

VMware vCenter Configuration Manager Software Provisioning Components Installation and User's Guide

Package Studio 1.1

Software Repository for Windows 1.1

Package Manager 1.2

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About This Book

This manual, *vCenter Configuration Manager Software Provisioning Components Installation and User's Guide*, describes how to install the components, use the components to create software packages, publish packages to repositories, and install software on target machines.

Intended Audience

To use the information in this guide effectively, you must have a basic understanding of how to configure network resources, install software, and administer operating systems. You also need to fully understand your network's topology and resource naming conventions.

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Introduction to VCM Software Provisioning

The VCM Software Provisioning components consist of VMware vCenter Configuration Manager Package Studio, software package repositories, and Package Manager.

VMware vCenter Configuration Manager Package Studio

Package Studio is the application used to build software packages for installation on target Windows servers and workstations.

A software package provides the files and metadata necessary to install and remove programs. One of the most useful features of a package is the metadata regarding dependencies, conflicts, and other relationships that are not represented by software installation files. This metadata is used to determine if the necessary dependencies are in place so that an installation is successful, and if not, what is necessary to make the installation successful. This use of metadata is similar to rpm on Linux.

Packages support commercial and custom software that may be installed using any installation technology, including .msi, .exe, or scripts (Python, VBScript, PowerShell, and others).

Once a package is created and ready for distribution, it is published to a software repository. You use Package Manager to download the package from the repository to the local machine and install it on your Windows systems.

Software Repository for Windows

Software Repository for Windows is the shared location to which packages are published by Package Studio and the location from which Package Manager downloads packages for installation.

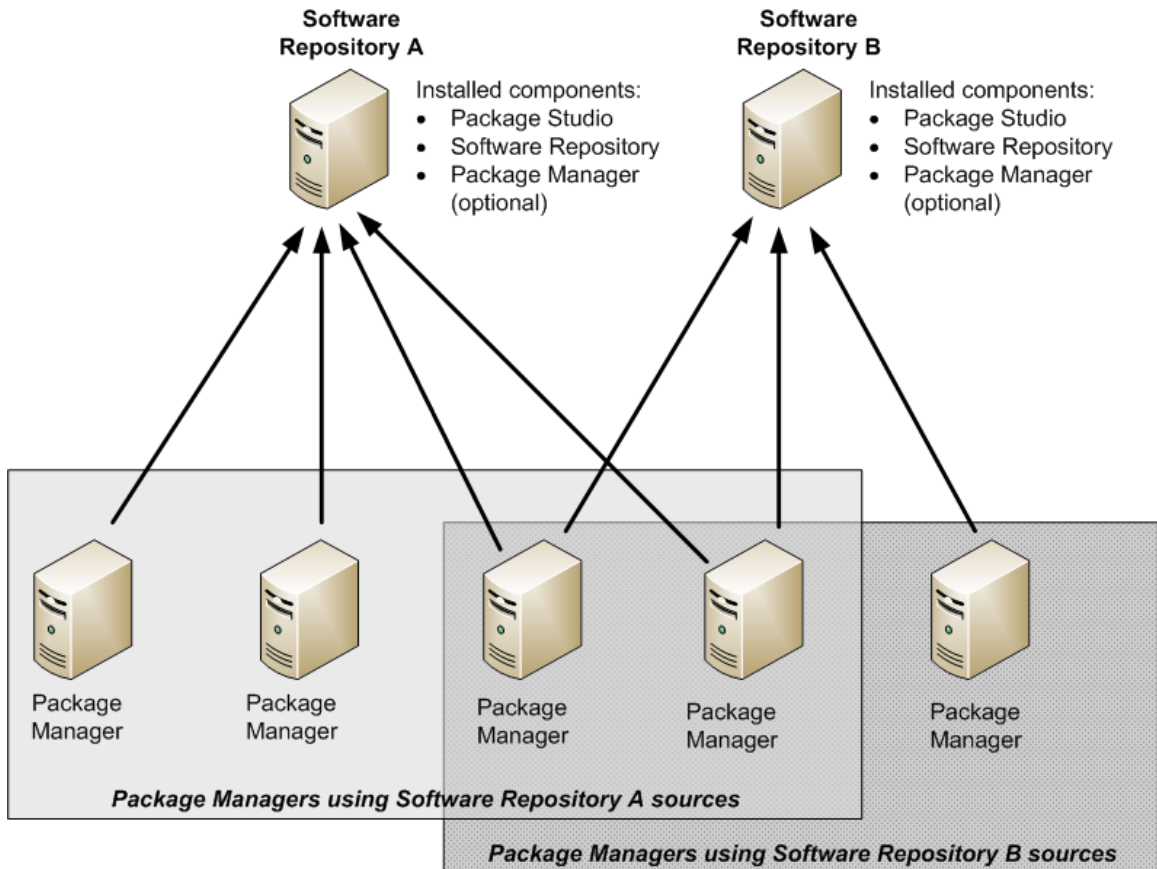
Package Manager for Windows

Package Manager is the application installed on each machine to manage the installation and removal of the software contained in packages. Package Manager is configured to use one or more repositories as sources for packages.

If you are using the software provisioning components in conjunction with VMware vCenter Configuration Manager (VCM), you can use VCM to add and remove sources, and to install and remove packages.

Overview of Component Relationships

The following diagram displays the general relationship between Package Studio, repositories, and Package Manager in a working environment.



Installing the Software Provisioning Components

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The software provisioning components should be installed on machines with the following relationships:

- **Software Repository for Windows:** Installed on at least one Windows machine in your environment, and installed on the same machine with Package Studio. Install the repository before installing Package Studio.
- **VMware vCenter Configuration Manager Package Studio:** Installed on the same machine as your software repository.
- **Package Manager:** Installed on all Windows machines on which you are managing software provisioning.

To uninstall the above applications using a script at a later date, you should save a copy of each of the .msi files in an archive location. To uninstall using the .msi, you must have the same version used to install the application.

Software Provisioning Requirements

VCM Software Provisioning provides the components to create software provisioning packages, publish the packages to repositories, and then install and remove software packages on target machines.

The following operating systems are supported platforms:

Table 2-1. Software Provisioning Operating System and Hardware Requirements

Supported Operating System	Supported Hardware Platform
Microsoft Windows 7	x86, x64
Microsoft Windows Server 2008 R2	x64
Microsoft Windows Server 2008 SP2	x86, x64
Windows Vista SP2	x86, x64
Microsoft Windows XP SP3	x86
Microsoft Windows XP SP2	x64
Microsoft Windows Server 2003 R2 SP2	x86, x64
Microsoft Windows Server 2003 SP2	x86, x64

Software Provisioning Component Software Requirements

The following are the VCM Software Provisioning components and their software requirements:

- **VMware vCenter Configuration Manager Package Studio:** The application used to create the software packages. Requires .NET 3.5.1.
- **Software Repositories:** The file system used to store the shared software packages. Requires .NET 3.5.1 and IIS 6, 7, or 7.5.
- **Package Manager:** The application on each managed machine that downloads packages from repositories, and then installs and removes the software contained in the packages. Requires .NET 3.5.1.

Software Provisioning on Guests

Any virtual machine guest on VMware ESX 3.5 and vSphere 4 (both i and non-i versions) meeting the above requirements can be used for any of the VCM Software Provisioning components.

Install Software Repository for Windows

The Software Repository for Windows and the VMware vCenter Configuration Manager Package Studio should be installed on the same machine. The process installs the Repository folders and subfolders, and configures the virtual directory. The virtual directory is used by Package Manager to access the repository.

Prerequisites

Target machine meets the supported hardware requirements, operating system, and software requirements. See "[Software Provisioning Requirements](#)" on page 9 for currently supported platforms and requirements.

Access to the Repository.msi, which is available on the VMware website or in the vCenter Configuration Manager application files. The default location in the VCM application files is C:\Program Files (x86)\VMware\VCMAgentFiles\Products.

Procedure

1. Double-click Repository.msi.
The **Welcome** page appears.
2. Click **Next**.
The **License Agreement** page appears.
3. Review the agreement, and then select **I accept the terms of the License Agreement** to continue. The other options become available.
4. Select **I am an authorized agent and/or representative of the customer/end-user and I have read the terms and conditions stated above**.
5. Click **Next**.
The **Installation Folder** page appears.
6. Use the default path or click **Change** to modify the path. When the path is correct, click **Next**.
The **Virtual Directory** page appears.
7. Use the default name or type a new name in the text box.
8. Click **Next**.

The **Ready to Install** page appears.

9. Click **Install**.

When the installation is completed, the **Setup Complete** page appears.

10. Click **Finish**.

The repository and the virtual directory are added to the locations specified during installation. The default location for the repository is `C:\Program Files\VMware\VC\Tools\Repository` (on 32-bit machines) or `C:\Program Files (x86)\VMware\VC\Tools\Repository` (on 64-bit machines). The default virtual directory `SoftwareRepository` is added to **Internet Information Services (IIS) > Web Sites > Default Web Site**.

Procedure (unattended using .msi)

1. On your Collector, navigate to `C:\Program Files (x86)\VMware\VC\AgentFiles\Products`.
2. Locate the `Repository.msi` file, and then copy it to the target machine. You can also run it from a shared location.
3. On the target machine, run the `.msi` file using the following command line syntax.

```
msiexec /i [path]\Repository.msi /qn /l*v %temp%\Repository.log
```

You can add the following arguments if you want to specify locations other than the default directories:

```
REPOSITORY_ROOT="C:\Program Files (x86)\VMware\VC\Tools\Repository\" (defaults to this path)
```

```
VIRTUAL_DIR_NAME_REPOSITORY=SoftwareRepository (defaults to this value)
```

Software Repository Structure

The files for a repository consist of the main folder (for example, `SoftwareRepository`). In this file are the following:

- `.hive`: Contains the repository management files, including such files as `repository.index` and `repository.toc`.
- `crates`: Contains alphabetical sub folders. It is to this location that the packages (`.crate` files) are published.
- `dists`: Contains `crates.gz` files. These files are metadata about the `.crate` files.

Manually Uninstall the Repository

Use the following script to run an unattended uninstall the software repository. To uninstall the application, you must use the version of the `Repository.msi` that was used to install the application.

Procedure

1. Copy the `Repository.msi` to the machine on which you are uninstalling the application or point to the file in a shared directory.
2. Run the `.msi` file using the following command line syntax:

```
msiexec /x [path]\Repository.msi /l*v %temp%\Repository.log
```

Manually Configure Repositories

Although you can use an installation file to install a repository on a machine, it may be necessary to manually create one.

The repository and the VMware vCenter Configuration Manager Package Studio should be installed on the same machine.

Prerequisites

Target machine meets the supported hardware requirements, operating system, and software requirements. See "[Software Provisioning Requirements](#)" on page 9 for currently supported platforms and requirements.

Procedure for IIS 6

NOTE The steps for configuring a repository on Windows Vista, Windows 7, and Windows 2008 are different from the ones provided here. See below.

