PKIF OCSP Plug-in for Microsoft Windows

Installation and Configuration

Last updated: **May 2010**

CYGNACOM

SOLUTIONS

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Table of Contents

Table of Tables

Table of Figures

1 Introduction

The PKIF OCSP Plug-in for Microsoft Windows is a revocation provider for the Microsoft Cryptographic API (CAPI). Applications that obtain basic PKI functionality from CAPI will call the PKIF OCSP Plug-in when validating a certificate. Many commonly used applications, such as Outlook, Internet Explorer and Infopath, use CAPI for PKI-related processing. The plug-in is installed using a basic Microsoft Installer (.msi file). A customization wizard is provided to produce transform files (.mst files) that can be used to produce installation packages tailored for a specific environment.

2 Installation

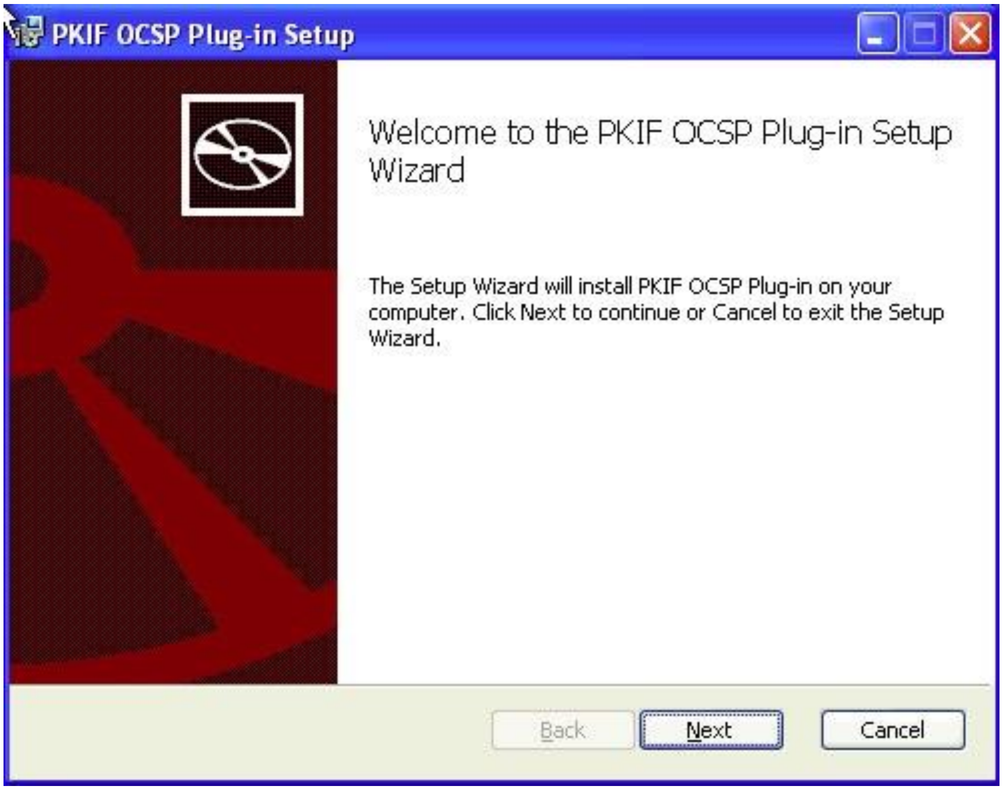
The PKIF OCSP Plug-in for Microsoft Windows is installed using a standard Windows installer. The installation package contains two features that may be installed, as described in the following table.

Table 1 Installation features

Feature	Description
PKIF OCSP Plug-in for Microsoft Windows	Contains the basic components that integrate with Microsoft CAPI to provide revocation status determination capabilities. This feature is mandatory.
PKIF OCSP Plug-in Customization Wizard	Contains a deployment utility that can be used to create customized installation packages.

The **Typical** feature set includes PKIF OCSP Plug-in for Microsoft Windows. Other features may be installed or not installed, as desired. The default installation package can be customized as described in Section 6.

To begin plug-in installation, double-click the PkifPkifOcspPlugin.msi file. The following dialog will be displayed. Click the **Next** button.



PKIF OCSP Plug-in Setup

Welcome to the PKIF OCSP Plug-in Setup Wizard

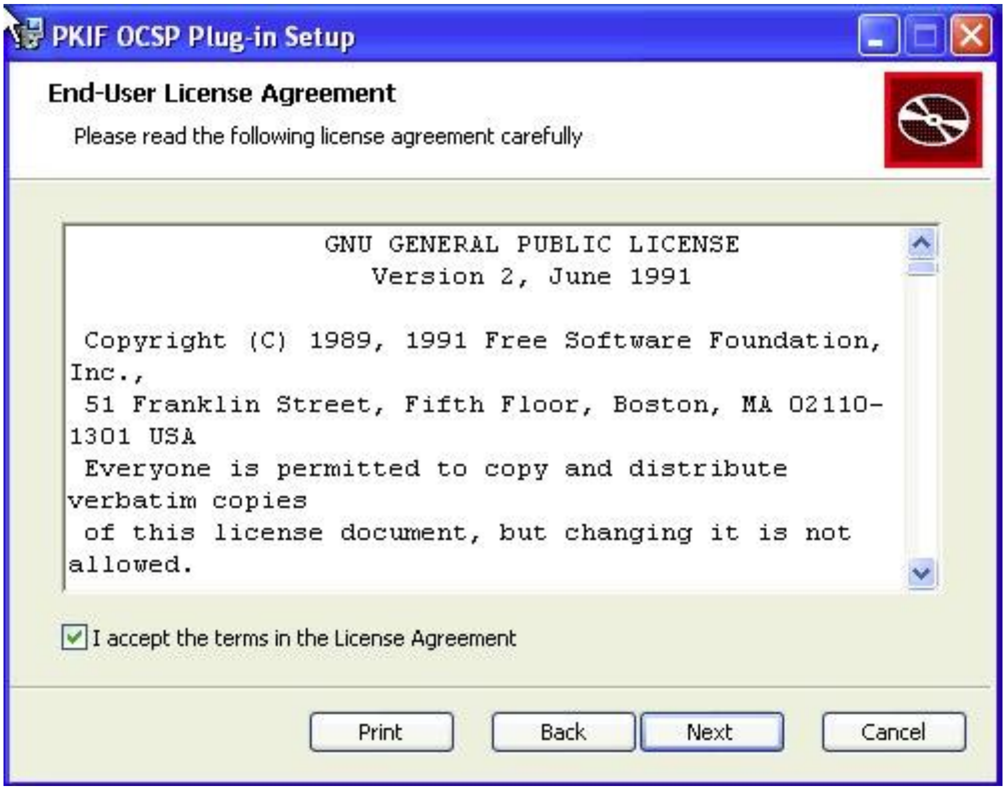
The Setup Wizard will install PKIF OCSP Plug-in on your computer. Click Next to continue or Cancel to exit the Setup Wizard.

Figure 1 PKIF OCSP Plug-in Setup

By default, the plug-in is installed to the following directory:

C:\Program Files\Cygnacom Solutions\PKIF OCSP Plug-in for Microsoft Windows.

Accept the terms in the License Agreement, and then click the **Next** button.


