

# Replacing Pahvant.MSI.Interop.dll in BIS

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## Introduction:

**Pahvant.MSI.Interop.dll** is one of the **izfree** Windows installer utilities which are distributed under the LGPL v2 license. This DLL is used to perform tasks in Microsoft Windows MSI-based installations.

Open Source Software regulations require that purveyors of software applications that include **Pahvant.MSI.Interop.dll** to provide their end customers with an optional means of replacing that DLL with an equivalent of the customer's own choosing.

This document describes how to perform the replacement for the **Bosch Building Integration System (BIS)**.

***IMPORTANT:** Any changes to BIS.msi are done at the user's own risk. Please ensure you make a backup of BIS.msi.*

## Overview of the procedure:

1. The DLLs of individual installation tasks are merged in groups. That is, you use the **IL Merger** tool to create "monolithic" components that contain the desired equivalent of **Pahvant.MSI.Interop.dll** instead of the original.
2. These monolithic components are then integrated into a new BIS installation program, **BIS.msi** located in `_Install\<language folder>\BIS\BIS.msi`, where "language folder" refers to the language of your BIS GUI (e.g. 1033\_en for English).

**NOTE:** The DLLs will be called dynamically as required by installation tasks.

## Required software for the procedure:

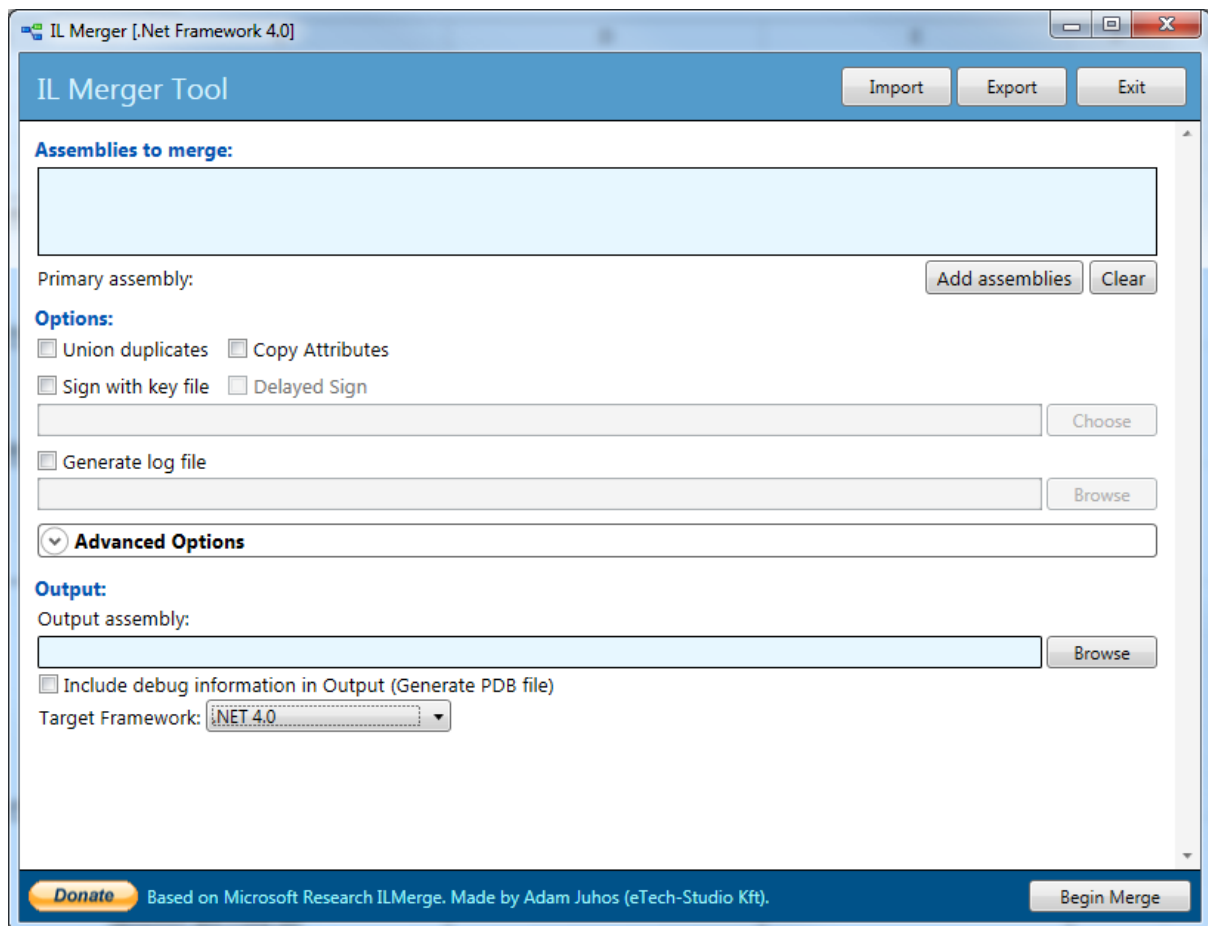
The following software and tools will be required for the replacement:

- a. The latest BIS setup file **\_Install\<language folder>\BIS\BIS.msi**
- b. **IL Merger** - <https://ilmergertool.codeplex.com/releases> (download IL Merger Tool 1.0.5 Normal Version, or later)
- c. **Orca Tools** – available from <https://msdn.microsoft.com/en-us/library/aa370557%28v=vs.85%29.aspx> as part of the Windows SDK Components for Windows Installer Developers.

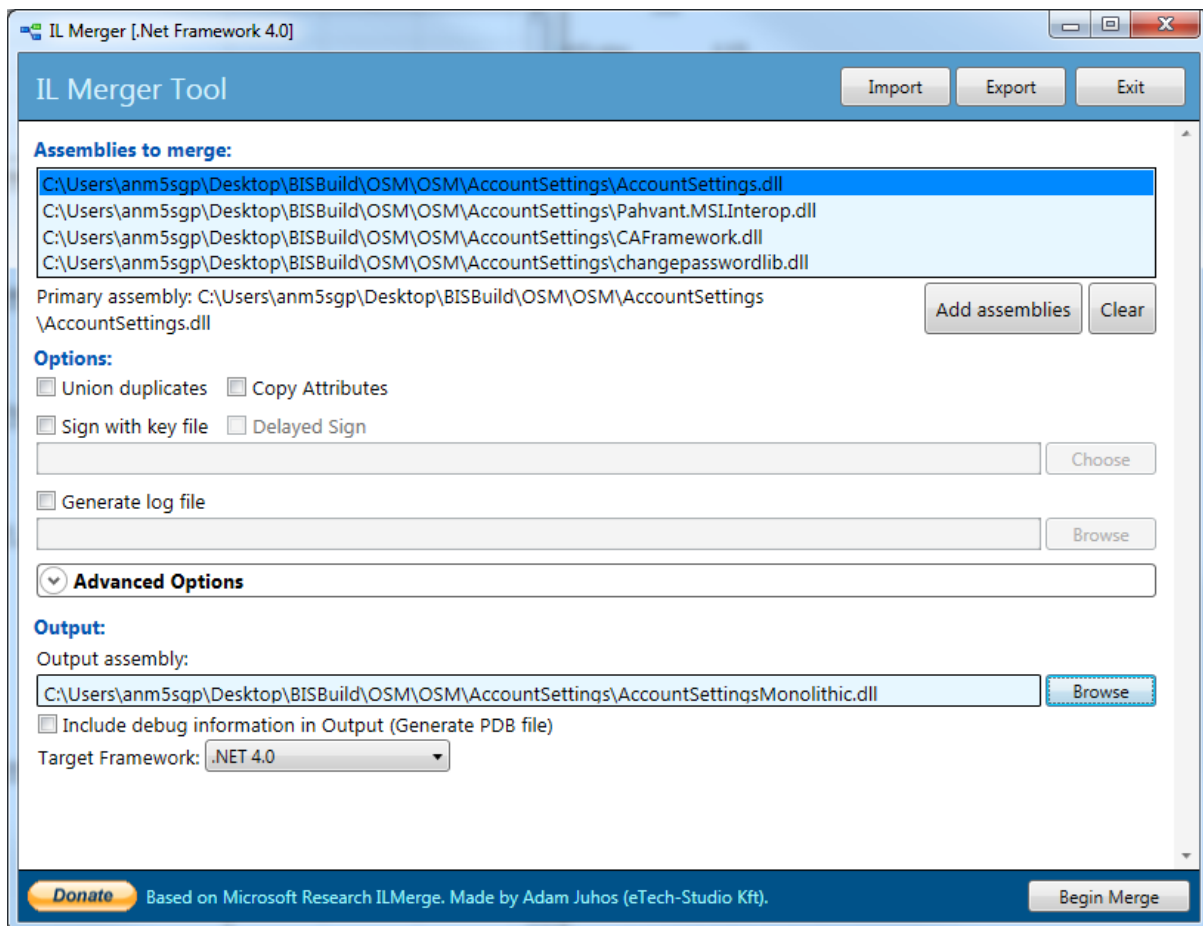
Install the IL Merger and Orca Tools in the local system