1. Create a repository directory on your desired drive. For example, C:\WindowsRepository.
2. Open **Internet Information Services (IIS) Manager**.
3. Expand <machine name> >**Web Sites**.
4. Right-click **Default Web Site**, and then select **New > Virtual Directory**. The **Welcome to the Virtual Directory Creation Wizard** appears.
5. Click **Next**. The **Virtual Directory Alias** page appears.
6. Type a name in the **Alias** text box. For example, SoftwareRepository.
7. Click **Next**. The **Web Site Content Directory** page appears.
8. Click **Browse** and locate the repository directory you previously created. For example, C:\WindowsRepository.
9. Click **Next**. The **Virtual Directory Access Permissions** page appears.
10. Select **Read, Run scripts, and Browse**.
11. Click **Next**. The **You have successfully completed the Virtual Directory Creation Wizard** page appears.
12. Click **Finish**. The new repository virtual directory alias is added to the **Default Web Sites** list.
13. Right-click the new repository directory, and then select **Properties**.
The <directory name> **Properties** dialog box appears.
14. Click the **Virtual Directory** tab, and then click **Remove**, located to the right of **Application name** text box. **Application name** and **Application pool** are disabled.
15. Click the **HTTP Headers** tab, and then click **MIME Types**. The **MIME Types** dialog box appears.
16. Click **New**. The **MIME Type** dialog box appears.
17. Add the following MIME types with these names and settings:

- **Extension:** .crate and **MIME type:** application/octet-stream
 - **Extension:** .index and **MIME type:** application/octet-stream
 - **Extension:** .gz and **MIME type:** application/octet-stream
 - **Extension:** .options and **MIME type:** application/octet-stream
 - **Extension:** .info and **MIME type:** application/octet-stream
18. Click **OK** to save your settings and close the **MIME Types** dialog box.
 19. On the **Properties** dialog box, click **OK** to close the dialog box.
 20. Open a Command Prompt window, and then browse to the repository folder you previously created.
 21. At the command prompt, type `mkdir .hive`, and then press **Enter**.
 22. At the command prompt, type `mkdir dists`, and then press **Enter**.
 23. Open a blank document in a text editing application, such as Notepad, and then add `<RepositoryIndex></RepositoryIndex>` to the contents.
 24. Click **File > Save As**. The **Save As** dialog box appears.
 25. Change the file name to `repository.index`, and then save the file in the previously created **.hive** folder.
 26. Open a blank document in a text editing application, such as Notepad. Do not add any text.
 27. Click **File > Save As**. The **Save As** dialog box appears.
 28. Change the file name to `repository.info`, and then save the empty file in the previously created **.hive** folder.
 29. Open an Internet Explorer window, and then browse to your virtual directory. For example, `http://<machinename>/SoftwareRepository`. The web page should display the **.hive** and **dists** folders. After you publish packages using the VMware vCenter Configuration Manager Package Studio, a **crates** folder is added.

Procedure for IIS 7 and later

1. Create a repository directory on your desired drive. For example, `C:\WindowsRepository`.
2. Open **Internet Information Services (IIS) Manager**.
3. Expand **<machine name> > Sites**.
4. Right-click **Default Web Site**, and then select **Add Virtual Directory**. The **Add Virtual Directory** dialog box appears.
5. Type a name in the **Alias** text box. For example, `SoftwareRepository`.
6. Click the **Physical path** ellipsis button. The **Browse for Folder** dialog box appears.
7. Browse for and select the repository directory you previously created. For example, `C:\WindowsRepository`.
8. Click **OK** to close the **Browse for Folder** dialog box.
9. Click **OK** to close the **Add Virtual Directory** dialog box.
10. Select the new virtual directory you just added, and then double-click **Directory Browsing** in **<yourdirectoryname> Home** pane. The pane displays **Directory Browsing**.
11. In the **Actions** pane, click **Enable**.

12. Click **Back** until you are again on the <yourdirectoryname> **Home** pane, and then click on **MIME Types**. The pane displays **MIME Types**.
13. In the **Actions** pane, click **Add**. The **Add MIME Type** dialog box appears.
14. Add the following MIME types with these names and settings:
 - **File name extension:** .crate and **MIME type:** application/octet-stream
 - **File name extension:** .index and **MIME type:** application/octet-stream
 - **File name extension:** .options and **MIME type:** application/octet-stream
 - **File name extension:** .info and **MIME type:** application/octet-stream
15. Close IIS.
16. Open a Command Prompt window, and then browse to the repository folder you previously created.
17. At the command prompt, type `mkdir .hive`, and then press **Enter**.
18. At the command prompt, type `mkdir dists`, and then press **Enter**.
19. Open a blank document in a text editing application, such as Notepad, and then add <RepositoryIndex></RepositoryIndex> to the contents.
20. Click **File > Save As**. The **Save As** dialog box appears.
21. Change the file name to `repository.index`.
22. Change the **Save as type** to `All Files`, and then save the file in the previously created **.hive** folder.
23. Open a blank document in a text editing application, such as Notepad. Do not add any text.
24. Click **File > Save As**. The **Save As** dialog box appears.
25. Change the file name to `repository.info`.
26. Change the **Save as type** to `All Files`, and then save the file in the previously created **.hive** folder.
27. Open an Internet Explorer window, and then browse to your virtual directory. For example, `http://<machinename>/SoftwareRepository`. The web page should display the **.hive** and **dists** folders. After you publish packages using the VMware vCenter Configuration Manager Package Studio, a **crates** folder is added.

Configure Mirrored Repositories

Mirrored repositories are configured where one repository is mirrored from another.

The most common use of mirrored repositories is if you have a repository in your main office and one in your satellite office. You do not want to install packages to machines in the satellite office across your wide area network. Configuring a mirrored repository will reduce the strain on your WAN, allowing the satellite office machines to install packages from a local repository.

Prerequisites

Target machine meets the supported hardware requirements, operating system, and software requirements. See ["Software Provisioning Requirements" on page 9](#) for currently supported platforms and requirements.

Procedure for IIS 6

NOTE The steps for configuring a repository on Windows Vista, Windows 7, and Windows 2008 are different from the ones provided here. See below.

1. Create a repository directory on your desired drive. For example, C:\WindowsRepository.
2. Open **Internet Information Services (IIS) Manager**.
3. Expand **<machine name> >Web Sites**.
4. Right-click **Default Web Site**, and then select **New > Virtual Directory**. The **Welcome to the Virtual Directory Creation Wizard** appears.
5. Click **Next**. The **Virtual Directory Alias** page appears.
6. Type a name in the **Alias** text box. For example, SoftwareRepository.
7. Click **Next**. The **Web Site Content Directory** page appears.
8. Click **Browse** and locate the repository directory you previously created. For example, C:\WindowsRepository.
9. Click **Next**. The **Virtual Directory Access Permissions** page appears.
10. Select **Read, Run scripts**, and **Browse**.
11. Click **Next**. The **You have successfully completed the Virtual Directory Creation Wizard** page appears.
12. Click **Finish**. The new repository virtual directory alias is added to the **Default Web Sites** list.
13. Right-click the new repository directory, and then select **Properties**.
The **<directory name> Properties** dialog box appears.
14. Click the **Virtual Directory** tab, and then click **Remove**, located to the right of **Application name** text box. **Application name** and **Application pool** are disabled.
15. Click the **HTTP Headers** tab, and then click **MIME Types**. The **MIME Types** dialog box appears.
16. Click **New**. The **MIME Type** dialog box appears.
17. Add the following MIME types with these names and settings:
 - **Extension:** .crate and **MIME type:** application/octet-stream
 - **Extension:** .index and **MIME type:** application/octet-stream
 - **Extension:** .gz and **MIME type:** application/octet-stream
 - **Extension:** .options and **MIME type:**application/octet-stream
 - **Extension:** .info and **MIME type:**application/octet-stream
18. Click **OK** to save your settings and close the **MIME Types** dialog box.
19. On the **Properties** dialog box, click **OK** to close the dialog box.
20. Copy and paste the contents of the original Repository folder, the .hive folder, the dist folder, and the crates folder, to the new repository location.
21. Add the new repository entry to the machine registry. On a 64-bit machine, go to HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\VMware, Inc.\LocalRepositories. On a 32-bit machine, go to HKEY_LOCAL_MACHINE\SOFTWARE\VMware, Inc.\LocalRepositories.
22. Right-click **LocalRepositories**, and then select **New > String Value**.
23. Right-click the new value, and the select **Rename**. Type the name of your new repository.
24. Right-click the new repository name, and then select **Modify**. The **Edit String** dialog box appears.

25. In the **Data Value** text box, type the fully qualified URI for the repository. For example, `http://<machinename>/NewRepository`.
26. Click **OK**.
27. Open an Internet Explorer window, and then browse to your new virtual directory. For example, `http://<machinename>/NewRepository`. The web page should display the .hive,dists, and crates folders. The crates folder contains any copied packages (*.crate files).
28. To keep the new repository synchronized with the original repository, you must continue to copy the files from the original repository to the new repository. You can use one of the following methods:
 - Manually copy the files from the original repository to the new repository.
 - Create a VBScript to copy IIS metabase and schema from one machine to another. The following article assumes both machines are running Windows Server 2003:
<http://www.microsoft.com/technet/prodtechnol/WindowsServer2003/Library/IIS/81f04967-f02f-4845-9795-bad2fe1a1687.msp?mfr=true>.
 - Use a commercial mirroring application.
 - If you are using VCM, you configure the Remote Command Package Mirroring template to copy packages between repositories, or write your own VBScript to run as a remote command to copy the files specified in the configuration steps above from the old repository to the new repository.

Procedure for IIS 7 and later

1. Create a repository directory on your desired drive. For example, `C:\WindowsRepository`.
2. Open **Internet Information Services (IIS) Manager**.
3. Expand **<machine name> > Sites**.
4. Right-click **Default Web Site**, and then select **Add Virtual Directory**. The **Add Virtual Directory** dialog box appears.
5. Type a name in the **Alias** text box. For example, `SoftwareRepository`.
6. Click the **Physical path** ellipsis button. The **Browse for Folder** dialog box appears.
7. Browse for and select the repository directory you previously created. For example, `C:\WindowsRepository`.
8. Click **OK** to close the **Browse for Folder** dialog box.
9. Click **OK** to close the **Add Virtual Directory** dialog box.
10. Select the new virtual directory you just added, and then double-click **Directory Browsing** in **<yourdirectoryname> Home** pane. The pane displays **Directory Browsing**.
11. In the **Actions** pane, click **Enable**.
12. Click **Back** until you are again on the **<yourdirectoryname> Home** pane, and then click on **MIME Types**. The pane displays **MIME Types**.
13. In the **Actions** pane, click **Add**. The **Add MIME Type** dialog box appears.
14. Add the following MIME types with these names and settings:

- **File name extension:** .crate and **MIME type:** application/octet-stream
 - **File name extension:** .index and **MIME type:** application/octet-stream
 - **File name extension:** .options and **MIME type:** application/octet-stream
 - **File name extension:** .info and **MIME type:** application/octet-stream
15. Close IIS.
 16. Copy and paste the contents of the original Repository folder, the .hive folder, the dist folder, and the crates folder, to the new repository location.
 17. Add the new repository entry to the machine registry. On a 64-bit machine, go to HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\VMware, Inc.\LocalRepositories. On a 32-bit machine, go to HKEY_LOCAL_MACHINE\SOFTWARE\VMware, Inc.\LocalRepositories.
 18. Right-click **LocalRepositories**, and then select **New > String Value**.
 19. Right-click the new value, and then select **Rename**. Type the name of your new repository.
 20. Right-click the new repository name, and then select **Modify**. The **Edit String** dialog box appears.
 21. In the **Data Value** text box, type the fully qualified URI for the repository. For example, http://<machinename>/NewRepository.
 22. Click **OK**.
 23. Open an Internet Explorer window, and then browse to your new virtual directory. For example, http://<machinename>/NewRepository. The web page should display the .hive,dists, and crates folders. The crates folder contains any copied packages (*.crate files).
 24. To keep the new repository synchronized with the original repository, you must continue to copy the files from the original repository to the new repository. You can use one of the following methods:
 - Manually copy the files from the original repository to the new repository.
 - Use a commercial mirroring application.
 - If you are using VCM, you configure the Remote Command Package Mirroring template to copy packages between repositories, or write your own VBScript to run as a remote command to copy the files specified in the configuration steps above from the old repository to the new repository.

Install Package Studio

The VMware vCenter Configuration Manager Package Studio and the repository must be installed on the same machine. The process installs the application files and specifies the repository to which Package Studio will publish packages.

NOTE When Package Studio is uninstalled from a machine, the locally saved projects and .crate files remain on the machine, allowing you to copy them to another machine or to delete them manually if they are not needed.

Prerequisites

Target machine meets the supported hardware requirements, operating system, and software requirements. See "[Software Provisioning Requirements](#)" on [page 9](#) for currently supported platforms and requirements.

Access to the PackageStudio.msi, which is available on the VMware website or in the vCenter Configuration Manager application files. The default location in the VCM application files is C:\Program Files (x86)\VMware\VCM\AgentFiles\Products.

(Recommended) Software Repository for Windows is installed. Installing the repository before installing Package Studio will reduce the manual configuration steps.

