ClickOnce Visual Studio 2013 Walkthrough

*****Bug Warning*** As of right now, customers will need to make sure the "target framework" is set to .NET 4 and not .NET 4.5 if they're using SHA2. See this article for the bug report and workaround: https://connect.microsoft.com/VisualStudio/feedbackdetail/view/957188**

This is intended to be a walk through for how to properly sign a standard clickonce application. This walk through utilized Windows 8.1 Pro with Microsoft Visual Studio Ultimate 2013 Version 12.0.21005.1 REL using Micosoft .Net Framework Version 4.5.5.141. This information can be found in the Help > About Microsoft Visual Studio.

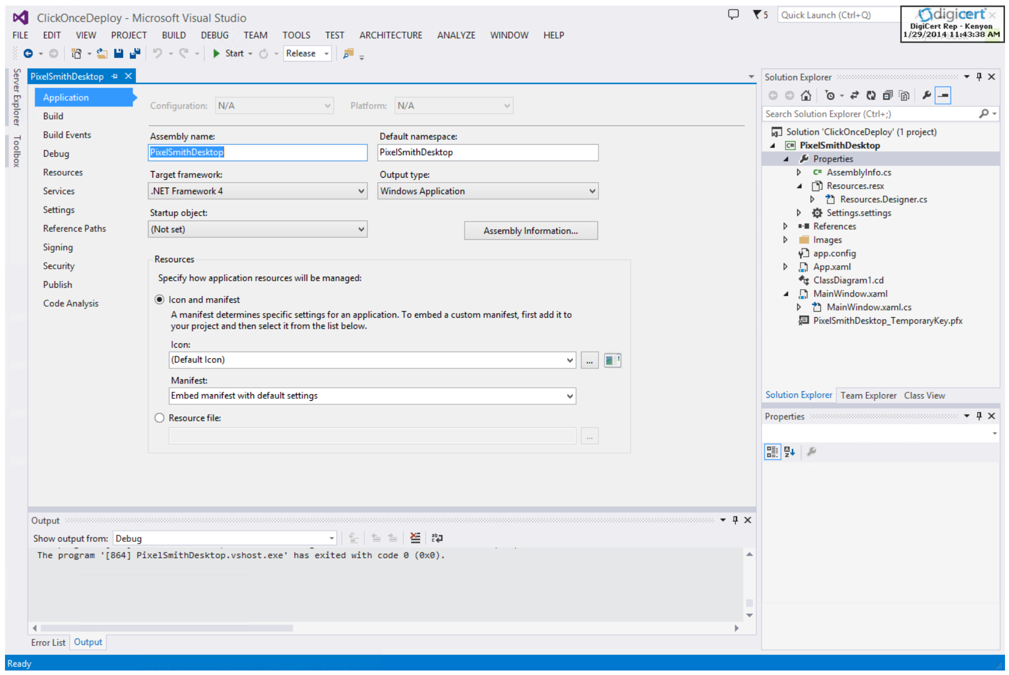
To get started I downloaded and installed Visual Studio 2013 which took about an hour. I also had to download Windows SDK for Windows 8.1, which contained signtool located in C:\Program Files (x86)\Microsoft SDKs\Windows\v7.1A\Bin\signtool.exe.

I then found a pre-built app with the help from Lynda.com and their exercise files if you are a member. It talks about the clickonce here, even though he did not sign correctly: http://www.lynda.com/ASPNET-tutorials/Creating-ClickOnce-application/67159/76641-4.html

Here is this wiki as a PDF you can send to customers if you want.

Make sure you update to the lastest version of Safenet!

Once everything is loaded I had to modify the properties of the project. Double click on properties on the right and then click on Application. I did not change anything here, but wanted to show the settings.



Configuration: N/A
Platform: N/A
Assembly name: PixelSmithDesktop
Default namespace: PixelSmithDesktop
Target framework: .NET Framework 4
Output type: Windows Application
Startup object: (Not set)
Resources
Specify how application resources will be managed:
Icon and manifest
A manifest determines specific settings for an application. To embed a custom manifest, first add it to your project and then select it from the list below.
Icon: (Default Icon)
Manifest: Embed manifest with default settings
Resource file:
Output
Show output from: Debug

```
The program '[864] PixelSmithDesktop.vshost.exe' has exited with code 0 (0x0).
```

Then click on Build Events. Build Events are what actually sign the application, to do it properly I specified it as a post-build event.

If using an EV code signing certificate they can use the following command:

> *"C:\Program Files (x86)\Microsoft SDKs\Windows\v7.1A\Bin\signtool.exe" sign /n "Elvtech Web Solutions, Inc." /v "$(ProjectDir)obj\x86\$(ConfigurationName)\$(TargetFileName)"*

- The double quotes are required.
- “C:Program Files (x86)Microsoft SDKsWindows\v7.0A\bin\signtool.exe” is the path to the signtool application, used to sign the executable.
- $(ProjectDir) points to the top directory of the project. The subfolder “\obj\x86” will vary depending on your build output path. The above was created and tested on VS2010. On VS2012, it may just be \obj. Note the path obj - ClickOnce pulls from the obj (not bin)
- $(ConfigurationName) is the build configuration name, such as Debug or Release – this is required because it signs it in the obj directory and has to know which folder to use.
- $(TargetFileName) is the name of the application executable.
- You can see the actual output of the variables by clicking on Macros > >. Please note that I just kept the variables in the

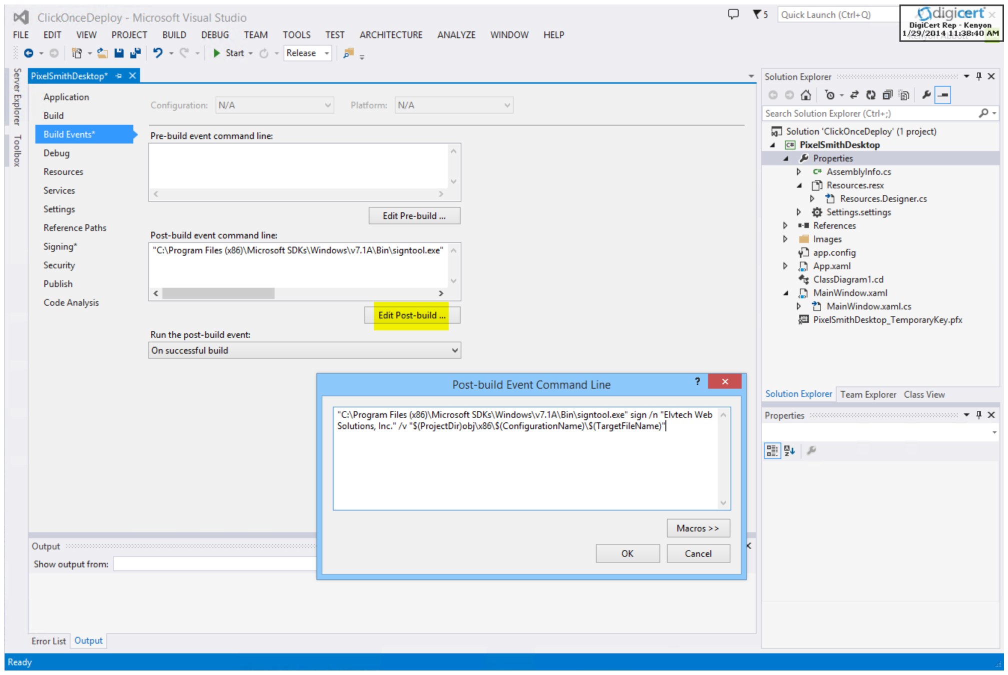
command.

