Online Responders

When a new certificate is issued, the computer queries the issuing CA to find out whether the certificate has been revoked. Traditionally, certificate revocation checking can be done by retrieving certificate revocation lists that are published in Lightweight Directory Access Protocol (LDAP) or Hypertext Transfer Protocol (HTTP) or by using a newer HTTP method named the Online Certificate Status Protocol (OCSP). OCSP is a lightweight HTTP protocol that responds faster and more efficiently than downloading a traditional CRL. An online responder is a trusted server that receives and responds to individual client requests for the status of a certificate. An OCSP responder retrieves CRLs and provides digitally signed real-time certificate revocation status responses to clients based on a given certificate authority's CRL. The amount of data retrieved per request remains constant regardless of the number of revoked certificates.

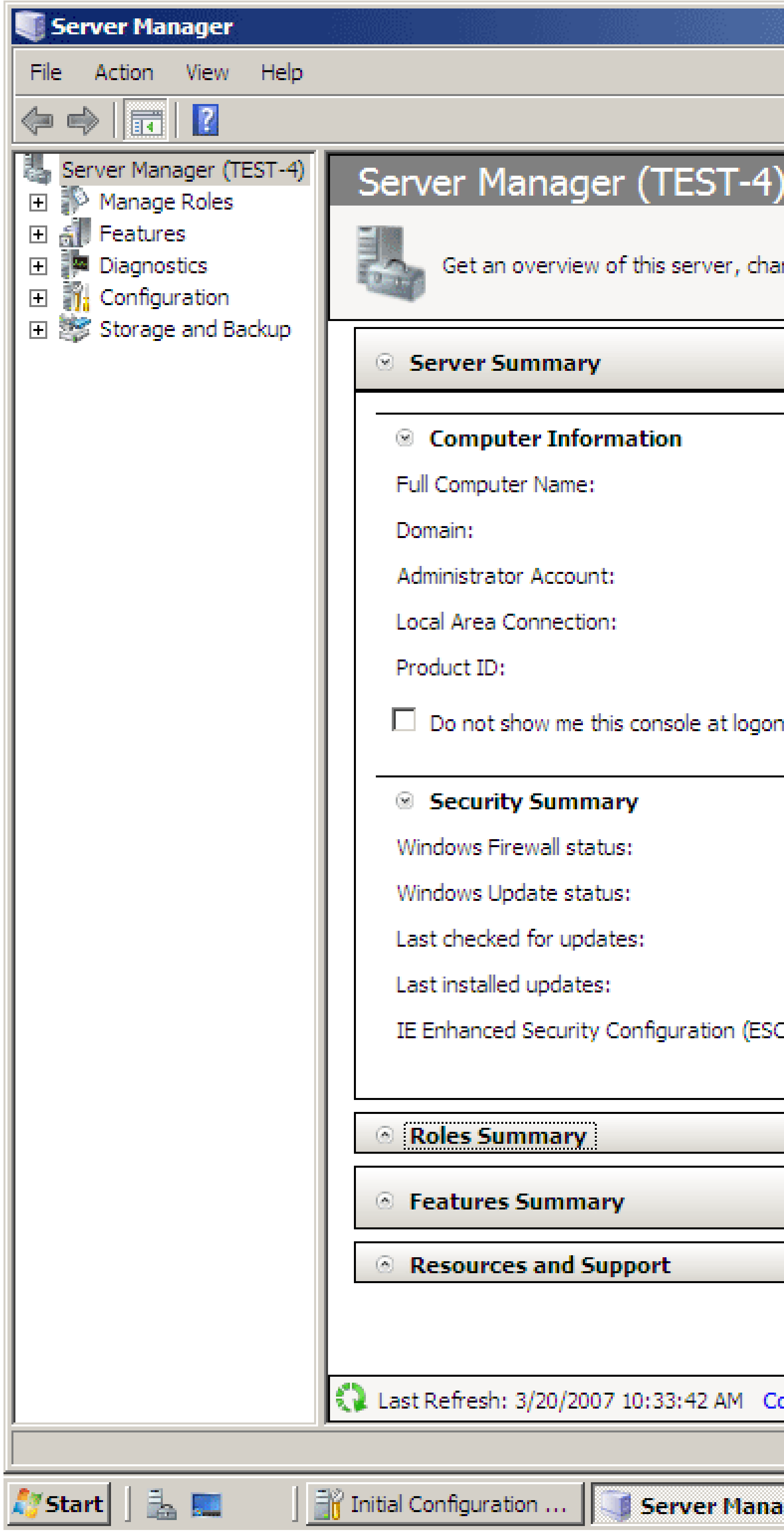
Online responders process certificate status requests more efficiently than direct access to CRLs in several scenarios

- When clients have slow VPN connections or do not have the high-speed connections required to download large CRLs
- When network utilization peaks because revocation-checking activity is high, such as when large numbers of users log on or send signed email simultaneously
- When revocation data for certificates is needed from a non-Microsoft certification authority
- When revocation data is needed to verify individual certificate status requests rather than all revoked or suspended certificates

Deploying Online Responders should occur after deploying CAs and before deploying the end-entity certificates. For more information about Server Manager and CA deployment, see Windows Server 2008 CA Enhancements (http://go.microsoft.com/fwlink/?LinkID=83212).