Procedure

1. Double-click `PackageStudio.msi`.
The **Welcome** page appears.
2. Click **Next**.
The **License Agreement** page appears.
3. Review the agreement, and then select **I accept the terms of the License Agreement** to continue. The other options become available.
4. Select **I am an authorized agent and/or representative of the customer/end-user and I have read the terms and conditions stated above**.
5. Click **Next**.
The **Installation Folder** page appears.
6. Use the default path or click **Change** to modify the path. When the path is correct, click **Next**.
The **Repository Root Folder** page appears.
7. Verify the path is to your installed repository files. To modify, click **Change**. When the path is correct, click **Next**.
The **Ready to Install** page appears.
8. Click **Install**.
When the installation is completed, the **Setup Complete** page appears.
9. Click **Finish**.

The Package Studio is installed to the location specified during installation. The default location is `C:\Program Files\VMware\VCM\Tools\Package Studio` (on 32-bit machines) or `C:\Program Files (x86)\VMware\VCM\Tools\Package Studio` (on 64-bit machines). To start Package Studio, select **Start > All Programs > VMware vCenter Configuration Manager > Tools > Package Studio**, or open the Package Studio folder and double-click `PackageStudio.exe`.

Procedure (unattended using .msi)

1. On your Collector, navigate to `C:\Program Files (x86)\VMware\VCM\AgentFiles\Products`.
2. Locate the `PackageStudio.msi` file, and then copy it to the target machine. You can also run it from a shared location.
3. On the target machine, run the .msi file using the following command line syntax.

```
msiexec /i [path]\PackageStudio.msi /qn /l*v %temp%\PackageStudio.log
```

You can add the following arguments if you want to specify locations other than the default directories:

`REPOSITORY_ROOT=C:\Program Files (x86)\VMware\VCM\Tools\Repository \` (Defaults to this or uses the Repository's value if it is already installed)

`PACKAGESTUDIO_DIR="C:\Program Files (x86)\VMware\VCM\Tools\Package Studio\"` (defaults to this path)

Manually Uninstall Package Studio

Use the following script to run an unattended uninstall the Package Manager. To uninstall the application, you must use the version of the PackageStudio.msi that was used to install the application.

Procedure

1. Copy the PackageStudio.msi to the machine on which you are uninstalling the application. You can also run it from a shared location.
2. Run the .msi file using the following command line syntax:

```
msiexec /x [path]\PackageStudio.msi /l*v %temp%\PackageStudio.log
```

Installing Package Manager for Windows

The Package Manager for Windows must be installed on all Windows machines on which you are managing software provisioning. The process installs Package Manager application files and the cratocache folder.

Package Manager can be run using command line options or using VMware vCenter Configuration Manager. Cratocache is the local folder to which software packages are downloaded before they are installed.

NOTE If you are using the Software Provisioning Components in conjunction with VMware vCenter Configuration Manager (VCM), you should not install the Package Manager using the following instructions, it is installed as part of the VCM Agent.

Prerequisites

Target machine meets the supported hardware requirements, operating system, and software requirements. See ["Software Provisioning Requirements" on page 9](#) for currently supported platforms and requirements.

Access to the PackageManager.msi, which is available on the VMware website.

Procedure

1. Double-click PackageManager.msi.
The **Welcome** page appears.
2. Click **Next**.
The **License Agreement** page appears.
3. Review the agreement, and then select **I accept the terms of the License Agreement** to continue. The other options become available.
4. Select **I am an authorized agent and/or representative of the customer/end-user and I have read the terms and conditions stated above**.
5. Click **Next**.
The **Installation Folder** page appears.
6. Use the default path or click **Change** to modify the path. When the path is correct, click **Next**.
7. Click **Next**.
The **Cache Folder** page appears.

8. Use the default path or click **Change** to modify the path where downloaded packages are saved. When the path is correct, click **Next**.

The **Ready to Install** page appears.

9. Click **Install**.

When the installation is completed, the **Setup Complete** page appears.

10. Click **Finish**.

The Package Manager and the cratecache folder are installed to the locations specified during installation. The default location is C:\Program Files (x86)\VMware\VCM\Tools.

Procedure (unattended using .msi)

1. On your Collector, navigate to C:\Program Files (x86)\VMware\VCM\AgentFiles\Products.
2. Locate the PackageManager.msi file, and then copy it to the target machine.
3. On the target machine, run the .msi file using the following command line syntax.

```
msiexec /i PackageManager.msi /qn /l*v %temp%\PackageManager.log
```

You can add the following arguments if you want to specify locations other than the default directories:

```
PACKAGEMANAGER_DIR="C:\Program Files (x86)\VMware\VCM\Tools\Package Manager for Windows\" (defaults to this path)
```

```
LOCAL_CRATE_CACHE="C:\Program Files (x86)\VMware\VCM\Tools\cratecache" (defaults to this path)
```

Manually Uninstall the Package Manager for Windows

Use the following script to run an unattended uninstall the Package Manager. To uninstall using the .msi, you must use the version of PackageManager.msi that was used to install the application.

Procedure

1. Copy the PackageManager.msi to the machine on which you are uninstalling the application
2. Run the .msi file using the following command line syntax:

```
msiexec /x PackageManager.msi /l*v %temp%\PackageManager.log
```

Using Package Studio to Create Software Packages and Publish to Repositories

3

Package Studio is the application used to build software packages for installation on target Windows servers and workstations.

Windows packages can include in-house and commercial software installation files, including .msi, .exe, VBScripts, python, PowerShell.

To add a software installer to a package, it must be able to install and uninstall unattended or quietly using command line options, response files, or other similar methods.

About Package Naming and Versioning

The name and version assigned to a software package has significant impact on package management when you are installing and uninstalling the package. When creating packages, you should have a clear understanding of how package names and versions are used by the Package Manager when running install and uninstall actions.

Managers of Windows software commonly work with installation files designed to install a specific publisher-provided version; however, a software package usually contains much more. In addition to the installation files, a software package can include command arguments, pre- and post-command scripts, and an assigned software signing certificate, any of which can be modified to optimize the process or to meet changing requirements. To account for all these variations in content, you must properly name and version your software packages.

Correct Naming Practices

When, as a system administrator, you create a package to install an application, for example, SQL Server 2005, you will begin by creating a project (*.prj), and then configuring a package (*.crate file) that is generated locally and can be published to a repository. The name of the project does not need to adhere to the stricter naming conventions you should use for a published package. The name of the package is determined by the value in the **Name** text box located on the **Properties** tab.

When you are ready to make a package available by publishing it to a repository, carefully consider the package name to ensure correct package management. The package name should not include the software version. For example, you should name the package containing SQL Server 2005 (version 9.00.1399.06) something like sqlserver, not sqlserver2k5. Instead, you should specify the primary version in the Version field when you build the package in Package Studio. Additionally, you must specify the architecture on which the package may be installed in the Architecture field. When the package is generated or published using the recommended naming (sqlserver), with Version and Architecture specified in the required fields, the file name is sqlserver_9.00.1399.06_x86.crate. Package Manager uses the specified version when checking if a package is installed, when checking if a dependency is installed, and when uninstalling a package.

If you find you need to modify a package, for example, to update a command argument to optimize installation, you should then add a value to the package version number rather than to the package name, for example, 9.00.1399.06-b, to enable Package Manager to identify and process the revised version.

Correct Versioning Practices

The version is added to the file name when the .crate file is generated. For example, sqlserver_9.00.4035.00_x86.crate, where 9.00.4035.00 is the software publisher's assigned version number and is considered the UpstreamVersion as described below.

You should carefully determine the version of the package. The processing of dependencies will not work if you incorrectly version a package.

You can also assign more detailed version numbers. The format is Epoch;UpstreamVersion-Version.

- **Epoch:** (Optional) Provided to allow you to leave behind version numbering mistakes in older versions of the package or to leave behind previous versioning schemes. Valid value is a single (small) integer. If omitted, the value is assumed to be zero. Epoch can contain only integers. In the Epoch, 9 is a lower version than 10.
- **UpstreamVersion:** (Required) The primary version number. It is usually the version of the application the package contains. The format is usually that of the package authors; however, it may need to be reformatted to fit your package management systems format and comparison scheme. Valid UpstreamVersion characters are 0-9, a-z, A-Z, ; (semicolon), . (period), - (dash), + (plus), and ~ (tilde). If there is no Epoch, semicolons are not allowed. If there is no Version, hyphens are not allowed.

In the upstream version, you can use the publisher's version number. The following is an example of how version numbers are processed by Package Manager, lowest version to highest version:

```

9 (earlier version)
9A
9AA
9Aa
9a
9+
9.0
9.0.0.0
9.00.0.0
9~
90
90.0
900 (later version)

```

Notice the order in which non-numeric characters are processed. Non-numeric characters are processed as a string based on their ASCII value. You should only use them if you know the ASCII value and understand the impact on the value of the version.

The easiest format to manage is the publisher's version.

- **Version:** (Optional) Provided to allow you to add package versions to the UpstreamVersion based on changes or edits to the base package. For example, you need to modify a command parameter to improve the installation process. Valid Version characters are 0-9, a-z, A-Z, . (period), - (dash), + (plus), and ~ (tilde).

When you modify a package, perhaps to apply a new signing certificate, you should add a value to the version number, for example, -b (9.00.1399.06-b) to indicate this is a later package version than the 9.00.1399.06 version.

Add this version with the same care you use with the UpstreamVersion. If you use non-numeric characters, they are processed as a string as described in the UpstreamVersion. The following list is an example, lowest to highest version.

```
9.00.1399.06-A (earlier version)
9.00.1399.06-B
9.00.1399.06-a
9.00.1399.06-b (later version)
```

A full version may look like the following example: 10;10.0.1600.22-b, where 10 is the Epoch,10.0.1600.22 is the UpstreamVersion, and b is the Version (a package version rather than an application version).

How Package Names and Versions Are Processed by Package Manager

When the command to install a package is issued to Package Manager, it evaluates packages for the name and for the version based on the operator (=; <; >; <=; >=). The Package Manager checks the Control.xml file in the *.crate file for the Crate Name and the Version.

For example, a package identified as sqlserver, version 8.0-a, has been installed by the Package Manager. You issue a command to install "sqlserver >= 9.00.1399.06". Package Manager reviews its list of known software packages and determines that sqlserver, version 8.0-a is already installed. It then reviews the known repository sources and identifies available packages sqlserver, version 9.00.1399.06, and sqlserver, version 9.00.1399.06-b. It installs the highest version of which it is aware, in this example, sqlserver version 9.00.1399.06-b.

Project Naming, Package Naming, and Package File Naming

It is possible to have the published package file name (.crate) be different from the suggested package file name, which is the package name as it appears on the package Properties tab, along with the version and architecture. This is usually as the result of the user changing the name of the package file from the suggested name when generating in Package Studio.

For example, you begin creating a new sqlserver package for 10.0.1600.22 (SQL Server 2008), where the **Properties** tab **Name** is sqlserver, and you save the project as sqlserver2008.prj. You continue working on the project, adding command arguments and pre- and post-command scripts. When it is ready to go into production, you **Generate** the package, changing the suggested file name, as it appears in the **Generate Software Package for Windows** dialog box to prod-sqlserver_10.0.1600.22_x86.crate so you can identify the production-ready version. The next day you are publishing this and other production-ready packages to a repository. You click **Publish > Existing** and select your existing prod-sqlserver_10.0.1600.22_x86.crate file. You then complete the process of publishing it to the repository. The file is published to the repository \crates\s folder, but with a file name of prod-sqlserver_10.0.1600.22_x86.crate. However, the control.xml file contains the correct Crate Name, sqlserver, and the package is still processed by Package Manager as sqlserver, version 10.0.1600.22, x86 architecture.

Creating Packages

A software package provides the files and metadata necessary to install and remove programs. One of the most useful features of a package is the metadata regarding dependencies, conflicts, and other relationships that are not represented by software installation files. This metadata is used to determine if the necessary dependencies are in place so that an installation is successful, and if not, what is necessary to make the installation successful. This use of metadata is similar to rpm on Linux.

Packages support commercial and custom software that may be installed using any installation technology, including .msi, .exe, or scripts (Python, VBScript, PowerShell, and others).