If using a standard code signing certificate they can use the following command:

"C:\Program Files (x86)\Microsoft SDKs\Windows\v7.1A\Bin\signtool.exe" sign /f "$(ProjectDir)KenyonAbbott.pfx" /p test /v "$(ProjectDir)obj\x86\$(ConfigurationName)\$(TargetFileName)"

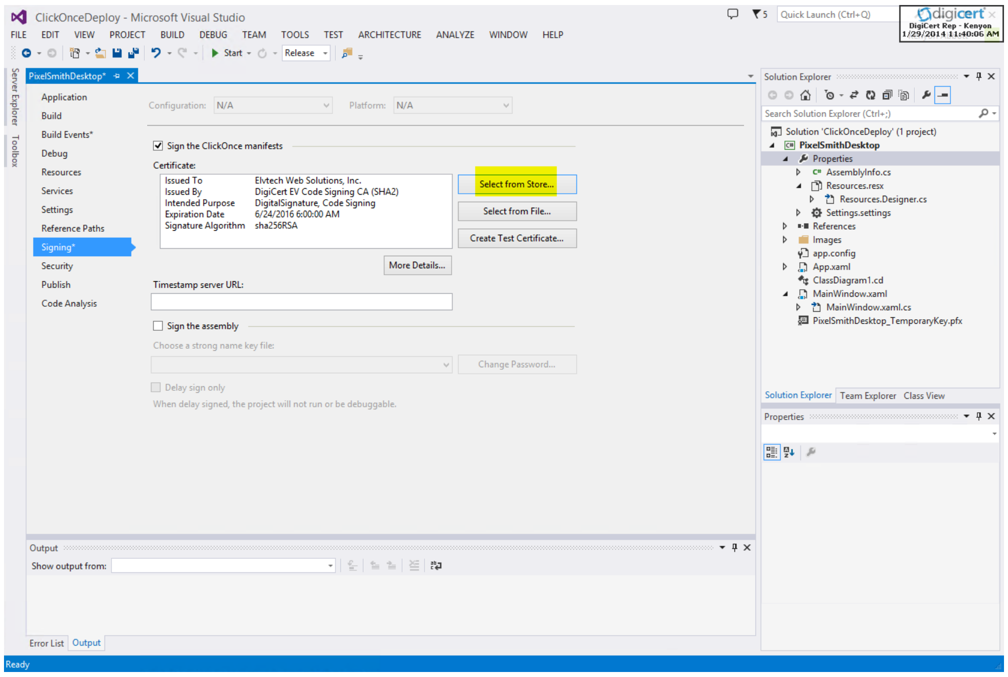
- The double quotes are required.
- “C:Program Files (x86)Microsoft SDKsWindows\v7.0A\bin\signtool.exe” is the path to the signtool application, used to sign the executable.
- $(ProjectDir) points to the top directory of the project. The subfolder “\obj\x86” will vary depending on your build output path. The above was created and tested on VS2010. On VS2012, it may just be \obj. <u>Note the path obj - ClickOnce pulls from the obj (not bin)</u>
- $(ConfigurationName) is the build configuration name, such as Debug or Release – this is required because it signs it in the obj directory and has to know which folder to use.
- $(TargetFileName) is the name of the application executable.
- KenyonAbbott.pfx is the name of the certificate file, which should be located in the top folder of the project.
- /p test – this is the password for the certificate
- You can see the actual output of the variables by clicking on Macros > >. Please note that I just kept the variables in the command.

I was lucky enough to find this command located on a website, but they were using a PFX file, I modified it to use my EV SHA1 code signing certificate. I only had one certificate by this name so I was able to specify by subject name. If they have multiple with the same name you will need to specify a different switch in signtool.



```
"C:\Program Files (x86)\Microsoft SDKs\Windows\v7.1A\Bin\signtool.exe" sign /n "Elvtech Web
Solutions, Inc." /v "$(ProjectDir)obj\x86\$(ConfigurationName)\$(TargetFileName)"
```

Then you can go to the Signing tab and check "Sign the ClickOnce mainifests" and then with the EV token plugged in select it from the store by clicking select from store.



Configuration: N/A Platform: N/A

☑ Sign the ClickOnce manifests

Certificate:

Issued To	Elvtech Web Solutions, Inc.
Issued By	DigiCert EV Code Signing CA (SHA2)
Intended Purpose	DigitalSignature, Code Signing
Expiration Date	6/24/2016 6:00:00 AM
Signature Algorithm	sha256RSA

Timestamp server URL:

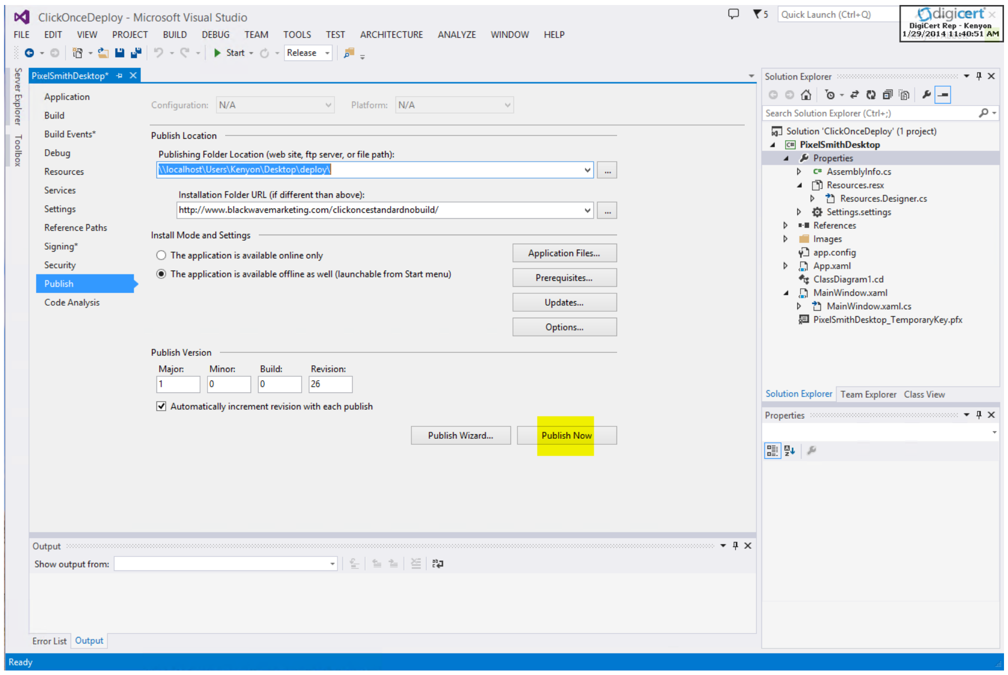
☐ Sign the assembly

Choose a strong name key file:

☐ Delay sign only

When delay signed, the project will not run or be debuggable.

Then you can click on the Publish tab. This should be already setup by the developer, but you can publish the application to a directory (Publish Folder Location). Then the installation can be moved to the place the installation will reside, most times a website. This path (Installation Folder URL) must be correct of the application will not install. Note: mine are different in some of the screenshots because I was signing with different certificates to test the results.



Configuration: N/A Platform: N/A

Publish Location

Publishing Folder Location (web site, ftp server, or file path):
\\localhost\Users\Kenyon\Desktop\deploy\

Installation Folder URL (if different than above):
http://www.blackwavemarketing.com/clickoncestandardnobuild/

Install Mode and Settings

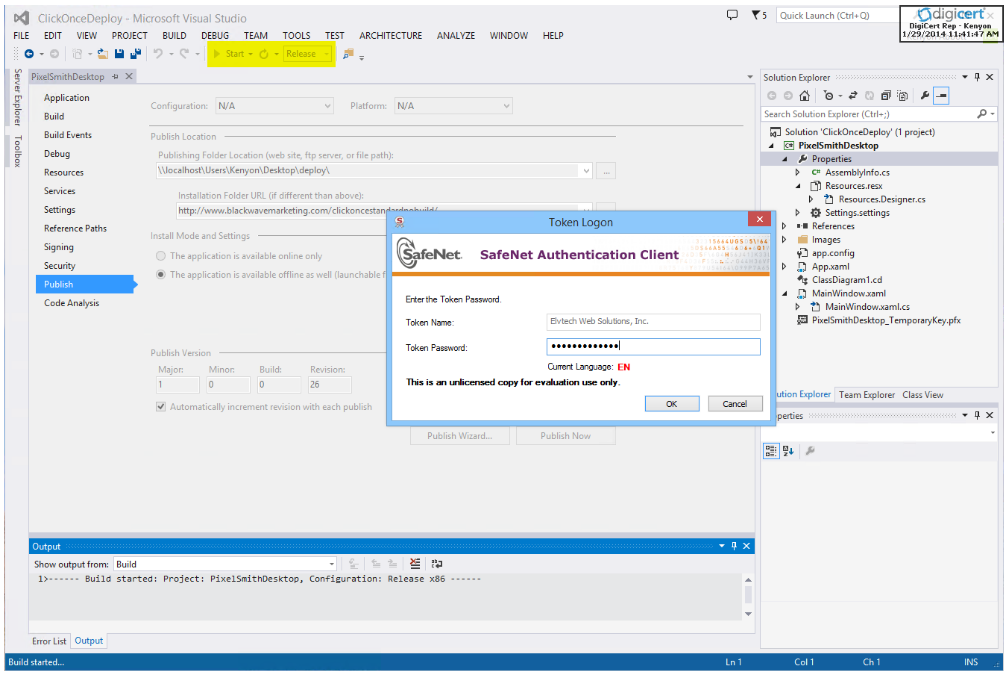
○ The application is available online only
● The application is available offline as well (launchable from Start menu)

Publish Version

Major:	Minor:	Build:	Revision:
1	0	0	26

☑ Automatically increment revision with each publish

I then built my application first and then entered the token password.


