

## INTRODUCTION

Often it is needed to easily deploy applications to all systems in a domain, or to specific systems. The following article describes how to deploy Windows Installer (MSI) packages to the systems in your domain using the built in tools that are part of Active Directory.

Installing non MSI packages, is mentioned briefly in this guide, but is generally outside the scope and will often require third party utilities to deploy.

## WHAT IS MSI?

MSI was originally named for Microsoft Installer but evolved more specifically to Windows Installer. It is a software technology (included with Windows) that takes care of most of the tedious aspects of installation, removal, registry changes, rollbacks, maintenance updates and other installation related tasks.

When an application is available as an MSI package, many special features are available. Below is list of common advantages:

- Consistent installation dialogs
- Standard silent and unattended installation options
- Large variety of command line features
- And finally, native support for Group Policy Deployment.

There are certain limitations in the ease and options available with an MSI. For example an MSI cannot install its own pre-requisites as part of its setup. You will need to check with your software vendors requirements to see if any prerequisites need to be installed first.

## OVERVIEW

The below is an overview of the steps that we will take to deploy an MSI.

### Steps to Deploying:

- Obtaining an MSI Version
- Checking for infrastructure pre-requisites such as C++ Runtimes, .NET Framework, etc...
- Perform a test run
- Sharing the installation
- Creating and Deploying the Group Policy Object
- Specifying Command Line Parameters
- Uninstalling a deployed application

#### Case Study Example:

Microsoft Word 2007 has been installed on all systems, however users need a way to save their documents as PDF. Deploying the **Save to PDF** add on is the best option.

<http://www.microsoft.com/download/en/details.aspx?displaylang=en&id=9943>



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### OBTAINING AN MSI VERSION

The first step in deploying an application using Group Policy, will be to obtain an MSI package for that software. Often you will find that not all software actually includes an MSI version. Below are some examples of ways to obtain, or even create an MSI for your installation.

#### Download MSI from Manufacturer:

The best option is that the software vendor that makes the application you wish to install makes an MSI version. If the installation you have is not an MSI (has a .msi extension) then you should check their website or support pages for such a download.

#### Extract MSI from Exe Version:

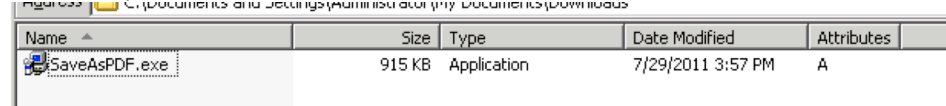
Some .EXE installations are actually an MSI package that has been wrapped up. You will need to consult documentation to see if there is the option to extract the MSI file directly from the .exe.

#### Create an MSI:

If an MSI package is not available. There are a variety of tools out there for packaging your executable install into an MSI. How well this works really depends on what that exe installer does, and if its actions are possible as part of an MSI. For example, installing an instance of SQL Express is not an option as part of an MSI. Items that can be easily rolled back are the only actions typically allowed within an MSI.

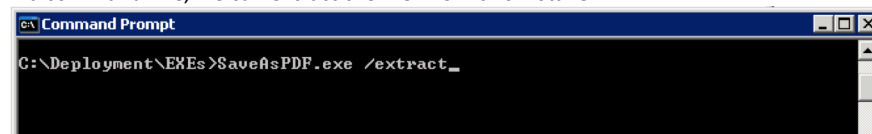
#### Case Study Example:

In our example, the Save to PDF Add-On is an executable.



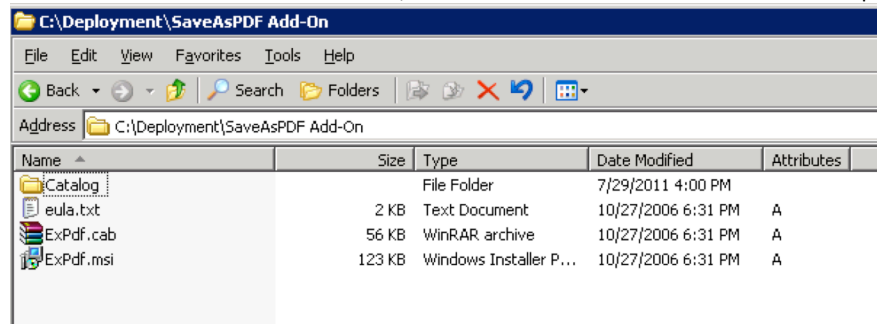
Name	Size	Type	Date Modified	Attributes
SaveAsPDF.exe	915 KB	Application	7/29/2011 3:57 PM	A

Via command line, we can extract the MSI from this installer.



```
C:\Deployment\EXEs>SaveAsPDF.exe /extract_
```

We have now been able to save the MSI, and its associated files to a location we can deploy it from.



