InstallShield 2025

Virtualization Guide

Legal Information

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Creating Customized Virtual Applications

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Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

You can use InstallShield to create customized virtual applications in the Microsoft App-V format.

Information about creating virtual applications is organized into the following sections:

- About Virtualization
- About the InstallShield Virtualization Interface
- Creating Microsoft App-V Packages

About Virtualization

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Note ▪ This section provides a description of virtualization in general for those that are not familiar with it. It does not represent the architecture of any specific vendor.

Virtualization enables you to isolate an application in its own environment so that it does not conflict with existing applications or modify the underlying operating system.

- Limitations of a Standard Installation Environment
- Benefits of Application Virtualization

Limitations of a Standard Installation Environment

A typical Windows application has dependencies on components that are shared by multiple applications. Applications access these shared system resources, such as the registry or Windows system files. When an installation author recognizes that their application references a shared system component, they include a merge module to install that component.

When one of these shared components is installed, it is possible that a previously installed version of the same component could be overwritten; this may cause the existing application to break. A similar problem could occur when one of these applications containing a shared component is uninstalled. Because of these possible problems, extensive compatibility testing needs to be performed before an application can be distributed in the enterprise environment.

The following diagram provides an example of two conflicting installed applications.
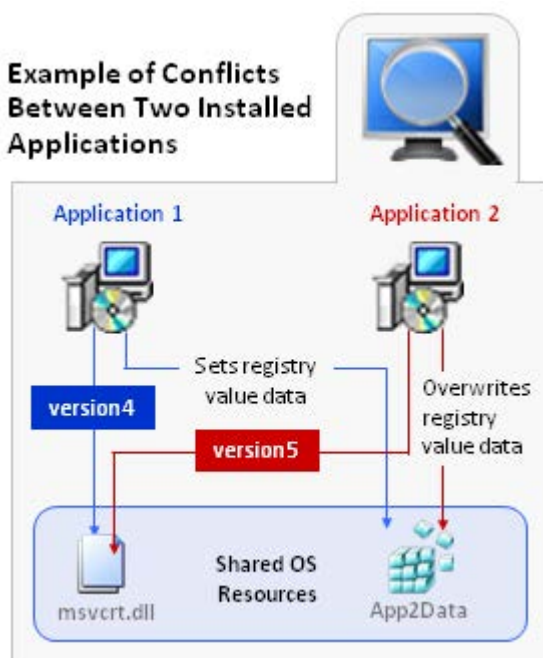
Figure 1: Example of Conflicts Between Two Installed Applications

Benefits of Application Virtualization

Virtual applications run in virtual environments that keep the application layer and the operating system layer separate. Each application includes its own configuration information in its virtual environment. As a result, many applications can run side-by-side with other applications on the same computer without any conflicts.

Even though virtual applications are not installed on the local machine, they exhibit the same functionality and access to local services as locally installed applications, and also nearly the same performance characteristics.

The following diagram provides an example of how application virtualization would solve the conflicts that are shown in the previous example.
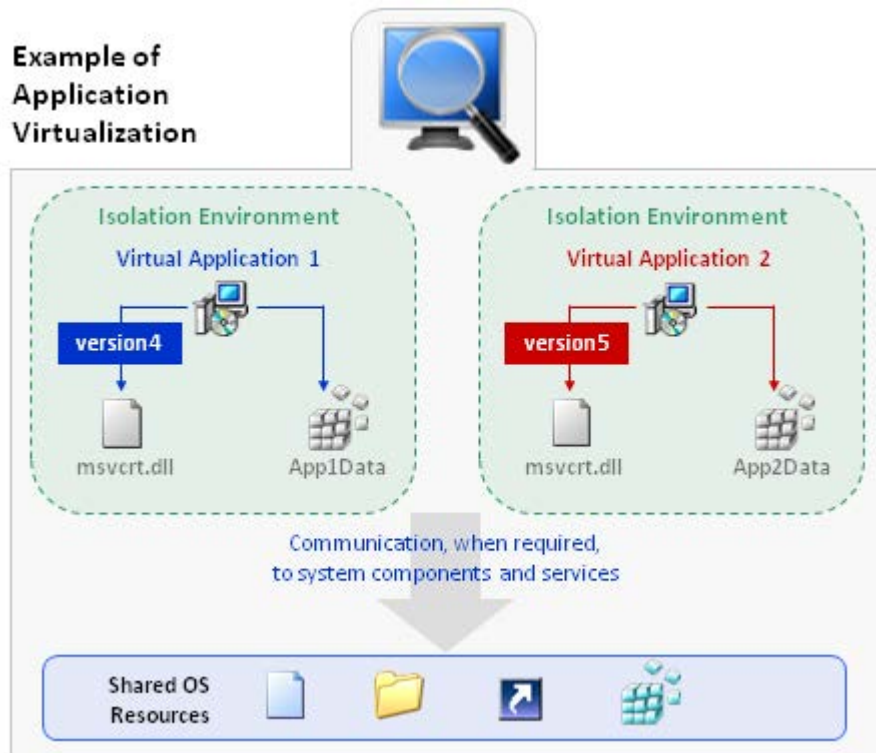
Figure 2: Example of Application Virtualization

Application virtualization allows the configuration of an application to be standardized to an isolation environment, rather than to an individual user's desktop machine. Application objects, files, and registry settings are contained within this isolation environment. Critical application resources are managed locally by the isolation environment, thus minimizing resource dependencies between applications.

Application virtualization greatly reduces the scope for conflicts between applications and, therefore, simplifies compatibility testing.

About the InstallShield Virtualization Interface

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Project ▪ The Microsoft App-V Assistant is available in the following project types:

- *Basic MSI*
- *MSI Database (Direct Edit Mode)*
- *Transform (Direct MST Mode)*

InstallShield provides the Microsoft App-V Assistant to help you author a virtual application. You cannot configure a virtual application's options using the Installation Designer.

Information about the interface of the Microsoft App-V Assistant is organized in the following topics:

- About the Virtualization Assistant Tabs

- Using the More Options, Other Places, and Help Links Sections in a Virtualization Assistant

- Navigating in a Virtualization Assistant

- Opening the Installation Designer

- Showing or Hiding the Virtualization Assistants

About the Virtualization Assistant Tabs

Edition • *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

When you create a new Basic MSI or MSI Database project, the Microsoft App-V tab is displayed in the InstallShield interface. The home page of the Assistant has a diagram that illustrates the process of creating a virtual application using that technology.

You can work within this Assistant to create a project and configure its options and requirements. You can also use the Project Assistant or the Installation Designer to define the traditional Windows Installer version of your product installation.

How the Microsoft App-V Assistant Works

When you create a new Basic MSI or MSI Database project, the Microsoft App-V tab is displayed in the InstallShield interface.

The Project Assistant tab and the Installation Designer tab show the underlying framework for your product's Windows Installer–based installation. Some of these product elements are also displayed in the Microsoft App-V Assistant, where you can configure a virtual application's options and requirements.

Integration with the Project Assistant and the Installation Designer

Information that you enter in the Microsoft App-V Assistant is saved directly to the underlying project file. The Microsoft App-V Assistant, Project Assistant, and Installation Designer run simultaneously. Any changes that you make in one are reflected instantly in the other. For example, if you remove a file through the Microsoft App-V Assistant, that file is no longer available in your project, and it does not appear in the Project Assistant or the Installation Designer.

Using the More Options, Other Places, and Help Links Sections in a Virtualization Assistant

Edition • *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

The left column on each page of the Microsoft App-V Assistant contains one or more lists of links to help you in creating your installation and finding information:

- **More Options**—Provides additional configuration options relating to the specific virtualization Assistant page. These are less common options that complete the functionality of the Assistant.

- **Other Places**—The view in the Installation Designer that corresponds to the current virtualization Assistant page. Clicking the link launches the full Installation Designer and activates that view.

- **Help Links**—This list provides links to help topics pertinent to the current virtualization Assistant page.

Navigating in a Virtualization Assistant

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Task **To navigate from one page of the Microsoft App-V Assistant to another, do one of the following:**

- To navigate directly to a specific page, click the appropriate icon in the navigation bar at the bottom of the page.

- To follow the assistant steps sequentially, do one of the following:

  - Click the Next or Back arrow buttons to move forward or backward.

  - Press CTRL+TAB to move to the next page and CTRL+SHIFT+TAB to move to the previous page.

- To move back to the Home page and view the overview diagram, click the Home button on the navigation bar.

Opening the Installation Designer

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

The **Installation Designer** tab displays the views in the InstallShield interface. You can use this tab to configure your Windows Installer package. To open a view in the Installation Designer, click the **Installation Designer** tab.

Note ▪ The Installation Designer and the Microsoft App-V Assistant run simultaneously. Any changes that you make in one are reflected instantly in the other.

Showing or Hiding the Virtualization Assistants

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

If you want to hide the Microsoft App-V Assistant, you can hide it so that its tab is not displayed in the InstallShield interface. Similarly, if the Microsoft App-V Assistant is hidden, you can choose to display it.

Task	**To show or hide the Microsoft App-V Assistant:**

On the **View** menu, click **Microsoft App-V Assistant**.

When the Microsoft App-V Assistant's command has a check mark next to it, the tab for that Assistant is shown in the InstallShield interface. When the check mark is not displayed, the Microsoft App-V Assistant is hidden.

Creating Microsoft App-V Packages

Edition ▪ *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

Microsoft Application Virtualization (App-V) enables you to deploy applications to end users without requiring the applications to be installed locally. Instead, only the App-V client needs to be installed on the client machines. Even though these virtual applications are never installed, they can communicate with the local operating system, middleware, plug-ins, and other applications. Using App-V enables you to centralize the deployment of applications and reduce application-to-application conflicts.

Information about Microsoft App-V and creating Microsoft App-V packages is presented in the following sections:

- Overview of Microsoft Application Virtualization and the Microsoft App-V Assistant

- Using the Microsoft App-V Assistant to Create an App-V Package

- Microsoft App-V Assistant Reference

Overview of Microsoft Application Virtualization and the Microsoft App-V Assistant

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Microsoft Application Virtualization (App-V) enables you to deploy applications to end users without requiring the applications to be installed locally. Instead, only the App-V client needs to be installed on the client machines. Even though these virtual applications are never installed, they can communicate with the local operating system, middleware, plug-ins, and other applications. Using App-V enables you to centralize the deployment of applications and reduce application-to-application conflicts.

The Microsoft App-V Assistant, which you can use to configure and build App-V packages, consists of the following pages:

Table 1 ▪ Pages Comprising the Microsoft App-V Assistant

Page	Description
Microsoft App-V Assistant Home Page	Displays a diagram that illustrates the process of creating an App-V package.

Table 1 ▪ Pages Comprising the Microsoft App-V Assistant (cont.)

Page	Description
Package Information Page	Enter the package name, enter a comment, specify any operating system requirements, and identify the deployment server.
Files Page	View existing files and folders, add and delete files, and set isolation options for selected files and folders. Isolation options specify how the virtual environment provides access to files and folders that the virtual application requests.
Applications Page	Create, delete, include, exclude, or rename App-V package shortcuts.
Registry Page	Add, delete, or modify the registry settings, and set the isolation options for selected registry keys. Isolation options specify how the virtual environment will provide access to registry keys that the virtual application requests.
Dynamic Suite Composition Page	Use to control virtual application interaction between multiple App-V packages. On this page, you can select one or more packages that need to be linked to this App-V package in order for it to execute correctly. *Version* ▪ *This page is available for App-V 4.x packages.*
Build Options Page	[Basic MSI Project mode] Select the releases that you want to build. [Direct Edit or Direct MST mode] To enable the Build function for an App-V package, select the **Build App-V package** option.

For information on Microsoft Application Virtualization and the Microsoft App-V Assistant, see the following topics:

- About Microsoft Application Virtualization (App-V) and the Microsoft App-V Assistant
- Components of an App-V Package
- About the Microsoft App-V Assistant

About Microsoft Application Virtualization (App-V) and the Microsoft App-V Assistant

Edition ▪ *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

This section provides an overview of Microsoft Application Virtualization and its infrastructure, and explains the benefits of using the Microsoft App-V Assistant to create App-V packages:

- Overview
- Microsoft Application Virtualization Infrastructure
- Benefits of Using the Microsoft App-V Assistant

Overview

Microsoft Application Virtualization (App-V) enables you to deploy applications to end users without requiring the applications to be installed locally. Instead, only the App-V client needs to be installed on the client machines. Even though these virtual applications are never installed, they can communicate with the local operating system, middleware, plug-ins, and other applications. Using App-V enables you to centralize the deployment of applications and reduce application-to-application conflicts.

Because App-V packages are not installed on the client, there is minimal impact on the host operating system or other applications. As a result, application conflicts and the need for regression testing are dramatically reduced.