Token Logon

SafeNet Authentication Client

Enter the Token Password.

Token Name: Elvtech Web Solutions, Inc.

Token Password: •••••••••••••

Current Language: EN

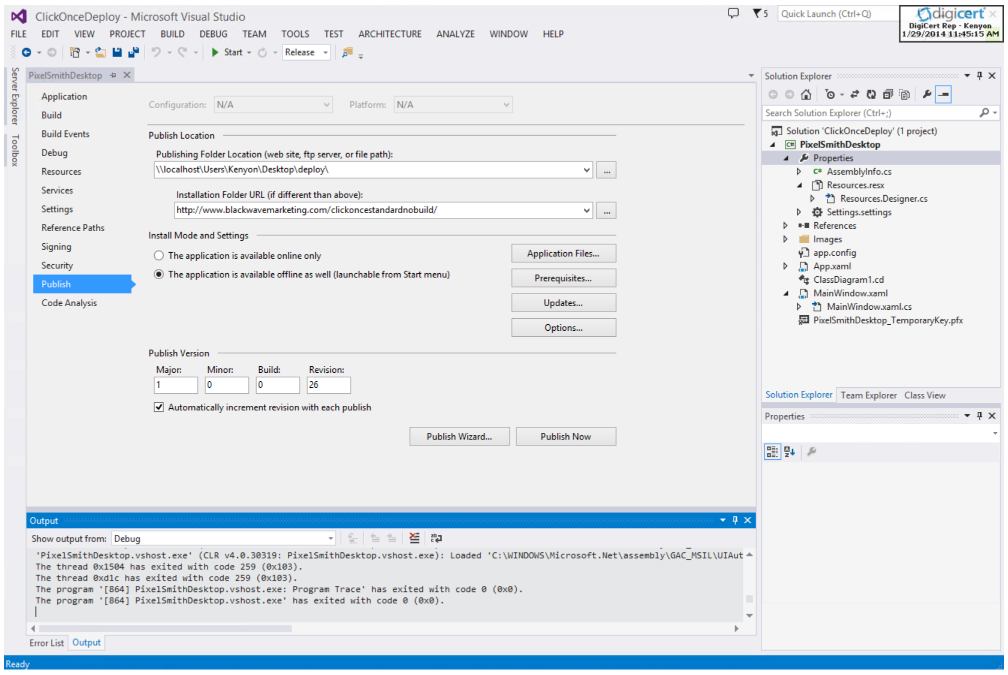
This is an unlicensed copy for evaluation use only.

Publishing Folder Location (web site, ftp server, or file path): \\localhost\Users\Kenyon\Desktop\deploy\

Installation Folder URL (if different than above): http://www.blackwavemarketing.com/clickoncestandardnobuild/

```
1>------ Build started: Project: PixelSmithDesktop, Configuration: Release x86 ------
```

I then clicked publish now to publish the application,


Configuration: N/A Platform: N/A

Publishing Folder Location (web site, ftp server, or file path): \\localhost\Users\Kenyon\Desktop\deploy\

Installation Folder URL (if different than above): http://www.blackwavemarketing.com/clickoncestandardnobuild/

Install Mode and Settings

( ) The application is available online only

(●) The application is available offline as well (launchable from Start menu)

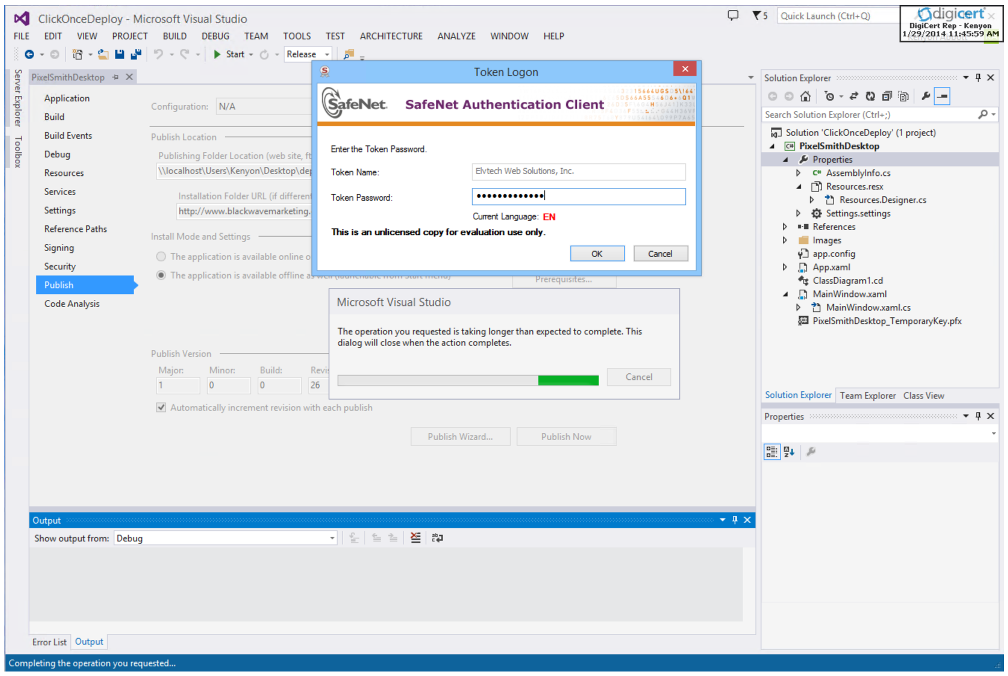
Publish Version: Major: 1 Minor: 0 Build: 0 Revision: 26

[✓] Automatically increment revision with each publish

Show output from: Debug

```
'PixelSmithDesktop.vshost.exe' (CLR v4.0.30319: PixelSmithDesktop.vshost.exe): Loaded 'C:\WINDOWS\Microsoft.Net\assembly\GAC_MSIL\UIAut
The thread 0x1504 has exited with code 259 (0x103).
The thread 0xd1c has exited with code 259 (0x103).
The program '[864] PixelSmithDesktop.vshost.exe: Program Trace' has exited with code 0 (0x0).
The program '[864] PixelSmithDesktop.vshost.exe' has exited with code 0 (0x0).
```

Enter token password again when prompted.


ClickOnceDeploy - Microsoft Visual Studio

Token Logon

SafeNet Authentication Client

Enter the Token Password.

Token Name: Elvtech Web Solutions, Inc.

Token Password: ●●●●●●●●●●●●●

Current Language: EN

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Microsoft Visual Studio

The operation you requested is taking longer than expected to complete. This dialog will close when the action completes.

Configuration: N/A

Publishing Folder Location (web site, ftp server, or file path): \\localhost\Users\Kenyon\Desktop\deploy\

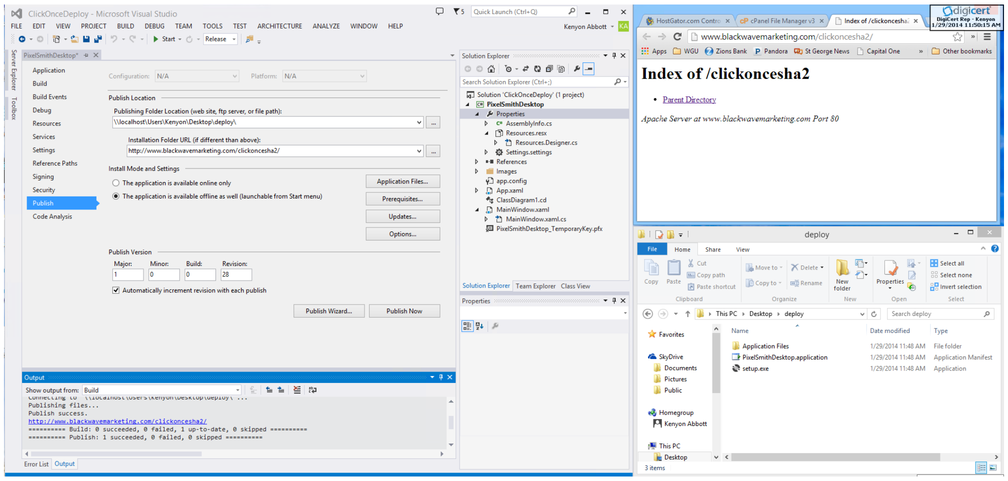
Installation Folder URL (if different than above): http://www.blackwavemarketing.com/clickoncesha2/

Publish Version — Major: 1, Minor: 0, Build: 0, Revision: 26

☑ Automatically increment revision with each publish

Completing the operation you requested...