Name	Size	Type	Date Modified	Attributes
Catalog		File Folder	7/29/2011 4:00 PM	
eula.txt	2 KB	Text Document	10/27/2006 6:31 PM	A
ExPdf.cab	56 KB	WinRAR archive	10/27/2006 6:31 PM	A
ExPdf.msi	123 KB	Windows Installer P...	10/27/2006 6:31 PM	A



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### CHECKING FOR INFRASTRUCTURE PRE-REQUISITES

In many situations your installation package will rely on one or more pre-requisite. In some cases these are operating system features that need to be enabled first. Below is an example of common pre-requisites to check for.

Check the documentation, or contact your software vendor for a full list of everything needed.

- Microsoft Visual C++ Runtimes
- Microsoft .NET Framework
- Internet Information Services (IIS)
- Microsoft SQL Server

### PERFORMING A TEST RUN:

To help ensure pre-requisites and configuration is correct, it is best to perform a test run of your installation. MSI packages can be installed silently from the command line allowing you to some degree simulate an installation before attempting to deploy to your entire network.

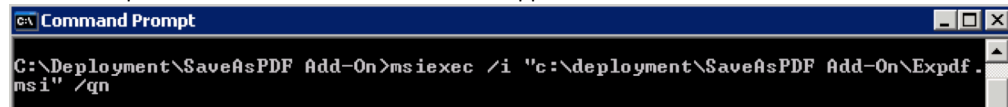
This can be run with the following command. Replace the path and then this will perform an installation of specified package silently. /i = Install, /qn = Quiet, No Dialogs.

**Msiexec /i "Path to MSI file" /qn**

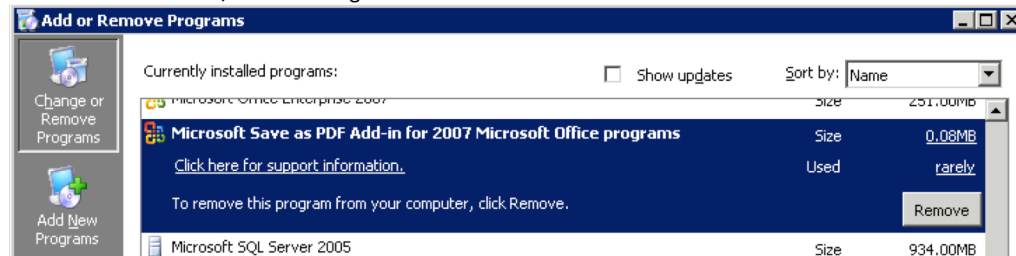
After running this, check Add-Remove Programs / Programs and Features and ensure the product installed. Also try running an using the application to ensure it is operational.

#### Case Study Example:

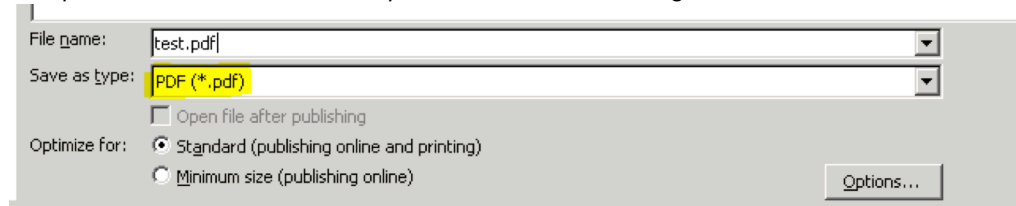
In this example we ran this command to install the application



Then we checked Add/Remove Programs



Finally we verified that the functionality worked. In this case allowing Save AS PDF from Word



#### Warning:

When testing deployments, it is strongly recommended to try manually on each Operating system and architecture that you will be deploying to.