1. Open **Server Manager**.

Figure 4: Server Manager



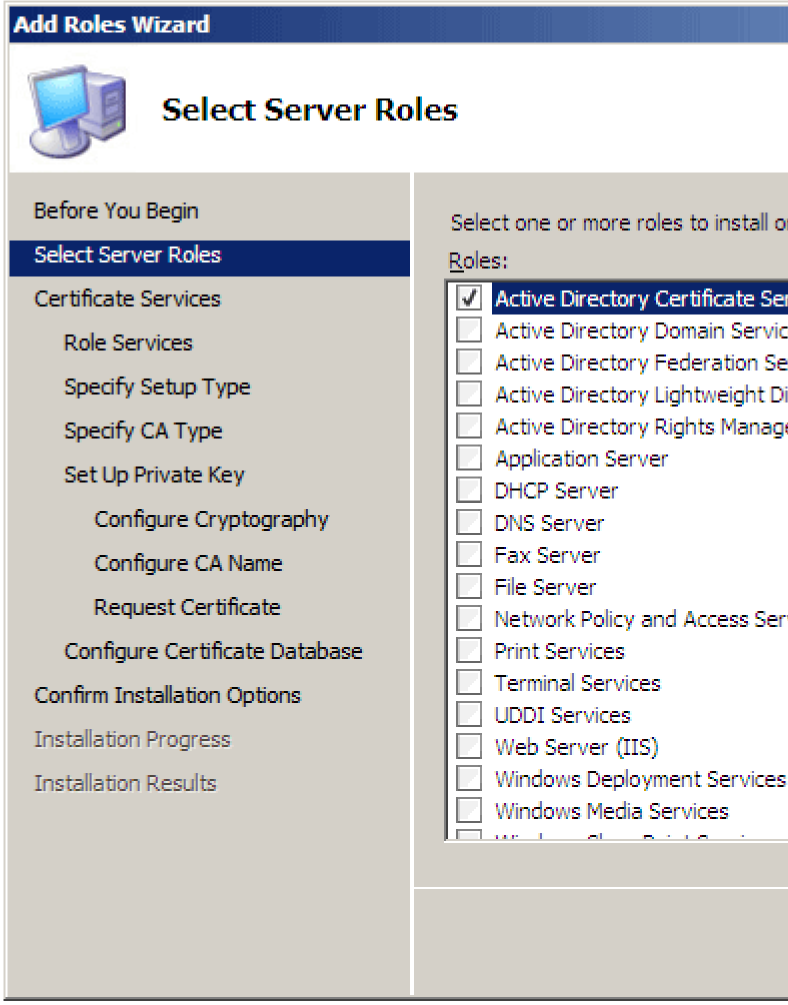
2. If the Online Responder is being installed on a computer without any other AD CS role services, click **Add roles** on the main page.

Note

If the Online Responder is installed on a computer where the CA or one of its components is already installed, select the Active Directory Certificate Services node in the left pane, and then click Add role services on the main page.

3. On the **Select Server Roles** page of the Add Roles Wizard (Figure 5), select the **Active Directory Certificate Services** check box, and then click **Next**.