The end result will open the the Installation Folder URL automatically. I am also showing where the application actually was created here.


Publishing Folder Location (web site, ftp server, or file path): \\localhost\Users\Kenyon\Desktop\deploy\

Installation Folder URL (if different than above): http://www.blackwavemarketing.com/clickoncesha2/

Install Mode and Settings

○ The application is available online only

● The application is available offline as well (launchable from Start menu)

Publish Version — Major: 1, Minor: 0, Build: 0, Revision: 28

☑ Automatically increment revision with each publish

Show output from: Build

```
Connecting to '\\localhost\Users\Kenyon\Desktop\deploy\' ...
Publishing files...
Publish success.
http://www.blackwavemarketing.com/clickoncesha2/
========== Build: 0 succeeded, 0 failed, 1 up-to-date, 0 skipped ==========
========== Publish: 1 succeeded, 0 failed, 0 skipped ==========
```

www.blackwavemarketing.com/clickoncesha2/

Index of /clickoncesha2

- Parent Directory

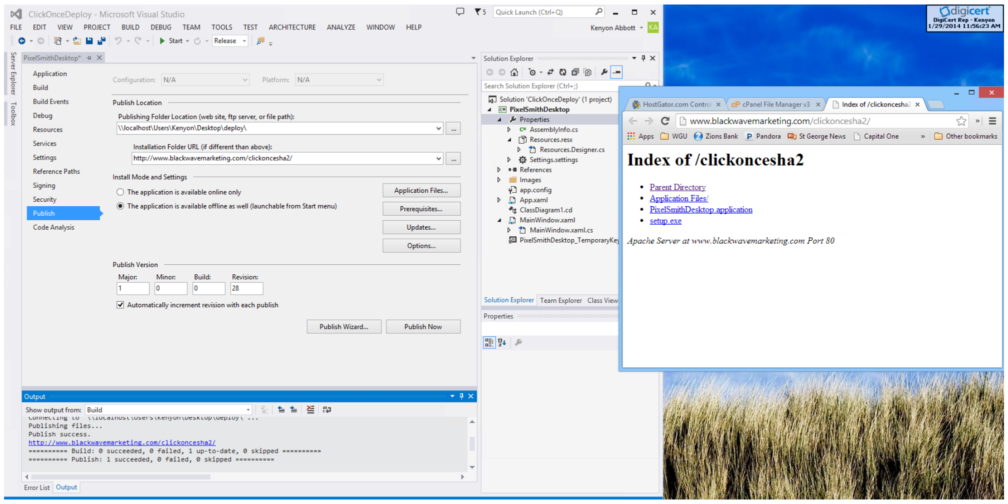
Apache Server at www.blackwavemarketing.com Port 80

deploy

Name	Date modified	Type
Application Files	1/29/2014 11:48 AM	File folder
PixelSmithDesktop.application	1/29/2014 11:48 AM	Application Manifest
setup.exe	1/29/2014 11:48 AM	Application

3 items

I then actually zipped the contents and moved it to my Installation Folder URL location and unzipped it there resulting in below.


www.blackwavemarketing.com/clickoncesha2/

Index of /clickoncesha2

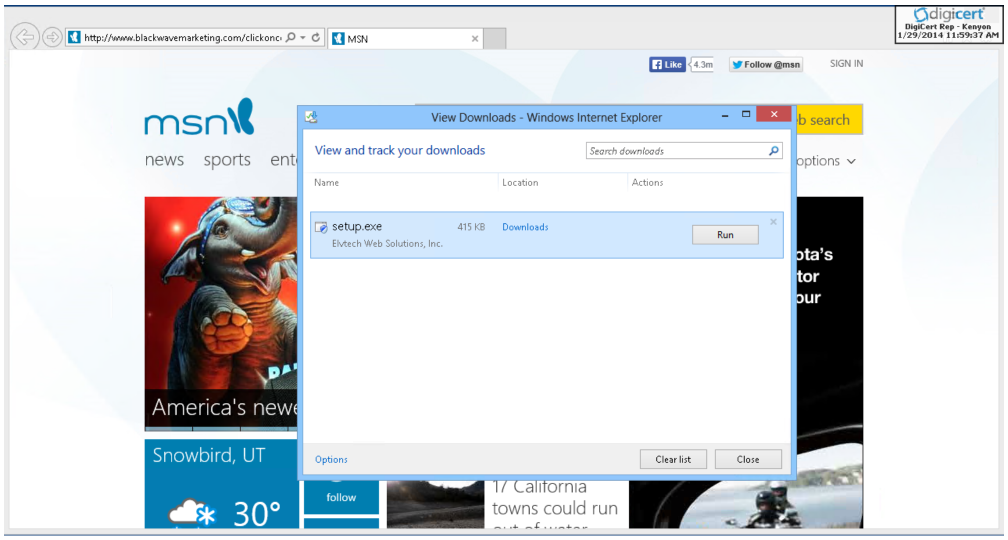
- Parent Directory
- Application Files/
- PixelSmithDesktop.application
- setup.exe

Apache Server at www.blackwavemarketing.com Port 80

Show output from: Build

```
Connecting to '\\localhost\Users\Kenyon\Desktop\deploy\' ...
Publishing files...
Publish success.
http://www.blackwavemarketing.com/clickoncesha2/
========== Build: 0 succeeded, 0 failed, 1 up-to-date, 0 skipped ==========
========== Publish: 1 succeeded, 0 failed, 0 skipped ==========
```

You can then download the exe file and run it.



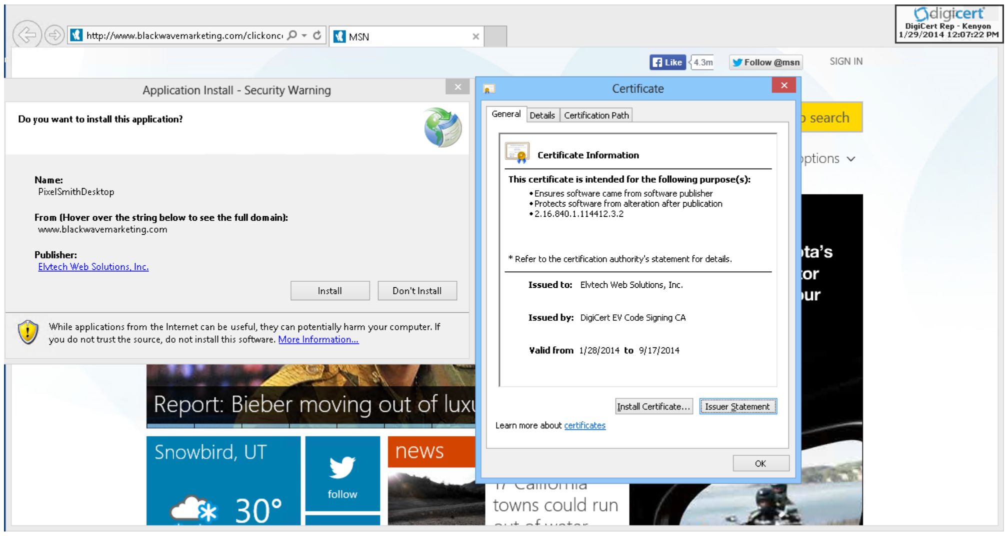
View Downloads - Windows Internet Explorer

View and track your downloads

Name	Location	Actions
setup.exe 415 KB Elvtech Web Solutions, Inc.	Downloads	Run

Options — Clear list — Close

If signed properly it will give a warning about installing the application and swill show the publisher. After you click on install it will install the application and bypass the windows smartscreen filter (just like a normal install with no additional dialogs about the filter).



Application Install - Security Warning

Do you want to install this application?

Name:
PixelSmithDesktop

From (Hover over the string below to see the full domain):
www.blackwavemarketing.com

Publisher:
Elvtech Web Solutions, Inc.

Install — Don't Install

While applications from the Internet can be useful, they can potentially harm your computer. If you do not trust the source, do not install this software. More Information...

Certificate

General — Details — Certification Path

Certificate Information

This certificate is intended for the following purpose(s):
- Ensures software came from software publisher
- Protects software from alteration after publication
- 2.16.840.1.114412.3.2

* Refer to the certification authority's statement for details.