PKIF OCSP Plug-in Setup

End-User License Agreement

Please read the following license agreement carefully

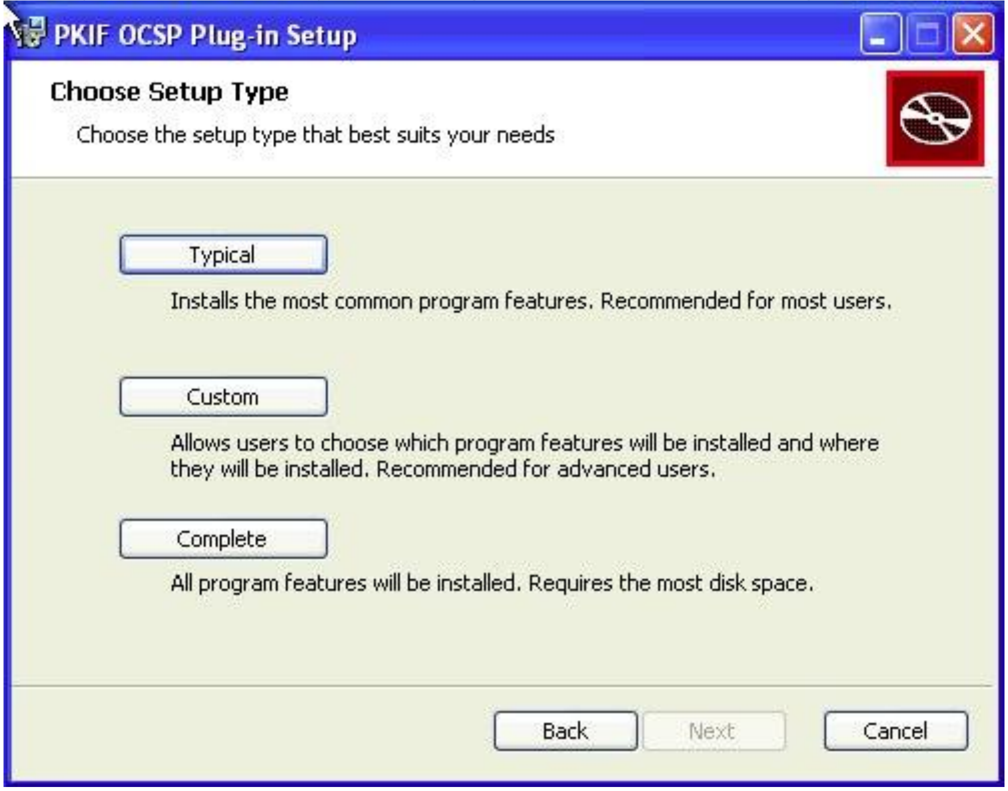
```
                GNU GENERAL PUBLIC LICENSE
                   Version 2, June 1991

 Copyright (C) 1989, 1991 Free Software Foundation,
Inc.,
 51 Franklin Street, Fifth Floor, Boston, MA 02110-
1301 USA
 Everyone is permitted to copy and distribute
verbatim copies
 of this license document, but changing it is not
allowed.
```

☑ I accept the terms in the License Agreement

Figure 2 End-User License Agreement

Click the **Typical** button for typical configuration on the third dialog.


PKIF OCSP Plug-in Setup

Choose Setup Type

Choose the setup type that best suits your needs

Typical

Installs the most common program features. Recommended for most users.

Custom

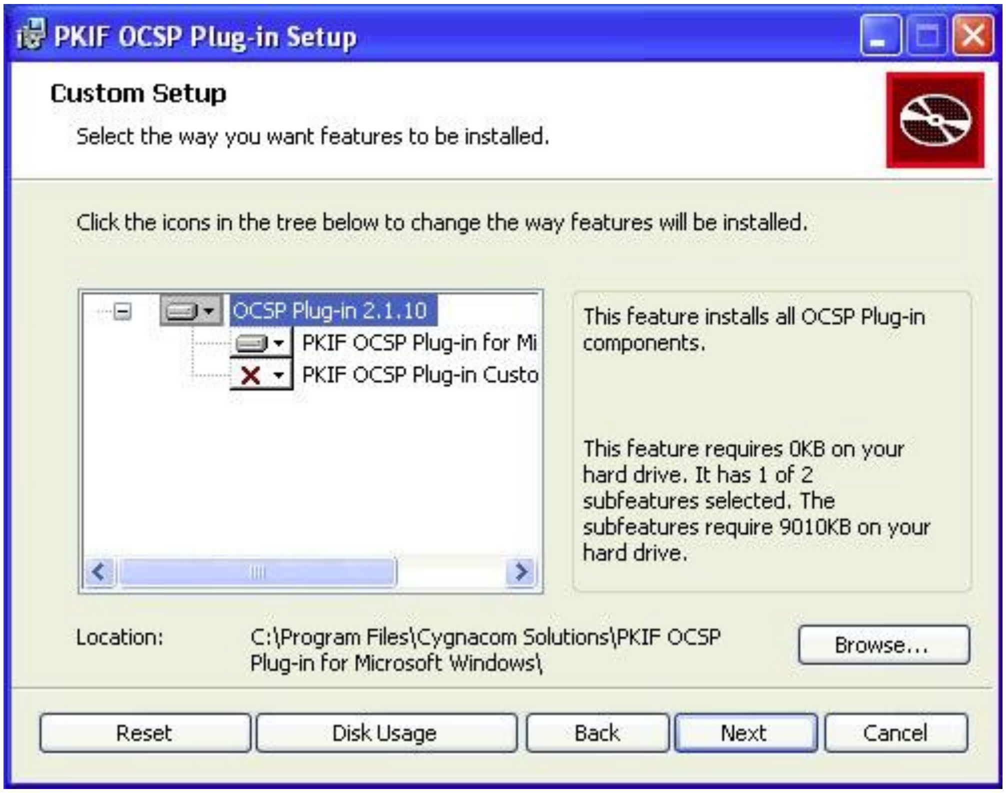
Allows users to choose which program features will be installed and where they will be installed. Recommended for advanced users.

Complete

All program features will be installed. Requires the most disk space.

Figure 3 Setup Type selection

Click **Custom** for custom configuration. In Custom Setup dialog PKIF OCSP Plug-in Customization Wizard feature can be selected to be installed and default installation location can be changed. Click the **Next** button to proceed.



PKIF OCSP Plug-in Setup

Custom Setup

Select the way you want features to be installed.

Click the icons in the tree below to change the way features will be installed.