Using Microsoft Application Virtualization enables you to centralize the installation and management of deployed applications, and control access to applications. The App-V client presents to the end user a list of applications to which that end user has access.

Microsoft Application Virtualization Infrastructure

The Microsoft Application Virtualization (App-V) infrastructure includes:

- **App-V Sequencer**—The App-V Sequencer converts application data into a format that is compatible with the App-V server and client, producing an App-V package.

- **App-V Server**—An App-V package can be placed on one or more App-V servers so that it can be streamed down to the clients on demand and cached locally.

- **Application Virtualization Client**—The App-V client is the system component that enables the end user to interact with the App-V packages that are available on the App-V server.

Benefits of Using the Microsoft App-V Assistant

Instead of using the App-V Sequencer to create App-V packages, you can use the InstallShield Microsoft App-V Assistant, as shown in the following diagram:
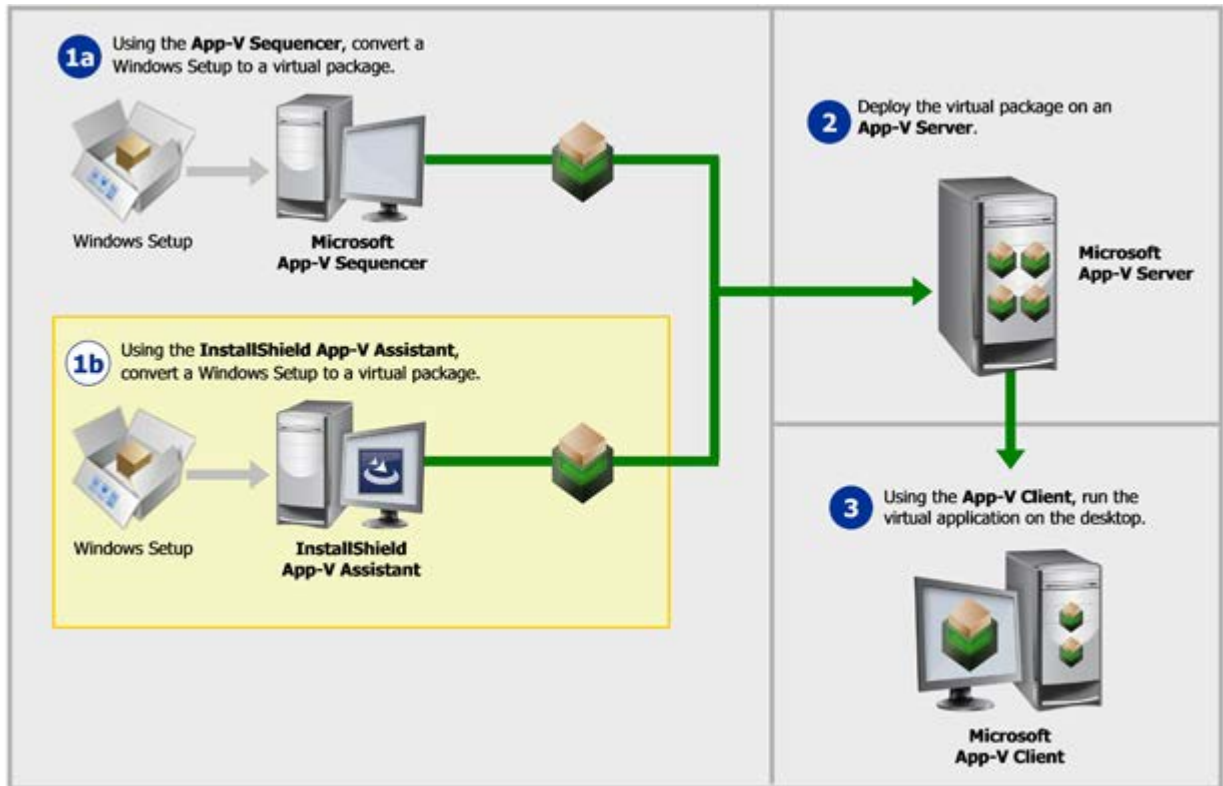
Figure 3: Using the Microsoft App-V Assistant to Create an App-V Package

Using the Microsoft App-V Assistant instead of the Microsoft App-V Sequencer to create an App-V package offers the following benefits.

Product Installation on a Clean Machine Is Not Required

The Microsoft App-V Sequencer obtains the information it needs to create an App-V package by installing a package on a clean machine and then comparing the file system snapshot that it took prior to installation with one it takes after installation. To perform this task properly, there are two requirements:

● **The product must be installed on a clean machine**—To ensure that all proper changes made by the installation are captured, sequencing needs to be performed on a clean machine (a computer with only the operating system, necessary service packs, and the App-V Sequencer installed on it). A new clean machine would need to be re-created for each application that is sequenced.

● **The installation directory must be known before sequencing can begin**—In order to sequence the application effectively, you must have detailed knowledge of the how the installation is supposed to work. Prior to beginning the sequencing process, you are required to specify the installation directory for the application being sequenced. This information is often not readily available, and may require you to open the installation in an editing tool, such as InstallShield, in order to find it, or run the installation one time prior to sequencing.

Instead of installing the package, the Microsoft App-V Assistant obtains the information it needs to create an App-V application directly from the installation. You are not required to have any knowledge of settings within the installation, such as the installation directory. Because there is no need to install the application to obtain this information, no permanent changes are made to the local machine and a clean machine is not required.

Ability to Test the App-V Package Immediately After Conversion

To run an App-V package, the App-V client must be installed on the machine. Because sequencing must be performed on a clean machine, which does not have the App-V client installed, you cannot immediately test a newly created App-V package on the same machine where you sequenced it.

The Microsoft App-V Assistant includes a launch utility that allows you to launch and test the App-V package locally immediately after conversion, before distributing it to the App-V server.

This feature requires that the App-V client is installed on the local machine.

Support for Including Diagnostic Tools in the App-V Package

When running a virtual application in its virtual environment, you may at some point want to examine its contents to evaluate or debug it. However, the standard diagnostic tools that you use to examine installed applications (such as the Registry Editor and the Windows Command Prompt window) are not normally available within the virtual environment for App-V 4.x. When a virtual application is running within its virtual environment, applications outside of that virtual environment cannot see into it.

When you use the InstallShield App-V Assistant to create an App-V 4.x package, you can choose to include shortcuts for diagnostic tools in the App-V package; these shortcuts enable you to use `Cmd.exe` and `Regedit.exe` on the local machine, with access to the virtual environment.

Beginning with App-V 5.x, it is no longer necessary to include diagnostic tool shortcuts directly in the App-V package, since the App-V Launcher is capable of launching a Command Prompt window within the virtual environment.

Components of an App-V Package

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

The files that comprise an App-V package depend on the version of the App-V package.

Components of an App-V 5.x Package (.appv)

The following table describes the main components of an App-V 5.x package (.appv):

Table 2 ▪ Components of an App-V 5.x Package

File	Description
.appv	The .appv file is the compressed package file that contains all of the other parts of the package.
[Content_Types].xml	This file contains a list of file extensions that the package supports and the type of content to which each extension type maps.
AppxBlockMap.xml	This file contains a list of files with details such as header size and file size.
AppxManifest.xml	This file contains metadata about the package.

Table 2 ▪ Components of an App-V 5.x Package (cont.)

File	Description
FilesystemMetadata.xml	This file contains information such as short file names, the directory-file hierarchy, and the mapping between the root folder and INSTALLDIR.
Registry.dat	This file contains registry data for the package.
StreamMap.xml	This file contains feature block 1 information.

Components of an App-V 4.x Package (.sft)

The following table describes the main components of an App-V 4.x package (.sft):

Table 3 ▪ Components of an App-V 4.x Package

File	Description
.sft	The .sft file contains all of the files, registry information, and other configuration details of the package.
Manifest file	This file is an XML file that lists all of the .osd files in an App-V package.
.osd	The .osd files are XML-based files that describe the package's individual targets (or applications) that can be run.
.ico	The .ico files are icons files that are used for published shortcuts and file type associations.
.sprj	This file is the Microsoft App-V Sequencer project file. It contains references to the .sft and .osd files, and to a large number of settings related to the sequencing process.

About the Microsoft App-V Assistant

Edition ▪ *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

Information about the Microsoft App-V Assistant is organized into the following sections:

- Process for Authoring an App-V Package Using the Microsoft App-V Assistant
- Supported InstallShield Project Types
- How Transforms are Included in an App-V Package
- How Windows Services Are Integrated into an App-V Package

Process for Authoring an App-V Package Using the Microsoft App-V Assistant

Edition ▪ *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

You can use the Microsoft App-V Assistant to convert a Windows Installer package into an App-V package. During this process, you can perform the following tasks:

- **Specify Package Information and Deployment Options**—Specify the package name, root folder name, enter a comment, specify any operating system requirements, and identify the deployment server.

- **Specify Files, Folders, Shortcuts, Registry Settings**—Specify the files, folders, application shortcuts, and registry settings that will be included in the App-V package.

- **Configure Isolation Options**—Set the isolation options for selected files, folders, and registry keys.

- **Build**—Specify build options and build an App-V package.

The following diagram illustrates the creation process for an App-V package:

Figure 4: Creating an App-V Package

Supported InstallShield Project Types

Edition ▪ *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

The **Microsoft App-V** tab is available when one of the following InstallShield project types is open:

- Basic MSI Project

- MSI Database (Direct Edit Mode)

- Transform (Direct MST Mode)

How Transforms are Included in an App-V Package

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

The Microsoft App-V Assistant supports the inclusion of transform files with Windows Installer packages in an App-V package.

- **How transforms are applied when building an App-V package**—When you are building an App-V package, transforms that you have specified are automatically applied to the base Windows Installer (.msi) package to create a temporary package, and then the App-V package is generated from that temporary package.

- **Creating a new transform**—You can create a new transform in InstallShield, and then build an App-V package from that transform file. When you create a new transform file in InstallShield, you specify the root .msi file in the Open Transform wizard. The steps you take to generate an App-V package after using that wizard are exactly the same as if you were editing a Windows Installer package in Direct Edit mode.

- **Converting a Windows Installer package with existing transforms**—If you have a Windows Installer package and one or more existing transform files, and you want to include these transforms in the App-V package, you need to open one of the transforms in InstallShield (rather than the .msi file). The Open Transform wizard will open, and you will be prompted to specify the root .msi file and which of the existing .mst files you want to include. The steps you take to generate an App-V package after using that wizard are exactly the same as if you were editing a Windows Installer package in Direct Edit mode.

Caution ▪ All of the transforms that you add to an App-V package must be located in the same folder as the Windows Installer .msi package so that they can be accessed when the App-V package is built.

How Windows Services Are Integrated into an App-V Package

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

When you use the Microsoft App-V Assistant to convert a Windows Installer package to an App-V package, references to Windows services that are encountered are integrated into the App-V package. In a Windows Installer package, a Windows service may be indicated by either an entry in its `ServiceInstall` table or by a Registry entry for Windows services.

- **ServiceInstall table**—If a Windows Installer package's use of a Windows service is indicated by an entry in the `ServiceInstall` table, the Microsoft App-V Assistant will convert that entry to a standard Registry entry for Windows services.

- **Registry entry**—If a Windows Installer package's use of a Windows service is indicated by a Registry entry for Windows services (perhaps as the result of being repackaged), the Microsoft App-V Assistant does not need to make any changes to support the application's use of the Windows service within the virtual environment.

Start Up and Shut Down Sequences

If an App-V package has an associated Windows service, App-V will start up the Windows service first, in the virtual environment, and then start up the virtual application. You will see the Windows service start up in the Task Manager as a separate process, but App-V will be running the service within the virtual environment.

Upon shut down, App-V will first shut down the virtual application and then shut down the Windows service.

Using the Microsoft App-V Assistant to Create an App-V Package

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The steps you need to take to create an App-V package are the following:

Table 4 • Steps for Creating an App-V Package Using the Microsoft App-V Assistant

Step #	Description
Step 1	Specifying Package Information and Deployment Options
Step 2	Managing Files in an App-V Package
Step 3	Setting Isolation Options for Folders and Files
Step 4	Modifying Shortcuts to the App-V Package's Executable Files
Step 5	Modifying App-V Package Registry Settings
Step 6	Setting App-V Package Registry Isolation Options
Step 7	Performing Dynamic Suite Composition *Version •* This information applies to App-V 4.x packages.
Step 8	Modifying Build Options
Step 9	Building an App-V Package
Step 10	Testing an App-V Package Using the App-V Launcher Tool

Specifying Package Information and Deployment Options

Edition • The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

When you are creating an App-V package, the first step is to specify the package name, root folder name, and enter a comment on the Package Information page. On this page, you can also specify any operating system requirements, identify the deployment server, and specify whether to include diagnostic tools with the virtual package. This page also lets you specify upgrade information for your App-V package if appropriate.