Figure 5: Select Server Roles



Add Roles Wizard

Select Server Roles

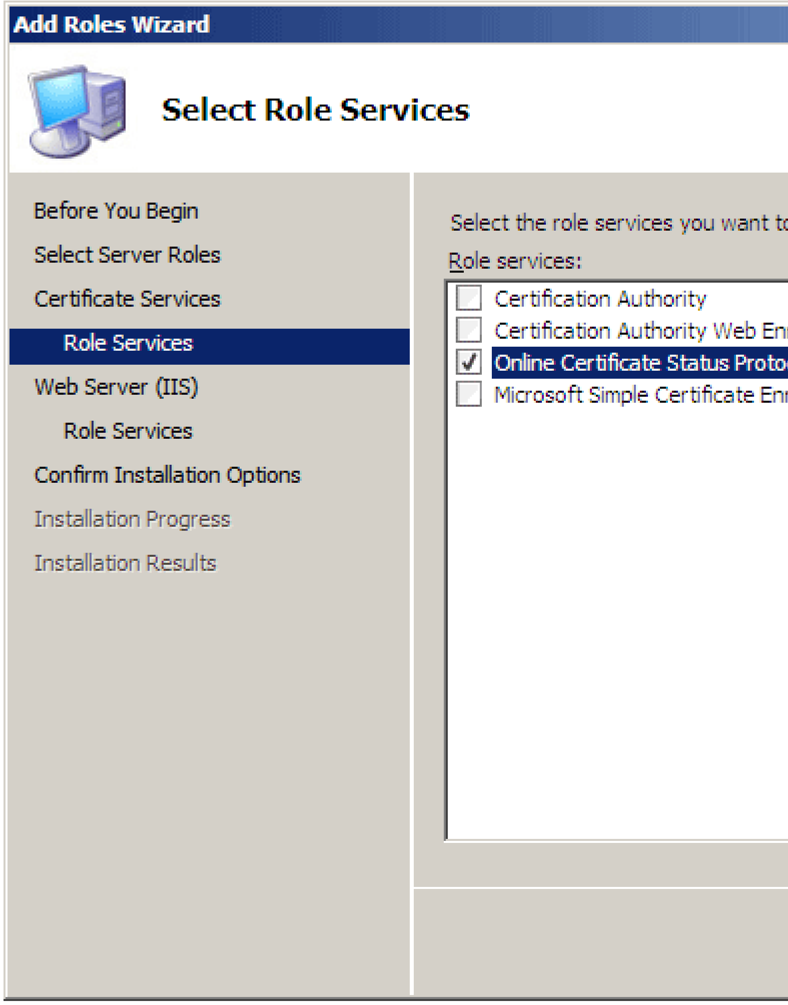
Select one or more roles to install o

Roles:

☑ Active Directory Certificate Ser
☐ Active Directory Domain Servic
☐ Active Directory Federation Se
☐ Active Directory Lightweight Di
☐ Active Directory Rights Manage
☐ Application Server
☐ DHCP Server
☐ DNS Server
☐ Fax Server
☐ File Server
☐ Network Policy and Access Ser
☐ Print Services
☐ Terminal Services
☐ UDDI Services
☐ Web Server (IIS)
☐ Windows Deployment Services
☐ Windows Media Services

4. On the **Select Role Services** page (Figure 6), select the **Online Certificate Status Protocol** check box.

Figure 6: Select Role Services



Select the role services you want t

Role services:

□ Certification Authority
□ Certification Authority Web En
☑ Online Certificate Status Proto
□ Microsoft Simple Certificate En

Because the Online Responder requires IIS, you are prompted to install IIS role services (Figure 7). The following IIS features are required for the Online Responder to operate properly:

Web Server

Common HTTP Features

- Static Content
- Default Document
- Directory Browsing
- Http Errors
- Http Redirection

Application Development

- .NET Extensibility
- ISAPI Extensions

Health and Diagnostics

- Http Logging
- Logging Tools
- Request Monitor
- Tracing

Security

- Request Filtering

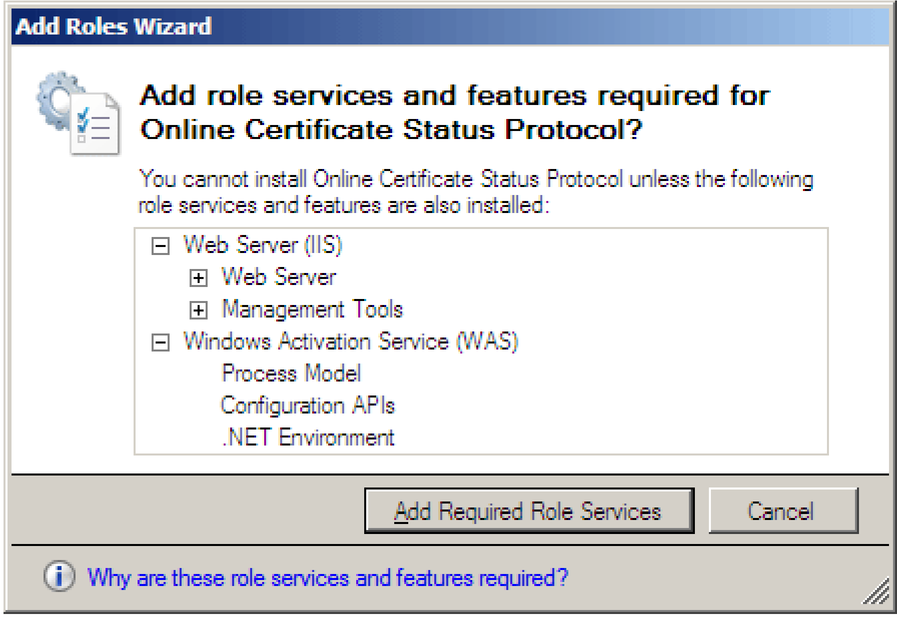
Performance

- Static Content Compression

Management Tools

- IIS Management Console
- IIS 6 Management Compatibility
- IIS Metabase Compatibility

5. Click **Add Required Role Services** to install the required IIS services, and click **Next**.



Add role services and features required for Online Certificate Status Protocol?

