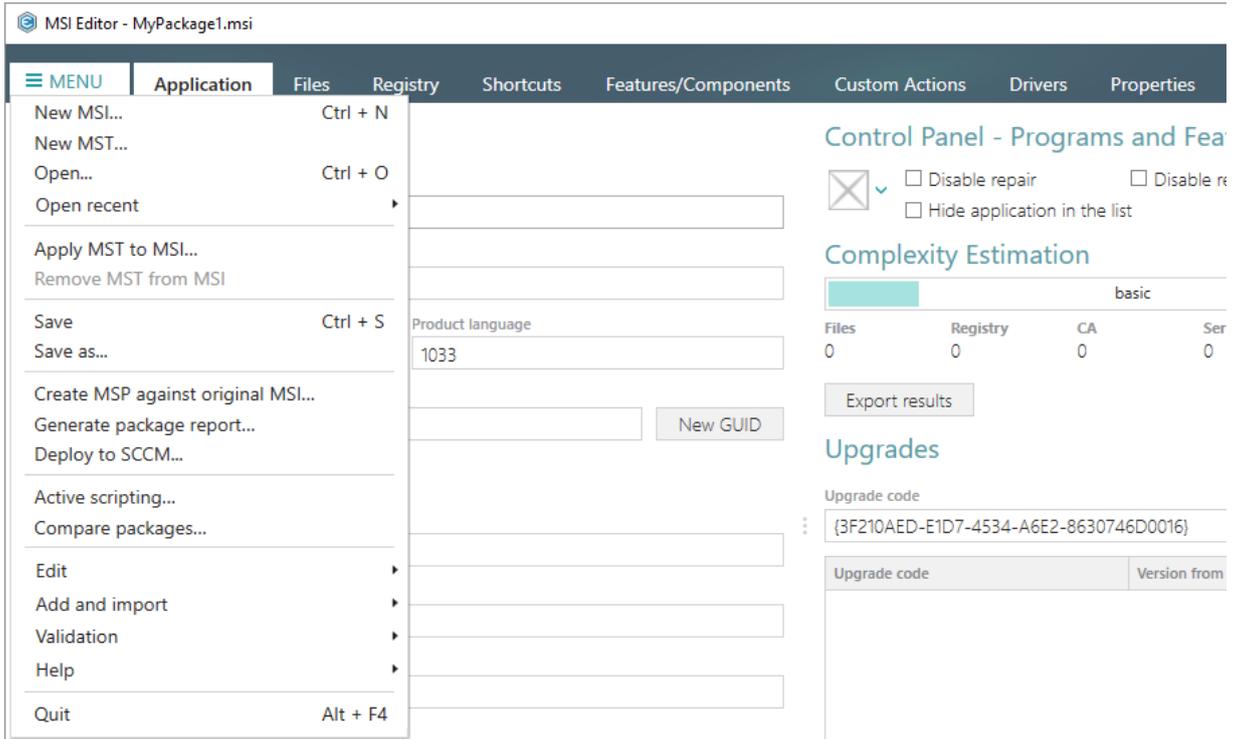
[2]. Select Open... from MENU.



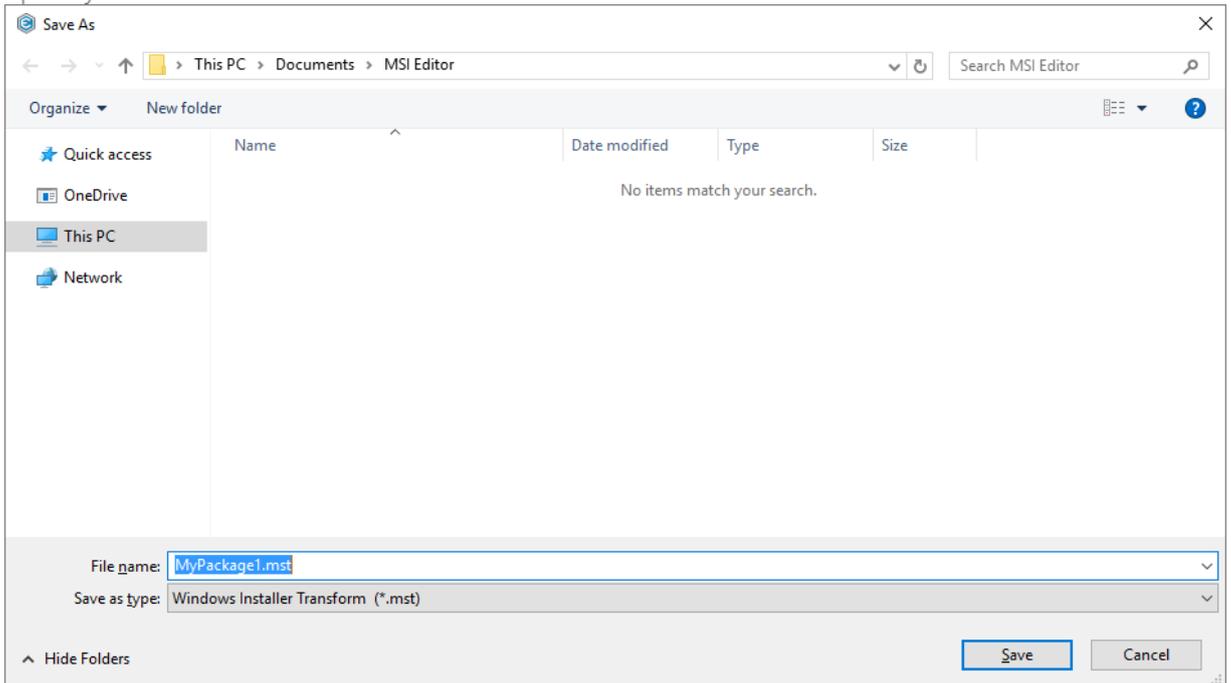
[3]. Choose your MSI package, for which you want to create an MST, and click Open.



[4]. Select New MST... from MENU.

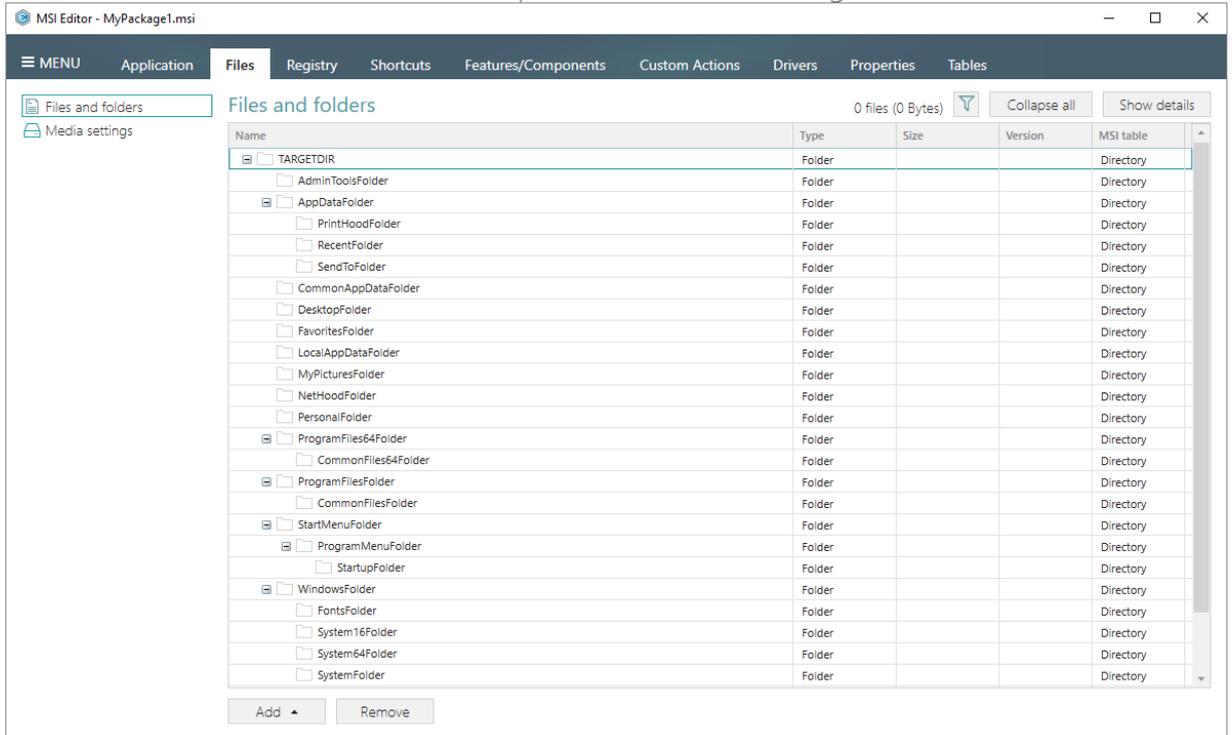


[5]. Specify a destination location and a name of the blank MST file and click Save.

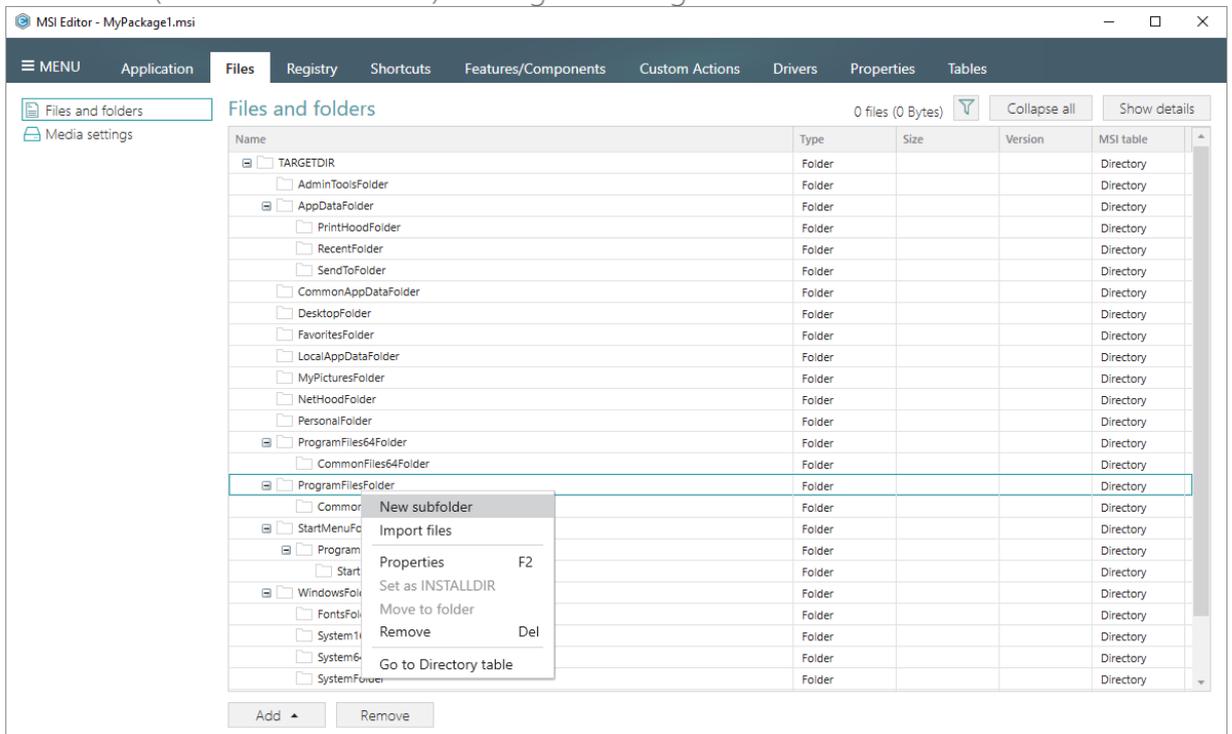


[6]. Now you can add and edit resources of the opened MSI package via the MST in MSI Editor. The steps from [7] to [16] describe how to create a new folder and import files to this folder; the steps from [17] to [25] describe how to create a new registry key, value, and import registry entries from the REG files; the steps from [26] to [32] describe how to create a new and import existing shortcuts to the package; and the last step [33] describes how to save all these changes to MST.

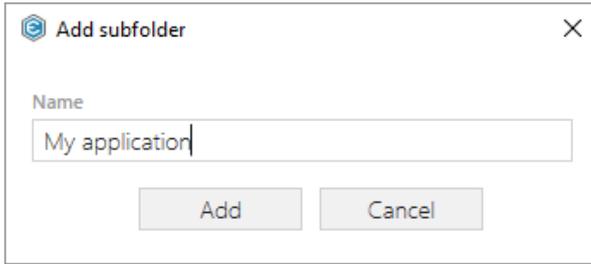
[7]. In order to create a new folder and import files to this folder, go to the Files tab.



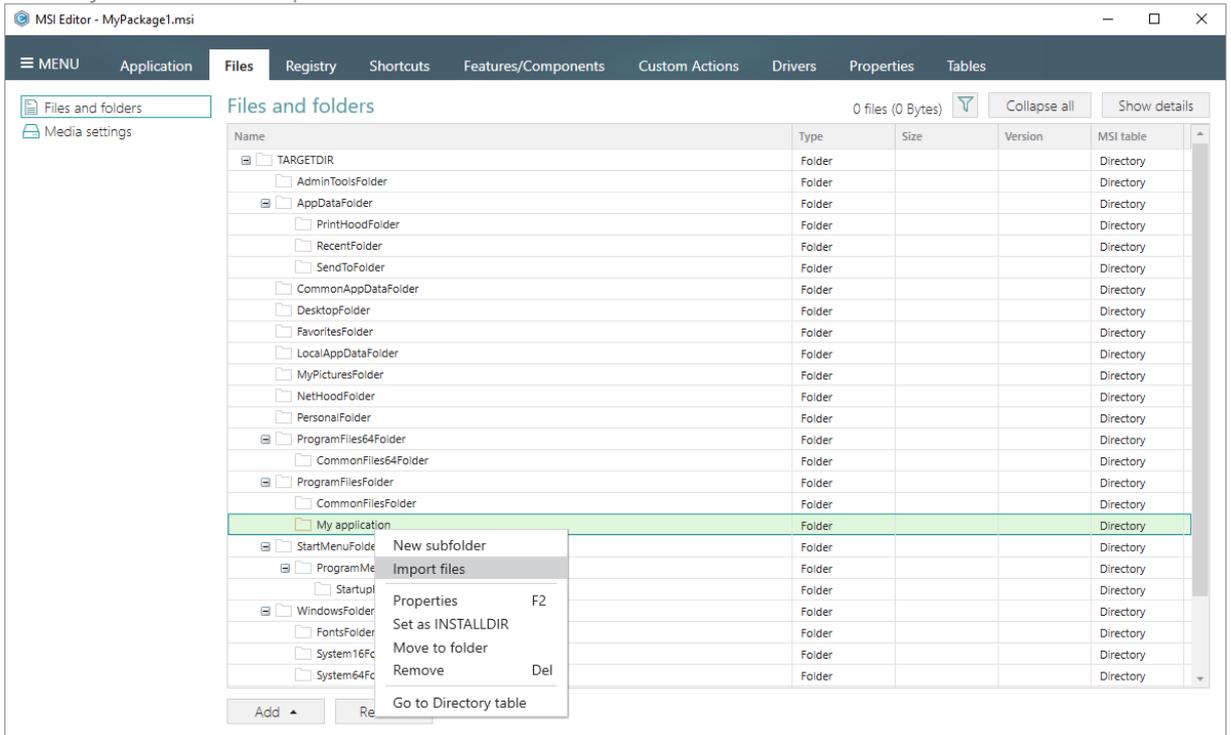
[8]. Select New subfolder from the context menu of a folder, where you want to create a new subfolder. Note that system folders are displayed using the grey folder icon and the subfolders (user-defined folders) – using the orange folder icon.



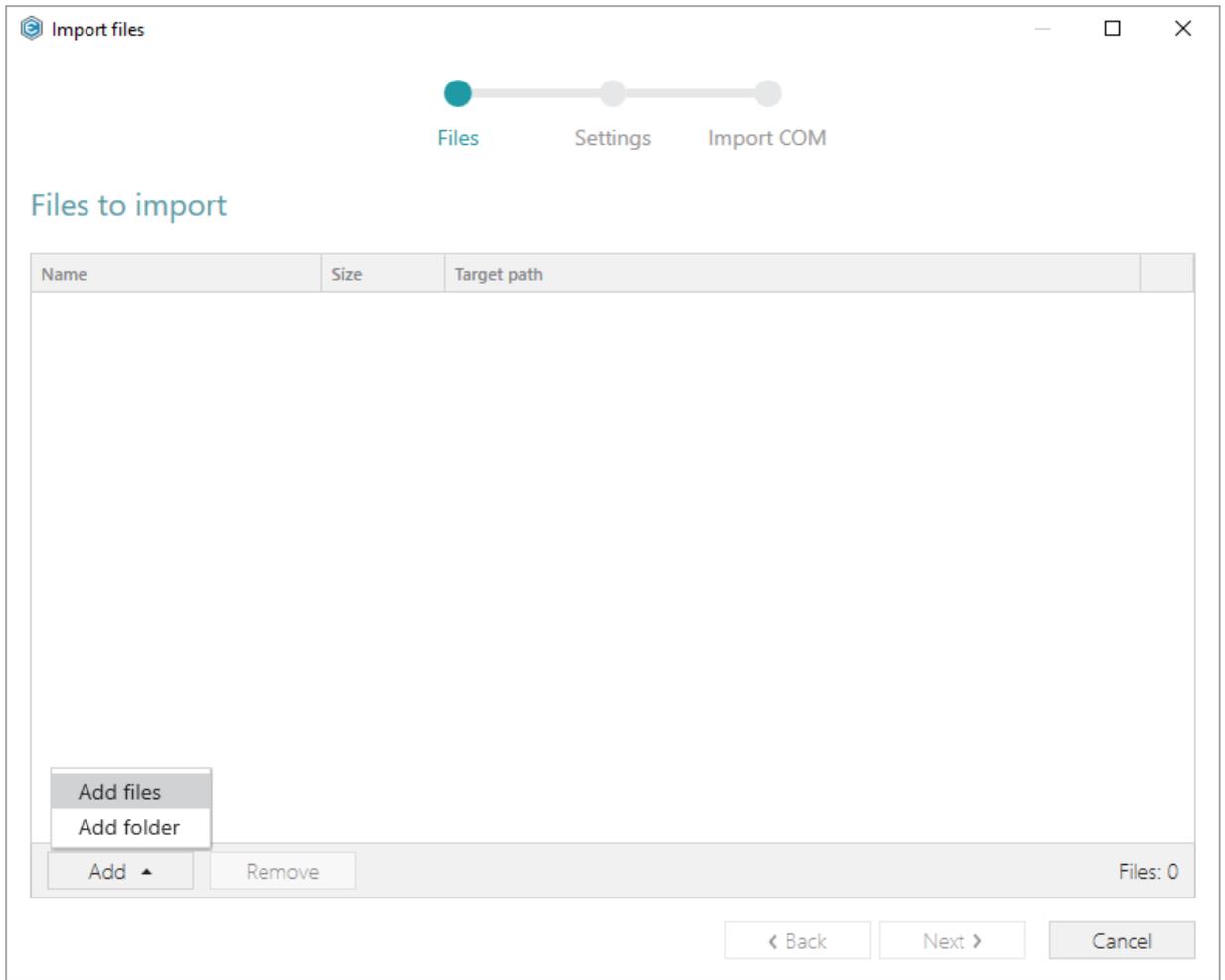
[9]. Enter a folder name and click Add.



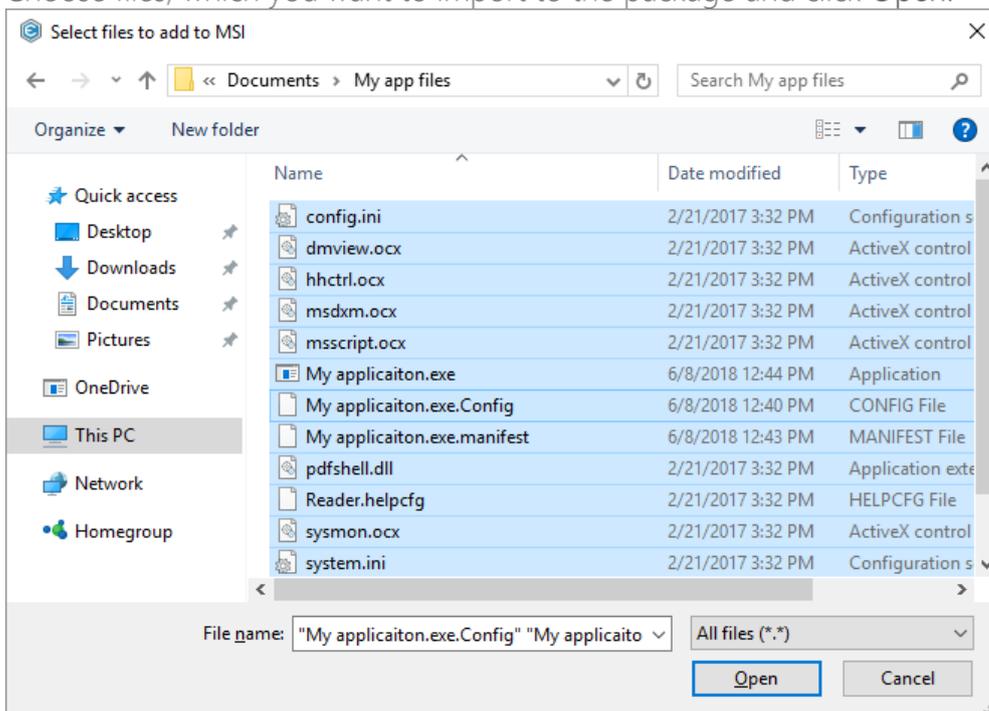
[10]. For adding files to your package, select Import files from the context menu of a folder, to which you want to import files.



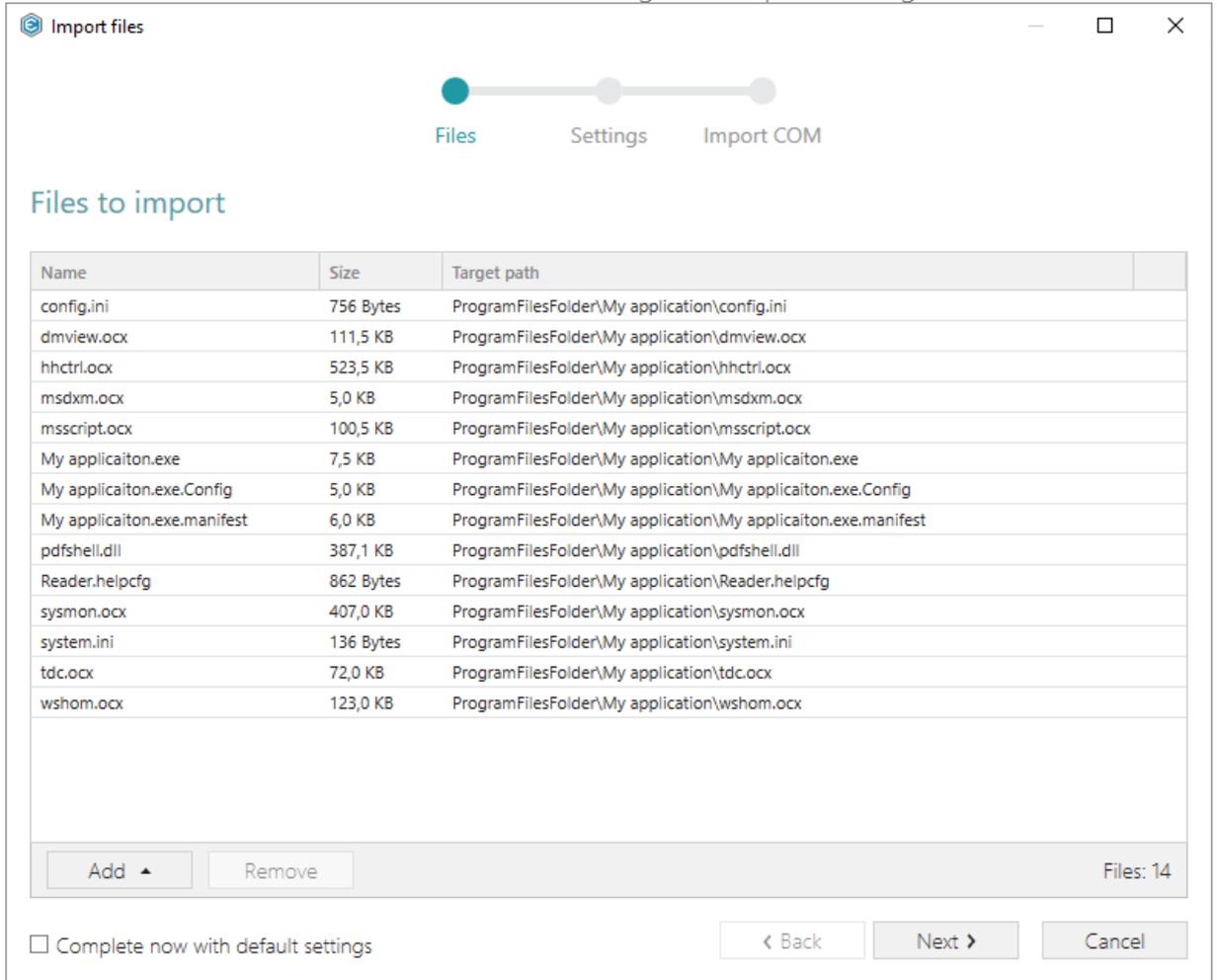
[11]. Click Add -> Add files to choose files in a folder or Add -> Add folder to choose a folder with subfolders and files.



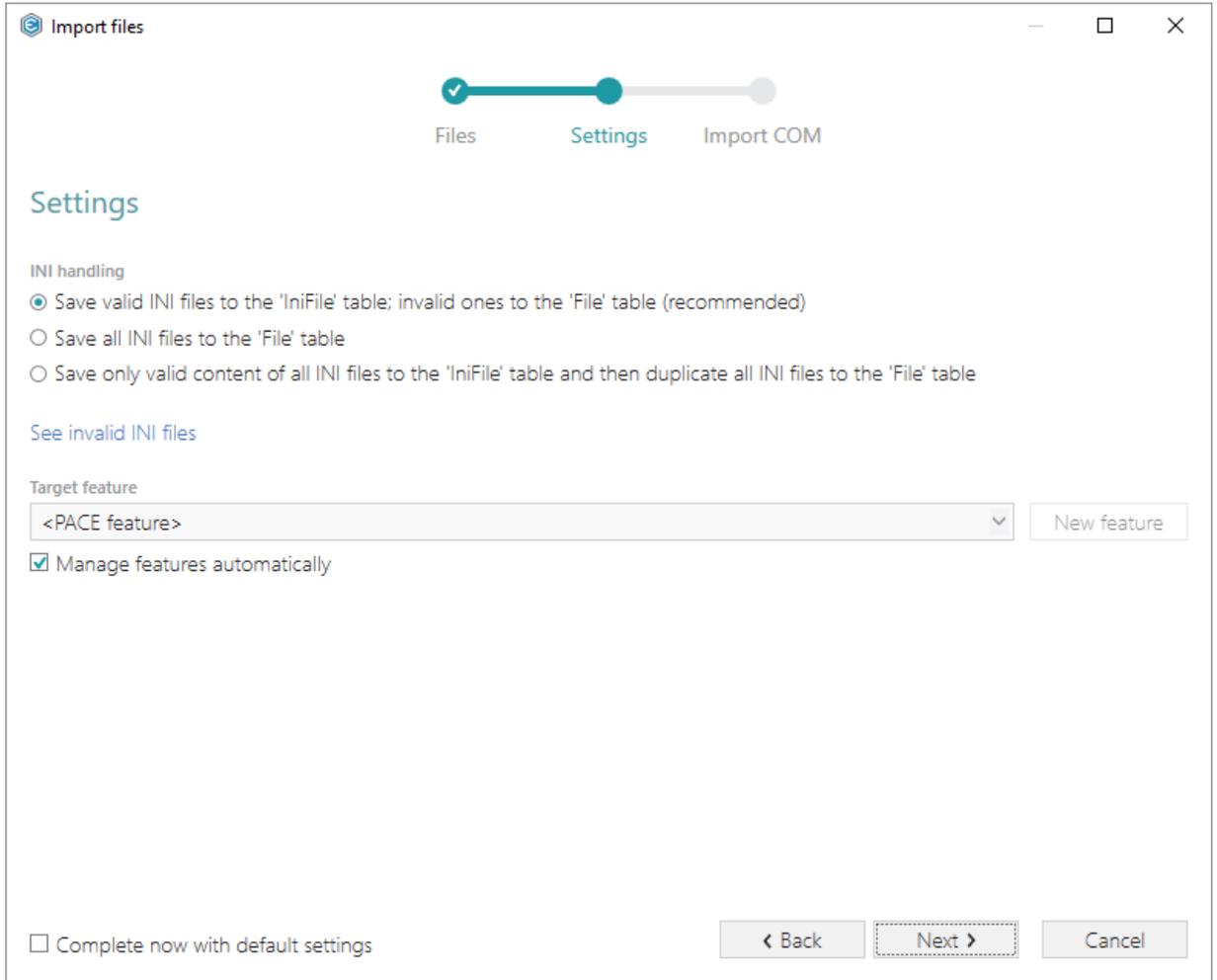
[12]. Choose files, which you want to import to the package and click Open.



[13]. Review the selected files and click Next to manage the import settings.



[14]. At this step, you can manage how to save INI files, select an MSI Feature, to which components with files will be assigned. Below, in the tables, you will find the detailed description of these settings. Note that files compression types and other Media settings are represented in the **Media settings** section of the **Files** tab. Choose the desired settings and click **Next** to continue.



INI handling

Save valid INI files to the 'IniFile' table; invalid ones to the 'File' table (recommended)

INI files, which comply with the INI file format, will be saved to the 'IniFile' table. All other INI files, which contain unsupported data, will be saved to the 'File' table as binary files.

Save all INI files to the 'File' table

All INI files will be saved only to the 'File' table as binary files.

Save only valid content of all INI files to the 'IniFile' table and then duplicate all INI files to the 'File' table

A valid content of all INI files will be saved to the 'IniFile' table, and then all INI files will be saved to the 'File' table as binary files. This allows installing INI files to the target system keeping their original structure with unsupported data, and update the necessary INI file values.

Target feature

Manage features automatically

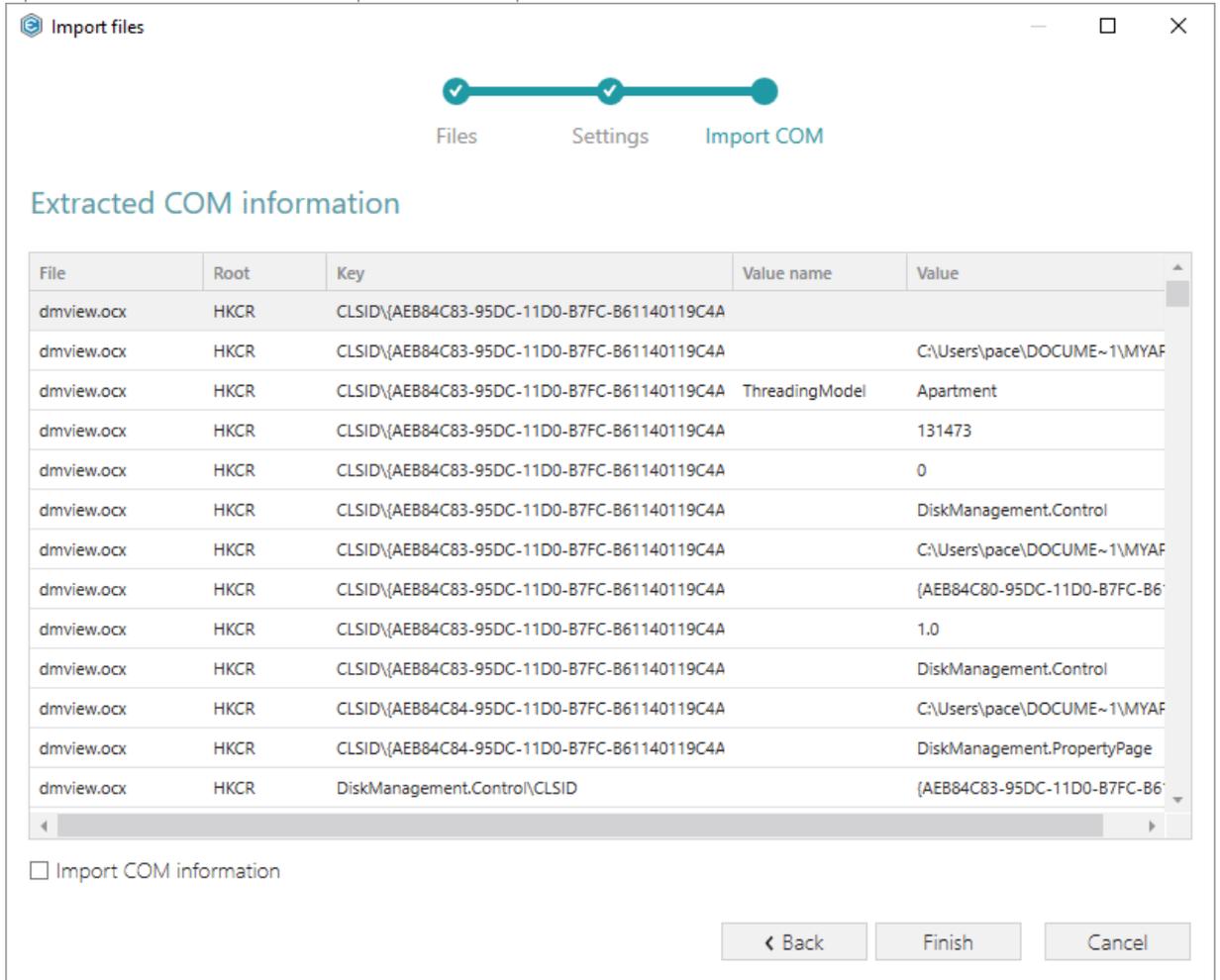
The specific PACE features will be created (or used if they exist) for the components, containing the imported files. Feature structure is based on the packaging best practices and depends on the destination location of files.



<a feature, selected from the list>

Components with files will be assigned to a feature, selected from the list.

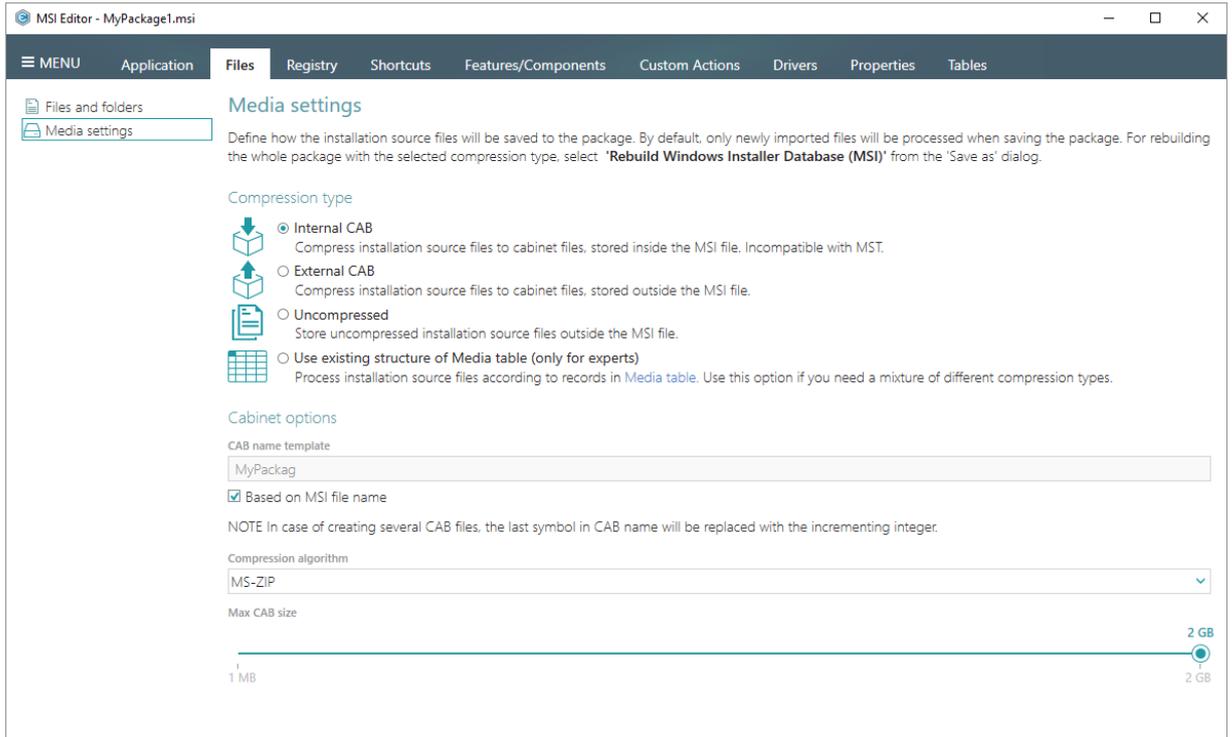
- [15]. On the last step you can review COM information, extracted from the selected files. For importing this COM information along with files, select the **Import COM information** option. Click **Finish** to complete the import.



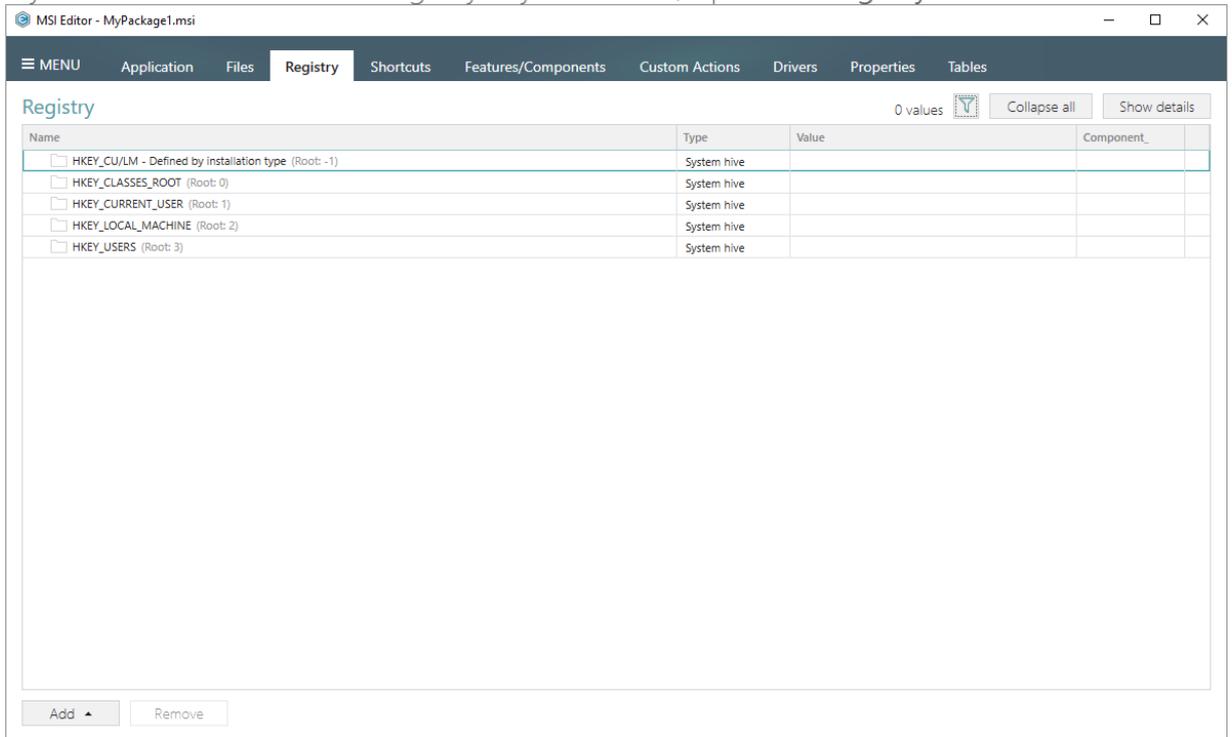
- [16]. Go to the **Media settings** section of the **Files** tab and choose the necessary compression type for the imported files. For the compressed files you can manage cabinet options such as CAB name, compression algorithm and maximum CAB size. Cabinets will be spit by the



selected maximum size.

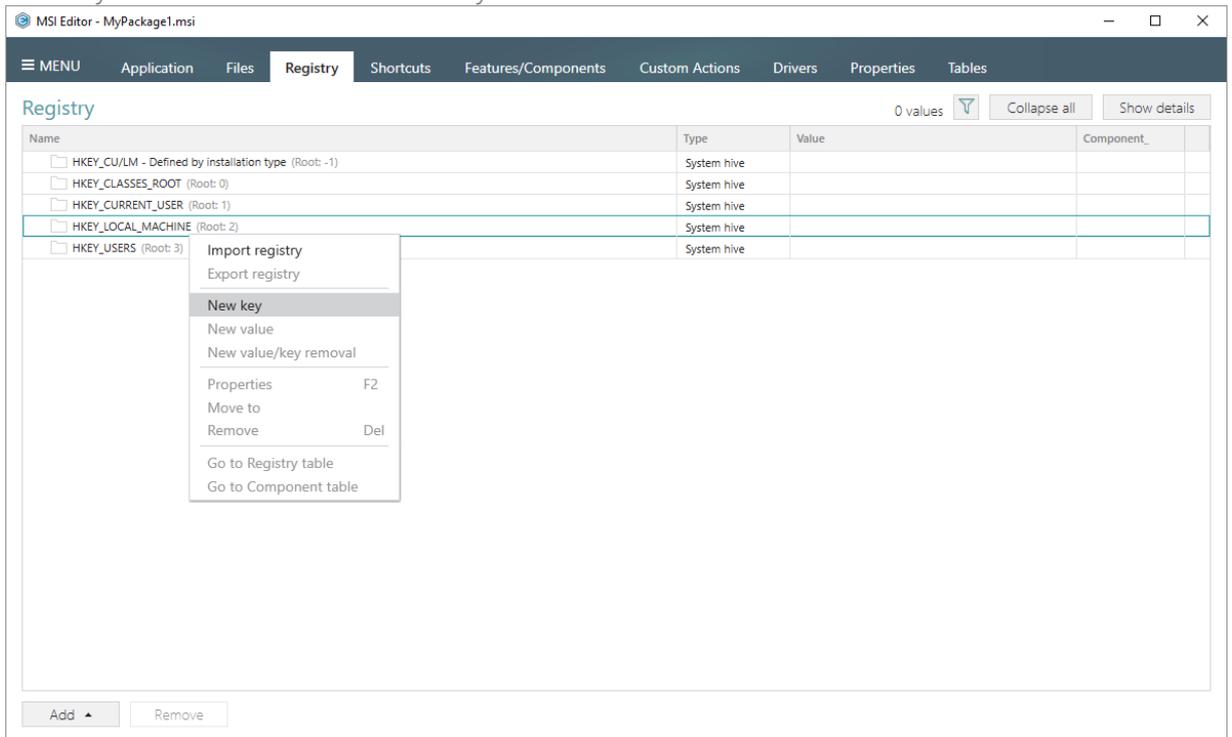


[17]. If you need to create a new registry key or a value, open the Registry tab.

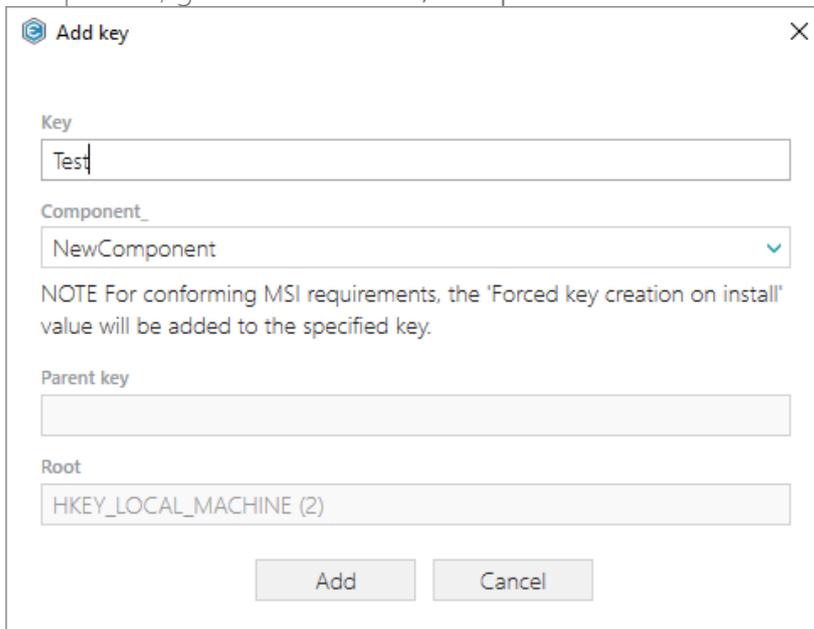




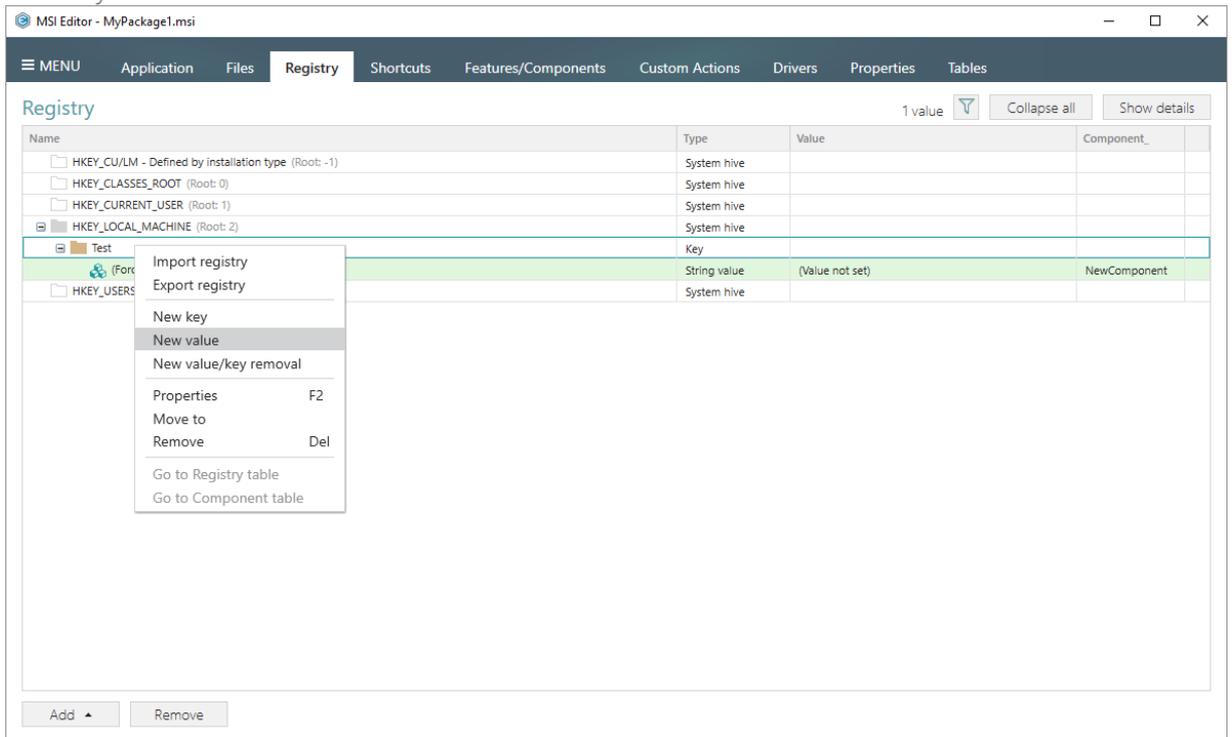
[18]. Select **New key** from the context menu of a root hive (e.g. HKEY_LOCAL_MACHINE), where you want to create a new key.



[19]. Enter a key name, select a component from the list, then click **Add**. For creating a new component, go to the Features/Components tab.



[20]. In order to create a new registry value, select **New value** from the context menu of a key, where you want to create this value.



[21]. For creating an ordinary registry value, specify a name and its value, choose a component from the list, to which this value will be assigned, and click **Save**.

For creating a Default key value, or securing a key creation and/or removal, select a respective option from the **Value processing method** field.

The **Parsed value** option serves easier creation of a registry value of the proper value type. However, the **Raw MSI value** option gives ability to manage what exactly will be saved to

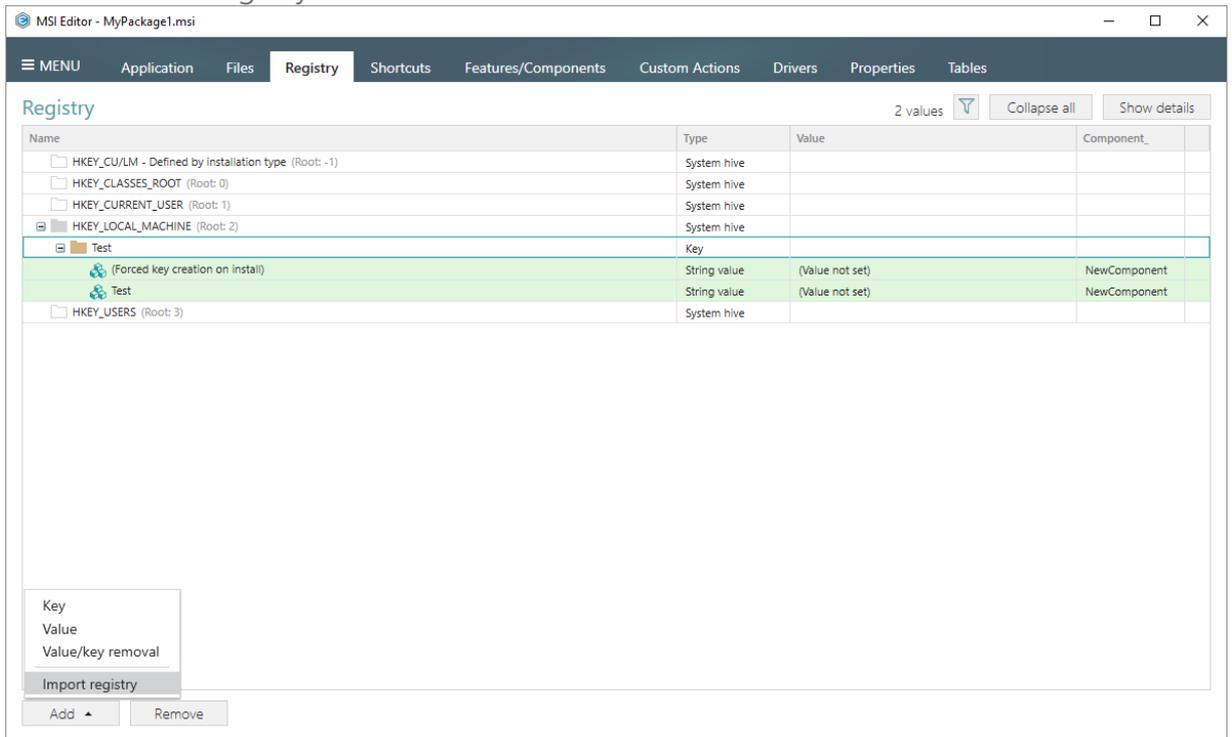
the opened MSI database.

The screenshot shows a 'Properties' dialog box for an MSI table named 'Registry'. The dialog is titled 'Properties' and contains the following fields and options:

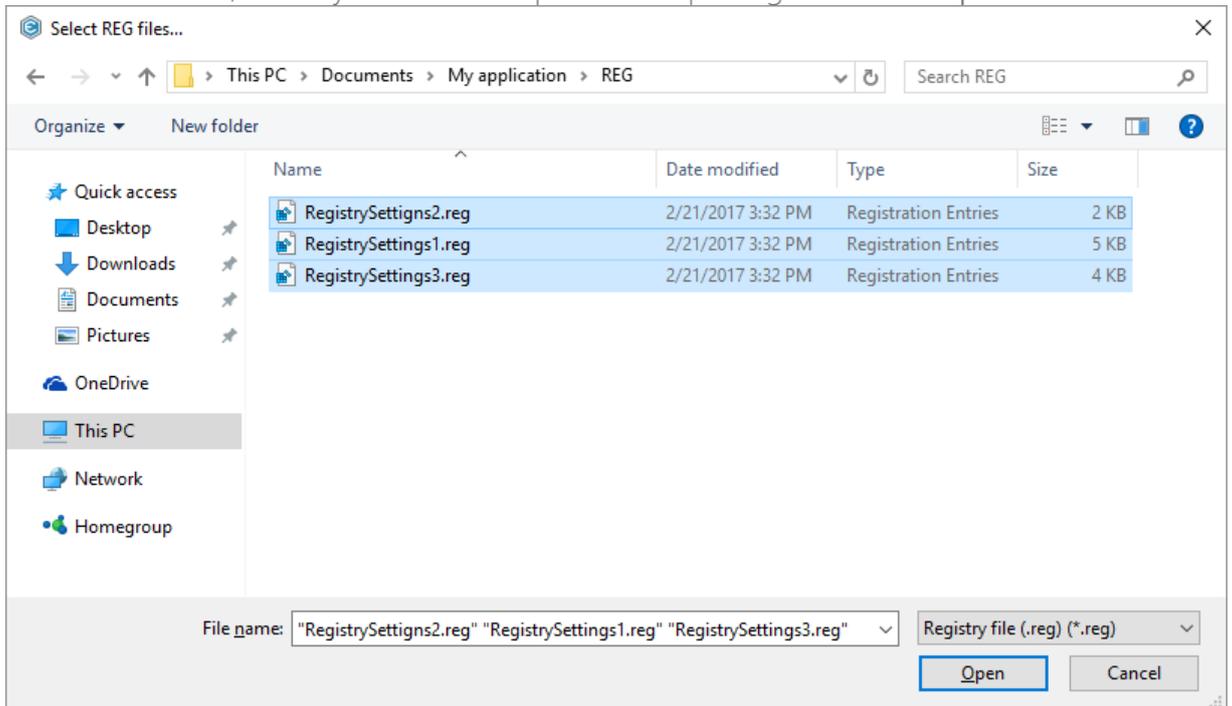
- Value processing method:** A dropdown menu set to '1. Set both name and value'.
- Name:** An empty text input field.
- Identifier:** A text input field containing 'reg_050dd2e9'.
- Value:** A section with two radio buttons:
 - Parsed value:** Selected. Below it is a 'Type' dropdown menu set to 'String value (REG_SZ)' and an empty 'Value' text input field.
 - Raw MSI value:** An empty text input field.
- Key:** A text input field containing 'Test' and a 'Browse...' button.
- Root:** A dropdown menu set to 'HKEY_LOCAL_MACHINE (2)'.
- Component_:** A dropdown menu set to 'NewComponent'.

At the bottom of the dialog are 'Save' and 'Cancel' buttons.

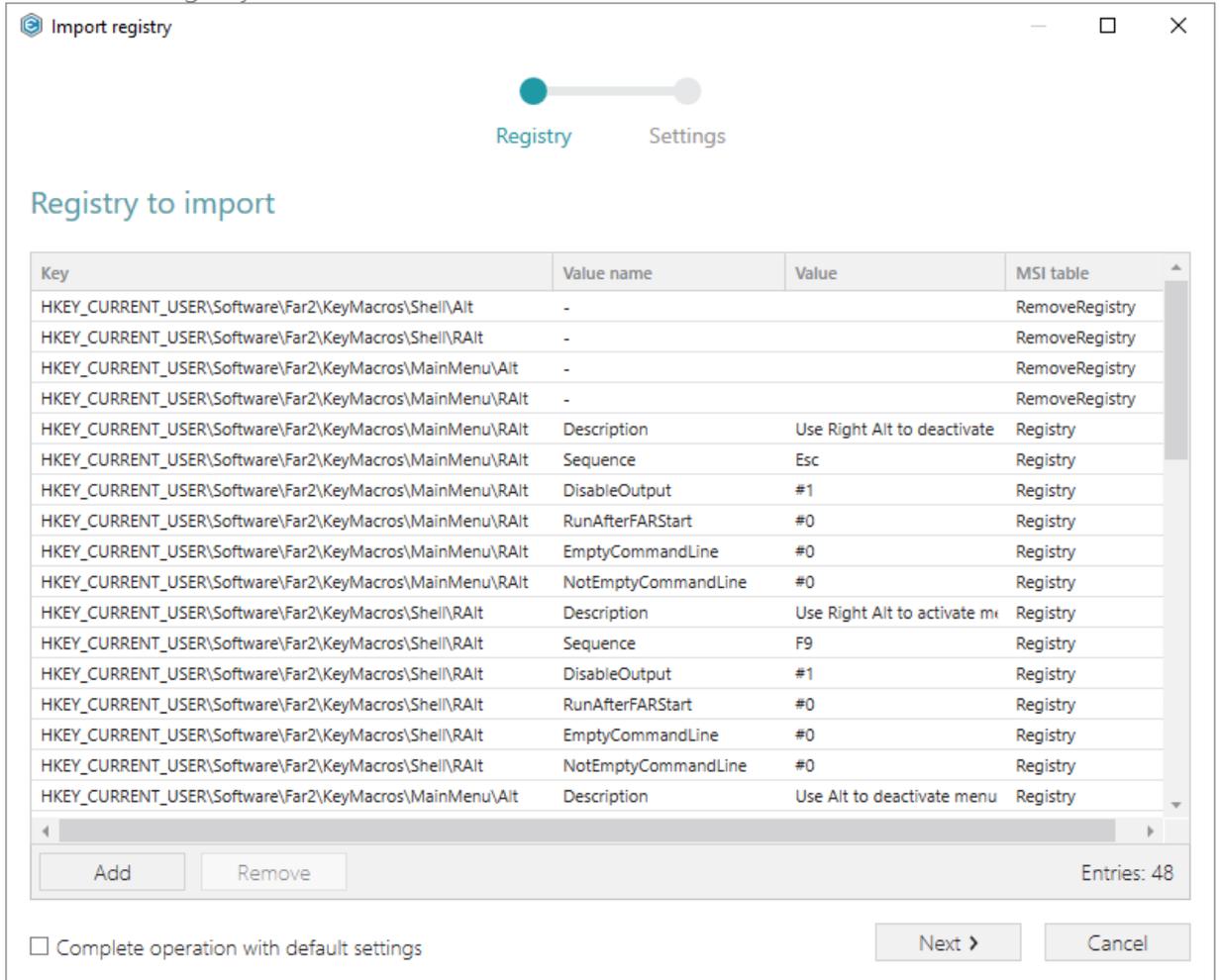
[22]. In order to import registry from the REG file, select Add -> Import registry from the toolbox of the Registry tab.



[23]. Choose REG files, which you want to import to the package and click Open.

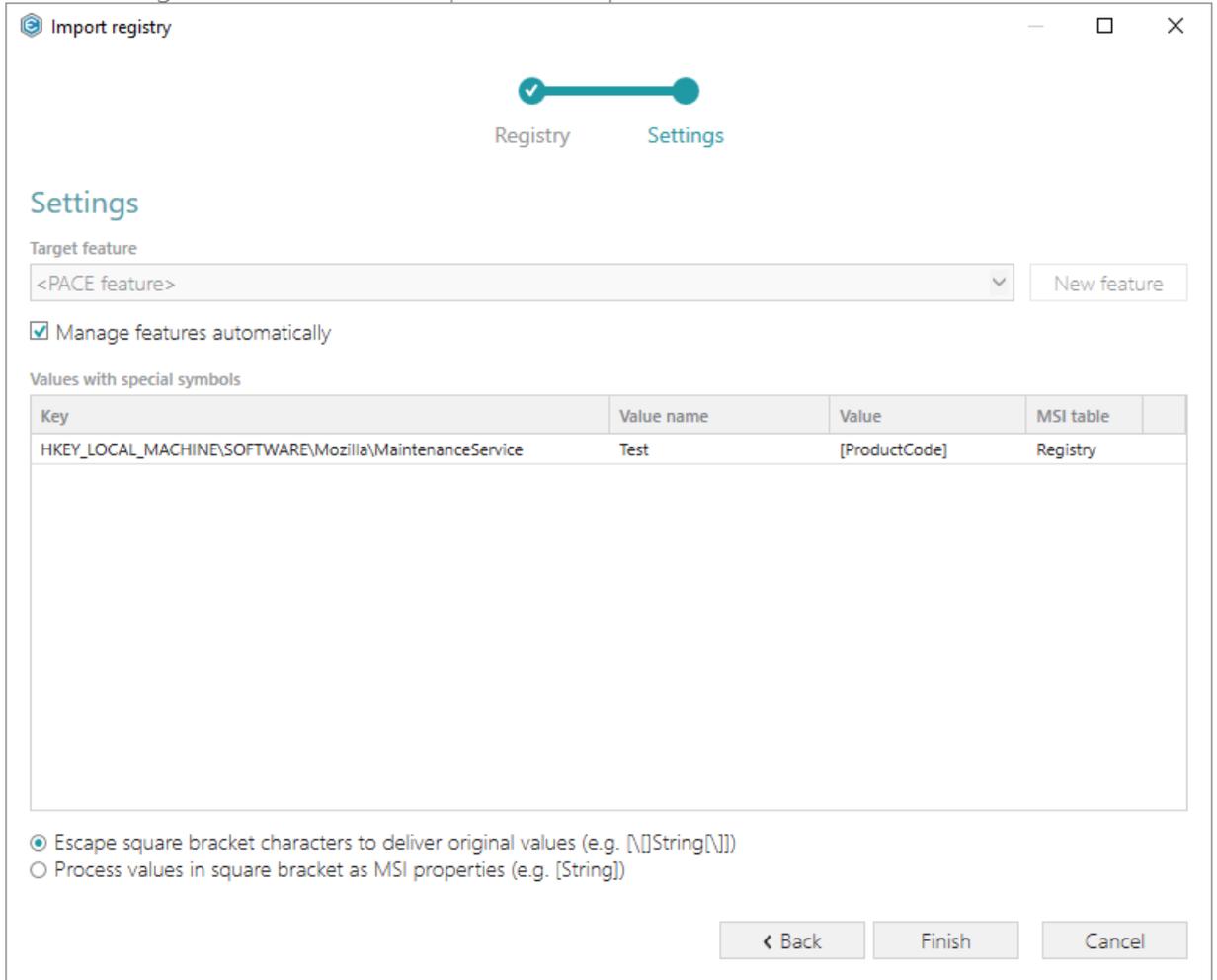


[24]. Review the registry entries, read from the selected REG files, and click Next.



[25]. At the Settings step, you can select an MSI Feature, to which components with the registry entries will be assigned. If the registry entries, which have been read, contain values in square brackets, you can select how these values will be processed – as MSI properties or as ordinary registry values. Below, in the tables, you will find the detailed description of

these settings. Click Finish to complete the import.



Feature settings

Manage features automatically

The specific PACE features will be created (or used if they exist) for the components, containing the imported registry. Feature structure is based on the packaging best practices and depends on the registry key location.

<a feature, selected from the list>

Components with registry will be assigned to a feature, selected from the list.

Values with special symbols

Escape square bracket characters to deliver original values

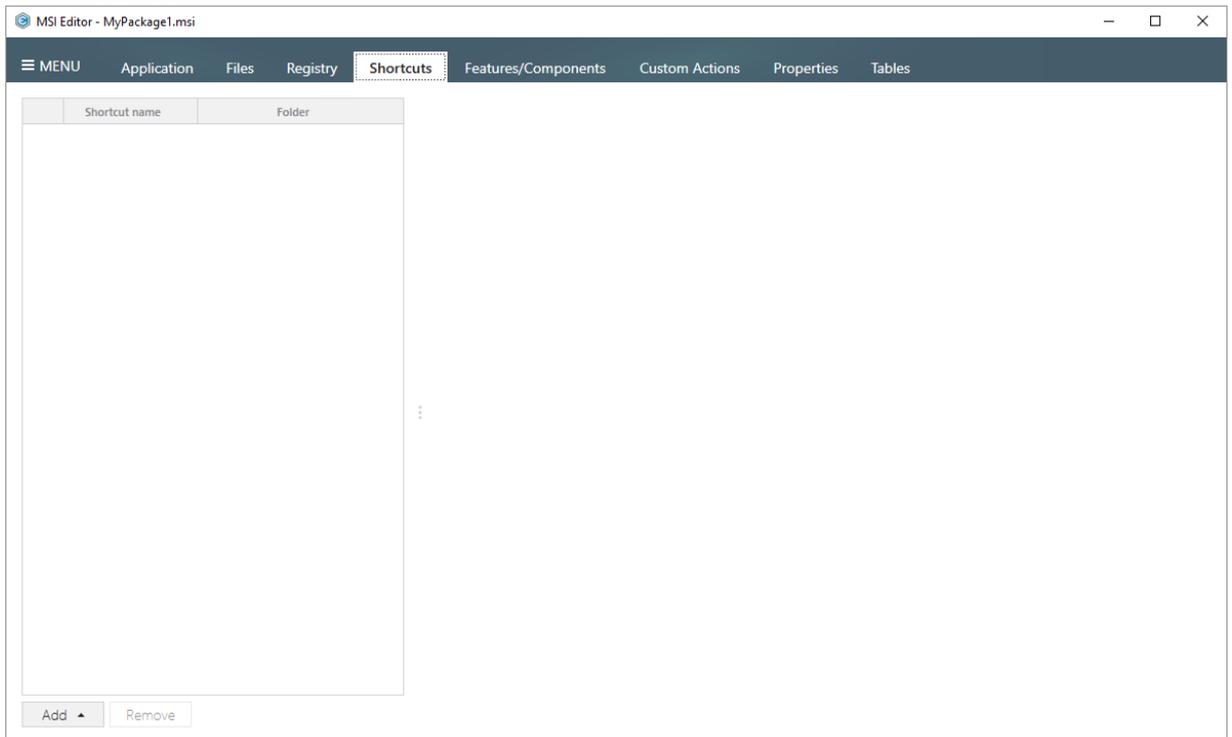
Values in square brackets, displayed in the list, will be saved to MSI as ordinary strings using the general rules for escaping the special characters. This approach guarantees the delivery of the imported registry entries to the target system with their original values.



Process values in square brackets as MSI properties

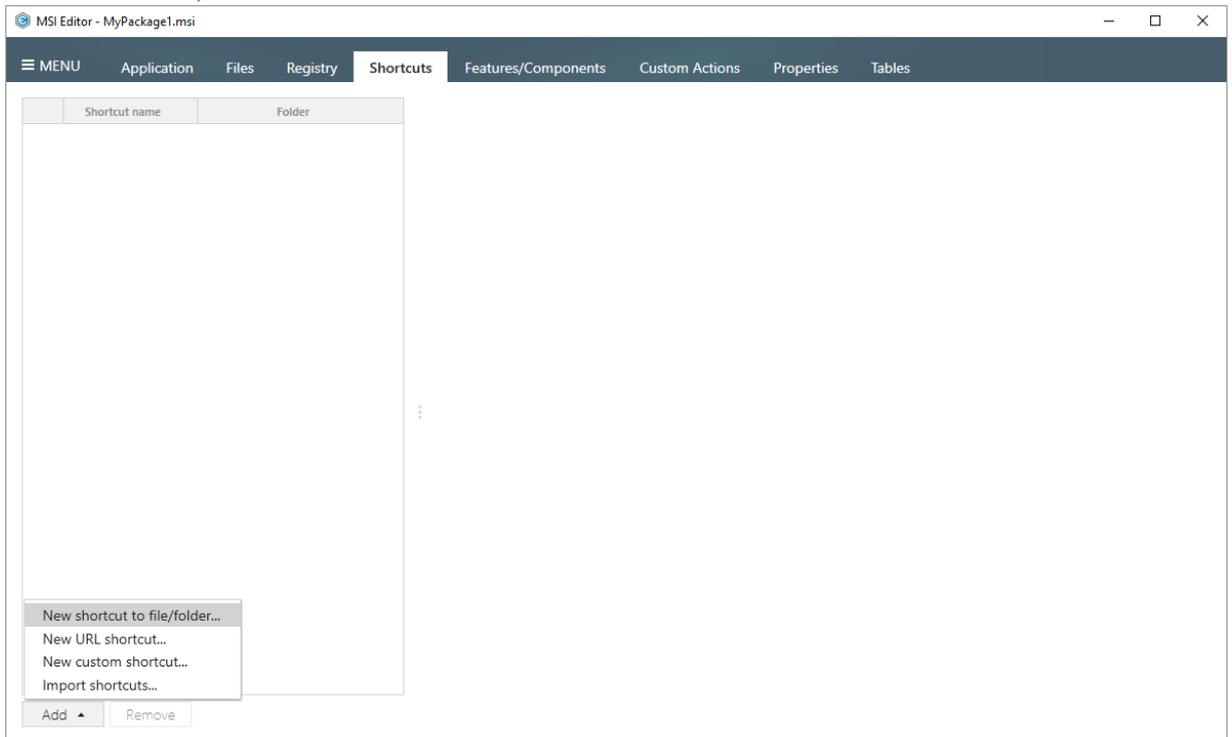
Values in square brackets, displayed in the list, will be saved to MSI as MSI properties. Thus, each MSI property will be replaced with its value during the MSI installation. If a property does not exist in MSI during the installation, it will be replaced with the blank value.

[26]. If you need to create a new or import the existing shortcuts to the package, go to the Shortcuts tab.

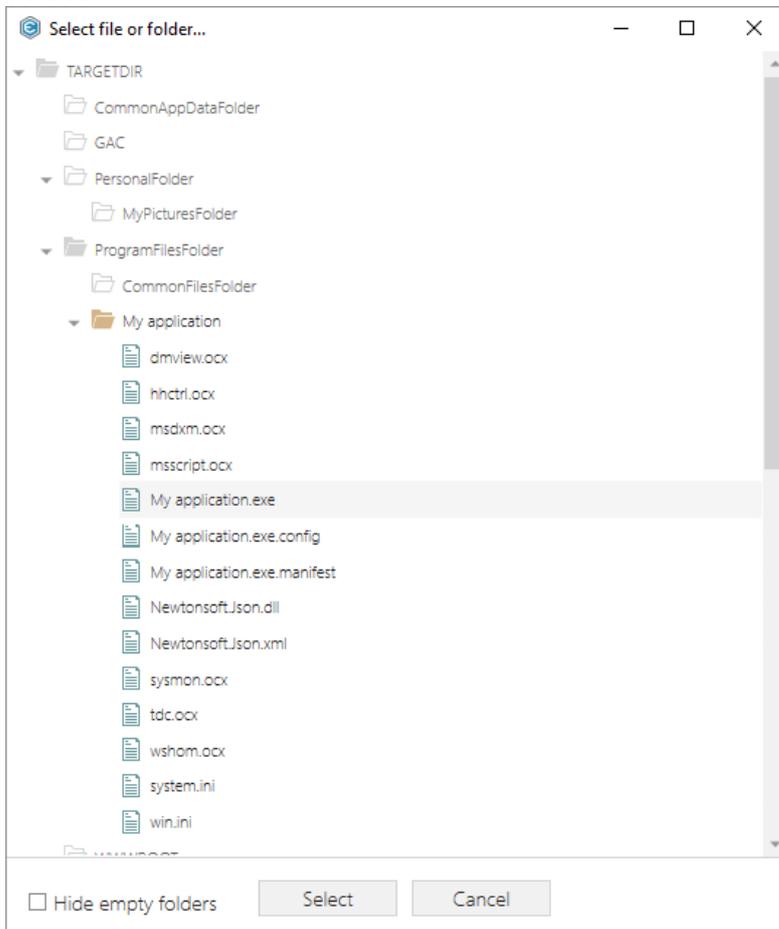




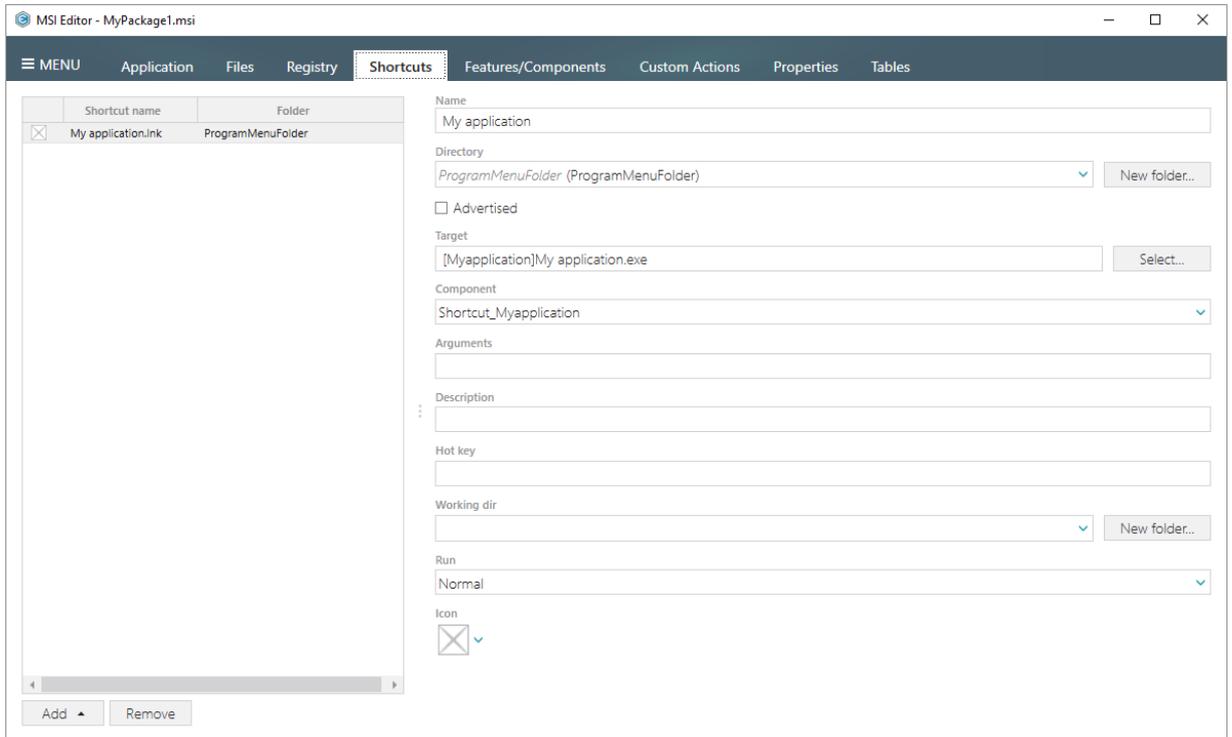
[27]. For creating a new shortcut that points to a file inside the package, select Add -> New shortcut to file/folder... from the toolbox of the Shortcuts tab.



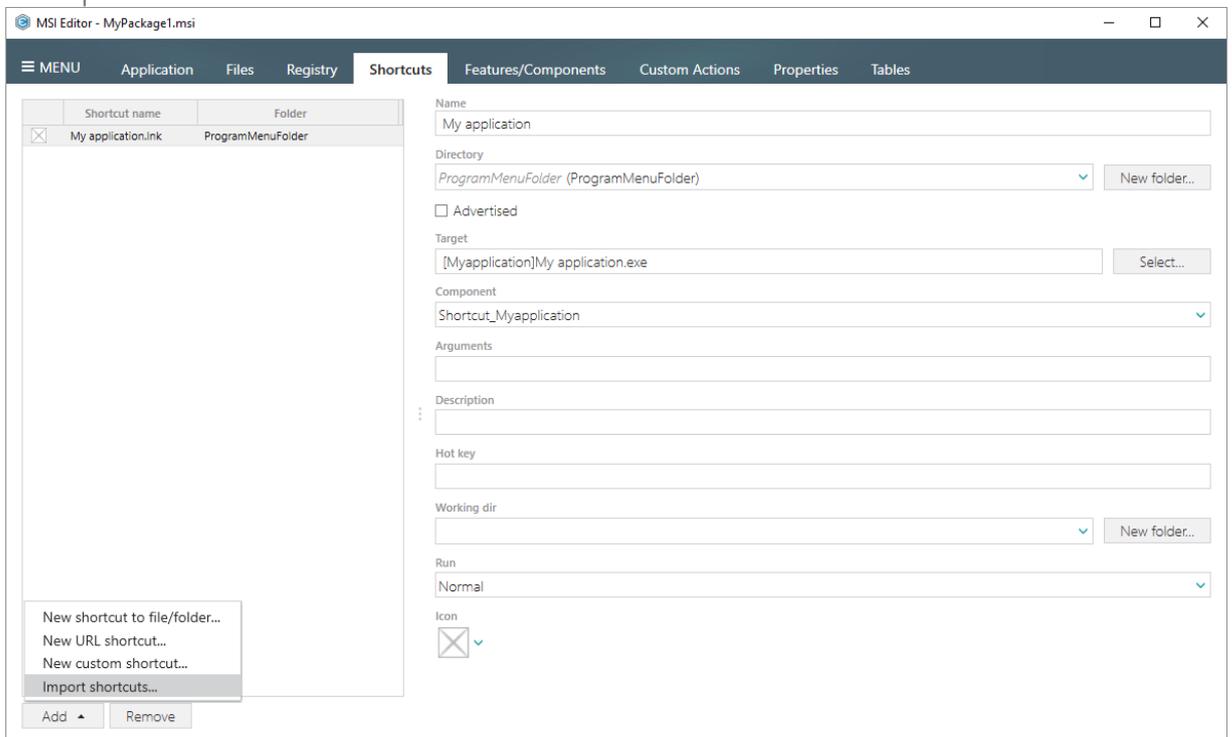
[28]. Select a file (e.g. My application.exe), which will be launched by this shortcut, and click Select.



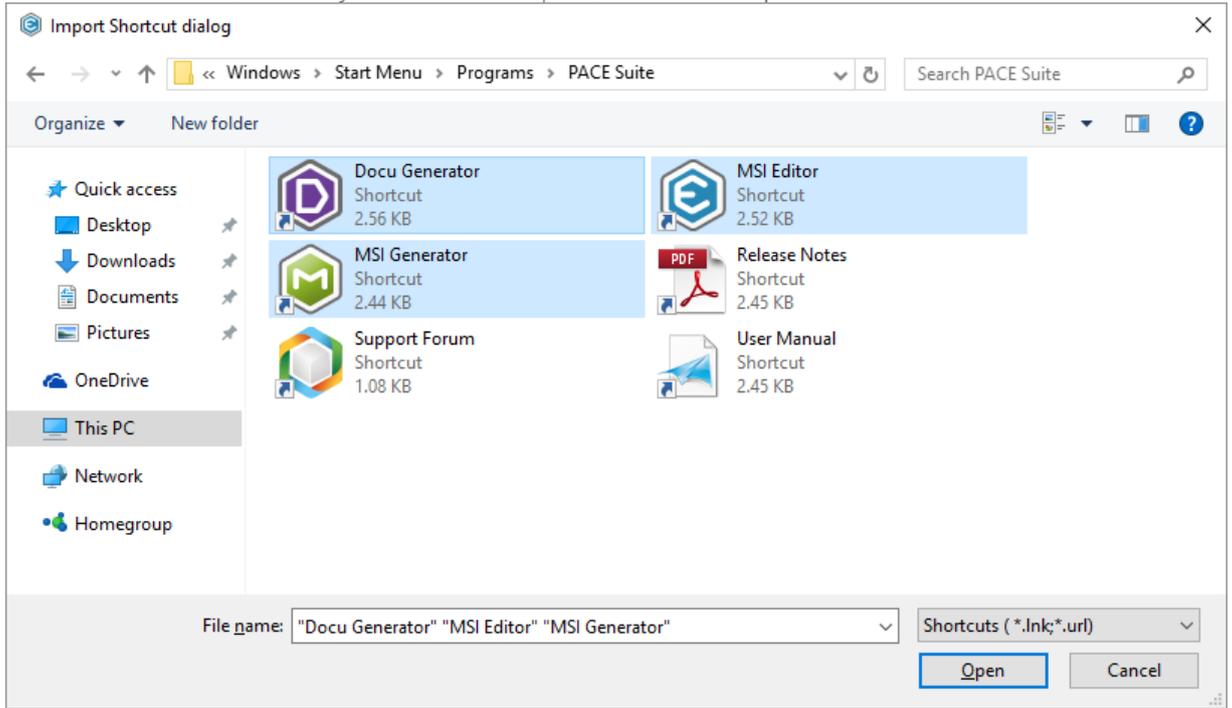
[29]. Using the details pane, you can update the shortcut name, destination location, target, icon and so on. Select the **Advertised** option to convert the created regular shortcut to the advertised one.



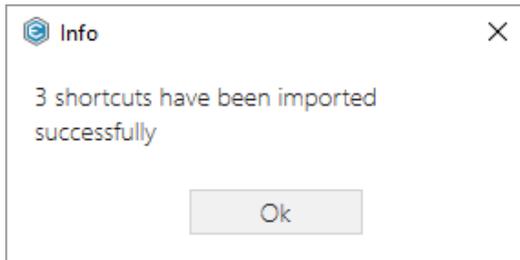
[30]. In order to import LNK and URL shortcuts to the package from the file system, select **Add -> Import shortcuts...** from the toolbox of the Shortcuts tab.



[31]. Choose shortcuts, which you want to import, and click Open.

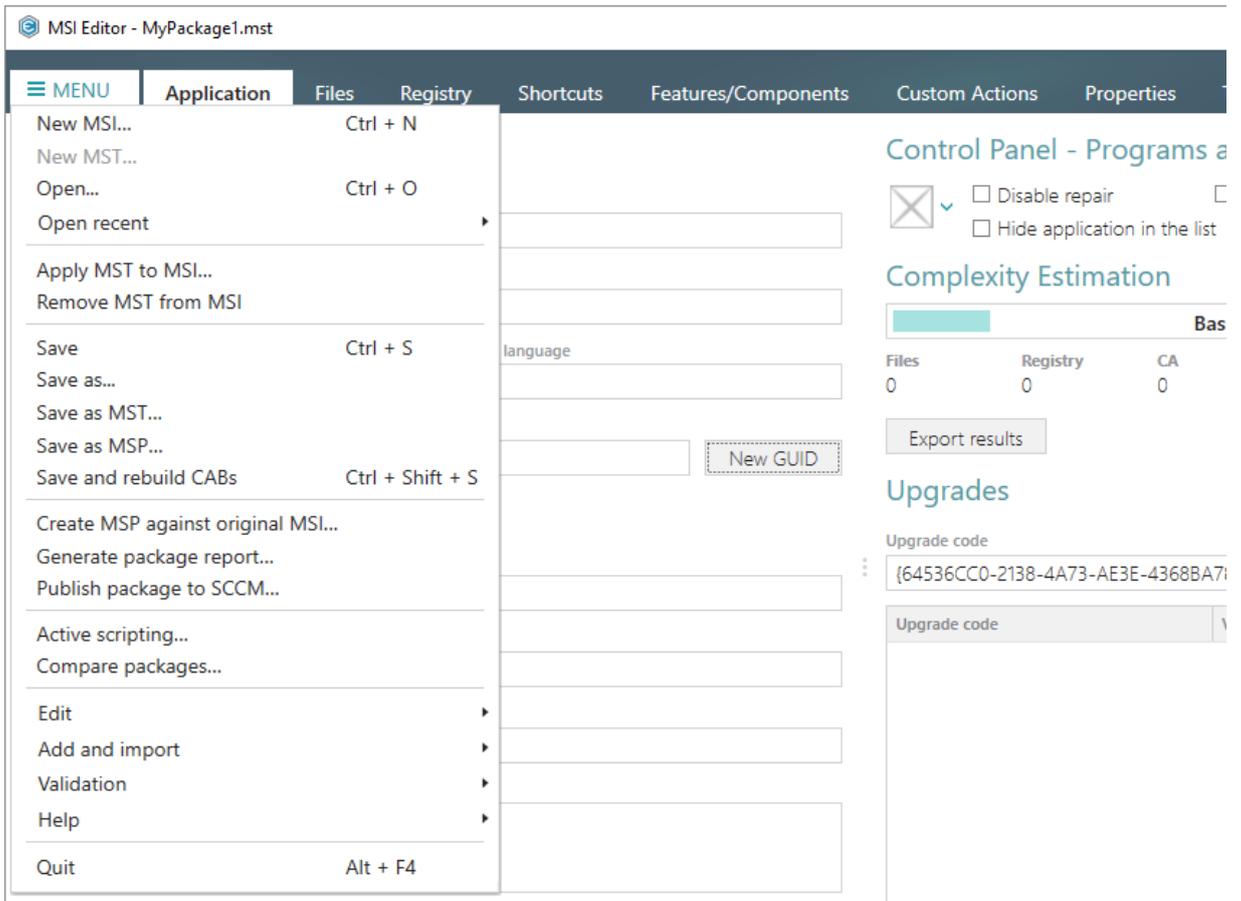


[32]. Click Ok to close the information dialog.





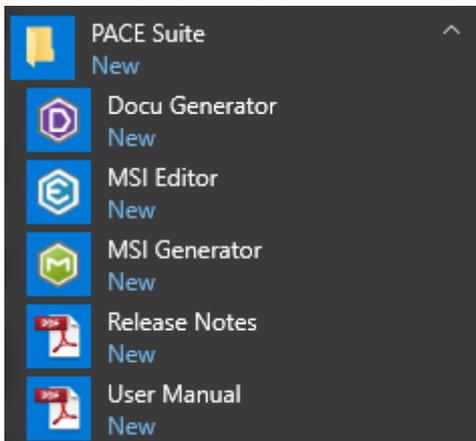
[33]. In order to save your changes, made to the opened MSI package via MST, select Save from the MENU.



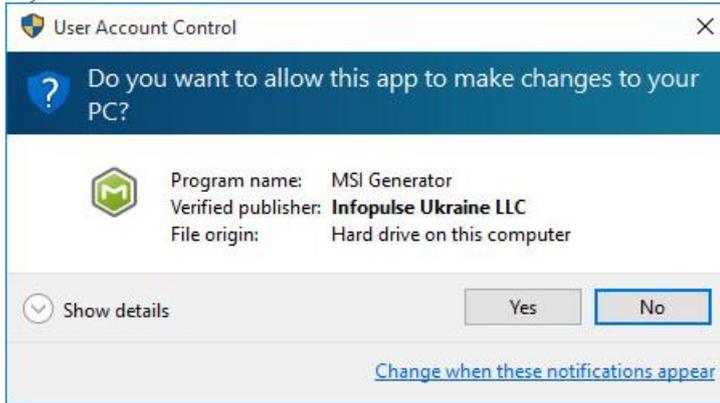
3.2.2 Create Response MST

Capture all your inputs and changes, made to the Windows Installer UI dialogs of the MSI installation, and save them to the MST file using MSI Generator. The MSI installation will be simulated, which allows capturing all necessary changes very promptly and without affecting your real system.

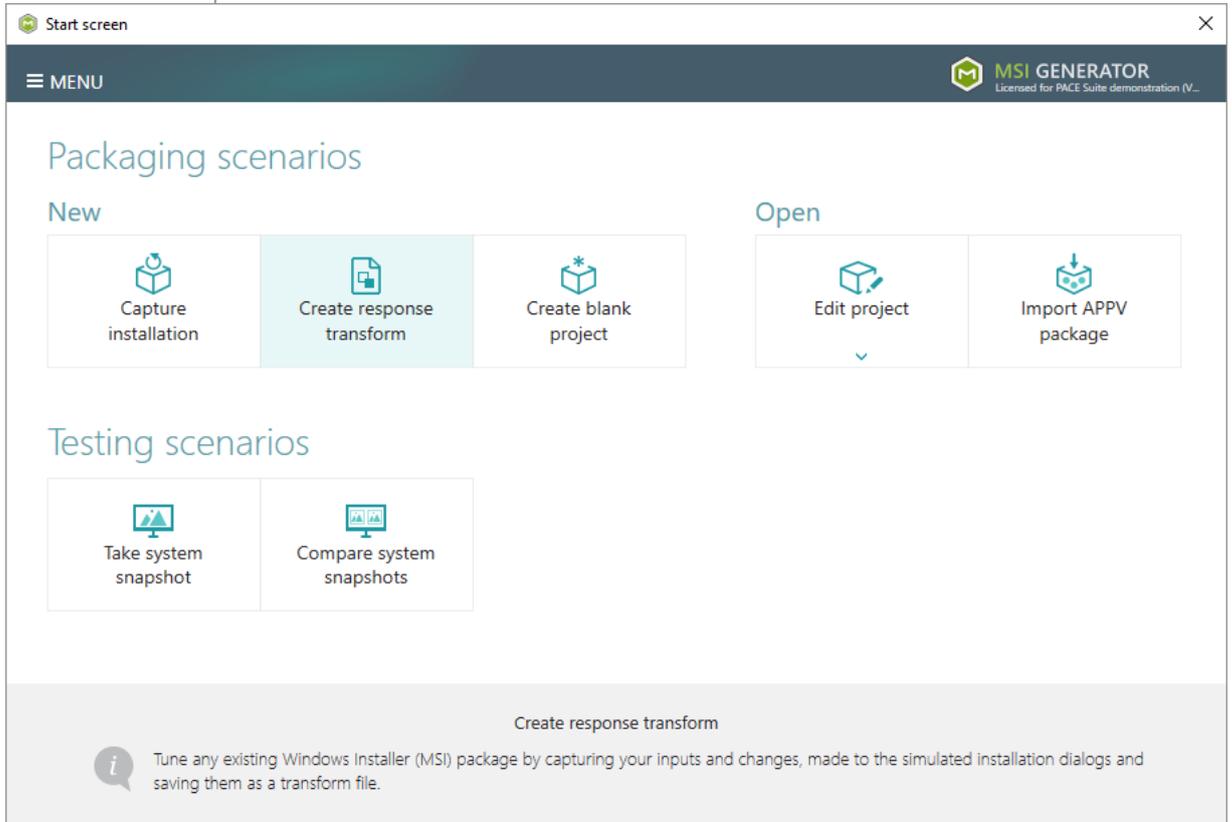
[1]. Launch MSI Generator from the desktop or the start menu shortcut.



[2]. If you have User Account Control enabled, click Yes in the opened window.

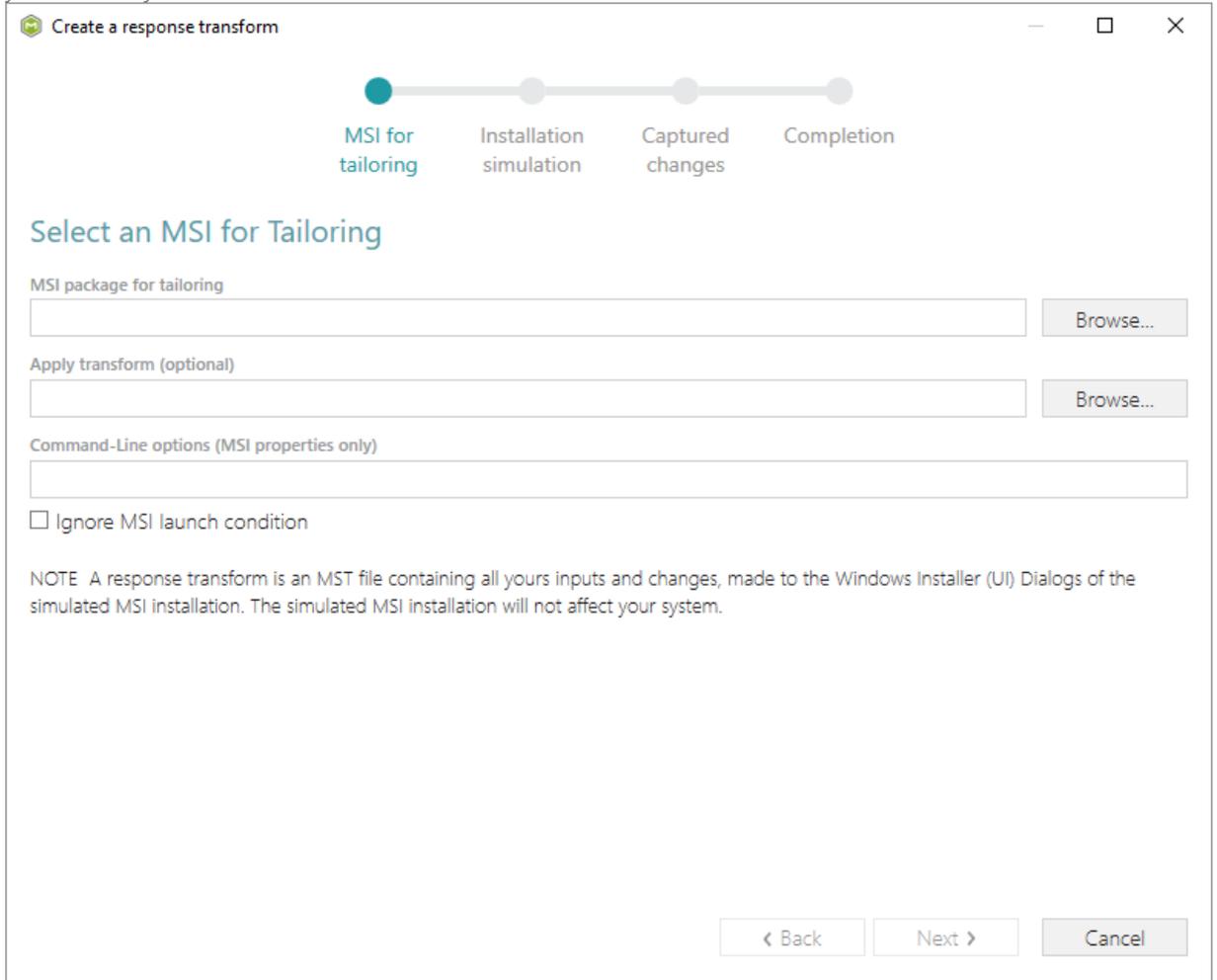


[3]. Click Create response transform.

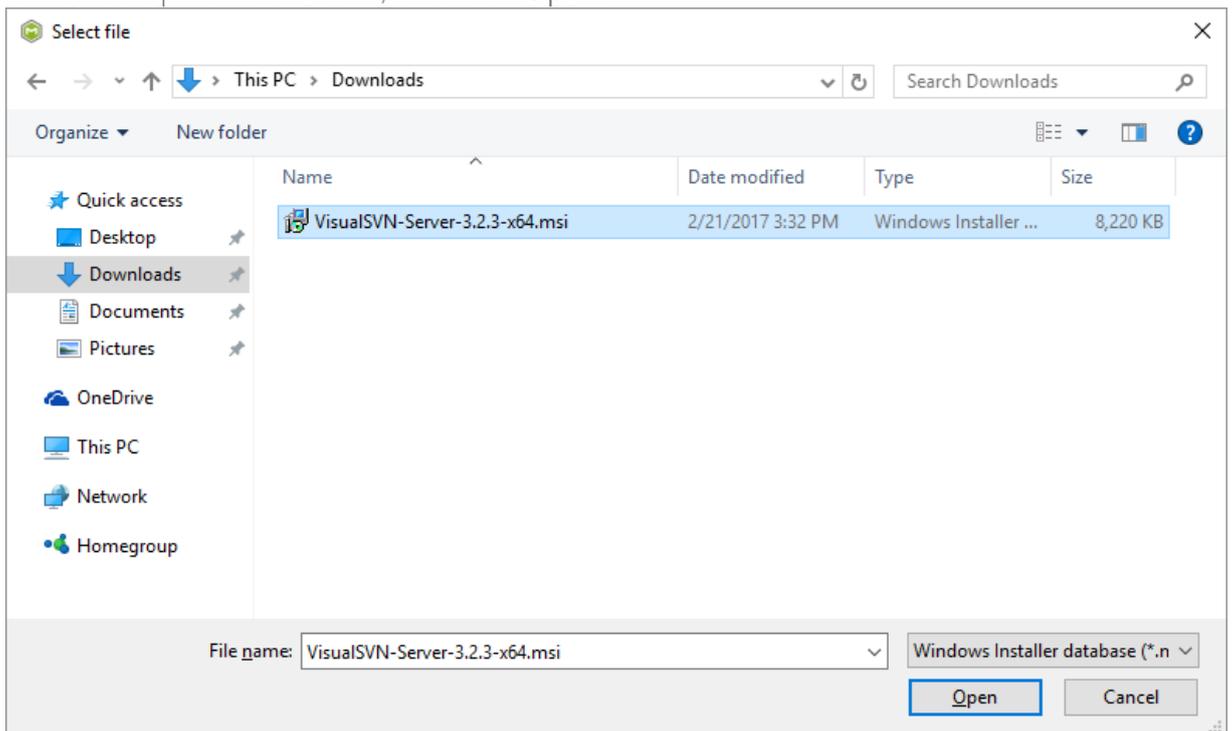


[4]. Click **Browse...**, located next to the MSI package for tailoring field, to select an MSI package for tailoring. Note that the MSI installation will be simulated and will not affect

your real system.



- [5]. Choose an MSI package (e.g. VisualSVN-Server-3.2.3-x64.msi), for which you want to create a response transform, and click Open.



- [6]. The Apply transform (optional) and Command-Line options (MSI properties only) fields are optional and they allow applying additional MST and setting MSI properties before the MSI tailoring. Select the Ignore MSI launch condition option to skip all condition from the LaunchCondition MSI table.

Create a response transform

MSI for tailoring Installation simulation Captured changes Completion

Select an MSI for Tailoring

MSI package for tailoring
C:\Users\pace\Downloads\VisualSVN-Server-3.2.3-x64.msi Browse...

Apply transform (optional) Browse...

Command-Line options (MSI properties only)

Ignore MSI launch condition

NOTE A response transform is an MST file containing all yours inputs and changes, made to the Windows Installer (UI) Dialogs of the simulated MSI installation. The simulated MSI installation will not affect your system.

< Back Next > Cancel

[7]. Click Next to start the MSI installation simulation.

Create a response transform

MSI for tailoring Installation simulation Captured changes Completion

Select an MSI for Tailoring

MSI package for tailoring
C:\Users\pace\Downloads\VisualSVN-Server-3.2.3-x64.msi Browse...

Apply transform (optional)
 Browse...

Command-Line options (MSI properties only)

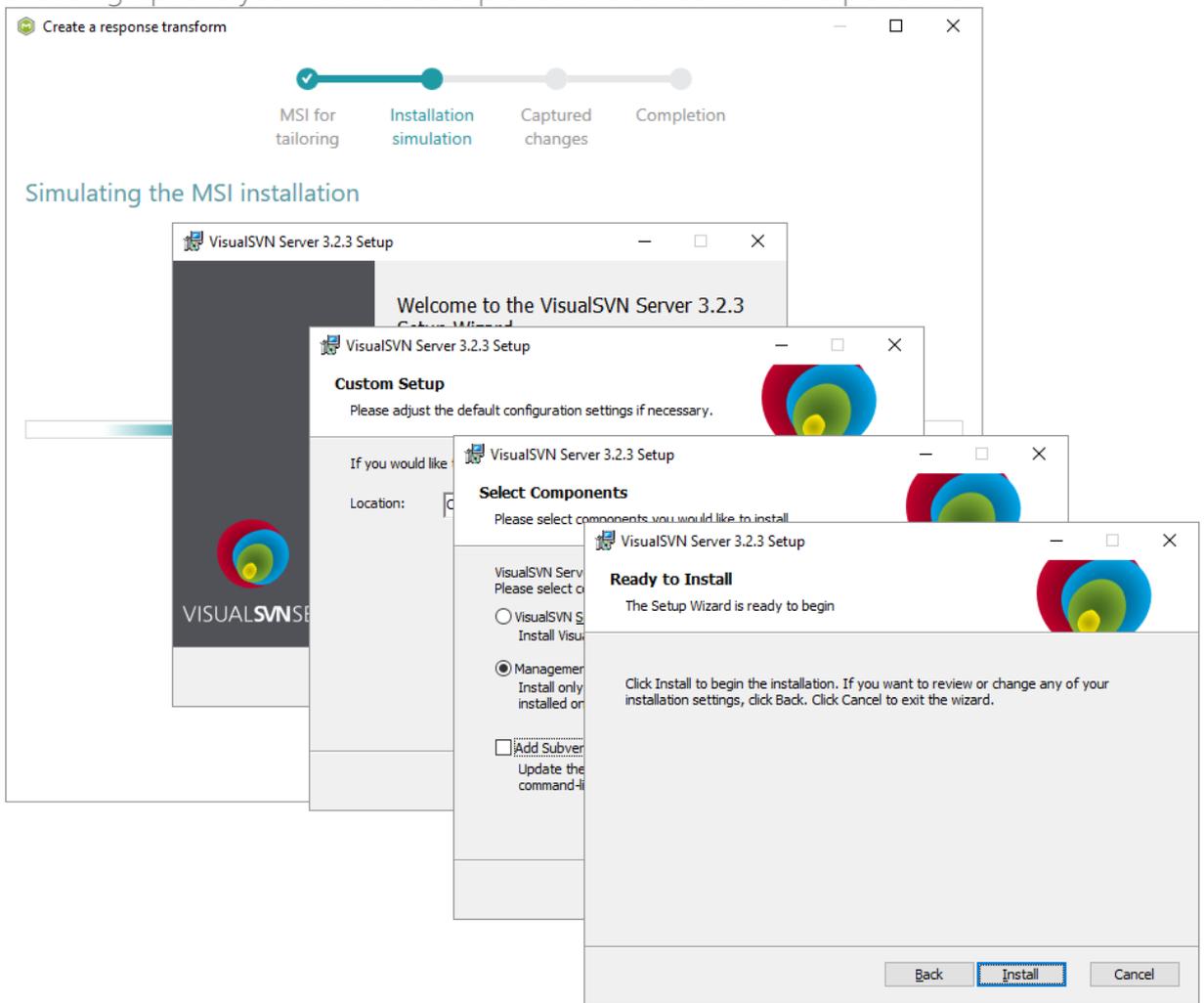
Ignore MSI launch condition

NOTE A response transform is an MST file containing all yours inputs and changes, made to the Windows Installer (UI) Dialogs of the simulated MSI installation. The simulated MSI installation will not affect your system.

< Back **Next >** Cancel



- [8]. Complete the simulated MSI installation following the Windows Installer dialogs and choosing options you need to be captured and saved to the response transform.



- [9]. Review captured information, which will be saved to the response transform (MST) file, by opening the Properties, Features and Directories tabs. Click Add to create new or click



Remove to remove the selected item in the opened tab.

Create a response transform

MSI for tailoring Installation simulation **Captured changes** Completion

Captured changes

Properties Features Directories

Items	Old value	New value	Captured state
LicenseAccepted		1	Created
ShowMigratePermissionsReport		0	Created
Feature_AddSvnToPath		1	Created
_BrowseProperty		INSTALLDIR	Created
ManagerOnly	0	1	Updated
SideBannerBitmap	WixUI_Bmp_Side	WixUI_Png_Side	Updated
TopBannerBitmap	WixUI_Bmp_Top	WixUI_Png_Top	Updated
UpdatePathVariable	1		Removed

Add Remove Total rows: 8

< Back Next > Cancel

[10]. Click Next to choose the saving options.

Create a response transform

MSI for tailoring Installation simulation **Captured changes** Completion

Captured changes

Properties Features Directories

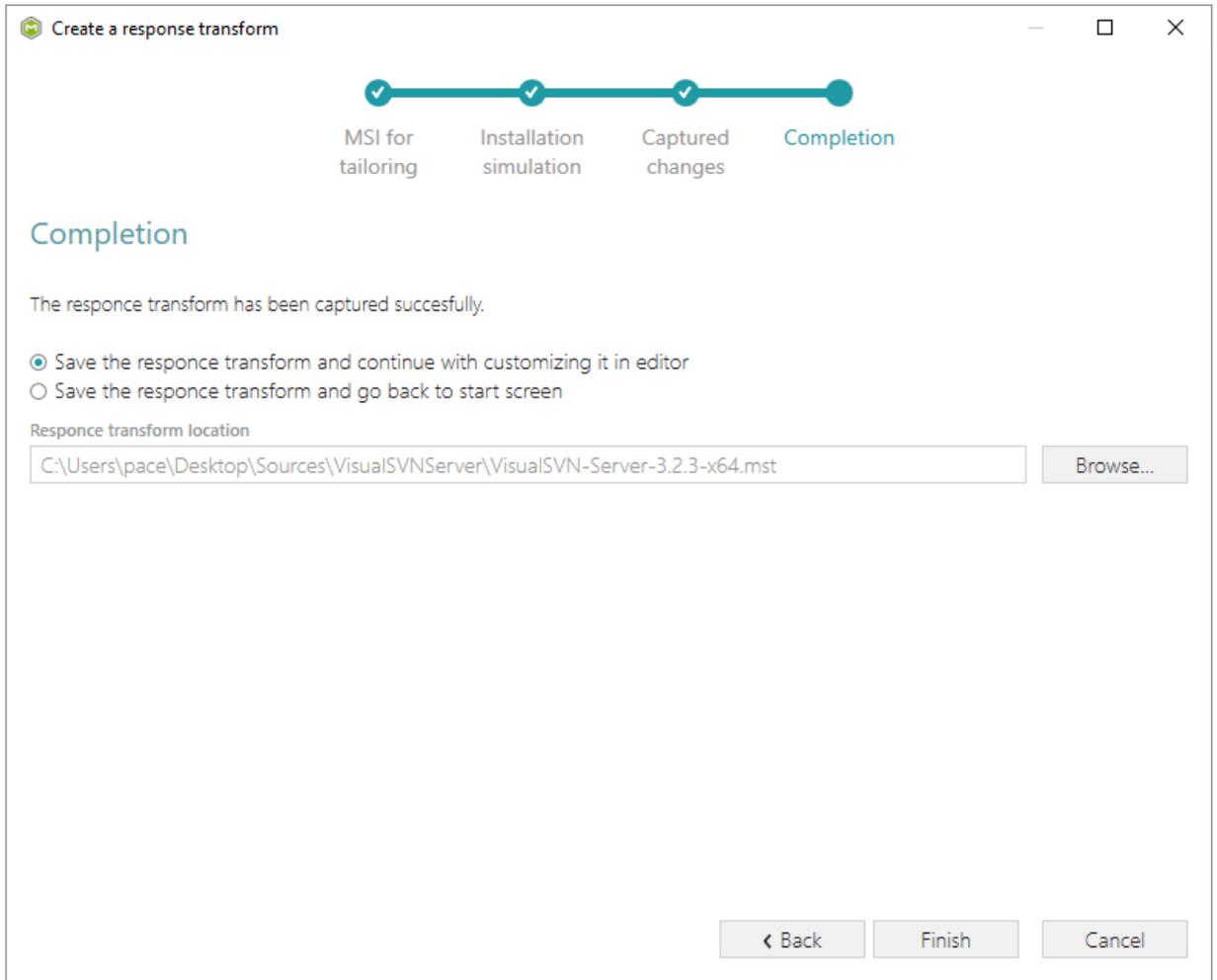
Items	Old value	New value	Captured state
LicenseAccepted		1	Created
ShowMigratePermissionsReport		0	Created
Feature_AddSvnToPath		1	Created
_BrowseProperty		INSTALLDIR	Created
ManagerOnly	0	1	Updated
SideBannerBitmap	WixUI_Bmp_Side	WixUI_Png_Side	Updated
TopBannerBitmap	WixUI_Bmp_Top	WixUI_Png_Top	Updated
UpdatePathVariable	1		Removed

Add Remove Total rows: 8

< Back Next > Cancel

[11]. We recommend to leave the Save the response transform and continue with customizing it in editor option selected to open the generated MST in MSI Editor. For changing the destination location and MST file name click Browse... Click Finish to create the response

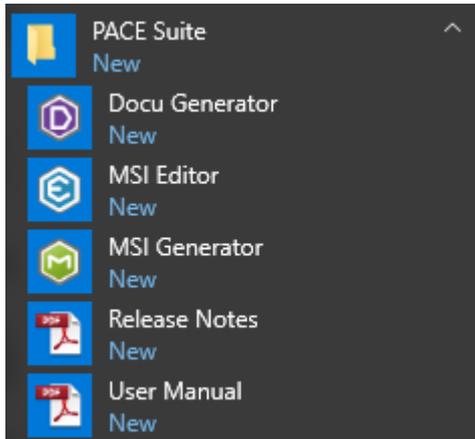
transform.



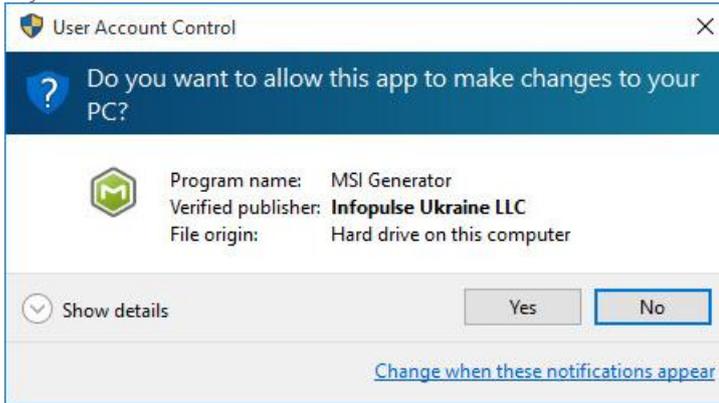
3.2.3 Capture System Changes to MST

Capture system changes, which were made to the file system and registry, by script, by application or manually and save them into MST file, generated against the selected MSI package using MSI Generator. Along with files and registry, services and environment variables, you can capture file system and registry permission changes.

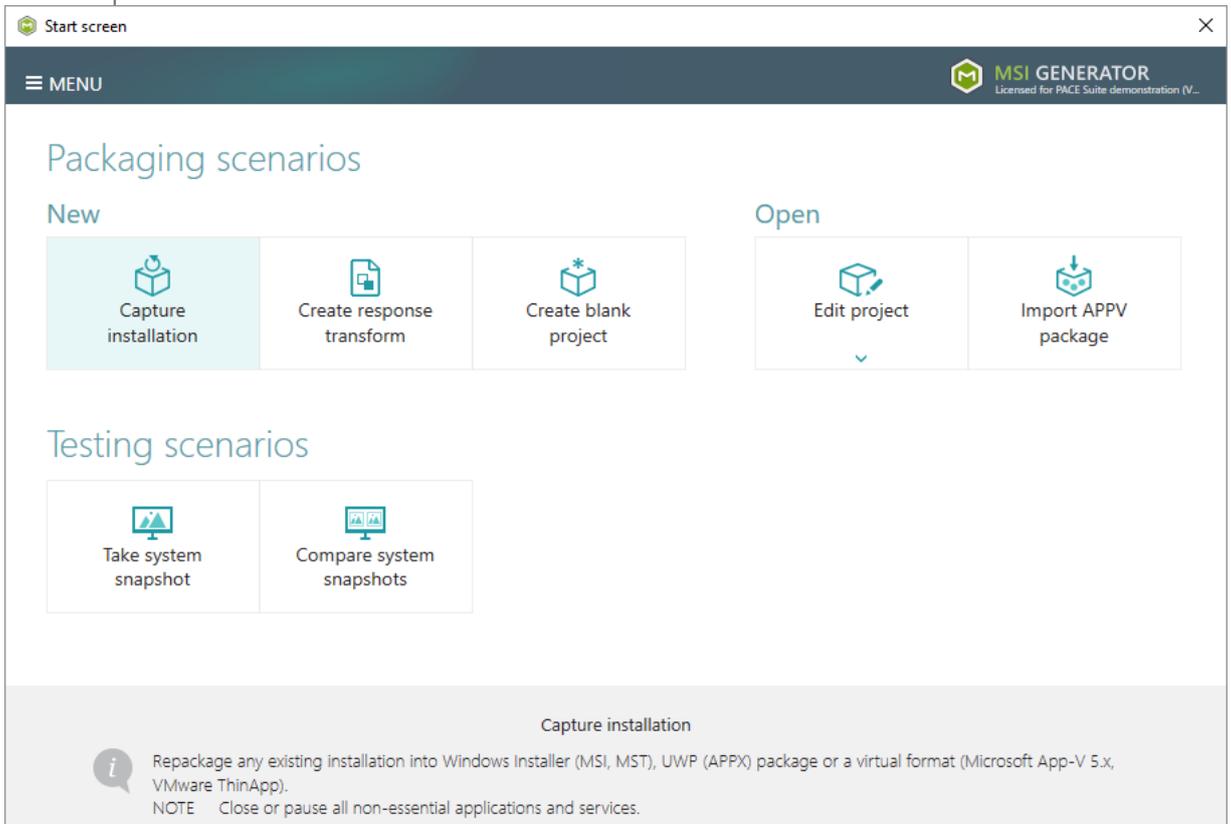
- [1]. Launch MSI Generator from the desktop or the start menu shortcut.



[2]. If you have User Account Control enabled, click Yes in the opened window.



[3]. Click Capture installation.



- [4]. Review the issues, which were detected on your system, and try to resolve them by closing the non-essential applications and stopping services. Thereafter, click **Next >**.

Capture installation

Prepare computer Capturing method Settings Installation Completion

Prepare the computer for capturing

It is strongly recommended to perform capturing on a clean virtual machine with all non-essential processes stopped in order to avoid capturing data, which is not related to your source installation. Also, in case of any failure, you will be able to restore the virtual machine to the previous state.

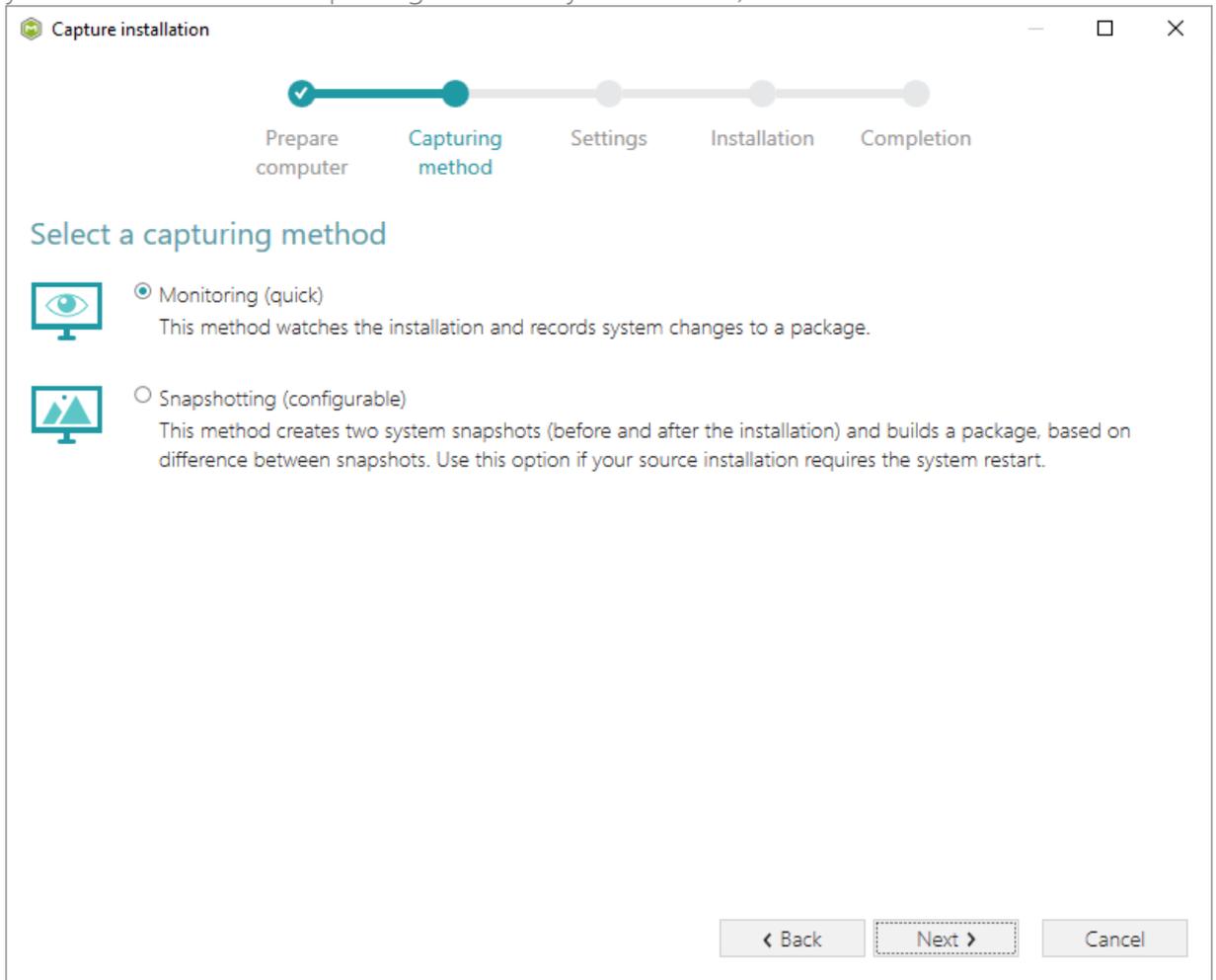
The following issues were detected on your system:

Description	Resolution
⚠ Diagnostic Policy Service is active.	Stop this service before capturing.
⚠ Windows Defender Service is active.	Stop this service before capturing.
⚠ Security Center is active.	Stop this service before capturing.
⚠ Windows Defender is running.	Close your antivirus software before capturing.

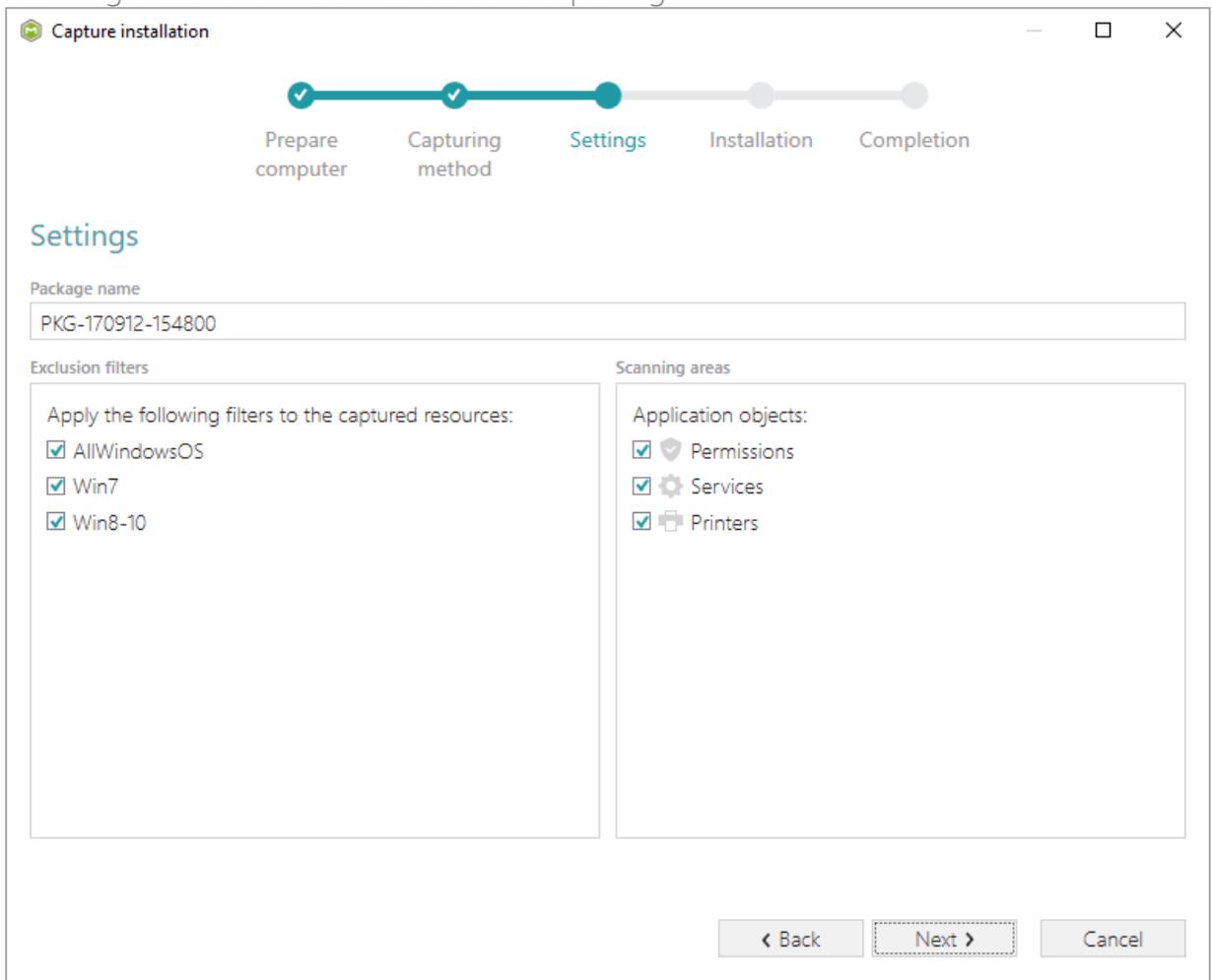
Refresh [Review the capturing recommendations...](#)

< Back Next > Cancel

[5]. Select the **Monitoring** method for the quicker capturing (or use the **Snapshotting** one if you need to continue capturing after the system restart) and click **Next >**.

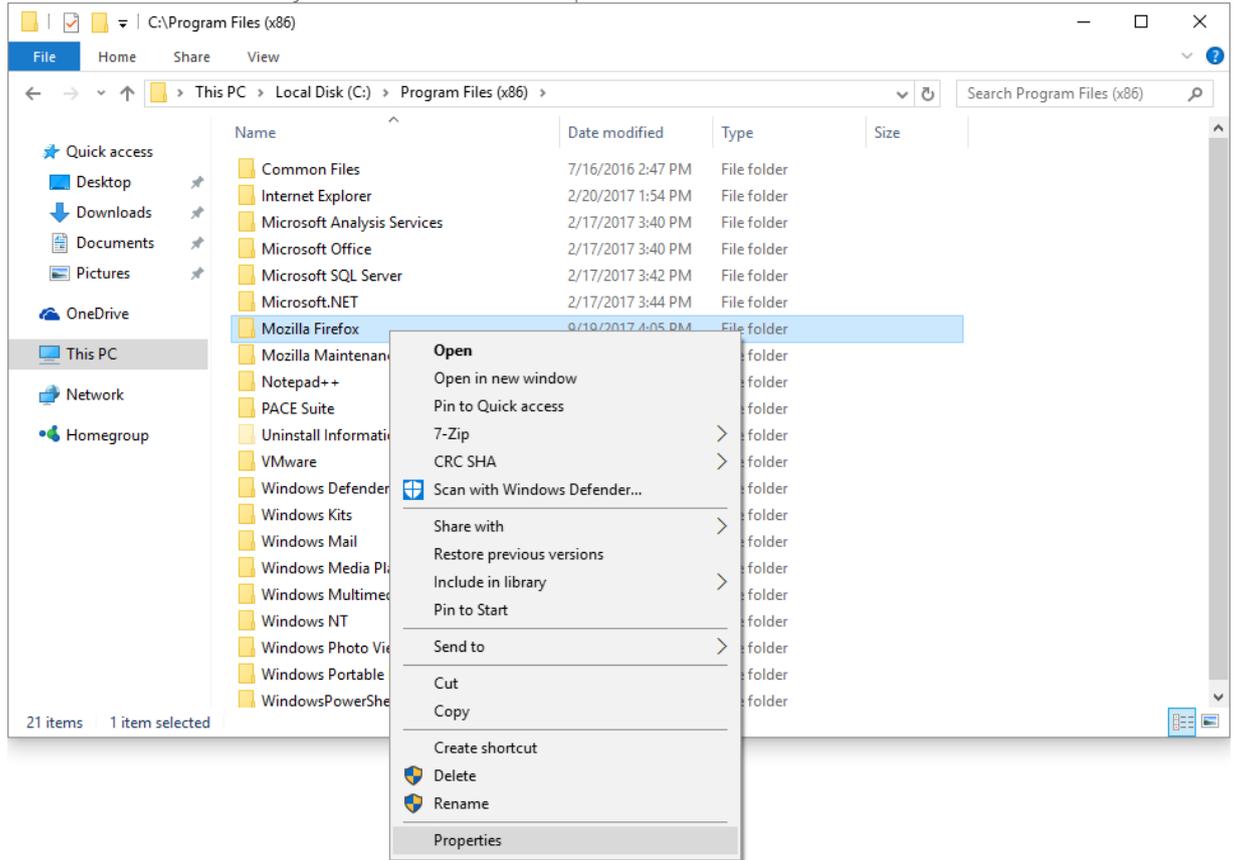


- [6]. Here you can review and update package name, disable needless exclusion filters and scanning areas. Click **Next >** to start the capturing.

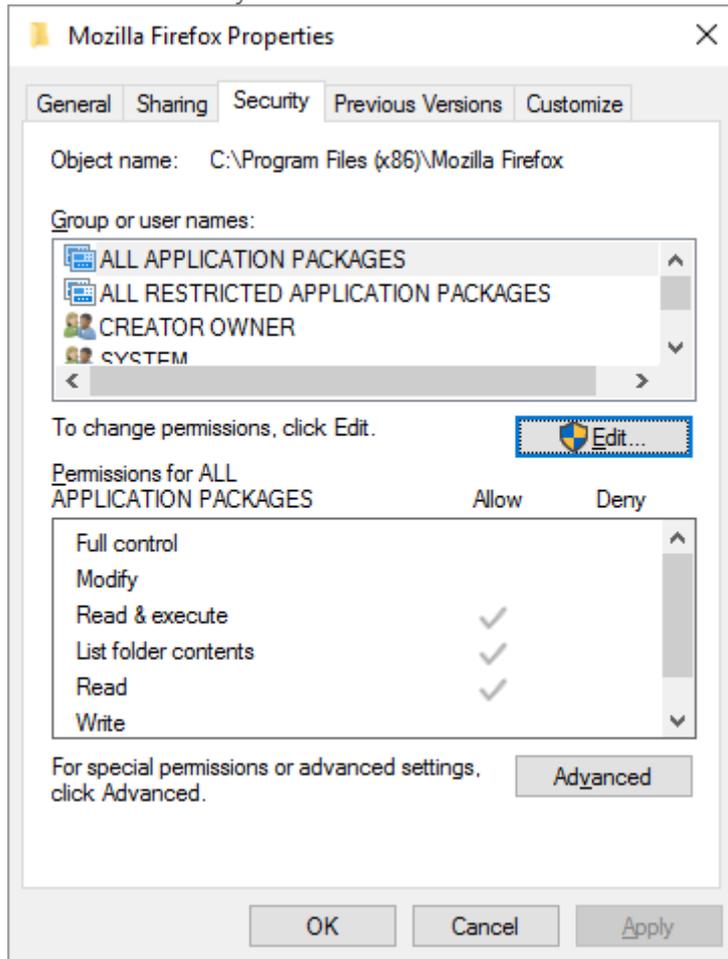


- [7]. Now you can make any changes to the file system and registry, which you want to capture and include to the transform (MST) file. For instance, you can create new or copy-paste existing files, import REG file to the system registry, changes permission settings, or launch the installed application in order to capture the necessary application configurations, like disabling updates and so on.
- [8]. If you additionally need to change the default permission settings on a folder or a file and include them to the package, select **Properties** from the Windows Explorer context menu

of a folder, on which you want to set new permissions.

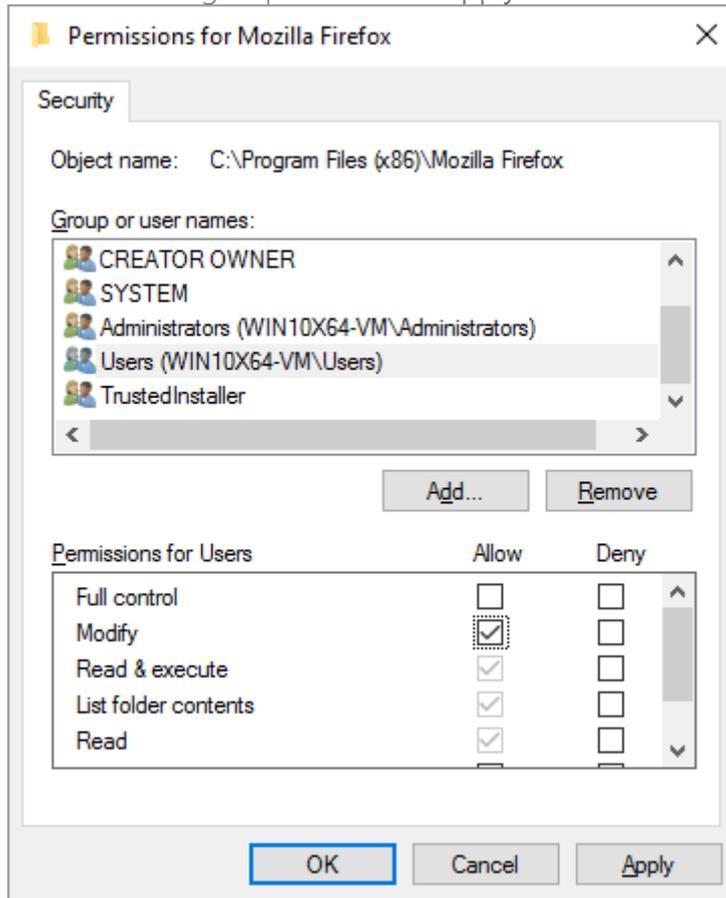


[9]. Go to the Security tab and click Edit.

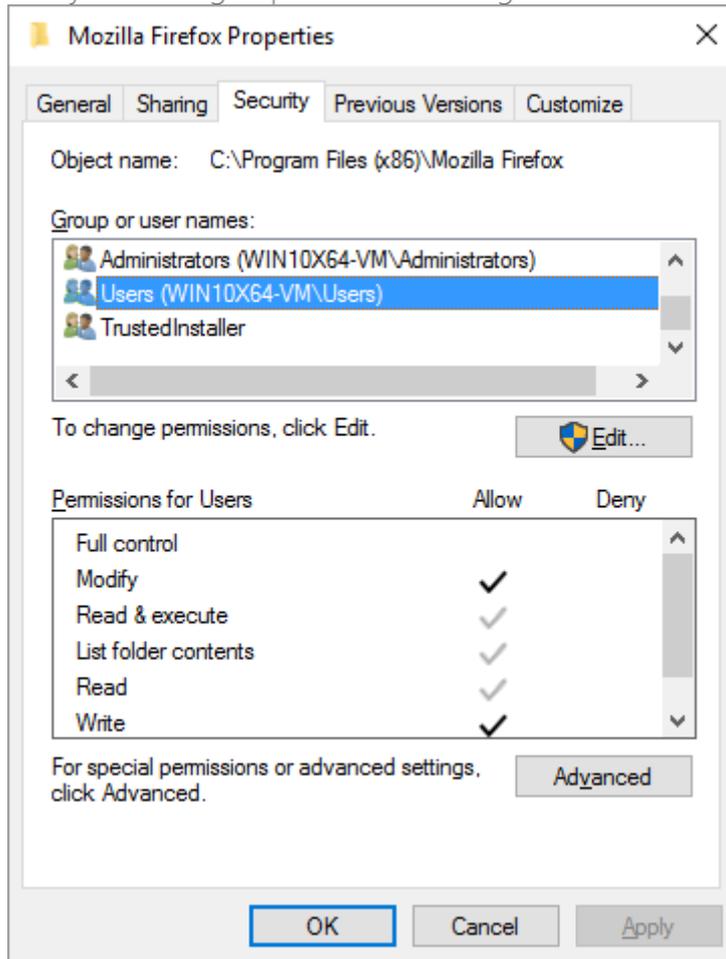


[10]. Select a group or a user, for which you want to change the permissions and then select the necessary access rights. For example, let's set the 'Write' and the 'Modify' access rights

for the 'Users' group. Then click Apply and OK.



[11]. Verify the changed permission settings and click OK to close the window.



[12]. Finally, to complete the capturing, select I have finished the installation and click Next >.

Capture installation

Prepare computer Capturing method Settings **Installation** Completion

Install your applications now

Now is the time to run installers of the applications, which you want to capture. You can run installers either manually or using the "Select and run..." functionality.

Select and run...

Detected MSI Installation

State	Copied	Name
-------	--------	------

Note that it is not recommended to repackage MSI to MSI. If you have instantly detected and copied MSI installations, cancel capturing and switch to customizing them via a transform in Editor.

Once the installation is completed, select "I have finished the installation" and click "Next".

I have finished the installation

< Back **Next >** Cancel

[13]. Wait a little, while the capturing process is finishing, filtering captured data and creating the project.

Capture installation

Prepare computer Capturing method Settings **Installation** Completion

Install your applications now

Now is the time to run installers of the applications, which you want to capture. You can run installers either manually or using the "Select and run..." functionality.

Select and run...

Detected MSI Installation

State	Copied	Name
-------	--------	------

Note that it is not recommended to repackage MSI to MSI. If you have instantly detected and copied MSI installations, cancel capturing and switch to customizing them via a transform in Editor.

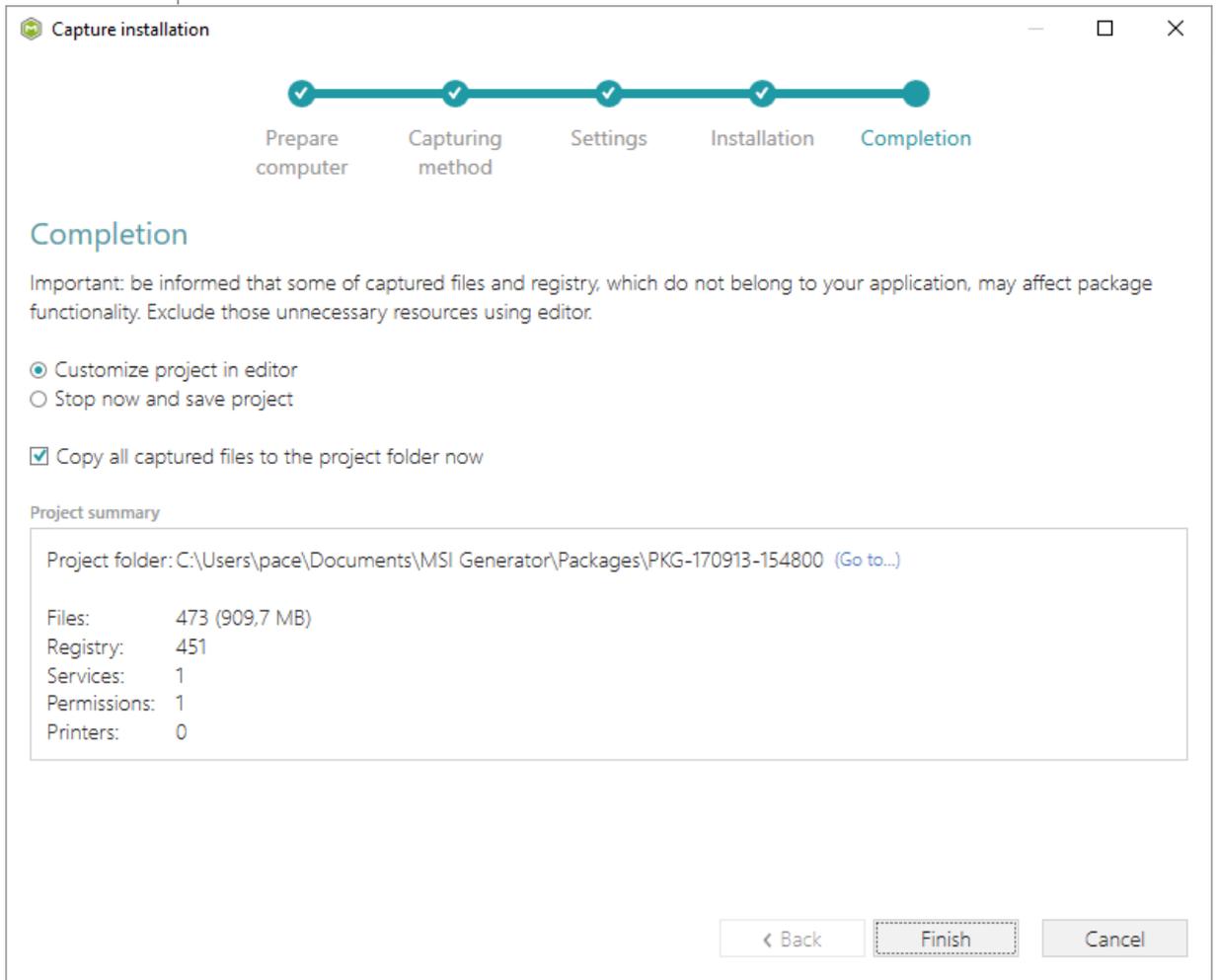
Once the installation is completed, select "I have finished the installation" and click "Next".

I have finished the installation

00:08 Scanning Services

< Back Next > Cancel

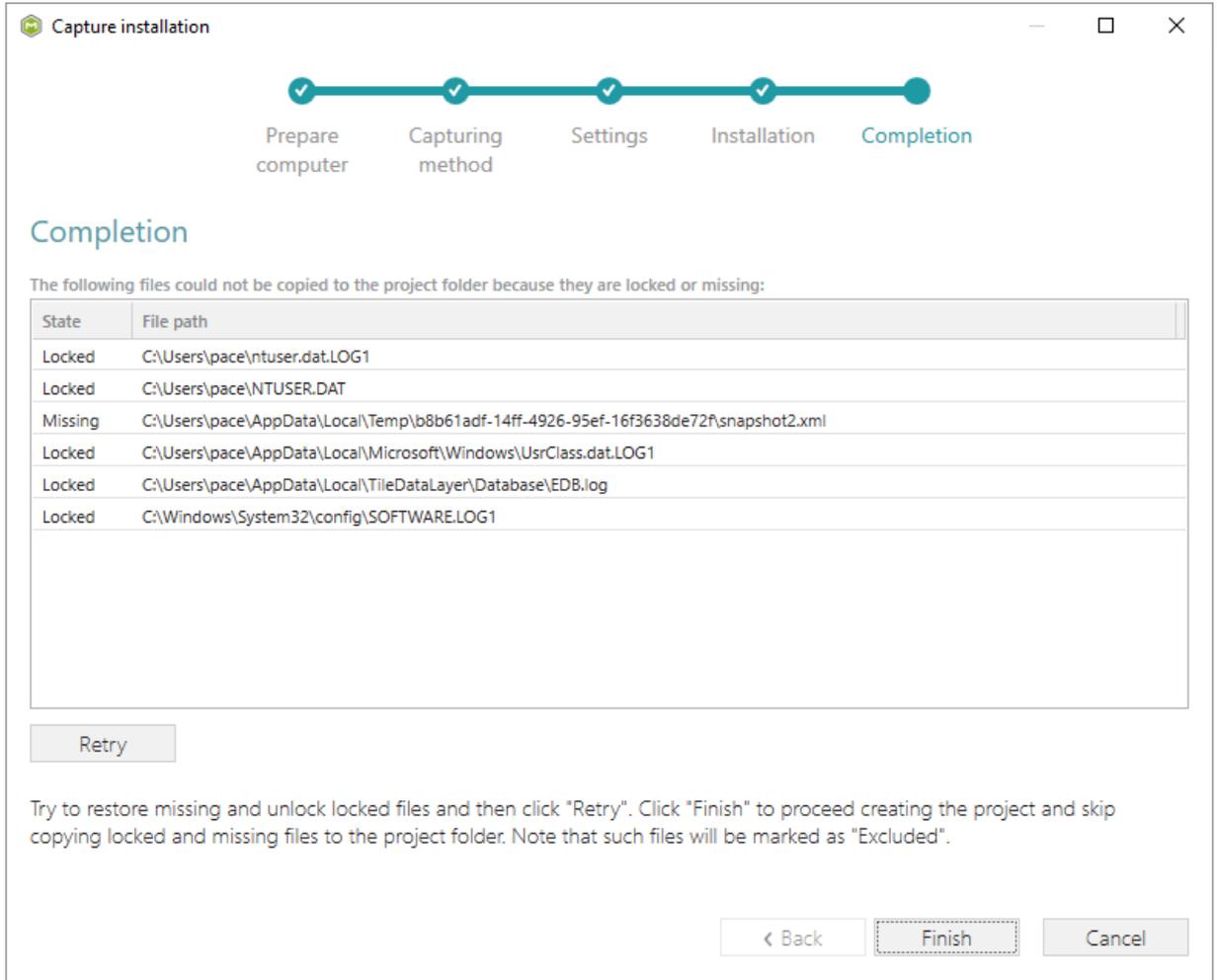
[14]. Leave selected the Customize project in editor and Copy all captured files to the project folder now options are selected and click Finish.



[15]. The following dialog displays captured files, which could not be copied to the project folder because they do not exist anymore or locked by the system or by an application. Try to resolve these issues and then click **Retry**. Click **Finish** to skip copying the missing



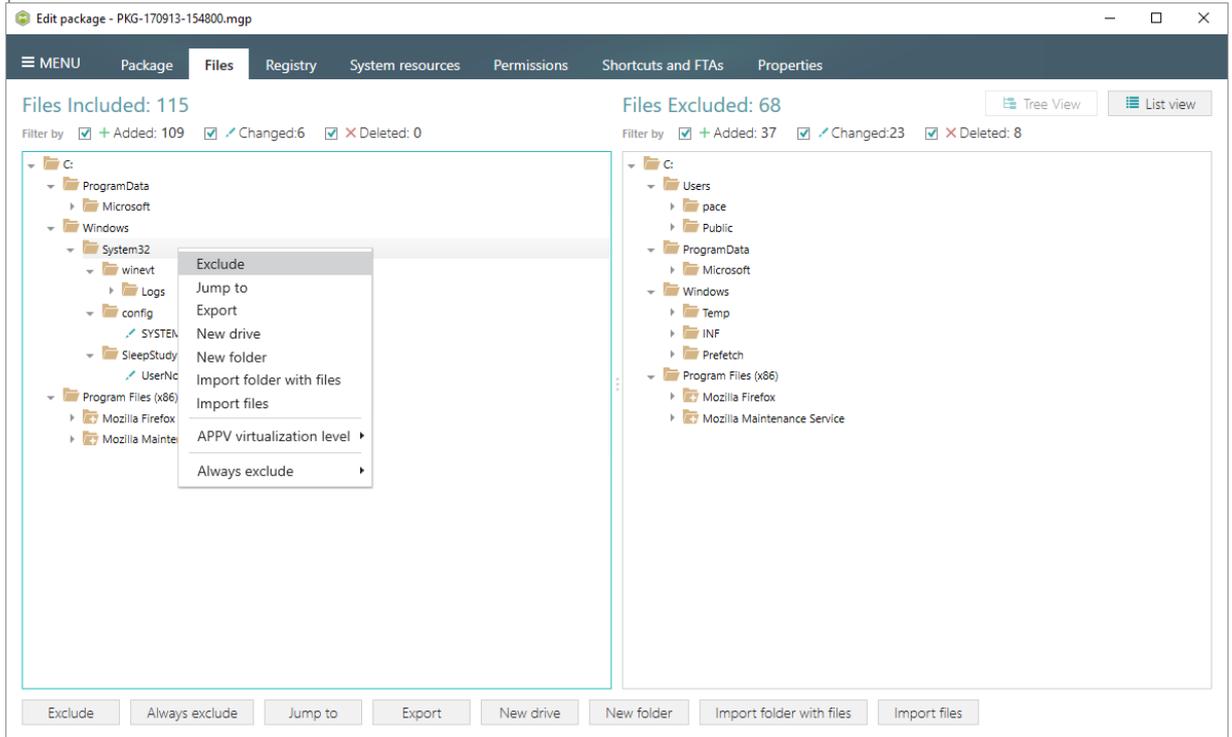
and locked files and mark them as Excluded resources.



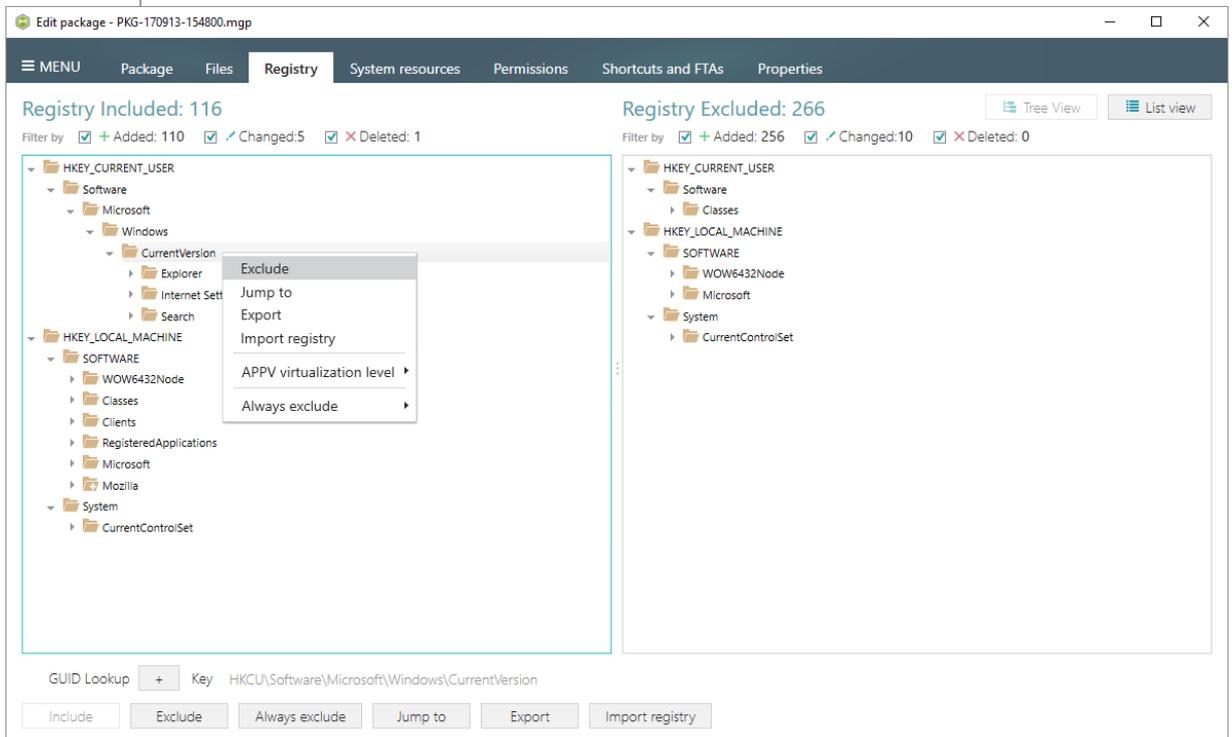
- [16]. Once the project is opened in the project editor, review the captured resources at the Files, Registry, System resources, Permissions, and Shortcuts and FTAs tabs and exclude unnecessary ones from the project. Unnecessary resources are files, registry entries, which are usually created or modified in the result of operating system work, and such resources could not be a part of your captured application. Unfortunately, there is no universal rule to discover which of captured files or registry entries should be excluded, so exclude only those ones, which almost 100% do not refer to your captured application (e.g. NOD32 antivirus files couldn't be a part of Firefox application).
- [17]. In order to review and exclude unnecessary files or folders, go to the Files tab, and select Exclude from the context menu of an item, which is located in the left 'Files Included'



pane.

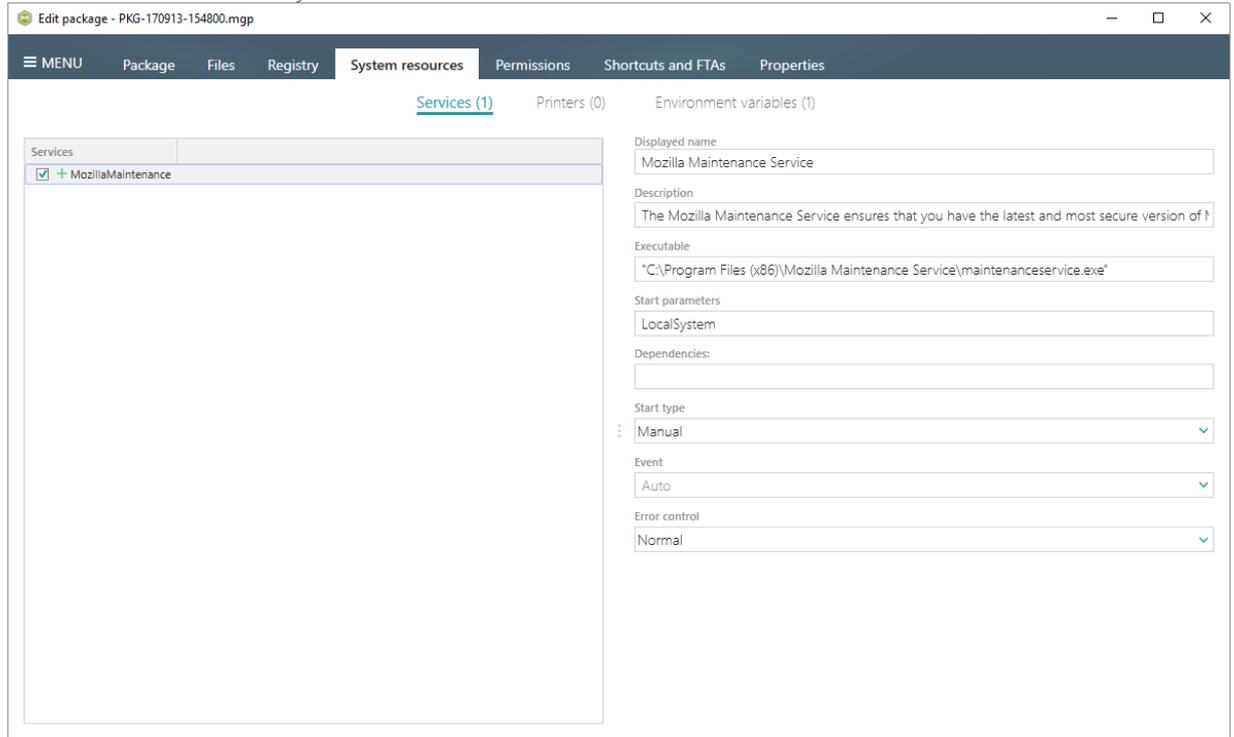


[18]. In order to review and exclude unnecessary registry keys or values, go to the Registry tab, and select Exclude from the context menu of an item, which is located in the left 'Registry Included' pane.

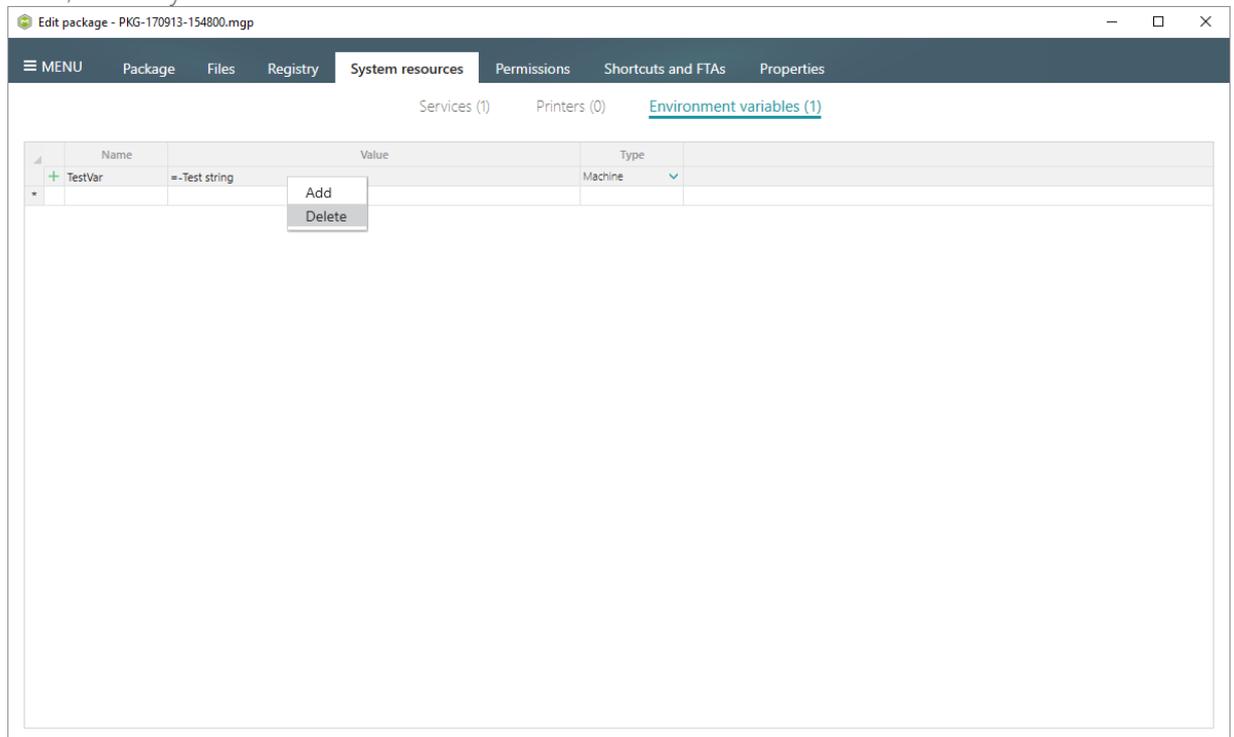


[19]. In order to review and exclude unnecessary services, go to the System resources -> Services tab, and uncheck the checkbox, located before the service name in the list, for

those services, which you want to exclude.

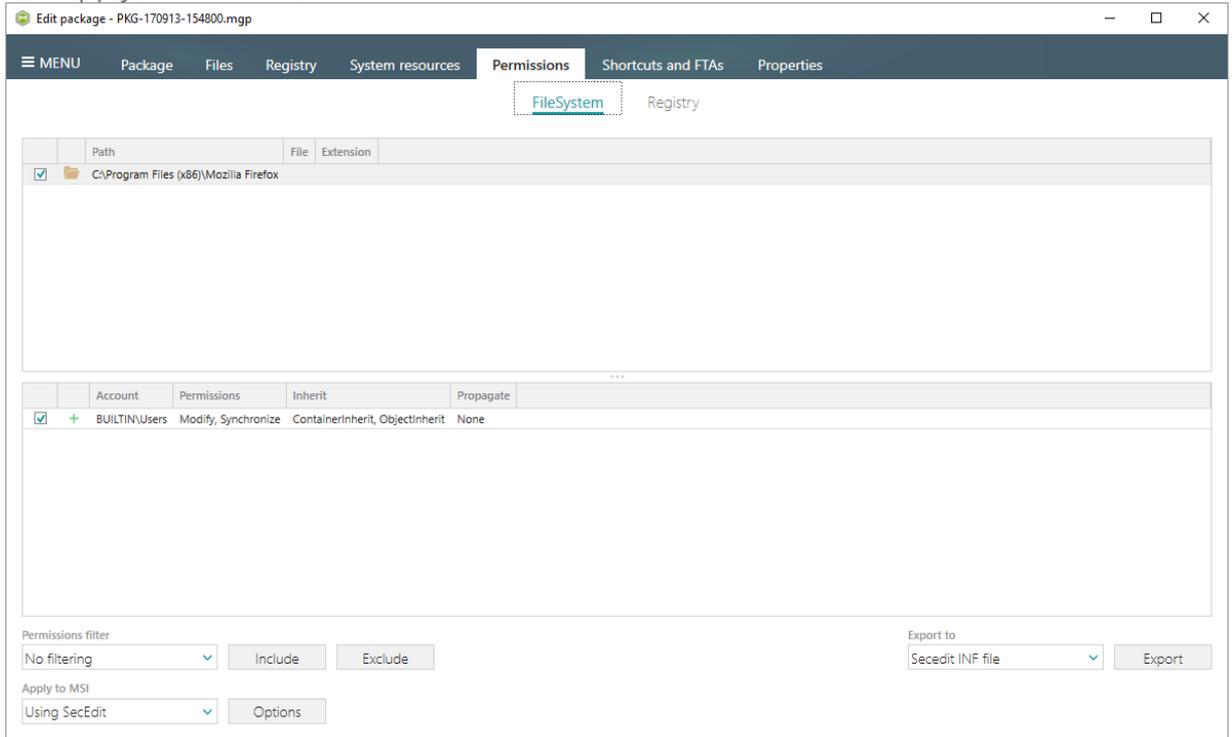


[20]. In order to review and remove unnecessary Environment variables, go to the System resources -> Environment variables tab, and select Delete from the context menu of an item, which you want to remove.

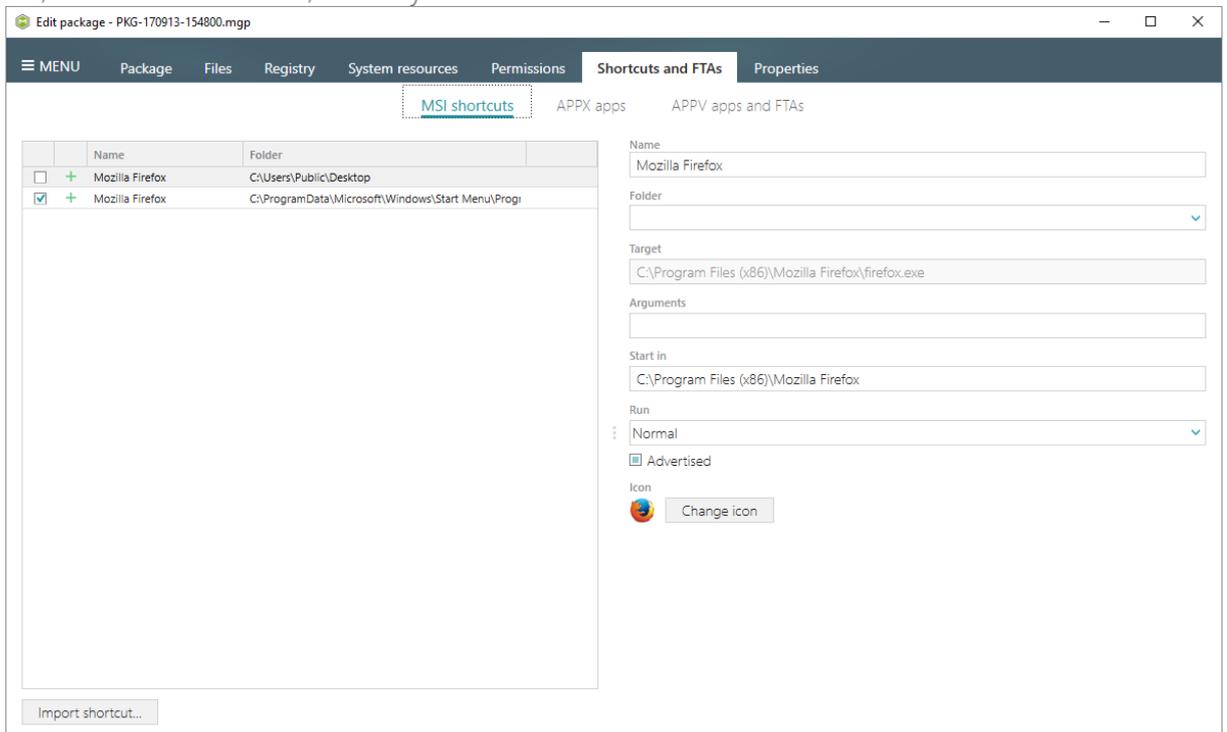


[21]. On the Permissions tab you will find captured permissions for the file system and registry. For excluding unnecessary permission changes, either uncheck the checkbox, located before the path, for which permission changes were detected, or select Do not apply in

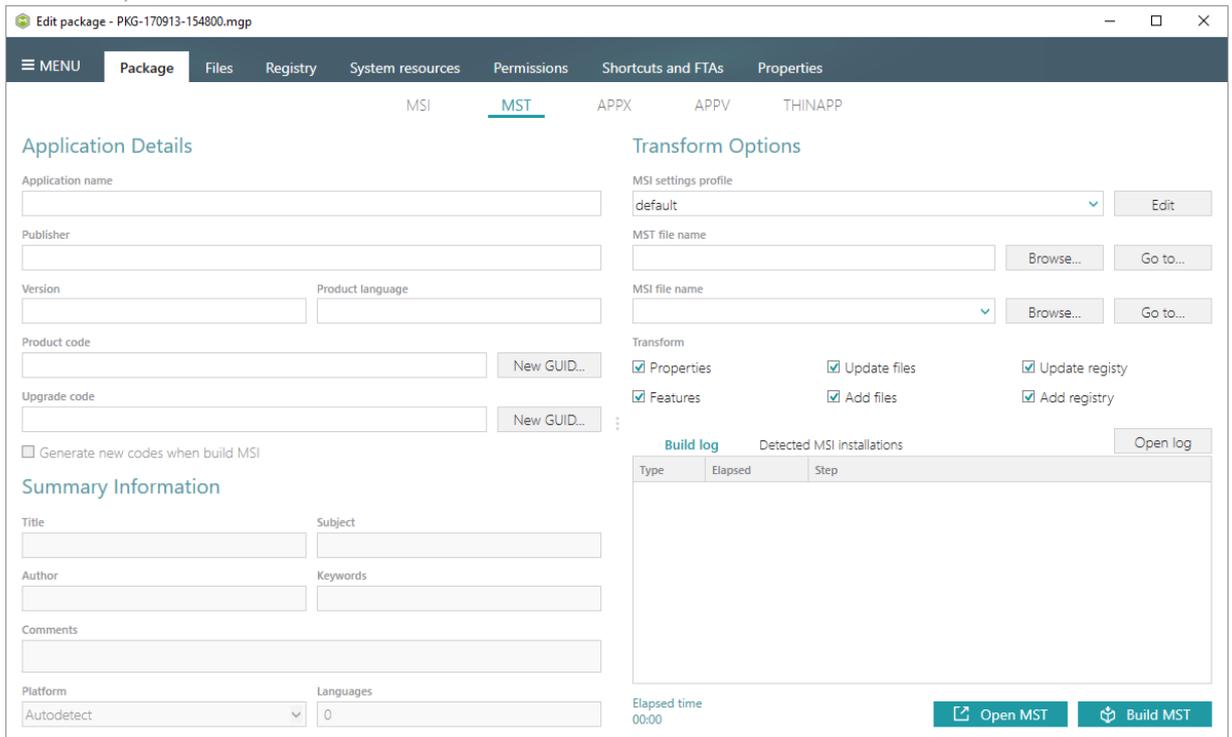
the Apply to MSI field, located in the bottom of the window.



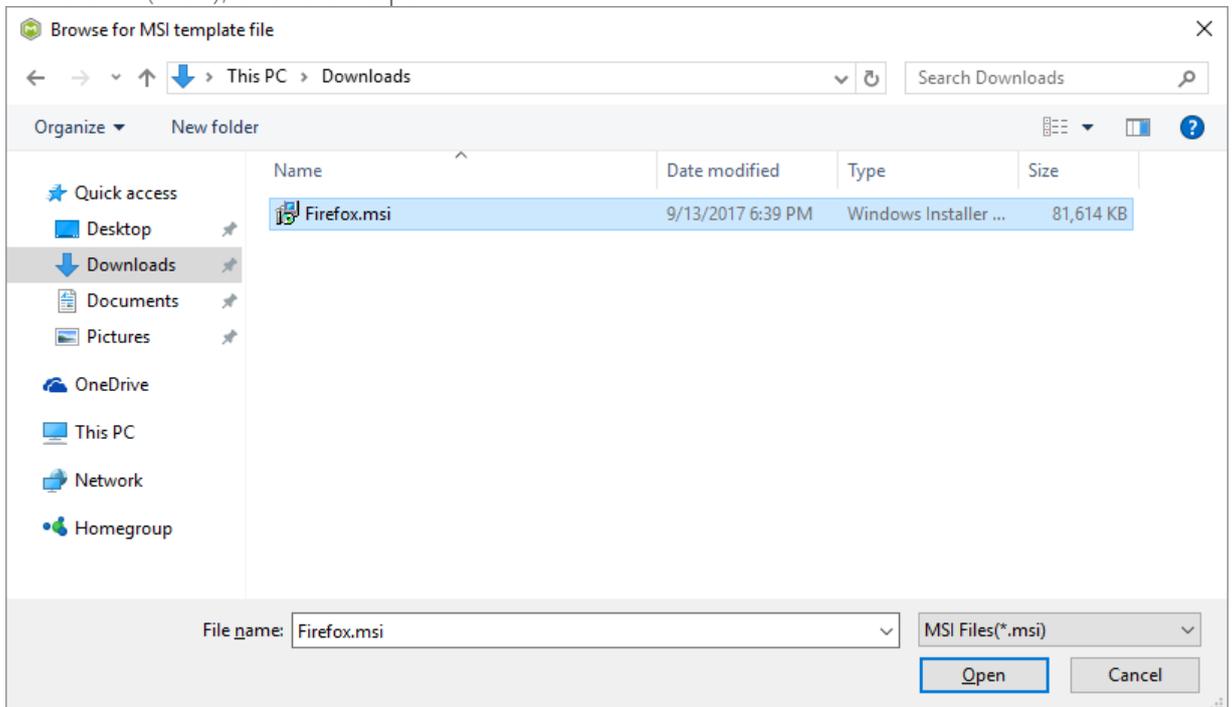
[22]. In order to review and exclude unnecessary shortcuts, go to the Shortcuts and FTAs -> MSI shortcuts tab, and uncheck the checkbox, located before the shortcut name in the list, for those shortcuts, which you want to exclude.