Specifying Package Information

Edition • The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

The first step in creating an App-V package is to enter information such as the package name.

Task   ***To specify package information:***

1. In the **Microsoft App-V Assistant**, open the **Package Information** page.

2. In the **Package Name** field, enter a name for the virtual package.

3. In the **Comments** field, enter a short description of the App-V package.

Specifying Operating System Requirements

Edition • The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

To specify operating system requirements for an App-V package, perform the following steps:

Task   ***To specify operating system requirements:***

1. In the **Microsoft App-V Assistant**, open the **Package Information** page.

2. Set the **Does your App-V package have any specific operating system requirements?** option to one of the following:

   ● **No**—Select this option if this application will run on all of the listed operating systems. When this option is selected, the operating system check boxes are locked and cannot be changed.

   ● **Yes**—Select this option if the application does not support one of the listed operating systems. When you select this option, the check boxes are unlocked and you can clear the selection of the unsupported operating systems.

3. If you selected **Yes**, select the operating systems that this application supports, and clear those that this application does not support.

Specifying Upgrade Package Information

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

InstallShield enables you to specify whether you want to create an upgrade for your App-V package. If you specify that you do want to create an upgrade, you can specify additional information about the upgrade, such as whether to append the version number to the App-V package file name.

Task **To specify upgrade information:**

1. In the **Microsoft App-V Assistant**, open the **Package Information** page.

2. In the **More Options** area, click **Upgrade Settings**. The **App-V Package Upgrade Settings** dialog box opens.

3. Do one of the following:

   ● To create an upgrade for your App-V package, select the **Enable Upgrade** check box. Then specify which package should be upgraded. If you want InstallShield to include the version number in the package name, select the **Append version number to package name** check box.

   ● To avoid creating an upgrade package, clear the **Enable Upgrade** check box.

Specifying the Deployment Server

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

To specify the deployment server for an App-V package, perform the following steps:

Task **To specify the deployment server:**

1. In the **Microsoft App-V Assistant**, open the **Package Information** page.

2. Under **Where will the App-V package be deployed?**, configure the appropriate options. For more information, see Package Information Page.

Including Diagnostic Tools in an App-V Package

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Version ▪ The diagnostic tools are available for App-V 4.x packages. Starting with App-V 5.x, it is no longer necessary to inject diagnostic tool shortcuts directly into the package. The App-V Launcher tool is capable of launching a Command Prompt window within the virtual environment of an App-V 5.x package.

The Microsoft App-V Assistant lets you specify whether you want to include the Registry Editor and Windows Command Prompt diagnostic tools with your App-V package.

If you include diagnostic tools with your App-V package, you will be able to look at the registry or file system for the application while it is running in its virtual environment. For example, if you were running an App-V package and got an error message stating that the application cannot load a DLL, you could use these diagnostic tools to troubleshoot the problem.

Task   ***To include diagnostic tools with an App-V package:***

1. In the **Microsoft App-V Assistant**, open the **Package Information** page.

2. In the **More Options** area, click **Diagnostic Tools**. The **Diagnostic Tools** dialog box opens.

3. If you want to include the Registry Editor with your App-V package so that you can use `Regedit.exe` on the local machine and have access to the virtual environment, select the **Registry Diagnostics** option.

    If the **Registry Diagnostics** option is selected, a file named `Virtual Registry.osd` will be created in the App-V Package folder, which can be used to display the registry within the virtual environment.

4. If you want to include the Windows Command Prompt application with your App-V package so that you can use `Cmd.exe` on the local machine and have access to the virtual environment, select the **File System Diagnostics** option.

    If the **File System Diagnostics** option is selected, a file named `Virtual File System.osd` will be created in the App-V Package folder, which can be used to display the files and folders within the virtual environment.

5. Click **OK**.

Launching the Diagnostic Tools Within the Virtual Environment

If you selected the Registry Diagnostics or File System Diagnostics options on the Diagnostic Tools dialog box, shortcuts to those tools are automatically added to the App-V package.

When an end user runs this App-V package, two additional shortcuts will be available in the application's shortcut folder: The names of these shortcuts will reflect the application name, such as:

```
[ProductName] Registry
[ProductName] File System
```

When an end user launches one of these shortcuts, that diagnostic tool is launched inside the context of the application's virtual environment.

Managing Files in an App-V Package

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

The next step in creating an App-V package is to view existing files and folders, add and delete files and folders, and set isolation options for files and folders.

The following tasks are performed on the Files page.

- Adding, Deleting, and Moving Files and Folders in an App-V Package

- Controlling the Display of Predefined Folders

- Specifying the Primary Application Directory

Adding, Deleting, and Moving Files and Folders in an App-V Package

Edition • *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

The directories in the destination tree on the Files page of the Microsoft App-V Assistant represent how your application will look when it is installed on to your end users' machines.

On the Files page, you can view all of the files and folders that are currently in your App-V package, add new files and folders to include in the App-V package, and delete files and folders from the App-V package.

Adding Files to an App-V Package

To add files to an App-V package, perform the following steps:

Task   ***To add a files to an App-V package:***

1. In the **Microsoft App-V Assistant**, open the **Files** page. The files and folders are listed in the **Microsoft App-V Application** tree, organized by installation directory.

    Folders are listed in the column on the left, and all of the files in the selected folder are listed on the right. Blue folders are the supported MSI standard folders. The folder with the check mark is INSTALLDIR, which represents the main product installation directory.

2. Browse through the folder tree to find the folder that you would like to add files to.

3. Select the folder and click the **Add Files** button. The **Open** dialog box opens.

4. Select the file or files that you want to add and click **Open**. The files you selected are now listed.

    Tip • *To select multiple files, use the Shift key (for contiguous files) or the Ctrl key (for non-contiguous files).*

Adding a File by Dragging and Dropping Files from Your System

You can also add files or folders to your App-V package on the Files page by dragging them from a directory on your computer to the desired location in the tree.

Adding an Existing Folder (and Its Contents) to an App-V Package

To add an existing folder and all of the files and subfolders within it to an App-V package, perform the following steps:

Task   ***To add an existing folder to an App-V package:***

1. In the **Microsoft App-V Assistant**, open the **Files** page. The files and folders are listed in the **Microsoft App-V Application** tree, organized by installation directory.

2. Browse through the folder tree to find the folder that you would like to add a folder into.

3. Select the folder and click the **Add Folders** button. The **Browse for Folder** dialog box opens, listing all of the directories available to your computer.

4. Select a folder and click **OK**.

    If you are editing an InstallShield project (not a Windows Installer package), you are prompted to choose whether you want to create a dynamic file link to the source folder.

5. Indicate whether you want to create a dynamic file link by selecting one of the following:

    *   **No**—For more flexibility with App-V options, it is recommended that you select No to indicate that you do not want to use a dynamic file link, because you would then not be able to customize isolation options for any of the items in this folder.

    *   **Yes**—If you wish to use the default isolation options for all the files and folders under this folder, then select the dynamic file link option by clicking **Yes**. The **Dynamic File Link Settings** dialog box would then open, prompting you to specify the source folder for your dynamic link, and to set options regarding which files and folders to include in the dynamic link. See Dynamic File Link Settings Dialog Box.

    The folder that you selected is now listed, along with of the files and folders within it.

Creating a New Folder

Task   ***To create a new folder:***

1. In the **Microsoft App-V Assistant**, open the **Files** page.

2. In the **Microsoft App-V Application** tree, right-click the folder that you want to contain the new folder, and click **New Folder**. InstallShield creates a new folder as a subfolder of the selected folder.

3. Enter a name for the new folder.

Moving Files and Folders

To change the folder's location in the App-V package folder tree structure, perform the following steps:

Task   ***To move a file or folder:***

1. In the **Microsoft App-V Assistant**, open the **Files** page.

2. In in the **Microsoft App-V Application** tree, drag the file or folder that you want to move to the new location.

Deleting Files and Folders

To delete a file or a folder (and all of its contents) from an App-V package, perform the following steps:

Task   **To delete a file or folder:**

1. In the **Microsoft App-V Assistant**, open the **Files** page.

2. In in the **Microsoft App-V Application** tree, right-click the file or folder that you want to delete. You are prompted to confirm the deletion.

3. Click **Yes**.

InstallShield removes the selected file or folder.

Caution • If you choose to delete a folder, you are also deleting all of the files and subfolders that the folder contains from the entire project, not just from the App-V package.

Note • You cannot delete predefined folders. You can only turn off the display of those folders. For more information, see Controlling the Display of Predefined Folders.

Controlling the Display of Predefined Folders

Edition • The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

On the Files page, the Microsoft App-V package tree initially displays the more commonly used predefined folders, such as [CommonFilesFolder] and [ProgramFilesFolder]. You can show and hide predefined folders on this page.

Task   **To display additional predefined folders:**

1. In the **Microsoft App-V Assistant**, open the **Files** page.

2. Right-click the **Microsoft App-V Application** node (or any of the files or folders that are listed), point to **Show Predefined Folder**, and then click predefined folder that you want to show.

    The folders that are currently displayed are preceded by a check mark; the folders that are not currently displayed do not have a check mark.

InstallShield adds the predefined folder to root level of the Microsoft App-V package tree.

Tip • To hide a predefined folder, click it in the list of predefined folders.

Note • It is not possible to hide [ProgramFilesFolder].

Specifying the Primary Application Directory

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

When App-V packages are run on a machine that has Application Virtualization Client installed, they are run from the App-V cache drive.

For optimum performance, the bulk of the application's files should be mounted to this drive at run time. In order to achieve this, it is useful to determine an application's primary application directory so that this directory can be mounted to the App-V literal cache drive when the App-V package is loaded.

When an App-V package is built using InstallShield or any AdminStudio tool, the following series of steps are used to determine an App-V package's primary application directory:

Table 5 ▪ Steps to Automatically Determine the Primary Application Directory

#	Step	Description
1	**Explicitly set primary application directory**	If a directory is specified on the Primary Application Directory dialog box. that directory is used.
		For more information, see File Mapping Dialog Box.
2	**Value of INSTALLDIR variable**	If the Windows Installer package has a value for `INSTALLDIR` (the Windows Installer property that specifies the root destination directory for an installation), that value is used as the primary application directory.
		Note ▪ All Windows Installer packages created by InstallShield or AdminStudio have a value for the `INSTALLDIR` *property.*
3	**Location of shortcut in a subdirectory of the ProgramFilesFolder**	If one of the .exe targets for a shortcut is in a subdirectory of `ProgramFilesFolder`, the folder directly under `ProgramFilesFolder` is used as the primary application directory. For example:
		`C:\Program Files\YourApplication`
4	**Location of shortcut in a directory other than ProgramFilesFolder**	If no .exe targets are located in a subdirectory of `ProgramFilesFolder`, the target directory of a shortcut that contains an .exe is used.
5	**ProgramFilesFolder**	If none of the above can be found, the primary application directory is set to `ProgramFilesFolder`. Typically, this would be:
		`C:\Program Files`

Explicitly Specifying the Primary Application Directory

To specify the primary application directory for an App-V package, perform the following steps.

Task   **To specify the primary application directory:**

1. In the **Microsoft App-V Assistant**, open the **Files** page.

2. In the **More Options** area, click **Primary Application Directory**. The **Primary Application Directory** dialog box opens, displaying the current primary application directory setting (if one has already been specified).

3. Click the ellipsis button (...). The **Browse for Directory** dialog box opens, listing all of the currently available destination directories for this App-V package.

4. Select one of the listed directories and click **OK**.

Setting Isolation Options for Folders and Files

Edition • *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

Version • *Some settings apply to particular versions of App-V packages. Version-specific differences are noted where appropriate.*

The Microsoft App-V Assistant enables you to configure isolation options for folders (in App-V 4.x and 5.x packages) and for files (in App-V 4.x packages). Isolation options indicate how the isolation environment provides access to system resources that the virtual application needs: you can choose to ignore one or more folders on the client system, or you can choose to create a merged view of one or more folders.

Task   **To configure isolation options for a folder or file:**

1. In the **Microsoft App-V Assistant**, open the **Files** page.

2. Right-click the file or folder that you want to configure and then click **Isolation Options**. The **Options** dialog box opens.

3. Select the appropriate option.

4. Click **OK**.

Files and folders that have a custom isolation option are marked with a special icon:
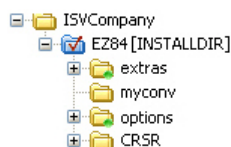
For information on the various options that are available, see the following:

● Options Dialog Box (for Configuring Isolation Options for a Folder)

● Options Dialog Box (for Configuring Isolation Options for a File)

Inheritance of Isolation Options from Folders to Files

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Isolation options for files and folders are always inherited. The App-V isolation environment will apply the most specific reference to that resource.