i.e. We will be performing tests on the below systems:

- Windows XP
- Windows 7 32 bit
- Windows 7 64 bit



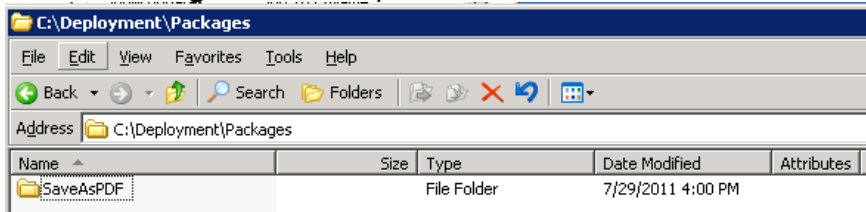
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## SHARING THE INSTALLATION:

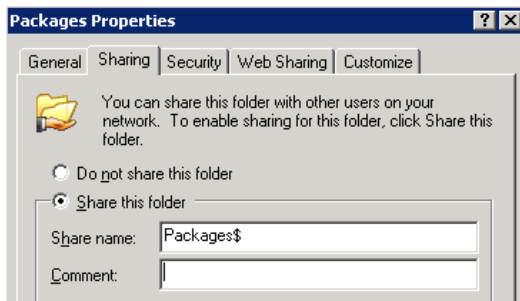
In order for all machines on the network, to have access to the MSI package, you will need to share it, and grant Read permissions to the group named **Domain Computers**. It is also recommended that you make the share hidden, to help prevent unauthorized access to the directory.

### Creating the Share:

1. Place your MSI Package(s) into a folder on the server. In our case study, we made a folder named **Packages** and have placed the **SaveAsPDF** MSI and files into its own directory.



2. Go to the properties of the **Packages** folder and go to sharing. Set it to **Share this folder** and make the share name as desired.

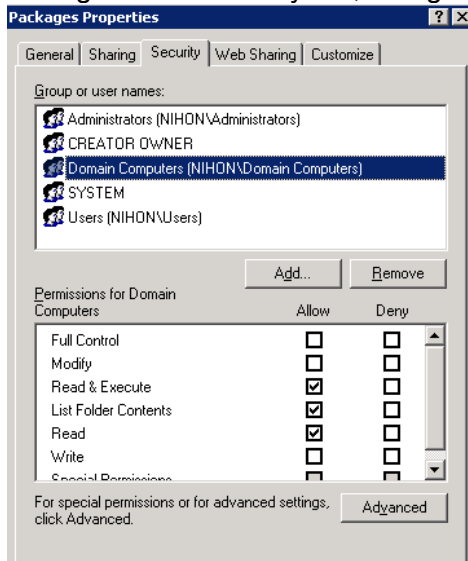


#### Hiding a Share:

In our example, we named it **Packages** and added a **\$** to the end. The dollar sign appended will make the share hidden.



- Next go to the Security tab, and grant **Domain Computers** Read rights on that folder



## CREATING AND DEPLOYING THE GROUP POLICY OBJECT

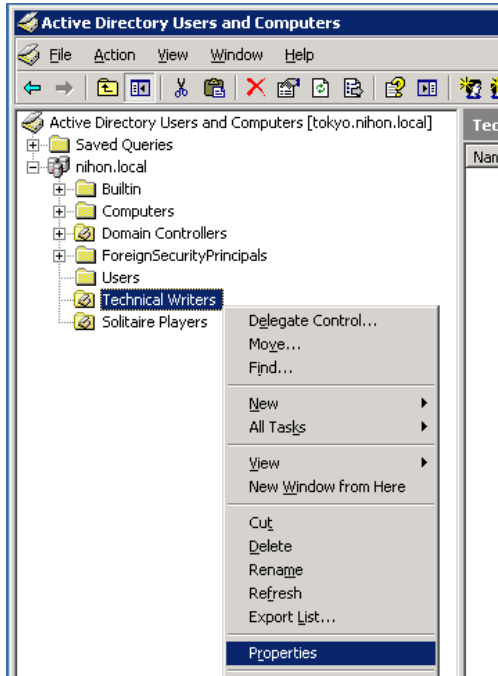
An MSI package can be assigned to an existing Group Policy Object, or even the existing default policy for the entire domain. However for ease of control, it is recommended to make a Group Policy Object for each installation package, or set of packages.