[23]. Finally, to build an MST from the project, navigate to the Package -> MST tab, click **Browse...**, located next to the MSI file name field.

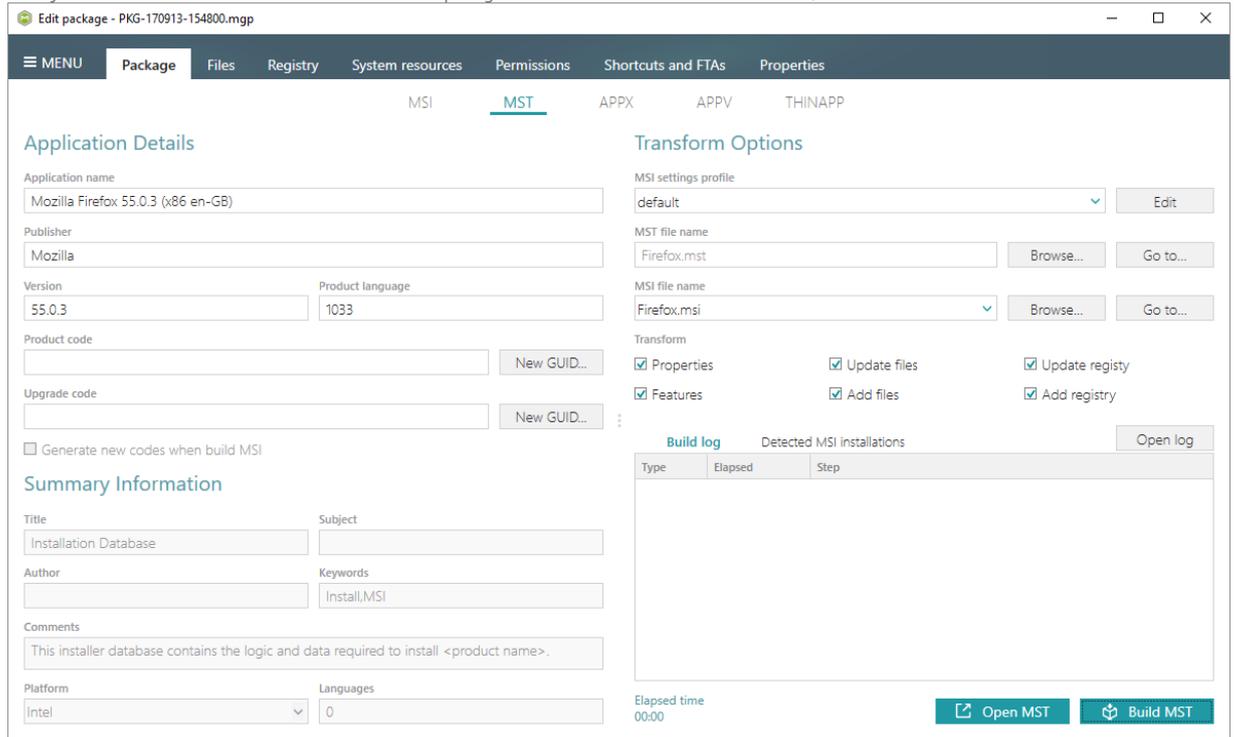


[24]. Choose an MSI package (e.g. Firefox.msi), against to which you want to create a transform (MST), and click **Open**.

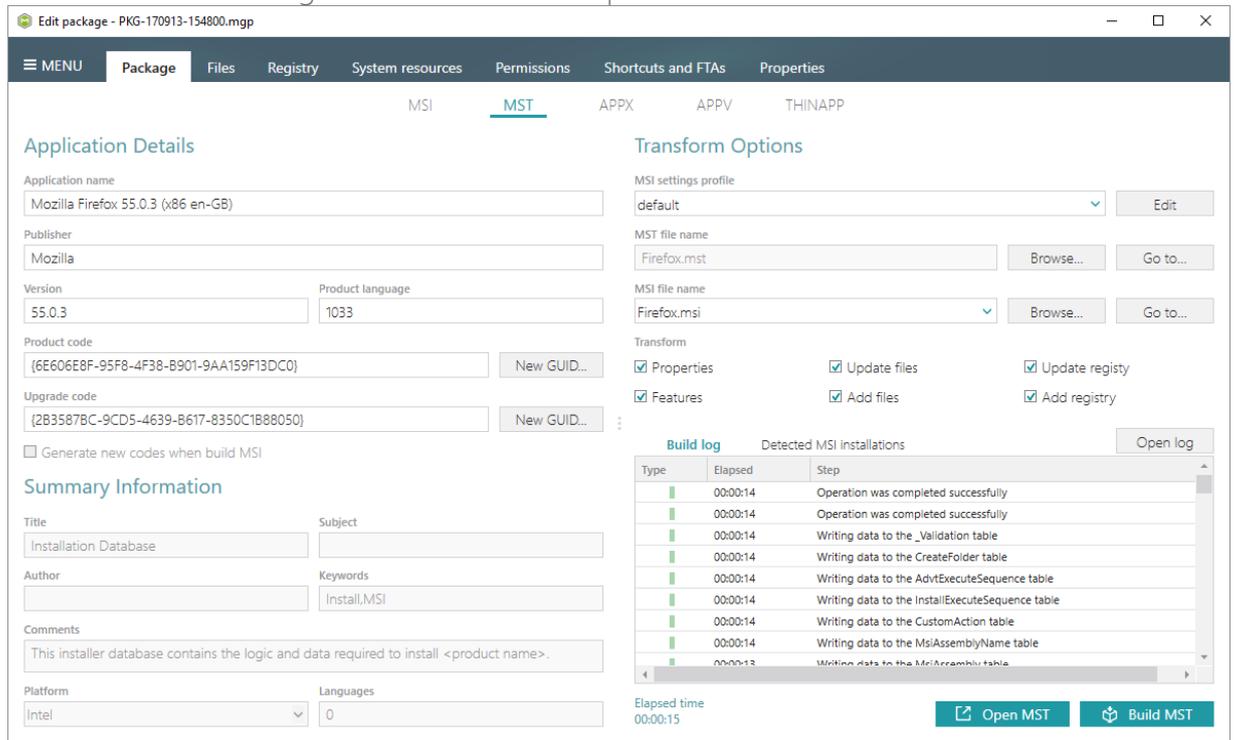


[25]. Update Application details such as name, publisher, version, language and click **Build MST** to generate a transform (MST) file. Note that the generated MST will contain only those resources that do not exist in the selected MSI package (in other words, MST will contain

only the difference between the project's and MSI resources).



[26]. Once the MST file is built, click **Go to...**, located next to the MST file name field, to open the MST file containing folder in Windows Explorer.



3.3 New MSP

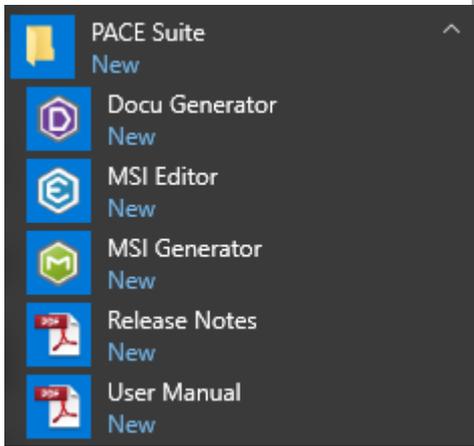
Choose a scenario that better suits your needs:

- Create MSP Based On Difference, described in section 3.3.1
Create a Patch (MSP) package, based on differences between two MSI packages.
- Save Changes to MSP, described in section 3.3.2
Save all your changes, made to the opened MSI database in MSI Editor, as a Patch (MSP) package.

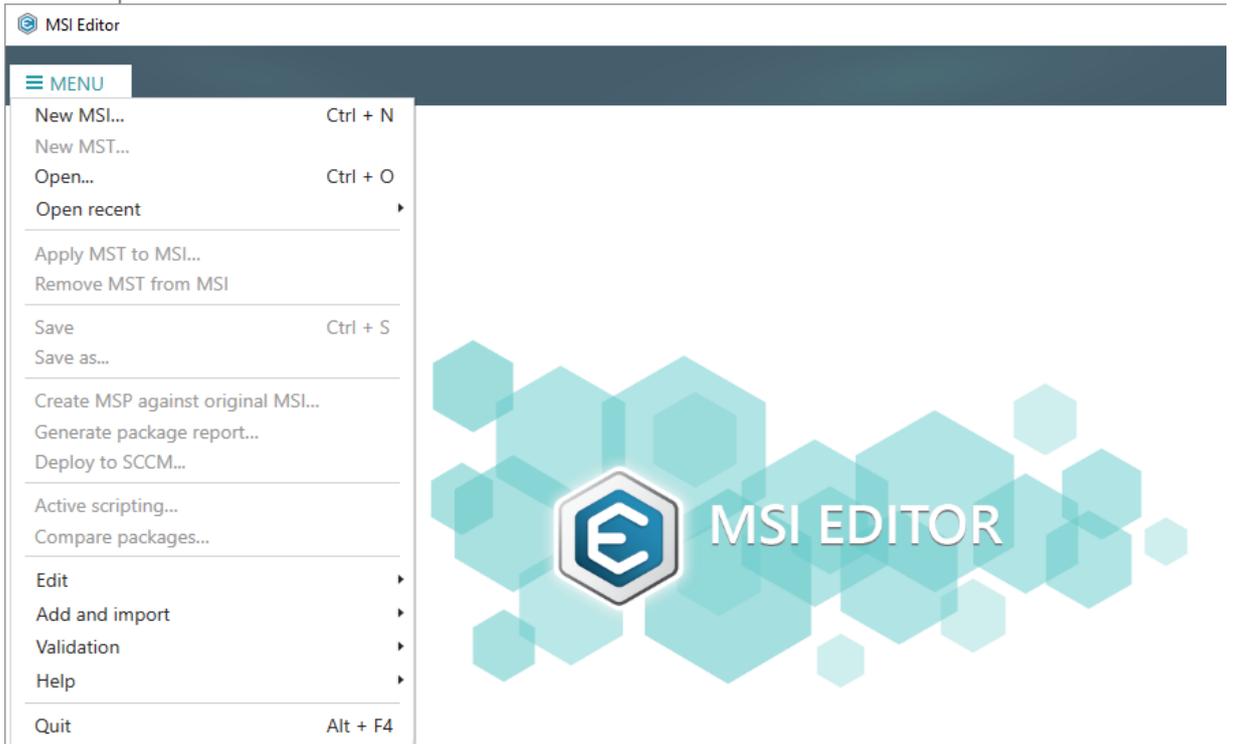
3.3.1 Create MSP Based On Difference

Create a Patch (MSP) package, based on differences between two MSI packages.

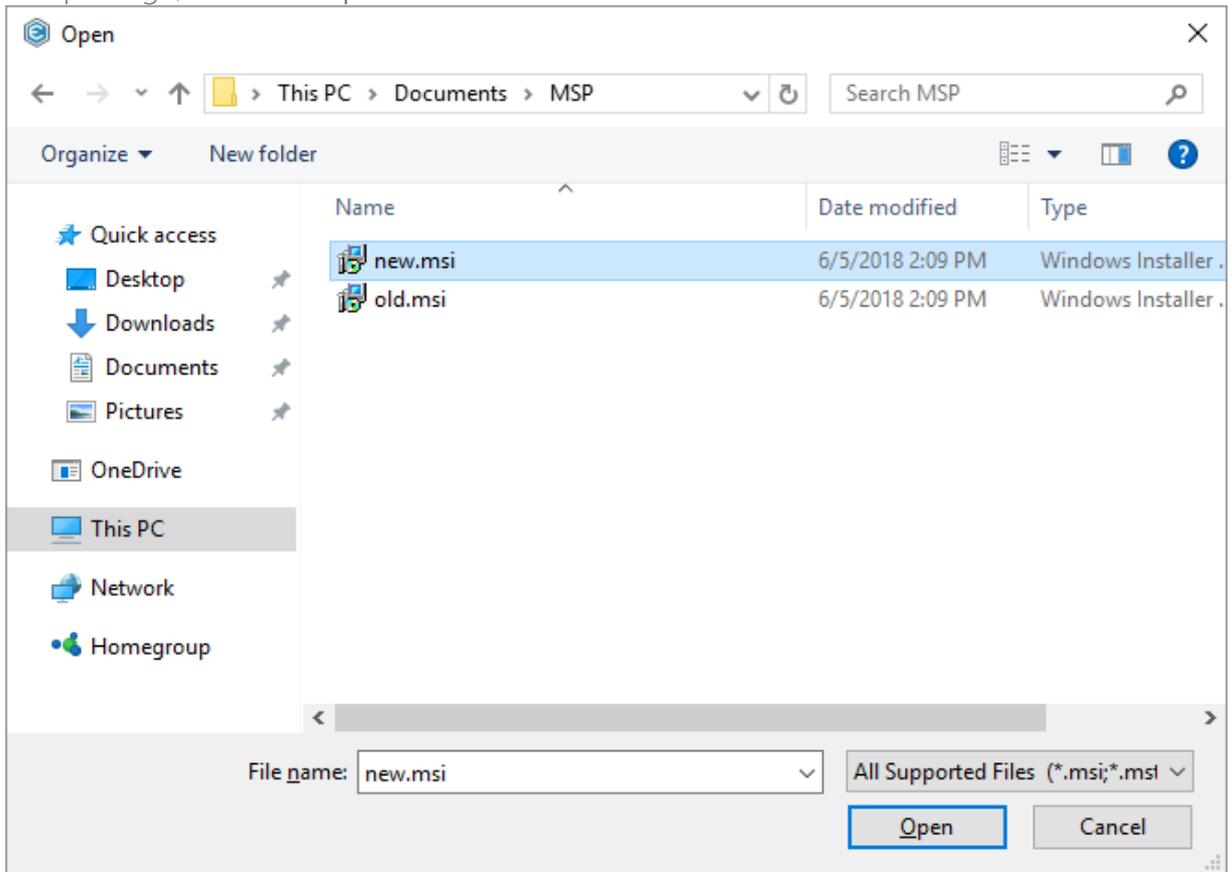
[1]. Launch MSI Editor from the desktop or the start menu shortcut.



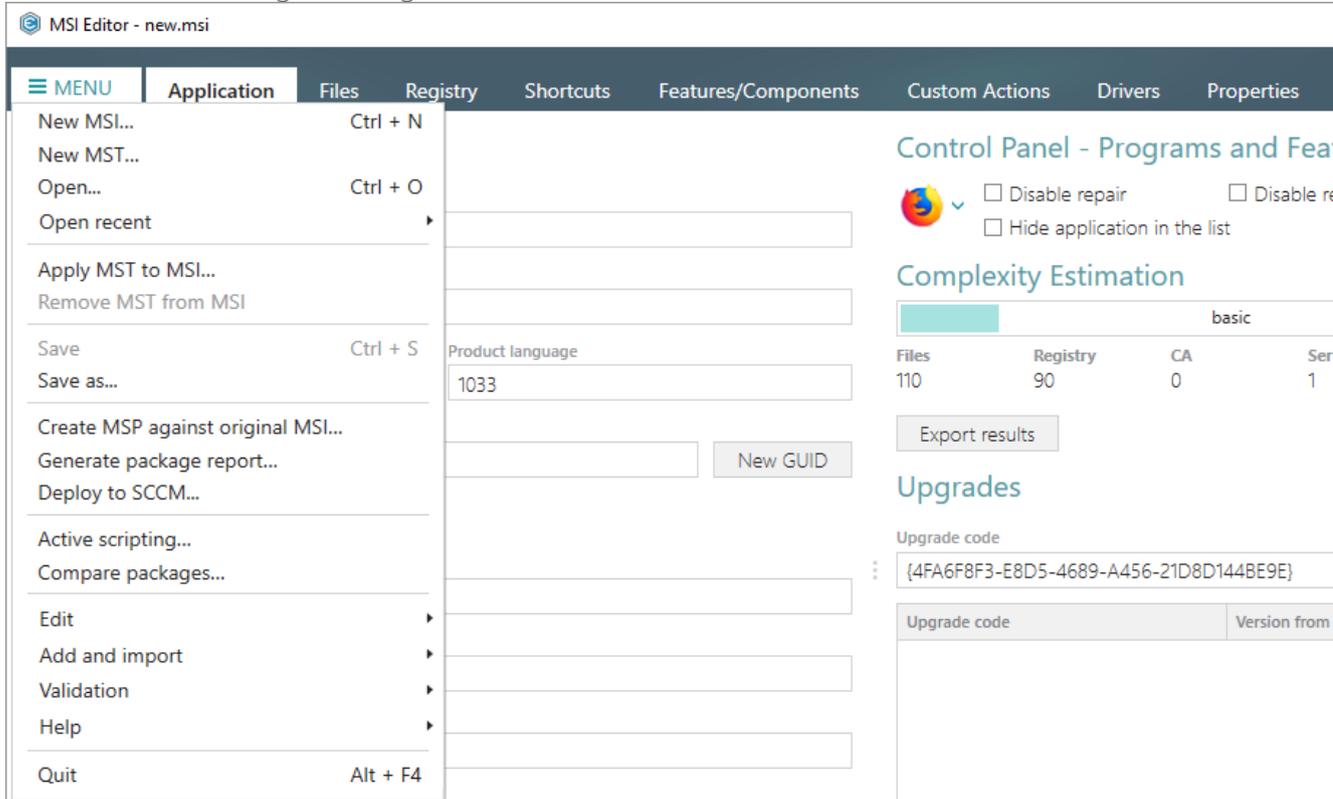
[2]. Select Open... from MENU.



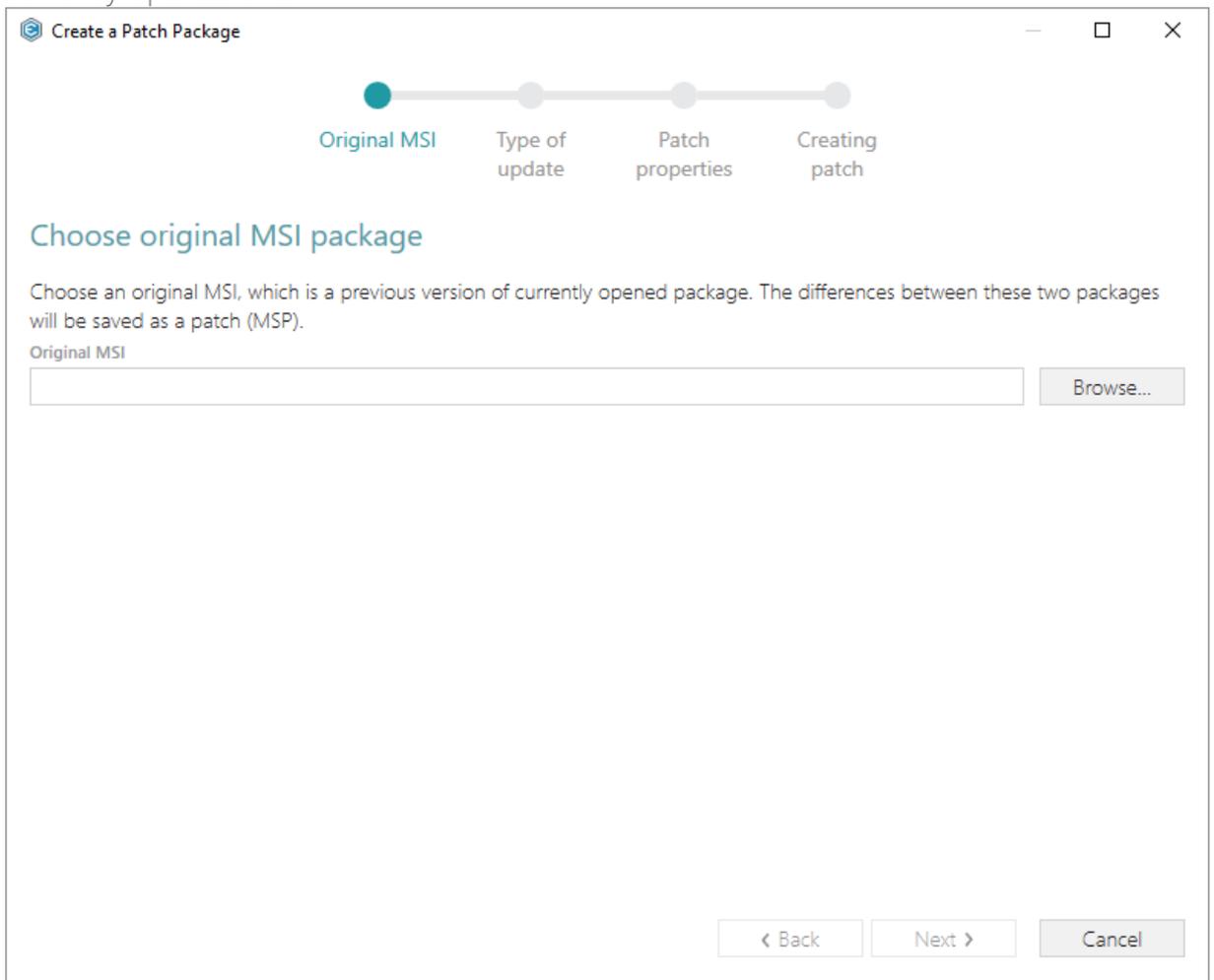
- [3]. Choose a recent MSI package, containing new resources in comparison to the previous MSI package, and click Open.



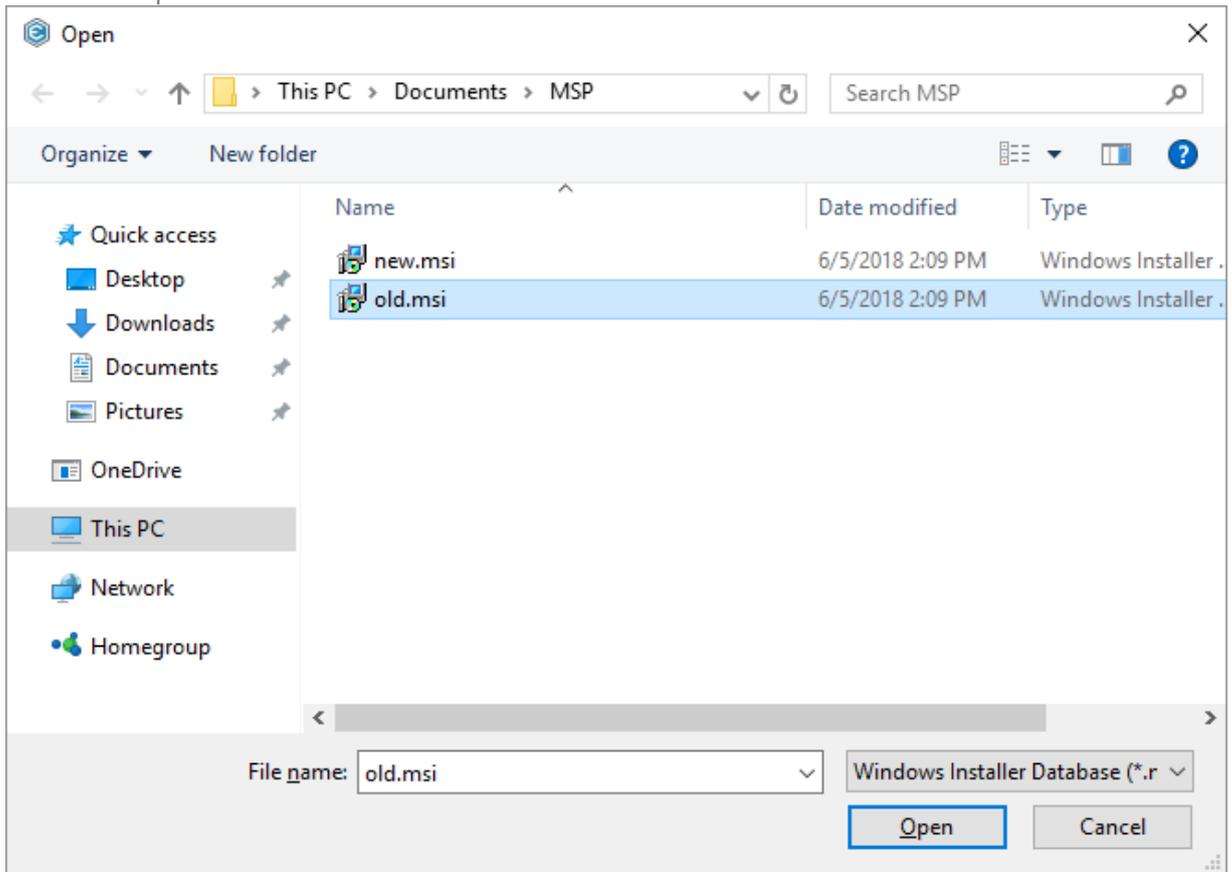
- [4]. Select Create MSP against original MSI... from MENU.



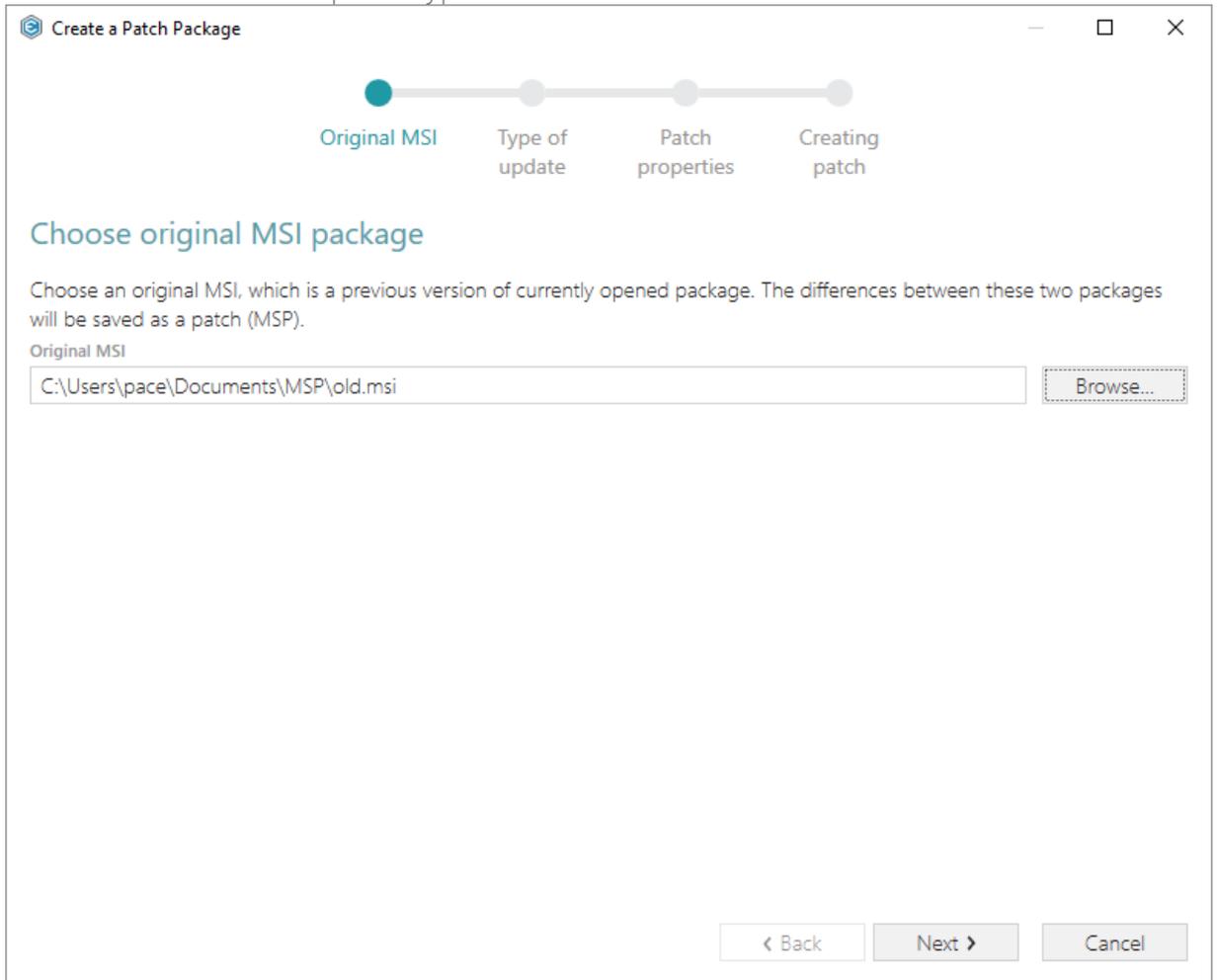
- [5]. Click **Browse...** to choose an original MSI package, which is a previous version of the currently opened one.



- [6]. Choose an original MSI package, which is a previous version of the currently opened one, and click Open.



[7]. Click Next to define an update type.



[8]. Increase a Product version value for the minor and major update and leave default one for the small update. Generate new Product code only for the major update and leave default one for the minor and small update. If needed, update a Target product name value in order to change the Product Name of the updated application. Click Next to

select a patch properties.

Create a Patch Package

Original MSI **Type of update** Patch properties Creating patch

Type of update

Increase version for minor and major update and leave default value for small update

Product version

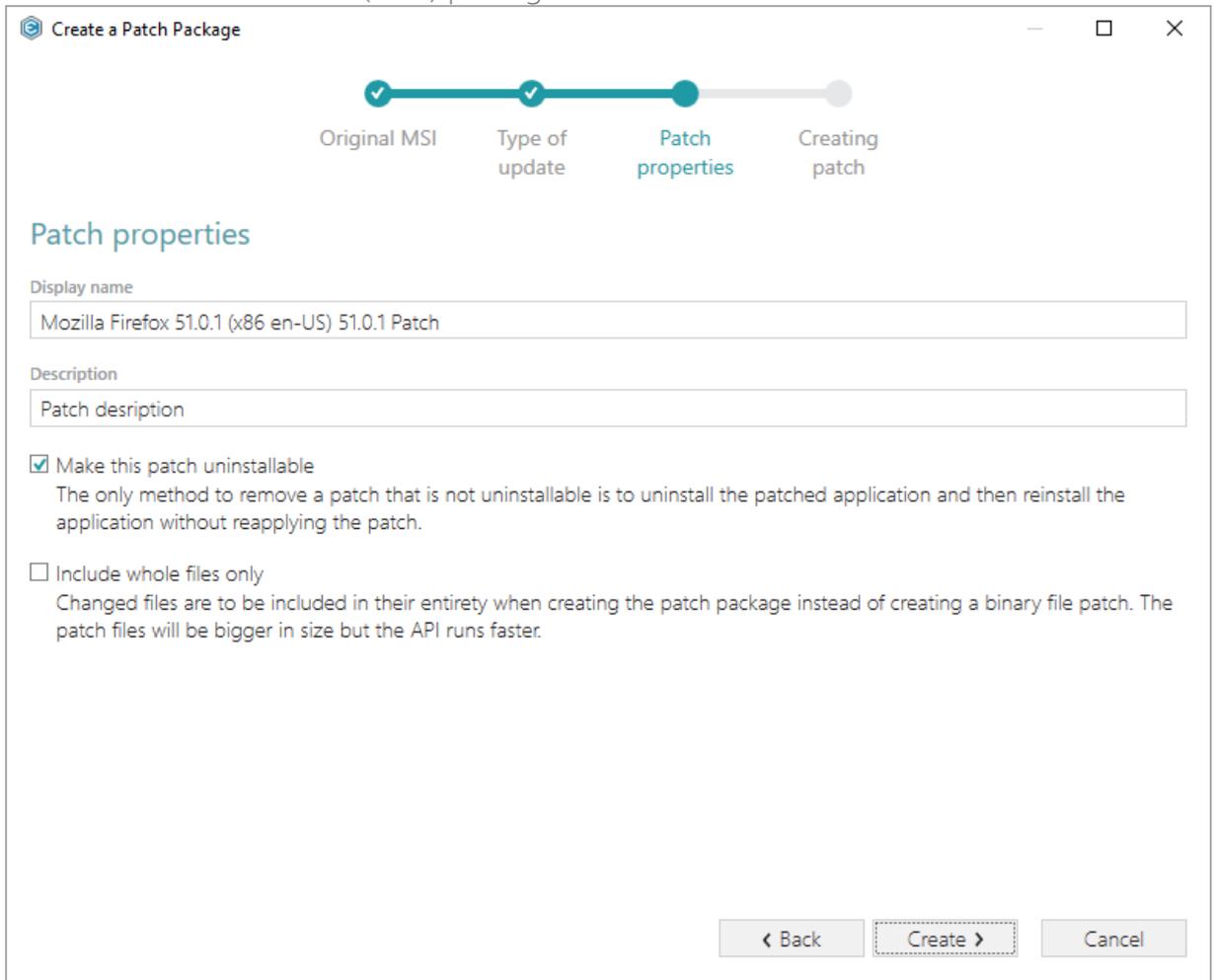
Generate new code only for major update and leave default value for minor and small update

Product code

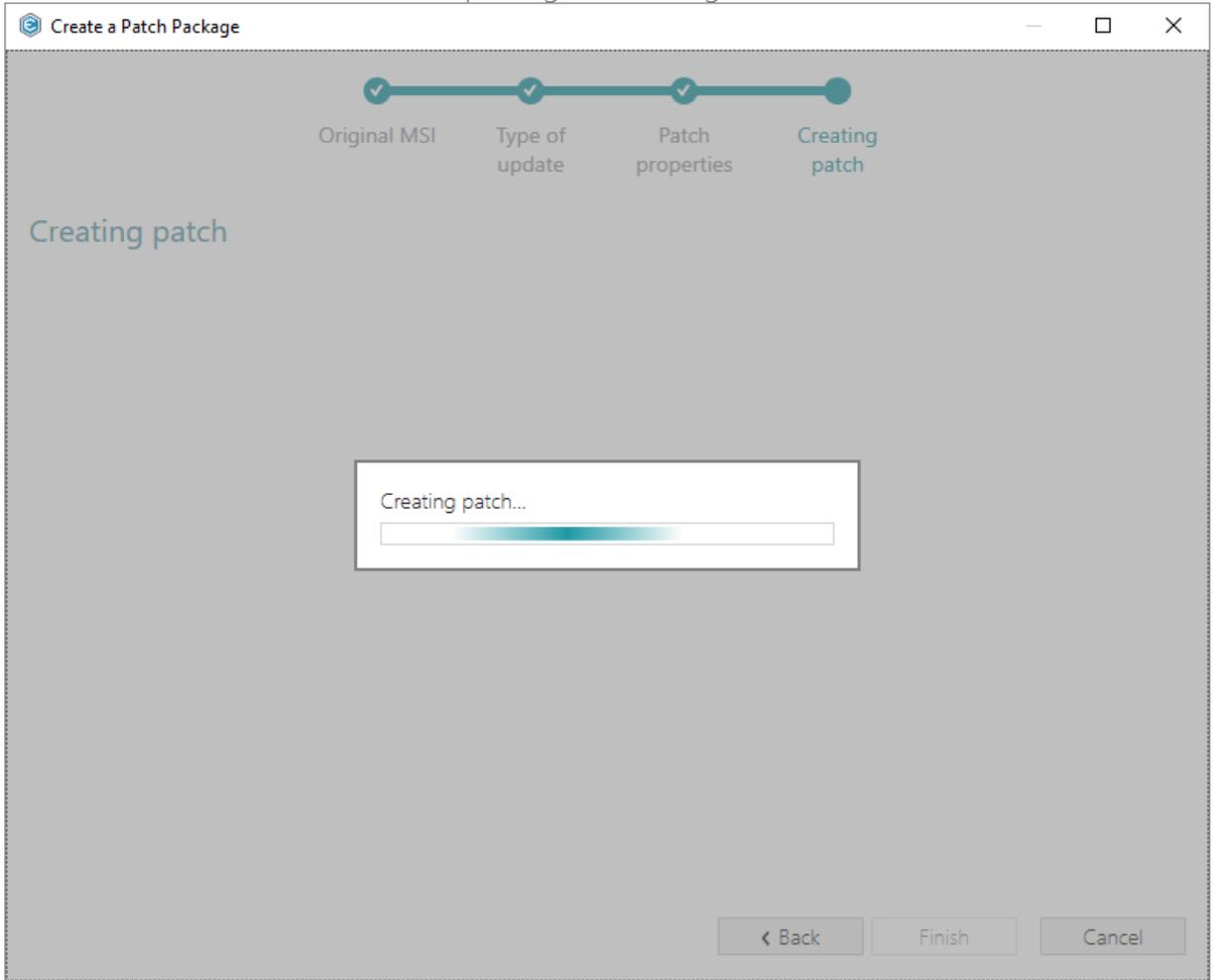
Target product name

[Review the instructions to create a patch package successfully...](#)

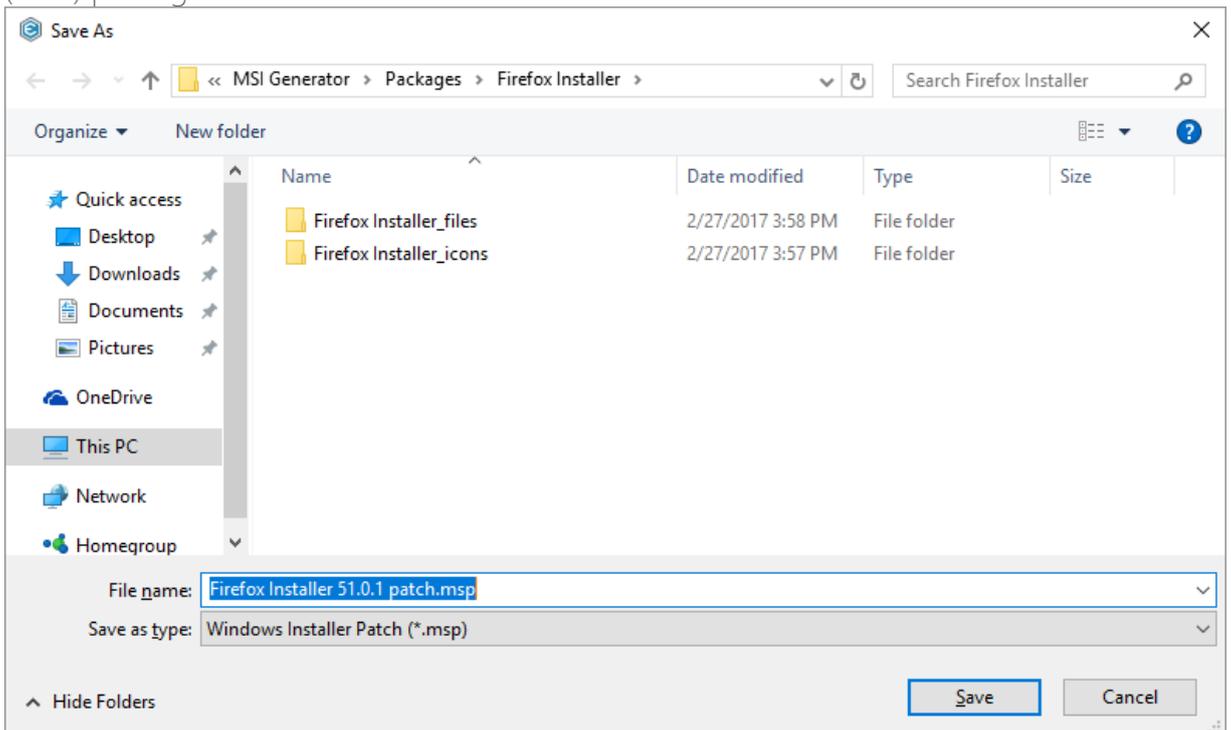
- [9]. Update Patch Display name, Description and select the necessary Patch properties. Click Create to create the Patch (MSP) package.



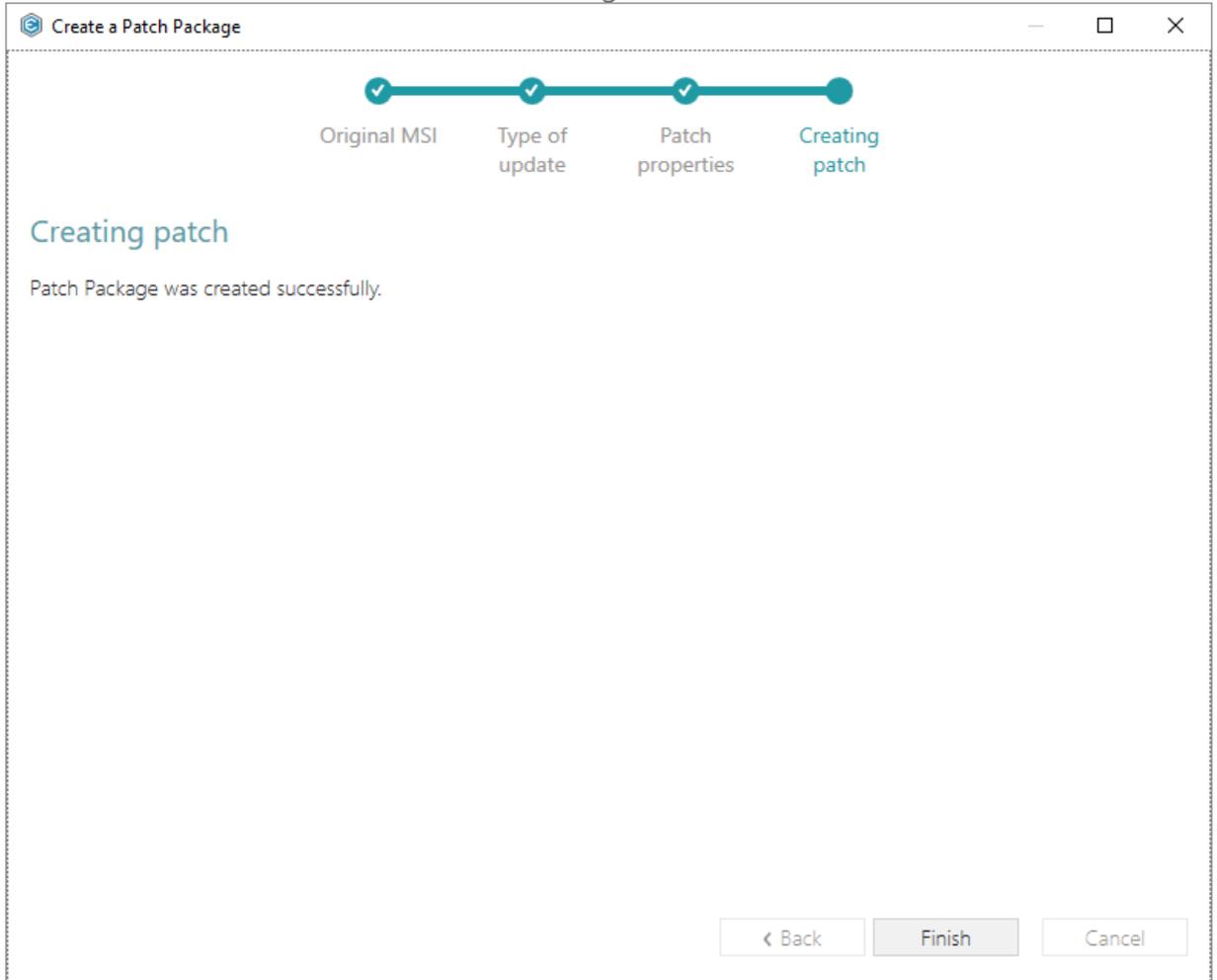
[10]. Please wait a little, while the Patch package is creating.



[11]. Choose a Patch name and a destination location and click Save to save the created Patch (MSP) package.



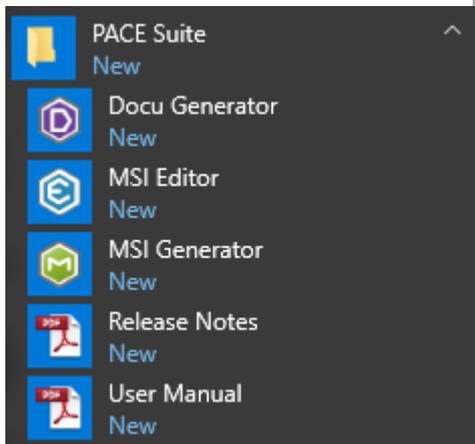
[12]. Click Finish to close the Create a Patch Package Wizard.



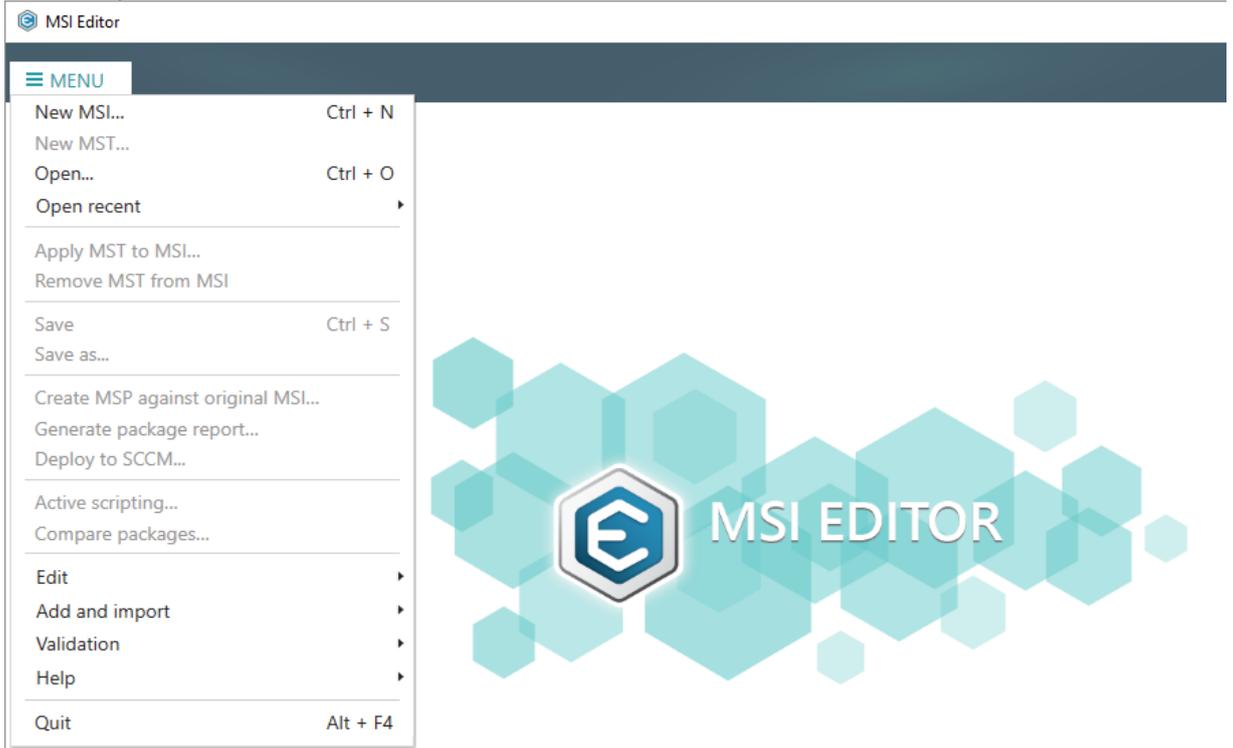
3.3.2 Save Changes to MSP

Save all your changes, made to the opened MSI database in MSI Editor, as a Patch (MSP) package.

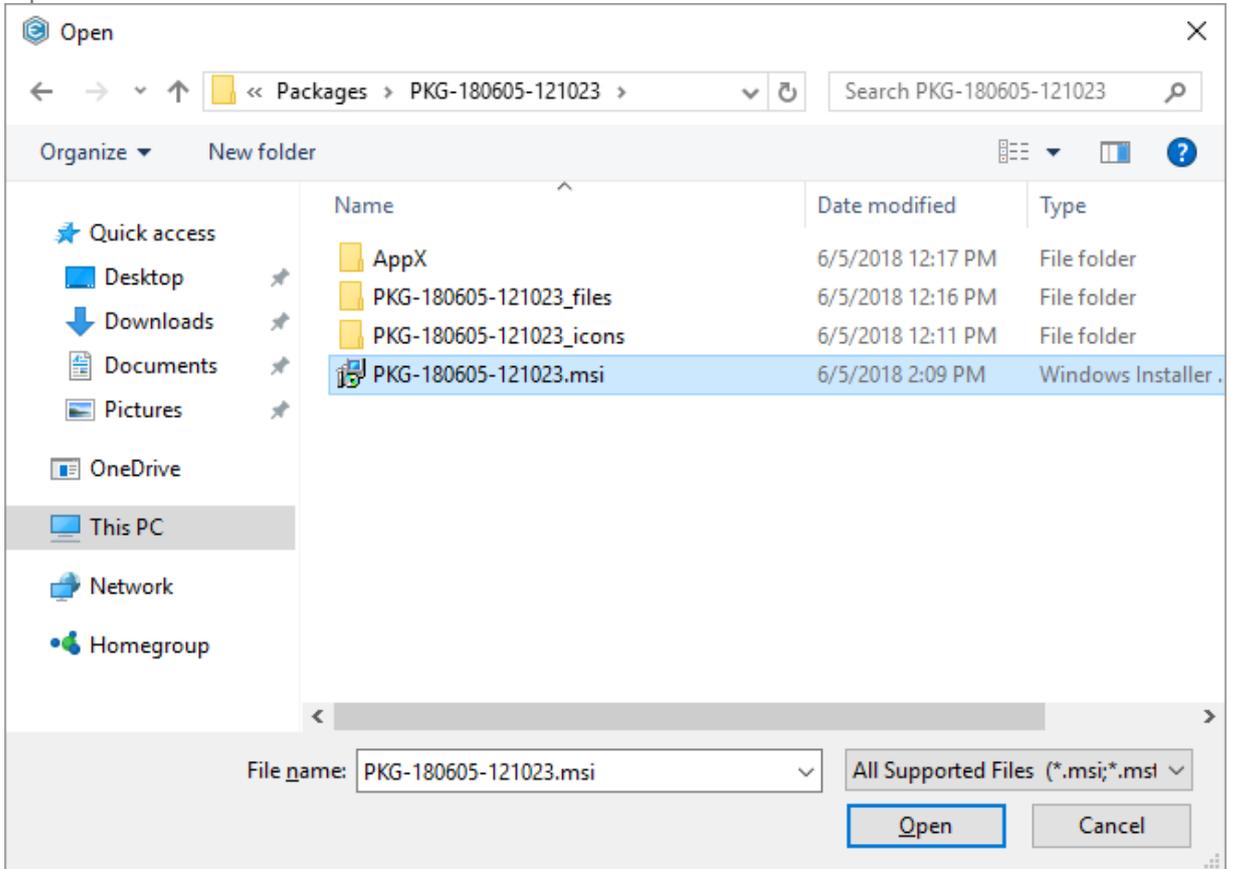
[1]. Launch MSI Editor from the desktop or the start menu shortcut.



[2]. Select Open... from MENU.



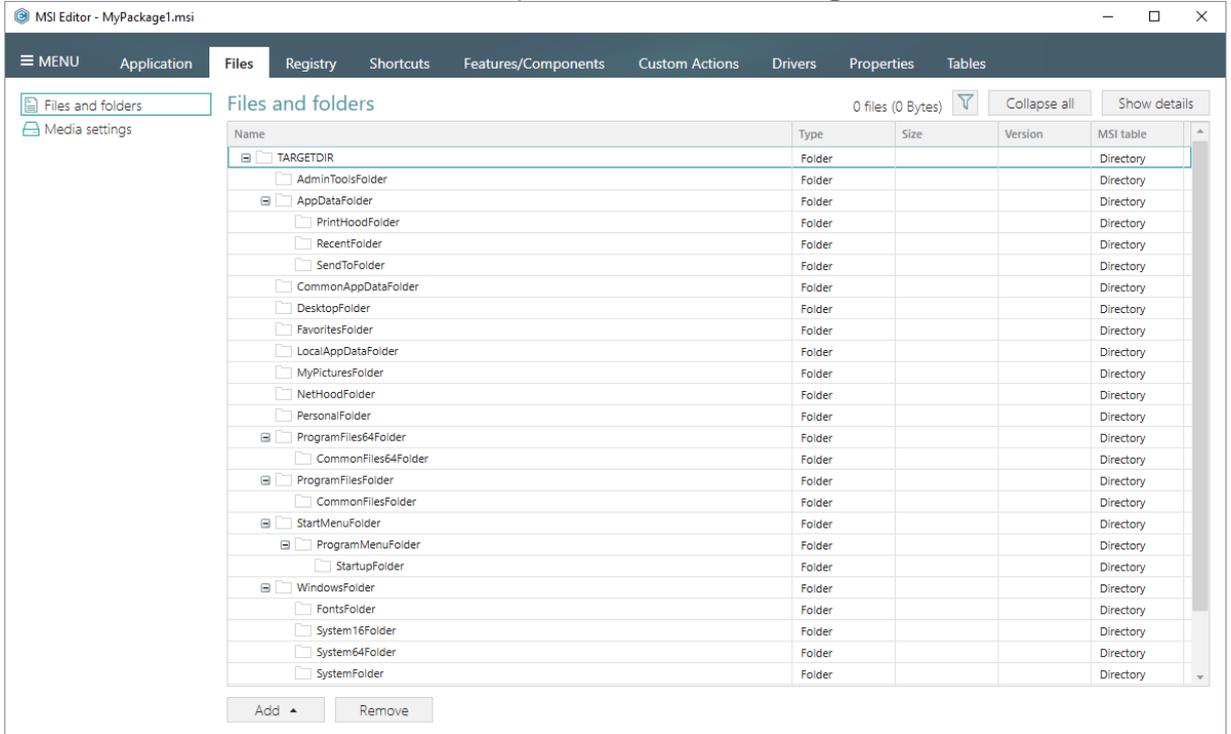
[3]. Choose an MSI package, for which you want to create a Patch (MSP) package, and click Open.



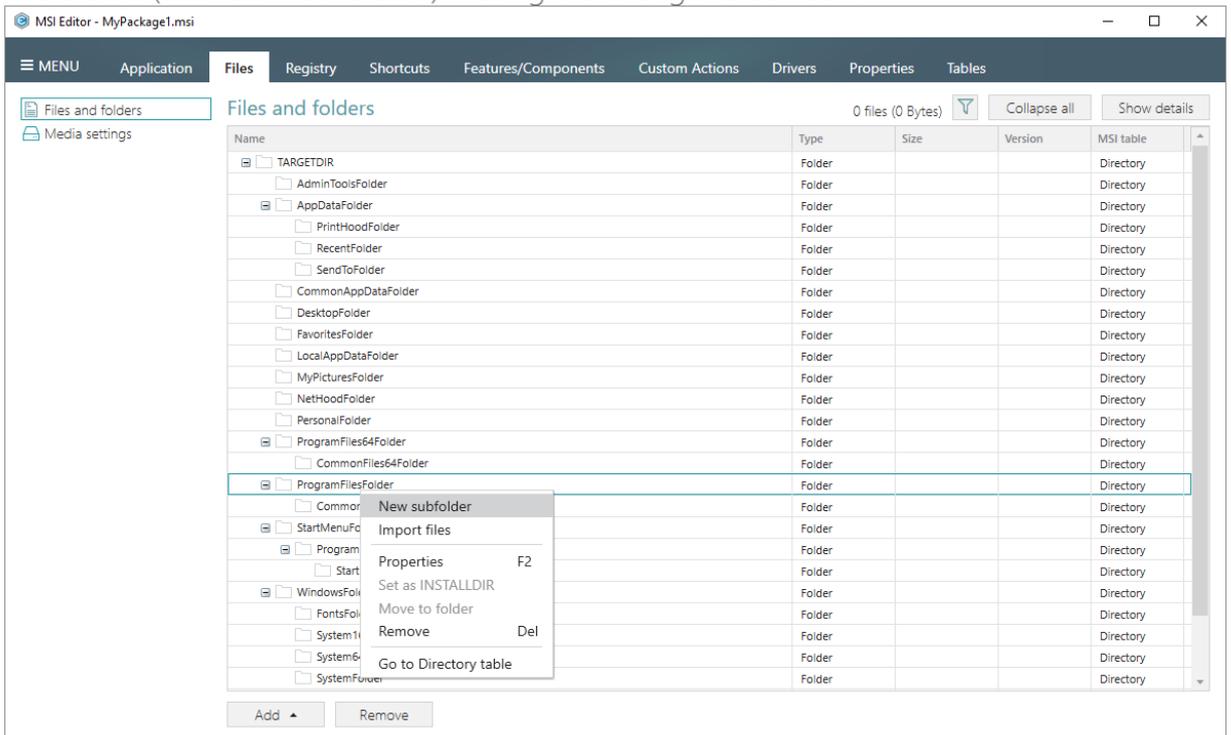
[4]. Now you can start adding the necessary resources, which you want to include to the Patch (MSP) package, using MSI Editor. The steps from [5] to [13] describe how to create a new

folder and import files to this folder; the steps from [14] to [22] describe how to create a new registry key, value, and import registry entries from the REG files; the steps from [23] to [29] describe how to create a new and import existing shortcuts; and the steps [30]-[36] describe how to save all these changes to the Patch (MSP) package.

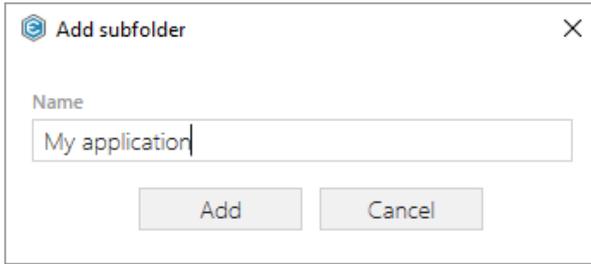
- [5]. In order to create a new folder and import files to this folder, go to the Files tab.



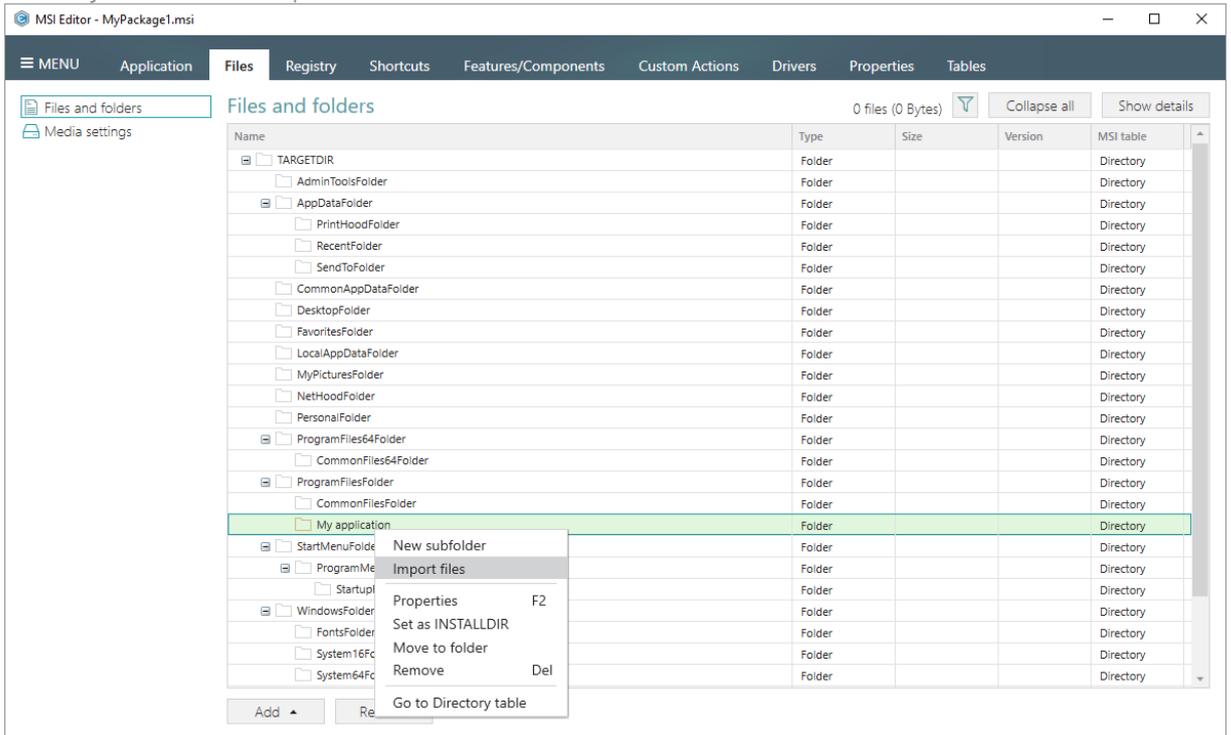
- [6]. Select New subfolder from the context menu of a folder, where you want to create a new subfolder. Note that system folders are displayed using the grey folder icon and the subfolders (user-defined folders) – using the orange folder icon.



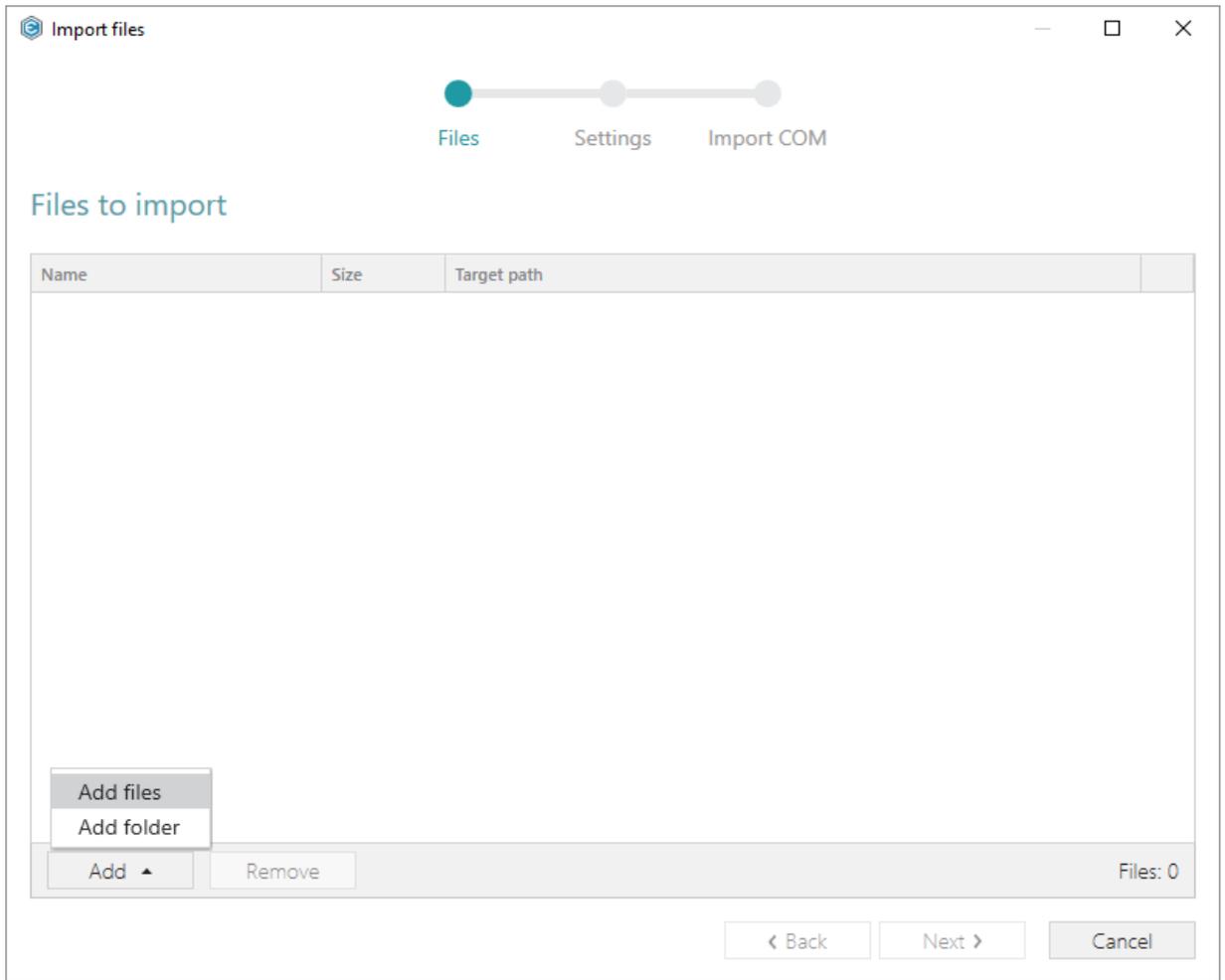
[7]. Enter a folder name and click Add.



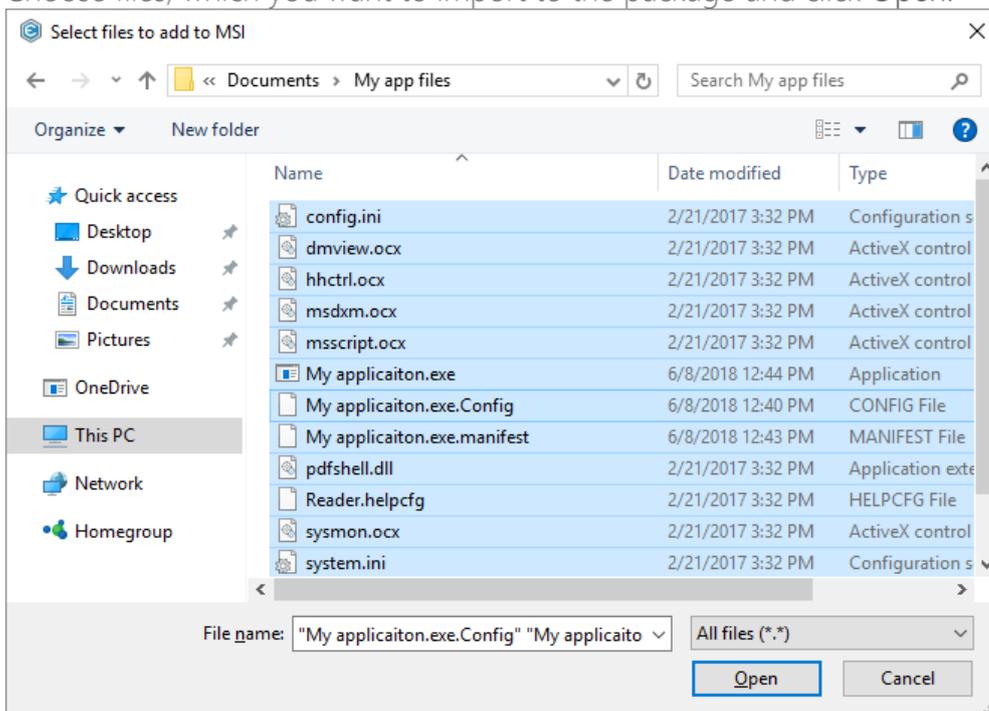
[8]. For adding files to your package, select Import files from the context menu of a folder, to which you want to import files.



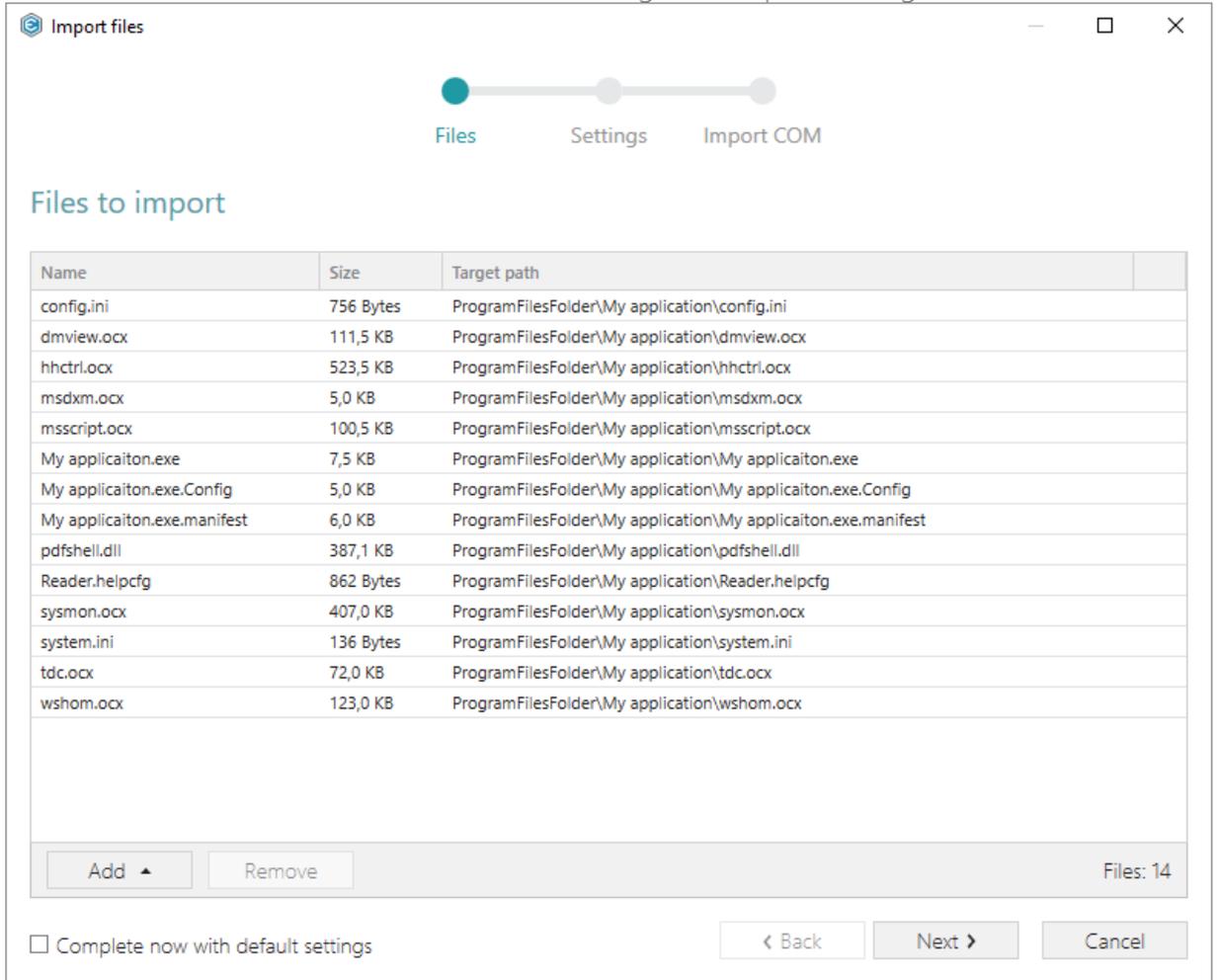
- [9]. Click Add -> Add files to choose files in a folder or Add -> Add folder to choose a folder with subfolders and files.



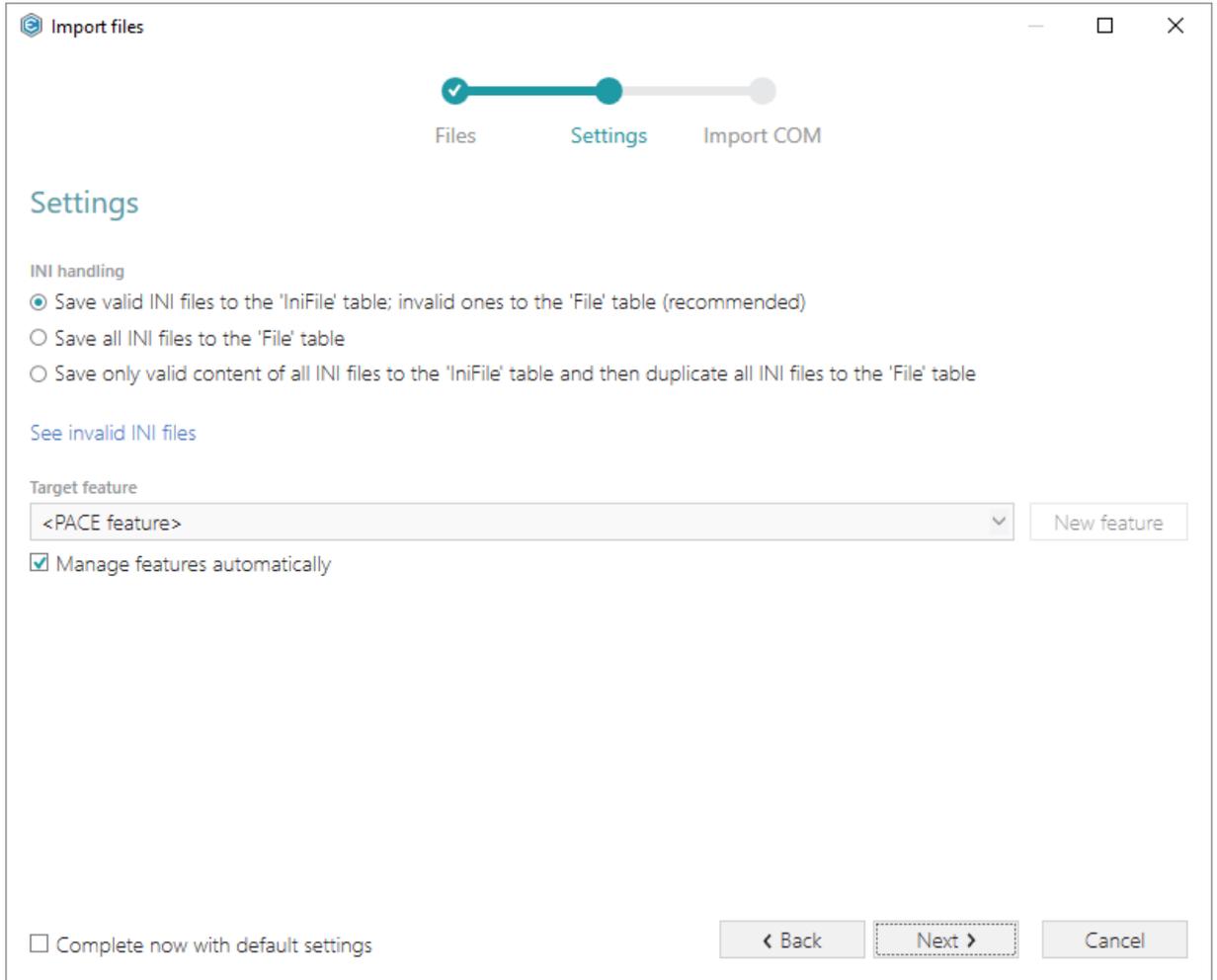
- [10]. Choose files, which you want to import to the package and click Open.



[11]. Review the selected files and click Next to manage the import settings.



[12]. At this step, you can manage how to save INI files, select an MSI Feature, to which components with files will be assigned. Below, in the tables, you will find the detailed description of these settings. Note that files compression types and other Media settings are represented in the Media settings section of the Files tab. Choose the desired settings and click Next to continue.



INI handling

Save valid INI files to the 'IniFile' table; invalid ones to the 'File' table (recommended)

INI files, which comply with the INI file format, will be saved to the 'IniFile' table. All other INI files, which contain unsupported data, will be saved to the 'File' table as binary files.

Save all INI files to the 'File' table

All INI files will be saved only to the 'File' table as binary files.

Save only valid content of all INI files to the 'IniFile' table and then duplicate all INI files to the 'File' table

A valid content of all INI files will be saved to the 'IniFile' table, and then all INI files will be saved to the 'File' table as binary files. This allows installing INI files to the target system keeping their original structure with unsupported data, and update the necessary INI file values.

Target feature

Manage features automatically

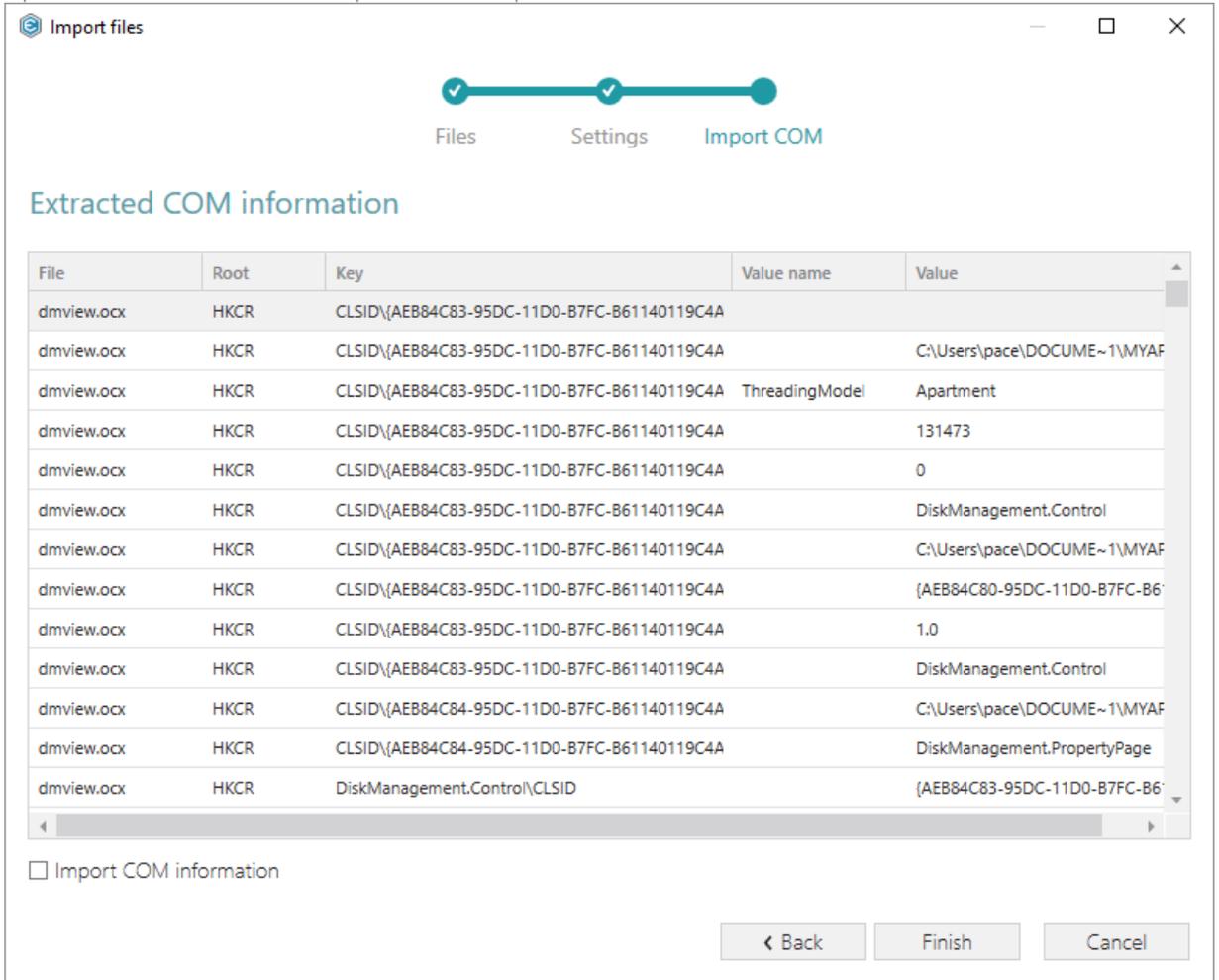
The specific PACE features will be created (or used if they exist) for the components, containing the imported files. Feature structure is based on the packaging best practices and depends on the destination location of files.



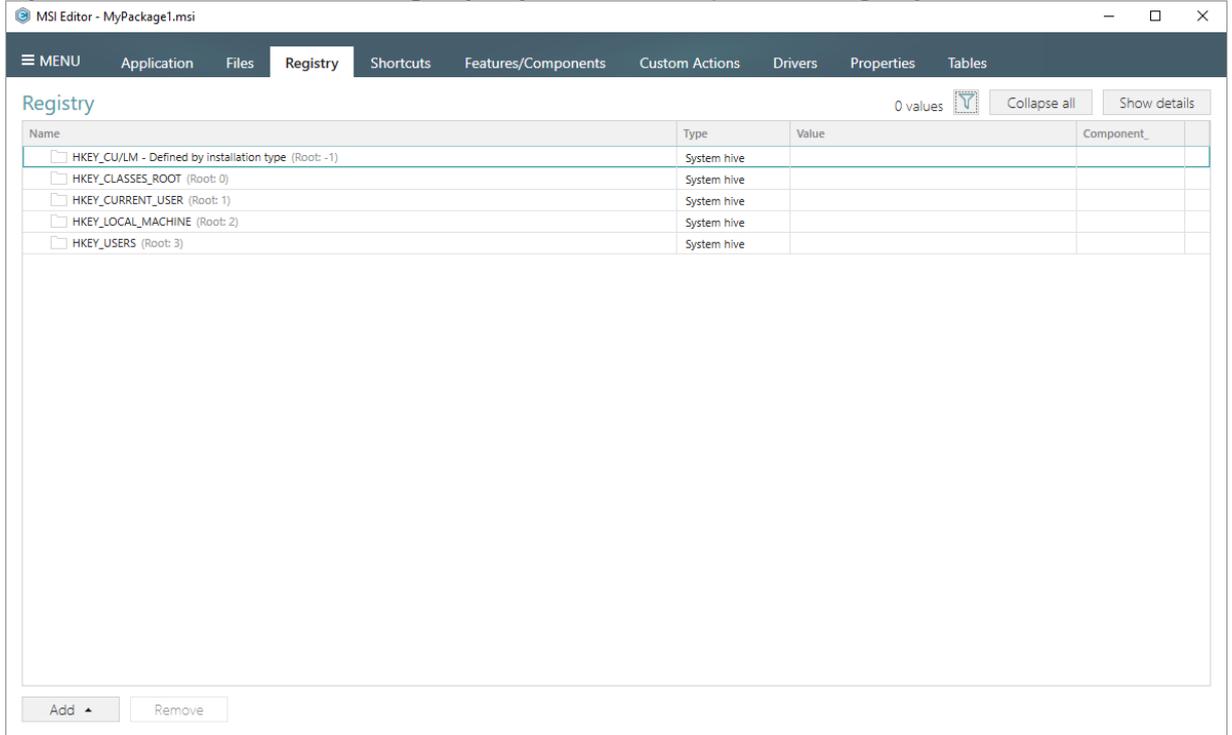
<a feature, selected from the list>

Components with files will be assigned to a feature, selected from the list.

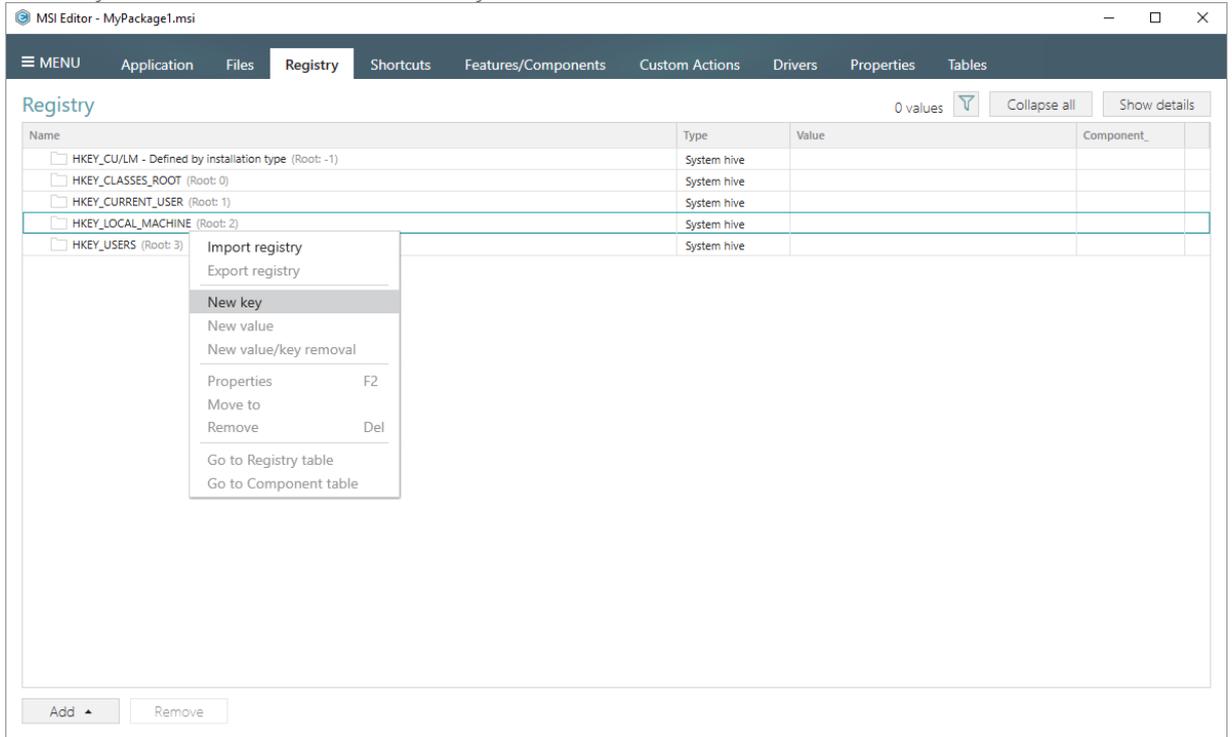
[13]. On the last step you can review COM information, extracted from the selected files. For importing this COM information along with files, select the **Import COM information** option. Click **Finish** to complete the import.



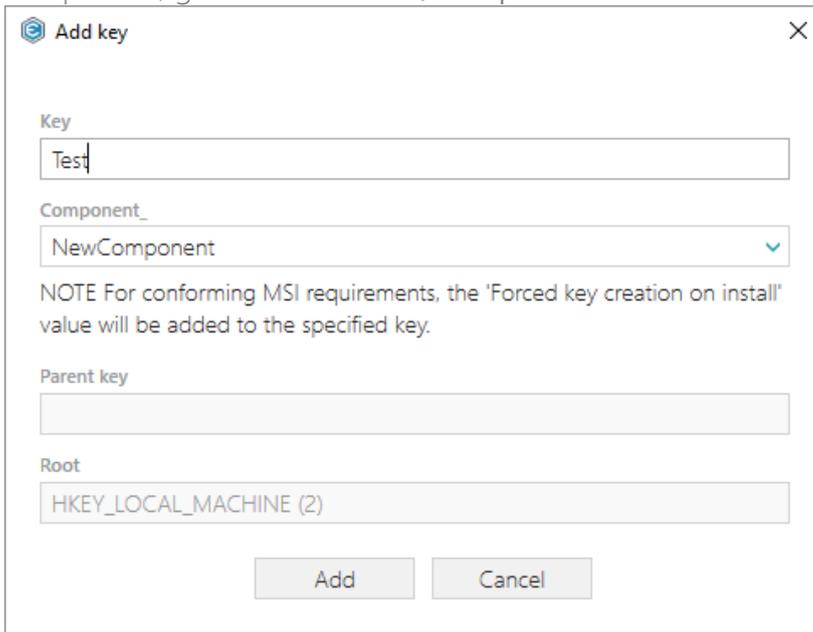
[14]. If you need to create a new registry key or a value, open the Registry tab.



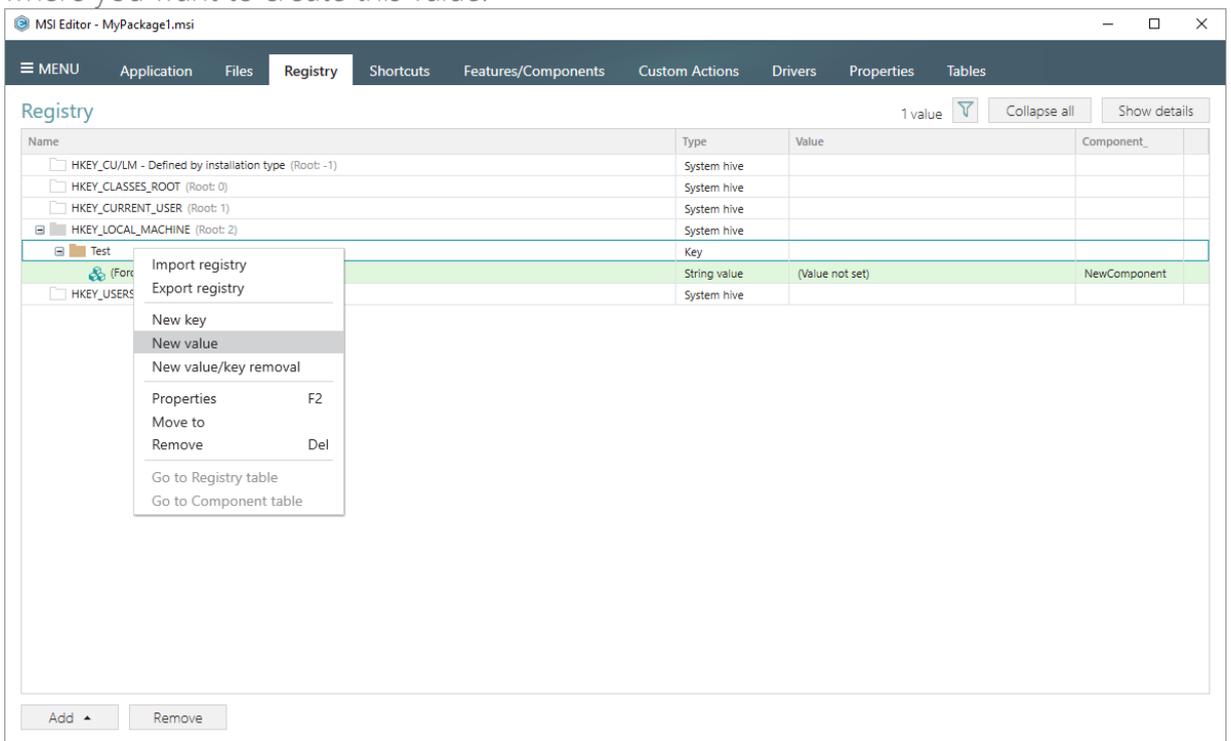
[15]. Select New key from the context menu of a root hive (e.g. HKEY_LOCAL_MACHINE), where you want to create a new key.



- [16]. Enter a key name, select a component from the list, then click **Add**. For creating a new component, go to the **Features/Components** tab.



- [17]. In order to create a new registry value, select **New value** from the context menu of a key, where you want to create this value.



- [18]. For creating an ordinary registry value, specify a name and its value, choose a component from the list, to which this value will be assigned, and click **Save**.

For creating a Default key value, or securing a key creation and/or removal, select a respective option from the **Value processing method** field.

The **Parsed value** option serves easier creation of a registry value of the proper value type.

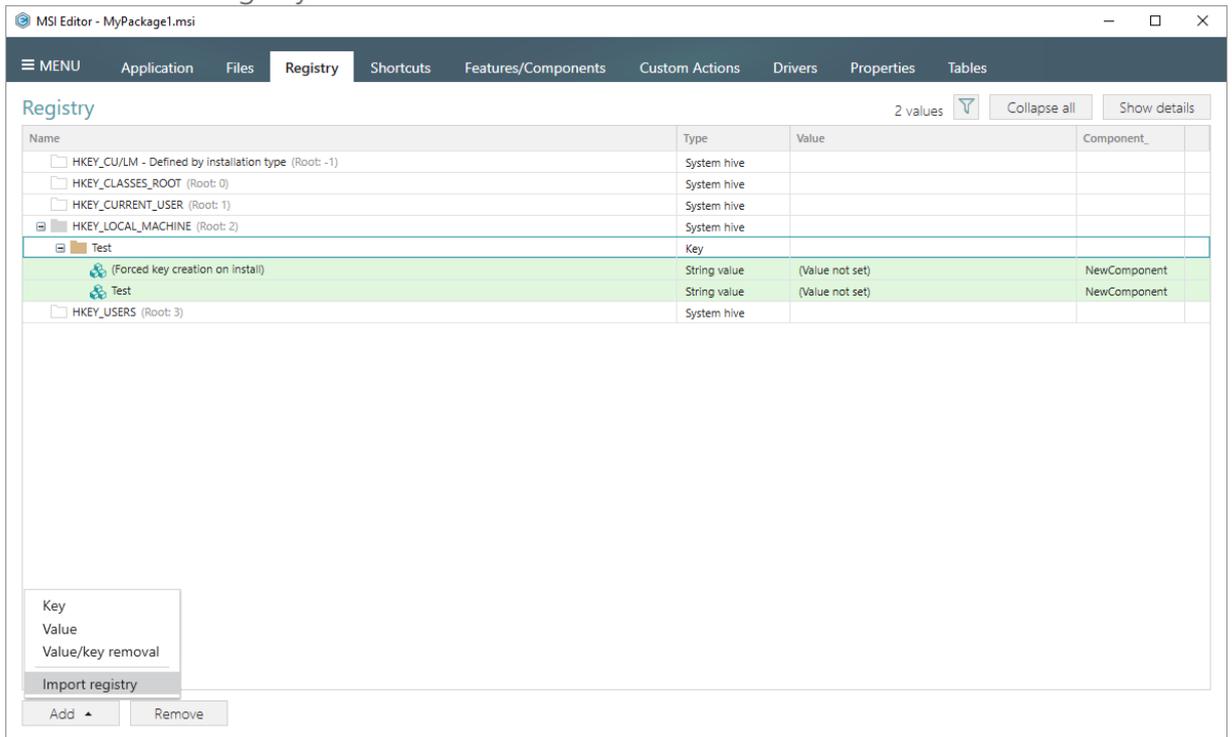
However, the Raw MSI value option gives ability to manage what exactly will be saved to the opened MSI database.

The screenshot shows a 'Properties' dialog box for an MSI table named 'Registry'. The dialog is titled 'Properties' and has a close button. It features a header with a cube icon and the text 'MSI table: 'Registry''. Below the header, there are several sections:

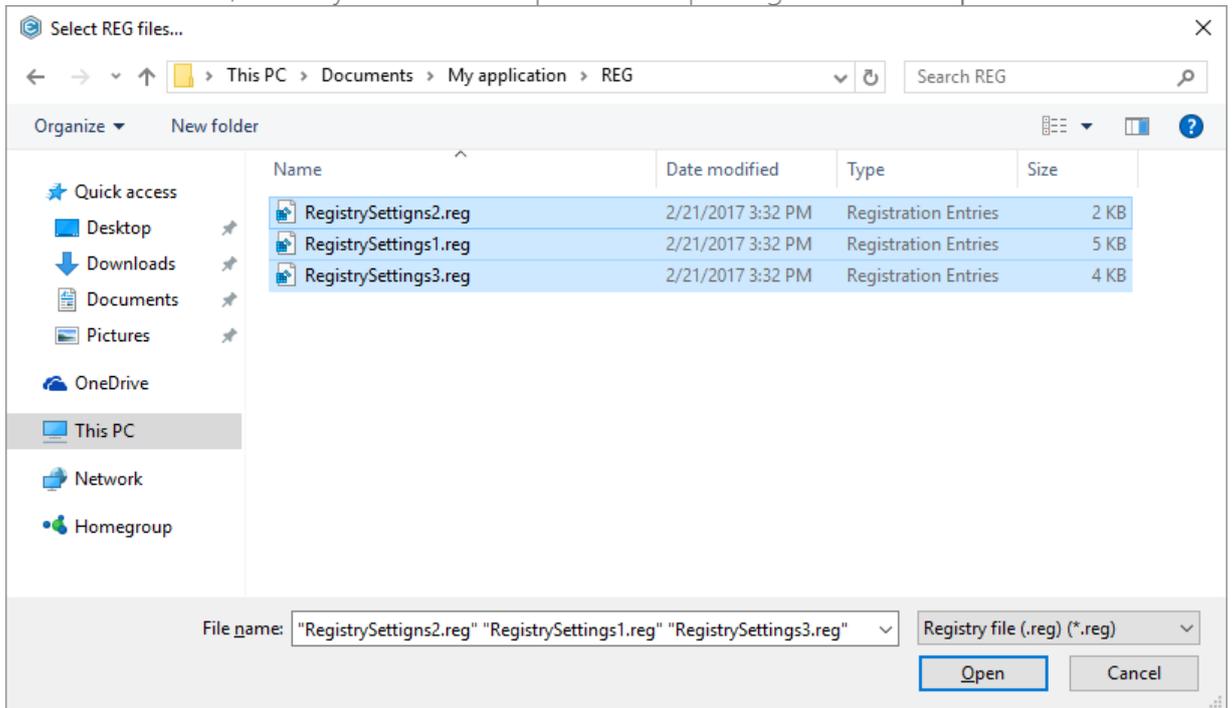
- Value processing method:** A dropdown menu set to '1. Set both name and value'.
- Name:** An empty text input field.
- Identifier:** A text input field containing 'reg_050dd2e9'.
- Value:** A section with two radio buttons: 'Parsed value' (selected) and 'Raw MSI value'. Below 'Parsed value' is a 'Type' dropdown menu set to 'String value (REG_SZ)' and a 'Value' text input field.
- Key:** A text input field containing 'Test' and a 'Browse...' button.
- Root:** A dropdown menu set to 'HKEY_LOCAL_MACHINE (2)'.
- Component_:** A dropdown menu set to 'NewComponent'.

At the bottom of the dialog are 'Save' and 'Cancel' buttons.

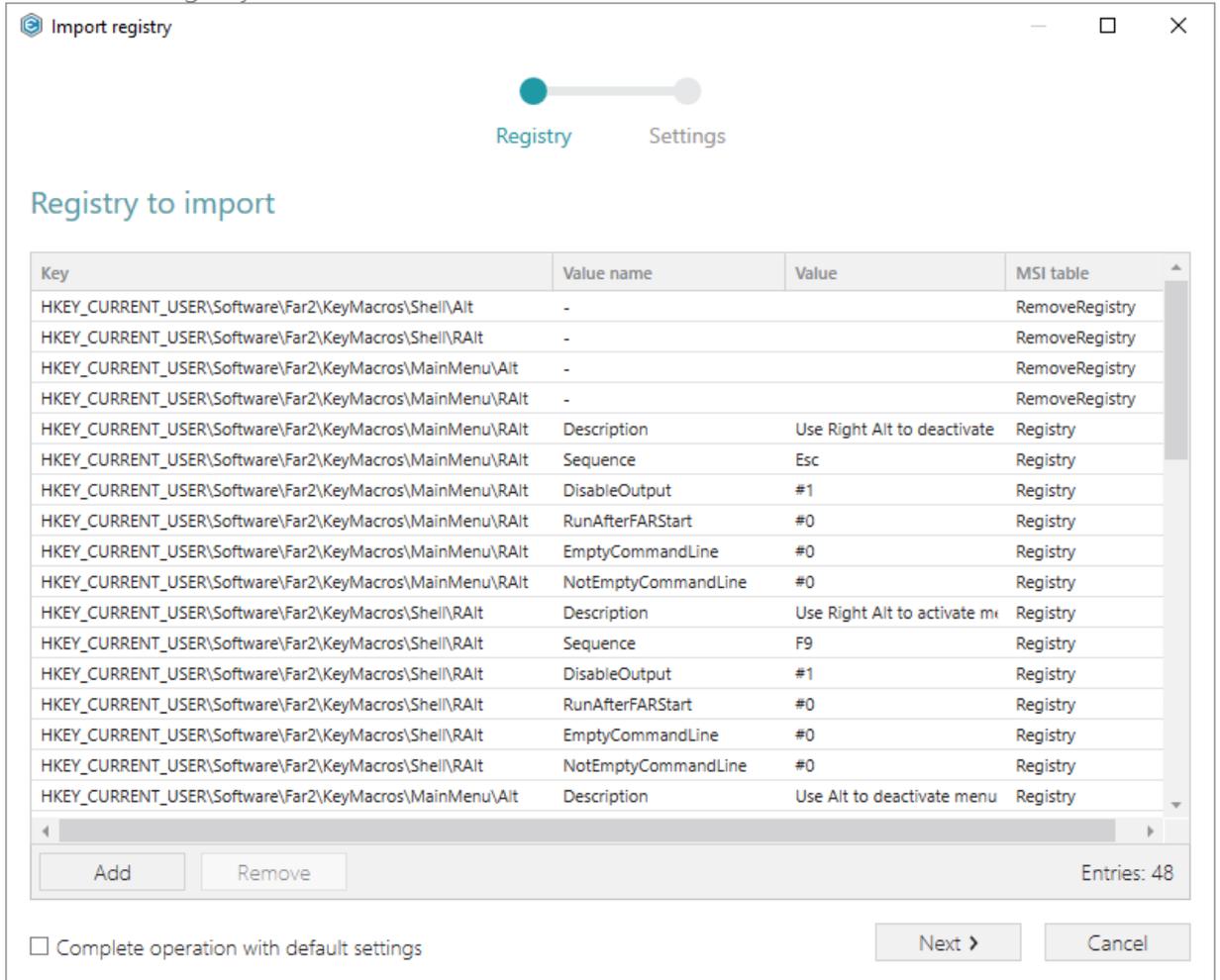
[19]. In order to import registry from the REG file, select Add -> Import registry from the toolbox of the Registry tab.



[20]. Choose REG files, which you want to import to the package and click Open.

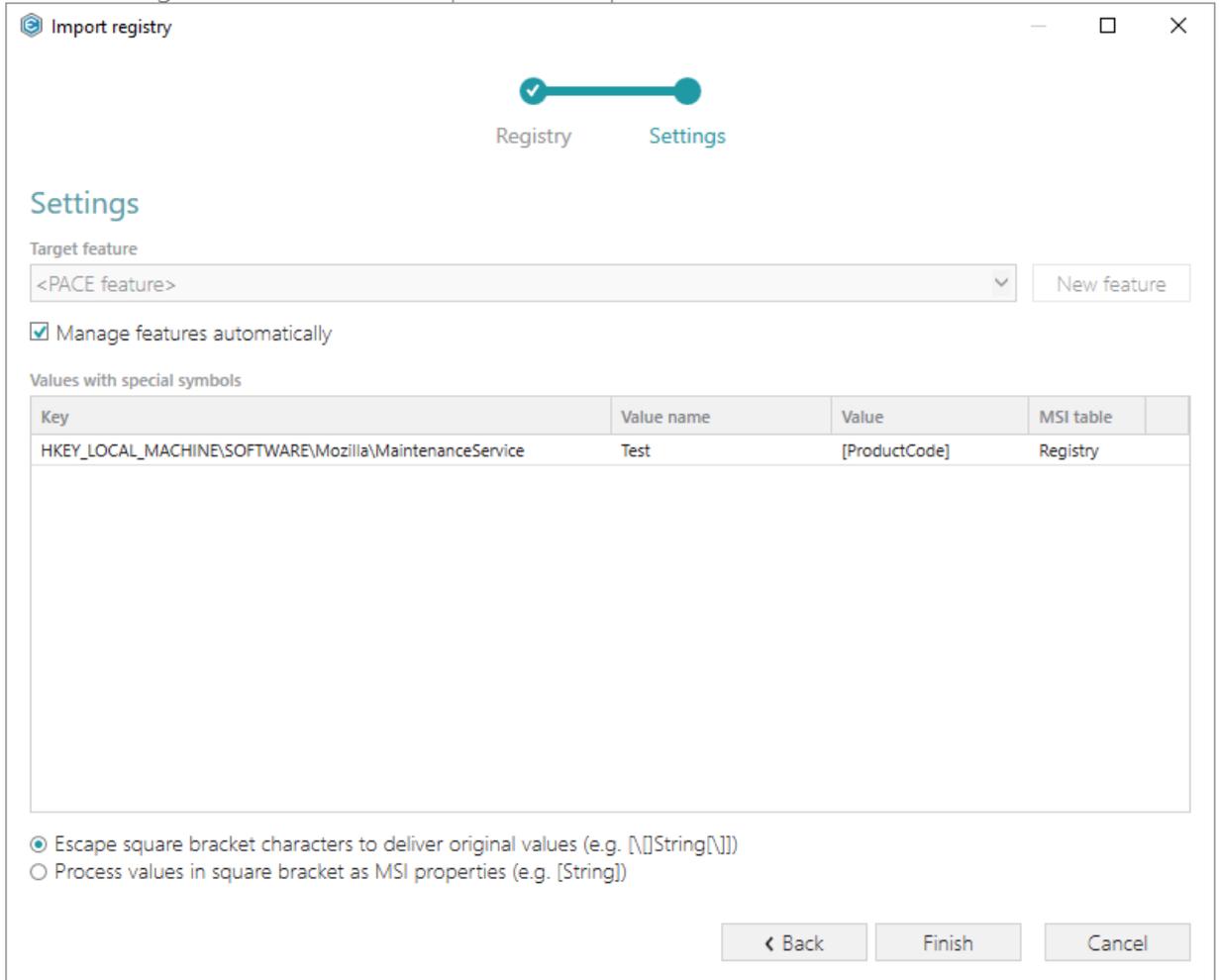


[21]. Review the registry entries, read from the selected REG files, and click Next.



[22]. At the Settings step, you can select an MSI Feature, to which components with the registry entries will be assigned. If the registry entries, which have been read, contain values in square brackets, you can select how these values will be processed – as MSI properties or as ordinary registry values. Below, in the tables, you will find the detailed description of

these settings. Click Finish to complete the import.



Feature settings

Manage features automatically

The specific PACE features will be created (or used if they exist) for the components, containing the imported registry. Feature structure is based on the packaging best practices and depends on the registry key location.

<a feature, selected from the list>

Components with registry will be assigned to a feature, selected from the list.

Values with special symbols

Escape square bracket characters to deliver original values

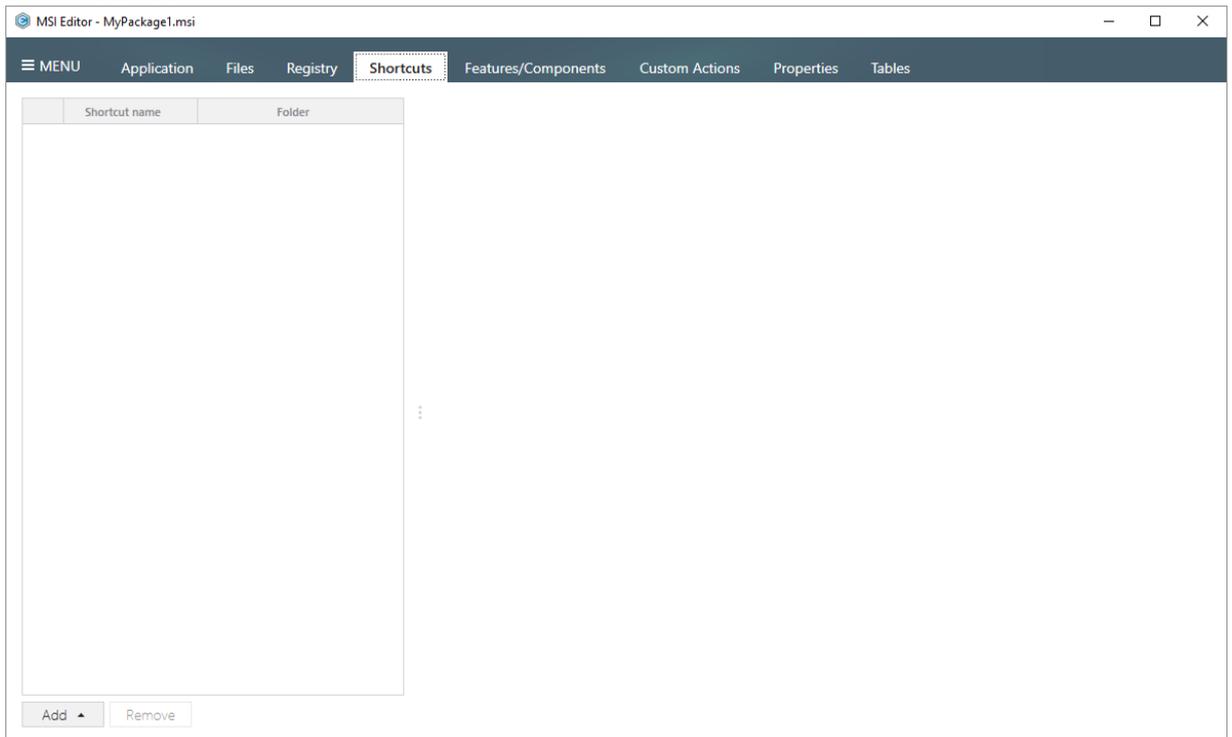
Values in square brackets, displayed in the list, will be saved to MSI as ordinary strings using the general rules for escaping the special characters. This approach guarantees the delivery of the imported registry entries to the target system with their original values.



Process values in square brackets as MSI properties

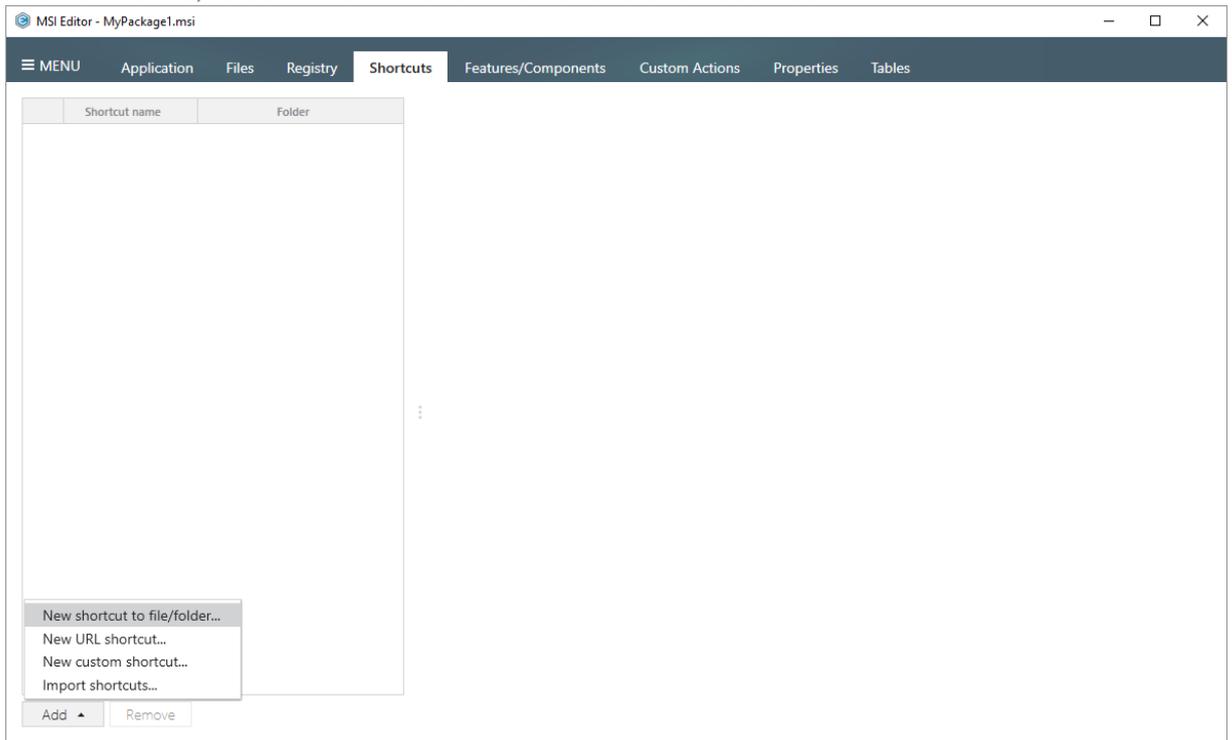
Values in square brackets, displayed in the list, will be saved to MSI as MSI properties. Thus, each MSI property will be replaced with its value during the MSI installation. If a property does not exist in MSI during the installation, it will be replaced with the blank value.

[23]. If you need to create a new or import the existing shortcuts to the package, go to the Shortcuts tab.

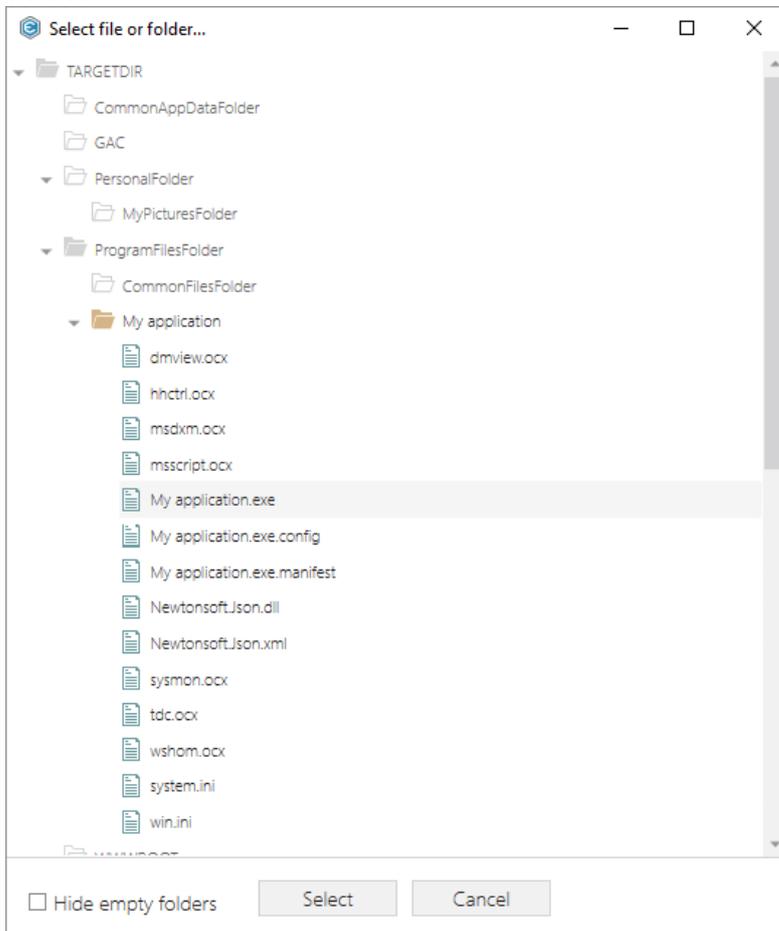




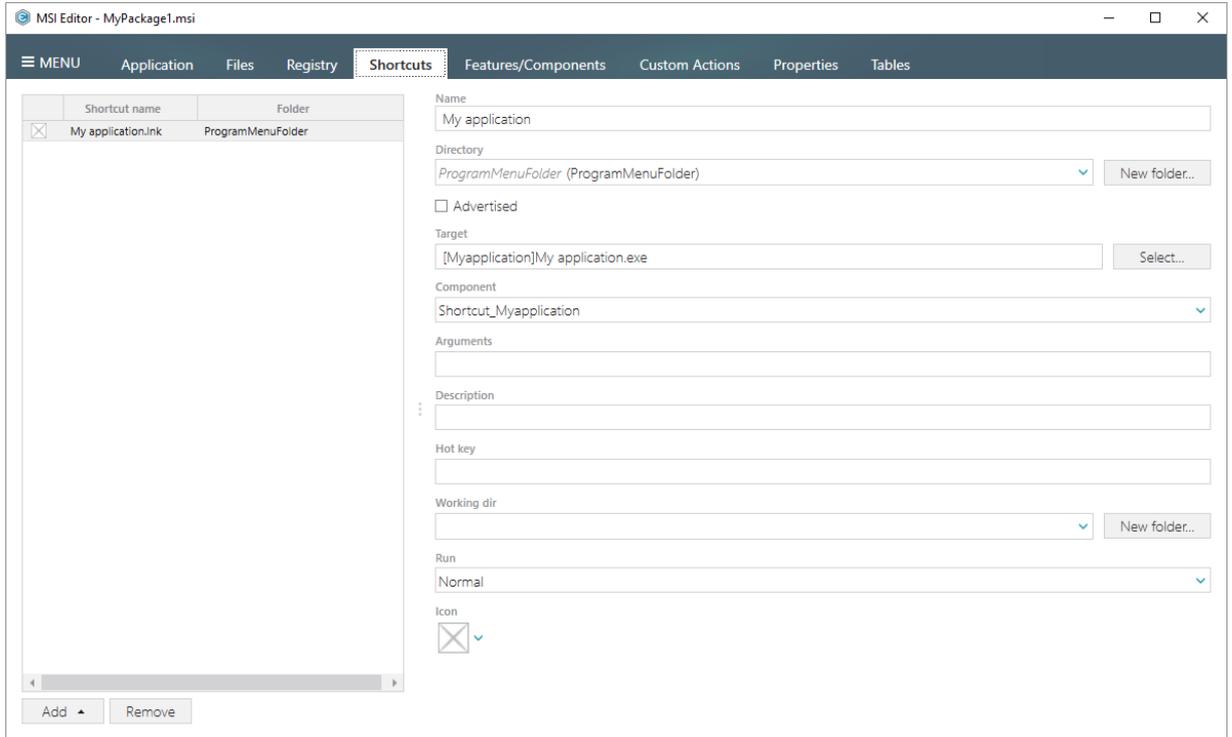
[24]. For creating a new shortcut that points to a file inside the package, select Add -> New shortcut to file/folder... from the toolbox of the Shortcuts tab.



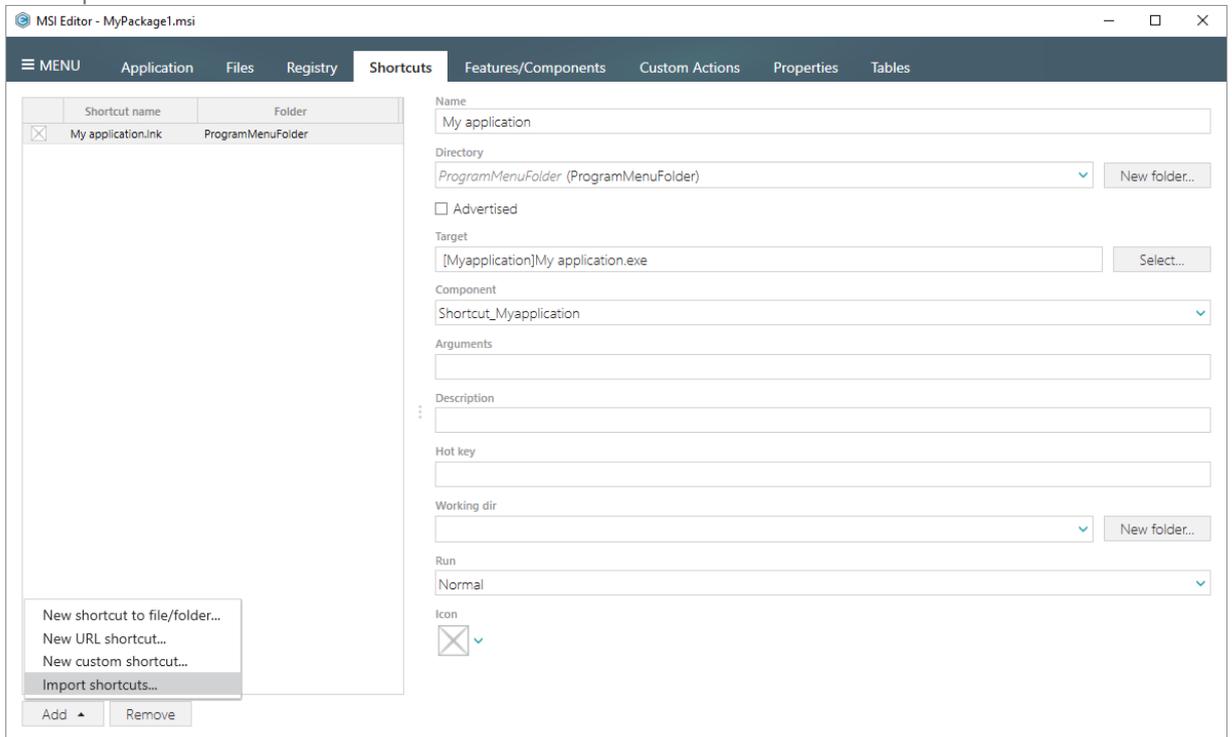
[25]. Select a file (e.g. My application.exe), which will be launched by this shortcut, and click Select.



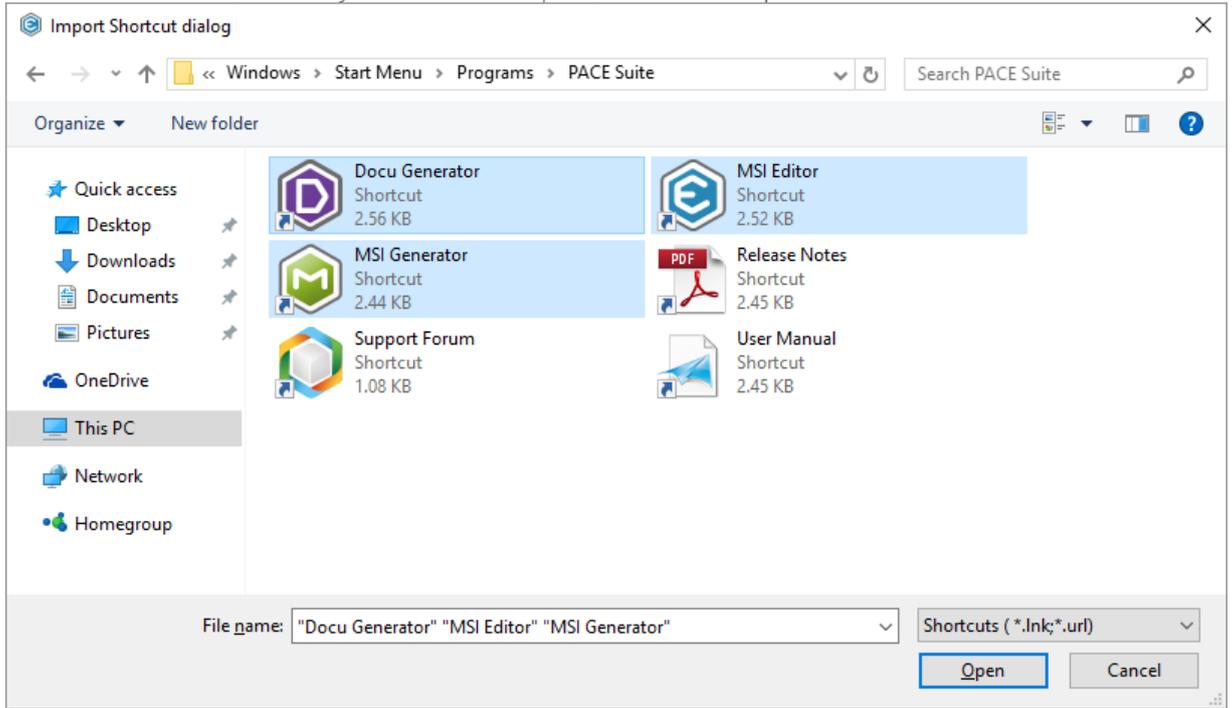
[26]. Using the details pane, you can update the shortcut name, destination location, target, icon and so on. Select the **Advertised** option to convert the created regular shortcut to the advertised one.



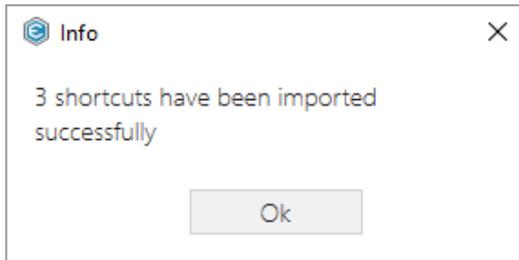
[27]. In order to import LNK and URL shortcuts to the package from the file system, select **Add -> Import shortcuts...** from the toolbox of the Shortcuts tab.



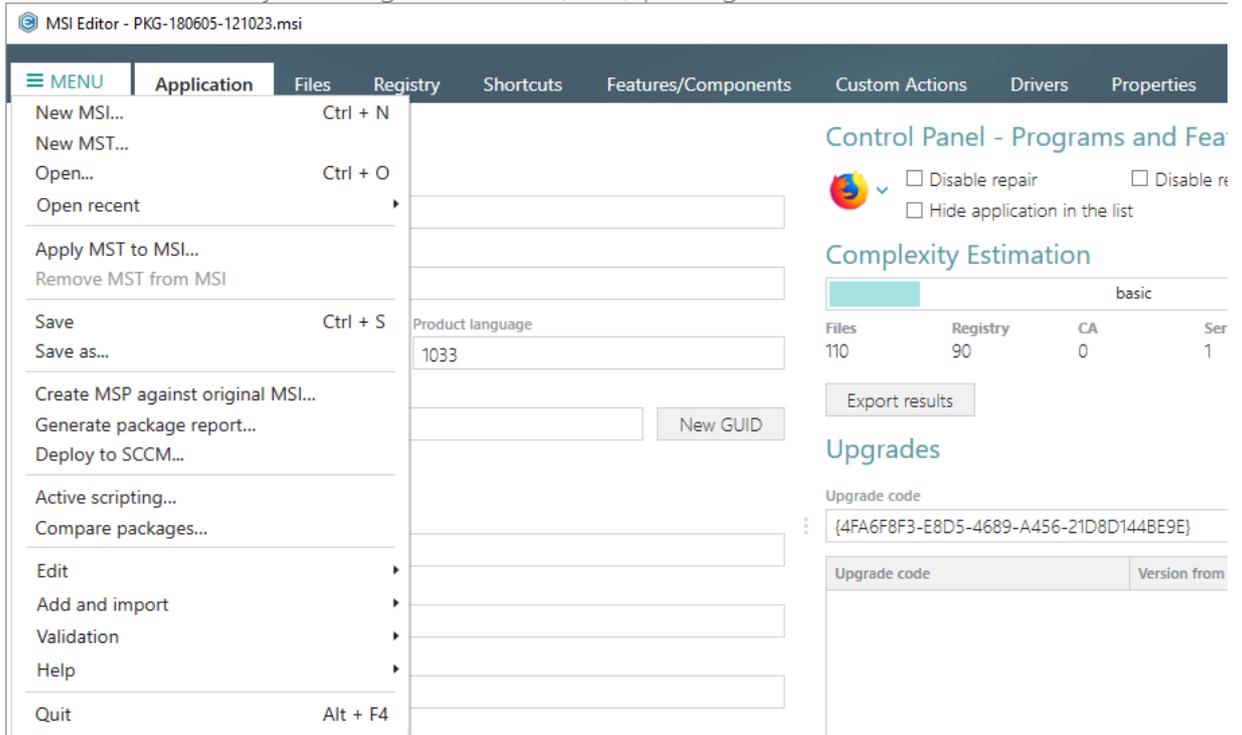
[28]. Choose shortcuts, which you want to import, and click Open.



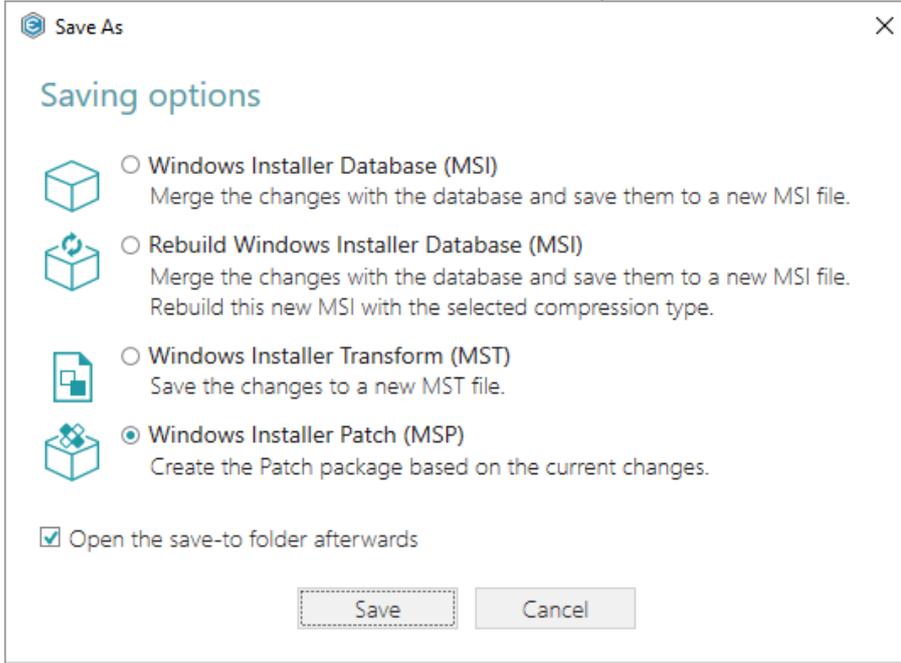
[29]. Click Ok to close the information dialog.



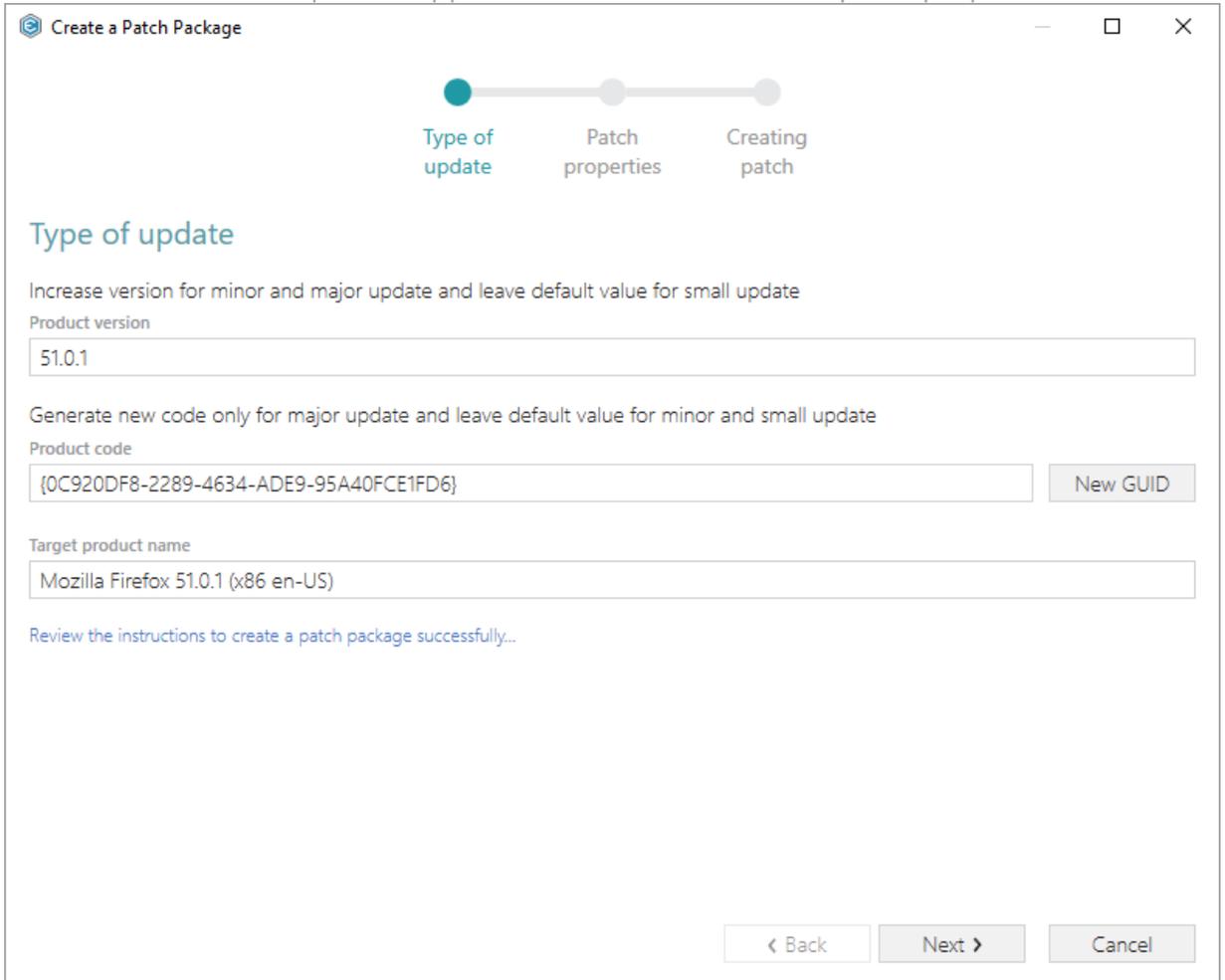
[30]. In order to save all your changes as Patch (MSP) package, select Save as... from MENU.



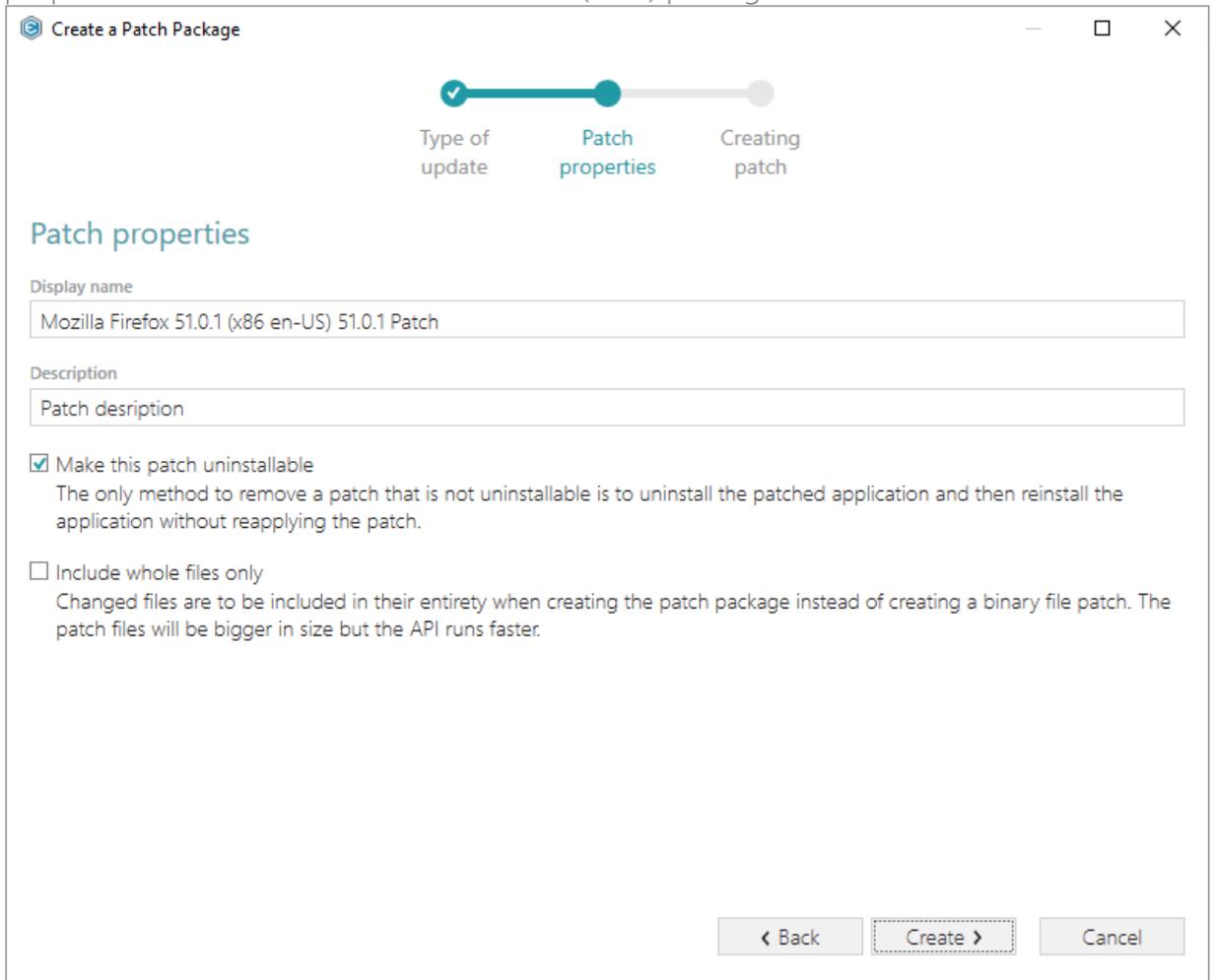
[31]. Choose the Windows Installer Patch (MSP) option and click Save.



[32]. Increase a Product version for the minor and major update and leave default for the small update. Generate new Product code only for the major update and leave default for the minor and small update. If needed, update a Target product name in order to change the Product Name of the updated application. Click Next to select patch properties.

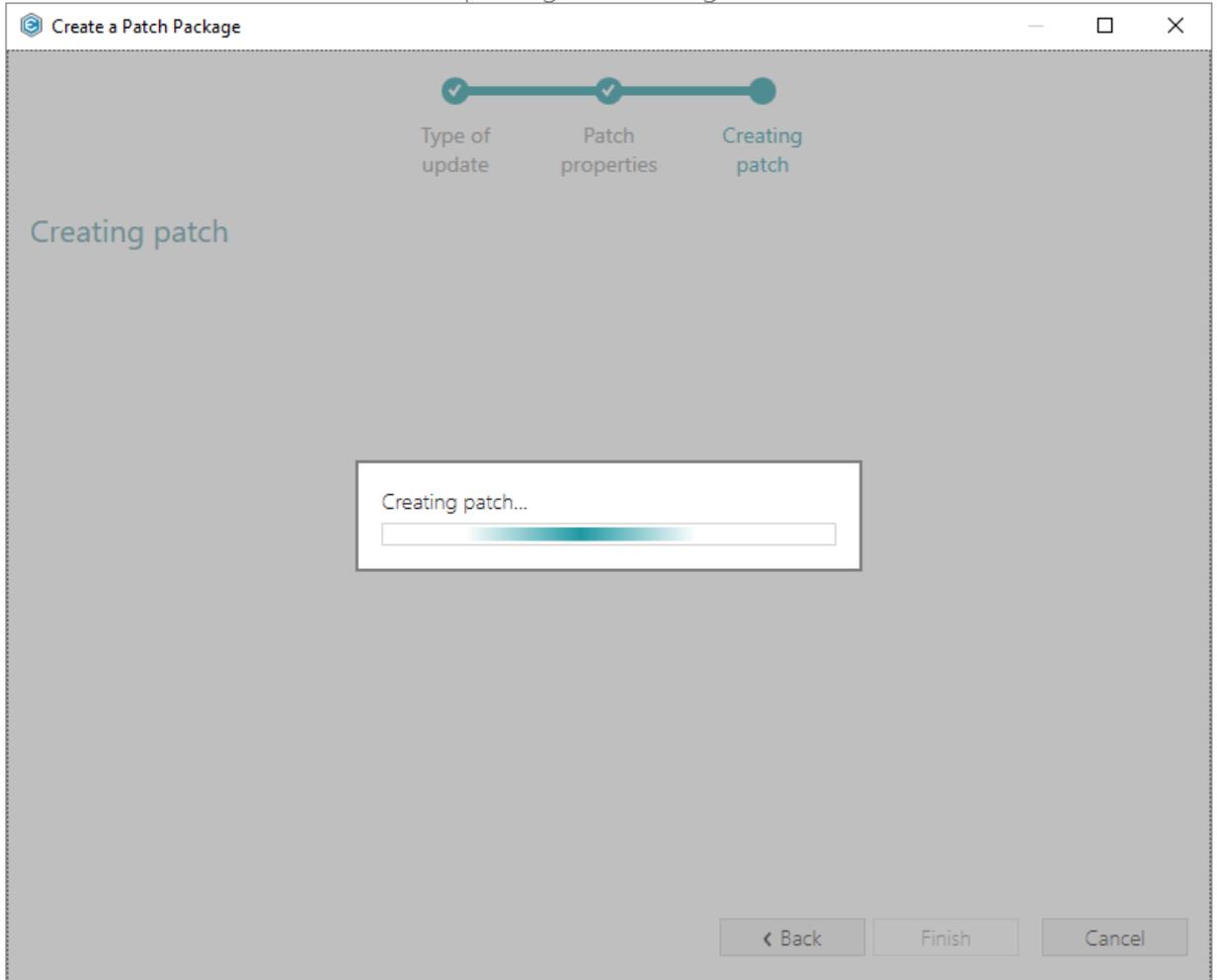


[33]. Update Display name and Description of the Patch package and select the necessary properties. Click Create to create the Patch (MSP) package.

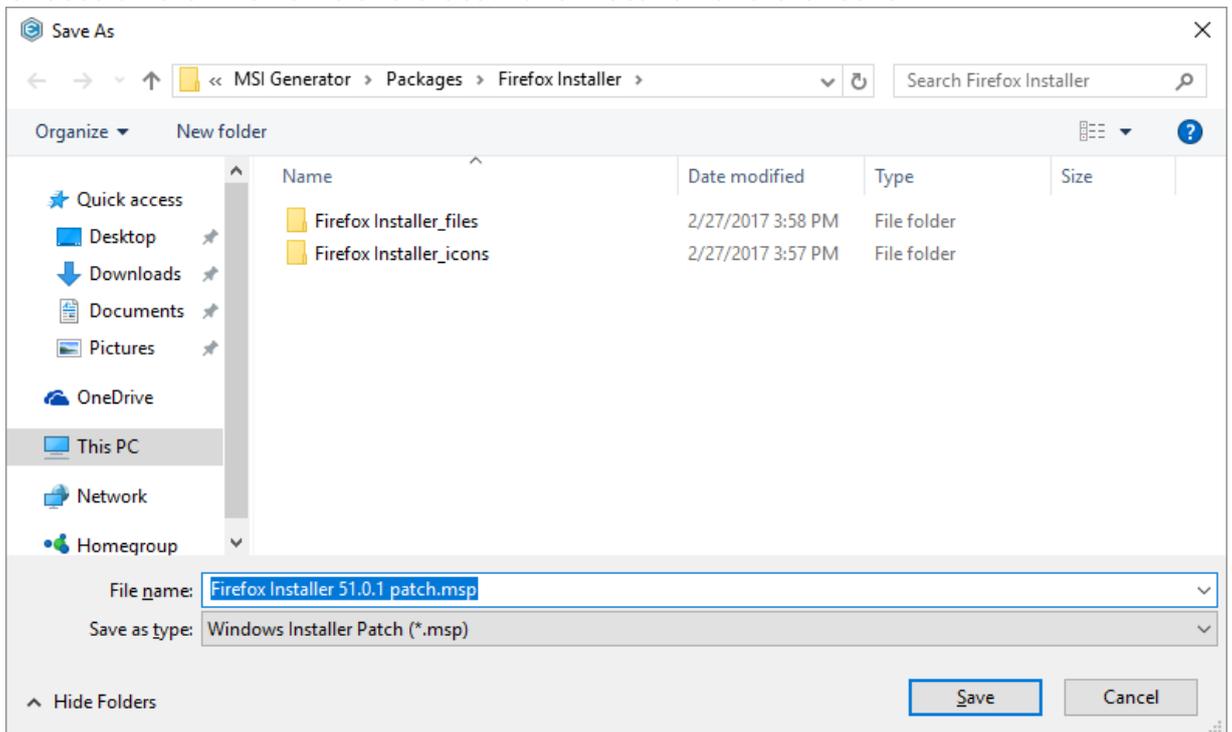




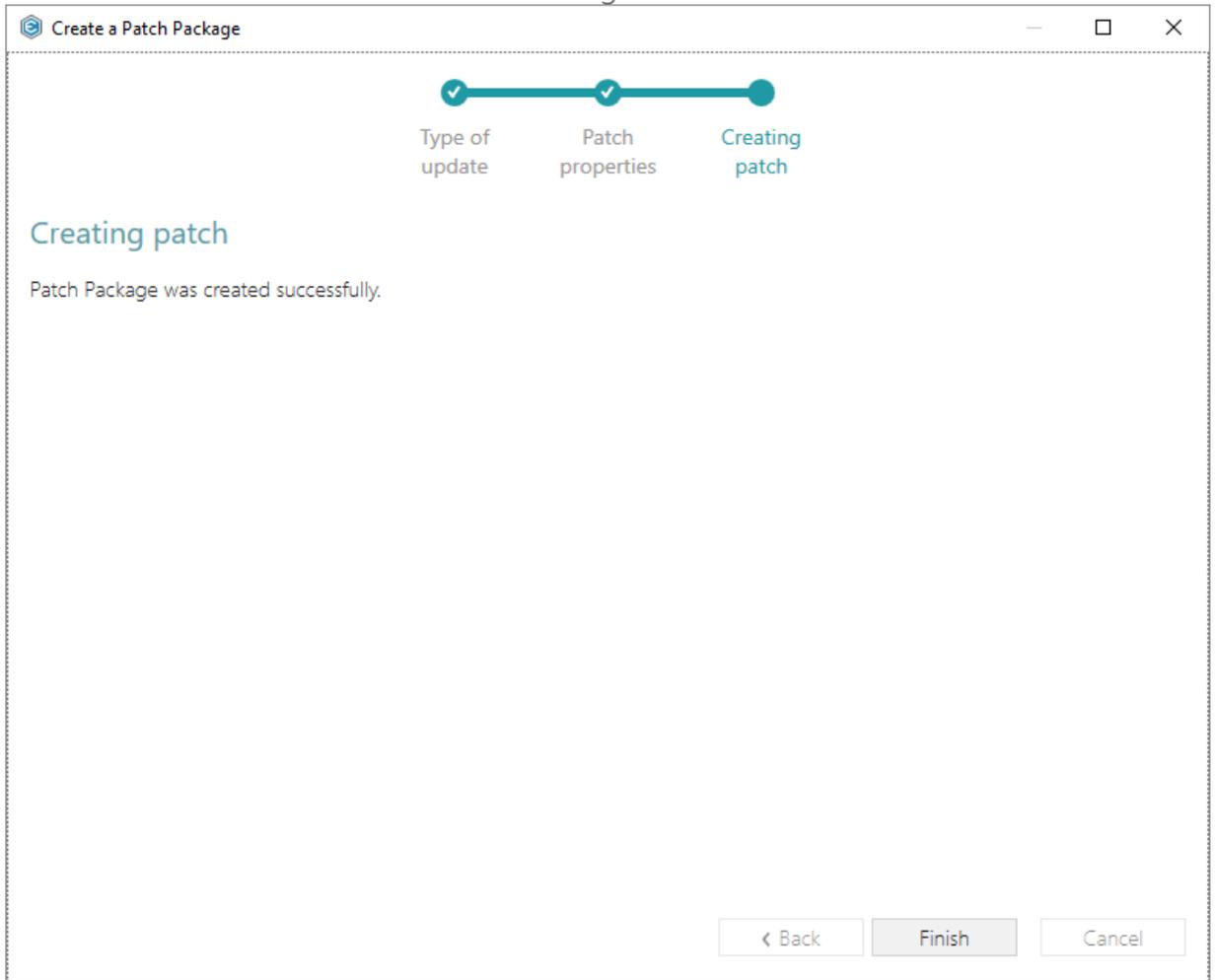
[34]. Please wait a little, while the Patch package is creating.



[35]. Choose a Patch file name and a destination location and click Save.



[36]. Click Finish to close the Create a Patch Package wizard.





3.4 New APPX

NOTE Building Universal Windows Platform app packages (APPX) is available under Windows 10 or Windows Server 2016 or newer.

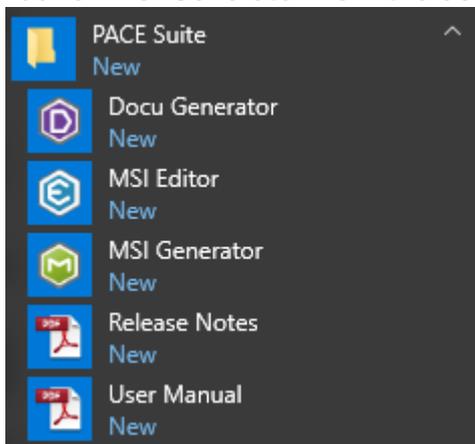
Choose a scenario that better suits your needs:

- **Create APPX from Scratch**, described in section 3.4.1
Create a new empty project in MSI Generator, add folders, files, registry entries and APPX apps (shortcuts) to this project and then generate the Universal Windows Platform app package (APPX) from this project.
- **Convert (Repackage) EXE, MSI to APPX**, described in section 3.4.2
Repackage your source installation (EXE, MSI, VBS, CMD, etc.) into Universal Windows Platform app package (APPX) using MSI Generator.

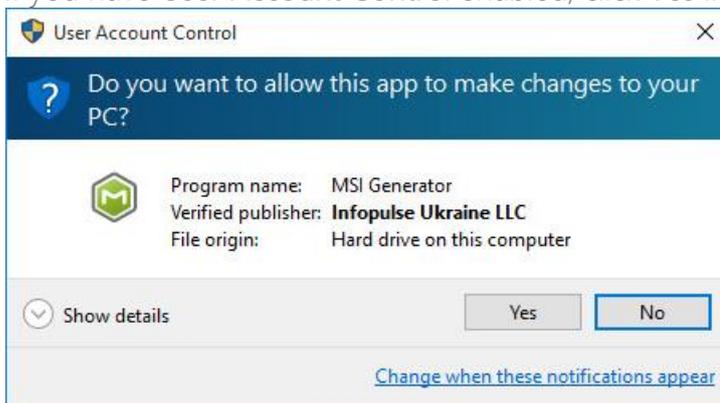
3.4.1 Create APPX from Scratch

Create a new empty project in MSI Generator, add folders, files, registry entries and APPX apps (shortcuts) to this project and then generate the Universal Windows Platform app package (APPX) from this project.

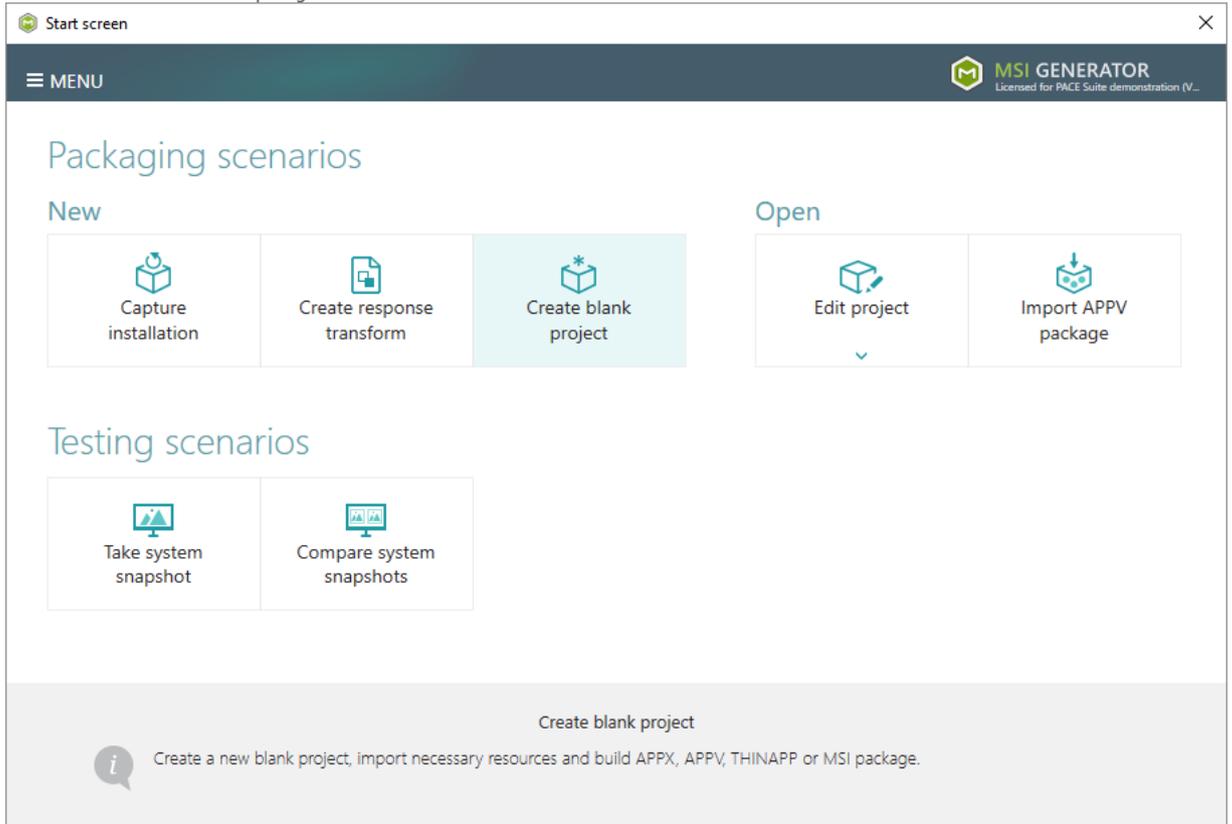
[1]. Launch MSI Generator from the desktop or the start menu shortcut.



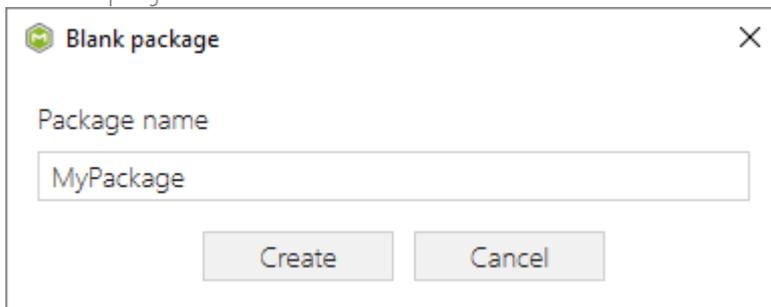
[2]. If you have User Account Control enabled, click Yes in the opened window.



[3]. Click Create blank project.

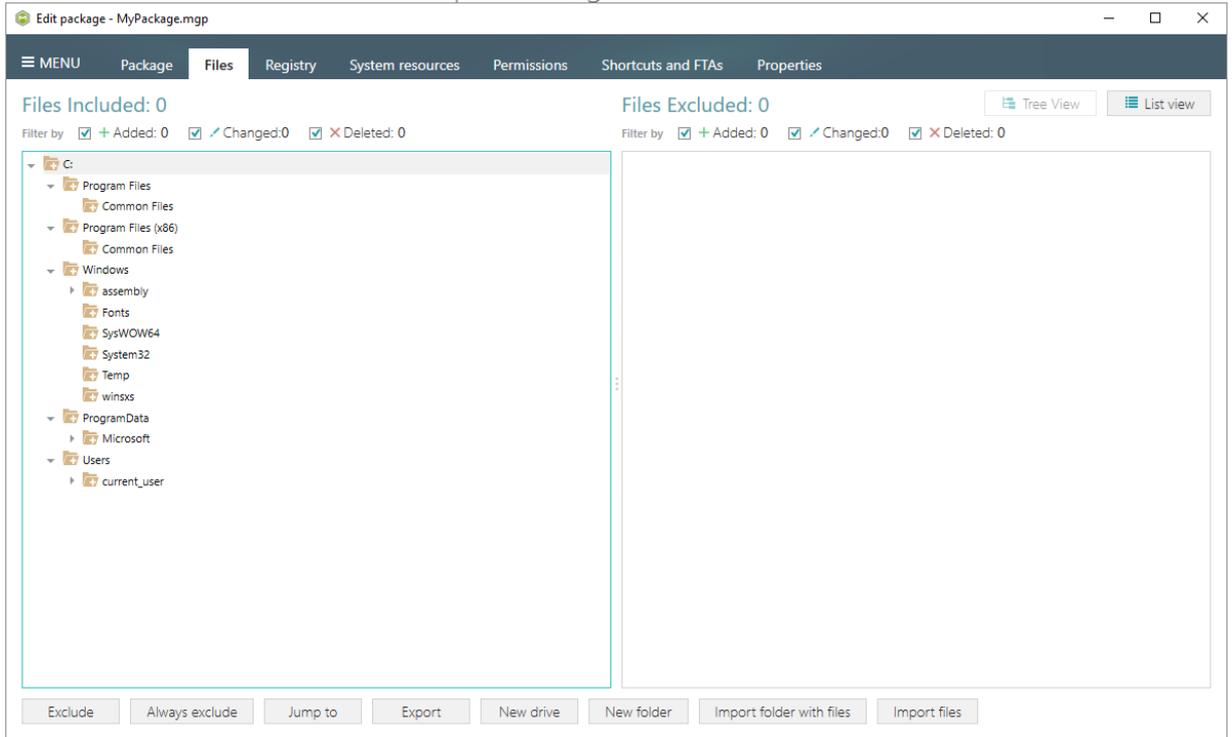


[4]. Enter a project name and click Create.

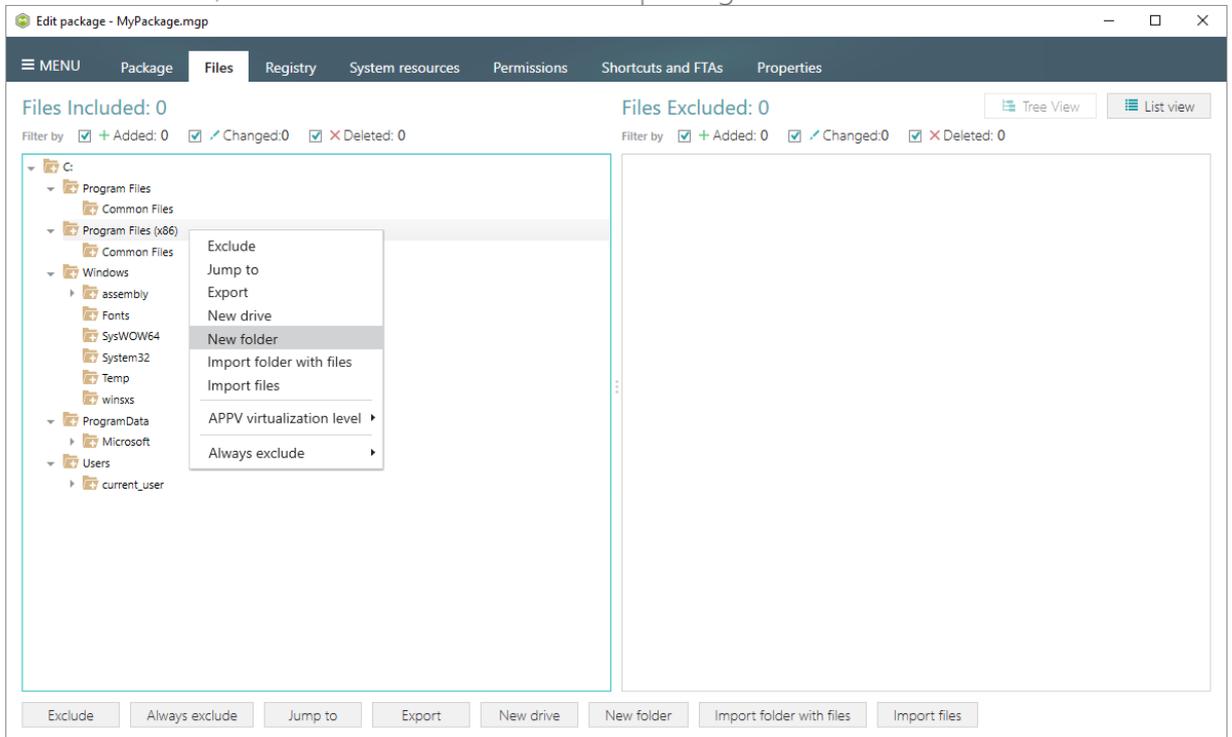


[5]. Once the newly created project is opened automatically, you can start adding the necessary resources using MSI Generator. The steps from [6] to [10] describe how to create a new folder and import files to this folder; the steps from [11] to [13] describe how to import registry entries from the REG file; the steps from [14] to [16] describe how to add APPX app (shortcut) and its logos; and two last steps [17] and [19] describe how to build APPX package from the prepared project.

[6]. In order to create a folder and import files, go to the Files tab.

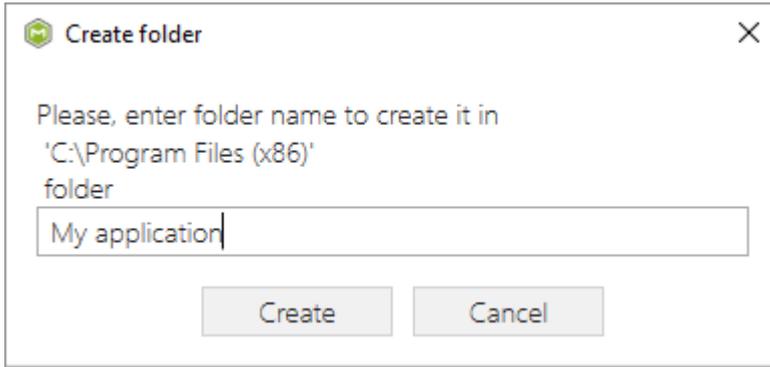


[7]. In the left pane, select **New folder** from the context menu of a folder, where you want to create a new empty folder. Note that the left 'Files Included' pane displays files and folders, which will be a part of your package, and the right 'Files Excluded' pane displays files and folders, which will not be saved to the package.

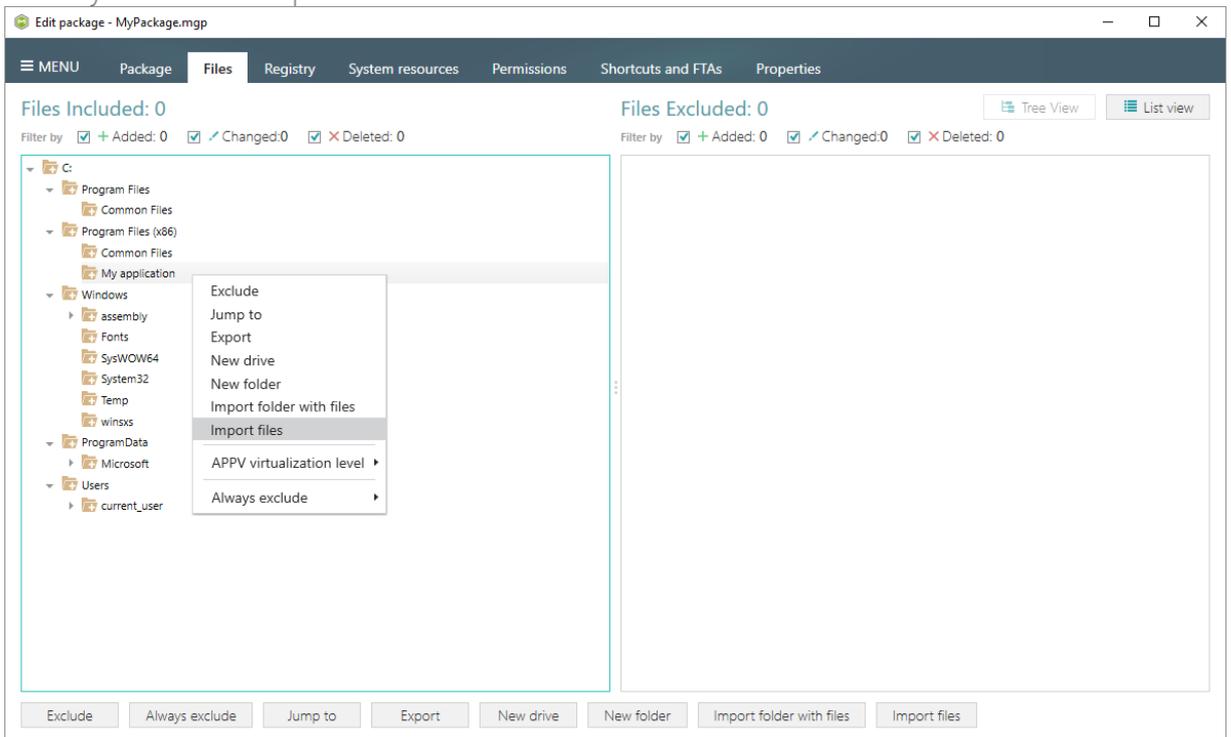




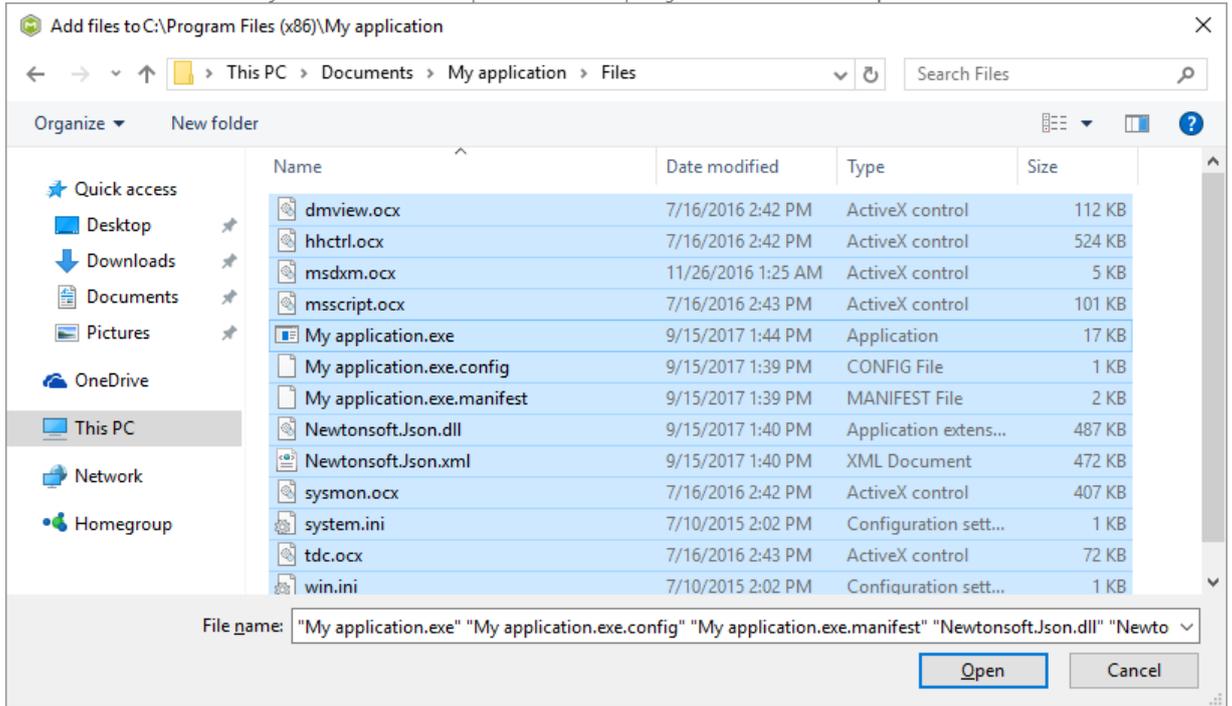
[8]. Enter a folder name and click Create.