For example, suppose you have an isolation option for C:\Windows and one for C:\Windows\System32. When the application requests C:\Windows\System32\Notepad.exe, then the C:\Windows\System32 isolation rule will be applied because C:\Windows\System32 is a more specific reference to C:\Windows\System32\Notepad.exe than is C:\Windows.

WINDOWS [Application Data]
  system32 [User Data]
    notepad.exe [User Data]
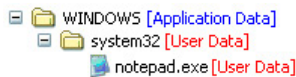
Figure 5: Example of Inheritance of Isolation Options from Folders to Files

Modifying Shortcuts to the App-V Package's Executable Files

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

You define application shortcuts to enable end users to launch an App-V package from within the virtual environment.

By default, the Microsoft App-V Assistant creates App-V packages for all of the executable shortcuts that exist in your project (or Windows Installer package). These shortcuts are listed in a checklist on the Applications page.

Caution ▪ You must define at least one shortcut to enable end users to launch the application from the isolation environment.

On the Applications page, you can create, delete, include, exclude, or rename executable files, which are derived from the shortcuts in its Windows Installer package.

- App-V Packages and the Virtual Environment

- App-V Shortcut Requirements

- Creating a New App-V Package

- Including an Existing App-V Shortcut

- Excluding or Deleting an Existing App-V Package

- Excluding vs. Deleting App-V Package Shortcuts

- Renaming a Shortcut

⚠️

Caution ▪ *If you delete a shortcut on the* **Applications** *page, the shortcut is also deleted from the InstallShield project, and, subsequently, from the Windows Installer package.*

App-V Packages and the Virtual Environment

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Edition ▪ *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

Shortcuts provide the most visible entry points for launching the applications in the App-V package. Most App-V packages should have at least one shortcut.

On the Applications page of the Microsoft App-V Assistant, you can define application shortcuts to enable end users to launch an application in the App-V package. The Microsoft App-V Assistant creates shortcuts for any executable files that are added through the Files page. All shortcuts are added to the App-V package and published to the system when the package is published.

To deploy an App-V package—on a local drive or a network share—systems administrators simply need to give end users access to the App-V package.

App-V Shortcut Requirements

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Edition ▪ *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

For each App-V package, you can define one or more shortcuts. Shortcuts provide the most visible entry points for launching the applications in the App-V package. Most App-V packages should have at least one shortcut.

Creating a New App-V Package

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Edition ▪ *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

On the Applications page of the Microsoft App-V Assistant, specify the files for which you want to create shortcuts.

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Task   *To create a new App-V shortcut:*

1. In the **Microsoft App-V Assistant**, open the **Applications** page.

2. Click **New**. The **Browse for a Shortcut Target File** dialog box opens and prompts you to select a file within this App-V package.

3. Select the target for the shortcut that you are creating.

4. Click **Open**. A new shortcut is listed, and it is named the same name as the selected file.

5. To include this shortcut in the App-V package, make sure that its check box is selected.

Including an Existing App-V Shortcut

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

If you want to include a previously excluded shortcut in an App-V package, perform the following steps.

Task   ***To include an existing App-V package:***

1. In the **Microsoft App-V Assistant**, open the **Applications** page.

2. To include a previously excluded shortcut, select the shortcut and select the check box.

Excluding or Deleting an Existing App-V Package

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

To prevent a shortcut from being created in the App-V package, you can choose to either delete or exclude it.

- **Excluding a shortcut**—When you exclude a shortcut, it will not be created in the App-V package, but it will remain in the InstallShield project.

- **Deleting a shortcut**—When you delete a shortcut, it is removed from both the App-V package and the InstallShield project.

  Caution ▪ If you delete a shortcut on the Applications page, the shortcut is also deleted from the InstallShield project, and, subsequently, from the Windows Installer package.

If you have any unnecessary shortcuts in your project, you can simply exclude them from the App-V package by unchecking them in the shortcuts list. If you like to permanently remove a shortcut, you can delete it from the shortcut list.

Excluding a Shortcut

If you want to exclude one of these shortcuts from being created in the App-V package, perform the following steps.

Task   ***To exclude a shortcut:***

1. In the **Microsoft App-V Assistant**, open the **Applications** page.

2. Select the shortcut that you want to exclude and clear its check box.

   Note ▪ When you exclude a shortcut, it is not created in the App-V package, but it remains in the InstallShield project.

Deleting a Shortcut

To delete a shortcut, perform the following steps.

Task   **To delete a shortcut:**

1.   In the **Microsoft App-V Assistant**, open the **Applications** page.

2.   Select the shortcut and click **Delete**.

*Caution • If you delete a shortcut on the **Applications** page, the shortcut is also deleted from the InstallShield project, and, subsequently, from the Windows Installer package.*

Excluding vs. Deleting App-V Package Shortcuts

Edition • The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

To prevent a shortcut from being created in the App-V package, you can choose to either delete or exclude it, depending upon whether you want it to remain in the InstallShield project.

●   **Excluding a shortcut**—When you exclude a shortcut, it will not be created in the App-V package, but it will remain in the InstallShield project. This means that the shortcut would be included in the Windows Installer package that is built from this InstallShield project.

●   **Deleting a shortcut**—When you delete a shortcut, it is removed from both the App-V package and the InstallShield project. This means that the shortcut would also be deleted from the Windows Installer package that is built from this InstallShield project.

Renaming a Shortcut

Edition • The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Task   **To rename a shortcut:**

1.   In the **Microsoft App-V Assistant**, open the **Applications** page.

2.   Select the shortcut that you want to rename and click **Rename**.

3.   Enter a new name for the shortcut.

Modifying App-V Package Registry Settings

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Using the Microsoft App-V Assistant, you can view existing registry keys, values, and data, and add or delete registry items in your App-V package.

You can also set isolation options for selected registry keys. Isolation options specify how the isolation environment will provide access to system resources requested by the application.

Information about modifying registry settings on the Registry page includes the following topics:

- About the Windows Registry
- Adding or Deleting Registry Keys and Values

About the Windows Registry

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

The Windows registry is a system-wide database that contains configuration information used by applications and the operating system. The registry stores all kinds of information, including the following:

- Application information such as company name, product name, and version number
- Path information that enables your application to run
- Uninstallation information that enables end users to uninstall the application easily without interfering with other applications on the system
- System-wide file associations for documents created by an application
- License information
- Default settings for application options such as window positions

Keys, Value Names, and Values

The registry consists of a set of keys arranged hierarchically under the My Computer explorer. Just under My Computer are several root keys. An installation can add keys and values to any root key of the registry. The root keys that are typically affected by installations are:

- HKEY_LOCAL_MACHINE
- HKEY_USERS
- HKEY_CURRENT_USER
- HKEY_CLASSES_ROOT

A key is a named location in the registry. A key can contain a subkey, a value name and value pair, and a default (unnamed) value. A value name and value pair is a two-part data structure under a key. The value name identifies a value for storage under a key, and the value is the actual data associated with a value name. When a value name is unspecified for a value, that value is the default value for that key. Each key can have only one default (unnamed) value.

Note that the terms key and subkey are relative. In the registry, a key that is below another key can be referred to as a subkey or as a key, depending on how you want to refer to it relative to another key in the registry hierarchy.

Adding or Deleting Registry Keys and Values

Edition • The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Editing the registry on the Registry page is performed much like it is performed in the InstallShield Registry view. To learn more, see Editing the Registry.

Setting App-V Package Registry Isolation Options

Edition • The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

The Microsoft App-V Assistant enables you to configure isolation options for a registry key.

Important • Although you cannot explicitly set an isolation option for a registry value, registry values are subject to the isolation options of their keys.

Task   *To configure an isolation option for a registry key:*

1. In the **Microsoft App-V Assistant**, open the **Registry** page.

2. Right-click the key that you would like to configure and then click **Isolation Options**. The **Options** dialog box opens.

3. Select one of the following options:

   ● **Merge with local key**—The App-V package sees a merged view of the registry entries for the selected key from both the local registry and from the App-V package's registry.

   ● **Override local key**—The App-V package sees only the registry entries for the selected key that are part of that App-V package.

4. Click **OK**.

Registry keys that have an override isolation option are marked with a special icon.
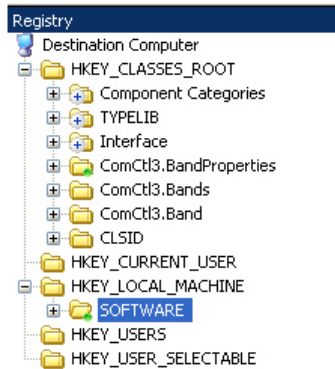
Tip ▪ To launch the Registry Import Wizard and import an existing registry (.reg) file, click the Import a .reg file option in the More Options area on the Registry page.

Inheritance of Isolation Options in the Registry

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Isolation options for registry keys are always inherited. The isolation environment will apply the most specific reference to that resource.

For example, suppose you have an isolation option for the `Microsoft` registry key and one for `Microsoft\Windows` registry key. When the application requests `Microsoft\Windows\CurrentVersion`, then the `Microsoft\Windows` isolation rule will be applied because `Microsoft\Windows` is a more specific reference to `Microsoft\Windows\CurrentVersion` than is `Microsoft`.
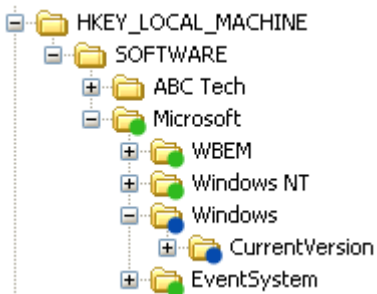

Figure 6: Example of Inheritance of Isolation Options from Folders to Files

Performing Dynamic Suite Composition

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Version ▪ This information applies to App-V 4.x packages.

A virtual package may rely on one or more other virtual packages in order to function properly. The Microsoft App-V Assistant lets you specify other App-V packages that the open App-V package (the primary package) requires. This capability, called *Dynamic Suite Composition*, enables your virtual package to interact with the other virtual applications in the virtual environment. Dynamic Suite Composition enables you to deploy common system components once on each client system, making them available for use by many App-V packages, rather than requiring you to include them with each of the App-V packages that are dependent on them. This reduces redundancy in the local App-V cache and simplifies the construction and testing of the primary virtual application.

To specify App-V packages that you want to include in a dynamic suite, use the Dynamic Suite Composition page of the Microsoft App-V Assistant.

Task **To add one more dependencies to your App-V package:**

1. In the **Microsoft App-V Assistant**, open the **Dynamic Suite Composition** page.

2. To add a dependency App-V package, click the **New** button. The **Open** dialog box opens.

3. Open the directory where the dependency App-V package that you want to add is located. That application's `.osd` and `.sft` files are listed.

4. Select one of the following:

   - **One of the .osd files**—If this dependency App-V package is or is going to be published on a server, select any one of the `.osd` files that are listed. If these `.osd` files were created properly, each of them should contain the information that will identify to the primary App-V package the published location of the dependency App-V package.

     Note ▪ It is not necessary to select more than one `.osd` file. All of them contain the same reference to the location of the dependency App-V package's `.sft` file, which is the only reference that is necessary in order for the primary App-V package to locate it.

   - **The .sft file**—If this dependency App-V package is or is going to be published locally on the client or at an accessible network location, you may select just the `.sft` file.

   The selected App-V package is now listed in the **Dependency Applications** list and, by default, the **Mandatory** option is selected.

5. Set the status of the selected App-V package by doing one of the following:

   - **If the dependency App-V package is mandatory**—If the primary App-V package will not run unless it can locate this dependency App-V package, leave the **Mandatory** option selected. If a dependency App-V package that is configured as mandatory is not available, an error will be generated when someone attempts to run the primary App-V package.

   - **If the dependency App-V package is not mandatory**—If the primary App-V package will run even if it cannot locate this dependency App-V package, clear the **Mandatory** option.

6. Build the primary App-V package.

Deleting a Dependency Application from the List

To remove an App-V package from the Dependency Applications list, select the application and click the Delete button.

Modifying Build Options

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Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

On the Build Options page, specify for which releases of this InstallShield project you want to build an App-V package, and specify whether you want to include additional Windows Installer packages in the virtual package.

Also, if you are editing a Windows Installer package in Direct Edit mode (or Direct MST mode), you need to select the Build App-V 5.x package check box or the Build App-V 4.x package check box on the Build Options page before you will be able to build an App-V package for that Windows Installer package.

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Important ▪ You must create at least one release (in the Releases view of the Installation Designer) before you can select a release on the Build Options page.