Once a package is created and ready for distribution, it is published to a software repository. You use Package Manager to download the package from the repository to the local machine and install it on your Windows systems.

Creating a software package includes creating and saving a project. Projects can be used to create variations based on platform or version that can then be published as separate packages.

General Process

1. Start the VMware vCenter Configuration Manager Package Studio. Select **Start > All Programs All > VMware vCenter Configuration Manager > Tools > Package Studio**.

NOTE If you are running Package Studio on a Windows 2008 Server, you must run the application as administrator. See ["Run Package Studio as Administrator" on page 25](#) for more information.

2. Click **Manage Packages**. Configure the package contents based on the options on the following tabs:
 - a. Click **Properties**. Type a **Name**, **Version**, and **Description**. Select the **Architecture**. These are required fields. You have the option to update the other fields, depending on your requirements.
Configuring the package with Depends, Conflicts, Provides, and adding and configuring the installation and removal files.
See the following for more information:
 - ["Create Packages with Dependencies" on page 25](#)
 - ["Create Packages as Dependency Containers" on page 27](#)
 - ["Specify Package Conflicts" on page 28](#)
 - ["Specify Provides for Packages" on page 29](#)
 - b. Click **Files**. Import the installation files, add pre-command files, configure the commands and arguments, and add post-command files. See ["Add Commands, Arguments, and Scripts to Packages" on page 31](#) for more information.
 - c. Click **Save** to save the setting and files as a Project (*.prj).
 - d. Click **Generate** to save the project as a package (*.crate).
3. Click **Package Signing**. Sign the package with a signing certificate. See ["Sign Packages with Certificates" on page 33](#) for more information.
 - a. Click **Open** to select a package (*.crate file).
 - b. Click **Sign**. Select a certificate from the certificate store or from a file.
4. Click **Manage Repositories**. Select the platforms and sections to which you are publishing the package.
 - a. Click **Add Platforms** to add a platform. See ["Add Platforms and Sections to Repositories" on page 40](#) for more information.
 - b. Select a platform, and then click **Add Sections**.

- c. Select a section, and then click **Publish Package**. See ["Publish Packages to Repositories " on page 41](#) for more information.
 - d. Select the package (.crate), and then click **Open**. The **Publish Package** dialog box appears.
 - e. (Optional) Select additional platforms and sections to which to publish the package.
 - f. Click **Publish**. The package is published to the software repository.
5. Click **External Software**. Add externally managed software, especially any packages specified as depends or conflicts in any of your packages.
 - a. Click **New External Package** and replace the text with the name you will use as an external software package name.
 - b. Type a version number in the **Version** text box.
 - c. Select the **Architecture** in the drop-down list.
 - d. Click **Select Attribute Name** and select a registry property or WMI attribute in the drop-down list.
 - e. Add attributes. See ["Define External Software Attributes" on page 46](#) for more information.
 - f. To save a copy locally, click **Save** .
 - g. Click **Publish External SW** to publish to the repository.

Run Package Studio as Administrator

The enhanced security on Windows 2008 Server requires you to run Package Studio as an administrator. If you do not, you will not be able to publish packages to the repository.

NOTE You do not need to run Package Studio as administrator if your repositories were configured on non-UAC protected paths or when you are running Package Studio and the repositories on machines other than a Windows 2008 Server.

Procedure

1. On a Windows 2008 machines, select **Start > All Programs > VMware vCenter Configuration Manager > Tools**.
2. Right-click **Package Studio** and select **Properties**.
3. Click the **Compatibility** tab.
4. In the Privilege Level area, select **Run this program as an administrator** and click **Apply**.
5. Click **OK**.
6. Select **Start > All Programs > VMware vCenter Configuration Manager > Tools > Package Studio**.
7. On the User Account Control dialog box, click **Yes**.

Create Packages with Dependencies

Package dependencies are a way to specify prerequisites for the installation of the current package or to install several packages with one action.

Dependencies can be used to identify and install prerequisite packages that must be installed before the software package you are configuring can be installed. The packages on which a package is dependent on are specified on the Depends tab, located on the Properties tab, when you create the package.

For example, you need to install SQL Server 2005 SP3 on your servers with SQL Server 2005 in order to meet system requirements. You create a package for the service pack (sqlserversp) and include sqlserver \geq 9.00.1399.068 as a dependency for the sqlserversp installation. When the sqlserversp package is installed, Package Manager checks for dependencies. In this example, sqlserver \geq 9.00.1399.06 is a dependency. It then checks the installed packages on the target machine for sqlserver \geq 9.00.1399.06 as an installed package. If Package Manager determines that the prerequisite package, sqlserver, is not installed, it downloads this package from the software repository and installs it. After the dependency is installed, package manager installs the files contained in the sqlserversp package.

You can also specify dependencies on applications that are not managed as packages and not installed using Package Manager by using External Software. If you added sqlserver, version 9.00.1399.06, to your external software application list, then the check for a dependency will begin with installed packages. If sqlserver is not found as an installed package, Package Manager then checks the external software list for an entry for sqlserver \geq 9.00.1399.06. If it finds one, checks the attributes, verifies the application is installed, it considers the dependency met and continues with the installation of sqlserversp.

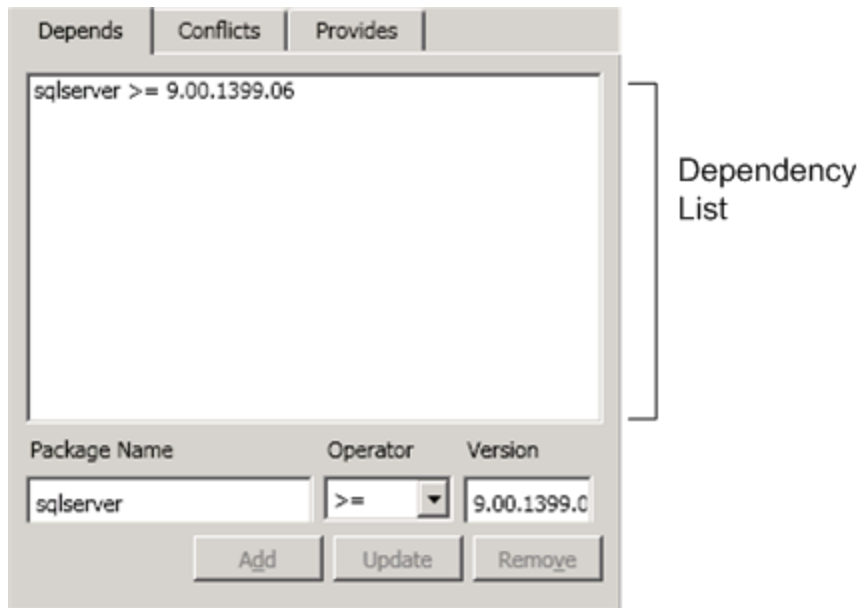
A best practice is to add any package you use as a dependency to the External Software list. This ensures that even externally installed software is processed by Package Manager at installation time. See ["About External Software" on page 43](#) for more information.

Prerequisite

To use the dependency packages at installation time, they must exist in the repositories. If the specified dependency packages do not exist in the repositories, the current package is not installed on the target machines.

Procedure

1. Start the VMware vCenter Configuration Manager Package Studio.
2. Click **Manage Packages**.
The package configuration tabs appear.
3. On the **Properties** tab, click the **Depends** sub-tab.



4. In the **Package Name** text box, type the name of the package. The package name typed in the text box must match the name of the package as it exists in the software repositories. For example, if you create a dependency for a `sqlserver >= 9.00.1399.06`, a package with the name `sqlserver` must exist in the repositories in order for the dependency to be met.
5. In the **Operator** drop-down list, select the operator used to specify the required version.
6. In the **Version** text box, type the version of the dependency package that must be installed before the current package is installed.
7. Click **Add**.

Create Packages as Dependency Containers

You can use package dependencies as a way to install several packages with one action. You can create packages without any installation files but containing multiple dependencies for all the software packages you want to install. This package serves as the container for multiple package dependencies.

The packages are specified on the **Depends** tab when you create the package. At the time of installation the Package Manager will review the installed packages it knows to be installed on the machine, identify any packages that are not yet installed, look through the repository, locate the candidate packages, and then install the files.

During installation, the dependencies are not processed in the order they appear in the list. If you need packages to install in a particular order, you should "chain" the packages. For example, if `antivirus` must be installed before `backuptools`, you should make `antivirus` a dependency of `backuptools` rather than including it as a dependency in the current package, as displayed in the example.

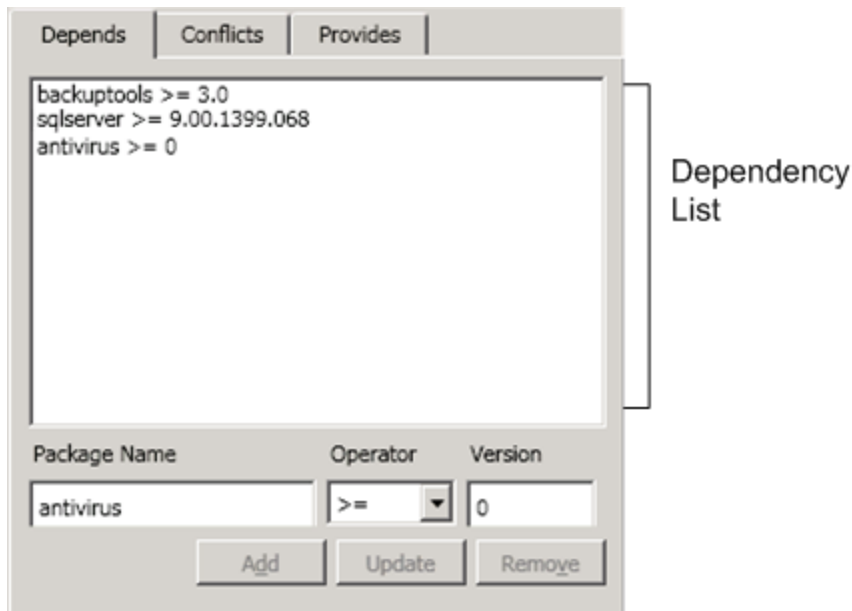
In the following procedure, a collection of packages are added to one package to install on a newly configured server. The dependency packages are `backuptools`, `sqlserver`, and `antivirus`.

Procedure

1. Start the VMware vCenter Configuration Manager Package Studio.
2. Click **Manage Packages**.

The package configuration tabs appear.

3. On the **Properties** tab, click the **Depends** sub-tab. (Examples of other dependencies, such as **Conflicts** or **Provides** are described later and in the online Help.)



4. In the **Package Name** text box, type the name of the package. The package name must match the name of the package as it exists in the repositories. For example, if you create a dependency for a `backuptools >= 3.0`, a package with the file name `backuptools_<version equal or later than value>_<architecture>` must exist in the repositories in order for the dependency to be met.
5. In the **Operator** drop-down list, select the operator used to specify the required version.
6. In the **Version** text box, type the number of the version required to calculate the dependent version.
7. Add other dependencies as needed.

Specify Package Conflicts

Some software packages adversely affect other software packages when they are installed on the same machine. When creating a software package, you can specify the names of packages that conflict with the package you are creating. Then, during installation, if a conflicting package is found on the target machine, the current package is not installed.

For example, installing McAfee and Norton antivirus on the same machine is known to cause conflicts in your environment. When creating a software package for each, you can specify the opposing package name on the Conflicts tab of each package. Then, when installing the mcafee package, Package Manager looks at the specified conflicts for the package. If norton is listed, it reviews the installed software package list to determine if norton is installed. If norton is installed, mcafee is not installed. If norton is not installed, the mcafee installation proceeds.