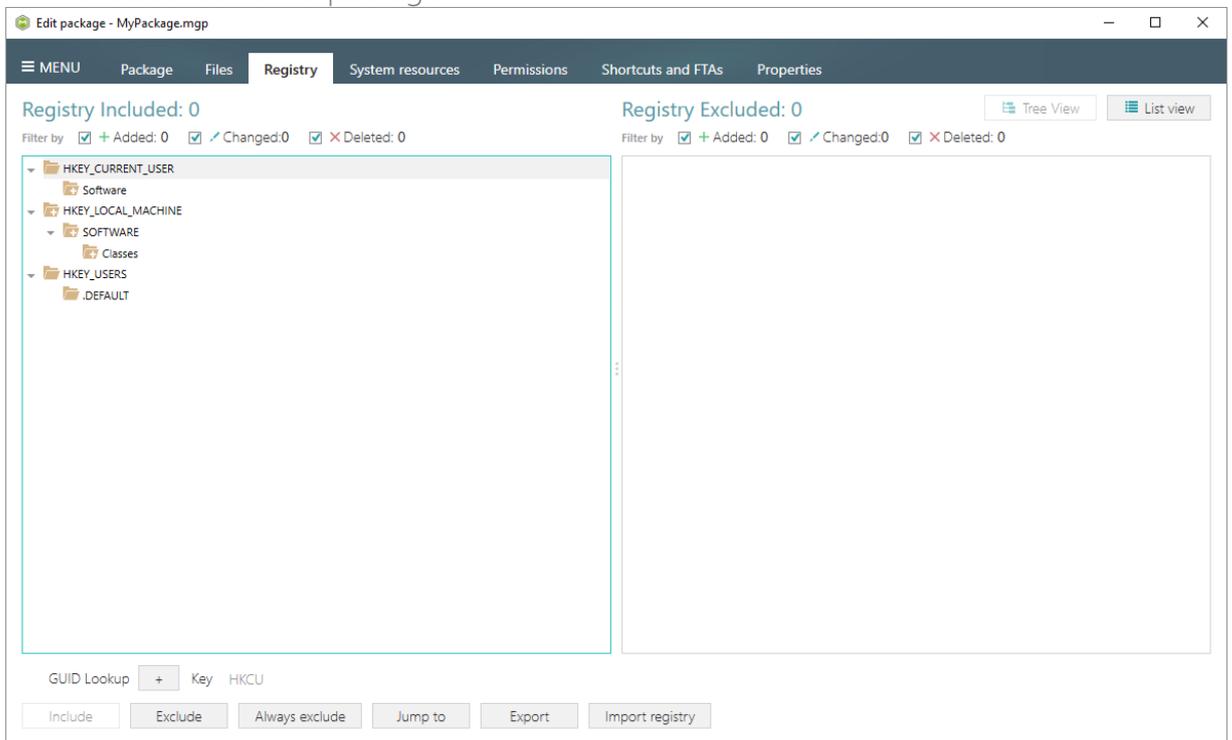
[9]. For adding files to your project, select Import files from the context menu of a folder, to which you want to import files.



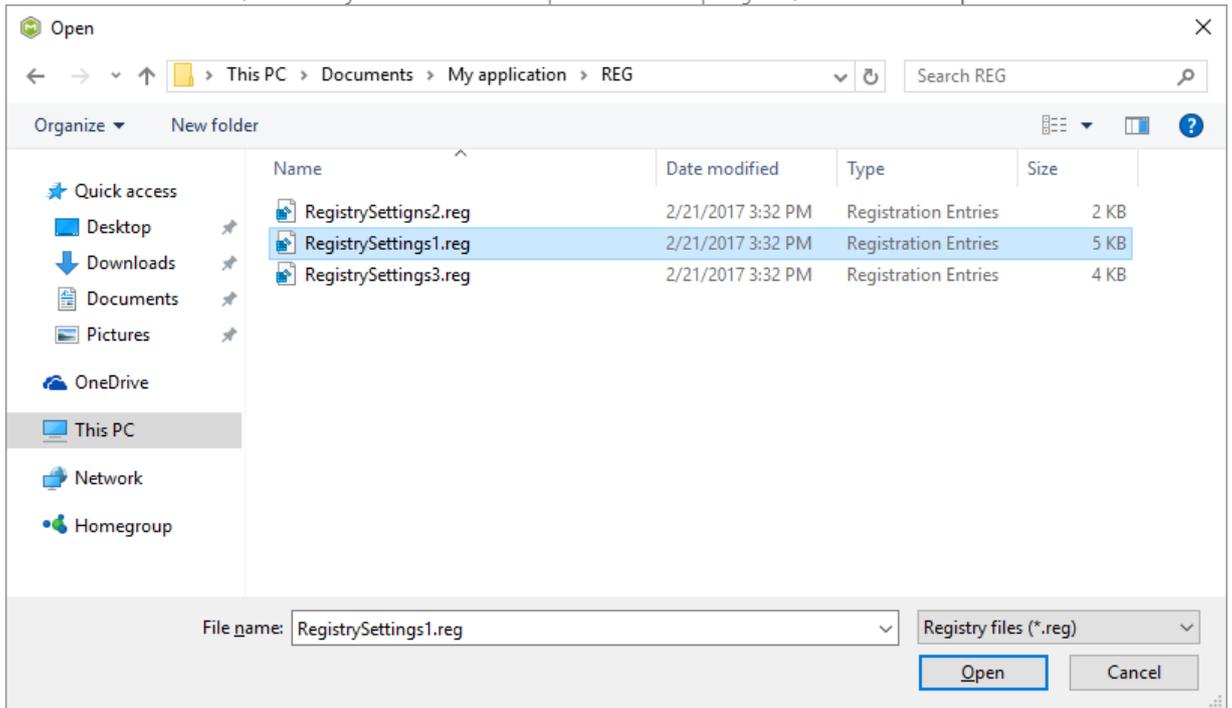
[10]. Choose files, which you want to import to the project and click Open.



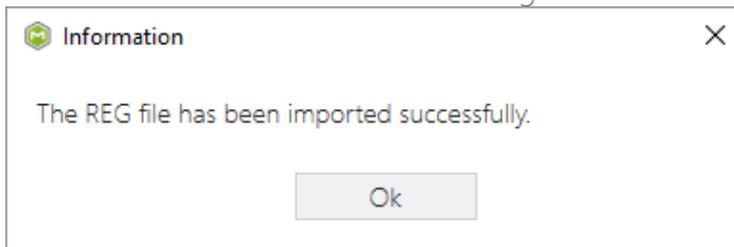
[11]. In order to import registry entries from the REG file, go to the Registry tab and click the Import registry button, located in the bottom part of the window. Note that the left 'Registry Included' pane displays registry keys and values, which will be a part of your package, and the right 'Registry Excluded' pane displays registry keys and values, which will not be saved to the package.



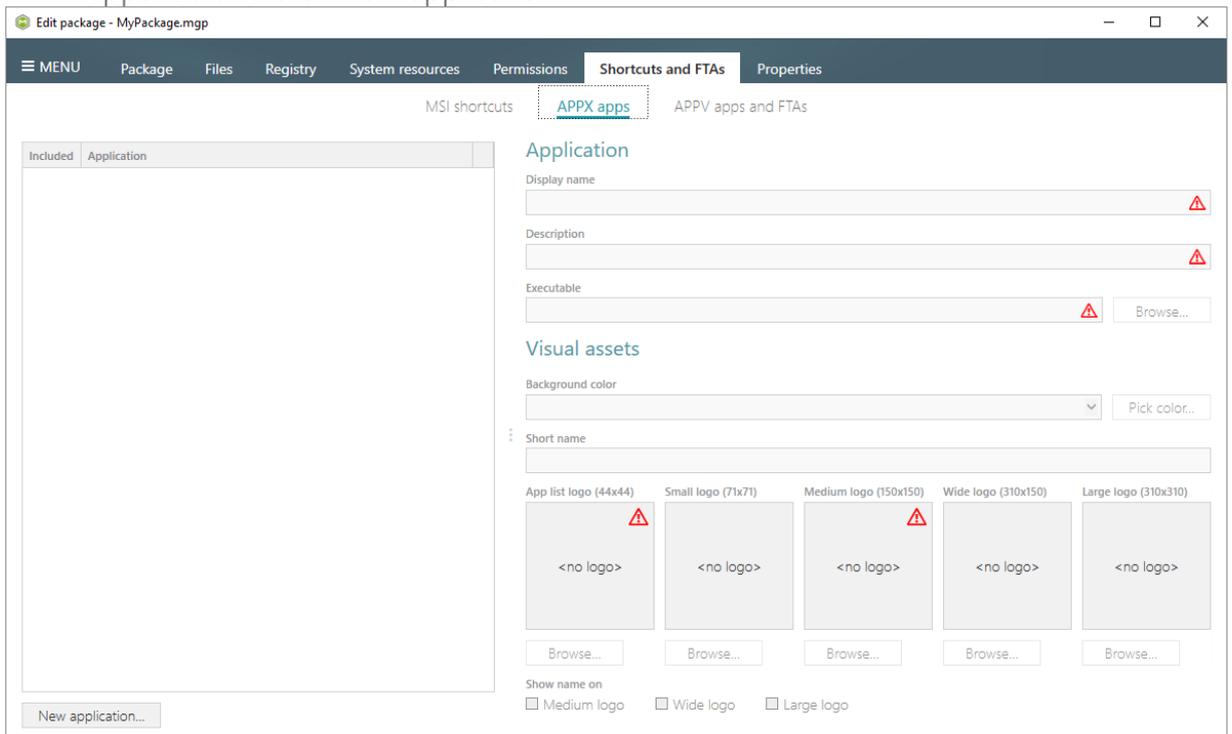
[12]. Choose a REG file, which you want to import to the project, and click Open.



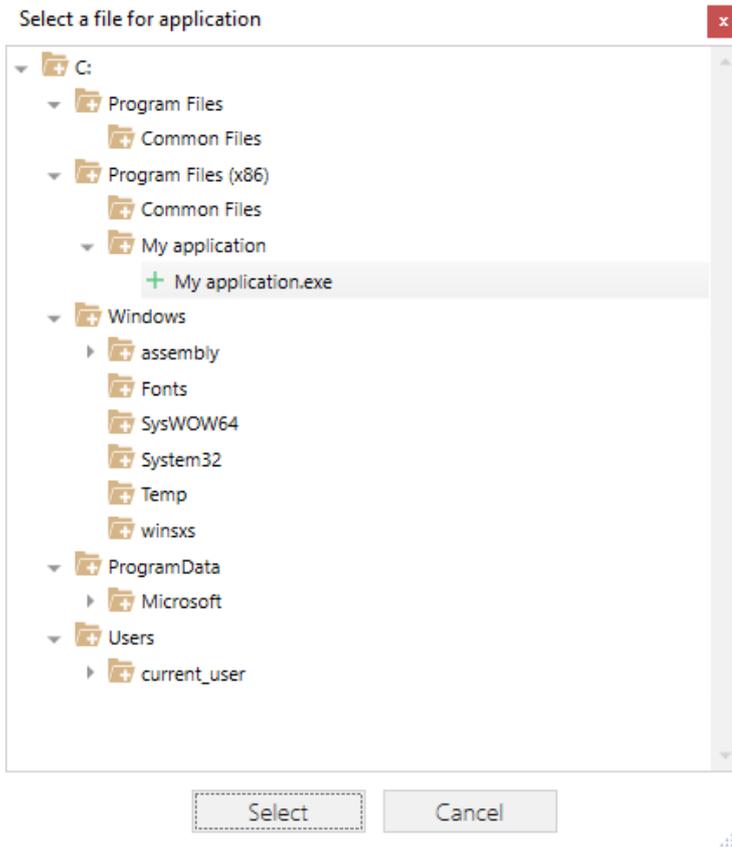
[13]. Click Ok to close the information dialog.



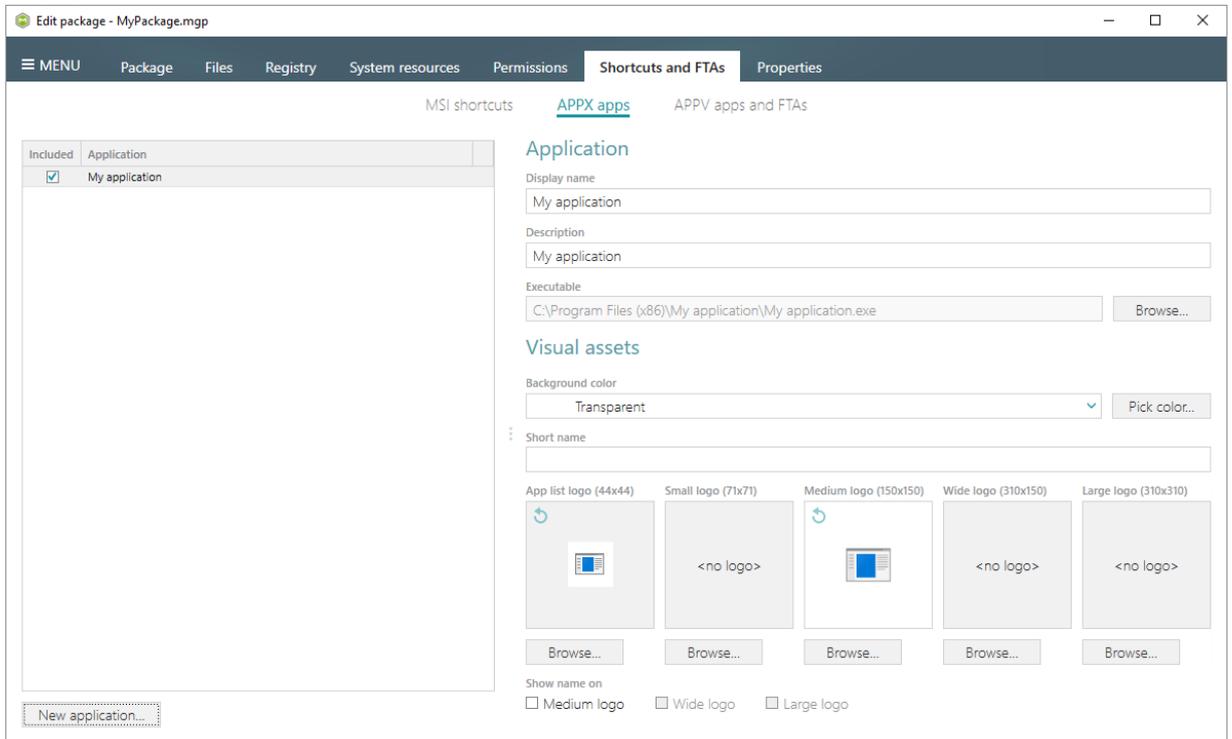
[14]. If you need to add an APPX app (shortcut) and its logos, go to the Shortcuts and FTAs -> APPX apps tab and click New application...



[15]. Select the main executable file (EXE) of your application from the tree and click Select.

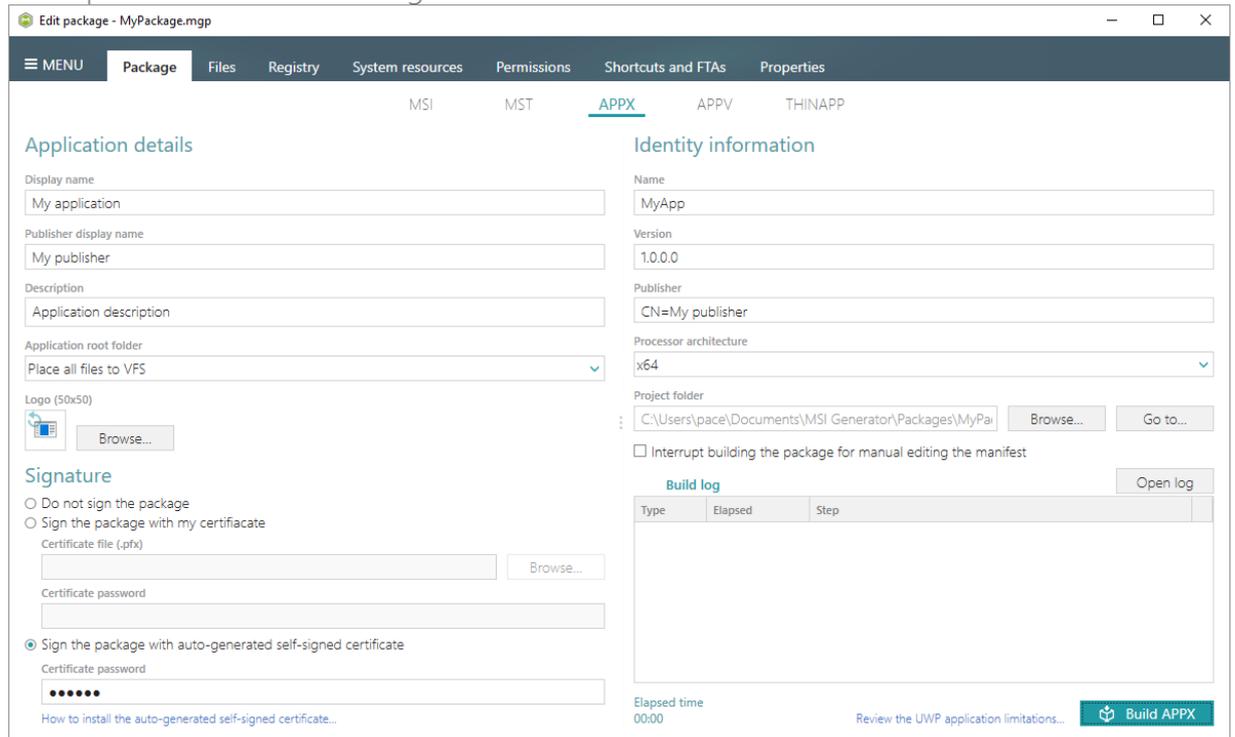


[16]. Using the details pane, you can update the APPX app display name, description, and visual assets such as background color and logos, which will be displayed in the Start menu.



[17]. In order to build APPX package from your project, navigate to the Package -> APPX tab, fill-in all the required fields, select the digital signing option and click Build APPX. Find

description of the APPX settings below in the table.



Application details

Display name	A friendly name of the package that can be displayed to users.
Publisher display name	A friendly name for the publisher of the package that can be displayed to users.
Description	A friendly description that can be displayed to users.
Application root folder	A location of the main application folder. Content of the selected folder will be placed to the package root, instead of VFS.
Logo (50x50)	A logo image of the package that can be displayed to users.

Signature

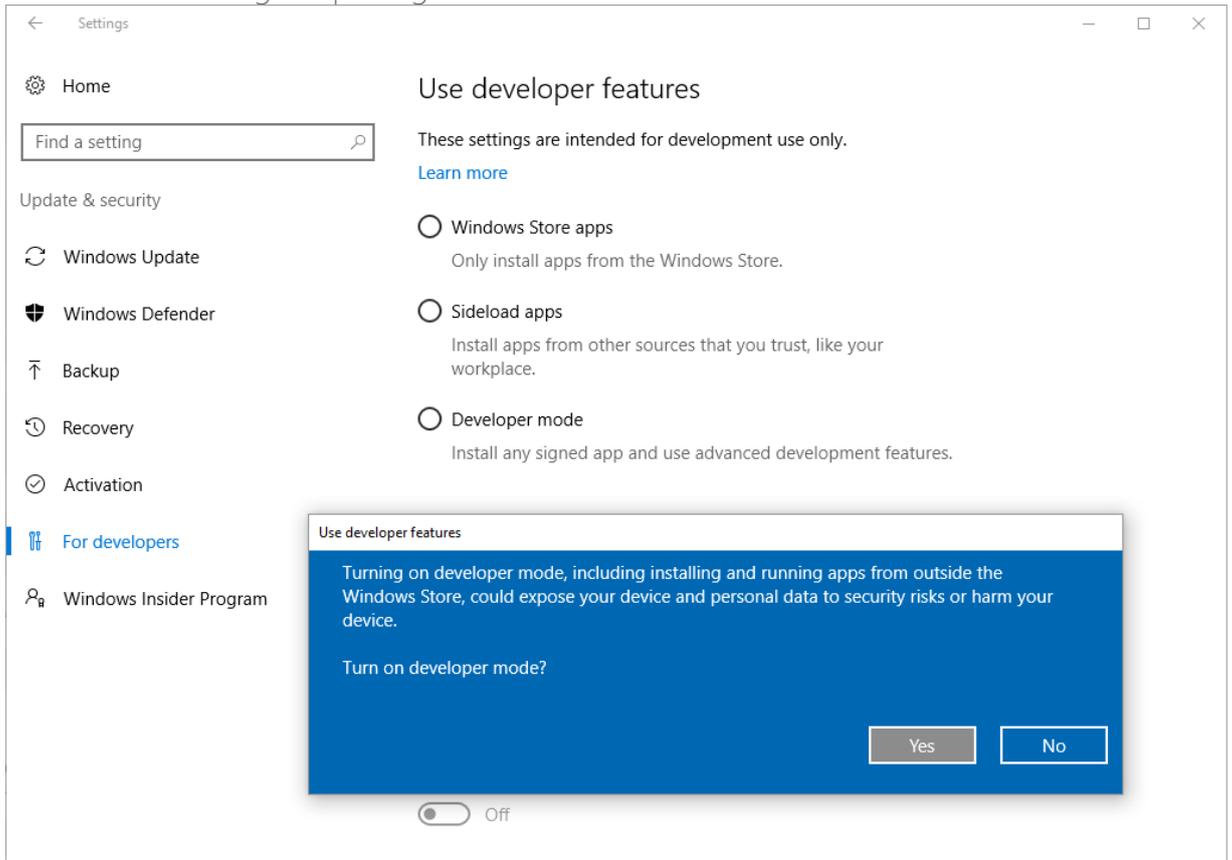
Do not sign the package	Use this option if you are planning to submit the package to Windows Store or sign it manually.
Sign the package with my certificate	Use this option to sign the generated package with the valid certificate that you already have.
Sign the package with auto-generated self-signed certificate	Use this option to generate the self-signed certificate and sign the package with this certificate. NOTE In order to deploy your package, install the generated certificate before (double-click the auto-generated.pfx file, and in the Certificate Import Wizard, install the certificate onto the Local Machine , and place the certificate into the Trusted People certificate store) and enable the Developer mode in Windows settings, as described in the next step.

Identity information

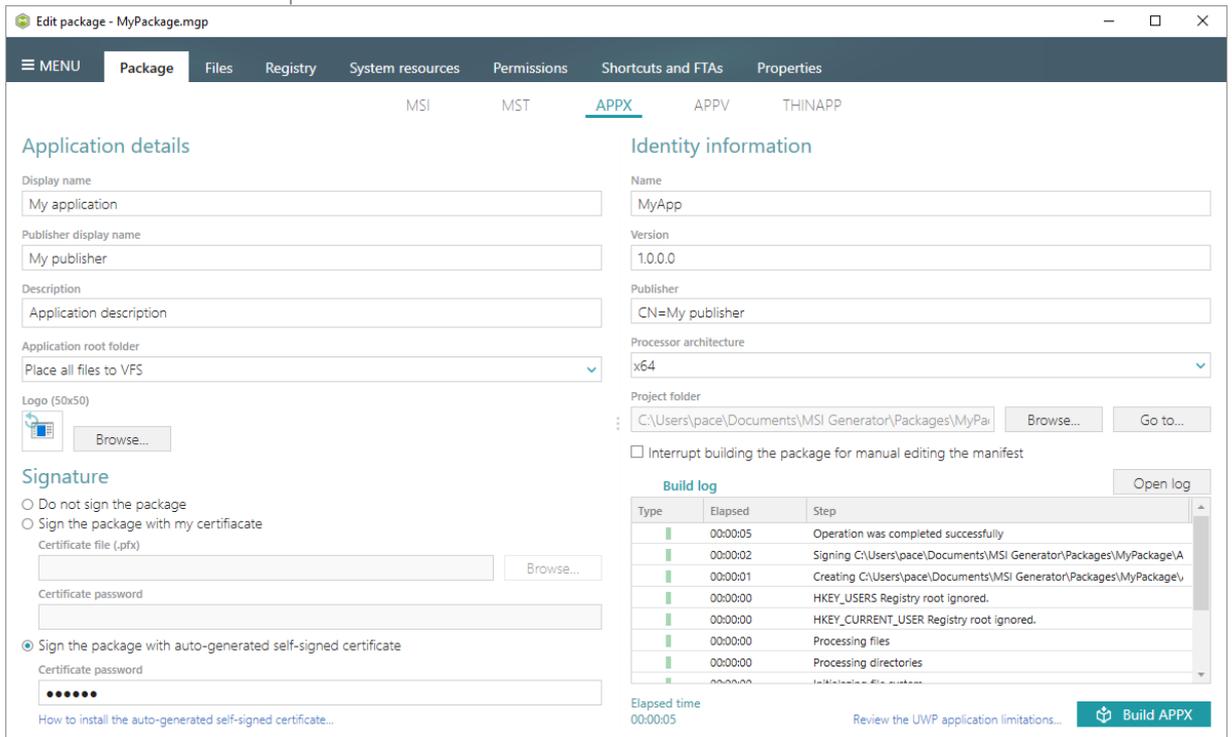
Name	Describes the contents of the package.
Version	The version number of the package.

Publisher	Describes the publisher information. The Publisher attribute must match the publisher subject information of the certificate used to sign a package.
Processor architecture	Describes the architecture of the code contained in the package.

[18]. If you have built the package with the Sign the package with the auto-generated self-signed certificate option selected, do not forget to install that generated certificate to the Trusted People certificate store and enable the Developer mode in the Windows settings to install the self-signed package.



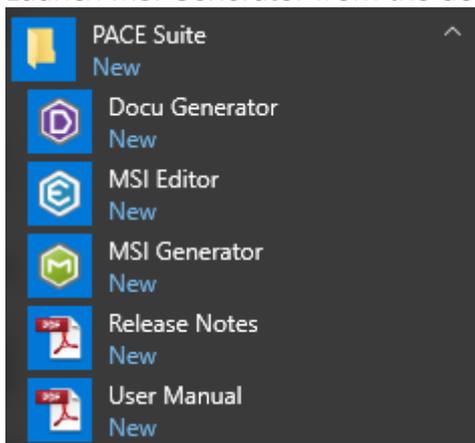
- [19]. Click Go to..., located next to the Project folder field, to open the package containing folder in Windows Explorer.



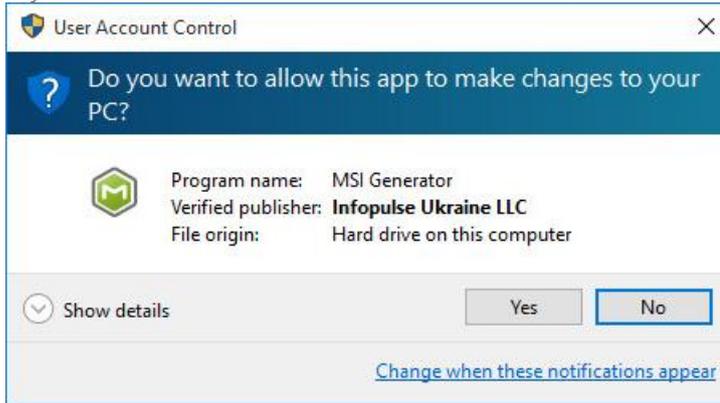
3.4.2 Convert (Repackage) EXE, MSI to APPX

Repackage your source installation (EXE, MSI, VBS, CMD, etc.) into Universal Windows Platform app package (APPX) using MSI Generator.

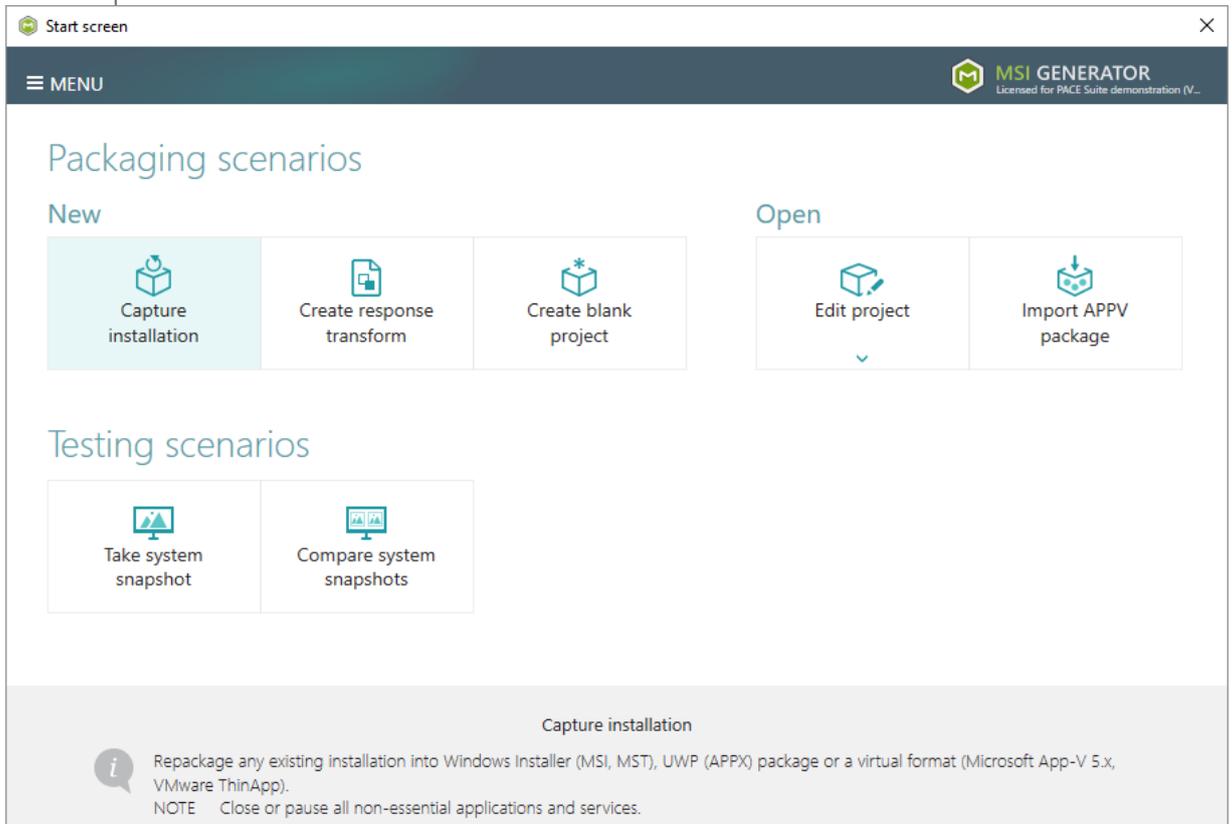
- [1]. Launch MSI Generator from the desktop or the start menu shortcut.



[2]. If you have User Account Control enabled, click Yes in the opened window.



[3]. Click Capture installation.



- [4]. Review the issues, which were detected on your system, and try to resolve them by closing the non-essential applications and stopping services. Thereafter, click **Next >**.

Capture installation

Prepare computer Capturing method Settings Installation Completion

Prepare the computer for capturing

It is strongly recommended to perform capturing on a clean virtual machine with all non-essential processes stopped in order to avoid capturing data, which is not related to your source installation. Also, in case of any failure, you will be able to restore the virtual machine to the previous state.

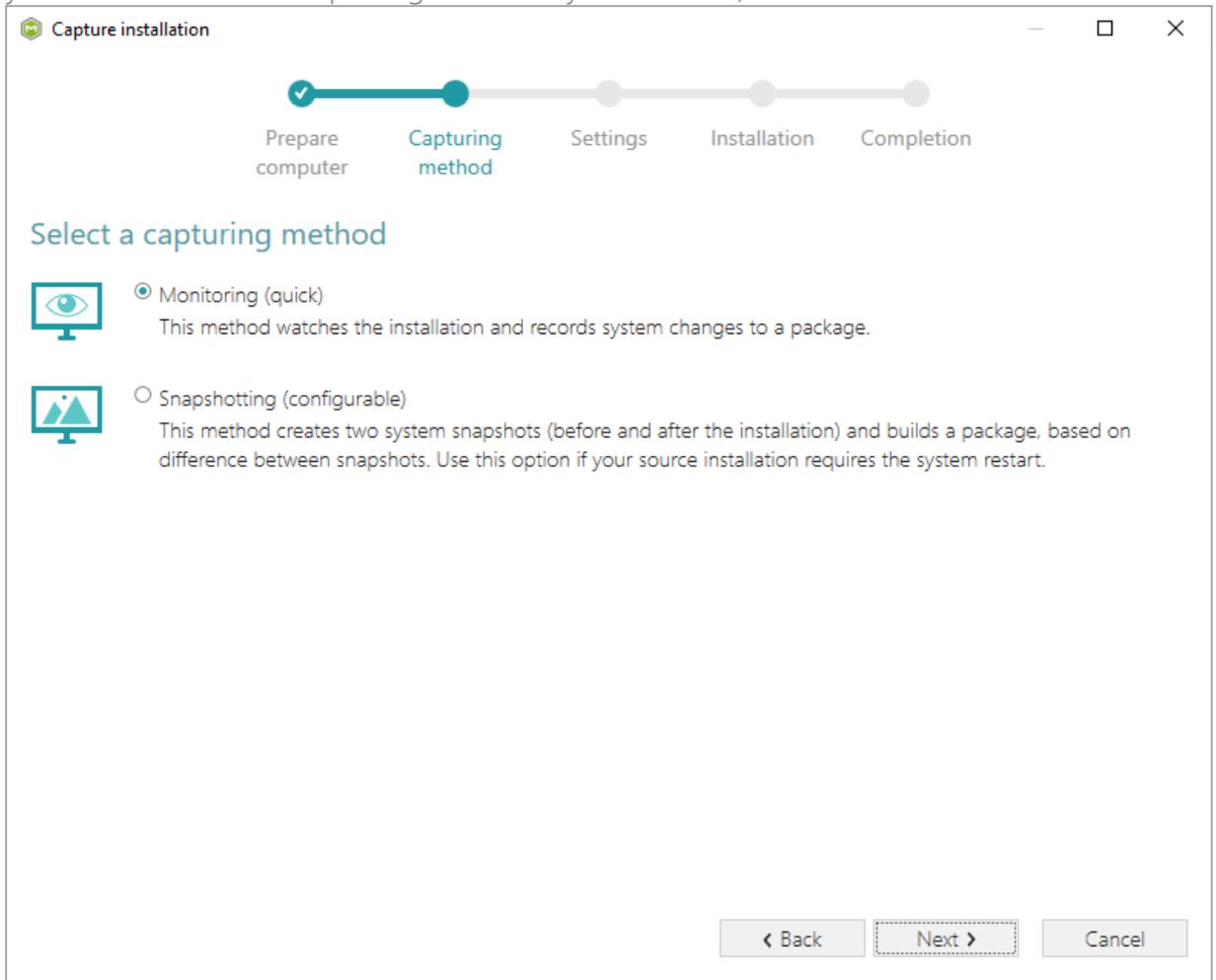
The following issues were detected on your system:

Description	Resolution
⚠ Diagnostic Policy Service is active.	Stop this service before capturing.
⚠ Windows Defender Service is active.	Stop this service before capturing.
⚠ Security Center is active.	Stop this service before capturing.
⚠ Windows Defender is running.	Close your antivirus software before capturing.

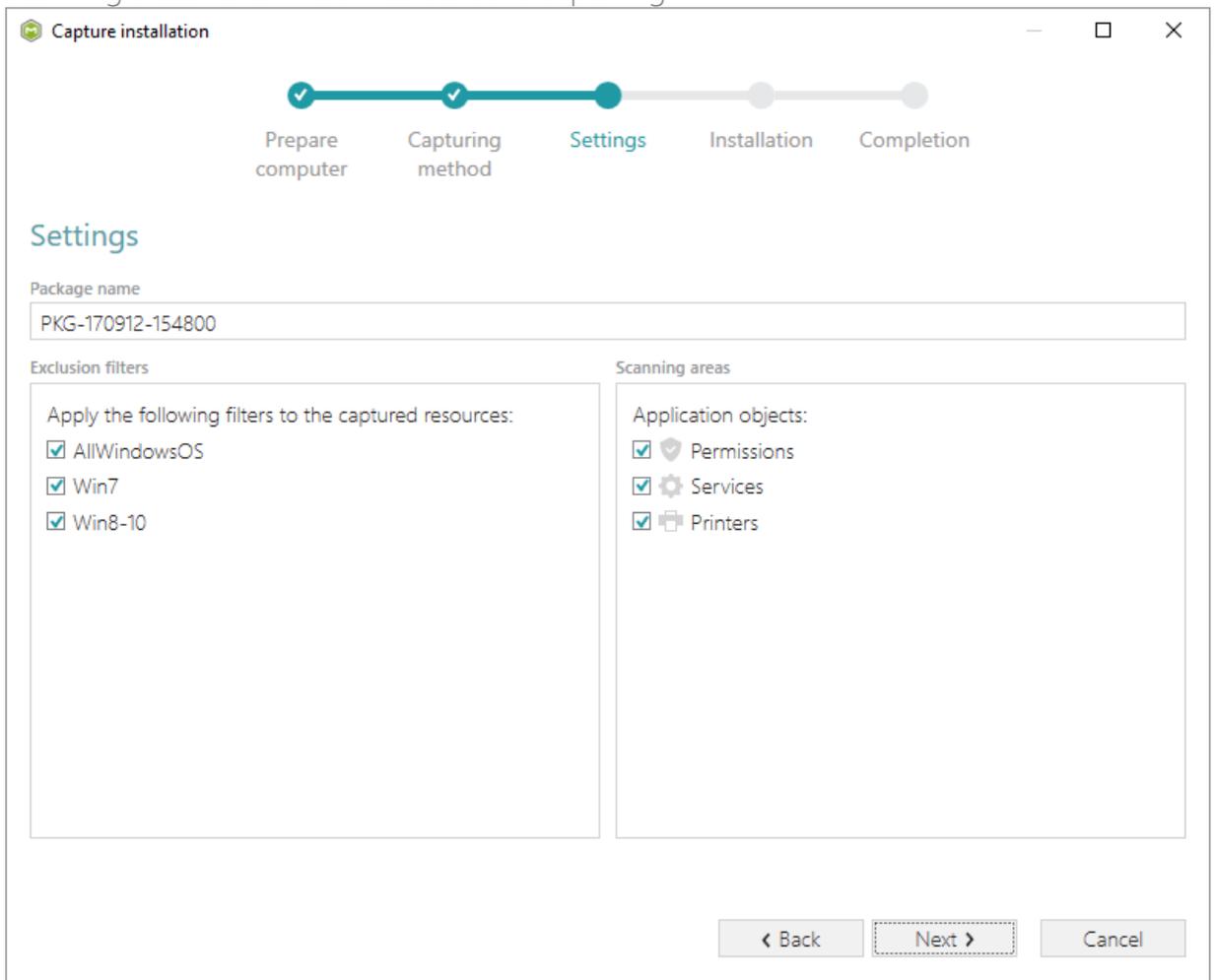
Refresh [Review the capturing recommendations...](#)

< Back Next > Cancel

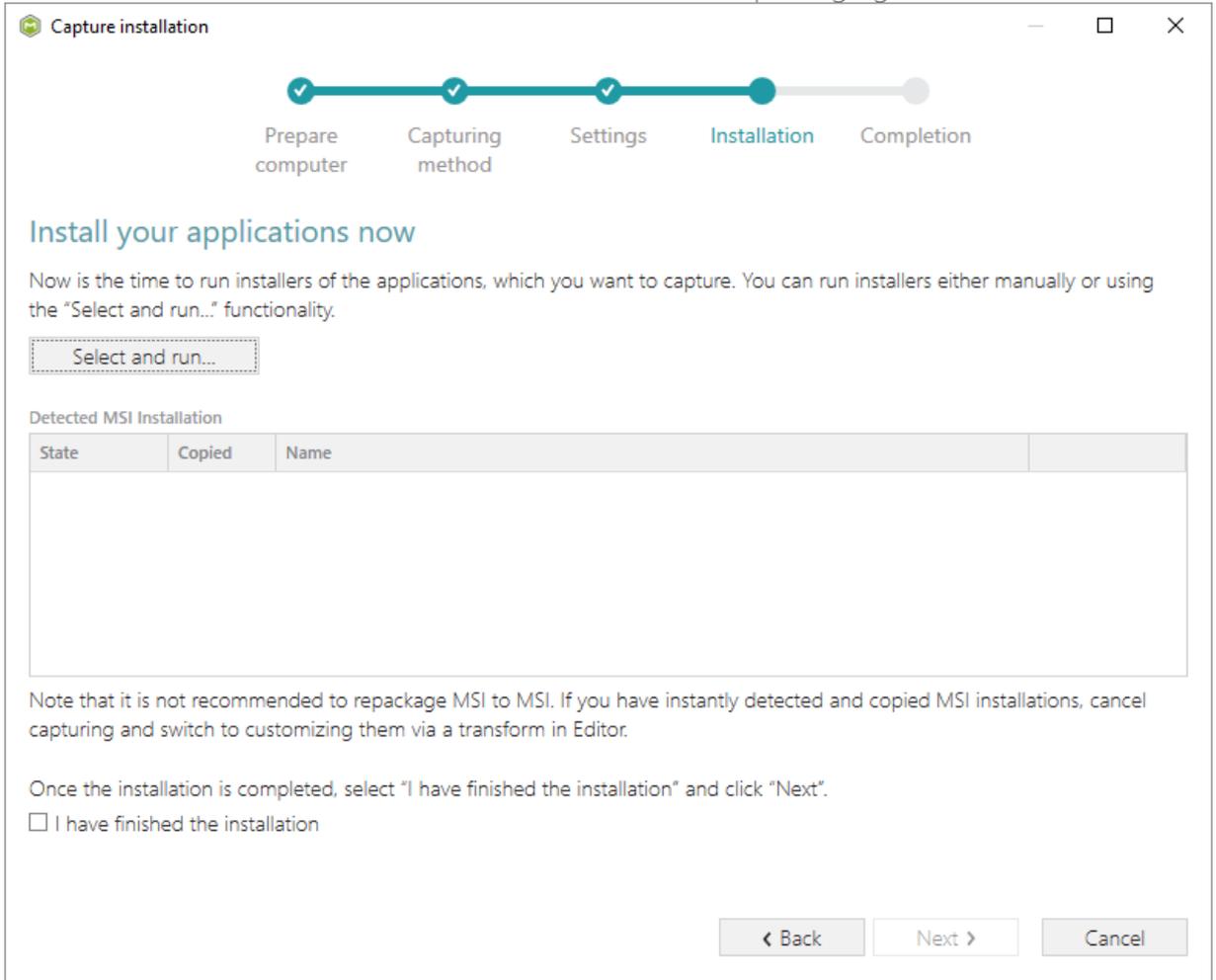
[5]. Select the **Monitoring** method for the quicker capturing (or use the **Snapshotting** one if you need to continue capturing after the system restart) and click **Next >**.



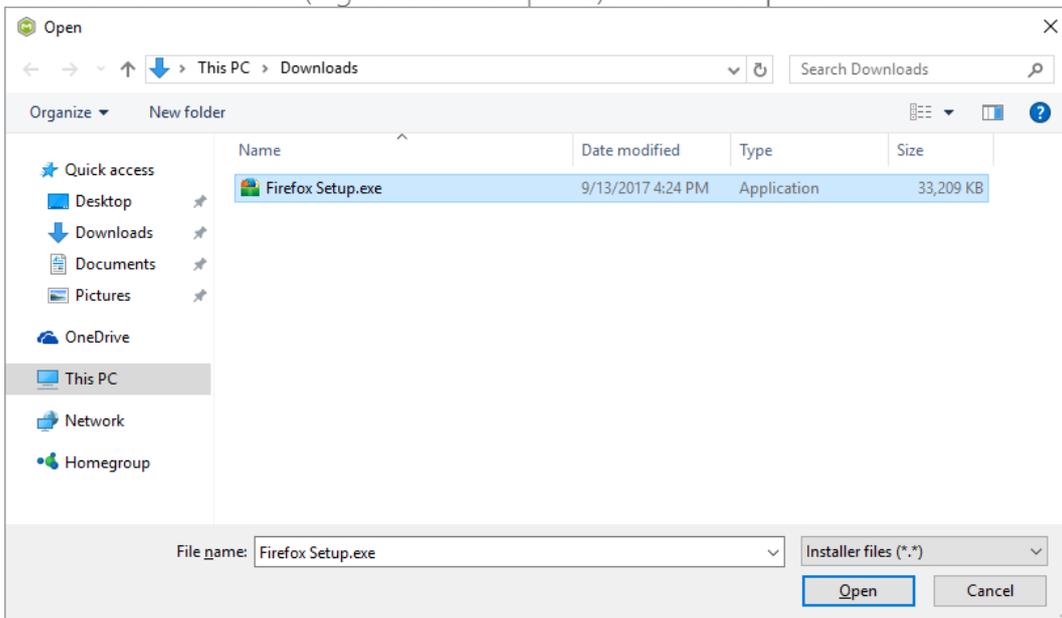
[6]. Here you can review and update package name, disable needless exclusion filters and scanning areas. Click **Next >** to start the capturing.



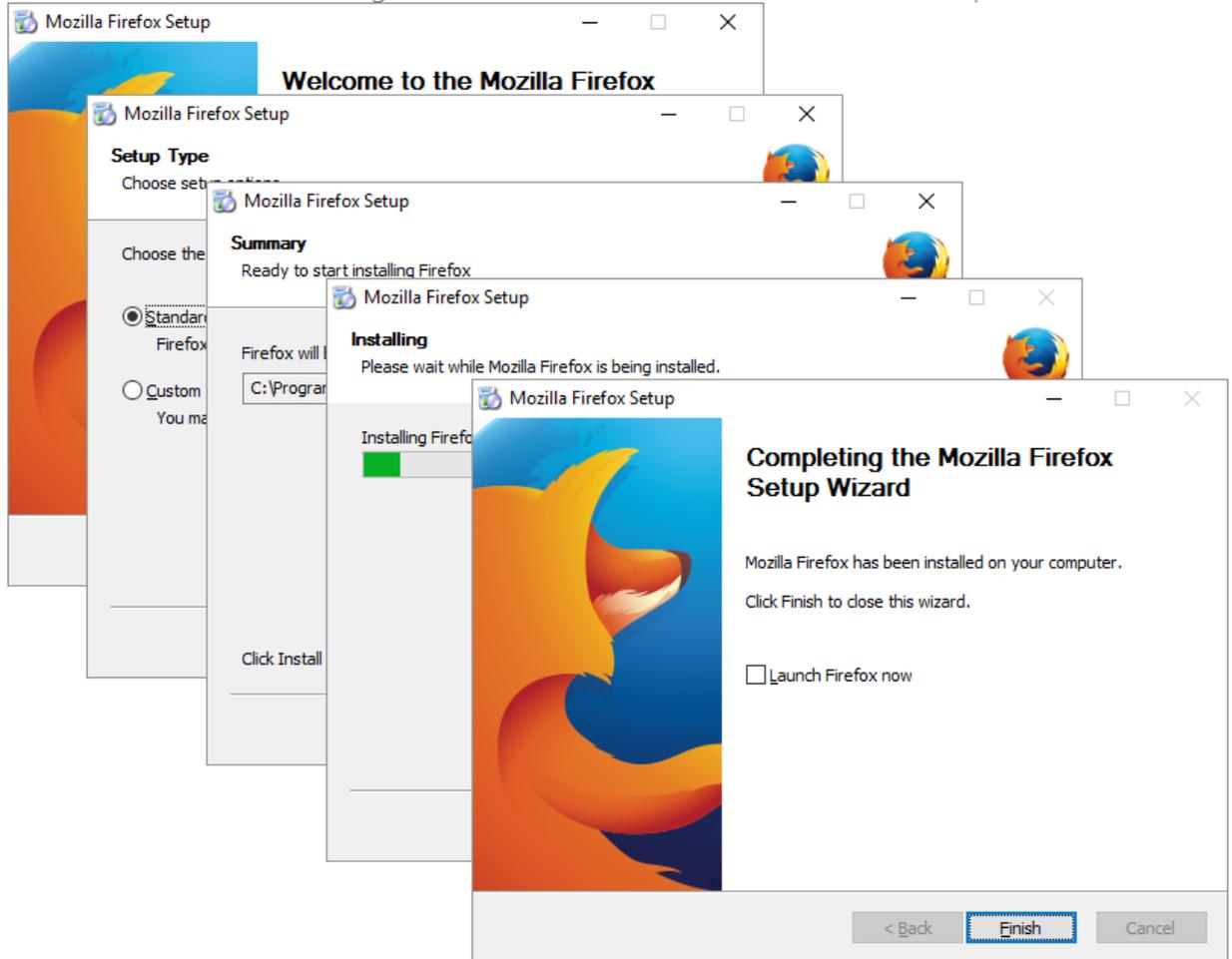
[7]. Click Select and run... to choose source installation for repackaging.



[8]. Select the installer file (e.g. Firefox Setup.exe) and click Open.



[9]. Follow the installation dialogs of the launched source installation to complete it.



[10]. Now you can make any changes to the file system and registry, which you want to capture and include to the package. For instance, you can create new or copy-paste existing files, import REG file to the system registry, changes permission settings, or launch the installed application in order to capture the necessary application configurations, like disabling updates and so on.

[11]. Finally, to complete the capturing, select I have finished the installation and click Next >.

Capture installation

Prepare computer Capturing method Settings **Installation** Completion

Install your applications now

Now is the time to run installers of the applications, which you want to capture. You can run installers either manually or using the "Select and run..." functionality.

Select and run...

Detected MSI Installation

State	Copied	Name
-------	--------	------

Note that it is not recommended to repackage MSI to MSI. If you have instantly detected and copied MSI installations, cancel capturing and switch to customizing them via a transform in Editor.

Once the installation is completed, select "I have finished the installation" and click "Next".

I have finished the installation

< Back **Next >** Cancel

[12]. Wait a little, while the capturing process is finishing, filtering captured data and creating the project.

Capture installation

Prepare computer Capturing method Settings **Installation** Completion

Install your applications now

Now is the time to run installers of the applications, which you want to capture. You can run installers either manually or using the "Select and run..." functionality.

Select and run...

Detected MSI Installation

State	Copied	Name
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Note that it is not recommended to repackage MSI to MSI. If you have instantly detected and copied MSI installations, cancel capturing and switch to customizing them via a transform in Editor.

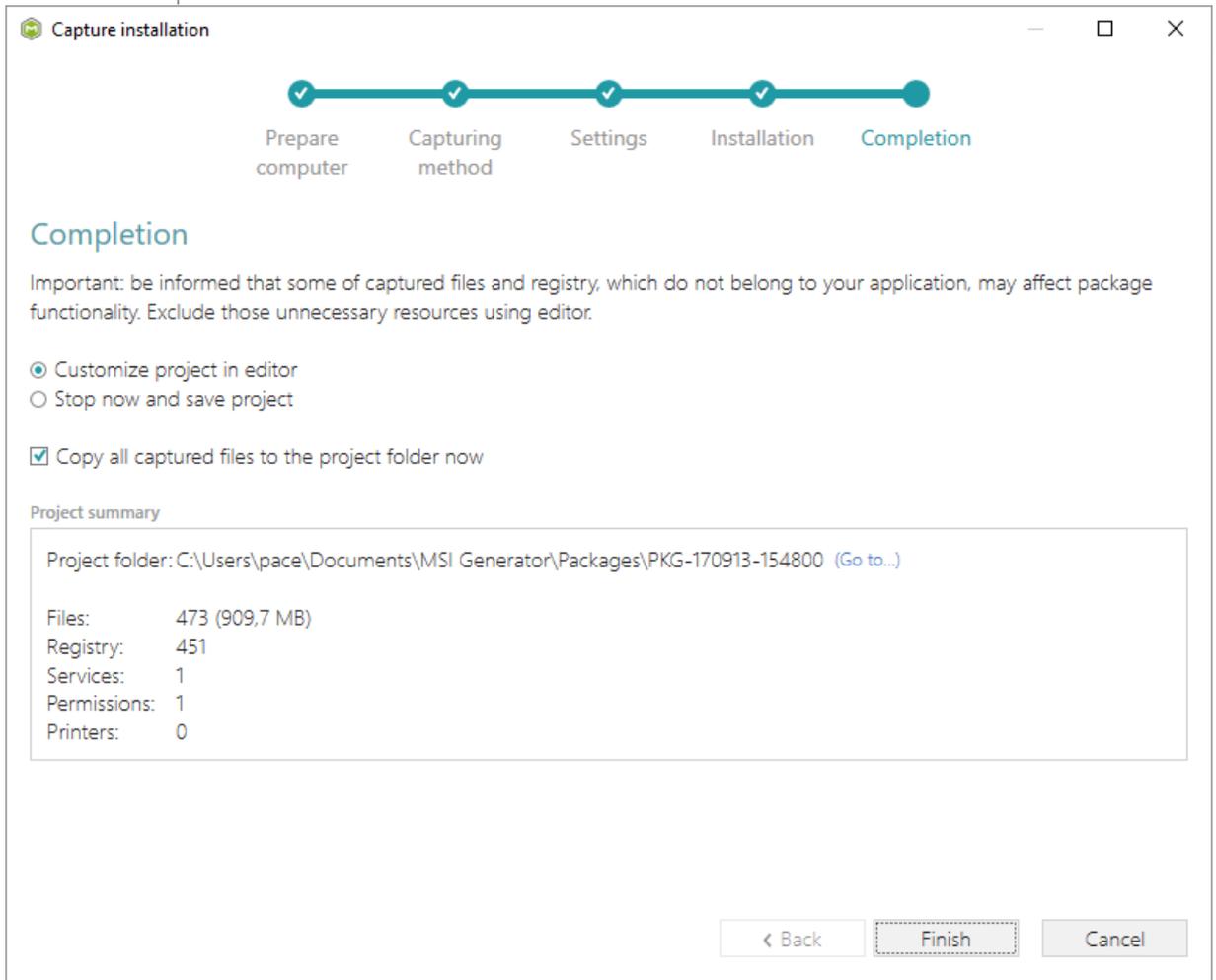
Once the installation is completed, select "I have finished the installation" and click "Next".

I have finished the installation

00:08 Scanning Services

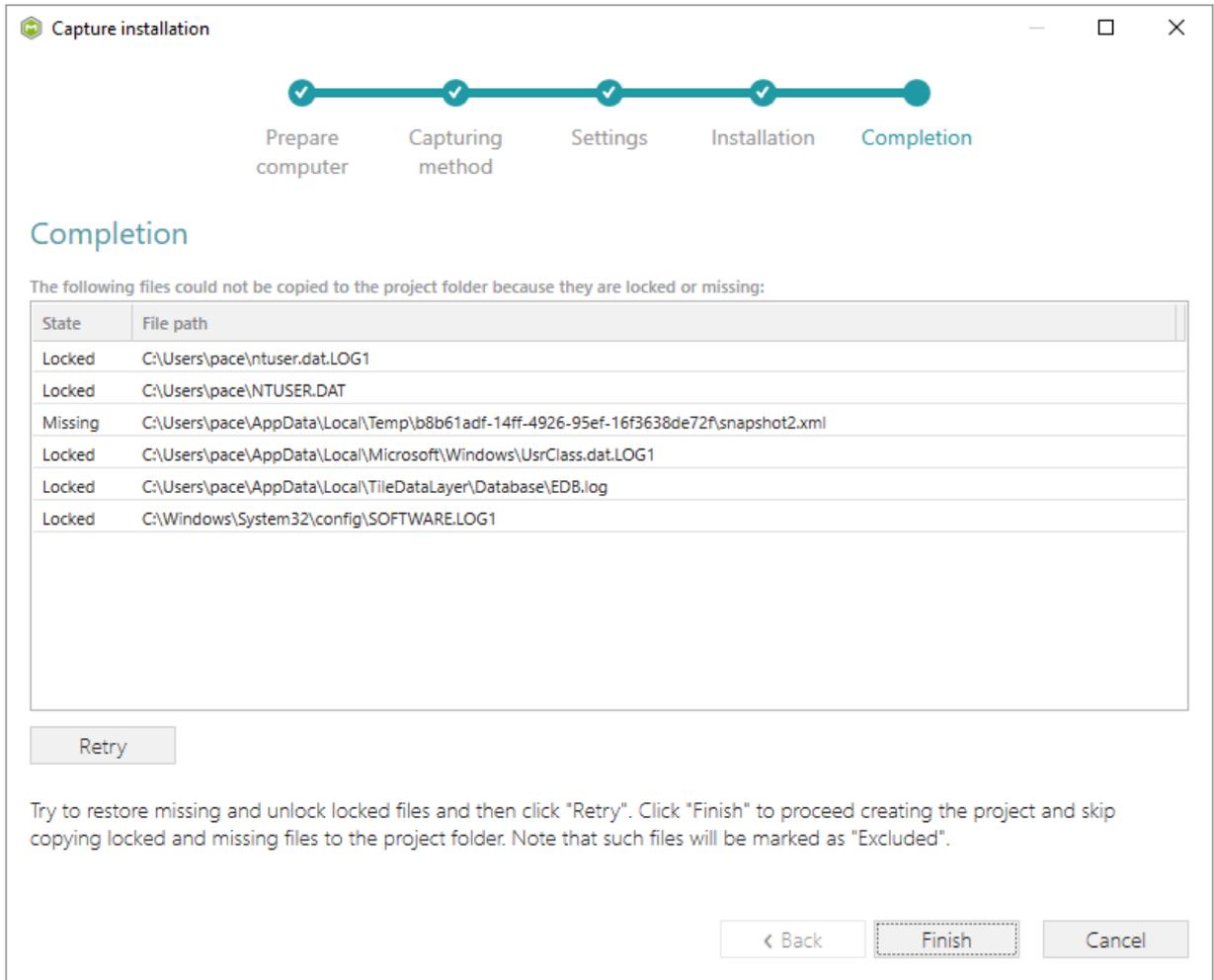
< Back Next > Cancel

[13]. Leave selected the Customize project in editor and Copy all captured files to the project folder now options are selected and click Finish.



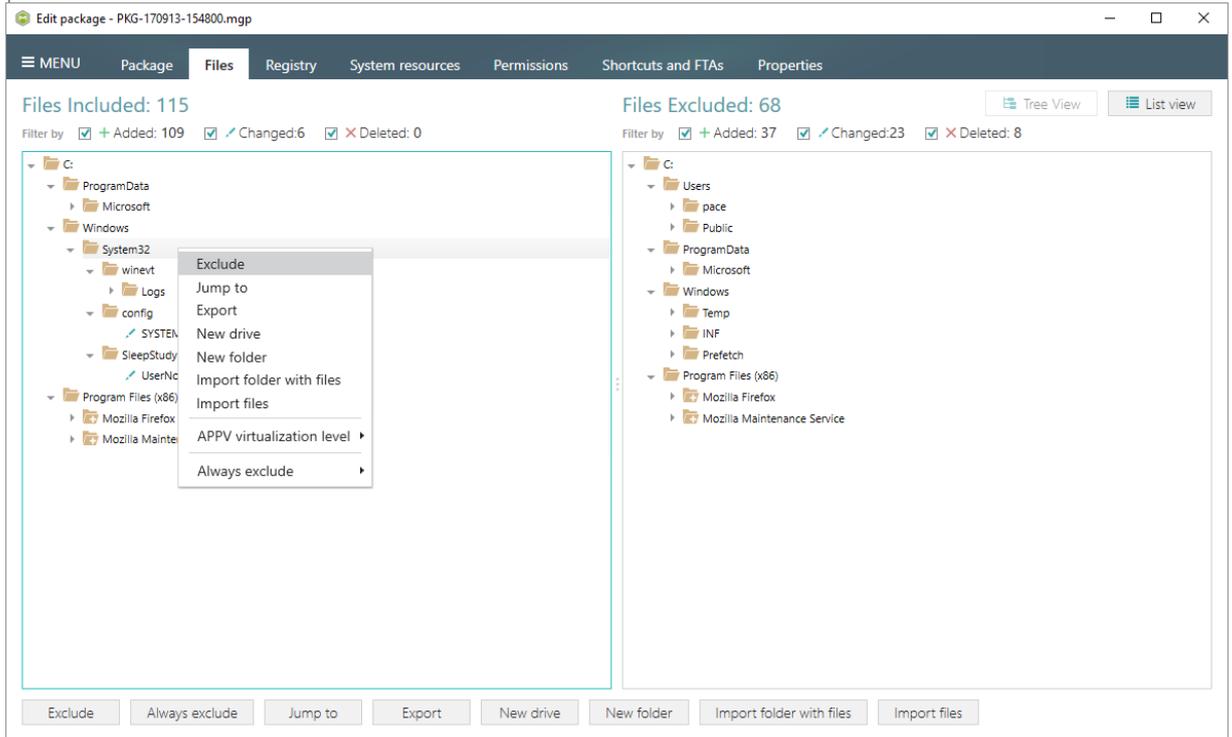
[14]. The following dialog displays captured files, which could not be copied to the project folder because they do not exist anymore or locked by the system or by an application. Try to resolve these issues and then click Retry. Click Finish to skip copying the missing

and locked files and mark them as Excluded resources.

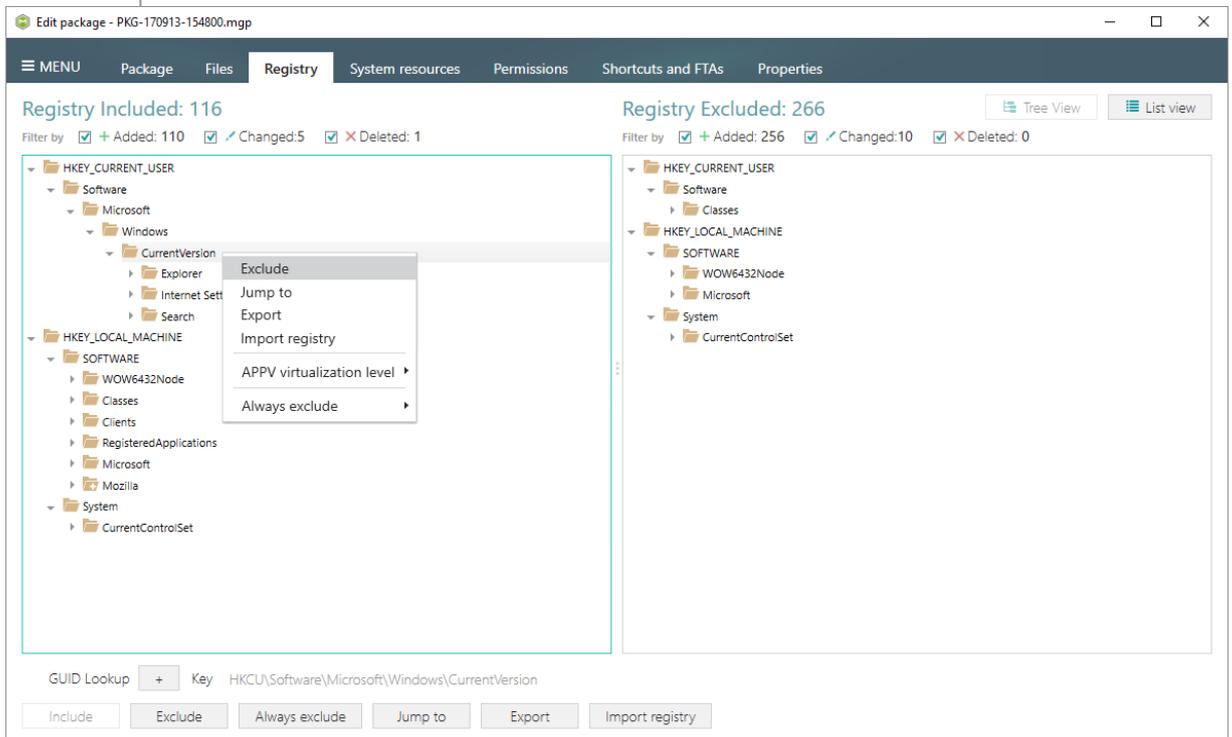


- [15]. Once the project is opened in the project editor, review the captured resources at the Files, Registry, System resources, Permissions, and Shortcuts and FTAs tabs and exclude unnecessary ones from the project. Unnecessary resources are files, registry entries, which are usually created or modified in the result of operating system work, and such resources could not be a part of your captured application. Unfortunately, there is no universal rule to discover which of captured files or registry entries should be excluded, so exclude only those ones, which almost 100% do not refer to your captured application (e.g. NOD32 antivirus files couldn't be a part of Firefox application).
- [16]. In order to review and exclude unnecessary files or folders, go to the Files tab, and select Exclude from the context menu of an item, which is located in the left 'Files Included'

pane.

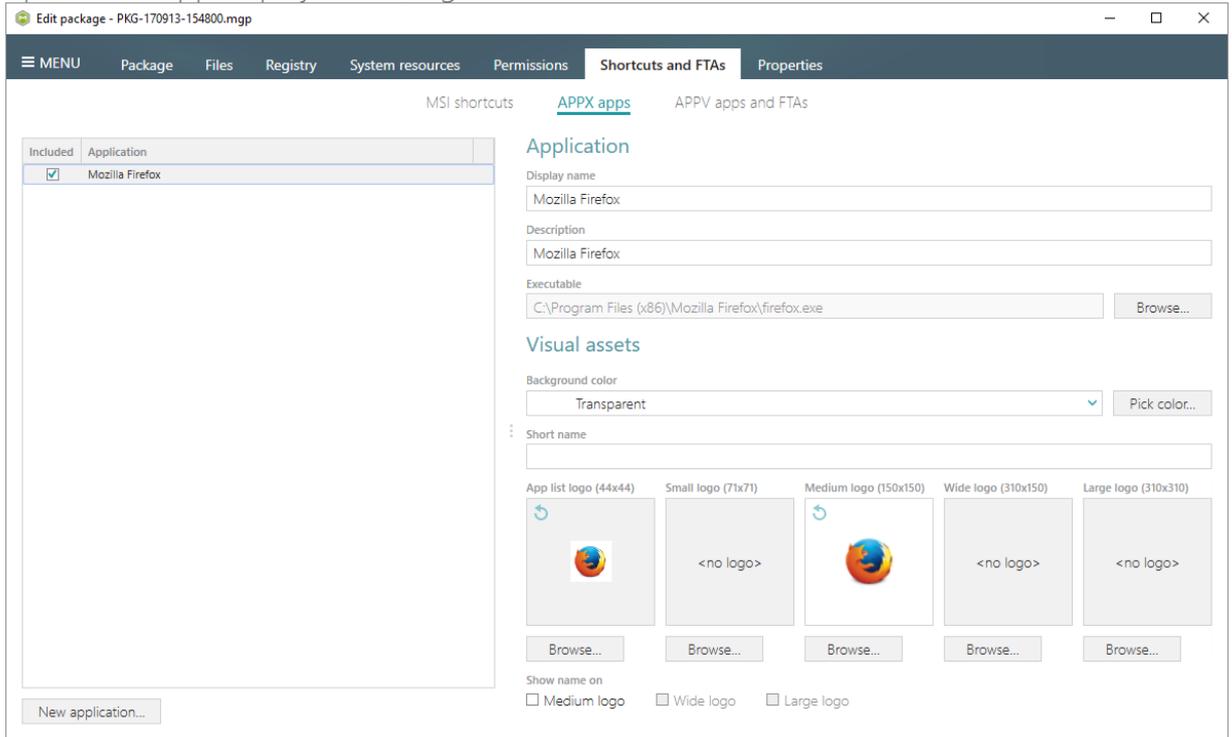


[17]. In order to review and exclude unnecessary registry keys or values, go to the Registry tab, and select Exclude from the context menu of an item, which is located in the left 'Registry Included' pane.

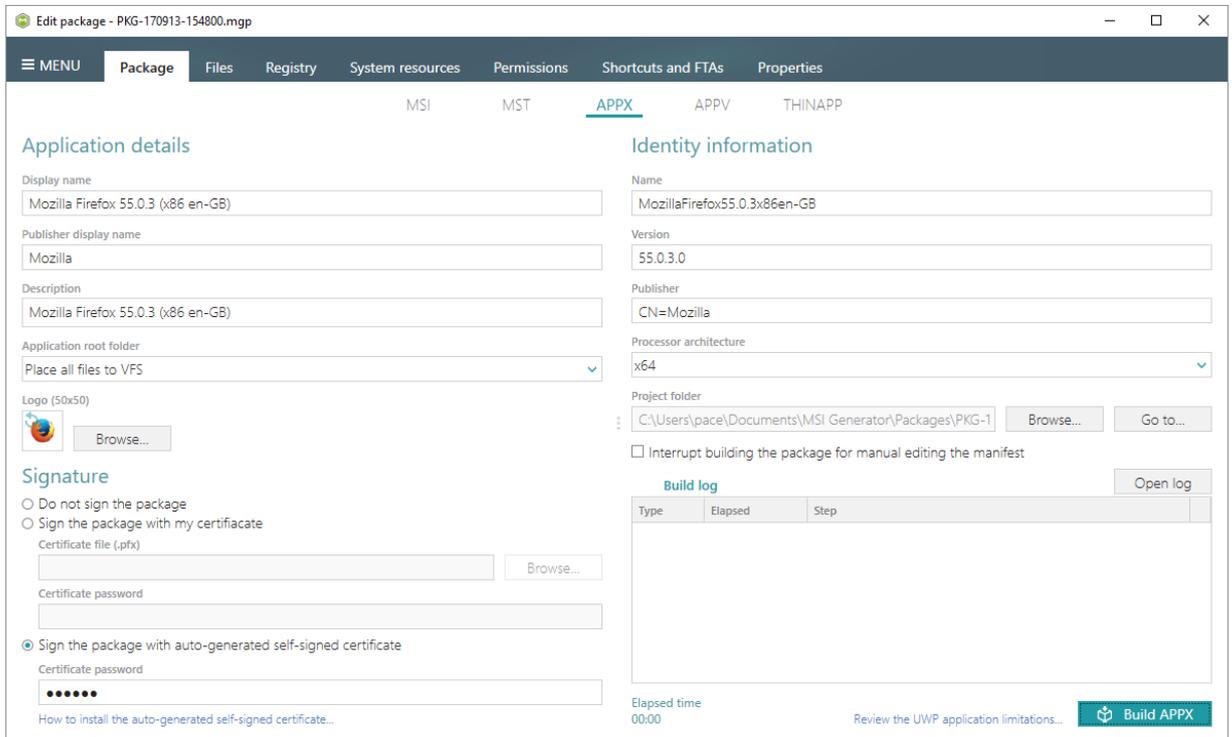


[18]. In order to review and exclude unnecessary APPX apps (shortcuts), go to the Shortcuts and FTAs -> APPX apps tab and uncheck the checkbox, located before the app name in the list, for those apps, which you want to exclude. Using the details pane, you can

update the app display name, logos and so on.



- [19]. Finally, to build APPX package from the project, navigate to the Package -> APPX tab, review and update (if necessary) Application details, Identity information, choose the digital signing option and click Build APPX. Find description of the APPX settings below in the table.



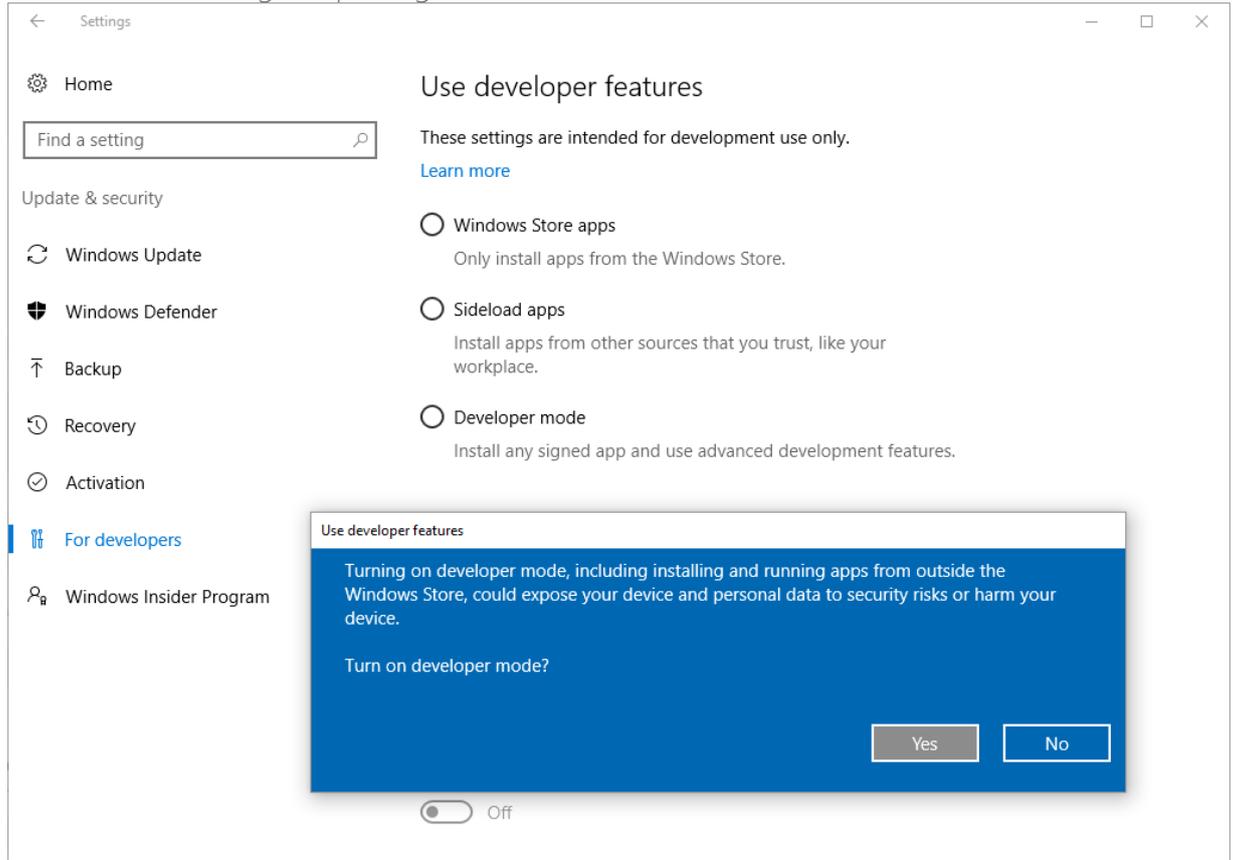
Application details

Display name A friendly name of the package that can be displayed to users.

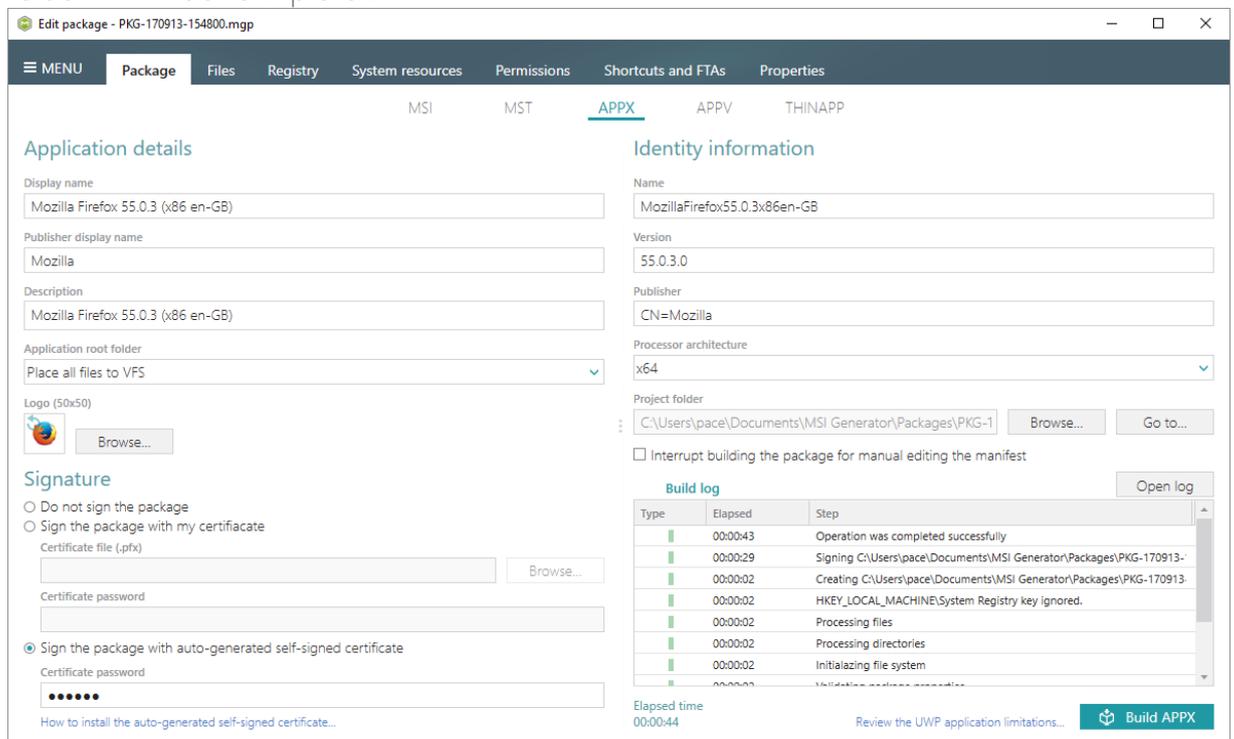
Publisher display name	A friendly name for the publisher of the package that can be displayed to users.
Description	A friendly description that can be displayed to users.
Application root folder	A location of the main application folder. Content of the selected folder will be placed to the package root, instead of VFS.
Logo (50x50)	A logo image of the package that can be displayed to users.
Signature	
Do not sign the package	Use this option if you are planning to submit the package to Windows Store or sign it manually.
Sign the package with my certificate	Use this option to sign the generated package with the valid certificate that you already have.
Sign the package with auto-generated self-signed certificate	Use this option to generate the self-signed certificate and sign the package with this certificate. NOTE In order to deploy your package, install the generated certificate before (double-click the auto-generated.pfx file, and in the Certificate Import Wizard, install the certificate onto the Local Machine , and place the certificate into the Trusted People certificate store) and enable the Developer mode in Windows settings, as described in the next step.
Identity information	
Name	Describes the contents of the package.
Version	The version number of the package.
Publisher	Describes the publisher information. The Publisher attribute must match the publisher subject information of the certificate used to sign a package.
Processor architecture	Describes the architecture of the code contained in the package.

[20]. If you have built the package with the Sign the package with the auto-generated self-signed certificate option selected, do not forget to install that generated certificate to the Trusted People certificate store and enable the Developer mode in the Windows settings

to install the self-signed package.



[21]. Click Go to..., located next to the Project folder field, to open the package containing folder in Windows Explorer.





3.5 New APPV

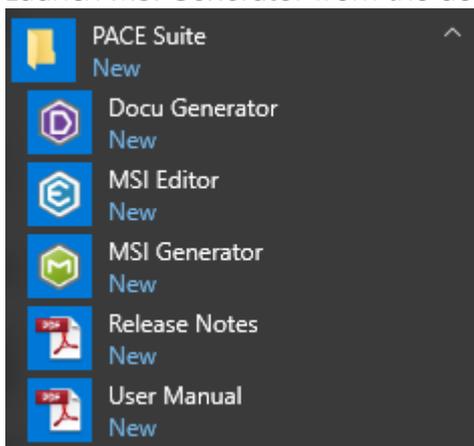
Choose a scenario that better suits your needs:

- **Create APPV from Scratch**, described in section 3.5.1
Create a new empty project in MSI Generator, add folders, files, registry entries and APPV apps, shortcuts and FTAs to this project and then generate the APPV 5.0/5.1/1607 (5.2) package from this project.
- **Convert (Repackage) EXE, MSI to APPV 5.x**, described in section 3.5.2
Repackage your source installation (EXE, MSI, VBS, CMD, etc.) into APPV 5.0/5.1/1607 (5.2) package using MSI Generator.

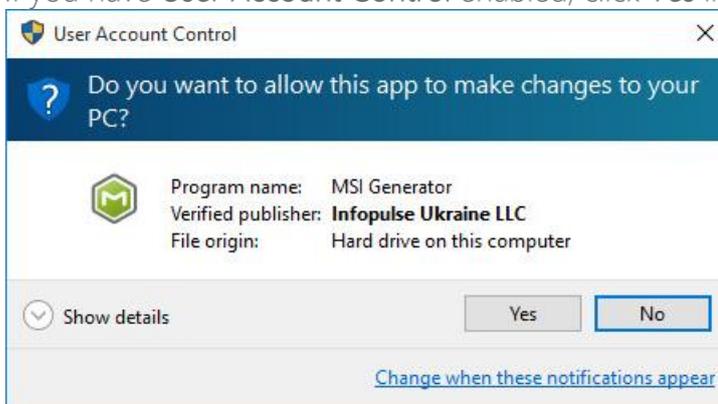
3.5.1 Create APPV from Scratch

Create a new empty project in MSI Generator, add folders, files, registry entries and APPV apps, shortcuts and FTAs to this project and then generate the APPV 5.0/5.1/1607 (5.2) package from this project.

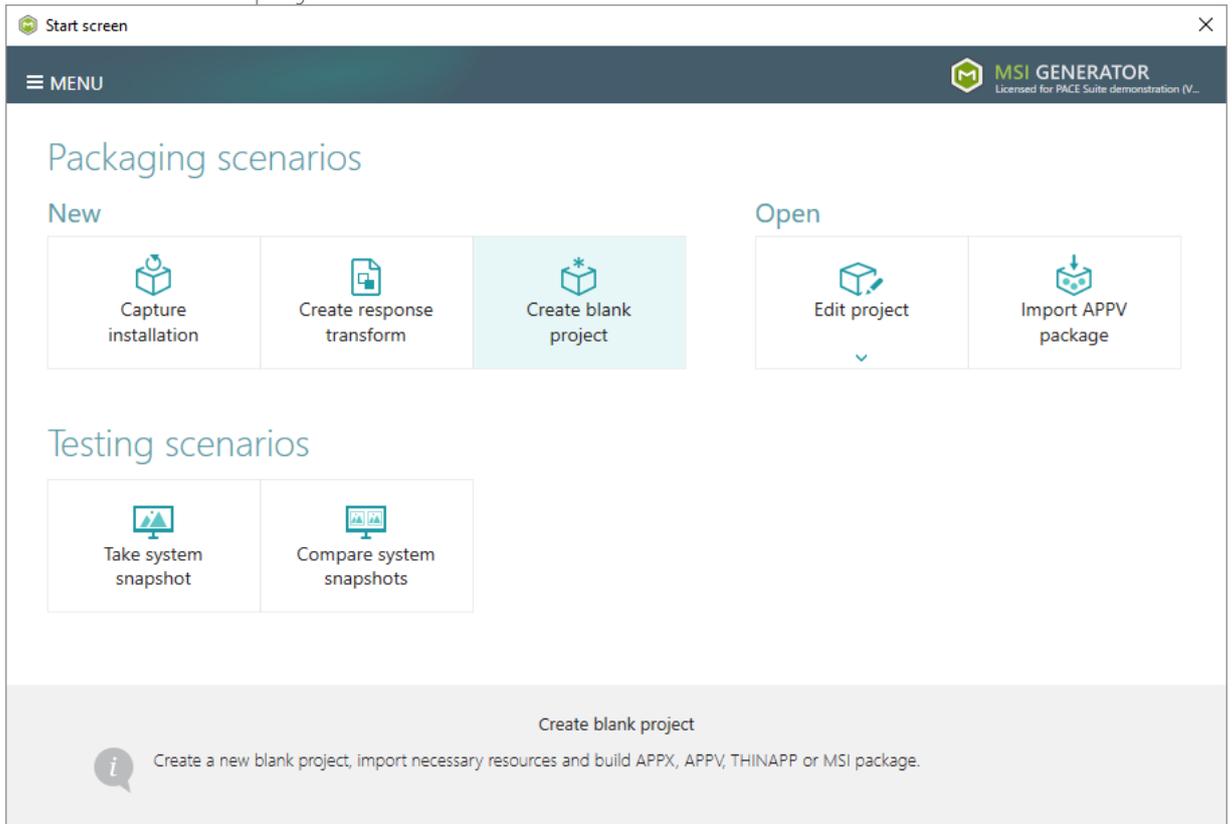
- [1]. Launch MSI Generator from the desktop or the start menu shortcut.



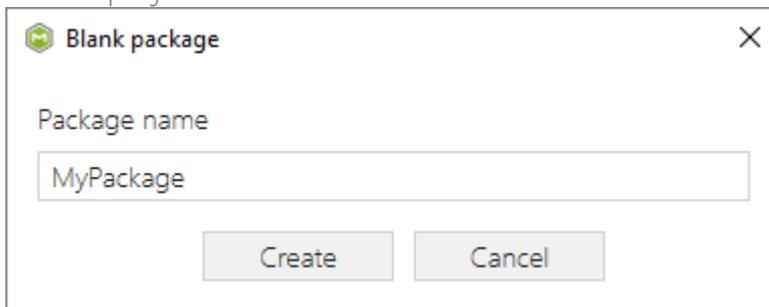
- [2]. If you have User Account Control enabled, click Yes in the opened window.



[3]. Click Create blank project.

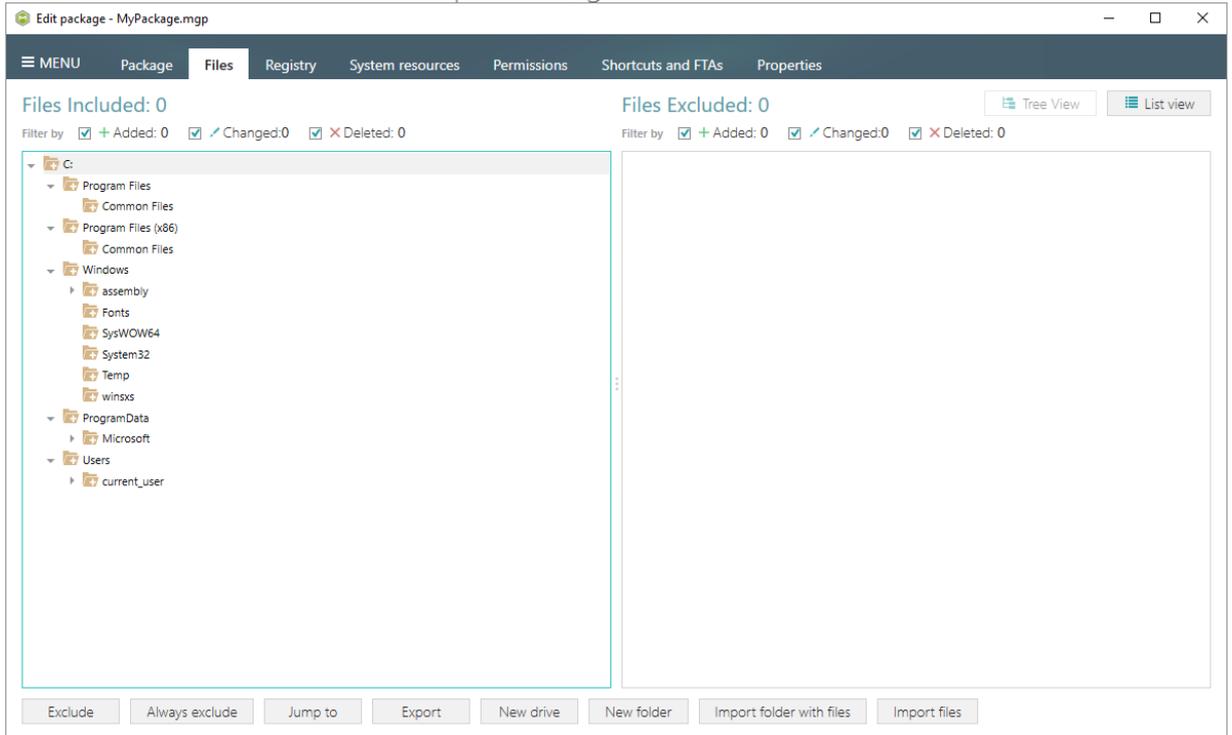


[4]. Enter a project name and click Create.

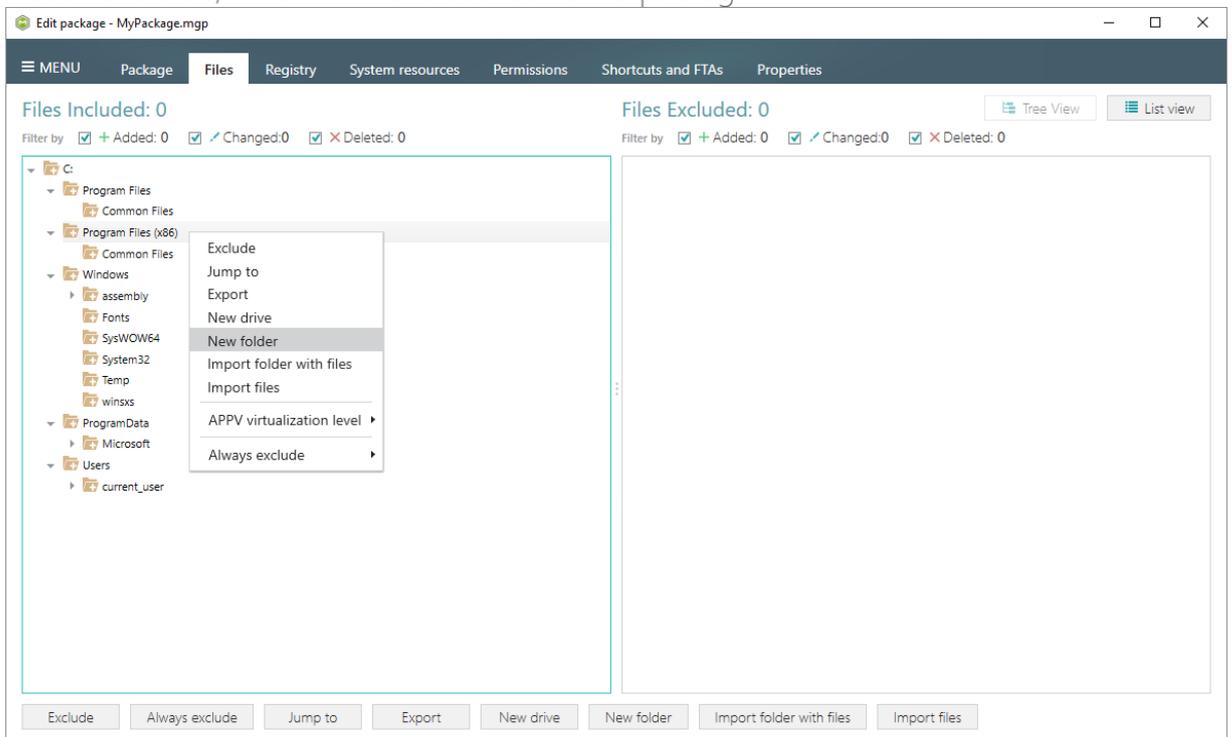


[5]. Once the newly created project is opened automatically, you can start adding the necessary resources using MSI Generator. The steps from [6] to [11] describe how to create a new folder, import files to this folder and change the default APPV virtualization level of a folder; the steps from [12] to [15] describe how to import registry entries from the REG file and change the default APPV virtualization level of a registry key; the steps from [16] to [21] describe how create a new APPV application, its shortcuts and associate file extensions with the application; and two last steps [22] and [23] describe how to build APPV package from the prepared project.

[6]. In order to create a folder and import files, go to the Files tab.

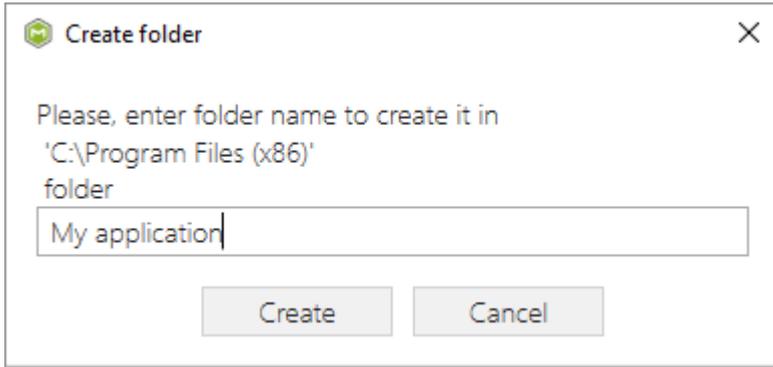


[7]. In the left pane, select **New folder** from the context menu of a folder, where you want to create a new empty folder. Note that the left 'Files Included' pane displays files and folders, which will be a part of your package, and the right 'Files Excluded' pane displays files and folders, which will not be saved to the package.

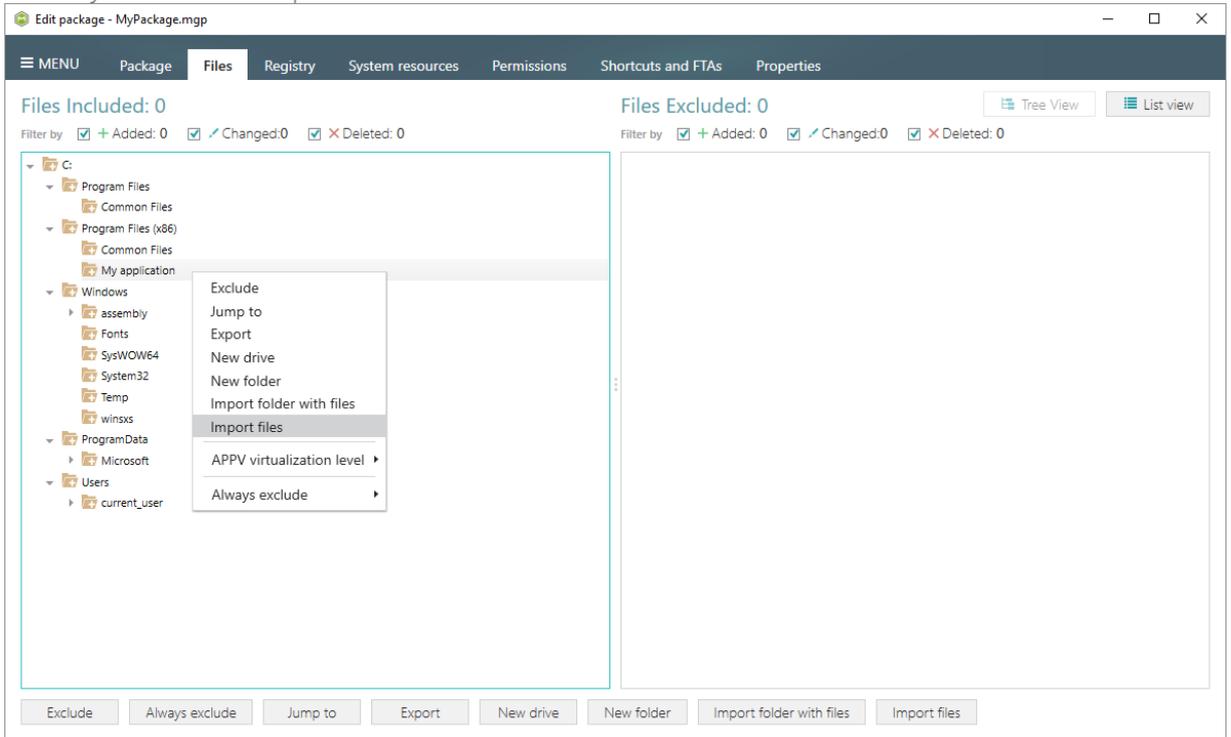




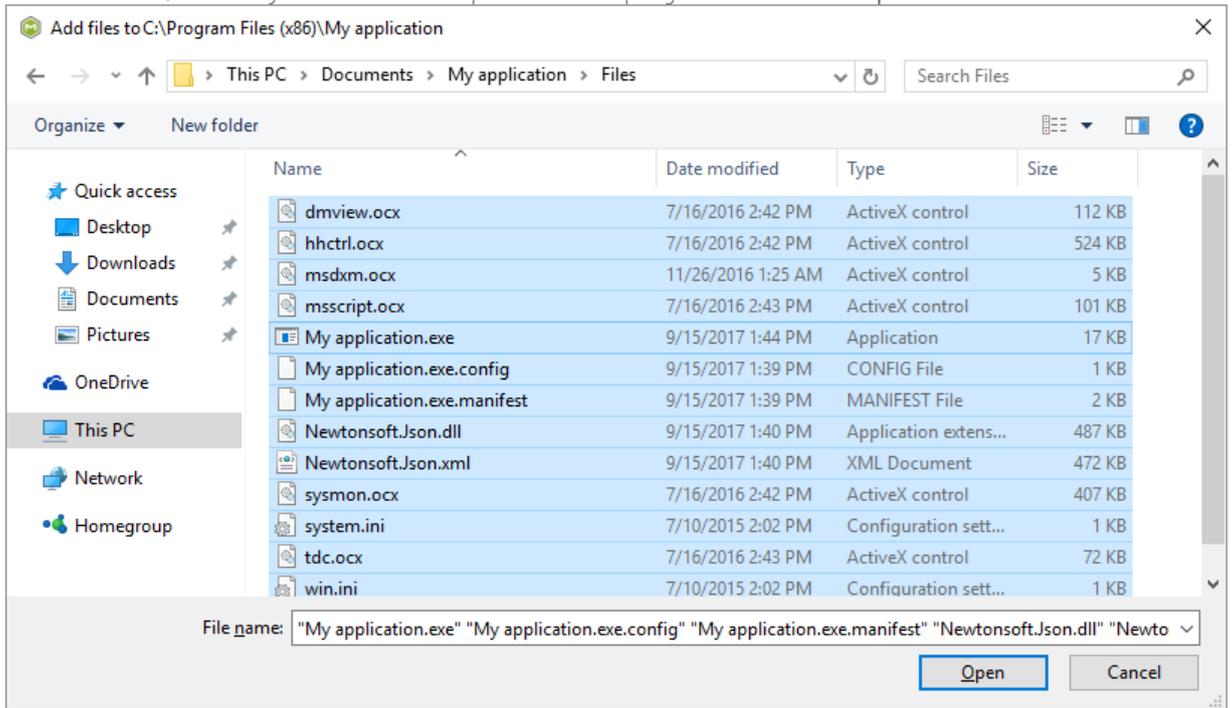
[8]. Enter a folder name and click Create.



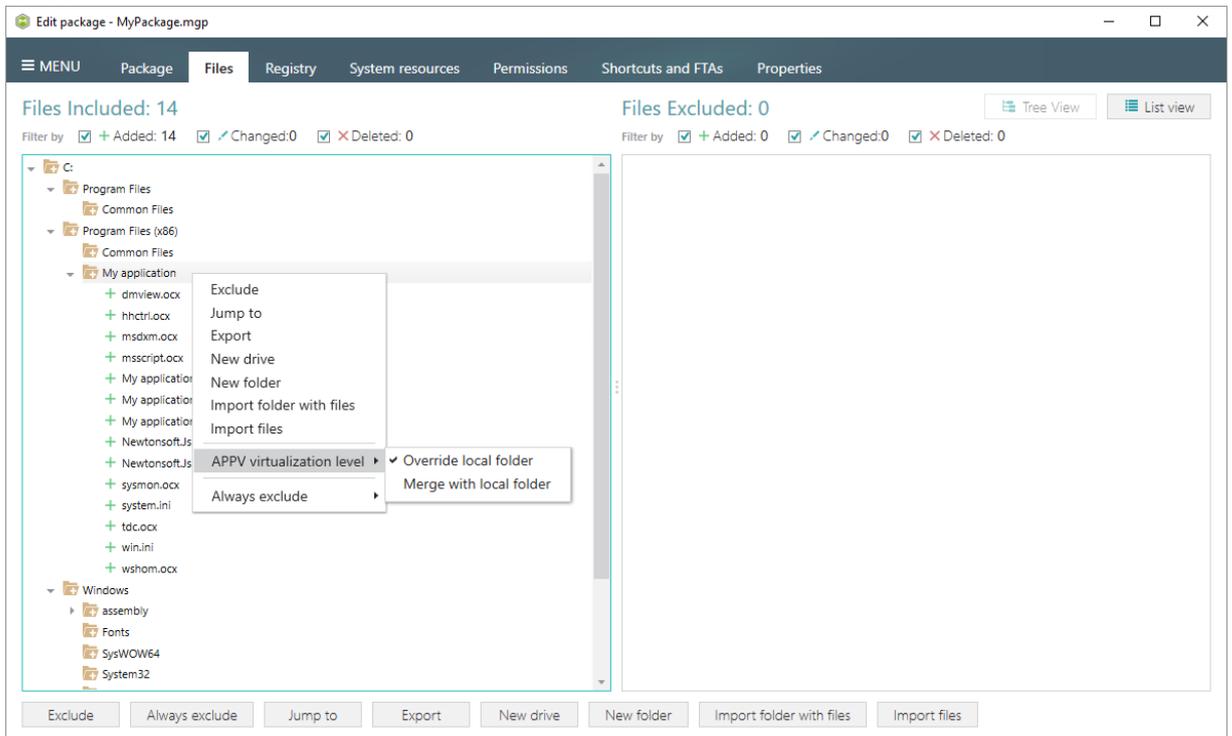
[9]. For adding files to your project, select **Import files** from the context menu of a folder, to which you want to import files.



[10]. Choose files, which you want to import to the project and click Open.

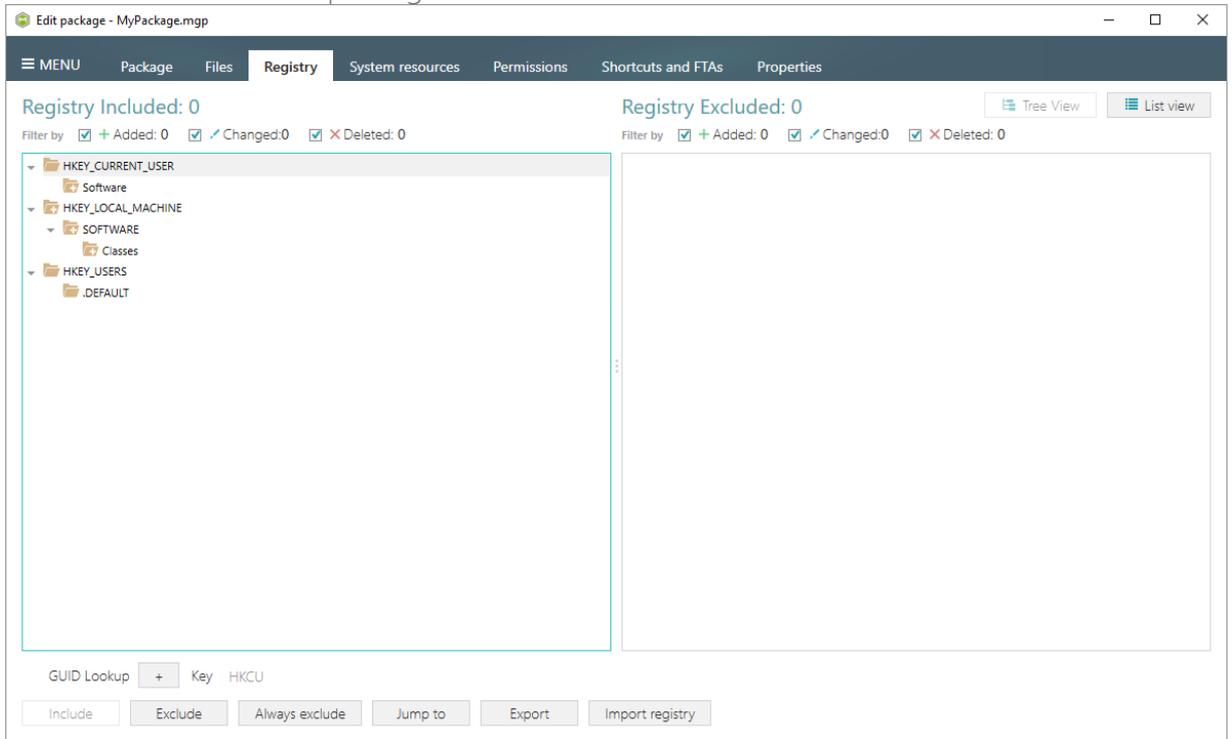


[11]. In order to change the default virtualization (isolation) level of a folder, open the folder context menu, and select either Override local folder or Merge with local folder option from the APPV virtualization level submenu. Note that if the APPV virtualization level submenu is disabled with the Override local folder option selected, it means that this option is inherited from the parent folder. Child folder could not have the Merge with local folder virtualization level, if parent one has the Override local folder virtualization level.

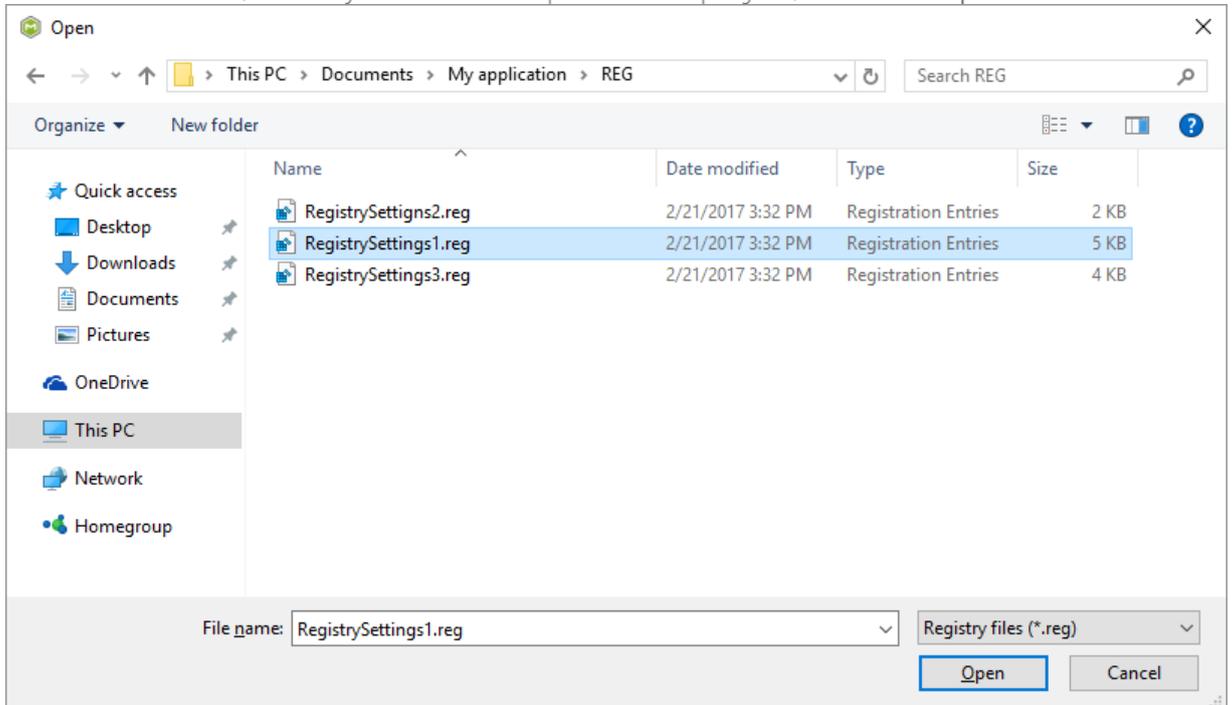


[12]. In order to import registry entries from the REG file, go to the Registry tab and click the Import registry button, located in the bottom part of the window. Note that the left

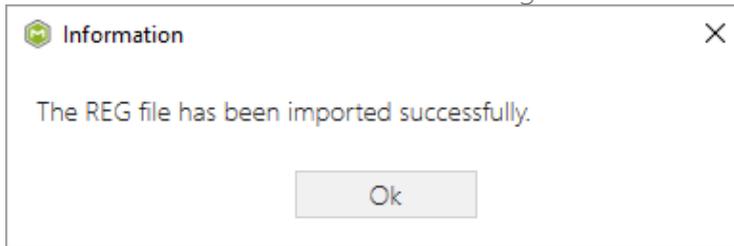
'Registry Included' pane displays registry keys and values, which will be a part of your package, and the right 'Registry Excluded' pane displays registry keys and values, which will not be saved to the package.



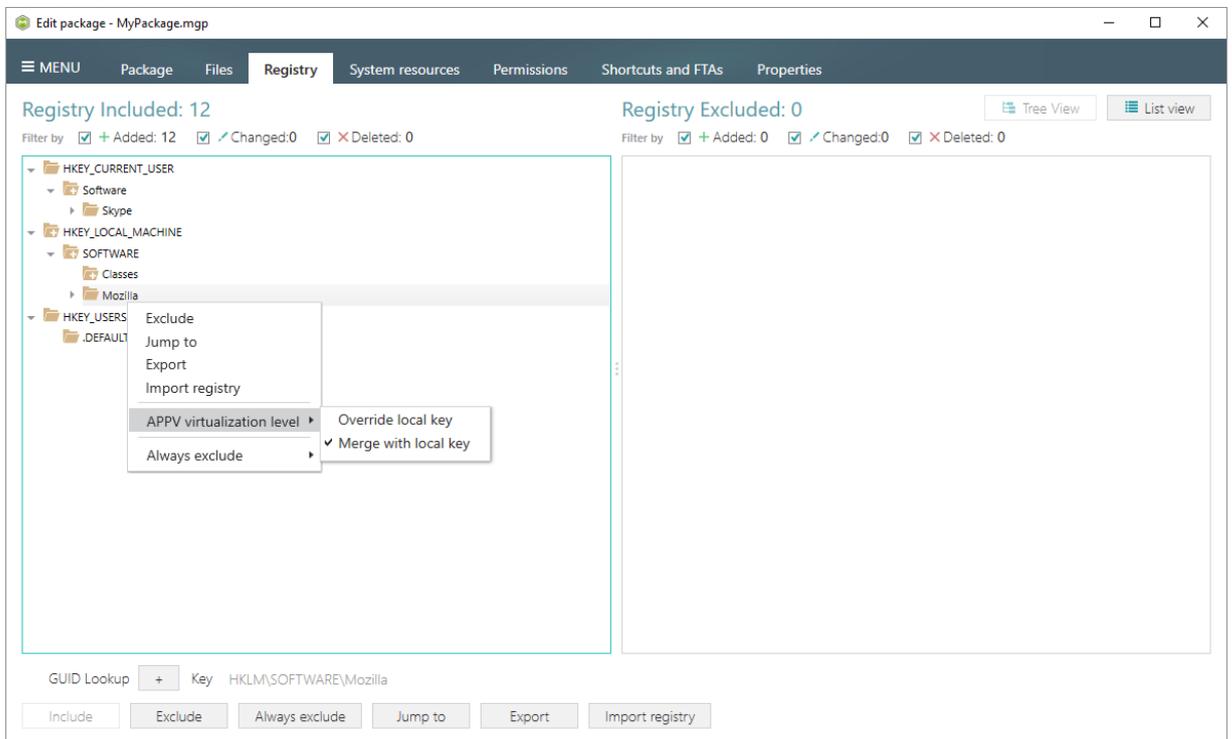
[13]. Choose a REG file, which you want to import to the project, and click Open.



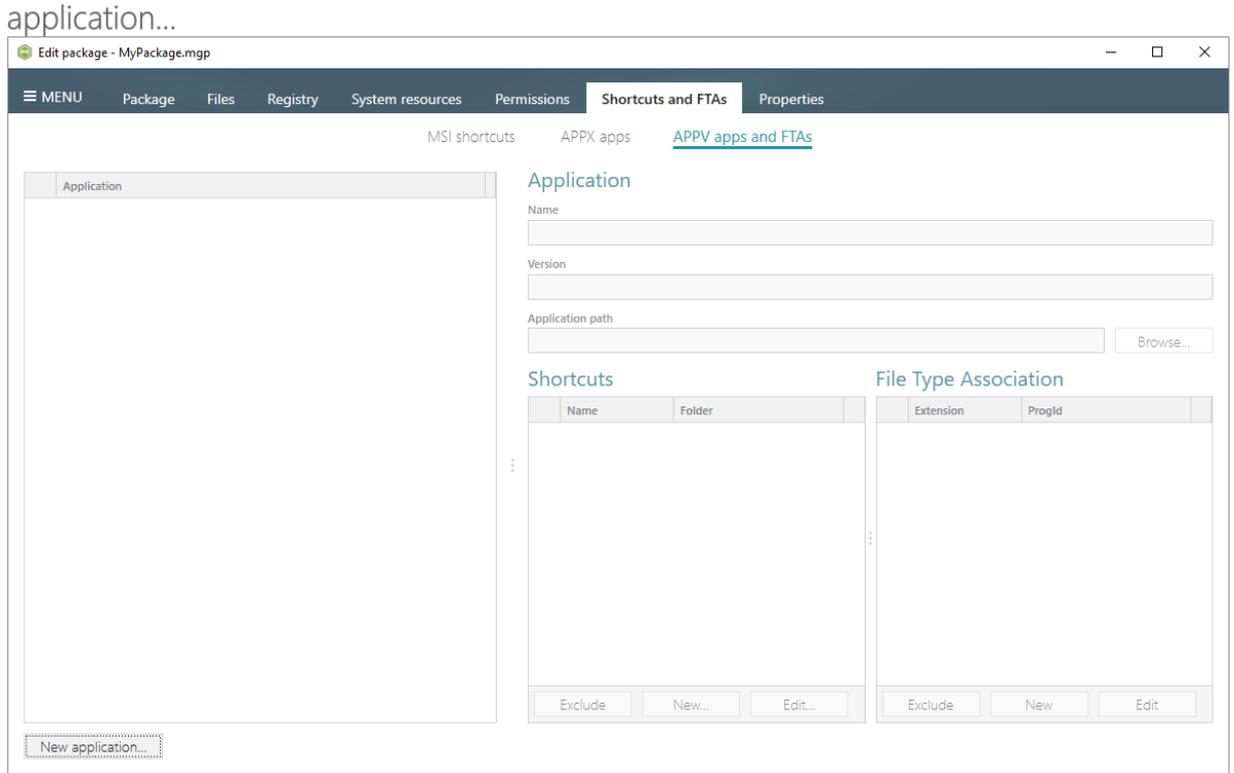
[14]. Click Ok to close the information dialog.



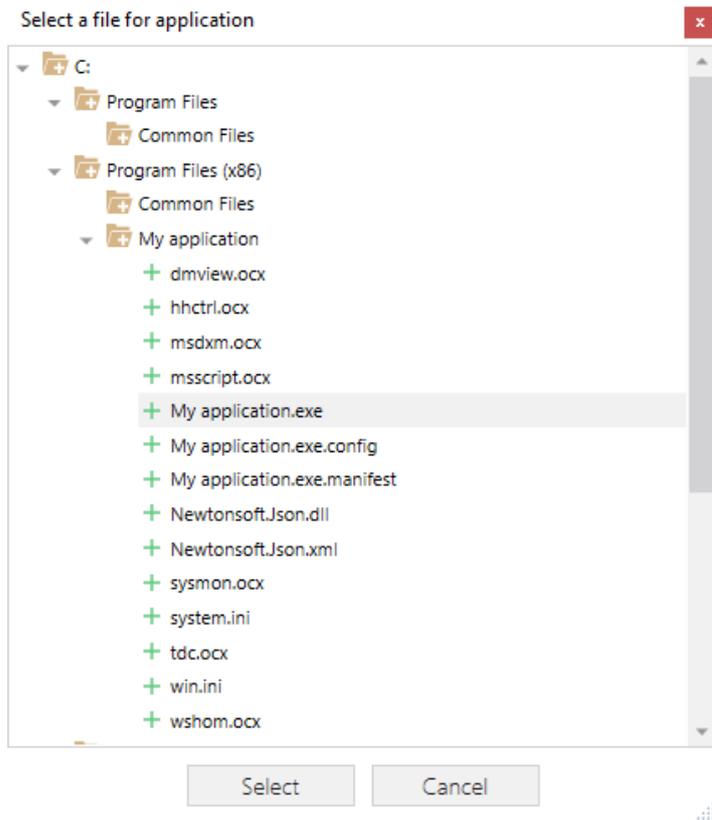
[15]. In order to change the default virtualization (isolation) level of a registry key, open the registry key context menu, and select either **Override local key** or **Merge with local key** option from the **APPV virtualization level** submenu. Note that if the **APPV virtualization level** submenu is disabled with the **Override local key** option selected, it means that this option is inherited from the parent registry key. A child registry key could not have the **Merge with local key** virtualization level, if the parent one has the **Override local key** virtualization level.



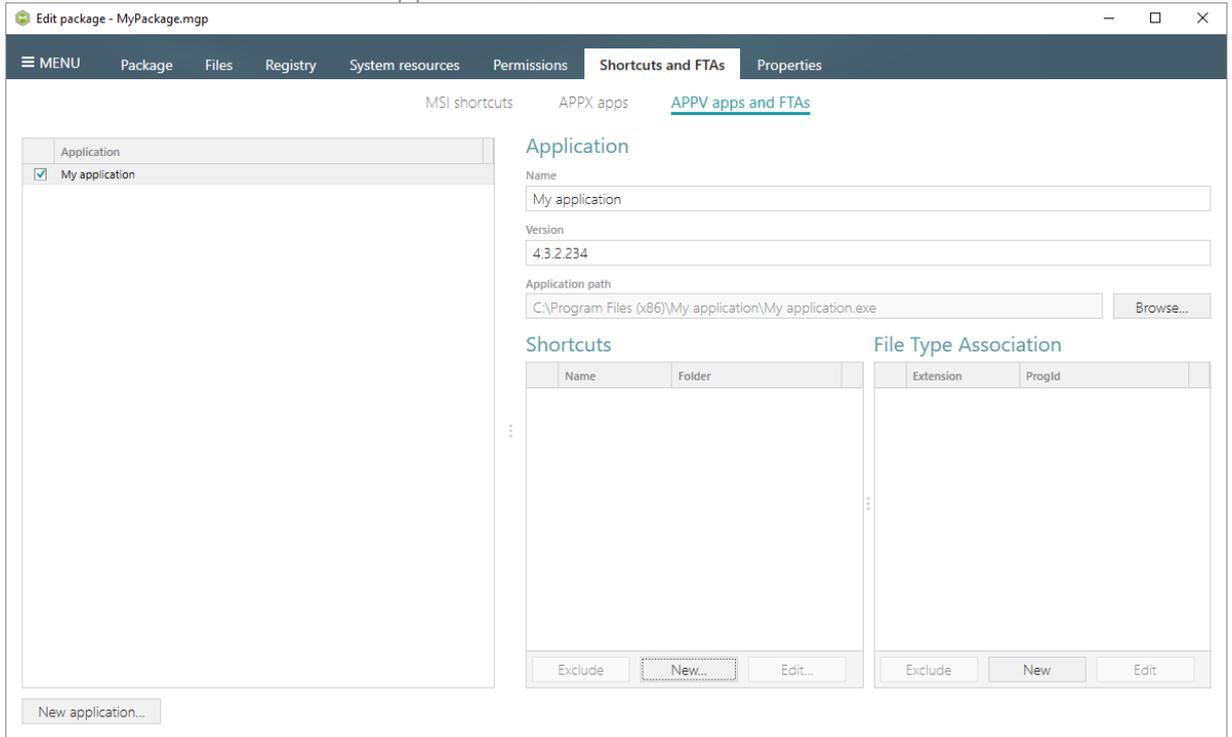
[16]. If you need to create an APPV application, its shortcuts and associate file extensions with this application, go to the Shortcuts and FTAs -> APPV apps and FTAs tab and click New



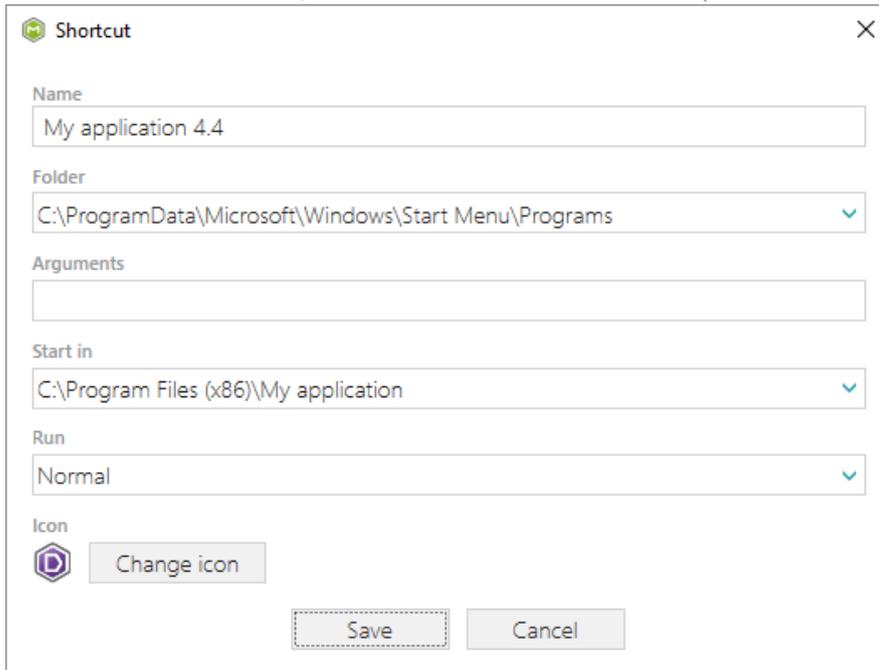
[17]. Select the main executable file (EXE) of your application from the tree and click Select.



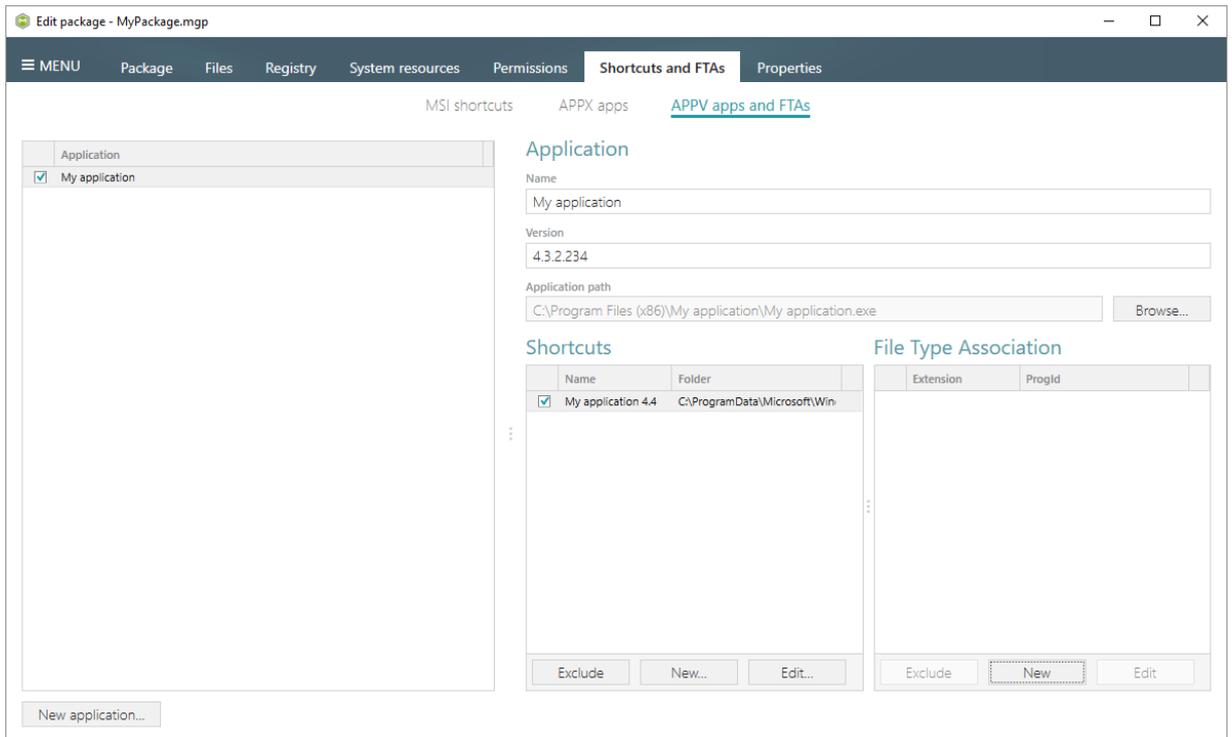
[18]. To create a shortcut for the application, click **New...** in the **Shortcuts** section.



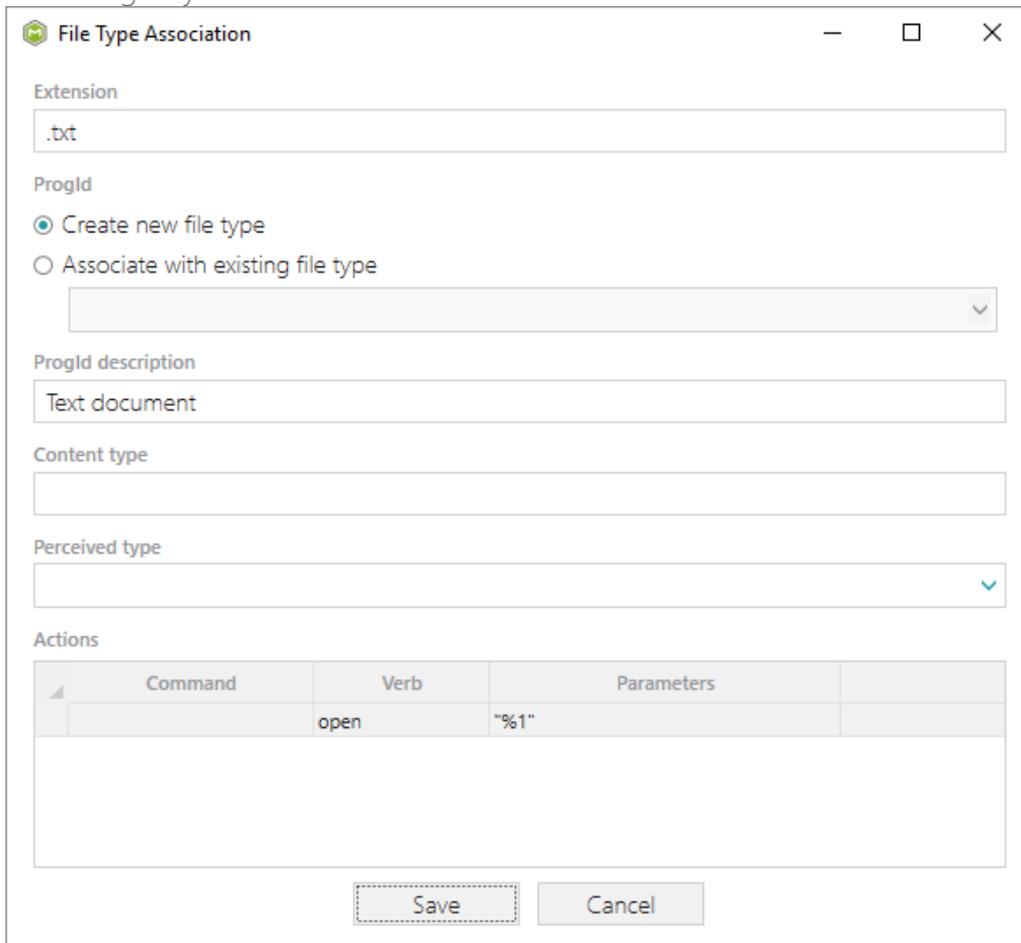
[19]. Enter a shortcut name, select a destination location ("Folder" field), icon and click **Save**.



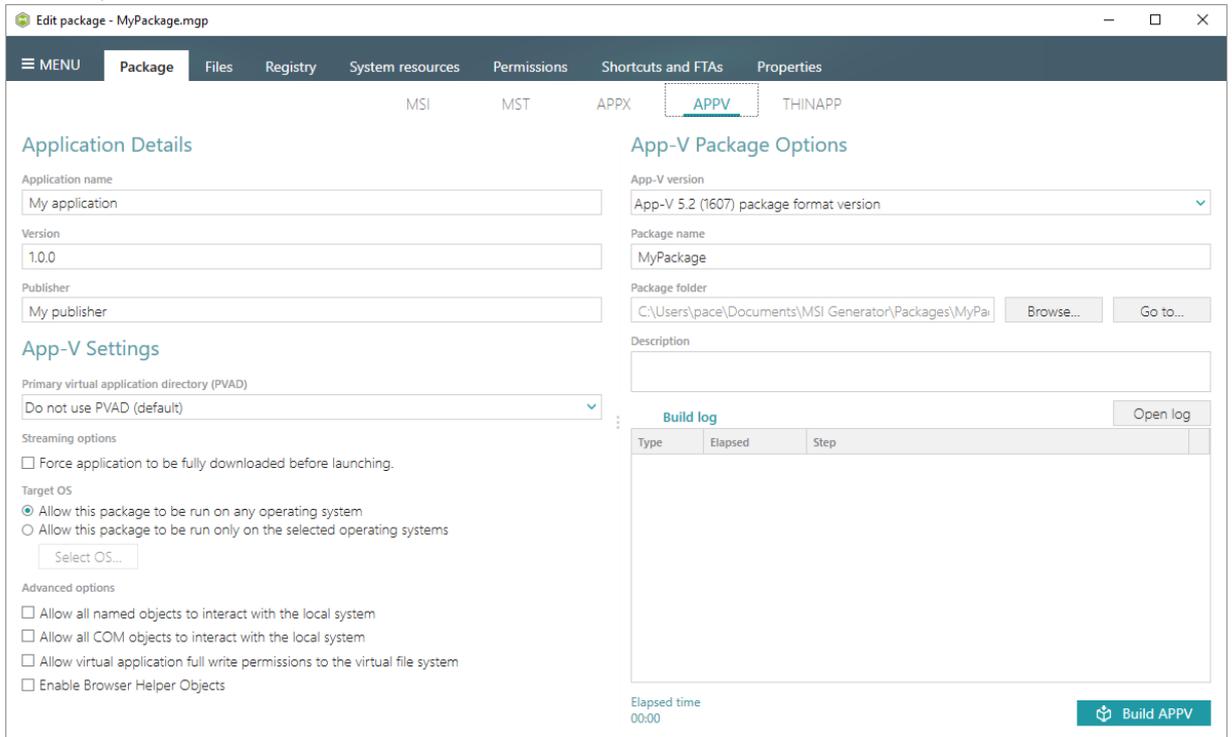
[20]. To associate some file extension with your application, click New... in the File Type Association section.



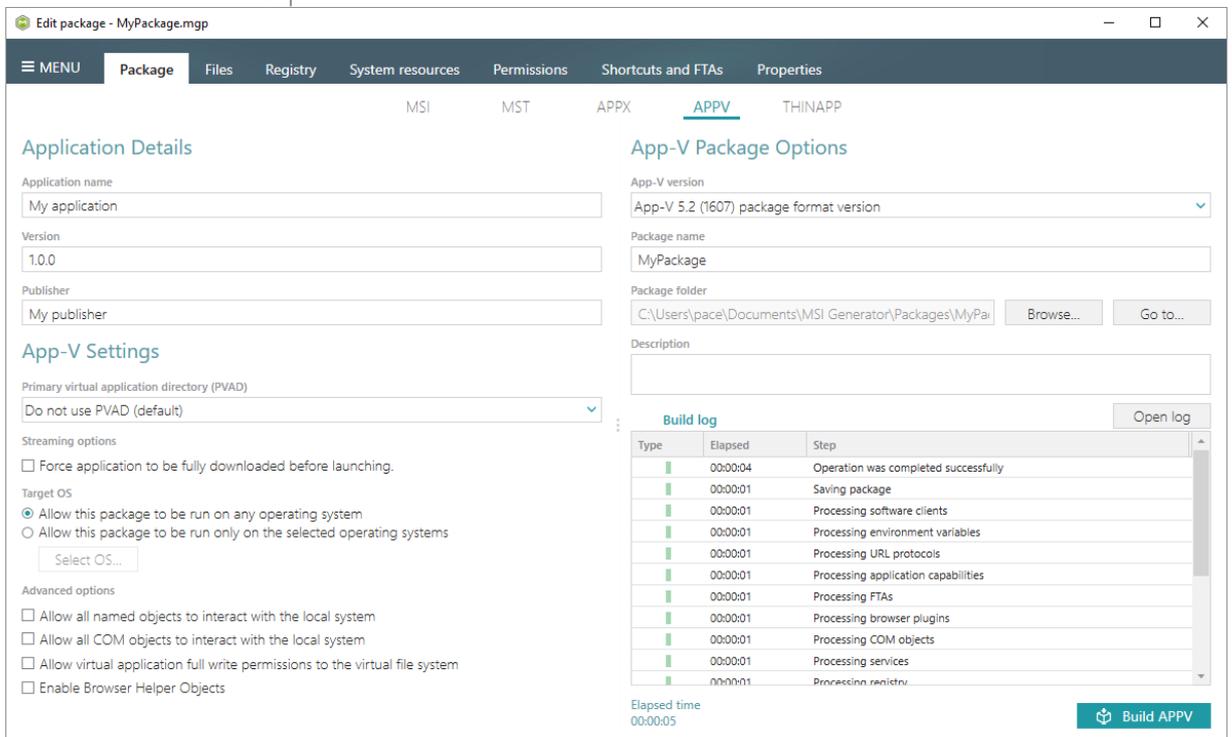
[21]. Enter a file extension and click Save. Optinally you can modify other FTA settings according to your needs.



[22]. In order to build APPV package from your project, navigate to the Package -> APPV tab, update Application Details, select the necessary App-V Settings, App-V package format version, and then click Build APPV.



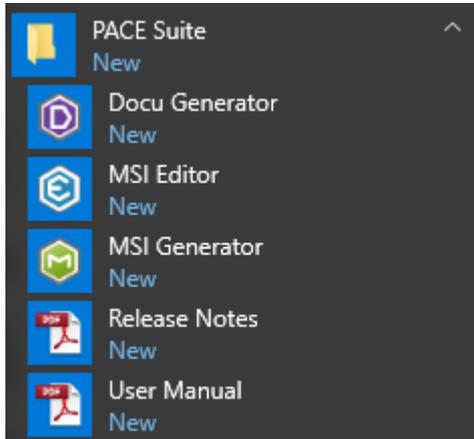
[23]. Click Go to..., located next to the Project folder field, to open the package containing folder in Windows Explorer.



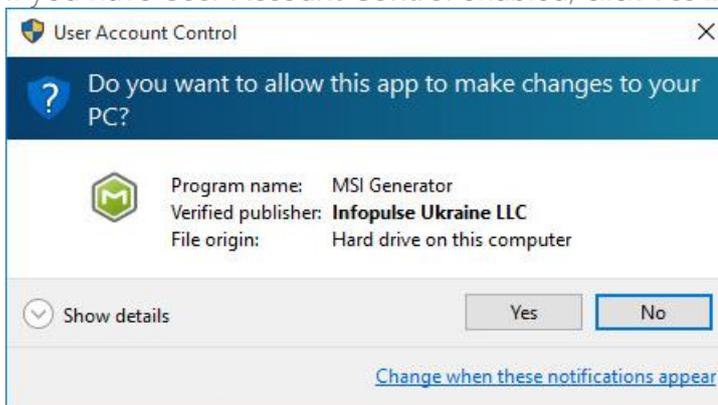
3.5.2 Convert (Repackage) EXE, MSI to APPV 5.x

Repackage your source installation (EXE, MSI, VBS, CMD, etc.) into APPV 5.0/5.1/1607 (5.2) package using MSI Generator.

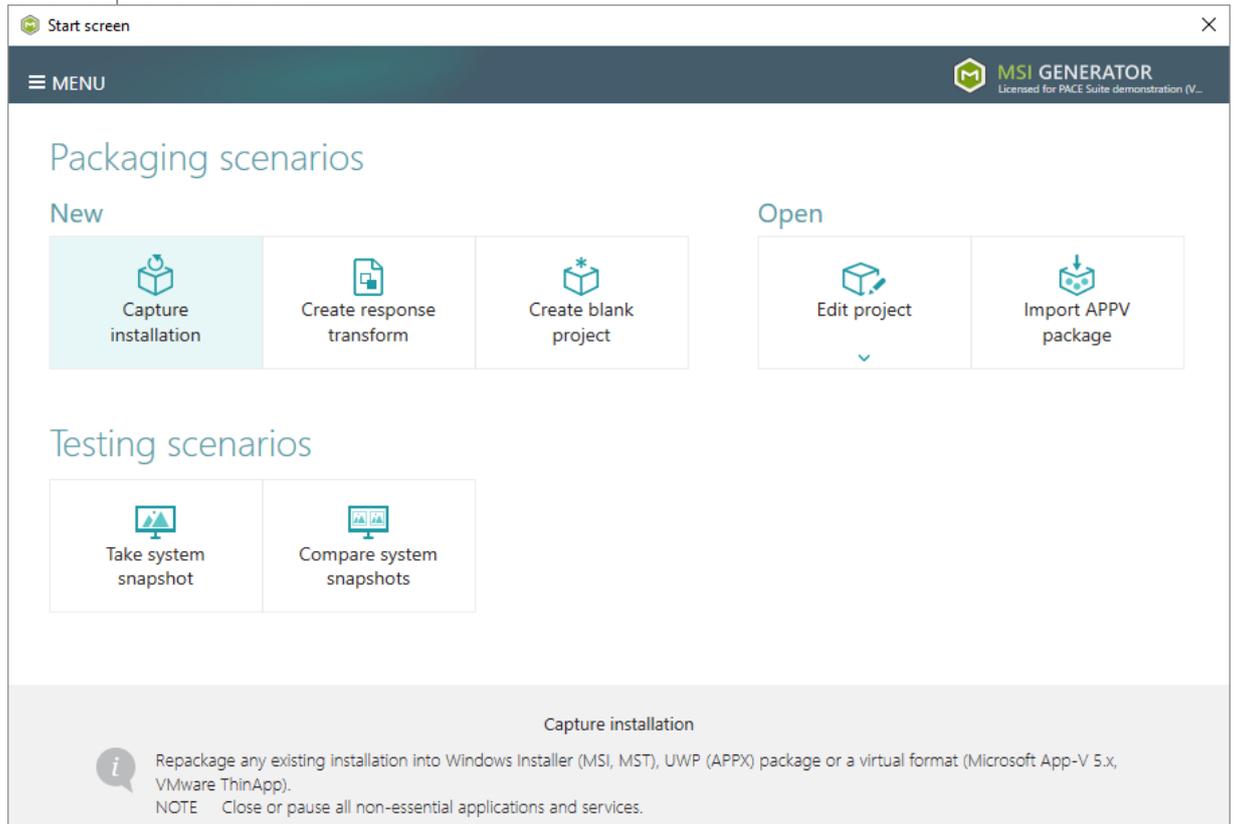
- [1]. Launch MSI Generator from the desktop or the start menu shortcut.



- [2]. If you have User Account Control enabled, click Yes in the opened window.



[3]. Click Capture installation.



- [4]. Review the issues, which were detected on your system, and try to resolve them by closing the non-essential applications and stopping services. Thereafter, click **Next >**.

Capture installation

Prepare computer Capturing method Settings Installation Completion

Prepare the computer for capturing

It is strongly recommended to perform capturing on a clean virtual machine with all non-essential processes stopped in order to avoid capturing data, which is not related to your source installation. Also, in case of any failure, you will be able to restore the virtual machine to the previous state.

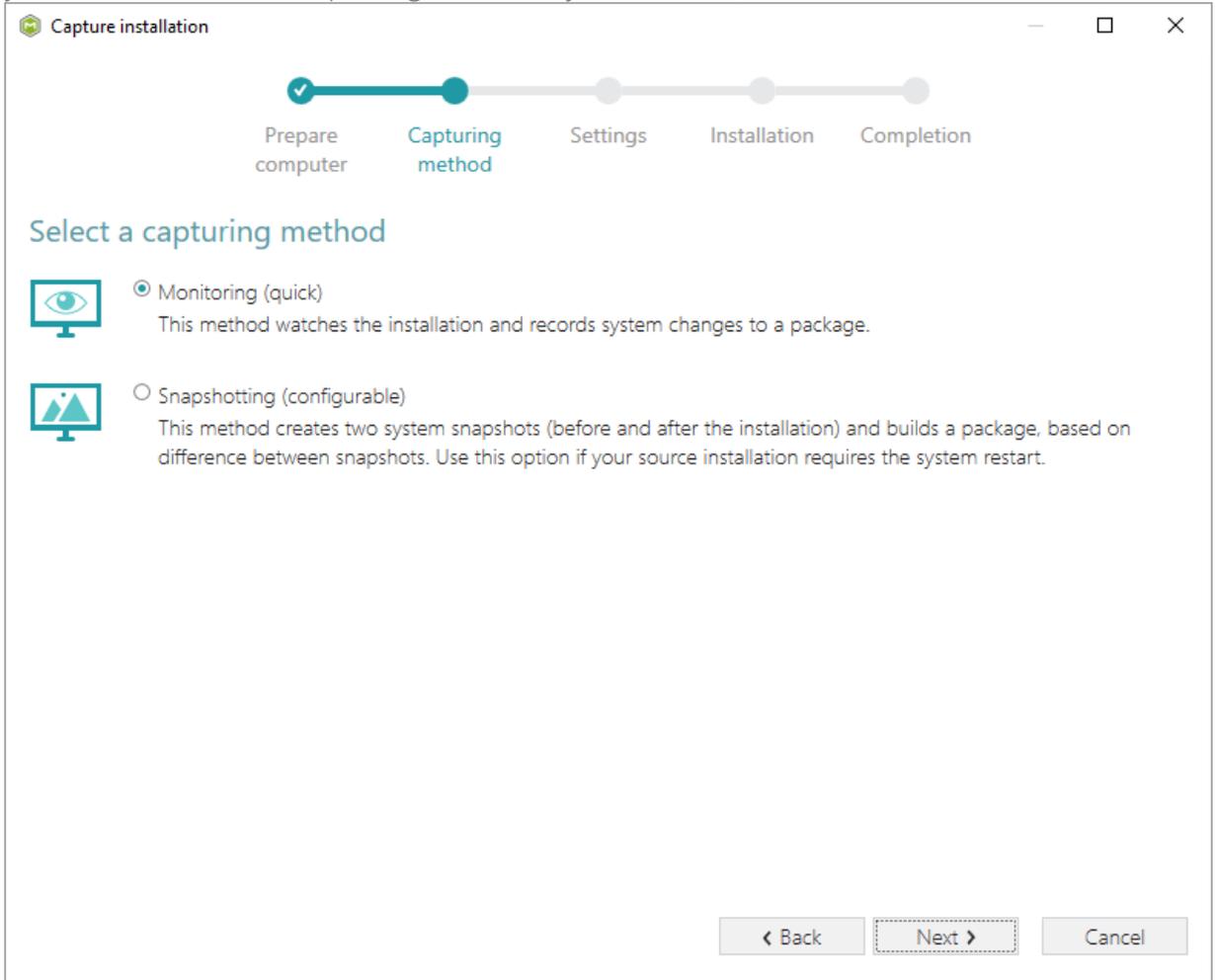
The following issues were detected on your system:

Description	Resolution
⚠ Diagnostic Policy Service is active.	Stop this service before capturing.
⚠ Windows Defender Service is active.	Stop this service before capturing.
⚠ Security Center is active.	Stop this service before capturing.
⚠ Windows Defender is running.	Close your antivirus software before capturing.

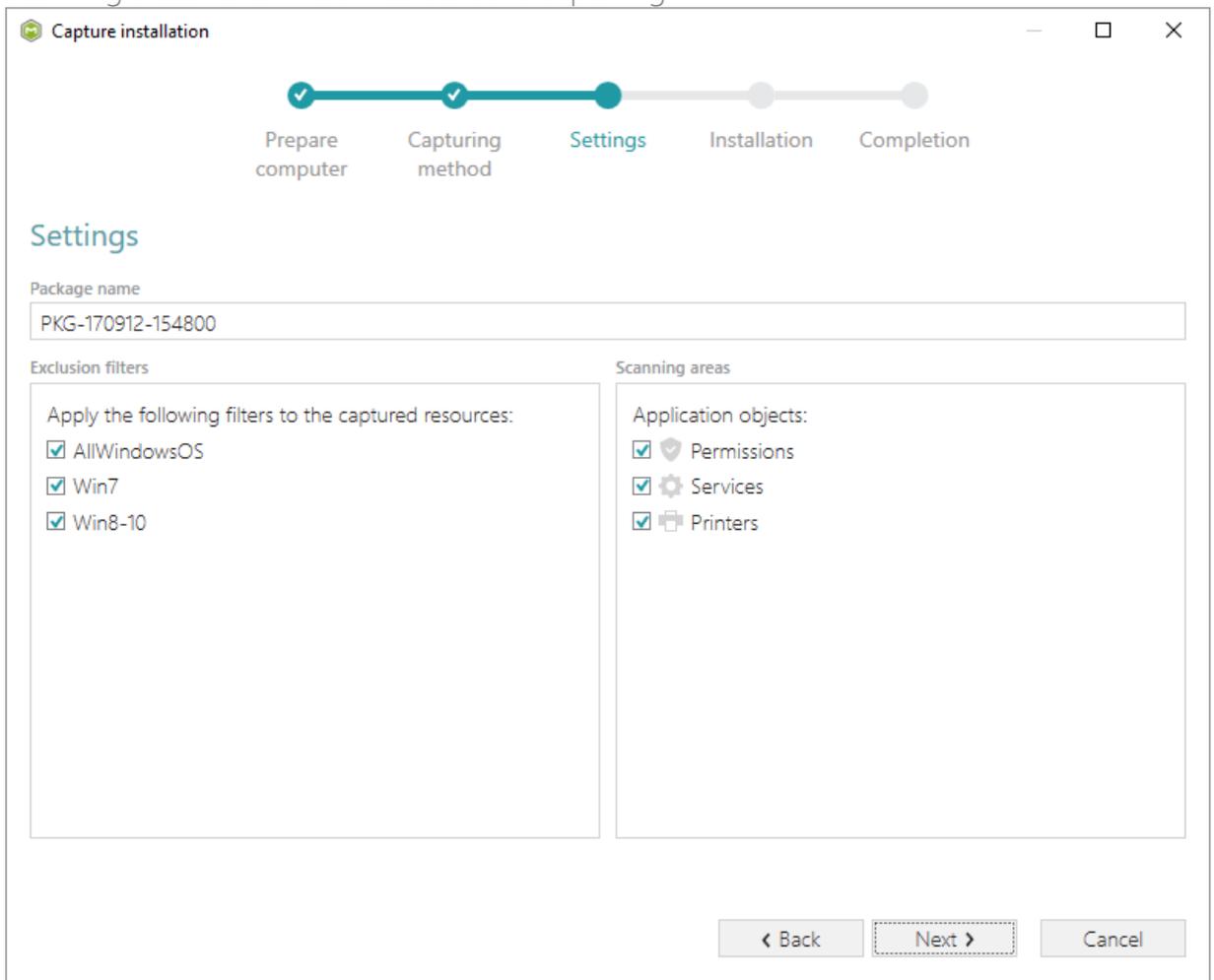
Refresh [Review the capturing recommendations...](#)

< Back Next > Cancel

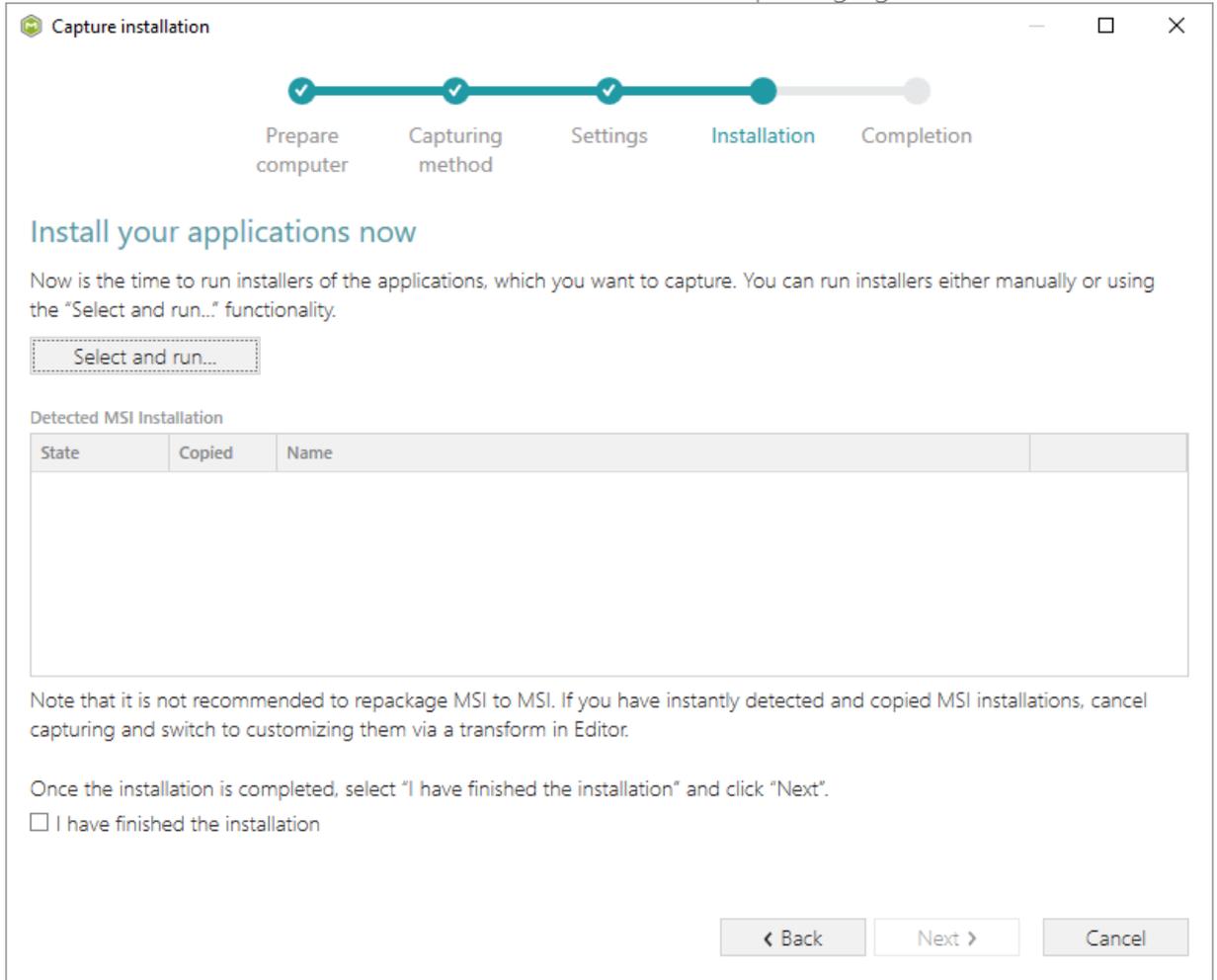
[5]. Select the **Monitoring** method for the quicker capturing (or use the **Snapshotting** one if you need to continue capturing after the system restart) and click **Next >**.



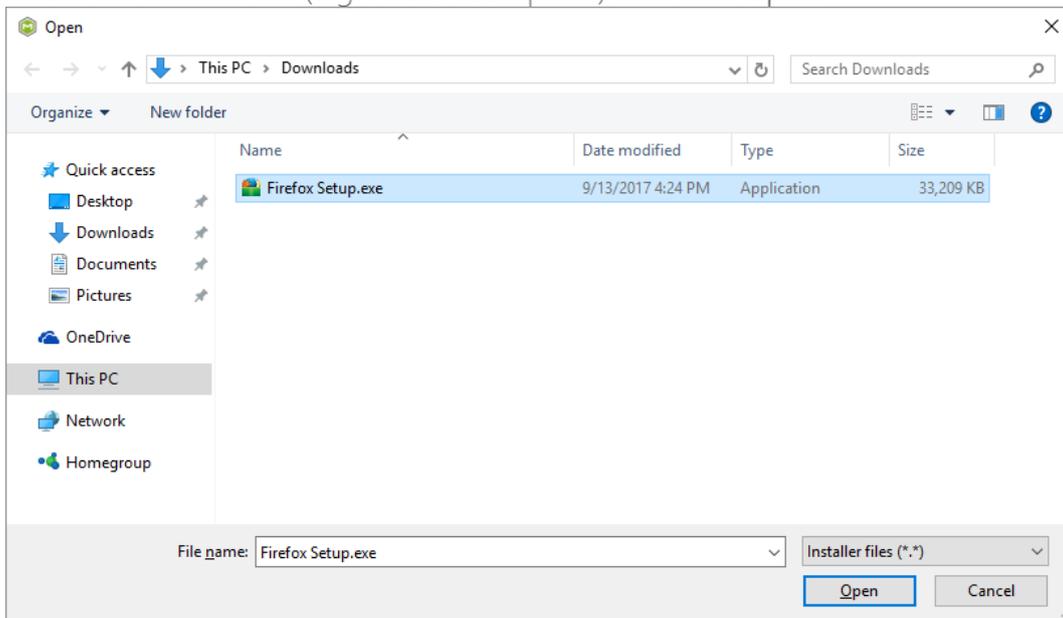
[6]. Here you can review and update package name, disable needless exclusion filters and scanning areas. Click **Next >** to start the capturing.



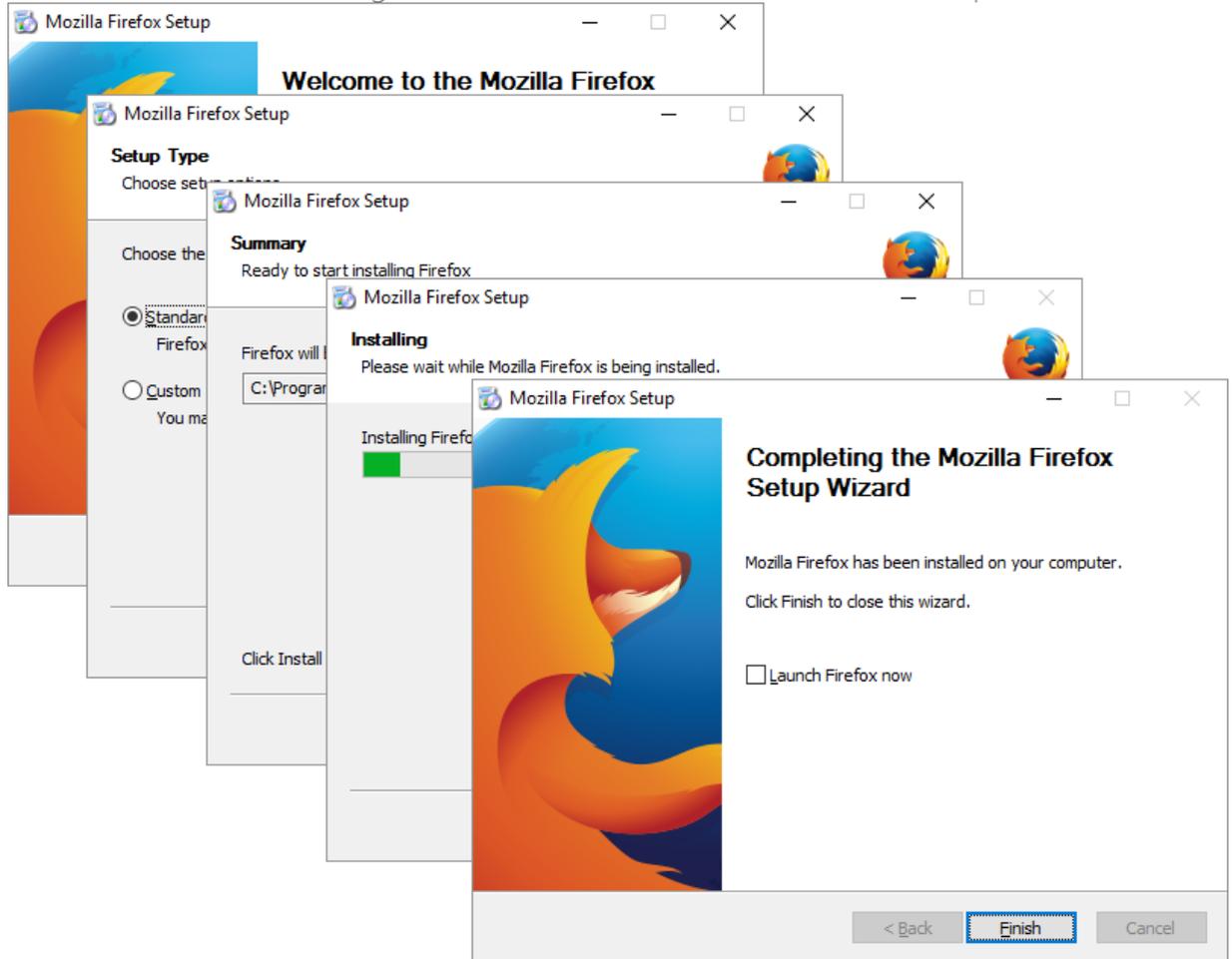
[7]. Click Select and run... to choose source installation for repackaging.



[8]. Select the installer file (e.g. Firefox Setup.exe) and click Open.



[9]. Follow the installation dialogs of the launched source installation to complete it.



[10]. Now you can make any changes to the file system and registry, which you want to capture and include to the package. For instance, you can create new or copy-paste existing files, import REG file to the system registry, changes permission settings, or launch the installed application in order to capture the necessary application configurations, like disabling updates and so on.

[11]. Finally, to complete the capturing, select I have finished the installation and click Next >.

Capture installation

Prepare computer Capturing method Settings **Installation** Completion

Install your applications now

Now is the time to run installers of the applications, which you want to capture. You can run installers either manually or using the "Select and run..." functionality.

Select and run...

Detected MSI Installation

State	Copied	Name
-------	--------	------

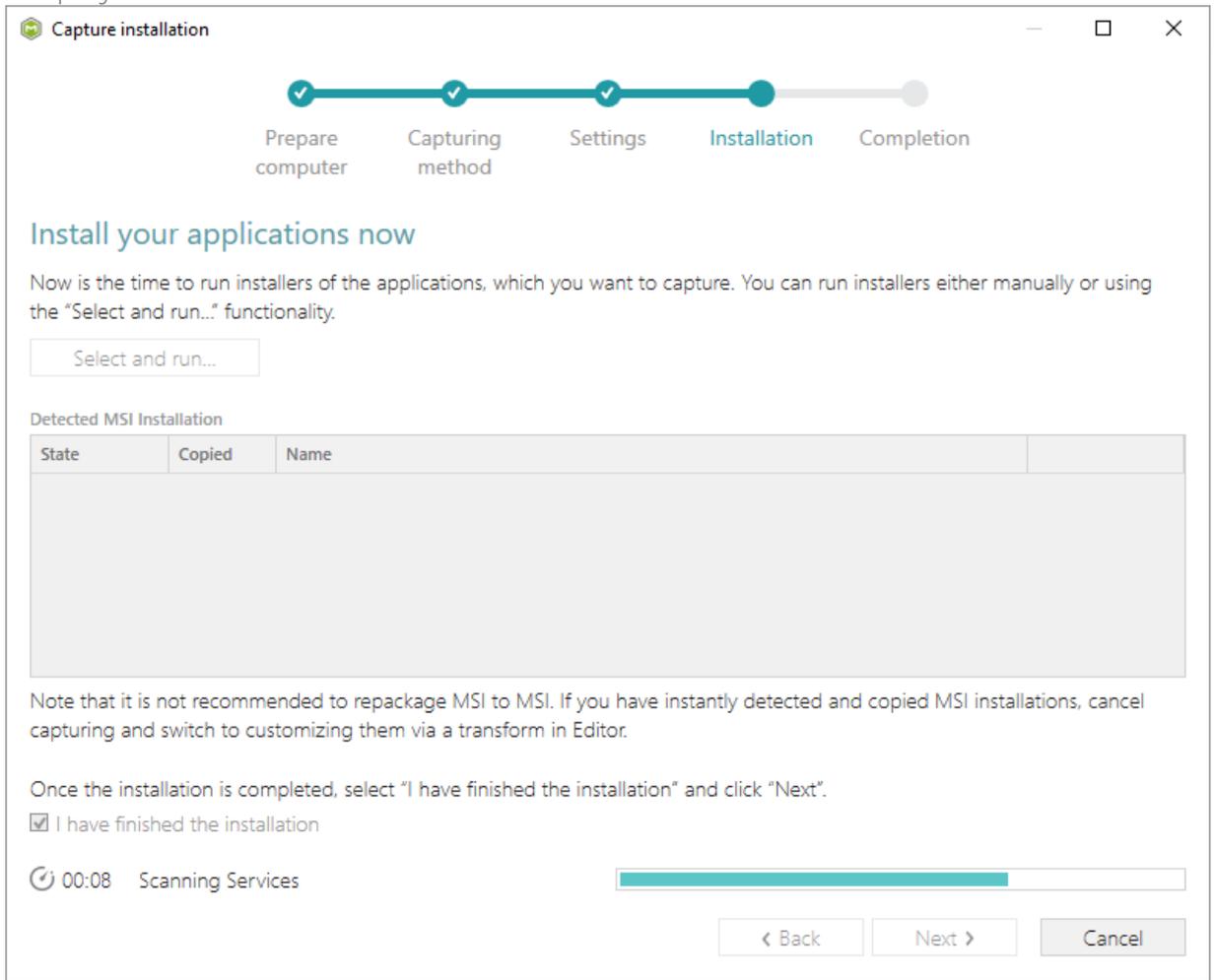
Note that it is not recommended to repackage MSI to MSI. If you have instantly detected and copied MSI installations, cancel capturing and switch to customizing them via a transform in Editor.

Once the installation is completed, select "I have finished the installation" and click "Next".