You cannot install Online Certificate Status Protocol unless the following role services and features are also installed:

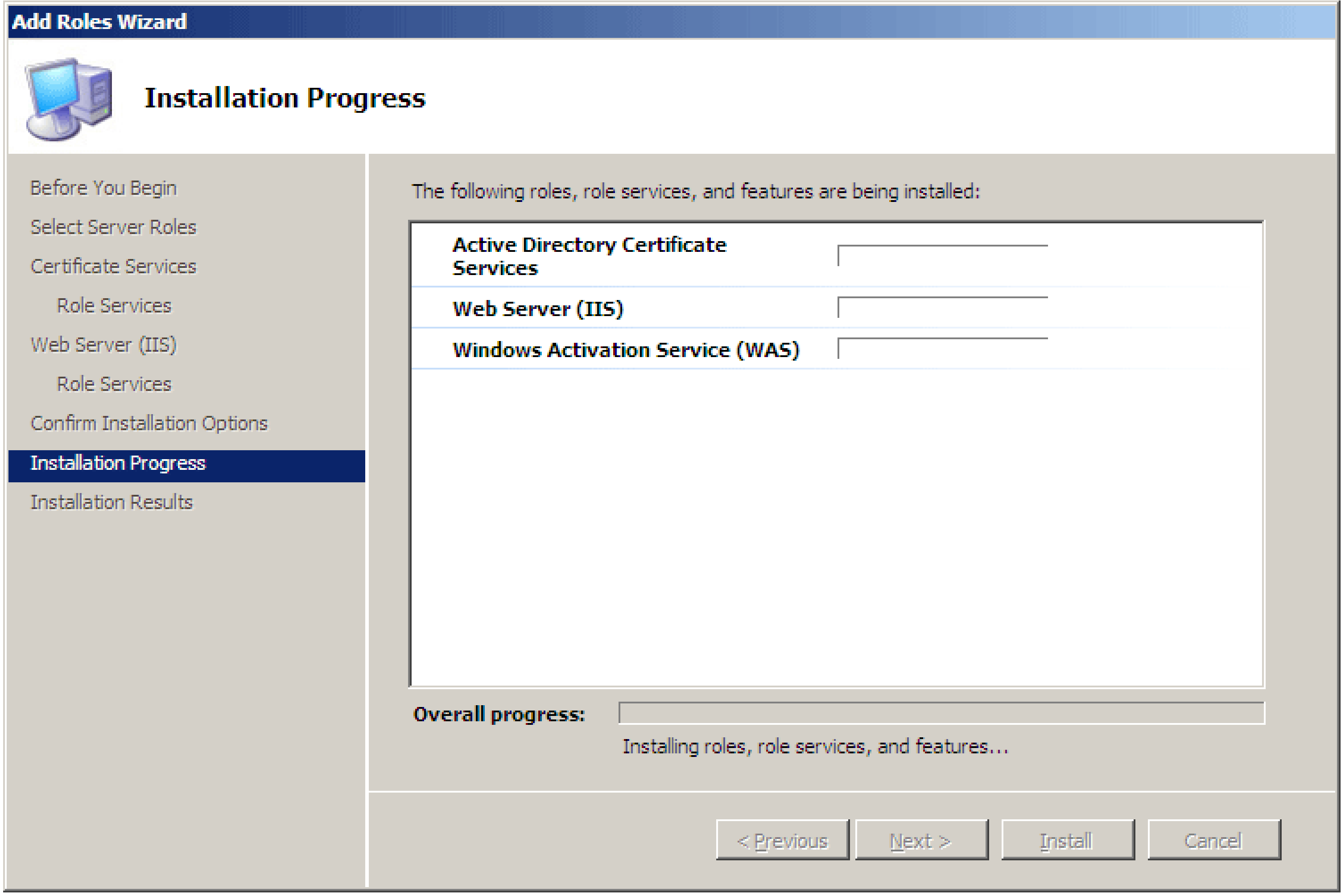
- ⊟ Web Server (IIS)
  - ⊞ Web Server
  - ⊞ Management Tools
- ⊟ Windows Activation Service (WAS)
  - Process Model
  - Configuration APIs
  - .NET Environment

Add Required Role Services
Cancel
Why are these role services and features required?

Figure 7: Add Required Role Services

6. The next two steps allow selecting the role services for the Web server (IIS). Click **Next** twice.

7. On the **Confirm Installation Options** page (Figure 8), click **Install**.



The following roles, role services, and features are being installed:

Active Directory Certificate Services

Web Server (IIS)

Windows Activation Service (WAS)

Overall progress:

Installing roles, role services, and features...