Issued to: Elvtech Web Solutions, Inc.

Issued by: DigiCert EV Code Signing CA

Valid from 1/28/2014 to 9/17/2014

Install Certificate... — Issuer Statement

Learn more about certificates

OK

****

I created a new account when I used the Promo code. Although re-keying may have been the wrong way to do it, the new .pfx file worked. So here is a writeup about what happened:
Request:
Deploy a digicert signed vsto using clickonce installation and Visual Studio 2013
Procedure:
This procedure is to sign a VSTO directly using an imported certificate which includes a private key (not on a token)
1. Install the Certificate provided by digicert into the certificate store.
2. Configure Visual Studio to sign the published manifests
Under Project Proerties, select "Signing"
Select "Sign the ClickOnce manifests"
Click "Select from Store" or "Select From File"
Select the digicert certificate.
Set the timestamp URL: http://timestamp.digicert.com
3. Save the properties
4. build and publish.
The setup.exe file and vsto manifest will both reference/be signed by the digicert certificate.
This procedure is to resign a file already signed by another certificate
1. Setup the Visual Studio project using a self signed certificate to sign the manifests when publishing.
2. Built the vsto using Visual Studio.
3. Obtain/Export the digicert certificate from the certificate store including the private key. It is important to have the certificate both in the store and as a .pfx file.
3. Loaded the Windows SDK 7.1 from Microsoft's website.
4. From the "start" menu, select "All Programs->Microsoft Windows SDK 7.1->Windows SDK 7.1 Command Prompt"
5. At the command prompt, navigate to the publish folder.

6. At the command prompt, type:
Signtool sign /t http://timestamp.digicert.com /n "<name of the certificate in the store to use>" setup.exe
7. Next, sign the manifest
Mage –sign <name of the manifest>.vsto –CertFile <path to .pfx file> -Password <password of the .pfx file>
The setup.exe file and vsto manifest will both reference/be signed by the digicert certificate.
When installing the VSTO, if the inclusion list for the installation location (MyComputer/Internet/Intranet/etc) is set to AuthenticodeRequired, the signing procedures above will allow the VSTO to be installed.
Thank you very much for all your help making this work.

****

Errors

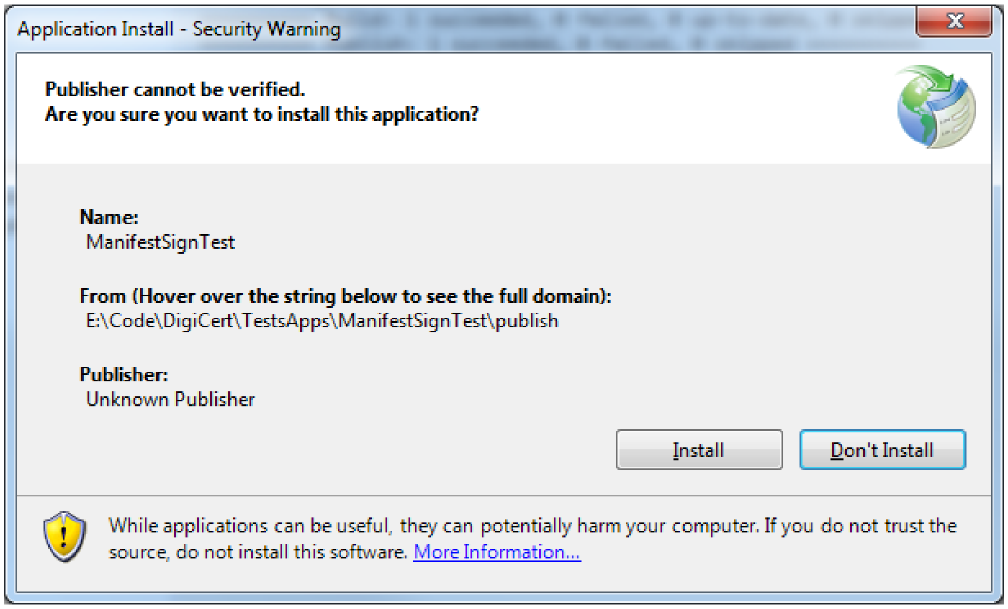
EV Code signing with SHA2 throws an error of Unknown Publisher.

Resolution: See this article: Unknown Publisher. If issue still persists it is likely because it is SHA2.

The problem seems to have something to do with Visual Studio signing the manifest file with a SHA2 certificate that is on the SafeNet eToken.   I don't know if the root cause is Visual Studio or SafeNet.

The way I got it to work was to publish the application from Visual Studio as normal and then I went back and manually resigned the manifest file. Here are the steps. ClickOnce-SHA2_error.pdf Make sure the token is plugged in before continuing.

Here is the warning I was getting right after I published form Visual Studio.


Application Install - Security Warning

Publisher cannot be verified.
Are you sure you want to install this application?

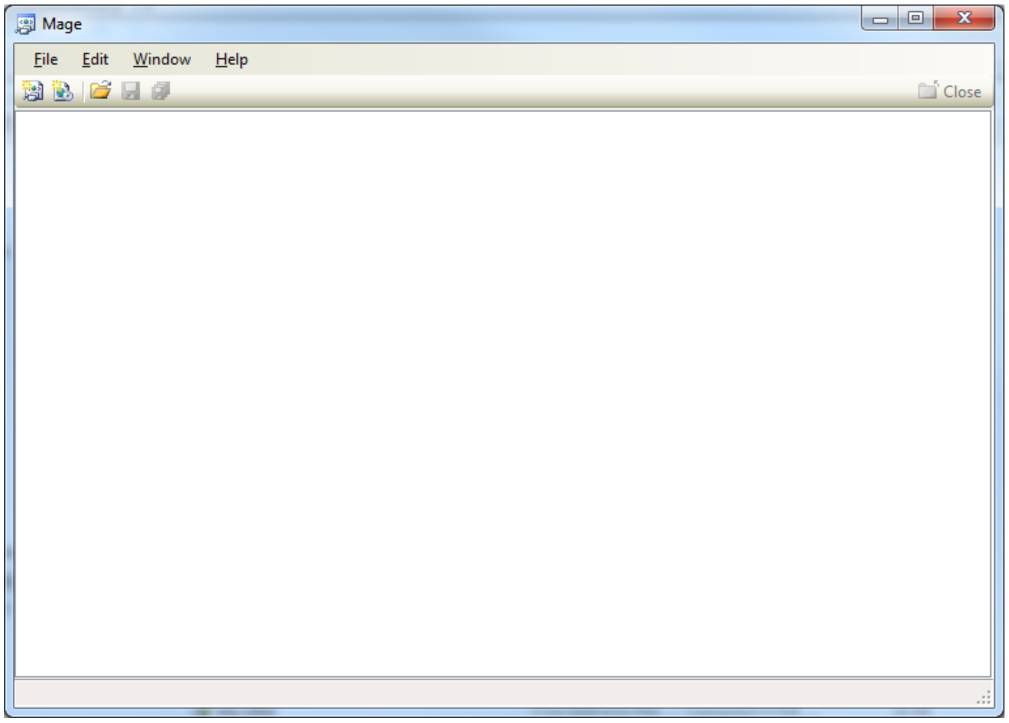
Name:
ManifestSignTest

From (Hover over the string below to see the full domain):
E:\Code\DigiCert\TestsApps\ManifestSignTest\publish