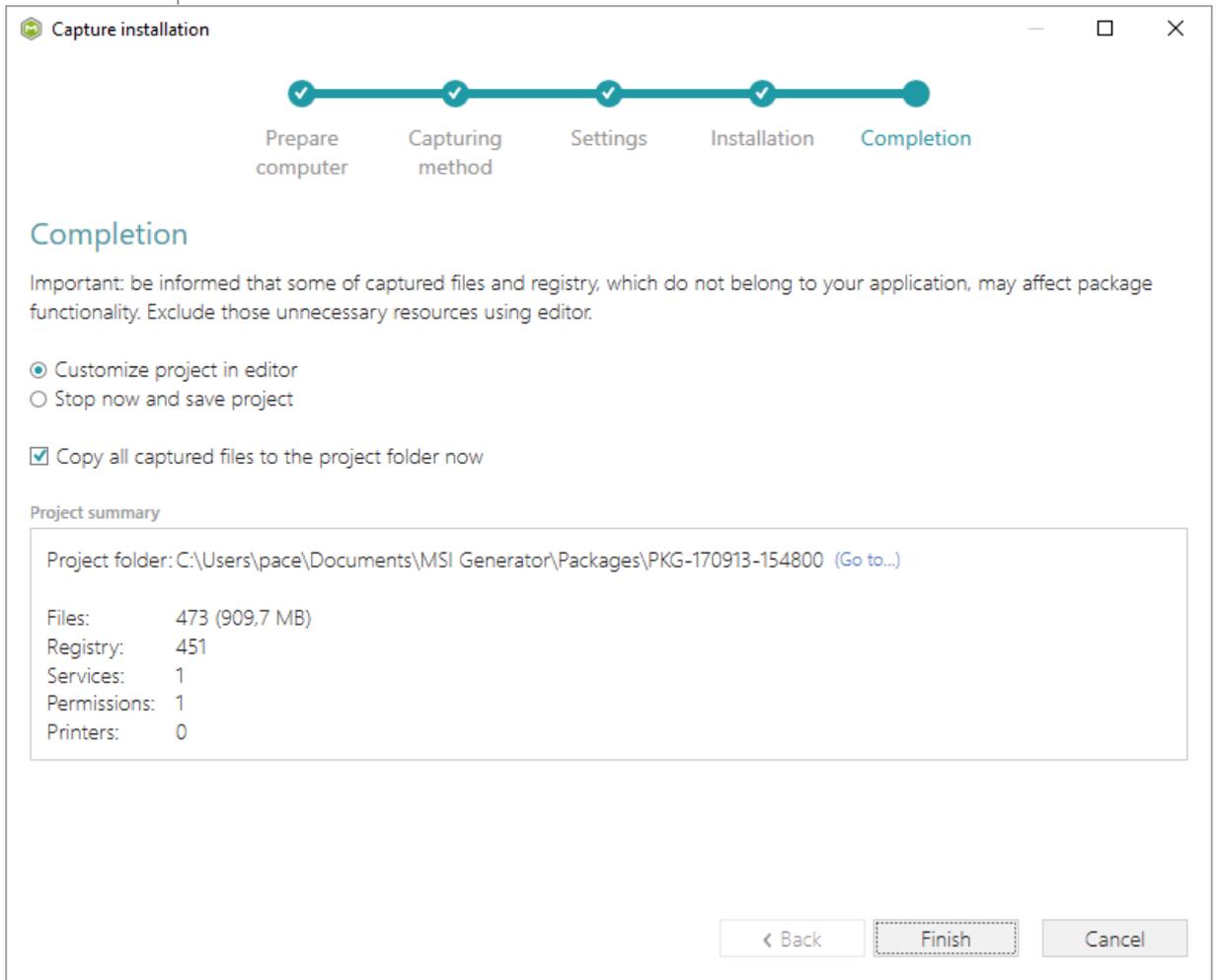
I have finished the installation

< Back **Next >** Cancel

[12]. Wait a little, while the capturing process is finishing, filtering captured data and creating the project.

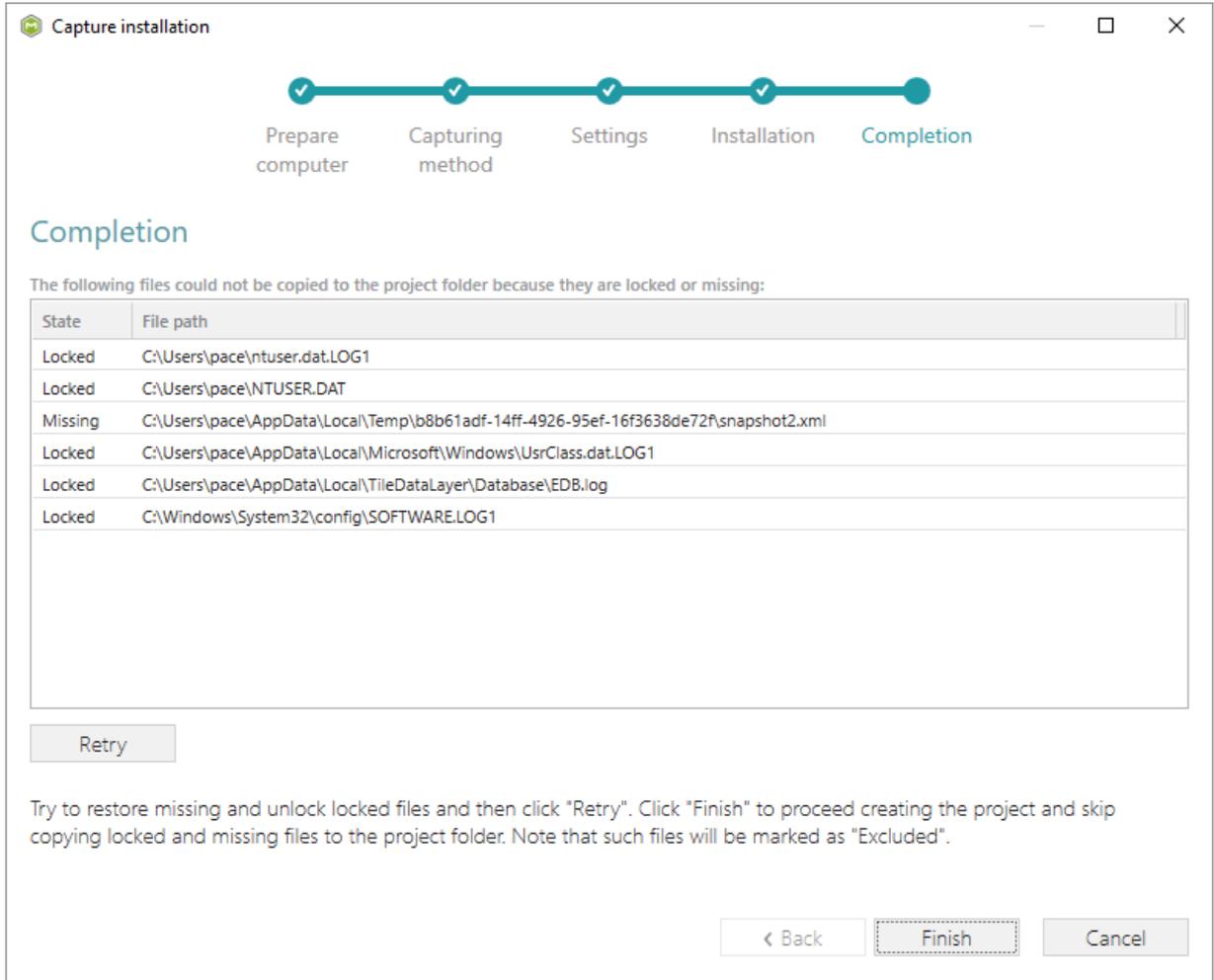


[13]. Leave selected the Customize project in editor and Copy all captured files to the project folder now options are selected and click Finish.



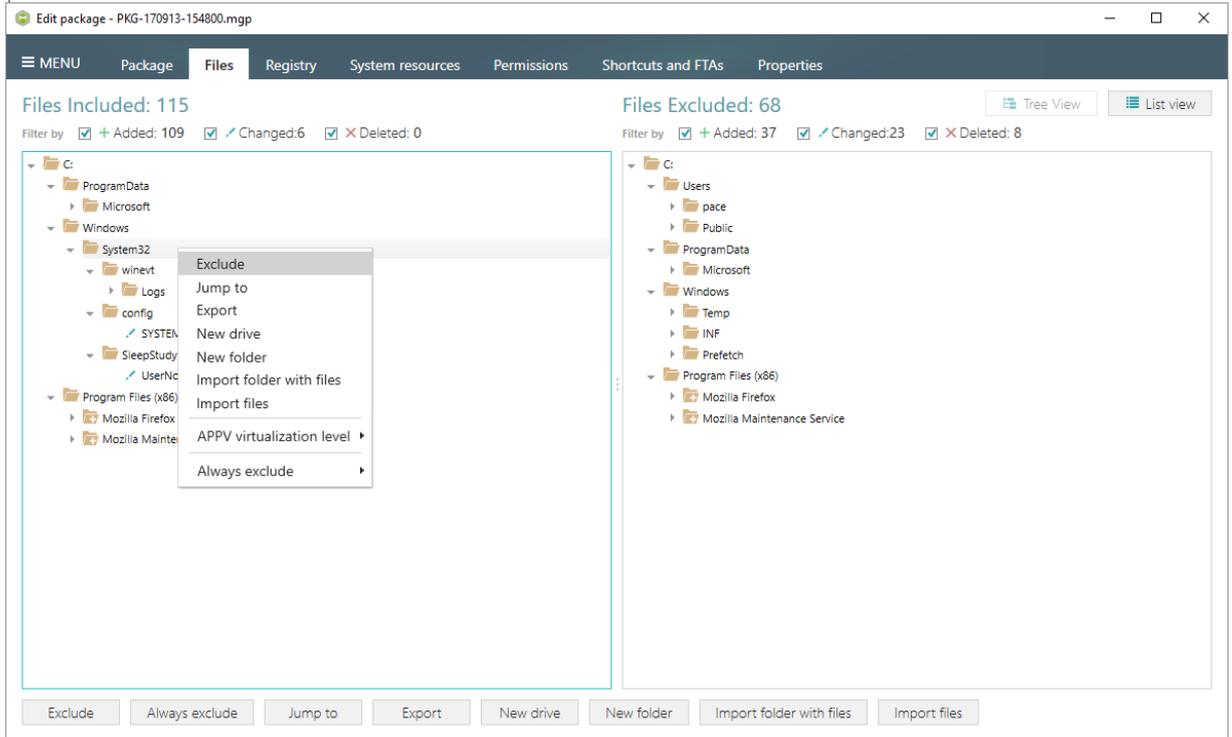
[14]. The following dialog displays captured files, which could not be copied to the project folder because they do not exist anymore or locked by the system or by an application. Try to resolve these issues and then click **Retry**. Click **Finish** to skip copying the missing

and locked files and mark them as Excluded resources.

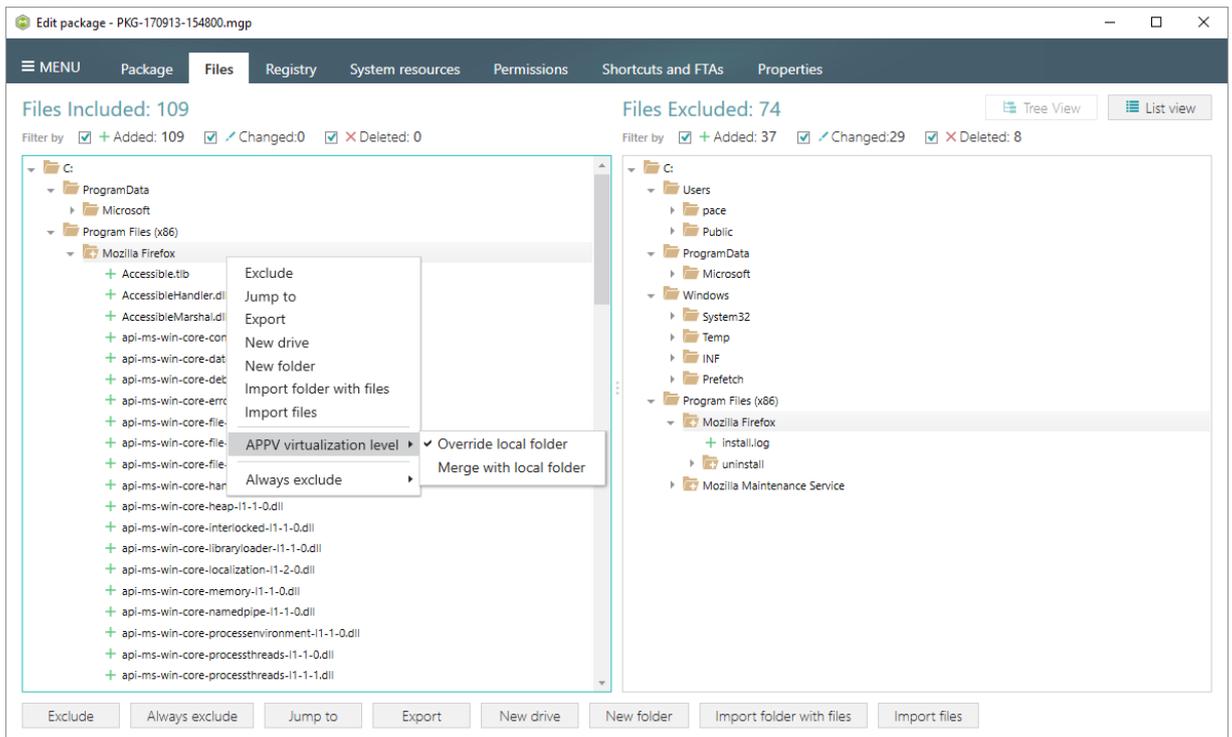


- [15]. Once the project is opened in the project editor, review the captured resources at the Files, Registry, System resources, Permissions, and Shortcuts and FTAs tabs and exclude unnecessary ones from the project. Unnecessary resources are files, registry entries, which are usually created or modified in the result of operating system work, and such resources could not be a part of your captured application. Unfortunately, there is no universal rule to discover which of captured files or registry entries should be excluded, so exclude only those ones, which almost 100% do not refer to your captured application (e.g. NOD32 antivirus files couldn't be a part of Firefox application).
- [16]. In order to review and exclude unnecessary files or folders, go to the Files tab, and select Exclude from the context menu of an item, which is located in the left 'Files Included'

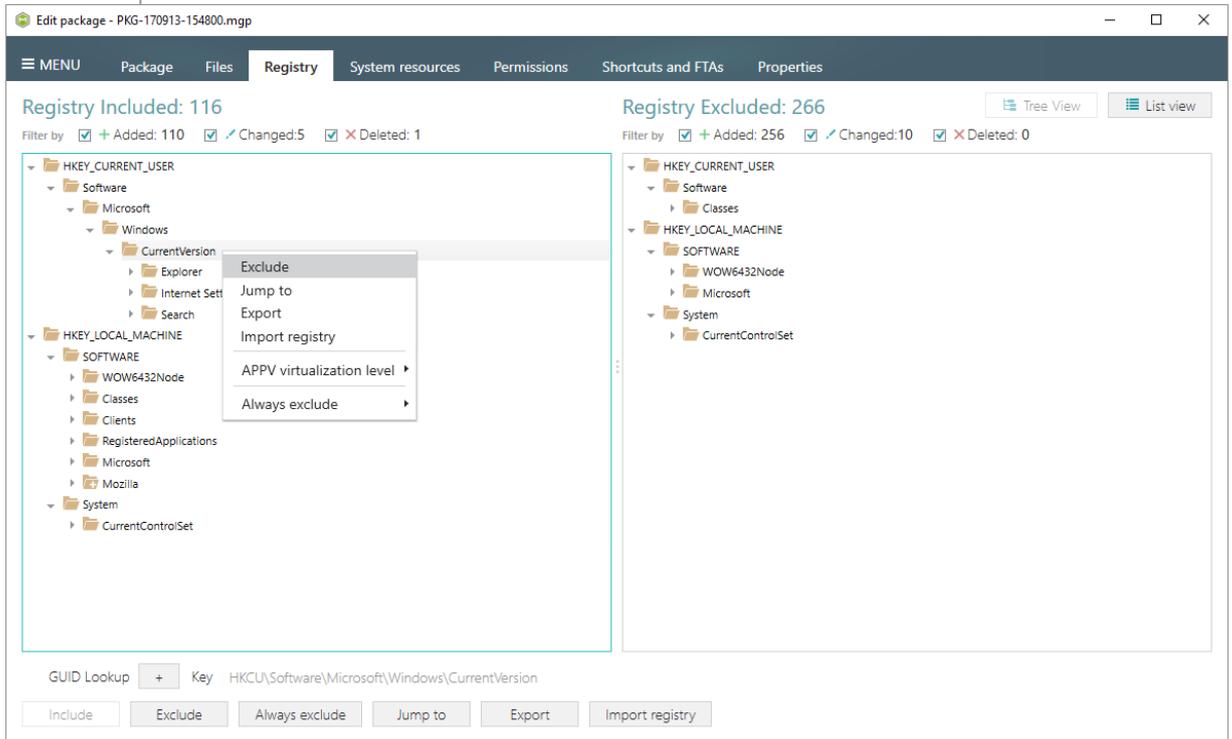
pane.



[17]. In order to change the default virtualization (isolation) level of a folder, open the folder context menu, and select either **Override local folder** or **Merge with local folder** option from the **APPV virtualization level** submenu. Note that if the **APPV virtualization level** submenu is disabled with the **Override local folder** option selected, it means that this option is inherited from the parent folder. Child folder could not have the **Merge with local folder** virtualization level, if parent one has the **Override local folder** virtualization level.

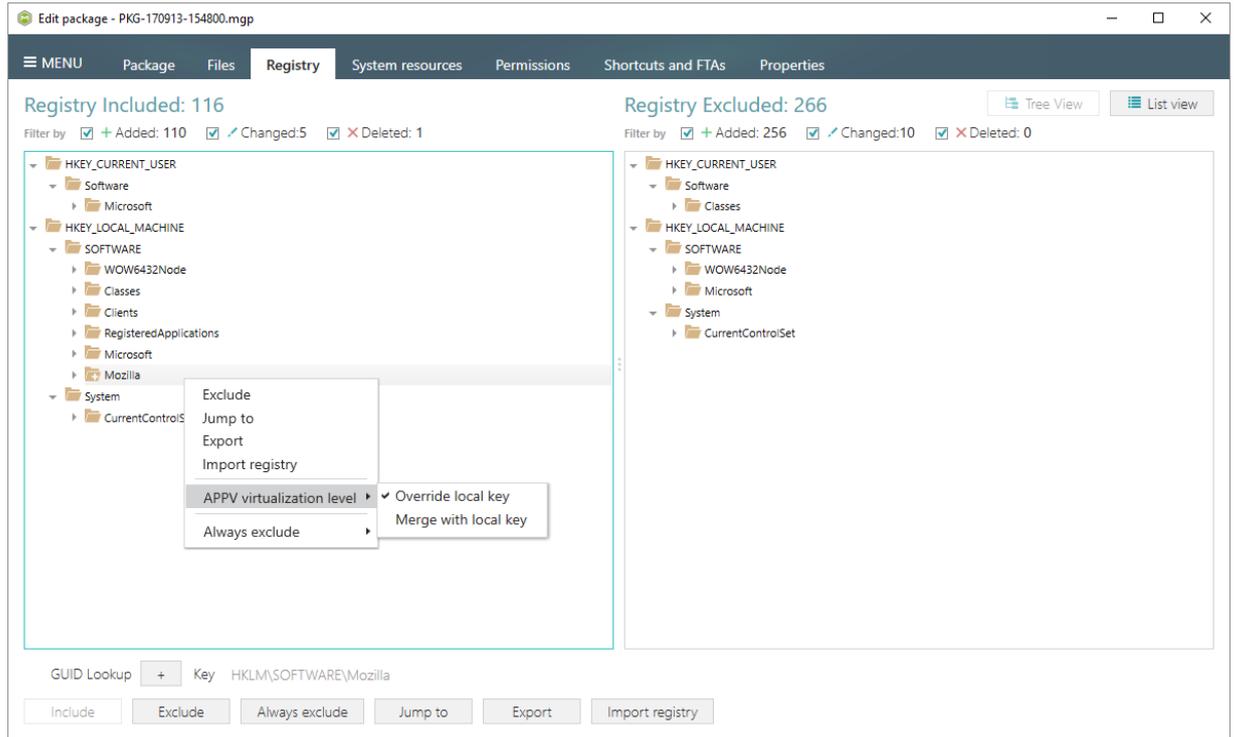


[18]. In order to review and exclude unnecessary registry keys or values, go to the Registry tab, and select Exclude from the context menu of an item, which is located in the left 'Registry Included' pane.

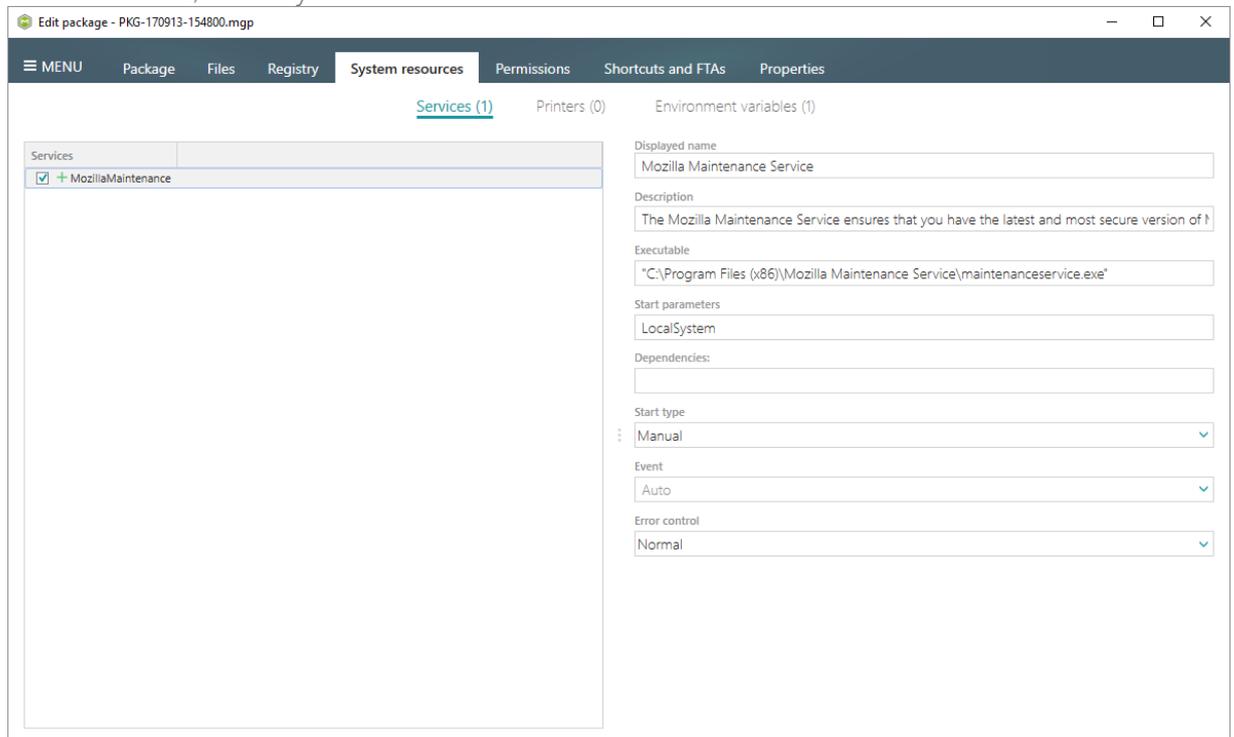


[19]. In order to change the default virtualization (isolation) level of a registry key, open the registry key context menu, and select either Override local key or Merge with local key option from the APPV virtualization level submenu. Note that if the APPV virtualization level submenu is disabled with the Override local key option selected, it means that this option is inherited from the parent registry key. A child registry key could not have the Merge with local key virtualization level, if the parent one has the Override local key

virtualization level.



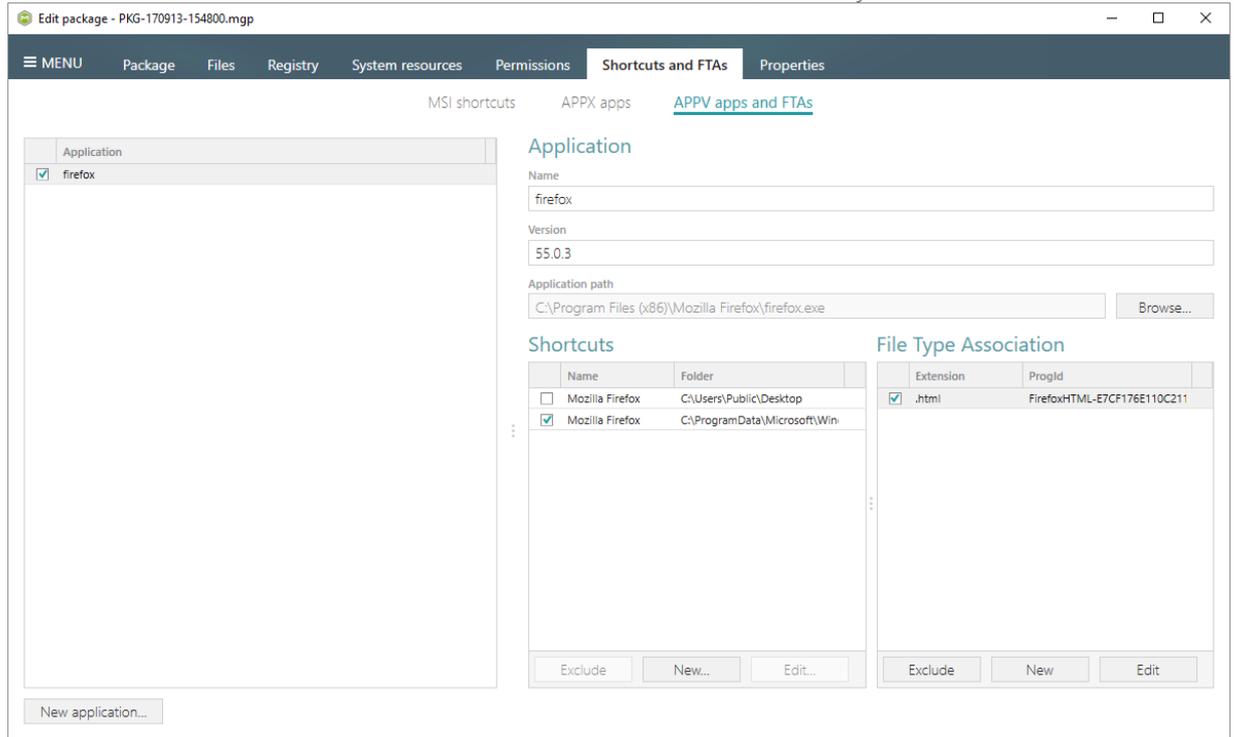
[20]. In order to review and exclude unnecessary services, go to the System resources -> Services tab, and uncheck the checkbox, located before the service name in the list, for those services, which you want to exclude.



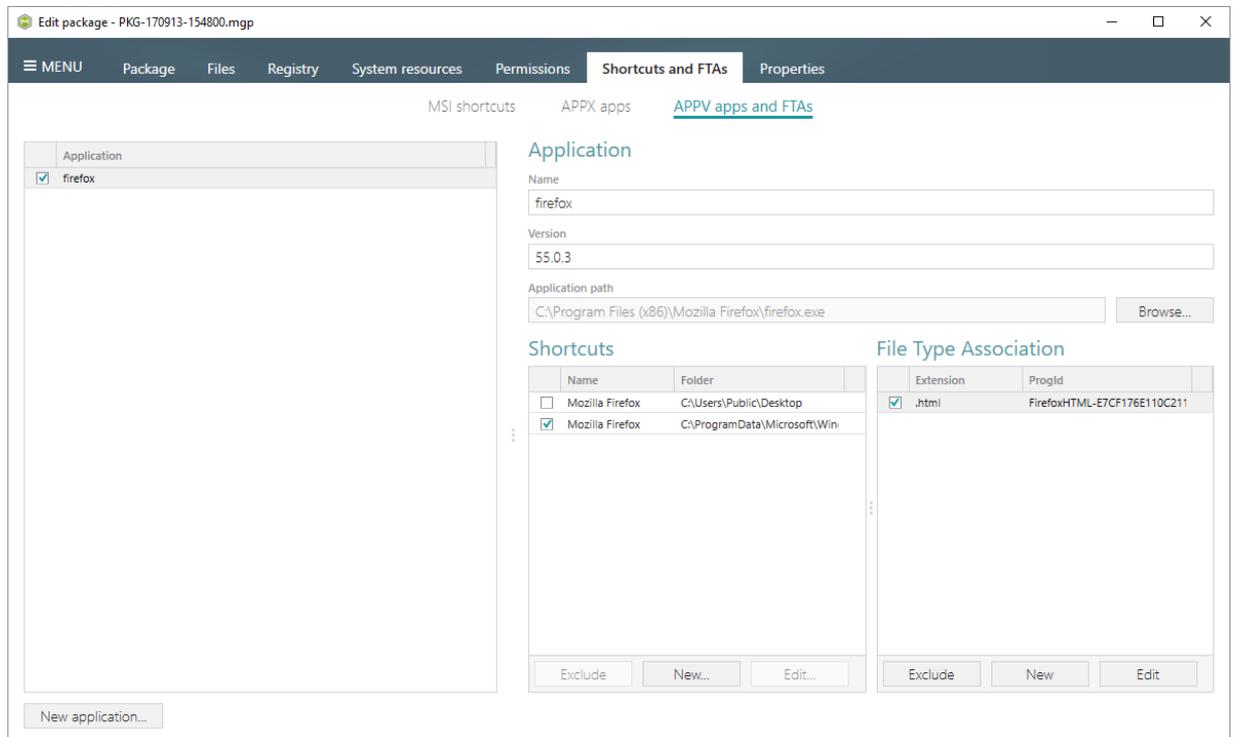
[21]. In order to review and exclude unnecessary APPV applications, shortcuts and their file type associations, go to the Shortcuts and FTAs -> APPV apps and FTAs tab, and



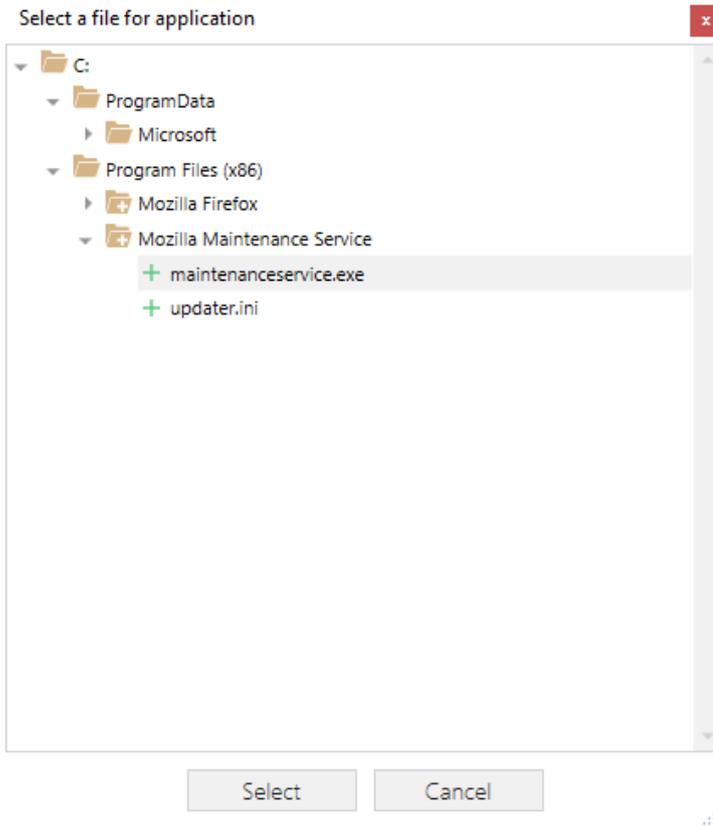
uncheck checkboxes, located before those items names, which you want to exclude.



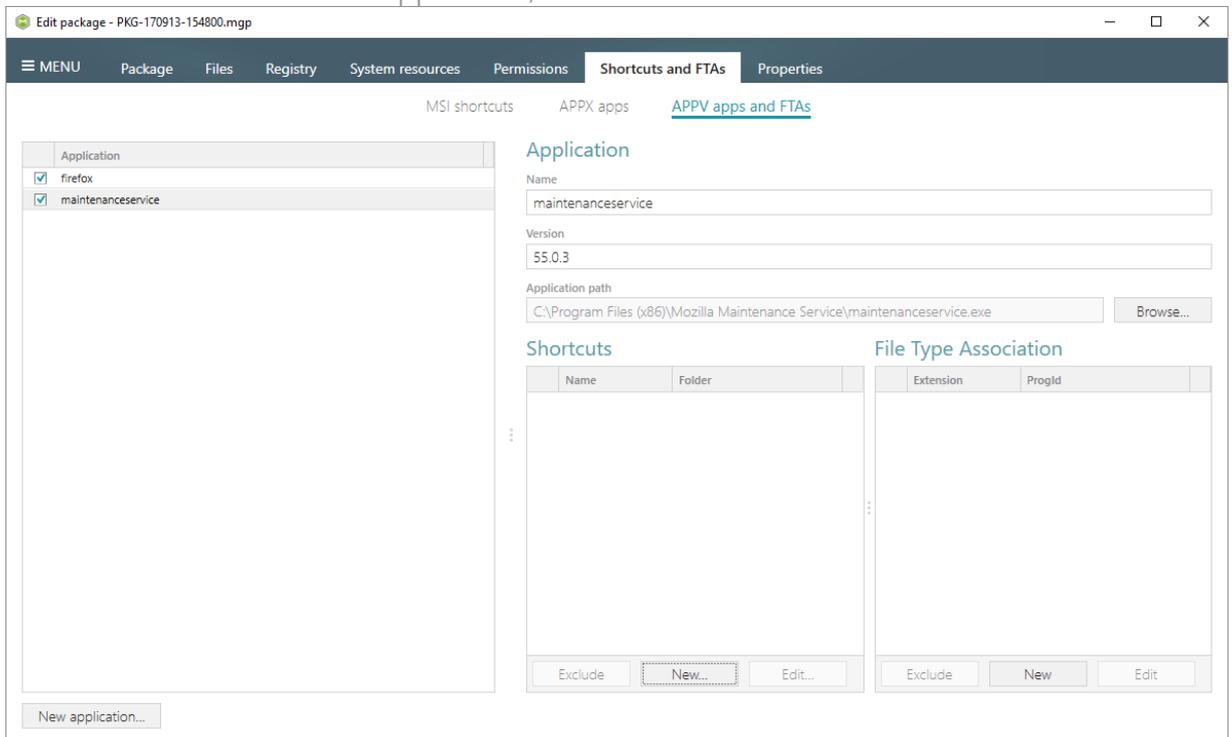
[22]. If you need to add a new APPV application, its shortcuts and associate file extensions with this application, click **New application...** on the Shortcuts and FTAs -> APPV apps and FTAs tab.



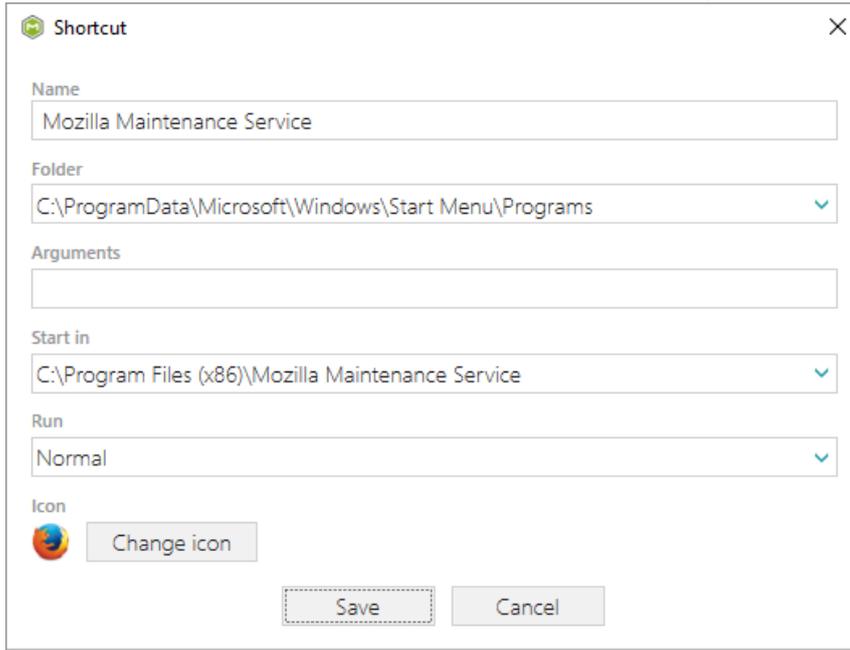
[23]. Select the executable file (EXE) from the tree and click Select.



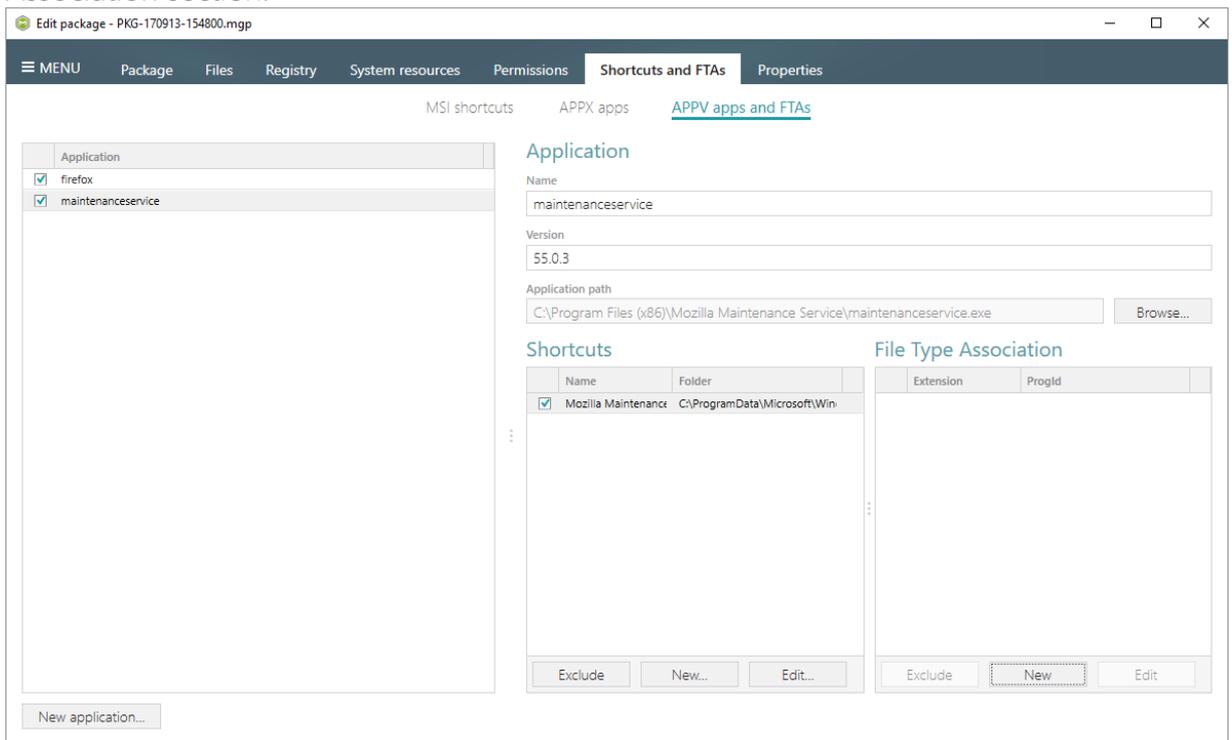
[24]. To create a shortcut for the application, click New... in the Shortcuts section.



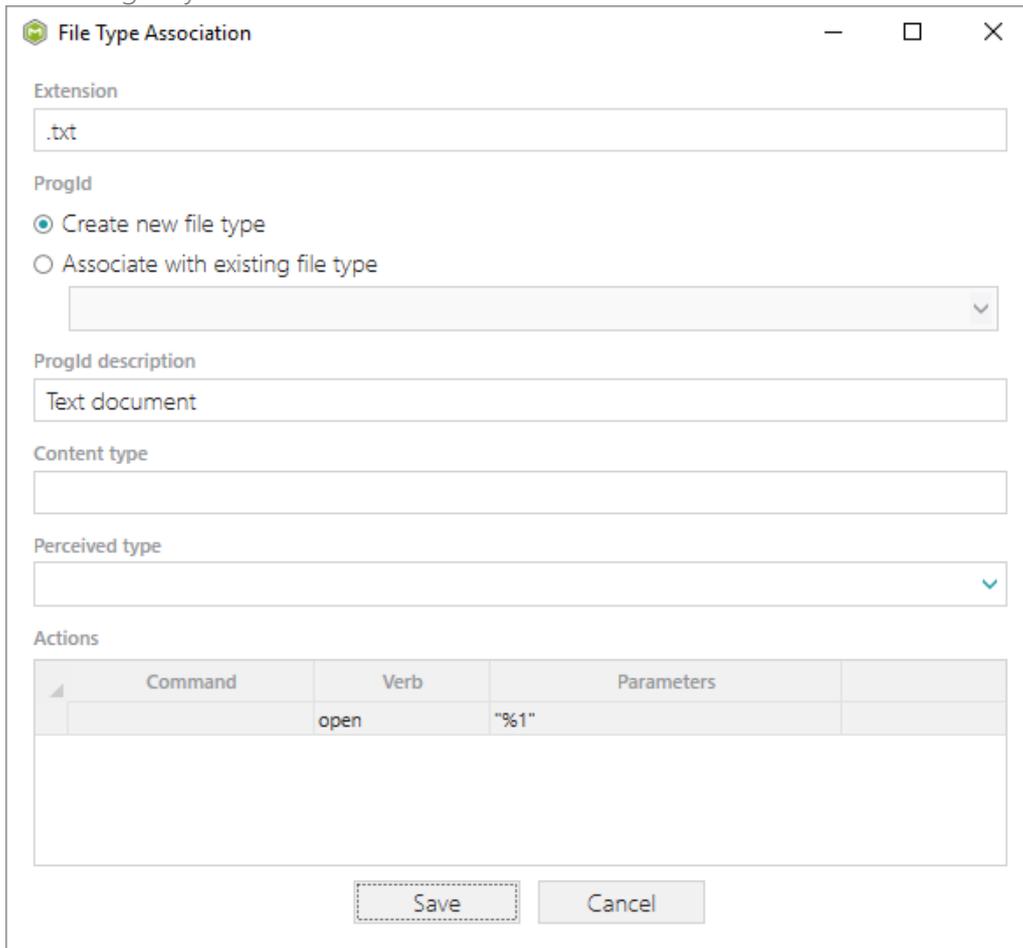
[25]. Enter a shortcut name, select a destination location ("Folder" field), icon and click Save.



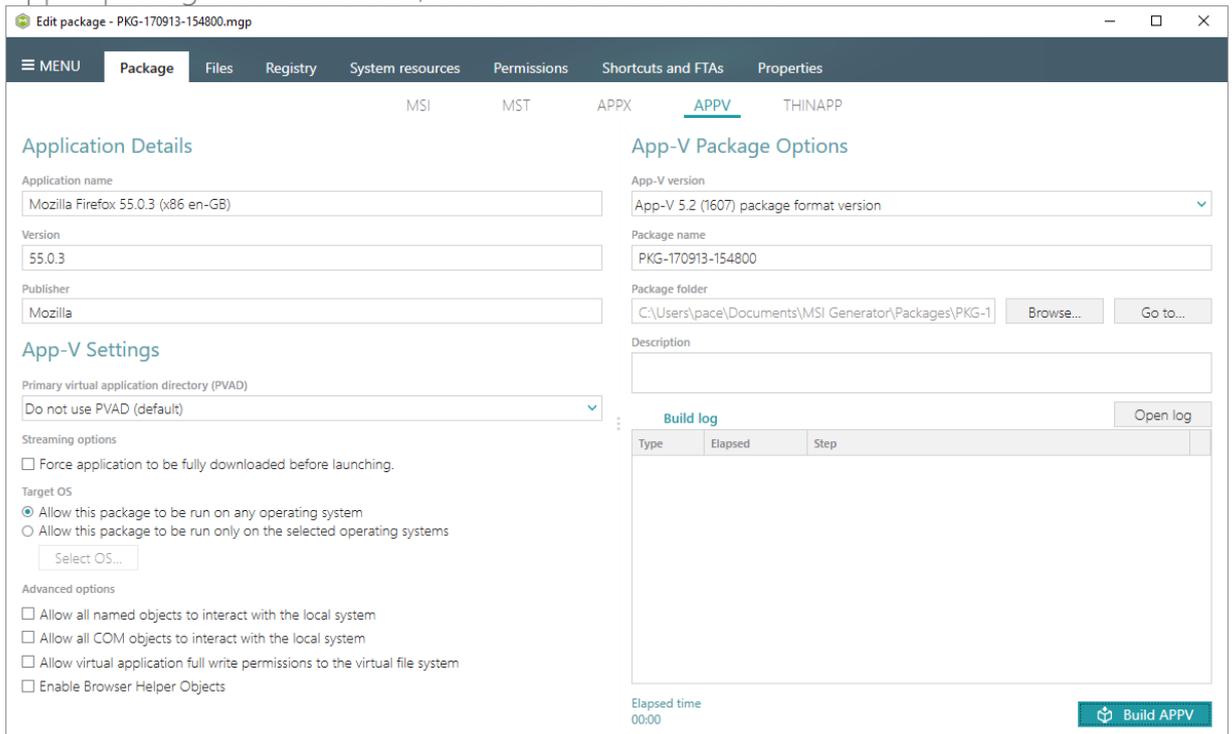
[26]. To associate some file extension with your application, click New... in the File Type Association section.



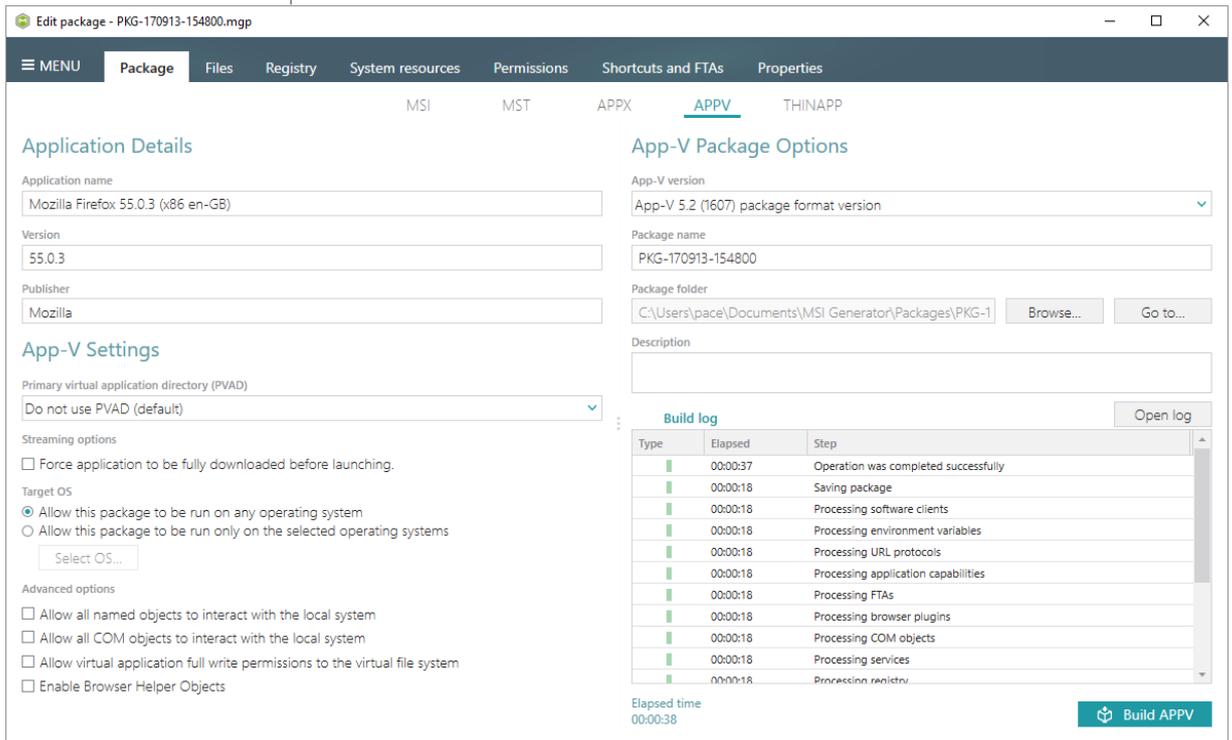
[27]. Enter a file extension and click Save. Optionally you can modify other FTA settings according to your needs.



[28]. Finally, to build APPV package from the project, navigate to the Package -> APPV tab, review and update (if necessary) Application Details, select the necessary App-V Settings, App-V package format version, and then click Build APPV.



[29]. Click **Go to...**, located next to the **Project folder** field, to open the package containing folder in Windows Explorer.





3.6 New THINAPP

NOTE For building THINAPP packages, ensure that your system contains VMware ThinApp (5.0.0/5.0.1/5.1.0/5.1.1/5.2.0) installed.

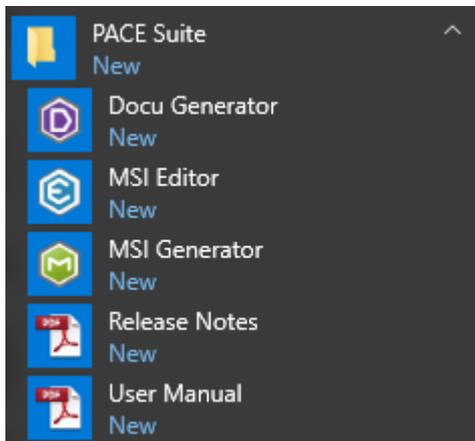
Choose a scenario that better suits your needs:

- Create THINAPP from Scratch, described in section 3.6.1
Create a new empty project in MSI Generator, add folders, files, registry entries, select entry points and then generate the THINAPP package from this project.
- Convert (Repackage) EXE, MSI to THINAPP, described in section 3.6.2
Repackage your source installation (EXE, MSI, VBS, CMD, etc.) into THINAPP package using MSI Generator.

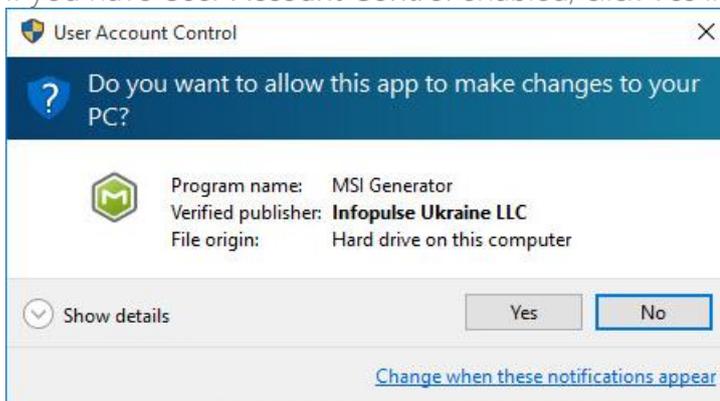
3.6.1 Create THINAPP from Scratch

Create a new empty project in MSI Generator, add folders, files, registry entries, select entry points and then generate the THINAPP package from this project.

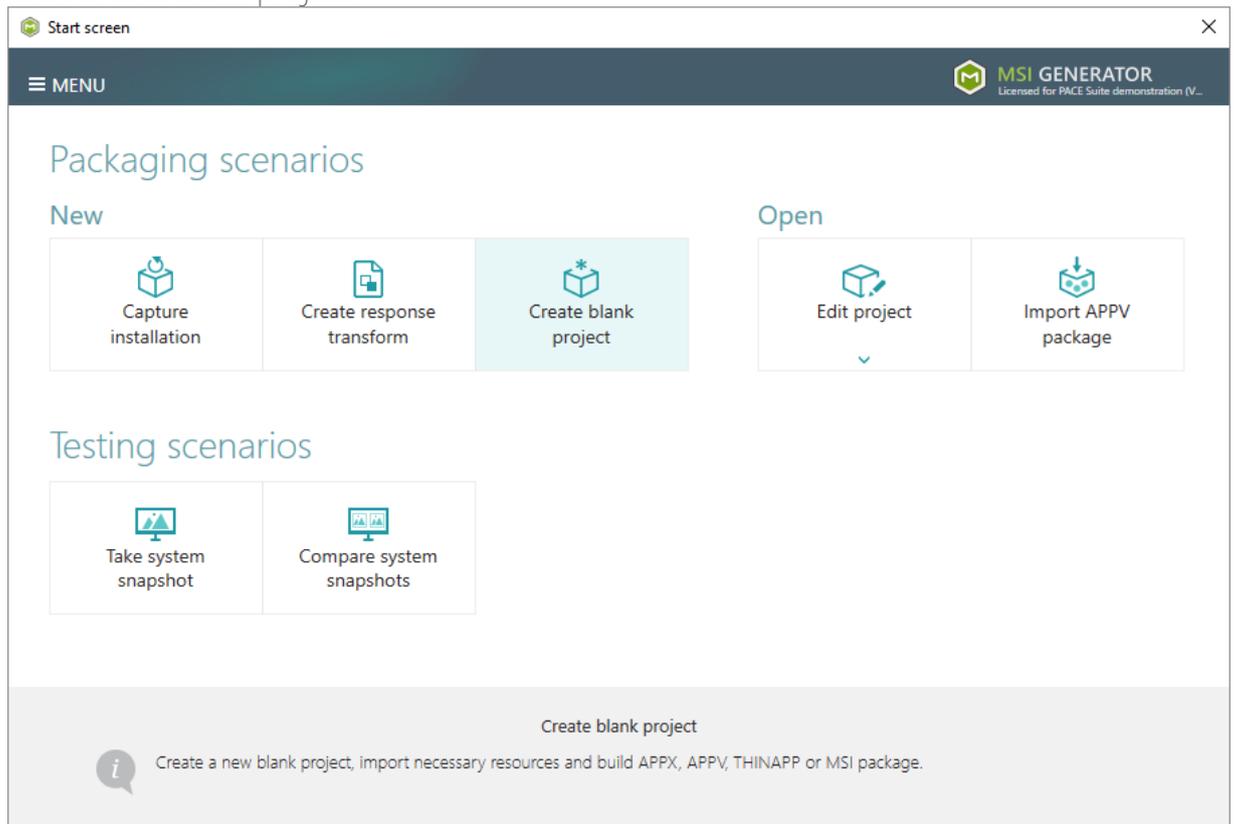
[1]. Launch MSI Generator from the desktop or the start menu shortcut.



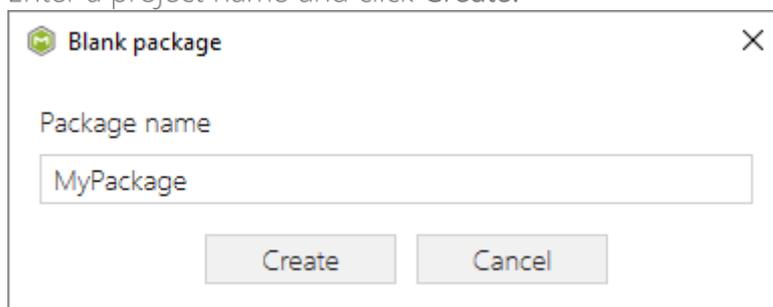
[2]. If you have User Account Control enabled, click Yes in the opened window.



[3]. Click Create blank project.

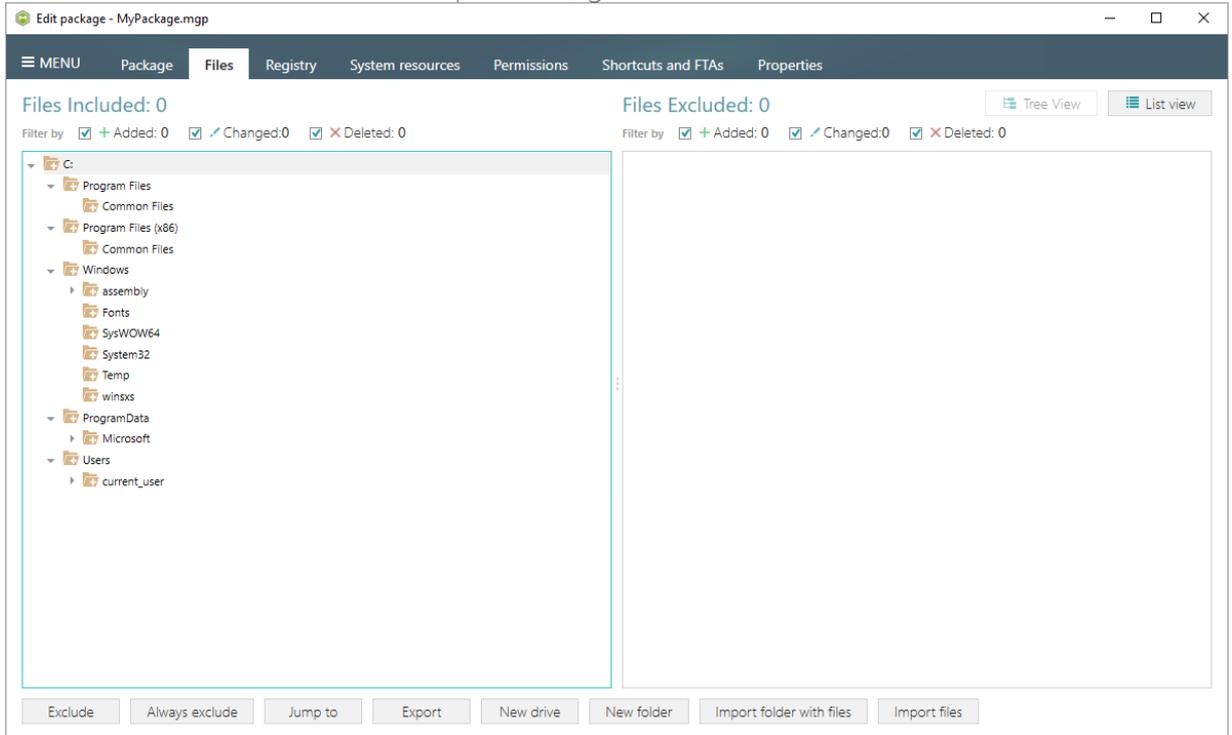


[4]. Enter a project name and click Create.

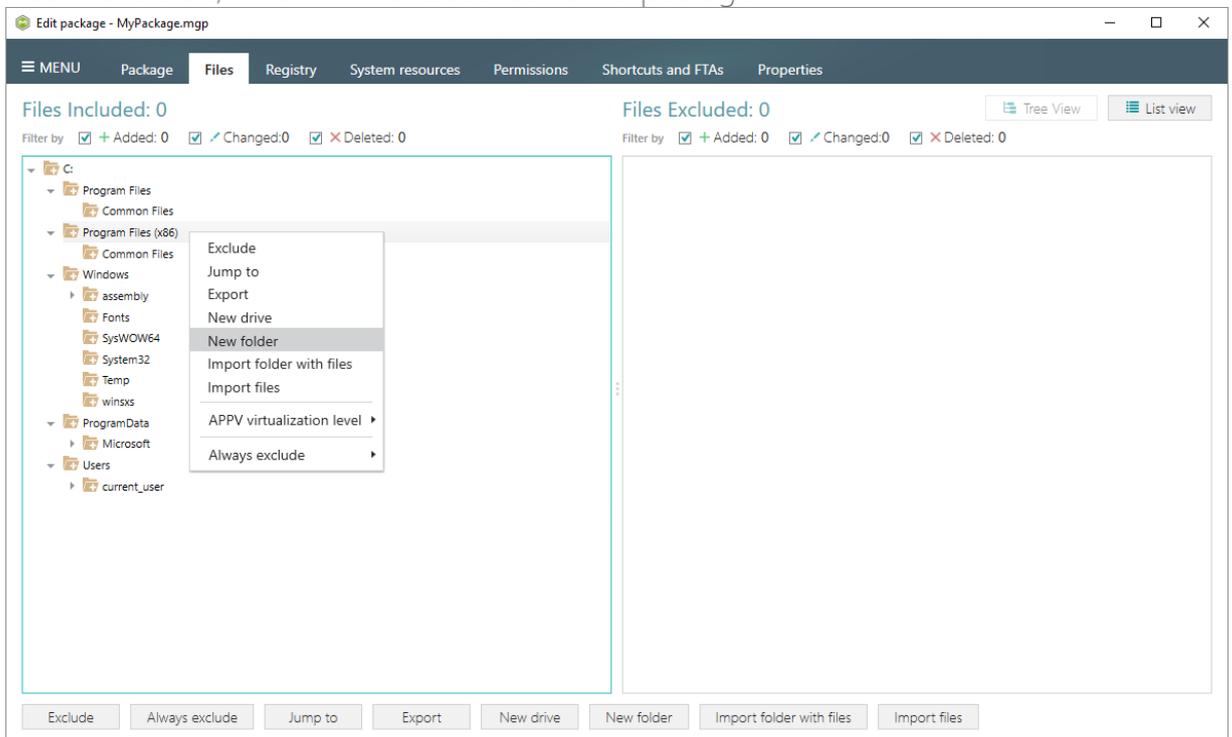


[5]. Once the newly created project is opened automatically, you can start adding the necessary resources using MSI Generator. The steps from [6] to [10] describe how to create a new folder and import files to this folder; the steps from [11] to [13] describe how to import registry entries from the REG file; and the steps [14] and [15] describe how to select entry points and build THINAPP package from the prepared project.

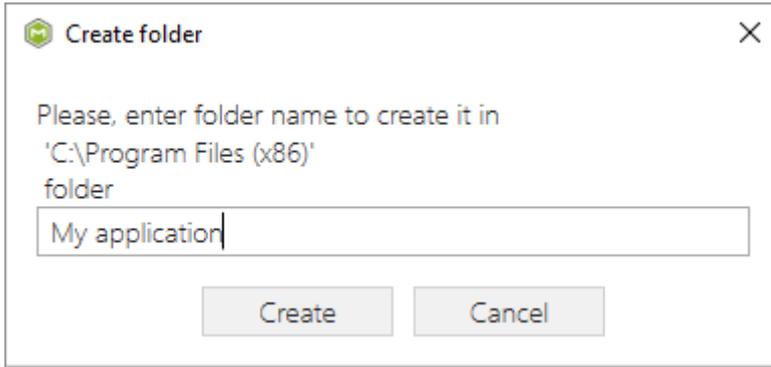
[6]. In order to create a folder and import files, go to the Files tab.



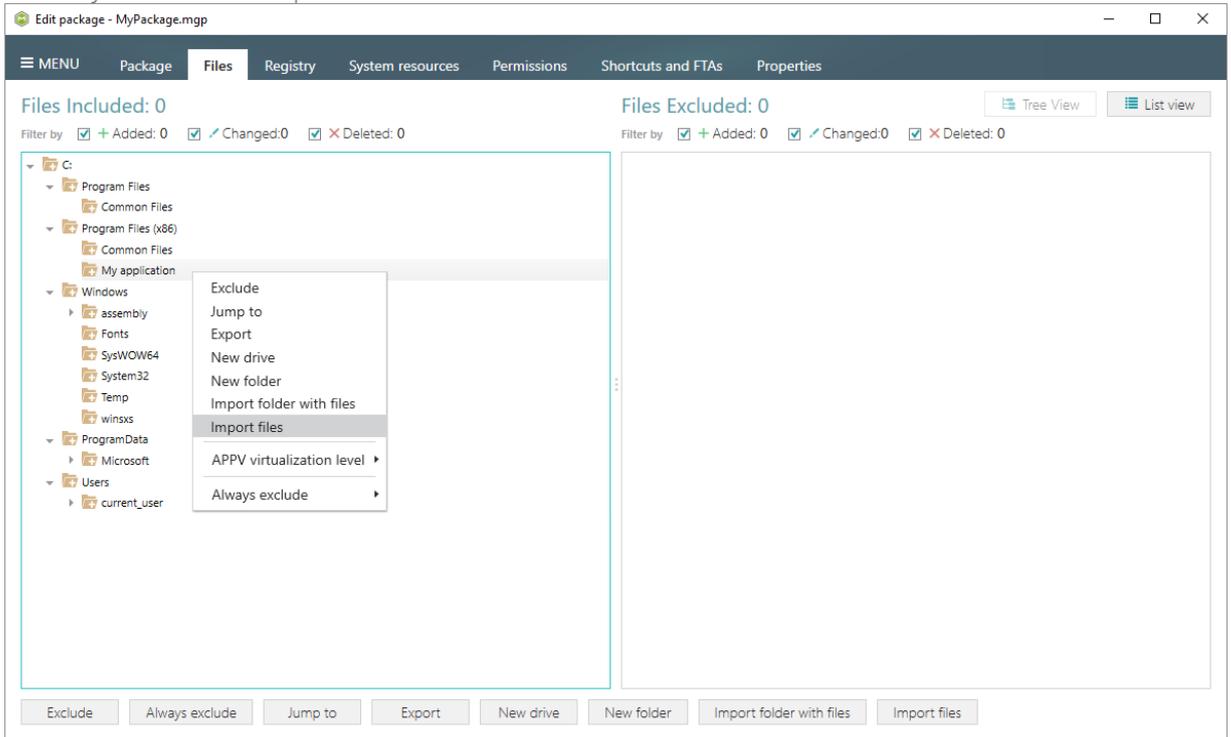
[7]. In the left pane, select **New folder** from the context menu of a folder, where you want to create a new empty folder. Note that the left 'Files Included' pane displays files and folders, which will be a part of your package, and the right 'Files Excluded' pane displays files and folders, which will not be saved to the package.



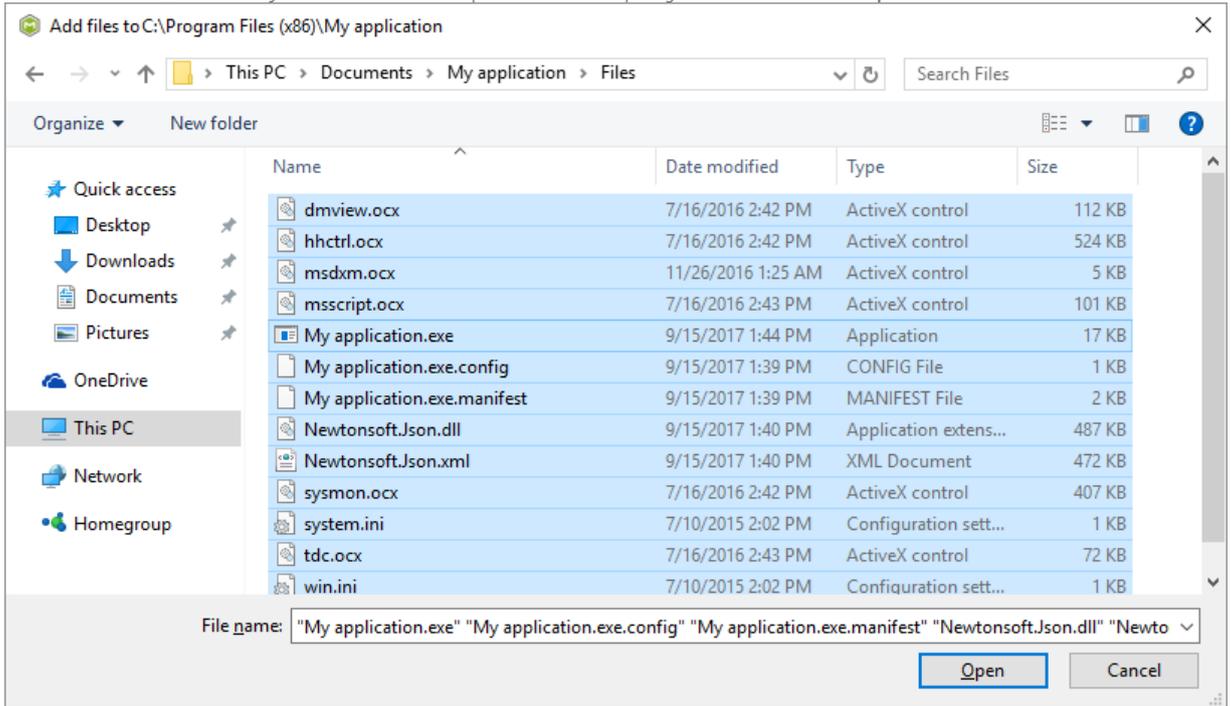
[8]. Enter a folder name and click Create.



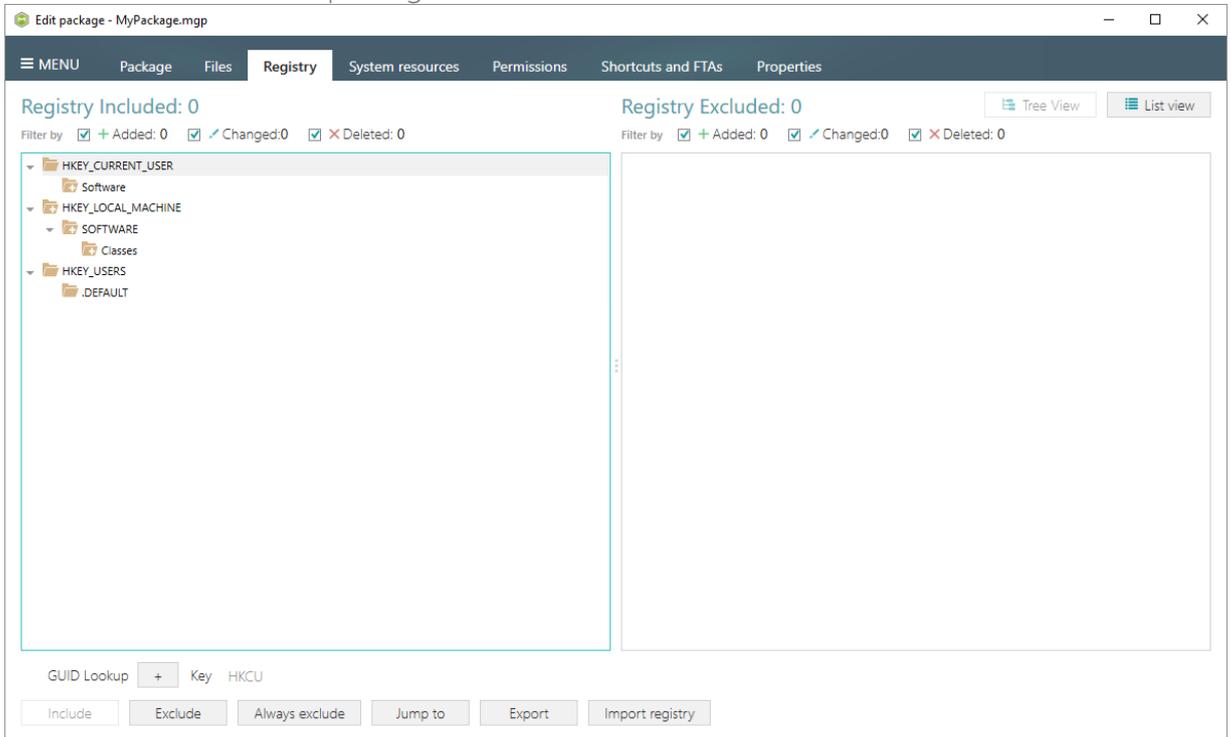
[9]. For adding files to your project, select **Import files** from the context menu of a folder, to which you want to import files.



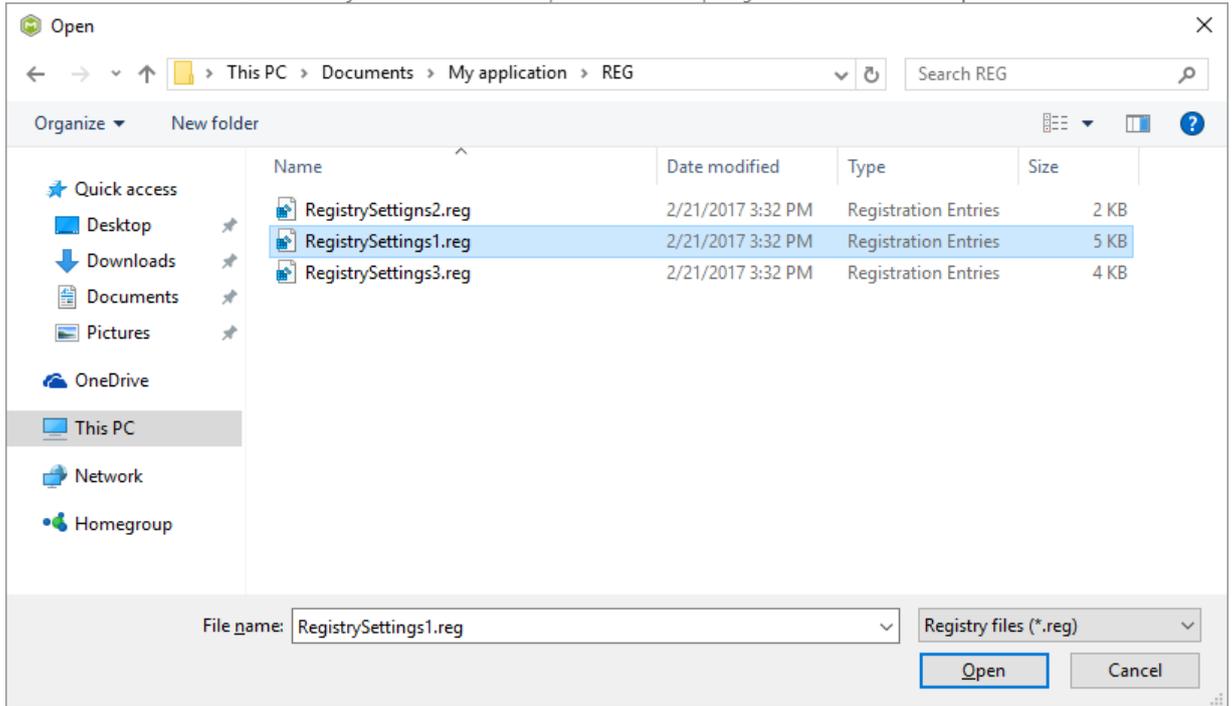
[10]. Choose files, which you want to import to the project and click Open.



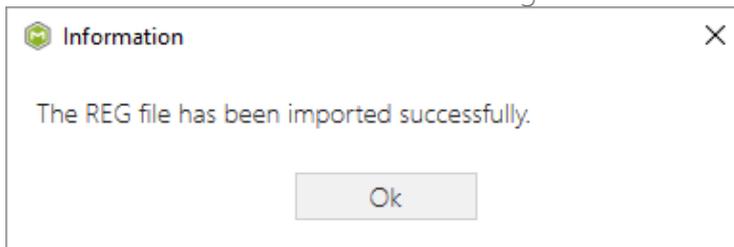
[11]. In order to import registry entries from the REG file, go to the Registry tab and click the Import registry button, located in the bottom part of the window. Note that the left 'Registry Included' pane displays registry keys and values, which will be a part of your package, and the right 'Registry Excluded' pane displays registry keys and values, which will not be saved to the package.



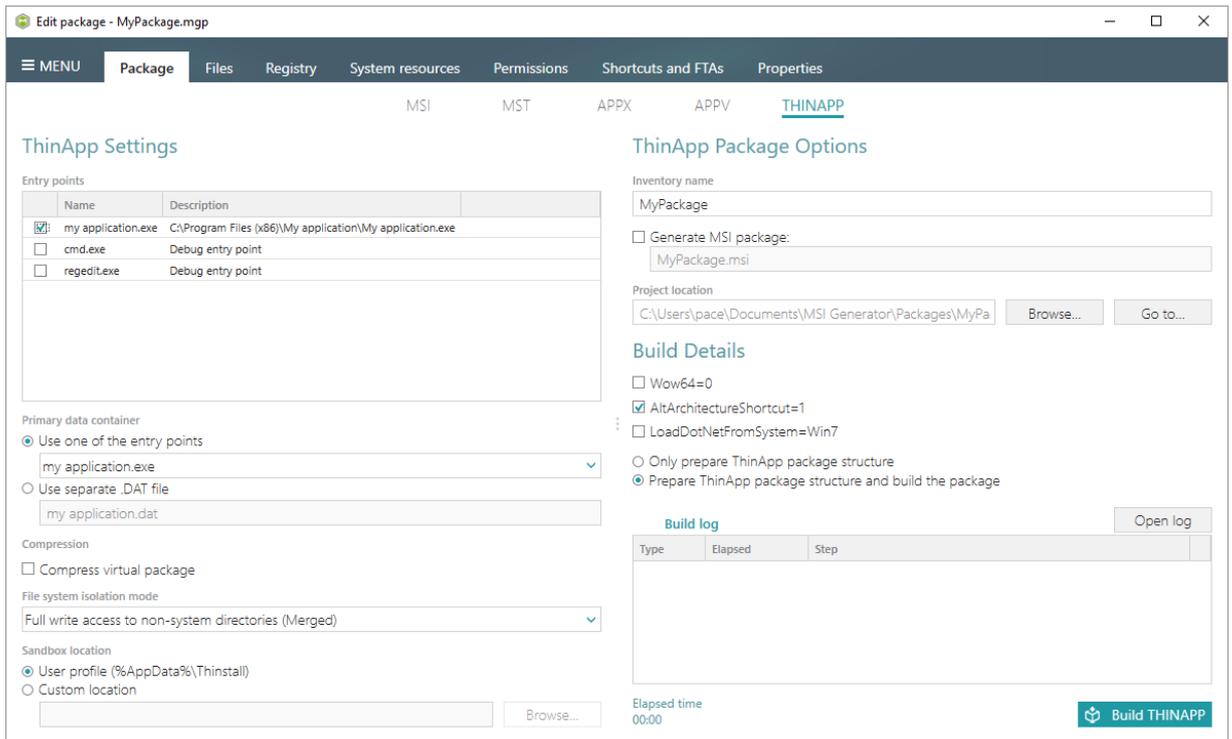
[12]. Choose a REG file, which you want to import to the project, and click Open.



[13]. Click Ok to close the information dialog.

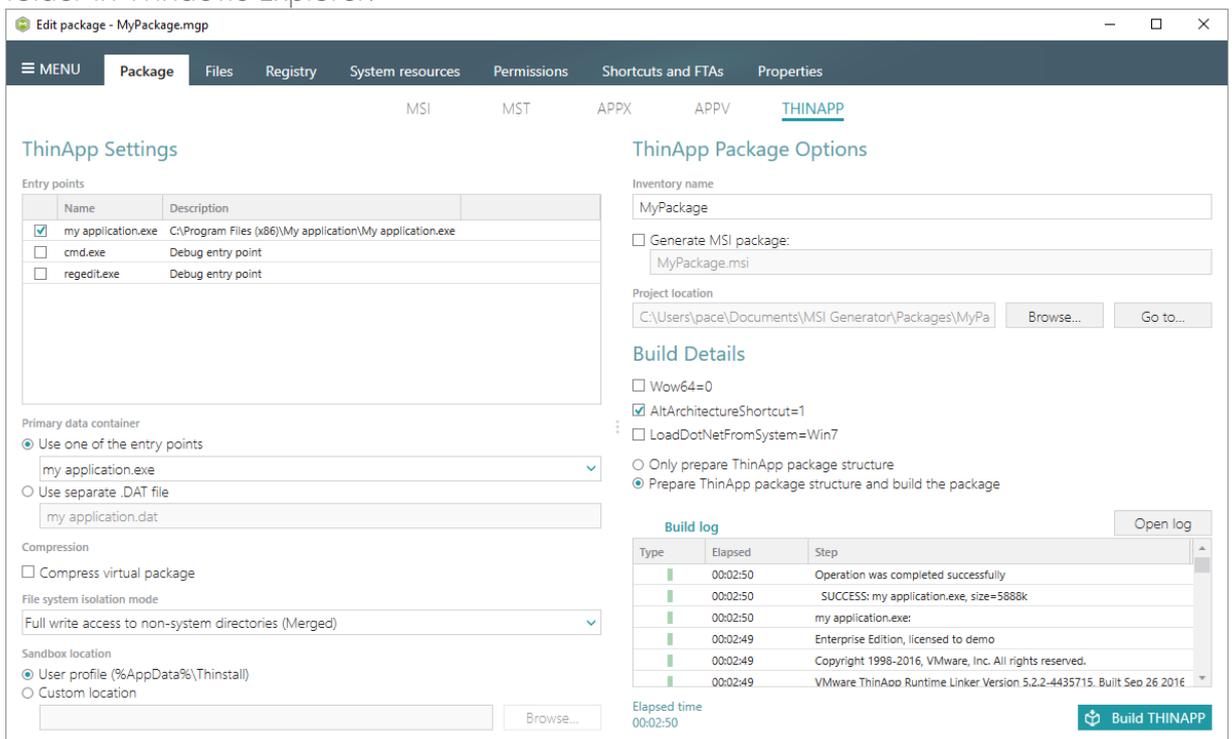


[14]. In order to build THINAPP package from your project, navigate to the Package -> THINAPP tab, select Entry points (shortcuts), primary data container location and other package options, and then click Build THINAPP.



NOTE For building THINAPP packages, ensure that your system contains VMware ThinApp (5.0.0/5.0.1/5.1.0/5.1.1/5.2.0) installed. If you have installed this tool to the custom location, go to the MENU -> Settings, select the Custom ThinApp install location option and then click Browse... to choose the installation location of the VMware ThinApp tools.

- [15]. Click Go to..., located next to the Project location field, to open the package containing folder in Windows Explorer.

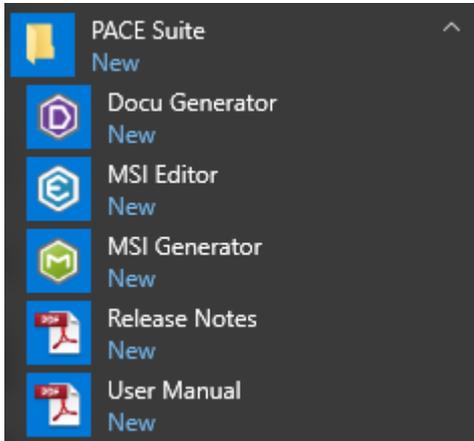




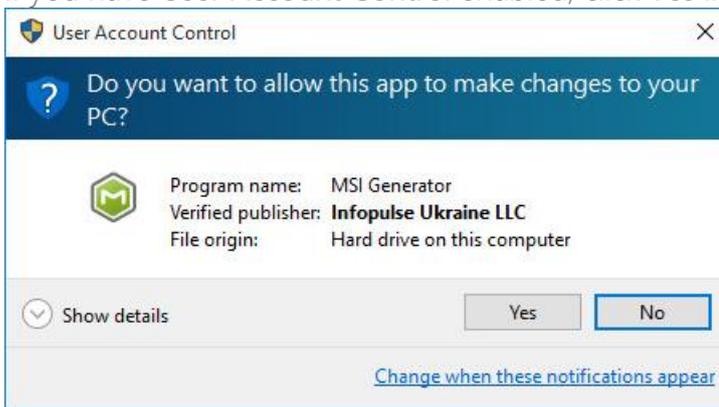
3.6.2 Convert (Repackage) EXE, MSI to THINAPP

Repackage your source installation (EXE, MSI, VBS, CMD, etc.) into THINAPP package using MSI Generator.

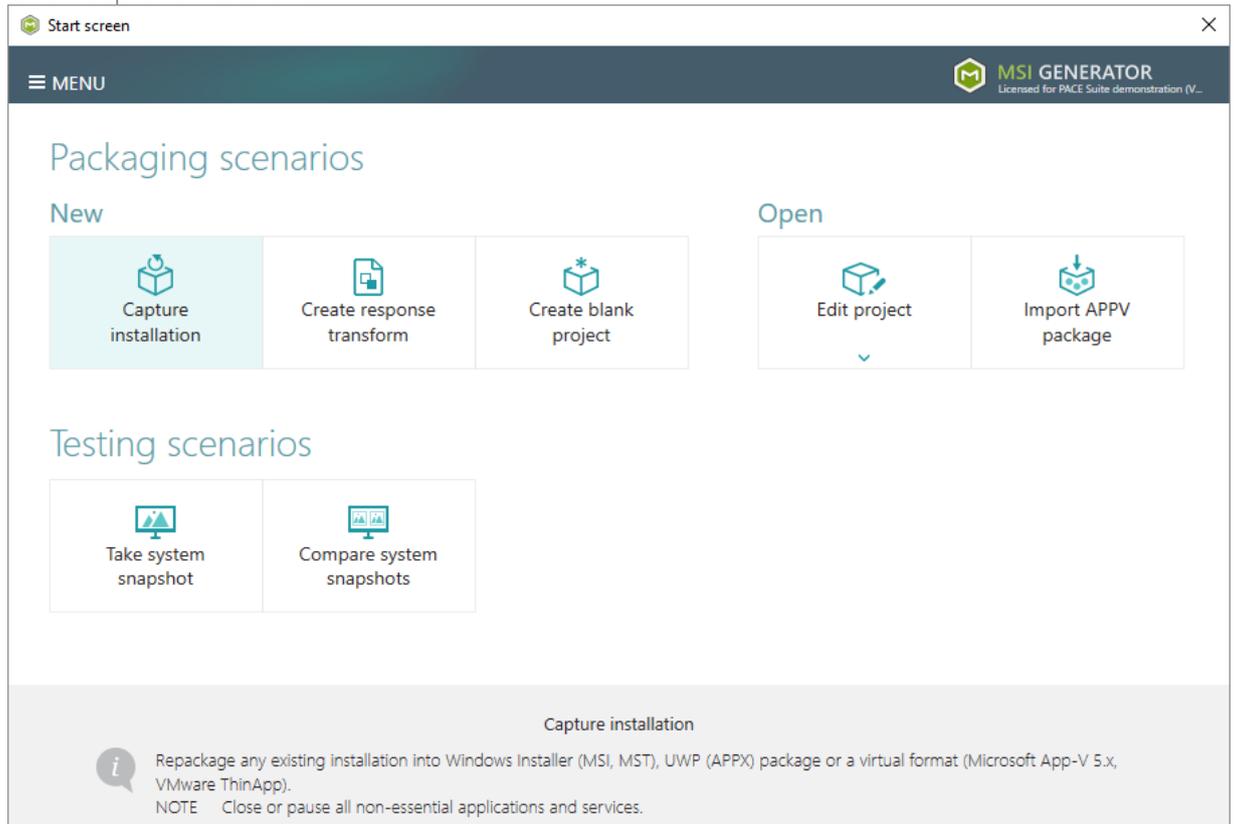
- [1]. Launch MSI Generator from the desktop or the start menu shortcut.



- [2]. If you have User Account Control enabled, click Yes in the opened window.



[3]. Click Capture installation.



- [4]. Review the issues, which were detected on your system, and try to resolve them by closing the non-essential applications and stopping services. Thereafter, click **Next >**.

Capture installation

Prepare computer Capturing method Settings Installation Completion

Prepare the computer for capturing

It is strongly recommended to perform capturing on a clean virtual machine with all non-essential processes stopped in order to avoid capturing data, which is not related to your source installation. Also, in case of any failure, you will be able to restore the virtual machine to the previous state.

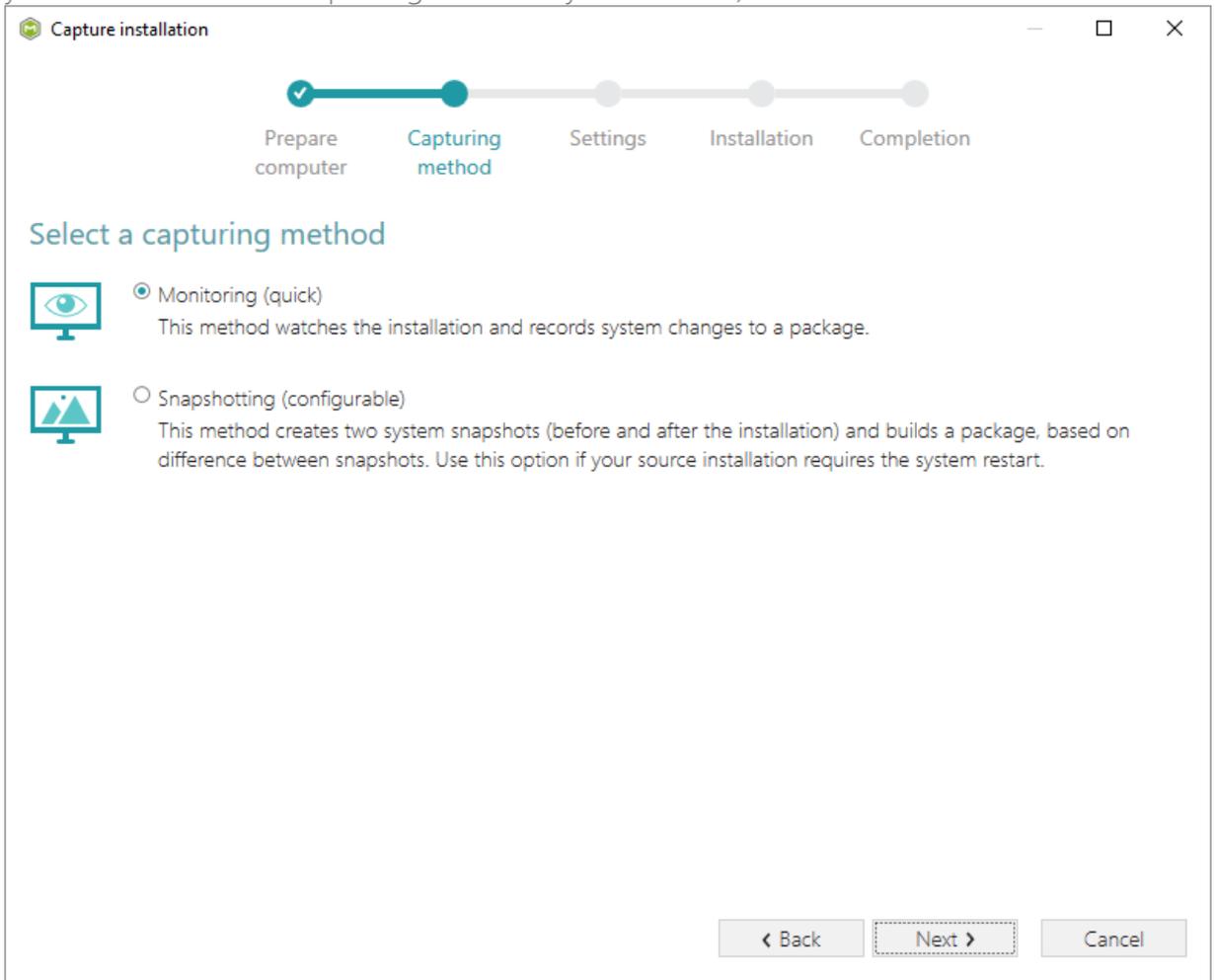
The following issues were detected on your system:

Description	Resolution
⚠ Diagnostic Policy Service is active.	Stop this service before capturing.
⚠ Windows Defender Service is active.	Stop this service before capturing.
⚠ Security Center is active.	Stop this service before capturing.
⚠ Windows Defender is running.	Close your antivirus software before capturing.

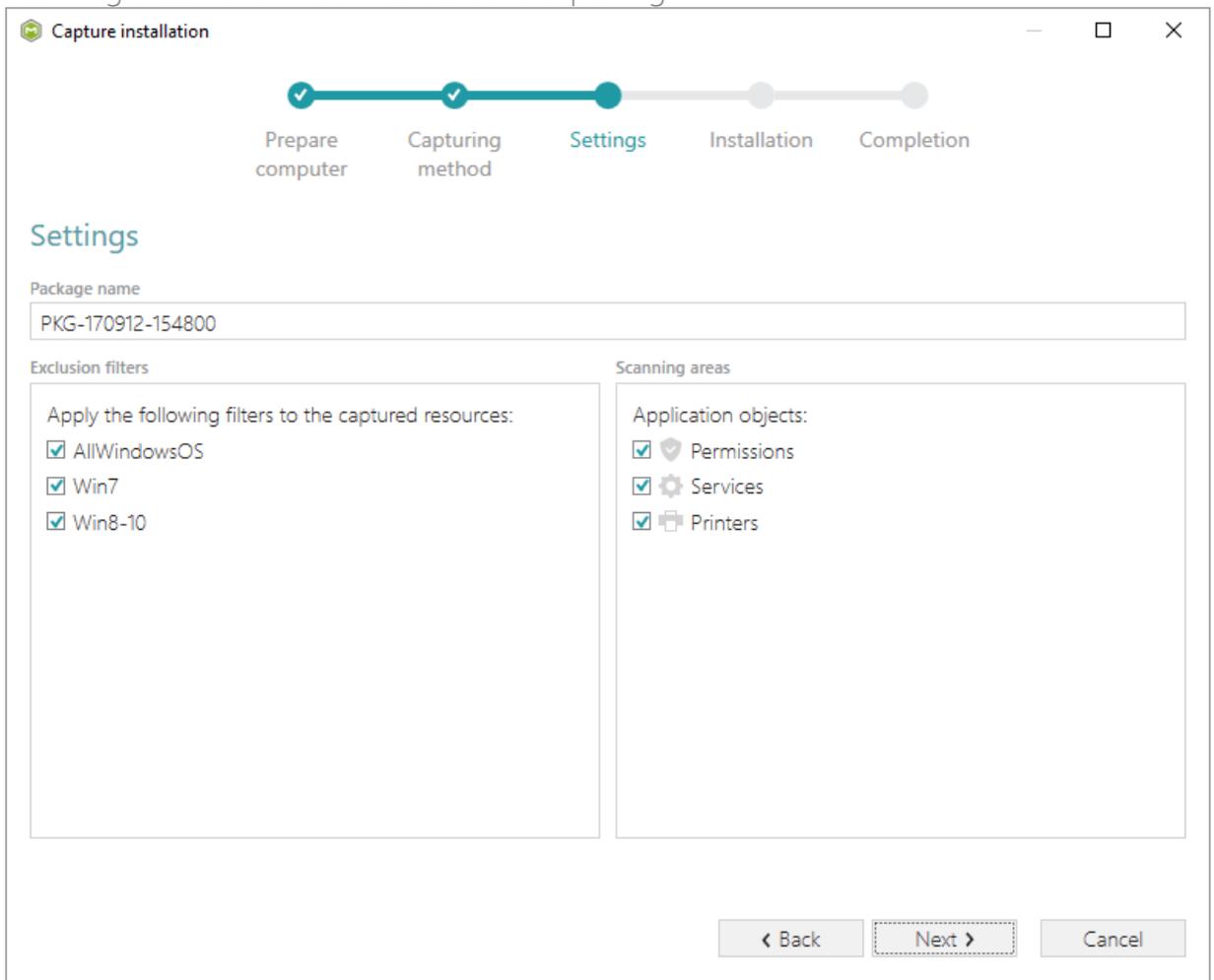
Refresh [Review the capturing recommendations...](#)

< Back Next > Cancel

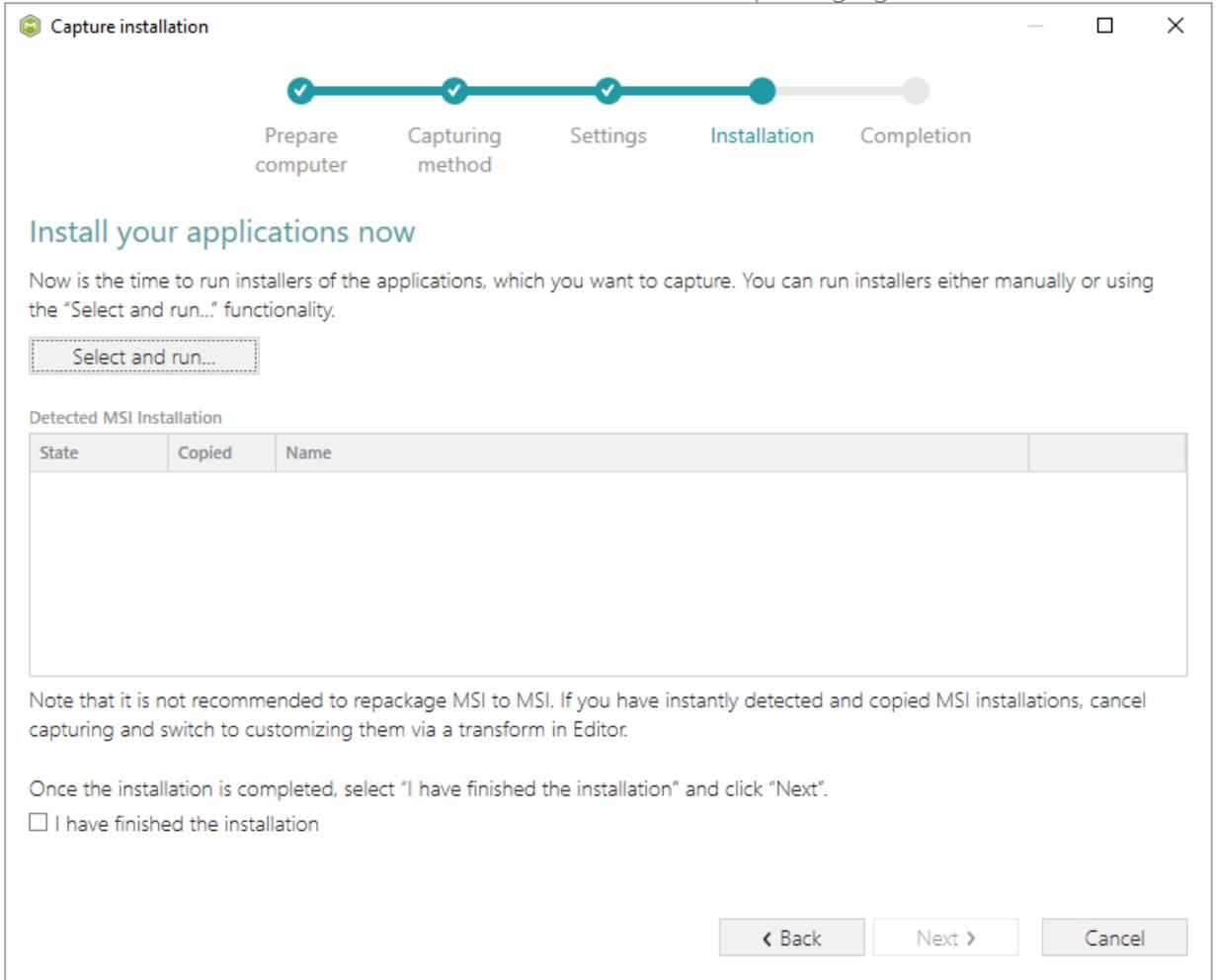
[5]. Select the **Monitoring** method for the quicker capturing (or use the **Snapshotting** one if you need to continue capturing after the system restart) and click **Next >**.



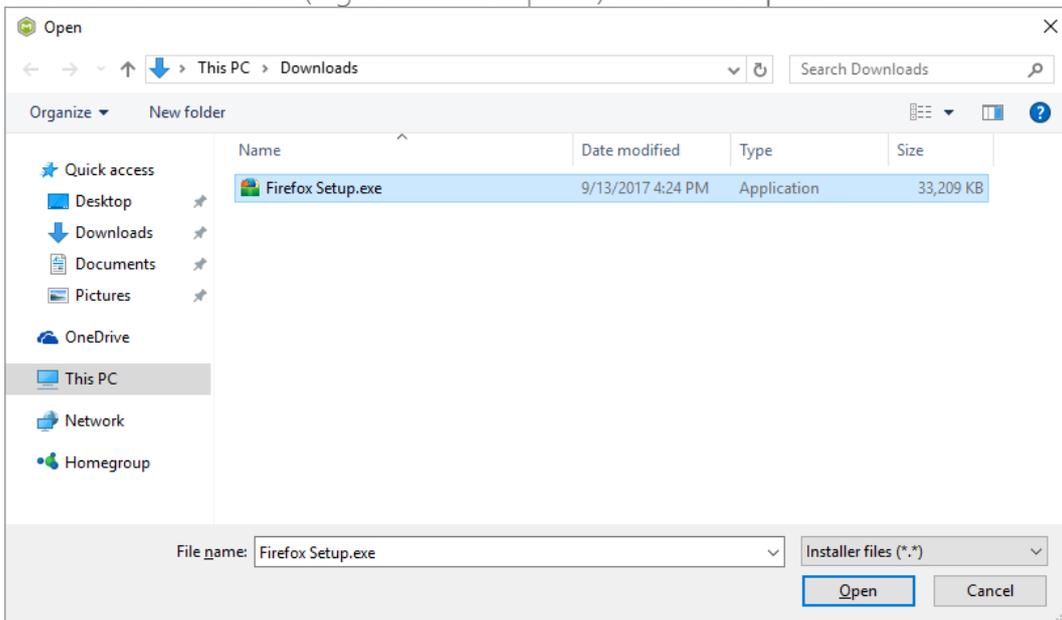
[6]. Here you can review and update package name, disable needless exclusion filters and scanning areas. Click **Next >** to start the capturing.



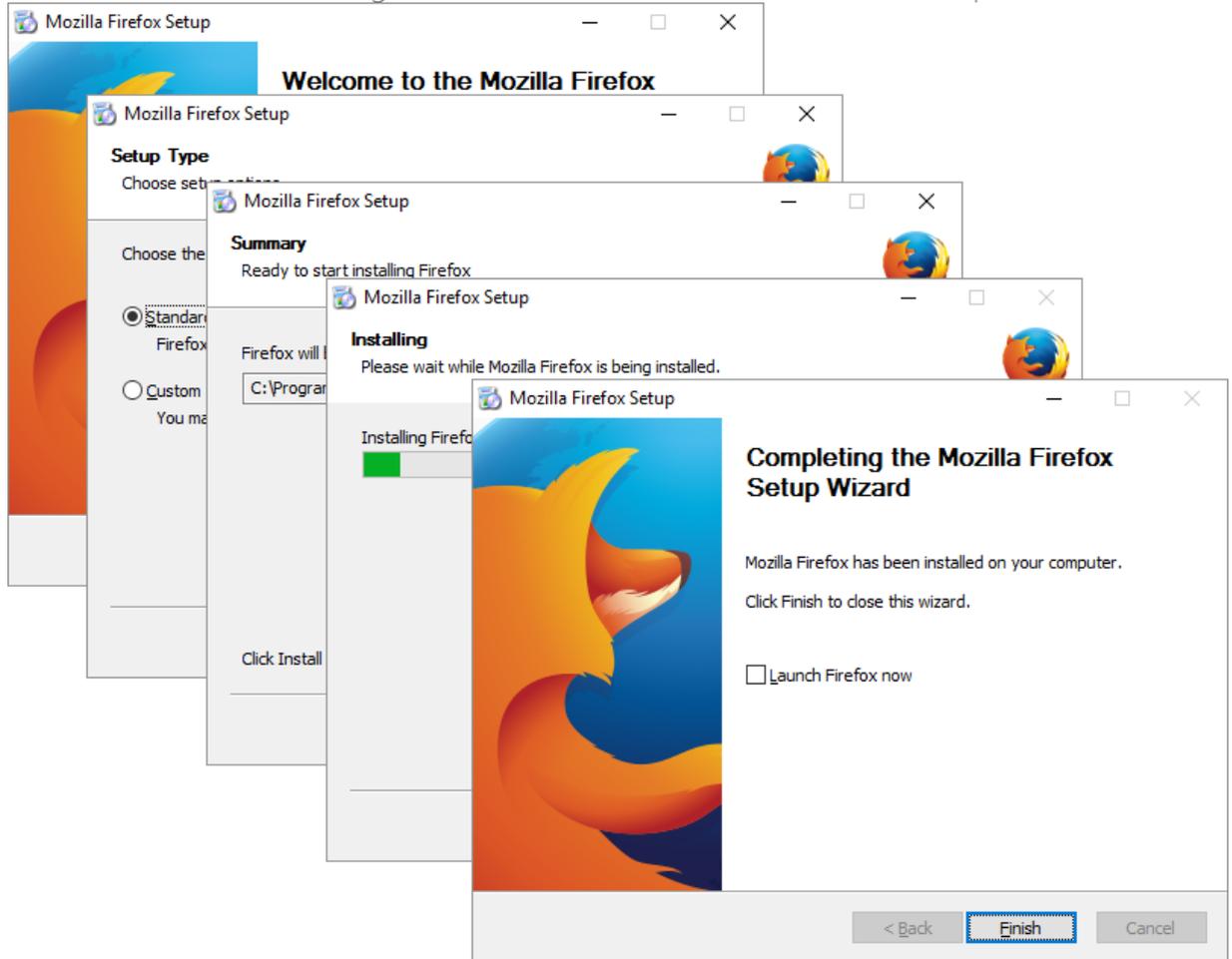
[7]. Click Select and run... to choose source installation for repackaging.



[8]. Select the installer file (e.g. Firefox Setup.exe) and click Open.



[9]. Follow the installation dialogs of the launched source installation to complete it.



[10]. Now you can make any changes to the file system and registry, which you want to capture and include to the package. For instance, you can create new or copy-paste existing files, import REG file to the system registry, changes permission settings, or launch the installed application in order to capture the necessary application configurations, like disabling updates and so on.

[11]. Finally, to complete the capturing, select I have finished the installation and click Next >.

Capture installation

Prepare computer Capturing method Settings **Installation** Completion

Install your applications now

Now is the time to run installers of the applications, which you want to capture. You can run installers either manually or using the "Select and run..." functionality.

Select and run...

Detected MSI Installation

State	Copied	Name
-------	--------	------

Note that it is not recommended to repackage MSI to MSI. If you have instantly detected and copied MSI installations, cancel capturing and switch to customizing them via a transform in Editor.

Once the installation is completed, select "I have finished the installation" and click "Next".

I have finished the installation

< Back **Next >** Cancel

[12]. Wait a little, while the capturing process is finishing, filtering captured data and creating the project.

Capture installation

Prepare computer Capturing method Settings **Installation** Completion

Install your applications now

Now is the time to run installers of the applications, which you want to capture. You can run installers either manually or using the "Select and run..." functionality.

Select and run...

Detected MSI Installation

State	Copied	Name
-------	--------	------

Note that it is not recommended to repackage MSI to MSI. If you have instantly detected and copied MSI installations, cancel capturing and switch to customizing them via a transform in Editor.

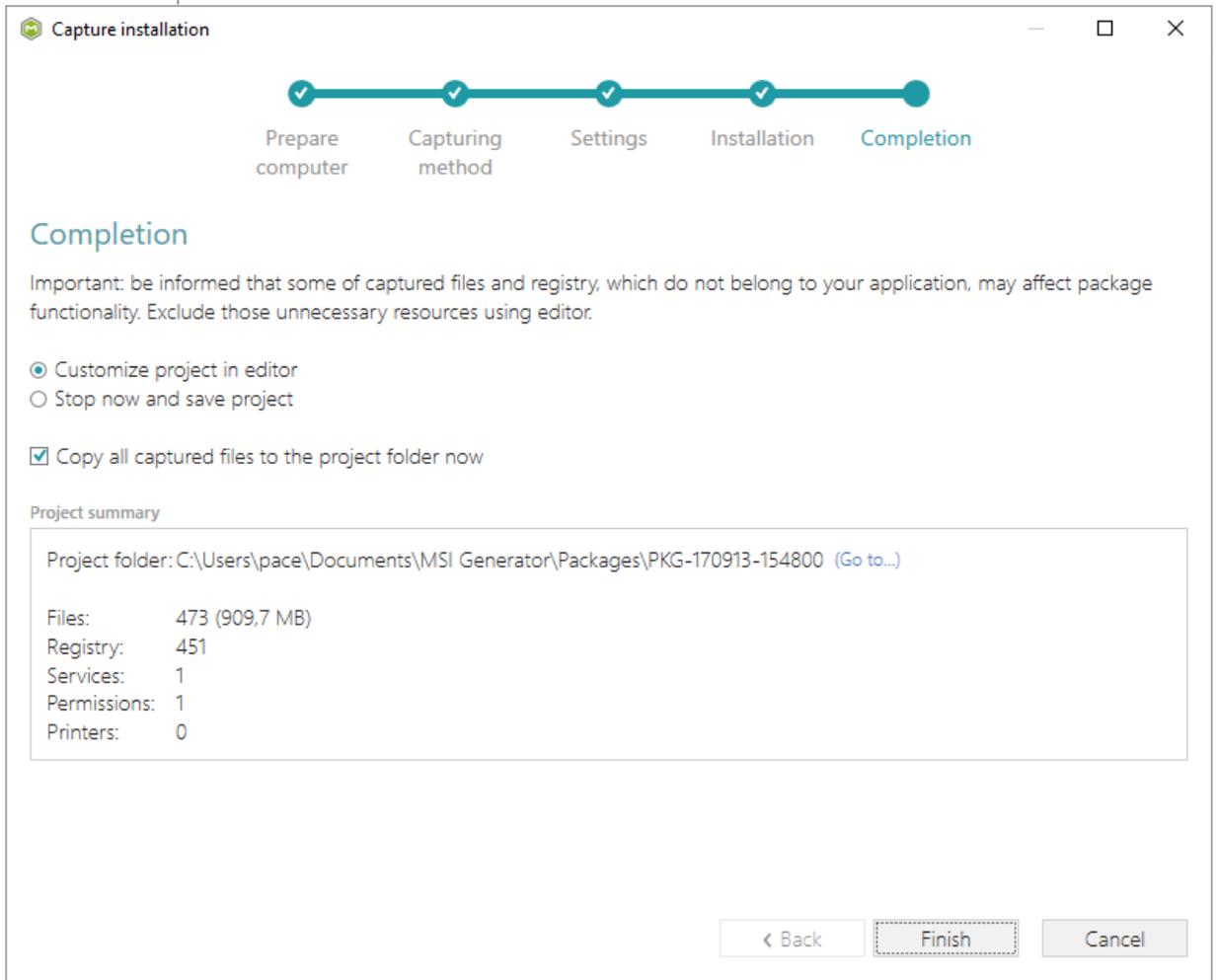
Once the installation is completed, select "I have finished the installation" and click "Next".

I have finished the installation

00:08 Scanning Services

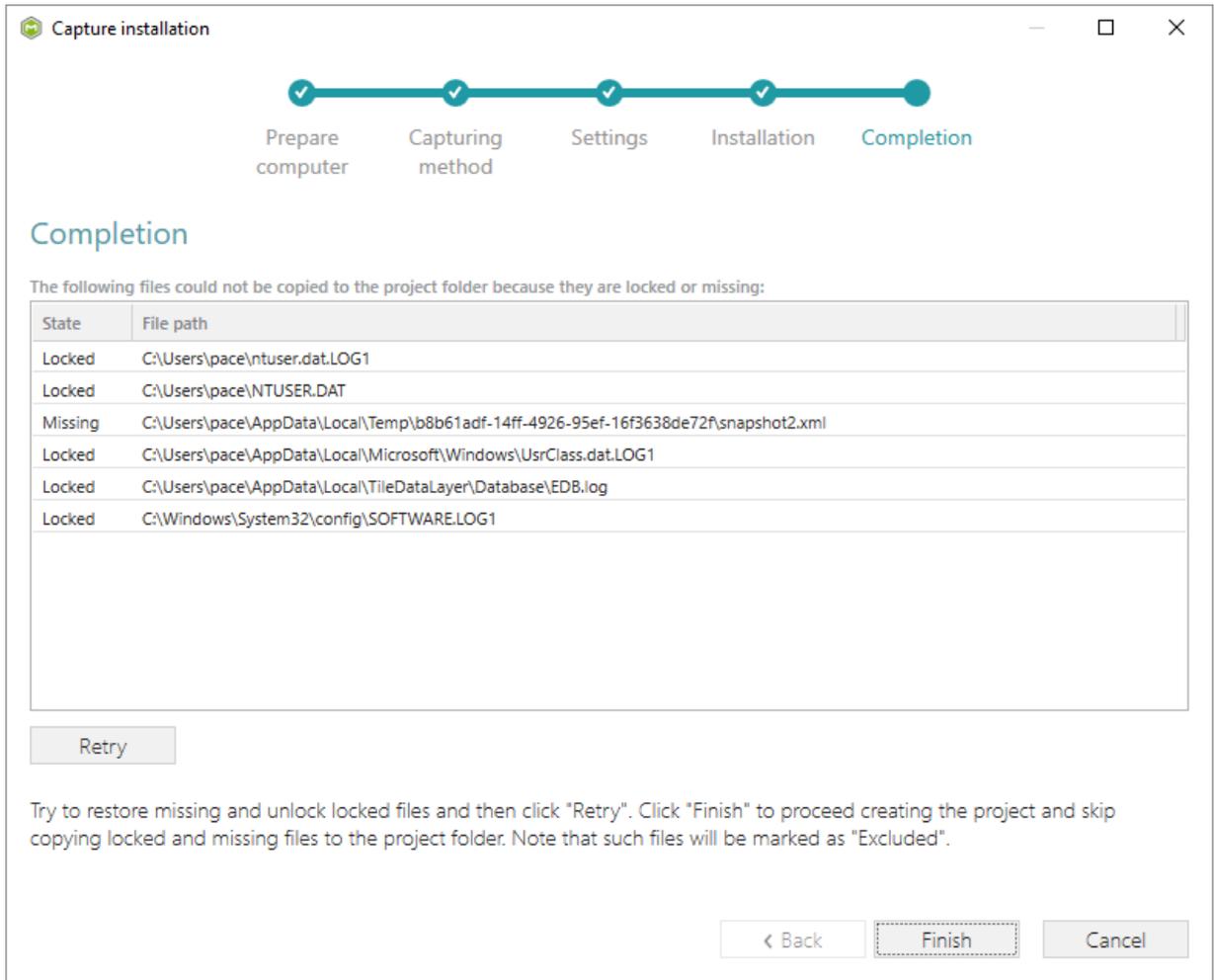
< Back Next > Cancel

[13]. Leave selected the Customize project in editor and Copy all captured files to the project folder now options are selected and click Finish.



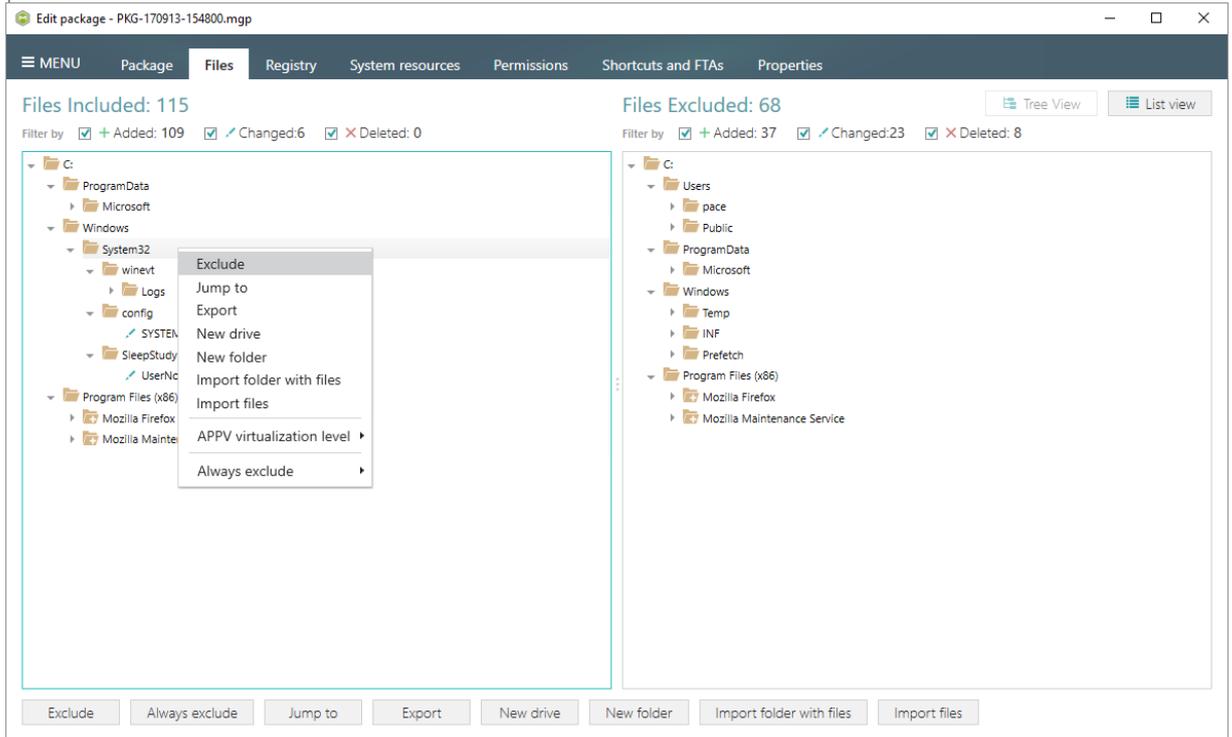
[14]. The following dialog displays captured files, which could not be copied to the project folder because they do not exist anymore or locked by the system or by an application. Try to resolve these issues and then click Retry. Click Finish to skip copying the missing

and locked files and mark them as Excluded resources.

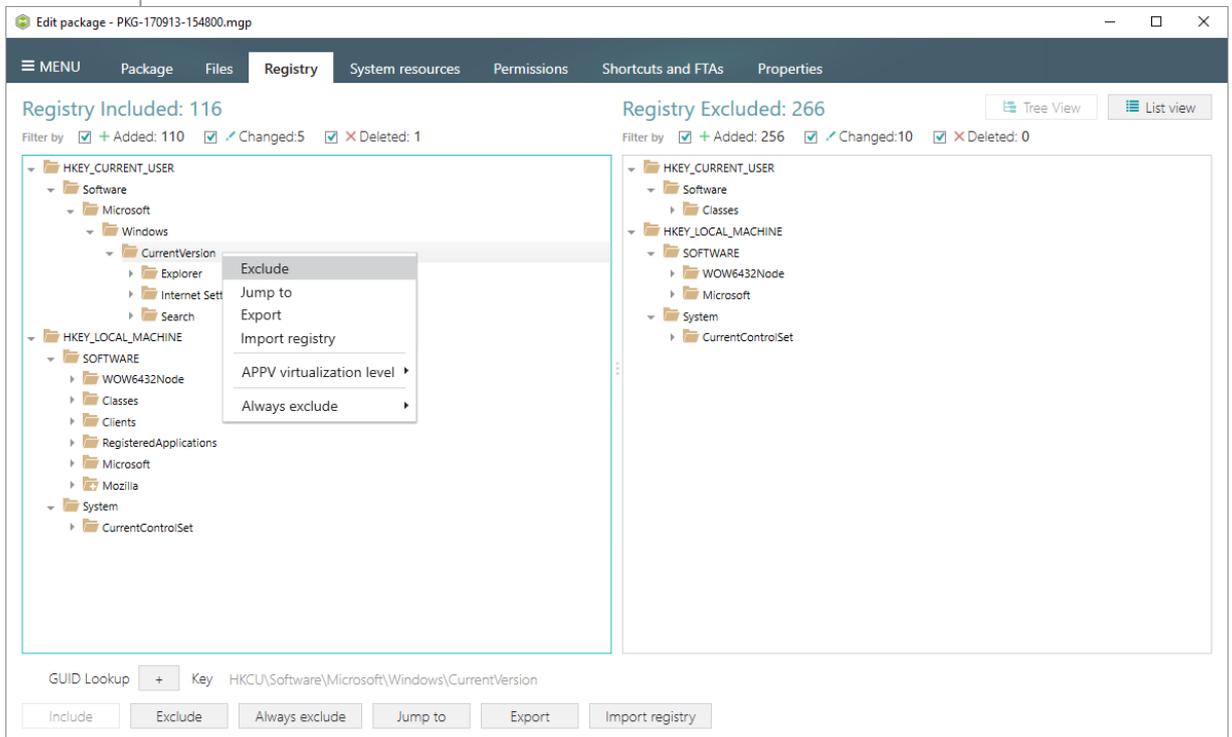


- [15]. Once the project is opened in the project editor, review the captured resources at the Files, Registry, System resources, Permissions, and Shortcuts and FTAs tabs and exclude unnecessary ones from the project. Unnecessary resources are files, registry entries, which are usually created or modified in the result of operating system work, and such resources could not be a part of your captured application. Unfortunately, there is no universal rule to discover which of captured files or registry entries should be excluded, so exclude only those ones, which almost 100% do not refer to your captured application (e.g. NOD32 antivirus files couldn't be a part of Firefox application).
- [16]. In order to review and exclude unnecessary files or folders, go to the Files tab, and select Exclude from the context menu of an item, which is located in the left 'Files Included'

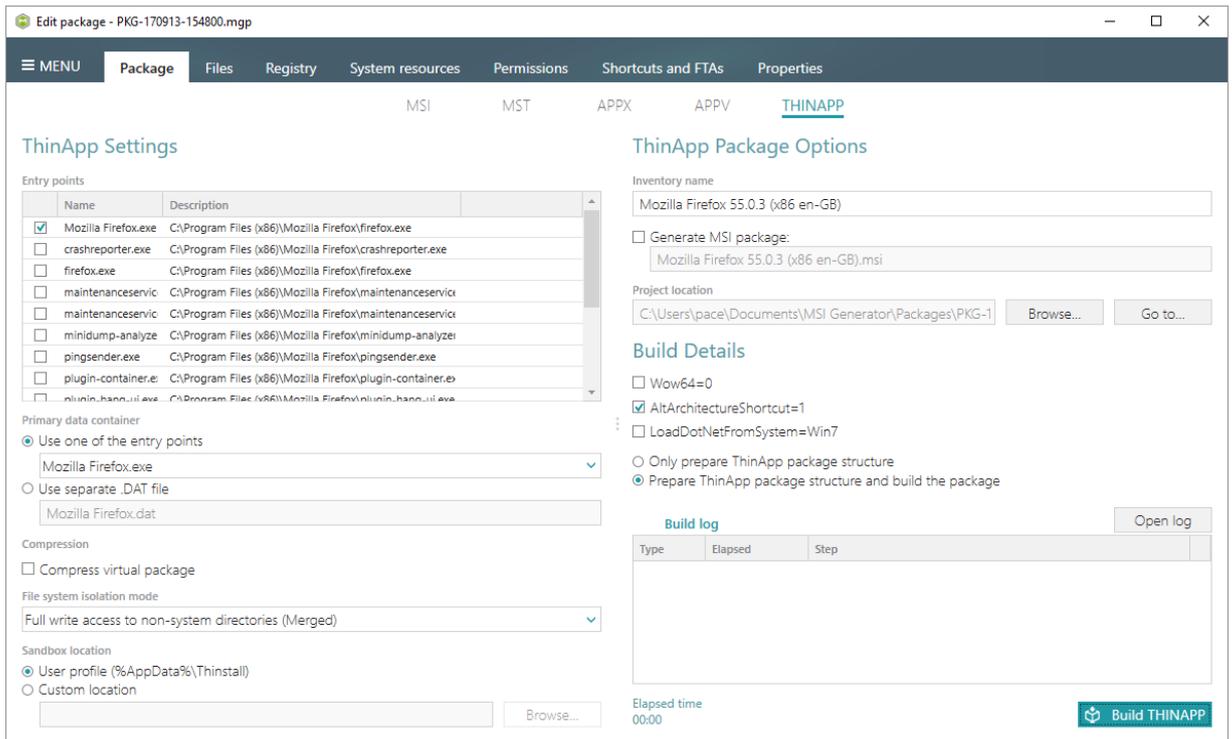
pane.



- [17]. In order to review and exclude unnecessary registry keys or values, go to the Registry tab, and select Exclude from the context menu of an item, which is located in the left 'Registry Included' pane.

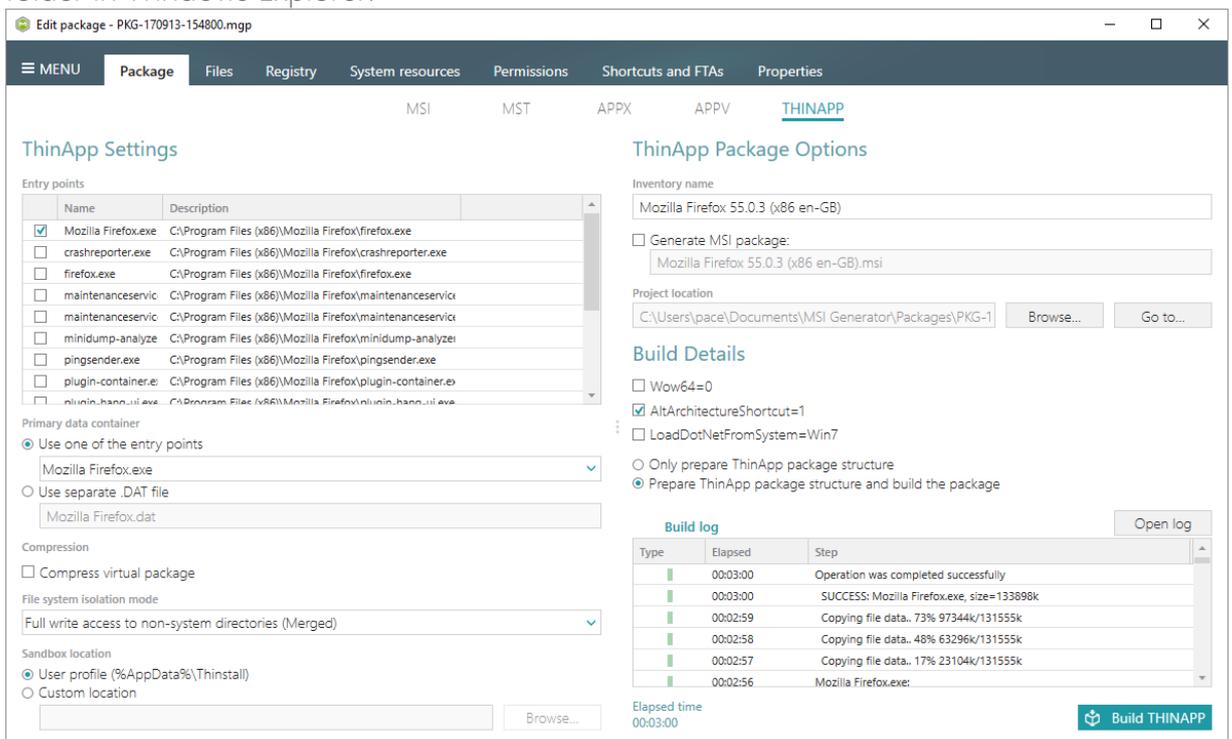


- [18]. Finally, to build THINAPP package from the project, navigate to the Package -> THINAPP tab, review Entry points (shortcuts), primary data container location and other package options, and then click Build THINAPP.



NOTE For building THINAPP packages, ensure that your system contains VMware ThinApp (5.0.0/5.0.1/5.1.0/5.1.1/5.2.0) installed. If you have installed this tool to the custom location, go to the MENU -> Settings, select the Custom ThinApp install location option and then click Browse... to choose the installation location of the VMware ThinApp tools

- [19]. Click Go to..., located next to the Project location field, to open the package containing folder in Windows Explorer.





3.7 Edit MSI/MST

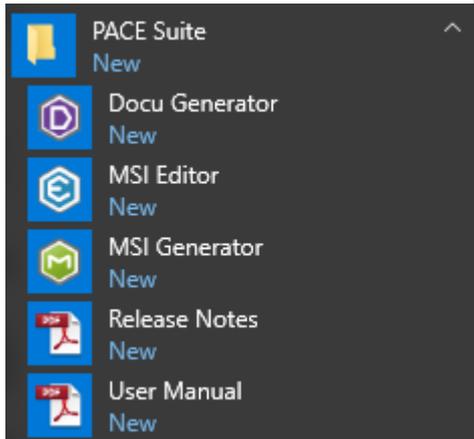
Choose a scenario that better suits your needs:

- **Manage Files and Folders**, described in section 3.7.2
Review files and folders of the package, add new system and user-defined folders, set permission settings, import files, extract COM information and .NET assemblies from the imported files.
- **Manage Registry**, described in section 3.7.3
Review registry of the package, add new registry keys and values, import registry from the REG file, and export registry to the REG file.
- **Manage Shortcuts**, described in section 3.7.4
Review shortcuts of the package, add new shortcuts to files, folders, URLs or import them from the file system.
- **Manage Custom Actions**, described in section 3.7.5
Review custom and standard actions of the package, edit and add new actions to any sequences of all installation modes.
- **Manage Device Drivers**, described in section 3.7.6
Review device drivers of the package, edit and add new drivers.

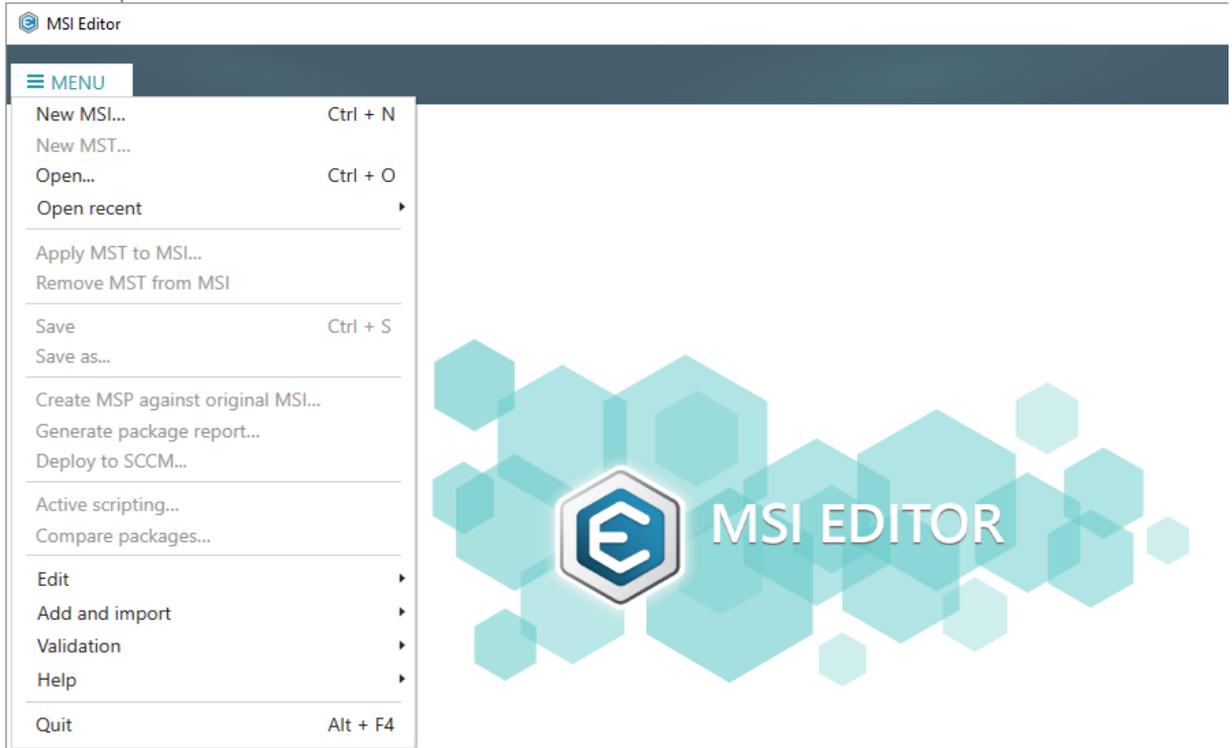
3.7.1 Pre-Condition

Open an MSI package following the instructions below:

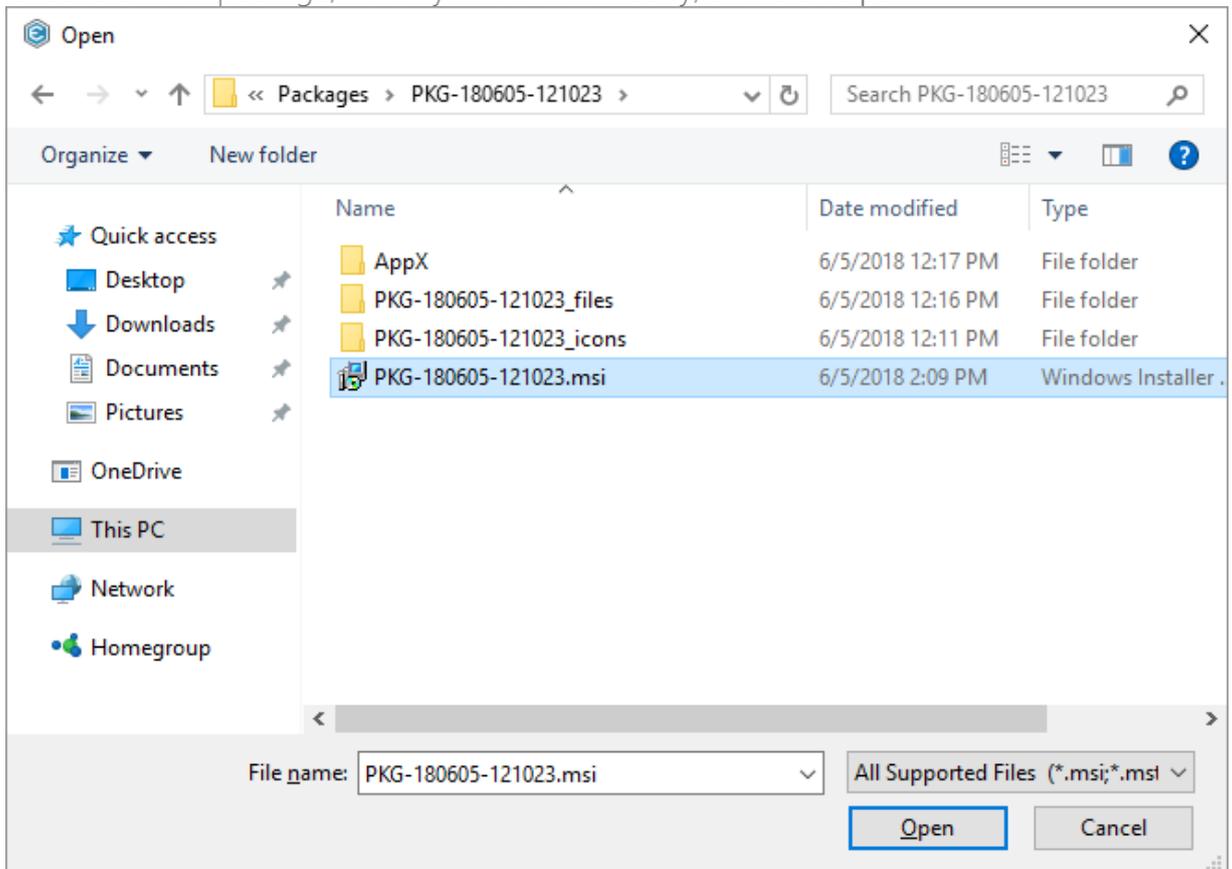
- [1]. Launch MSI Editor from the desktop or the start menu shortcut.



[2]. Select Open... from MENU.

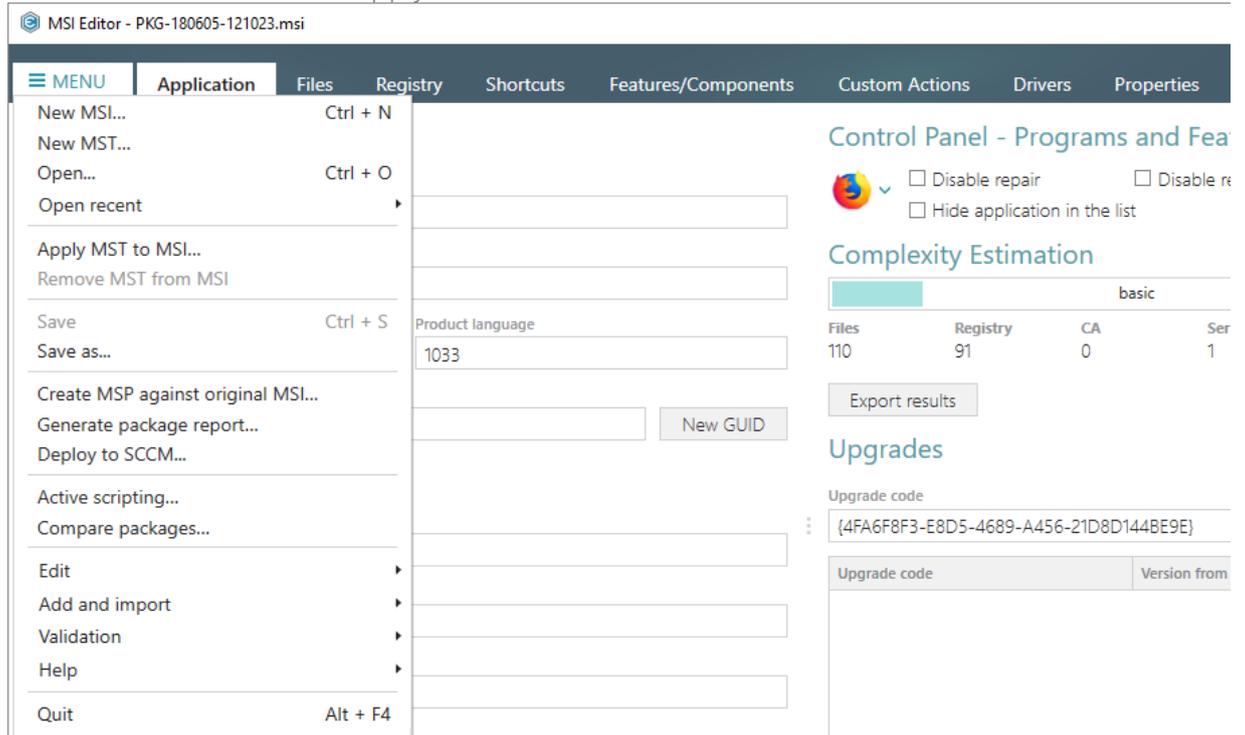


[3]. Choose an MSI package, which you want to modify, and click Open.



[4]. If you want to modify MSI package via Transform (MST), you can either apply existing MST by selecting Apply MST to MSI... from MENU and choosing an MST file or select

New MST... to create and apply a new transform file.



3.7.2 Files and Folders

Choose a scenario that better suits your needs:

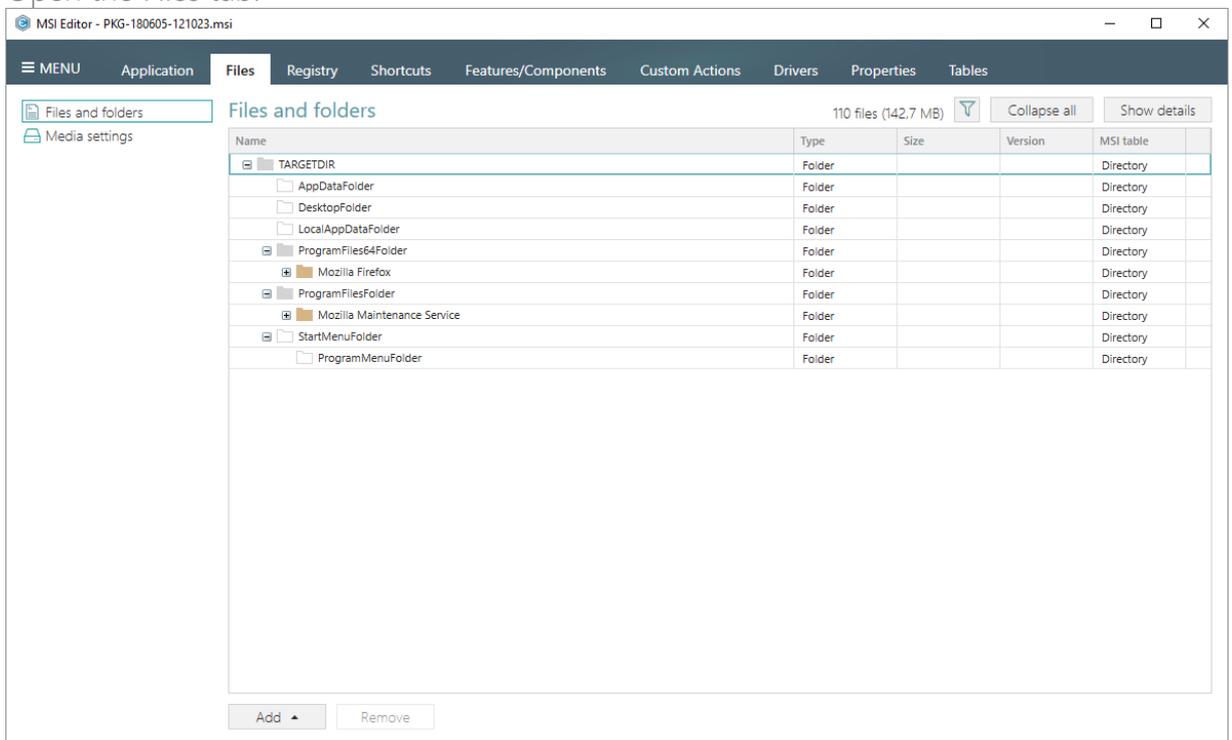
- Add System Folder, described in section 3.7.2.1
Add a system (standard) folder from the list into the package.
- Add Subfolder, described in section 3.7.2.2
Add a subfolder (user-defined folder) to the package.
- Import Files and COM, described in section 3.7.2.3
Import files with the extracted on-the-fly COM information.
- Rebuild All Files, described in section 3.7.2.4
Rebuild the whole package with the selected compression type.
- Set Permissions, described in section 3.7.2.5
Set custom permissions for the file or the folder.
- Remove Permissions, described in section 3.7.2.6
Locate files and folders with custom permissions and remove the unnecessary permissions.
- Move to Folder, described in section 3.7.2.7
Move a file or a folder from one folder to another.
- Set as INSTALLDIR, described in section 3.7.2.8
Set a subfolder (user-defined folder) of the package as the INSTALLDIR.

- Edit INI File, described in section 3.7.2.9
Edit a name, a destination location and a content of the INI file, which has been read from the IniFile table.
- Edit File Properties, described in section 3.7.2.10
Edit a file name, an identifier, a destination location, a component and many other attributes of the binary file, which has been read from the File table.
- Edit Folder Properties, described in section 3.7.2.11
Edit a folder target and source name, an identifier, a parent folder.

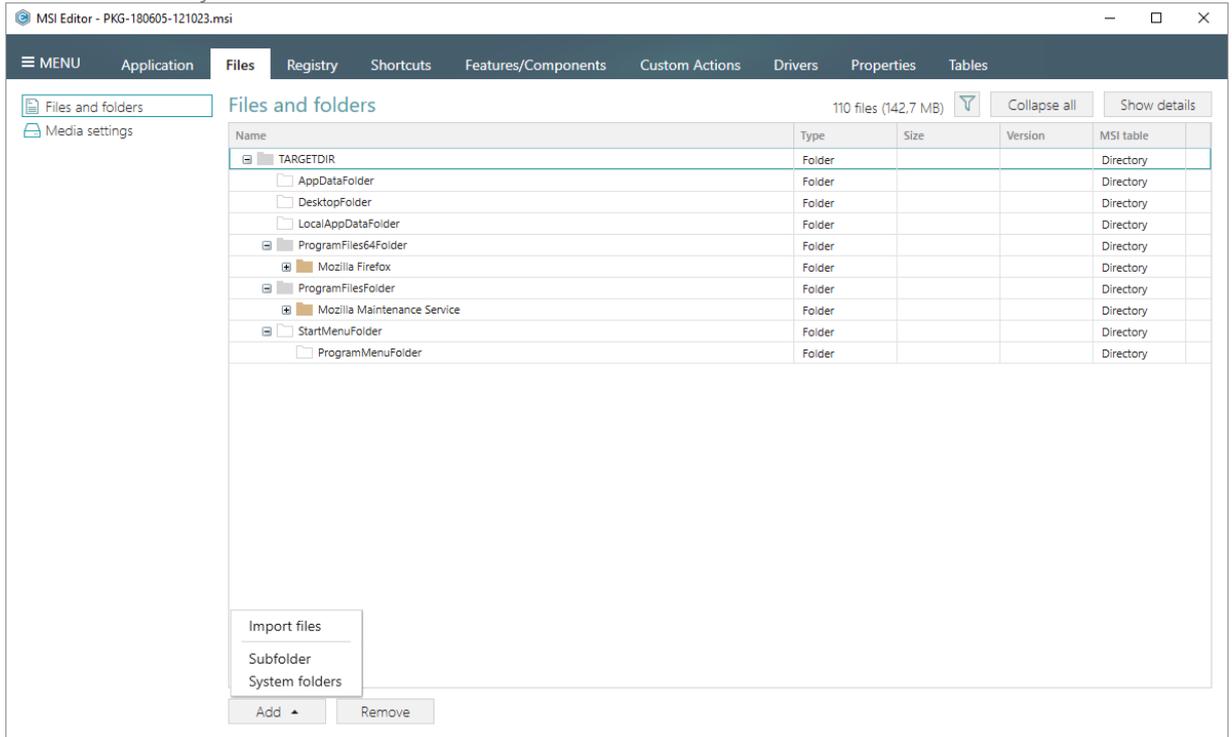
3.7.2.1 Add System Folder

Add a system (standard) folder from the list into the package.

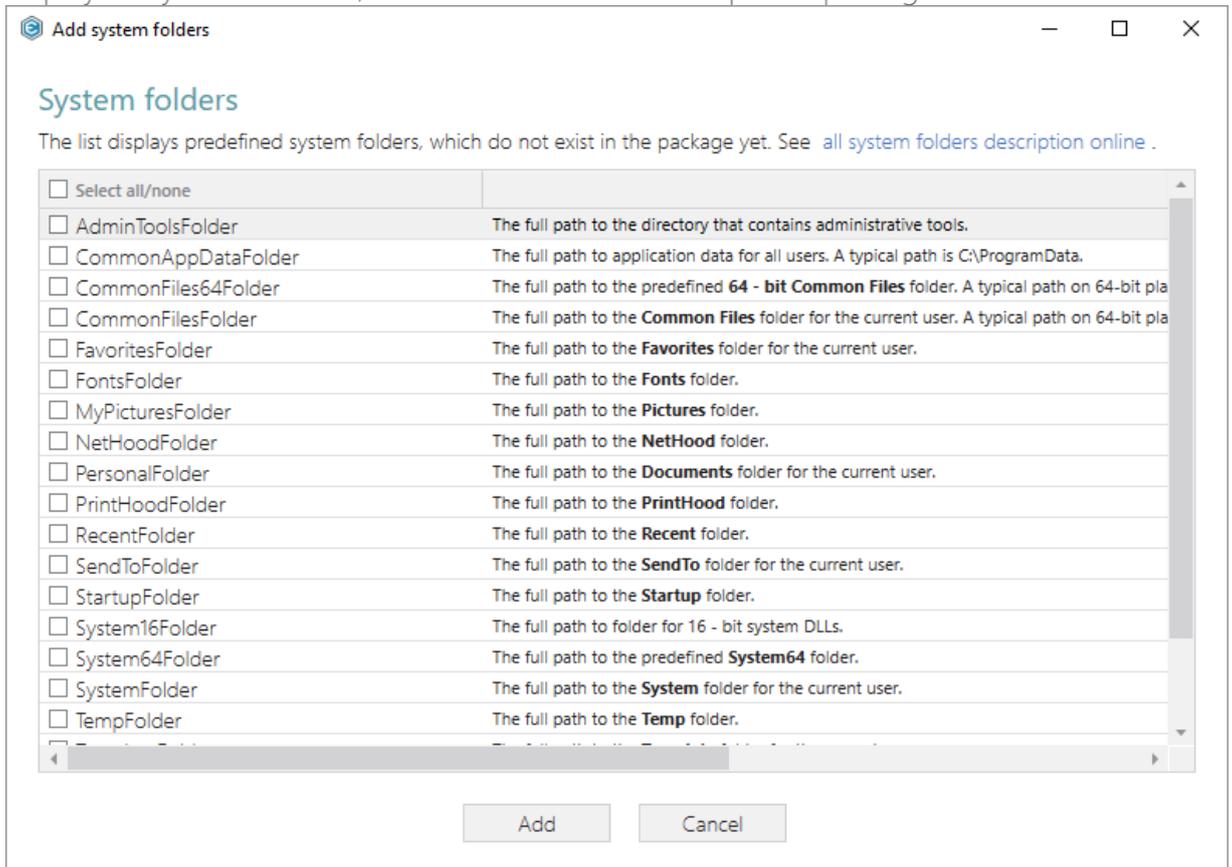
[1]. Open the Files tab.



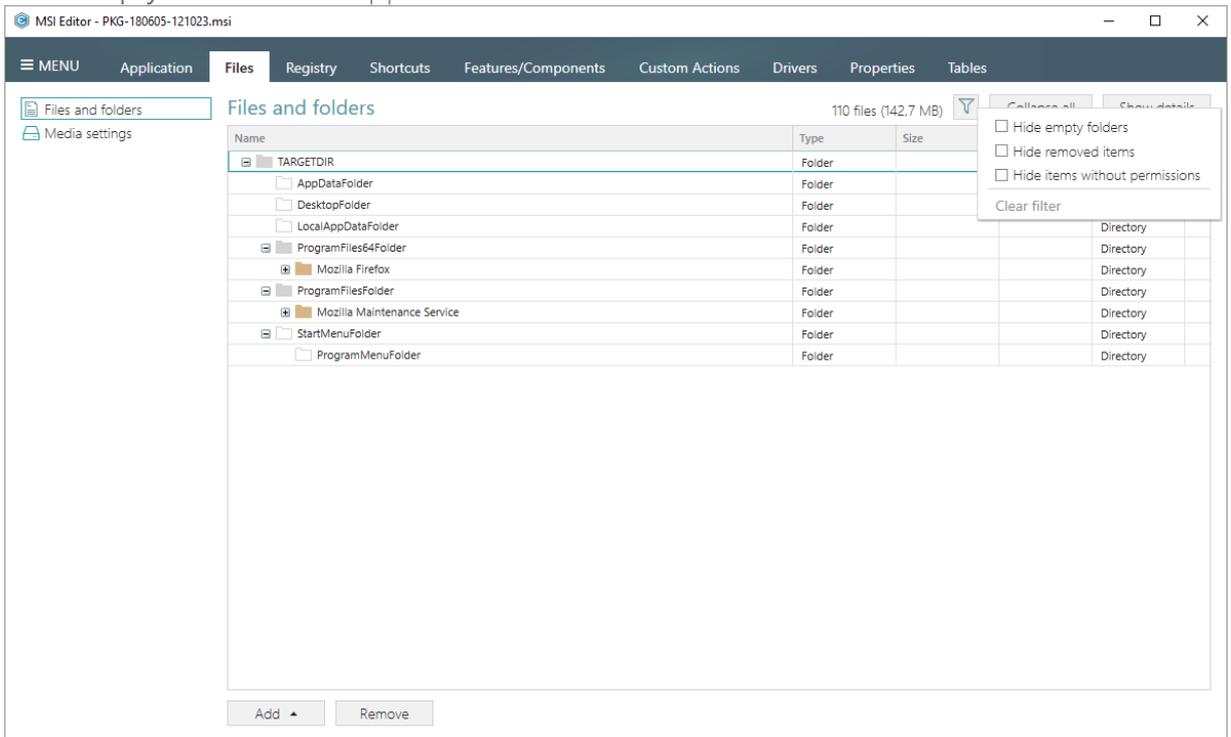
[2]. Click Add -> System folders.



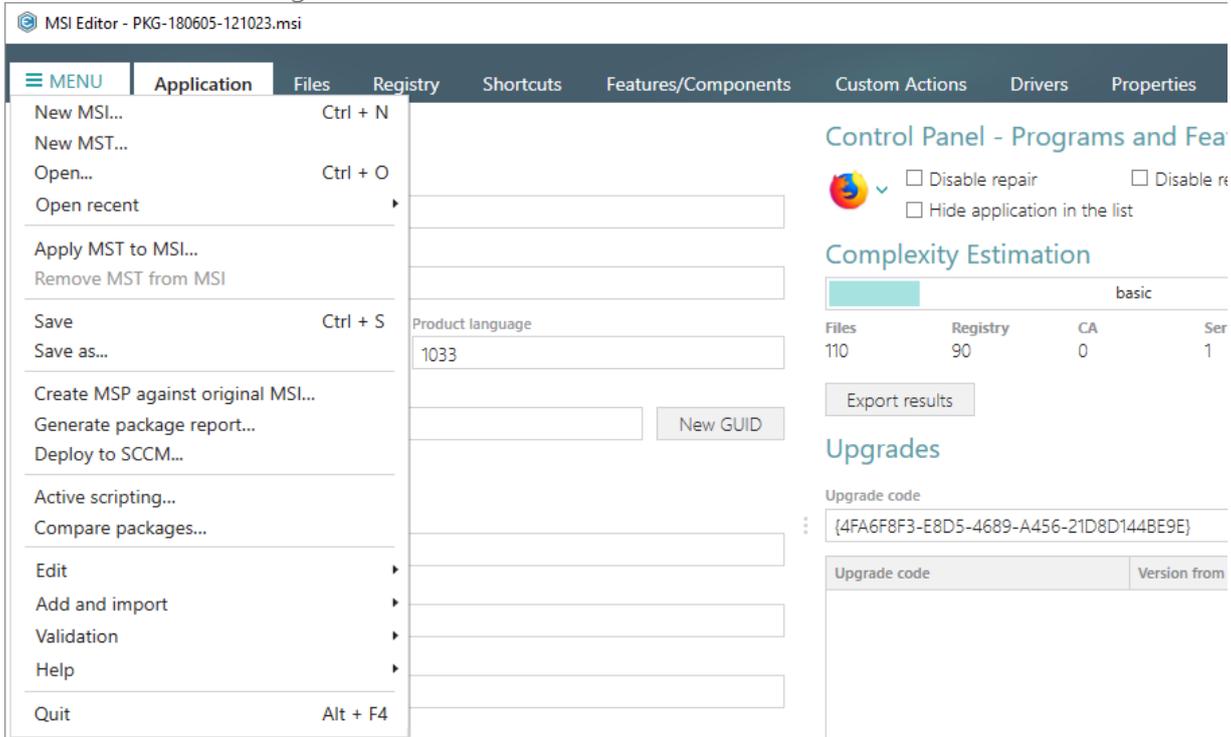
[3]. Choose the necessary system folders from the list and click Add. Note that this list displays only those folders, which do not exist in the opened package.



- [4]. If you cannot find the specific folder in the list and on the Files tab, ensure that the filter Hide empty folders is not applied.



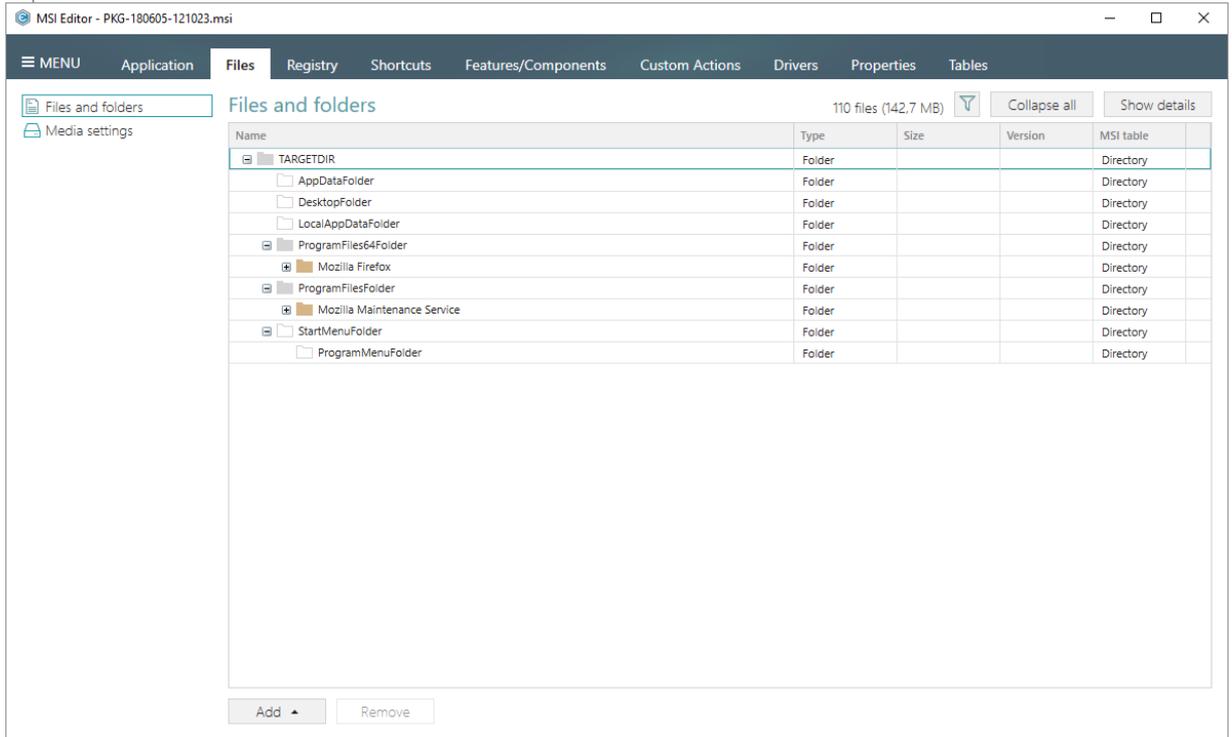
- [5]. In order to save changes, select Save from MENU.



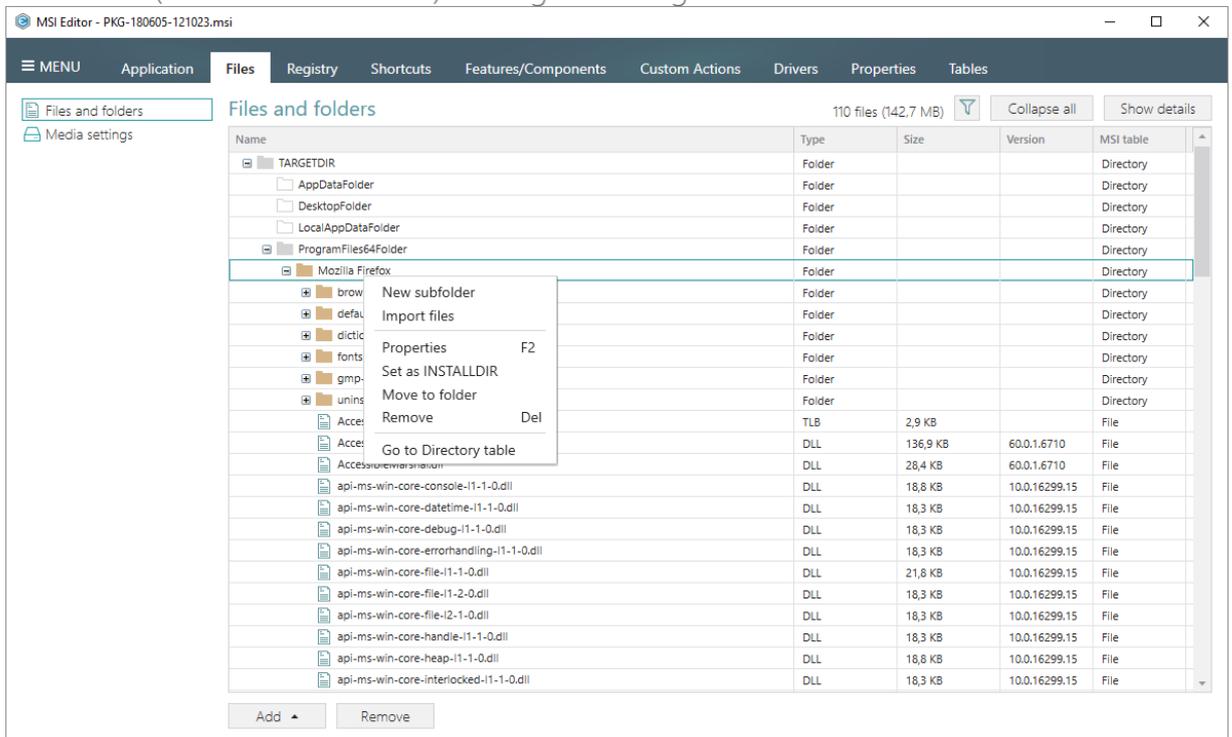
3.7.2.2 Add Subfolder

Add a subfolder (user-defined folder) to the package.

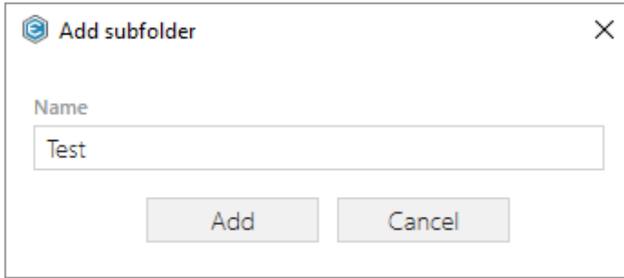
[1]. Open the Files tab.



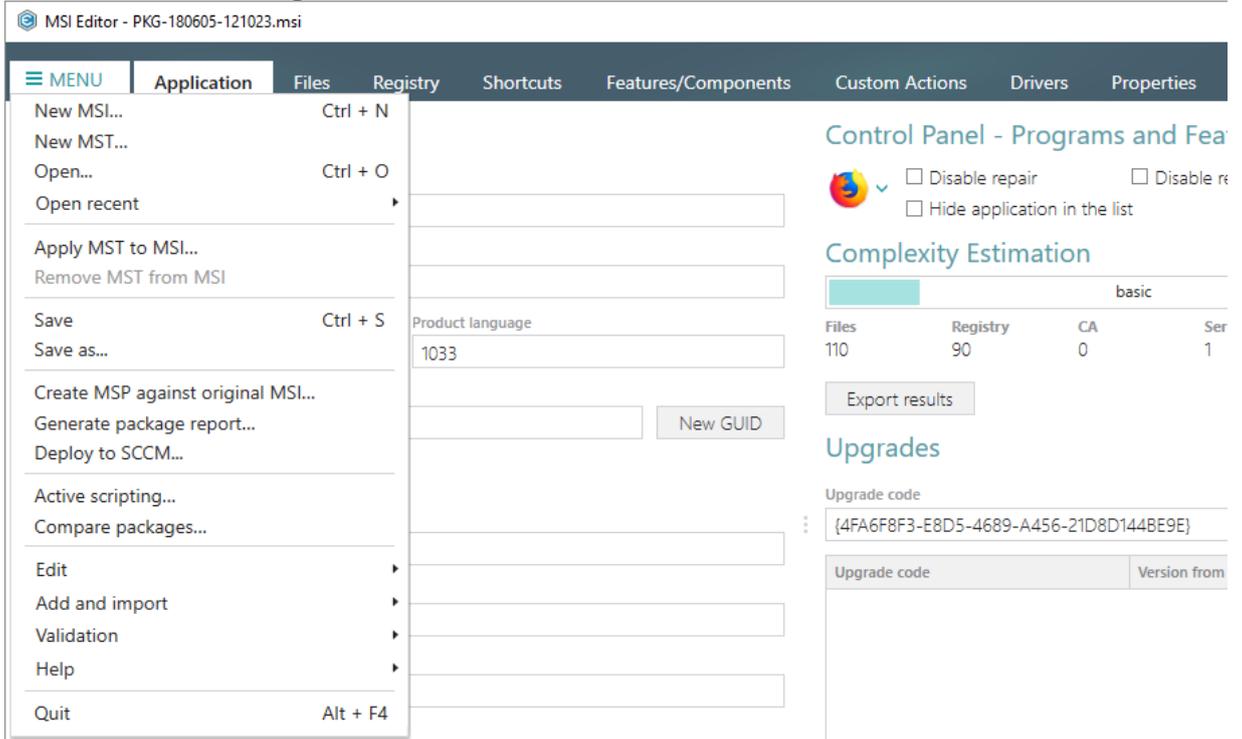
[2]. Select New subfolder from the context menu of a folder, where you want to create a new subfolder. Note that system folders are displayed using the grey folder icon and the subfolders (user-defined folders) – using the orange folder icon.



[3]. Enter a folder name and click Add.



[4]. In order to save changes, select Save from MENU.