Figure 8: Confirm Installation Options

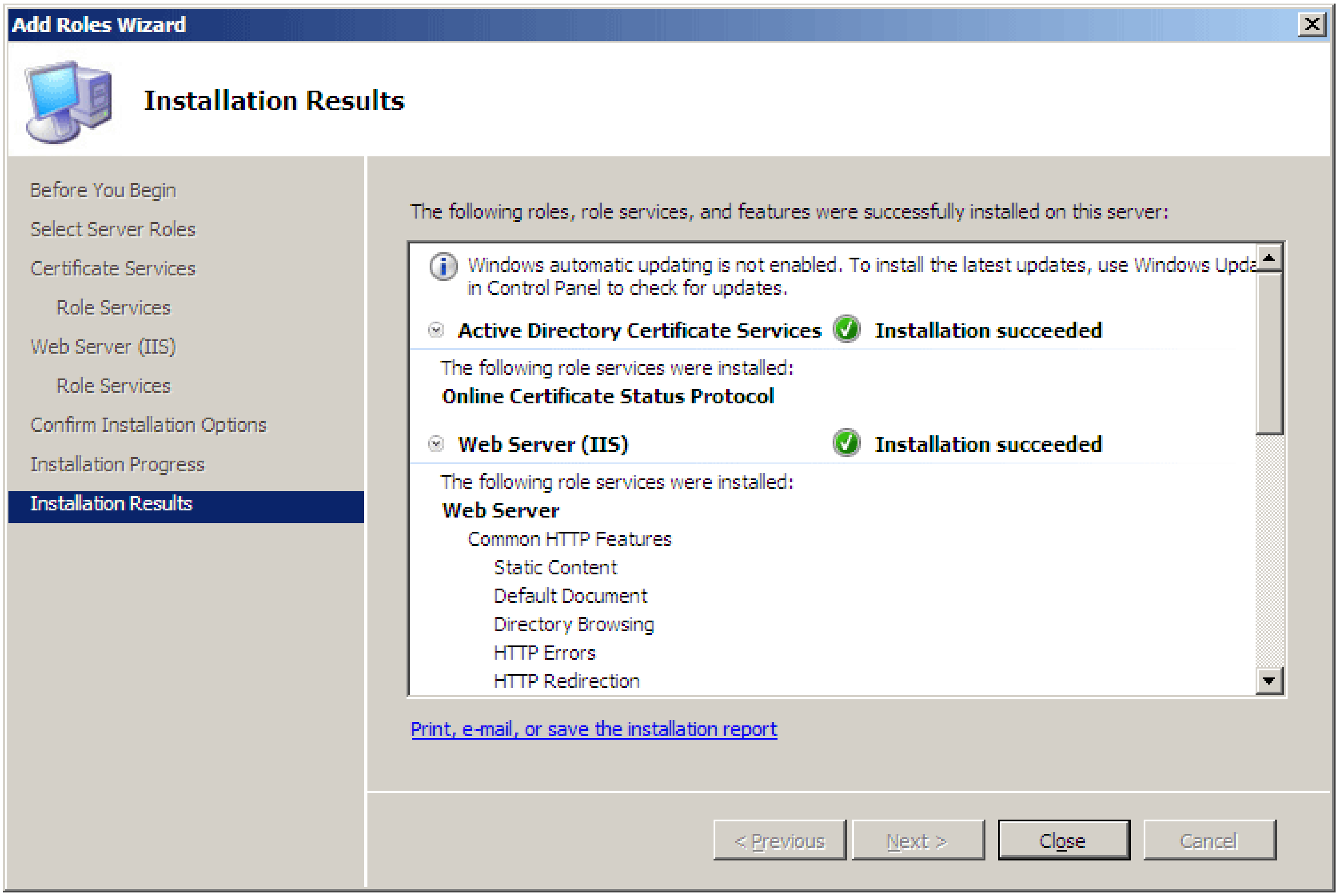
Note

The IIS installation process might take a long time to complete.

8. **Figure 9: Installation Progress**

9. When the installation is complete, the status of the installation process is displayed on the **Installation Results** page.

   Figure 10: Installation Results



Installation Results

The following roles, role services, and features were successfully installed on this server:

Windows automatic updating is not enabled. To install the latest updates, use Windows Upda
in Control Panel to check for updates.