- OCSP Plug-in 2.1.10
  - PKIF OCSP Plug-in for Mi
  - PKIF OCSP Plug-in Custo

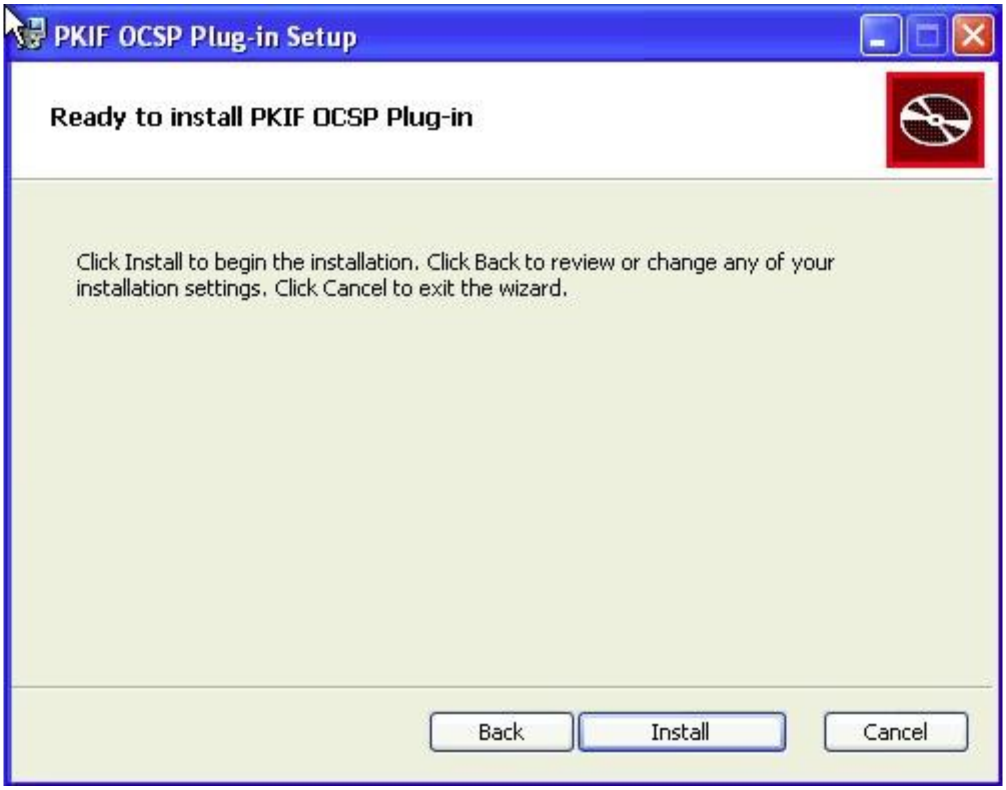
This feature installs all OCSP Plug-in components.

This feature requires 0KB on your hard drive. It has 1 of 2 subfeatures selected. The subfeatures require 9010KB on your hard drive.

Location: C:\Program Files\Cygnacom Solutions\PKIF OCSP Plug-in for Microsoft Windows\

Figure 4 Custom Setup

To complete the installation, click the **Install** button. This will copy the plug-in files to the selected file folder, set up the default registry configuration and register the plug-in with Microsoft CAPI.


PKIF OCSP Plug-in Setup

Ready to install PKIF OCSP Plug-in

Click Install to begin the installation. Click Back to review or change any of your installation settings. Click Cancel to exit the wizard.

Figure 5 PKIF OCSP Plug-in Installation

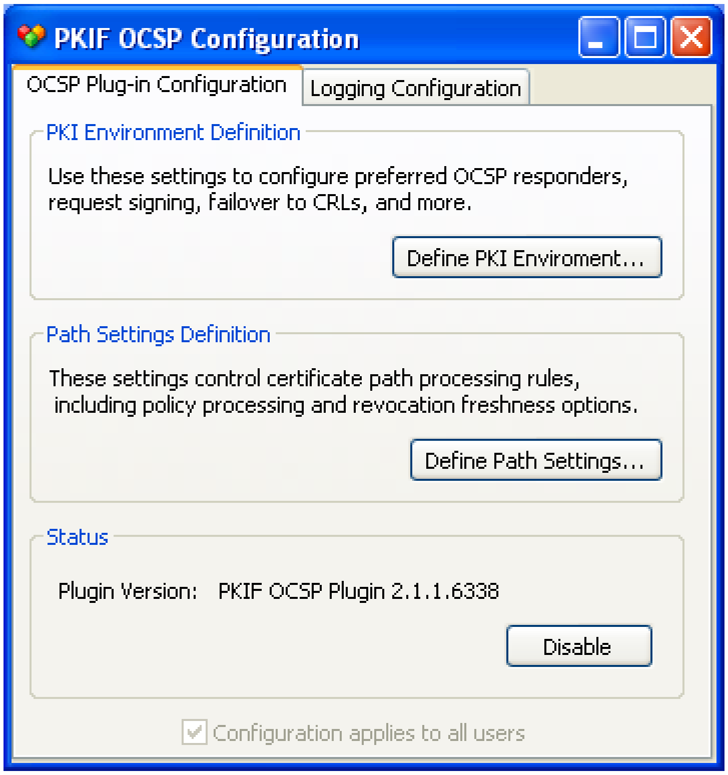
After the installation completes, click the **Finish** button (not shown). Close and restart any applications that use CAPI for PKI processing in order for the plug-in to be used.

3 Configuration

The PKIF OCSP Plug-in installer will prepare a default set of configuration options that features the following options:

- Retrieve trust anchors, certificates and CRLs from the current user’s CAPI certificate and CRL stores
- Use CAPI for cryptographic functionality
- Retrieve certificates and CRLs from LDAP and HTTP URIs included in issuerAltName, crlDistributionPoint or authorityInformationAccess certificate extensions
- Retrieve revocation status information from OCSP responders identified in authorityInformationAccess certificate extensions (responder certificates will be validated to a trust anchor in the current user’s trust anchor store)

A configuration utility is provided with the plug-in to enable the default configuration to be changed. The OCSP Plug-in Configuration panel of the utility is shown below.



Use these settings to configure preferred OCSP responders, request signing, failover to CRLs, and more.

These settings control certificate path processing rules, including policy processing and revocation freshness options.

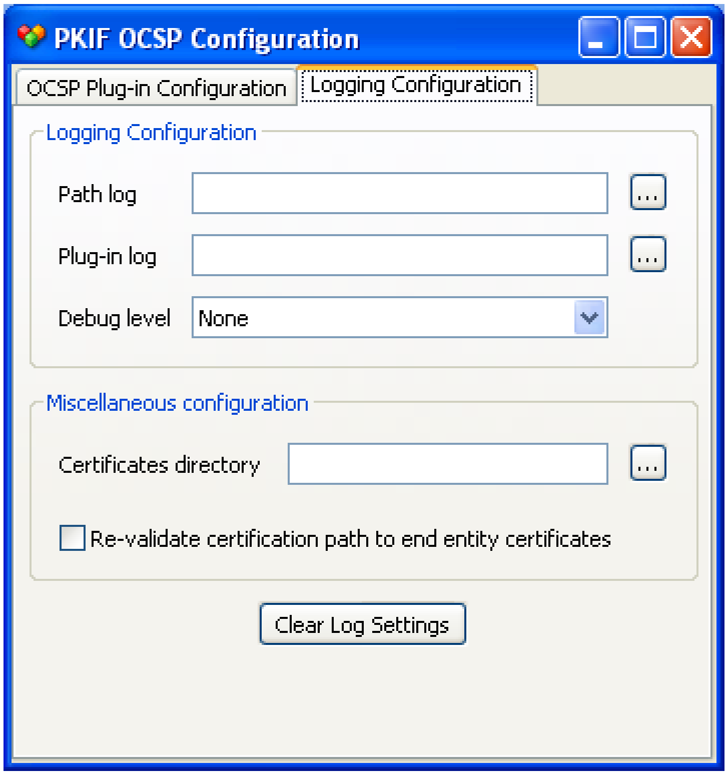
Plugin Version: PKIF OCSP Plugin 2.1.1.6338

☑ Configuration applies to all users

Figure 6 PKIF OCSP Configuration Utility

Usage of the PKI Environment Definition and Path Processing Definition options is described in **Configuring PKI Settings Using PKIFv2 Resources**. The Status option can be used to register and unregister the plug-in with Microsoft CAPI. Following installation, the button should read **Disable**, as shown above. The plug-in can be unregistered by clicking the **Disable** button. After unregistering the plug-in, the button should be labeled **Enable** and can be used to register the plug-in with Microsoft CAPI. In this release, the **Configuration applies to all users** checkbox is checked and disabled. Settings apply to all users on a particular machine. Future versions may enable per-user configuration.

The plug-in provides various logging capabilities that can be used to troubleshoot problems with the plug-in or infrastructure problems. The Logging Configuration panel is shown below.