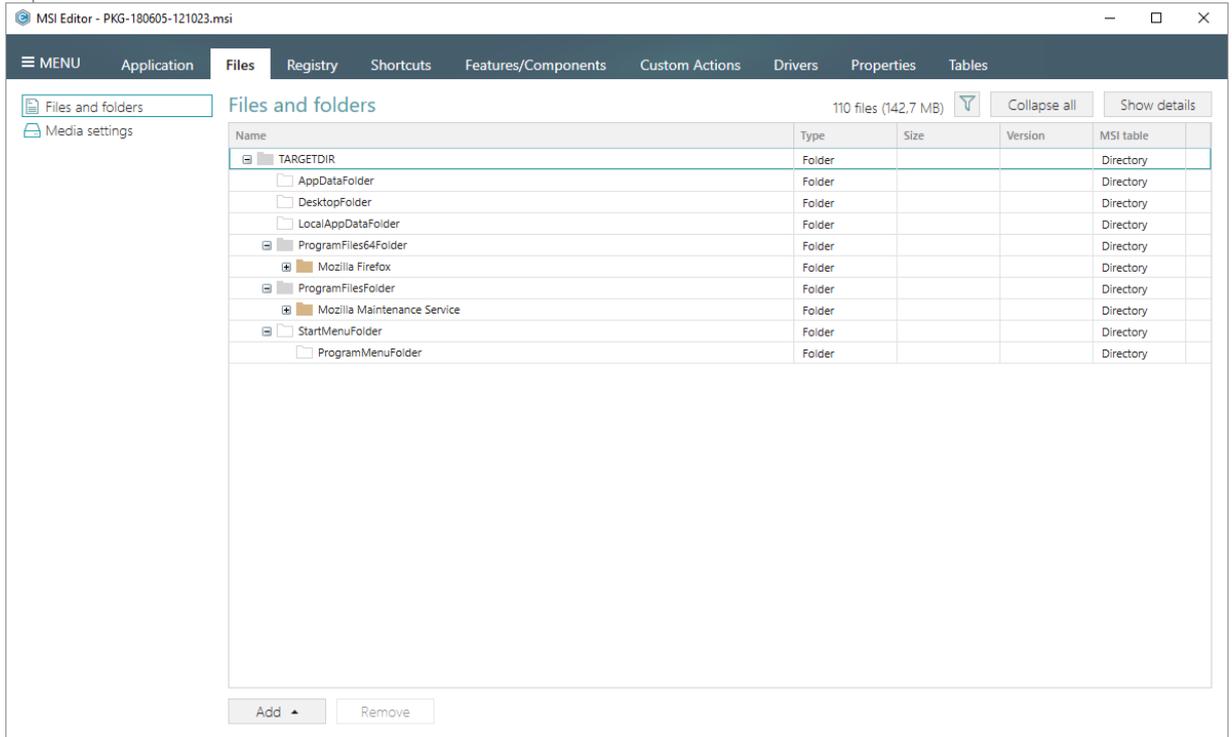


3.7.2.3 Import Files and COM

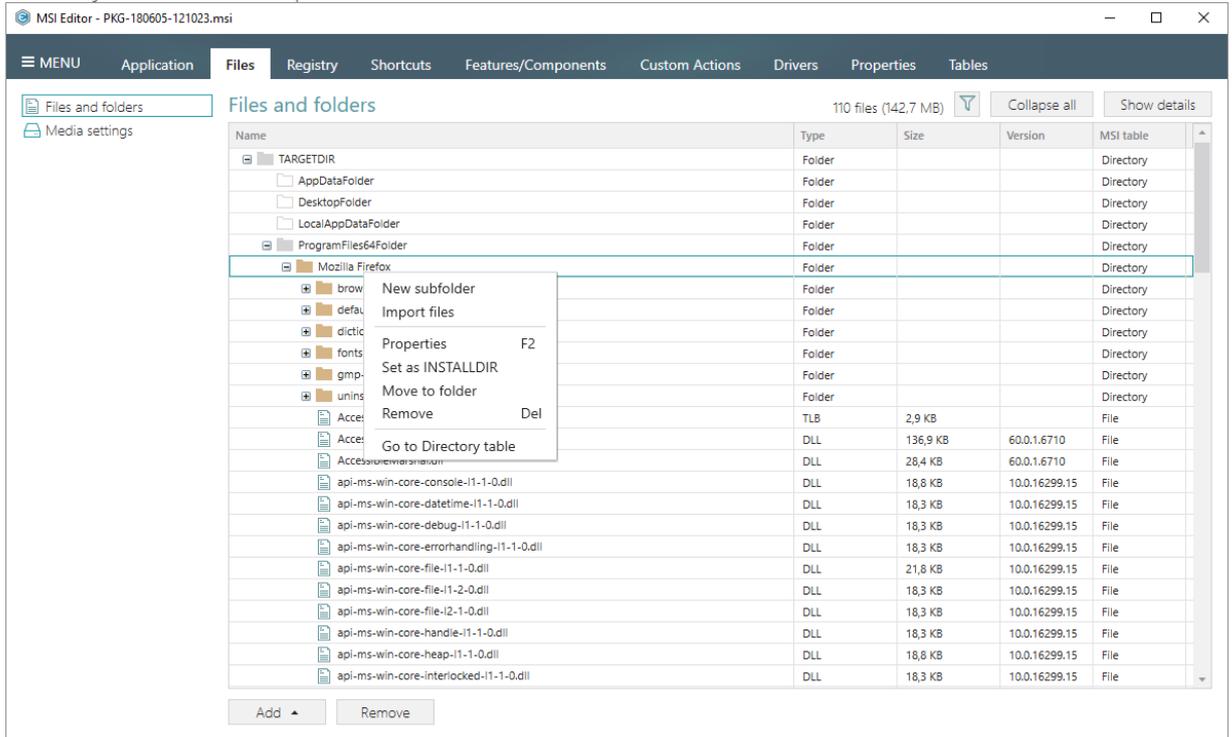
Import files with the extracted on-the-fly COM information.

NOTE MSI Editor allows extracting and importing to the package both 32-64 bit COM information and .NET assemblies from the selected (*.DLL, *.OCX, *.LTB) files.

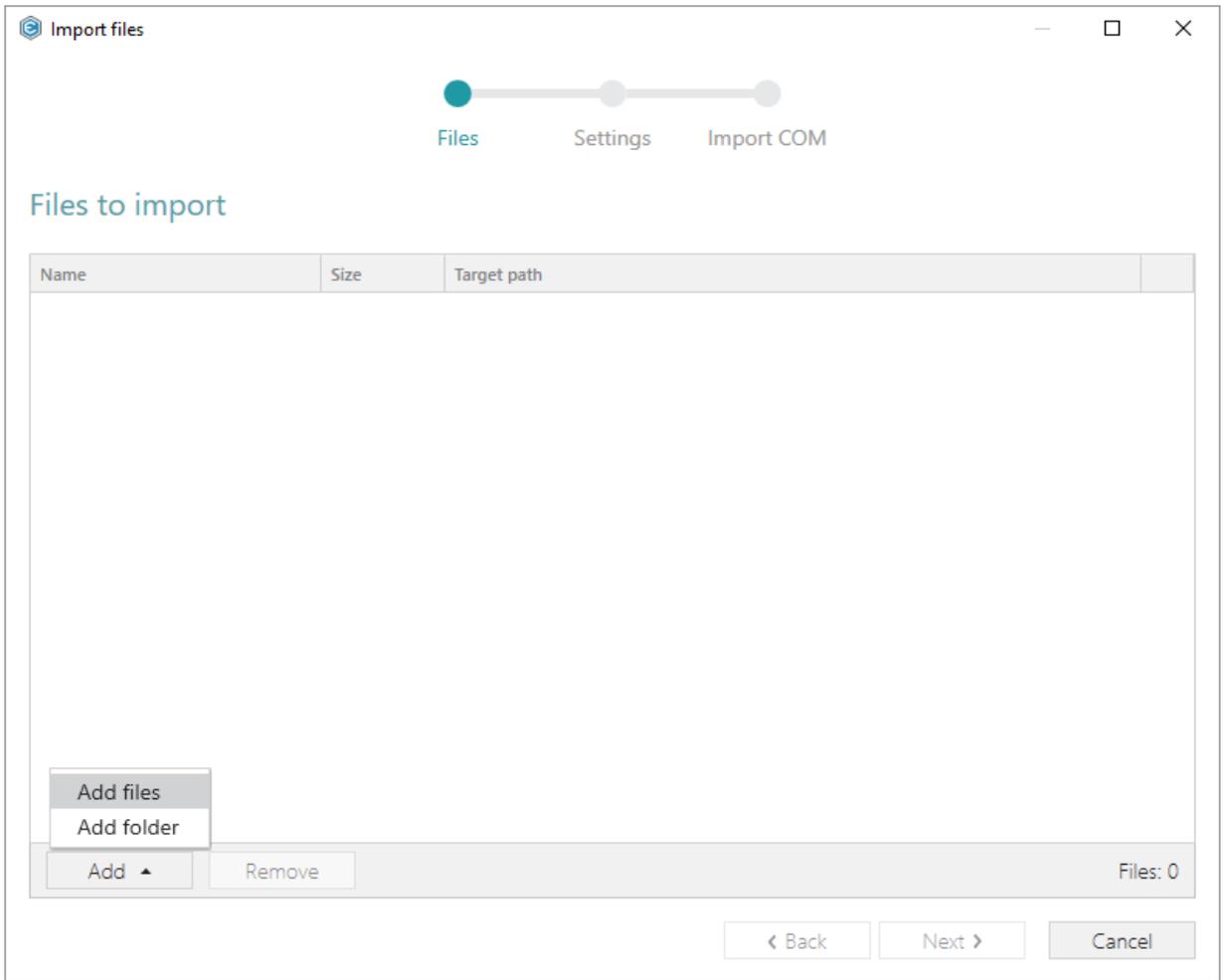
[1]. Open the Files tab.



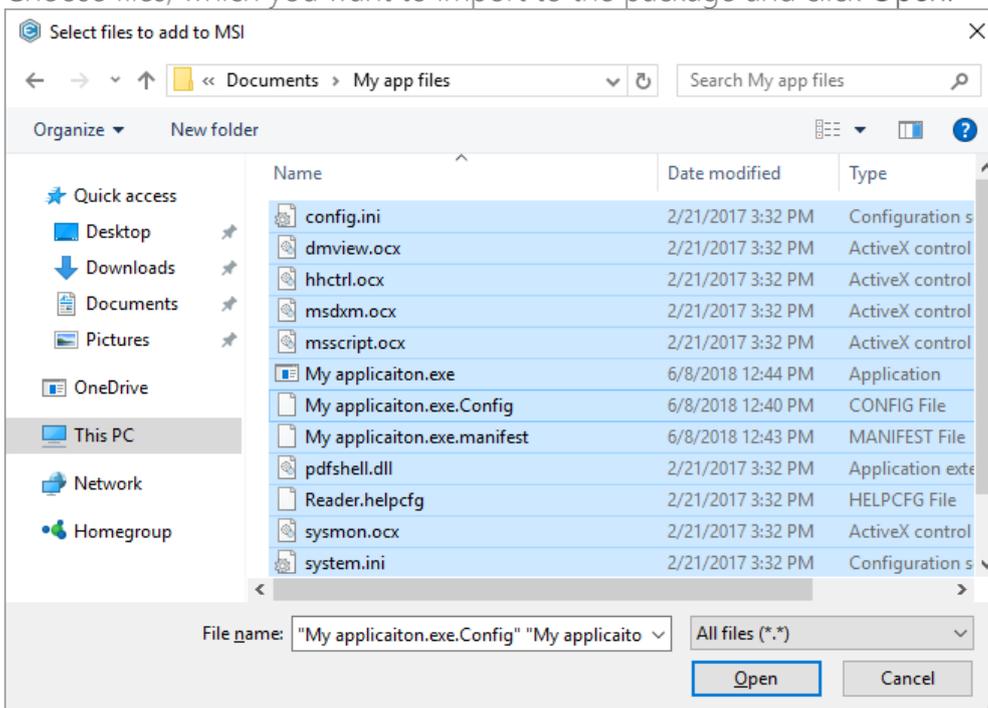
[2]. For adding files to your package, select Import files from the context menu of a folder, to which you want to import files.



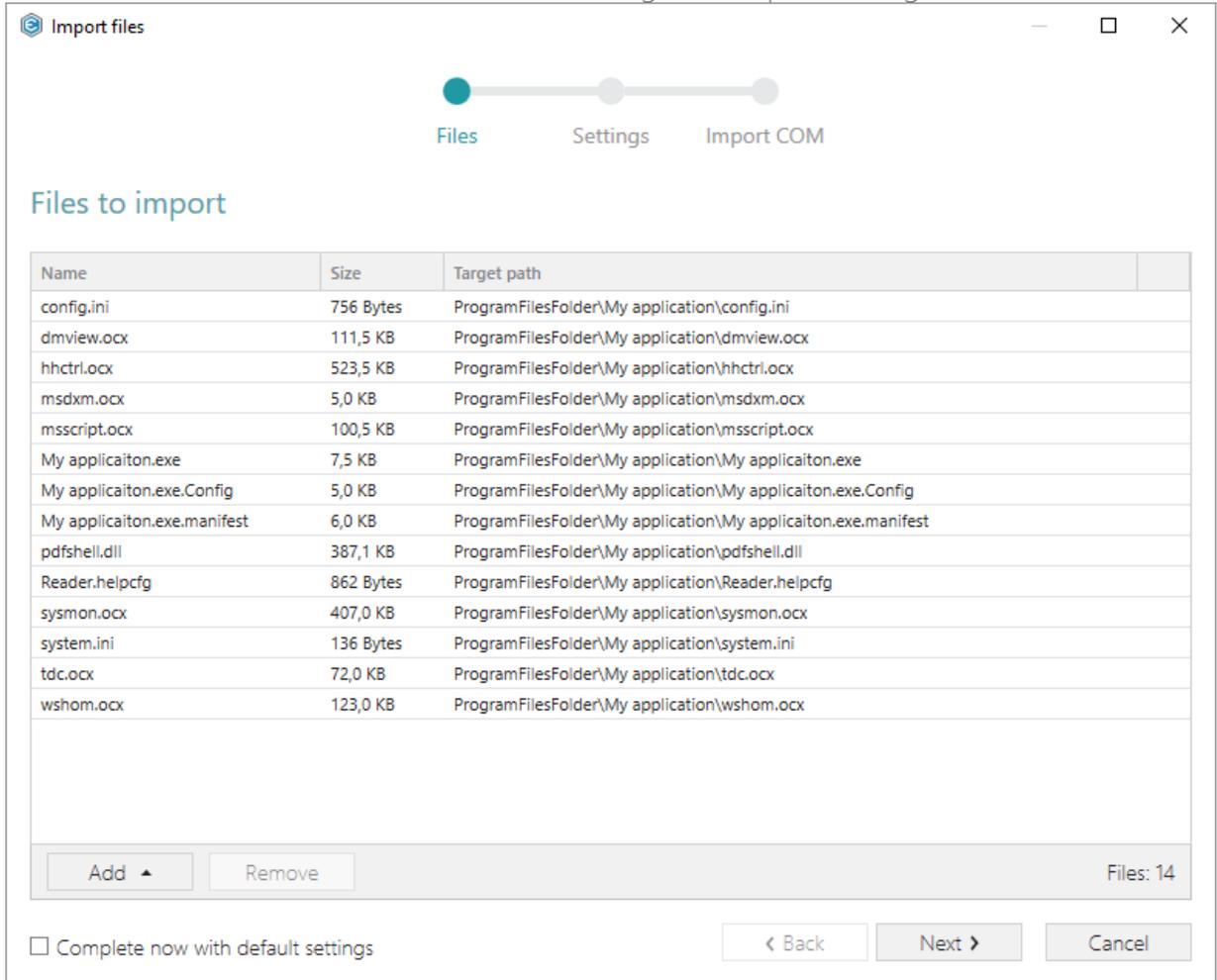
- [3]. Click Add -> Add files to choose files in a folder or Add -> Add folder to choose a folder with subfolders and files.



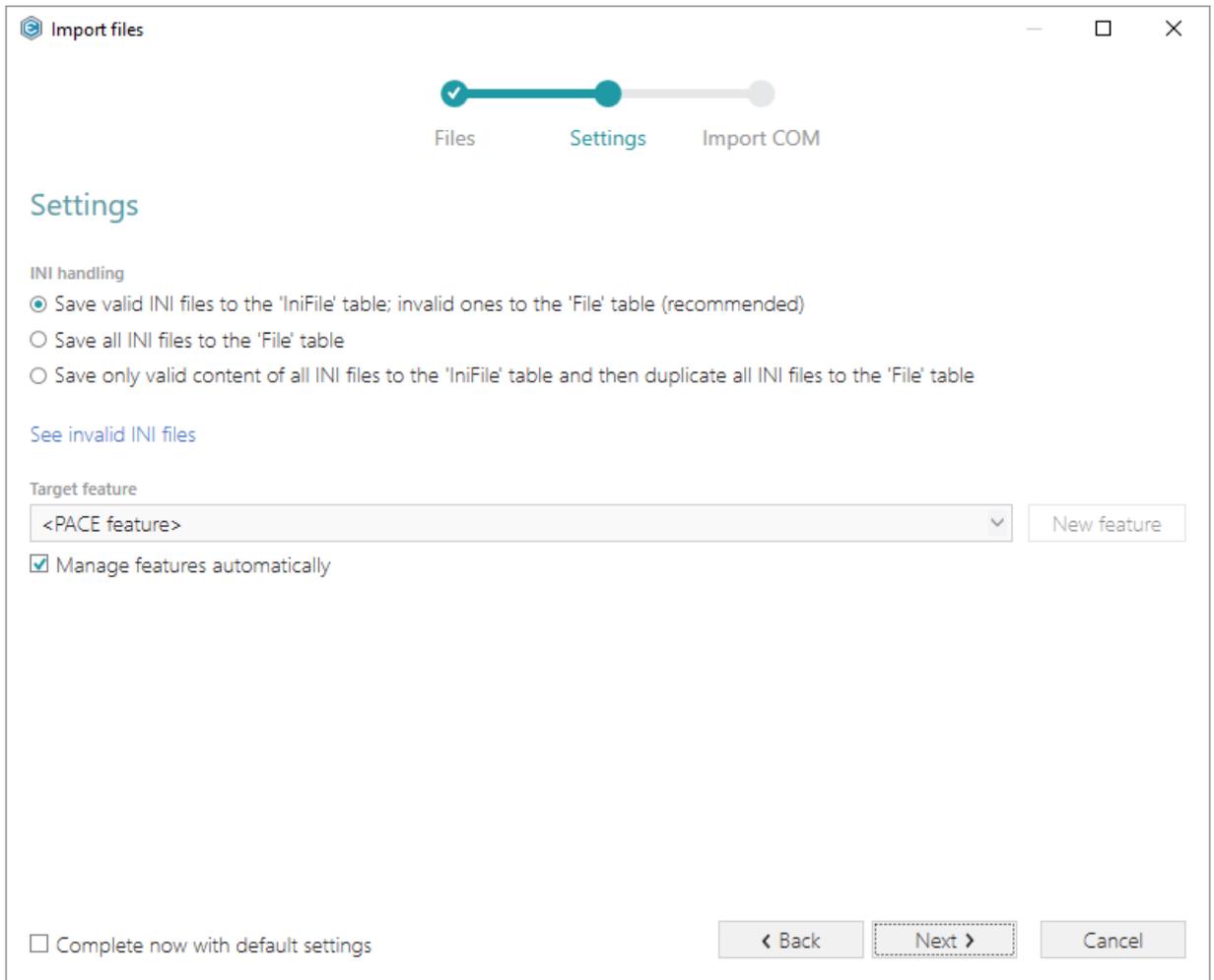
- [4]. Choose files, which you want to import to the package and click Open.



[5]. Review the selected files and click Next to manage the import settings.



[6]. At this step, you can manage how to save INI files, select an MSI Feature, to which components with files will be assigned. Below, in the tables, you will find the detailed description of these settings. Note that files compression types and other Media settings are represented in the Media settings section of the Files tab. Choose the desired settings and click Next to continue.



INI handling

Save valid INI files to the 'IniFile' table; invalid ones to the 'File' table (recommended)

INI files, which comply with the INI file format, will be saved to the 'IniFile' table. All other INI files, which contain unsupported data, will be saved to the 'File' table as binary files.

Save all INI files to the 'File' table

All INI files will be saved only to the 'File' table as binary files.

Save only valid content of all INI files to the 'IniFile' table and then duplicate all INI files to the 'File' table

A valid content of all INI files will be saved to the 'IniFile' table, and then all INI files will be saved to the 'File' table as binary files. This allows installing INI files to the target system keeping their original structure with unsupported data, and update the necessary INI file values.

Target feature

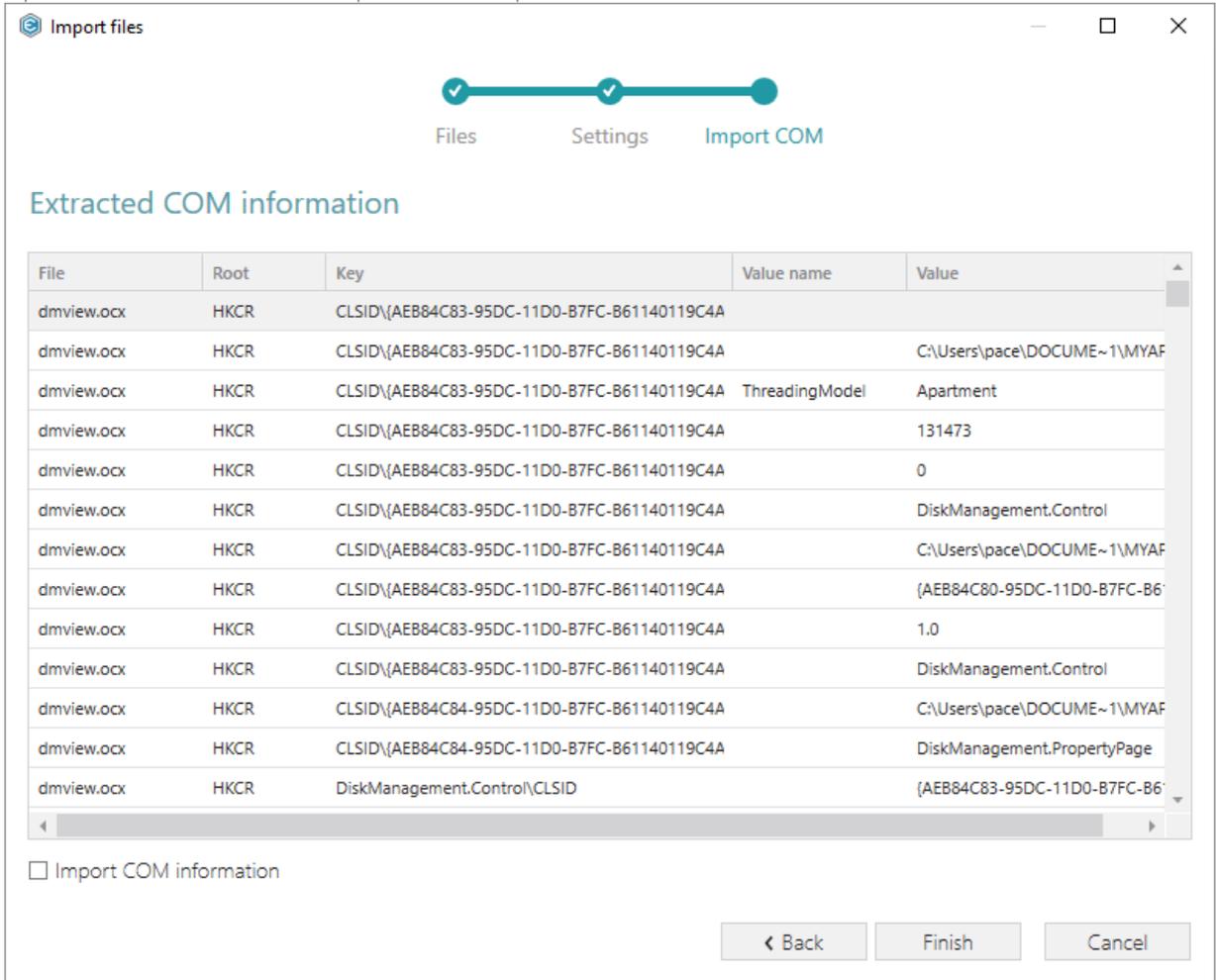
Manage features automatically

The specific PACE features will be created (or used if they exist) for the components, containing the imported files. Feature structure is based on the packaging best practices and depends on the destination location of files.

<a feature, selected from the list>

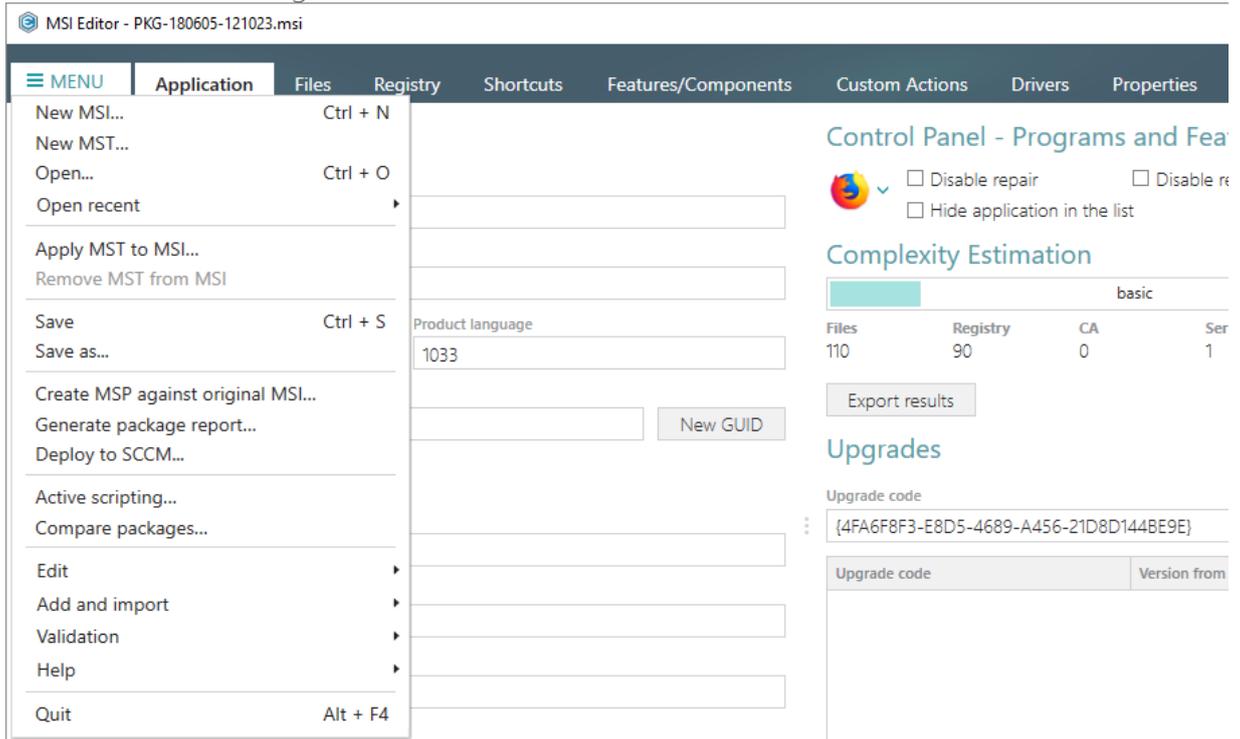
Components with files will be assigned to a feature, selected from the list.

- [7]. On the last step you can review COM information, extracted from the selected files. For importing this COM information along with files, select the Import COM information option. Click Finish to complete the import.



- [8]. Go to the Media settings section of the Files tab and choose the necessary compression type for the imported files. For the compressed files you can manage cabinet options such as CAB name, compression algorithm and maximum CAB size. Cabinets will be split by the selected maximum size.

[9]. In order to save changes, select Save from MENU.

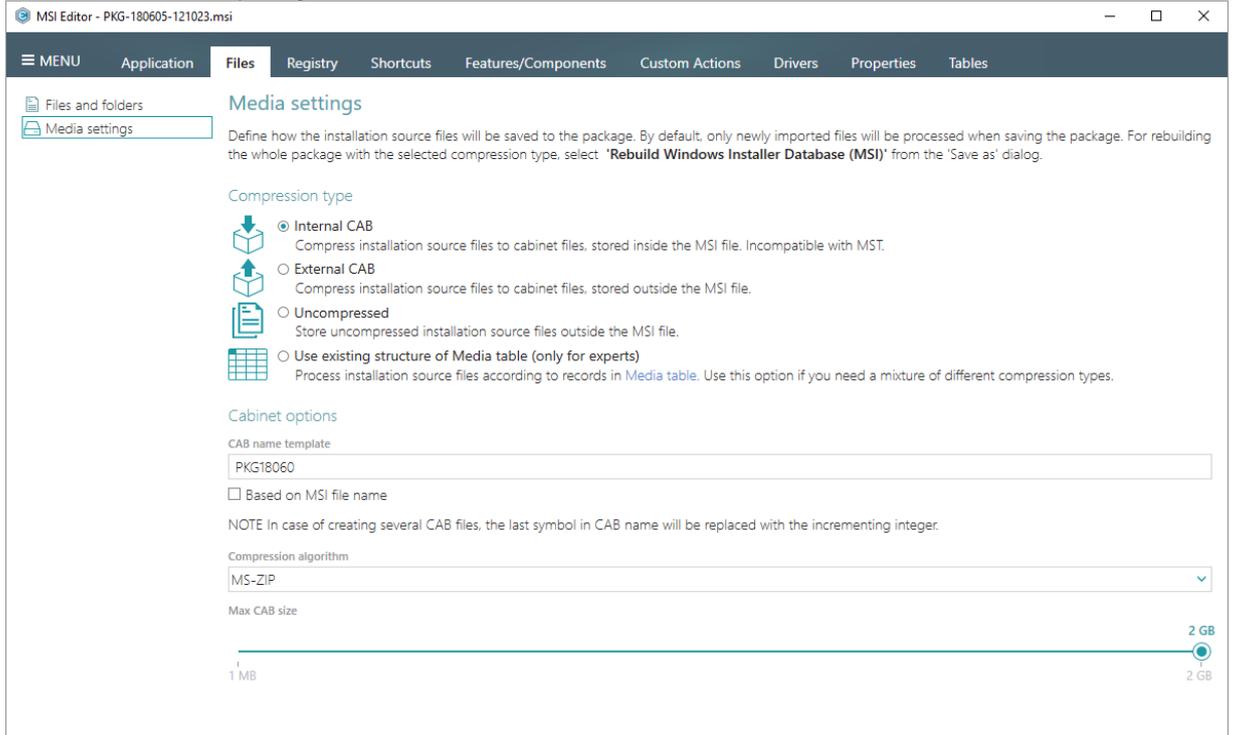


3.7.2.4 Rebuild All Files

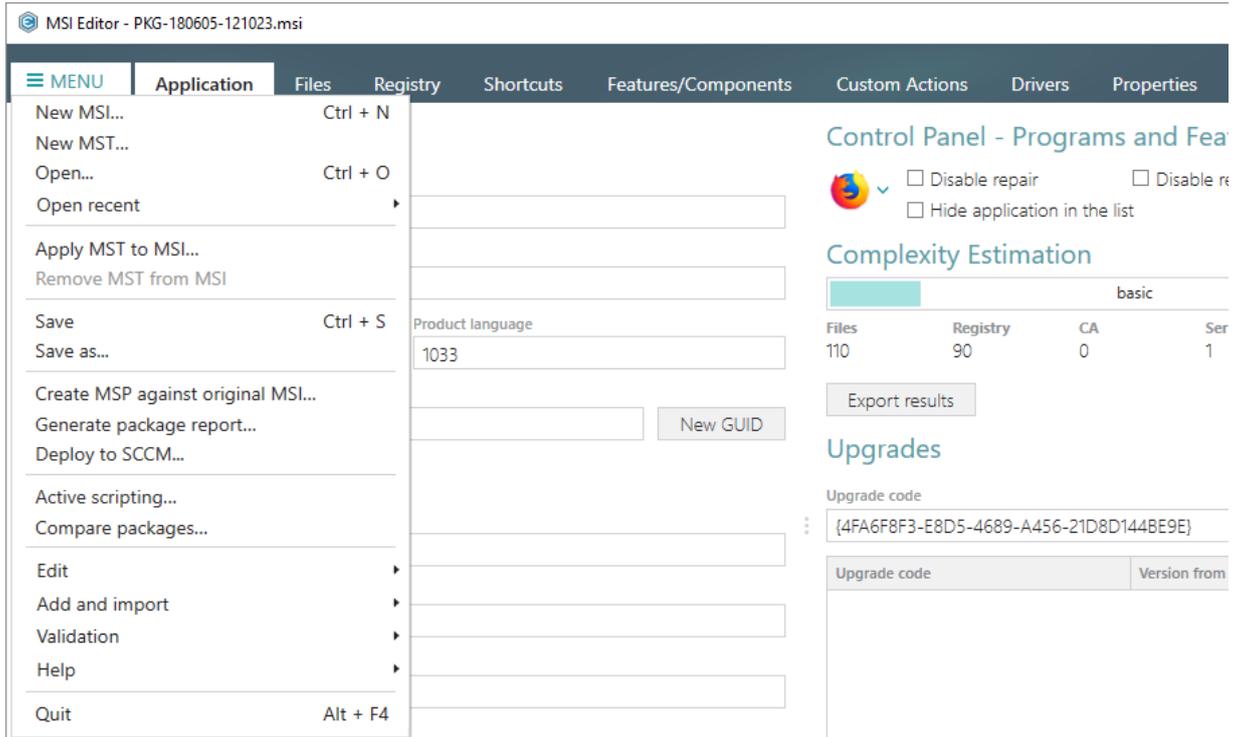
Rebuild the whole package with the selected compression type. For this, all your changes will be merged with MSI and saved as a new MSI package in the location, which you select. Then, all files of this MSI package will be extracted and then saved again using the selected compression type and cabinet options.

[1]. Open the Files tab and select the **Media settings** section. Select the desired compression type that will be applied to all package files. For the compressed options you can manage cabinet options such as CAB name, compression algorithm and maximum CAB size.

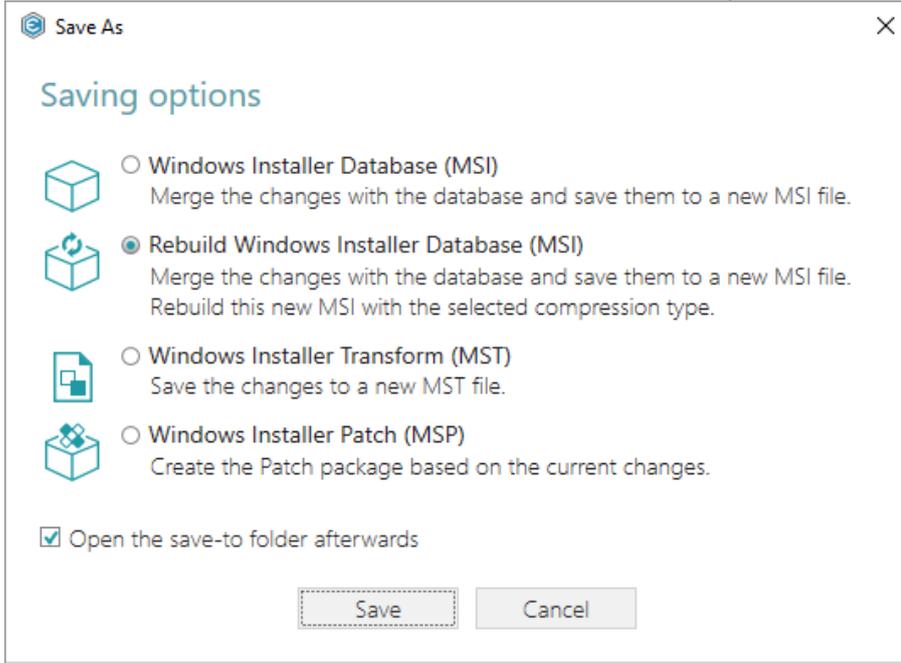
Cabinets will be split by the selected maximum size.



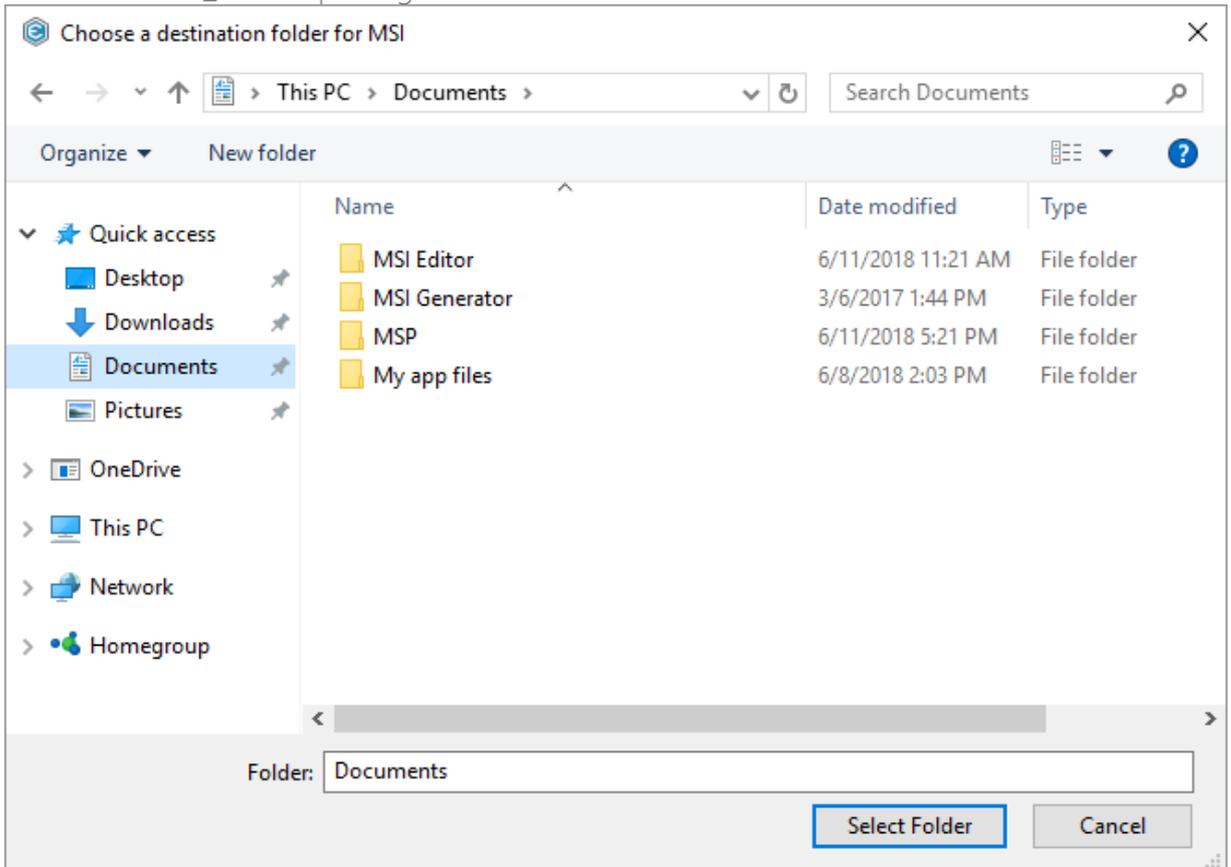
[2]. Select Save as from MENU.



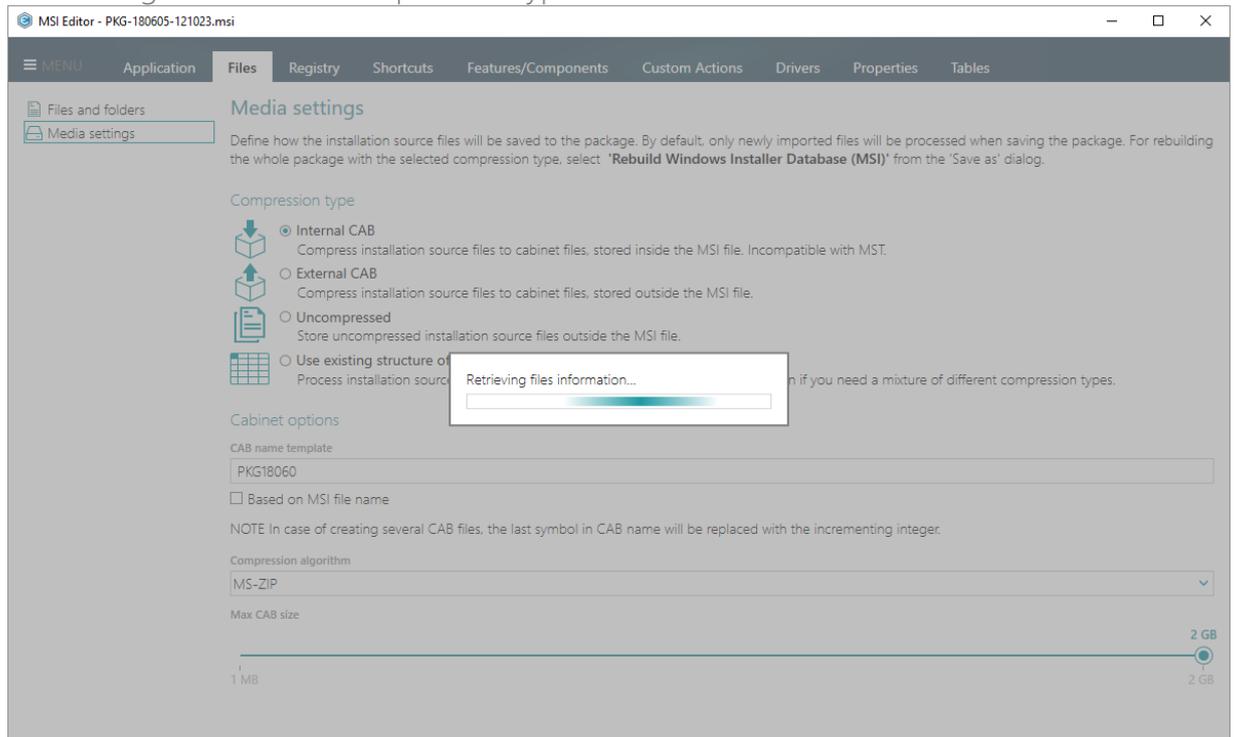
[3]. Select the Rebuild Windows Installer Database (MSI) option and click Save.



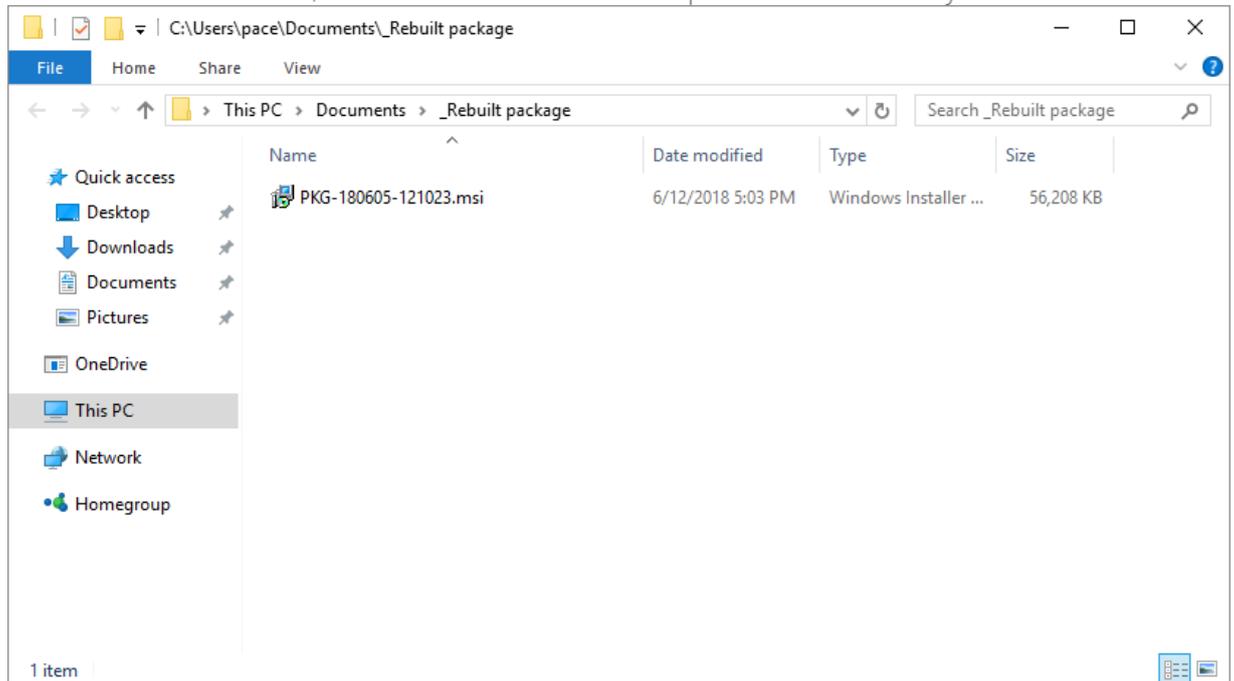
[4]. Choose a destination folder, where the rebuilt MSI will be saved and click Select Folder. Note that the “_Rebuilt package” folder will be created in the selected folder.



- [5]. Wait a little, while the MSI Editor is extracting all files from the package and processing them using the selected compression type.



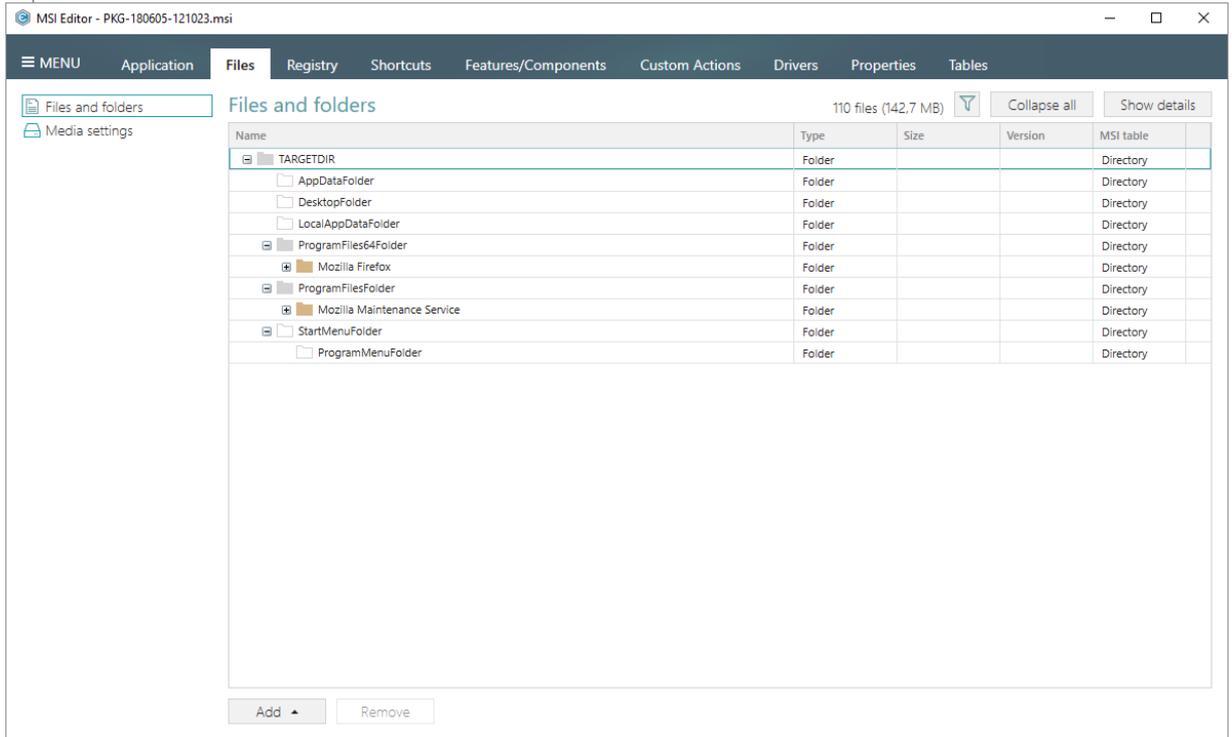
- [6]. Once the MSI is rebuilt, the save-to folder will be opened automatically.



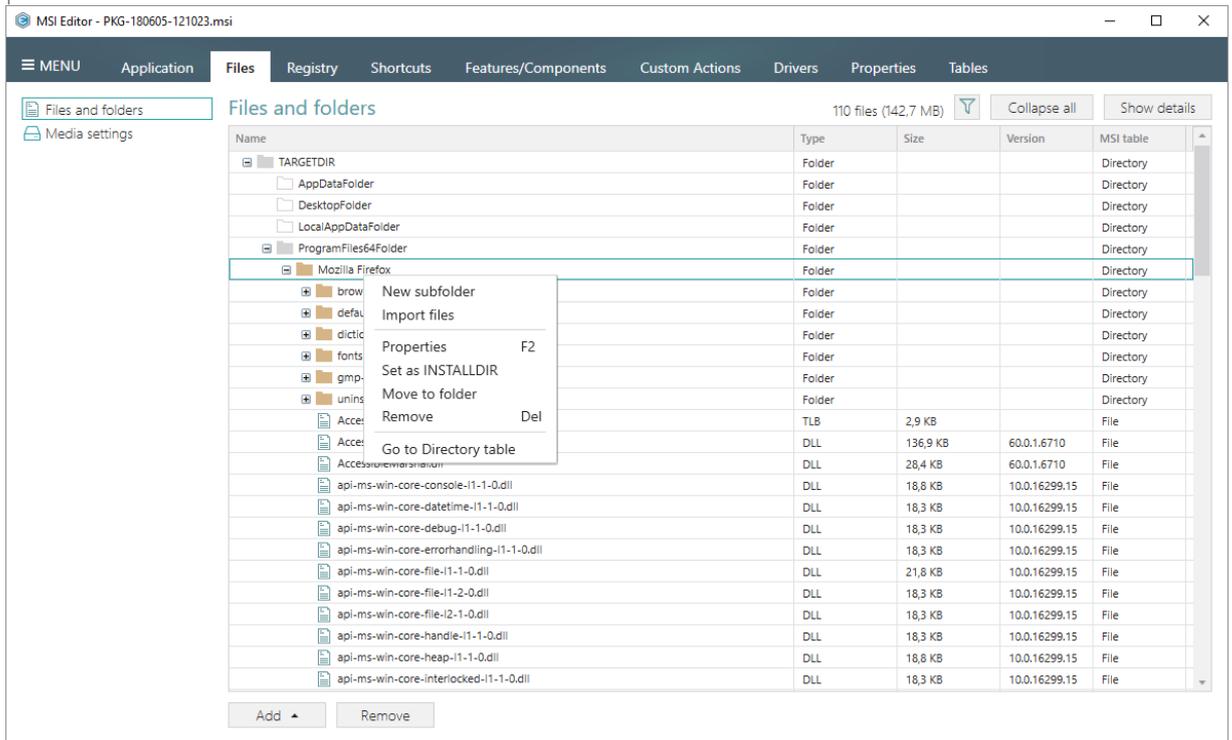
3.7.2.5 Set Permissions

Set custom permissions for the file or the folder.

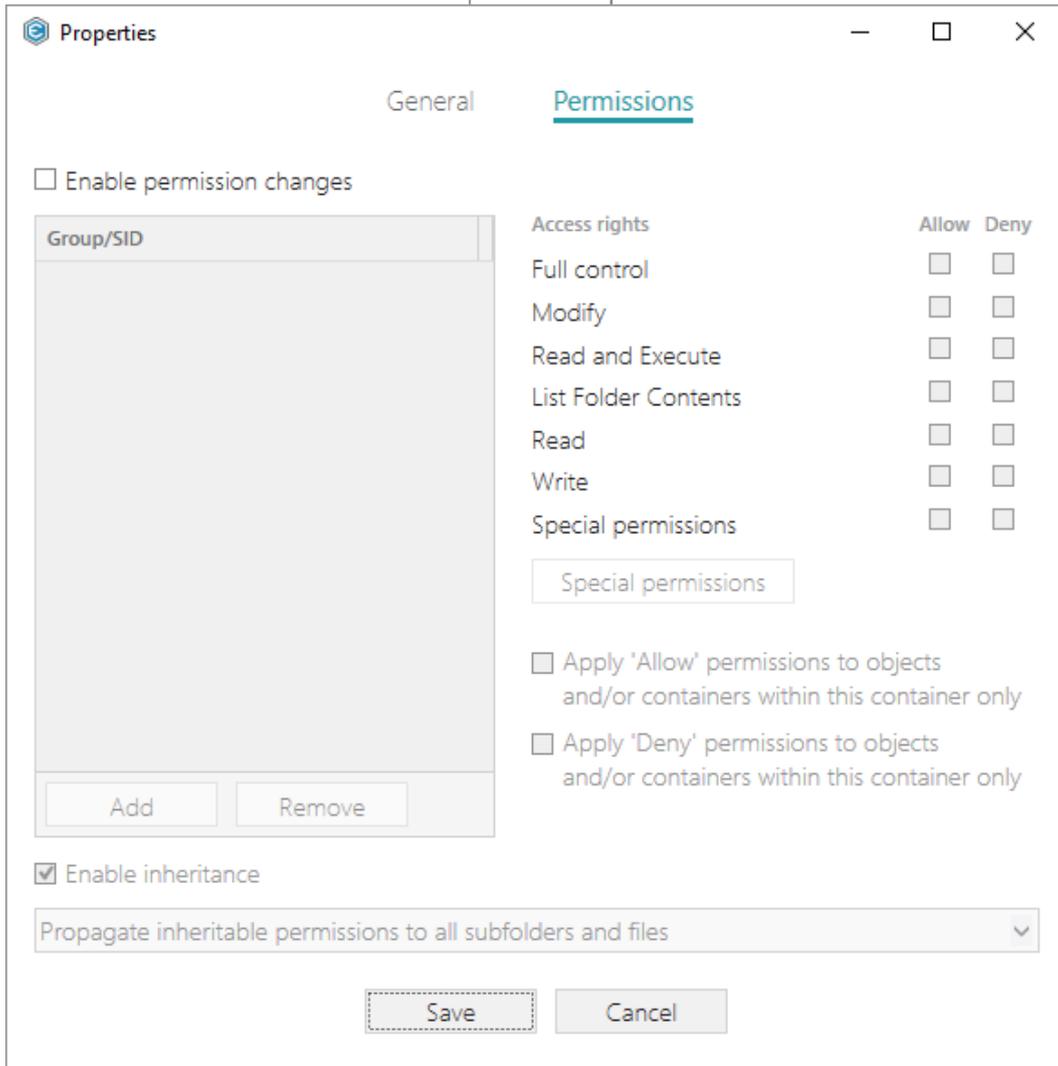
[1]. Open the Files tab.



[2]. Select Properties from the context menu of a folder or a file, for which you want to set permissions.

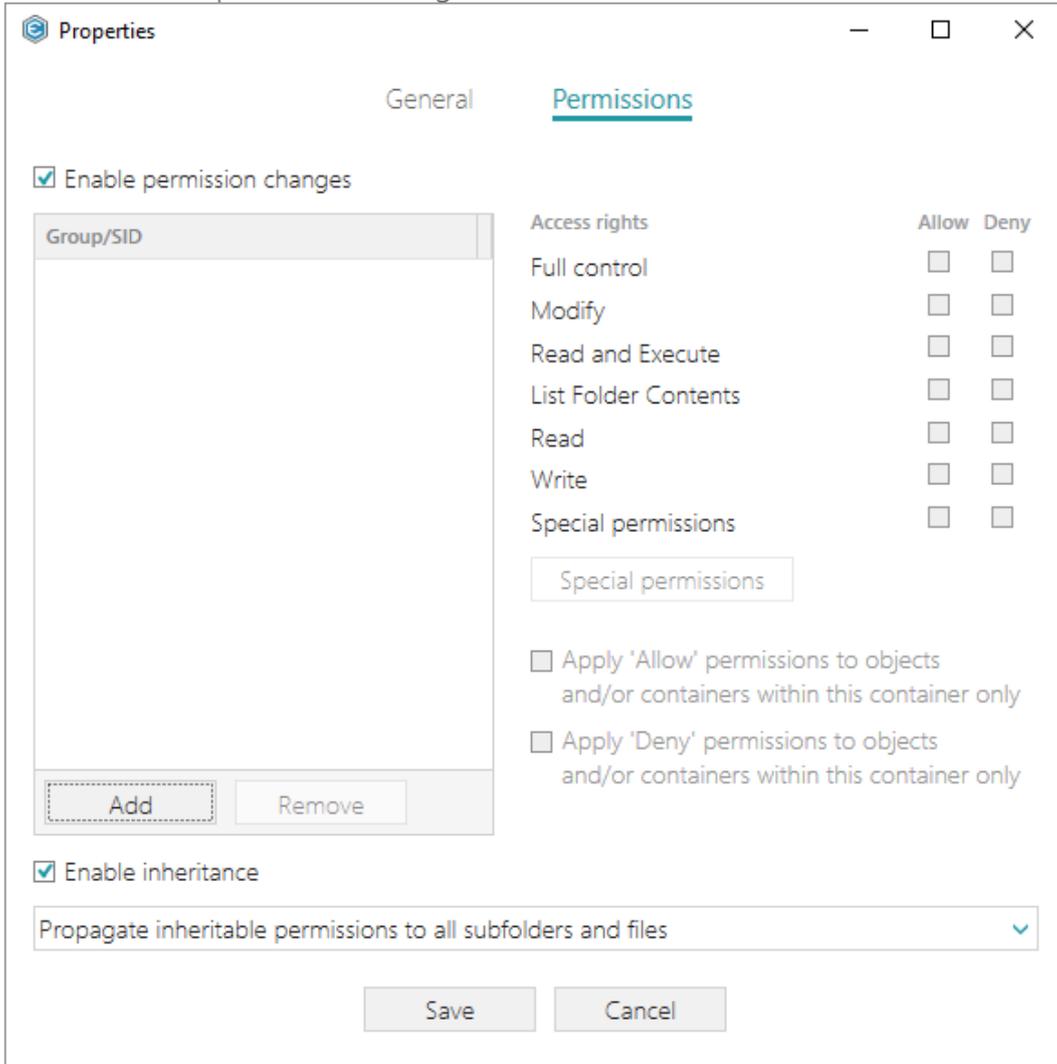


[3]. Go to the Permissions tab of the opened Properties window.

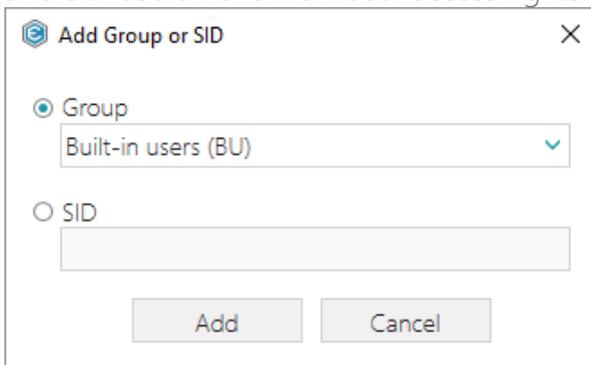




[4]. Tick the Enable permission changes checkbox and click Add.



[5]. Select a group from the list or enter SID manually, for which you want to set permissions, and click Add. Note that you can add as many groups and SID as you need. Each group and SID could have individual access rights.

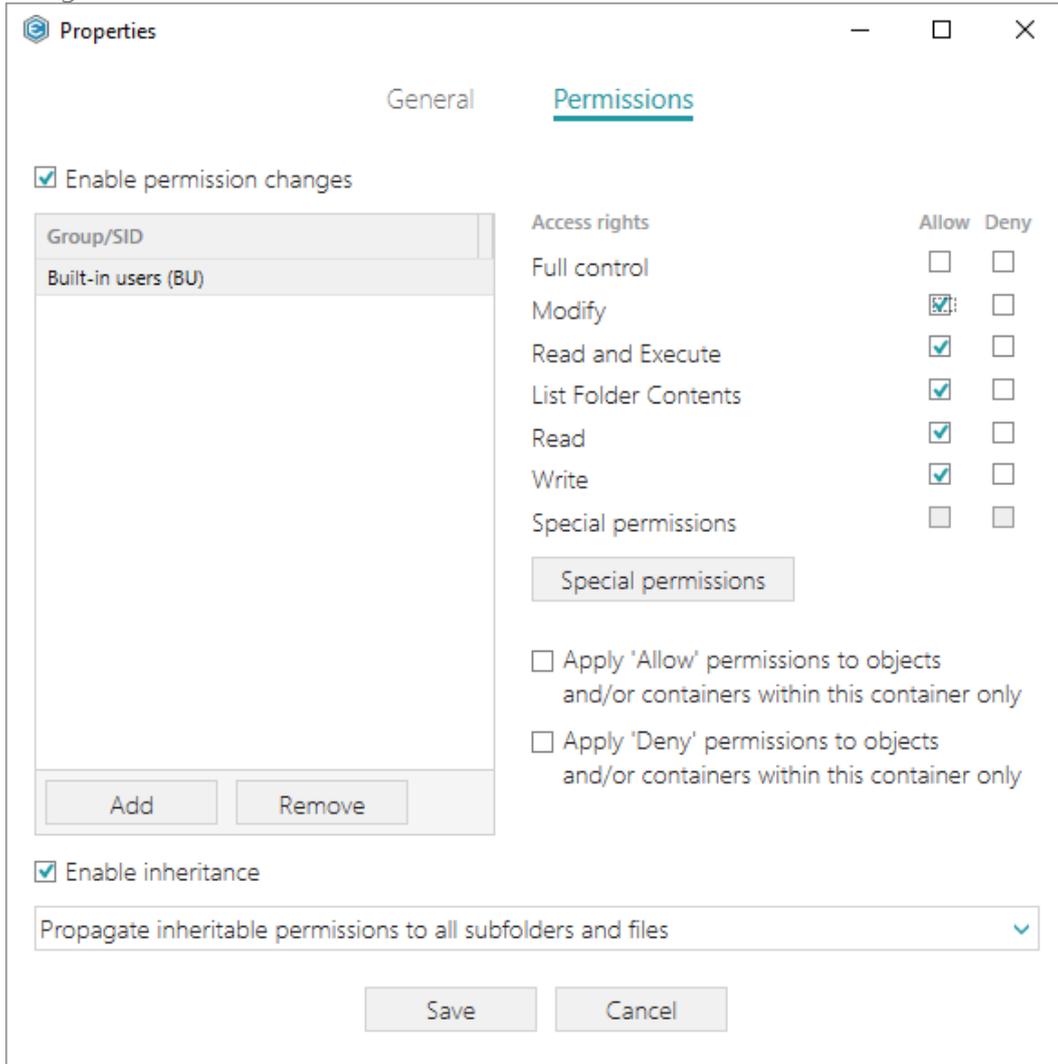


[6]. Tick the necessary access rights for the selected group or SID, change (if needed) special permissions, inheritance options and behavior of applying the permissions. Click Save to save the changed permission settings to MSI. Note that permissions will be propagated

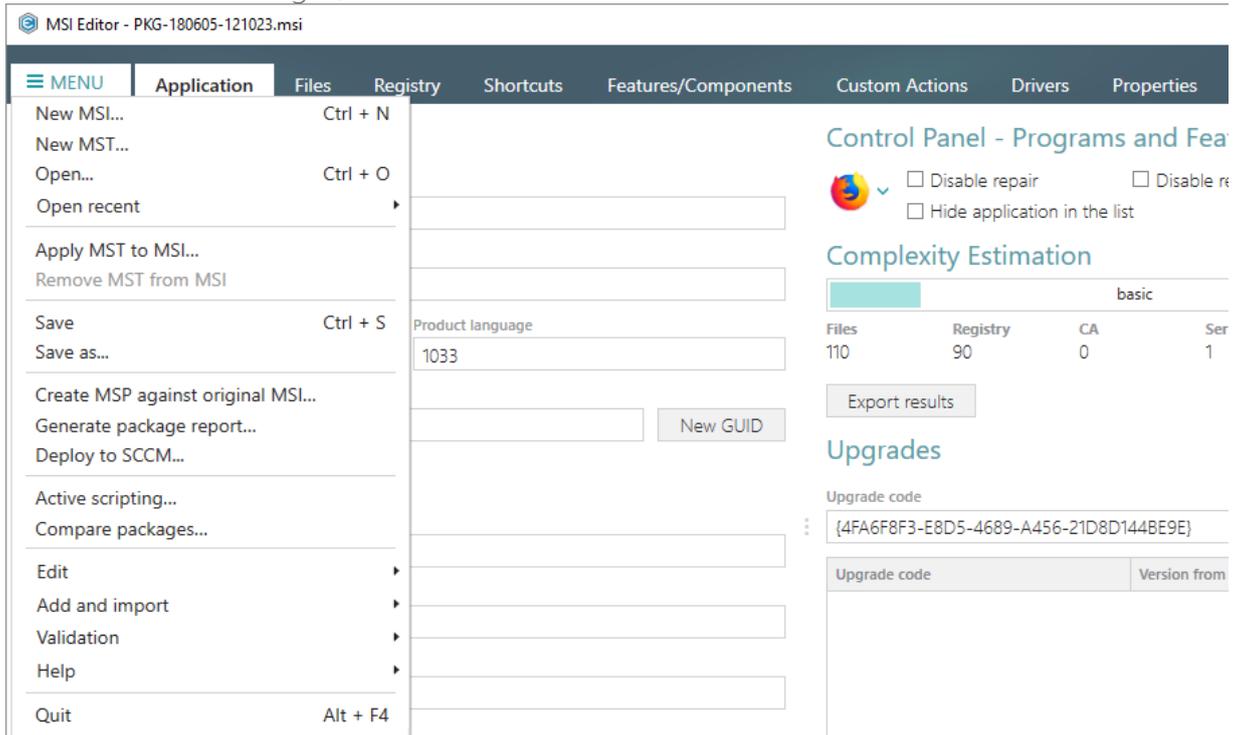




using the SecEdit tool.



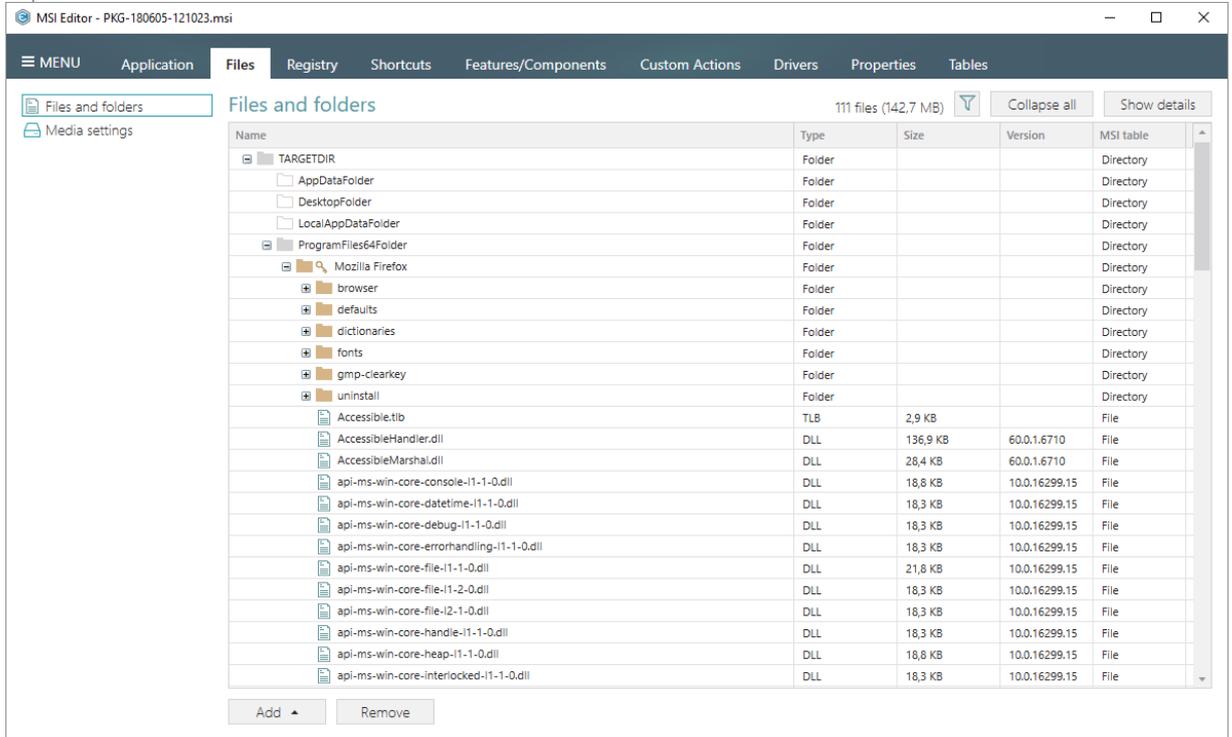
[7]. In order to save changes, select Save from MENU.



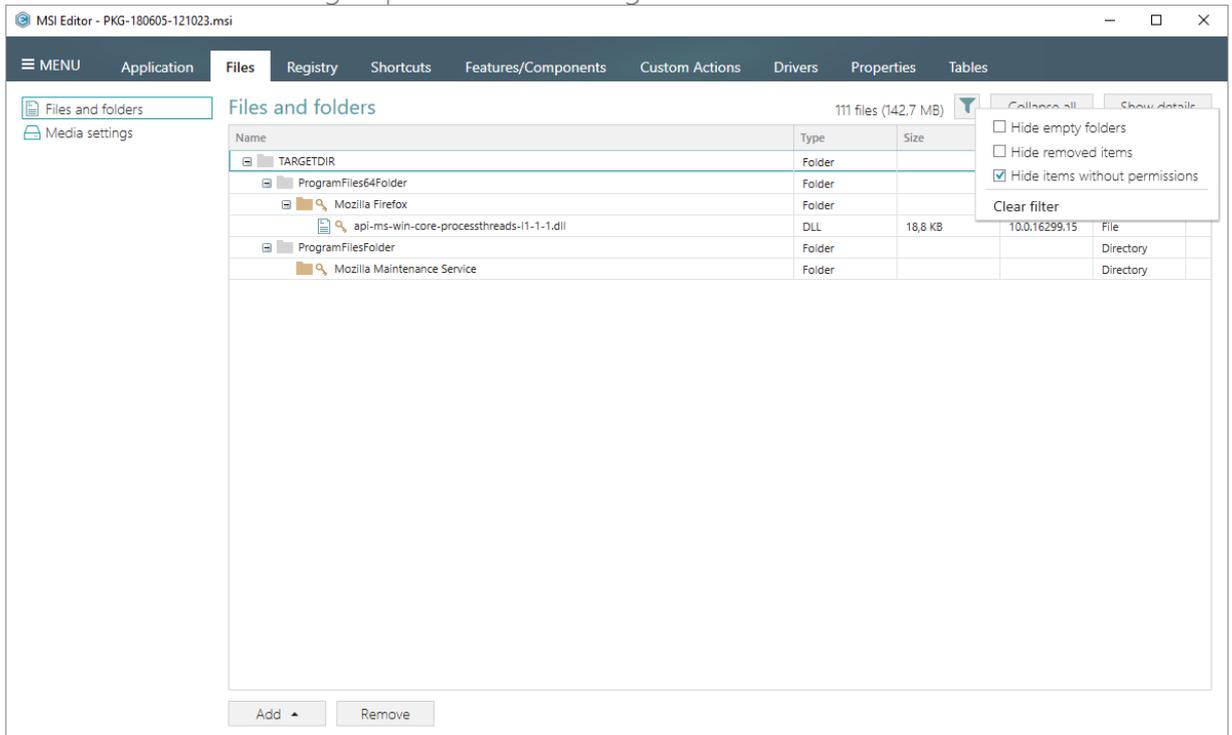
3.7.2.6 Remove Permissions

Locate files and folders with custom permissions and remove the unnecessary permissions.

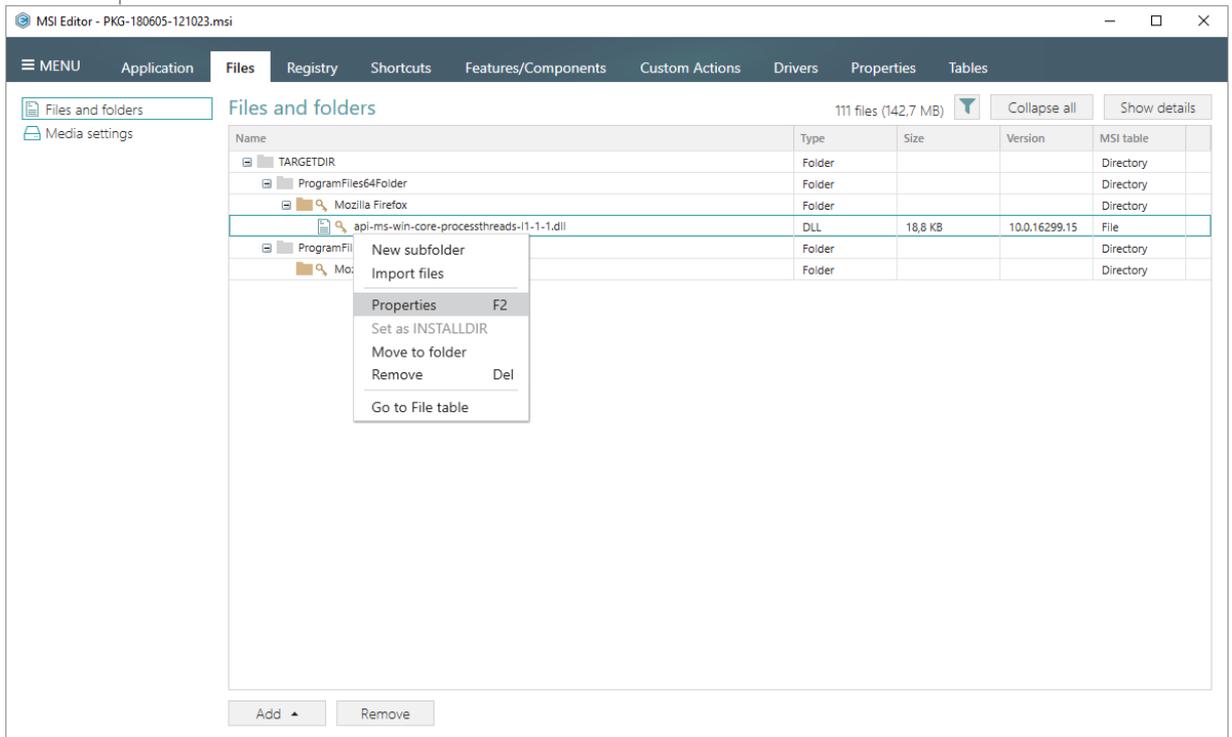
- [1]. Open the Files tab.



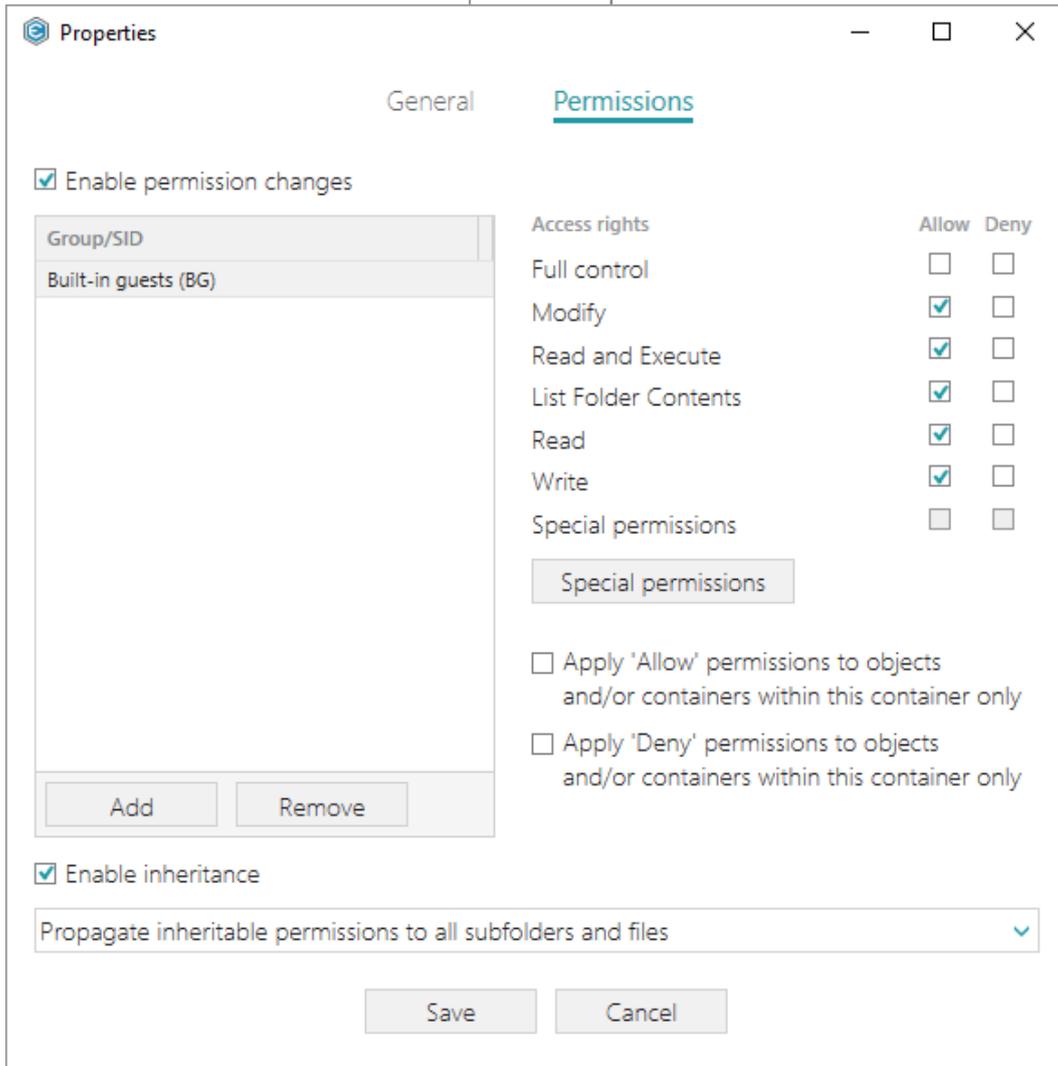
- [2]. (Optional) Click on the Filter and apply the Hide items without permissions filter to locate resources with the changed permissions settings.



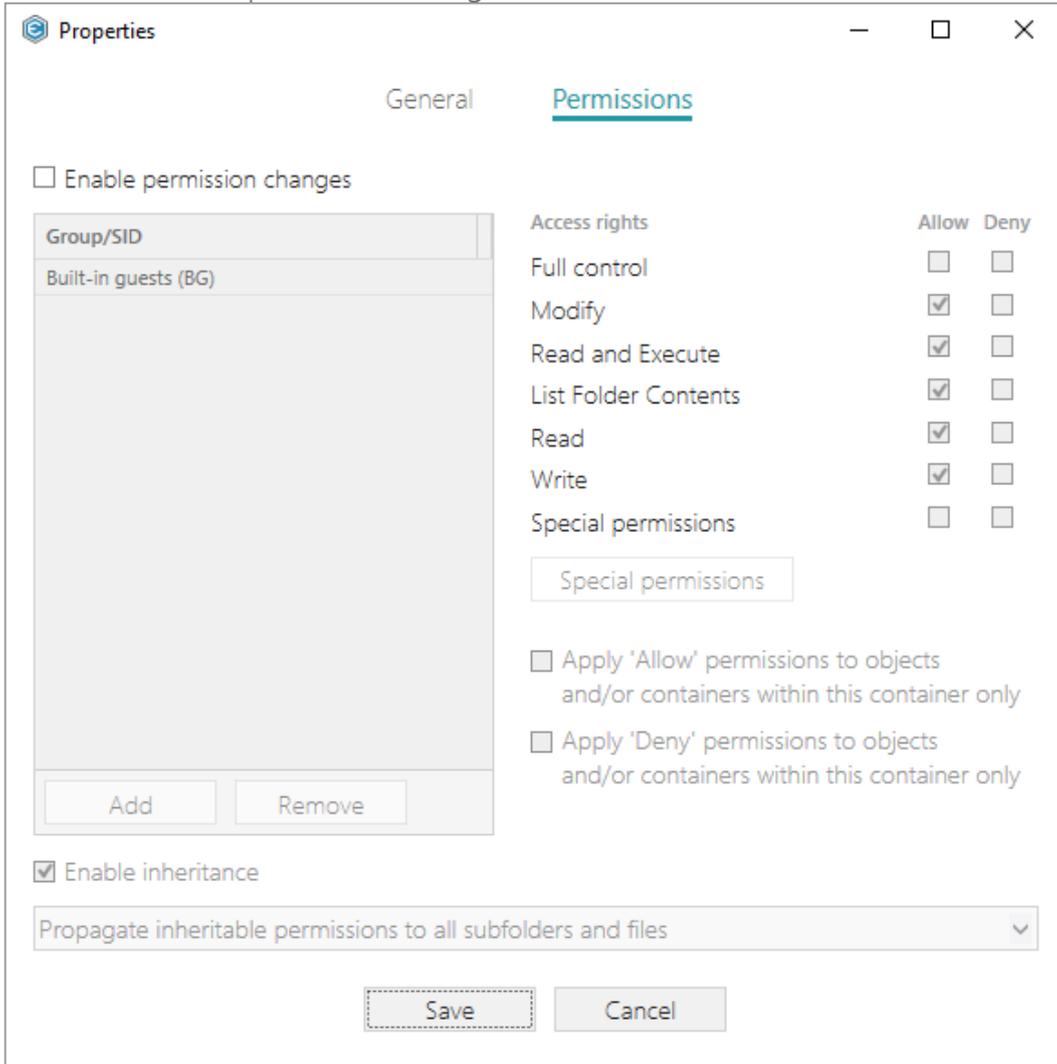
- [3]. Select Properties from the context menu of a folder or a file, for which you want to remove permissions.



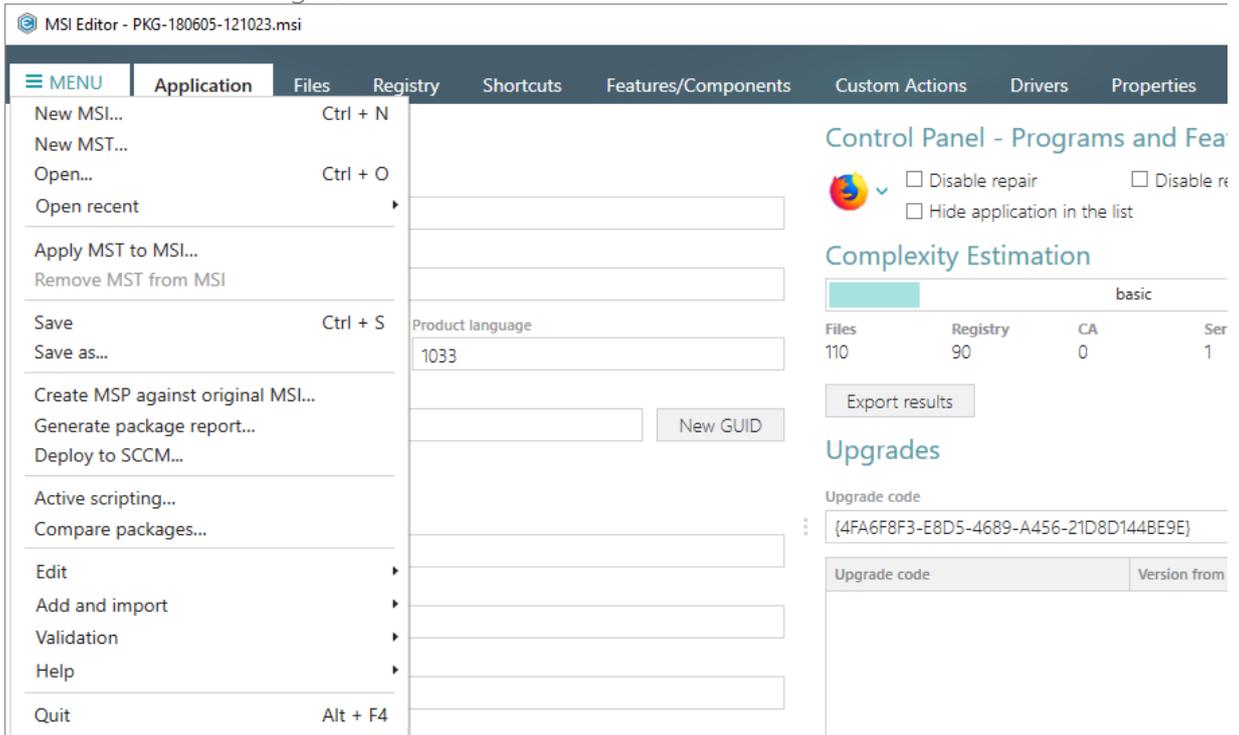
[4]. Go to the Permissions tab of the opened Properties window.



[5]. Untick the Enable permission changes checkbox and click Save.



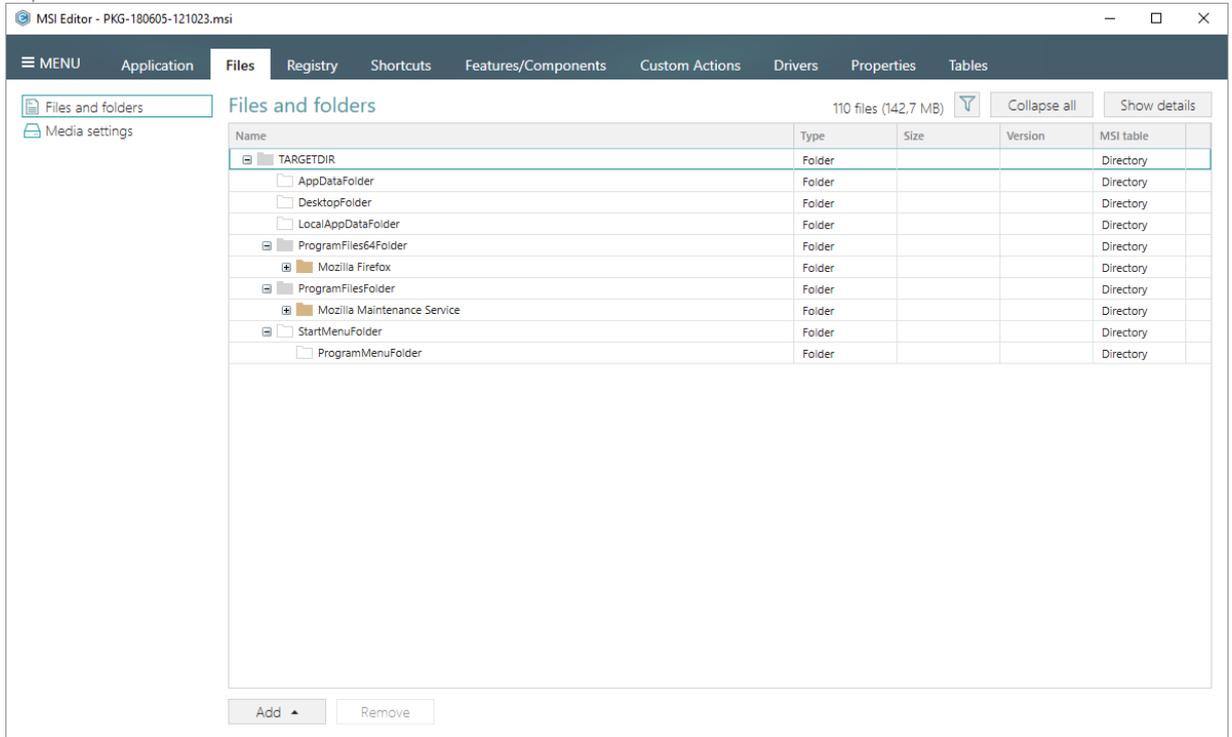
[6]. In order to save changes, select Save from MENU.



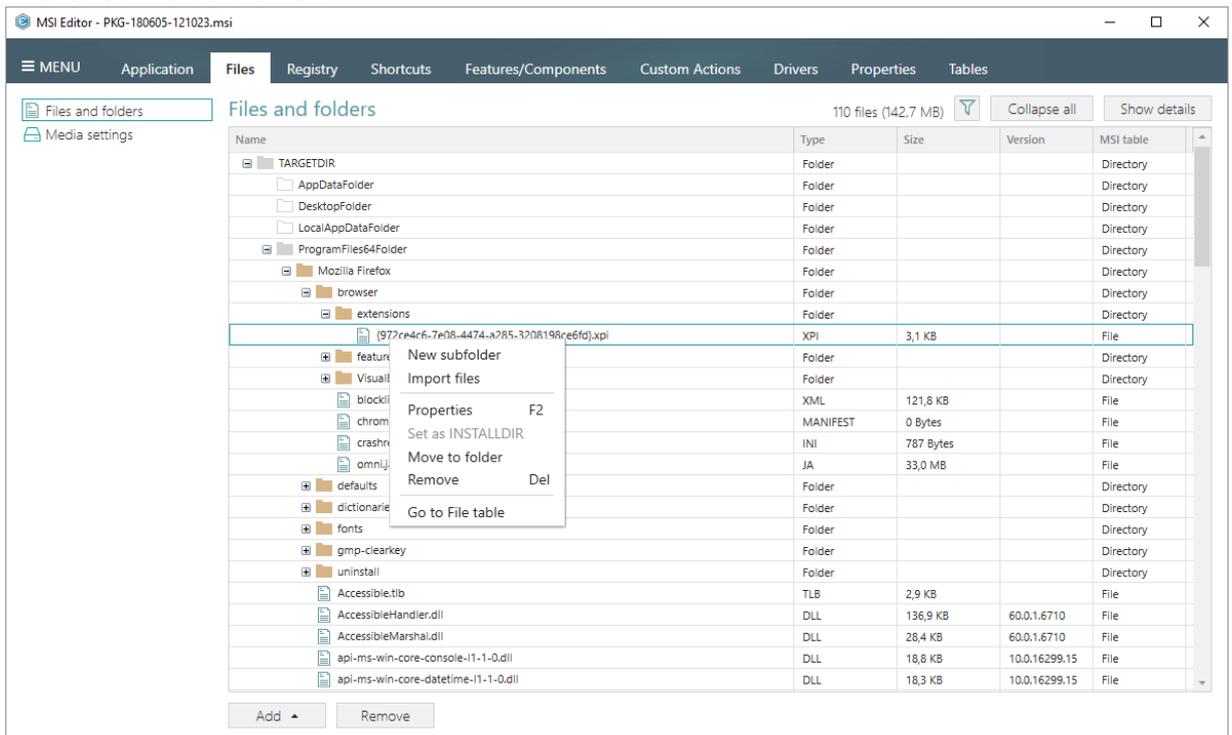
3.7.2.7 Move to Folder

Move a file or a folder from one folder to another. Note that the component structure also could be changed.

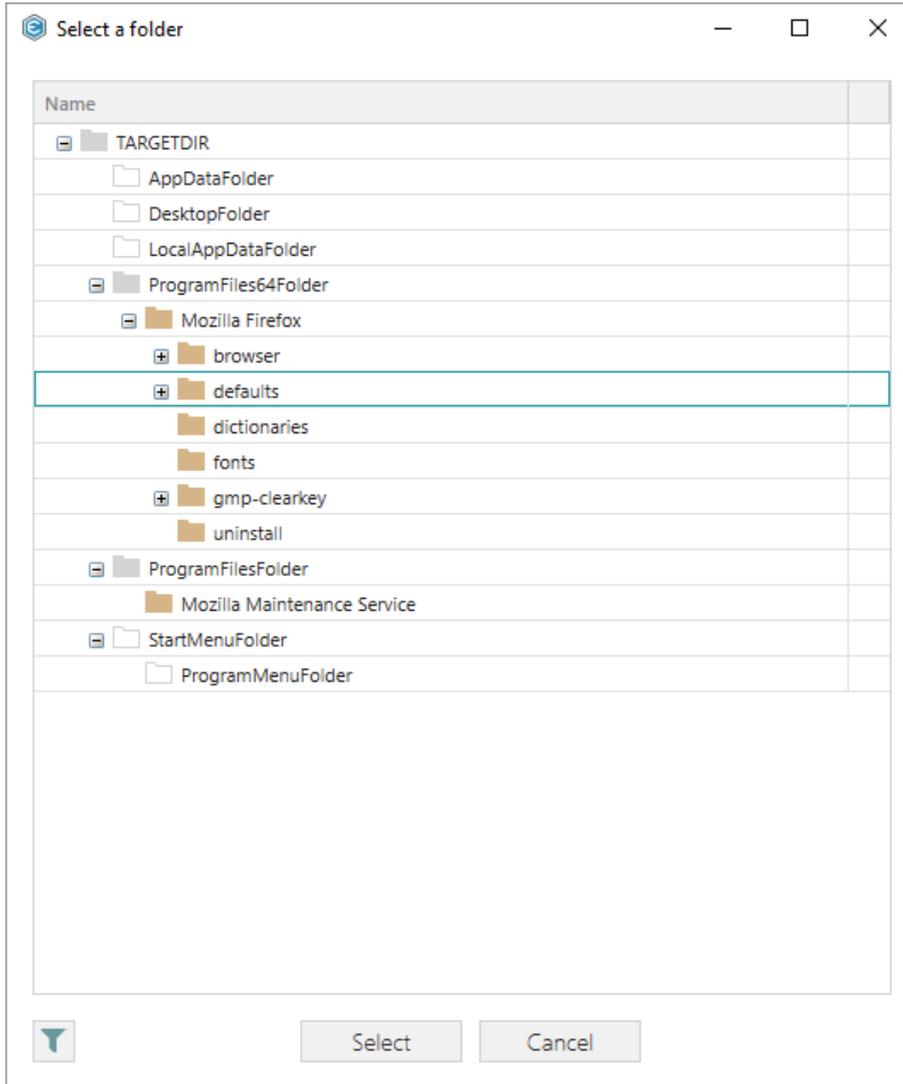
- [1]. Open the Files tab.



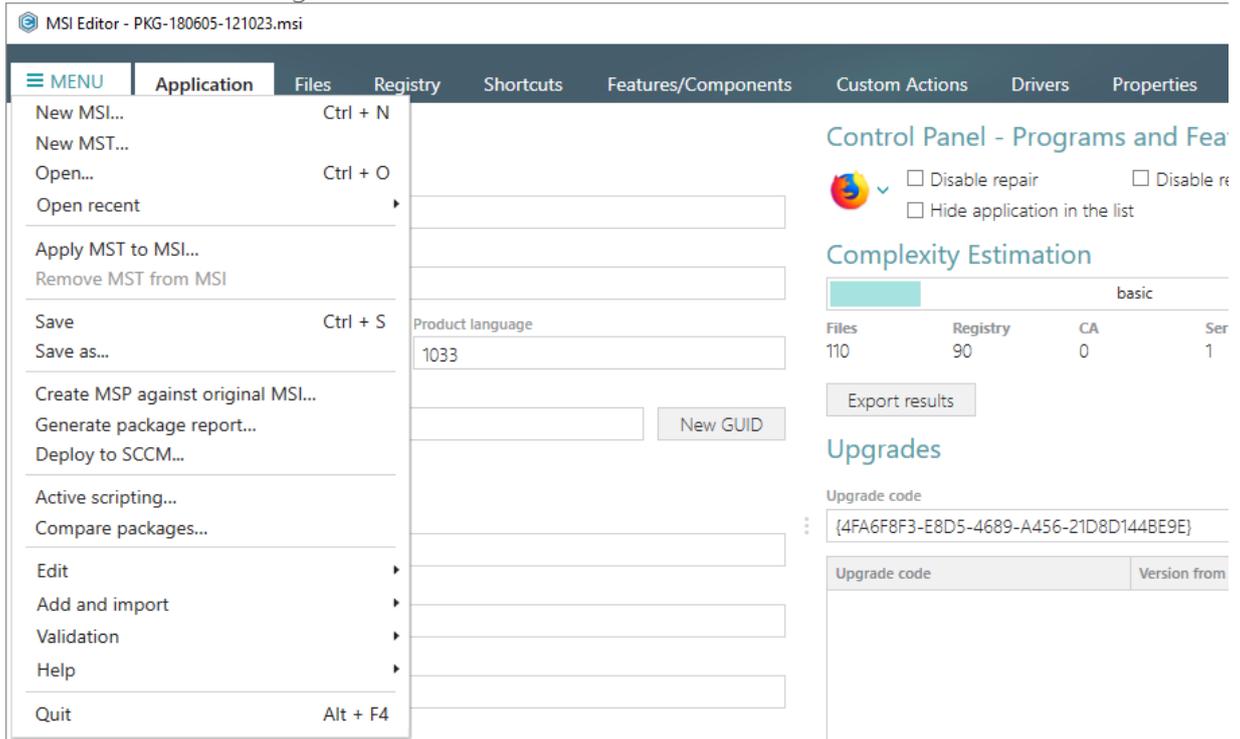
- [2]. Select Move to folder from the context menu of a file or a folder, which you want to move to another folder.



[3]. Select a new destination location from the folders tree and click Select.



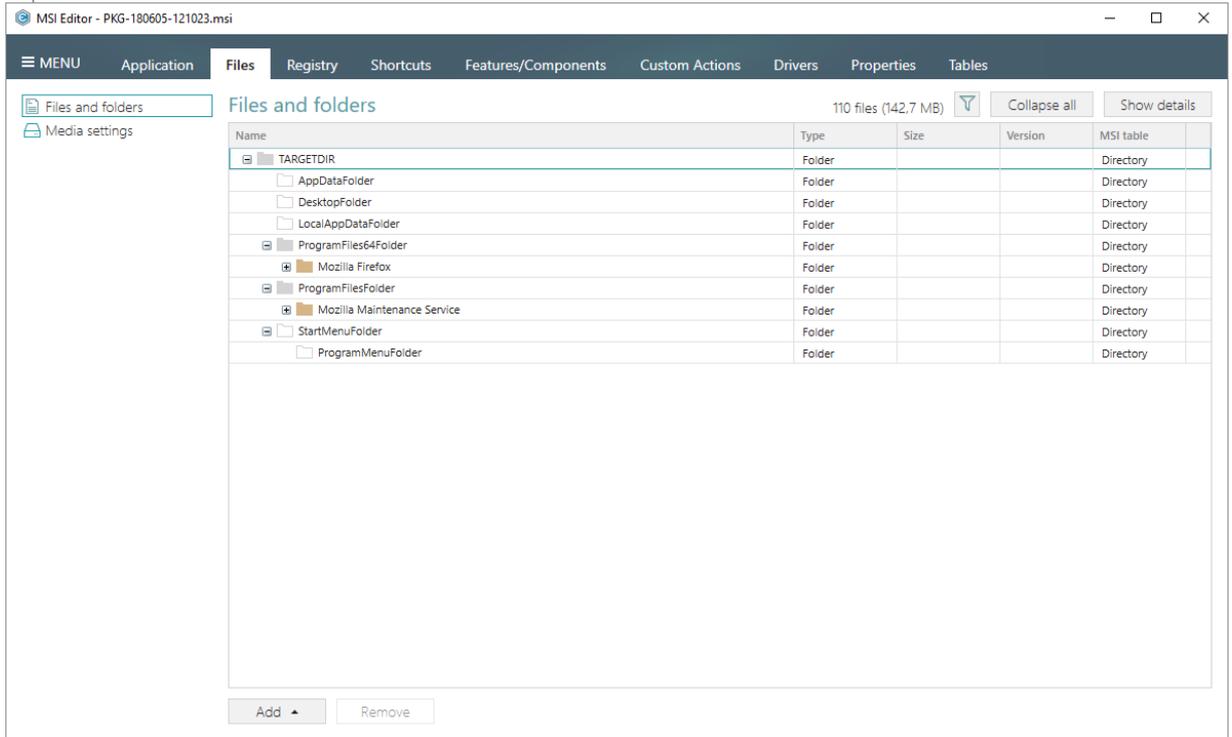
[4]. In order to save changes, select Save from MENU.



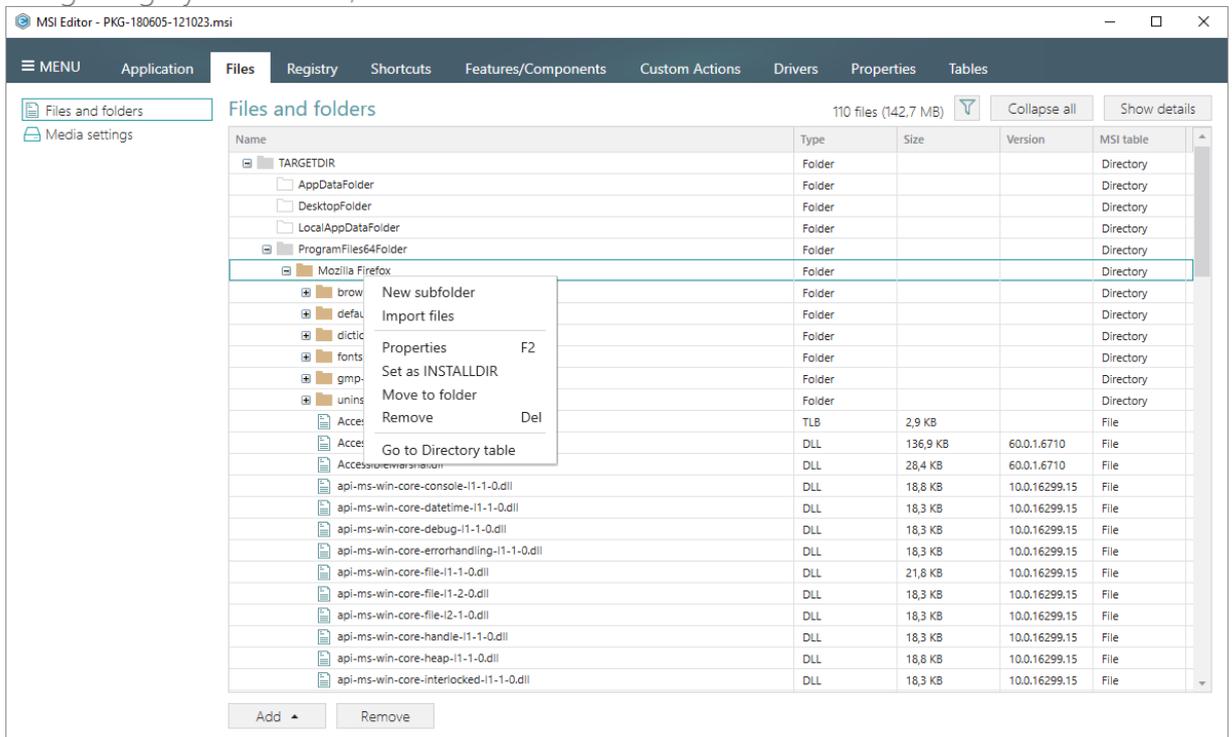
3.7.2.8 Set as INSTALLDIR

Set a subfolder (user-defined folder) of the package as the INSTALLDIR. This means that an identifier of the selected folder will be changed to the 'INSTALLDIR' value. Note that identifier of a folder is used as the folder property. Usually, the INSTALLDIR property represents the main product installation folder, and you can re-define its path via the command line or a Custom Action.

[1]. Open the Files tab.

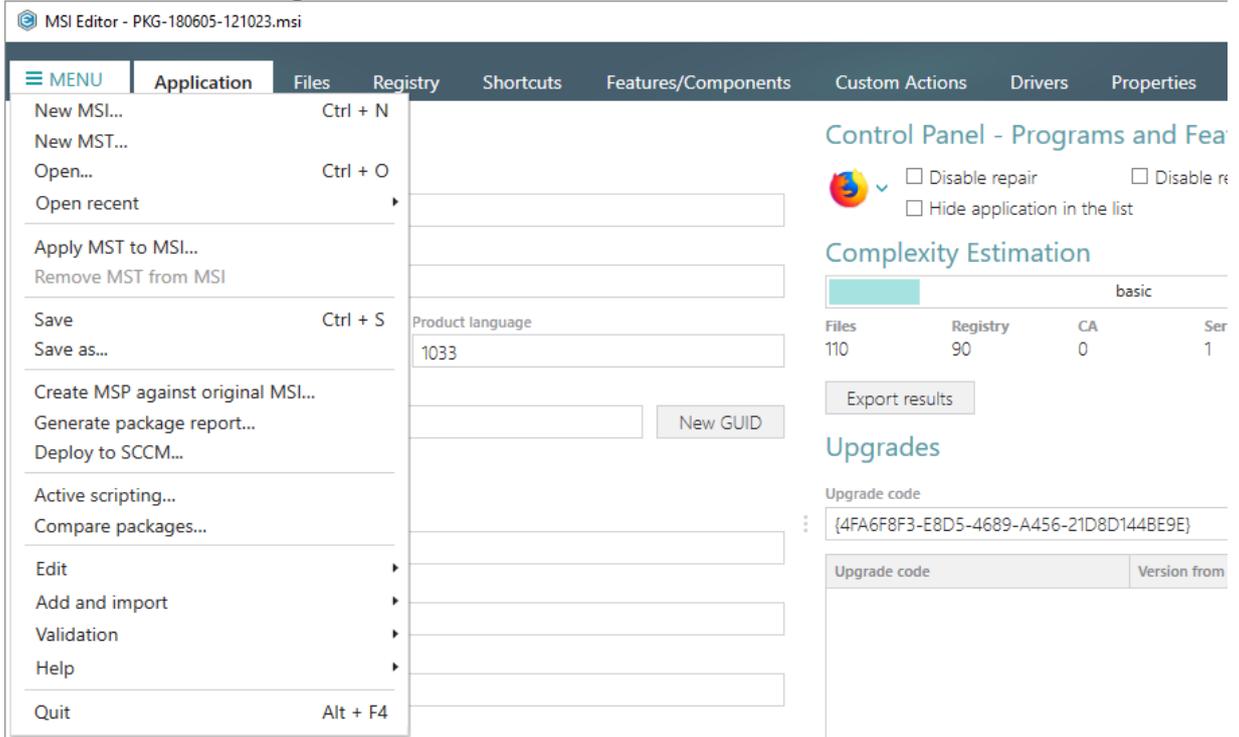


[2]. Select Set as INSTALLDIR from the context menu of a subfolder (user-defined folder), which you want to set as the INSTALLDIR property. Note that system folders, displayed using the grey folder icon, could not be set as INSTALLDIR.



The INSTALLDIR folder displays its identifier in the parentheses.

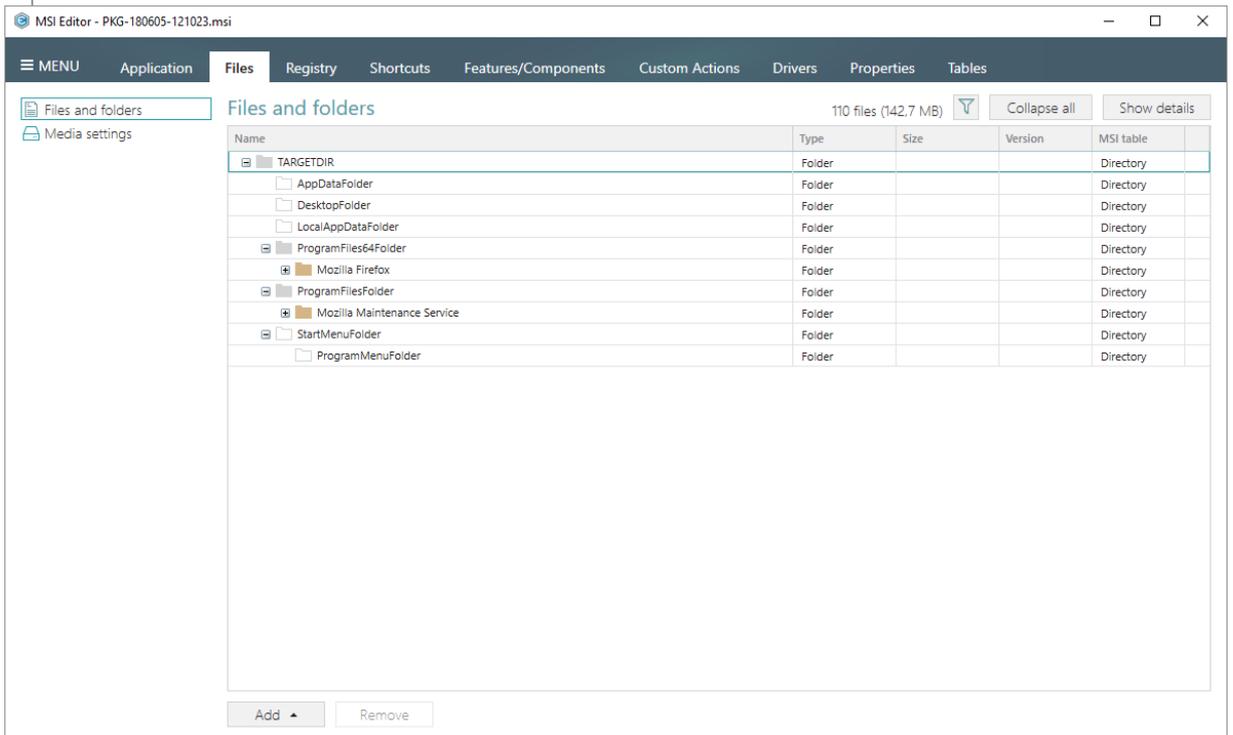
[3]. In order to save changes, select Save from MENU.



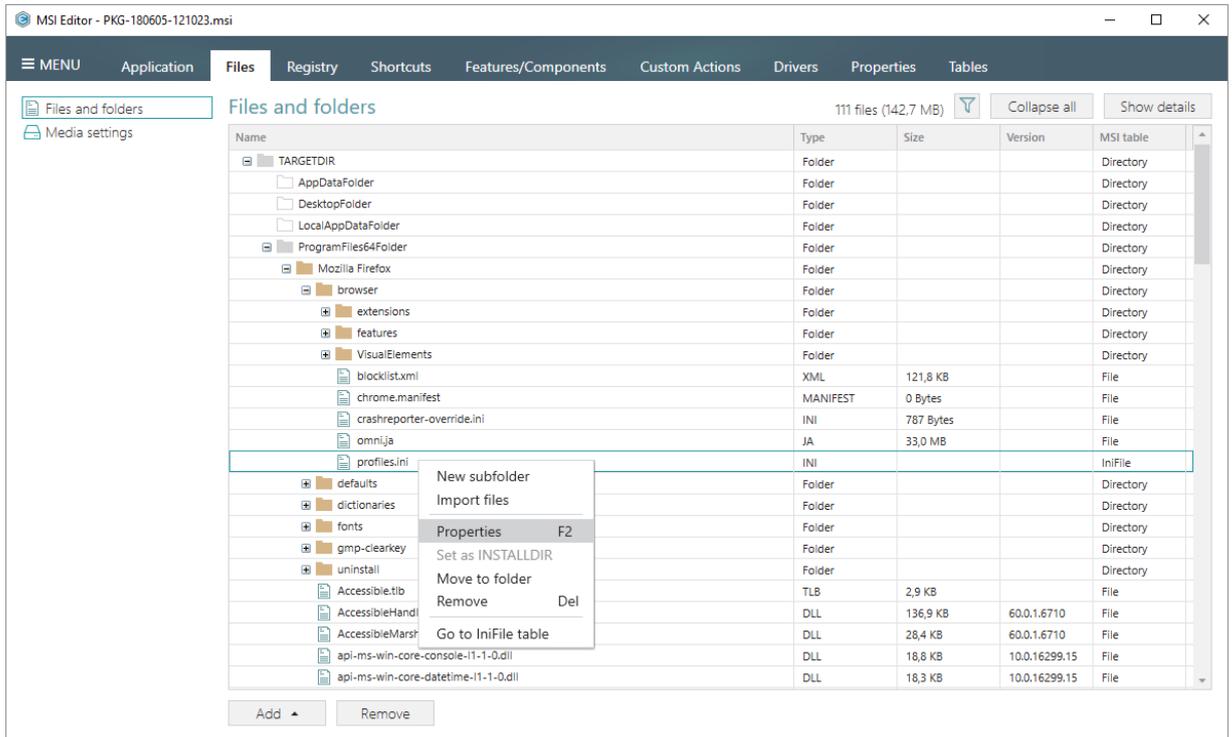
3.7.2.9 Edit INI File

Edit a name, a destination location and a content of the INI file, which has been read from the IniFile table. Note that content of the binary files, which has been read from the File table, could not be modified using the approach, described below.

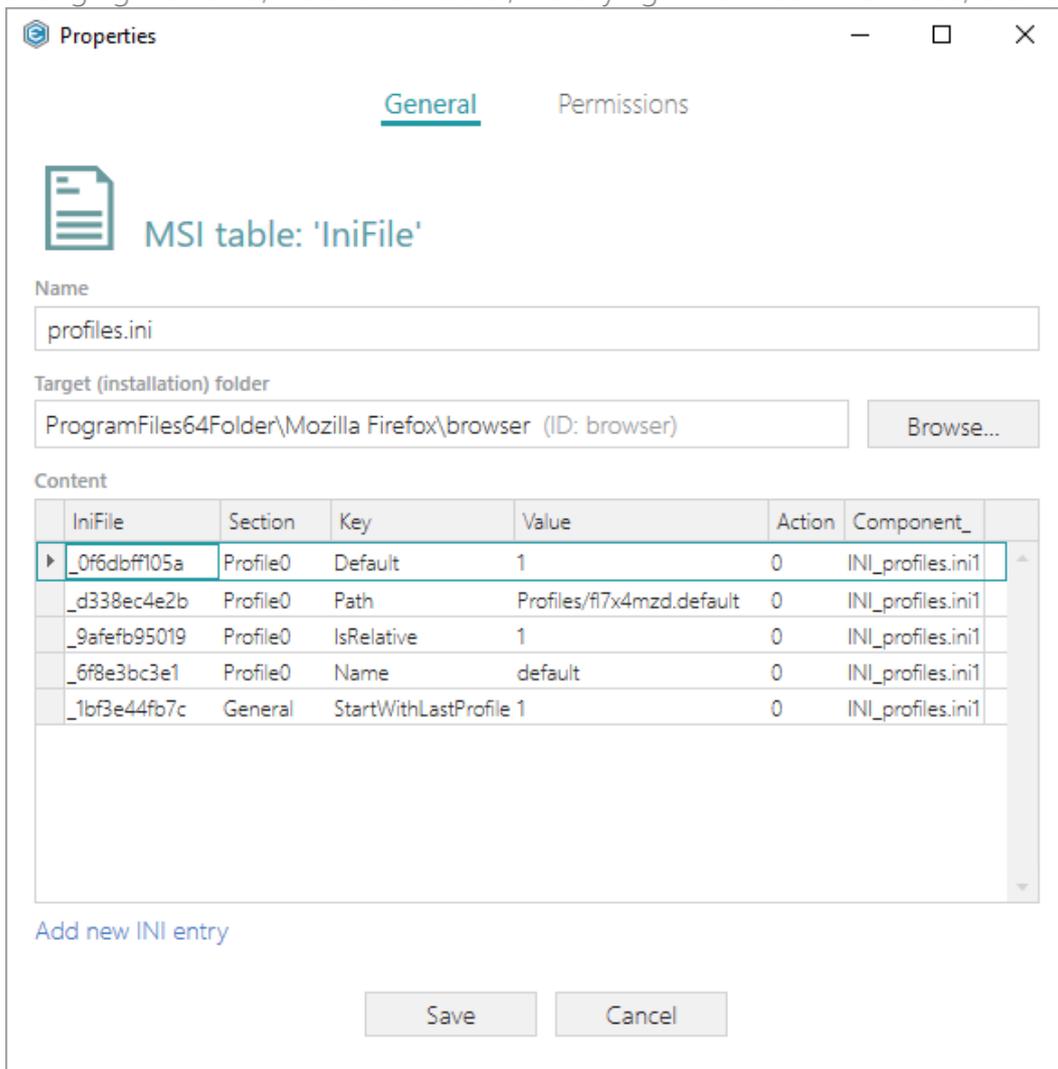
[1]. Open the Files tab.



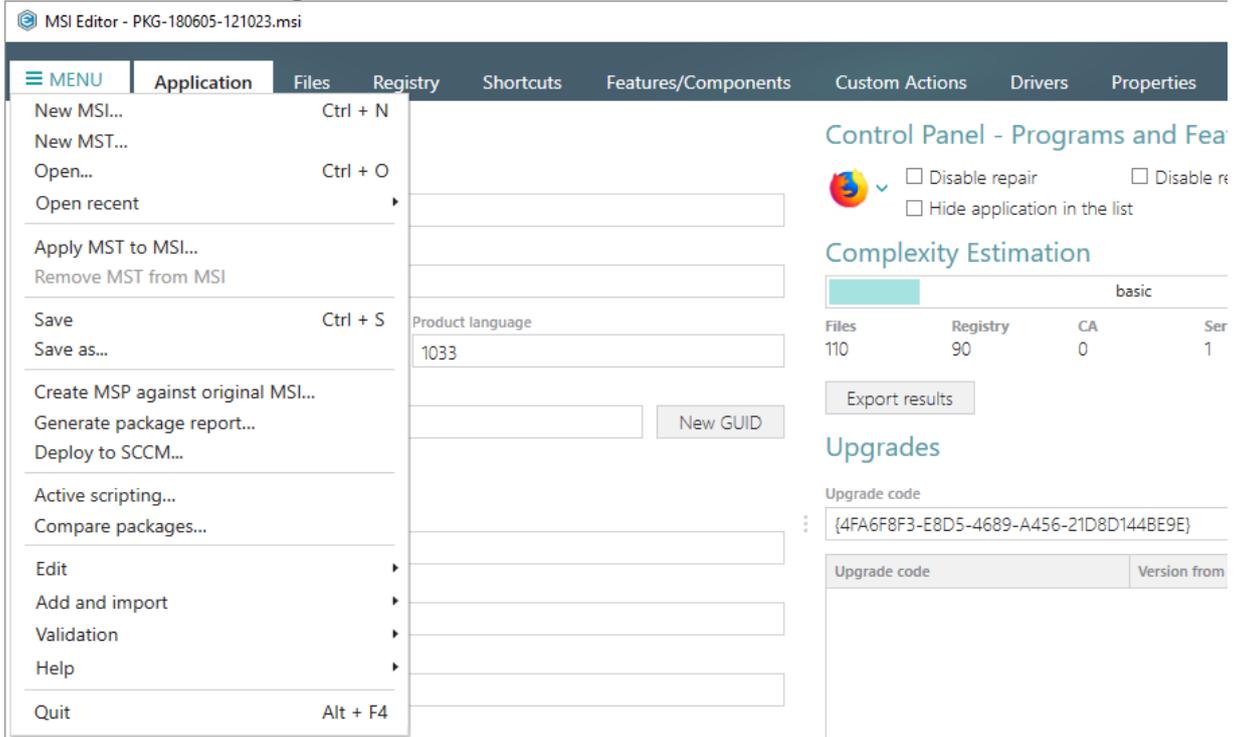
- [2]. Locate INI file, which you want to edit, and check that this file is read from the IniFile table (indicated in the 'MSI table' column or on the Details pane). Select Properties from the context menu of this INI file.



- [3]. Using the Properties window make the necessary changes to the INI file, such as changing file name, installation folder, modifying INI entries. Afterwards, click Save.



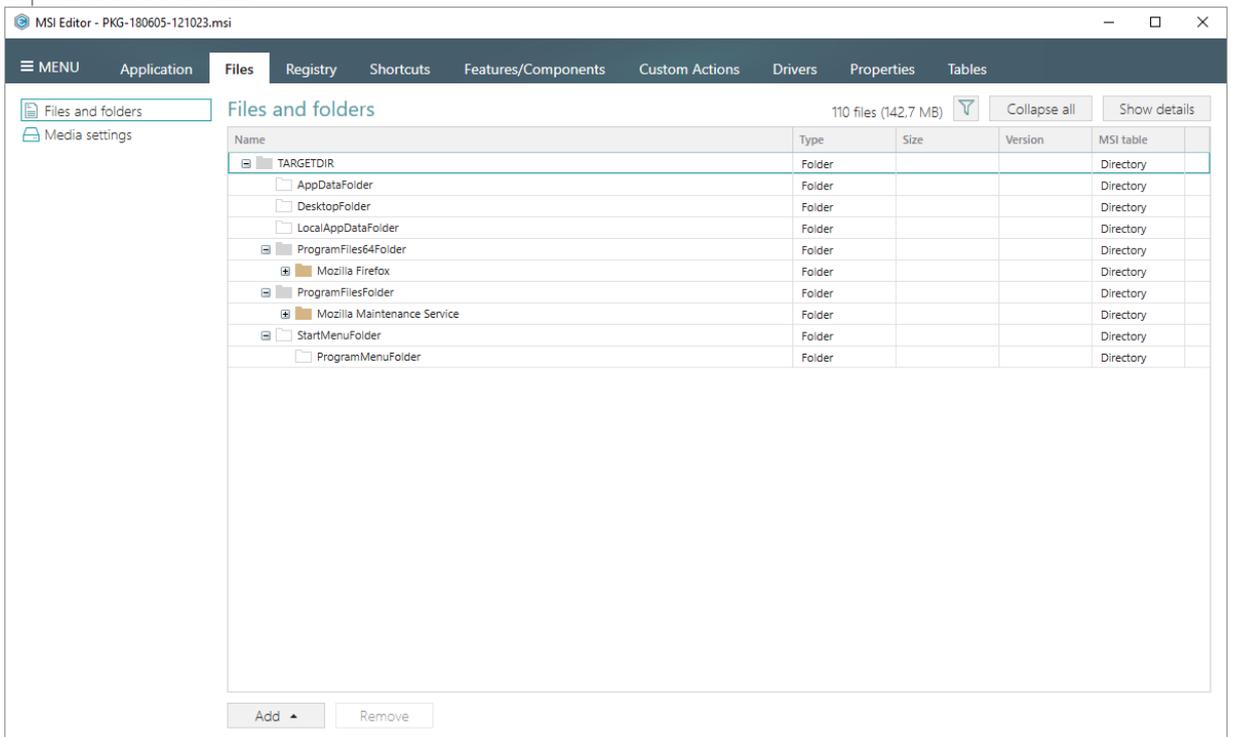
[4]. In order to save changes, select Save from MENU.



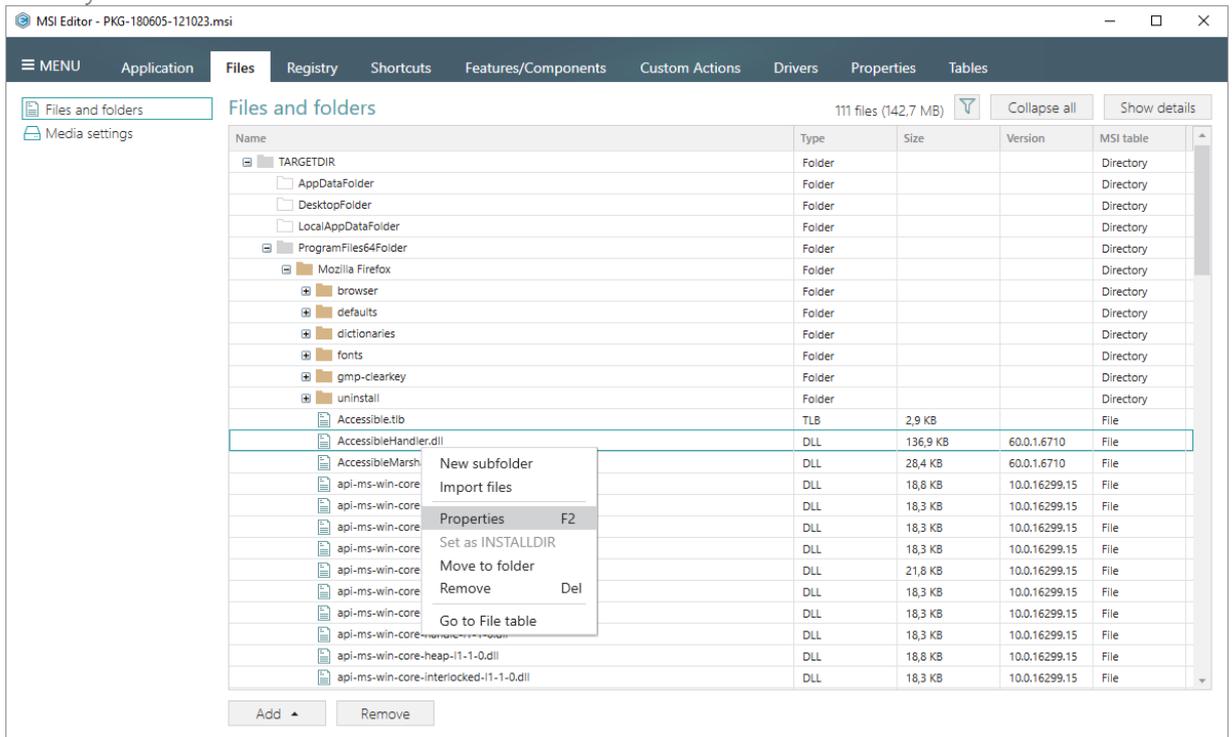
3.7.2.10 Edit File Properties

Edit a file name, an identifier, a destination location, a component and many other attributes of the binary file, which has been read from the File table.

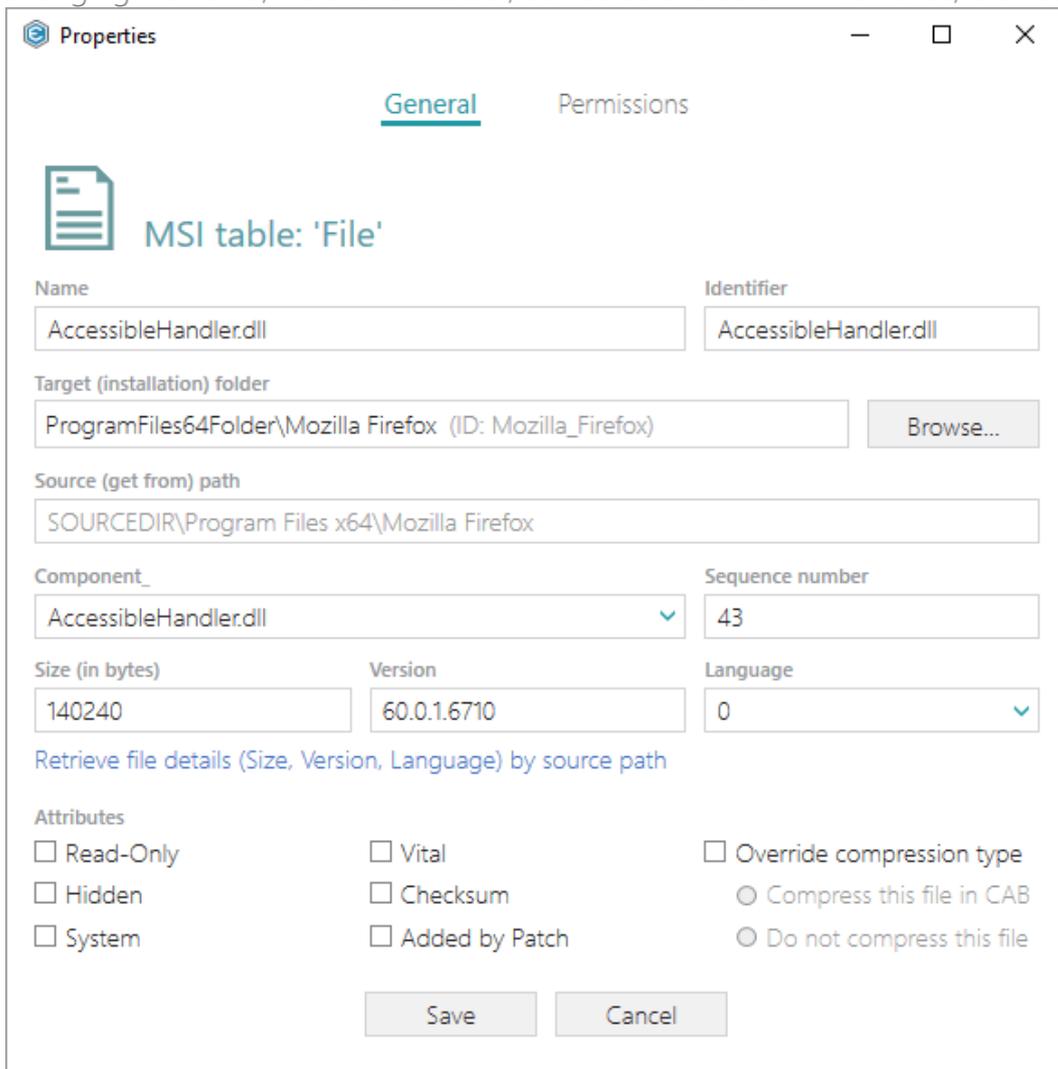
[1]. Open the Files tab.



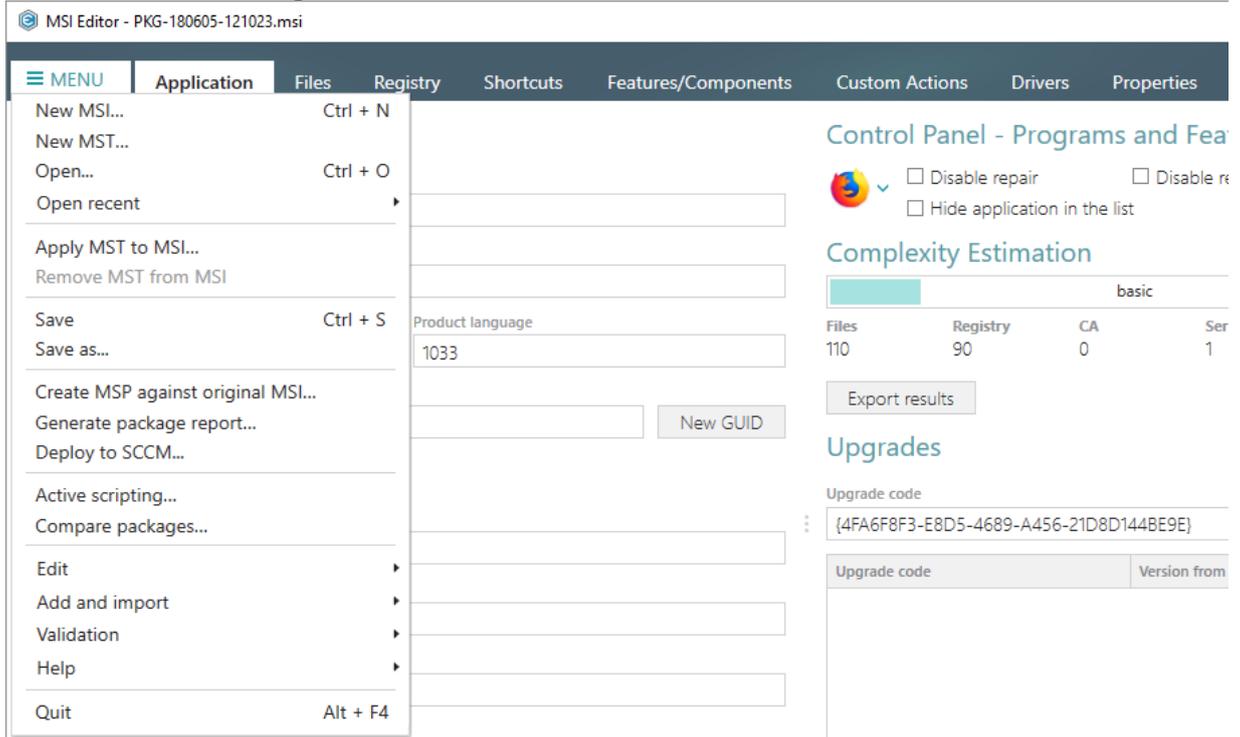
[2]. Select Properties from the context menu of a file, details of which you want to review and modify.



- [3]. Using the Properties window make the necessary changes to the file details, such as changing file name, installation folder, attributes and so on. Afterwards, click Save.



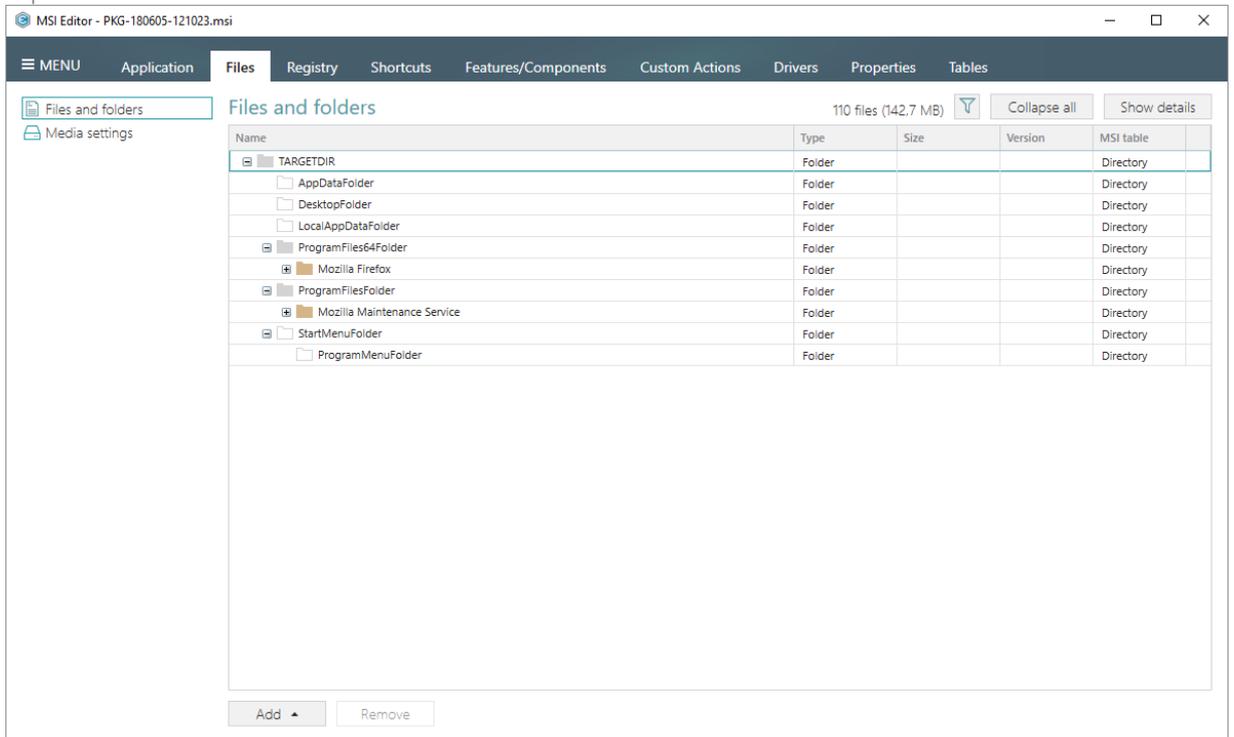
[4]. In order to save changes, select Save from MENU.



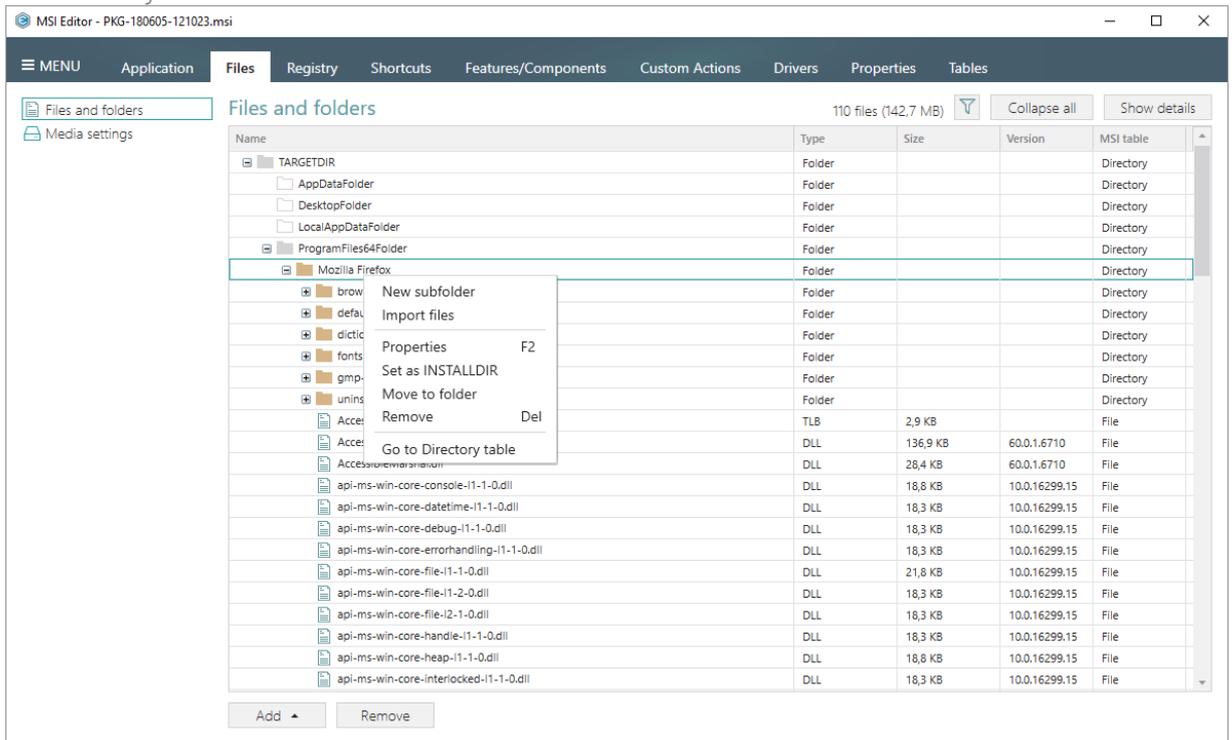
3.7.2.11 Edit Folder Properties

Edit a folder target and source name, an identifier, a parent folder.

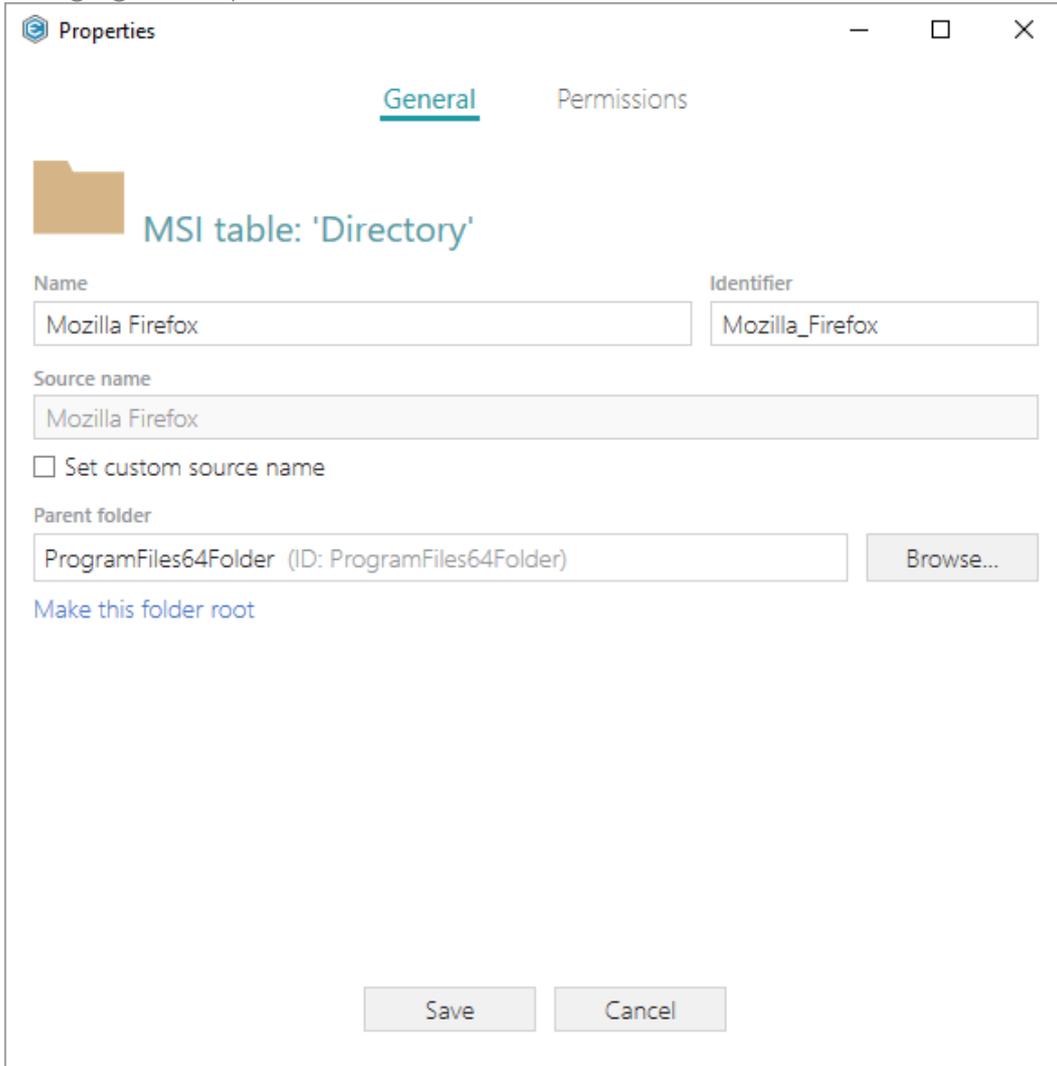
[1]. Open the Files tab.



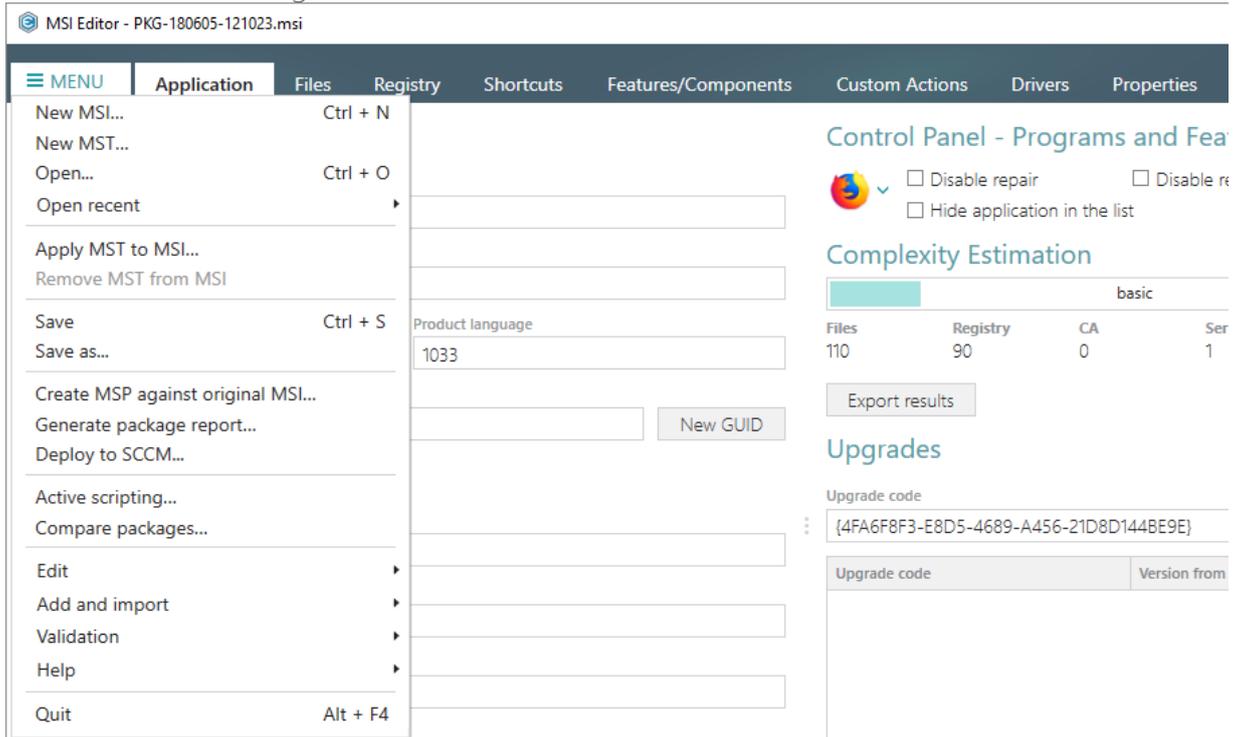
- [2]. Select Properties from the context menu of a folder, details of which you want to review and modify.



- [3]. Using the Properties window, make the necessary changes to the folder details, such as changing name, parent folder and so on. Afterwards, click Save.



[4]. In order to save changes, select Save from MENU.



3.7.3 Registry

Choose a scenario that better suits your needs:

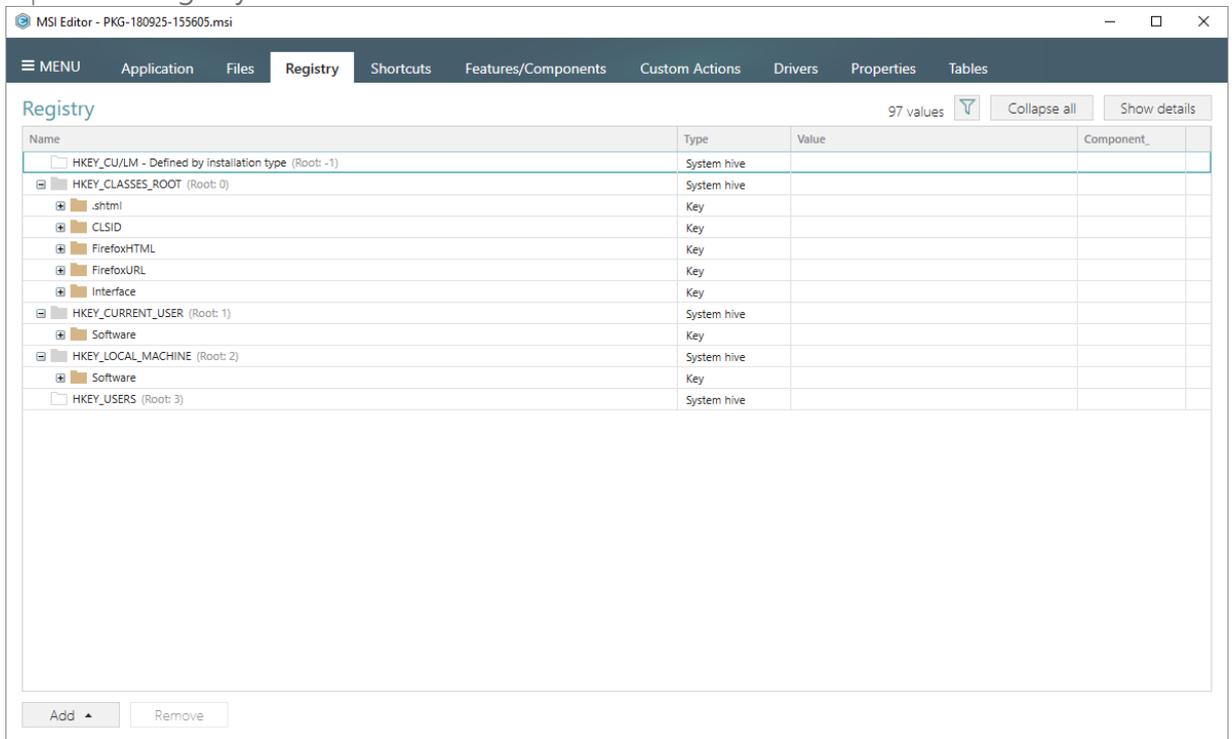
- **Add Registry Key**, described in section 3.7.3.1
Add a new registry key or sub-key manually.
- **Add Registry Value**, described in section 3.7.3.2
Add a new registry value manually.
- **Add Value/Key Removal**, described in section 3.7.3.3
Add a new RemoveRegistry value manually for securing a value or a key removal during the package installation.
- **Import Registry**, described in section 3.7.3.4
Import registry from the REG file.
- **Export Registry**, described in section 3.7.3.5
Export the selected registry to the REG file.
- **Set Permissions**, described in section 3.7.3.6
Set custom permissions for the registry key.
- **Remove Permissions**, described in section 3.7.3.7
Locate registry key with custom permissions and remove the unnecessary permissions.
- **Move to**, described in section 3.7.3.8
Move a registry value or a key from one parent key to another one.

- Edit Registry Key, described in section 3.7.3.9
Modify details and options of the selected registry key.
- Edit Registry Value, described in section 3.7.3.10
Modify details of the selected registry value.
- Edit Value/Key Removal, described in section 3.7.3.11
Modify details of the selected value/key removal item (RemoveRegistry) to secure a value or a key removal during the package installation.

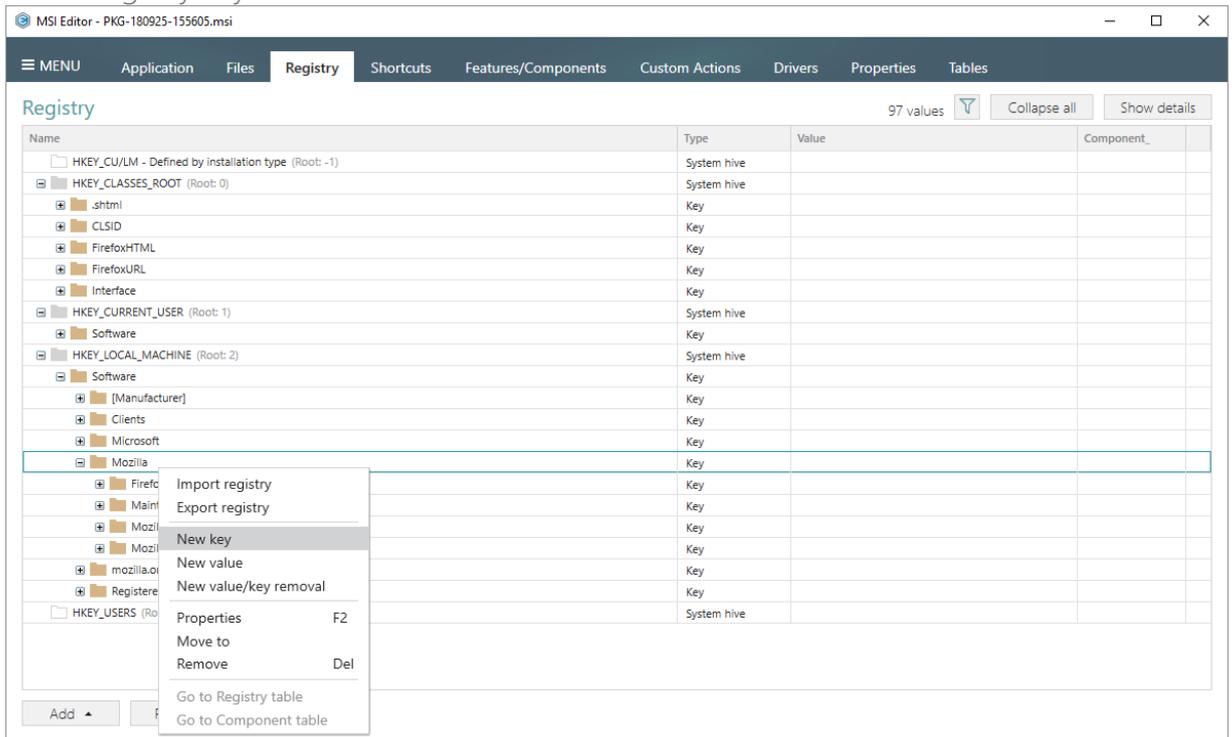
3.7.3.1 Add Registry Key

Add a new registry key or sub-key manually.

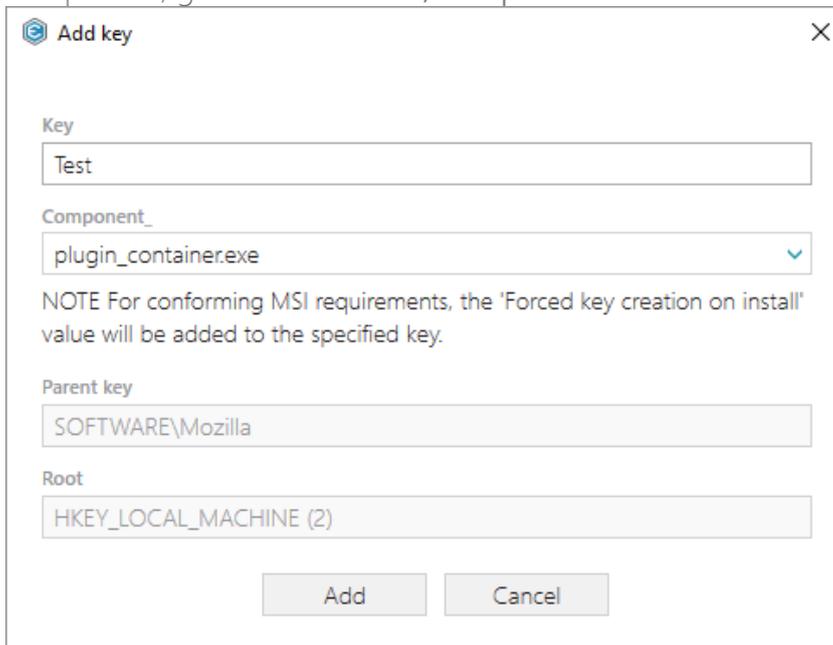
- [1]. Open the Registry tab.



- [2]. Select **New key** from the context menu of a root hive or a key, where you want to create a new registry key.



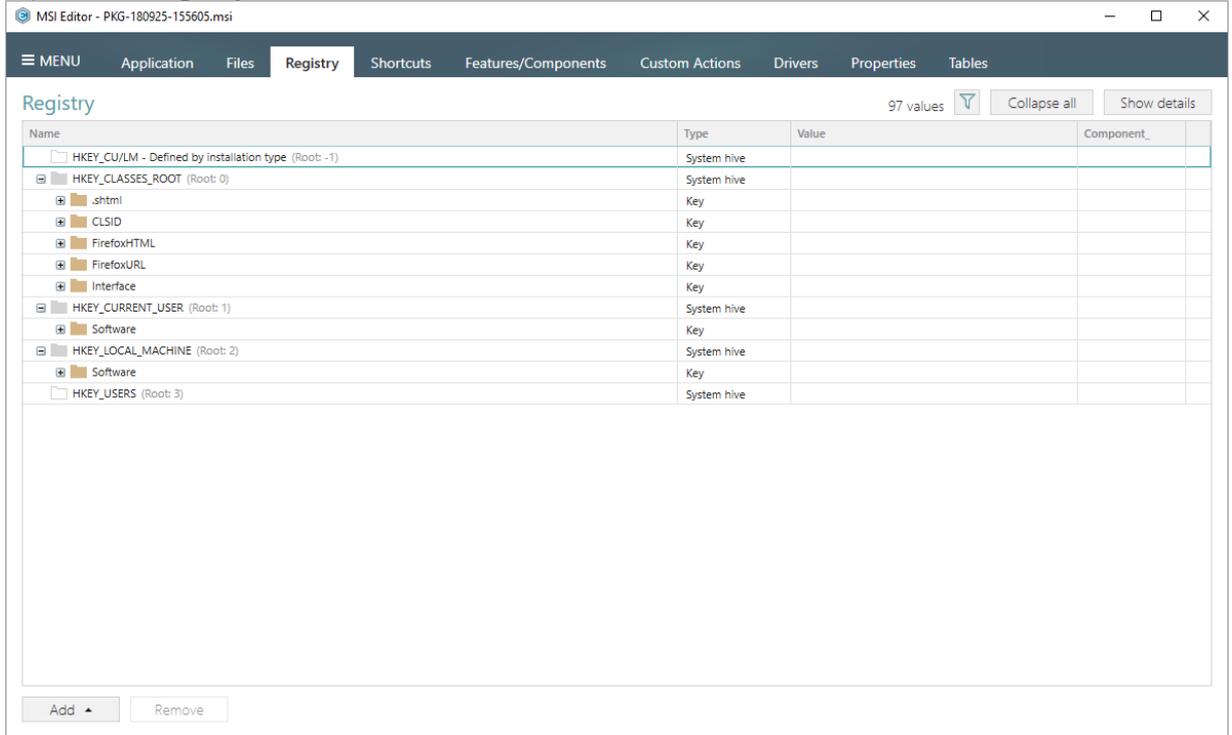
- [3]. Enter a key name, select a component from the list, then click **Add**. For creating a new component, go to the **Features/Components** tab.



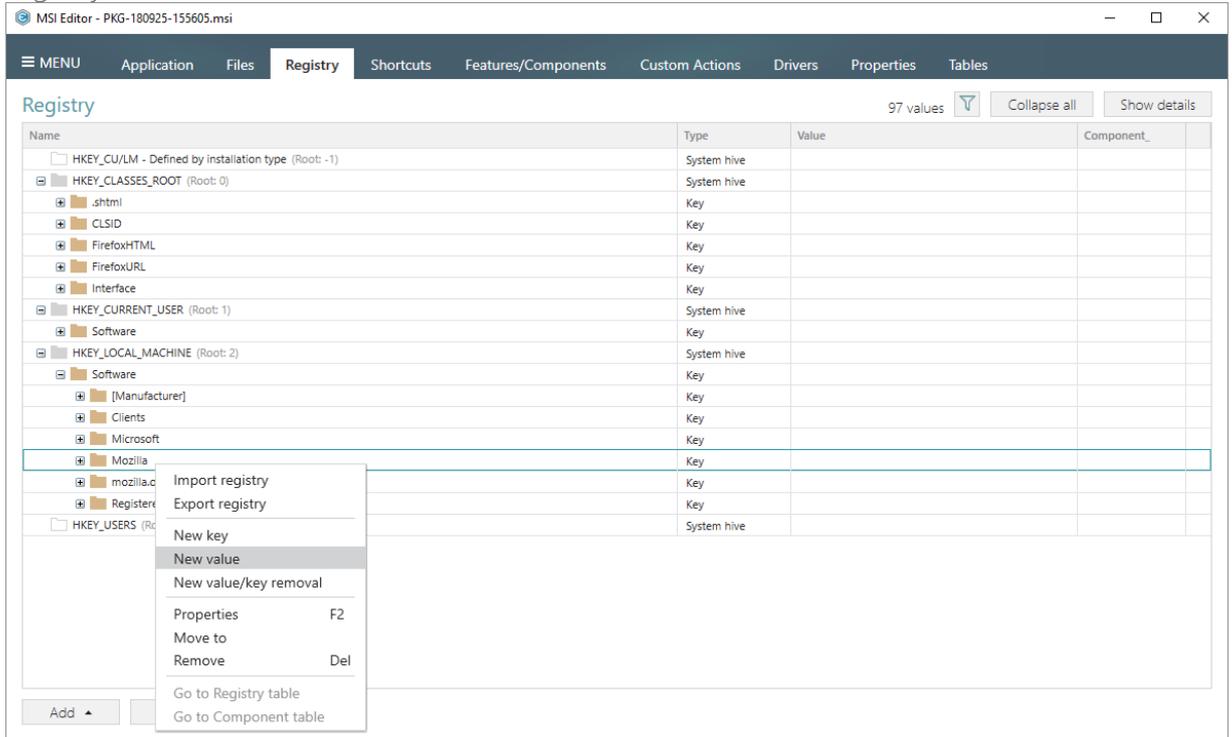
3.7.3.2 Add Registry Value

Add a new registry value manually.

[1]. Open the Registry tab.



[2]. Select New value from the context menu of a key, where you want to create a new registry value.



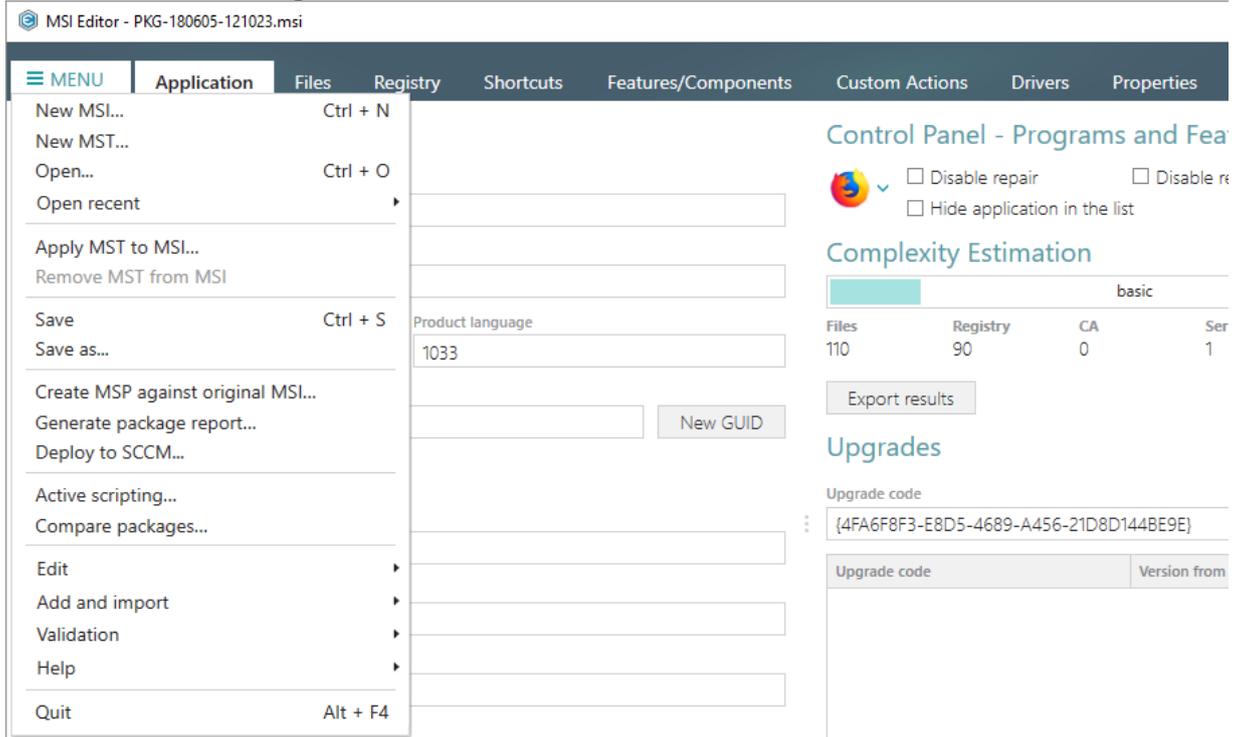
[3]. For creating an ordinary registry value, just specify a Name, Value itself, select a Component from the list, to which this value will be assigned, and then click Save.

For creating a Default key value, or securing an empty key creation on install and/or its removal on uninstall, select a respective option from the Value processing method field.

The Parsed value option serves easier creation of a registry value of the proper value type. However, the Raw MSI value option gives ability to manage what exactly will be saved to the opened MSI database.

The screenshot shows a 'Properties' dialog box for an MSI table named 'Registry'. The dialog has a title bar with standard window controls. Below the title bar is a header area with a cube icon and the text 'MSI table: 'Registry''. The main area contains several sections: 'Value processing method' with a dropdown menu set to '1. Set both name and value'; 'Name' and 'Identifier' text boxes, with 'Identifier' containing 'reg_72c93ad2'; 'Value' section with a radio button selected for 'Parsed value', a 'Type' dropdown set to 'String value (REG_SZ)', and an empty 'Value' text box; a radio button for 'Raw MSI value' with an empty text box below it; 'Key' text box containing 'SOFTWARE\Mozilla' and a 'Browse...' button; 'Root' dropdown set to 'HKEY_LOCAL_MACHINE (2)'; and 'Component_' dropdown set to 'plugin_container.exe'. At the bottom are 'Save' and 'Cancel' buttons.

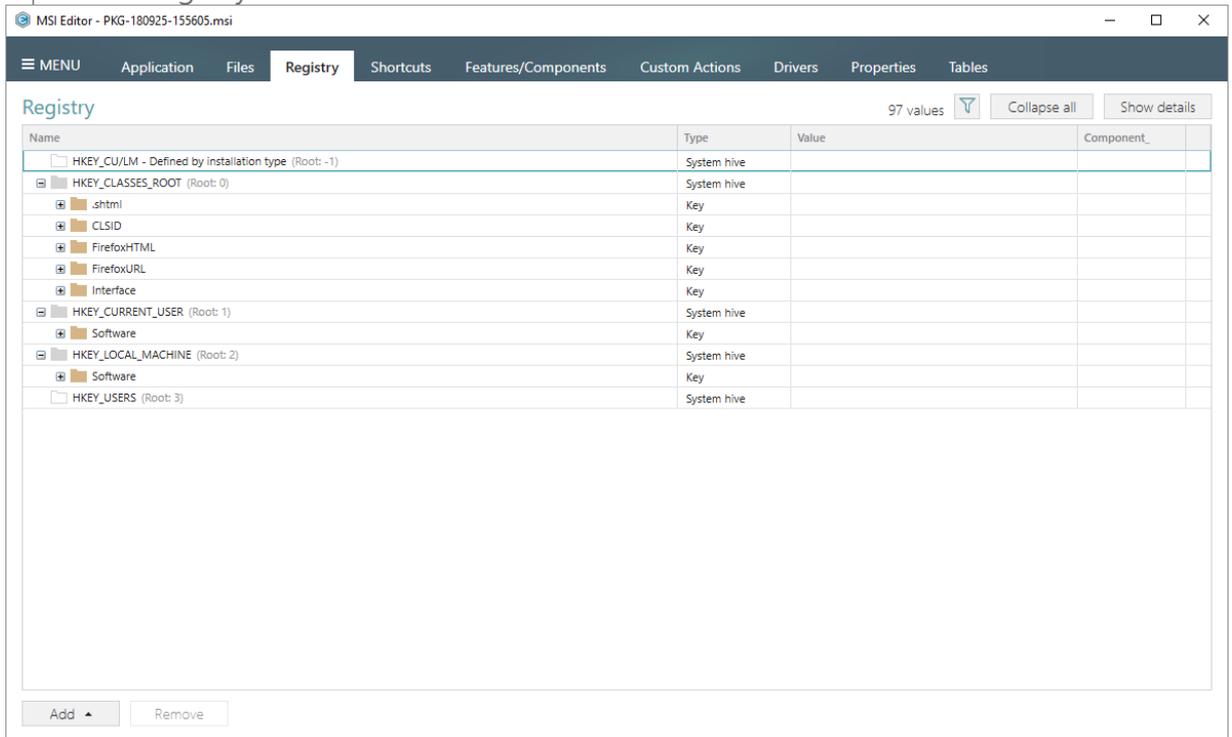
[4]. In order to save changes, select Save from MENU.