The below steps cover creating this and assigned it to the **Technical Writers** Organizational Unit within Active Directory.

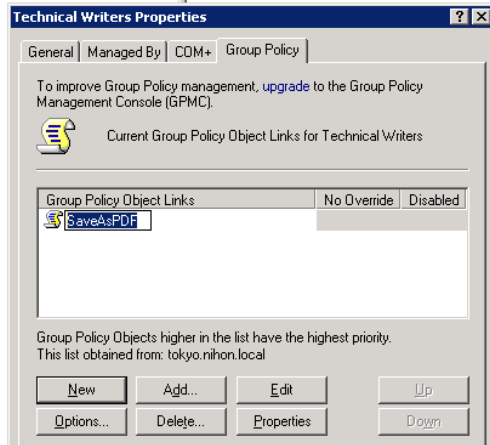
### Creating the Group Policy Object:

- Open **Active Directory Users and Computers**, and locate the Organizational Unit that contains the computers you wish to deploy the package to. Right click on it and choose **Properties**. (Alternatively, you can deploy to the entire domain by choosing the Domain Root)





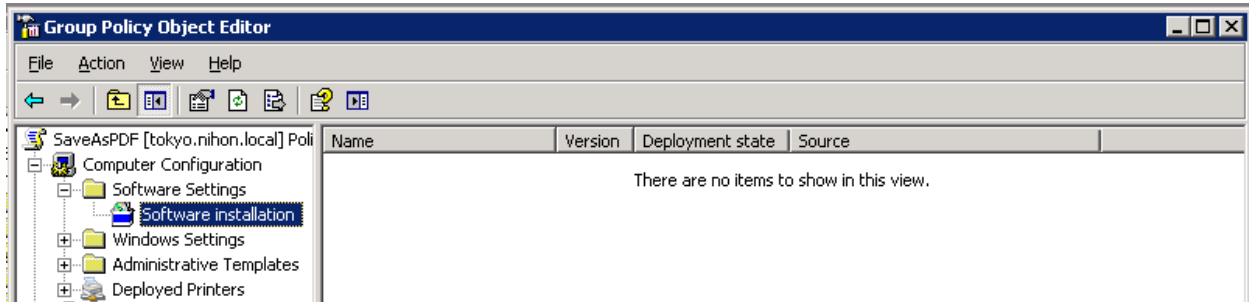
- Next navigate to the **Group Policy** tab and choose **New** to create a new object and name it.



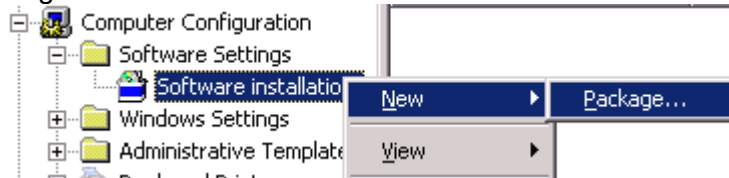
### Creating the Group Policy Object (continued...)

- Once the object is created, click **Edit**; this will open the **Group Policy Object Editor**. Within this editor, browse to **Computer Configuration > Software Settings > Software Installation**. This is where you will add your package.