Path log

Plug-in log

Debug level: None

Certificates directory

□ Re-validate certification path to end entity certificates

Figure 7 Logging Configuration

By default, logging is turned off by setting the **Debug level** option to **None**. The following debug levels are available, in order from least amount of output to most output” **None**, **Error**, **Information**, **Warning**, **Debug** and **Trace**. Most output is written to the file specified in the **Plug-in log** option. When the **Re-validate certification path to end entity certificates** option is checked, certification path result information is written to the file specified by the **Path log** parameter. When the **Re-validate certification path to end entity certificates** option is checked, the plug-in will perform full certification path processing for non-certification authority certificates. This can result in rejection of certificates that otherwise would have been accepted. If a folder is specified for the **Certificates directory** option, the plug-in will write out most certificates it handles during the course of determining the revocation status of a particular certificate (certificates used to verify the revocation status of a CRL issuer or OCSP responder may not be output). Certificates are written to a file named using a SHA1 hash of the certificate, as follows: <certificate thumbprint>.der. Clicking the **Clear Log Settings** button will reset the logging parameters to the values shown above.

Note, the debugging logs grow without bounds. These features should be activated only when trying to diagnose a problem and should be disabled during normal use.

4 Centralized configuration

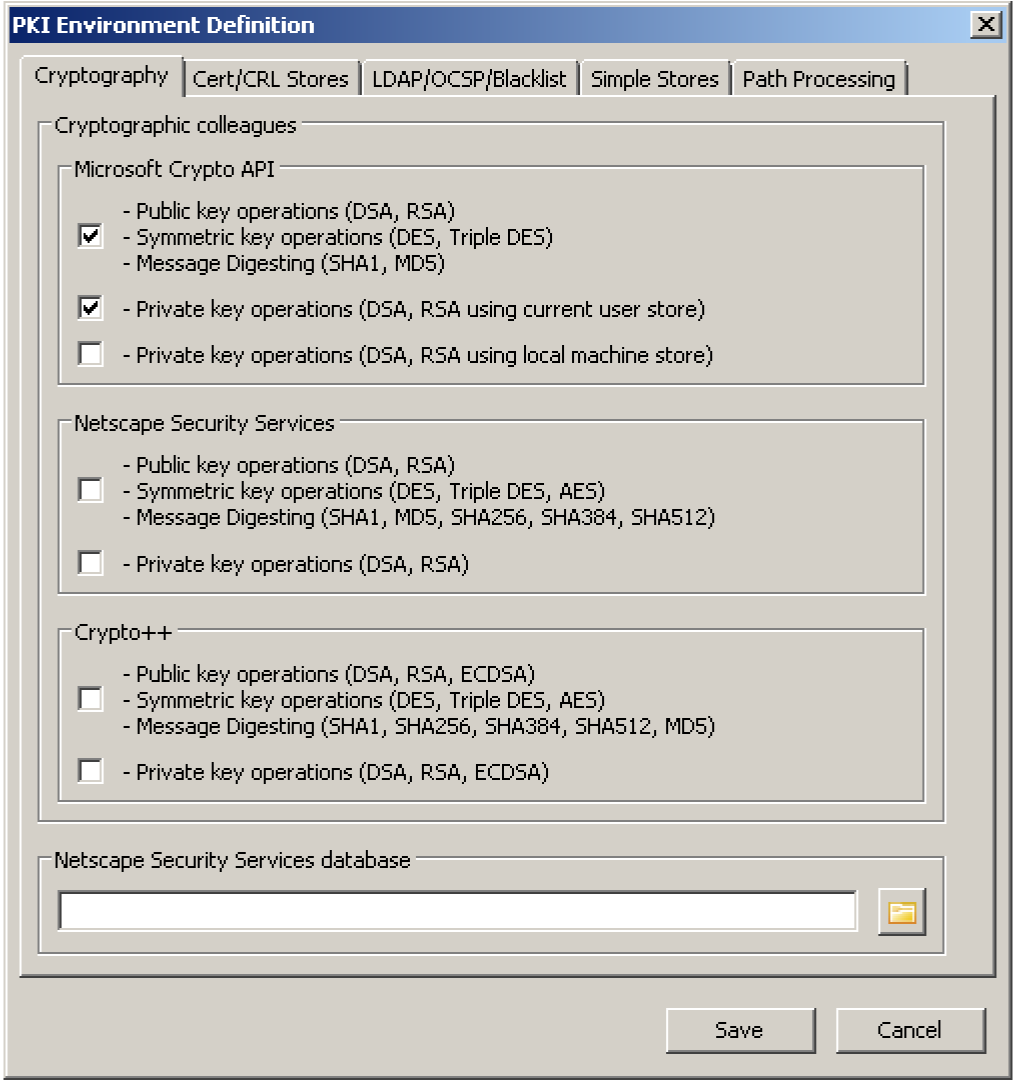
Configuration settings for the plug-in are written to the following registry location:

HKEY_LOCAL_MACHINE\Software\Cygnacom Solutions\OCSPPlugin.

The values under this location can be captured by an administrator and distributed using an enterprise-wide configuration management tool, such as SMS or Group Policy, or by creating a custom installation package. The PKIF OCSP Plug-in Configuration utility is primarily intended for use by administrators in defining settings that will be distributed across an enterprise. The plug-in will recognize per-user settings that reside in the same location under HKEY_CURRENT_USER, but the configuration utility cannot be used to manage these settings.

5 Configuration Strategies

The PKIF OCSP Plug-in can be configured to perform revocation status determination, or certification path processing, a number of different ways. By default, following installation, the plug-in is configured to provide revocation status for all certificates containing an AIA extension with an OCSP component. The figures below shows these default settings (all fields on the two panels not shown are blank).



Cryptographic colleagues

Microsoft Crypto API

☑ - Public key operations (DSA, RSA)
- Symmetric key operations (DES, Triple DES)
- Message Digesting (SHA1, MD5)

☑ - Private key operations (DSA, RSA using current user store)

□ - Private key operations (DSA, RSA using local machine store)

Netscape Security Services

□ - Public key operations (DSA, RSA)
- Symmetric key operations (DES, Triple DES, AES)
- Message Digesting (SHA1, MD5, SHA256, SHA384, SHA512)

□ - Private key operations (DSA, RSA)