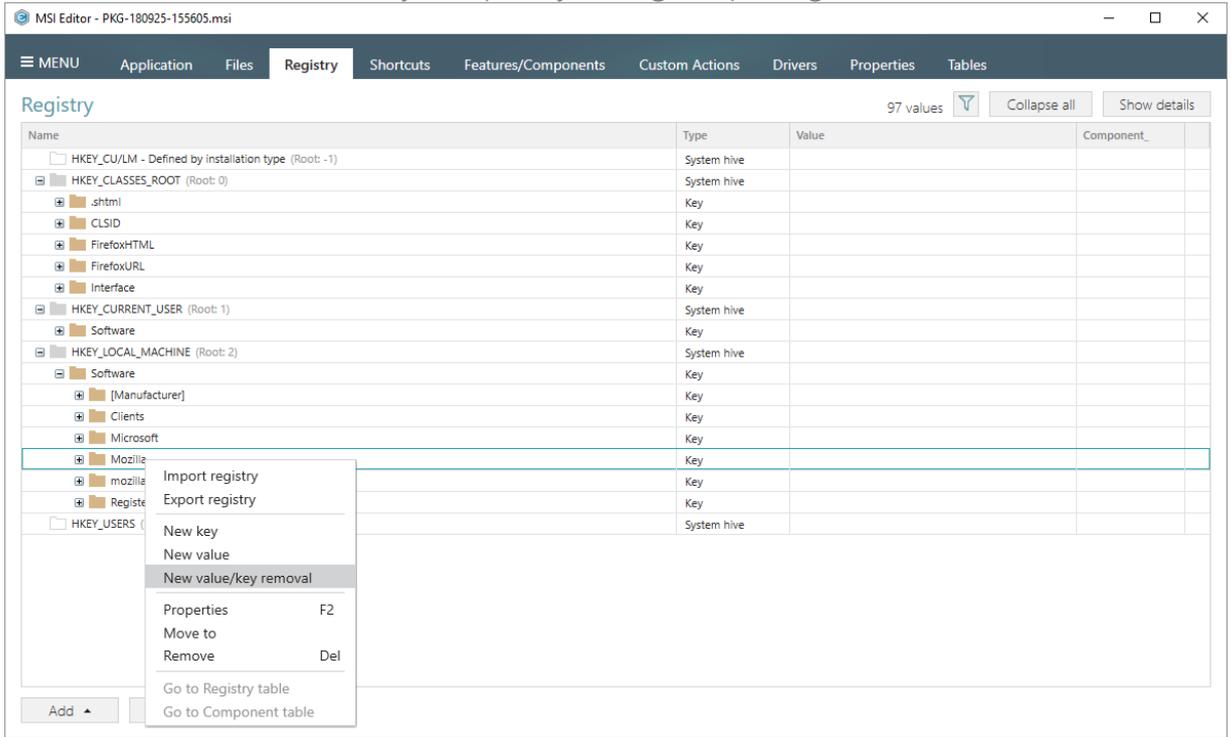
3.7.3.3 Add Value/Key Removal

Add a new RemoveRegistry value manually for securing a value or a key removal during the package installation.

[1]. Open the Registry tab.

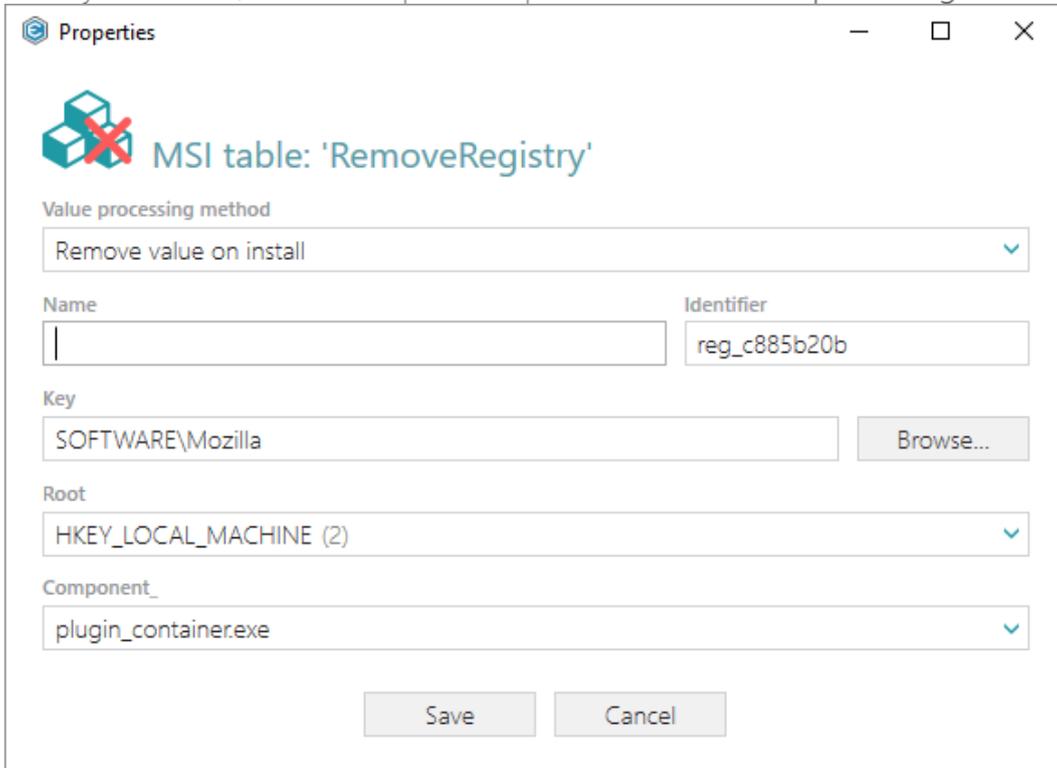


- [2]. Select New value/key removal from the context menu of a key, from which you want to remove a value or a whole key completely during the package installation.



- [3]. For removing a registry value, specify its Name, select a Component from the list, which will controls the deletion of thee specified registry value, and then click Save.

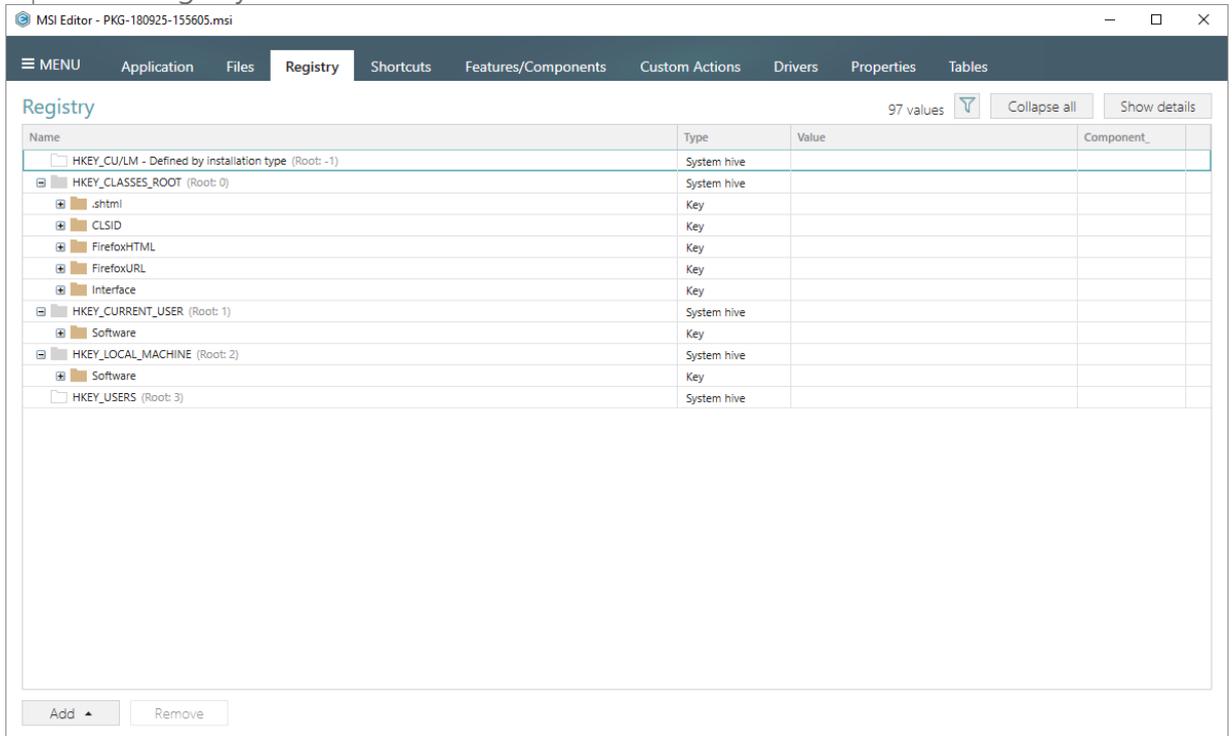
For cleaning-up a Default key value, or removing a whole key with all of its values and subkeys on install, select a respective option from the Value processing method field.



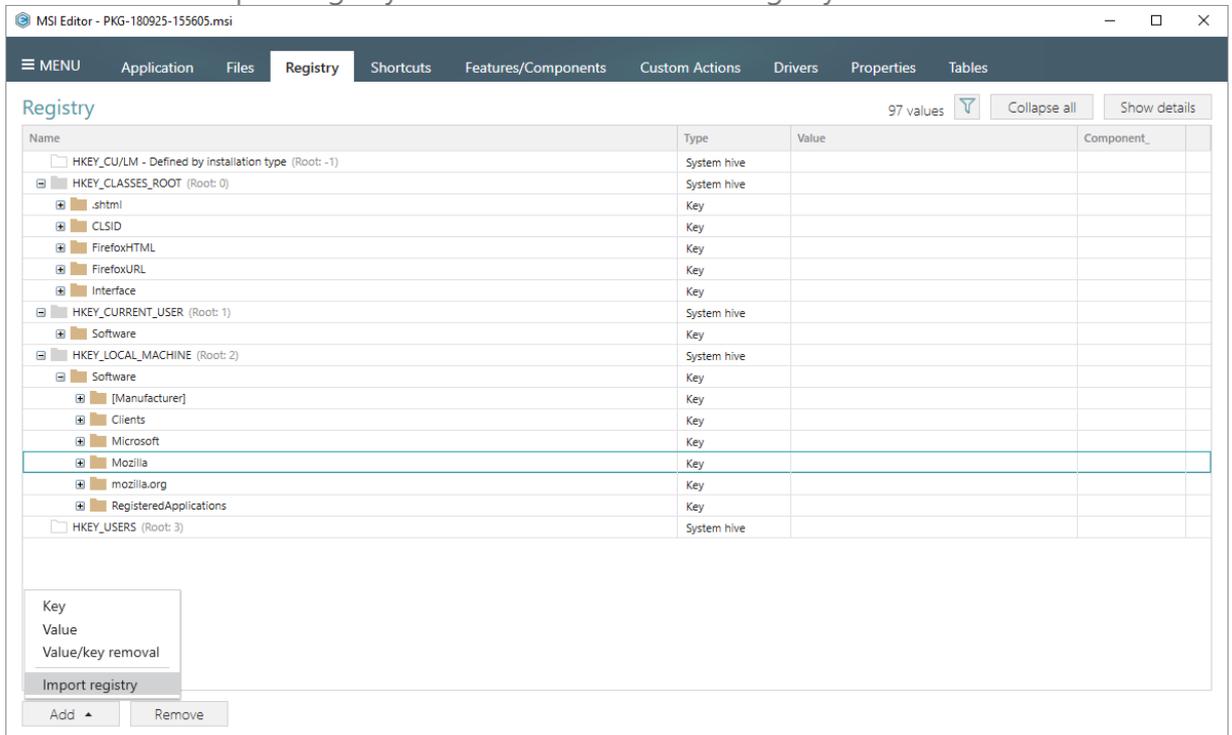
3.7.3.4 Import Registry

Import registry from the REG file.

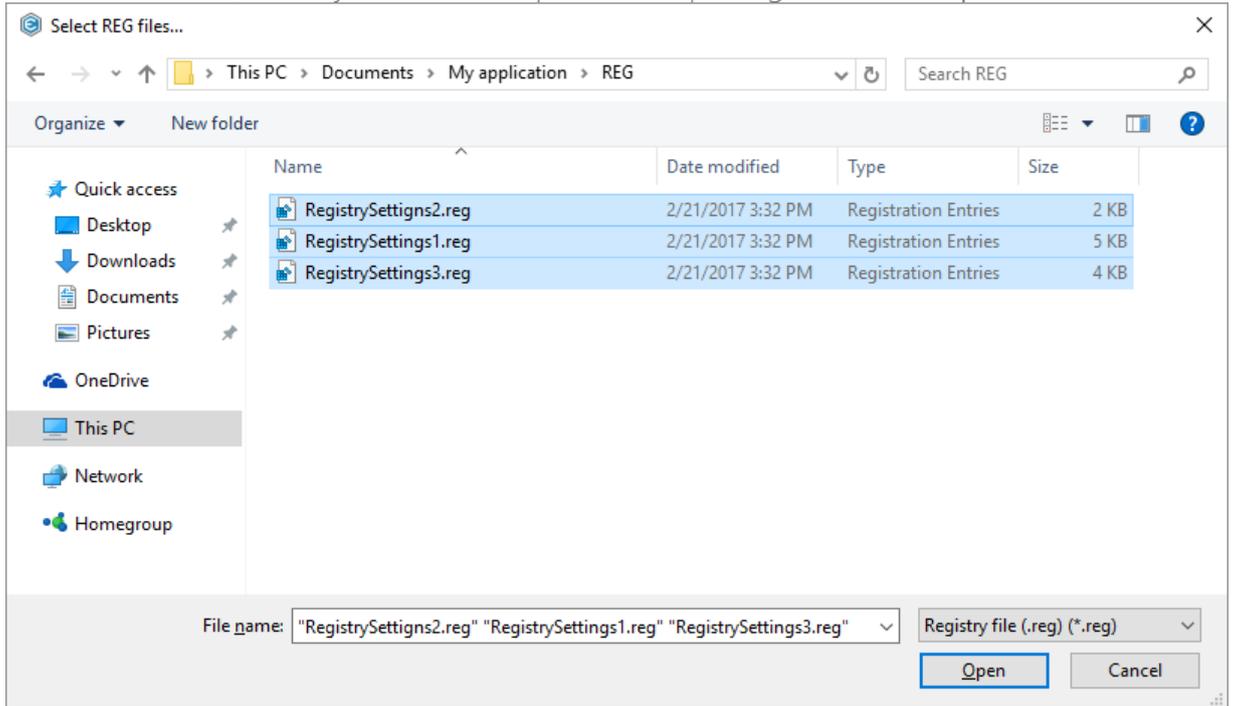
[1]. Open the Registry tab.



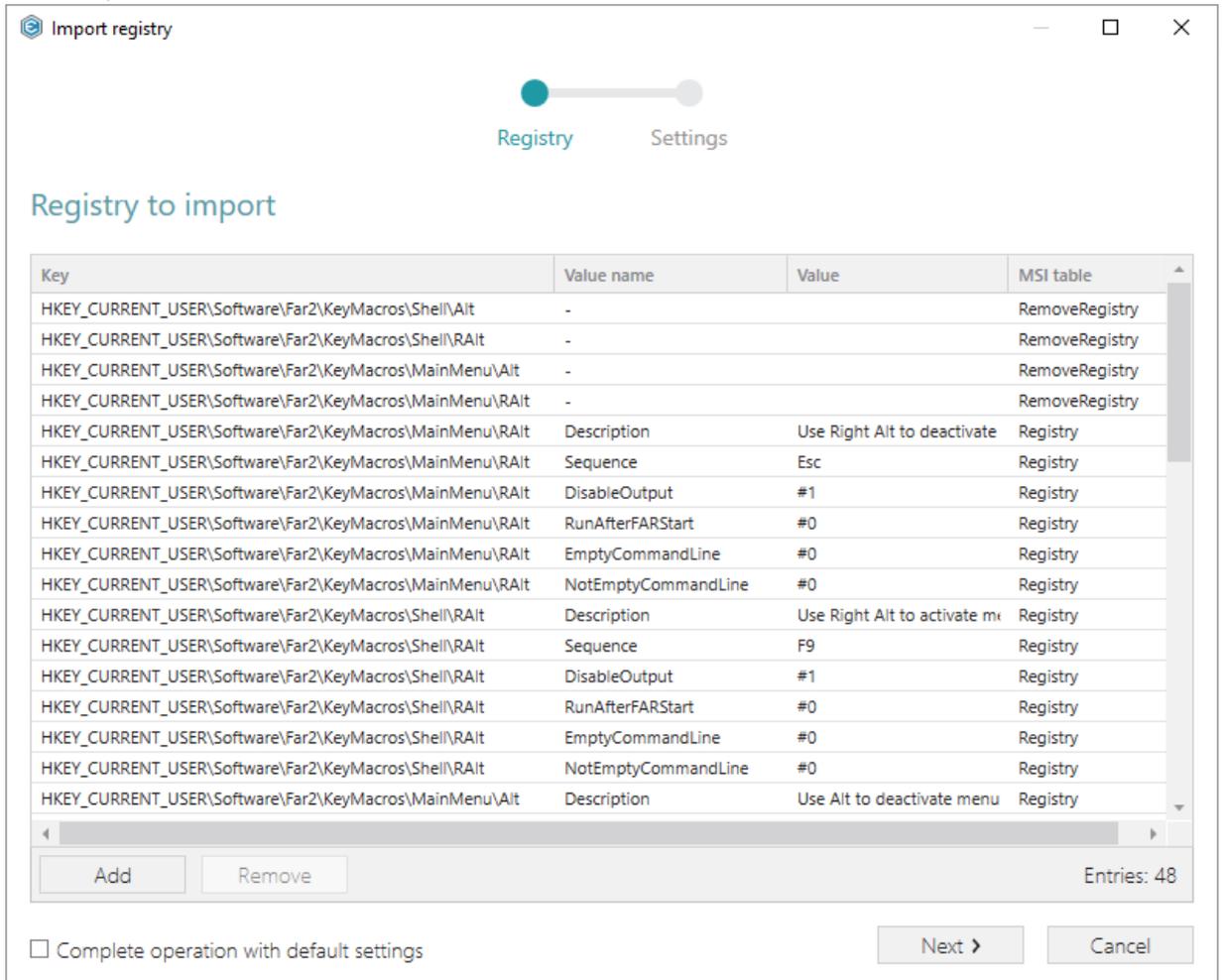
[2]. Select Add -> Import registry from the toolbox of the Registry tab.



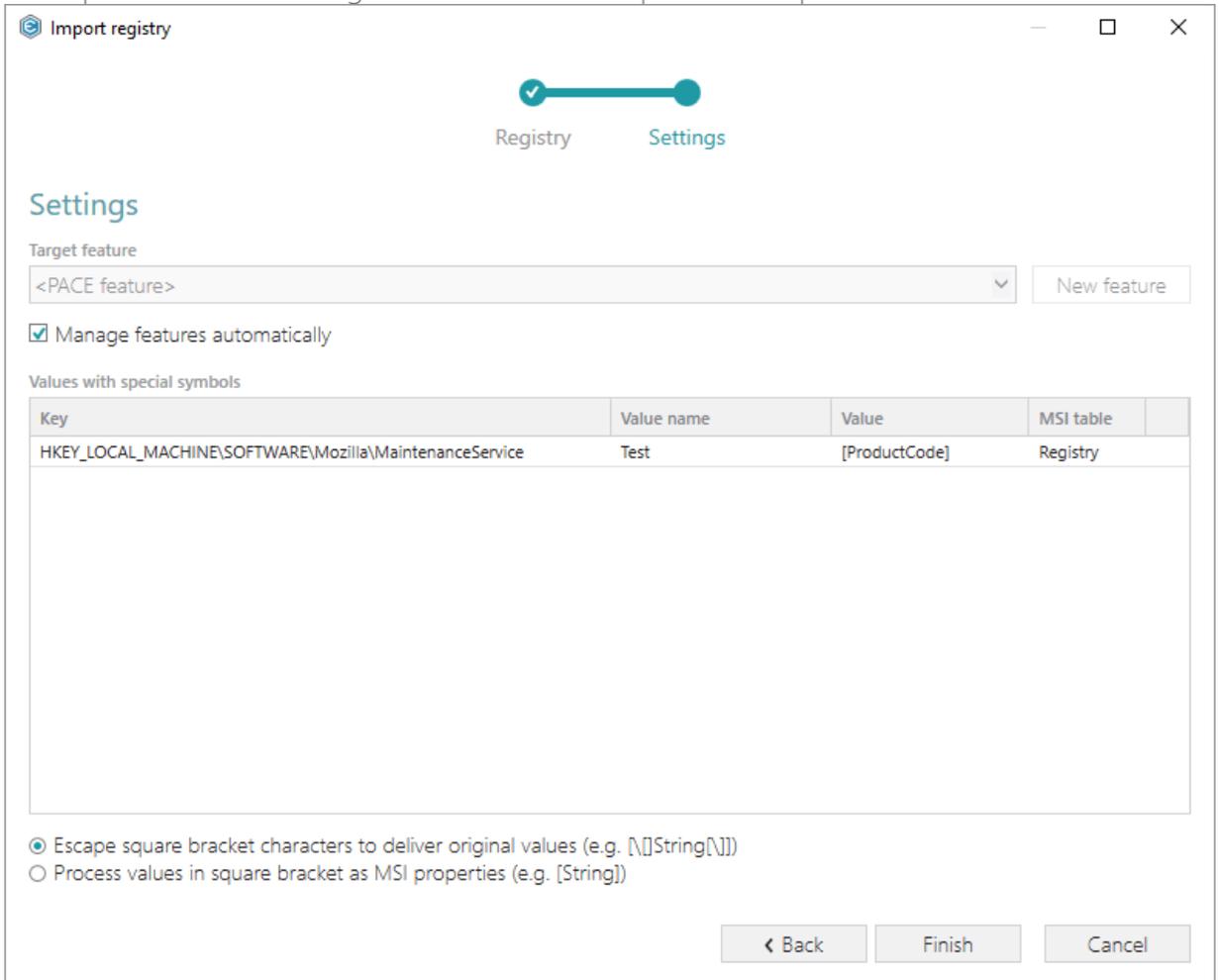
[3]. Choose REG files, which you want to import to the package and click Open.



[4]. Review the registry entries, read from the selected REG files, remove unnecessary, if needed, and click Next.



- [5]. At the **Settings** step, you can select an MSI Feature, to which components with the registry entries will be assigned. If the registry entries, which have been read, contain values in square brackets, you can select how these values will be processed – as MSI properties or as ordinary registry values. Below, in the tables, you will find the detailed description of these settings. Click **Finish** to complete the import.



Feature settings

Manage features automatically

The specific PACE features will be created (or used if they exist) for the components, containing the imported registry. Feature structure is based on the packaging best practices and depends on the registry key location.

<a feature, selected from the list>

Components with registry will be assigned to a feature, selected from the list.

Values with special symbols

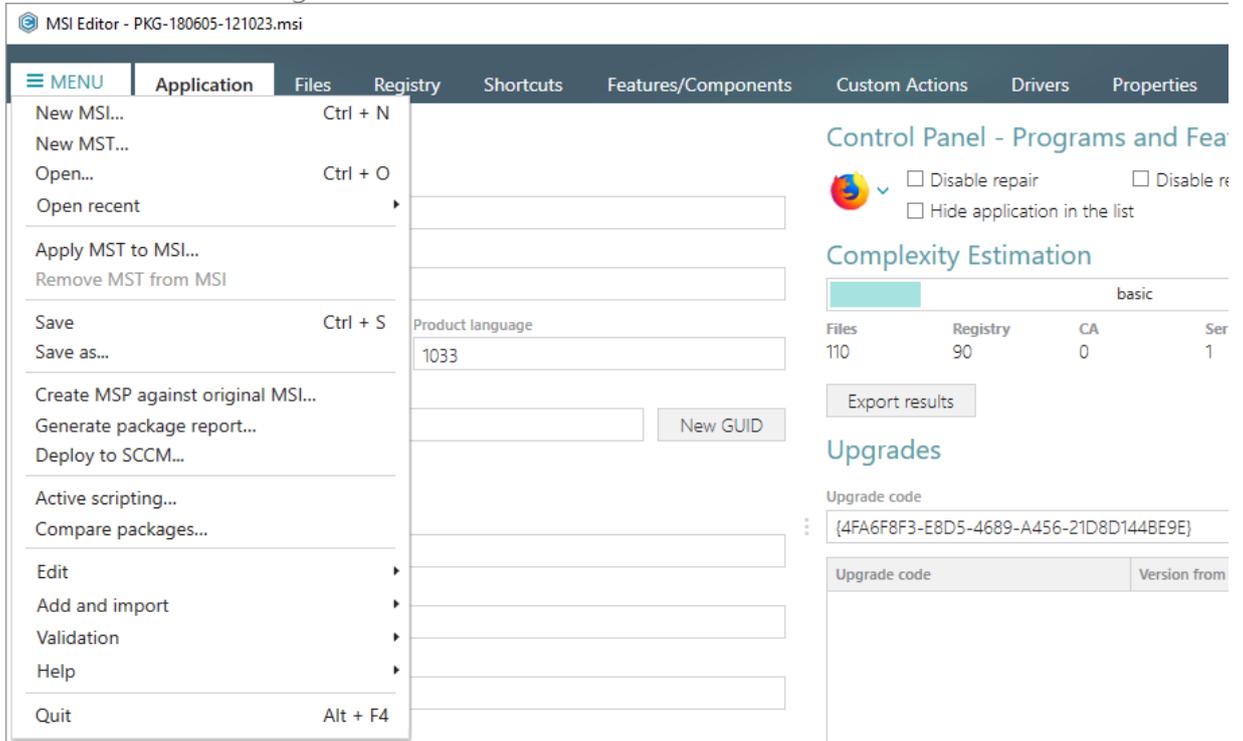
Escape square bracket characters to deliver original values

Values in square brackets, displayed in the list, will be saved to MSI as ordinary strings using the general rules for escaping the special characters. This approach guarantees the delivery of the imported registry entries to the target system with their original values.

Process values in square brackets as MSI properties

Values in square brackets, displayed in the list, will be saved to MSI as MSI properties. Thus, each MSI property will be replaced with its value during the MSI installation. If a property does not exist in MSI during the installation, it will be replaced with the blank value.

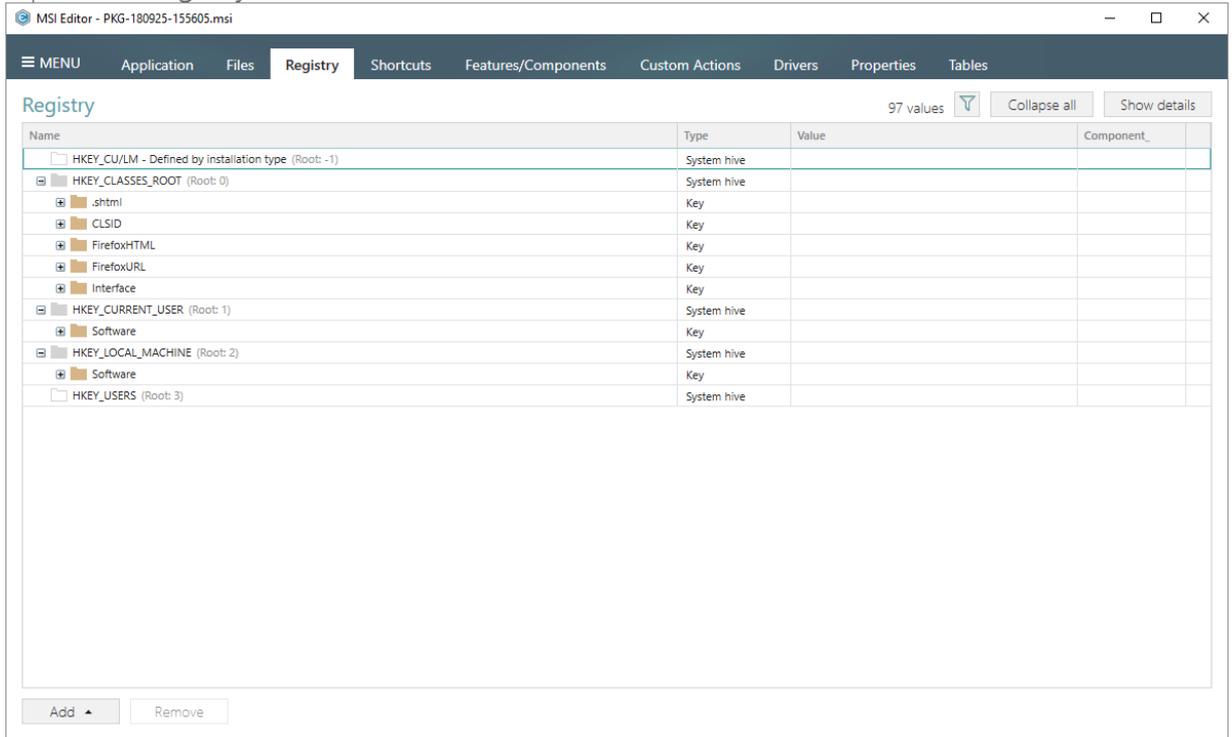
[6]. In order to save changes, select Save from MENU.



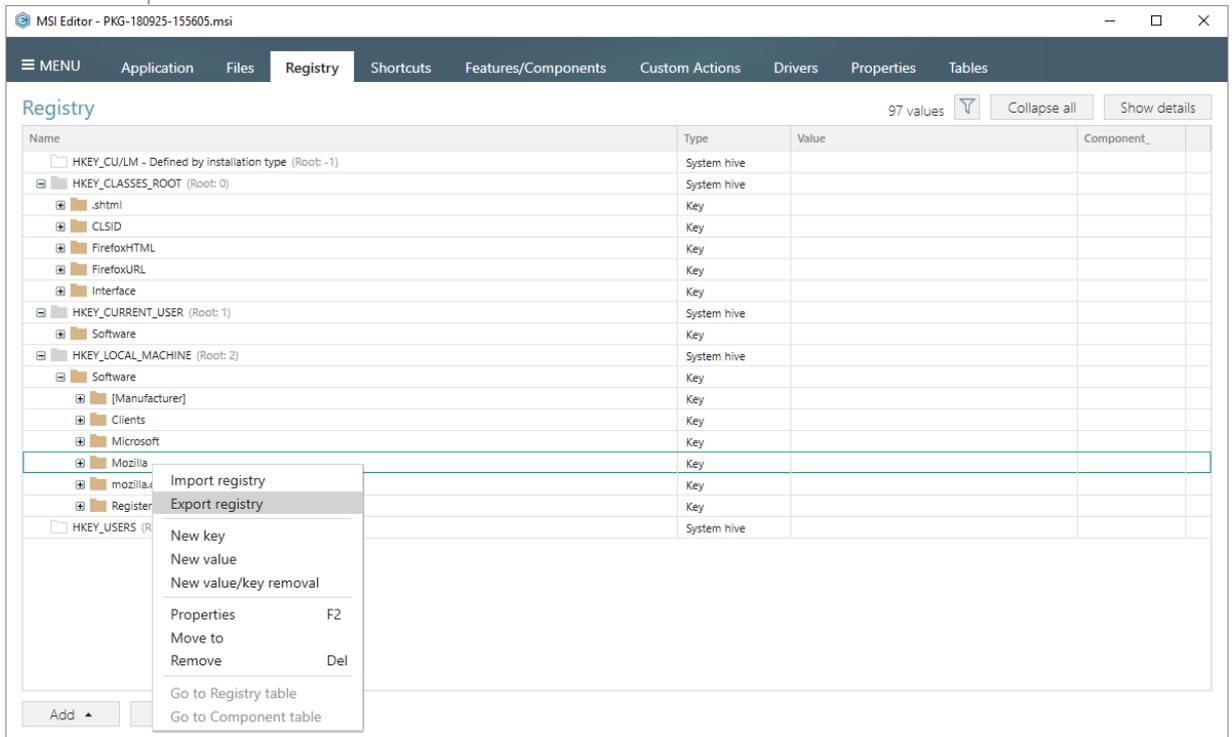
3.7.3.5 Export Registry

Export the selected registry to the REG file.

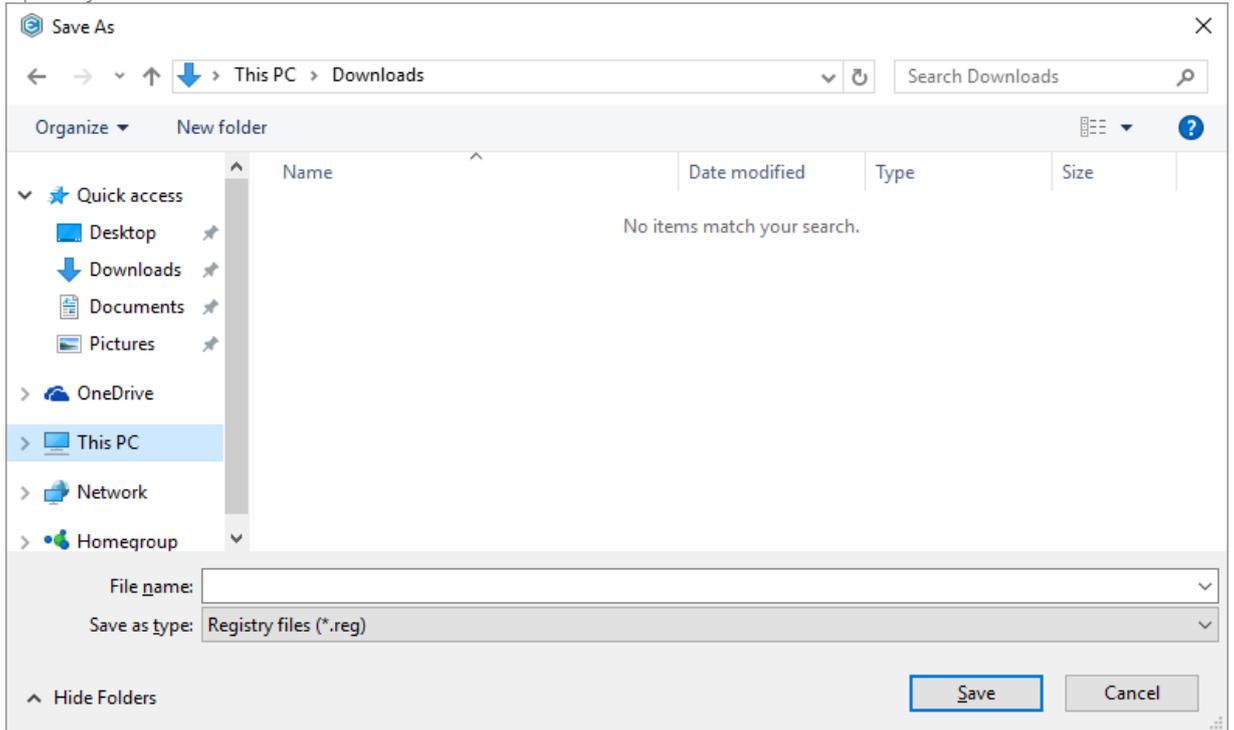
[1]. Open the Registry tab.



[2]. Select Export registry from the context menu of a root hive, key, or a value, which you want to export to the REG file.



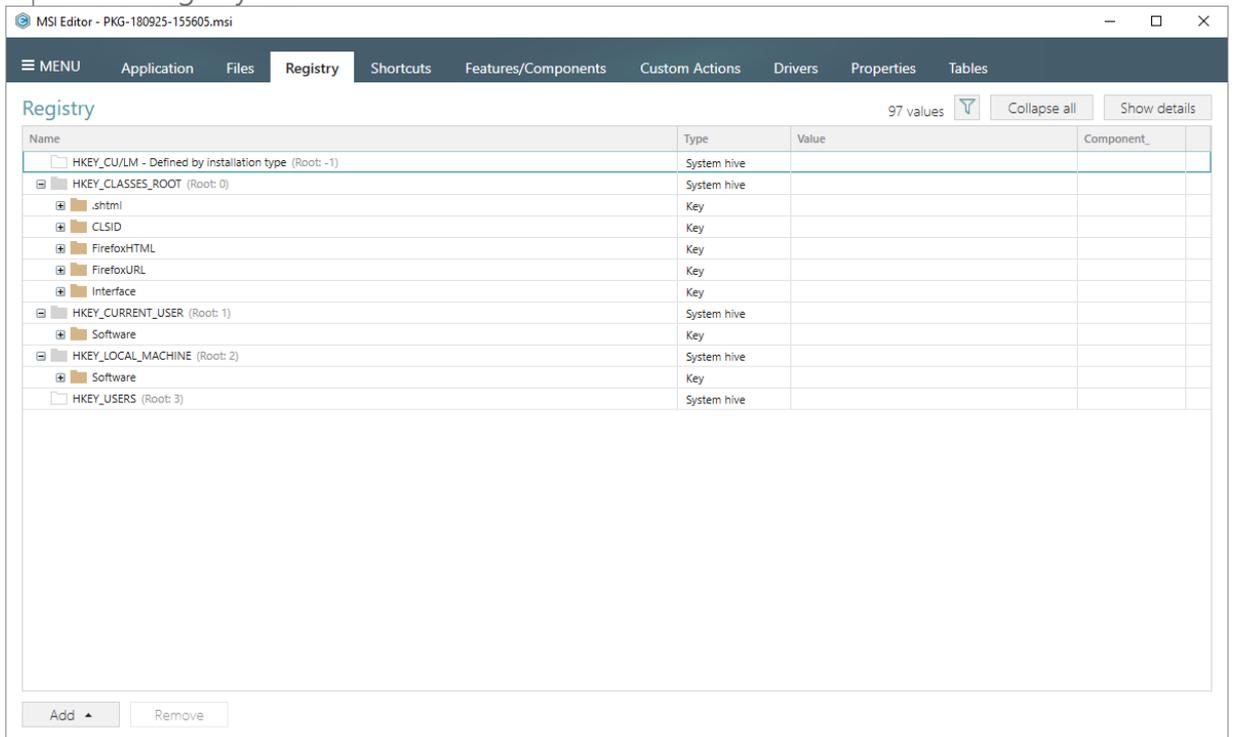
[3]. Specify a name and a destination location of the REG file and click Save.



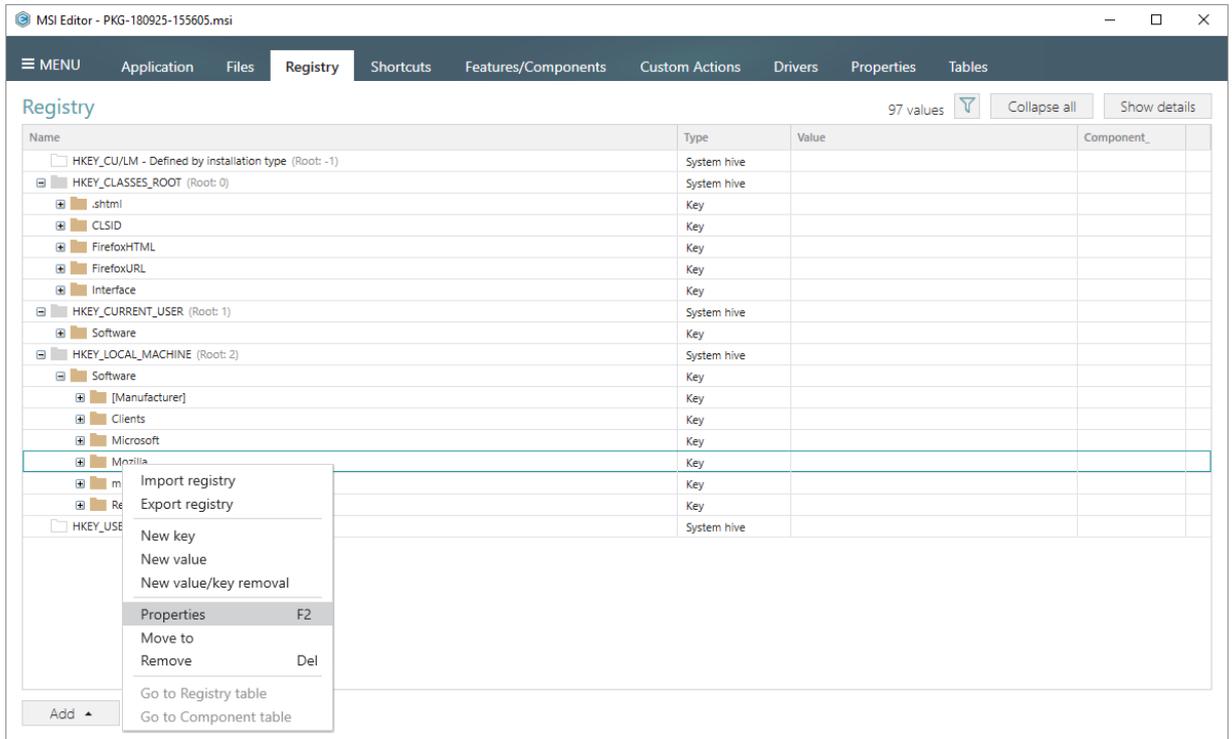
3.7.3.6 Set Permissions

Set custom permissions for the registry key.

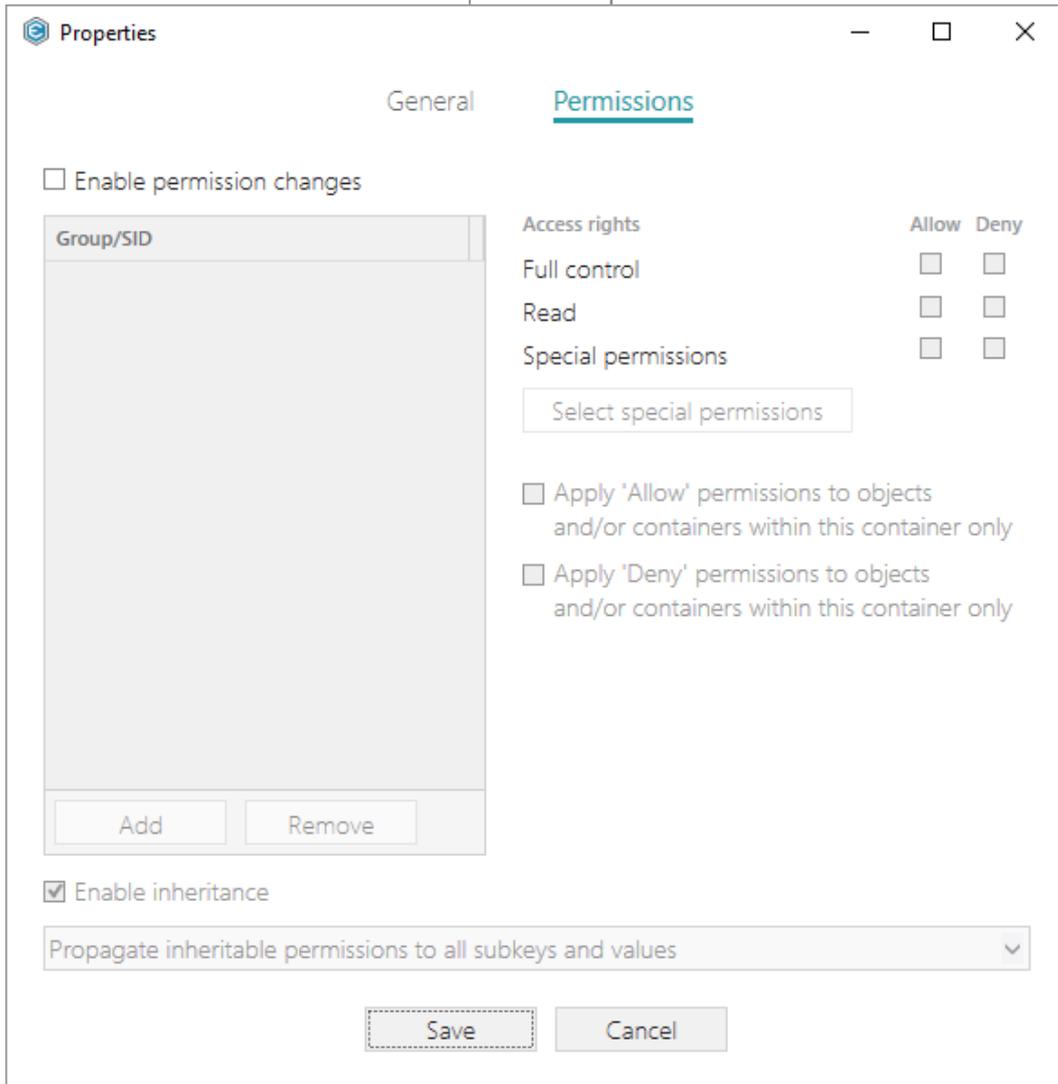
[1]. Open the Registry tab.



- [2]. Select Properties from the context menu of a registry key, for which you want to set permissions. Note that permissions could not be changed for the registry values and root hives.

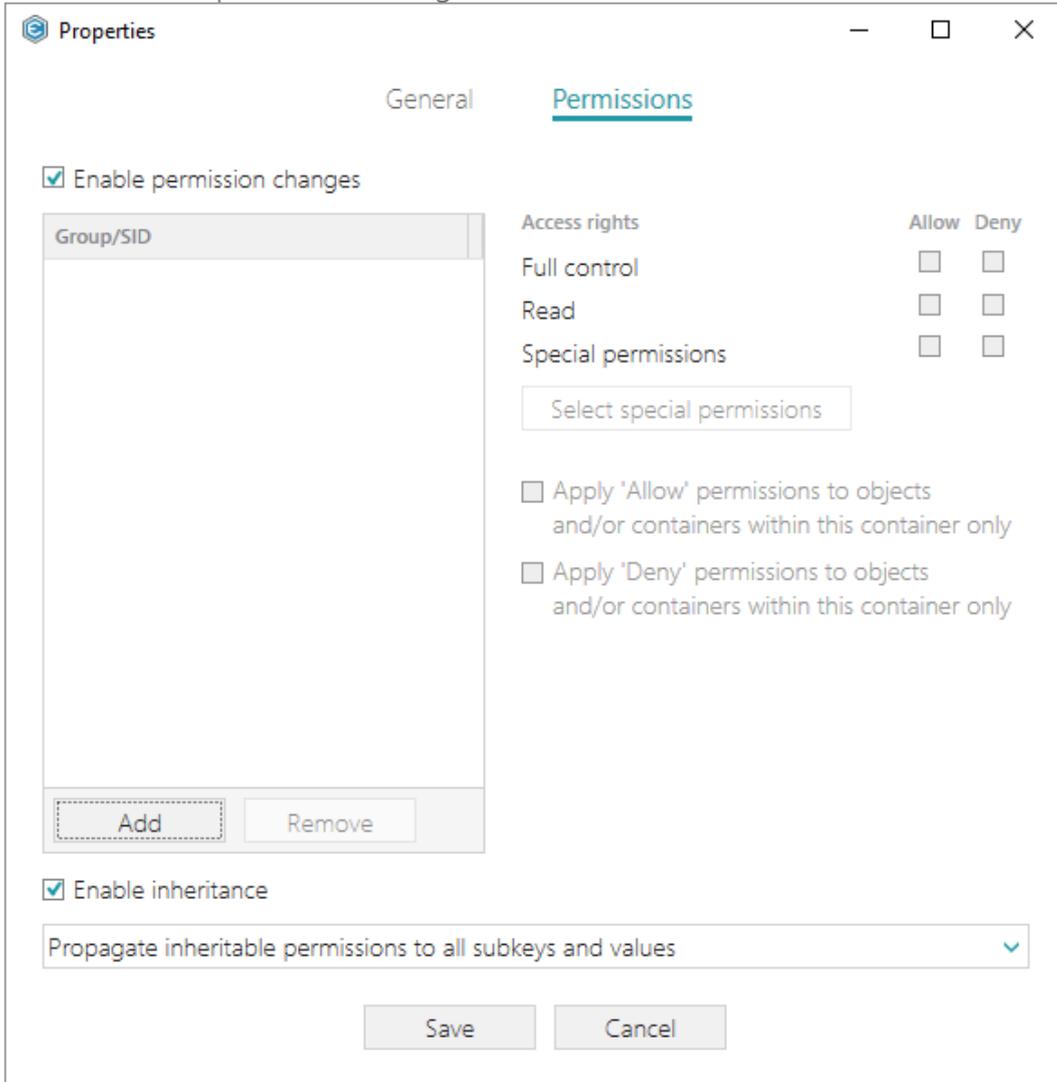


[3]. Go to the Permissions tab of the opened Properties window.

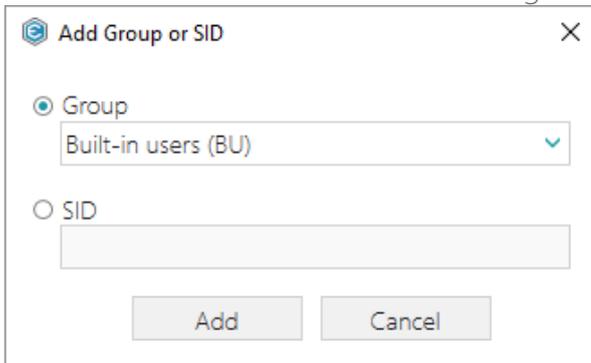




[4]. Tick the Enable permission changes checkbox and click Add.



[5]. Select a group from the list or enter SID manually, for which you want to set permissions, and click Add. Note that you can add as many groups and SID as you need. Each group and SID could have individual access rights.

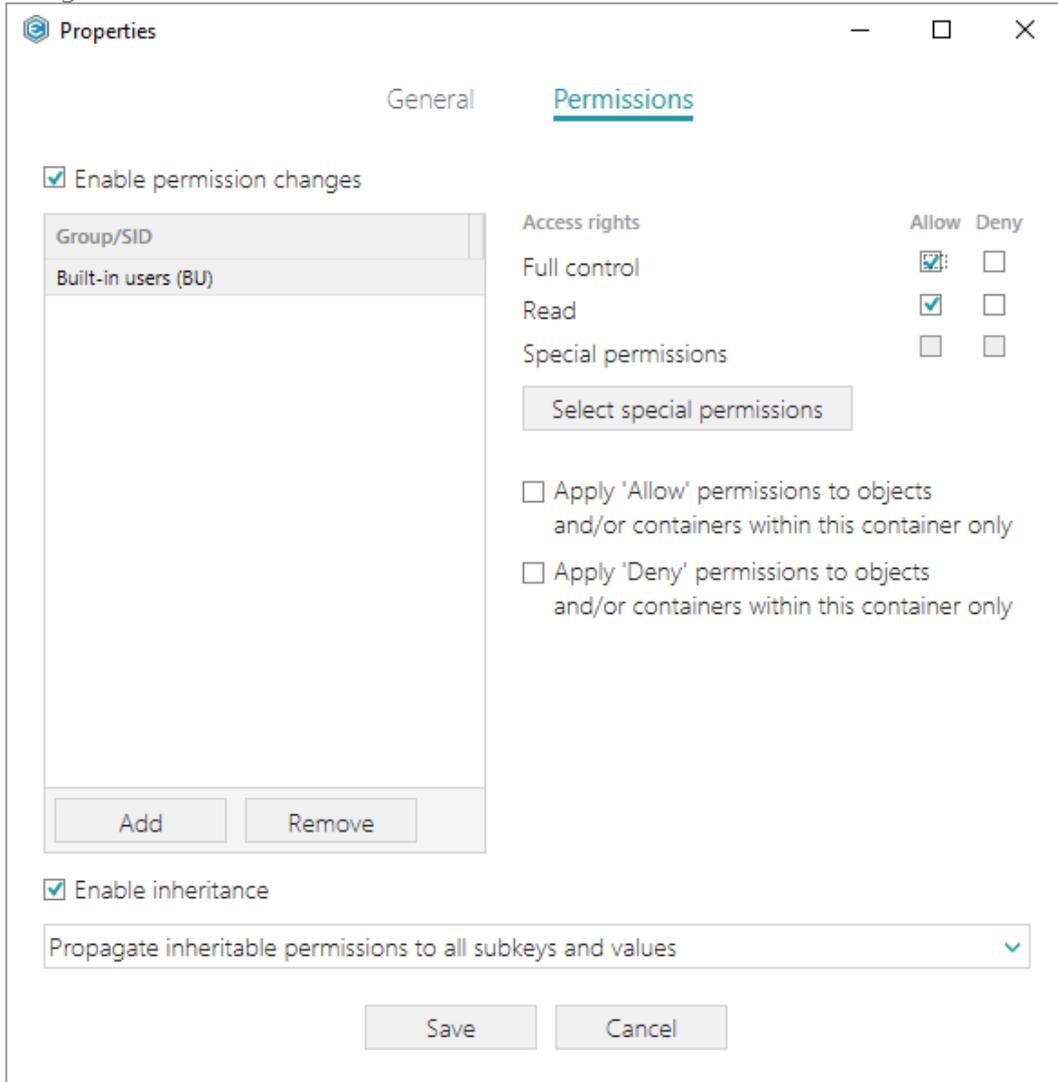


[6]. Tick the necessary access rights for the selected group or SID, change (if needed) special permissions, inheritance options and behavior of applying the permissions. Click Save to save the changed permission settings to MSI. Note that permissions will be propagated

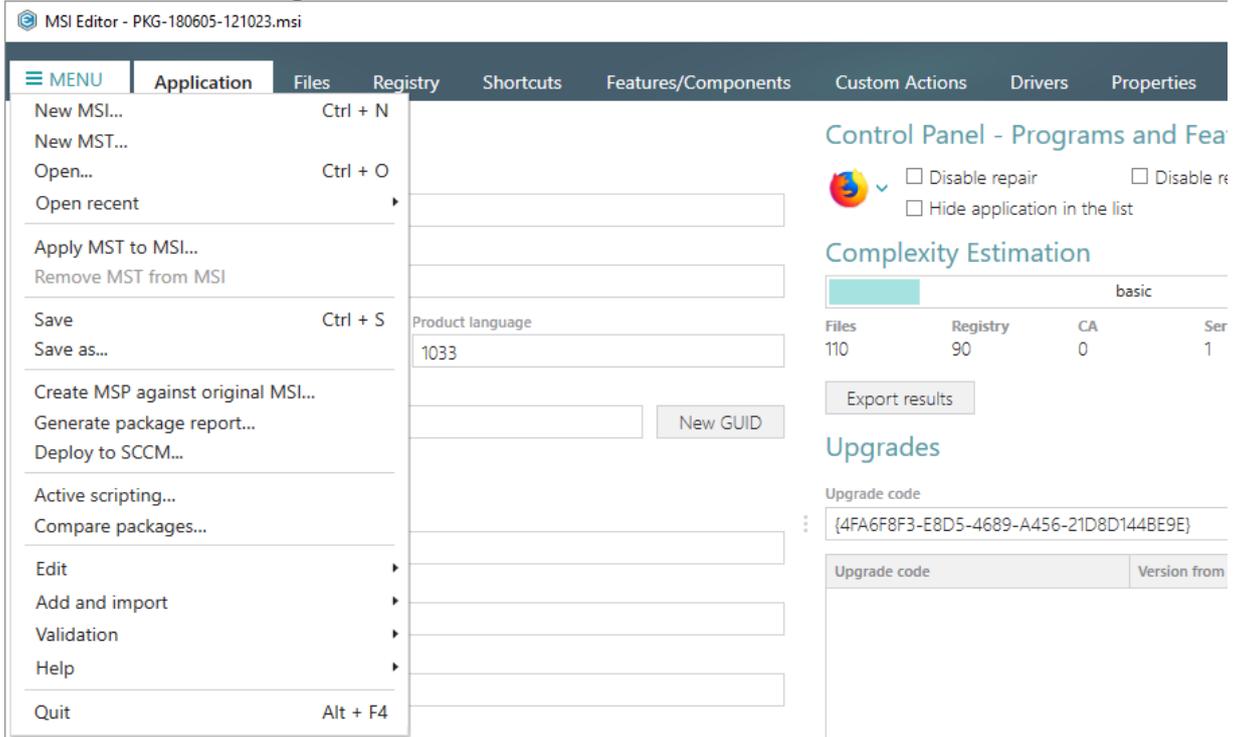




using the SecEdit tool.



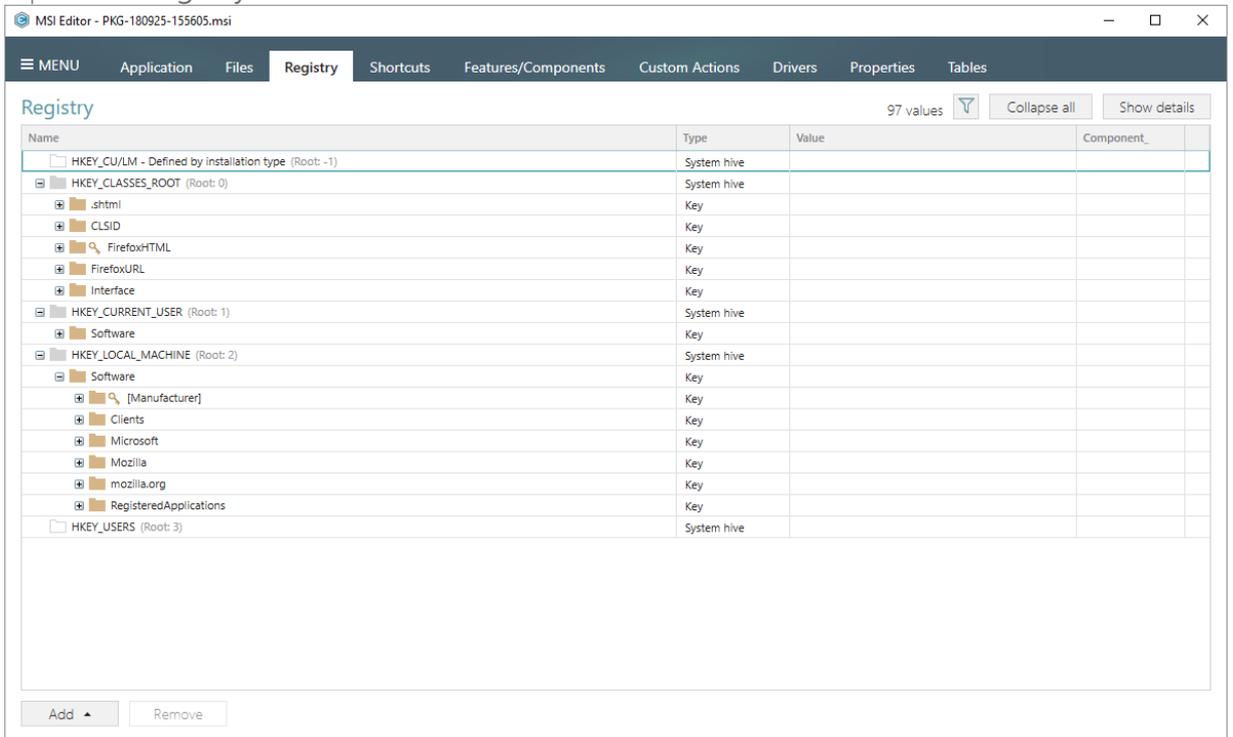
[7]. In order to save changes, select Save from MENU.



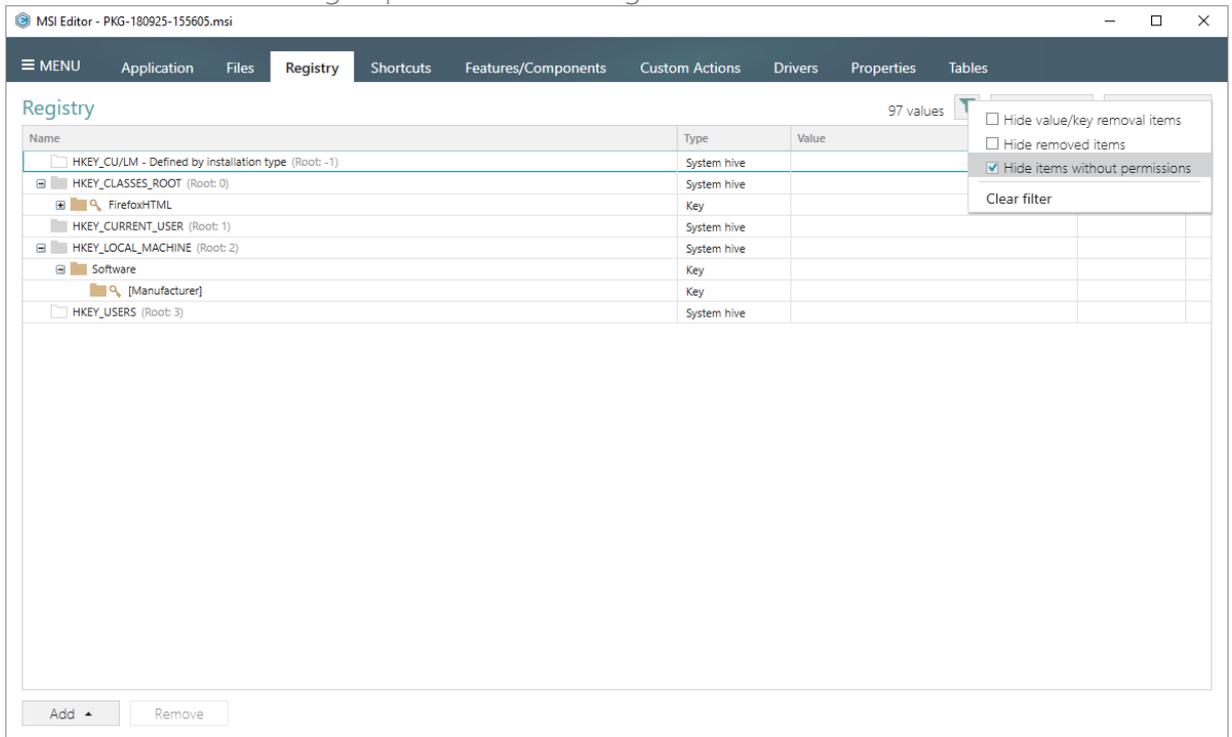
3.7.3.7 Remove Permissions

Locate registry key with custom permissions and remove the unnecessary permissions.

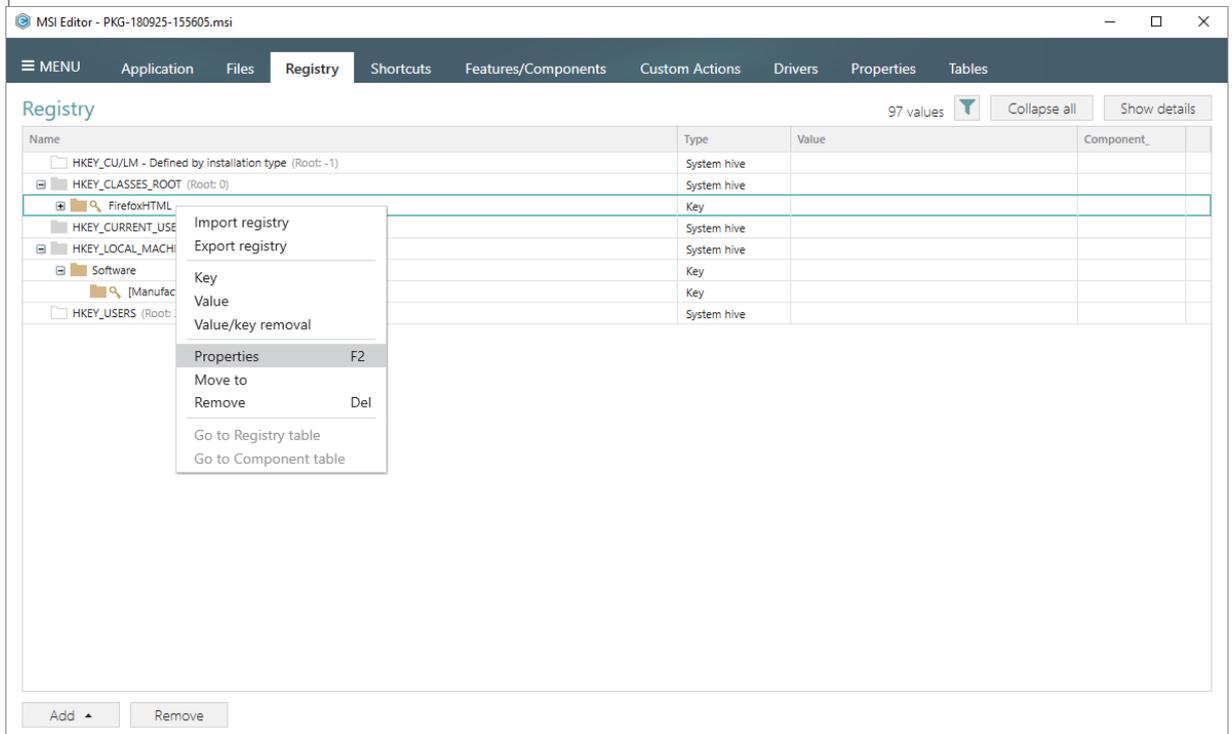
[1]. Open the Registry tab.



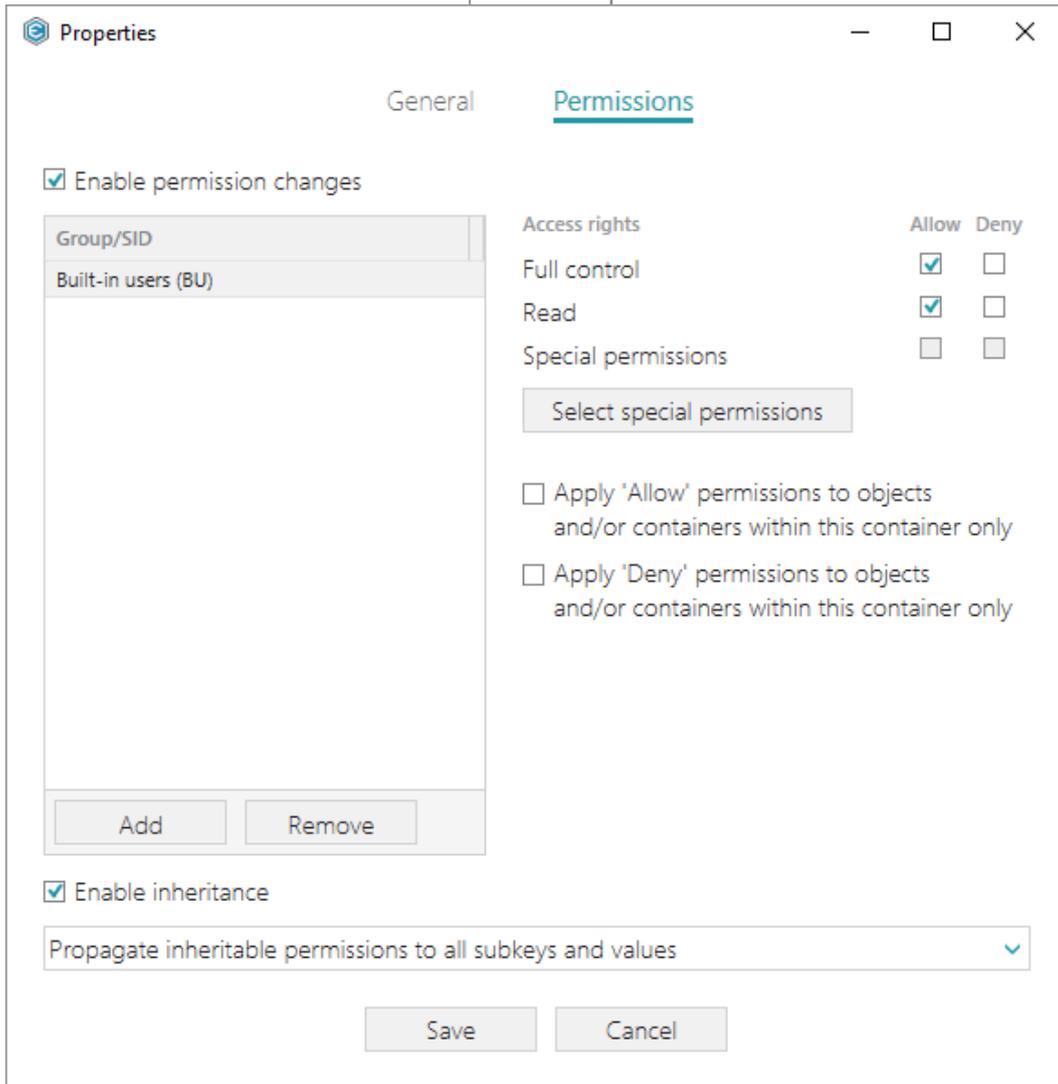
- [2]. (Optional) Click on the Filter and apply the Hide items without permissions filter to locate resources with the changed permissions settings.



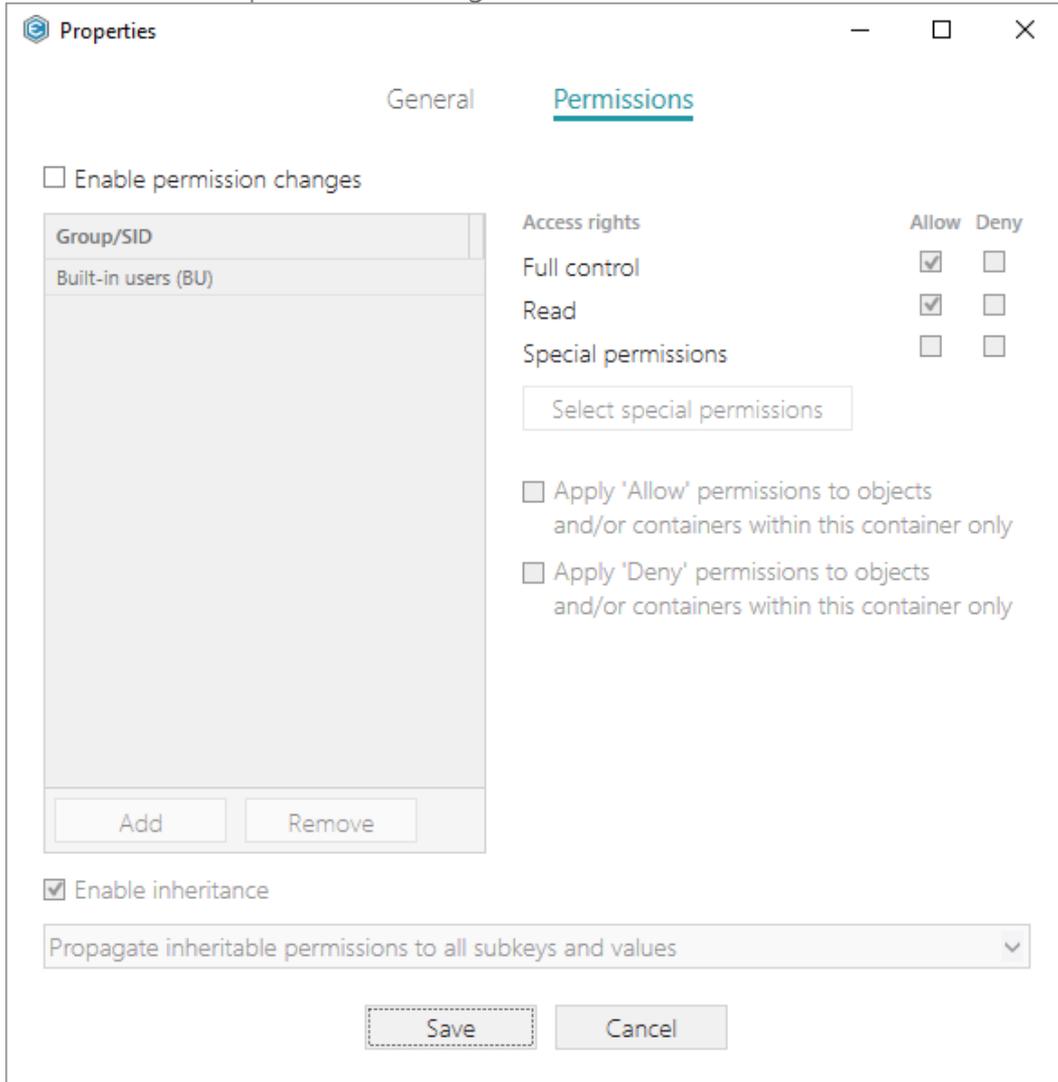
- [3]. Select Properties from the context menu of a registry key, for which you want to remove permissions.



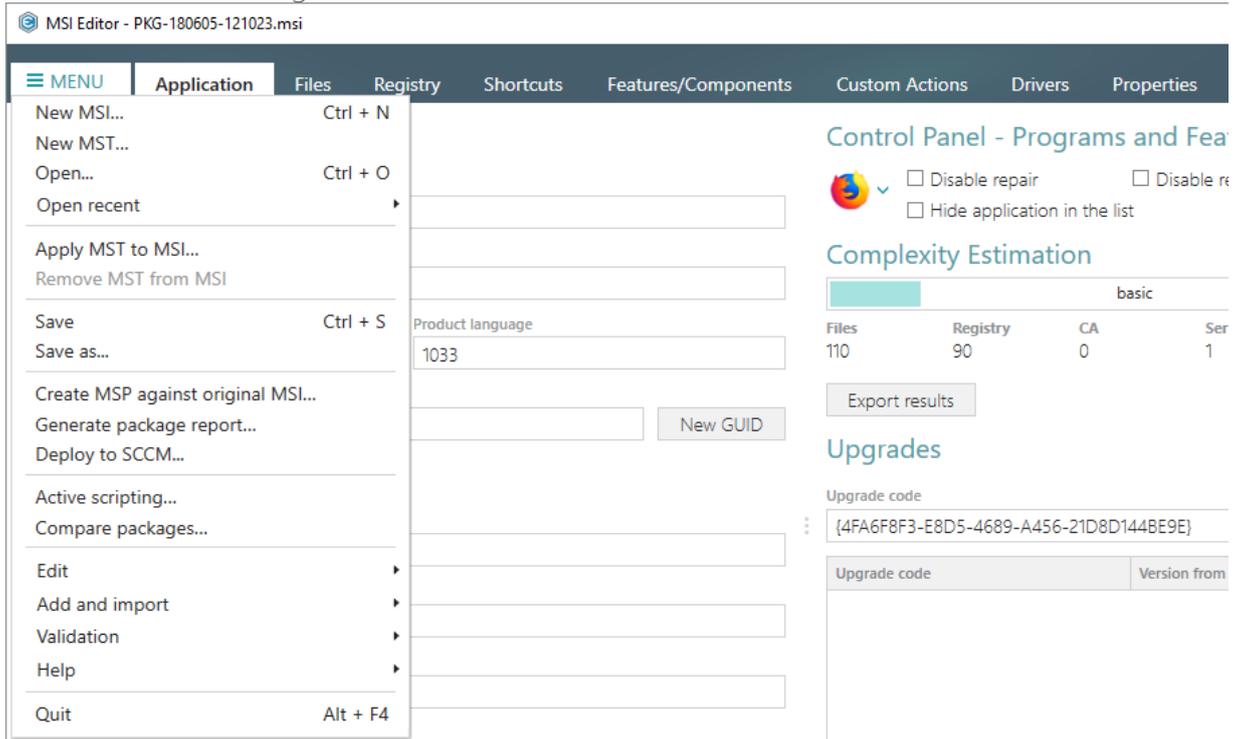
[4]. Go to the Permissions tab of the opened Properties window.



[5]. Untick the Enable permission changes checkbox and click Save.



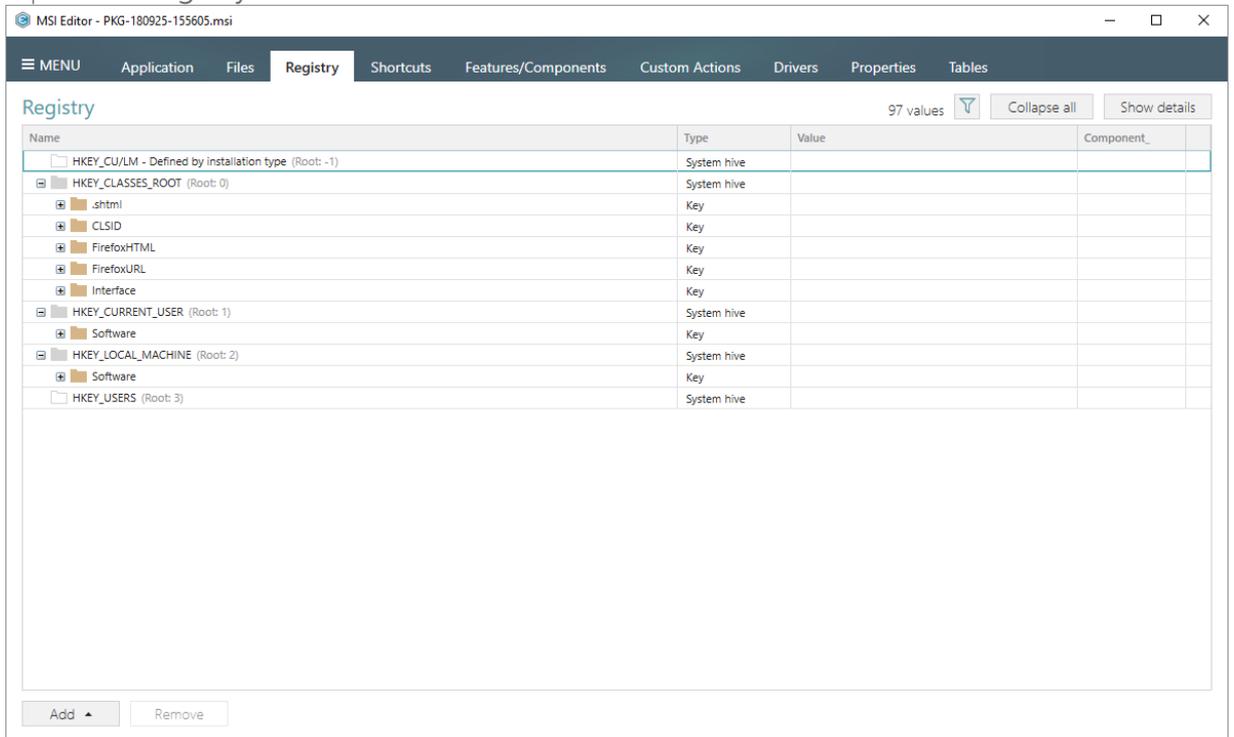
[6]. In order to save changes, select Save from MENU.



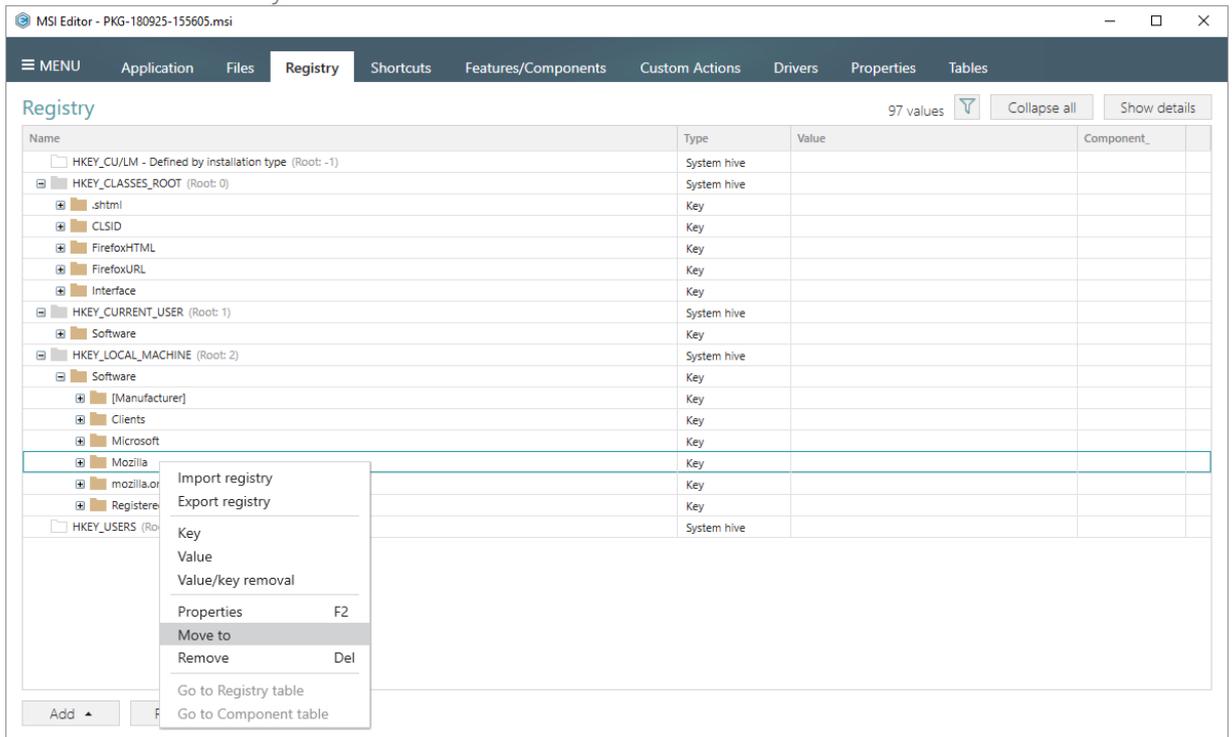
3.7.3.8 Move to

Move a registry value or a key from one parent key to another one.

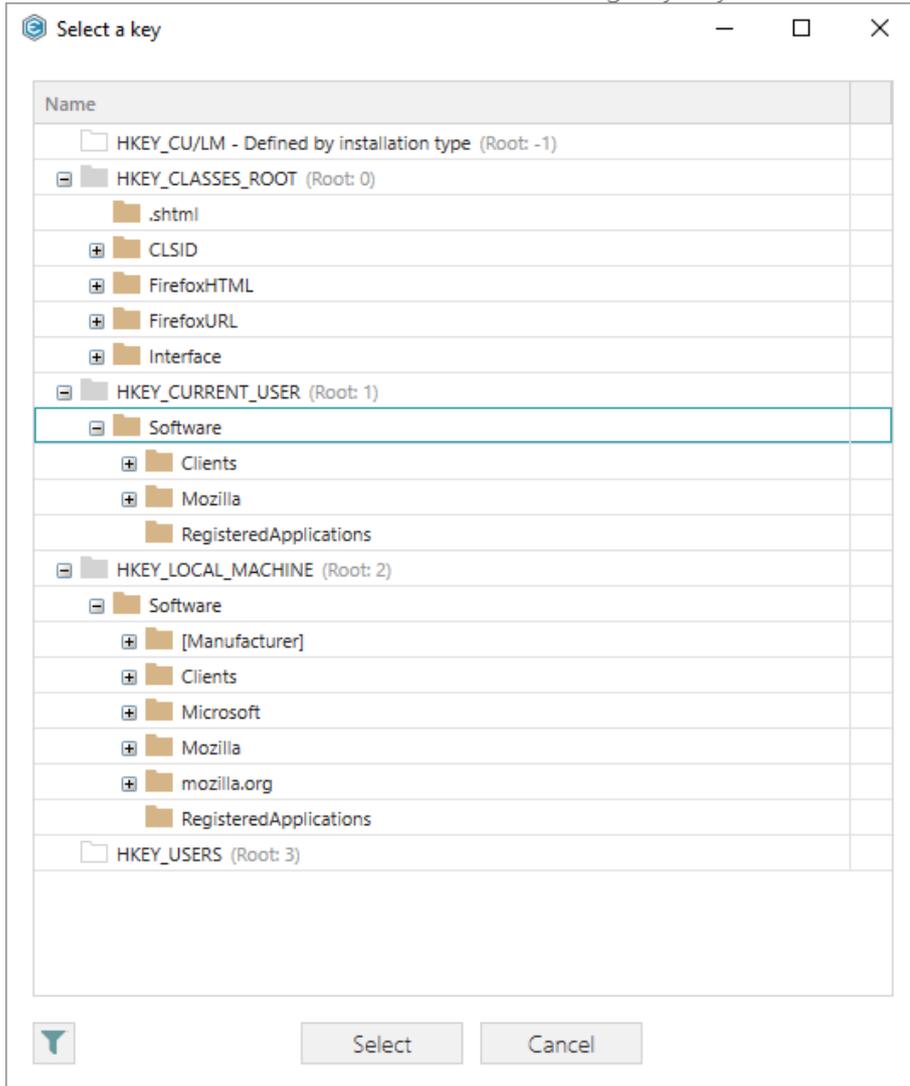
[1]. Open the Registry tab.



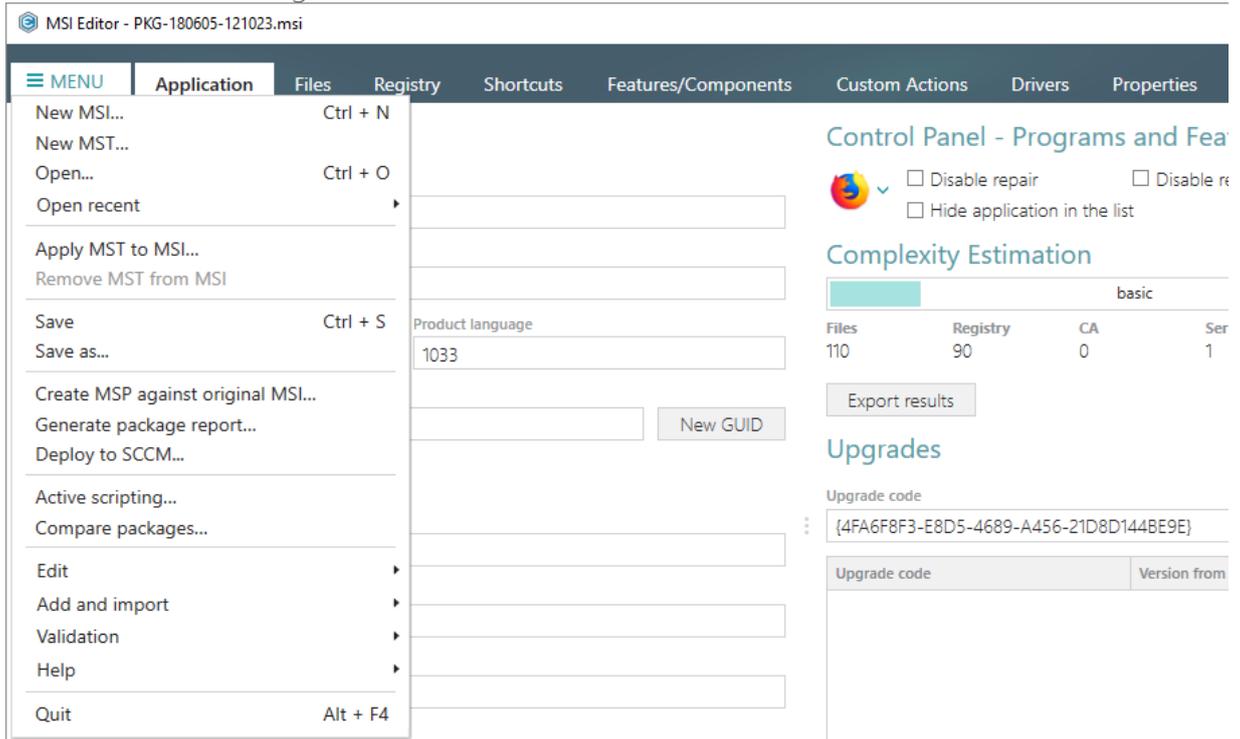
[2]. Select **Move to** from the context menu of a registry key or a value, which you want to move to another key.



[3]. Select a new destination location from the registry keys tree and click Select.



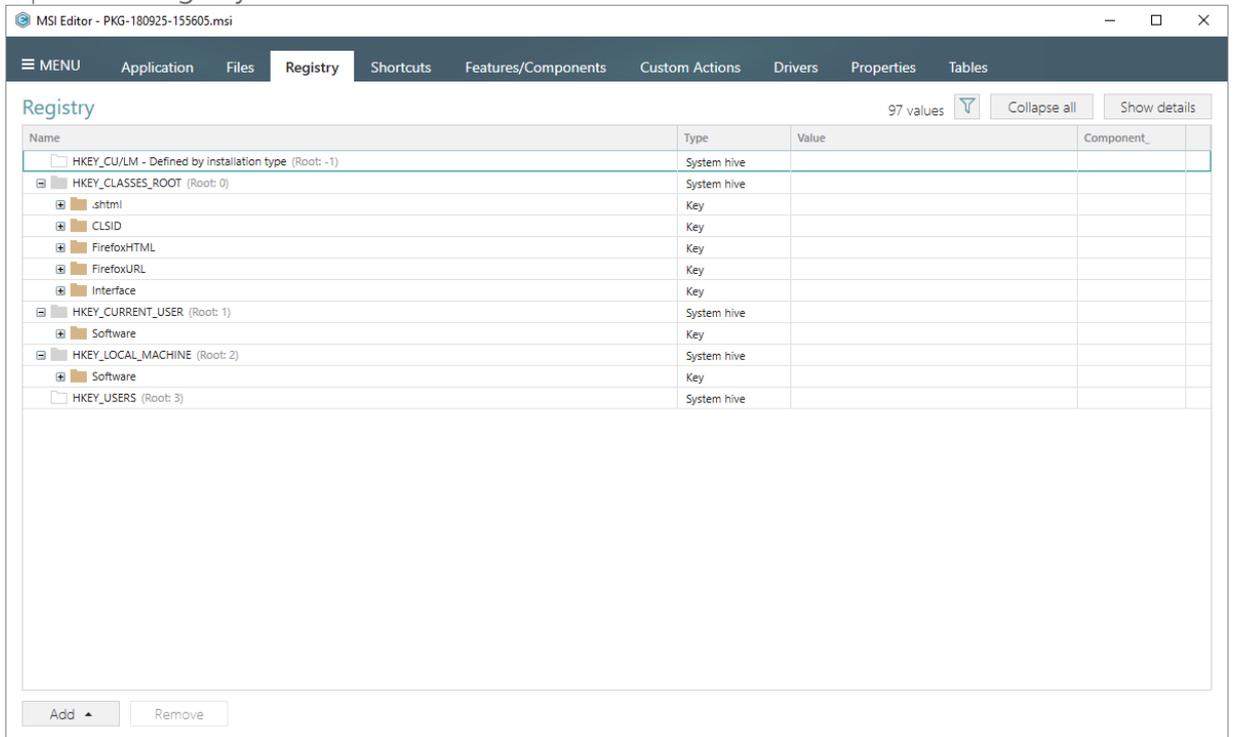
[4]. In order to save changes, select Save from MENU.



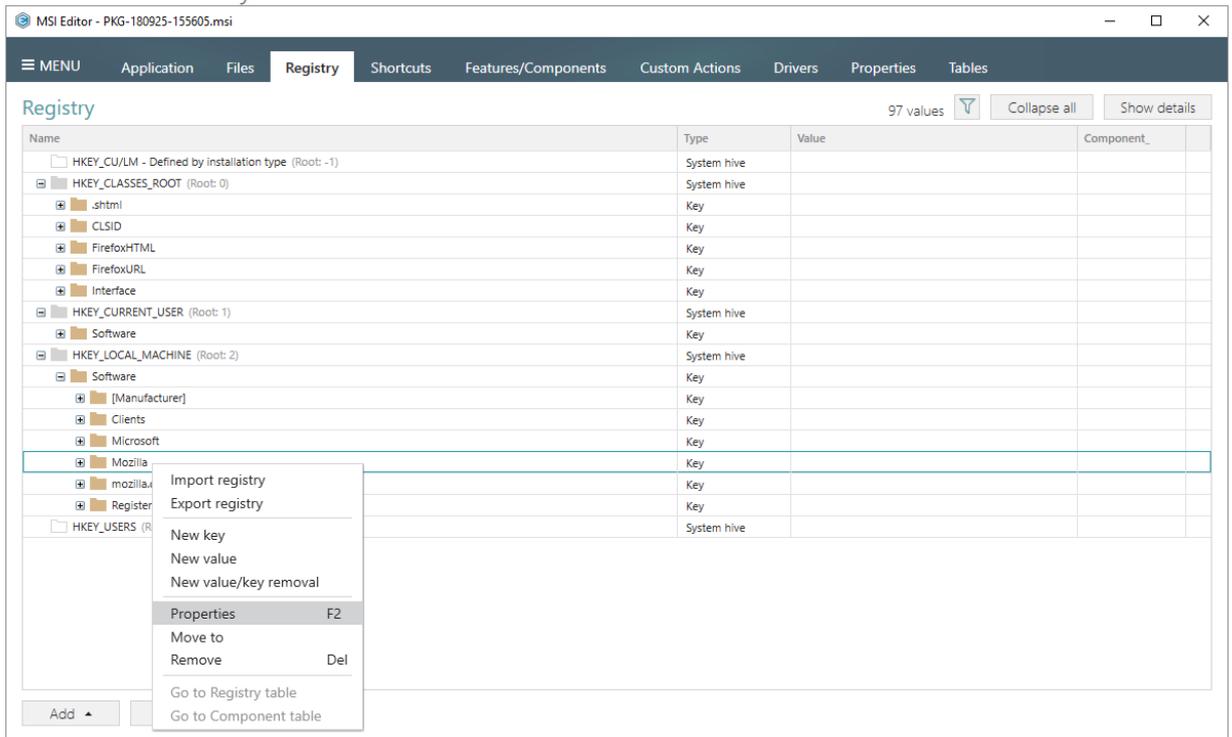
3.7.3.9 Edit Registry Key

Modify details and options of the selected registry key.

[1]. Open the Registry tab.



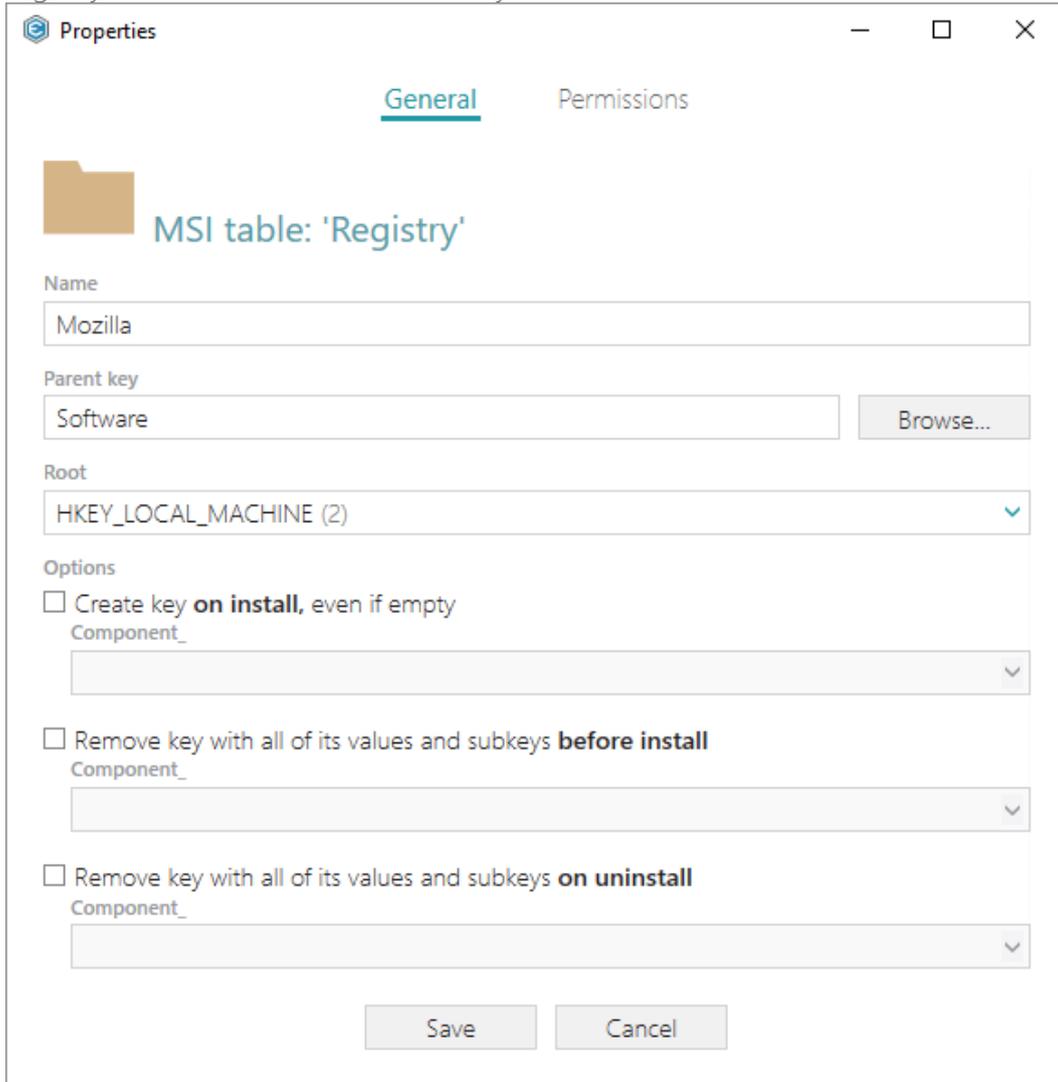
- [2]. Select Properties from the context menu of a registry key, details of which you want to review and modify.



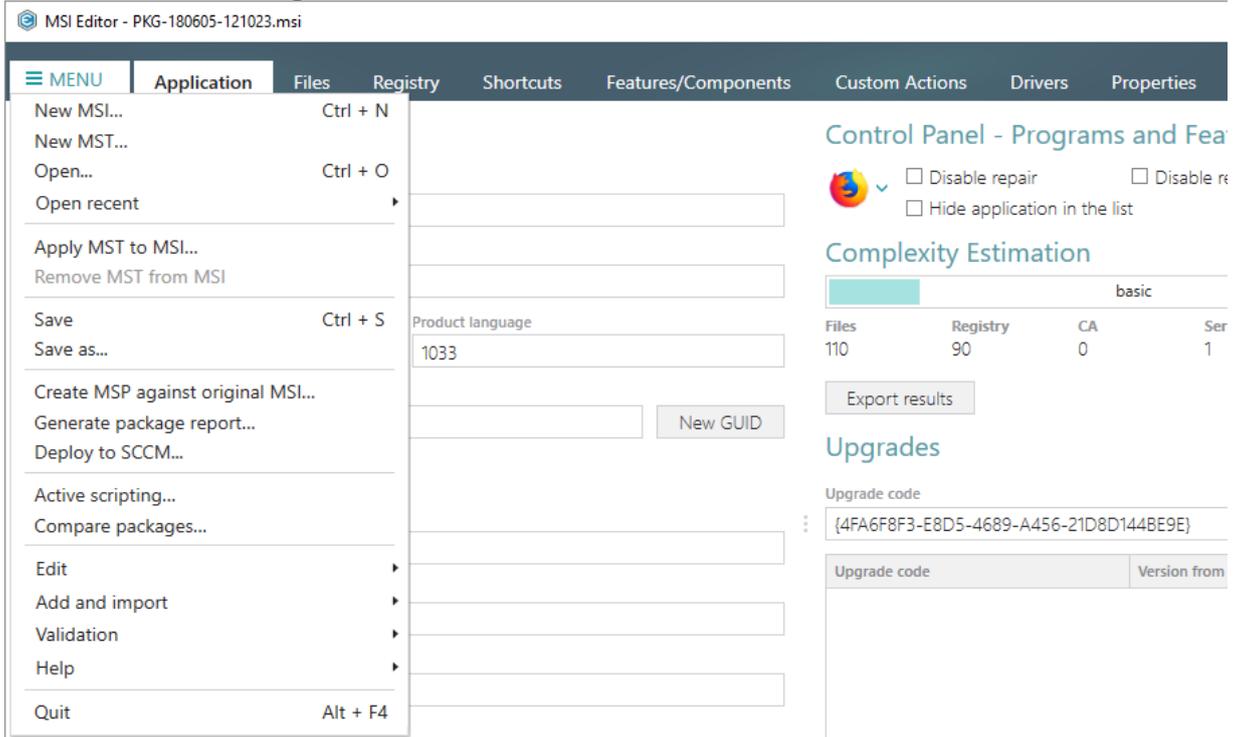
- [3]. Using the Properties window make the necessary changes to the key Name, its Parent key and Root hive. You can modify the Parent key directly in the text field or use Browse to choose a new key from the registry tree. Note that changing the Parent key and/or the Root hive will result in moving the selected key to a new location.

Select the necessary key Options (e.g. 'Create key on install, even if empty') to secure the key creation and/or removal. The selected key Options will be represented as special

registry values, created under this key. Afterwards, click Save.



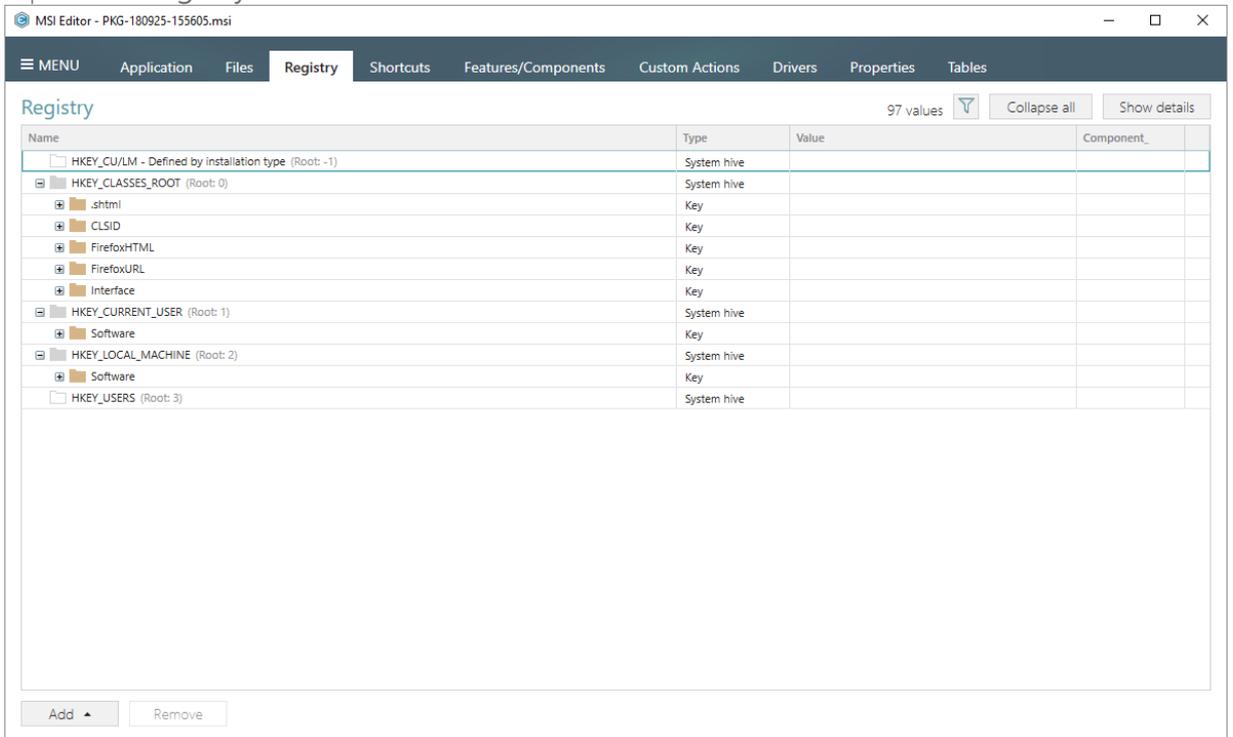
[4]. In order to save changes, select Save from MENU.



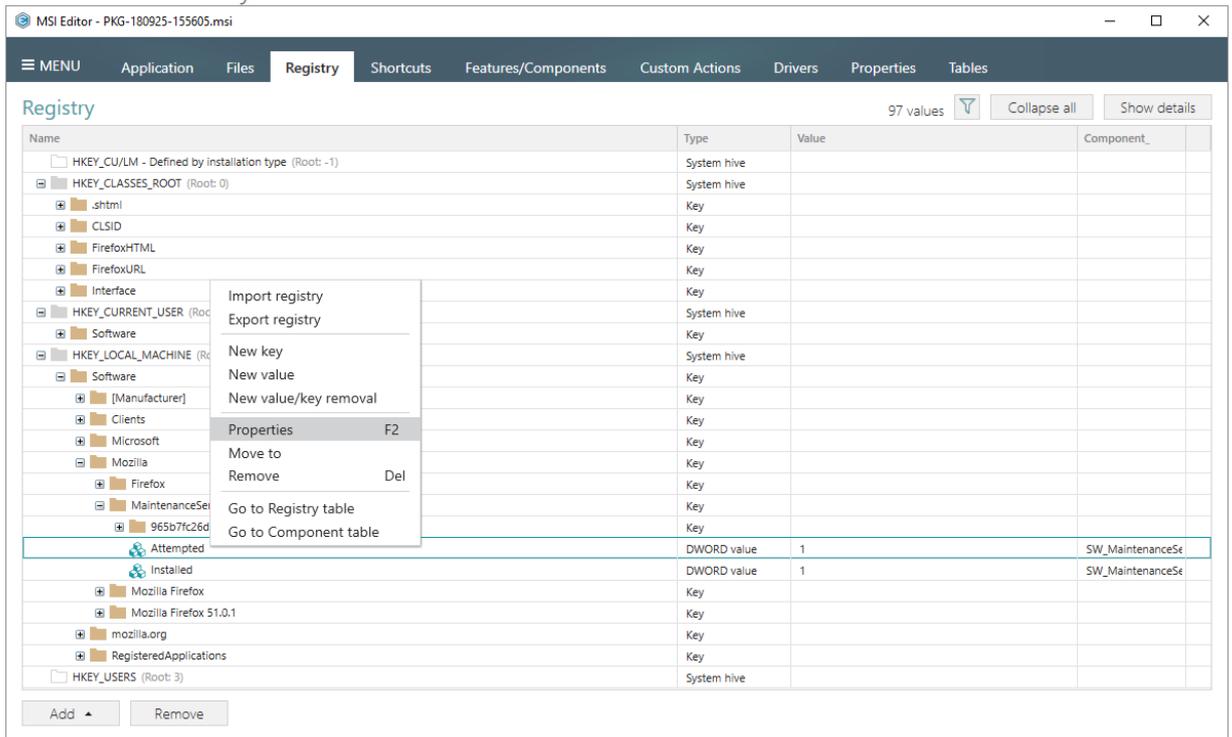
3.7.3.10 Edit Registry Value

Modify details of the selected registry value.

[1]. Open the Registry tab.



- [2]. Select **Properties** from the context menu of a registry value, details of which you want to review and modify.



- [3]. Using the **Properties** window make the necessary changes to the value **Name**, **Value** itself, and **Component** that controls the installation of this registry value.

The **Parsed value** option serves easier editing of a registry value of the selected value type. The **Raw MSI value** option displays and gives ability to manage what exactly will be saved to the opened MSI database.

Note that changing a **Key** and a **Root** hive will result in moving this registry value to a new location. You can modify the **Key** directly in the text field or use **Browse** to choose a new key from the registry tree.

The **Value processing method** options defines whether this value will be an ordinary registry value with the specified **Name** and **Value** or will secure a key creation and/or removal. Below, in the tables, you will find the detailed description of these options.

Afterwards, click **Save**.

Value processing method

1. Set both name and value

On install, the package creates an ordinary registry value with the specified name and value itself in the system registry at the selected root and key.

On uninstall, the package removes this registry value from the system registry. The containing registry key will be automatically removed only if it is empty.

2. Set <Default> key value

On install, the package creates the Default key value with the specified value in the system registry at the selected root and key. In the system registry, this value is represented as "(Default)":

Name	Type	Data
ab(Default)	REG_SZ	Test



On uninstall, the package cleans-up the Default key registry value in the system registry. The containing registry key will be automatically removed only if it is empty.

3. Create the key on install, even if empty

On install, the package creates the specified key in the system registry at the selected root, even if this key is empty. By default, empty keys are not created.

On uninstall, no additional actions take place.

4. Remove the key with all of its values and subkeys on uninstall

On install, no additional actions take place.

On uninstall, the package removes this key completely along with all of its values and subkeys.

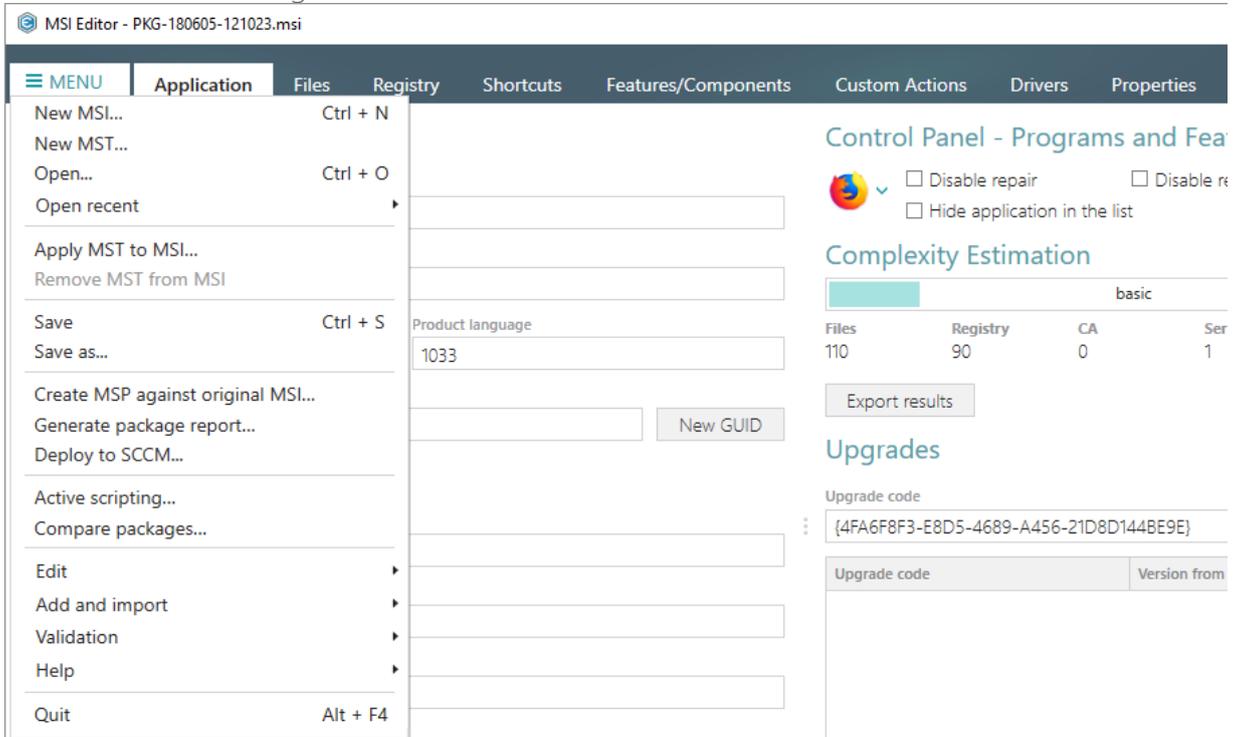
5. Both 3 and 4

On install, the package creates the specified key in the system registry at the selected root, even if this key is empty. By default, empty keys are not created.

On uninstall, the package removes this key completely along with all of its values and subkeys.

NOTE For removing registry values or keys from the system registry before install, add the 'Value/key removal' item, described in section 3.7.3.3

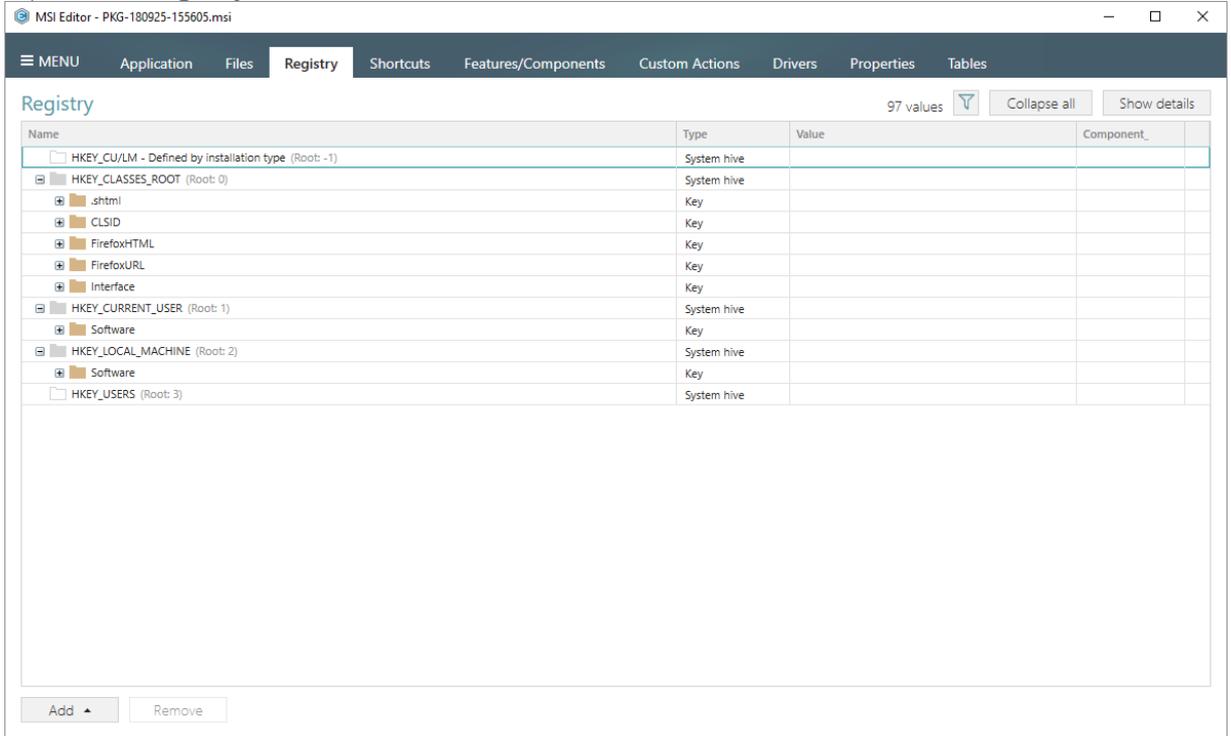
[4]. In order to save changes, select Save from MENU.



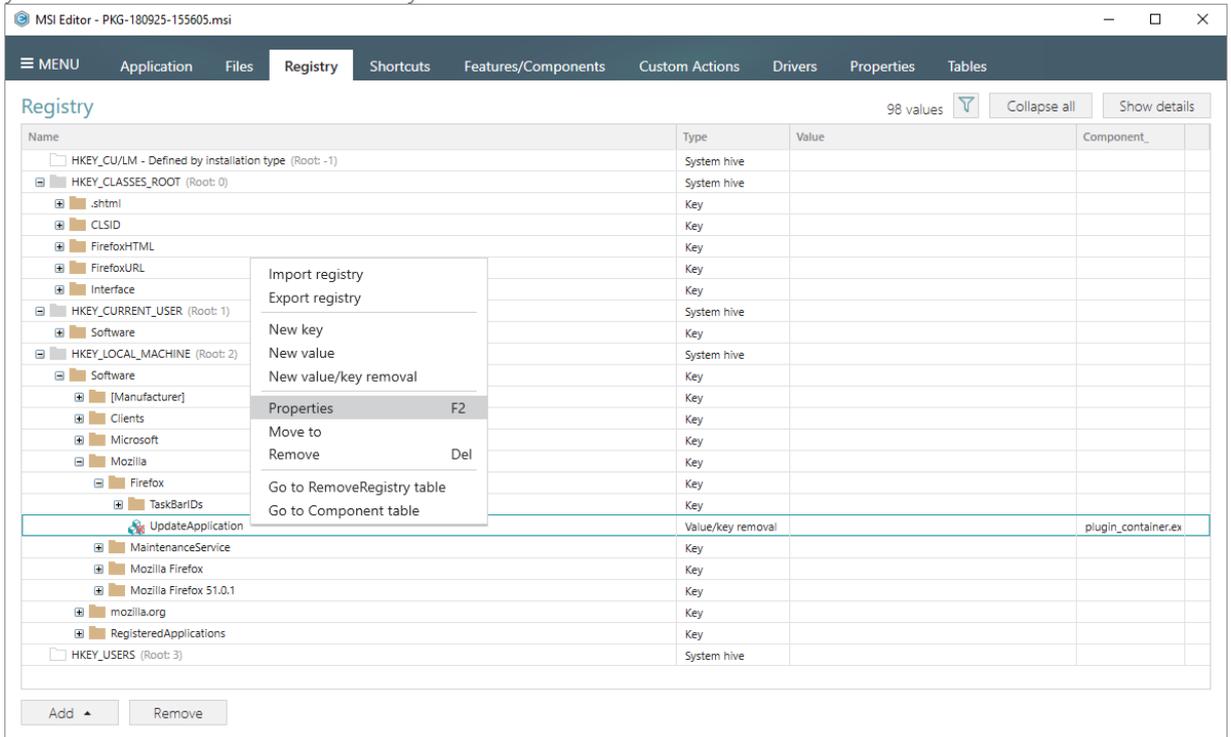
3.7.3.11 Edit Value/Key Removal

Modify details of the selected value/key removal item (RemoveRegistry) to secure a value or a key removal during the package installation.

- [1]. Open the Registry tab.



- [2]. Select Properties from the context menu of a 'Value/key removal' item, details of which you want to review and modify.

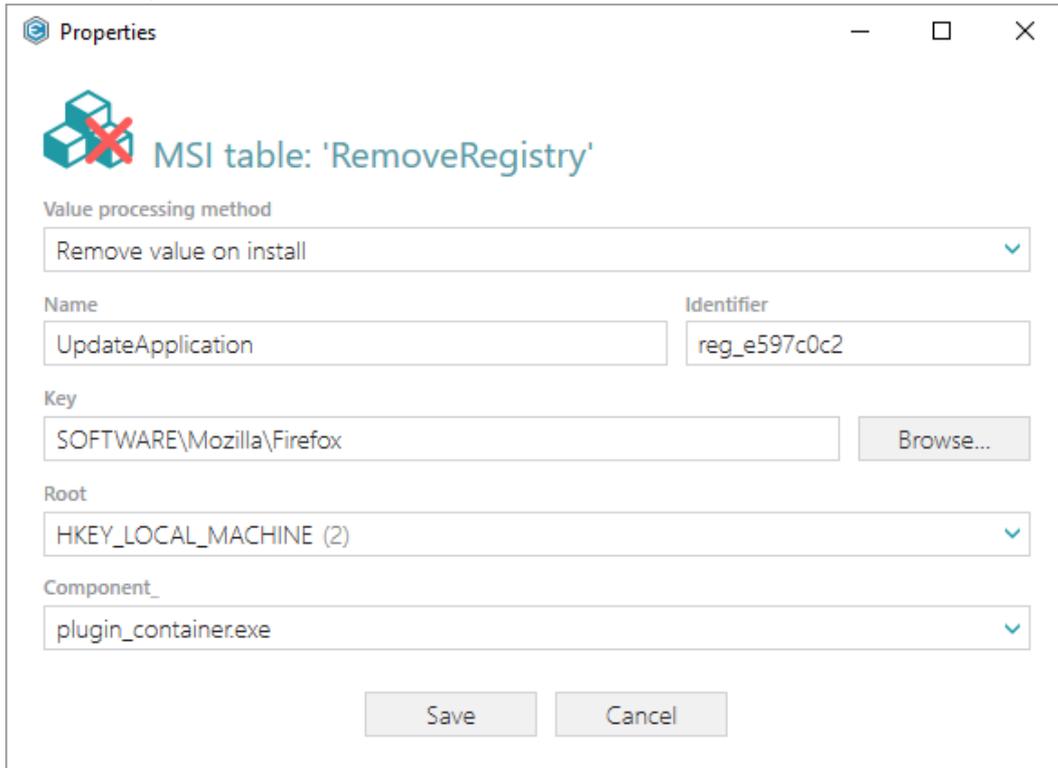


- [3]. Using the Properties window make the necessary changes to a value Name, its Key, Root hive, and Component that controls the deletion of this registry value. Note that the

specified registry value will be removed from the system registry at the selected root and key during the package installation, right before new registry values are created.

The Value processing method options defines what will be removed: an ordinary value, a Default key value, or whole key. Below, in the tables, you will find the detailed description of these options.

Afterwards, click Save.



Value processing method

Remove value on install

On install, right before new registry values are created, the package removes an ordinary registry value of the specified name from the system registry at the selected root and key.

On uninstall, no additional actions take place.

Clean-up <Default> key value on install

On install, right before new registry values are created, the package cleans-up the Default key value with the specified value in the system registry at the selected root and key. In the system registry, this value is represented as "(Default)":

Name	Type	Data
ab (Default)	REG_SZ	(value not set)

On uninstall, no additional actions take place.

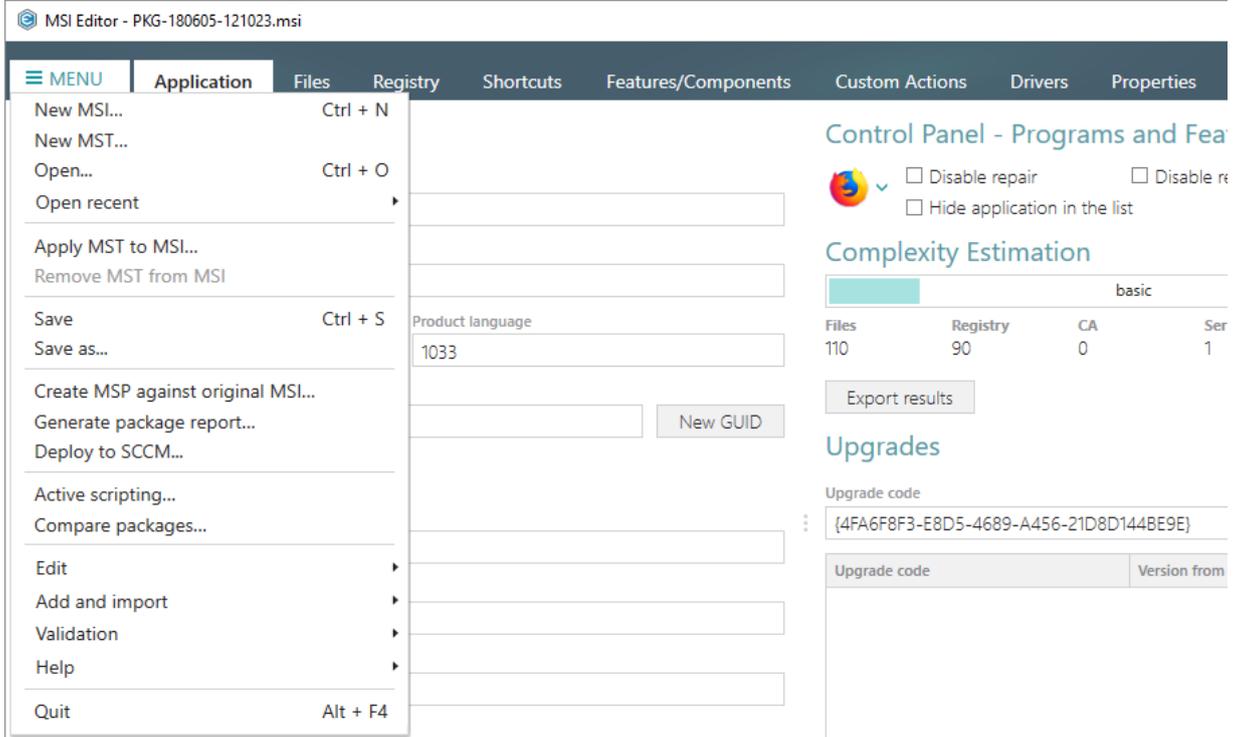


Remove the key with all of its values and subkeys on install

On install, right before new registry values are created, the package removes this key completely along with all of its values and subkeys.

On uninstall, no additional actions take place.

[4]. In order to save changes, select Save from MENU.



3.7.4 Shortcuts

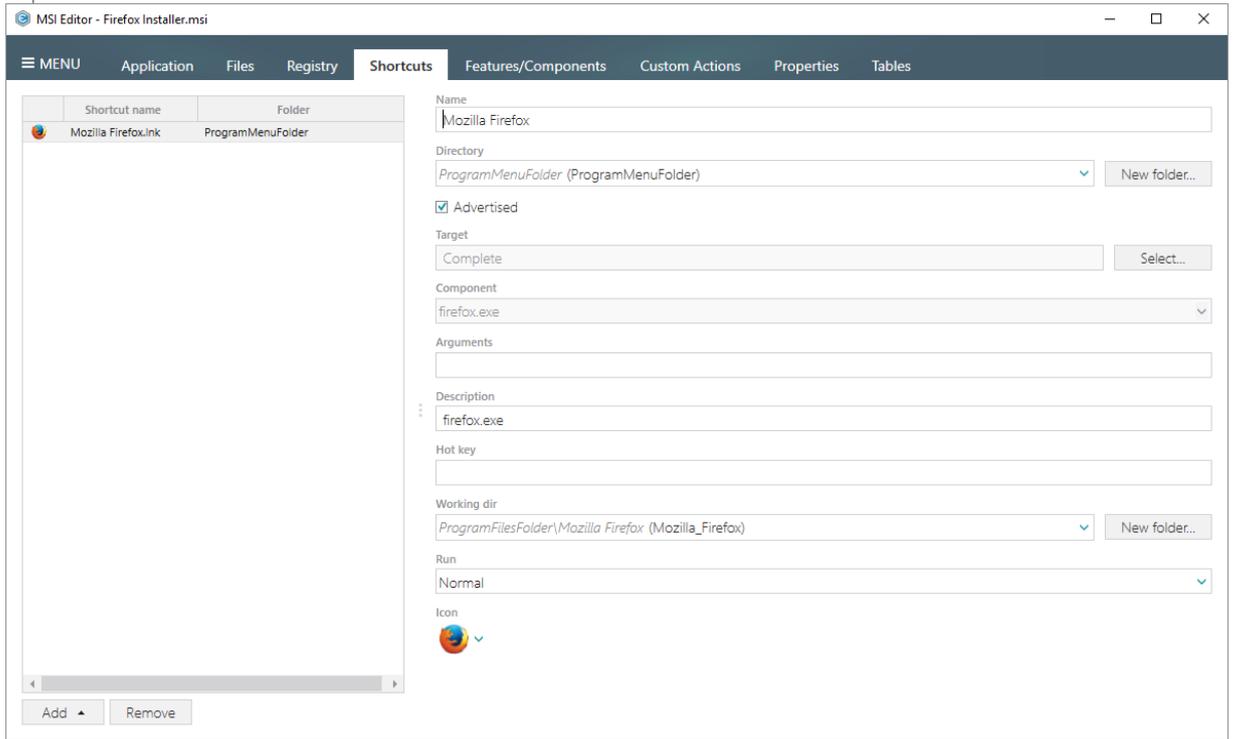
Choose a scenario that better suits your needs:

- Add Shortcut to File or Folder, described in section 3.7.4.1
Add regular or advertised shortcut that points to a file or a folder inside the package.
- Add URL Shortcut, described in section 3.7.4.2
Add the URL shortcut to your package just typing an address.
- Import Shortcuts, described in section 3.7.4.3
Import LNK and URL shortcuts from the file system to the package.

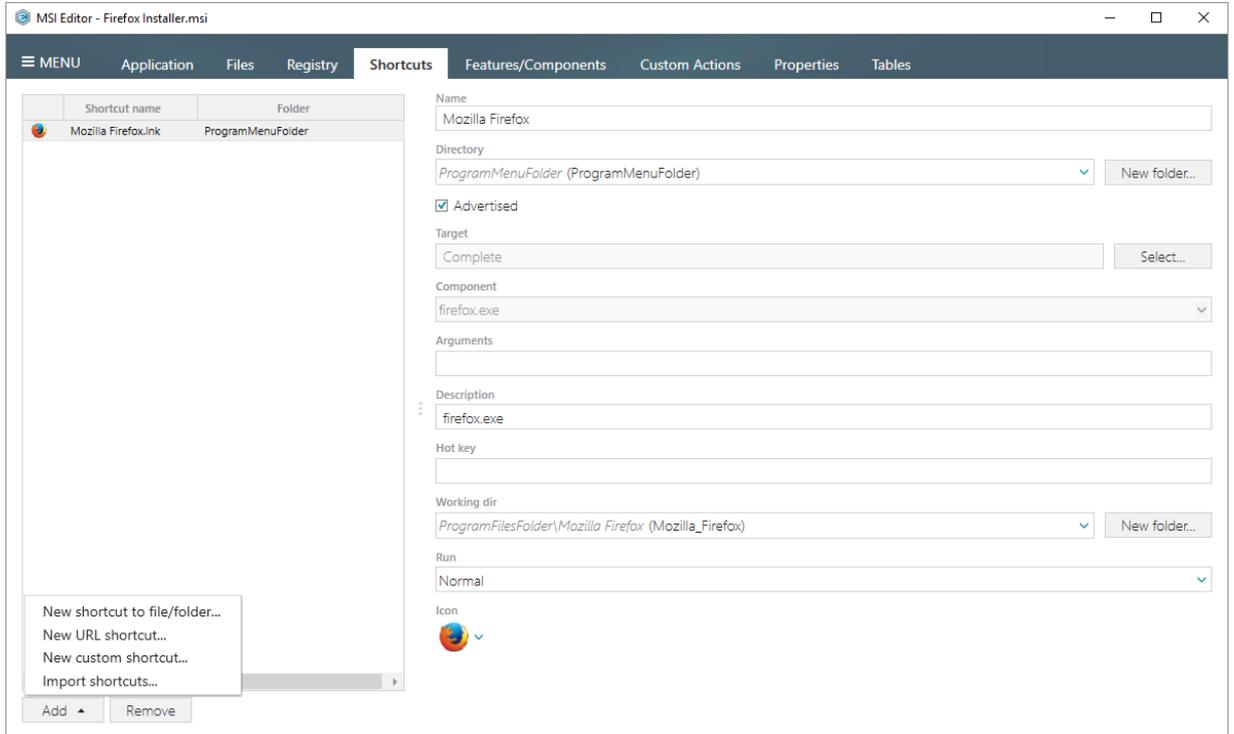


3.7.4.1 Add Shortcut to File or Folder

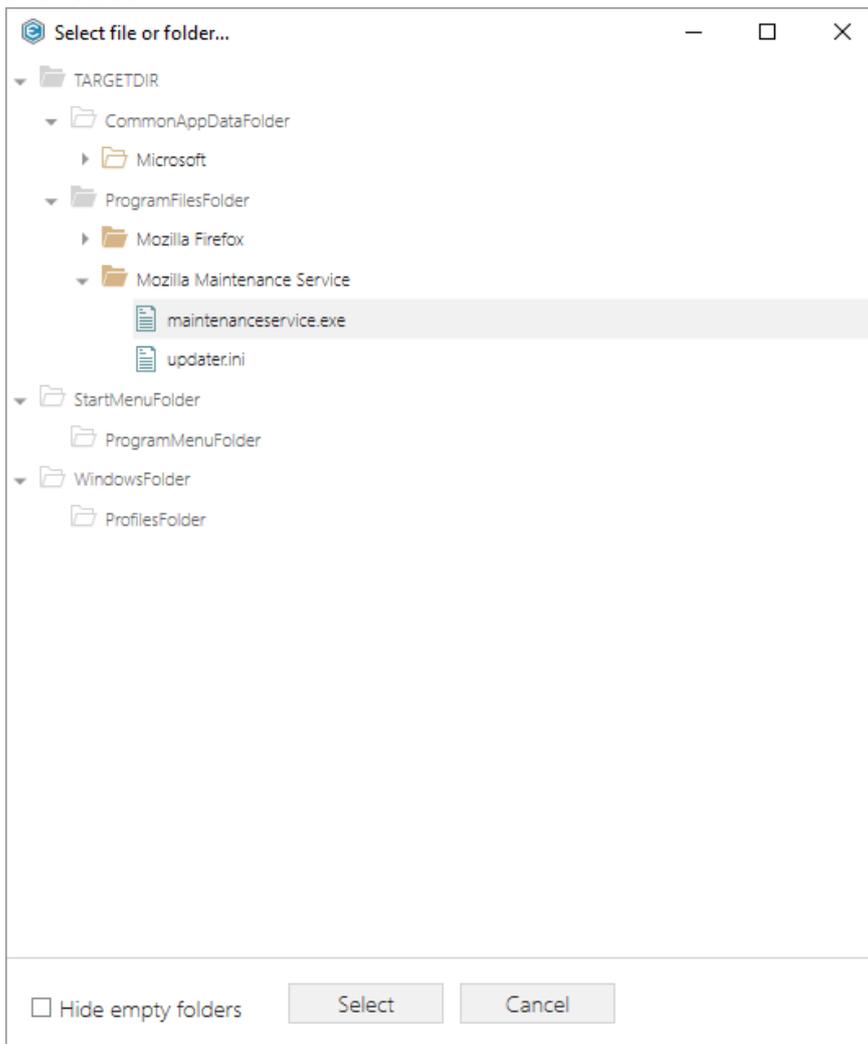
[1]. Open the Shortcuts tab.



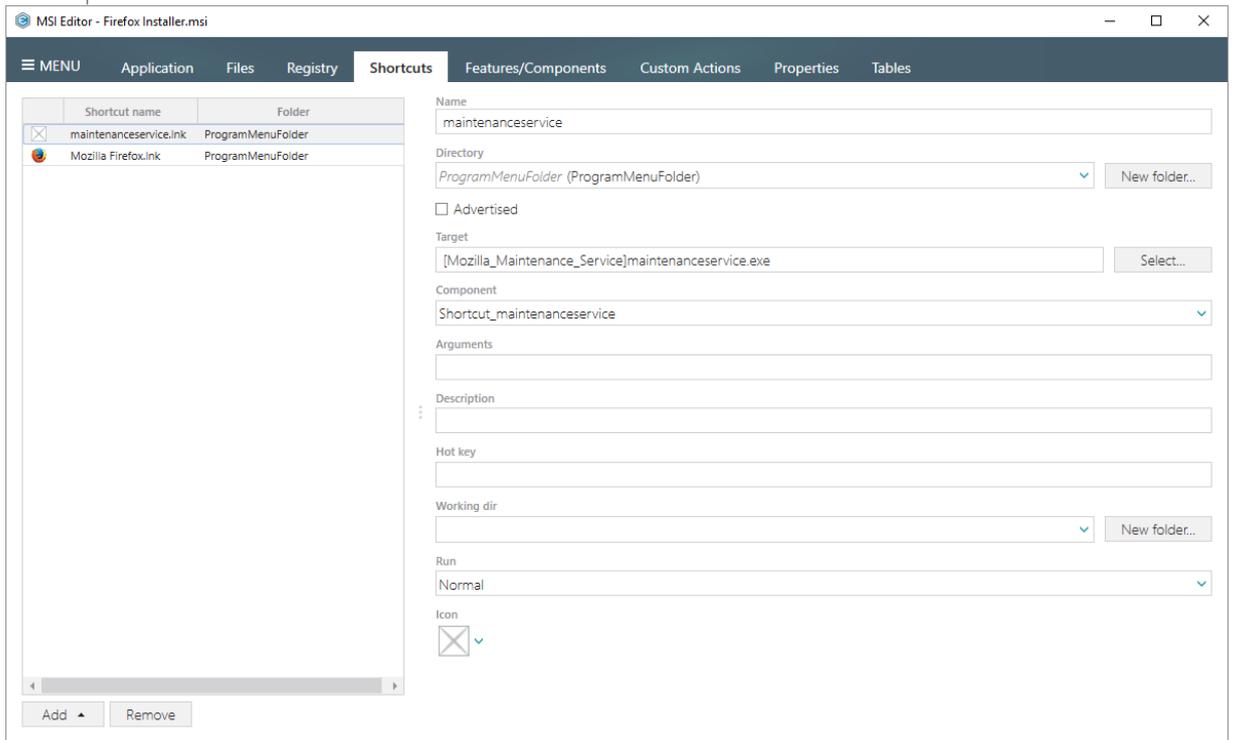
[2]. Click Add -> New shortcut to file/folder...



- [3]. Select a file or a folder from the Tree, to which you want to create an LNK shortcut and click Select.

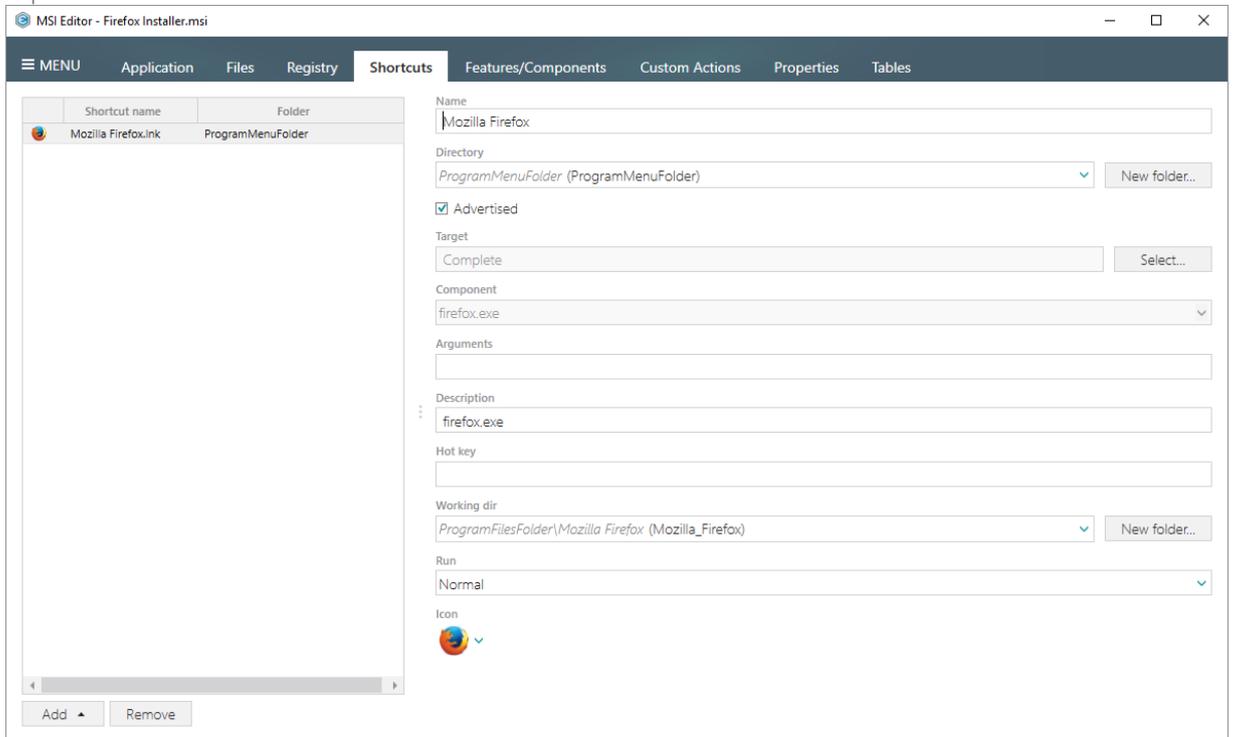


- [4]. Review and modify details of the created shortcut such as name, directory, icon, description and others.

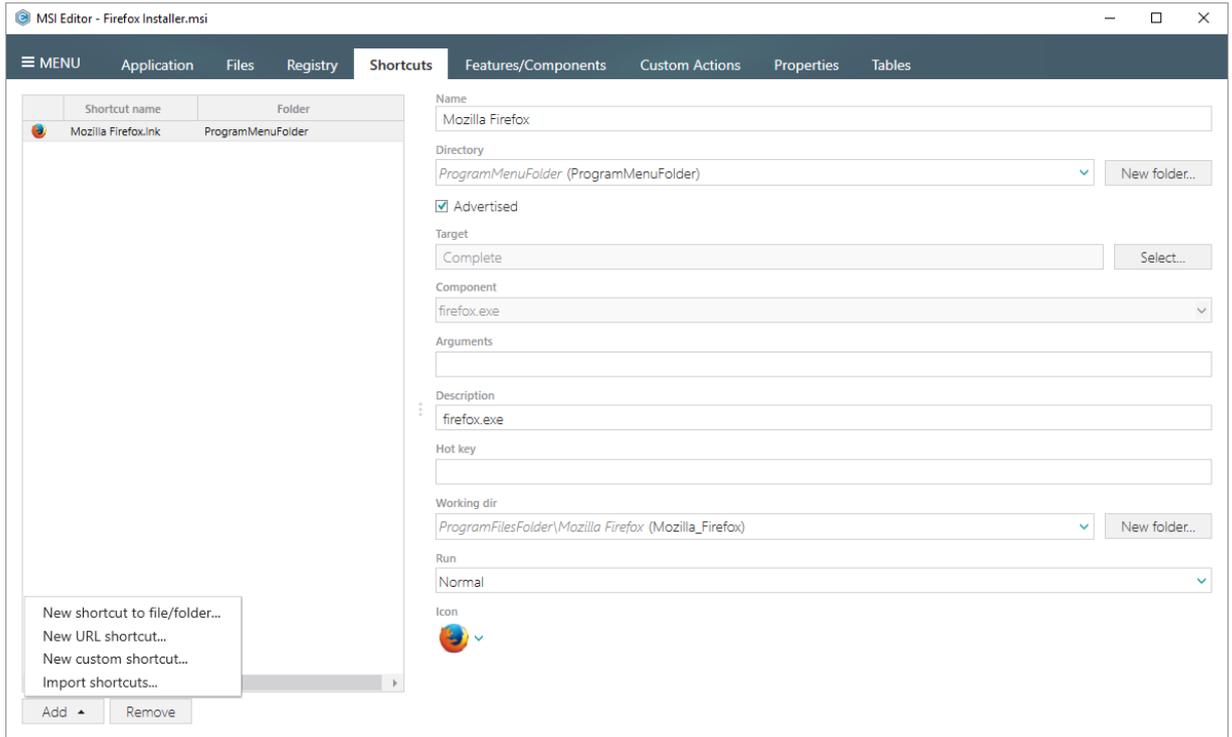


3.7.4.2 Add URL Shortcut

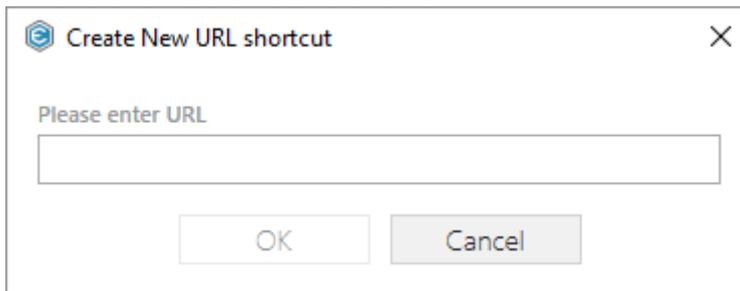
- [1]. Open the Shortcuts tab.



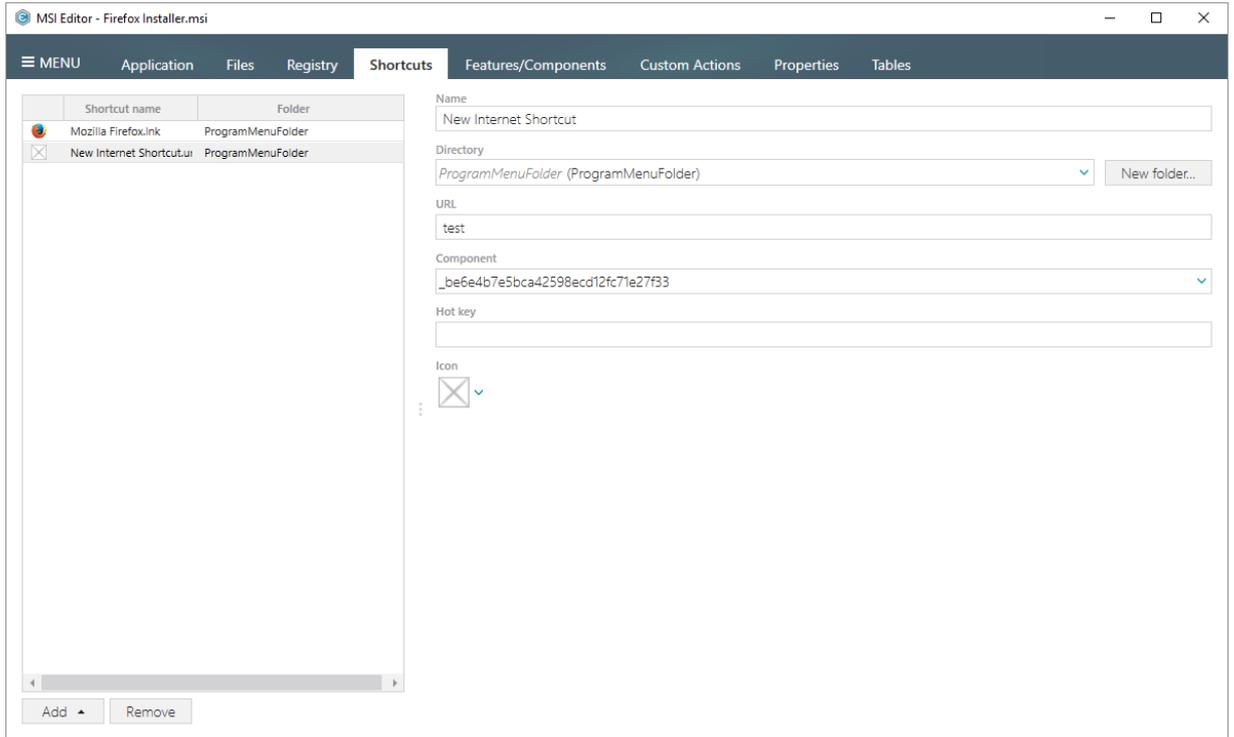
[2]. Click Add -> New URL shortcut...



[3]. Enter a shortcut URL and click OK.

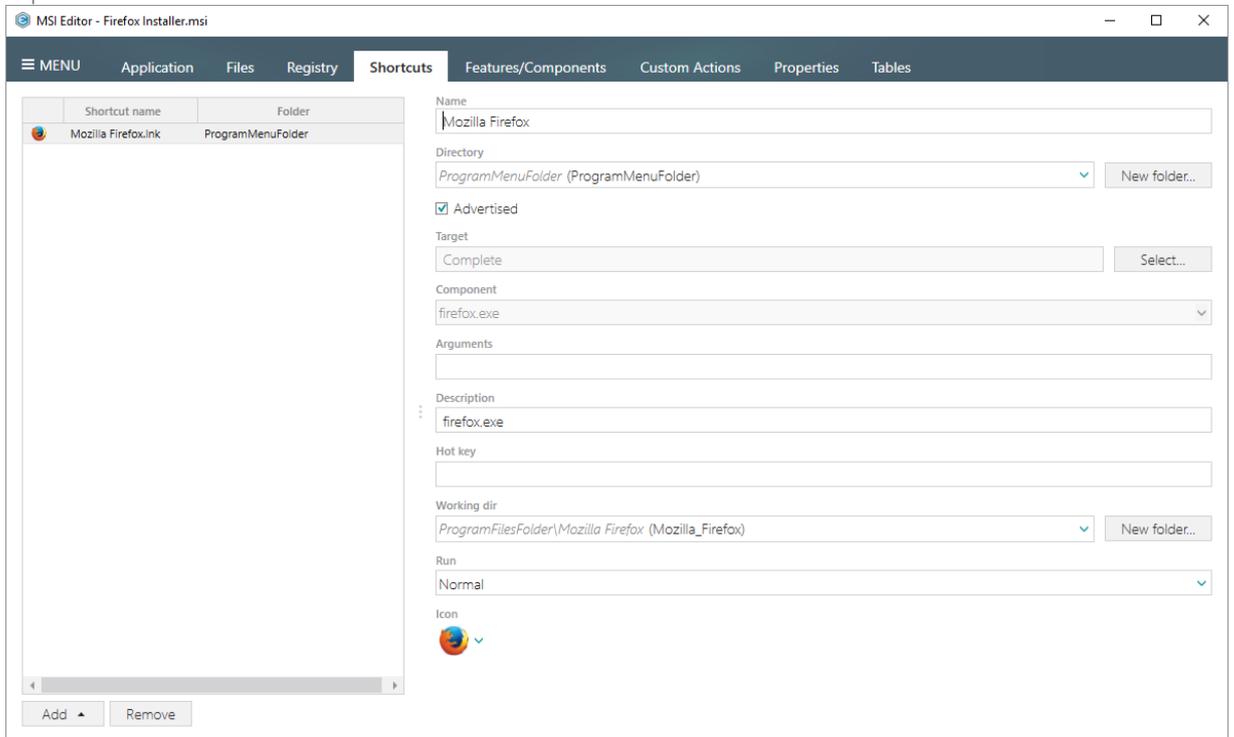


- [4]. Review and modify details of the created shortcut such as name, directory, icon, URL and others.

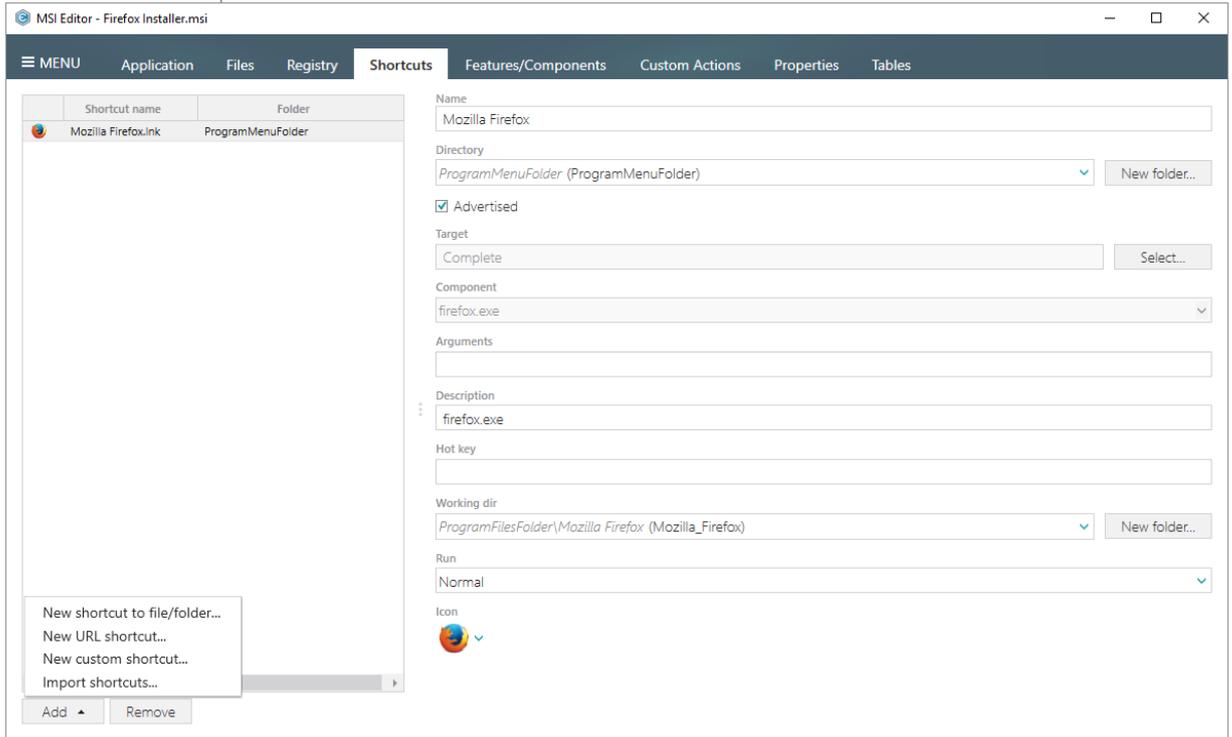


3.7.4.3 Import Shortcuts

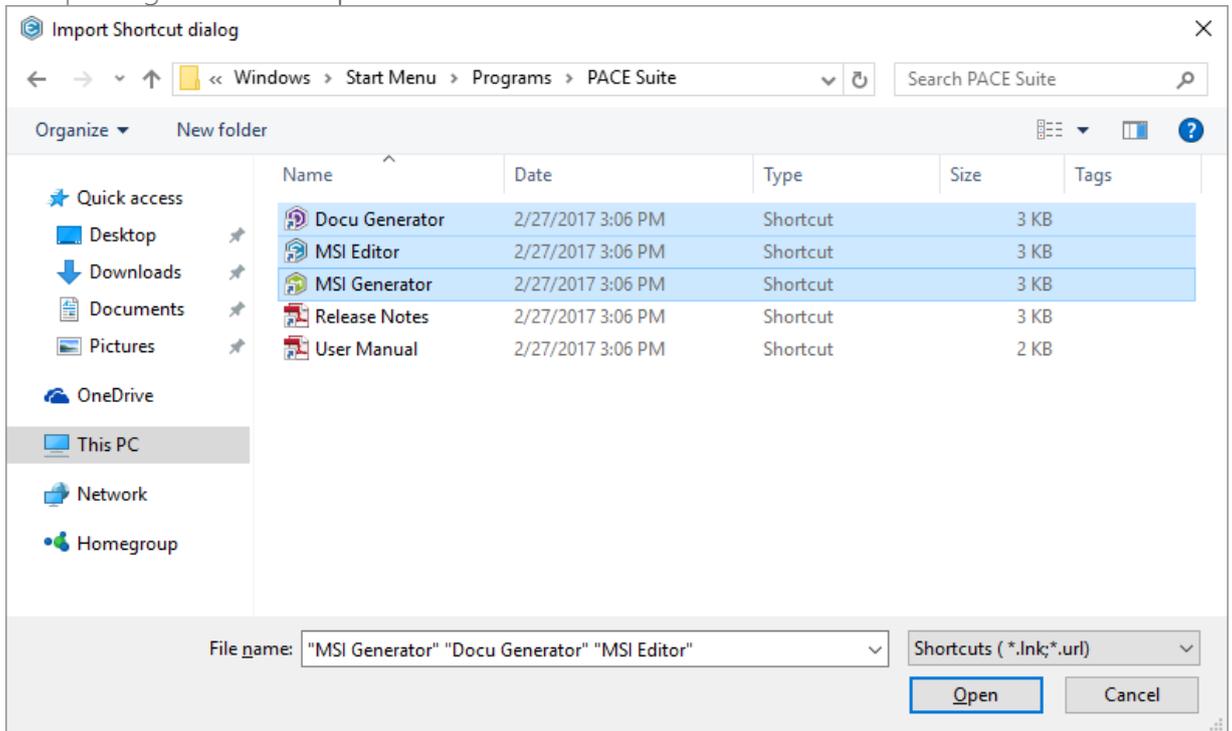
- [1]. Open the Shortcuts tab.



[2]. Click Add -> Import shortcuts...



[3]. Choose LNK and URL shortcuts from your file system you want to import to the opened MSI package and click Open.





3.7.5 Custom Actions

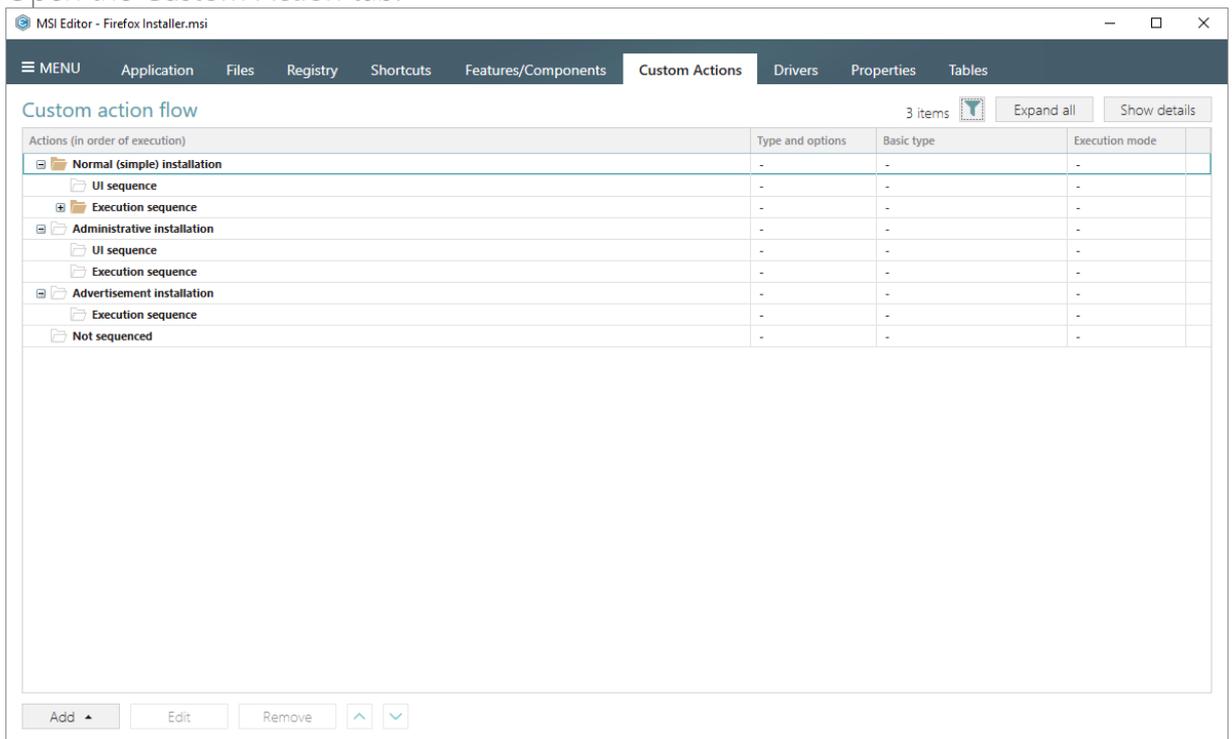
Choose a scenario that better suits your needs:

- Add Standard Actions, described in section 3.7.5.1
Add new standard actions to the necessary sequences.
- Add Custom Action, described in section 3.7.5.2
Add a new custom action to the necessary sequences with the aim of launching EXE, calling functions from DLL, running VBScript, Jscript, setting a new property value, folder path, and showing an error message.
- Edit Custom Action, described in section 3.7.5.3
Edit basic type, resources, sequence and other settings of the existing custom action.

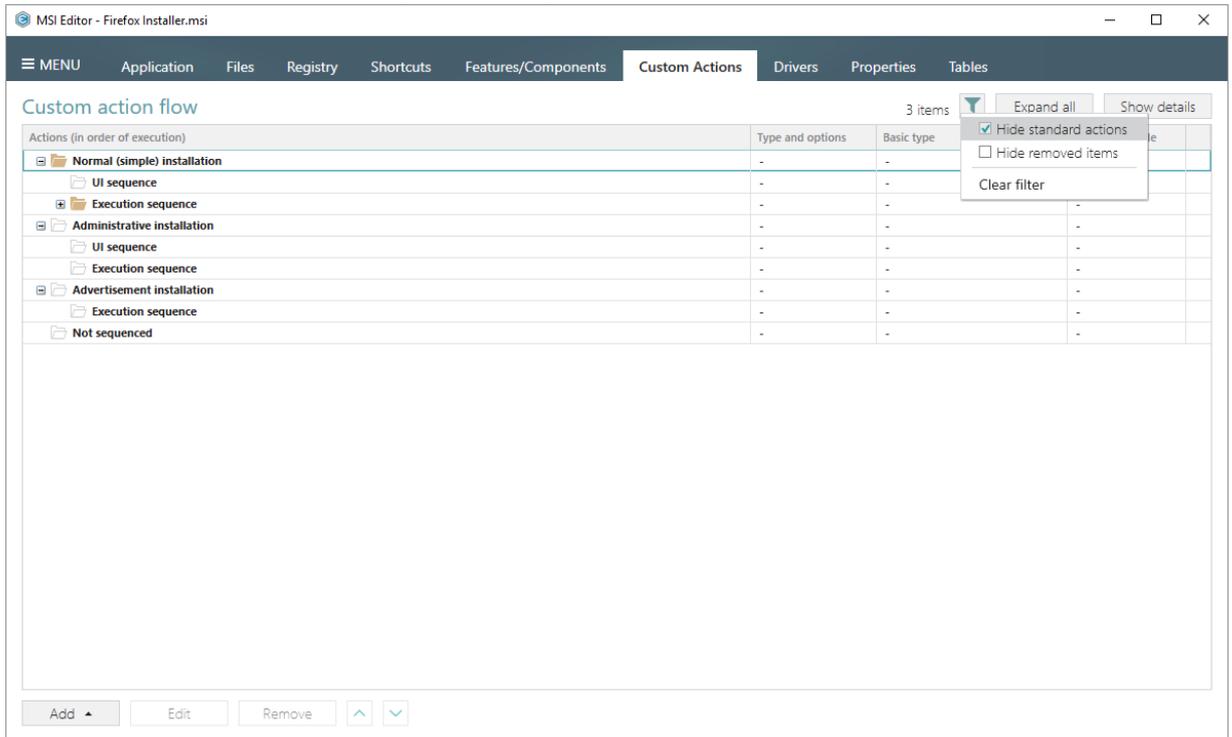
3.7.5.1 Add Standard Actions

Add new standard actions to the necessary sequences of the opened package.

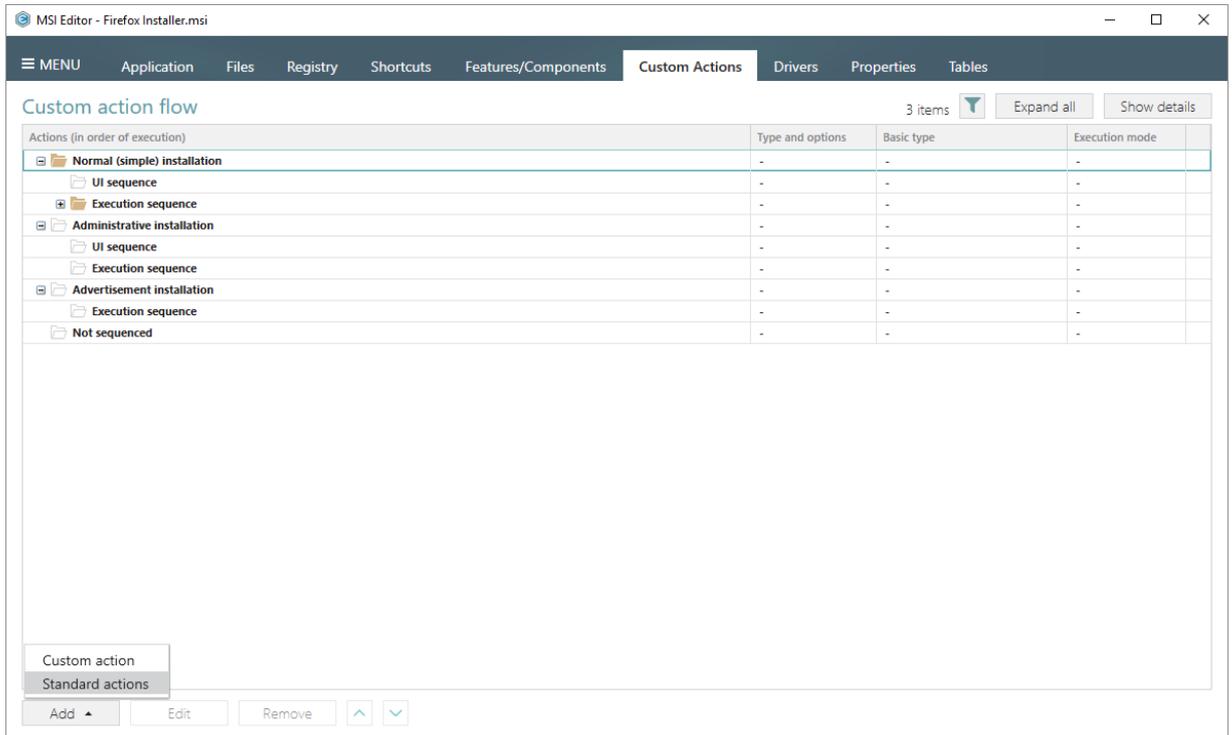
[1]. Open the Custom Action tab.



[2]. (Optional) To review the existing standard actions, which are hidden by default, click on the  and untick the 'Hide standard actions' filter.