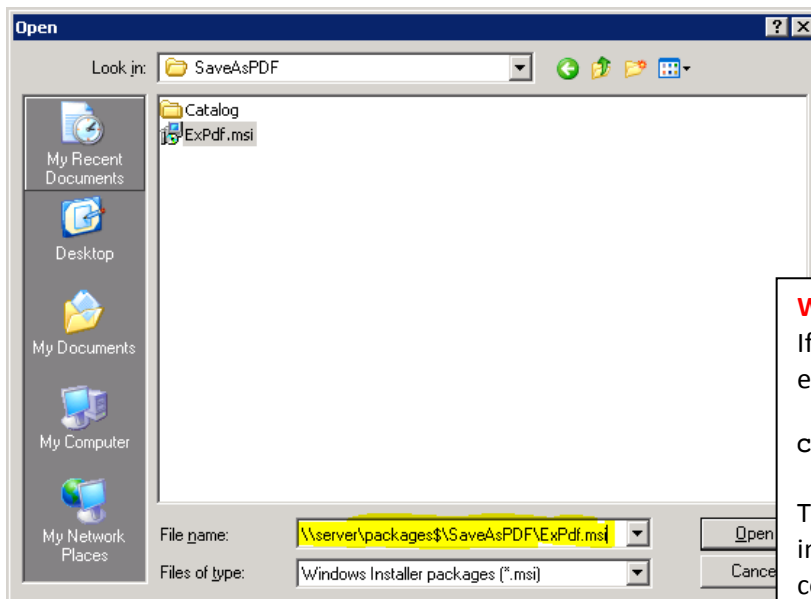




4. Right click on **Software installation** and choose **New > Package**.



5. Next you will be prompted to browse to your folder. It is important that you browse to it via the **SHARE**, and not to its local location on your server.



**Warning:**

If you browse to your MSI file locally, for example

`C:\Deployment\Packages\SaveAsPDF`

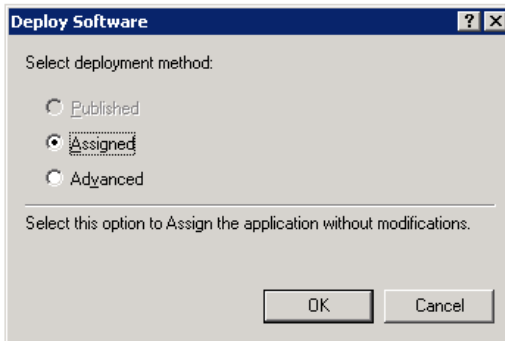
Then your deployment will fail as the installation needs to be specified at a common location (UNC Path) accessible by all computers installing it.

### Creating the Group Policy Object (continued...)




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- After selecting the package you will typically get the options of **Published**, **Published or Advanced**. In this case choose **Assigned** which simply means the packaged will be assigned to install on those systems.



Once done you will see it listed under software packages:

Name	Version	Deployment state	Source
 Microsoft Save as PDF Add-in for...	12.0	Assigned	\\tokyo\PACKAGES\$\SaveAsPDF\ExPdf.msi

- Installation will typically occur on the next system restart as the group policy is refreshed and applied.

### Advanced Settings:

Below is a brief explanation of a few Advanced Settings:

- Deployment > Uninstall this application when it falls out of scope of management:**  
This option causes the MSI package to automatically become uninstalled if the computer moves out of an OU with that package. For example, say John Doe moves out the Technical Writers OU, and into the Solitaire Players OU that does not get this package. With this item checked it would automatically install the user.

This can be very valuable when managing licenses used of applications.

- Deployment > Uninstall this application when it falls out of scope of management > Advanced > Make this 32-bit X86 application available to Win64 machines:**  
If your installation application is 32 bit (which most are), then you will want to ensure this is checked, otherwise your package will not get installed on any system that is 64 bit.