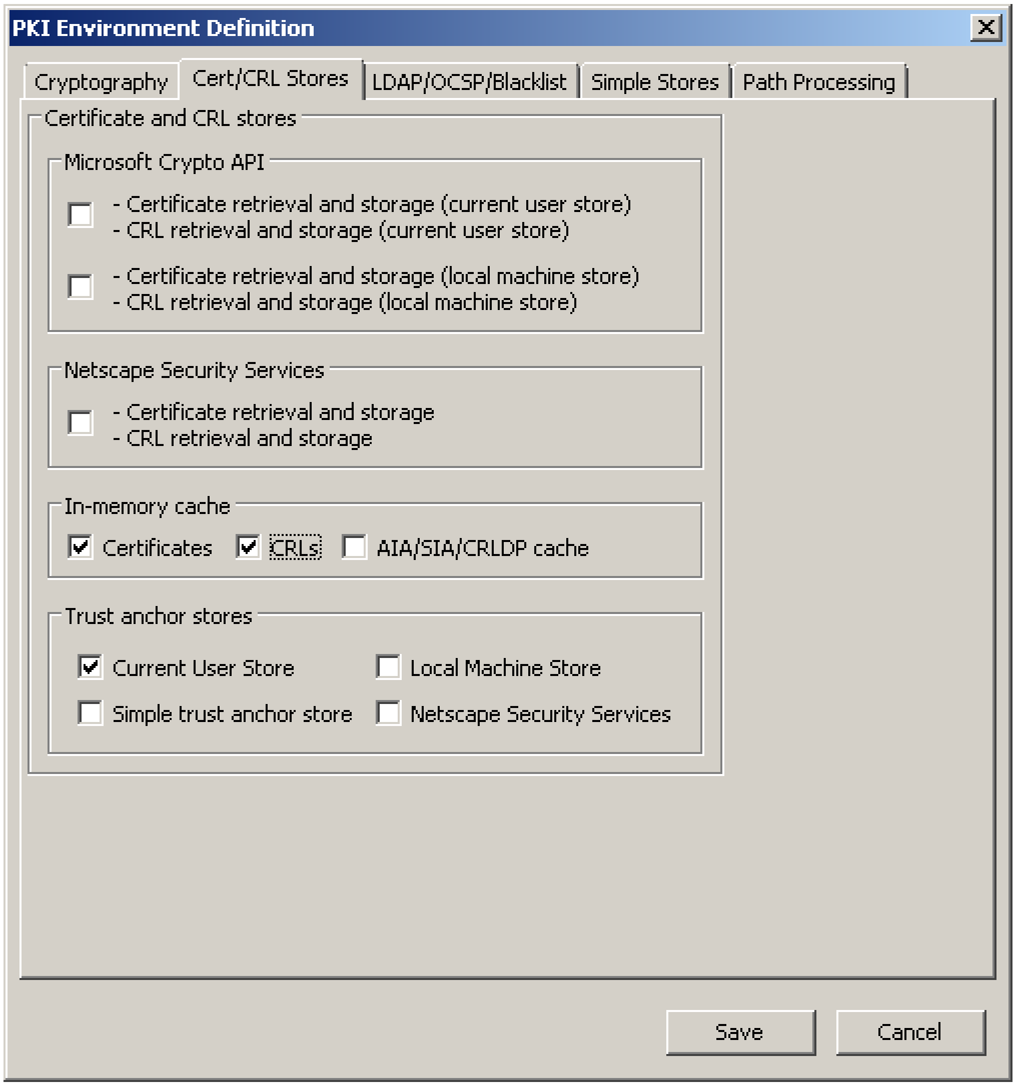
Crypto++

□ - Public key operations (DSA, RSA, ECDSA)
- Symmetric key operations (DES, Triple DES, AES)
- Message Digesting (SHA1, SHA256, SHA384, SHA512, MD5)

□ - Private key operations (DSA, RSA, ECDSA)

Netscape Security Services database

Figure 8 Default crypto settings for the PKIF OCSP Plug-in



Certificate and CRL stores

Microsoft Crypto API

□ - Certificate retrieval and storage (current user store)
- CRL retrieval and storage (current user store)

□ - Certificate retrieval and storage (local machine store)
- CRL retrieval and storage (local machine store)

Netscape Security Services

□ - Certificate retrieval and storage
- CRL retrieval and storage

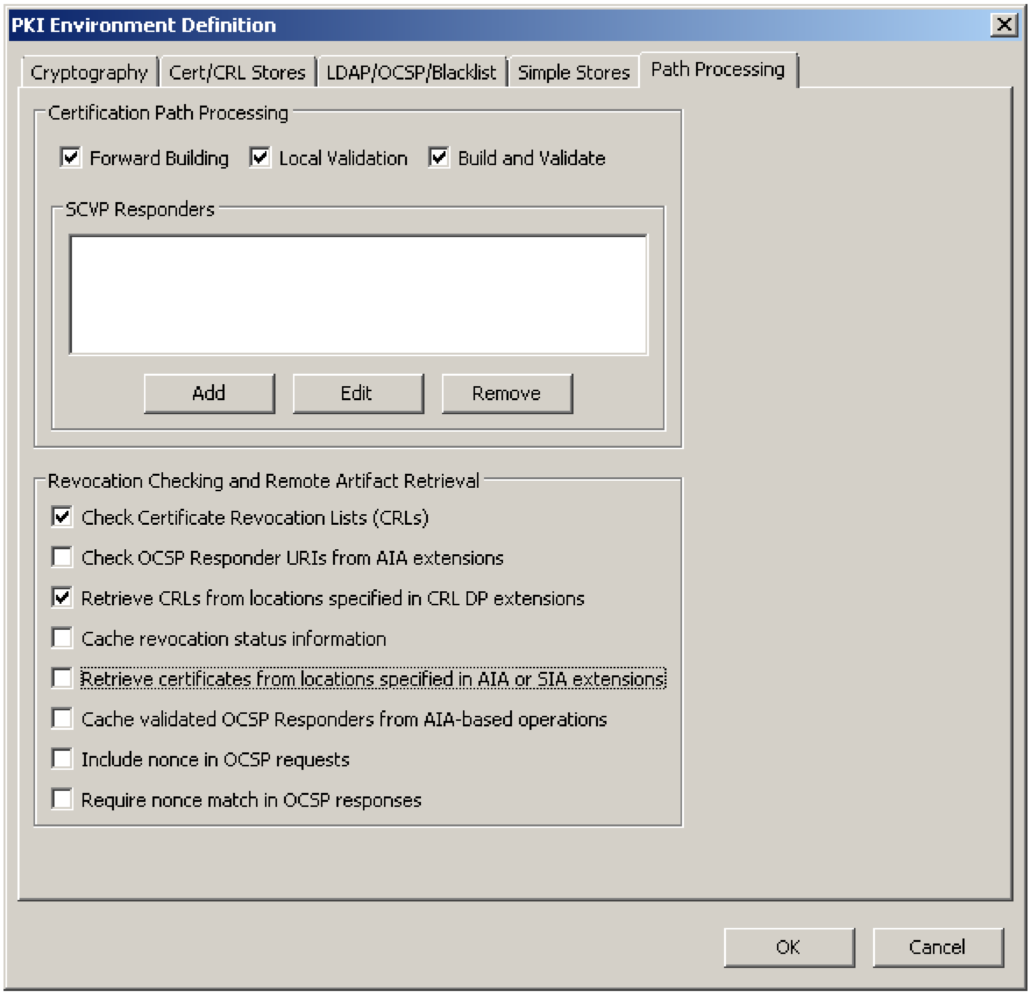
In-memory cache

☑ Certificates ☑ CRLs □ AIA/SIA/CRLDP cache

Trust anchor stores

☑ Current User Store □ Local Machine Store
□ Simple trust anchor store □ Netscape Security Services

Figure 9 Default repository settings for the PKIF OCSP Plug-in



Certification Path Processing

☑ Forward Building ☑ Local Validation ☑ Build and Validate

SCVP Responders

Revocation Checking and Remote Artifact Retrieval

☑ Check Certificate Revocation Lists (CRLs)
□ Check OCSP Responder URIs from AIA extensions
☑ Retrieve CRLs from locations specified in CRL DP extensions
□ Cache revocation status information
□ Retrieve certificates from locations specified in AIA or SIA extensions
□ Cache validated OCSP Responders from AIA-based operations
□ Include nonce in OCSP requests
□ Require nonce match in OCSP responses

Figure 10 Default Path settings for the PKIF OCSP Plug-in

Usage of the PKI Environment Definition and Path Processing Definition options is described in **Configuring PKI Settings Using PKIFv2 Resources**. There are several broad configuration strategies to consider when deploying the plug-in, including:

- AIA-based OCSP only (the default configuration)
- AIA-based OCSP and CRL DP-based CRLs
- AIA-based OCSP, CRL DP-based CRLs and CRLs from an enterprise directory
- OCSP from an enterprise OCSP responder only
- OCSP from an enterprise OCSP responder and AIA OCSP
- OCSP from an enterprise OCSP responder, AIA-based OCSP and CRL DP-based CRLs
- OCSP from an enterprise OCSP responder, AIA-based OCSP, CRL DP-based CRLs and CRLs from an enterprise directory

Multiple enterprise directories or OCSP responders can be specified, with each providing service for specific namespaces, if desired.