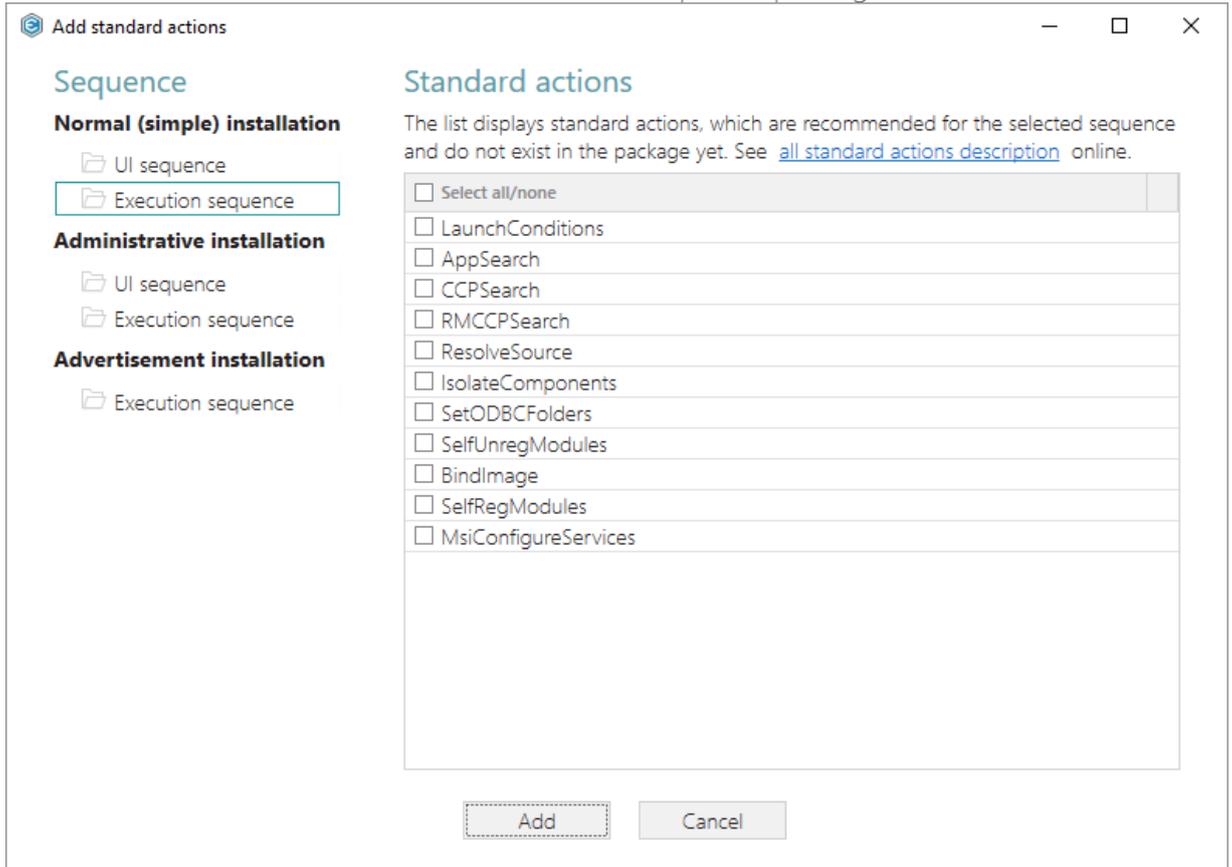


[3]. Click Add -> Standard actions.



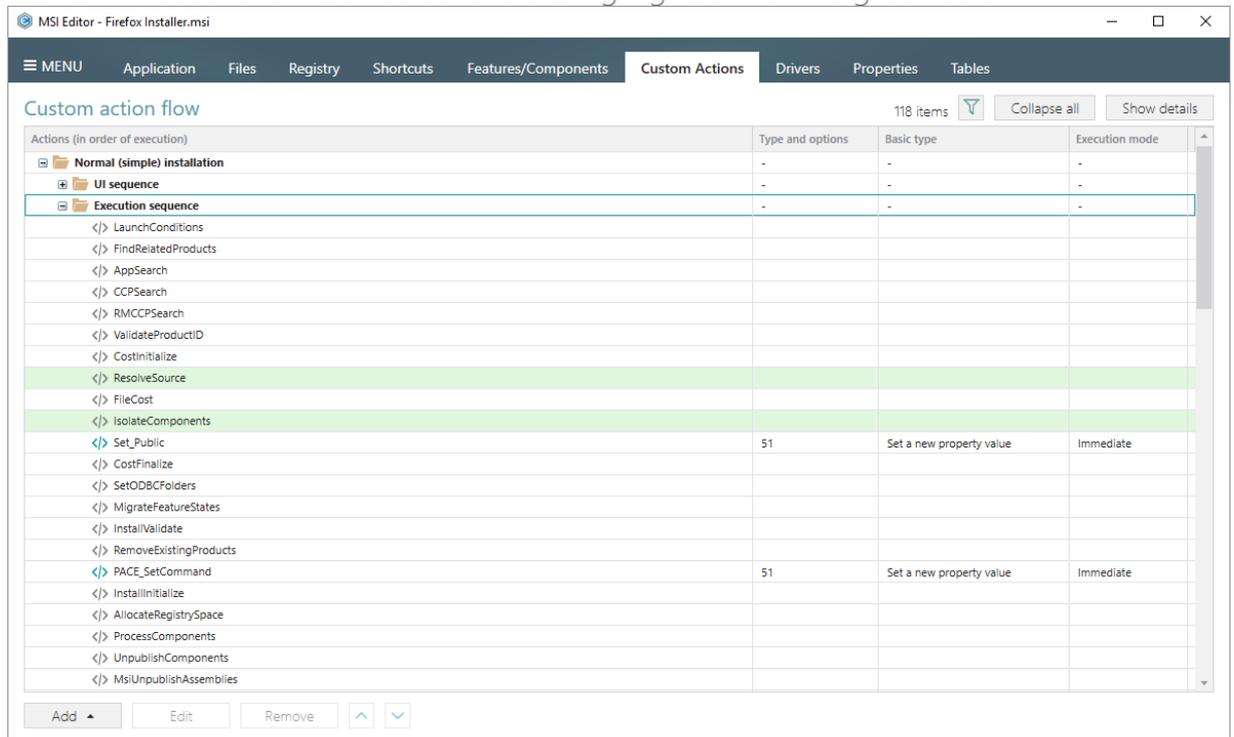
[4]. Choose the sequence from the list on the left, select the necessary standard actions, which you want to add, and then click Add.
NOTE You may add actions to the different sequences at once. The list displays only

those standard actions, which do not exist in the opened package.



- [5]. Review the added standard actions by expanding the necessary installation modes and their sequences.

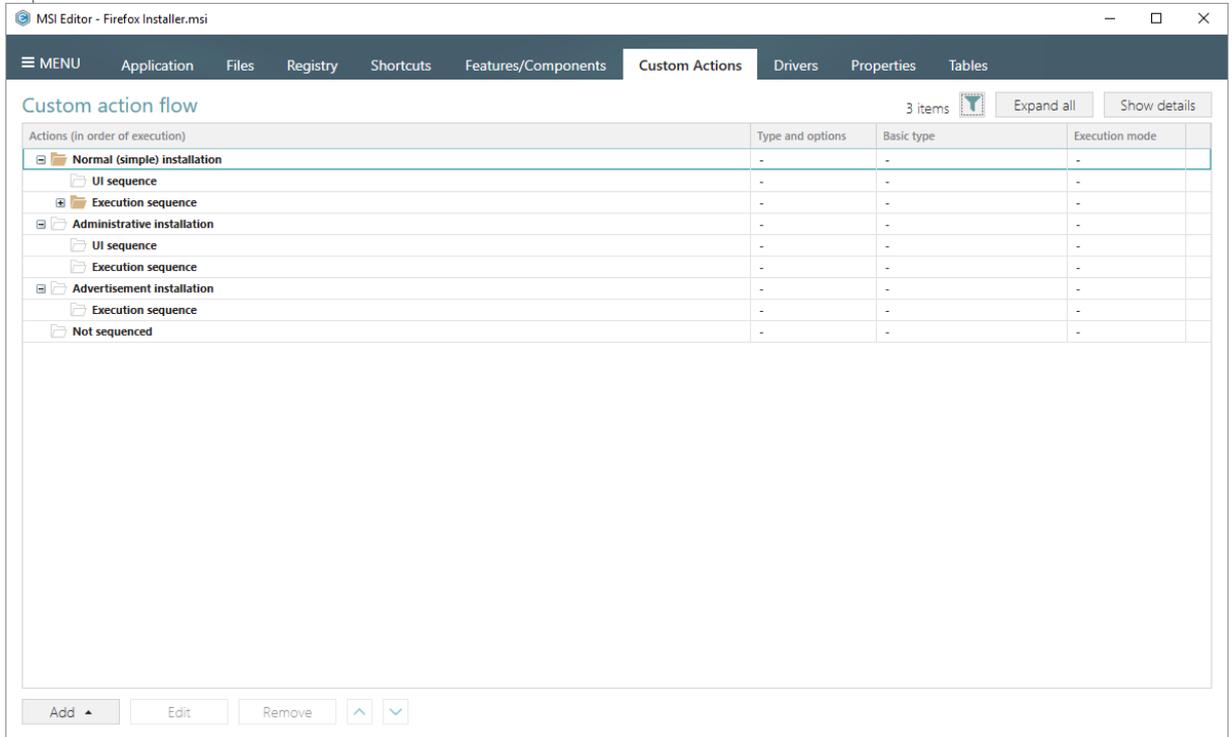
NOTE All added and modified actions are highlighted with the green color.



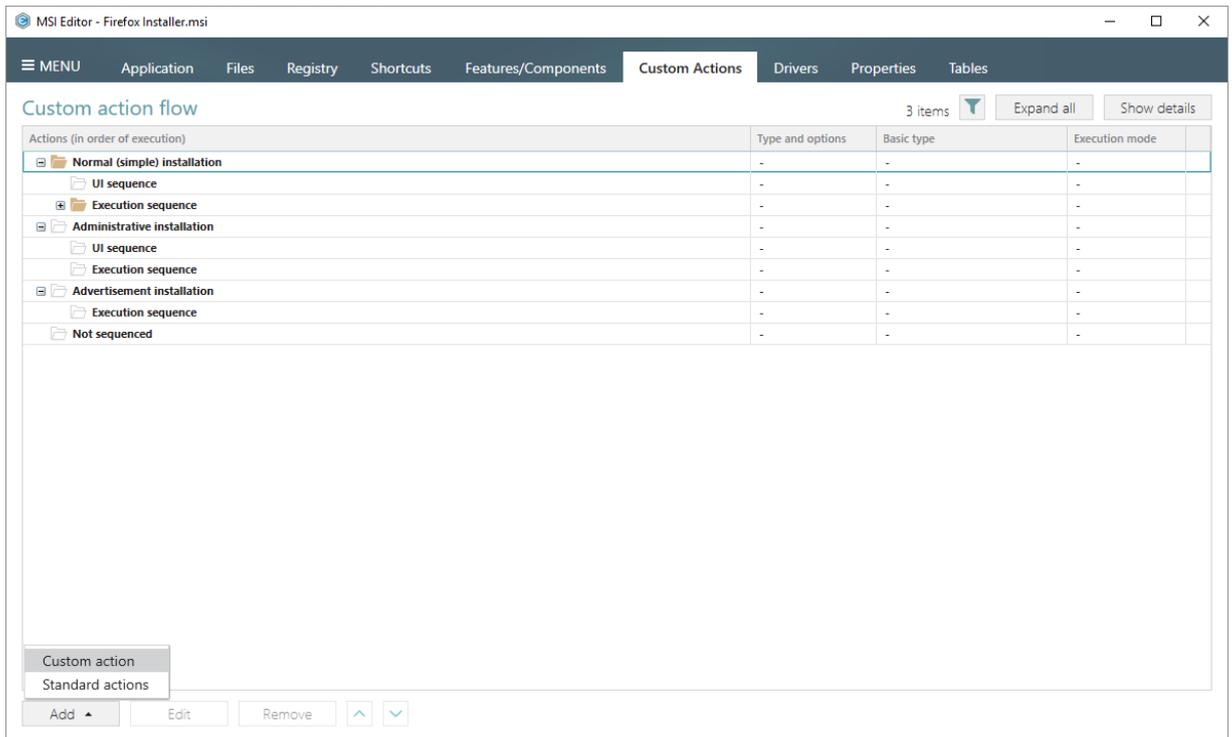
3.7.5.2 Add Custom Action

Add a new custom action to the necessary sequences with the aim of launching EXE, calling functions from DLL, running VBScript, Jscript, setting a new property value, folder path, and showing an error message.

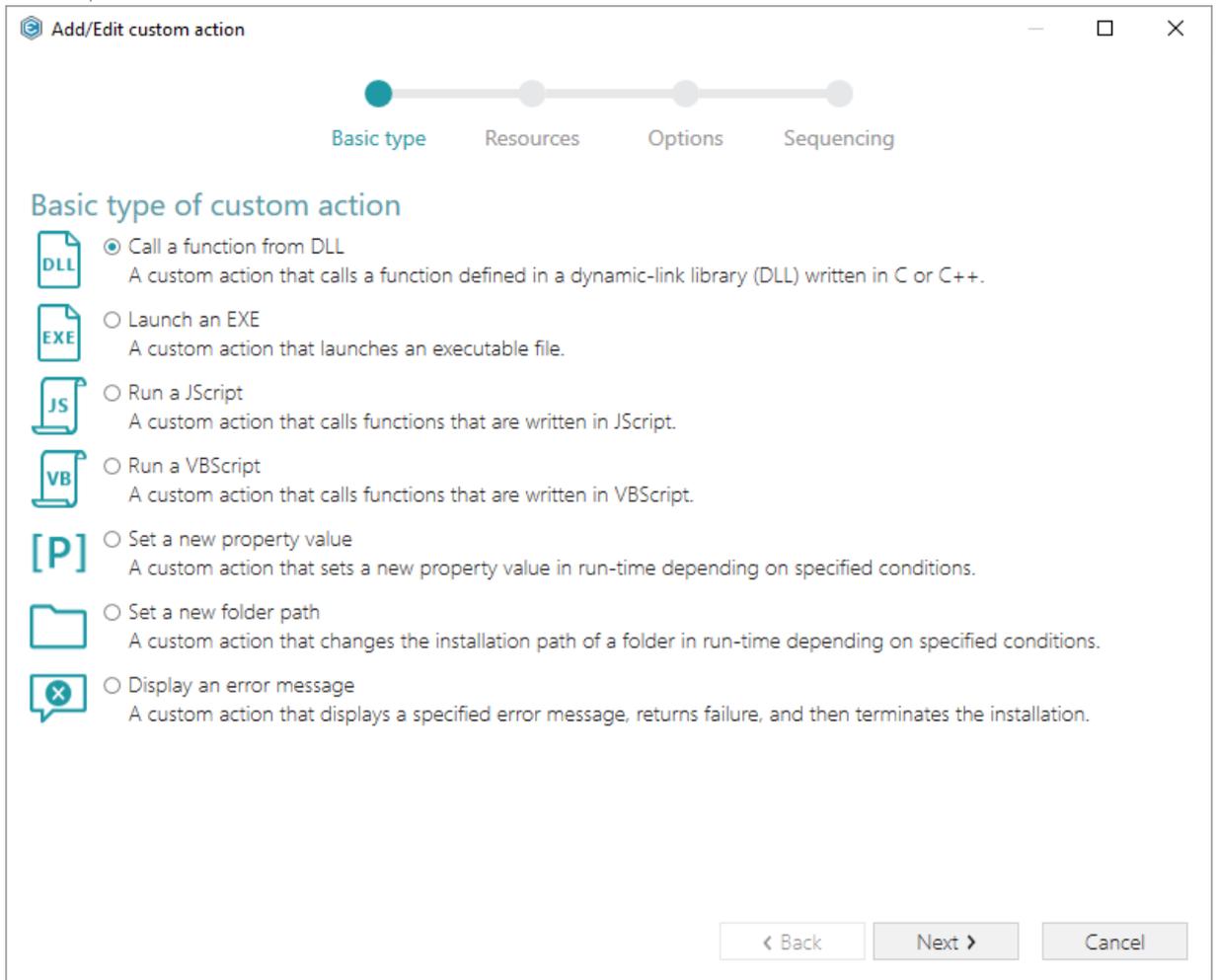
[1]. Open the Custom Action tab.



[2]. Click Add -> Custom action.

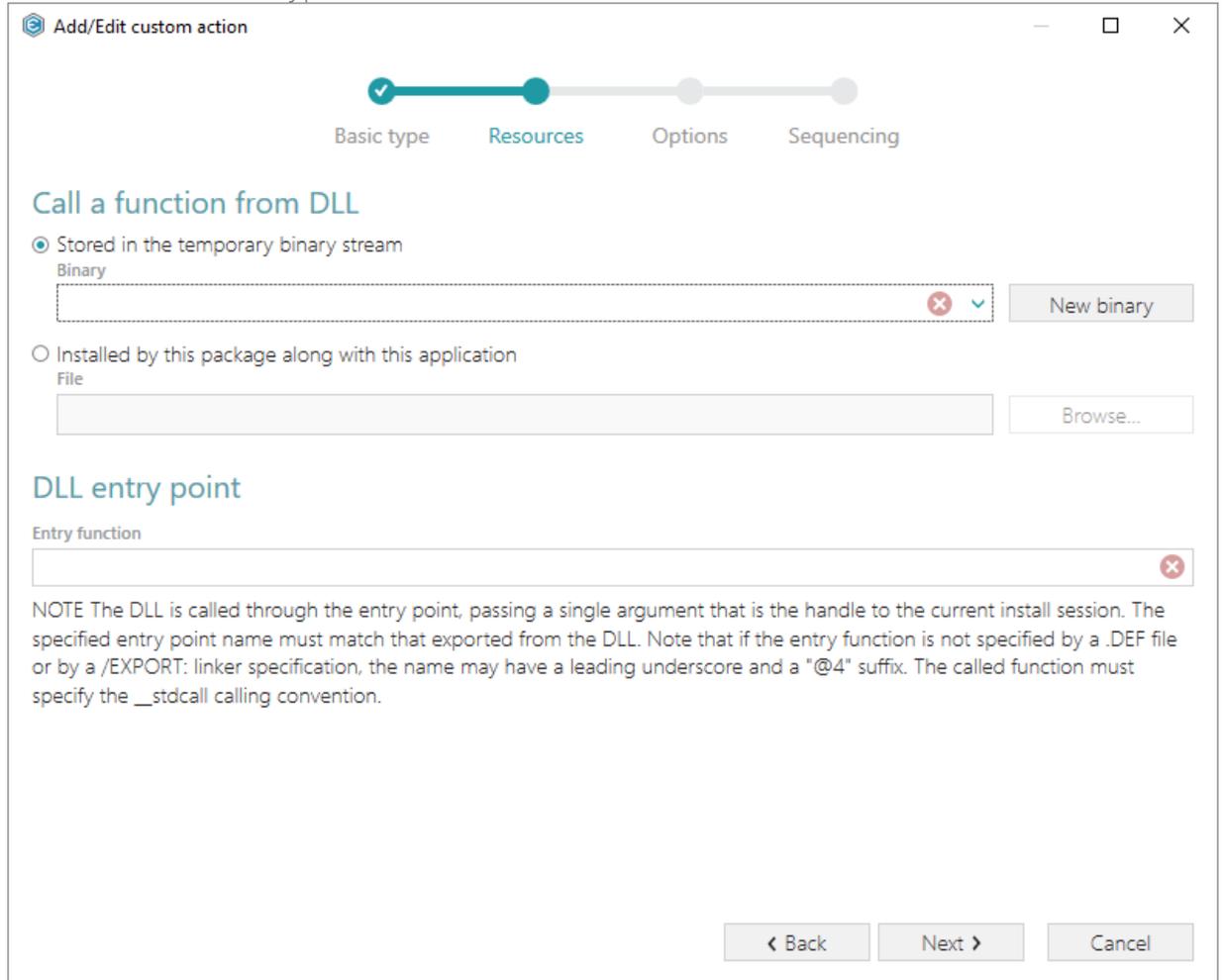


- [3]. Select a basic type of the custom action, like launching an EXE, running a script and others, and click Next.



- [4]. Specify the custom action resources, choosing the most appropriate type of source for your action and entering the necessary arguments. Then, click Next.
NOTE The wizard displays only compatible fields and options for the previously selected

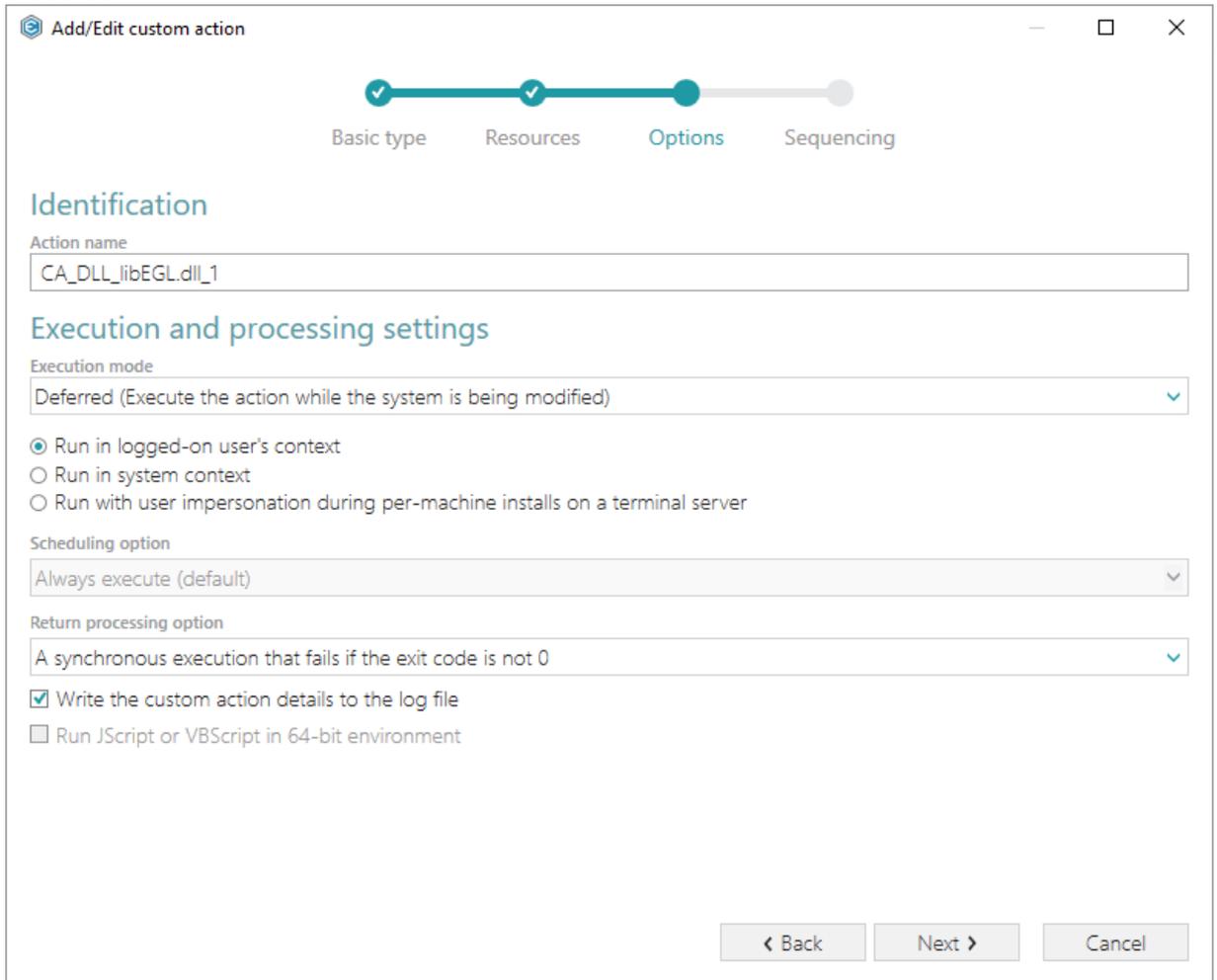
custom action basic type.



- [5]. Specify a name of your custom action, select one of the execution modes (Immediate, Deferred, Rollback and Commit), choose the execution context, scheduling, return processing and other options. Then, click Next.

NOTE All options that are incompatible with the previously selected settings are

disabled.



- [6]. On the sequencing step, you can choose a position, where you would like to run your custom action. The sequence drop-down list allows you to select only compatible positions, taking into account your previously selected options. Also, you are free to specify execution conditions either by entering them manually or choosing from the drop-down list. Click Finish to add your custom action.

NOTE Incompatible sequences are disabled.

The screenshot shows a dialog box titled "Add/Edit custom action" with a progress bar at the top. The progress bar has four steps: "Basic type", "Resources", "Options", and "Sequencing". The "Sequencing" step is currently selected and highlighted in blue. Below the progress bar, there are two sections: "Normal (simple) installation" and "Administrative installation". Each section has two columns of settings: "UI sequence" and "Execution sequence (recommended)" on the left, and "UI sequence conditions" and "Execution sequence conditions" on the right. The "UI sequence" dropdowns are set to "Do not run in this sequence". The "Execution sequence" dropdowns are set to "Run after InstallFiles" for the normal installation and "Do not run in this sequence" for the administrative installation. The "UI sequence conditions" and "Execution sequence conditions" fields are empty. At the bottom of the dialog, there are three buttons: "Back", "Finish", and "Cancel". The "Finish" button is highlighted with a dashed border.

Normal (simple) installation

UI sequence	Do not run in this sequence	UI sequence conditions	
Execution sequence (recommended)	Run after InstallFiles	Execution sequence conditions	

Administrative installation

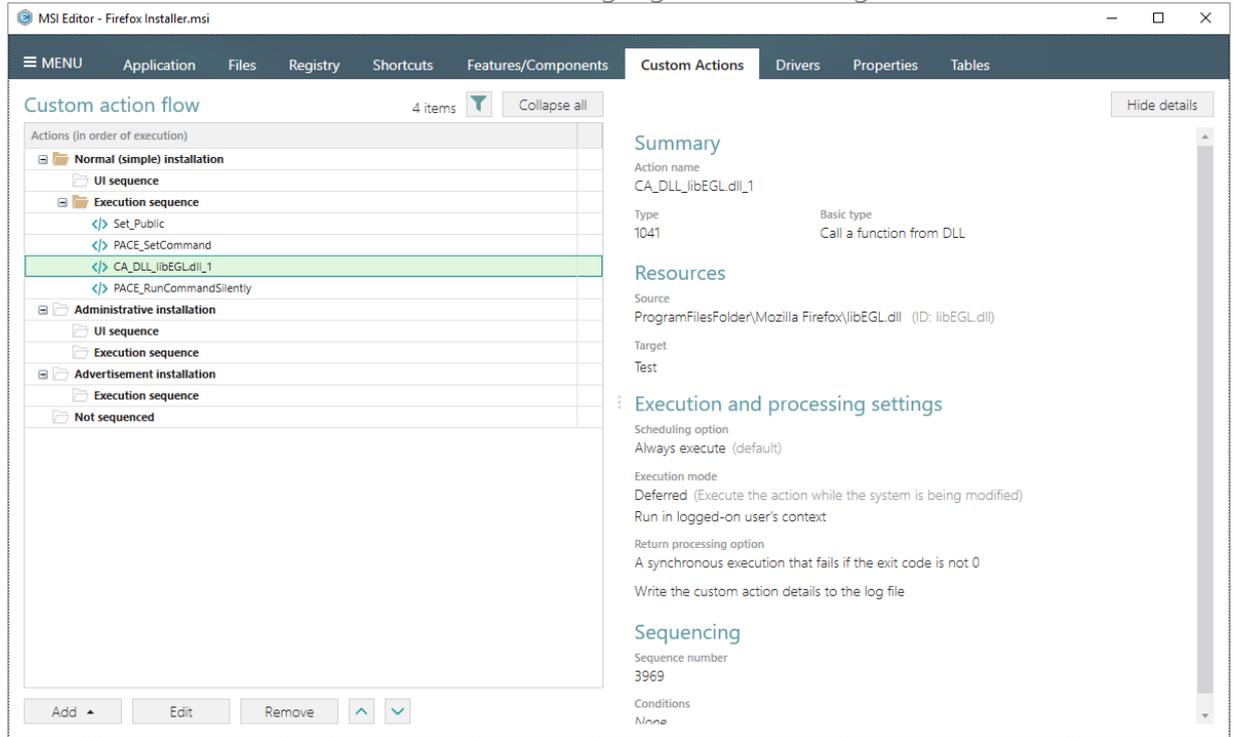
UI sequence	Do not run in this sequence	UI sequence conditions	
Execution sequence	Do not run in this sequence	Execution sequence conditions	

NOTE The UI sequences, which typically contain standard actions related to collecting system information, are only processed if the user interface level is set to Reduced or Full; and, respectively are skipped if level is set to basic UI or no UI.
An administrative installation is typically initiated by a network administrator to assign and install applications for individual users and groups of users.
The advertisement installation sequence is not present on this step because it cannot be used for custom actions.
For information on the sequence conditions, see [Conditional Statement Syntax online](#).

Back Finish Cancel

- [7]. The first occurrence of the added custom action will be automatically selected. Click Show details to review all custom action details.

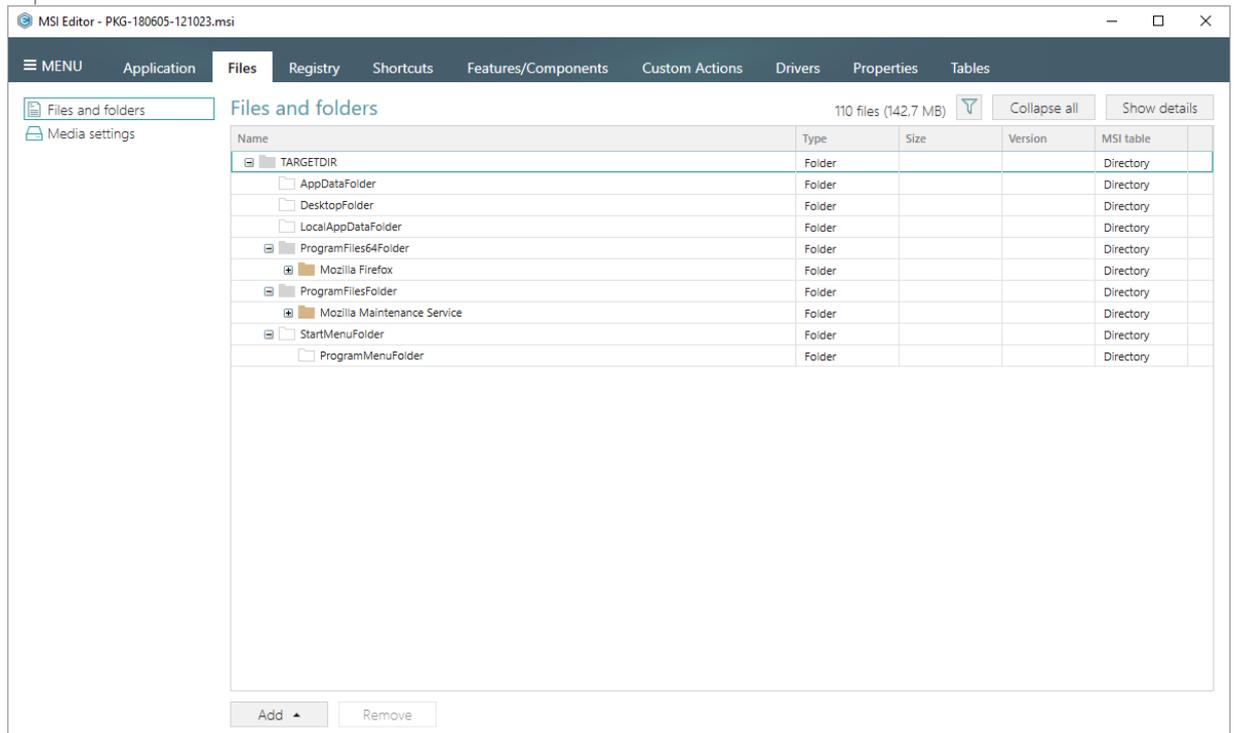
NOTE All added and modified actions are highlighted with the green color.



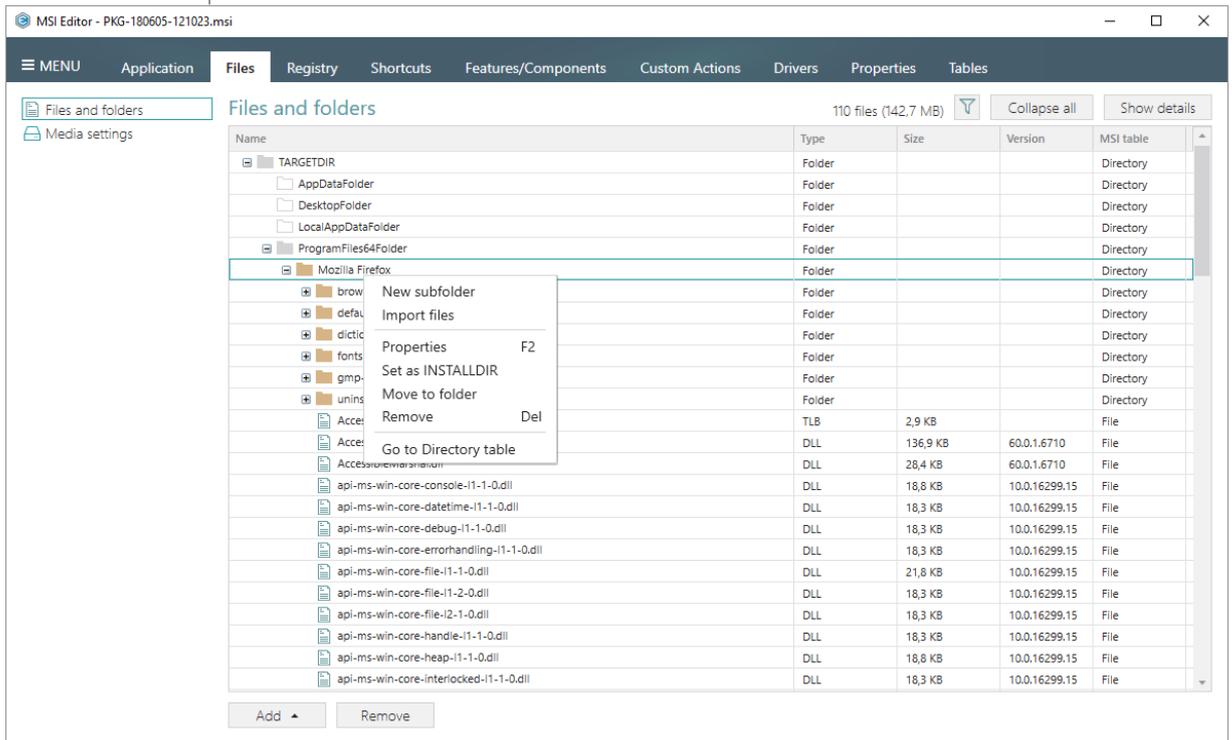
3.7.5.2.1 Run PowerShell script

Run a PowerShell script from MSI during the installation or de-installation process. This solution consists of two parts: (1) importing PowerShell script to the package; (2) adding a Custom action for running this script.

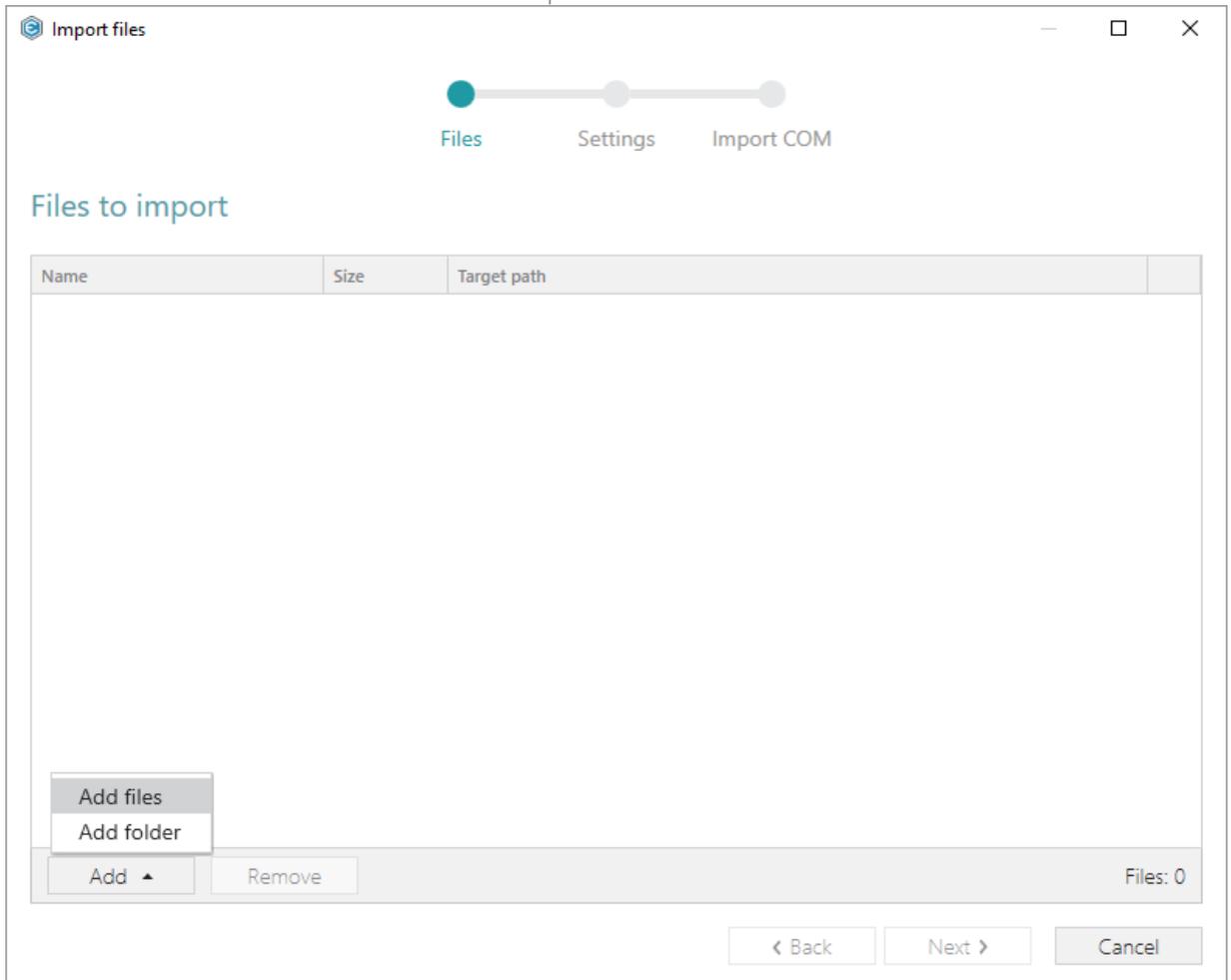
- [1]. Open the Files tab.



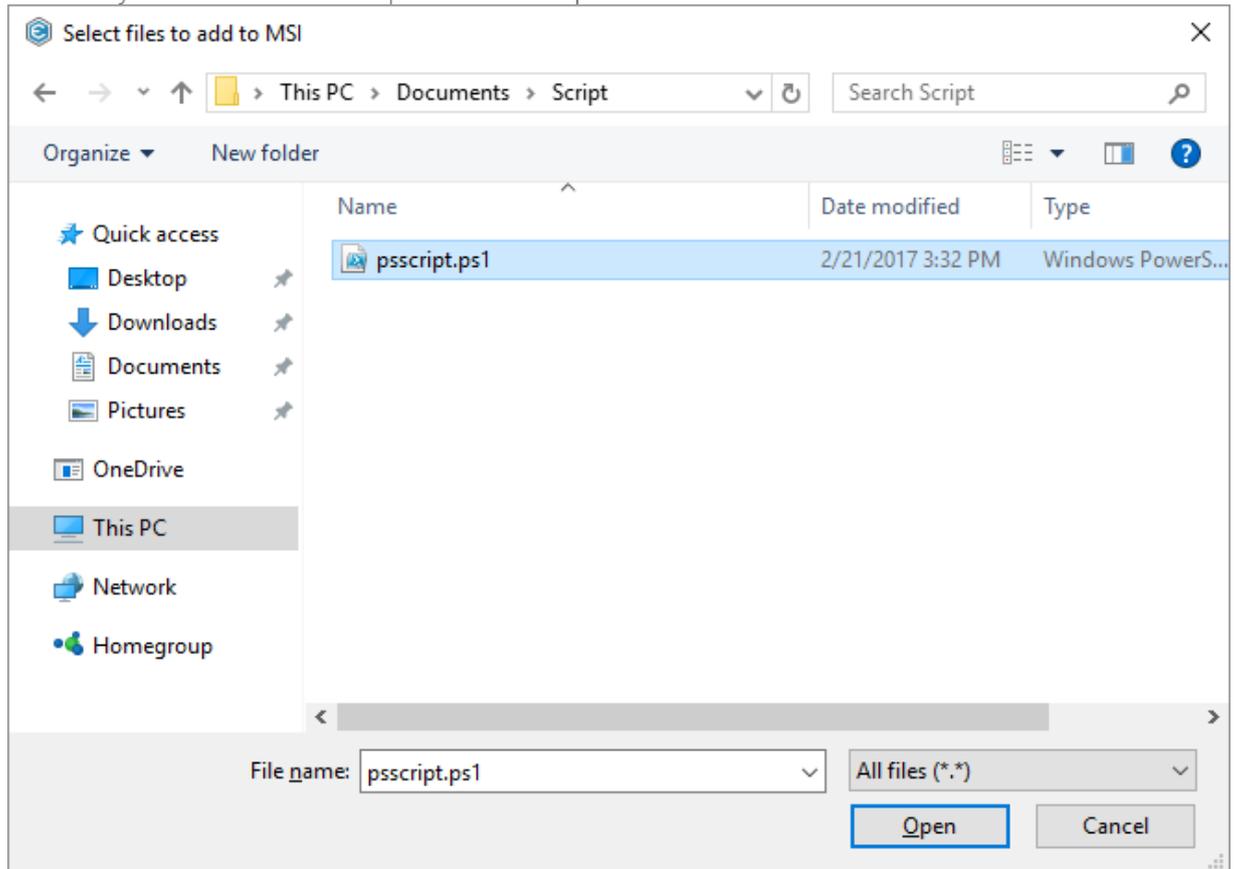
- [2]. Select Import files from the context menu of a folder, to which you want to import the PowerShell script.



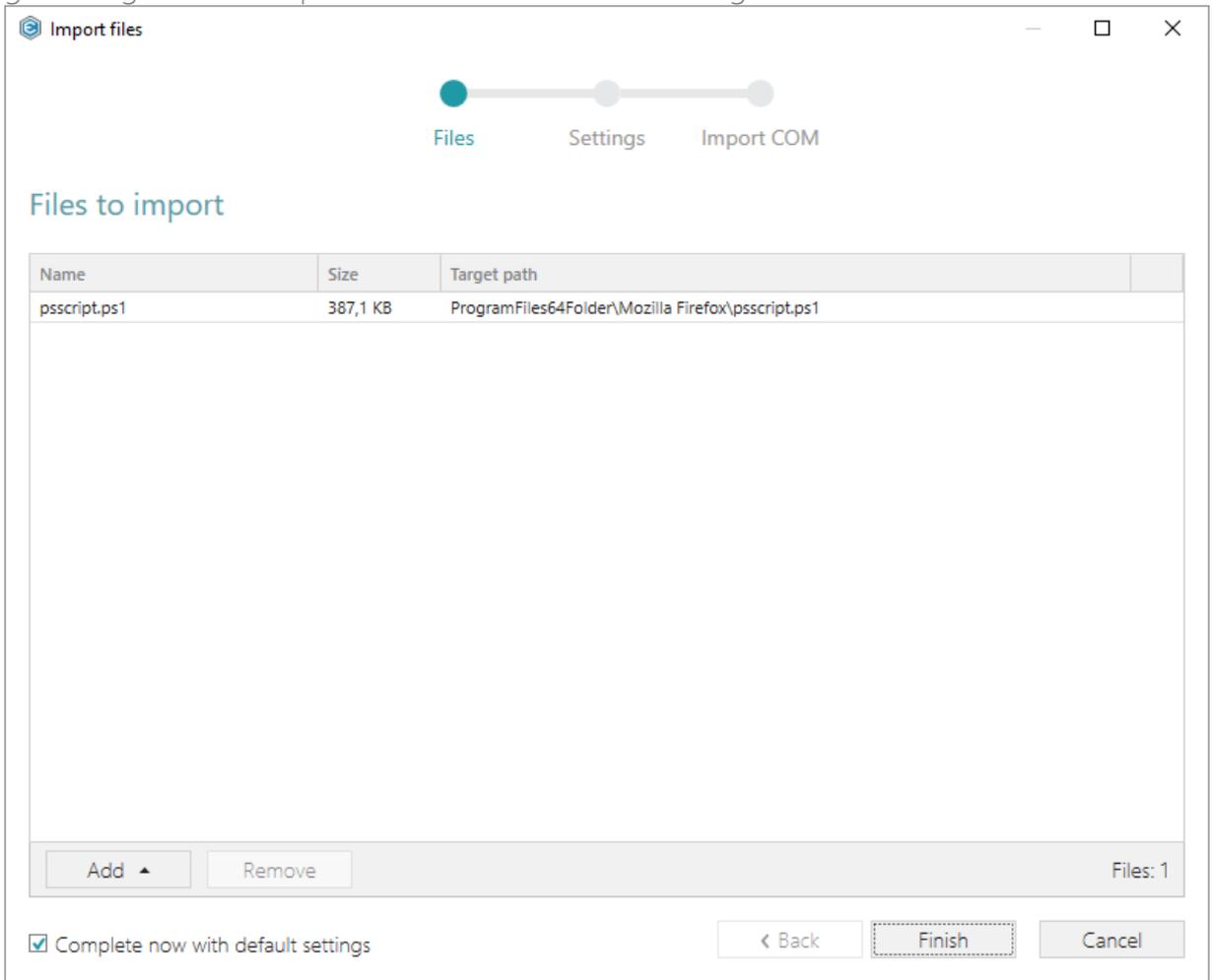
- [3]. Click Add -> Add files to choose the script.



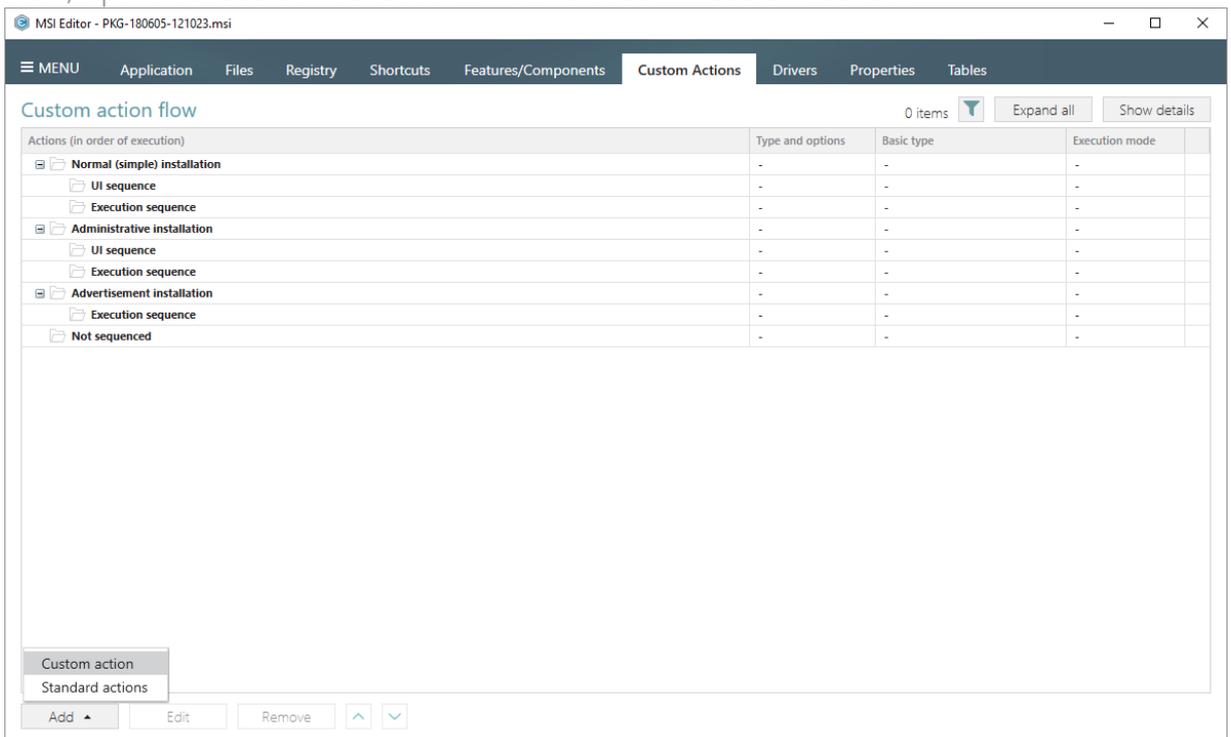
[4]. Choose your PowerShell script and click Open.



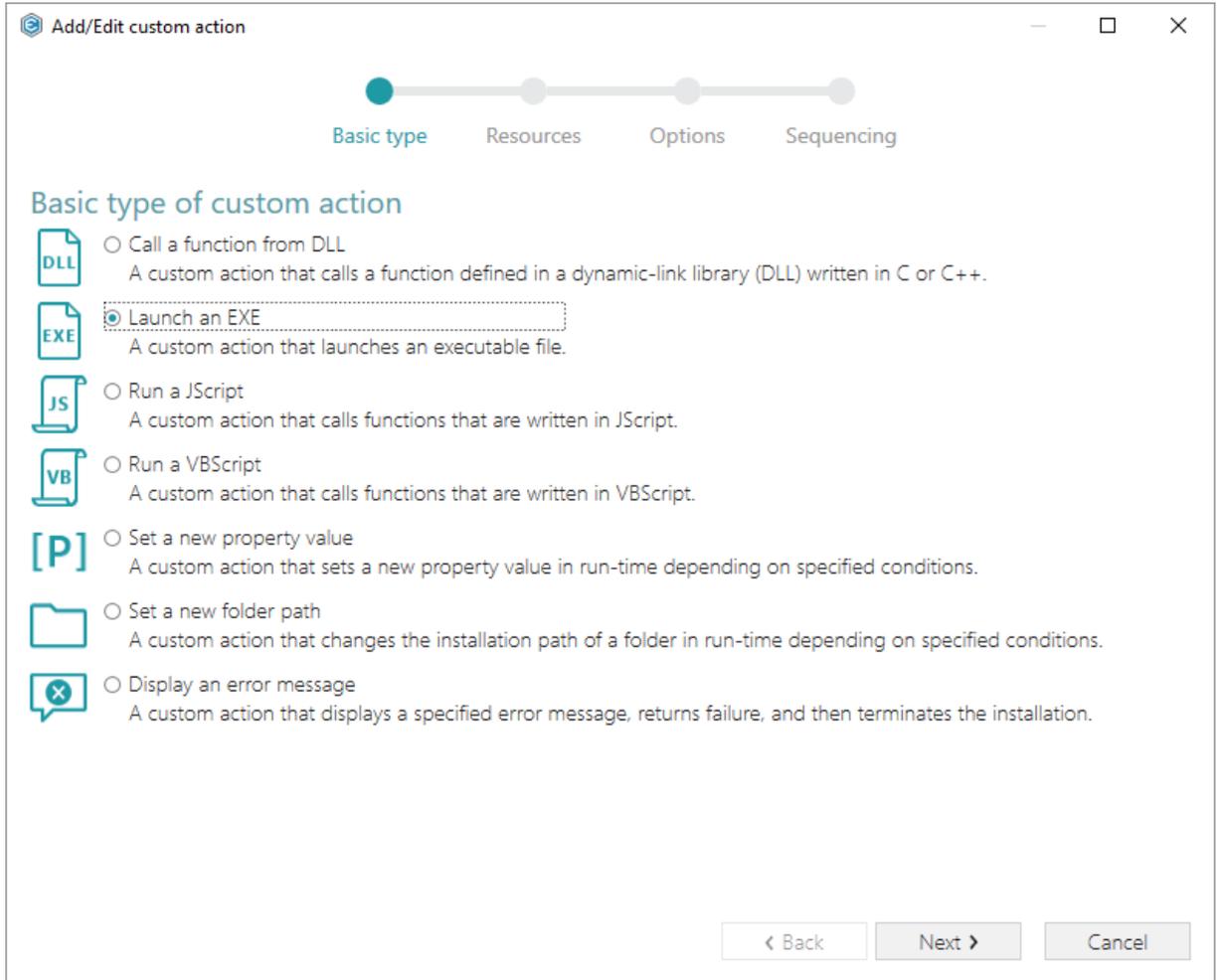
- [5]. Tick the Complete now with default settings option and click Finish. Alternatively, you can go through all the steps and choose the desired settings.



- [6]. Now, open the Custom Action tab and click Add -> Custom action.



[7]. Select Launch an EXE and click Next.



- [8]. Select the Located on the system at the path, which is specified in the Command line field, in the selected working folder and click Browse...

Add/Edit custom action

Basic type Resources Options Sequencing

Launch an EXE

Stored in the temporary binary stream
Binary
[Dropdown] [New binary]

Installed by this package along with this application
File
[Field] [Browse...]

Located on the system at the path, which is specified in the property
Property
[Dropdown] [New property]

Located on the system at the path, which is specified in the Command line field, in the selected working folder
Working folder
[Field] [Browse...]

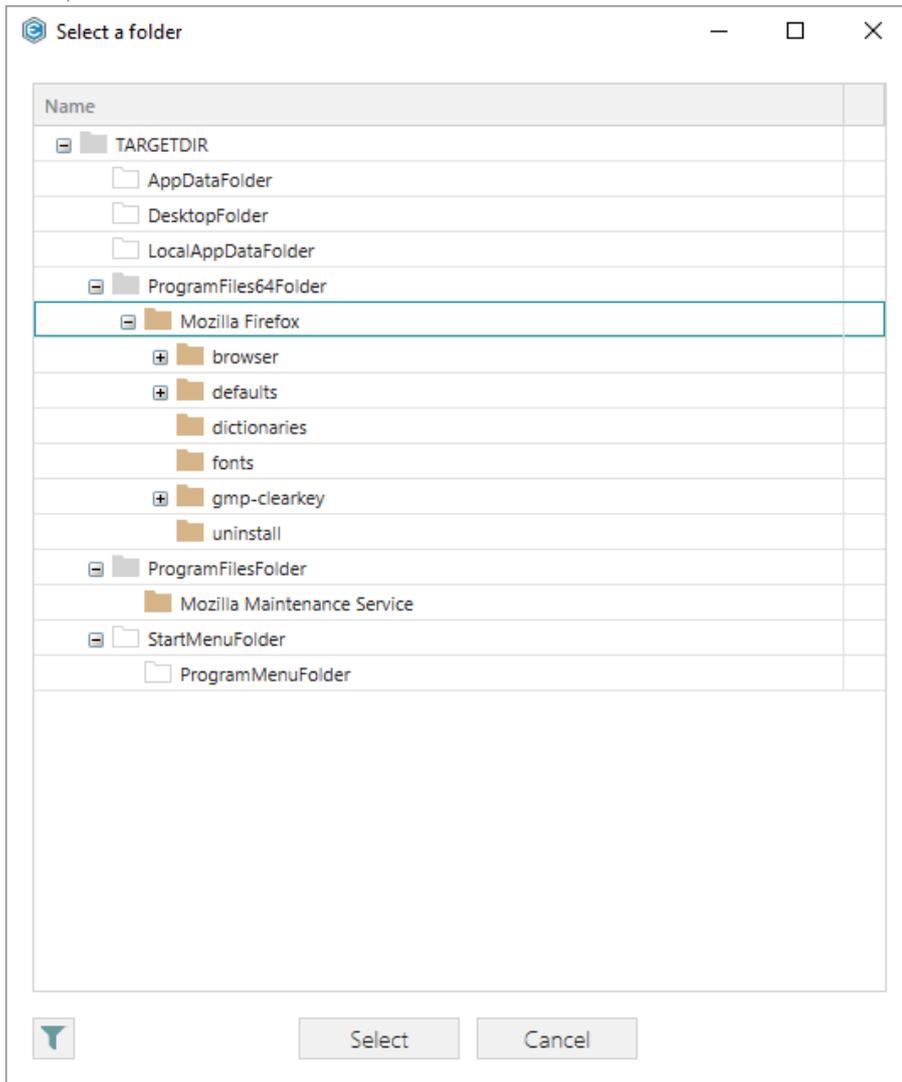
Command line string for executable

Command line
[Field]

NOTE Quotation marks must be used around long file names or paths. The value is treated as formatted text and may contain references to properties, files, folders, environment variables or other formatted text attributes. See [formatted text description online](#).

[< Back] [Next >] [Cancel]

- [9]. Select a script-containing folder, to which you have imported the PowerShell script and then, click Select.



- [10]. Enter the `powershell.exe -ExecutionPolicy Bypass -File "<script file name>.ps1"` to the Command line field, where <script file name> is replaced with a name of your PowerShell script (e.g. psscript.ps1). Then, click Next.

Add/Edit custom action

Basic type Resources Options Sequencing

Launch an EXE

Stored in the temporary binary stream
Binary
[Dropdown] [New binary]

Installed by this package along with this application
File
[Dropdown] [Browse...]

Located on the system at the path, which is specified in the property
Property
[Dropdown] [New property]

Located on the system at the path, which is specified in the Command line field, in the selected working folder
Working folder
ProgramFiles64Folder\Mozilla Firefox (ID: Mozilla_Firefox) [Browse...]

Command line string for executable

Command line
powershell.exe -ExecutionPolicy Bypass -File "psscript.ps1"

NOTE Quotation marks must be used around long file names or paths. The value is treated as formatted text and may contain references to properties, files, folders, environment variables or other formatted text attributes. See [formatted text description online](#).

[< Back] [Next >] [Cancel]

NOTE -ExecutionPolicy Bypass parameter was added to make sure the custom action will always execute regardless of the current execution policy on the system.

- [11]. Select the Deferred execution mode, and the Run in system context option. From the Return processing options list, choose An asynchronous execution that waits for exit code

at the end of the sequence, and click Next.

Add/Edit custom action

Basic type Resources **Options** Sequencing

Identification

Action name
CA_Run_PowerShell

Execution and processing settings

Execution mode
Deferred (Execute the action while the system is being modified)

Run in logged-on user's context
 Run in system context
 Run with user impersonation during per-machine installs on a terminal server

Scheduling option
Always execute (default)

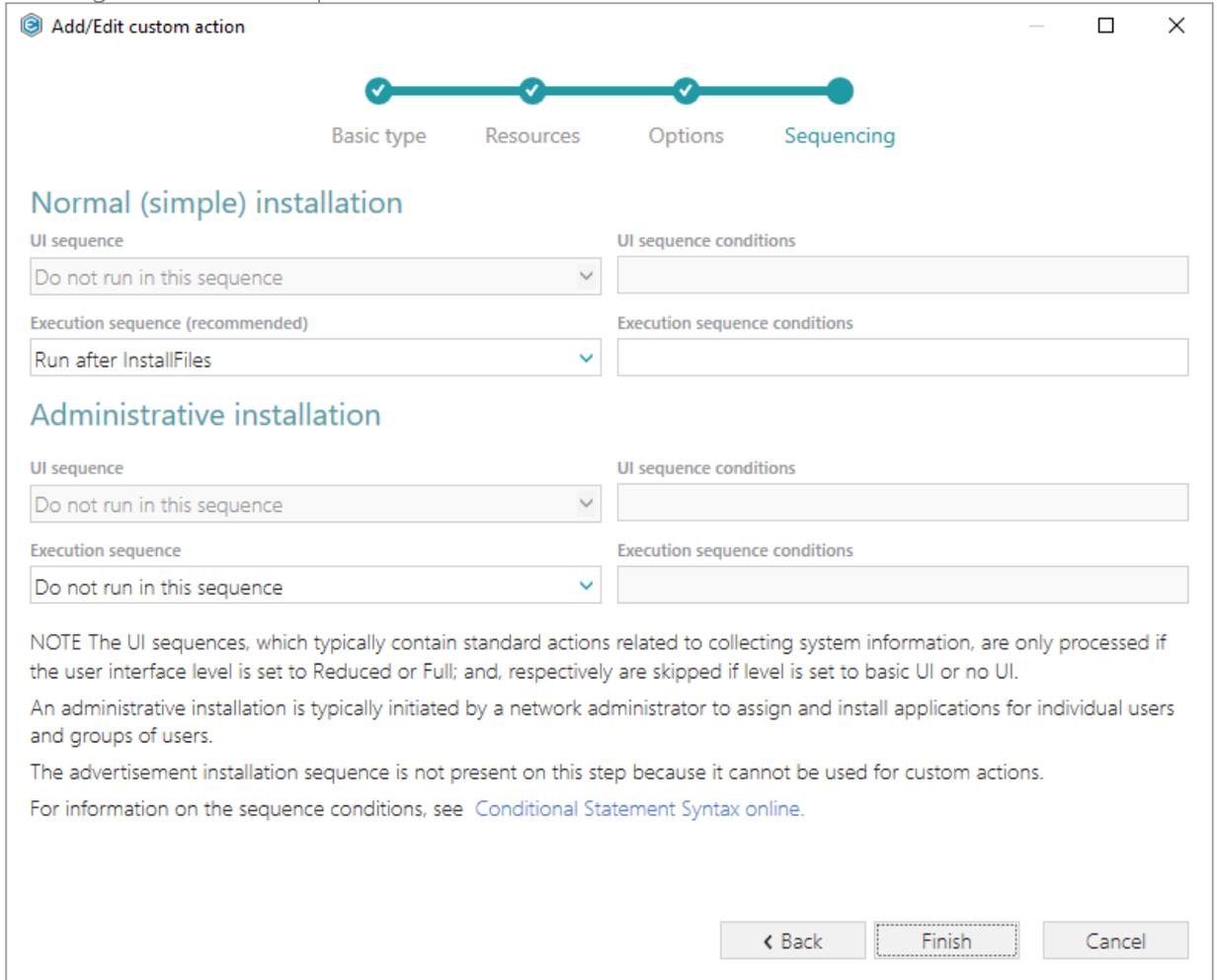
Return processing option
An asynchronous execution that waits for exit code at the end of the sequence

Write the custom action details to the log file
 Run JScript or VBScript in 64-bit environment

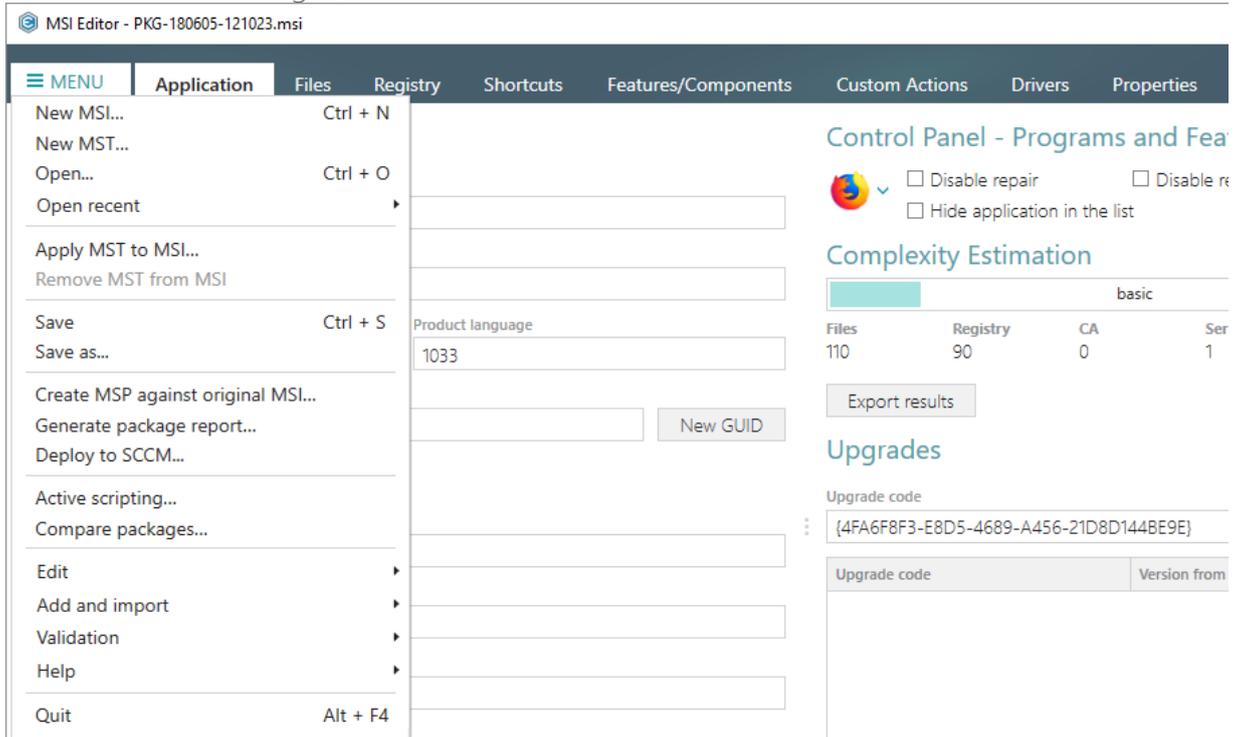
< Back Next > Cancel

- [12]. From the Execution sequence (recommended) list, select Run after InstallFiles (or any other position, located below). If needed, specify the execution conditions - enter them manually or choose from the dropped list. Click Finish to add your custom action for

running PowerShell script.



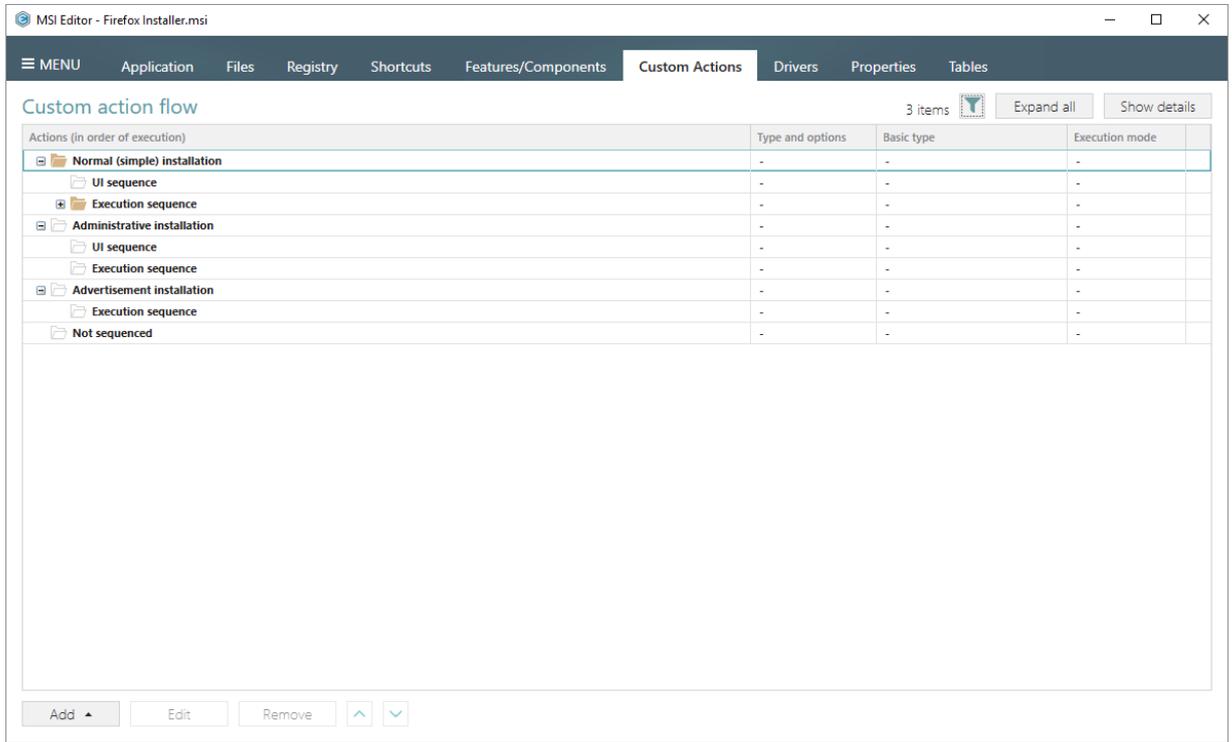
[13]. In order to save changes, select Save from MENU.



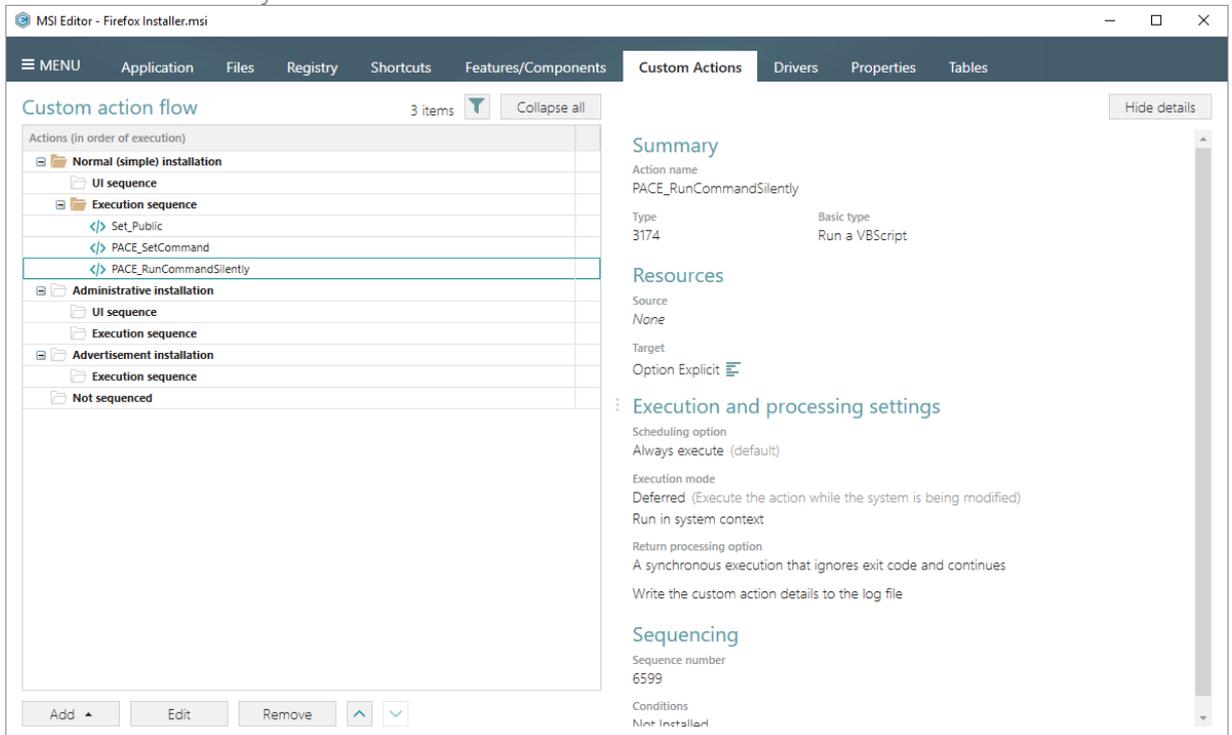
3.7.5.3 Edit Custom Action

Edit basic type, resources, sequence and other settings of the existing custom action.

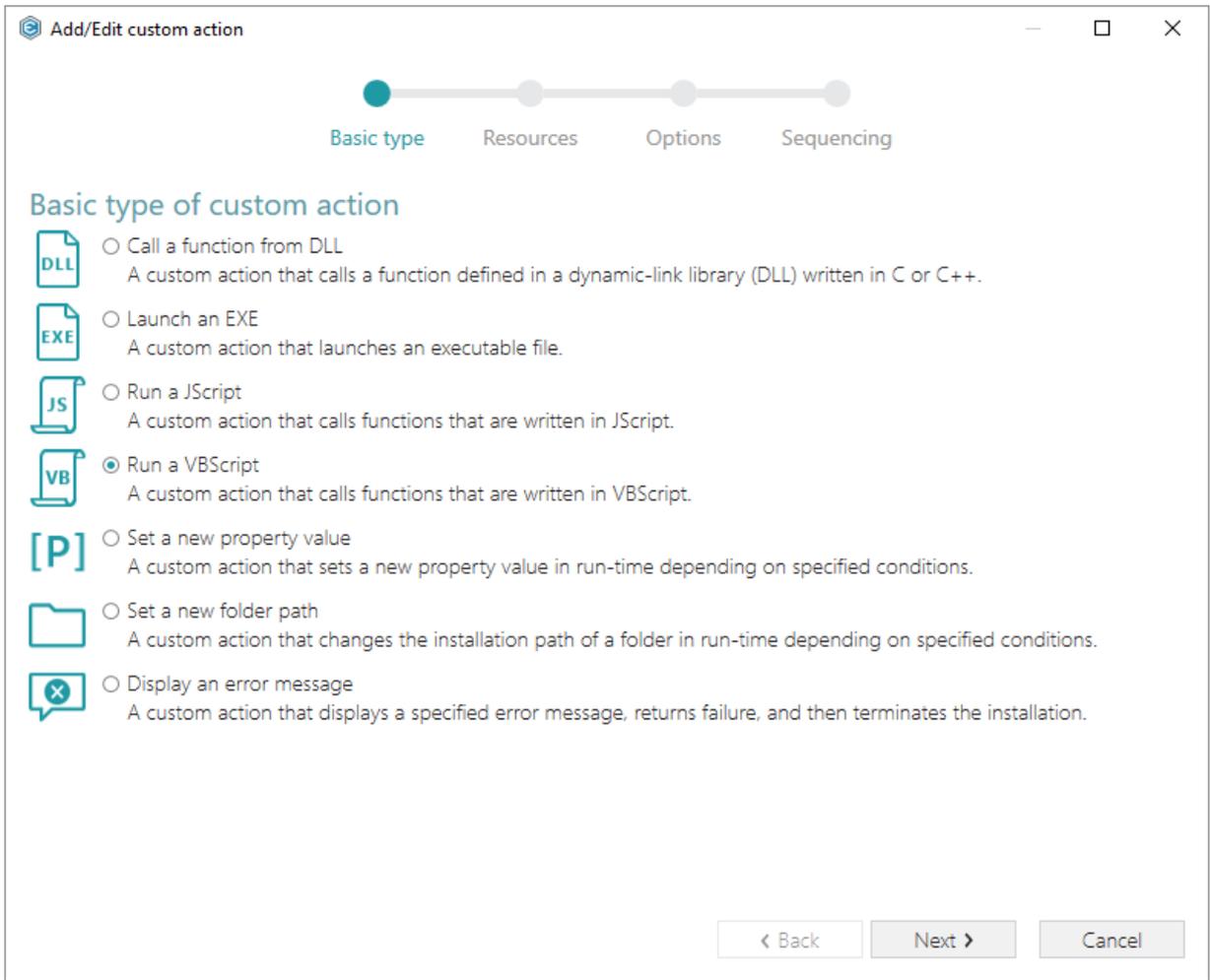
- [1]. Open the Custom Action tab.
Click Show details to review the action details.



- [2]. Select the necessary custom action from the list and click Edit.



- [3]. Either keep the existing basic type of your custom action or change it if necessary and click Next.



- [4]. If necessary, select new custom action resources such as a type of source and source itself, arguments, etc. Then, click Next.
NOTE The wizard displays only compatible fields and options for the previously selected



custom action basic type.

The screenshot shows the 'Add/Edit custom action' dialog box with the 'Resources' step selected. The progress bar at the top indicates the current step. The 'Run a VBScript' section has four radio button options. The first three are unselected, and the fourth is selected. The 'Script code' text area contains the following code:

```
Option Explicit
Dim sPath, WshShell
sPath = Session.Property("CustomActionData")
If Len(sPath) > 0 Then
```

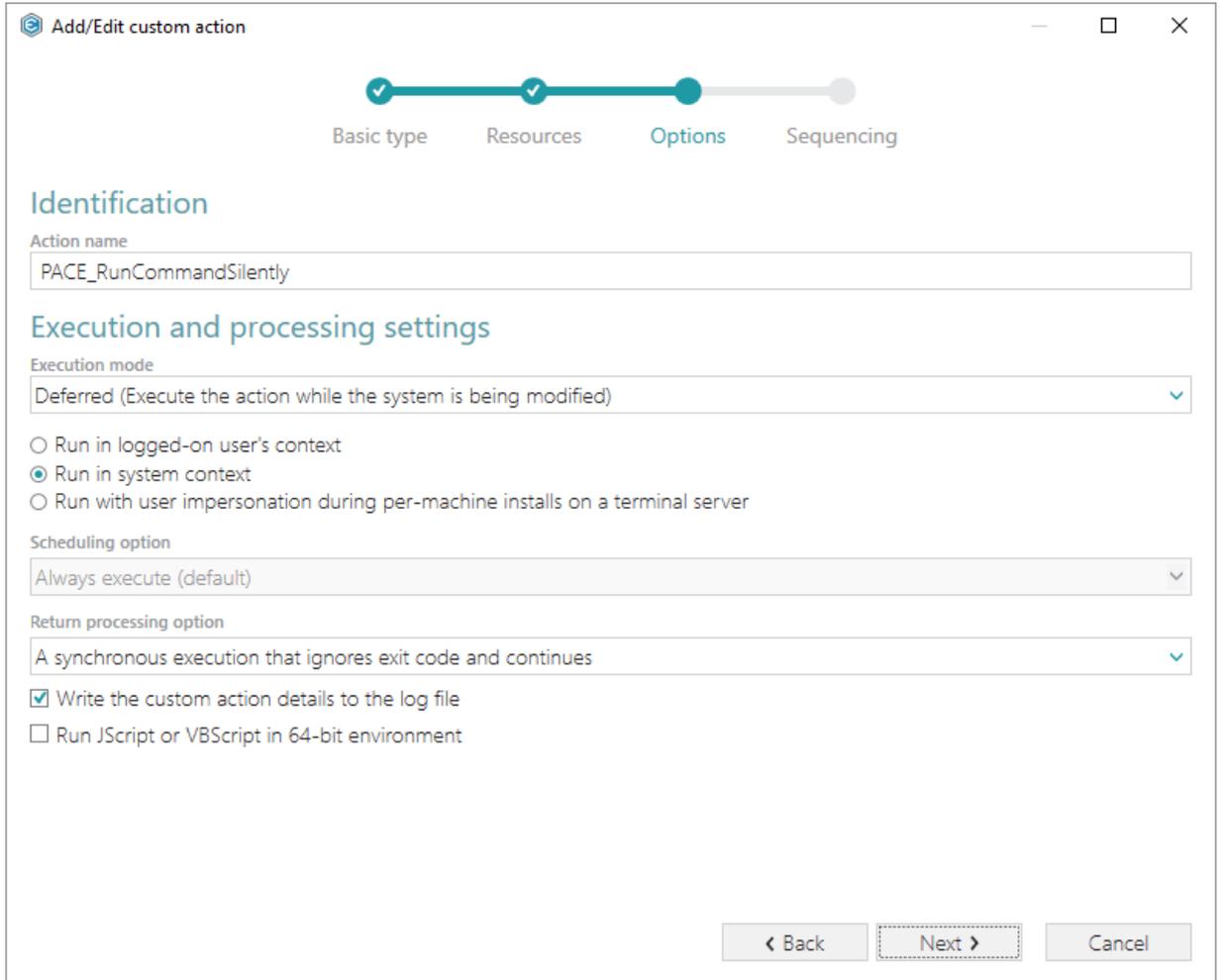
The 'Optional function that can be called' section has a 'Function name' text box which is empty. At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a dashed border.

- [5]. At the Options step, you can change the custom action name, execution mode (Immediate, Deferred, Rollback and Commit), execution context, scheduling, return processing and other options. Then, click Next.

NOTE All options that are incompatible with the previously selected settings are

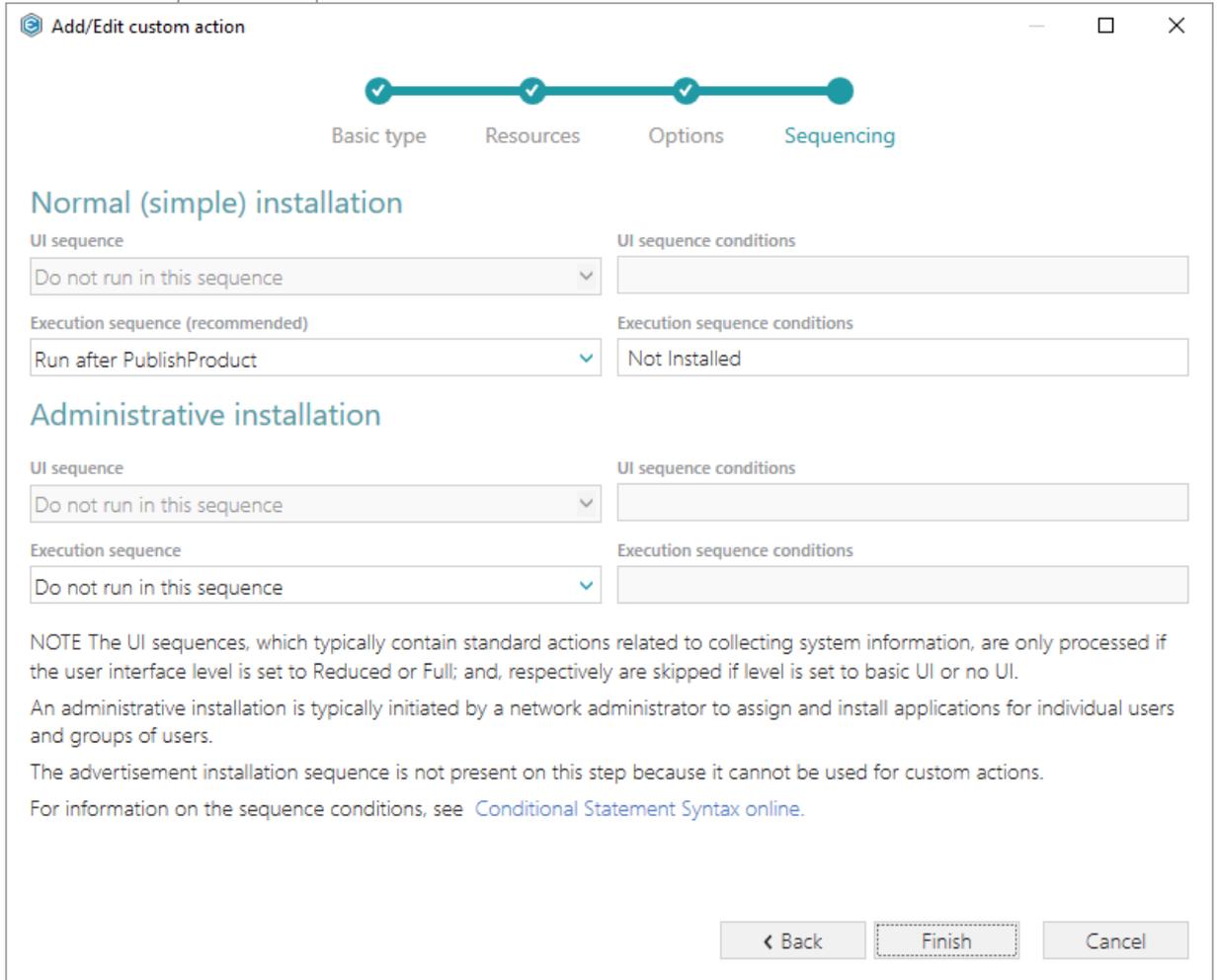


disabled.



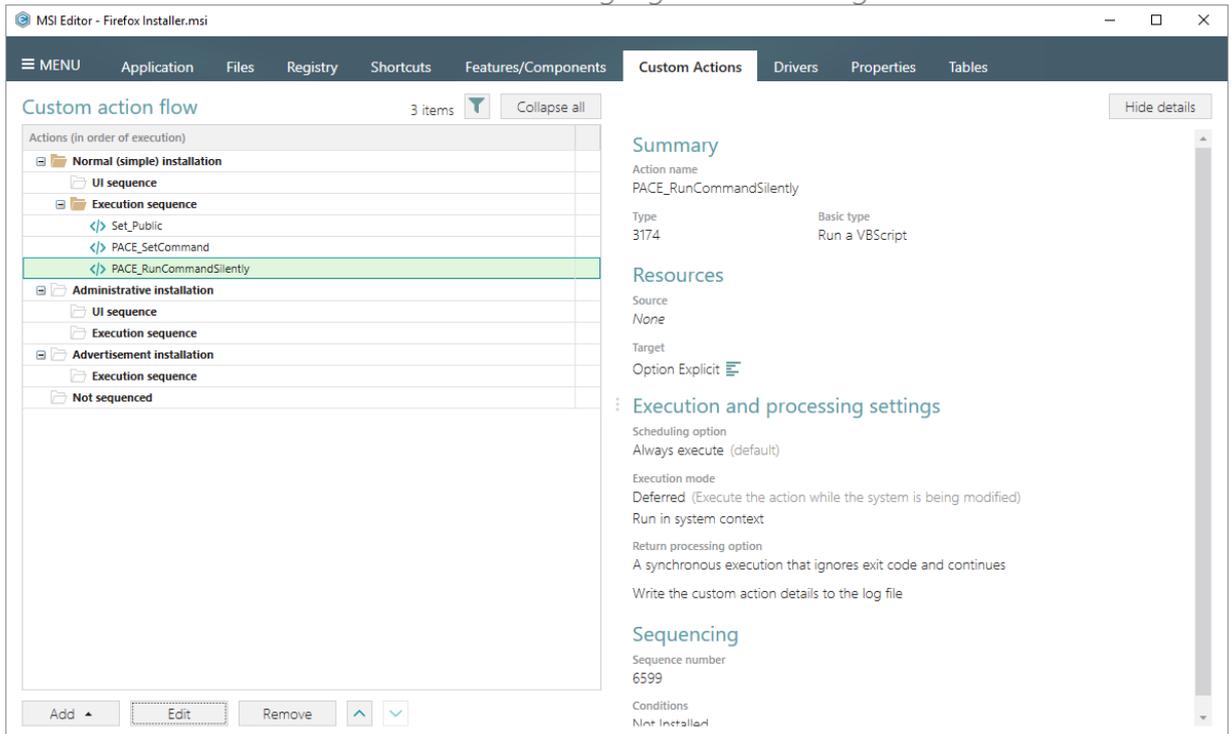
- [6]. At the last step, you can change a position, where you would like to run your custom action. The sequence drop-down list allows you to select only compatible positions, taking into account your previously selected options. Also, you free to update the execution conditions either by entering them manually or choosing from the drop-down list. Click Finish to update your custom action.

NOTE Incompatible sequences are disabled.



[7]. Click Show details to review details of the edited custom actions.

NOTE All added and modified actions are highlighted with the green color.





3.7.6 Drivers

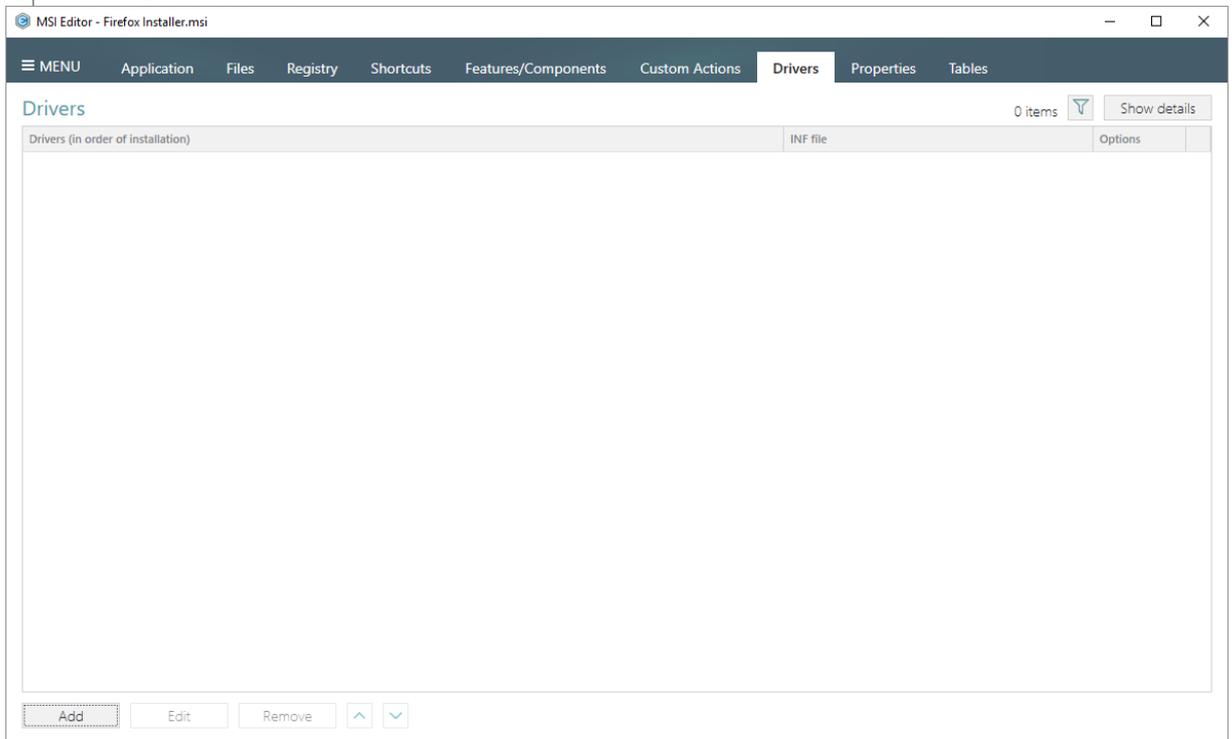
Choose a scenario that better suits your needs:

- **Add Driver**, described in section 3.7.6.1
Add a new device driver with the help of Driver Install Frameworks (DIFx) tools, a standard solution recommended by Microsoft.
- **Edit Driver**, described in section 3.7.6.2
Edit installation options, conditions and target architecture of the existing device driver.

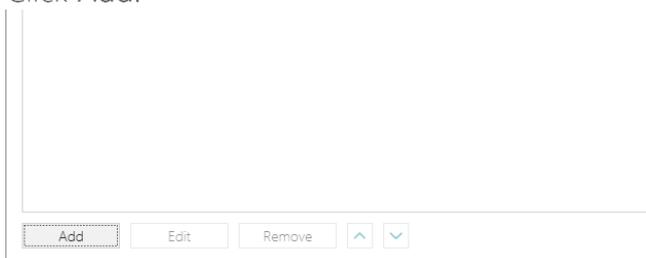
3.7.6.1 Add Driver

Add a new device driver with the help of Driver Install Frameworks (DIFx) tools, a standard solution recommended by Microsoft.

[1]. Open the Drivers tab.

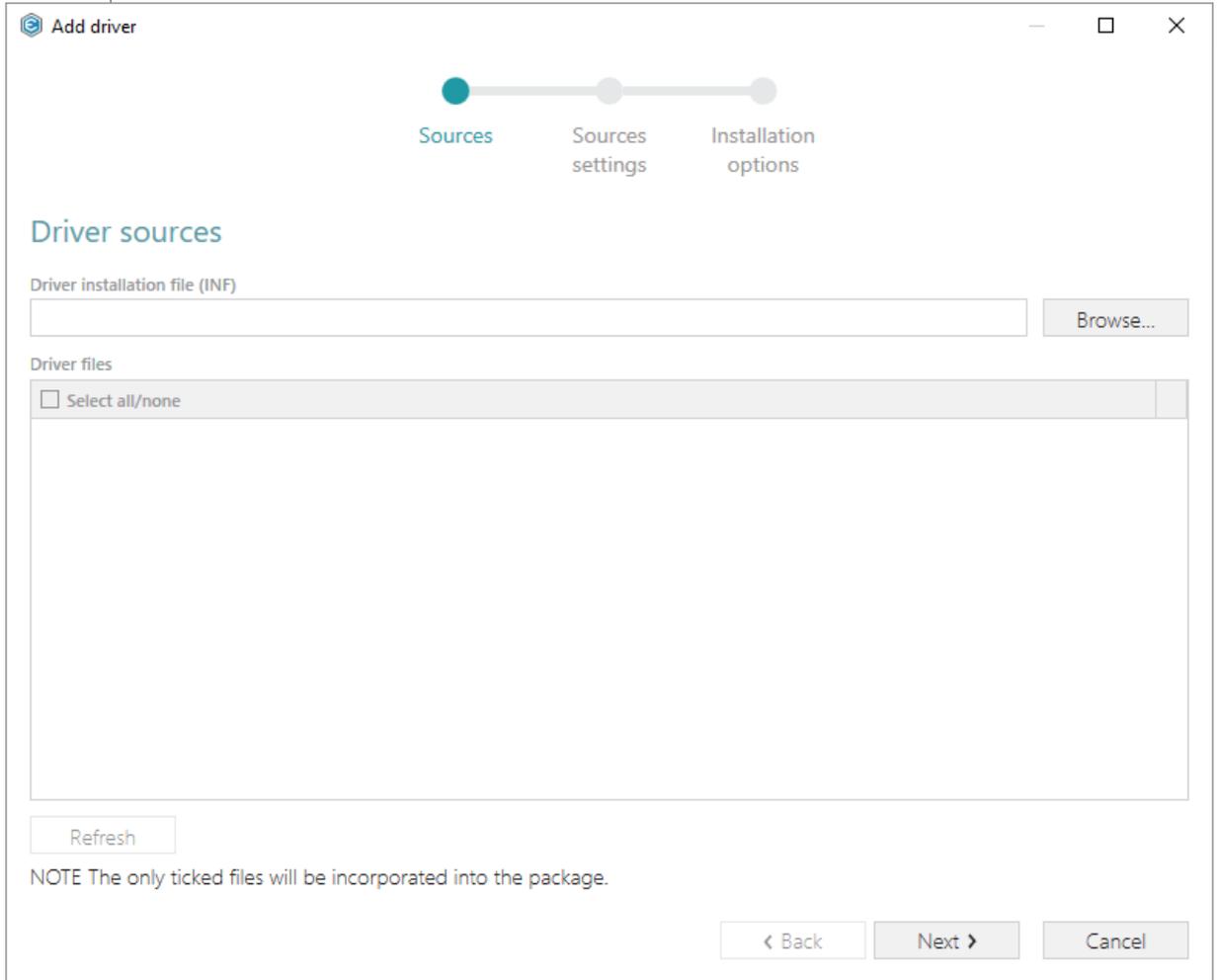


[2]. Click Add.

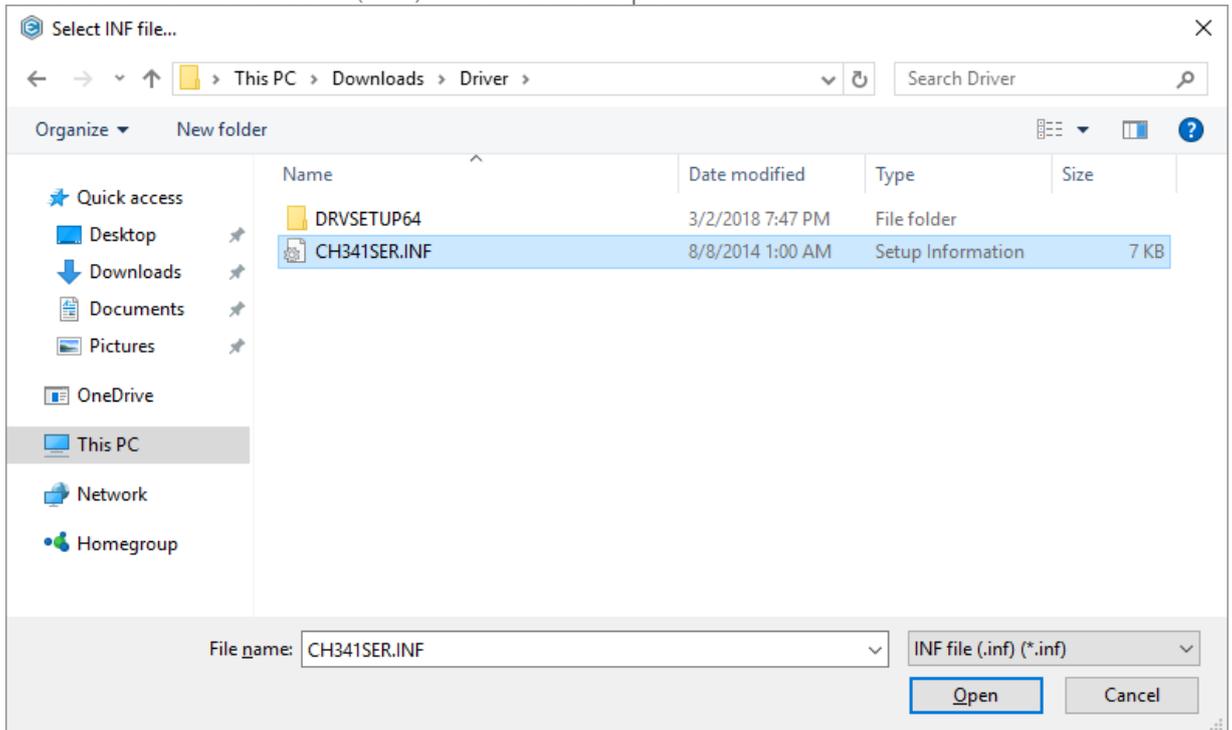




[3]. In the opened wizard window, click Browse.

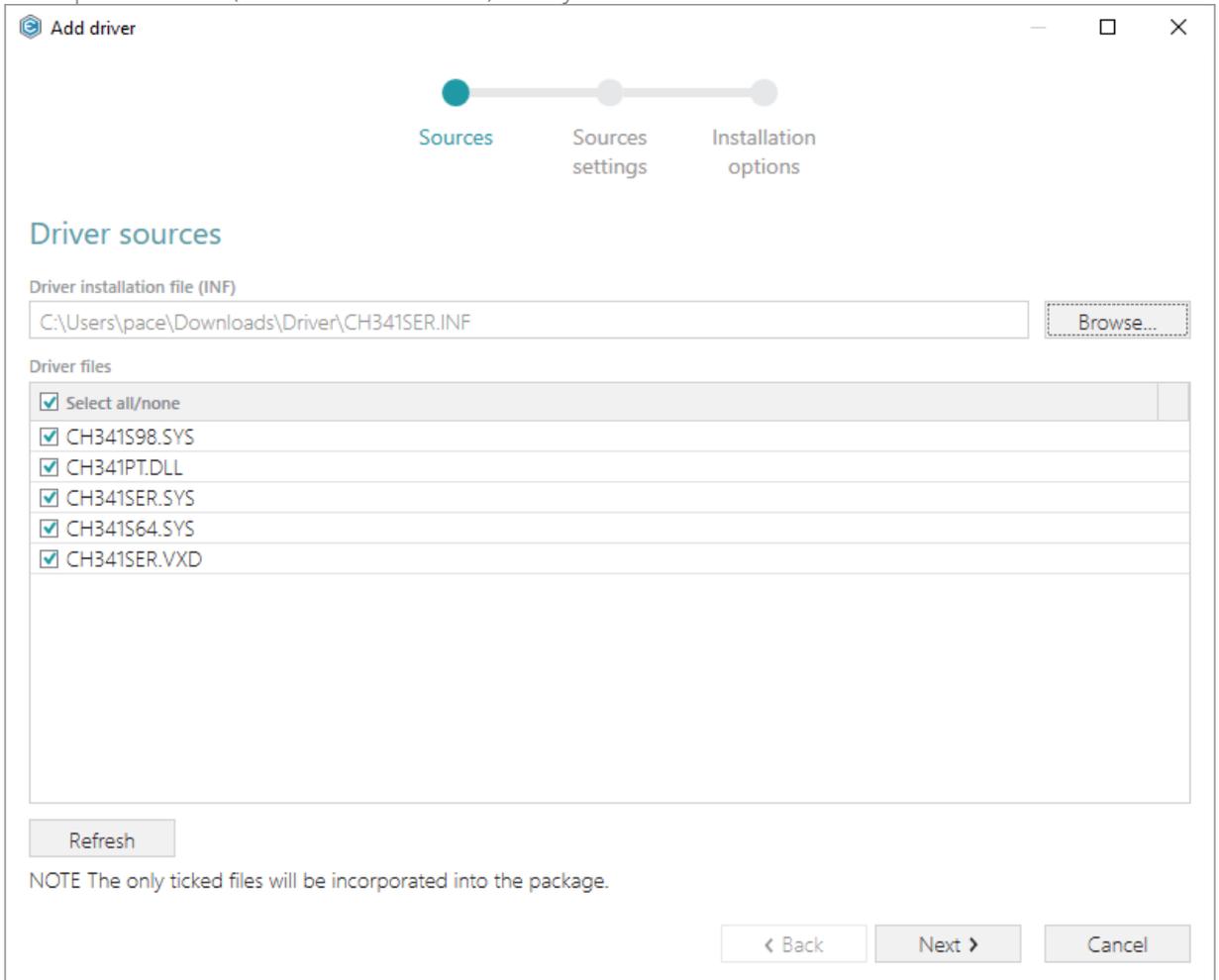


[4]. Choose driver installation (.INF) file and click Open.



- [5]. Review the source driver files, list of which is acquired from the selected driver installation (.INF) file, and click Next.

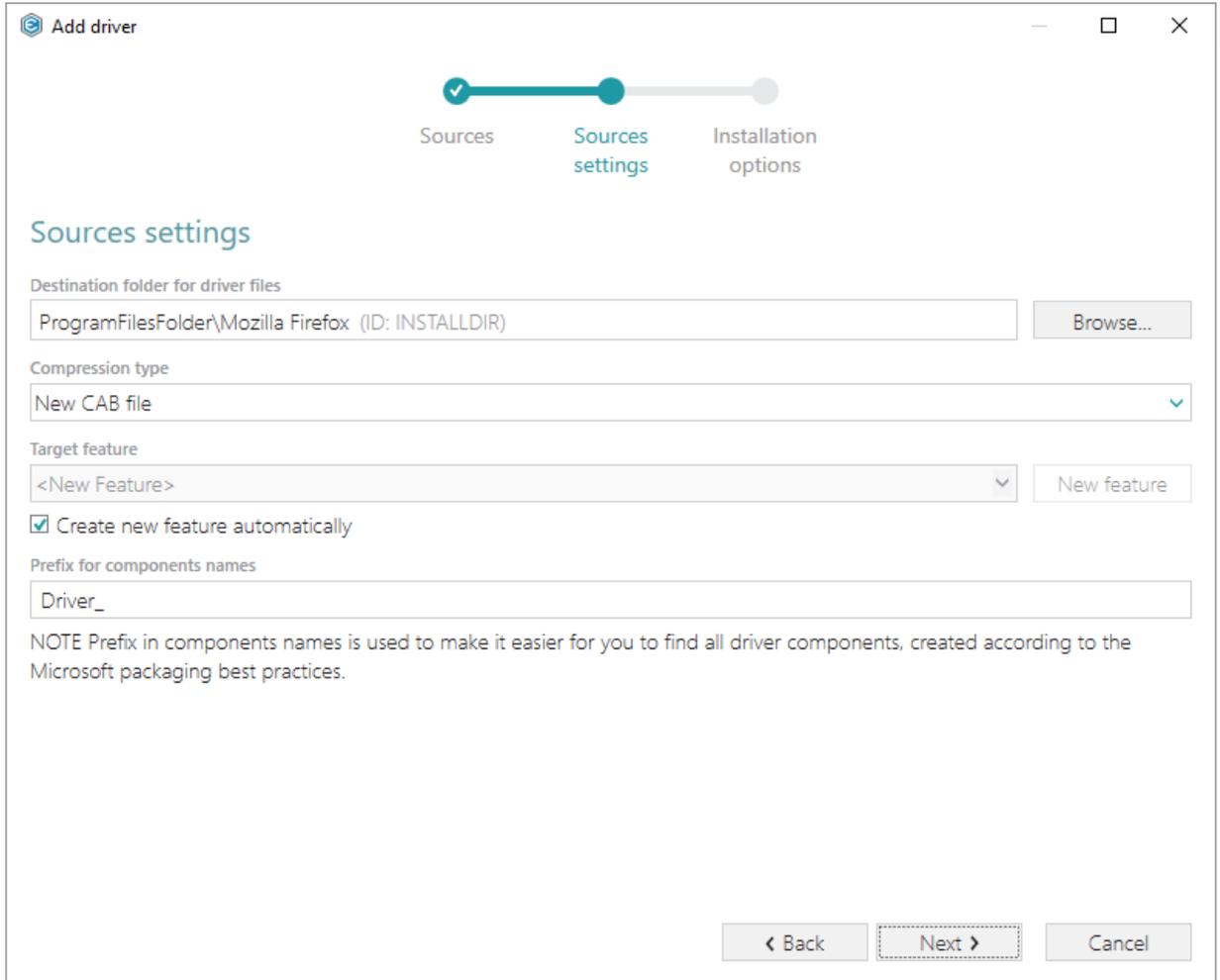
NOTE Wizard additionally checks the existence of the source driver files on the file system, next to the selected INF file. If you have missing files, either untick their checkbox to skip such files (not recommended) or try to restore them.



- [6]. At this step, select a destination folder, where the previously selected driver files will be installed, choose one of the compression types for those files, specify a target feature, to which components of the driver files will be assigned. Then, click Next.

NOTE The wizard will additionally create a subfolder for driver files in the selected

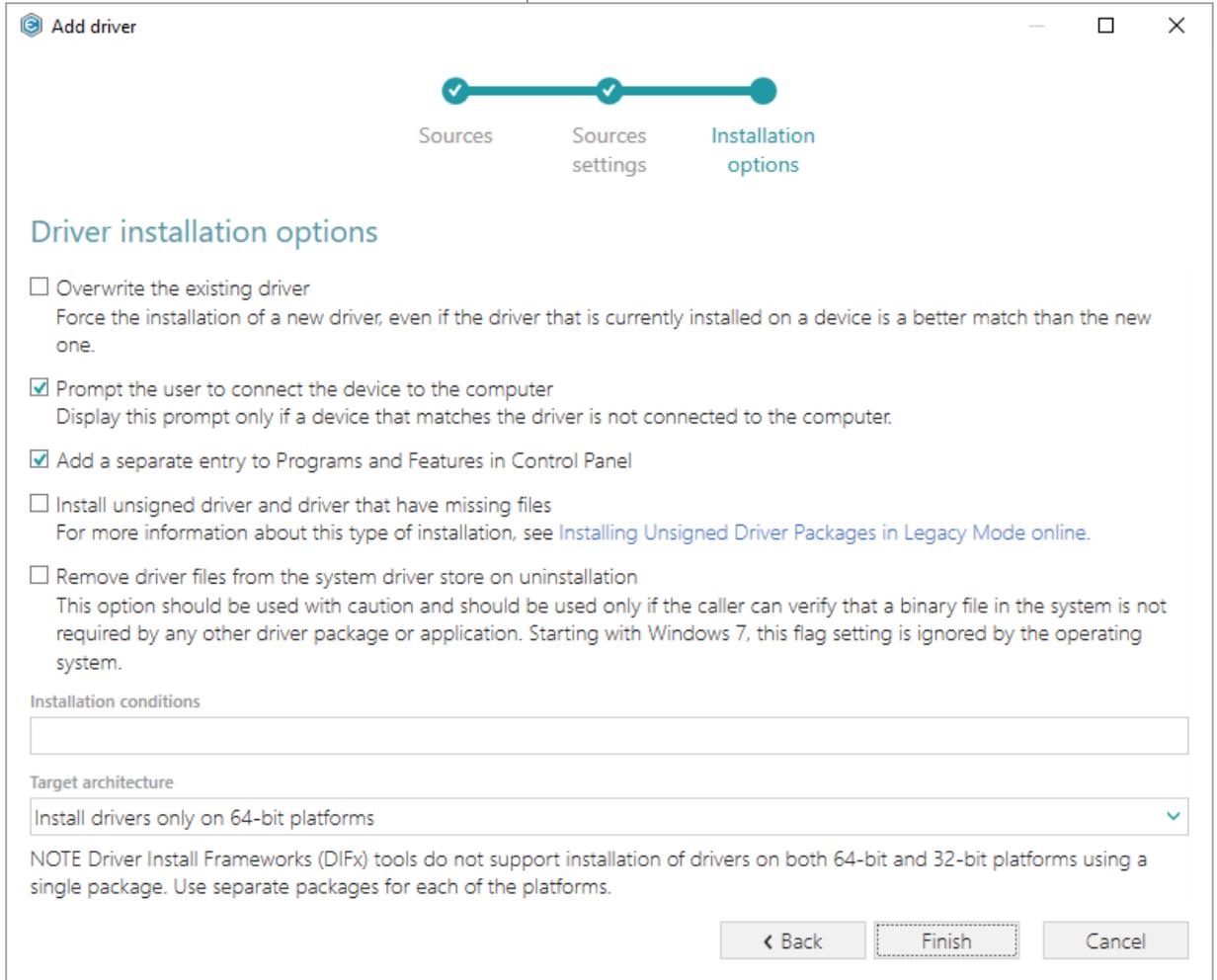
destination folder.



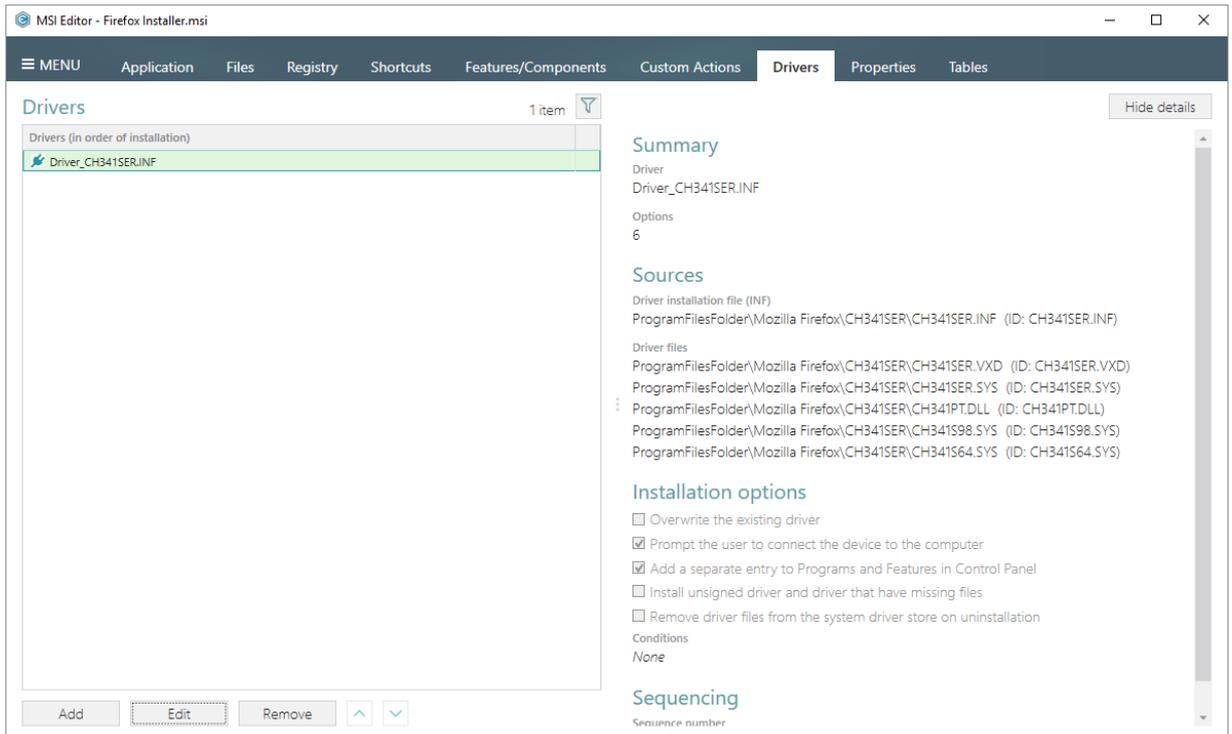
- [7]. At the last step, you can select driver installation options, used by Driver Install Frameworks (DIFx) tool, specify installation conditions, which will be used for the main driver component (see [Conditional Statement Syntax](#)), and select a target architecture, which defines whether a 32-bit or 64-bit DIFx tool will be used. Click Finish to add the driver.

NOTE One package can not contain both 32-bit and 64-bit DIFx tool, and as a result, one package can not install driver on both platforms. Use separate packages if you need to

install driver on both 32-bit and 64-bit platforms.



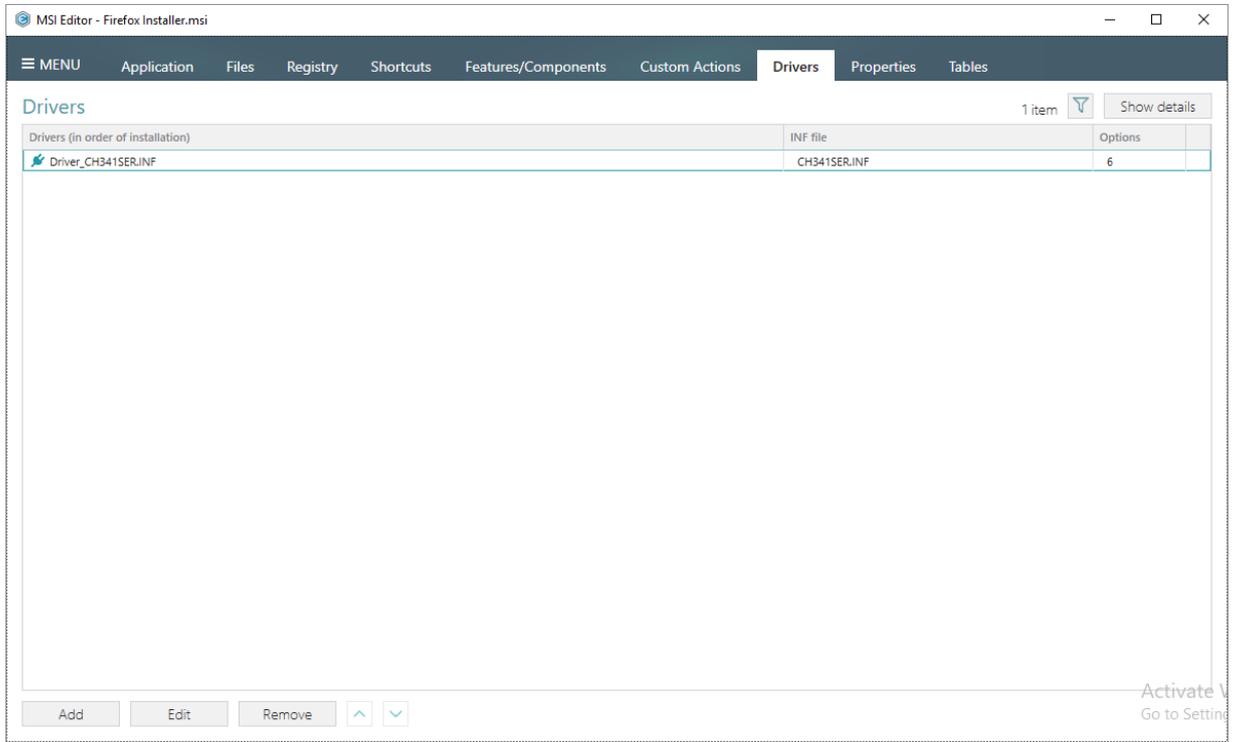
[8]. The newly added device driver will be automatically selected. Click Show details to review the driver details.



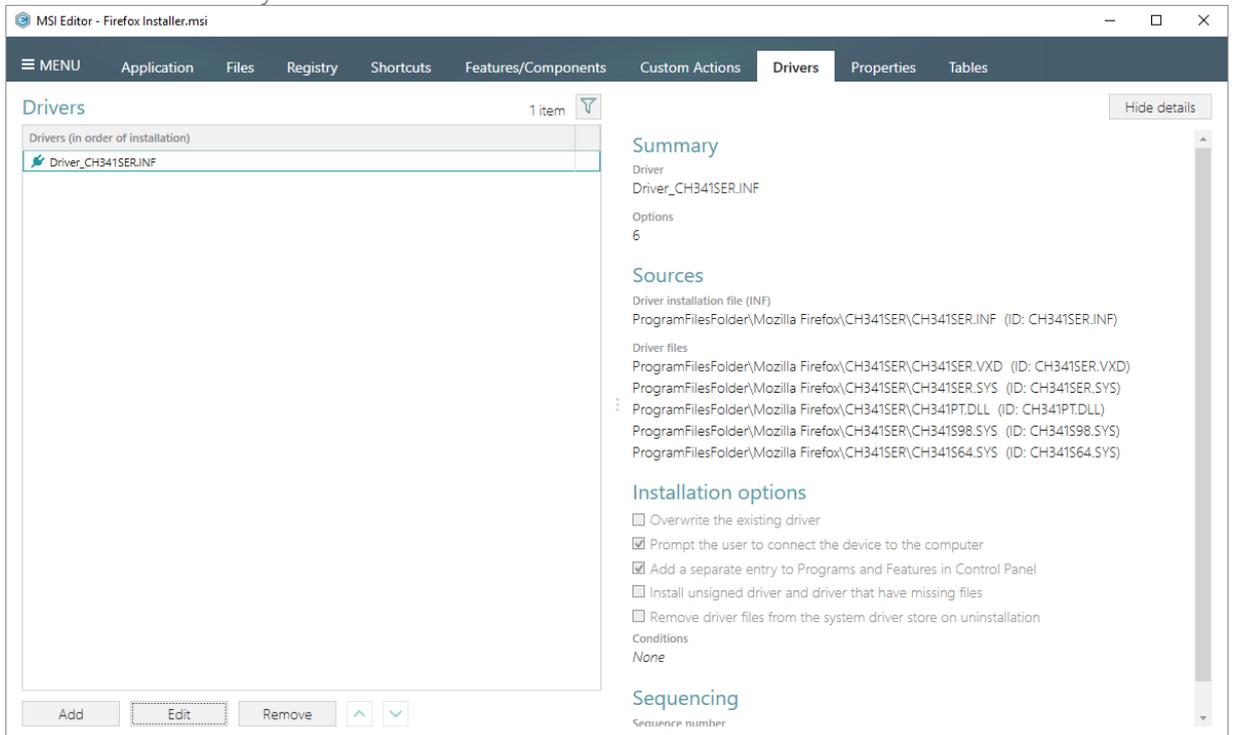
3.7.6.2 Edit Driver

Edit installation options, conditions and target architecture of the existing device driver.

- [1]. Open the Drivers tab.
Click **Shows details** to review the device driver details.



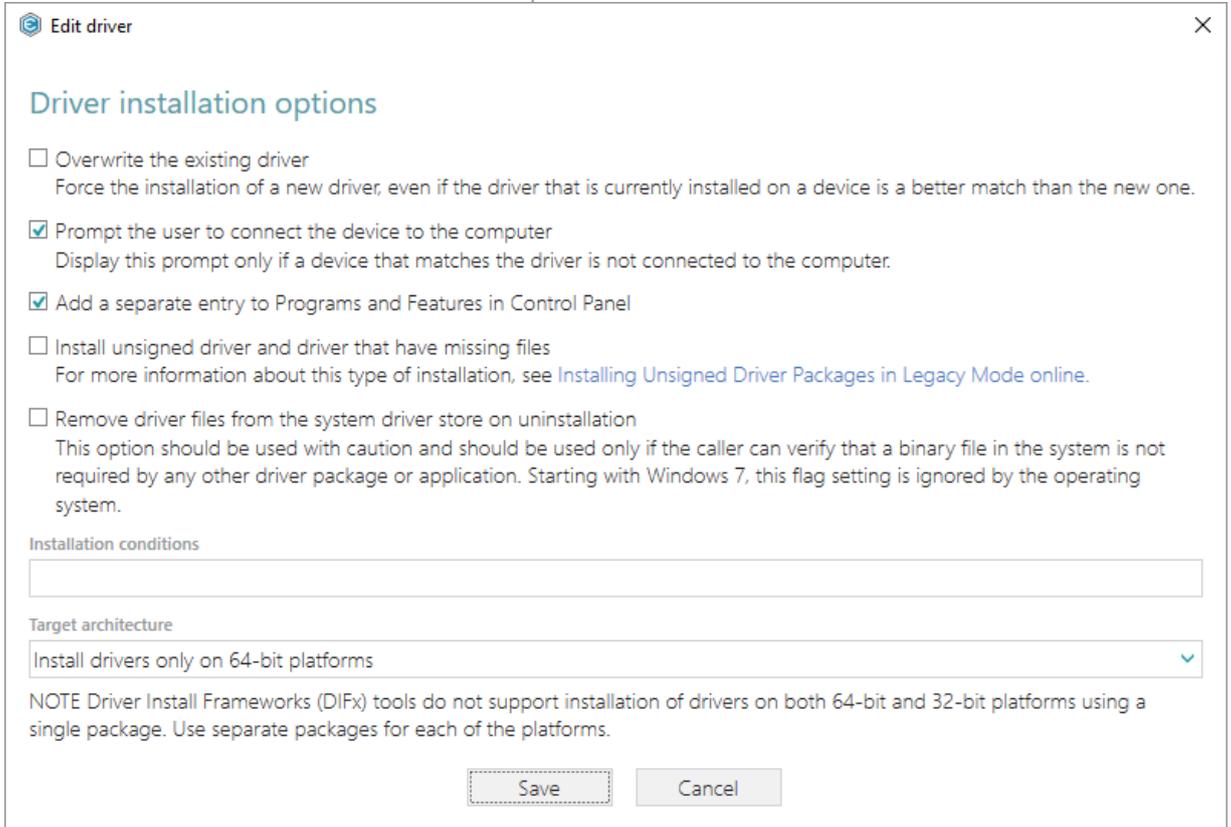
- [2]. Select the necessary driver from the list and click **Edit**.



- [3]. In the opened window you can change driver installation options, used by Driver Install Frameworks (DIFx) tool, specify installation conditions, which will be used for the main driver component (see [Conditional Statement Syntax](#)), and change a target architecture,

which defines whether a 32-bit or 64-bit DIFx tool will be used. Click **Save** to update the driver settings.

NOTE One package can not contain both 32-bit and 64-bit DIFx tool, and as a result, one package can not install driver on both platforms. Use separate packages if you need to install driver on both 32-bit and 64-bit platforms..



Edit driver [Close]

Driver installation options

- Overwrite the existing driver
Force the installation of a new driver, even if the driver that is currently installed on a device is a better match than the new one.
- Prompt the user to connect the device to the computer
Display this prompt only if a device that matches the driver is not connected to the computer.
- Add a separate entry to Programs and Features in Control Panel
- Install unsigned driver and driver that have missing files
For more information about this type of installation, see [Installing Unsigned Driver Packages in Legacy Mode online](#).
- Remove driver files from the system driver store on uninstallation
This option should be used with caution and should be used only if the caller can verify that a binary file in the system is not required by any other driver package or application. Starting with Windows 7, this flag setting is ignored by the operating system.

Installation conditions
[Text box]

Target architecture
Install drivers only on 64-bit platforms [Dropdown arrow]

NOTE Driver Install Frameworks (DIFx) tools do not support installation of drivers on both 64-bit and 32-bit platforms using a single package. Use separate packages for each of the platforms.

[Save] [Cancel]

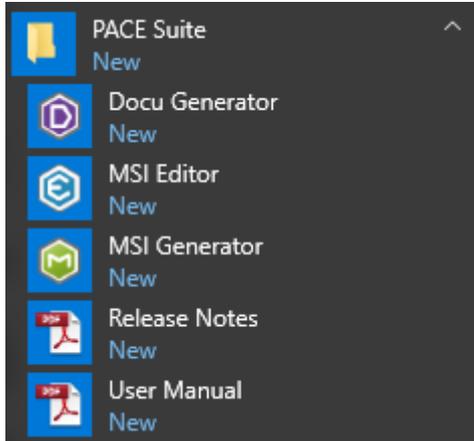


3.8 Edit Project

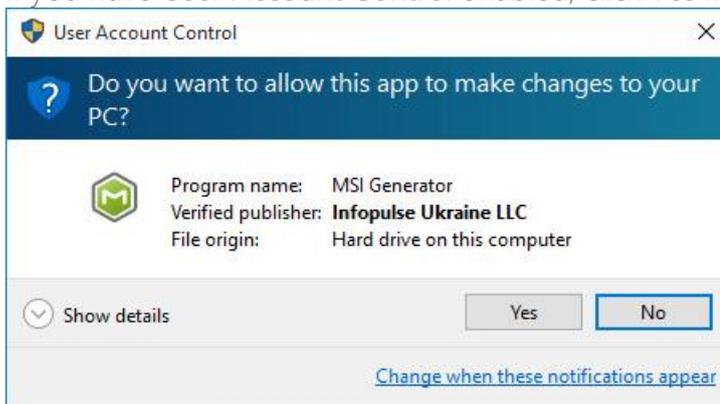
3.8.1 Pre-Condition

Open a project file following the instructions below:

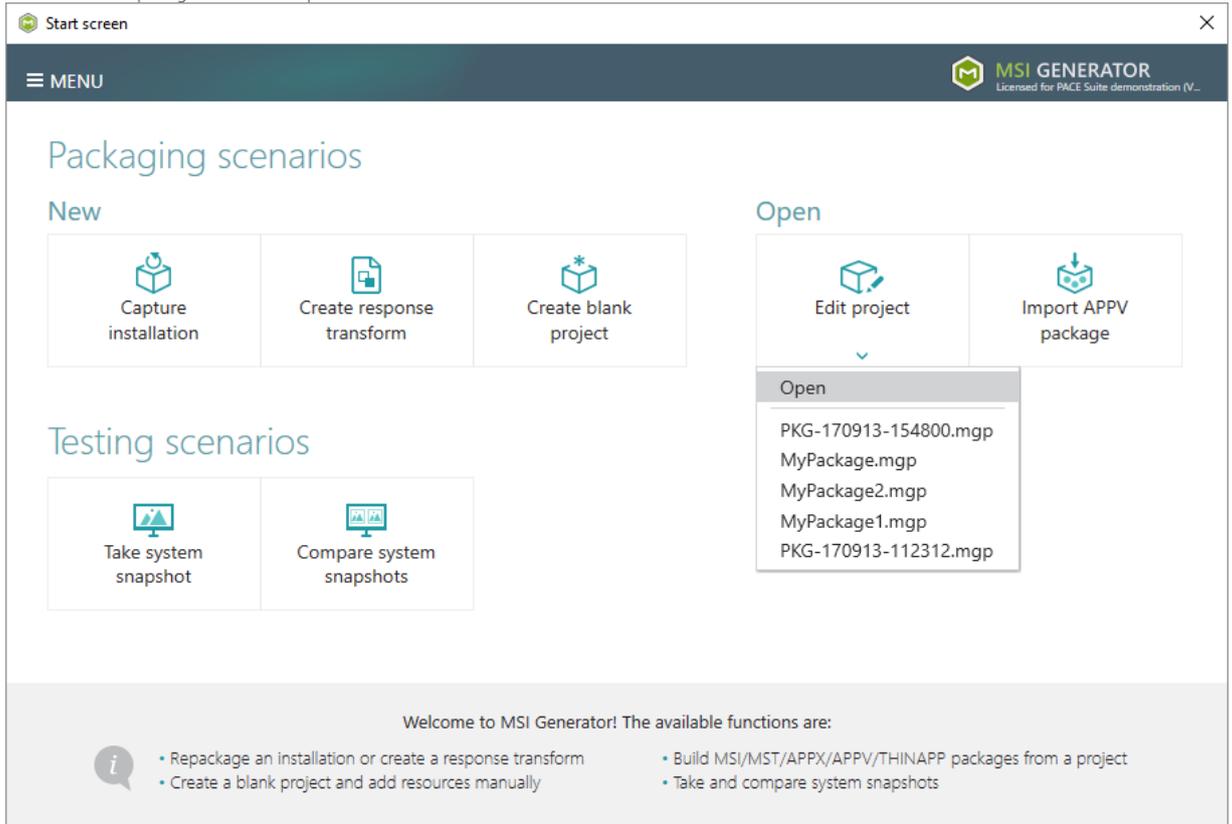
- [1]. Launch MSI Generator from the desktop or the start menu shortcut.



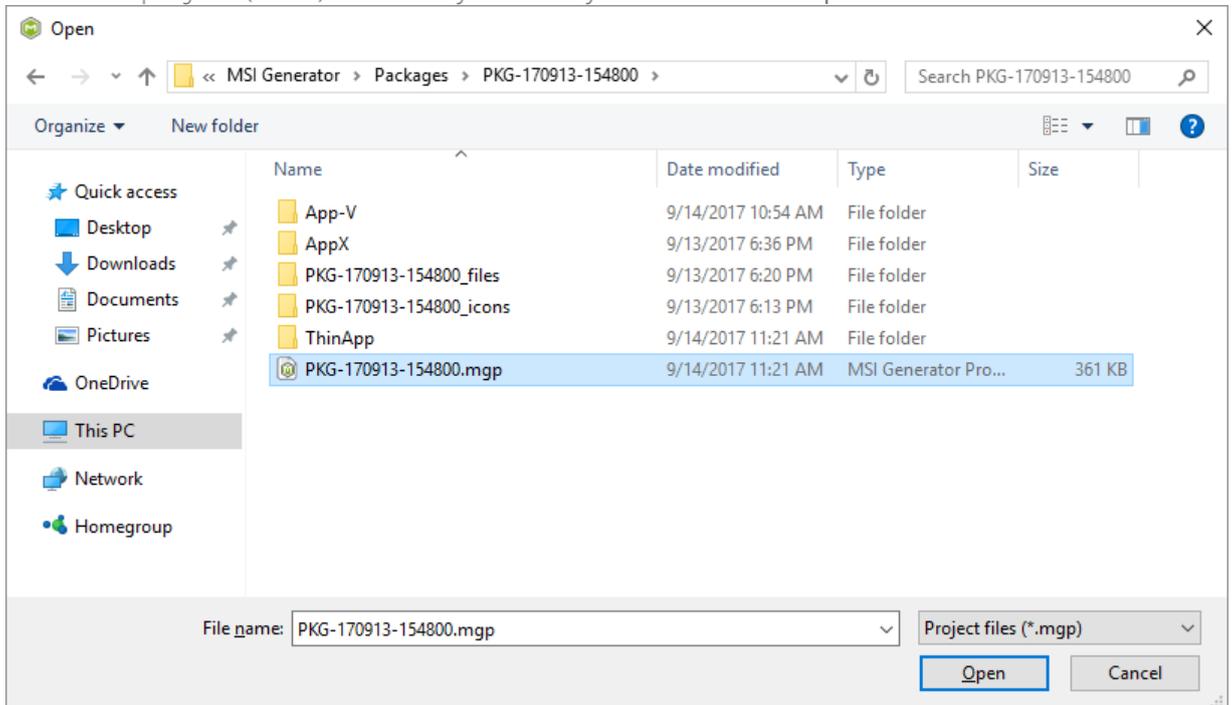
- [2]. If you have User Account Control enabled, click Yes in the opened window.



[3]. Click Edit project -> Open.



[4]. Choose a project (MGP) file from your file system and click Open.



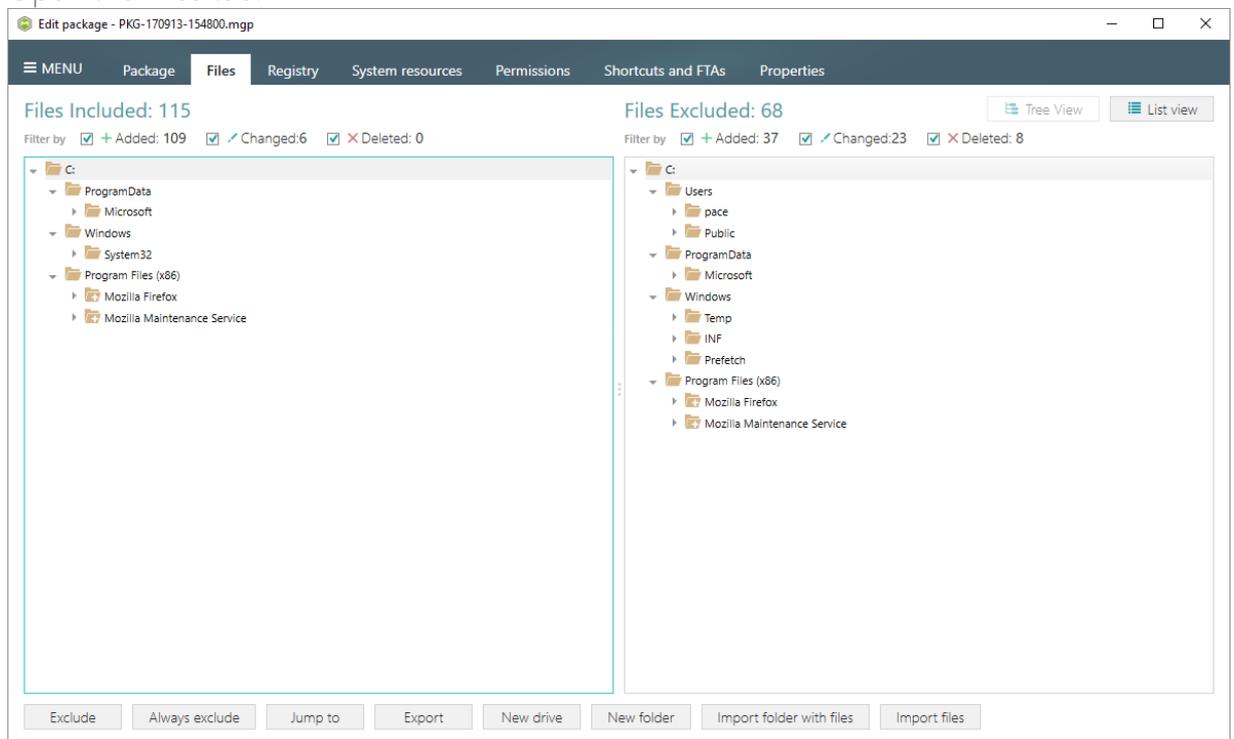
3.8.2 File and Folders

MSI Generator filters captured files and folders automatically and puts excluded (filtered) ones to the right pane, named 'Files Excluded', and the rest of resources – to the left pane, named 'Files Included'. Resources from the 'Files Included' pane will be saved to your package, and resources from the 'Files Excluded' will not be a part of the package, it will be kept as excluded ones only in the project. Note that you can include or exclude necessary resources at any time.

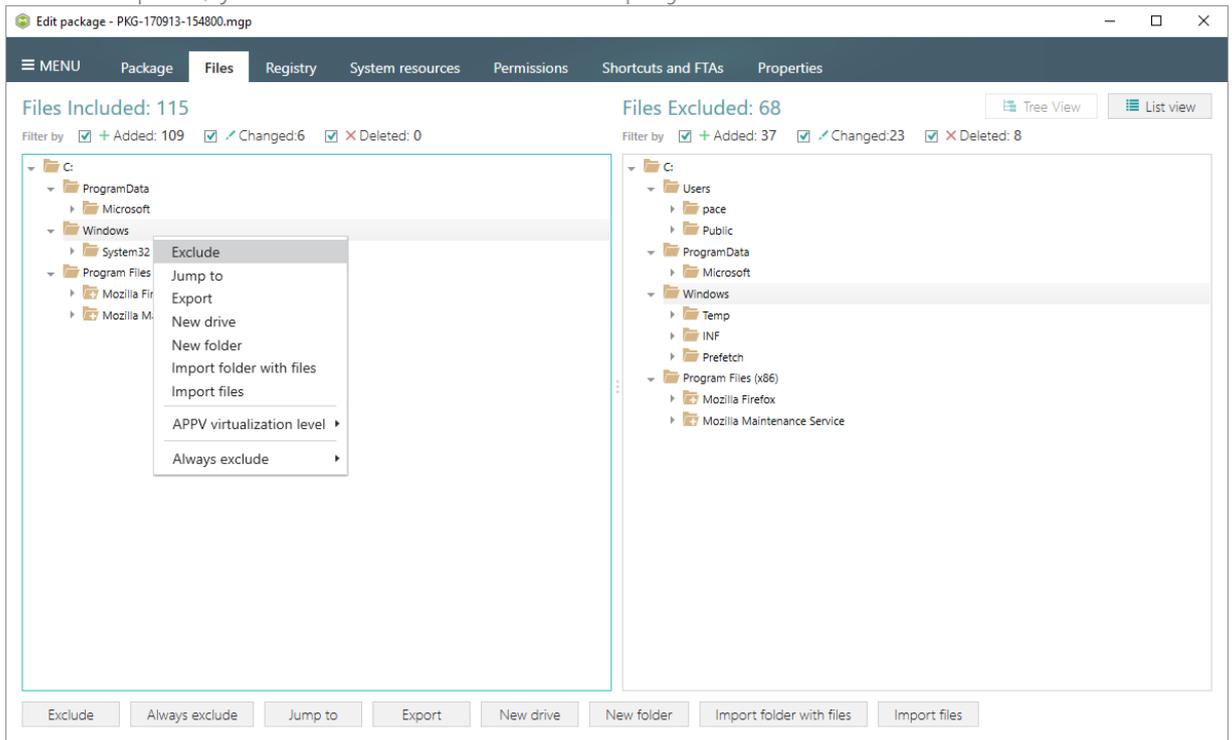
3.8.2.1 Exclude Files and Folders

Exclude unnecessary resources from the project.

[1]. Open the Files tab.



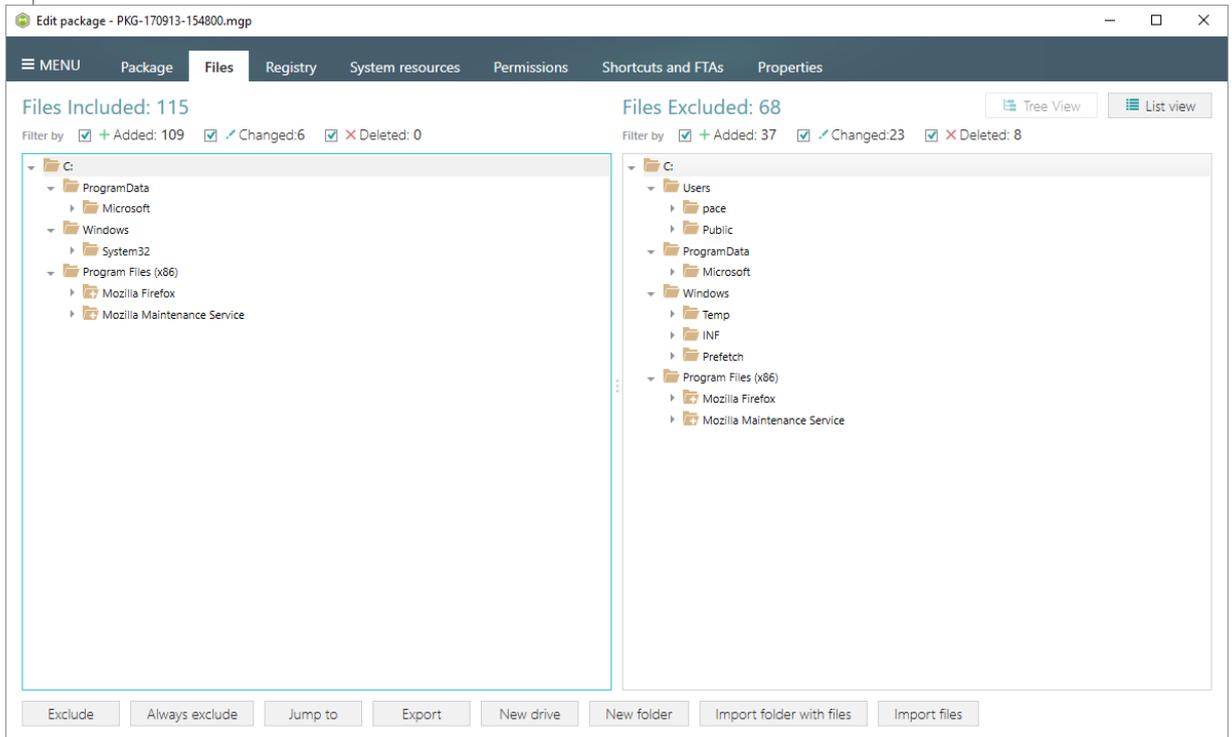
- [2]. Select Exclude from the context menu of an item, which is located in the left 'Files Included' pane, you want to exclude from the project.



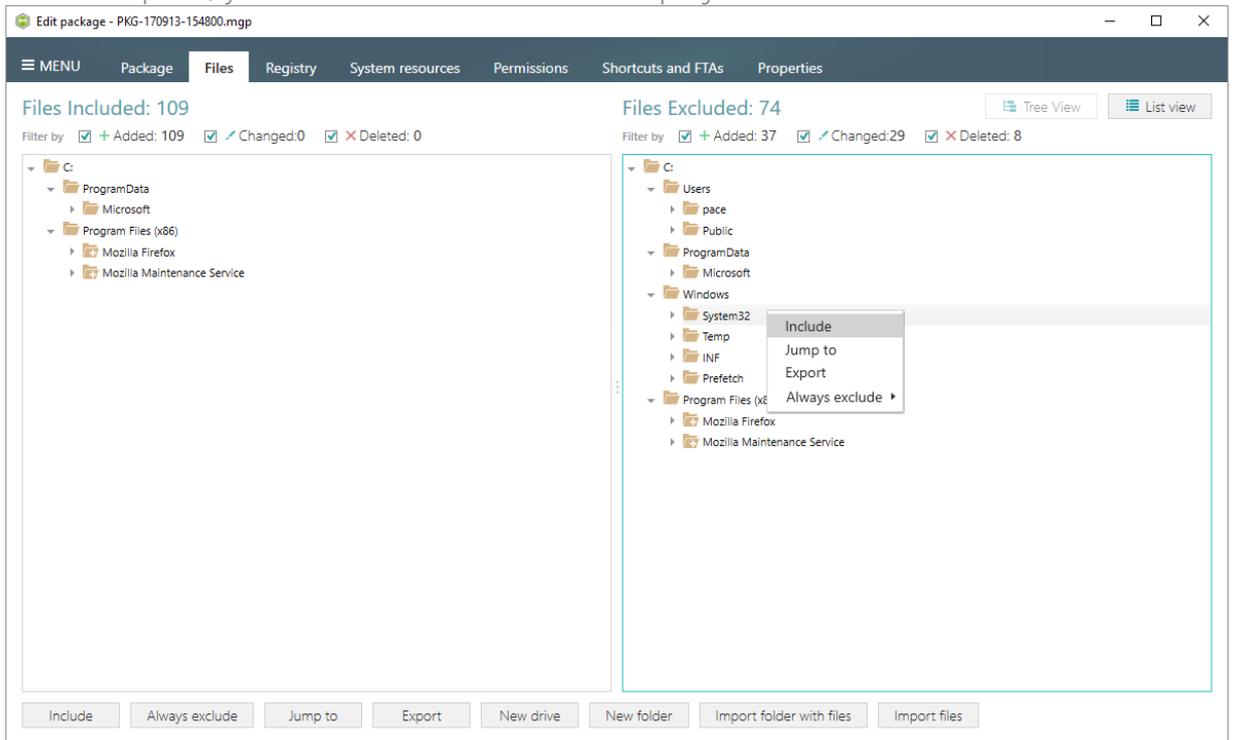
3.8.2.2 Include Files and Folders

Include necessary resources, previously excluded from the project.

- [1]. Open the Files tab.

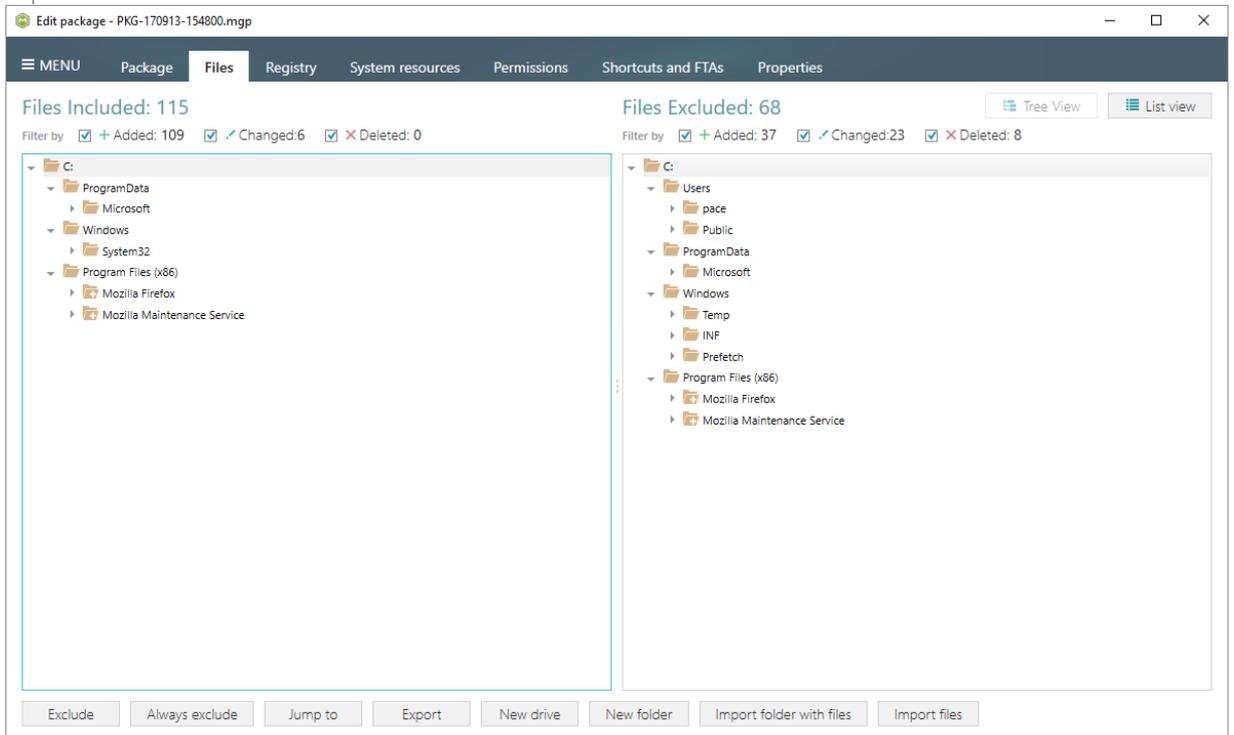


- [2]. Select Include from the context menu of an item, which is located in the right 'Files Excluded' pane, you want to include back to the project.

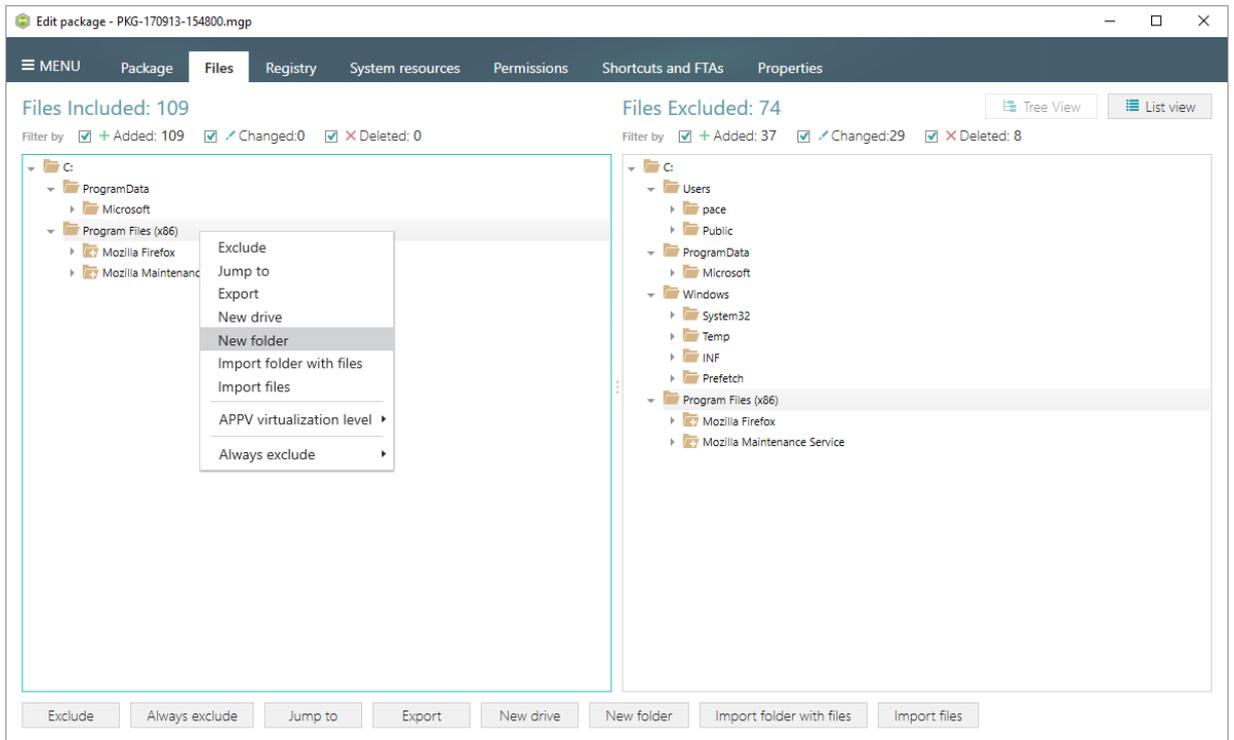


3.8.2.3 Add Custom Folder

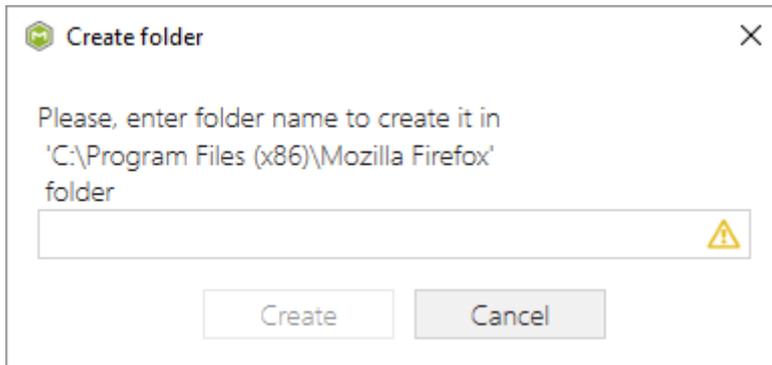
- [1]. Open the Files tab.



- [2]. Select **New folder** from the context menu of a parent folder, to which you want to add a new custom folder.

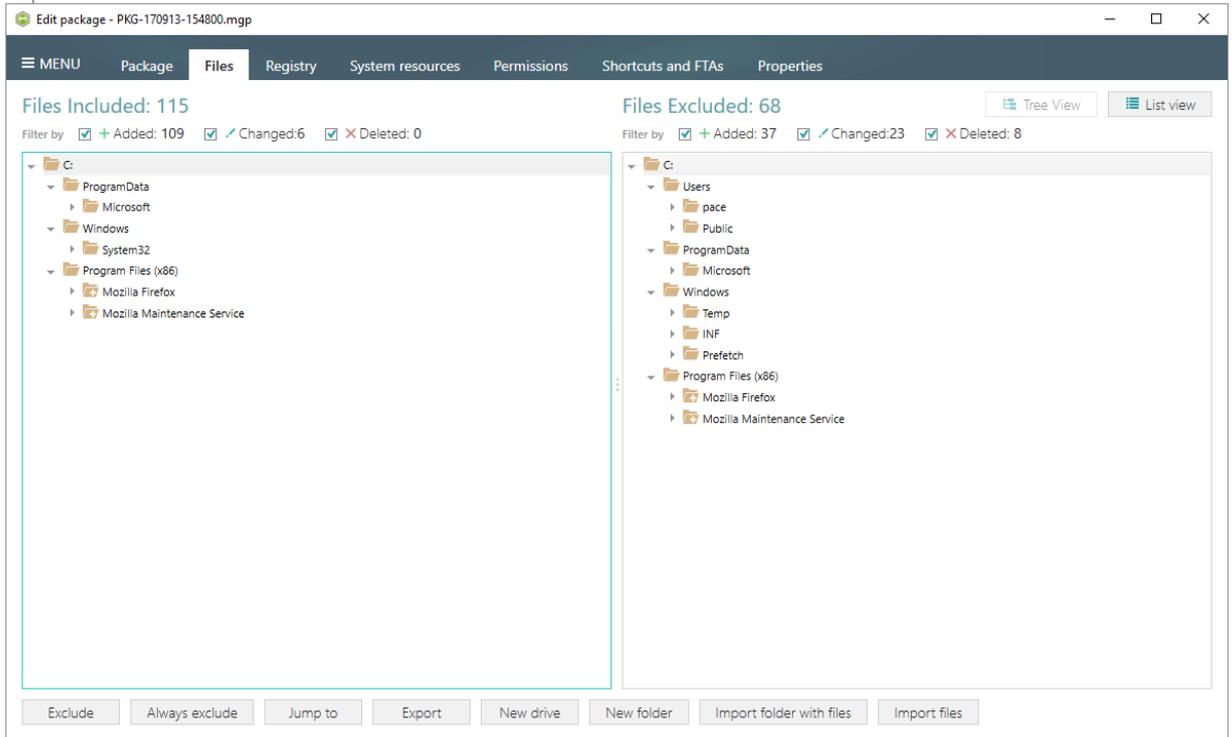


- [3]. Enter a folder name and click **Create**.

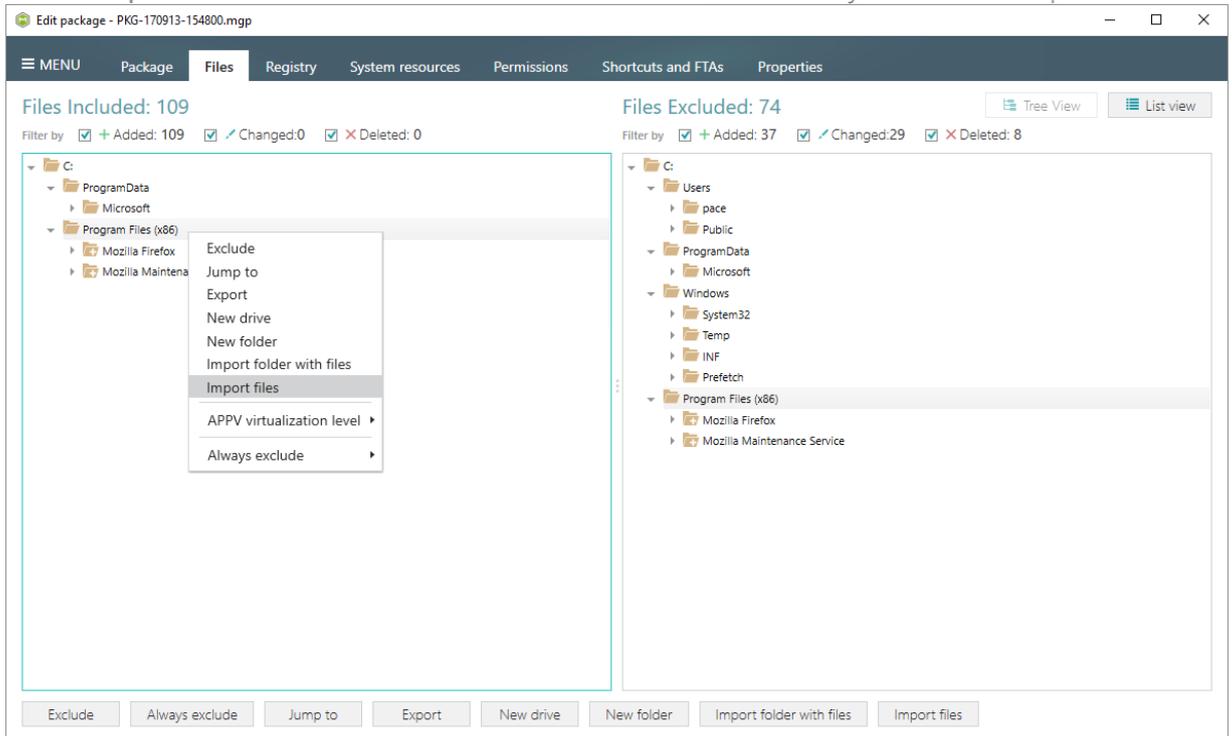


3.8.2.4 Import Files

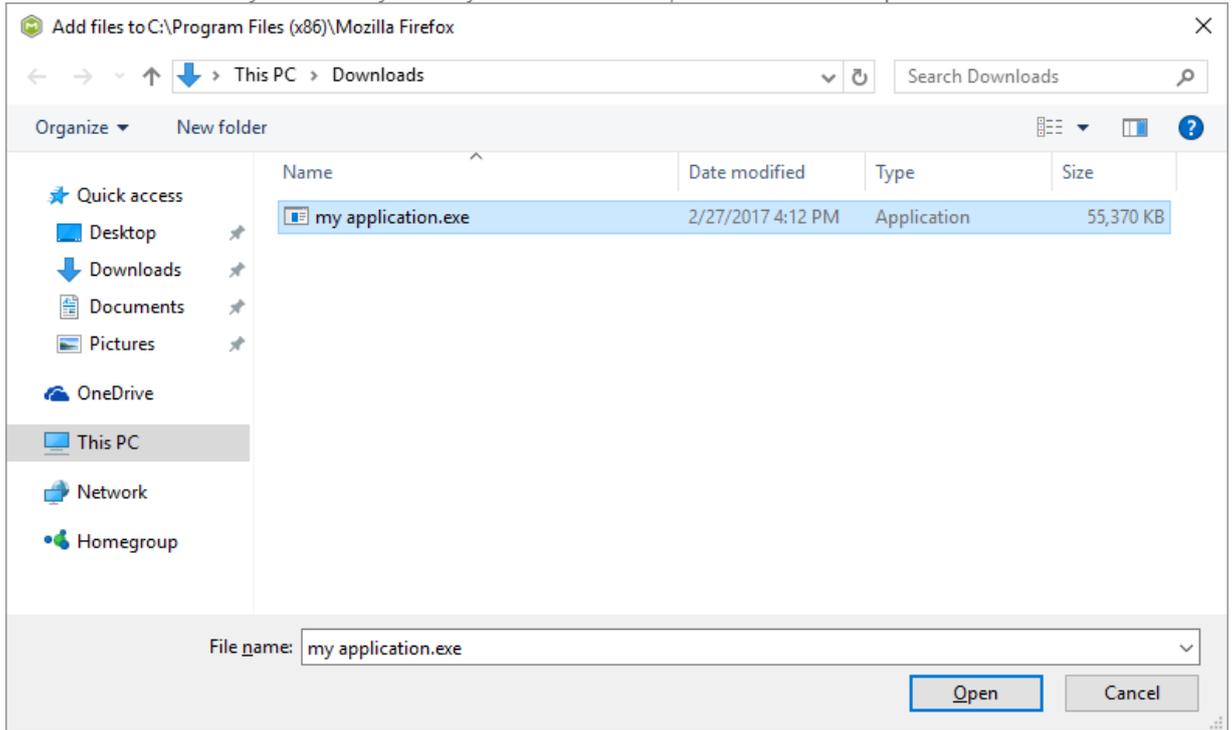
[1]. Open the Files tab.



[2]. Select Import files from the context menu of a folder, to which you want to import files.



[3]. Choose files from your file system you want to import and click Open.



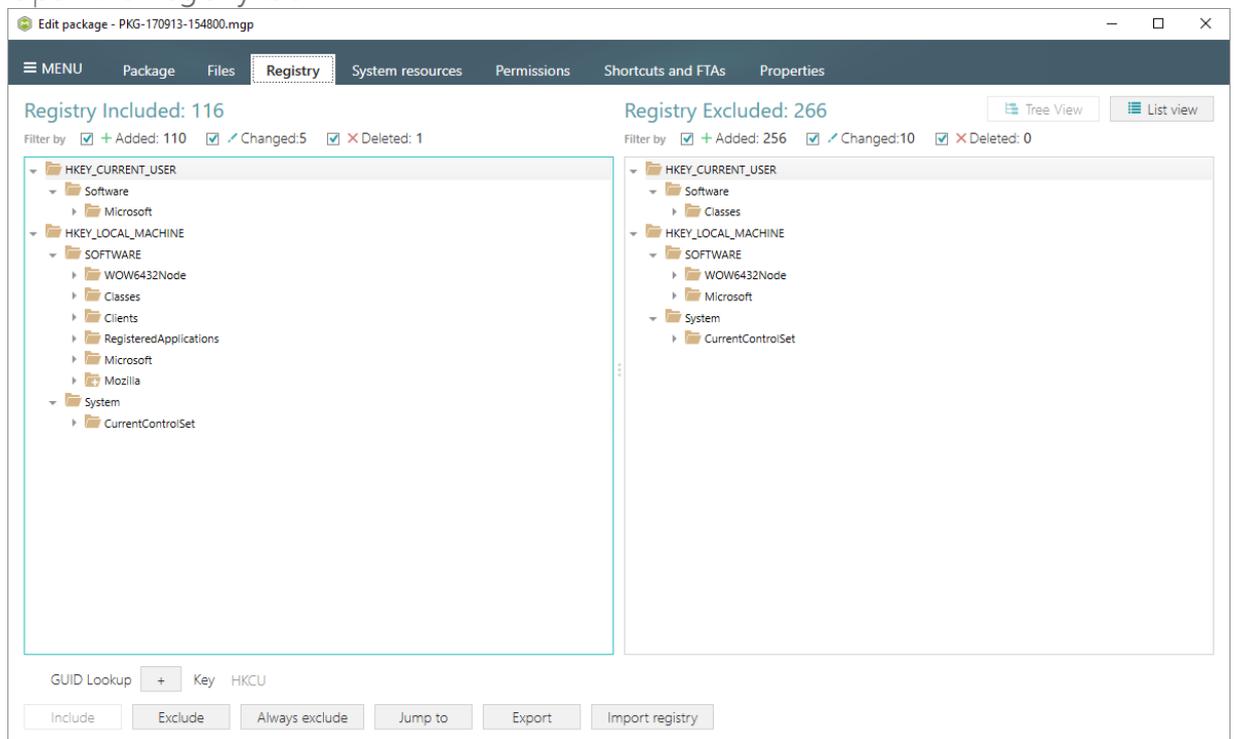
3.8.3 Registry

MSI Generator filters captured registry entries automatically and puts excluded (filtered) ones to the right pane, named 'Registry Excluded', and the rest of resources – to the left pane, named 'Registry Included'. Resources from the 'Registry Included' pane will be saved to your package, and resources from the 'Registry Excluded' will not be a part of the package, it will be kept as excluded ones only in the project. Note that you can include or exclude necessary resources at any time.

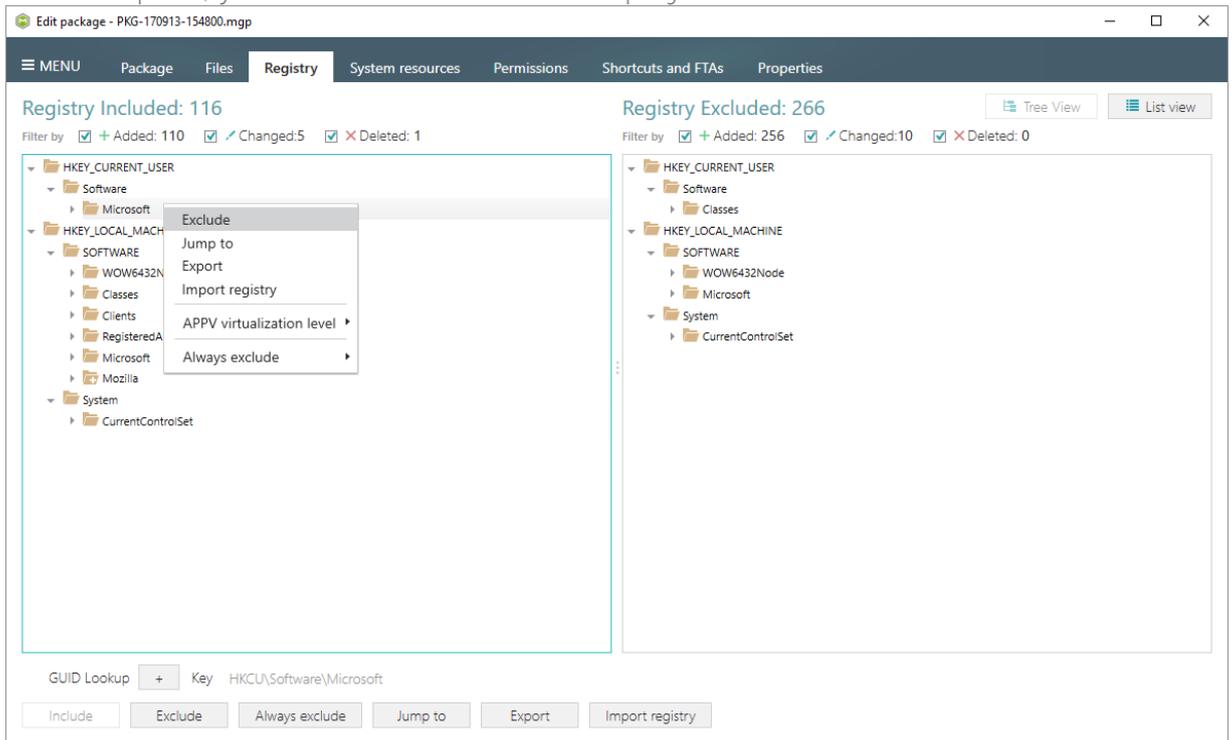
3.8.3.1 Exclude Registry Entries

Exclude unnecessary resources from the project.