Active Directory Certificate Services ✓ **Installation succeeded**

The following role services were installed:
Online Certificate Status Protocol

Web Server (IIS) ✓ **Installation succeeded**

The following role services were installed:
Web Server
Common HTTP Features
Static Content
Default Document
Directory Browsing
HTTP Errors
HTTP Redirection

Print, e-mail, or save the installation report

10. Click **Close**.

As part of the setup process, a virtual directory named OCSP is created in IIS, and the ISAPI extension used as the Web proxy is registered. You can manually register or un-register the Web proxy by using either of the following commands:

```
certutil –vocsproot
```

```
certutil –vocsproot delete
```

PREPARING THE ENVIRONMENT

The environment preparation consists of the following steps:

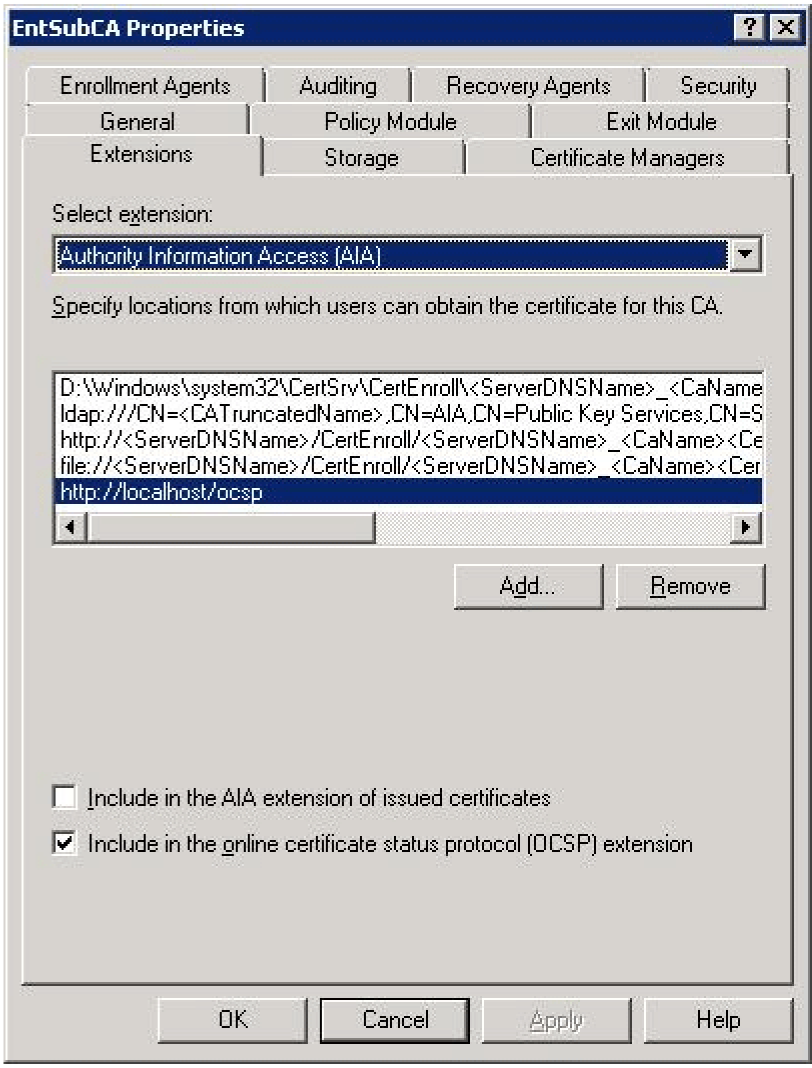
- Configure the CA.
- Configure the OCSP Response Signing certificate template.
- Enroll for an OCSP Response Signing certificate against a stand-alone CA.
- Use a hardware security module (HSM) to protect OCSP signing keys.

You must configure the CAs to include the Online Responder's URL as part of the authority information access extension of issued certificates. This URL is used by the OCSP client to validate the certificate status.

To configure the authority information access extension

1. Open the Certification Authority snap-in, right-click the name of the issuing CA,and then click **Properties**.
2. Click the **Extensions** tab.
3. In the **Select extension** list, click **Authority Information Access (AIA)** (Figure 11), and then click **Add**.

Figure 11: CA Properties



Select extension: Authority Information Access (AIA)

Specify locations from which users can obtain the certificate for this CA.

```
D:\Windows\system32\CertSrv\CertEnroll\<ServerDNSName>_<CaName
ldap:///CN=<CATruncatedName>,CN=AIA,CN=Public Key Services,CN=S
http://<ServerDNSName>/CertEnroll/<ServerDNSName>_<CaName><Ce
file://<ServerDNSName>/CertEnroll/<ServerDNSName>_<CaName><Cer
http://localhost/ocsp
```