Selecting the Releases for Which You Want to Build App-V Packages

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Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

You select the releases that you want to build an App-V package for on the Releases tree of the Build Options page.

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Important ▪ You cannot create or edit a release in the Microsoft App-V Assistant. If no releases exist, you can simply click the Build toolbar button to create a new release or open the Releases view of the InstallShield Installation Designer. You must create at least one release before you will be able to build an App-V package. For more information, see Creating and Building Releases.

If you are editing a Windows Installer package (Direct Edit Mode) or transform file (Direct MST Mode), the Releases tree on the Build Options page is not displayed.

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Task   ***To select releases to build:***

1. In the **Microsoft App-V Assistant**, open the **Build Options** page.

2. Select the releases in the **Releases** tree that you want to build an App-V package for.

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Important ▪ When you select a release on the Build Options page, you are specifying that whenever you build that particular release, you want to also build an App-V package for that release. However, the releases that are

selected on the Build Options page have no bearing upon which release is built when you click the Build button on the toolbar. When you initiate a build by clicking the Build button, a build is initiated for the active release—the release that was most recently selected on the Installation Designer Releases view. The output of that build would depend upon what releases were selected on the Build Options page:

- **Active release selected**—A Windows Installer package and an App-V package would be built.

- **Active release not selected**—Only a Windows Installer package would be built.

***Note ▪** To build more than one release at a time, perform a batch build. See Performing Batch Builds.*

Enabling App-V Package Building When in Direct Edit Mode

***Edition ▪** The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

When you are editing a Windows Installer (.msi) package or a transform (.mst) file in the Microsoft App-V Assistant, you are in Direct Edit Mode or Direct MST Mode. Because you are directly editing a Windows Installer package, you save your changes by selecting Save on the File menu. It not necessary to build the package, because it is already built. Therefore, InstallShield's Build function is disabled.

However, you do need to run the build process to build an App-V package for this Windows Installer package. To do this, perform the following steps:

Task | ***To enable App-V package building when in Direct Edit Mode:***

1. Open a Windows Installer package or a transform file in InstallShield. It will be opened in Direct Edit Mode or Direct MST Mode, and the Build function (**Build** on the **Build** menu and the **Build** toolbar button) will be disabled.

2. In the **Microsoft App-V Assistant**, open the **Build Options** page.

3. Select the **Build App-V 5.x package** check box or the **Build App-V 4.x package** check box.

The Build toolbar button is enabled.

Specifying Whether to Compress the Data Files in an App-V Package

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***Edition ▪** The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

***Version ▪** This information applies to App-V 4.x packages.*

InstallShield lets you specify whether you want to use zlib compression for the data files in the App-V package.

Task **To specify whether to compress the data files in the App-V package:**

1. In the **Microsoft App-V Assistant**, open the **Build Options** page.

2. Specify the appropriate option for the **Would you like to compress the data in the virtual package?** option.

Including Additional Windows Installer Packages in an App-V Package

Edition ▪ *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

Sometimes a primary Windows Installer package uses other Windows Installer packages indirectly, such as driver files, client components, etc. In addition to being able to convert a single Windows Installer package to a virtual package, you can also use the Microsoft App-V Assistant to convert an application suite of multiple Windows Installer packages into one virtual package.

To include additional Windows Installer packages in an App-V package, set the **Would you like to include additional MSI files in the virtual package?** option on the Build Options page to Yes, and then select the packages that you want to add.

Task **To include additional Windows installer packages in an App-V package:**

1. In the **Microsoft App-V Assistant**, open the **Build Options** page.

2. Set the **Would you like to include additional MSI files in the virtual package?** option to **Yes**.

3. Click the **Open** button and select the Windows Installer packages that you want to add. After each file is selected, it will be listed in the **Windows Installer Files (.msi)** list.

   - The order of the packages can be changed by selecting a package in the list and clicking the Move Up (↑) and Move Down (↓) buttons.

   - Use the Delete button (✖) to delete a package from the list.

Building a Windows Installer Package to Assist in the Distribution of an App-V Package

Edition ▪ *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

You can choose to build a Windows Installer package to assist in the distribution of an App-V package. This simplifies the deployment of an App-V package by enabling you to use enterprise distribution tools such as Microsoft System Center Configuration Manager or Novell ZENworks Configuration Management.

To build a Windows Installer package with your App-V package, select the **Generate an installation package as part of the build output** check box on the Advanced Settings dialog box. You can access this dialog box by clicking the Advanced Settings link in the More Options area on the Build Options page of the Microsoft App-V Assistant. By default, this check box is not selected.

When you run this Windows Installer file, the minimally required App-V package files will be "installed" in the local App-V client system cache. (The App-V package files remain on the App-V server until the client requests that they be downloaded when the application is launched for the first time.)

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Note ▪ The App-V client must be installed on the local machine before you can install an App-V package. The installation will detect and warn if the App-V client is not available, and the installation will fail.

To remove an installed App-V package, you need to use the Application Virtualization Client tool, which is available in the Administrative Tools of the Windows Control Panel.

Specifying Package Feature Block Optimizations

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Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

You can use the package optimization to control the performance and network traffic that is associated with running an App-V package. The package optimization support you select determines how quickly the App-V package launches, and how often additional functionality needs to be streamed to the client while the App-V package is being used.

The files in an App-V package can be grouped into two feature blocks:

● **Feature block 1**—Feature block 1 must contain the core functionality of the App-V package that is necessary to launch the application. At application launch, all of the files in feature block 1 are streamed to the client in one unit.

● **Feature block 2**—Feature block 2 can contain additional functionality of the App-V package that is not necessary to launch the application. While the App-V package is being used, the files in feature block 2 can be streamed in small packets on an as-needed basis.

You can either choose to include all App-V package files in feature block 1 or, to improve launch speed, you can choose to group the files into two feature blocks: feature block 1 and feature block 2.

You indicate your package optimization preference on the Package Optimizations dialog box, which is opened by clicking the Package Optimizations link in the More Options area on the Build Options page.

The Package Optimizations dialog box includes the following options:

Table 6 ▪ Package Optimizations Options

Option	Description
Optimize for Streaming	If you choose this option, the Microsoft App-V Assistant will perform a static analysis of the shortcuts in the application and decide which files should be in feature block 1 and which should be in feature block 2. This option provides a relatively quick launch time while limiting network traffic during application use. *Note ▪ When application files are streamed to a client either at launch or during application use, they are saved in the App-V cache and do not need to be streamed again during subsequent use of the application.*
Optimize for Offline Use	If you choose this option, all files in the App-V package will be included in feature block 1 and will be streamed to the client at startup in one file before the application launches. After that, no more streaming is done. All files are stored in the App-V cache, which means that the application is available for use even when the machine is not connected to the App-V server. Select this option if you want to enable end users to use the App-V package when not connected to the App-V server and if you want to eliminate network traffic when the App-V package is being used. *Note ▪ When application files are streamed to a client either at launch or during application use, they are saved in the App-V cache and do not need to be streamed again during subsequent application use.*

Building an App-V Package

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

The method for App-V package depends upon what file you have open in InstallShield—an InstallShield project or a Windows Installer package.

Building an App-V Package from Within an InstallShield Project

To build an App-V package from within an InstallShield project, perform the following steps:

Task   **To build an App-V package for an InstallShield project:**

1. Open the InstallShield project in InstallShield.

2. On the **Releases** view of the Installation Designer, make sure that at least one release has been created, and select the release that you want to build.

    *Important ▪ You cannot create or edit a release in the Microsoft App-V Assistant. If no releases exist, or if you want to create a new release, open the **Releases** view of the InstallShield Installation Designer. You must create at least one release before you will be able to build an App-V package. For more information, see Creating and Building Releases.*

3. In the **Microsoft App-V Assistant**, open the **Build Options** page.

4. In the **Releases** tree, select the same release that is selected on the **Releases** view of the InstallShield Installation Designer. This is the release that you will build an App-V package for.

5. Click the **Build** toolbar button (or select **Build Release** on the **Build** menu) to start building the active release.

    Important ▪ When you select a release on the Build Options page, you are specifying that whenever you build that particular release, you want to also build an App-V package for that release. However, the releases that are selected on the Build Options page have no bearing upon which release is built when you click the Build button on the toolbar. When you initiate a build by clicking the Build button, a build is initiated for the active release—the release that was most recently selected on the Installation Designer Releases view. The output of that build would depend upon what was selected on the Build Options page:

    ● **Active release selected**—*A Windows Installer package and an App-V package would be built.*

    ● **Active release not selected**—*Only a Windows Installer package would be built.*

    To learn how to build more than one release at a time, see Performing Batch Builds.

Building an App-V Package from Within a Windows Installer Package in InstallShield

To build an App-V package for a Windows Installer package, perform the following steps:

Task   **To build an App-V package for a Windows Installer package:**

1. Do one of the following to open a Windows Installer package:

    ● On the **File** menu, select **Open** and select a Windows Installer package (`.msi`).

    ● On the **File** menu, select **Open** and select a transform file (`.mst`). The **Open Transform Wizard** opens and you are prompted to identify the transform file's associated Windows Installer package.

    ● On the **File** menu, select **New** to open the **New Project** dialog box. Select **Transform** and click **OK**. The **Open Transform Wizard** opens and you are prompted to identify the transform file's associated Windows Installer package.

2. Use the Installation Designer to make any desired edits to the Windows Installer package or Transform file, and use the Microsoft App-V Assistant to set App-V package options.

3. On the **File** menu, click **Save**.

4. In the **Microsoft App-V Assistant**, open the **Build Options** page.

5. Select the **Build App-V 5.x package** check box or the **Build App-V 4.x package** check box. The **Build Virtual Package** button is enabled.

6. Click the **Build Virtual Package** button.

Build Output for App-V Packages

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Version ▪ Some functionality is specific to particular versions of App-V packages. Version-specific differences are noted where appropriate.

Location of the Build Output

If you build an App-V 5.x package, InstallShield saves the App-V output in the following directory path:

App-VPackage*ProductName*

If you build an App-V 4.x package, InstallShield saves the App-V output in the following directory path:

App-VPackage*ProductName*_v*N*

The version number (*N*) of the App-V 4.x package is appended to the end of that folder path. Each time that you build an upgrade, InstallShield creates a new subfolder and increments the version number in the name of the subfolder.

The default location of the App-VPackage folder depends on whether you are building an App-V 5.x or 4.x package from within an MSI Database project or a Basic MSI project:

- If you are building an App-V package from within an MSI Database project (.msi file), InstallShield creates the App-VPackage folder in the same folder as the .msi file.

- If you are building an App-V package from an .ism file, InstallShield creates the App-VPackage folder in the following location:

  InstallShield Project Folder*ProjectName**Product Configuration**Release Name*\DiskImages\Disk1

Contents of the Build Output

If you are building an App-V package from within InstallShield, the output of the build consists of the following:

- An App-V package—For information on the files that are included in an App-V package, see Components of an App-V Package.

- A Windows Installer–based installation—Note that this is built only if you are building an App-V package from within a Basic MSI project. If you are building an App-V package from within an MSI Database project in InstallShield, InstallShield does not build this file.

- A new Basic MSI project that assists in the distribution of the App-V package—This is built if you choose to generate an installation package as part of the build process.

InstallShield creates the new Basic MSI project in the release folder. Note the following details about this project:

- The project contains dynamic file links to the App-V package files.

- The properties and directories are updated in the project.

- The Releases view contains four or more releases that enable you to build different combinations of releases (for example, compressed or uncompressed, with or without an InstallShield prerequisite for the App-V client).

- A built release is also included with the new Basic MSI project. Any warnings or errors from this build are included as warning -9150 or error -9151 in the App-V project.

- You can use this project if you want to add more functionality to your Windows Installer package. For example, you can create major upgrades, digitally sign the package, and more.

- You can update the end-user license agreement (EULA) with your own custom EULA. The EULA that is included by default contains instructions that explain how to replace the default EULA text with your own EULA text.

- This project is overwritten each time that you rebuild your App-V project.

Note ▪ For troubleshooting information about resolving errors and warnings that you may encounter when you are building a virtual application, see Virtualization Conversion Errors and Warnings.

Building App-V Packages Through the Command Line

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

When you configure an App-V package in an InstallShield project and then build that project (using either the user interface or the command line), both the Windows Installer package and the App-V package are built. When you use the standard InstallShield command-line build, you do not need to add any additional command-line parameters. All of the App-V package settings are saved within the InstallShield project.

Testing an App-V Package Using the App-V Launcher Tool

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

You can use the App-V Launcher tool to locally test a newly built App-V package before moving it to a deployment server.