- [1]. Open the Registry tab.



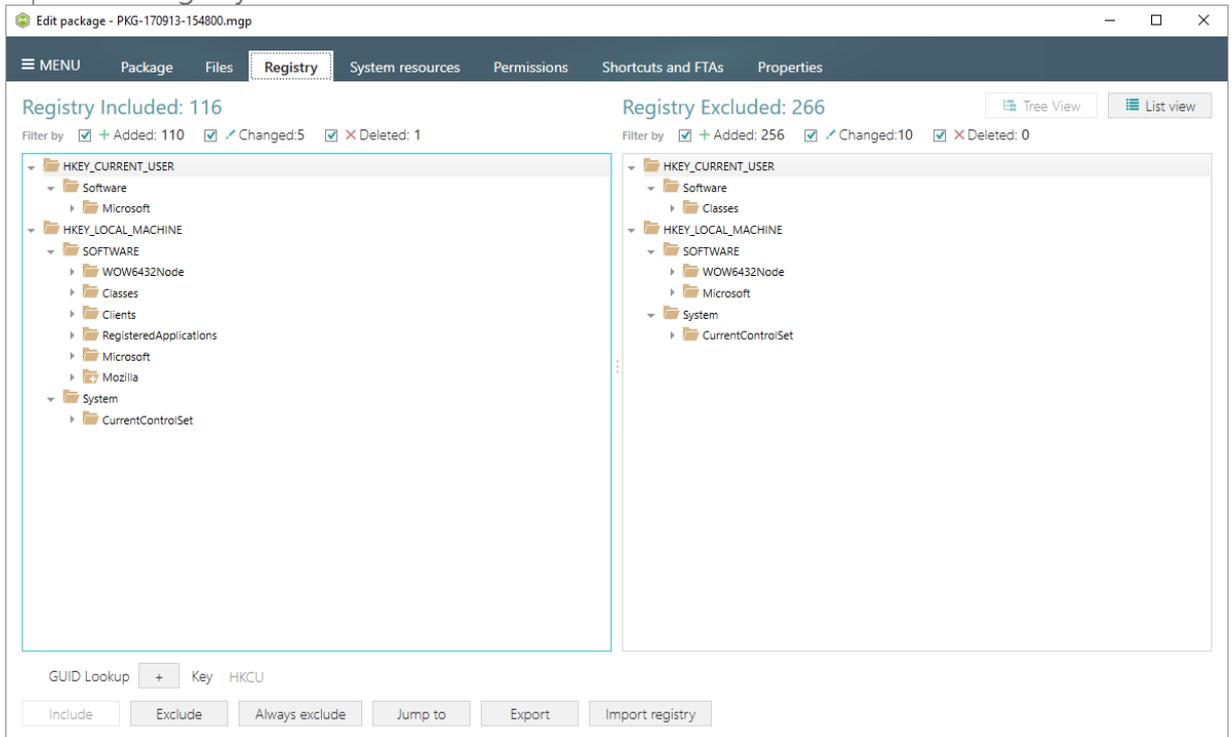
- [2]. Select Exclude from the context menu of an item, which is located in the left 'Registry Included' pane, you want to exclude from the project.



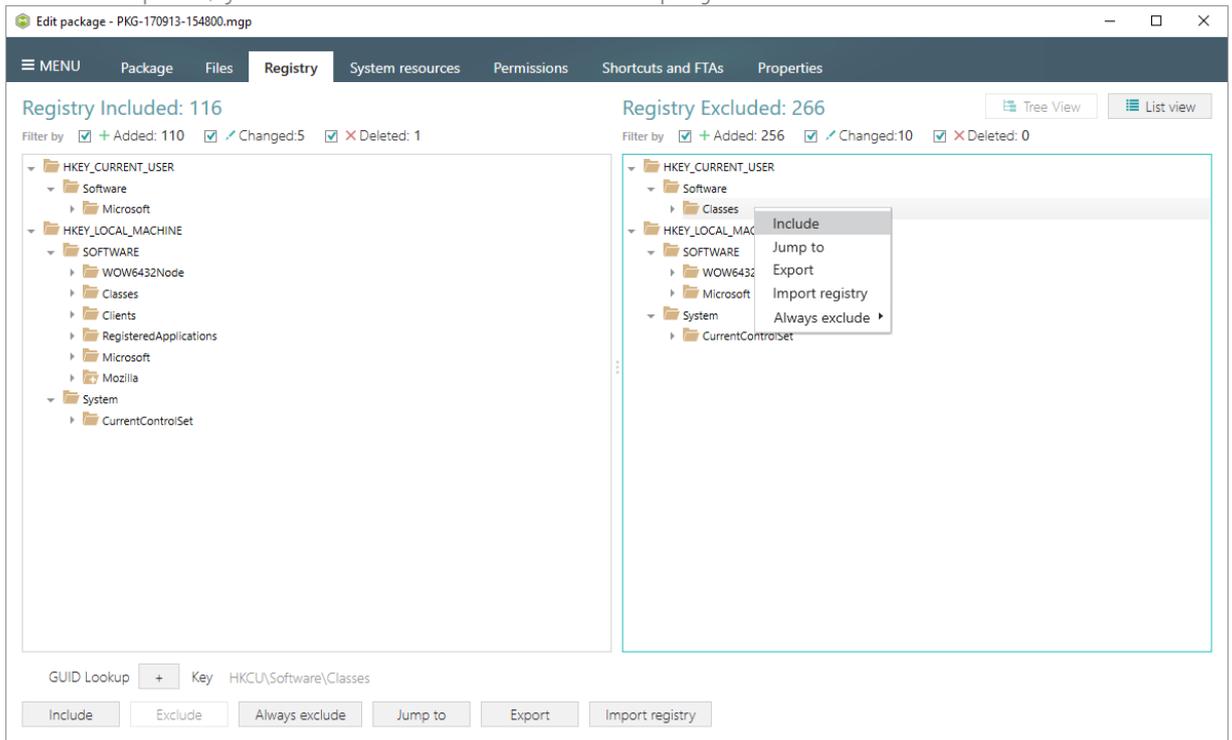
3.8.3.2 Include Registry Entries

Include necessary resources, previously excluded from the project.

- [1]. Open the Registry tab.

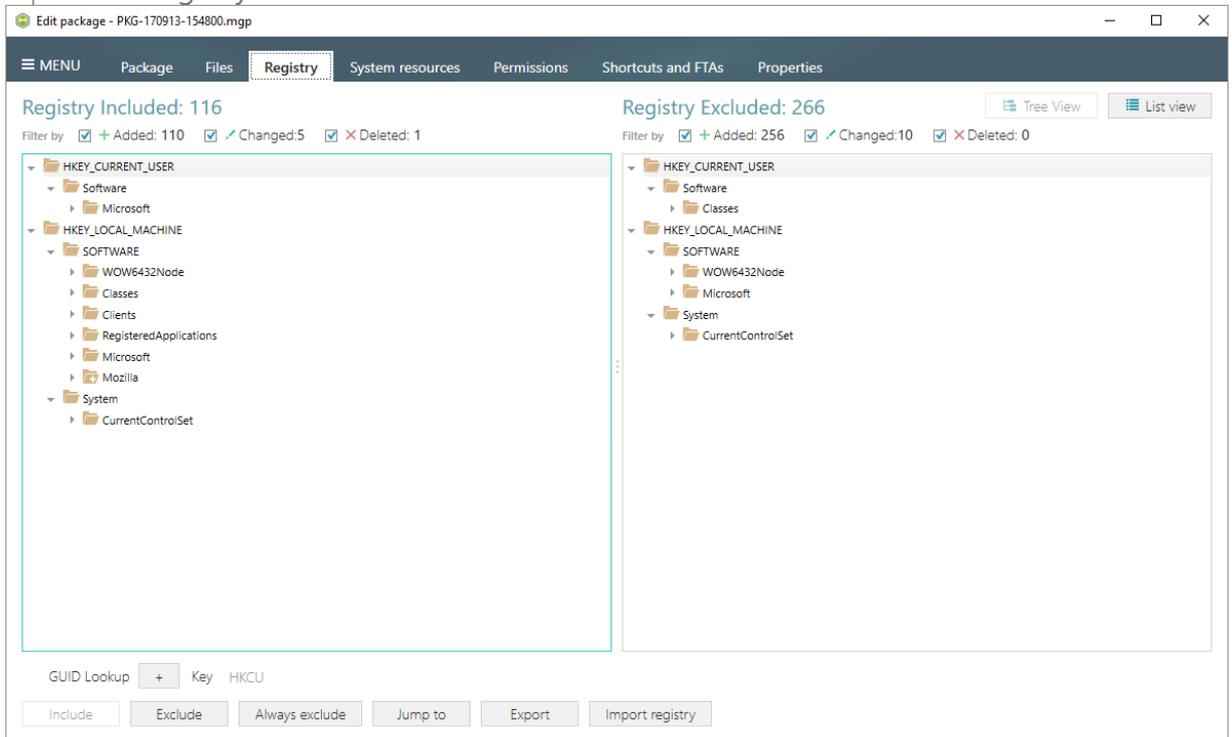


- [2]. Select **Include** from the context menu of an item, which is located in the right 'Registry Excluded' pane, you want to include back to the project.

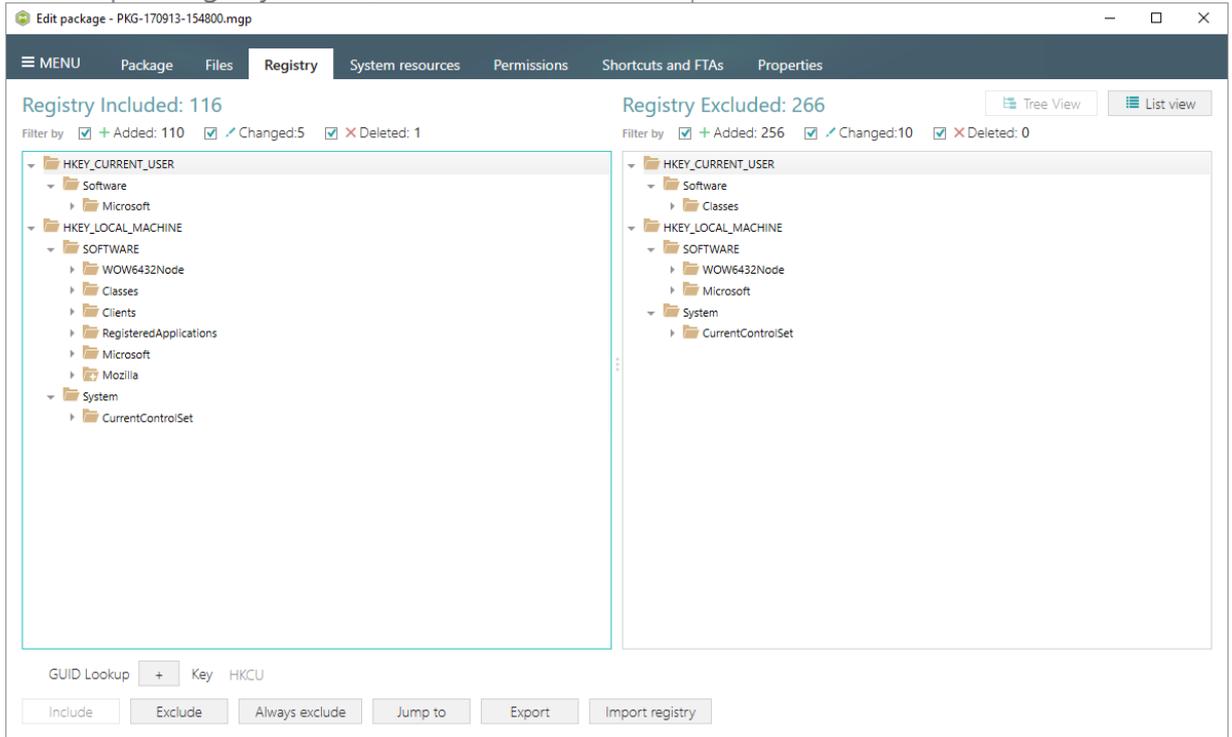


3.8.3.3 Import Registry

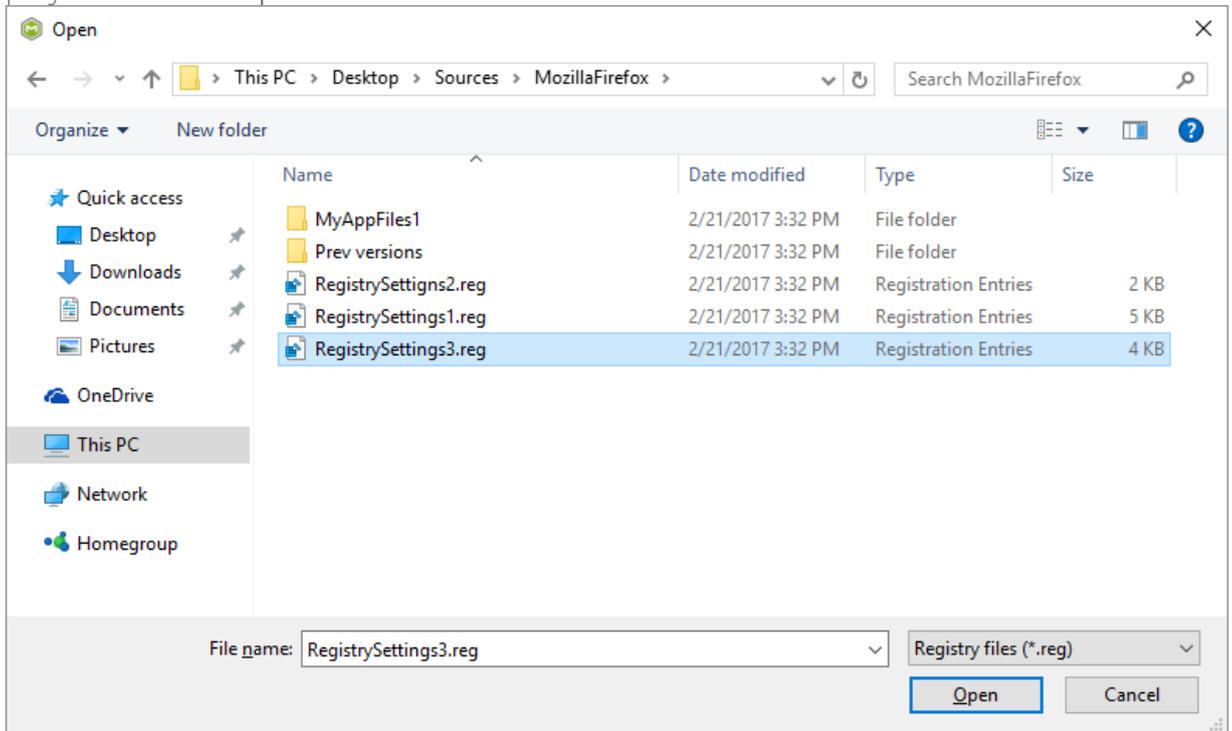
- [1]. Open the Registry tab.



[2]. Click Import registry button, located in the bottom part of the window.

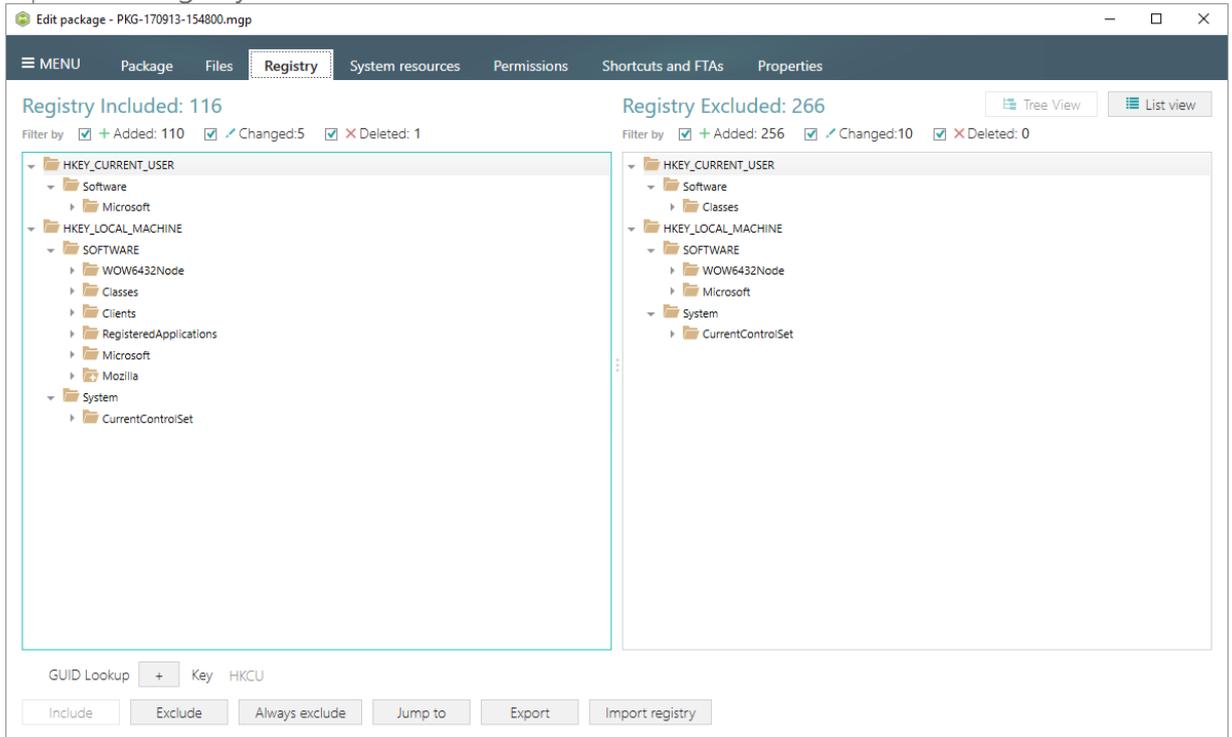


[3]. Choose a REG file from your file system, content of which you want to import to the project and click Open.

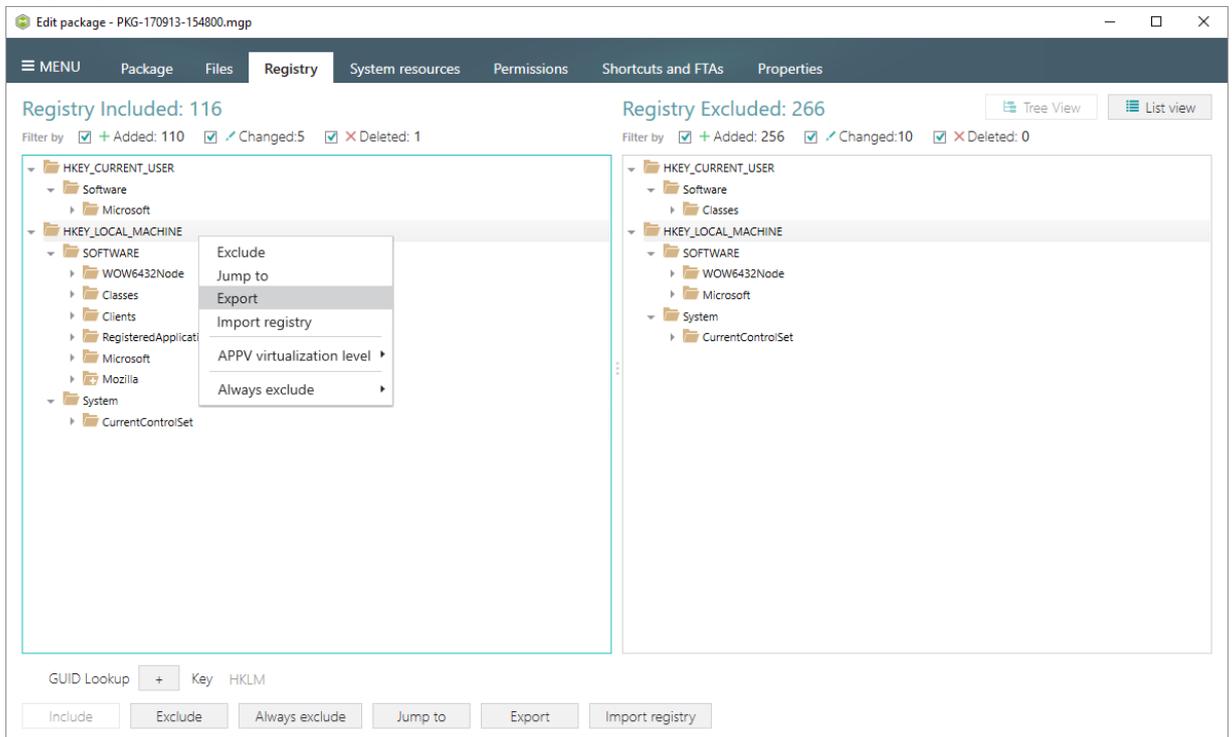


3.8.3.4 Export Registry

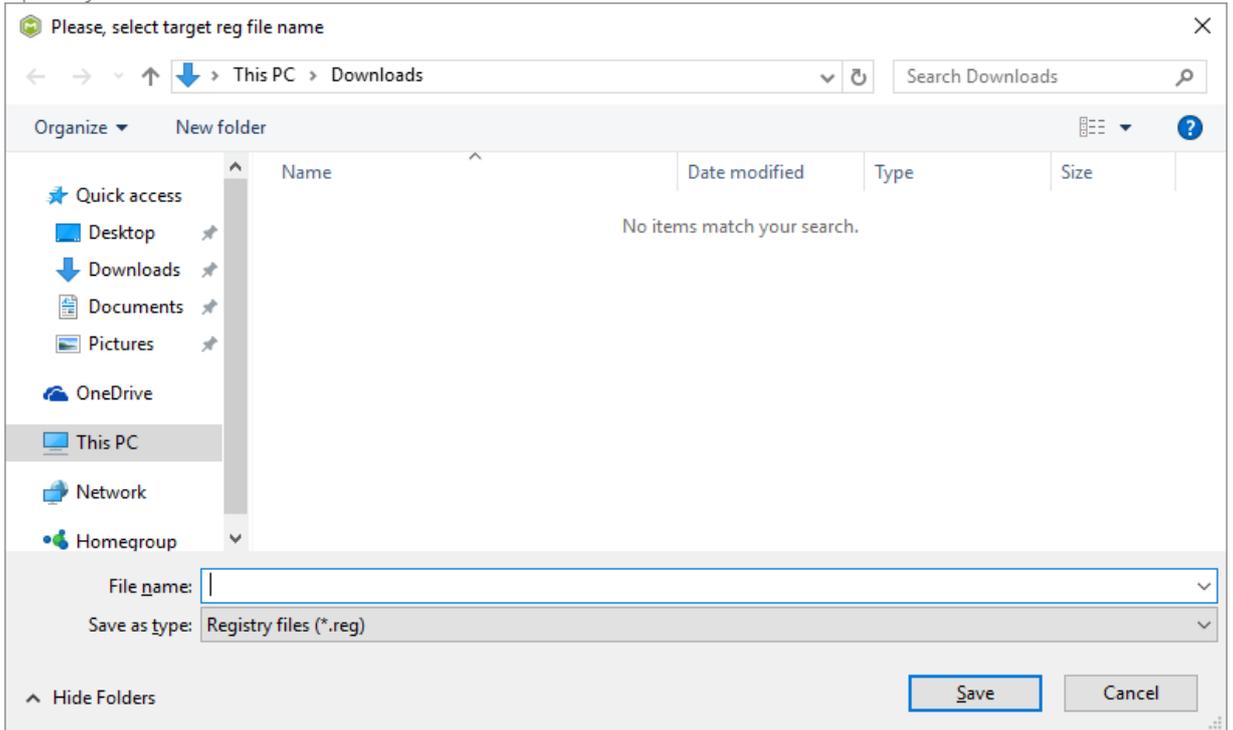
[1]. Open the Registry tab.



[2]. Select Export from the context menu of a registry entry, which you want to export to the REG file.



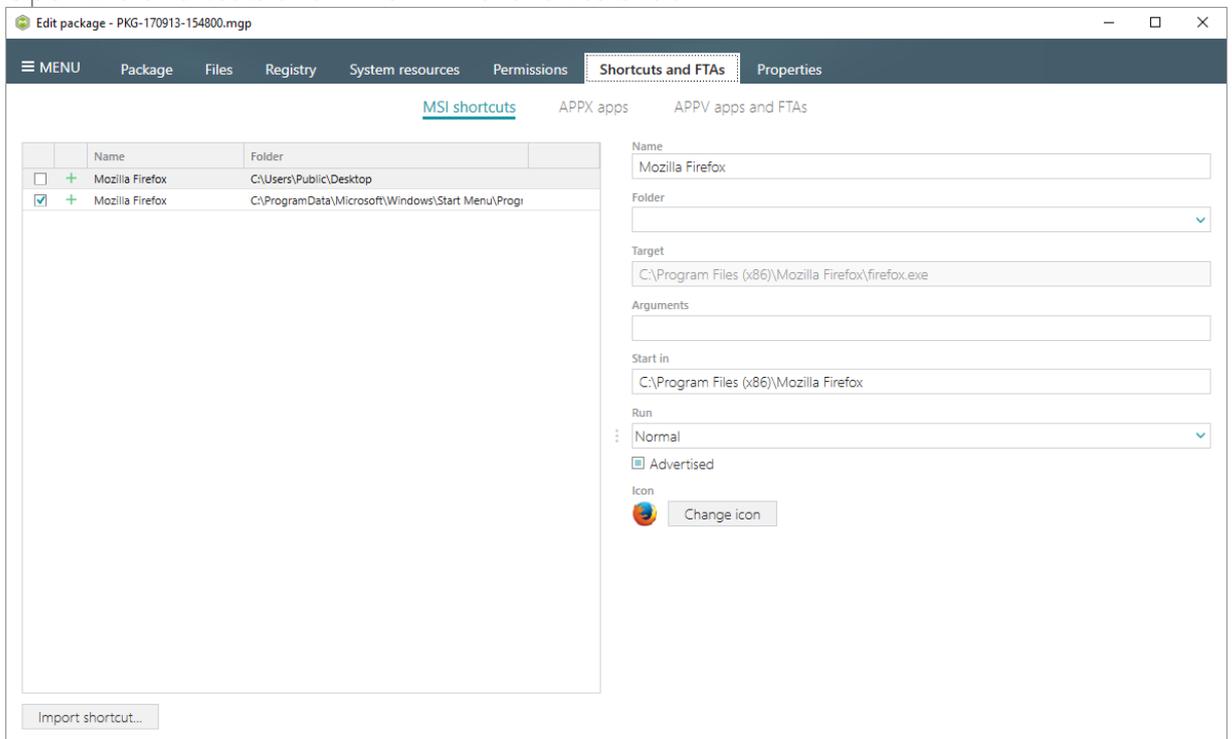
[3]. Specify a name and a destination location of the REG file and click Save.



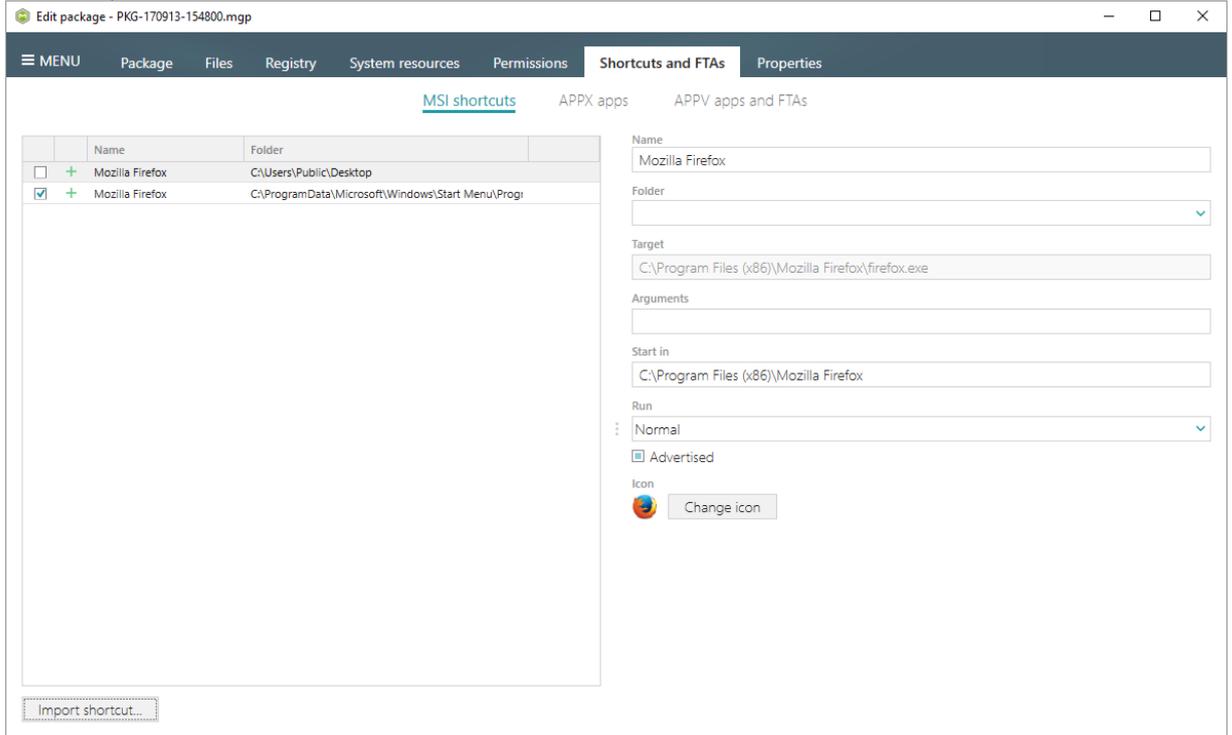
3.8.4 Shortcuts

3.8.4.1 Import Shortcut

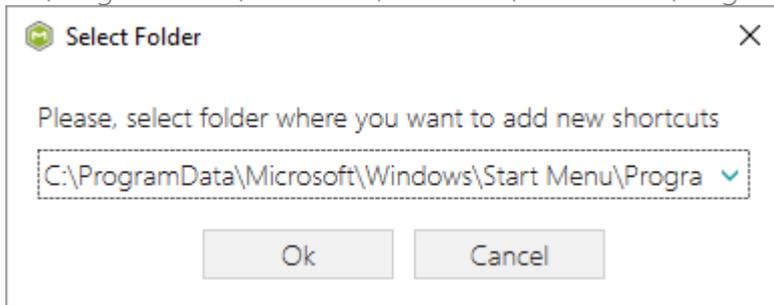
[1]. Open the Shortcuts and FTAs -> MSI shortcuts tab.



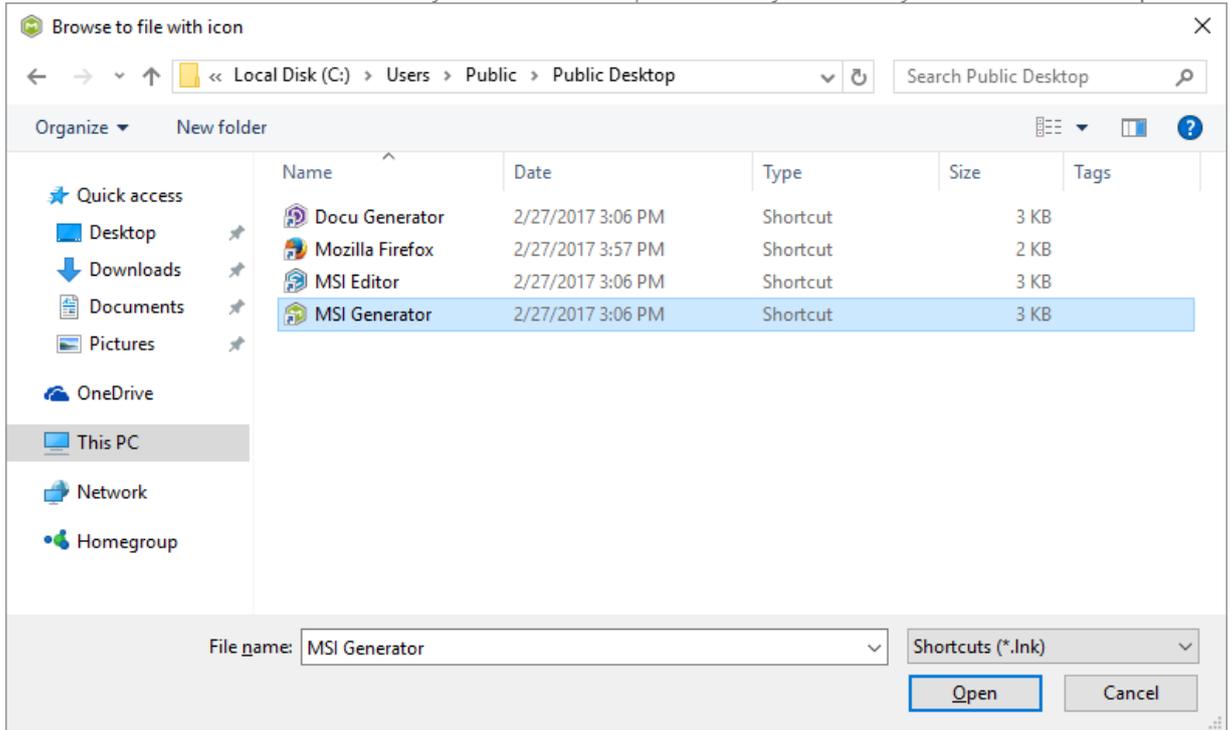
[2]. Click Import shortcut...



[3]. Select a folder, to which you want to import shortcuts (e.g. 'C:\ProgramData\Microsoft\Windows\Start Menu\Programs') and click Ok.

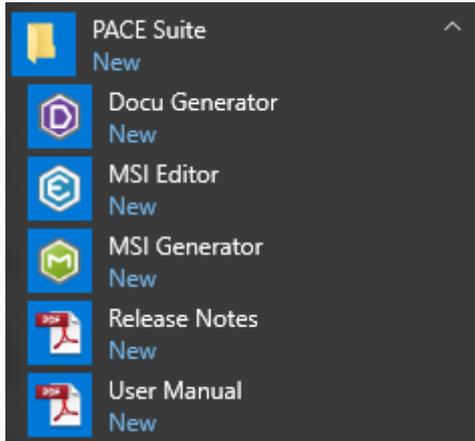


[4]. Choose an LNK shortcut, which you want to import from your file system and click Open.

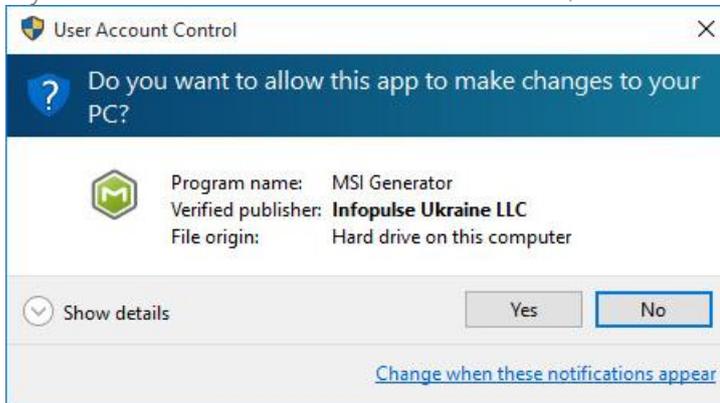


3.9 Edit APPV

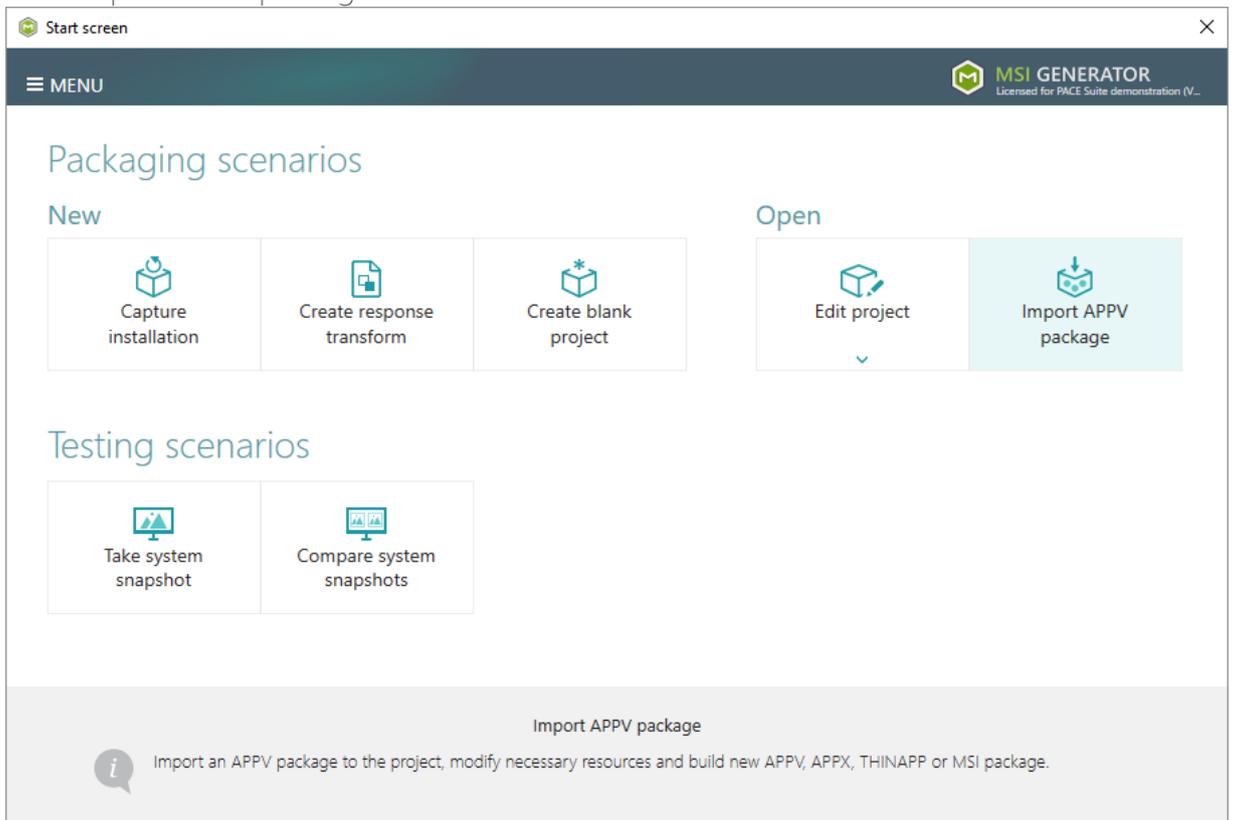
[1]. Launch MSI Generator from the desktop or the start menu shortcut.



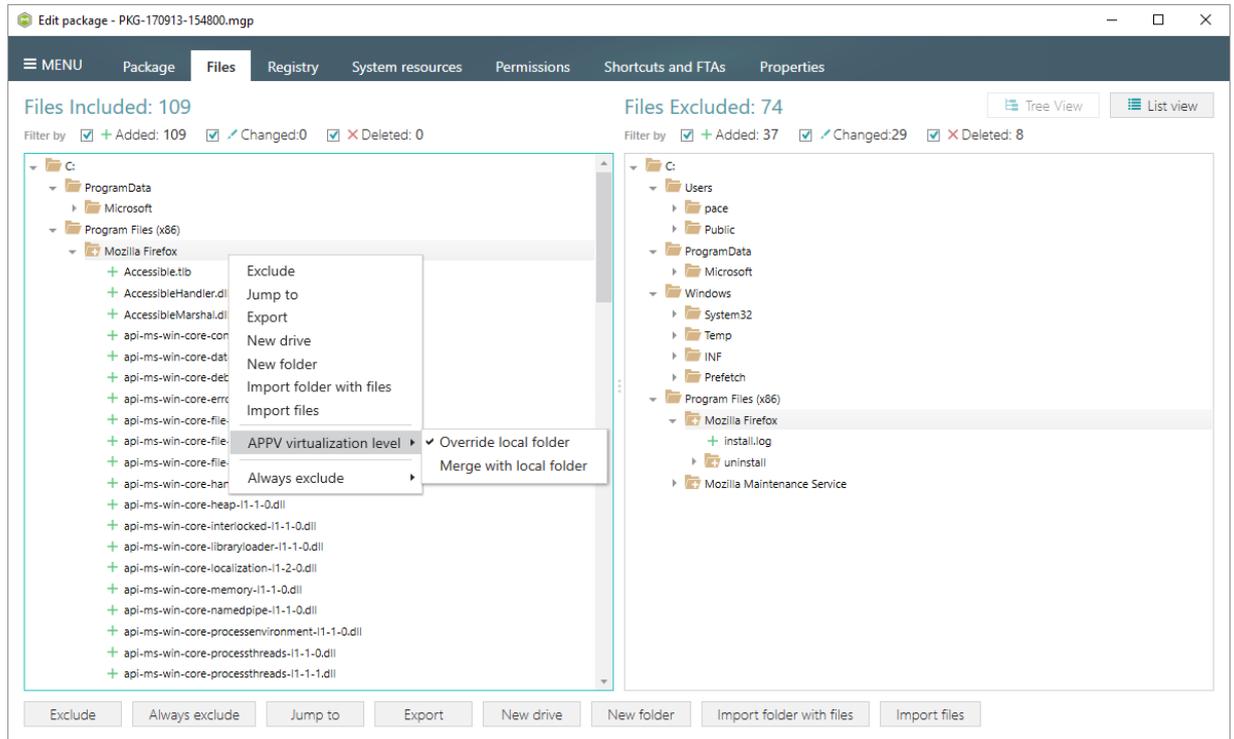
[2]. If you have User Account Control enabled, click Yes in the opened window.



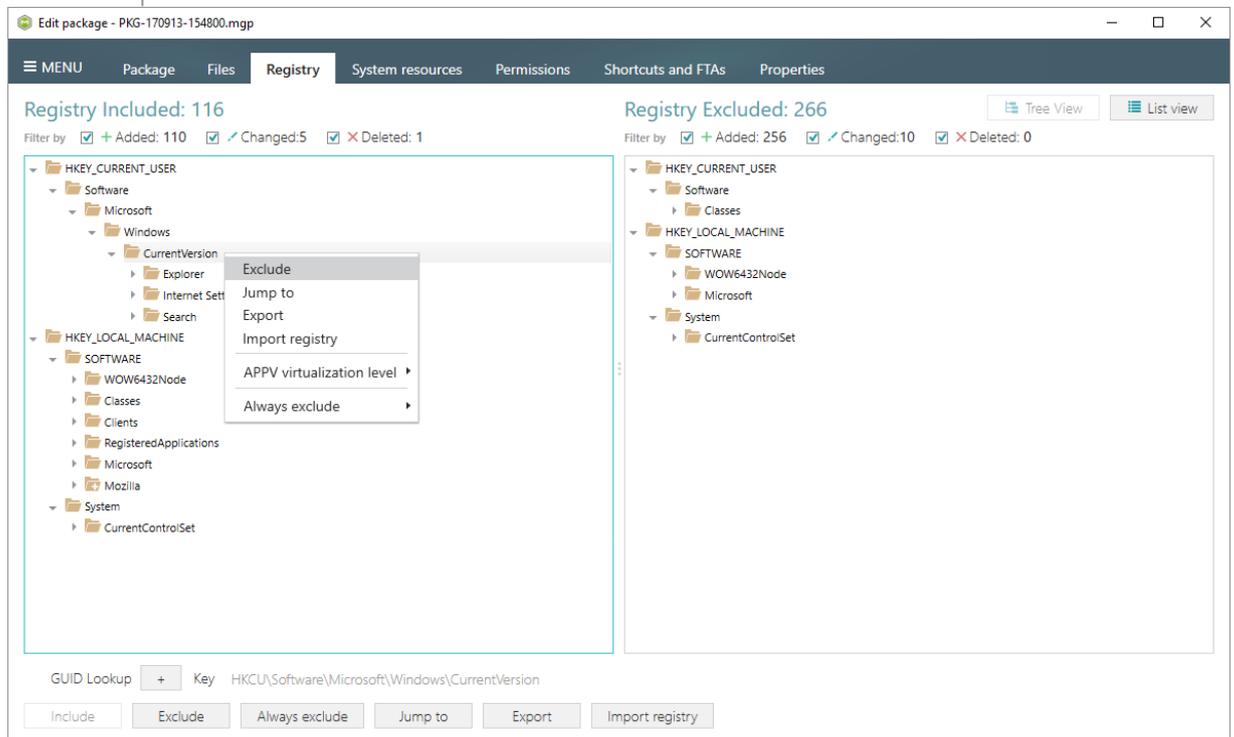
[3]. Click Import APPV package.



option is inherited from the parent folder. Child folder could not have the Merge with local folder virtualization level, if parent one has the Override local folder virtualization level.

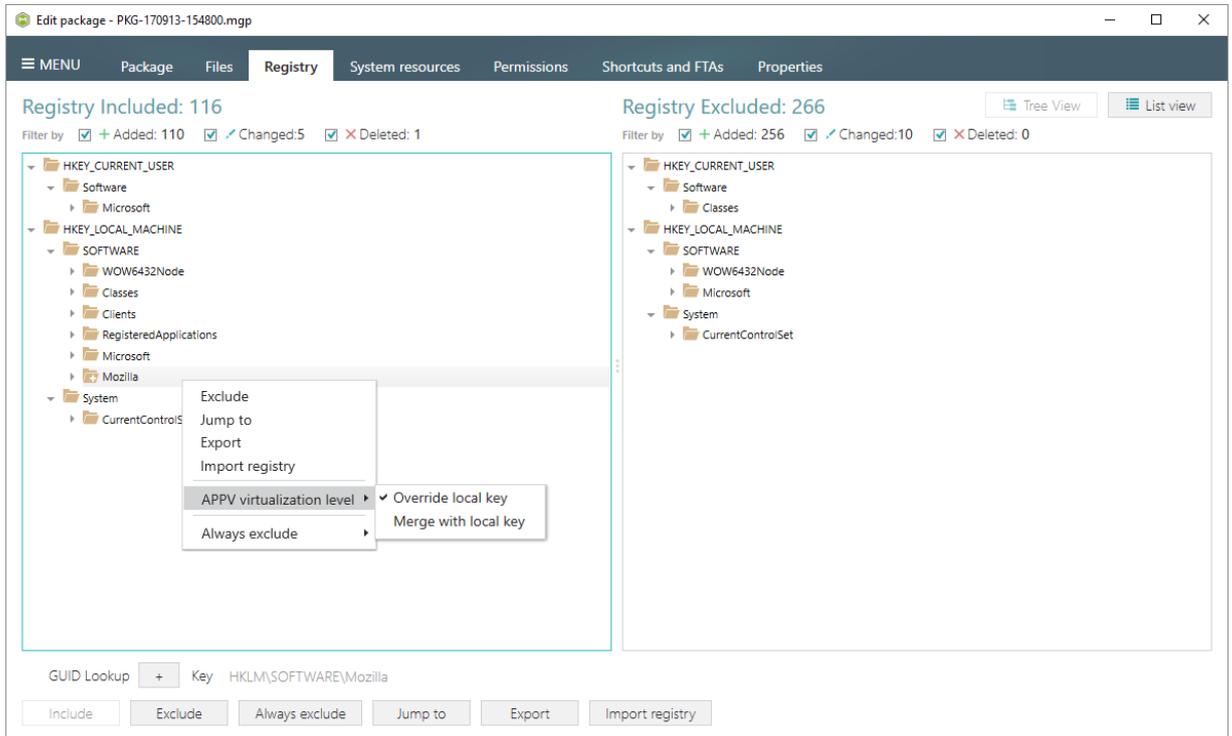


- [7]. In order to review and exclude unnecessary registry keys or values, go to the Registry tab, and select Exclude from the context menu of an item, which is located in the left 'Registry Included' pane.

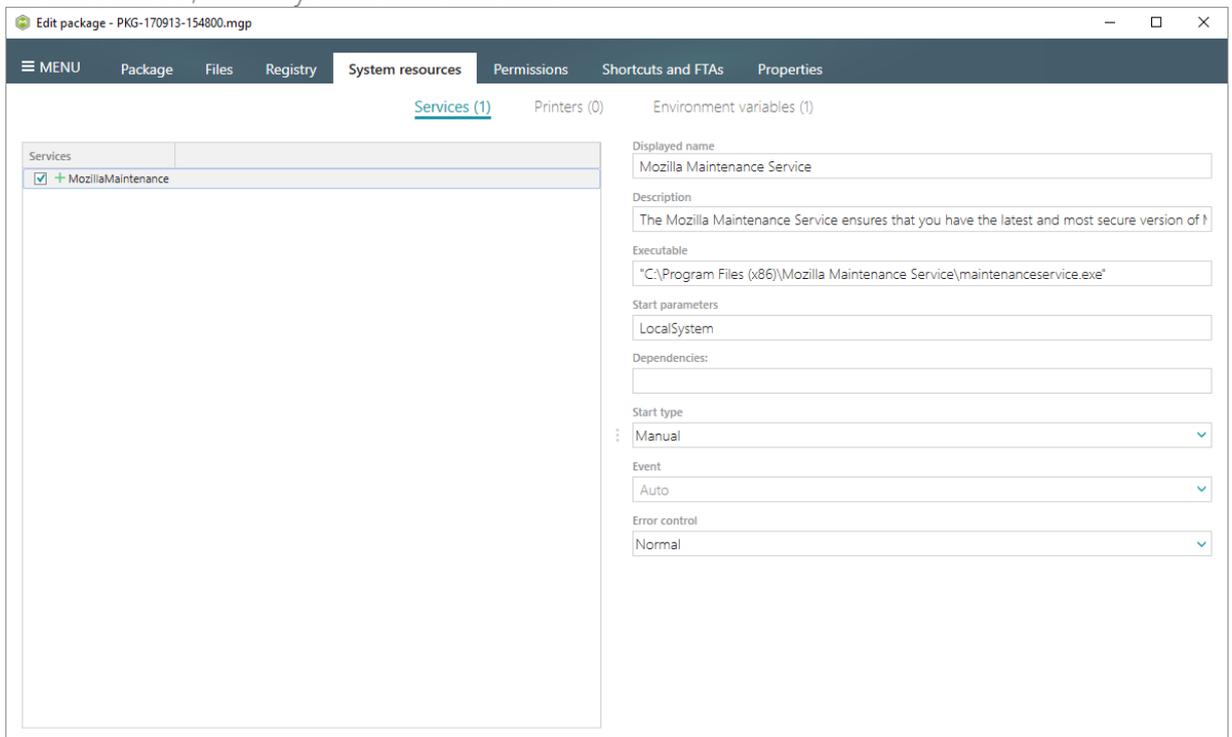


- [8]. In order to change the default virtualization (isolation) level of a registry key, open the registry key context menu, and select either Override local key or Merge with local key option from the APPV virtualization submenu. Note that if the APPV virtualization

level submenu is disabled with the **Override local key** option selected, it means that this option is inherited from the parent registry key. A child registry key could not have the **Merge with local key** virtualization level, if the parent one has the **Override local key** virtualization level.

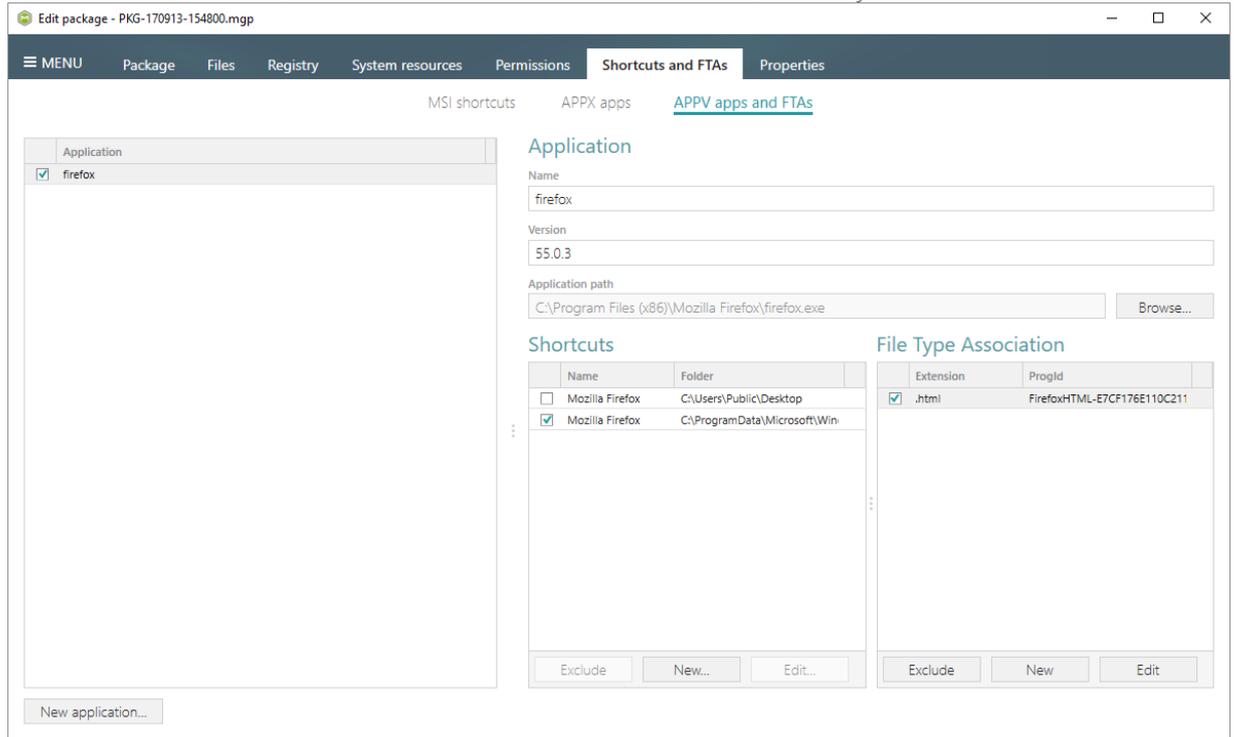


- [9]. In order to review and exclude unnecessary services, go to the **System resources** -> **Services** tab, and uncheck the checkbox, located before the service name in the list, for those services, which you want to exclude.

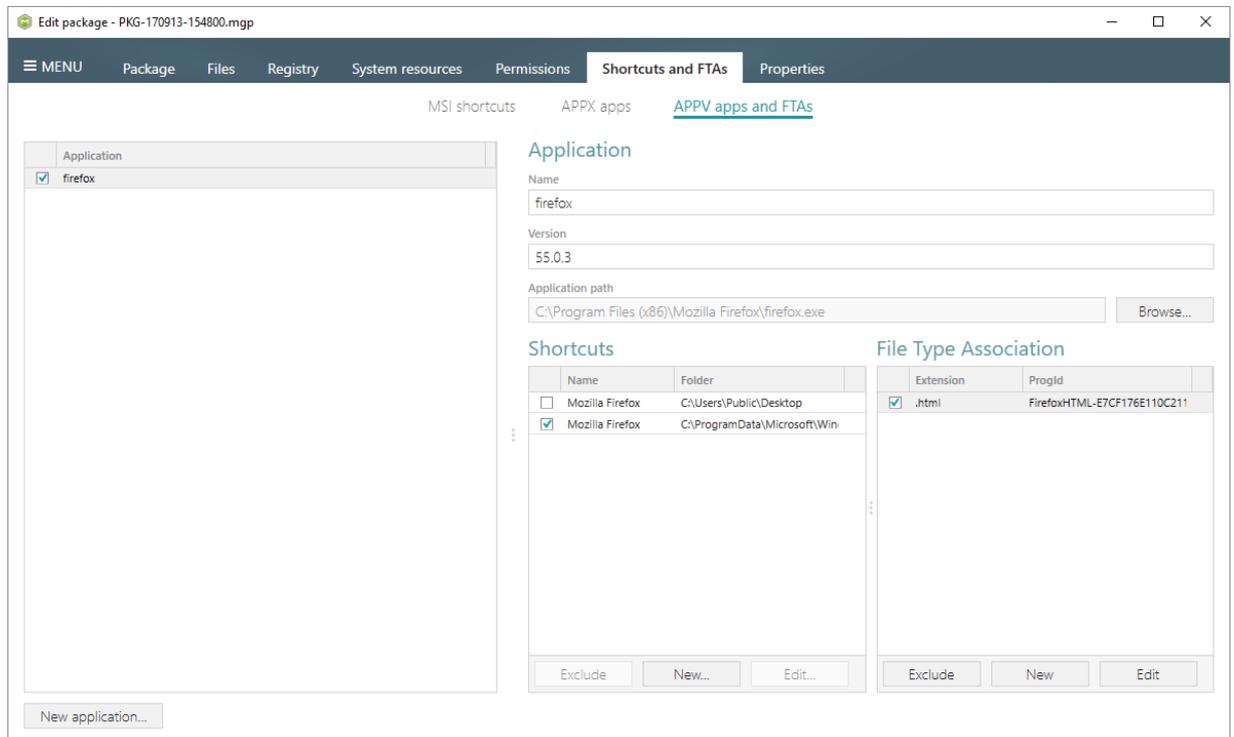


- [10]. In order to review and exclude unnecessary APPV applications, shortcuts and their file type associations, go to the **Shortcuts and FTAs** -> **APPV apps and FTAs** tab, and

uncheck checkboxes, located before those items names, which you want to exclude.

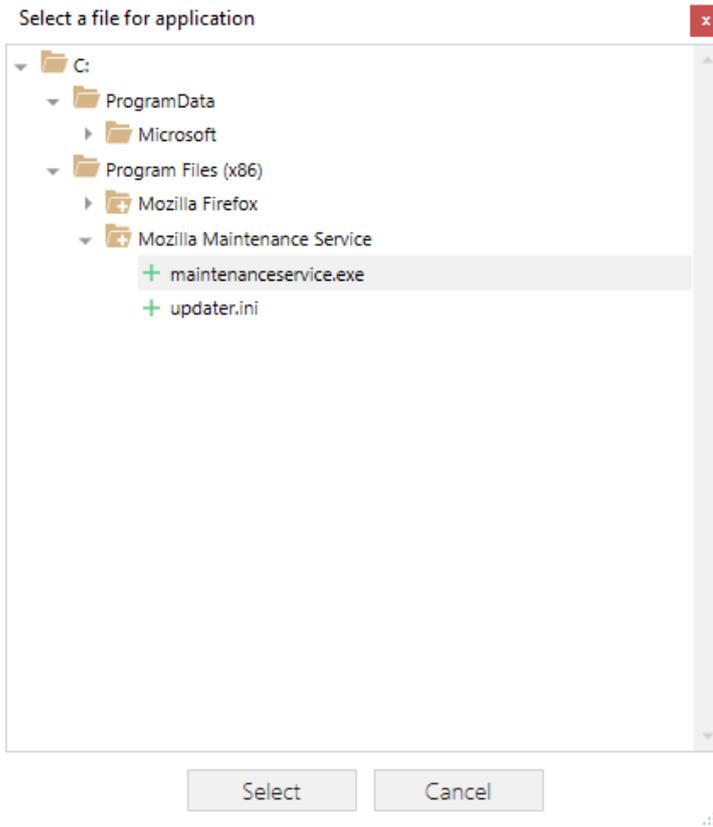


- [11]. If you need to add a new APPV application, its shortcuts and associate file extensions with this application, click **New application...** on the Shortcuts and FTAs -> APPV apps and FTAs tab.

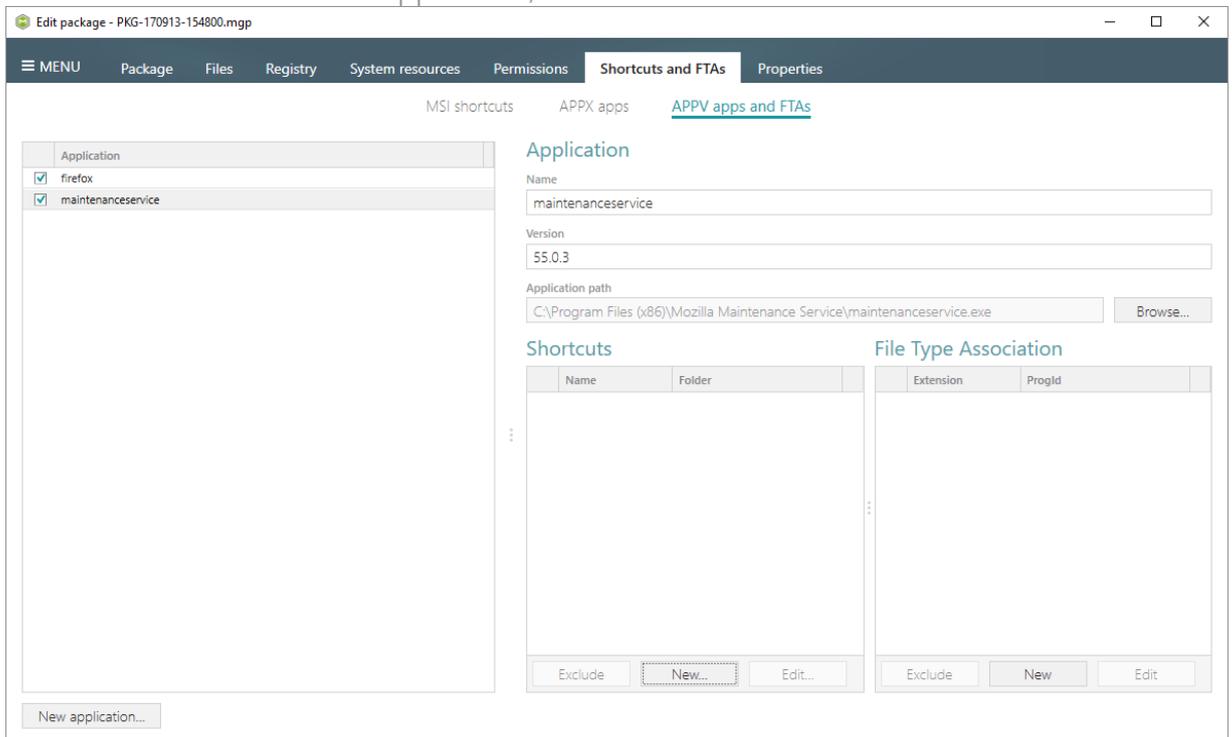




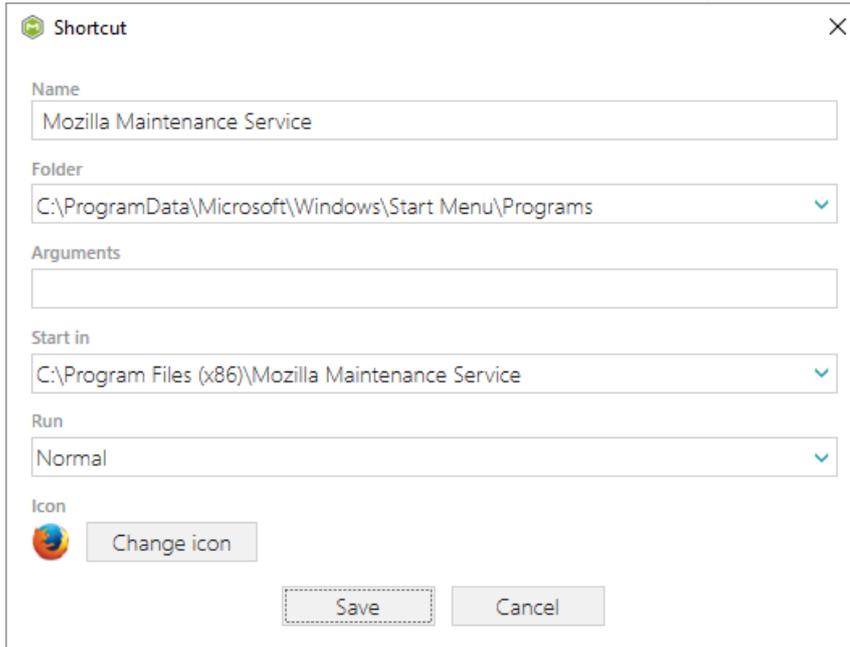
[12]. Select the executable file (EXE) from the tree and click Select.



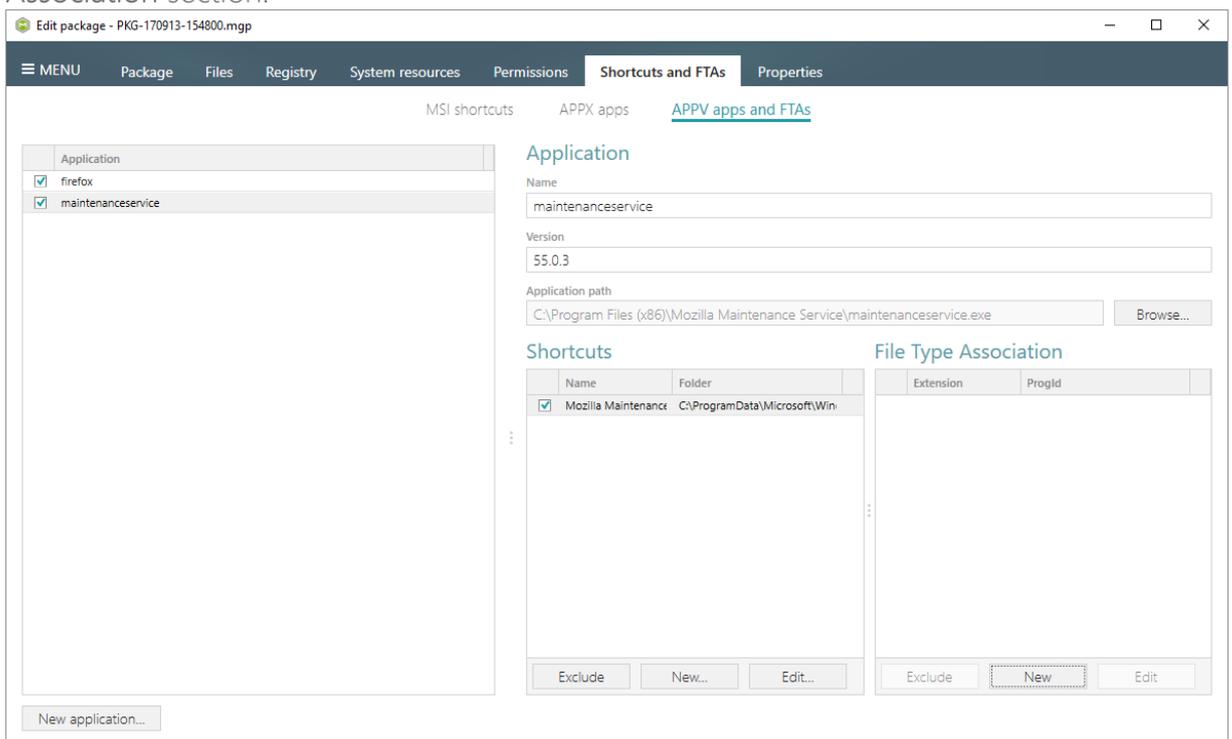
[13]. To create a shortcut for the application, click New... in the Shortcuts section.



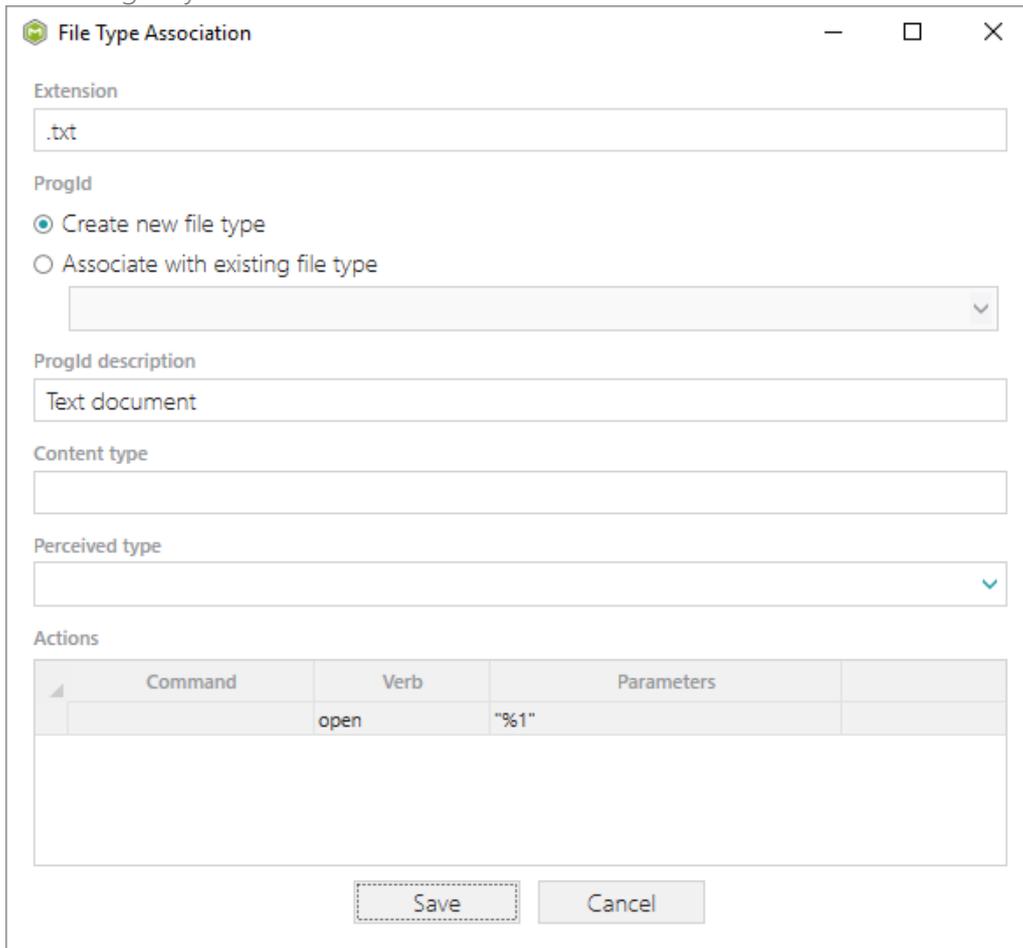
[14]. Enter a shortcut name, select a destination location ("Folder" field), icon and click Save.



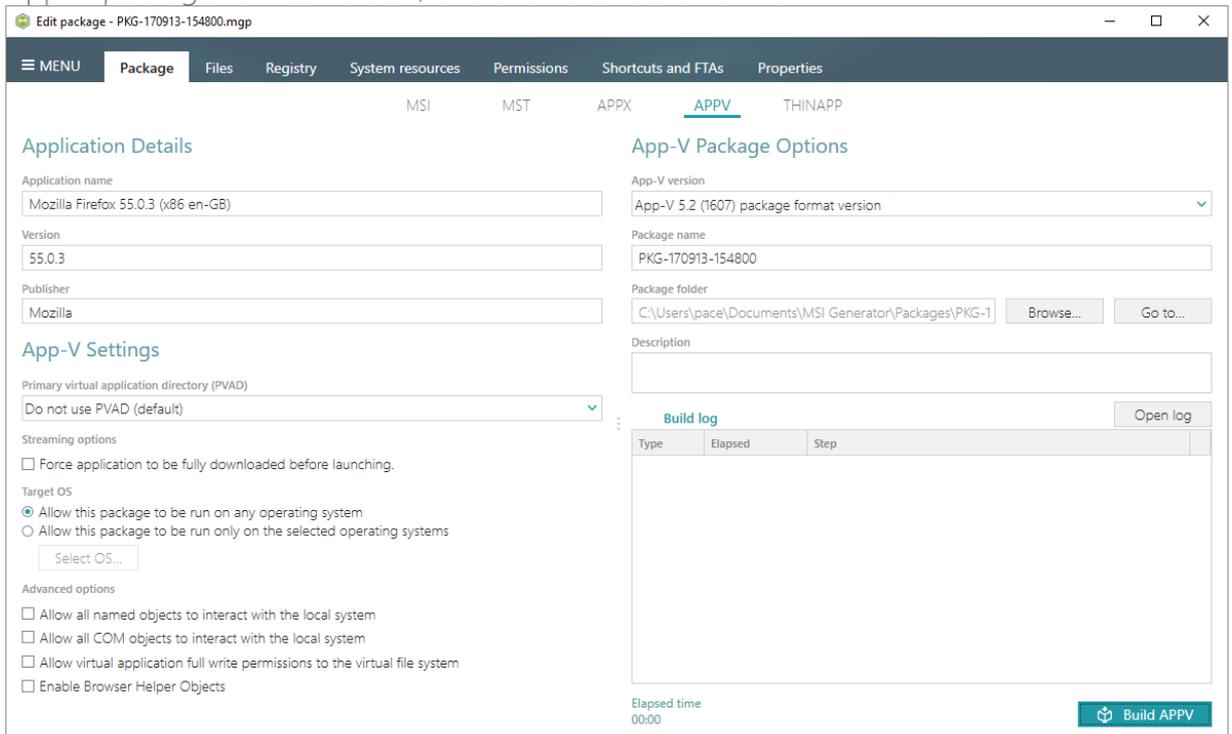
[15]. To associate some file extension with your application, click New... in the File Type Association section.



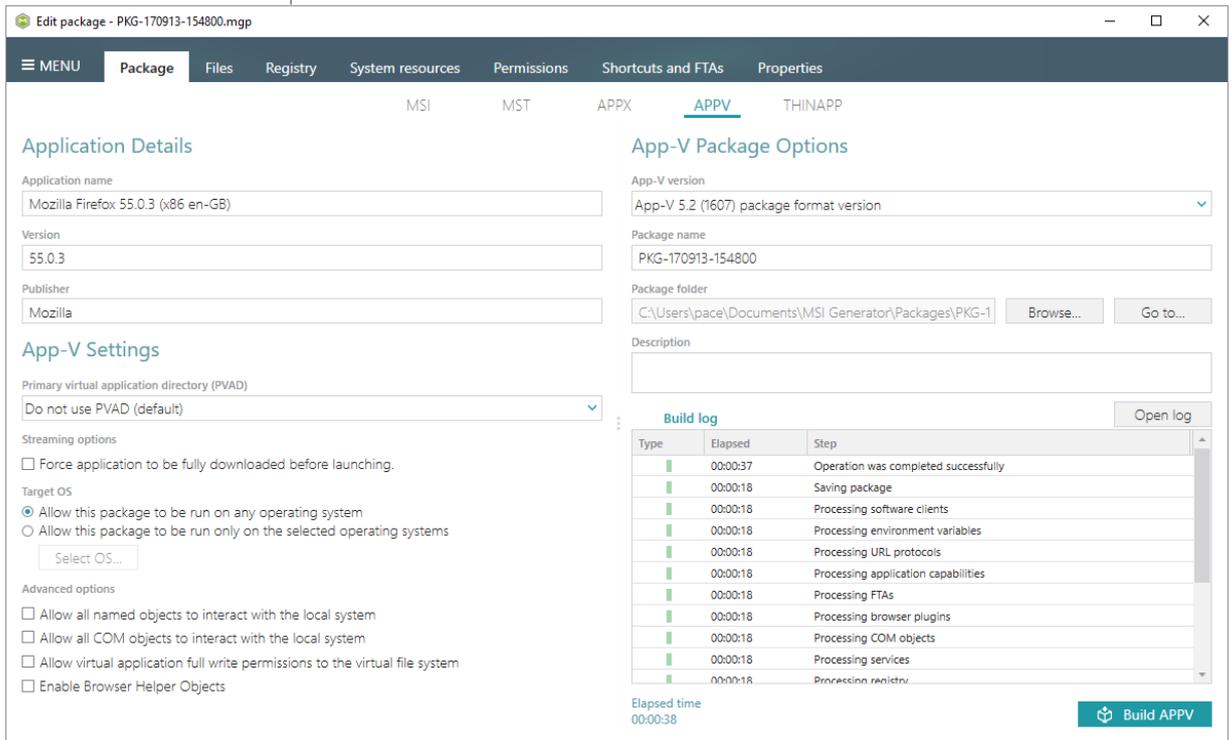
[16]. Enter a file extension and click Save. Optionally you can modify other FTA settings according to your needs.



[17]. Finally, to build APPV package from the project, navigate to the Package -> APPV tab, review and update (if necessary) Application Details, select the necessary App-V Settings, App-V package format version, and then click Build APPV.



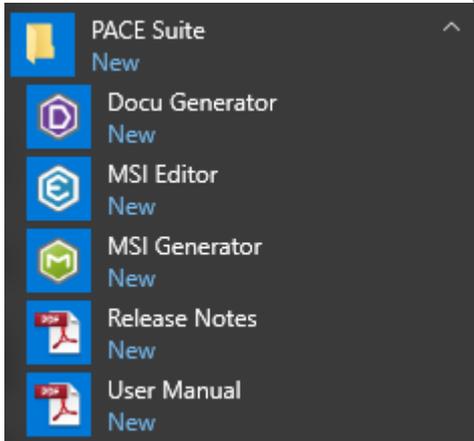
[18]. Click **Go to...**, located next to the **Project folder** field, to open the package containing folder in Windows Explorer.



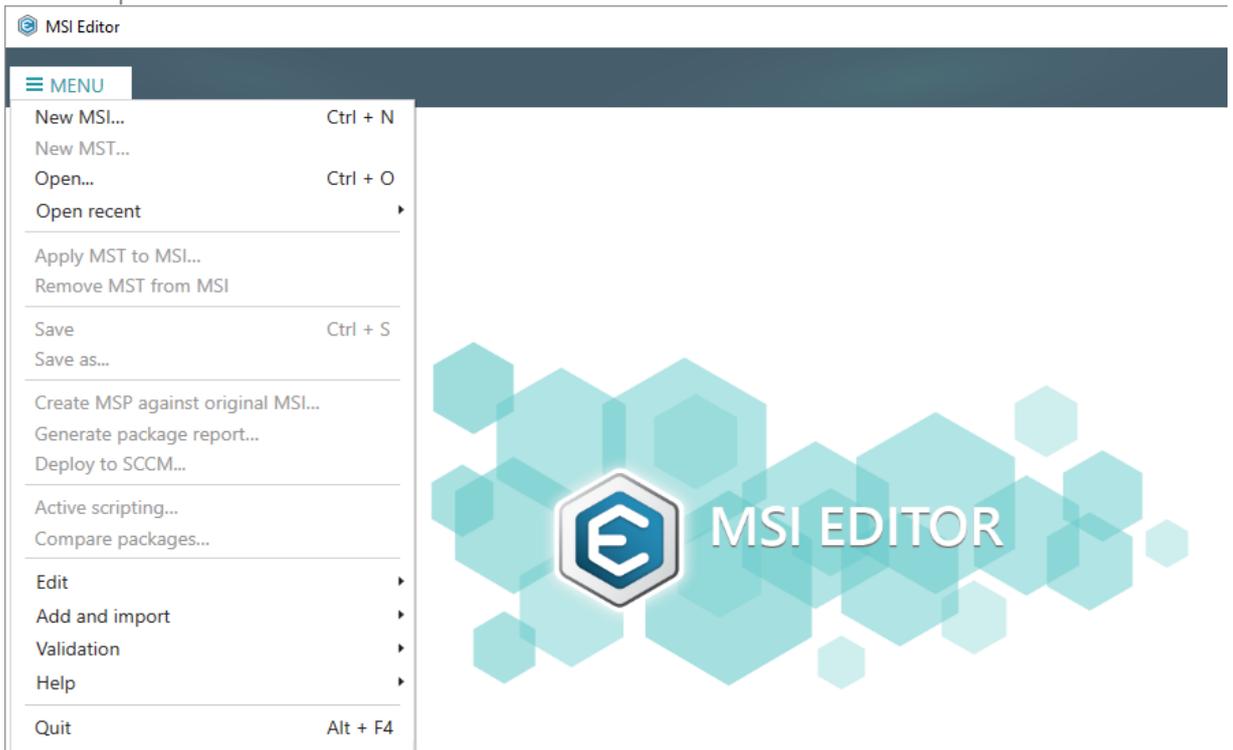
3.10 Deploy (Publish) to SCCM

NOTE For publishing MSI packages to Microsoft SCCM 2007 (SP1/SP2/R1/R2) or SCCM 2012 (SP1/SP2/R2/R2 SP1) server, ensure that your system contains Microsoft Management Framework 3.0 and Windows Remote Management (WinRM) service enabled.

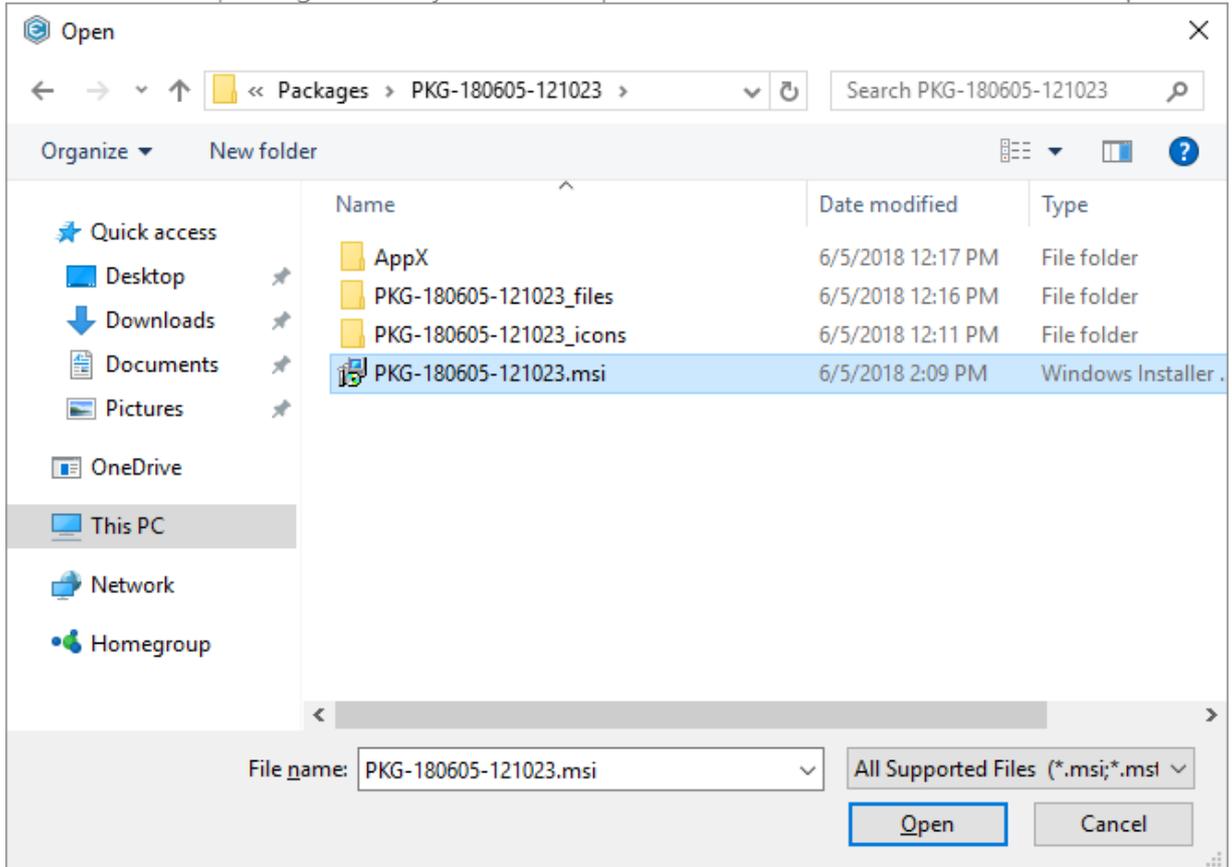
[1]. Launch MSI Editor from the desktop or the start menu shortcut.



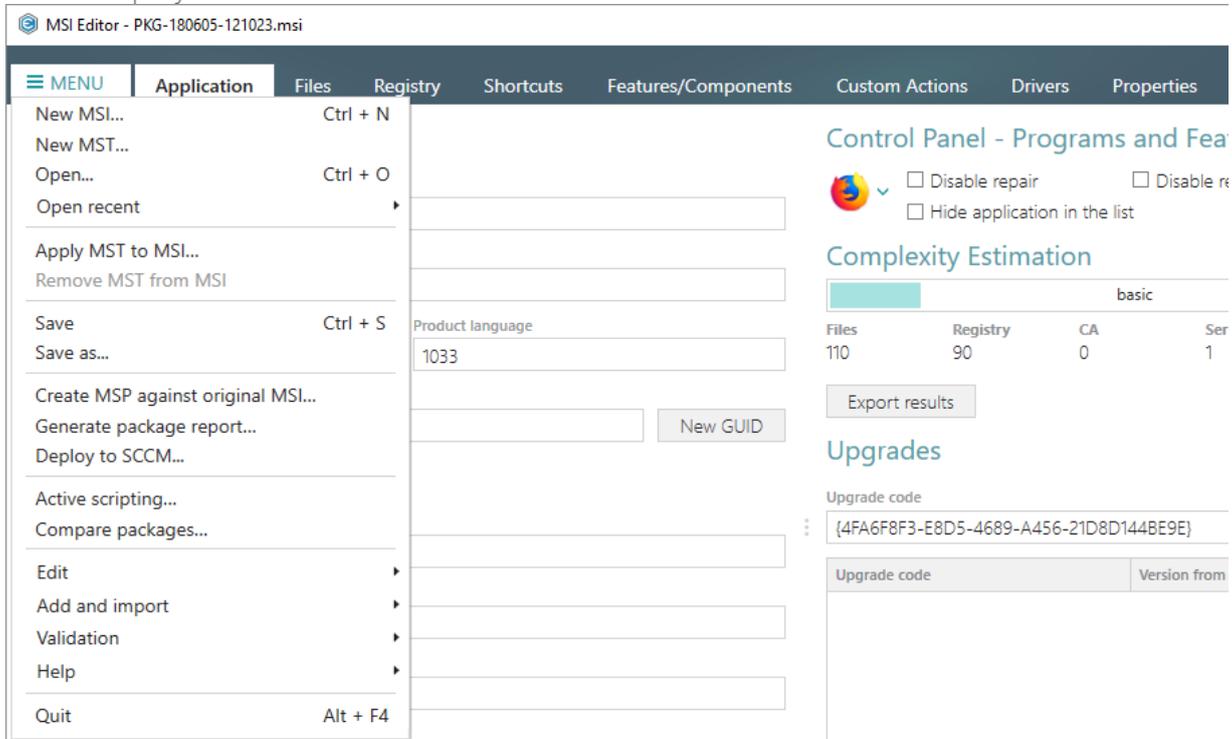
[2]. Select Open... from MENU.



[3]. Choose an MSI package, which you want to publish to the SCCM server and click Open.



[4]. Select Deploy to SCCM... from MENU.



[5]. Specify an IP address or a hostname of your SCCM server, user name and password for connecting to the SCCM. Enter a network share, where the package should be uploaded, and credentials for connecting to the network share. Click Next to choose a publishing model. Click Test connections... to check connections to the SCCM server and network



share.

Publish package to SCCM

Progress bar: SCCM server (active), Package definition, Display information, Publish options, Select files, Publishing

SCCM server and network share settings

Specify an IP address or hostname of SCCM server

SCCM server

User name Password

Use Windows session credentials

Specify a network share where packages will be uploaded

Network share for packages

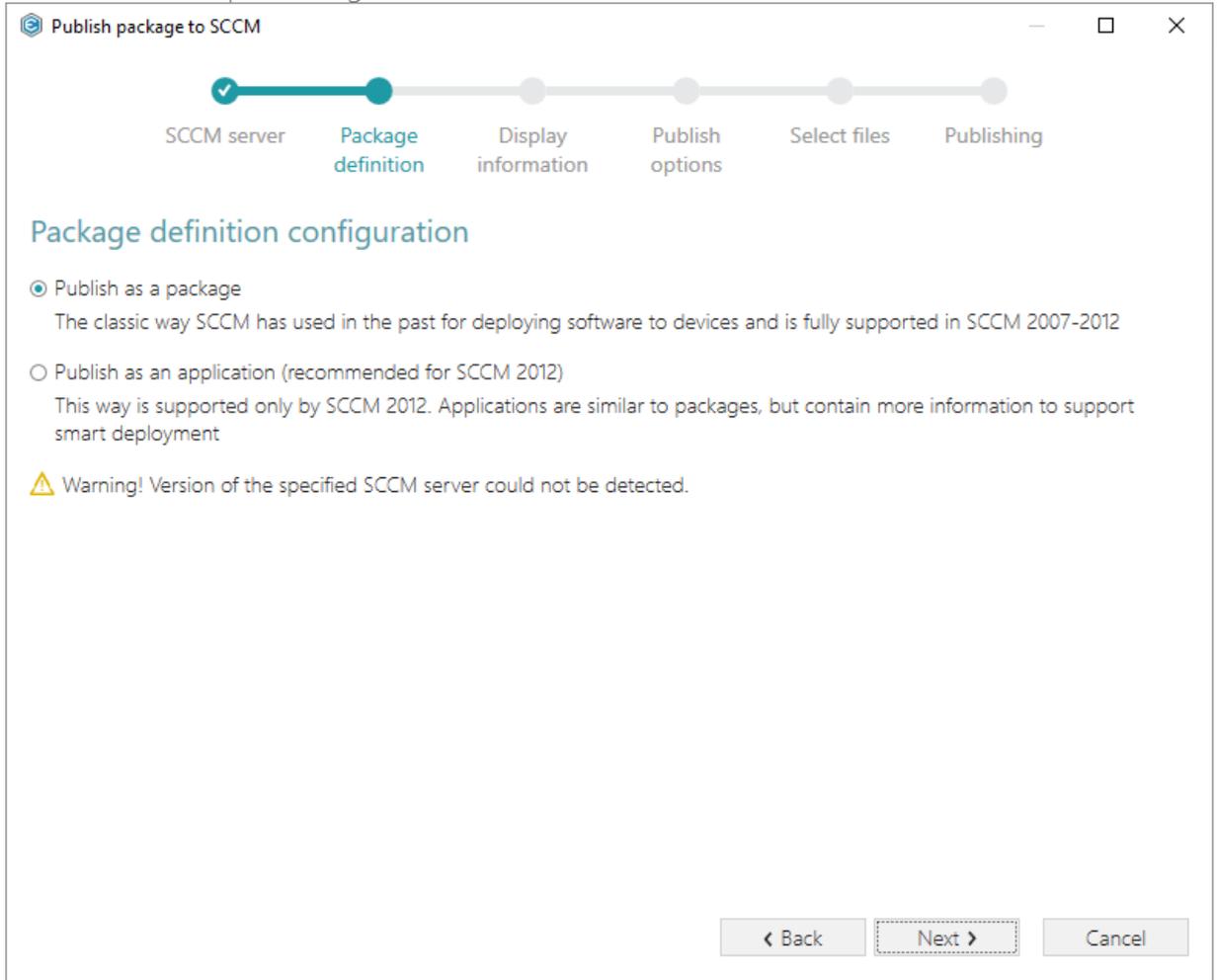
User name Password

Use Windows session credentials

[Test connections...](#)



[6]. Select a suitable publishing model and click Next.



- [7]. Review and update package display information such as name, manufacturer, version and others. Click Next to choose publish options.

Publish package to SCCM

Progress bar: SCCM server (checked), Package definition (checked), Display information (current), Publish options, Select files, Publishing

Display information

Name: Mozilla Firefox 51.0.1 (x86 en-US)

Manufacturer: Mozilla

Version: 51.0.1

Language: English

Description: Mozilla - Mozilla Firefox 51.0.1 (x86 en-US) - 51.0.1

Buttons: < Back, Next >, Cancel

[8]. Select the necessary publish options and click Next.

The screenshot shows a wizard window titled "Publish package to SCCM". At the top, a progress bar indicates the current step is "Publish options", which is highlighted in blue. The other steps are "SCCM server", "Package definition", "Display information", "Select files", and "Publishing".

Publish options

Installation behavior
Install for system

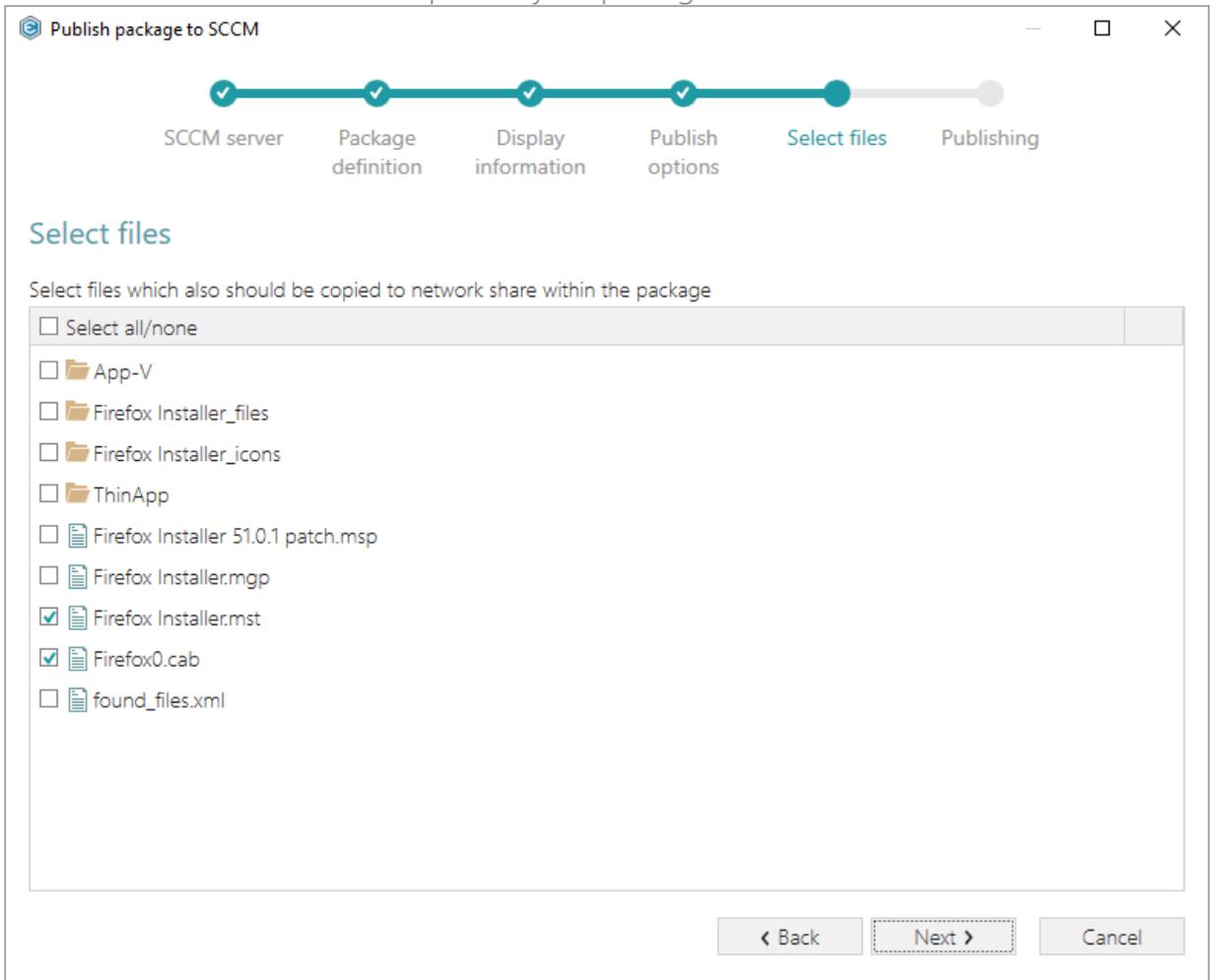
Logon requirement
Whether or not a user is logged on

Device restart
Determine behavior based on return codes

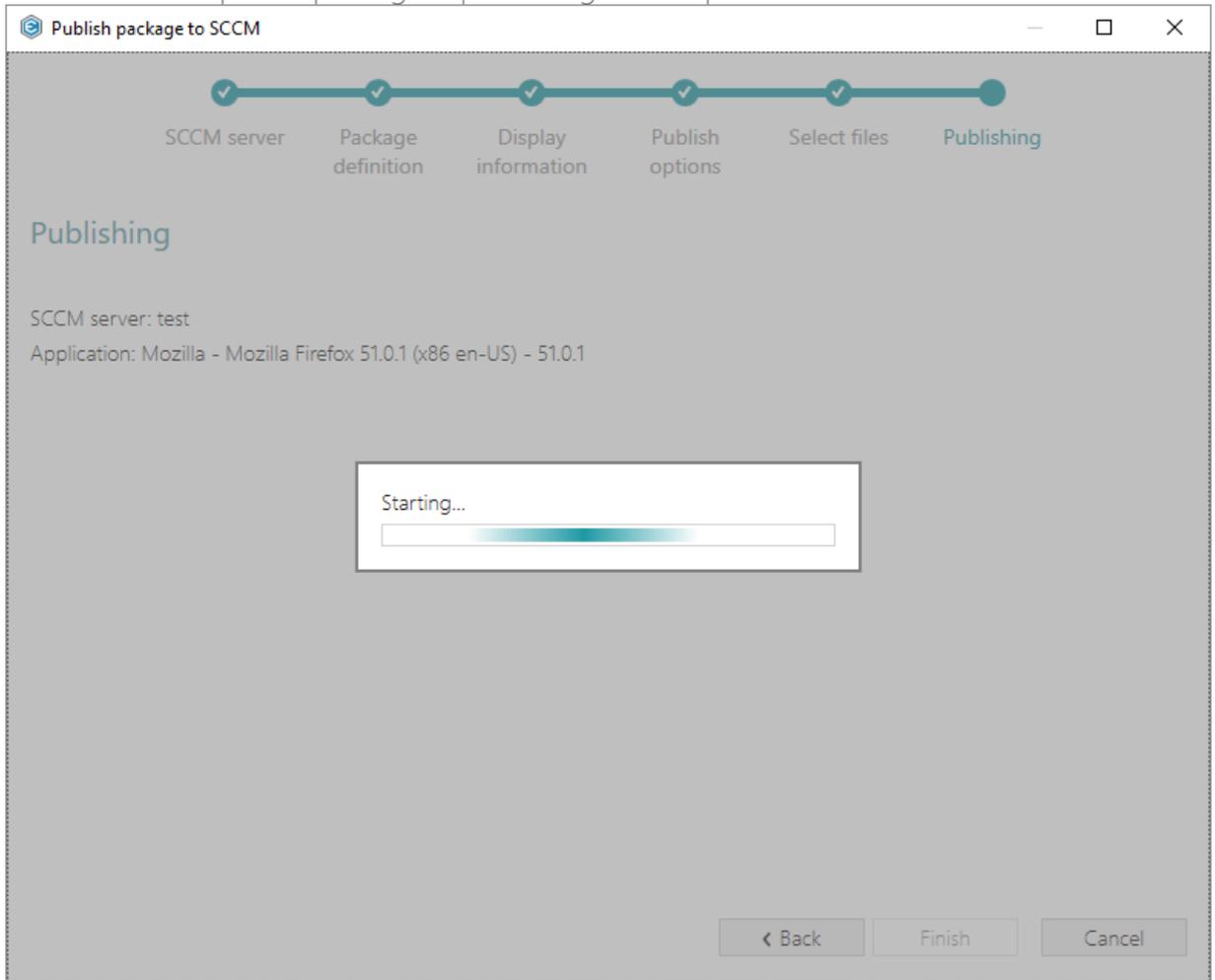
Maximum allowed run time (minutes)
120

Navigation buttons: < Back, Next >, Cancel

- [9]. Select which of files and folders, located in the package folder, should be copied to the network share and click **Next** to publish your package to the SCCM server.



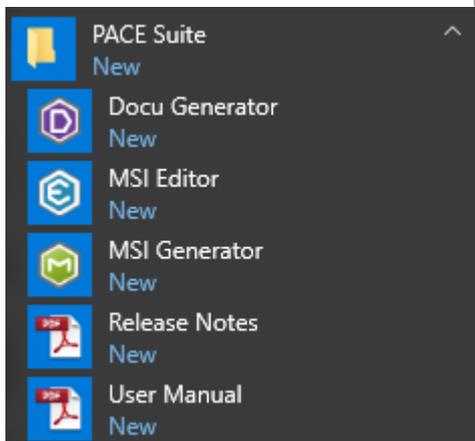
[10]. Wait while the opened package is publishing to the specified SCCM server.



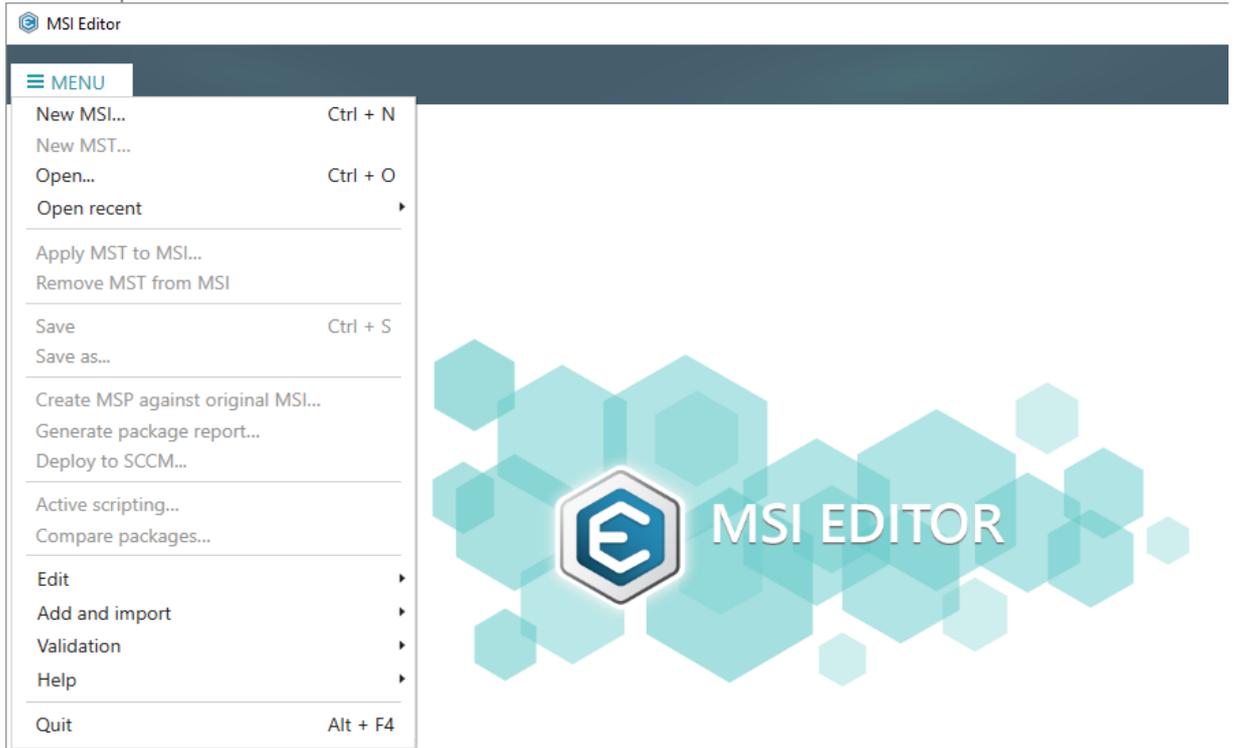
3.11 Generate Package Report

NOTE PACE Suite supports Word Document (.DOCX) and Excel Workbook (.XLSX) format types and allows generating a report with no Microsoft Office installed on the system.

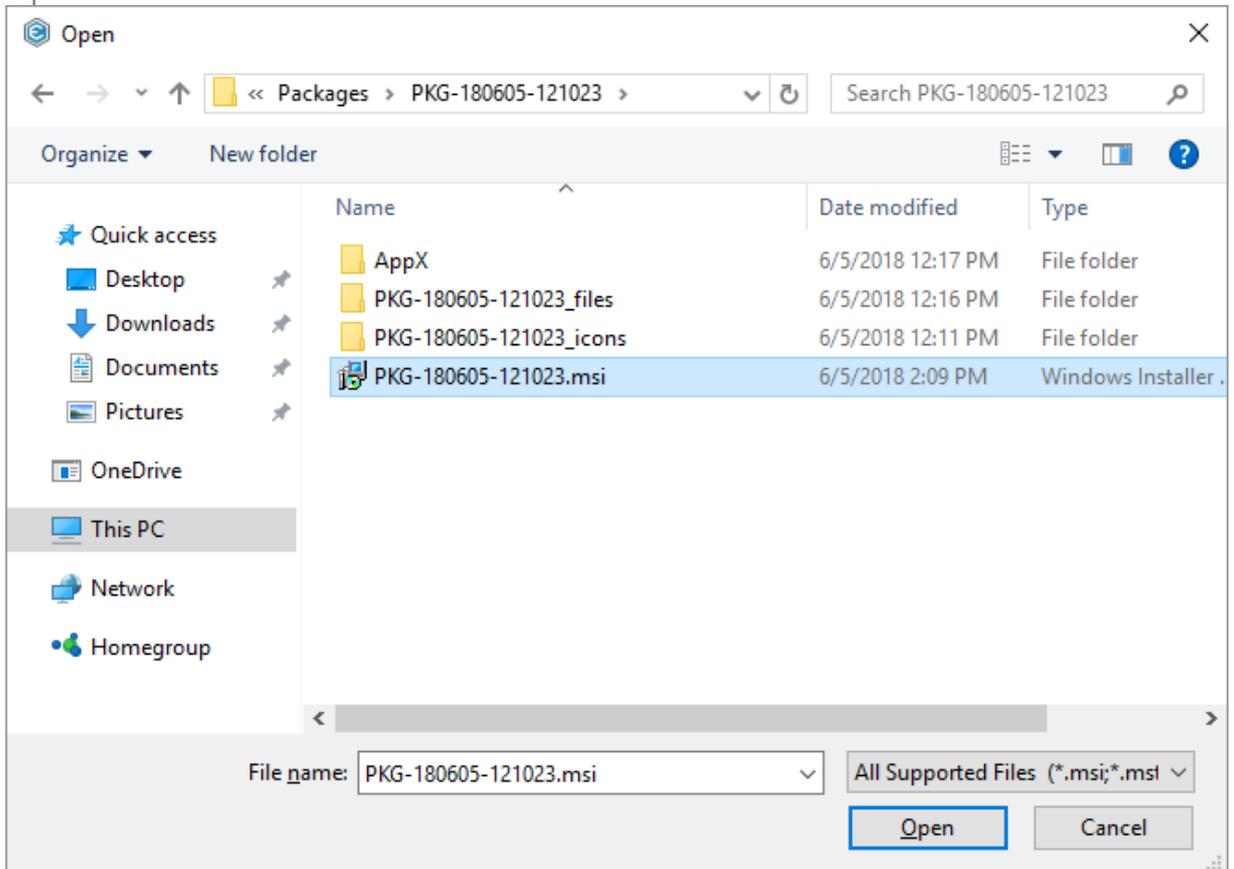
[1]. Launch MSI Editor from the desktop or the start menu shortcut.



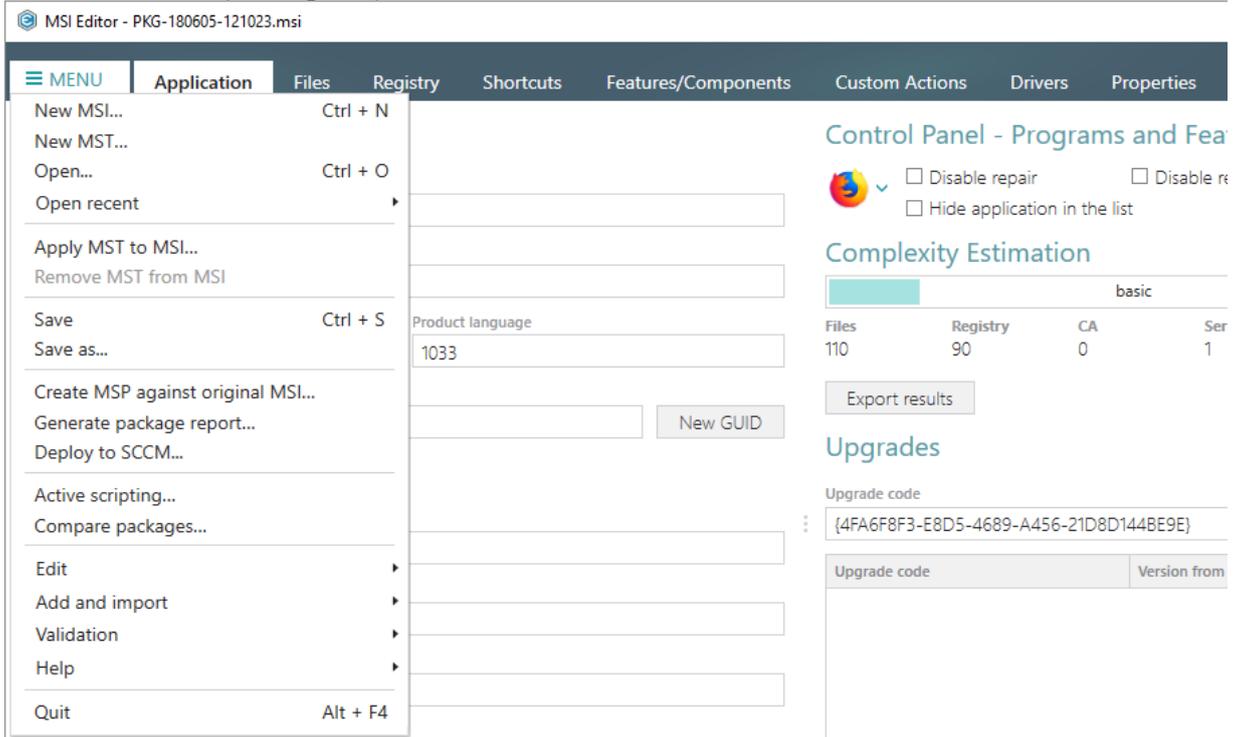
[2]. Select Open... from MENU.



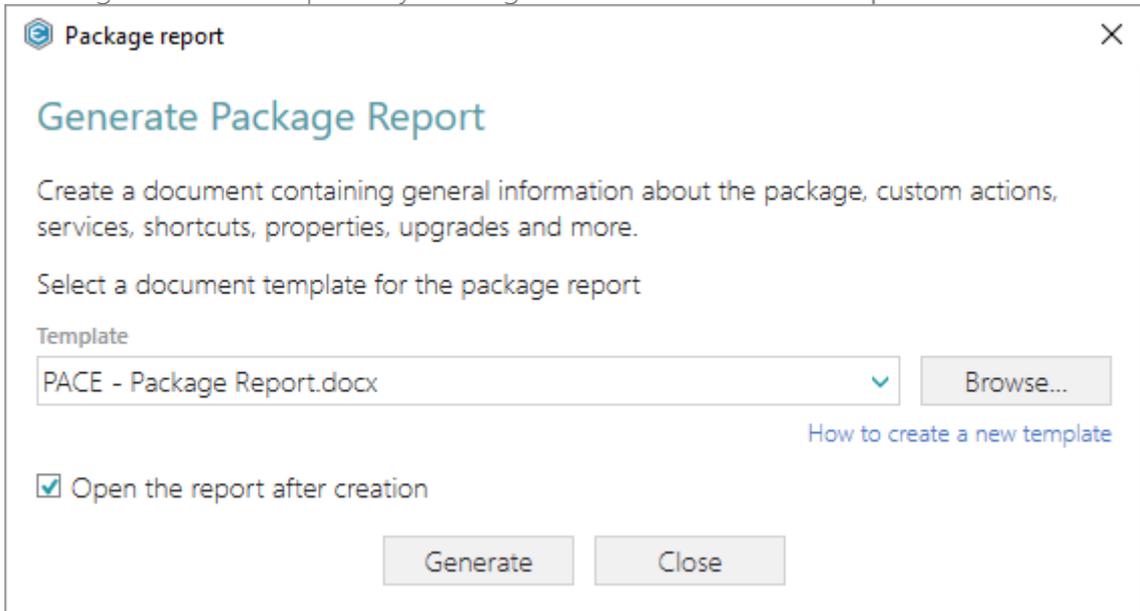
[3]. Choose an MSI package, for which you want to generate a package report and click Open.



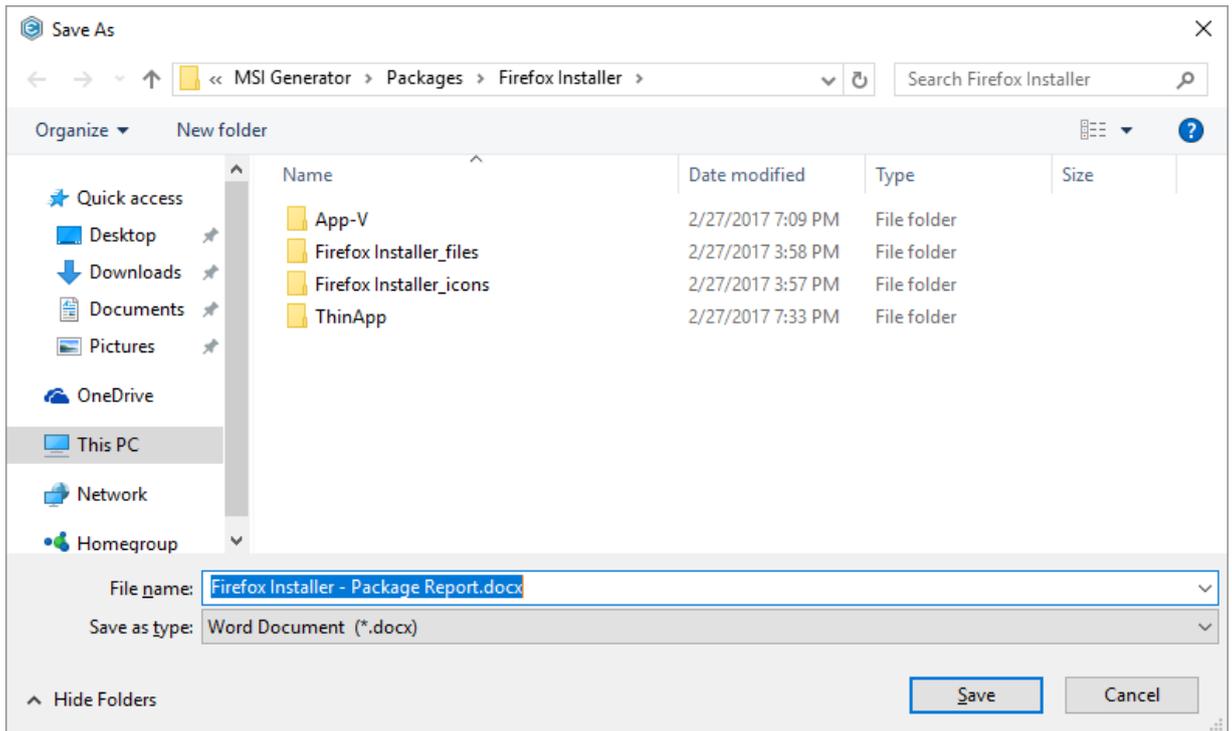
[4]. Select Generate package report... from MENU.



[5]. Select a template for your report and click Generate. Find more information about creating a custom template by clicking How to create a new template.

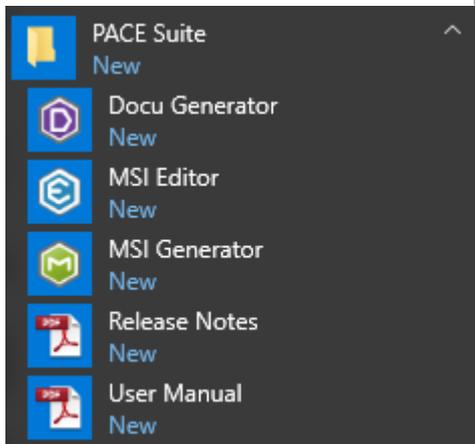


- [6]. Specify a file name and a destination location of the generated package report and click Save.

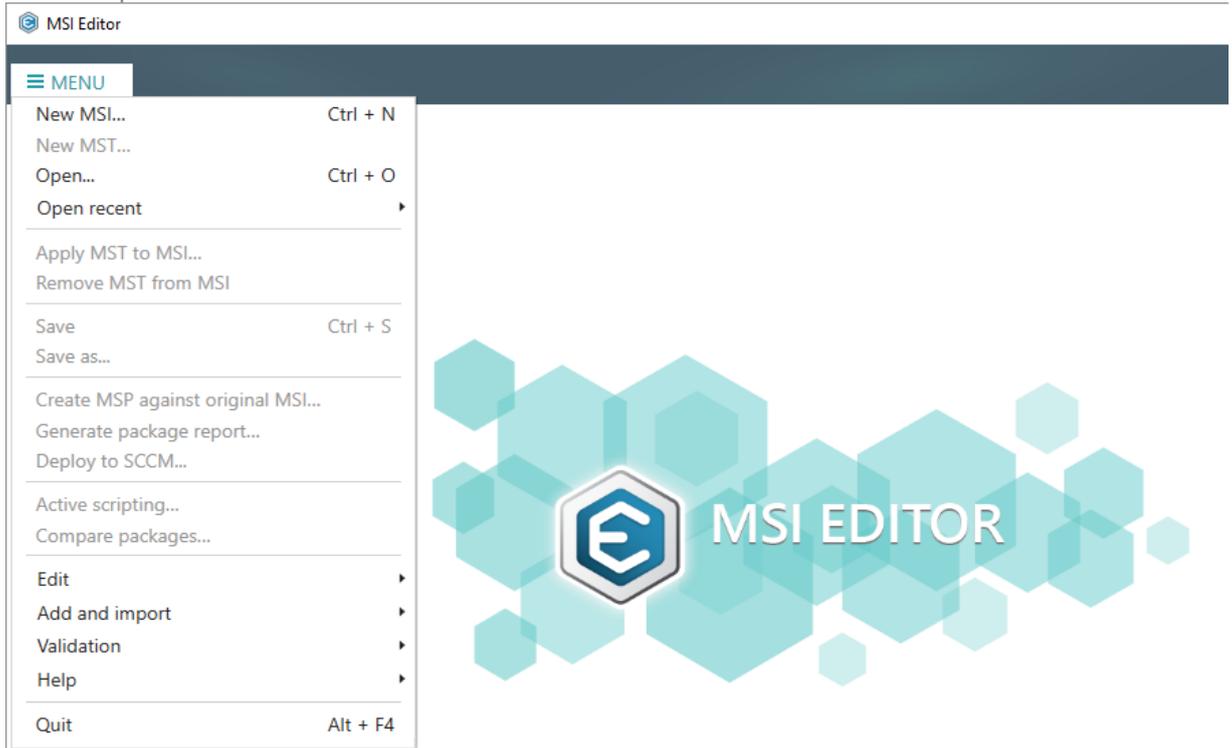


3.12 Validate Package

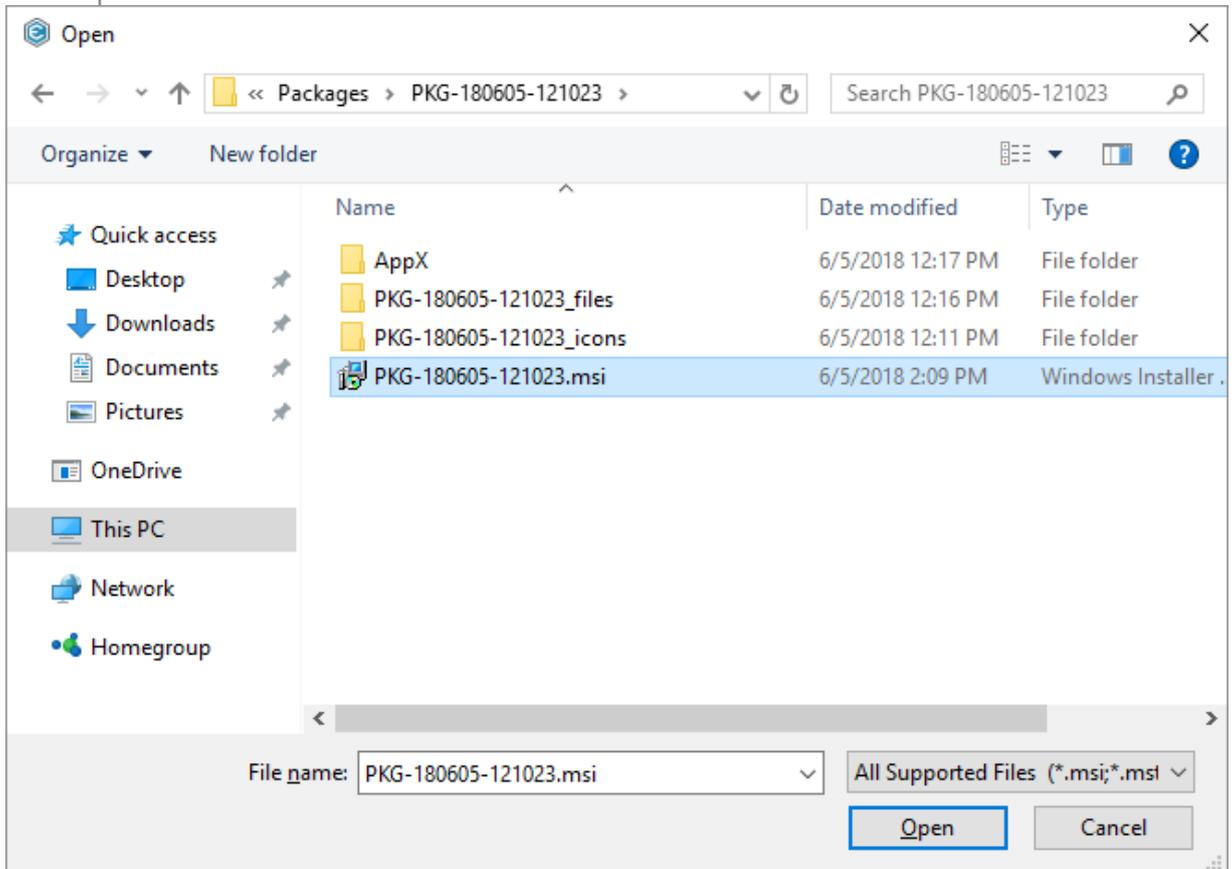
- [1]. Launch MSI Editor from the desktop or the start menu shortcut.



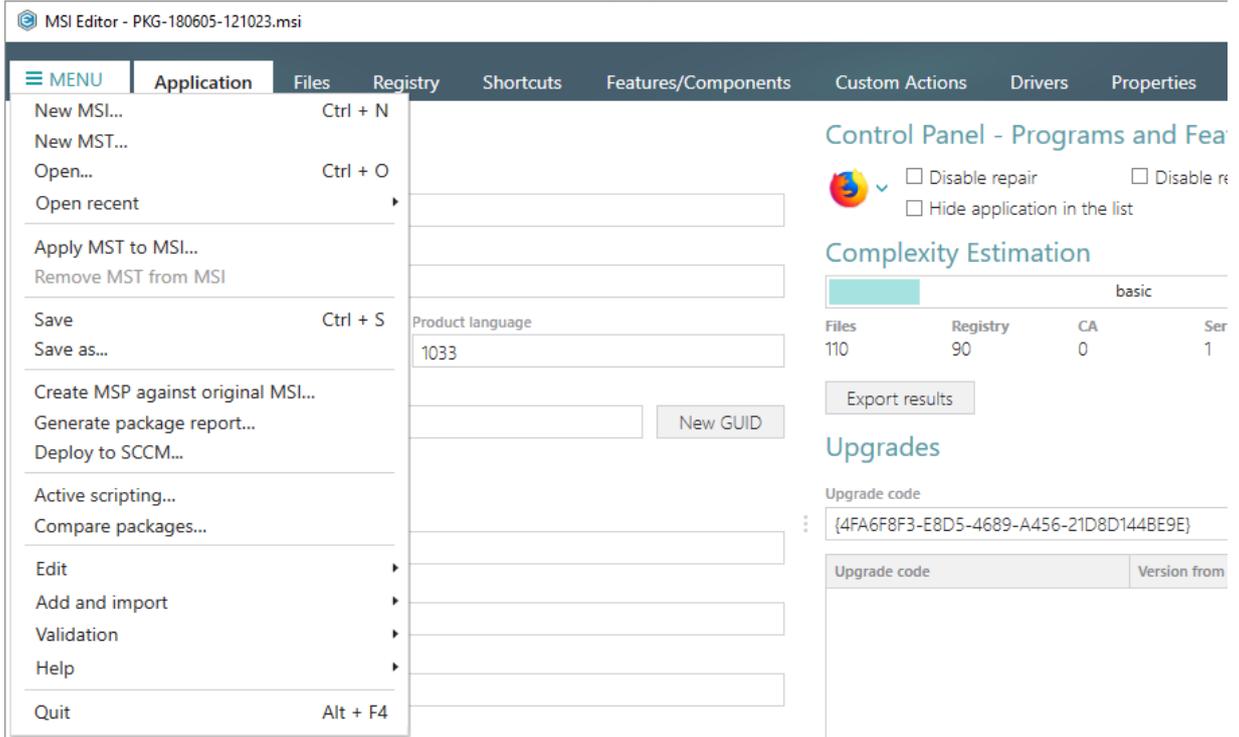
[2]. Select Open... from MENU.



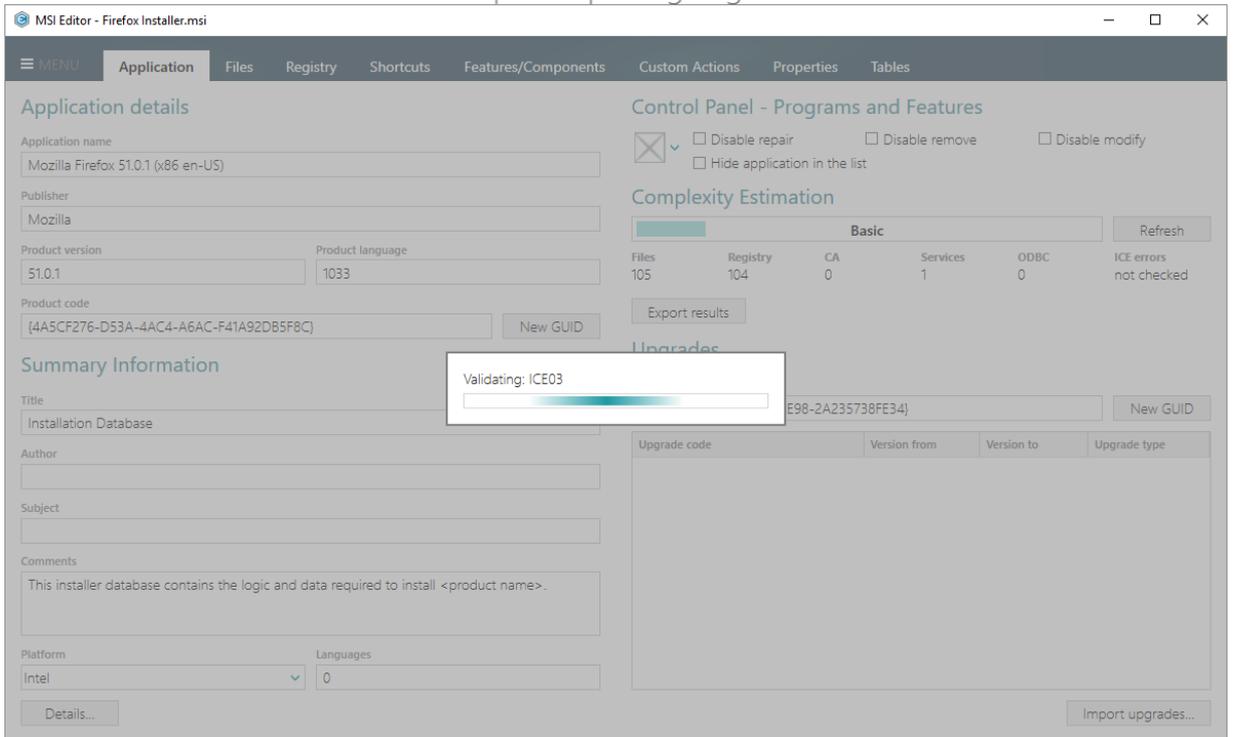
[3]. Choose an MSI package, which you want to validate against the standard CUB files and click Open.



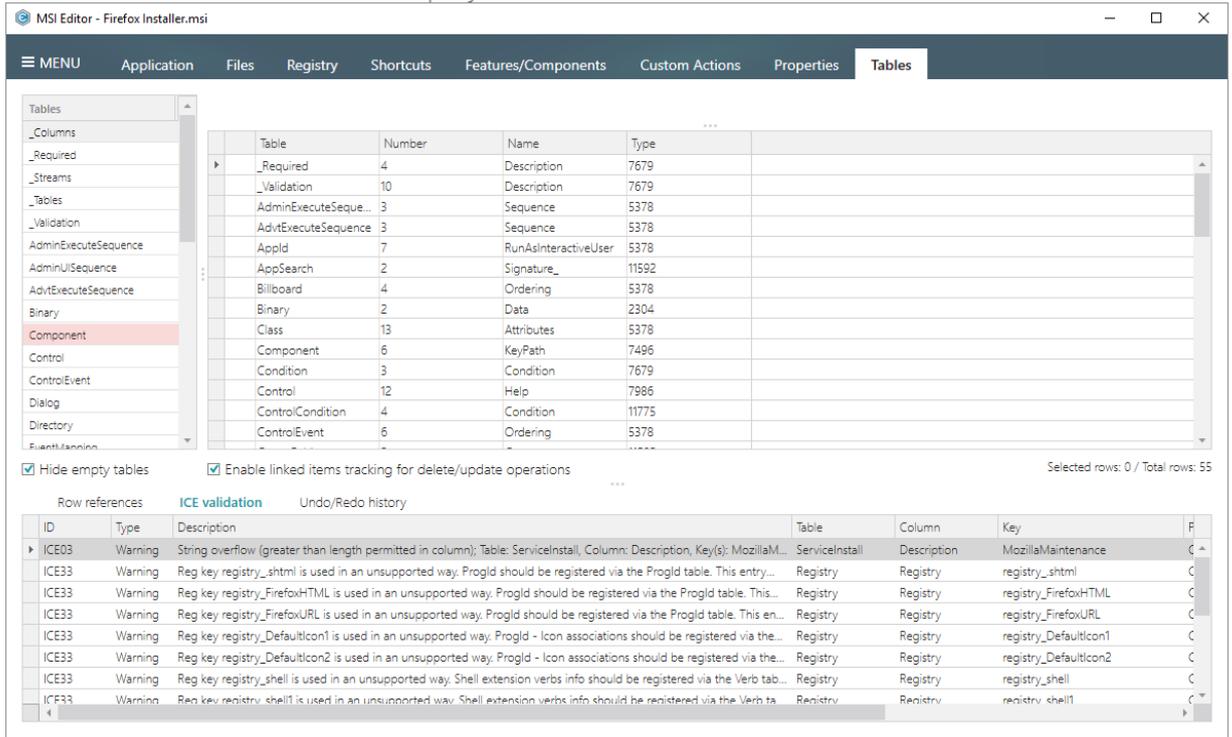
[4]. Select Validation -> Full MSI validation suite (ICE) from MENU.



[5]. Wait while MSI Editor validates the opened package against the standard Darice CUB file.

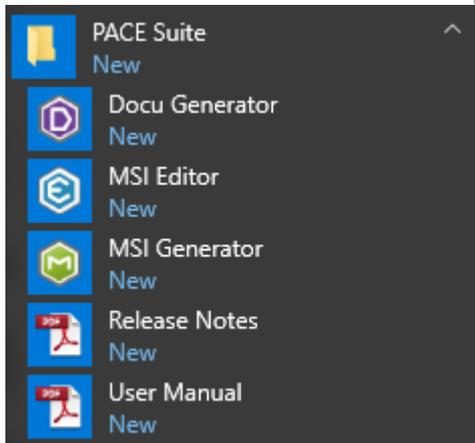


[6]. The validation results will be displayed on the Tables -> ICE validation tab.

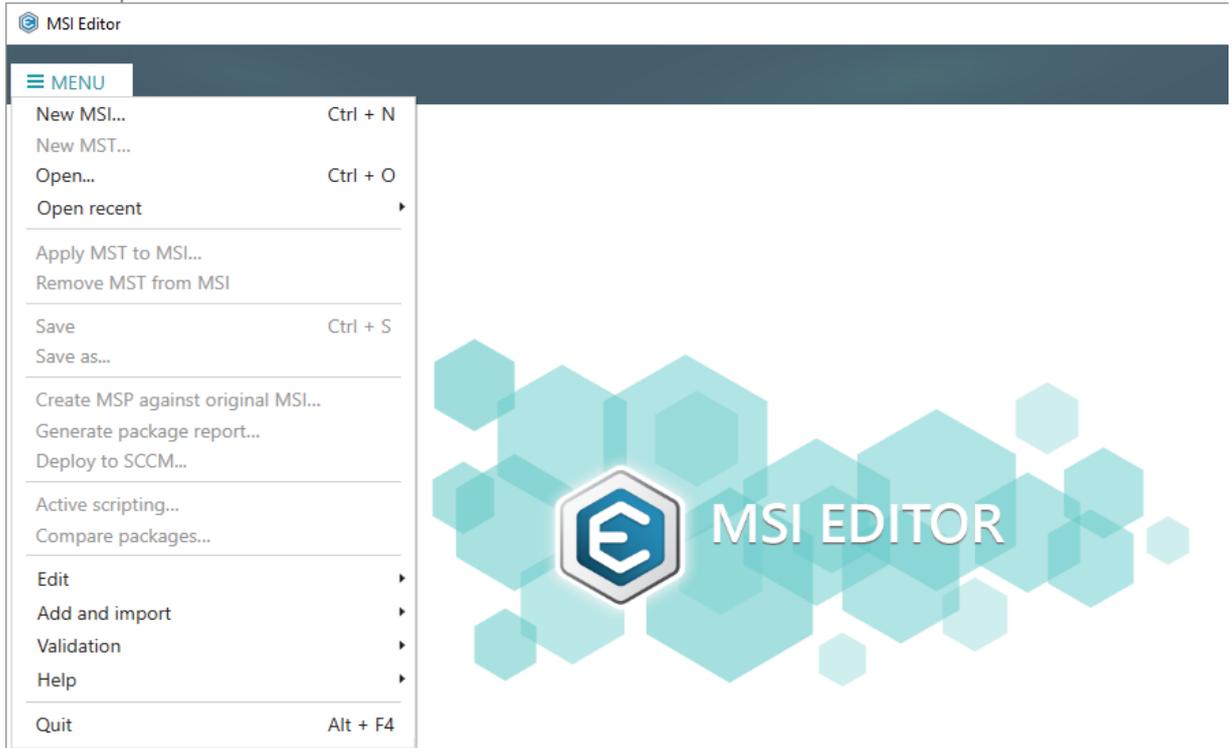


3.13 Calculate Package Complexity

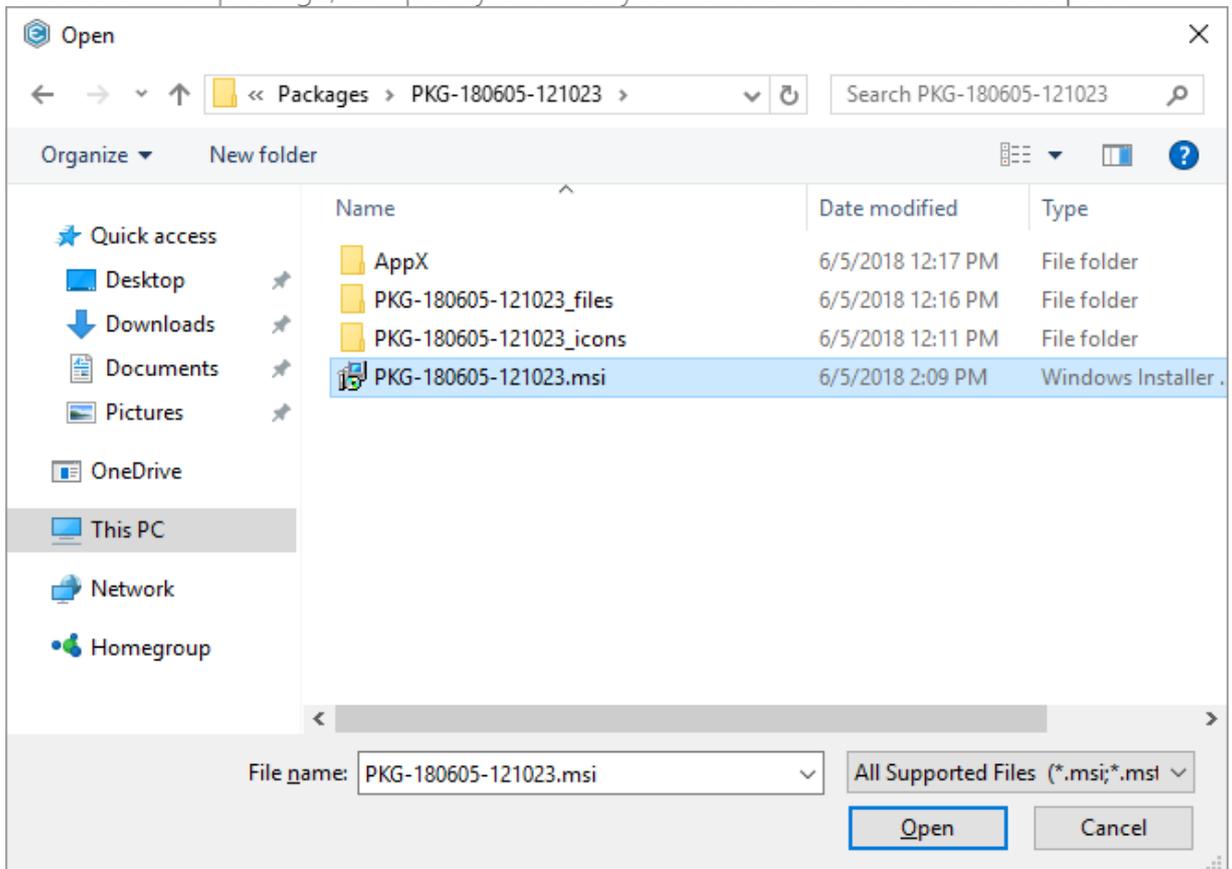
[1]. Launch MSI Editor from the desktop or the start menu shortcut.



[2]. Select Open... from MENU.

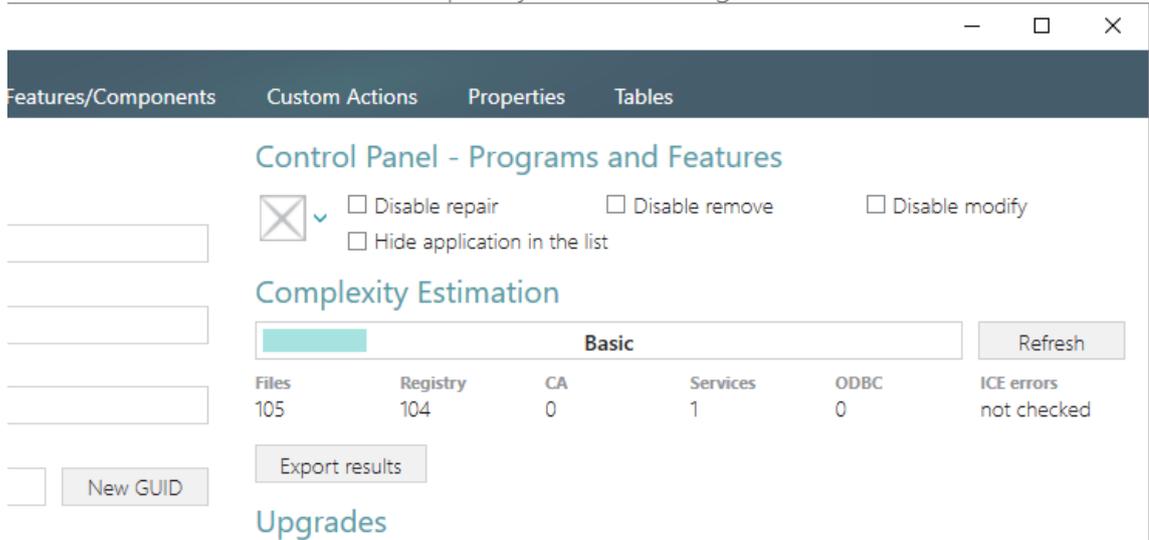


[3]. Choose an MSI package, complexity of which you want to calculate and click Open.

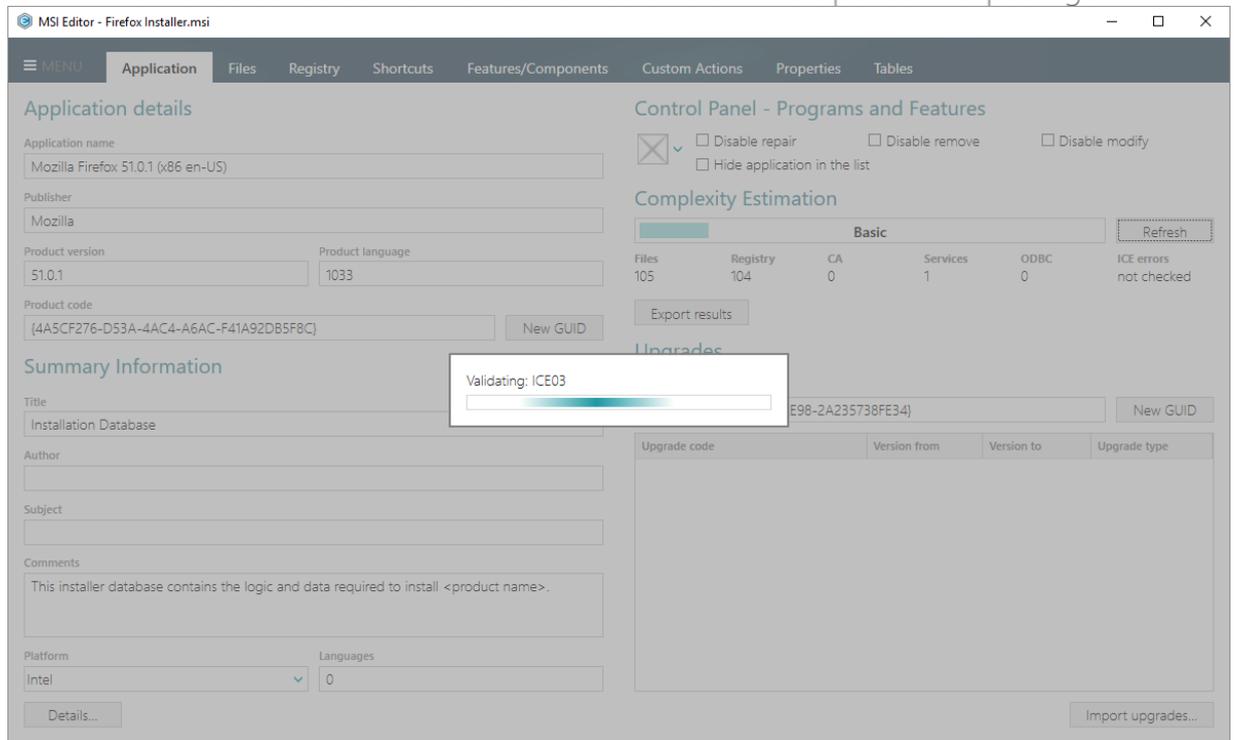




[4]. Click Refresh to re-calculate complexity level including ICE validation errors.

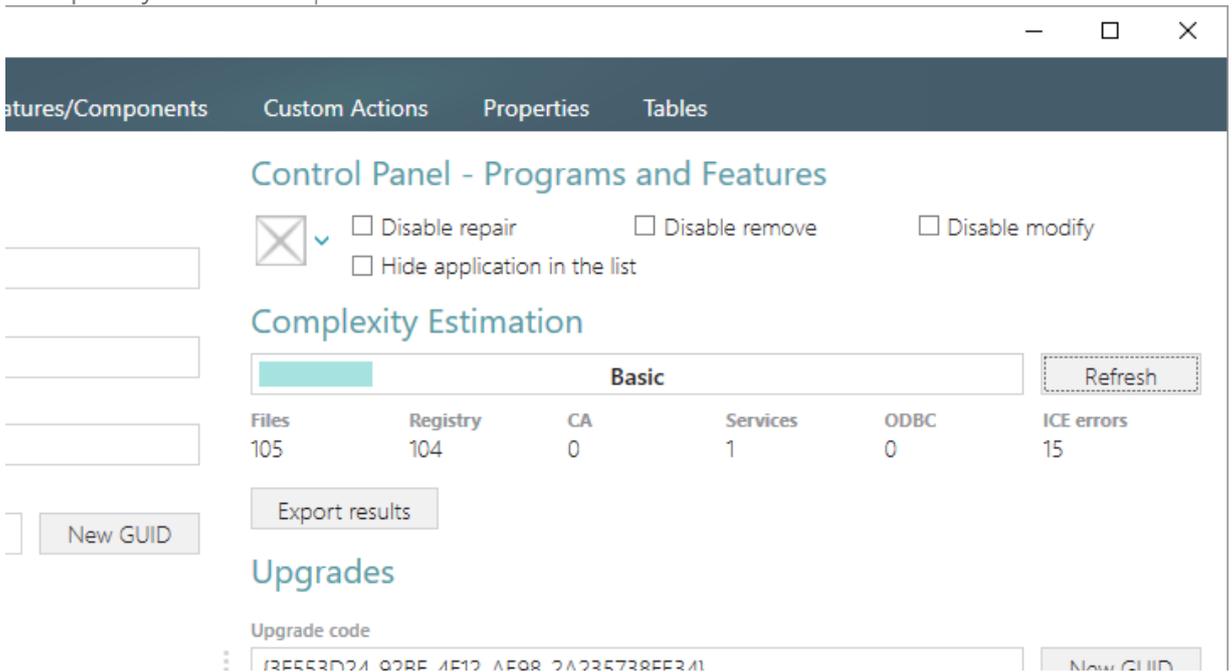


[5]. Wait while MSI Editor calculates number of ICE errors in the opened MSI package.

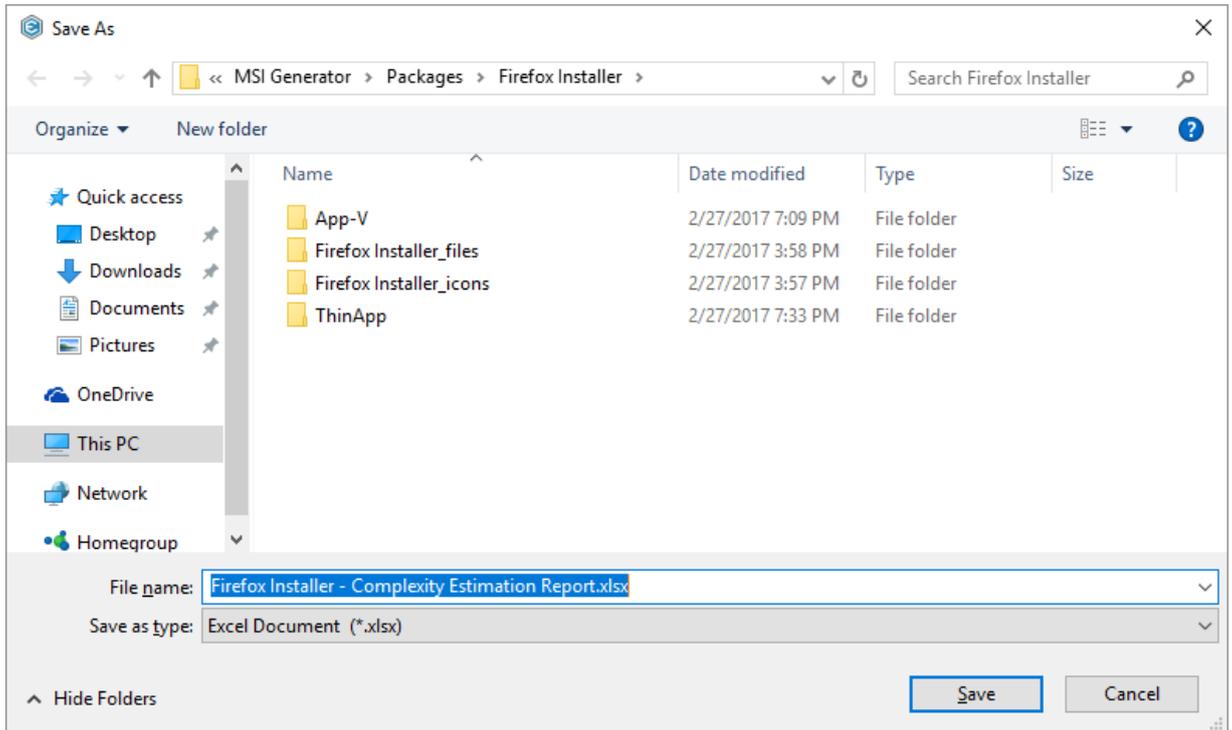




- [6]. In order to export complexity estimation results to the XLSX file, click Export results at the Complexity Estimation panel.



- [7]. Specify a name and a destination location of the exported complexity estimation results and click Save.



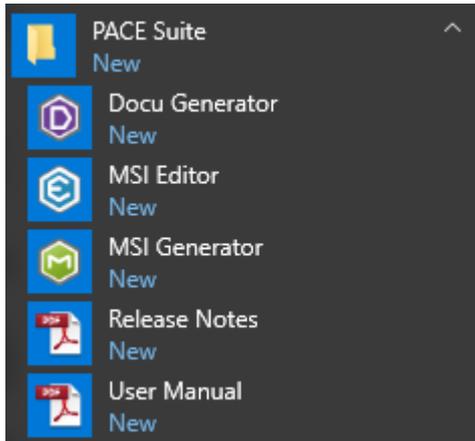


3.14 Create Discovery Documentation

Record all your on-screen actions into a nice looking document with screenshots and annotations. Such document could contain installation and configuration instructions and the like.

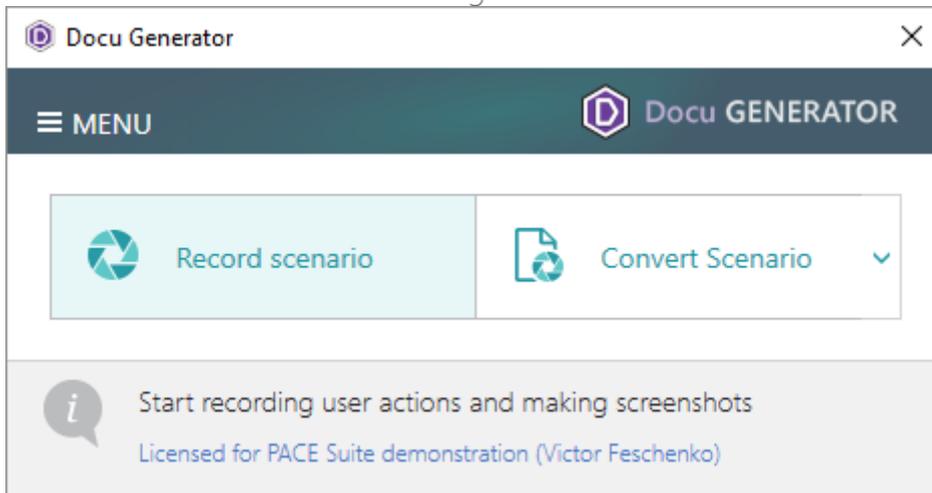
NOTE In order to take screenshots of application, which is launched with elevated permissions, launch Docu Generator with elevated permissions as well.

- [1]. Launch Docu Generator.



In order to launch Docu Generator with elevated permissions, press Shift and select Run as administrator from the context menu of the Docu Generator's shortcut.

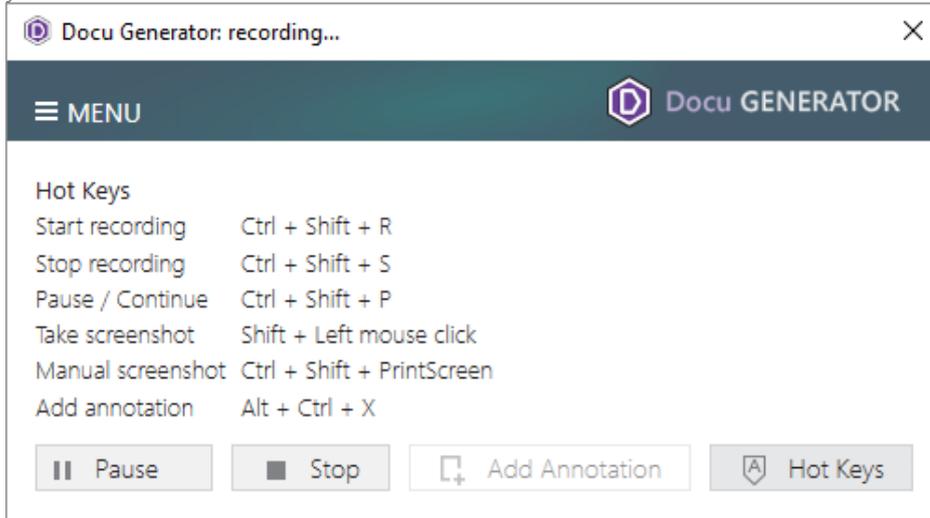
- [2]. Click Record scenario to start taking series of screenshots and annotations.



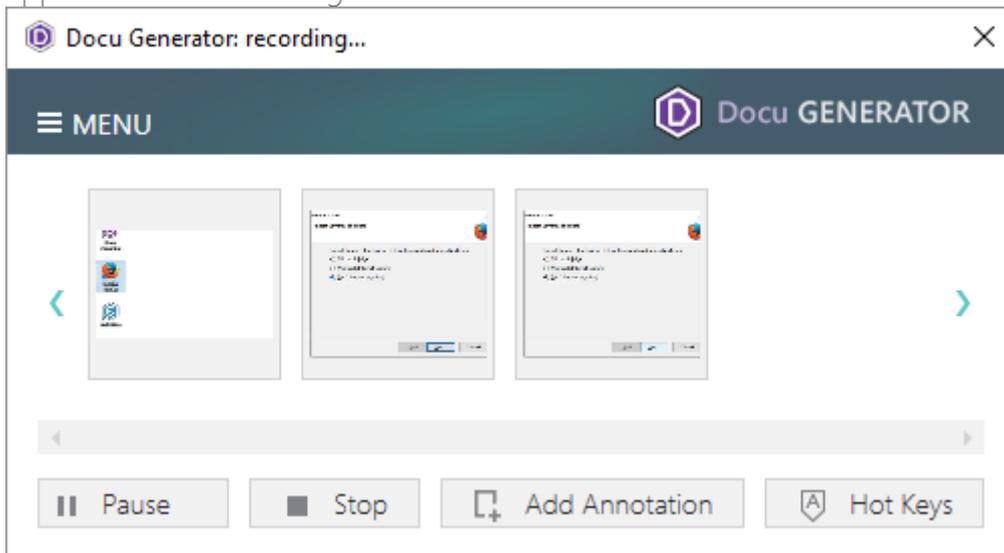
- [3]. Hover your mouse pointer on the Hot Keys button to check which of hot keys are used to take screenshots. Press the Shift key + Left mouse click to take a screenshot of an active window, dialog or screen area. Press Ctrl + Shift + PrintScreen, then click and drag the mouse pointer to select a rectangular area you want to grab. A screenshot is done when



you release the mouse button.

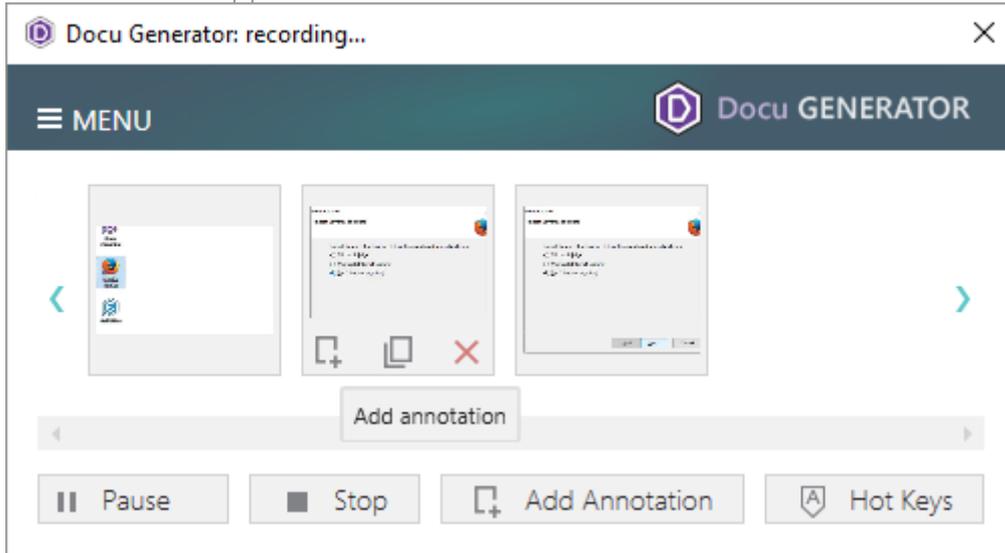


- [4]. Now, do the actions you want to record into the document. Launch executables, go through dialogs, select options and enter values just telling Docu Generator when to take another screenshot, as described above. A preview of each new screenshot immediately appears in the Recording window.

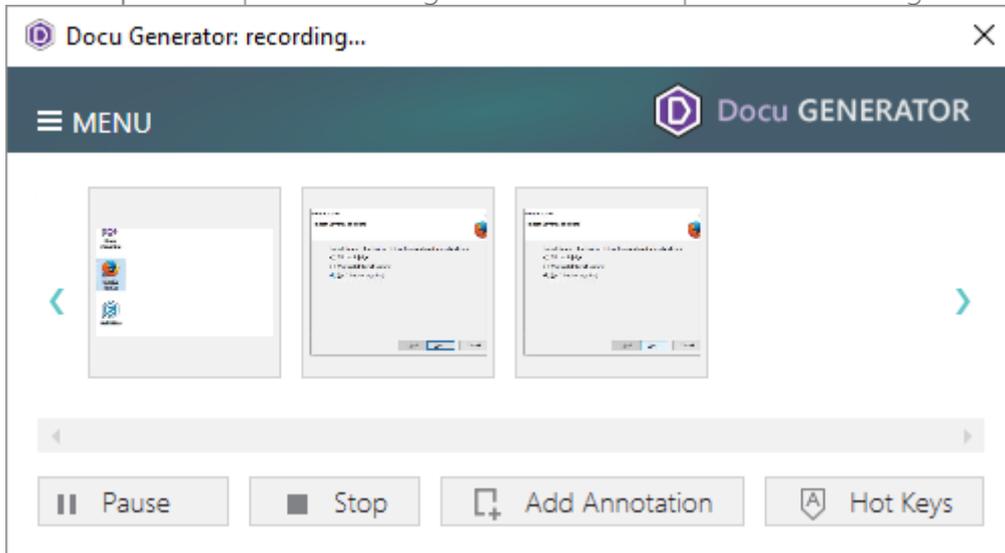


- [5]. In order to Add annotation, Copy to clipboard or Remove a screenshot, hover mouse pointer on a preview of the screenshot in the Recording window and select the respective

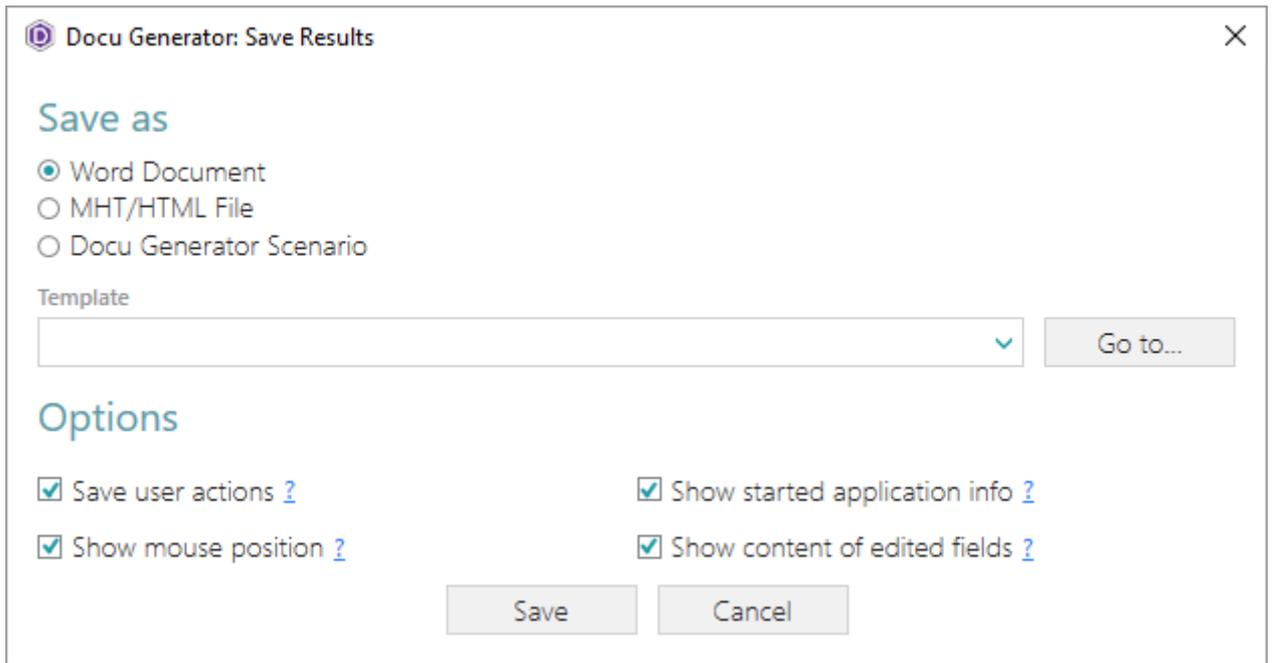
function, in the appeared bottom bar.



- [6]. Click Stop to complete recording the scenario and proceed to saving results.



- [7]. Select an output format of the document, saving options and click Save to create document. A Template is an optional field, described below.



Find options description below in table.

Option	Description
Save user actions	This option adds the information about names of controls (which were clicked on) and names of the captured windows and dialog boxes to the document.
Show mouse position	This option adds information about mouse pointer position and highlights it with a red circle on screenshots to the document.
Show started application info	This option adds information about paths and command line arguments of the launched application to the document.
Show contents of edited fields	This option adds contents of input fields of the captured windows and dialog boxes to the document.
Template	<p>Docu Generator supports Microsoft Word (DOT/DOTX) and HTML/MHT templates to be used for document creation. To use a template, specify its file path in the "Save Results" window.</p> <p>In order to mark a position where screenshots and comments are to be placed to, add the following textual placeholder into a template: [SCR]</p> <p>You can specify placeholder [SCR] in the existing table in a template. In this case, the placeholder points to a cell where screenshots should start, while a column to the right of it will be populated with comments.</p> <p>If the placeholder is located outside a table, then a new table for screenshots and comments will be created. A Docu Generator-default table style will be used.</p> <p>If a placeholder is not found, screenshots and comments will be appended to the end of the template. You will be warned about this in the Save Results window</p>

NOTE To let you return to your scenario later, Docu Generator always creates DSCN file along with the output file in an output folder.

NOTE If Microsoft Word is unavailable on the machine, the option of saving DOC file is inactive, but you still can save a DSCN file and convert it on a machine with MS Office installed later.



4 References

4.1 More Information and Contact

Product website | <http://pacesuite.com>

Support email | pace-support@infopulse.com

Support Portal | <http://pacesuite.com/support>

Educational videos | [YouTube channel](#)

4.2 PACE Suite in Social and Professional Networks



| itninja.com/pace



| [@pacesuite](https://twitter.com/pacesuite)



| fb.com/pacesuite



| <https://www.linkedin.com/groups/PACE-Suite-APS-community-4765703>