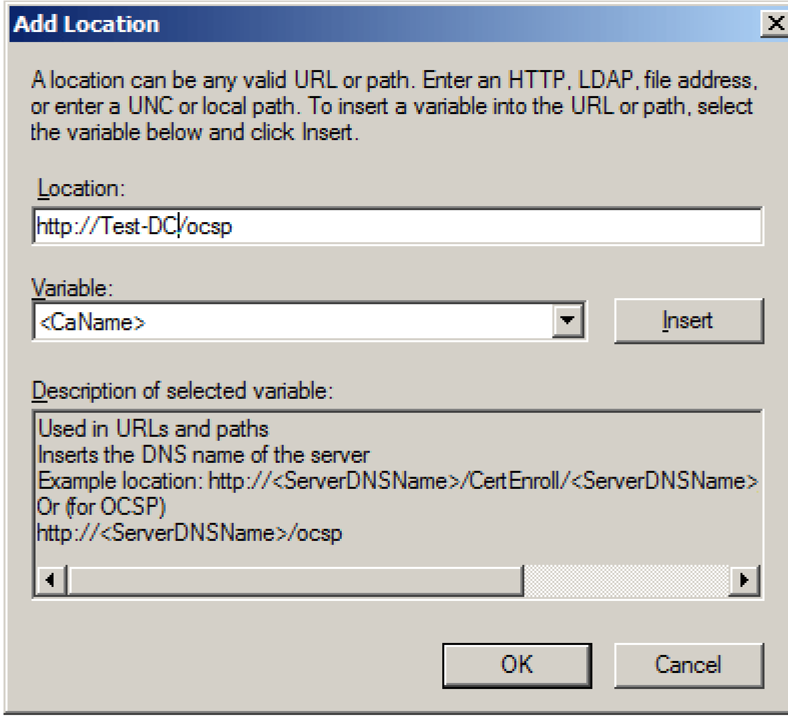
☐ Include in the AIA extension of issued certificates

☑ Include in the online certificate status protocol (OCSP) extension

4. In the **Add Location** dialog box (Figure 12), type the full URL of the Online Responder, which should be in the following form: http://<*DNSServerName*>/<*vDir*>

Note
When installing the Online Responder, the default virtual directory used in IIS is OCSP.

5. **Figure 12: Add Location dialog box**

6. 

A location can be any valid URL or path. Enter an HTTP, LDAP, file address, or enter a UNC or local path. To insert a variable into the URL or path, select the variable below and click Insert.

Location: http://Test-DC/ocsp

Variable: <CaName>

Description of selected variable:
Used in URLs and paths
Inserts the DNS name of the server
Example location: http://<ServerDNSName>/CertEnroll/<ServerDNSName>
Or (for OCSP)
http://<ServerDNSName>/ocsp

7. Click **OK**.
8. Select the location from the **Location** list.
9. Select the **Include in the online certificate status protocol (OCSP) extension** check box, and then click **OK**.

Configuring the OCSP Response Signing certificate template

The Online Responder can sign OCSP responses by using the issuing CA key or a dedicated signing key. A signing certificate has the following attributes:

- Has a short validity period. (A validity period of two weeks is recommended.)
- Includes the id-pkix-ocsp-nocheck extension.
- Does not include CRL distribution point and authority information access extensions.
- Includes id-kp-OCSPSigning enhanced key usage (EKU).
- The steps to configure the OCSP Response Signing template in the Windows Server 2003 operating system are different from the steps starting in Windows Server 2008.

Note

In Windows Server 2008, a version 3 template is introduced. The new template version allows advanced cryptography support in addition to other enhancements. For more information, see Windows Server 2008 CA Enhancements (http://go.microsoft.com/fwlink/?LinkID=83212).

Configuring the OCSP Response Signing certificate template

Starting in Windows Server 2008, a new certificate template is added to the available templates in Active Directory Domain Services (AD DS). The new template, named OCSP Response Signing, is a version 3 template preconfigured with the required extensions and attributes listed previously. No modifications are required to the template or to the CA.

As with any template, the enrollment permissions must be configured.

To configure the template security settings to allow Online Responders to enroll for signing certificates

1. Open the Certificate Templates snap-in.
2. Double-click the **OCSP Response Signing** template or a duplicate you have created, and then click the **Security** tab.
3. Add the Online Responder computers to the **Group or user names** list.
4. To allow Online Responder computers to enroll for the OCSP Response Signing certificate, select the **Allow** check box for the Read and Enroll permissions.

Note

The Autoenroll permission is not used by the Online Responder, which has a separate implementation of autoenrollment that is explained in detail later in this document. The default Windows autoenrollment implementation limits a template to issuing one certificate per client. By default, Windows autoenrollment will renew only one of the signing certificates available on the Online Responder computer and will archive the rest. In some cases, Windows autoenrollment will not use the original CA that issued the certificate for renewal. This is not the behavior expected by the Online Responder, which requires renewal by the same CA.

Assigning an OCSP Response Signing template to a CA

After the templates are properly configured, the CA needs to be configured to issue that template.