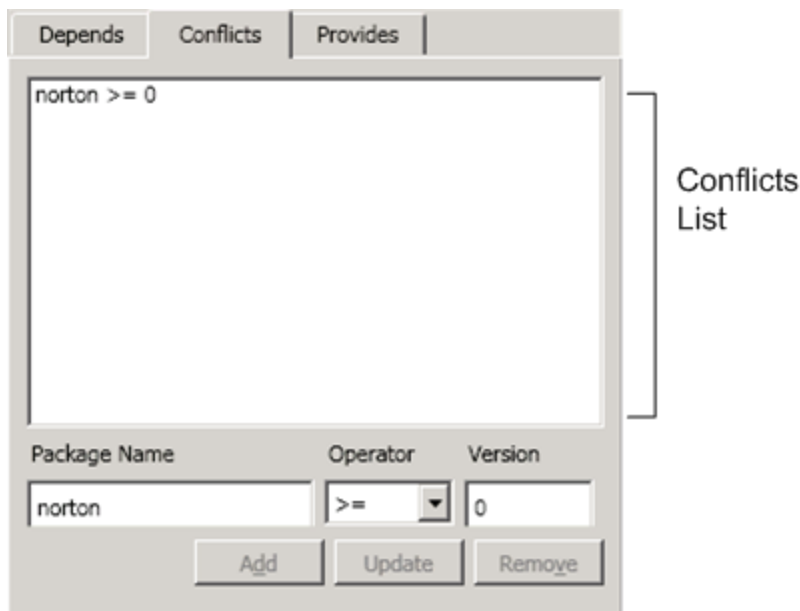
You can also specify conflicts on applications that are not managed as packages and not installed using Package Manager by using External Software. Then, when installing the mcafee package, Package Manager looks at the specified conflicts for the package. If norton is listed as a conflict, it reviews the installed software package list to determine if norton is installed. If norton is not installed, it then checks the external software application list and determines if it is installed. If norton appears as installed as either an installed package or as an installed external software application, mcafee is not installed. If it is determined that norton is not installed, the mcafee installation proceeds.

A best practice is to add any package you specify as a conflicts to the External Software list. This ensures that even externally installed software is processed by Package Manager at installation time. See ["About External Software" on page 43](#) for more information.

Depending on the application, it is possible to install multiple versions of the software on a machine with no ill effects, while other applications will not work properly if there is more than one version installed. Using conflicts, you can specify that a package should not be installed if a previous version is installed. For example, you currently have version 2 of a package installed, and you want to install version 3. You specify in the version 3 package that it conflicts with version 2. During the installation of version 3 you are informed that version 2 conflicts with version 3. You uninstall version 2, and then run the version 3 installation again. This time, not finding the conflicting package, it will install version 3. When version 4 is released, you specify in the version 4 package that it conflicts with version 2 and version 3. Then, if either version 2 or 3 is currently installed, you are notified of the conflict and can then uninstall the older package before installing version 4.

Procedure

1. On the **Properties** tab, click the **Conflicts** sub-tab.



2. In the **Package Name** text box, type the name of the package. The package name type in the text box must match the name of the package as it exists in the software repositories.
3. Click **Add**. The value is added to the dependency list.
4. Add other dependencies as needed.

Specify Provides for Packages

Specifying what a package Provides works in two ways.

Provides the Application

The package you are creating also installs another application; it provides the other application.

For example, SQL Server 2008 (sqlserver) installs .Net 3.5.1, so you can add dotnet to the package properties Provides tab. Assuming that sqlserver is then installed on a machine, and you later install a package where a dependency on dotnet => 3.0 was configured, Package Manager first looks to see if a dotnet => 0 was installed. If not found, it checks installed packages to determine if any provide dotnet. If it finds the sqlserver package is installed with a Provides value of dotnet, it considers the dependency met and installs the package.

Provides a Type of Functionality

You want to classify the package you are creating as an general application type; it provides a type of functionality.

When using Provides to specify a type of functionality you are specifying that it provides a logical package rather than a concrete package. This logical package name is a generic name applied to any one of a group of packages, all of which provide similar functionality.

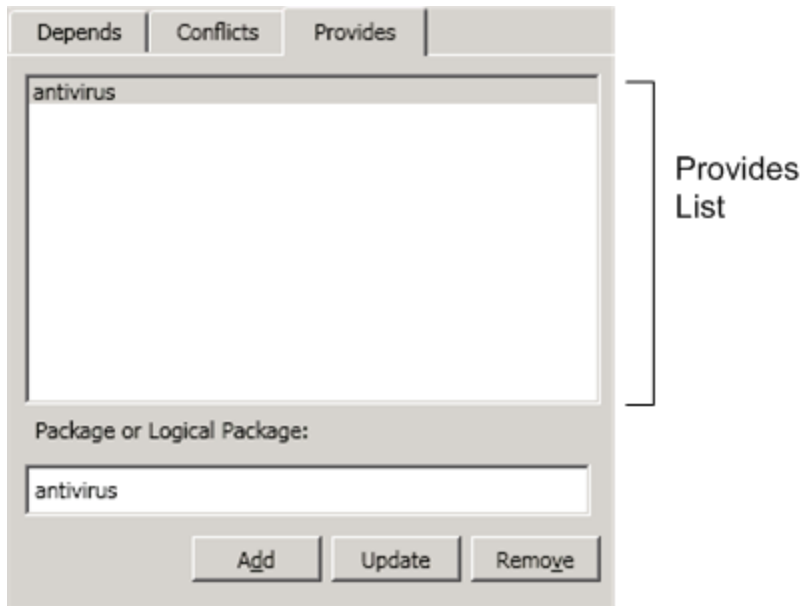
For example, you create a package for McAfee (mcafee) where the Provides tab is configured with the logical package name of antivirus and the Conflicts is configured with norton. You then create a package for Norton (norton) where the Provides tab is configured with the logical package name of antivirus and the Conflicts tab is configured with mcafee.

You now have two packages configured to provide antivirus as a logical package. Now, when you create a Cisco VPN package (cisco-vpn), which requires some form of antivirus be installed first, you specify antivirus >= 0 on the Depends tab.

During the installation of the cisco-vpn package, the process first checks dependencies. It sees a dependency for antivirus =>0. It reviews the installed packages. If no antivirus package is identified, it checks installed packages to determine if any provide antivirus. If found, it considers the antivirus Depends criteria has been met and installs. If not found in any installed packages, it reviews the repository packages for a package named antivirus. If not found, the installation stops and a message tells you that cisco-vpn depends on antivirus, and antivirus could not be found. You install mcafee or norton, and then retry the install of cisco-vpn. This time the cisco-vpn install will find the provided antivirus and the installation will continue.

Procedure

1. On the **Properties** tab, click the **Provides** sub-tab.



2. In the **Package or Logical Package** text box, type the name of the package or functionality type. Use lower case. Although the text box allows you to use mixed case, the dependencies and conflicts will process only lower-case names.
3. Click **Add**. The value is added to the Provides list.
4. Add other Provides as needed.

Add Commands, Arguments, and Scripts to Packages

To use Package Manager to install and remove packages, you must configure the Files tab with the appropriate commands, arguments, and optional pre- and post-command scripts to be run before and after the installation command.

Every application has unique command and script requirements. Consult the documentation issued for the application for which you are creating a package when configuring the Files tab options.

Referencing Response Files Using System Environment Variables

Some software installations require a response file during the install process. To accommodate the need for a response file you can add the `%CrateWorkingDirectory%` system variable to your arguments when you configure the installation and removal options.

For example, you are creating a package where the `.msi` requires a response file named `settings.ini`. You include the `settings.ini` file in your Project Data Directory files, and then configure the Arguments with the correct reference. In this example, the Argument is `/q settings="%CrateWorkingDirectory%\Data\settings.ini"`.

The value `%CrateWorkingDirectory%\Data\` is required, after this value you add any subdirectories that exist in your Project Data Directory. For example, the `settings.ini` may be in a folder named `InstallSettings`, in which case the argument is `/q settings="%CrateWorkingDirectory%\Data\InstallSetting\settings.ini"`.

When the package begins installing, the referenced files are downloaded to the target machine's TEMP directory, and then processed by the .msi.

Referencing License Files

The use of license files in the package command line options varies between applications. Some can be referenced in a shared location, using the system environment variables described above, or included in a .bat file, while others may be applied on a user-by-user basis. Consult the product publisher's documentation for the application for which you are creating a package to determine how you can include the information in the package.

Prerequisites

Installation and removal files are accessible to Package Studio users.

Optional pre- and post-command scripts are accessible to Package Studio users.

Procedure

1. Click the **Files** tab.
2. In the **Select Files to Import** area, click **Select Folder**. The Browse for Folder dialog box appears.
3. Browse to the folder containing the files to include in the package. Click **OK**. The file path is added to the text box.
4. Click **Import Files Into Project**. The contents of the folder specified in the file path text box are added to the project and the file and sub-folders are displayed in the **Project Data Directory** area.
5. In the **Project Data Directory** area, you may have the following options:
 - To add, remove, or rename the files in the folder, click the **Folder** button. The folder contents are displayed. When the folder contents are properly organized, close the window.
 - To update the displayed files, click the **Refresh** button.
6. Configure the commands and arguments for installing the package. In the process type drop-down list, located above the Pre-Command File label, select **Installation**.
7. (Optional) To specify a script to run before installation, for example, to shut down a service, click **Add** on the **Pre-Command File** line. Browse to the location of the pre-command executable file type. The file required by Package Studio begins preinst*.*. To see all files, type *.* in the File name text box. Click **Open** to select the file. The file is renamed preinst.<extension> and is displayed after the **Pre-Command File** label.
8. If the command used to run the installation is displayed in the Project Data Directory, select the .exe or .msi, and then click **Set Command**. You may also type the command in the text box. The **Command** text box must display the name of the command to be run, it does not have to be a command from the file list.
9. In the **Arguments** text box, type the arguments you want to apply to the installation process when it is run. Separating the arguments from the command allows for consistent behavior and better tracking of results.
10. (Optional) To specify a script to run after installation, for example, to restart a service, click **Add** on the **Post-Command File** line. Browse to the location of the post-command executable file type. The file required by Package Studio begins postinst*.*. To see all files, type *.* in the File name text box. Click **Open** to select the file. The file is renamed postinst.<extension> and is displayed after the **Post-Command File** label.

11. (Optional) Select **Force Reboot after command** if the package requires a reboot after installation.

IMPORTANT If you select this option, the target machines will reboot after installation of the current package without regard to time of day, state of the machine, or other factors.

12. To configure the associated removal command, repeat the above process after selecting **Removal** in the drop-down list. The files, commands, arguments, and pre- and post-command options may all be different for each of the actions.

Using Signing Certificates with Software Packages

When creating packages, you have the option to sign the package with a software signing certificate. Signing a package ensures that package is from an authorized source and has not been altered since it was published before it are installed on your machines.

About Signing Certificates and Installing Software Packages

Signing packages is an optional function; however, signing software packages is commonly part of the best practice for proper network security. If you are unfamiliar with certificates, you should have a network administrator who is familiar with certificate management assign you one with a private key. You can publish unsigned packages to repositories, but this is not recommended.

If you are familiar with certificates, and decide to sign packages, you must be able to meet the following prerequisites in order to sign and install packages:

- The signing certificate must be a trusted certificate.
- The signing certificate has a private key.
- The user signing the packages has access to the signing certificate's private key when signing a package. Access can be to the Certificate Store containing the certificate, an exported .pfx file of the certificate, or an exported .pvk file of the certificate.
- The public key of the signing certificate you used to sign a package is available on all the machines on which you are installing packages.

Using a certificate with an expiration time will require you to generate and publish revised packages after the certificate expires. If the certificate passes the expiration time, the packages must be individually edited to point to a different and valid certificate, or new packages must be created.

Sign Packages with Certificates

You have the option to use a certificate to sign the packages you create. For more information about certificates, see ["About Signing Certificates and Installing Software Packages" on page 33](#).

Signing packages is an optional function; however, signing software packages is commonly part of the best practice for proper network security. If you are unfamiliar with certificates, you should have a network administrator who is familiar with certificate management assign you one with a private key. You can publish unsigned packages to repositories, but this is not recommended.

Prerequisites

To successfully create and install signed packages, you must have the following:

- The signing certificate must be a trusted certificate.
- The signing certificate has a private key.
- The user signing the packages has access to the signing certificate's private key when signing a package. Access can be to the Certificate Store containing the certificate, an exported .pfx file of the certificate, or an exported .pvk file of the certificate.
- The public key of the signing certificate you used to sign a package is available on all the machines on which you are installing packages.