To open the App-V Launcher tool, click **Test launch the App-V package** in the More Options area on the Build Options page. The App-V Launcher will attempt to launch that application. If there are multiple shortcuts in this App-V package, the Launch App-V Package dialog box opens, where you are prompted to select the shortcut that you want to launch from a list of all of the shortcuts.

Requirements for Using the App-V Launcher Tool

The machine on which you use the App-V Launcher to test an App-V package must meet the following requirements:

- The Microsoft Application Virtualization Client must be installed.

- The version of the Microsoft Application Virtualization Client that is present should be equal to or newer than the minimum client version of the App-V package.

- File streaming must be enabled because the App-V Launcher publishes the App-V package from a local file path. If file streaming is not enabled, the App-V Launcher displays an informative message asking if it can enable this functionality.

App-V Launcher Tool Location

When an App-V package is built, the App-V Launcher tool (`AppVLauncher.exe`) is placed in the same folder as the App-V package.

How the App-V Launcher Tool Works

In order to make it possible to test the App-V package without having to publish it on the server, a copy of the App-V Launcher tool is automatically copied to the output directory of each App-V package. The App-V Launcher looks for the .appv or .sft file that is located in the same directory.

Note ▪ The first time that you use the App-V Launcher to run an application in an App-V package, the entire package is published to that machine; this includes all of the package's shortcuts and file extension associations in the package. If you then use the App-V Launcher to run any application in the App-V package again, the App-V Launcher unpublishes the package (and its shortcuts and file extension associations) before republishing the package.

Also note that the `AppVLauncher.exe` *file requires elevation. If you want to be able to test your App-V package in a locked-down environment where end users will not have elevated privileges, you may want to use the App-V Launcher once to launch and publish your App-V package with elevated privileges. Once you have done that, you can use the published shortcuts and file extension associations to start your application.*

The App-V Launcher is a convenient testing tool that makes it possible for you to reliably and accurately test your App-V packages on your local machine or any other system that has the App-V client installed before moving it to the App-V server.

Troubleshooting the Builds of App-V Packages

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

For troubleshooting information about resolving errors and warnings that you may encounter when you are building a virtual application, see Virtualization Conversion Errors and Warnings.

Application Features that Require Pre- or Post-Conversion Actions

Edition • The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Some application features are ignored when an App-V package is created. Therefore, some additional pre- or post-conversion actions must be taken in order for the App-V package to be created properly.

One action you could take to try to include ignored features in an App-V package is to first repackage the application using the Repackaging Wizard that is included with Repackager, and then convert the repackaged application to an App-V package.

Edition • Repackager is included with AdminStudio.

For a list of ignored features, see Application Features Requiring Pre- or Post-Conversion Actions.

Microsoft App-V Assistant Reference

Edition • The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Reference information about the Microsoft App-V Assistant is organized into the following sections:

- Microsoft App-V Assistant Pages
- Microsoft App-V Assistant Dialog Boxes

Microsoft App-V Assistant Pages

Edition • The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

The Microsoft App-V Assistant is comprised of the following pages:

- Microsoft App-V Assistant Home Page
- Package Information Page
- Files Page
- Applications Page
- Registry Page
- Dynamic Suite Composition Page
- Build Options Page

Microsoft App-V Assistant Home Page

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

The Microsoft App-V Assistant Home page displays a diagram that illustrates the process of creating an App-V package.

Click the following icons in the navigation bar at the bottom of the page to navigate through the Microsoft App-V Assistant interface:

Table 7 ▪ Navigation Bar Icons

Icon	Destination
	Package Information Page
	Files Page
	Applications Page
	Registry Page
	Build Options Page
	Go to next page.
	Jump back to previous page.
	Microsoft App-V Assistant Home Page

Package Information Page

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Version ▪ Some settings apply to particular versions of App-V packages. Version-specific differences are noted where appropriate.

On the Package Information page, specify the package name and enter a comment to document this virtual package. On this page, you can also choose to include diagnostic tools with the virtual package.

The Package Information page includes the following settings:

Table 8 ▪ Package Information Page

Option	App-V Version	Description
Package Name	**App-V 4.x, App-V 5.x**	Enter a name for the virtual package. *Tip ▪ If your virtual package contains multiple applications, you can specify the name that identifies the entire package. For example, Microsoft Office could be used to identify a package that contains Microsoft Word and Microsoft Excel applications that run in the same virtual environment.*
Comments	**App-V 4.x, App-V 5.x**	Enter a short description of the App-V package. This setting is optional.
Does your App-V package have any specific operating system requirements?	**App-V 4.x, App-V 5.x**	Select one of the following: ● **Yes**—The application does not support one of the listed operating systems. When you select this option, the check boxes become enabled, and you can clear the selection of the unsupported operating systems. ● **No**—This application run on all of the listed operating systems. When this option is selected, the operating system check boxes are disabled and cannot be changed. Note that the list of operating systems that are displayed varies, depending on which version of App-V you are targeting.

Table 8 ▪ Package Information Page (cont.)

Option	App-V Version	Description
Root Folder Name	**App-V 4.x**	Specify the root folder of the App-V package's file system. During run time, the Application Virtualization Client mounts the package's file system to the App-V virtual drive; the Q drive is the default. The long and short names of the root folder must be unique because two packages with the same root folder name cannot be deployed simultaneously. The default value for the Root Folder Name setting is based on the `[ProductName]` and `[ProductVersion]` properties of the App-V package's associated Windows Installer package using the 8.3 file naming convention. For example: ● If `[ProductName]` is `MyApplication` and `[ProductVersion]` is `1.12.3.1`, the default folder name is `MyApplic.112`. ● If `[ProductName]` is `MyApp` and `[ProductVersion]` is `1`, the default folder name is `MyApp.1`. ● If `[ProductName]` is `MyBlueApp` and `[ProductVersion]` is `1.2.3.4`, the default folder name is `MyBlueAp.123`.
Protocol	**App-V 4.x**	Select the protocol that you want to use to stream the sequenced application package from the virtual application server to an Application Virtualization Client. Available options are: ● **RTSP**—The real-time streaming protocol streams the App-V package. This is the default option. ● **RTSPS**—The real-time streaming protocol with transport layer security streams the App-V package. ● **FILE**—The App-V package are streamed from a file share. ● **HTTP**—The hypertext transport protocol streams the App-V package. ● **HTTPS**—The secure hypertext transport protocol streams the App-V package.

Table 8 ▪ Package Information Page (cont.)

Option	App-V Version	Description
Host	**App-V 4.x**	Specify the host—the virtual application server or the load balancer in front of a group of virtual application servers that stream the App-V package to the Application Virtualization Client. You can either specify a static host name or IP address, or you can enter `%SFT_SOFTGRIDSERVER%` to indicate an environment variable. *Note ▪ If you enter `%SFT_SOFTGRIDSERVER%`, you must set up the SFT_SOFTGRIDSERVER system environment variable on each Application Virtualization Client. The value of this environment variable should be the name or IP address of the host.* *When you assign the variable on a client system, any Application Virtualization Client session that is running on the system must be closed and reopened; otherwise, the session is not aware of the new application source.*
Port	**App-V 4.x**	Specify the port on which the virtual application server or the load balancer listens for Application Virtualization Client requests for the package. The default port is 554.
Path	**App-V 4.x**	Specify the relative path on the virtual application server where the App-V package is stored. This is also the path from which the App-V package is streamed. If the App-V package is stored in a subdirectory of CONTENT, the path must be specified in this setting; otherwise, you can leave this setting blank.
Diagnostic Tools	**App-V 4.x**	For testing purposes, you can choose to include diagnostic tools in your App-V package by clicking the Diagnostic Tools link in the More Options area. For more information, see App-V Diagnostic Tools Dialog Box.
Upgrade Settings	**App-V 4.x, App-V 5.x**	To specify upgrade information for your App-V package, click the Upgrade Settings link in the More Options area. For more information, see App-V Package Upgrade Settings Dialog Box.

Files Page

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Use the Files page of the Microsoft App-V Assistant to perform tasks such as the following:

- View the files and folders in the App-V package

- Add or remove files and folders in the App-V package

- Set isolation options

Tip ▪ You can specify which of the Windows Installer predefined folders are listed in the Microsoft App-V package tree. To learn how, see Controlling the Display of Predefined Folders*.*

Applications Page

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Shortcuts provide the most visible entry points for launching the applications in the App-V package. Most App-V packages should have at least one shortcut.

On the Applications page of the Microsoft App-V Assistant, you can define application shortcuts to enable end users to launch an application in the App-V package. The Microsoft App-V Assistant creates shortcuts for any executable files that are added through the Files page. All shortcuts are added to the App-V package and published to the system when the package is published.

For more information, see the following:

- Creating a New App-V Package

- Including an Existing App-V Shortcut

- Excluding or Deleting an Existing App-V Package

- Renaming a Shortcut

Registry Page

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

On the Registry page, you can view existing registry keys, values, and data, and add or delete registry items. You can also override the default isolation options for a registry key. Isolation options specify how the virtual environment will provide access to system resources requested by the application.

The default settings for isolation options are built into the Microsoft App-V Assistant, and those defaults are adequate for most environments. However, you can override the default settings for selected registry keys to exert control over application interactions with client operating system resources. For an overview of the available isolation options, and for instructions on how to set them, see Setting App-V Package Registry Isolation Options.

Registry items that are listed on this page will be included in the App-V package, and those that you delete will not. By default, all new registry keys are isolated.

Tip • To launch the Registry Import Wizard and import an existing registry (.reg) file, click the Import a .reg file option in the More Options area on the Registry page.

Note • You cannot set isolation options on root registry keys.

Editing the registry on the Registry page is performed much like it is performed in the InstallShield Registry view. To learn more, see Editing the Registry.

Important • While you cannot explicitly set an isolation option on a registry value, registry values are subject to the isolation options of their keys.

Dynamic Suite Composition Page

Edition • The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Version • This information applies to App-V 4.x packages.

A virtual package may rely on one or more other virtual packages in order to function properly. The Microsoft App-V Assistant lets you specify other App-V packages that the open App-V package (the primary package) requires. This capability, called *Dynamic Suite Composition*, enables your virtual package to interact with the other virtual applications in the virtual environment. Dynamic Suite Composition enables you to deploy common system components once on each client system, making them available for use by many App-V packages, rather than requiring you to include them with each of the App-V packages that are dependent on them. This reduces redundancy in the local App-V cache and simplifies the construction and testing of the primary virtual application.

To specify App-V packages that you want to include in a dynamic suite, use the Dynamic Suite Composition page of the Microsoft App-V Assistant.

The following settings are available on the Dynamic Suite Composition page.

Table 9 • Dynamic Suite Composition Page

Option	Description
Dependency App-V Packages	List of all of the dependency App-V packages that have been selected for the primary App-V package.

Table 9 ▪ Dynamic Suite Composition Page (cont.)

Option	Description
Mandatory	Indicates whether to selected dependency App-V package is required in order for the primary App-V package to run. • **If the dependency App-V package is mandatory**—If the primary App-V package will not run unless it can locate this dependency App-V package, leave the Mandatory option selected. If a dependency App-V package that is configured as Mandatory is not available, an error will be generated when someone attempts to run the primary App-V package. • **If the dependency App-V package is not mandatory**—If the primary App-V package will run even if it cannot locate this dependency App-V package, clear the Mandatory option.
New Button	To add an App-V package to the Dependency App-V Packages list, click this button and select the App-V package (.osd, .sft) that you want to add. Select one of the following: • **One of the .osd files**—If this dependency App-V package is or is going to be published on a server, select any one of the .osd files that are listed. If these .osd files were created properly, each of them should contain the information that will identify to the primary App-V package the published location of the dependency App-V package. It is not necessary to select more than one .osd file. All of them contain the same reference to the location of the dependency App-V package's .sft file, which is the only reference that is necessary in order for the primary App-V package to locate it. • **The .sft file**—If this dependency App-V package is or is going to be published locally on the client or at an accessible network location, you may select just the `.sft` file. The selected reference App-V package is now listed in the Dependency Applications list and, by default, the Mandatory option is selected.
Delete Button	Click to delete the selected App-V package from the list.

Build Options Page

Edition ▪ *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

The Build Options page is where you configure various settings for the build of your virtual package. Some of the settings are available directly on the Build Options page. Some are available through dialog boxes that you can launch from links in the More Options area of the Build Options page.

Settings on the Build Options Page

The following settings are available on the Build Options page.