6 Customizing the OCSP Plug-in Installer

The PKIF OCSP Plug-in is installed using a Microsoft Windows Installer package named PkifOcspPlugin.msi. This installer performs basic installation activities including copying files, registration with the host operating system, establishing default configuration values, preparing shortcuts, etc. In some cases, additional configuration is required after using the default installation package before using OCSP Plug-in. For example, in some environments specification of an enterprise OCSP responder may be required. The OCSP Plug-in Customization Wizard can be used to generate a transform file that can be applied to the default installer to help avoid the need to perform manual configuration steps following installation.

The transform file generated by the customization wizard can be installed using the msiexec shown below:

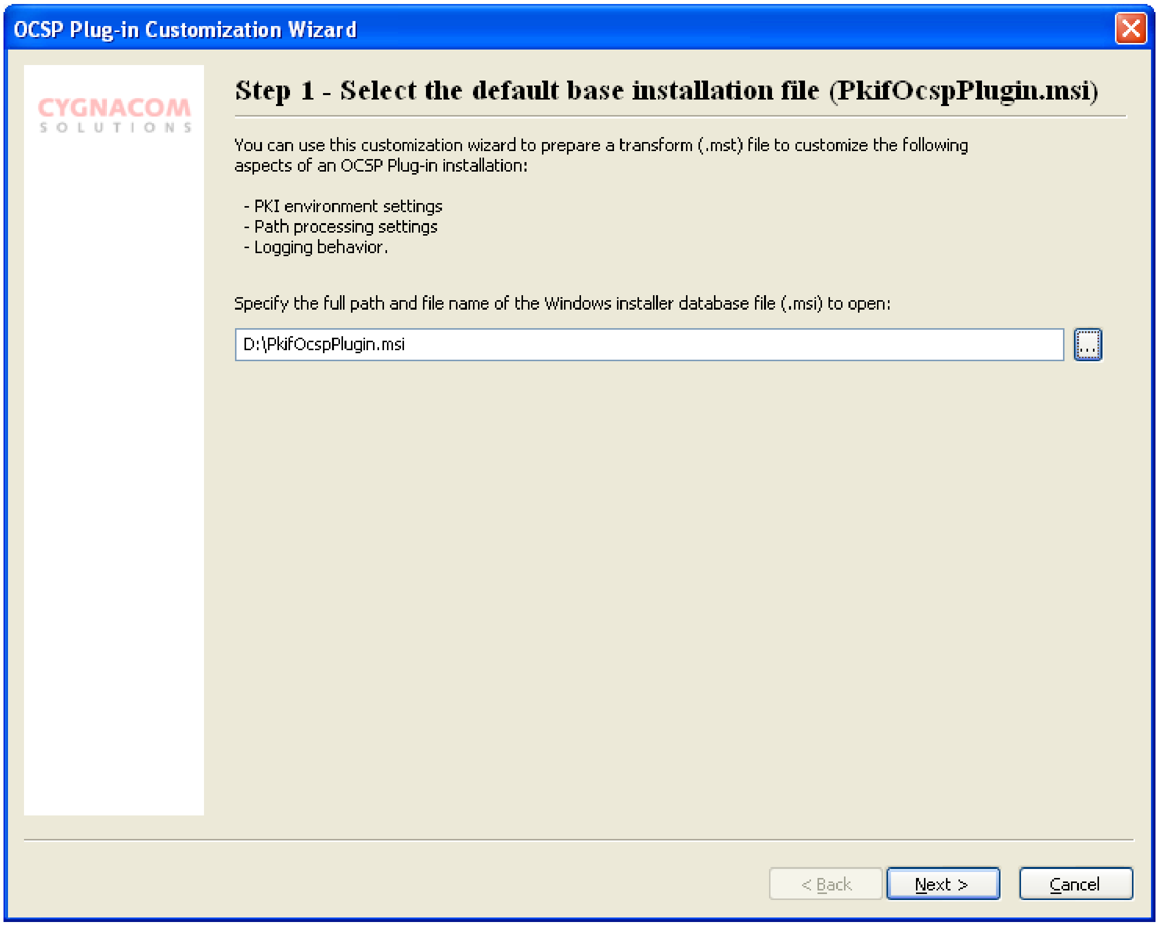
```
msiexec /i <full path & filename of installer> TRANSFORMS=<full path & filename of transform>
```

Alternatively, the transform file can be applied to the base installation package using a tool like ORCA (http://msdn.microsoft.com/en-us/library/aa370557%28VS.85%29.aspx). This approach results in a single .msi file that can be distributed and used to install OCSP Plug-in with the desired customizations.

The following sections describe usage of the customization wizard. Prior to beginning a customization activity make sure to have collected the information identified below, i.e., OCSP responder addresses, LDAP-accessible directory addresses, namespaces for OCSP responders and LDAP-accessible directories, etc.

6.1 Base Installation File Selection

To launch the customization wizard, double-click the OcspPluginCustomizationWizard.exe file or select the OcspPluginCustomizationWizard shortcut from the Start Menu. The panel shown below will be displayed. Browse to the default PkifOcspPlugin.msi file then click the **Next** button.



Step 1 - Select the default base installation file (PkifOcspPlugin.msi)

You can use this customization wizard to prepare a transform (.mst) file to customize the following aspects of an OCSP Plug-in installation:

- PKI environment settings
- Path processing settings
- Logging behavior.

Specify the full path and file name of the Windows installer database file (.msi) to open:

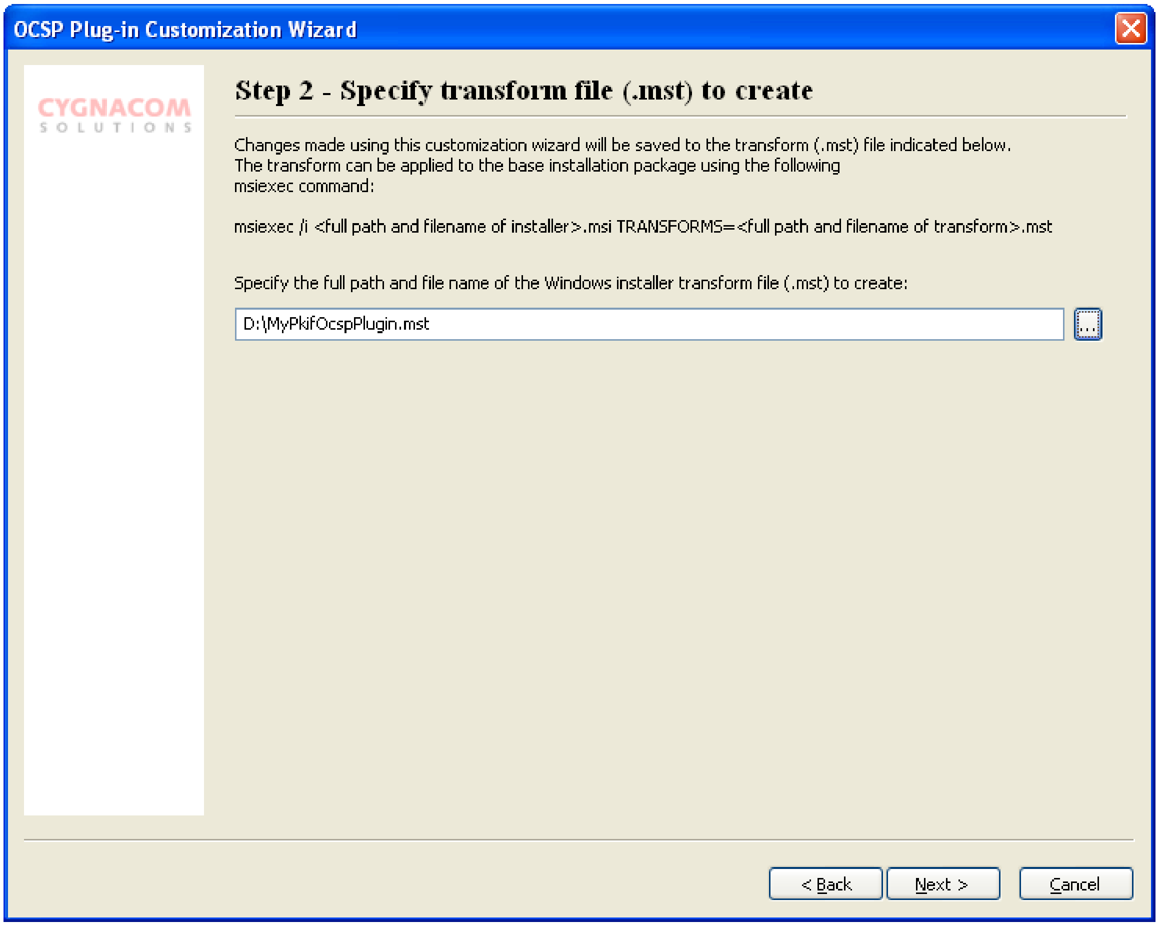
D:\PkifOcspPlugin.msi

Figure 11 Default Installation File Selection

The MSI referenced on this panel must be the default PkifOcspPlugin.msi. Editing transformed MSI files is not supported in this release.

6.2 Transform File Identification

The settings specified using the OCSP Plug-in Customization Wizard will be saved as a transform file (.mst). Browse to the location where the transform file should be saved and provide a filename, as shown below.



Step 2 - Specify transform file (.mst) to create

Changes made using this customization wizard will be saved to the transform (.mst) file indicated below. The transform can be applied to the base installation package using the following msiexec command:

```
msiexec /i <full path and filename of installer>.msi TRANSFORMS=<full path and filename of transform>.mst
```

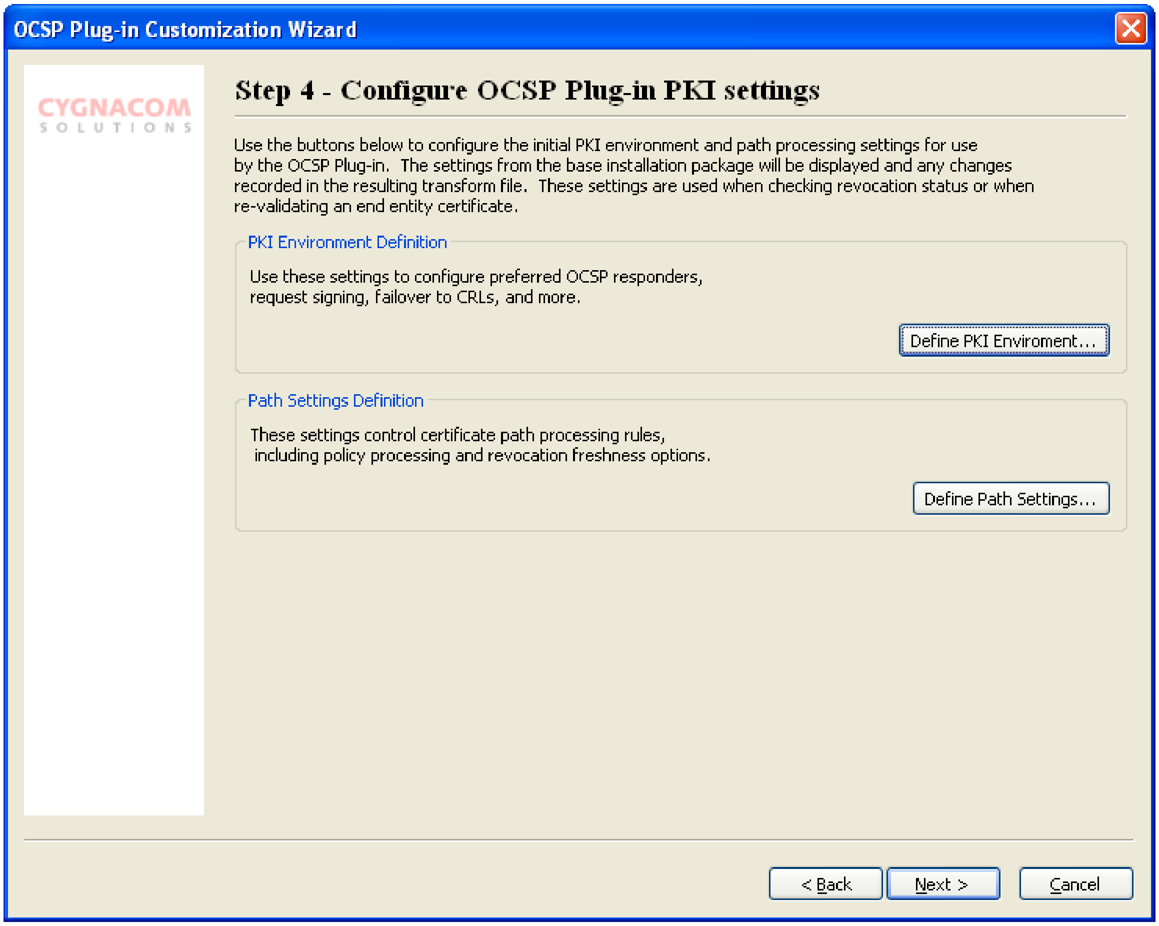
Specify the full path and file name of the Windows installer transform file (.mst) to create:

D:\MyPkifOcspPlugin.mst

Figure 12 Transform file identification

6.3 Configure OCSP Plug-in PKI Settings

OCSP Plug-in PKI settings can be configured using a panel similar to the interface of the OCSP Plug-in Configuration Utility.



Step 4 - Configure OCSP Plug-in PKI settings

Use the buttons below to configure the initial PKI environment and path processing settings for use by the OCSP Plug-in. The settings from the base installation package will be displayed and any changes recorded in the resulting transform file. These settings are used when checking revocation status or when re-validating an end entity certificate.

PKI Environment Definition

Use these settings to configure preferred OCSP responders, request signing, failover to CRLs, and more.