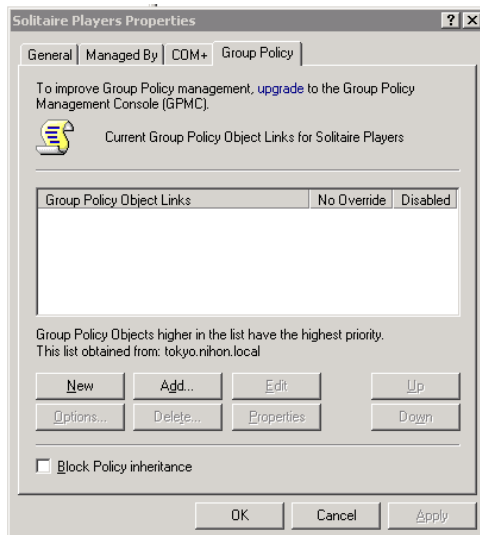


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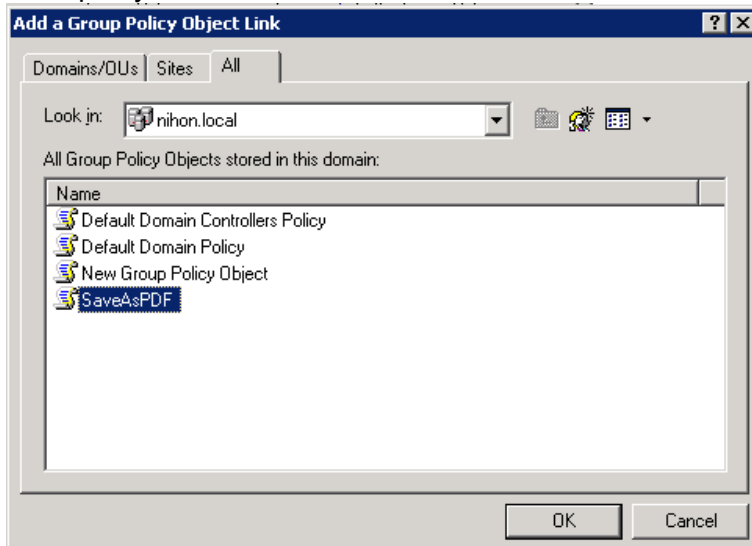
### Deploying to Additional OUs:

Since we added our Save As PDF installer to its own Object. We can easily add it to another OU with the following steps.

1. Browse to the additional OU you wish to deploy the application to. Open its **Properties** and go to the **Group Policy** tab. Here click **Add** instead of new.



2. After clicking **Add**, there will be a few ways to browse for existing Group Policy Objects. In the below example, you went to the **All** tab and found and selected the existing **SaveAsPDF** object.



- This OU will now have the same package assignment.

## SPECIFYING COMMAND LINE PARAMETERS

Often an installed application may have specialized setting. Like location of a SQL Database, or a shared directory, or perhaps some other configuration. The standard MSI format for specifying properties that affect an install work well, but how do we specify an MSI package property when deploying an MSI?

**Msiexec /i "Path to MSI file" PROPERTY="VALUE" /qn**

These properties are actually stored within the installation file which is actually composed of a database with tables. One of those tables is named **Property**; these tables and their values can be edited with a program named Orca.

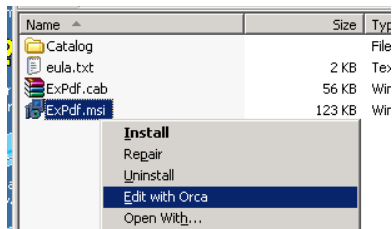
### Obtaining Orca:

Orca is included in the Microsoft Windows Server 2003 SDKs, as well as the SDK for most other versions of Windows since then. At the time of writing this article, the below download will install this full SDK which will install many tools, Orca being one of them.

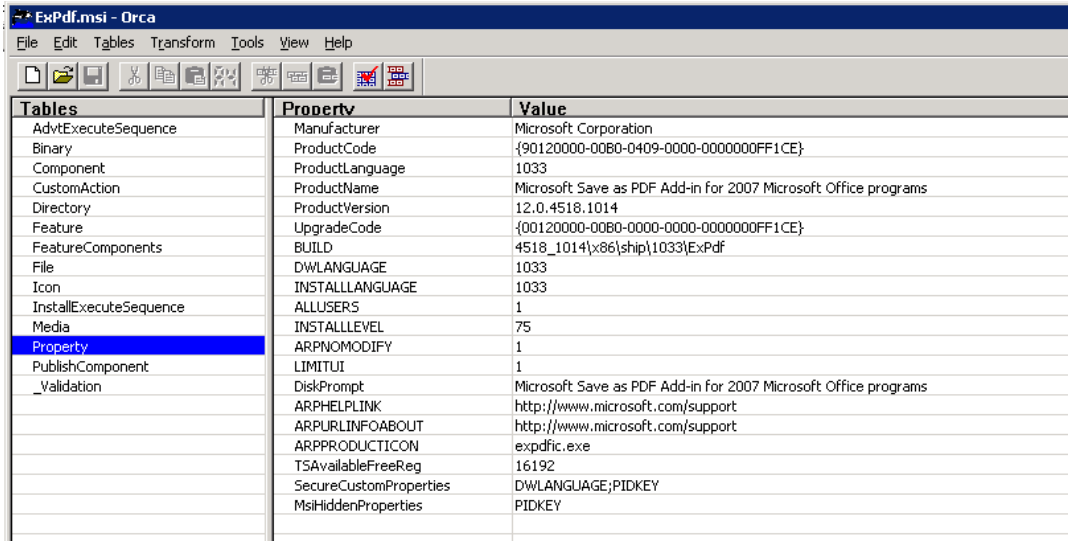
<http://www.microsoft.com/download/en/details.aspx?displaylang=en&id=6510>

### Editing Properties with Orca:

Once Orca has been installed, you will be able to easily edit the databases tables of MSI packages. Below we show opening the **Property** table of our SaveAsPDF msi. There is no custom parameters here we would want to edit, but in some cases there are and they can be saved directly in the MSI file, rather than passing command line options.