Procedure

1. Click **Package Signing**.

2. If you do not have a package open, click **Open**.

The **Browse for Package** dialog box appears.

3. Locate the *.crate file you are signing, and then click **Open**.

The path and file name are displayed after **Package**, located below the toolbar.

4. Click **Sign**.

The **Select Signing Certificate** dialog box appears.

5. Select one of the following options, and then click **Browse**:

- **Select signing Certificate from Windows Certificate Store**

- a. The **Browse for Signing Certificate** dialog box appears, displaying the contents of the Windows Certificate Store.
- b. Locate the appropriate signing certificate in the store. It must have a private key. To limit the displayed certificates to only those with private keys, click the top nodes in each of the displayed trees, Current User and Local Machine. Only the certificates with private keys are displayed.
- c. Click **Select**.

The certificate is added to the text box on the **Select Signing Certificate** dialog box.

- **Select signing certificate from file (.pfx, .pvk)**

- a. The **Browse for Signing Certificate** dialog box appears, displaying certificate files.
- b. Locate the exported certificate *.pvk or *.pfx file.
- c. Click **Open**.

The certificate is added to the text box on the **Select Signing Certificate** dialog box.

6. Clear or select the **Requires Password** check box, depending on whether the selected certificate file has a password.

If you select the check box, type the password in the text box.

7. Click **Select**.

8. Review the **Package Signature and Security Status** area. The following values indicate a successfully

signed package:

- **Package Signing:** Signed
- **Signature Validation:** Valid
- **Package Validation:** Valid

Editing Packages

You can either edit the project (*.prj) from which you originally created a package (*.crate) file or create a new project based on an existing package (*.crate) file.

You cannot directly edit a package, you can only edit a project. When the project contains your changes, you first generate a package (*.crate), and then you publish it to the your repositories; however, you must be careful to properly version the new package to ensure that Package Manager can process it correctly when installing or uninstalling the package.

Edit Published Packages

After publishing a package, you may need to modify one or more of the settings to improve performance or to adapt the package to changing system needs. For example, the dependencies or arguments for installation must change in order to accommodate new company requirements.

To edit, either open an existing project or create a new project from an existing .crate file, generate the revised .crate file, and then publish the revised version of the package to the repositories.

Best Practices

When editing a project, you should use the following best practices:

- When you generate a new package from a project, you should modify the version, located after the UpstreamVersion in the version format. For example, if the previous version was 3.5.1-a where "-a" is the local package version, change the version to 3.5.1-b, indicating this is a revision of the package rather than the version of the application you are installing.
- Never unpublish a package from a live repository. Unpublishing disables Package Manager ability to run removal actions. Unpublish also disables Package Manager's awareness of version changes.

Prerequisites

The package to be used as the base package is saved as a project (*.prj) or as a generated package (*.crate) saved locally, and the files are available to Package Studio user.

Procedure

1. Click **Manage Packages**.
2. Use one of the following methods, depending on the type of file with which you want to work:
 - **Project (*.prj):**
 - a. Click **Open**. The **Choose a project** dialog box appears.
 - b. Select the project (*.prj).
 - c. Click **Open**. The **Properties**, **Files**, and **Signing** tabs now display the settings of the source project.

- **Package (*.crate):**
 - a. Select **New > Project from Package**. The **New Project** dialog box appears.
 - b. In the **Project Name** text box, type a name that will be saved as a .prj file.
 - c. Specify the **Project Directory**.
 - d. Click **OK**. The **Choose a package** dialog box appears. Browse to the location of the .crate file you are editing. You can use a local copy or browse to a repository if there is not a copy save locally.
 - e. Click **Open**. The **Properties**, **Files**, and **Signing** tabs now display the settings of the source package.
- 3. Make any necessary changes, for example, add a command line argument or post install script.
- 4. On the **Properties** tab, update the **Version**. The best practice is to add or modify the package version, after the UpstreamVersion in the version format. For example, if the previous version was 3.5.1-a where "-a" is the local package version, change the version to 3.5.1-b, indicating this is a revision of the package rather than the version of the application you are installing.
- 5. Click **Save**. Saving the .prj file provides a backup of the package settings. In the **Save project** dialog box, browse to the location of your project files (*.prj files), and then click **Save**.
- 6. Click **Generate**.
Generating the .crate file provides a copy of the package that you can publish now or later, and edit again if necessary.
- 7. In the **Generate Software Package for Windows** dialog box, browse to the location of your saved packages (*.crate files), and then click **Save**. The new version and architecture are automatically appended to the file name.
- 8. Click the **Manage Repositories** tab.
- 9. Select a **section** in a **platform** to which you are publishing the package.
- 10. Click **Publish Package**.
The **Choose a Package** dialog box appears.
- 11. Select the .crate file to publish, and then click **Open**.
The **Publish a Package** dialog box appears.
- 12. Select the **platforms** and **sections** where you want the package categorized. See "[About Repository Platforms and Sections](#)" on page 39 for more information.
- 13. Click **Publish**.
The package is added to the repository. If it published to repository source already added to Package Manager, the package is immediately available for installation.

Create New Package from Existing Projects or Packages

It is sometimes easier to create a new package from an existing project or package, allowing you to leverage existing configuration settings. For example, a new software version is issued. When researching the changes, you determine that the installation command information is the same for new software as it was for the previous version. In this case it may be faster to use the previous package as the base for the new package. You would need to change the version, the description, and the installation files, but you can use all the dependencies, and the pre- and post-commands.

Prerequisites

The package to be used as the base package is saved as a project (*.prj) or as a generated package (*.crate) saved locally, and the files are available to Package Studio user.

Procedure

1. Click **Manage Packages**.
2. Use one of the following methods, depending on the type of file with which you want to work:
 - **Project (*.prj):**
 - a. Click **Open**. The **Choose a project** dialog box appears.
 - b. Select the project (*.prj).
 - c. Click **Open**. The **Properties**, **Files**, and **Signing** tabs now display the settings of the source project.
 - **Package (*.crate):**
 - a. Select **New > Project from Package**. The **New Project** dialog box appears.
 - b. In the **Project Name** text box, type a name that will be saved as a .prj file.
 - c. Specify the **Project Directory**.
 - d. Click **OK**. The **Choose a package** dialog box appears. Browse to the location of the .crate file you are editing. You can use a local copy or browse to a repository if there is not a copy save locally.
 - e. Click **Open**. The **Properties**, **Files**, and **Signing** tabs now display the settings of the source package.
3. On the **Properties** tab, update the **Version** and the **Description** so you can continue to track the changes to the package. Edit any other settings as needed.
4. On the **Files** tab, modify files, commands, and scripts as needed.
5. Click **Save**. Saving the .prj file provides a backup of the package settings. In the **Save project** dialog box, browse to the location of your project files (*.prj files), and then click **Save**.
6. Click **Generate**.
Generating the .crate file provides a copy of the package that you can publish now or later, and edit again if necessary.
7. In the **Generate Software Package for Windows** dialog box, browse to the location of your saved packages (*.crate files), and then click **Save**. The new version and architecture are automatically appended to the file name.
8. Click the **Manage Repositories** tab.
9. Select a **section** in a **platform** to which you are publishing the package.

10. Click **Publish Package**.

The **Choose a Package** dialog box appears.

11. Select the .crate file to publish, and then click **Open**.

The **Publish a Package** dialog box appears.

12. Select the **platforms** and **sections** where you want the package categorized. See "[About Repository Platforms and Sections](#)" on page 39 for more information.

13. Click **Publish**.

The package is added to the repository. If it published to repository source already added to Package Manager, the package is immediately available for installation.

Using Software Repository for Windows

Software Repository for Windows is the shared location to which packages are published by Package Studio and the location from which Package Manager downloads packages for installation.

You manage the contents of repositories with Package Studio and specify the repository sources, the platforms and sections, from which to install or remove software packages using Package Manager.

About Repository Platforms and Sections

When you publish a package to a repository, you specify one or more platforms and sections. Platforms and sections are the hierarchy used to organize software in repositories.

To publish packages to a repository, you must define at least one platform. Each platform must include at least one section.

Platforms

The platform value can be used to define the operating system architecture on which the package can be installed. In other repository systems, such rpm, it is common for the platform to represent the operating system architecture.

Package Manager does not detect the architecture of the operating system on which it is running and it is therefore unable to automatically identify the platform version required for installation on the target machine. It is up to you to specify the packages based on well-defined platforms in repositories.

Create and use platforms to help manage your software package distribution based on the operating system platforms on which they can be installed. When you use a greater level of specificity, it will result in smaller groups of packages and will increase the predictability of what packages are installed.

Providing consistent naming across all repositories is important to successfully managing multiple repositories and installing packages.

For example, you may specify platforms as follows:

- Any
- Any_32
- Any_64
- Win2k3
- Win2k3_32
- Win2k3_64

By including the 32- and 64-bit references in the platform names, you will be better able to ensure the correct version of package is installed on target machines.

Sections

Sections are used to further refine how your packages are organized in each platform. Sections are used to specify the repository sources for Package Manager, allowing you to control which packages are available to which machines.

How you use sections can be adapted to your particular business needs. The following are examples of how you can use sections:

- **Business Groups:** Marketing, sales, front office, back office, research and development.
- **Development State:** In development, testing, production.
- **Traditional IT Software Management Structure:** Software publisher, department (business groups), license type (limited or site license).

Sample Platforms and Sections

The following example uses the suggested platform organization and a version of the traditional IT software management structure.



In VMware vCenter Configuration Manager Package Studio, the platforms and sections displayed on the Manage Repositories tab are based on your [path]\<your repository name>\.hive\repository.toc file. You can edit the file contents directly if you are configuring an initial repository with detailed structure.

Add Platforms and Sections to Repositories

Using the Manage Repositories tab you can add platforms and sections, and then publish packages to the repository sections. See ["About Repository Platforms and Sections" on page 39](#) for more information regarding best practices when creating platforms and sections.

Procedure

1. Start the VMware vCenter Configuration Manager Package Studio.
2. Click the **Manage Repositories** tab.
3. Select your **Repository Host** in the drop-down list.
4. Select the **Repository** in the drop-down list.

If you previously added platforms and sections to the repository, the tree view pane will display the names in a tree view. If this is the first time you have worked with this repository, the left-hand pane is blank.

5. Click **Add Platform**.

The **Add Platform** dialog box appears.

6. Type a name, and then click **OK**.

The platform is added to the tree view.

7. Select the platform, and then click **Add Section**.

The **Add Section** dialog box appears.

8. Type a name, and then click **OK**.

The section is added below the selected platform in the tree view.

9. Continue adding sections to a platform, or add more platforms and sections.

After creating the platforms and sections, you can now publish your packages.

Publish Packages to Repositories

Publishing packages to a repository makes the packages available to the Package Manager to add as a source. The Package Manager is the application that manages the installation and removal of packages on target machines.

Prerequisites

You have generated one or more packages (*.crate) that you are ready to publish to your repository. See ["Creating Packages" on page 23](#) for information about creating and generating packages.

Procedure

1. Start the VMware vCenter Configuration Manager Package Studio.
2. Click the **Manage Repositories** tab.
3. Select your **Repository Host** in the drop-down list.
4. Select the **Repository** in the drop-down list.

If you previously added platforms and sections to the repository, the tree view pane will display the names in a tree view. If this is the first time you have worked with this repository, the left-hand pane is blank. For more information about adding platforms and sections, see ["Add Platforms and Sections to Repositories" on page 40](#).

5. Select a section to which you are adding a package.
6. Click **Publish Package**.

The **Choose a package** dialog box appears.

7. Select the .crate file to add to the section.
8. Click **Open**.

The **Publish Package** dialog box appears, allowing you to select additional platforms and sections to which you can publish the package.

9. Select the check boxes for additional platforms and sections, and then click **Publish**.

The package is added to the selected platforms and sections, and the package information is displayed in the packages list.

If the section is identified as a source to the Package Manager or in VCM, the new package is now available. To add sources, see ["Add Repository Sources " on page 49](#).

Using External Software

External Software is software not installed and managed by the Package Manager. It is either already installed before you begin managing software with Package Manager, or it is software you choose to install individually.