## Steps to replace the DLL:

1. Acquire your alternative to **Pahvant.MSI.Interop.dll**  
**Note:** the source code for this open source component is available on the BIS installation media under **\_Install\AddOns\Platform\OSM\MSI.Interop**. You may use it to create your own **Pahvant.MSI.Interop.dll**.
2. On your BIS installation medium, locate the folder **\_Install\AddOns\Platform\OSM** with its 18 subfolders.
3. Copy the entire OSM folder to a different location, and there replace the existing **Pahvant.MSI.Interop.dll** with alternative component in each of the subfolders where the replacement is desired.
4. Follow the steps below to create new monolithic components. These steps can be repeated for all or any combination of the components listed in **TABLE A** below.
  - a. Launch the **IL Merger Tool**.
  - b. Clear all the check boxes on the first page
  - c. Set **Target framework** to .NET 4.0



- d. Click the **Add assemblies** button and add assemblies in the order given in the **Input** column in **TABLE A**. For example, for the first component **AccountSettings** you should add the assemblies in the following order:
  - 1.AccountSettings.dll
  - 2.Pahvant.MSI.Interop.dll
  - 3.CAFramework.dll
  - 4.ChangepasswordLib.dll
- e. Enter the output assembly name from the **Output** column in **TABLE A**, e.g. in this case: **AccountSettingsMonolithic.dll**



- f. Click the **Begin Merge** button. It will create a merged component with the name given in the **Output assembly** text box.
  - g. Exit the **IL Merger Tool**.
5. Repeat the actions in step 4 for each component that requires the replacement.  
**Note** that components 6 and 9 require extra steps, described below.
6. When you have merged all the assemblies you require, the new monolithic components are ready for integration into **BIS.msi**.

#### **NOTE: Extra steps 6a and 9a required for component folders 6 and 9:**

- **6a:** Use the **IL Merger** tool to merge the Input assemblies listed in the Input column for 6a to create a new version of **DComPermissionsFix.exe**.  
Then copy the new **DComPermissionsFix.exe** to the folder  
**\_Install\Tools\DComPermissionsFix\**
- **9a:** After step 9, run **ERMerger.exe**. It will merge **DotNetCA.dll** with  
**DotNetCALibMonolithic.dll** to create a new **DotNetCA.dll**.

**TABLE A**

No.	Component Folder	Input	Output
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1	AccountSettings	AccountSettings.dll Pahvant.MSI.Interop.dll CAFramework.dll ChangepasswordLib.dll	AccountSettingsMonolithic.dll
2	InstallIISforBIS	CheckIISForBIS.dll Pahvant.MSI.Interop.dll CAFramework.dll IISInstalledFeatures.dll	CheckIISForBISMonolithic.dll
3	CopyFiles	CopyFiles.dll Pahvant.MSI.Interop.dll CAFramework.dll CopyConfigFilesLib.dll	CopyFilesMonolithic.dll
4	CreateAccount	CreateAccount.dll Pahvant.MSI.Interop.dll CAFramework.dll BoschST.Core.dll BoschST.Win32.dll ChangePasswordLib.dll	CreateAccountMonolithic.dll
5	DBAction	DBAction.dll Pahvant.MSI.Interop.dll CAFramework.dll BoschST.BIS.Core.dll BoschST.Core.dll BoschST.SQLCommon.dll BoschST.Win32.dll CSharpCommon.dll DatabaseInstallDll.dll ReportingCommon.dll ReportingFactory.dll ReportingSSRS.dll ResourceMetaData.dll BIS_SSRS_GUI.dll	DBActionMonolithic.dll
6	DComPermissions	DComPermissions.dll Pahvant.MSI.Interop.dll CAFramework.dll DcomPermissionsLib.dll Logger.dll win32Security.dll	DComPermissionsMonolithic.dll
6a	DComPermissions	DComPermissionsFix.exe DcomPermissionsLib.dll Logger.dll Pahvant.MSI.Interop.dll win32Security.dll	DComPermissionsFix.exe (It can be replaced in the following location “_Install \ Tools \ DComPermissionsFix”)