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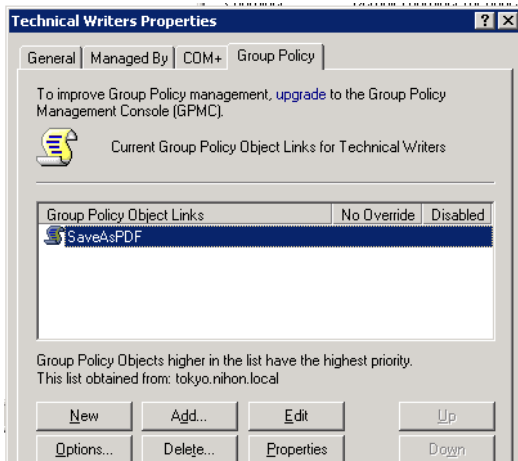
Tables	Property	Value
AdvExecuteSequence	Manufacturer	Microsoft Corporation
Binary	ProductCode	{90120000-0060-0409-0000-0000000FF1CE}
Component	ProductLanguage	1033
CustomAction	ProductName	Microsoft Save as PDF Add-in for 2007 Microsoft Office programs
Directory	ProductVersion	12.0.4518.1014
Feature	UpgradeCode	{00120000-0060-0000-0000-0000000FF1CE}
FeatureComponents	BUILD	4518_1014{x86}{ship}{1033}ExPdf
File	DWLANGUAGE	1033
Icon	INSTALLLANGUAGE	1033
InstallExecuteSequence	ALLUSERS	1
Media	INSTALLLEVEL	75
Property	ARPNOMODIFY	1
PublishComponent	LIMITUI	1
_Validation	DiskPrompt	Microsoft Save as PDF Add-in for 2007 Microsoft Office programs
	ARPHelpLink	http://www.microsoft.com/support
	ARPUrInfoAbout	http://www.microsoft.com/support
	ARPPRODUCTICON	expdfic.exe
	TSAvailableFreeReg	16192
	SecureCustomProperties	DWLANGUAGE;PIDKEY
	MsiHiddenProperties	PIDKEY

## UNINSTALLING DEPLOYED APPLICATIONS:

After some time, you may want to uninstall the application because it is no longer needed, or desired, or perhaps to pave way for a different installation package. To do this follow the below steps.

### Removing a Deployed Application:

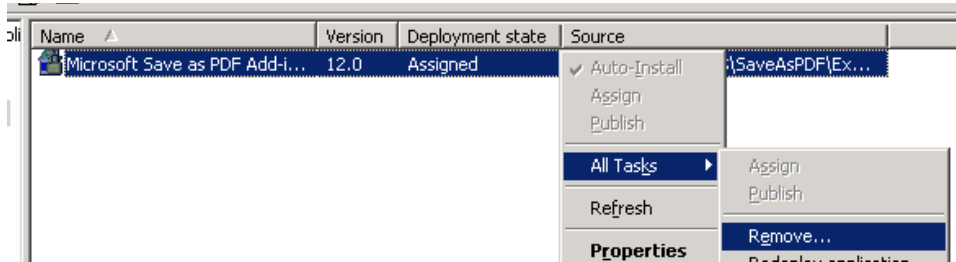
1. Browse within Active Directory, and locate the OU or Domain you wish you remove the application from. Within **Properties > Group Policy**, select the policy that has the deployed application and click **Edit**.



2. Within the policy, browse to **Software Installation** and select the package to uninstall. Right click on it and choose **All Tasks > Remove...**



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3. Next choose **Immediately uninstall the software from users and computers**. This will cause the package to be uninstalled; typically occurring on the next system restart.