About External Software

External Software is used to define the attributes by which software that was not installed by Package Manager as part of a package is identified on target machines.

Identifying externally managed software is required to ensure the proper processing of dependencies and conflicts when a package is installed on a machine where software was not installed by Package Manager. If external software is not properly identified, you may install a second copy of an application because it was specified as a dependency in a package, or you may install a package on a machine where externally installed software was identified as conflicting with the package.

When adding entries to the external software list, the naming of the applications follows the same naming conventions as a regular package (`<externalpackagename>_<version>_<architecture>`), but each one contains one or more user-defined attributes rather than files. Once added to the list, the entries are referred to in this documentation as external software packages.

External software package attributes serve as external package definitions. Each attribute consists of an attribute name and value. The name is selected from the drop-down list, and the value is added to the text box.

When the external software list is published to the repository, the file name is `Repository.options`. The file is published to the `.hive` folder in the repository files. Each repository can contain only one `Repository.options` file. Therefore, the published `Repository.options` file list should contain definitions of all the applications you are using as dependencies and specifying as conflicts for software packages managed by the repository.

Best Practices

When you add a dependency or specify a conflict in any package, you should define the external software attributes for each depends or conflicts package. This practice ensures that machines where applications are already installed will be properly processed by Package Manager at installation time.

If an application has not been defined in the external software list and it was not installed by Package Manager, the following may occur:

- **Depends:** Package Manager will install a second copy of an application when it is specified as a dependency.
- **Conflicts:** Package Manager will install a package even though an externally installed application exists on the machine that is specified as conflicting with the package being installed.

To avoid these undesirable results, you should add all externally managed software to the External Software list, paying particular attention to packages specified as depends or conflicts in your packages, and continue to publish updated versions to the repository to ensure Package Manager has the most current list to reference when processing dependencies and conflicts during installation.

Adding Applications to an External Software List

Consider adding existing applications to your External Software list under the following circumstances:

- You begin using software provisioning to install packages on machines already in use. Adding previously installed applications to the External Software list and then publishing it to the repository provides the mechanism by which Package Manager can verify the existence of the application on the target machine. It makes applications not installed as packages visible to Package Manager, reducing the need to re-install applications installed outside Package Manager.
- You add dependencies to applications installed outside Package Manager. Even on a machine on which only the basic operating system is installed, you will have certain applications that are already installed, for example, Internet Explorer. Identify the applications, add them to the External Software list, and publish the list to the repository used by the machines.

Managing External Software Lists

You can publish only one version of the list to a repository. After creating an initial list, add to the existing list rather than publishing a new list. If you publish a new list to a repository, it overwrites the existing list.

Naming External Software Packages

When creating the name for the external software package (<New External Package>), apply the same naming considerations you used when naming packages. By using the same naming conventions, you ensure that Package Manager can process the defined external software "packages" as if they were actual packages, even though they contain only attributes to check rather than installation files.

See ["About Package Naming and Versioning" on page 21](#) for more information.

Defining Attributes

The list of attributes displayed in the **Attribute Name** drop-down list is based on values in the uninstall registry keys, located in HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall (on 32-bit machines) or HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Microsoft\Windows\CurrentVersion\Uninstall (on 64-bit) and on properties defined in Windows Management Instrumentation (WMI) for installed software. When creating attributes, make certain that the value entered in the Value text box correctly matches the expected value for the application on the target machines.

How Package Manager Processes External Software during Installation

When instructed to install a package, Package Manager processes the request in the order described below.

In the following example it is assumed that some of your target machines have SQL Server 2005 SP3 already installed. As you begin using software provisioning to manage software on your machines, you should define a new external software package for sqlserver, using the appropriate version number to represent the service pack. This external software package name matches the name of the other sqlserver packages containing installation files for various versions.

Prerequisites for the Example

- You added the following application definition to the External Software list and published it to your repository (as an entry in Repository.options) based on the following example:
 - Application name = sqlserver
 - Version = 9.3.4035.00
 - Architecture = x86
 - Attributes and Values are:
 - InstallLocation = C:\Program Files (x86)\Microsoft SQL Server\
 - VersionMajor = 9
- Using Package Manager, create a package (named serversetup in this example) containing a dependency for sqlserver >= 9.0
- The Repository.options file is published to repositories

Example Process Flow

Package Manager processes the content in the following workflow:

1. Package Manager receives a command to install serversetup.
2. Package Manager checks the dependencies in the serversetup package and determines that there is a dependency on sqlserver equal to or later than version 9.0.
3. Package Manager checks the installed packages list to determine if a package meeting the criteria has been installed.
 - If yes, it considers the dependency met and proceeds with the other serversetup installation requirements.
 - If no, it checks the external software list as defined in the Repository.options.
4. Package Manager checks the external software package list.

If the name sqlserver, version 9.0 or later entry is found in Repository.options, Package Manager then checks the specified attributes on the machine. In this example, it checks that HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall contain a registry key with properties where InstallLocation = c:\Program Files (x86)\Microsoft SQL Server\ and VersionMajor = 9.

 - If the two attributes match, it considers the dependency met and proceeds with the other serversetup installation requirements.
 - If one or more the attributes do not match, it checks the assigned repository sources for an available package meeting the criteria.
5. Package Manager checks the available package list for a managed software package.

- If it locates an available package meeting the criteria, sqlserver equal to or later than version 9, it installs the package and considers the dependency met. Package Manager then proceeds with the other serversetup installation requirements.
- If it does not locate a package meeting the criteria, the serversetup package will not install. It cannot be installed until the dependency for sqlserver equal to or later than version 9.0 is met.

Define External Software Attributes

External Software is used to define the attributes by which software that was not installed by Package Manager as part of a package is identified on target machines.

Identifying externally managed software is required to ensure the proper processing of dependencies and conflicts when a package is installed on a machine where software was not installed by Package Manager. If external software is not properly identified, you may install a second copy of an application because it was specified as a dependency in a package, or you may install a package on a machine where externally installed software was identified as conflicting with the package.

When adding entries to the external software list, the naming of the applications follows the same naming conventions as a regular package (<externalpackagename>_<version>_<architecture>), but each one contains one or more user-defined attributes rather than files. Once added to the list, the entries are referred to in this documentation as external software packages.

External software package attributes serve as external package definitions. Each attribute consists of an attribute name and value. The name is selected from the drop-down list, and the value is added to the text box.

When the external software list is published to the repository, the file name is Repository.options. The file is published to the .hive folder in the repository files. Each repository can contain only one Repository.options file. Therefore, the published Repository.options file list should contain definitions of all the applications you are using as dependencies and specifying as conflicts for software packages managed by the repository.

You will either be creating a new list or opening and adding to an existing list.

Prerequisites

You have identified software already installed using the publishers installer, not Package Manager, on one or more machines in your network, and you have determined the attributes Package Manager uses to determine if the application is installed. See ["About External Software" on page 43](#) for more information about naming and attributes.

Procedure

1. Start the VMware vCenter Configuration Manager Package Studio. The default location on the Collector is C:\[installation location]\VMware\VCM\Tools\Package Studio\PackageStudio.exe.
2. Click **External Software**.

By default, a blank list appears. If you are adding to an existing list, click **Open** and browse to the existing list you are editing. The saved file is <filename>.options.

3. Click **<New External Software>** and replace the text with the name you want to be treated as the external software package name using the same conventions used for all package names. For example adobeacrobatereader.
4. Type the version number in the **Version** text box.
5. Select the application architecture in the **Architecture** drop-down list.
6. Click **<Select Attribute Name>** and select a registry property or WMI attribute in the drop-down list.

7. Replace **<New Attribute Value>** with the exact string to match when verifying the value exists.
8. To add another attribute, click the green plus button. A new attribute row is added.
Continue defining as many attributes as required to verify presence of the application on the target machine.
9. To define another application, click **Add** (located below the list), and repeat the process.
10. To save a copy locally, click **Save**.
The **Save Repository Options** dialog box appears. You can save it with a locally unique name provided you do not change the .options extension.
11. Click **Save**.
The default save location is My Documents/Package Studio.
12. To publish the list to a repository, click **Publish External SW**.
The **Publish Options** dialog box appears.
13. Select a **Repository Host** name in the drop-down list.
14. Select a **Repository** name in the drop-down list.
15. Click **Publish**.
The file is published to your repository in the .hive folder as Repository.options.

Using Package Manager for Windows

Package Manager is the application installed on each machine to manage the installation and removal of the software contained in packages. Package Manager is configured to use one or more repositories as sources for packages.

The key components in the effective use of Package Manager is the proper creation of packages and deploying the packages to repositories to which target machine has the necessary access.

Processing Dependencies

Working with packages, Package Manager is able to process the dependencies, Depends, Conflicts, Provides, ensuring you do not install software on a machine that has negative results for the machine users or affects the processes it runs.

For example, you have a machine where Package A is installed. You use Package Manager to install Package B. The processing of the package includes checking the dependencies. In this example, Package B is configured with a Conflicts with Package A. The installation does not proceed and the Package Manager informs you of the conflict.

Security

As a standard security measure, Package Manager assumes that all packages must be signed with a private key before they are installed or uninstalled. To accommodate organizations that do not use software signing or where the immediate circumstances require you to ignore that signature, override options are provided.

Add Repository Sources

A repository source is a section under a platform in a repository. Adding platforms and sections to the repository allows you to control which repository sources the Package Manager for Windows uses when installing and removing software. For example, a repository may contain platforms with both test sections and release sections, but by making Package Manager aware of only the release sections, you ensure that packages still in the testing phase are not added to the repository list and are therefore not available for installation.

Additionally, you can add sources from more than one repository, and you can specify the order in which the repository sources are queried.

The repository source list to which you are adding sources is `repository.xml`, located in `C:\Documents and Settings\All Users\Application Data\VMware\Wasp` on each managed machine.

Prerequisites

The platforms and sections are defined in the repositories for which you are adding sources.

Procedure

1. At the Package Manager command prompt, type `wasp listrepository`. The currently defined sources are displayed in a list.
2. Use one of the following methods to add repository sources:
 - To add repository sources to the end of the existing list, type `wasp addrepository bin <repositoryUri> <platformname> <sectionname>` .
 - To add a repository and assign it a particular place in the list, type `wasp insertrepository bin <repositoryUri> <platformname> <sectionname> <indexnumber>`. When using `insertrepository`, the number specifies where the source is inserted in the repository source in the list, and therefore the order in which the repository is processed when determining if a package is available for download. A value of 0 (zero) puts the repository source at the top of the list.

See ["Package Manager for Windows Command Line Options" on page 51](#) for more information about other arguments related repositories.
3. Press **Enter**. The entry is added to the repository list.
4. Type `wasp listrepository`. The format (bin) and URI are displayed in the list along with the platform and section.

Remove Repository Sources

A source is the combination of a platform and section in a repository. Removing repository platforms and sections to the repository list allows you to control which repository sources the Package Manager for Windows uses when installing and removing software.

CAUTION If you remove a repository source from which a particular package was installed, and the package is no longer available in the local `cratcache` folder, you will not be able to uninstall the package.

Prerequisites

The repository entries exist in `repository.xml`, located in `C:\Documents and Settings\All Users\Application Data\VMware\Wasp`.

Procedure

1. At the Package Manager command prompt, type `wasp listrepository`. The currently defined sources are displayed in a list.
2. To remove a repository source, type `wasp removerepository bin <repositoryUri> <platformname> <sectionname>`. See ["Package Manager for Windows Command Line Options" on page 51](#) for more information about other arguments related repositories.
3. Press **Enter**. The entry is removed from the repository list.
4. Type `wasp listrepository`. Verify that the repository source has been removed.

Install Packages

The installation of packages is run as a command line function. Installing a published package includes processing dependencies.

Prerequisites

The package is listed as a repository source in Package Manager for Windows. See ["Add Repository Sources" on page 49](#) for more information.

Procedure

1. At the Package Manager command prompt, type `wasp list all`. The available packages are displayed in a table.
2. Type `wasp <switches> install "<packagename> <arguments>"`. See ["Package Manager for WindowsCommand Line Options" on page 51](#) for more information about the switches and arguments related to installing packages.
3. Press **Enter**. The package is downloaded from the repository to the `[path]\cratecache\` location. If you did not use the `/q=y` switch, the command requires a response from you after downloading the package. Type **Y** to install now. Type **N** if you want to install later.
4. Type `wasp list`. The package is displayed in the list as installed.