Table 10 ▪ Settings on the Build Options Page

Setting	Description
Build App-V 4.x package or **Build App-V 5.x package**	(Direct Edit/Direct MST Modes Only) When you directly edit a Windows Installer package, it is not necessary to build the package, because it is already built. Therefore, InstallShield's Build function is disabled. Select the Build App-V 4.x package check box or the Build App-V 5.x package check box to enable the Build function. When this option is selected, the Build Virtual Package button is enabled. For more information, see Enabling App-V Package Building When in Direct Edit Mode.
Build Virtual Package	(Direct Edit/Direct MST Modes Only) When you directly edit a Windows Installer package, if you select the Build App-V 4.x package check box or the Build App-V 5.x package check box, this button is enabled. Click it to build the App-V package. *Note* ▪
Would you like to compress the data in the virtual package?	*Version* ▪ *This setting applies to App-V 4.x packages.* To use zlib compression to compress the data in the App-V package, select Yes.
Would you like to include additional MSI files in the virtual package?	Sometimes a primary Windows Installer package uses other Windows Installer packages indirectly, such as driver files, client components, etc. To include additional Windows Installer packages in an App-V package, set this option to **Yes**, and then select the packages that you want to add. For more information, see Including Additional Windows Installer Packages in an App-V Package.
Select releases for which you want to build an App-V package	Specify for which releases you want to build App-V packages. For more information, see Selecting the Releases for Which You Want to Build App-V Packages. *Note* ▪ *If you are editing a Windows Installer package (Direct Edit Mode) or transform file (Direct MST Mode), the Releases tree on the Build Options page is not displayed.*

Links in the More Options Area on the Build Options Page

The following links are available in the More Options area of the Build Options page.

Table 11 ▪ More Options Links on the Build Options Page

Setting	Description
Open App-V package folder	To open the folder that contains the App-V package, click this link in the More Options box.
Package Optimizations	To configure package optimization, click this link in the More Options box. To learn more, see Specifying Package Feature Block Optimizations.
Advanced Settings	To generate a Windows Installer package that can assist in the distribution of the App-V Client and to optionally include the App-V Launcher tool for testing purposes, click this link in the More Options box.
Test launch the App-V package	To launch your App-V package for testing on your build machine, click this link in the More Options box. For more information, see Testing an App-V Package Using the App-V Launcher Tool.

Microsoft App-V Assistant Dialog Boxes

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

The Microsoft App-V Assistant includes the following dialog boxes:

- App-V Diagnostic Tools Dialog Box
- File Mapping Dialog Box
- Isolation Options Dialog Box (for a Package)
- Isolation Options Dialog Box (for Registry Keys)
- Launch App-V Package Dialog Box
- Options Dialog Box (for Configuring Isolation Options for a File)
- Options Dialog Box (for Configuring Isolation Options for a Folder)
- Package Optimizations Dialog Box

Advanced Settings Dialog Box

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

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Version ▪ Some settings apply to particular versions of App-V packages. Version-specific differences are noted where appropriate.

The Advanced Settings dialog box opens when you click the Advanced Settings link in the More Options section on the Build Options tab. This dialog box is where you specify build and run-time options.

Table 12 ▪ Advanced Settings Dialog Box Options

Option	App-V Version	Description
Generate an installation package as part of the build output	**App-V 4.x, App-V 5.x**	To build an installation package with your App-V package, select this check box. This check box is not selected by default. If you do select this check box, you can specify whether you want to load the installation package from the media location or from the shared location. Building an installation package enables you or your end users to use enterprise distribution tools such as Microsoft System Center Configuration Manager or Novell ZENworks Configuration Management to distribute your App-V package. When you run this Windows Installer file, the minimally required App-V package files will be "installed" in the local App-V client system cache. (The .sft file remains on the App-V server until the client requests that it be downloaded when the application is launched for the first time.) 📄 *Note ▪ The App-V client must be installed on the local machine before you can install an App-V package. The installation will detect and warn if the App-V client is not available, and the installation will fail.* To remove an installed App-V package, you need to use the Application Virtualization Client tool, which is available in the Administrative Tools of the Windows Control Panel.
Load from Media Location	**App-V 4.x**	To load the installation package from the media location, select this option.
Compress	**App-V 4.x, App-V 5.x**	To build a compressed installation package, select this check box. If this check box is cleared, an uncompressed installation package is built.
App-V Client Prerequisite (Generates Setup.exe)	**App-V 4.x, App-V 5.x**	If you want to include the InstallShield prerequisite that installs the App-V client on the target system, select this check box. Note that a Setup.exe setup launcher is required if the InstallShield prerequisite needs to be included in the release.

Table 12 ▪ Advanced Settings Dialog Box Options (cont.)

Option	App-V Version	Description
Load from Shared Location	**App-V 4.x**	To load the installation package from the shared location, select this check box.
Include App-V Launcher Tool	**App-V 4.x, App-V 5.x**	To use the Include App-V Launcher tool to locally test a newly built App-V package before moving it to a deployment server, select this check box. For more information, see Testing an App-V Package Using the App-V Launcher Tool.

App-V Diagnostic Tools Dialog Box

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Version ▪ The diagnostic tools are available for App-V 4.x packages. Starting with App-V 5.x, it is no longer necessary to inject diagnostic tool shortcuts directly into the package. The App-V Launcher tool is capable of launching a Command Prompt window within the virtual environment of an App-V 5.x package.

On the Diagnostic Tools dialog box, which is opened by selecting Diagnostic Tools in the More Options area on the Package Information page, you can choose to include the Registry Editor and Windows Command Prompt diagnostic tools with your App-V package.

If you include diagnostic tools with your App-V package, you will be able to look at the registry or file system for the application while it is running in its virtual environment. For example, if you were running an App-V package and you encountered an error message stating that the application cannot load a DLL, you could use these diagnostic tools to troubleshoot the problem.

The Registry Editor diagnostic tool lets you use `Regedit.exe` on the local machine and have access to the virtual environment. The Command Prompt diagnostic tool lets you use `Cmd.exe` on the local machine and have access to the virtual environment.

Launching the Diagnostic Tools Within the Virtual Environment

If you selected the Registry Diagnostics or File System Diagnostics options on the Diagnostic Tools dialog box, shortcuts to those tools are automatically added to the App-V package.

When an end user runs this App-V package, two additional shortcuts will be available in the application's shortcut folder: The names of these shortcuts will reflect the application name, such as:

```
[ProductName] Registry
[ProductName] File System
```

When an end user launches one of these shortcuts, that diagnostic tool is launched inside the context of the application's virtual environment.

App-V Package Upgrade Settings Dialog Box

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Version ▪ Some settings apply to particular versions of App-V packages. Version-specific differences are noted where appropriate.

The App-V Package Upgrade Settings dialog box is where you specify whether you want to create an upgrade for your App-V package. If you specify that you do want to create an upgrade, you can specify additional information about the upgrade.

Table 13 ▪ App-V Package Upgrade Settings Dialog Box Settings

Setting	App-V Version	Description
Enable Upgrade	**App-V 4.x, App-V 5.x**	To create an upgrade for an earlier App-V package, select this check box.
		If you do not want to create an upgrade, clear this check box. When this check box is cleared, the other settings on the App-V Package Upgrade Settings dialog box are disabled.
		This check box is cleared by default.
Always upgrade latest built package	**App-V 4.x**	If you selected the Enable Upgrade check box and you want InstallShield to build an upgrade that updates the latest built App-V package, select this option.
Choose package to upgrade	**App-V 4.x, App-V 5.x**	If you selected the Enable Upgrade check box and you want InstallShield to build an upgrade that updates a particular App-V package, select this option, and then specify the path of the earlier package that you want to be updated.
Previous package to upgrade	**App-V 5.x**	If you selected the Enable Upgrade check box and you want InstallShield to build an upgrade that updates a particular App-V package, select this option, and then specify the path of the earlier package that you want to be updated.
Append version number to package name	**App-V 4.x, App-V 5.x**	If you selected the Enable Upgrade check box and you want InstallShield to append the version number to the App-V package name, select this check box.

File Mapping Dialog Box

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

The File Mapping dialog box lets you specify how you want to store the files in your App-V package. It also lets you indicate whether you want to allow write access to the virtual file system.

To launch the File Mapping dialog box, click the File Mapping link in the More Options area on the Files page. This dialog box displays the current primary application directory setting (if one has already been specified).

The following settings are available on the File Mapping dialog box.

Table 14 ▪ File Mapping Dialog Box Settings

Setting	Description
Specify how files are stored in this package	Select the appropriate option: ● **Map all files into the virtual file system (VFS)**—This option matches the behavior that was introduced in the Sequencer for App-V 5 SP3. This support is available for App-V 4.x and 5.x packages. ● **Specify a primary application directory. Files and folders that are descendants of this directory will be mapped to the root folder**—To use a primary application directory, select this option and then optionally specify the application directory that contains most of the files in the App-V packages. To specify the application directory, click the ellipsis button (...). When you do so, the Browse for Directory dialog box opens, listing all of the currently available destination directories for this App-V package. If you leave the application directory field blank, the directory is determined automatically at run time. To learn how, see Specifying the Primary Application Directory. At run time when the App-V package is loaded, the directory and its contents are mounted to the App-V virtual drive. This is the default option.
Allow full write permission to the VFS	If you want an App-V 5.x package that you are creating to have full write permissions to the virtual file system (VFS), select this check box. Selecting this check box may be useful for sequencing third-party applications.

Isolation Options Dialog Box (for a Package)

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Use the Isolation Options dialog box to configure advanced settings for COM isolation and named object isolation. This support is available for App-V 5.x packages.

To access the Isolation Options dialog box, click the Isolation Settings link in the More Options area on the Package Information page.

The following settings are available on the Isolation Options dialog box.

Table 15 ▪ Isolation Options Dialog Box

Setting	Description
COM isolation	Select the appropriate option: • Isolate COM objects from the local system • Allow COM objects to interact with the local system
Named object isolation	Select the appropriate option: • Isolate named objects from the local system • Allow all named objects to interact with the local system

Isolation Options Dialog Box (for Registry Keys)

Edition ▪ *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

Use the Isolation Options dialog box to specify whether the App-V package should see only the registry entries for the selected key that are part of that App-V package, or see a merged view of the registry entries for the selected key from both the local registry and from the App-V package's registry.

To open the Isolation Options dialog box, right-click a registry key on the Registry page and then click Isolation Options.

Caution ▪ *Modify isolation options only if you have advanced knowledge of Microsoft operating system objects and registry settings.*

Use the Isolation Options dialog box to select one of the following options:

Table 16 ▪ Options on the Isolation Option Dialog Box

Option	Description
Merge with local key	The App-V package sees a merged view of the registry entries for the selected key from both the local registry and from the App-V package's registry.
Override local key	The App-V package sees only the registry entries for the selected key that are part of that App-V package.

Launch App-V Package Dialog Box

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

If you use the InstallShield App-V Launcher to locally test a newly built App-V package before moving it to a deployment server, the Launch App-V Package dialog box opens when an App-V package has more than one shortcut. You are prompted to select the shortcut that you want to launch from a list of all of the shortcuts.

To open the App-V Launcher, click the **Test launch the App-V package** link in the More Options area on the Build Options page.

Options Dialog Box (for Configuring Isolation Options for a File)

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Version ▪ This information applies to App-V 4.x packages.

Use the Options dialog box to configure isolation options for the selected file.

Caution ▪ Modify isolation options only if you have advanced knowledge of Microsoft operating system objects, App-V, and registry settings.

The following setting is available on the Options dialog box for a file that is selected on the Files page:

Table 17 ▪ Setting on the Options Dialog Box for a File

Setting	Description
File Type	Specify the data type of the file. Available options are: ● **Application Data**—Changes to the file are saved for all users of the App-V package on the client system. ● **User Data**—Changes to the file are saved only for the logged-on user.

Options Dialog Box (for Configuring Isolation Options for a Folder)

Edition ▪ The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.

Version ▪ Some settings apply to particular versions of App-V packages. Version-specific differences are noted where appropriate.

Use the Options dialog box to configure isolation options for the selected folder.

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Caution ▪ *Modify isolation options only if you have advanced knowledge of Microsoft operating system objects, App-V, and registry settings.*

The following settings are available on the Options dialog box for a folder that is selected on the Files page:

Table 18 ▪ Settings on the Options Dialog Box for a Folder

Setting	Description
Isolation	Specify whether you want to use isolation for the selected folder and all of its contents. Available options are: ● **Merge with local directory**—The virtual application sees a combined view for the selected directory and its contents; it consists of the folder and its contents in the virtual application's directory and the folder and its contents that are on the local system. ● **Override local directory**—The virtual application sees only the folders and their contents that are in the App-V package. The folders in the App-V package are isolated from the local directory.
File Type	🏳️ **Version** ▪ *This setting is available for App-V 4.x packages.* Specify the data type of the folder. Available options are: ● **Application Data**—Changes to the folder are saved for all users of the App-V package on the client system. ● **User Data**—Changes to the folder are saved only for the logged-on user.