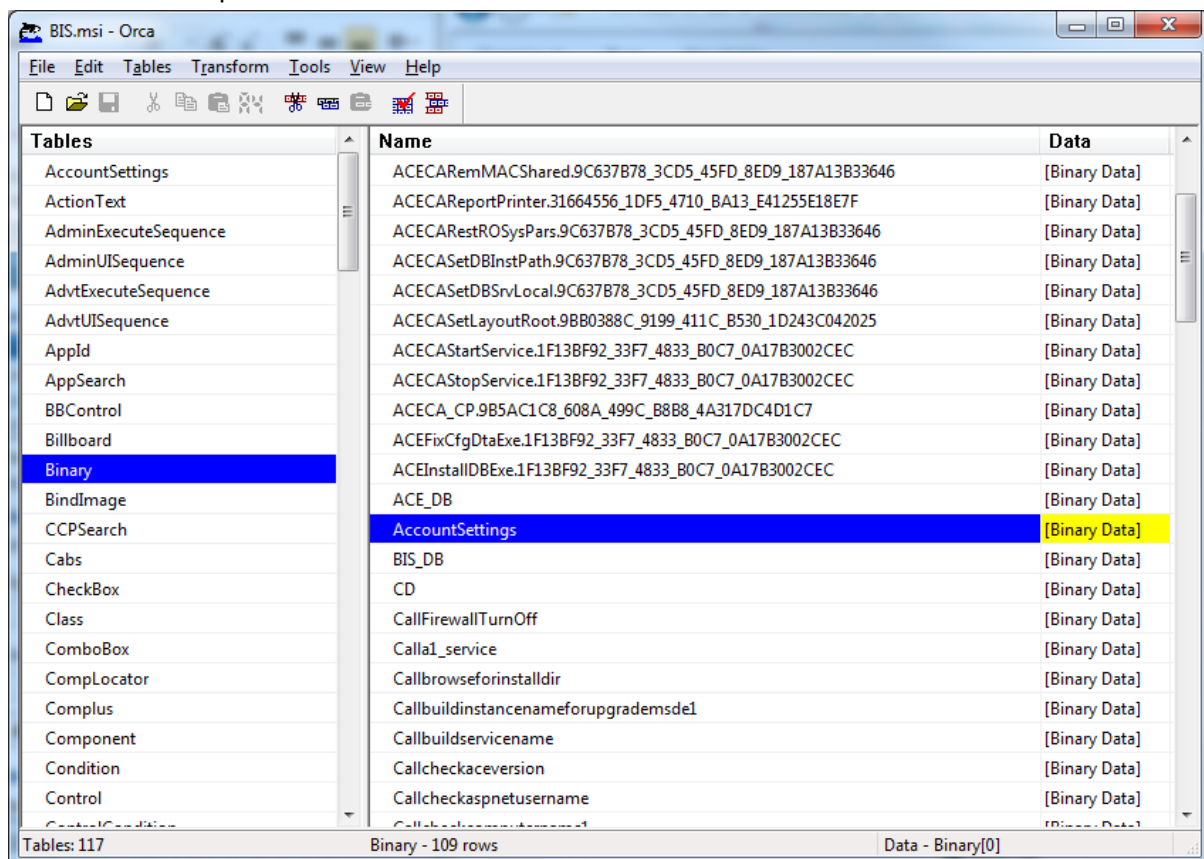
7	DComSettings	DComSettings.dll Pahvant.MSI.Interop.dll CAFramework.dll ChangePasswordLib.dll	DComSettingsMonolithic.dll
8	DirectoryACL	DirectoryACL.dll Pahvant.MSI.Interop.dll CAFramework.dll win32Security.dll	DirectoryACLMonolithic.dll
9	DotNetCA	DotNetCALib.dll Pahvant.MSI.Interop.dll CAFramework.dll	DotNetCALibMonolithic.dll
9a	DotNetCA	Run ERMerge.exe(it will merge the following 2 component)  DotNetCA.dll DotNetCALibMonolithic.dll	DotNetCA.dll
10	FirewallAction	FirewallAction.dll Pahvant.MSI.Interop.dll CAFramework.dll Interop.NetFwTypeLib.dll	FirewallActionMonolithic.dll
11	IISSettings	IISSettings.dll Pahvant.MSI.Interop.dll CAFramework.dll	IISSettingsMonolithic.dll
12	IISVirtualDirectory	IISVirtualDirectory.dll Pahvant.MSI.Interop.dll CAFramework.dll Interop.IISole.dll	IISVirtualDirectoryMonolithic.dll
13	InstallUtilPerformanceCounters	InstallUtilPerformanceCounters.dll Pahvant.MSI.Interop.dll CAFramework.dll BuildLib.dll	InstallUtilPerformanceCountersMonolithic.dll
14	RSAction	RsAction.dll Pahvant.MSI.Interop.dll CAFramework.dll BoschST.BIS.Core.dll BoschST.Core.dll ChangePasswordLib.dll DatabaseInstallDll.dll ReportingCommon.dll ReportingFactory.dll ReportingServicesInstall.dll ReportingServicesMgr.dll ReportingSSRS.dll ResourceMetaData.dll SQLServerManager.dll BIS_SSRS_GUI.dll	RSActionMonolithic.dll