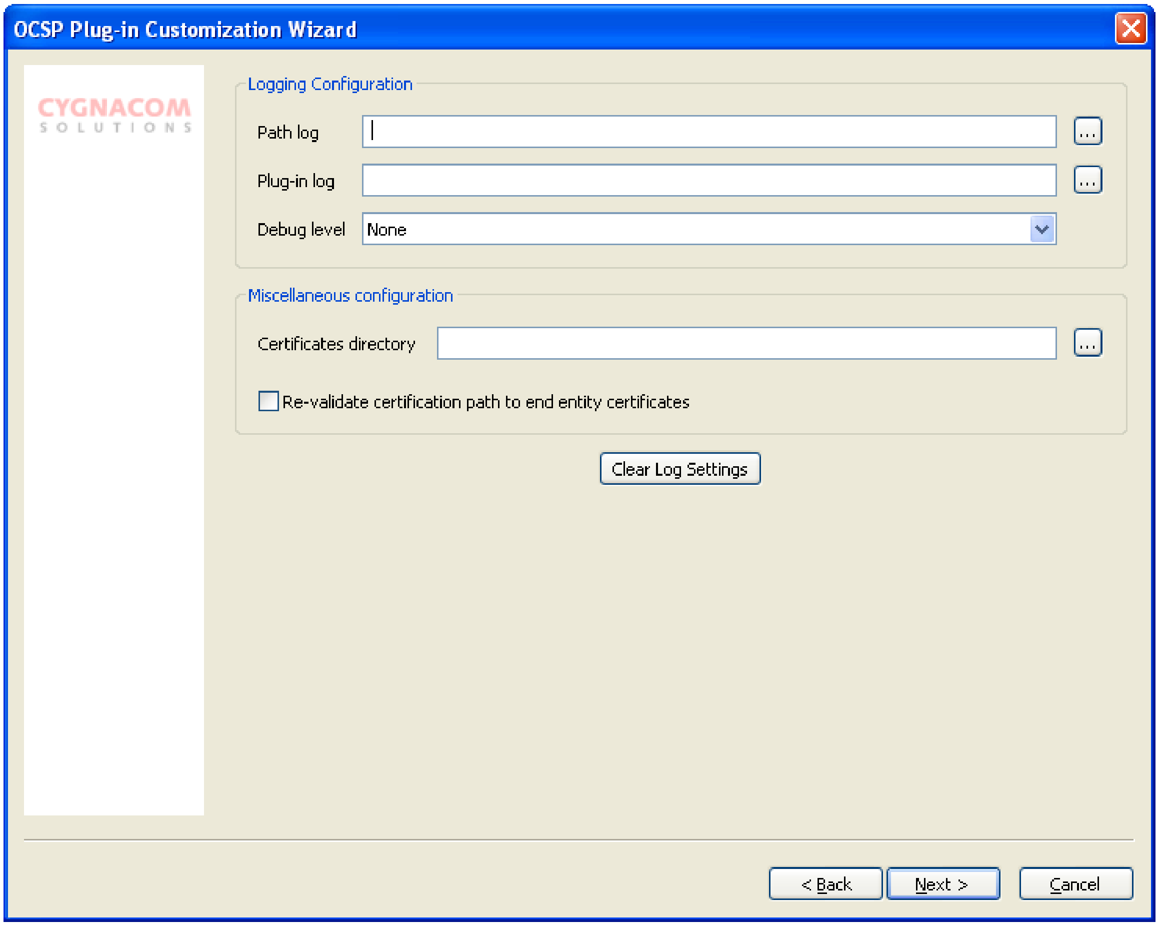
Path Settings Definition

These settings control certificate path processing rules, including policy processing and revocation freshness options.

Figure 13 OCSP Plug-in customization

6.4 Configure Logging

OCSP Plug-in logging settings can be configured using a panel similar to the interface of the OCSP Plug-in Configuration Utility.



OCSP Plug-in Customization Wizard

Logging Configuration

Path log

Plug-in log

Debug level: None

Miscellaneous configuration

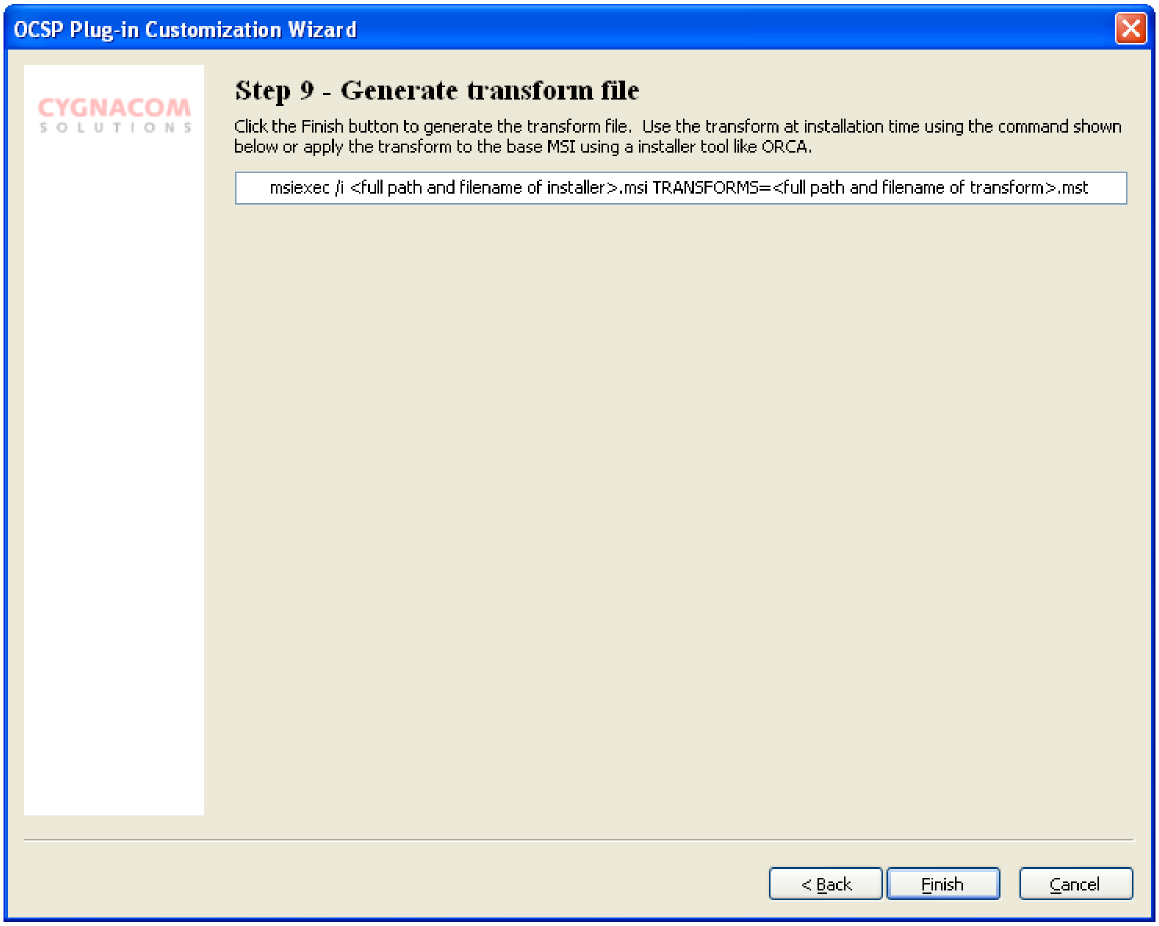
Certificates directory

□ Re-validate certification path to end entity certificates

Figure 14 OCSP Plug-in logging customization

6.5 Generate transform

The last step is to generate the specified transform file to include the settings configured through execution of the customization wizard. The command used to apply the transforms using msiexec is shown on the final panel, as shown below, in a form that allows copy and paste. Click the **Finish** button to generate the transform file.



Step 9 - Generate transform file

Click the Finish button to generate the transform file. Use the transform at installation time using the command shown below or apply the transform to the base MSI using a installer tool like ORCA.

```
msiexec /i <full path and filename of installer>.msi TRANSFORMS=<full path and filename of transform>.mst
```

Figure 15 Transform file generation