Package Optimizations Dialog Box

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Edition ▪ *The Microsoft App-V Assistant is included in the Premier Edition of InstallShield.*

The Package Optimizations dialog box enables you to specify your preference for control of performance and network traffic that is associated with running an App-V package. The package optimization option that you select determines how quickly the App-V package launches, and how often additional functionality needs to be streamed to the client while the App-V package is being used.

The Package Optimizations dialog box opens when you click the Package Optimizations link in the More Options area on the Build Options page.

Use the Package Optimizations dialog box to select one of the following options:

Table 19 ▪ Package Optimizations Options

Option	Description
Optimize for Streaming	the Microsoft App-V Assistant performs a static analysis of the shortcuts in the application and decides which files should be in feature block 1 and which should be in feature block 2. This option provides a relatively quick launch time while limiting network traffic during application use. *Note ▪ When application files are streamed to a client either at launch or during application use, they are saved in the App-V cache and do not need to be streamed again during subsequent use of the application.*
Optimize for Offline Use	All files in the App-V package are included in feature block 1. All of the files are streamed to the client at start up in one file before the application launches. After that, no more streaming is done. All files are stored in the App-V cache, which means that the application is available for use even when the machine is not connected to the App-V server. If you want to enable end users to use the App-V package when the target system is not connected to the App-V server, and if you want to eliminate network traffic when the App-V package is being used, select this option. *Note ▪ When application files are streamed to a client either at launch or during application use, they are saved in the App-V cache and do not need to be streamed again during subsequent application use.*

For more information, see Specifying Package Feature Block Optimizations.

Advanced Table Settings for Conversion to Microsoft App-V

You can customize your virtual conversion process in the following ways:

● **Per package**—You can use InstallShield to directly edit the ISVirtualPackage table to modify the settings referenced below. You can also use the App-V Assistant user interface to modify the settings.

● **Globally for any conversion**—You can edit the Settings.xml file to specify default values for many of the settings that can be specified in the ISVirtualPackage table.

In addition to editing the ISVirtualPackage table, you can also edit other tables (directory, file, registry, shortcut) that store App-V conversion settings related to a particular item in the package, such as a particular shortcut, file, registry entry, or directory.

Information about customizing table settings for your App-V conversion process are organized into the following sections:

● ISVirtualPackage Table

- ISVirtualRelease Table

- ISVirtualDirectory Table

- ISVirtualFile Table

- ISVirtualRegistry Table

- ISVirtualShortcut Table

- Miscellaneous Virtual Conversion Settings

- Editing the Settings.xml File

Note ▪ If you want to modify the setting in the ISVirtualPackage *table globally, you can edit the* Settings.xml *file, as described in Editing the Settings.xml File. However, the settings in the* ISVirtualDirectory, ISVirtualFile, ISVirtualRegistry, *and* ISVirtualShortcut *tables cannot be specified in the* Settings.xml *file.*

ISVirtualPackage Table

The ISVirtualPackage table is the main table that stores package-wide conversion settings. To edit this table, open the package in InstallShield and open the Direct Editor view. Also, if you make selections in the InstallShield Assistants, it will modify the settings in this table.

The following are App-V settings in the ISVirtualPackage table.

Table 20 ▪ App-V Settings in ISVirtualPackage Table

Name	Value	Default	Meaning
AppVComments			SFT file comments
AppVDiagFileSystem	1	0	Include File System Diagnostic tool - a shortcut is included to run cmd.exe from the physical System32 folder. This cmd.exe and any programs launched from it will have access to the virtual environment of the package
AppVDiagRegistry	1	0	Include Registry System Diagnostic tool - a shortcut is included to run regedit.exe from the physical Windows folder. It will have access to the virtual environment.
AppVDSC0, AppVDSC1, etc.	Absolute path to OSD or SFT file [: MANDATORY]		Dynamic Suite Composition settings

Table 20 ▪ App-V Settings in ISVirtualPackage Table

Name	Value	Default	Meaning
AppVFullVFSWriteMode	1	0	Set to enable full VFS Write mode. *Note* ▪ *This setting only applies for App-V 5.x packages.*
APPVLOADING	1	0	Set this option to not include the SFT file in the wrapper MSI. The SFT file will be streamed from the server location specified in the OSD and manifest files.
AppVMsiWrapperCompress	1	0	Compression setting for wrapper MSI
AppVName		Same as name of MSI	Specify package name
AppVNoCompression	1	0	Compression setting - default is compressed
AppVNoSpacesInFileNames	1		Will replace spaces in the SFT, OSD, and Icon file names with '_'.
AppVOS	Bitwise or of flags representing OS	0	0 indicates OS independent. Otherwise, here is the OS list starting with bit 1: WinXP, WinXP64, Win2003Svr, Win2003TS, Win2003TS64, Win2008Svr, Win2008TS, Win2008TS64, WinVista, WinVista64, Win7, Win764, Win2008R2TS64
AppVPackageOptimization	Offline or Stream	Stream	Only the shortcut targets are put in feature block 1 (FB1) if Stream is selected. Otherwise the entire package is put in FB1.
AppVPrereq	1	0	Set this option to include App-V client setup as a setup prerequisite for the wrapper MSI. It will be necessary to obtain a redistributable copy of the App-V client setup to use this feature.

Table 20 ▪ App-V Settings in ISVirtualPackage Table

Name	Value	Default	Meaning
AppVRootFolderName		8.3 name based on product name and version	Specify root folder name
AppVRuntimeDrive	Drive letter such as M:	Q:	App-V client drive to use
AppVServerURLHost			Server location of SFT file
AppVServerURLPort			Server location of SFT file
AppVServerURLProtocol	RTSP, RTSPS, FILE, HTTP, or HTTPS		Protocol to use to access SFT file location
AppVSpaceReplacementString	Some string		Use together with setting AppVNoSpacesInFileNames property to 1. Any spaces in SFT, OSD, and Icon file names will be replaced by the string specified in the value of this property. If the string 'EMPTYSTRING' is used, then spaces will just be removed.
AppVTestLauncher	1	1	AppVLauncher.exe is copied next to the newly built App-V package. This tool can be used to easily test deploy App-V packages.
AppVUpgrade	1	0	Enables creation of an upgrade package
AppVUpgradeAppendPackageVersion	1	1	Package version will be appended to the end of the SFT file name
AppVUpgradeLatest	1	0	Will locate the most recently built App-V package based on modified timestamp on SFT files found in appropriately named sub-folders next to the MSI file.

Table 20 ▪ App-V Settings in ISVirtualPackage Table

Name	Value	Default	Meaning
AppVUpgradePreviousPackage			Absolute path to SFT from previous package that will be upgraded.
AppVv5ComInprocess	1	0	Set to 1 to enable in-process COM interaction. Com Interaction has to also be enabled for this option to have effect. *Note ▪ This setting only applies for App-V 5.x packages.*
AppVv5ComInteraction	1	0	Set to 1 to enable COM interaction. *Note ▪ This setting only applies for App-V 5.x packages.*
AppVv5ComOutofprocess	1	1	Set to 1 to enable out-of-process COM interaction. Com Interaction has to also be enabled for this option to have effect. *Note ▪ This setting only applies for App-V 5.x packages.*
AppVv5EnableBrowserHelperObjects	0	1	Set to 0 to disable browser helper objects. *Note ▪ This setting only applies for App-V 5.x packages.*
AppVv5NamedObjectsInteraction	1	0	Set to 1 to enable named objects interaction. *Note ▪ This setting only applies for App-V 5.x packages.*
BuildMSI	1	0	Create a wrapper MSI file that can be used to deploy the App-V package

Table 20 ▪ App-V Settings in ISVirtualPackage Table

Name	Value	Default	Meaning
`MSIFile0, MSIFile1, etc`	Absolute path to MSI		Indicates other MSI packages to suite together with the current one into one package.
`VirtualPackageBuildOutputFolder`	Absolute path to a directory		Instead of creating the converted virtual applications in a folder next to the source MSI, put them in a new folder under this specified location - this overrides the global redirect option in settings.xml.

Note ▪ *If you want to modify these settings globally, you need to edit the* `Settings.xml` *file, as described in Editing the Settings.xml File.*

ISVirtualRelease Table

The `ISVirtualRelease` table stores the relationship between InstallShield project releases and the virtual package type you want to build. This table is only relevant when you are editing an InstallShield Basic MSI project (not when you are editing an MSI package in the DirectEdit mode). If you make the relevant selections in the Assistants, it will modify the settings in this table.

Note ▪ *The settings in this table cannot be specified in the Settings.xml file.*

Table 21 ▪ General Settings in ISVirtualRelease Table

ISRelease_	ISProductConfiguration_	Name	Value	Meaning
`Key to ISRelease`	`Key to ISProductConfiguration`	`BuildVirtualPackage`	1	Build virtual package when associated release is built
`Key to ISRelease`	`Key to ISProductConfiguration`	`Provider`	Semicolon separated list of Thinstall, AppV, and Citrix	Indicates virtual technologies to which to convert MSI packages

ISVirtualDirectory Table

The following are App-V settings in the ISVirtualDirectory table.

Table 22 ▪ App-V Settings in ISVirtualDirectory Table

Directory_	Name	Value	Meaning
Key into Directory table	AppVUserData	1	If set, then treat this directory as user data. If unspecified, then default algorithm is used to determine whether to mark directory as user data or application data.
Key into Directory table	AppVOverride	1	Override directory contents during upgrade

ISVirtualFile Table

The following are App-V settings in the ISVirtualFile table.

Table 23 ▪ App-V Settings ISVirtualFile Table

File_	Name	Value	Meaning
Key into File table	AppVUserData	1	If set, then treat this file as user data. If unspecified, then default algorithm is used to determine whether to mark file as user data or application data.
Key into File table	AppVOverride	1	Override file during upgrade

ISVirtualRegistry Table

The following are App-V settings in the ISVirtualRegistry table.

Table 24 ▪ App-V Settings in ISVirtualRegistry Table

Registry_	Name	Value	Meaning
Key into Registry table	AppVOverride	1	If set, virtual application will only see the registry key contents in the virtual package and no child keys that may be present on the physical machine. Otherwise, virtual application will see only values in the virtual package, but will see child keys present on the physical machine, if they are not also present in the virtual package.

ISVirtualShortcut Table

The following are App-V settings in the ISVirtualShortcut table.

Table 25 ▪ App-V Settings in ISVirtualShortcut Table

Shortcut_	Name	Value	Meaning
Key into Shortcut table	AppVApplication	0	A value of zero indicates that this shortcut will not be included in the converted App-V package.

Manually Adding an Entry to the ISVirtualShortcut Table

Typically the target version in an OSD file is automatically determined during conversion to App-V 4.x package format. The version of the shortcut target file is used, or if the target file does not have a version, then a default value of '1.0' is used. To set a custom version, you can manually add an entry to the ISVirtualShortcut table.

Task   ***To manually populate the ISVirtualShortcut table using the InstallShield Editor:***

1. Open the **Direct Editor** view.

2. Select the **ISVirtualShortcut** table and click **New** to add a new record.

3. Enter the following values:

    ● For **Shortcut**, enter the key of the shortcut.

    ● For **Name**, enter the property name which is **AppVTargetVersion**.

    ● For **Value**, enter the desired version number.

4. Click **OK**.

Note ▪ This setting only has effect for App-V 4.x conversion.

Miscellaneous Virtual Conversion Settings

You can edit the following XML file to modify global settings that also govern the creation of virtual packages.

Table 26 ▪ Miscellaneous Settings

Location	Name	Value	Meaning
System\Msi.xml	IgnoreTables	MSI table names	Control whether an error or warning is flagged for certain tables during conversion

Table 26 ▪ Miscellaneous Settings

Location	Name	Value	Meaning
System\Msi.xml	IgnoreCustomActions	MSI custom action names	List of custom actions that can safely be ignored during virtual conversion
System\Msi.xml	PropertyDefaults	MSI property names with given values	Default values to use for certain MSI properties rather than flagging them as warnings
Support\0409\settings.xml	GlobalBuildRedirectFolder	Absolute directory path	Instead of creating the converted virtual applications in a folder next to the source MSI, put them in a new folder under this specified location

Editing the Settings.xml File

To edit the Settings.xml file, add a property element for each setting in the Virtualization/Properties section of the file. You can find the Settings.xml file in the following directory:

[InstallShield Installation Directory]\Support\0409

Edit the following section of the file:

```
<Virtualization>
...
    <Properties>
        <!--Use this section to provide a global default for any setting
        that is found in the ISVirtualPackage table-->
        <!--<Property Name="AppVRuntimeDrive" Value="G:"/>-->
        <!--<Property Name="AppVServerURLPath" Value="%PackageName%_v%PackageVersion%" />-->
    </Properties>
</Virtualization>
```

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