15	ServiceInstallUtil	ServiceInstall.dll Pahvant.MSI.Interop.dll CAFramework.dll BuildLib.dll	ServiceInstallUtilMonolithic.dll
16	ServiceManager	ServiceManager.dll Pahvant.MSI.Interop.dll CAFramework.dll	ServiceManagerMonolithic.dll
17	ServiceSettings	ServiceSettings.dll Pahvant.MSI.Interop.dll CAFramework.dll ChangepasswordLib.dll	ServiceSettingsMonolithic.dll
18	ShareFolder	ShareFolder.dll Pahvant.MSI.Interop.dll CAFramework.dll	ShareFolderMonolithic.dll

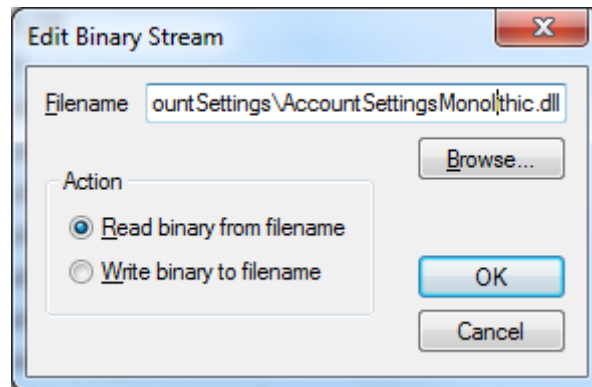
#### END OF TABLE A

## Steps to create a customized BIS.msi that includes the new DLL

1. Launch the **Orca** tool
2. Make a backup of the **BIS.msi** file and store it in a safe place
3. Click menu: **File > Open** to open **\_Install\<language folder> \BIS\BIS.msi** , where " language folder" refers to the language of your BIS GUI (e.g. 1033\_en for English).
4. Select "Binary" from the list in the **Tables** pane. **Name** and **Binary Data** appear in the main pane.



5. Now begins the procedure of associating each Binary Name with the new Binary Data from the Binary Data column in **TABLE B**
6. For example, in Orca select **AccountSettings** from the **Name** column, then double-click **Binary Data** in the Data column.  
You will be prompted for a file name.
7. Click the **Browse** button and locate your newly created customized DLL; e.g. **AccountSettingsMonolithic.dll**



8. Select the radio button **Read binary from filename**, then click the **OK** button and save **BIS.msi**
9. Repeat these procedure above (steps 5, through7) for all the component folders in **TABLE B** where you have replaced **Pahvant.MSI.Interop.dll**

**TABLE B**

No.	Component Folder	Binary Name	Binary Data
1	AccountSettings	AccountSettings	AccountSettingsMonolithic.dll
2	<b>InstallIISforBIS</b>	CheckIISForBIS	CheckIISForBISMonolithic.dll
3	CopyFiles	CopyFiles	CopyFilesMonolithic.dll
4	CreateAccount	CreateAccount	CreateAccountMonolithic.dll
5	DBAction	DBAction	DBActionMonolithic.dll
6	DComPermissions	DComPermissions	DComPermissionsMonolithic.dll
7	DComSettings	DComSettings	DComSettingsMonolithic.dll
8	DirectoryACL	DirectoryACL	DirectoryACLMonolithic.dll
9	DotNetCA	<b>Calldotnetca</b>	<b>DotNetCA.dll</b>
10	FirewallAction	FirewallAction	FirewallActionMonolithic.dll
11	IISSettings	IISSettings	IISSettingsMonolithic.dll
12	IISVirtualDirectory	IISVirtualDirectory	IISVirtualDirectoryMonolithic.dll
13	InstallUtilPerformanceCounters	InstallUtilPerformanceCounters	InstallUtilPerformanceCountersMonolithic.dll
14	RSAction	RSAction	RSActionMonolithic.dll
15	ServiceInstallUtil	ServiceInstallUtil	ServiceInstallUtilMonolithic.dll
16	ServiceManager	ServiceManager	ServiceManagerMonolithic.dll
17	ServiceSettings	ServiceSettings	ServiceSettingsMonolithic.dll
18	ShareFolder	ShareFolder	ShareFolderMonolithic.dll



**END OF TABLE B**

## **Conclusion**

**BIS.msi** now contains your alternatives to **Pahvant.MSI.Interop.dll**

To install BIS with this new **BIS.msi** execute **setup.exe** as normal:

- If you downloaded BIS from the internet, then the **setup.exe** is in the **\_Install** folder
- If you are installing from the delivered USB stick then the **setup.exe** is in the root folder

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