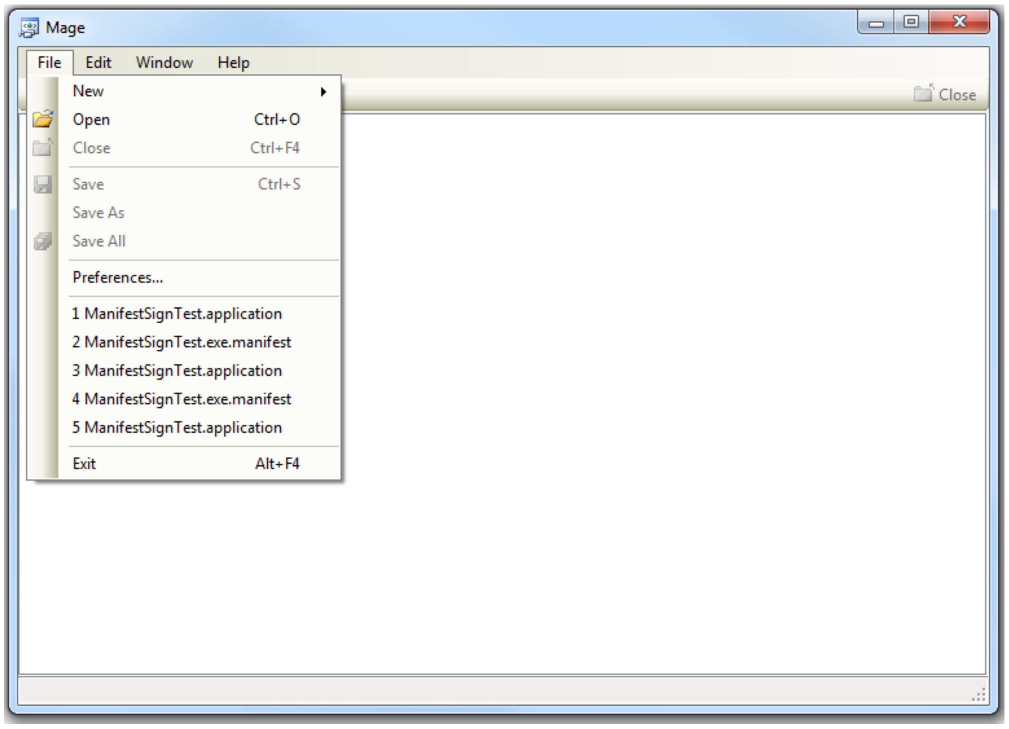
Publisher:
Unknown Publisher

While applications can be useful, they can potentially harm your computer. If you do not trust the source, do not install this software. More Information...

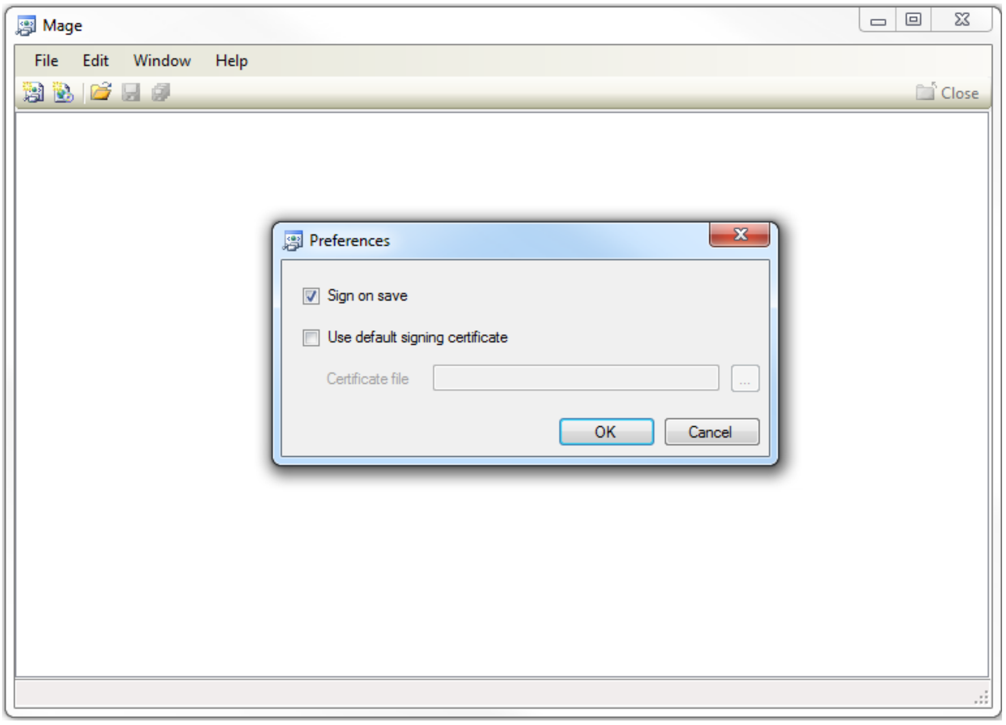
Visual Studio SDK comes with a program called mageui.exe (mine was in my C:\Program Files\Microsoft SDKs\Windows\v7.0\Bin directory). Double click this program to run it and it will look like this:



Go to the File menu and select Preferences.


Mage
File Edit Window Help
New
Open Ctrl+O
Close Ctrl+F4
Save Ctrl+S
Save As
Save All
Preferences...
1 ManifestSignTest.application
2 ManifestSignTest.exe.manifest
3 ManifestSignTest.application
4 ManifestSignTest.exe.manifest
5 ManifestSignTest.application
Exit Alt+F4
Close

Check the "Sign on save" checkbox and press OK. DO NOT check the "Use default signing certificate".



Preferences

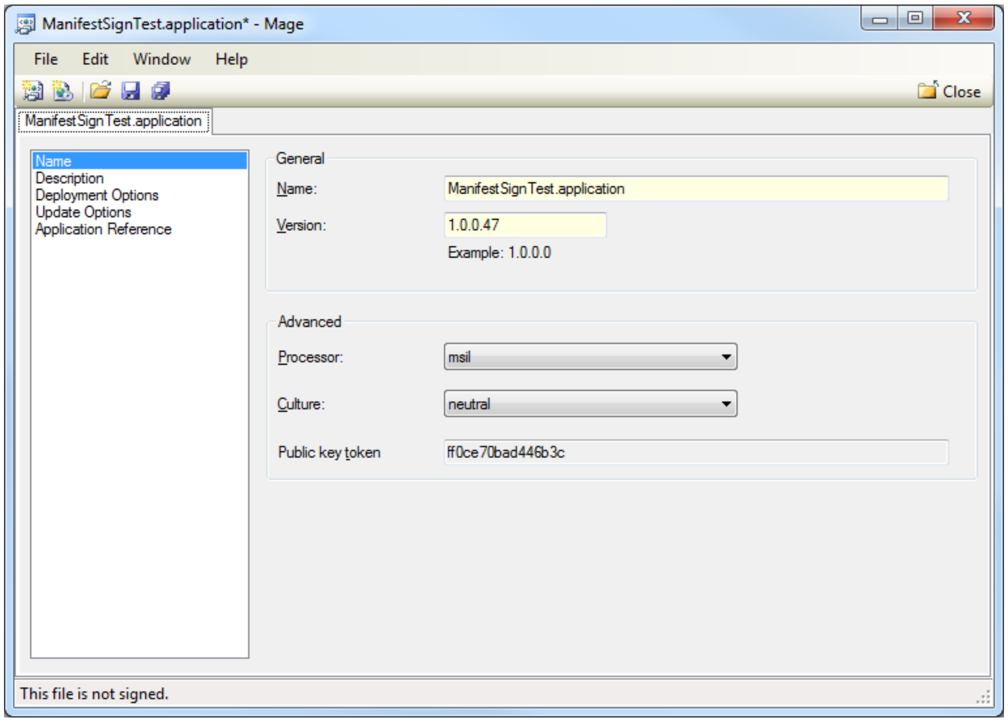
[✓] Sign on save

[ ] Use default signing certificate

Certificate file

OK Cancel

Go to the File menu and select Open. Navigate to the folder where the application was published and open the manifest file.