Remove Packages

Uninstalls the software included in the selected packages. Optionally, you can also uninstall any dependencies not used by other software packages. The removal of packages is run as a command line function.

Prerequisites

The package includes uninstall files and commands.

The package is located in the local cratecache folder or listed as a repository source in Package Manager for Windows.

Procedure

1. At the Package Manager command prompt, type `wasp list`. The installed packages are displayed in a table.
2. Type `wasp <switches> remove "<packagename> <arguments>"`. See ["Package Manager for WindowsCommand Line Options" on page 51](#) for more information about the switches and arguments related to removing packages.
3. Press **Enter**.
4. If you did not use the `/q=y` switch, the command requires a response from you before running the uninstall in the package. Type **Y** to uninstall now. Type **N** to cancel the uninstall process.
5. Type `wasp list`. The package is displayed in the list as installed.

Package Manager for WindowsCommand Line Options

Package Manager for Windows to installs and removes packages from the machines on which it is installed. The following are the command line options that can be run on each machine where Package Manager is installed.

Using the command line options, you can manage only one machine at a time.

To use the command line options, you must run the commands from the folder where `wasp.exe` is installed. The default location is `C:\Program Files (x86)\VMware\VCM\Tools\Package Manager for Windows`.

Requirements and Considerations

- Each command is preceded by `wasp`. For example, `wasp update`.
- The switches and arguments are added in the following order:
 1. `wasp` (the command)
 2. switches (in any order)
 3. command
 4. arguments (use double quotes around the argument (for example, "sqlserver >= 9.00.1399.06-b"))

Example: `wasp /q=y /AllowUnsigned=y install "sqlserver >= 9.00.1399.06-b"`

Wasp Command Line Options

The commands, including arguments and switches, are described below:

Install Package

Table 6-1. Install Command Line Switches and Arguments

Command	Command Line Arguments	Command Line Switches	Comments
install			Install new packages.
	package name		Name of the package without the .crate extension.
	version		Use <; >; =; <=; >= to specify version. Include quotes around the entire argument, for example, "sqlserver >= 9.00.1399.06-b".
		/LoginName	For unattended installs requiring reboot you can call install with LoginName, LoginPassword, and LoginNetwork.
		/LoginPassword	For unattended installs requiring reboot you can call install with LoginName, LoginPassword, and LoginNetwork
		/LoginDomain	For unattended installs requiring reboot you can call install with LoginName, LoginPassword, and LoginNetwork.
		/d	<p>Download packages from repository. If no arguments are added, it only downloads the packages to the local cratecache.</p> <ul style="list-style-type: none"> ■ all: Downloads all packages before installing any of them. ■ each: Downloads and then installs each package before downloading and installing the next package. ■ none: Does not download any packages, instead only uses the local cratecache copy. <p>Example: /d=each install notepad .</p>
		/q	Default value =n. If you use =y, does not stop and prompt after displaying the installation plan.

Command	Command Line Arguments	Command Line Switches	Comments
		/AllowUnsigned	Default value =n. If you use =y, the package is installed even if the package is unsigned. Example: /AllowUnsigned=y install notepad.
		/NoSignature	Default value =n. If you use =y, the package is installed without attempting to verify the signature.
		/ContinueOnInsufficientSpace	Default value =n. If you use =y, the installation proceeds even if the system drive does not have enough space for the package contents.
		/overwrite	Default value =n. If you use =y, the removal process overwrites any unfinished tasks from the previous command. The value is used only in conjunction with the /q=y value.

Remove Package

Table 6-2. Remove Command Line Switches and Arguments

Commands	Command Line Arguments	Command Line Switches	Comments
remove			Remove installed software package.
	package name		Name of the package without the .crate extension.
	version		Use <; >; =; <=; >= to specify version. Include quotes around the entire argument, for example, "sqlserver >= 9.00.1399.06-b".
		/LoginName	For unattended uninstalls requiring reboot you can call with LoginName, LoginPassword, and LoginNetwork.
		/LoginPassword	For unattended uninstalls requiring reboot you can call with LoginName, LoginPassword, and LoginNetwork .
		/LoginDomain	For unattended uninstalls requiring reboot you can call with LoginName, LoginPassword, and LoginNetwork.
		/d	<p>Download packages from repository. If no arguments added, it only downloads the packages to the local cratecache.</p> <ul style="list-style-type: none"> ■ all: Downloads all packages before uninstalling any of them. ■ each: Downloads and then uninstalls each package before downloading and uninstalling the next package. ■ none: Does not download any packages, instead only uses the local cratecache copy. <p>Example: /d=all remove notepad</p>
		/q	Default value =n. If you use =y,

Commands	Command Line Arguments	Command Line Switches	Comments
			does not stop and prompt after displaying the removal plan.
		/AllowUnsigned	Default value =n. If you use =y, the package is uninstalled even if the package is unsigned. Example: /AllowUnsigned=y remove notepad.
		/NoSignature	Default value =n. If you use =y, the package is uninstalled without attempting to verify the signature.
		/overwrite	Default value =n. If you use =y, the removal process overwrites any unfinished tasks from the previous command. The value is used only in conjunction with the /q=y value.

Autoremove Packages

Table 6-3. Autoremove Command Line Switches and Arguments

Commands	Command Line Arguments	Command Line Switches	Comments
autoremove			Identify and remove packages that were installed as dependencies but that are no long depended upon by any packages.
		/LoginName	For unattended upgrades requiring reboot you can call with LoginName, LoginPassword, and LoginNetwork
		/LoginPassword	For unattended upgrades requiring reboot you can call with LoginName, LoginPassword, and LoginNetwork
		/LoginDomain	For unattended uninstalls requiring reboot you can call with LoginName, LoginPassword, and LoginNetwork.
		/d	<p>Download packages from repository. If no arguments added, it only downloads the packages to the local cratecache.</p> <ul style="list-style-type: none"> ■ all: Downloads all packages before uninstalling any of them. ■ each: Downloads and then uninstalls each package before downloading and uninstalling the next package. ■ none: Does not download any packages, instead only uses the local cratecache copy. <p>Example: /d=all autoremove notepad</p>
		/q	Default value =n. If you use =y, does not stop and prompt after displaying the removal plan.
		/AllowUnsigned	Default value =n. If you use =y, the package is uninstalled even if

Commands	Command Line Arguments	Command Line Switches	Comments
			the package is unsigned. Example: /AllowUnsigned=y remove notepad.
		/NoSignature	Default value =n. If you use =y, the package is uninstalled without attempting to verify the signature.
		/overwrite	Default value =n. If you use =y, the removal process overwrites any unfinished tasks from the previous command. The value is used only in conjunction with the /q=y value.

List Installed Packages

Table 6-4. List Command Line Switches and Arguments

Commands	Command Line Arguments	Command Line Switches	Comments
list			List of installed packages.
	all		List of known packages. Possible status values: <ul style="list-style-type: none"> ■ Candidate: Package Manager is aware of the package in at least one repository. ■ Installed: Package is installed.
		/v	Verbose output. Example: wasp /v list all.
		/x	Output in XML

Updated Package Information

Table 6-5. Update Command Line Switches and Arguments

Commands	Command Line Arguments	Command Line Switches	Comments
update			Retrieve updated package information from source repositories. No data is displayed after the command.

Status

Table 6-6. Status Command Line Switches and Arguments

Commands	Command Line Arguments	Command Line Switches	Comments
status	package name		Provides a list of running tasks or, if given a package name, provides the state of the package. Format is wasp status notepad or wasp status "notepad=2.0"

Clear Status

Table 6-7. Clear Status Command Line Switches and Arguments

Commands	Command Line Arguments	Command Line Switches	Comments
clear status	package name		Given a package name, the command clears the state of the first matching package. Format is wasp clear status notepad or wasp clear status "notepad=2.0"

Resume Execution of Commands

Table 6-8. Resume Command Line Switches and Arguments

Commands	Command Line Arguments	Command Line Switches	Comments
resume			Continues the execution of a list of commands in order to support reboots during a set of commands. Runs off of a file named tls.tls. The file's default location is %APPDATA%.

List Repositories

Table 6-9. Listrepository Command Line Switches and Arguments

Commands	Command Line Arguments	Command Line Switches	Comments
listrepository			Lists all entries in repository.xml.

Add Repository

Table 6-10. Addrepository Command Line Switches and Arguments

Commands	Command Line Arguments	Command Line Switches	Comments
addrepository			Adds an entry to the end of the list in repository.xml. Default location is C:\Documents and Settings\All Users\Application Data\VMware\Wasp.
	RepositoryEntry		<p>Format is addrepository bin <repositoryUri> <platformname> <sectionname> where bin specifies the format. Use single or double quotes around the repositoryUri if it contains spaces.</p> <p>Example: wasp addrepository bin http://server/softwarerepository Win7 Release. In this example, the wasp command is also displayed.</p>

Insert Repository

Table 6-11. Insertrepository Command Line Switches and Arguments

Commands	Command Line Arguments	Command Line Switches	Comments
insertrepository			Adds an entry to repository.xml at the specified index point.
	RepositoryEntry		Format is insertrepository bin <repositoryUri> <platformname> <sectionname> <indexnumber> Example: wasp insertrepository bin http://server/softwarerepository Win7 Release 0. In this example, the wasp command is also displayed and the index insertion point is at the beginning of the existing list.
	index		0-based index of the position to insert the record into Example: wasp insertrepository bin http://server/softwarerepository Win7 Release 2. In this example, the wasp command is also displayed and the index insertion point is third in the existing list. 0 is first.

Remove Repository

Table 6-12. Removerepository Command Line Switches and Arguments

Commands	Command Line Arguments	Command Line Switches	Comments
removerepository			Removes an entry from repository.xml
	RepositoryEntry		Format is removerepository bin <repositoryUri> <platformname> <sectionname>

List Local Cratocache

Table 6-13. Listlocalcratocache Command Line Switches and Arguments

Commands	Command Line Arguments	Command Line Switches	Comments
listlocalcratocache			Displays the cratocache location.

Clean Cratocache

Table 6-14. Clean Command Line Switches and Arguments

Commands	Command Line Arguments	Command Line Switches	Comments
clean			Erase downloaded archive files in the cratocache folder.

Maintain Package Manager for Windows Data

In addition to the tasks of installing and removing packages, and adding and removing repository sources, you can use wasp commands to check package status and to keep your machines current.

The following are only a few suggested commands. For a complete list of commands and switches, see ["Package Manager for Windows Command Line Options" on page 51](#)

Package Manager Maintenance

When working in Package Manager, data may become out of date if you are performing many actions at one. Use wasp update to refresh the data regarding repository sources, cratocache files, and external software.

To view a list of installed packages, type wasp list.

To view a list of all packages, including installed, preinstalled, and candidates, type wasp list all. Installed packages have been installed on the machine, candidates are packages in source repositories that are eligible for installation but not installed on the machine.

The cratocache folder stores the local copies of packages installation/removal files. To determine the location of the cratocache, type wasp listlocalcratocache.

You may delete files from the cratocache; however, when you issue a remove command for the package, the file will be downloaded from the repository in order to run the remove commands. You should only remove a package from the cratocache if you know it is still available in a repository. If it is not in the cratocache nor is it in the repository, you will not be able to remove the software. To delete the files from the folder, type wasp clean.

Repository Source Maintenance

Viewing a list of all repository sources of which Package Manager is aware helps to ensure that you install packages only from approved sources. Type wasp listrepository.

If, when reviewing the list, you need to remove a repository source from the list, type wasp removerepository bin <repositoryUri> <platformname> <sectionname>. See ["Remove Repository Sources" on page 50](#) for more information.

CAUTION If you remove a repository source from which a particular package was installed, and the package is no longer available in the local cratecache folder, you will not be able to uninstall the package.

Some packages are installed as dependencies for other packages. You can remove unused dependencies using `wasp autoremove`. See ["Package Manager for Windows Command Line Options" on page 51](#) for more about the associated switches.

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