General

Name: ManifestSignTest.application

Version: 1.0.0.47

Example: 1.0.0.0

Advanced

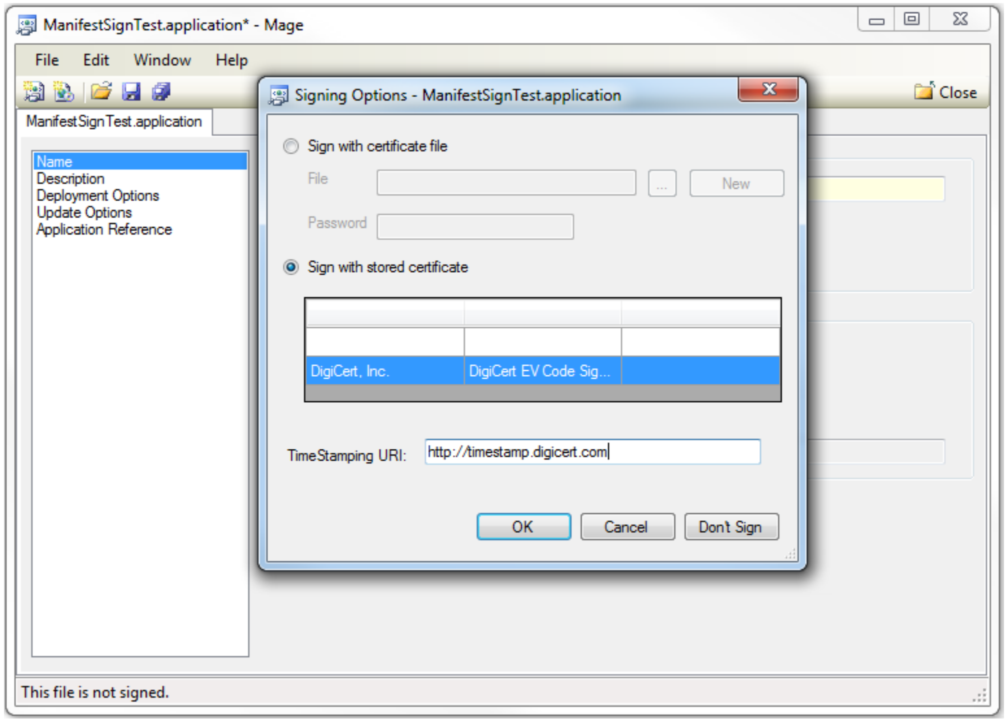
Processor: msil

Culture: neutral

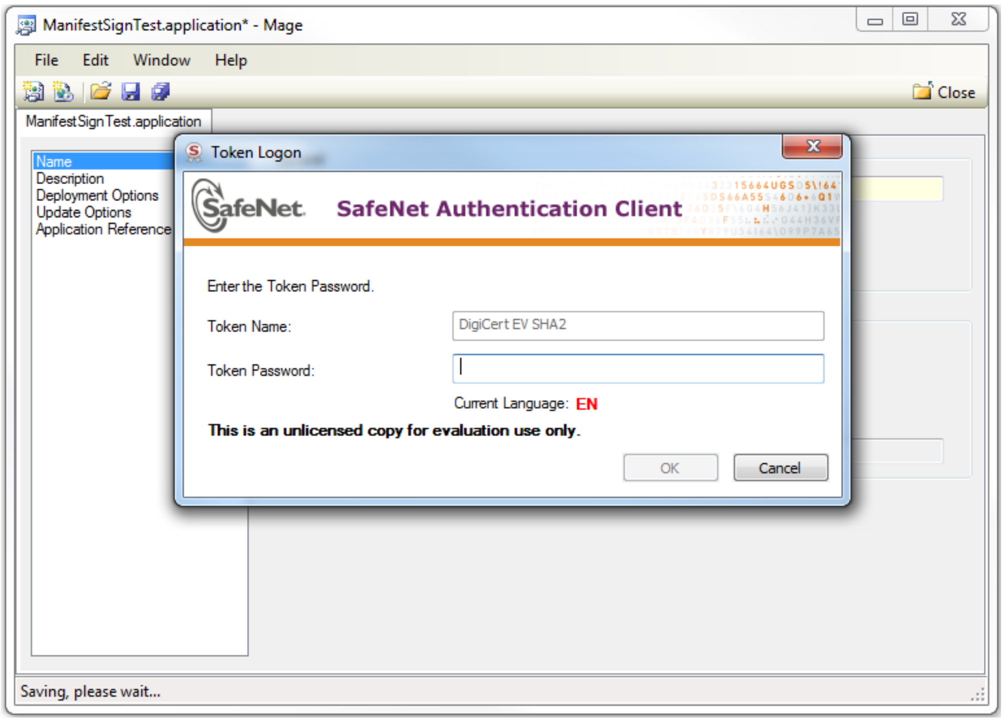
Public key token ff0ce70bad446b3c

This file is not signed.

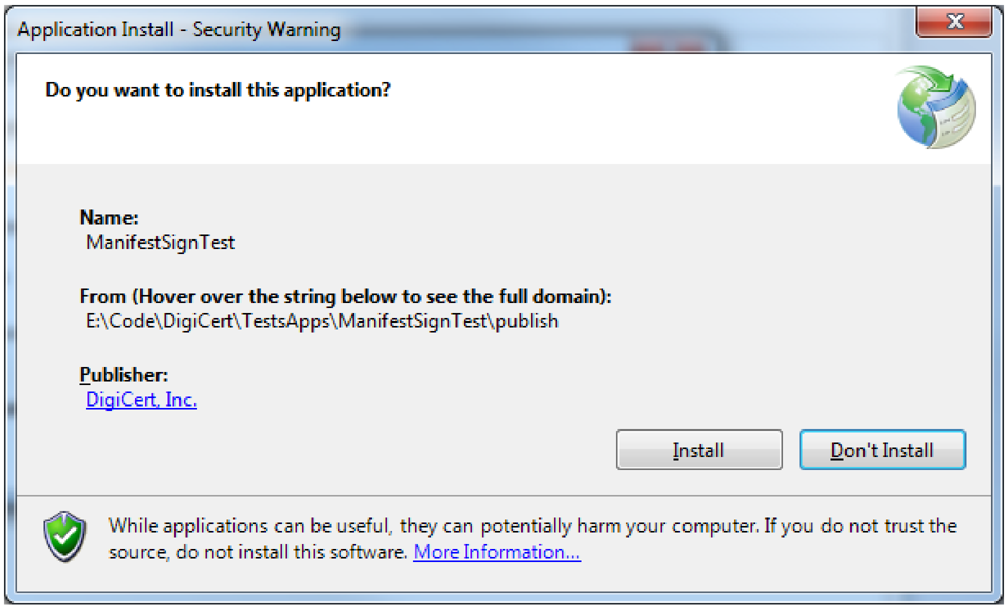
Don't make any changes to the manifest. Go to the File menu and select "Save". The Signing Options dialog should pop up. Select "Sign with stored certificate", make sure you select your signing certificate by clicking on it (it should be highlighted), enter the timestamp URI, and press OK.



The SafeNet password dialog should pop up. Enter your token password and press OK. After the dialog is gone the signing should be complete and you can just close the mageui.exe program.



When you run the application you should now see the publisher.


Application Install - Security Warning

Do you want to install this application?

Name:
ManifestSignTest

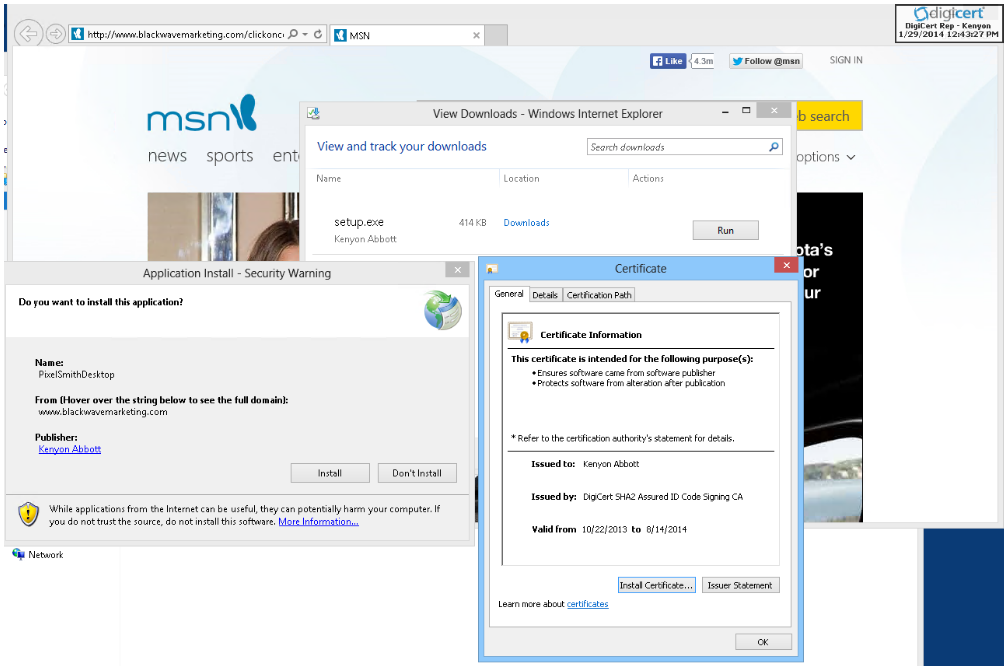
From (Hover over the string below to see the full domain):
E:\Code\DigiCert\TestsApps\ManifestSignTest\publish

Publisher:
DigiCert, Inc.

While applications can be useful, they can potentially harm your computer. If you do not trust the source, do not install this software. More Information...

Instructions- ClickOnce-SHA2_error.pdf

Standard Code signing shows like below (I expected to get a smartscreen filter after clicking install but I didn't)



Application Install - Security Warning

Do you want to install this application?

Name:
PixelSmithDesktop

From (Hover over the string below to see the full domain):
www.blackwavemarketing.com

Publisher:
Kenyon Abbott

While applications from the Internet can be useful, they can potentially harm your computer. If you do not trust the source, do not install this software. More Information...

Certificate

Certificate Information

This certificate is intended for the following purpose(s):
• Ensures software came from software publisher
• Protects software from alteration after publication

* Refer to the certification authority's statement for details.

Issued to: Kenyon Abbott

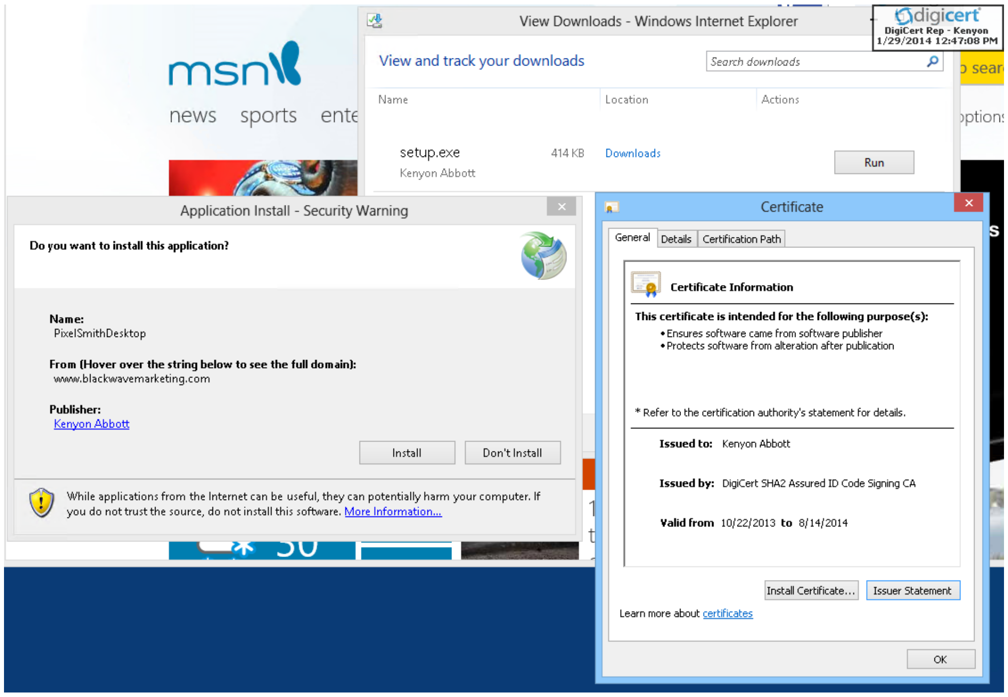
Issued by: DigiCert SHA2 Assured ID Code Signing CA

Valid from 10/22/2013 to 8/14/2014

Learn more about certificates

Standard code signing without specifying a post-build event:

Resolution: Make sure a post-build event is specified.



View Downloads - Windows Internet Explorer

View and track your downloads

Name	Location	Actions
setup.exe 414 KB Kenyon Abbott	Downloads	Run

Application Install - Security Warning

Do you want to install this application?

Name:
PixelSmithDesktop

From (Hover over the string below to see the full domain):
www.blackwavemarketing.com

Publisher:
Kenyon Abbott

Install | Don't Install

While applications from the Internet can be useful, they can potentially harm your computer. If you do not trust the source, do not install this software. More Information...

Certificate

General | Details | Certification Path

Certificate Information

This certificate is intended for the following purpose(s):
- Ensures software came from software publisher
- Protects software from alteration after publication

* Refer to the certification authority's statement for details.

Issued to: Kenyon Abbott

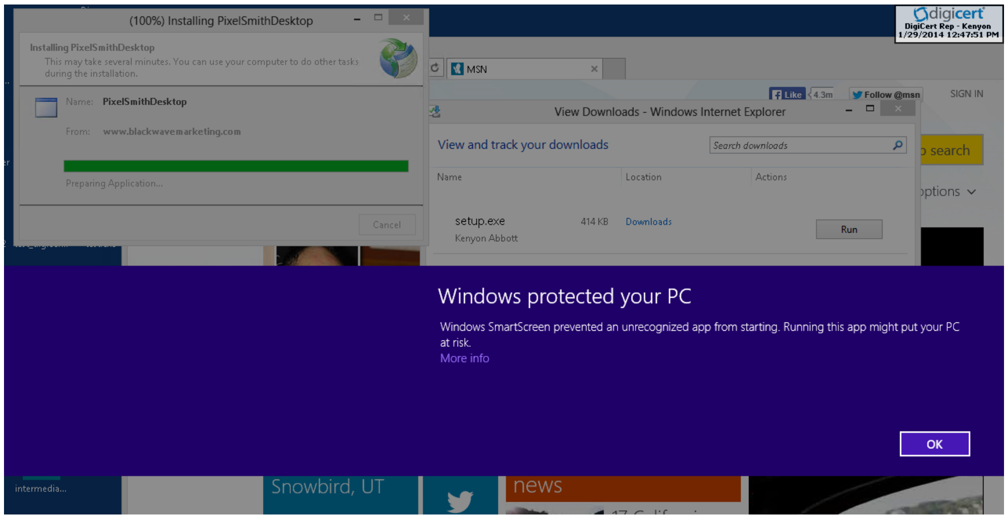
Issued by: DigiCert SHA2 Assured ID Code Signing CA

Valid from 10/22/2013 **to** 8/14/2014

Install Certificate... | Issuer Statement

Learn more about certificates

OK



(100%) Installing PixelSmithDesktop

Installing PixelSmithDesktop
This may take several minutes. You can use your computer to do other tasks during the installation.

Name: PixelSmithDesktop
From: www.blackwavemarketing.com

Preparing Application...

Cancel

View Downloads - Windows Internet Explorer

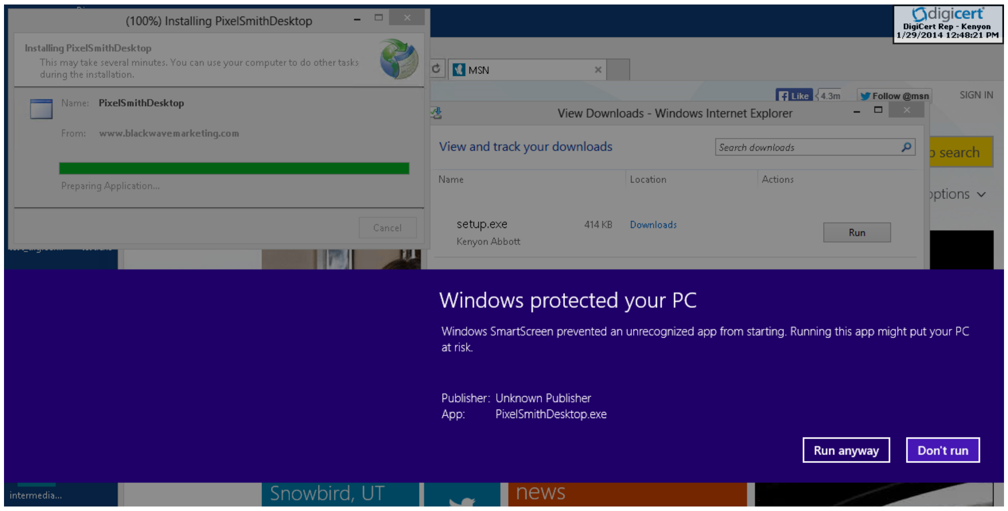
View and track your downloads

Name	Location	Actions
setup.exe 414 KB Kenyon Abbott	Downloads	Run

Windows protected your PC

Windows SmartScreen prevented an unrecognized app from starting. Running this app might put your PC at risk.
More info

OK



(100%) Installing PixelSmithDesktop

Installing PixelSmithDesktop
This may take several minutes. You can use your computer to do other tasks during the installation.

Name: PixelSmithDesktop
From: www.blackwavemarketing.com

Preparing Application...

Cancel

View Downloads - Windows Internet Explorer

View and track your downloads

Name	Location	Actions
setup.exe 414 KB Kenyon Abbott	Downloads	Run

Windows protected your PC

Windows SmartScreen prevented an unrecognized app from starting. Running this app might put your PC at risk.

Publisher: Unknown Publisher
App: PixelSmithDesktop.exe

Run anyway | Don't run

Another article on this: Error: EV Code Signing in Visual Studio 2010/2012 + Windows 8 / Smart screen filter won't allow install ClickOnce deployment