To configure the CA to issue certificates based on the newly created OCSP Response Signing template

1. Open the Certification Authority snap-in.
2. Right-click **Certificate Templates**, click **New**, and then click **Certificate Template to Issue**.
3. In the available templates list, click the **OCSP Response Signing** template, and then click **OK**.

Enrolling for an OCSP Response Signing certificate

For enhanced security, the Online Responder runs with Network Service privileges. This means it does not have access to computer private keys by default, and permissions for private keys that need to be accessed by the Online Responder have to be modified to allow access. A new functionality, which is introduced in version 3 templates, allows the enrollment client to configure permissions for computer keys as part of the enrollment process to allow access for services running as Network Service. This functionality is available starting in Windows Vista and Windows Server 2008.

The new OCSP Response Signing version 3 template enables this functionality by default, allowing the enrollment client to modify the private key permissions automatically to allow Network Service Read access to the OCSP signing private key.

As long as a CA that is running at least Windows Server 2008 is used to issue a certificate based on the OCSP Response Signing template or a duplicate of that template, no additional configuration is required.

If a Windows Server 2003, Enterprise Edition–based CA is used, OCSP signing private key permissions must be configured manually on the Online Responder computer to allow the Online Responder service access to the private key.

In Windows Vista and Windows Server 2008, the ability to modify private key permissions was added to the Certificates snap-in.

The following procedure is required only if a Windows Server 2003–based CA is used to issue OCSP signing certificates.

To configure the private key permissions for an OCSP signing certificate issued by a Windows Server 2003–based CA

1. On the Online Responder computer, open the Certificates snap-in for the local computer.
2. In the available certificates list, select the **OCSP Response Signing** certificate.

Note

The signing certificate should first be manually enrolled.

3. On the **Actions** menu, point to **All Tasks**, click **Manage Private Keys**, and then click **Add**.
4. Type **network service**, and then click **OK**.
5. Verify that only the **Read** permission is allowed for the NETWORK SERVICE, and then click **OK**.
6. Restart the Online Responder service by typing the following commands at a command prompt:

   Copy

   ```
   net stop ocspsvc
   net start ocspsvc
   ```

Note

The steps above apply only if the Online Responder revocation configuration is set for manual enrollment of the OCSP signing certificate. If the revocation configuration is configured for OCSP automatic enrollment, the private keys should have the correct permissions by default and the steps above should not be required.

Note

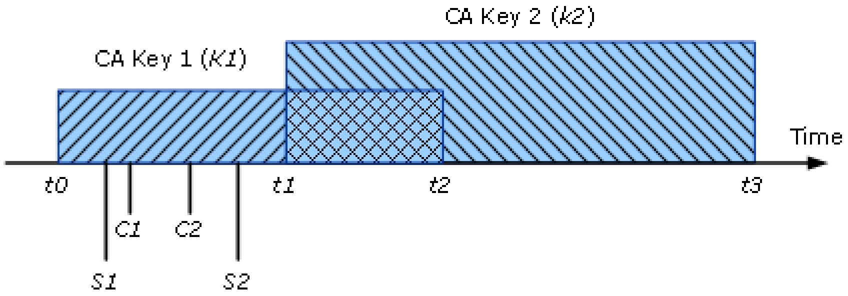
If the revocation configuration is set to use OCSP autoenrollment and a Windows Server 2003–based CA is used, renewal of OCSP signing certificates will require additional steps, as specified below.

Renewing OCSP Response Signing certificates

After the initial certificate enrollment is complete and the proper key access control list (ACL) is set, renewing OCSP Response Signing certificates is similar to any other certificate renewal procedure with one caveat. When the CA certificate is renewed, the OCSP Response Signing certificate used for validation of existing certificates must still be signed by the CA certificate that was used to issue the existing certificates.

Figure 15 illustrates the situation. OCSP Response Signing certificates (S1, S2) need to be signed by the same CA certificate (k1) that was used to sign the end-entity certificates (C1, C2). After the CA certificate is renewed (t1), the CA will be using the new CA certificate (k2) to sign newly issued certificates. However, there could still be valid certificates that were issued using the previous CA certificate (k1) in the organization. The existing certificates could be valid up to the expiration date of the previous CA certificate (t2).

Figure 15: The OCSP Response Signing certificate renewal problem



Certificates issued using the new CA certificate (k2) require an OCSP Signing Certificate signed by using the new CA certificate (available by making a standard renewal request). However, the OCSP Signing Certificate for the certificates that were issued using the previous CA certificate (k1) requires the signature of the previous CA certificate.

To overcome this limitation, the CA role service was updated in Windows Server 2008 to allow the renewal of OCSP Response Signing certificates by using a previous CA certificate. This feature is not enabled by default. Use the following procedure to allow the renewal of OCSP Response Signing certificates by using existing CA keys.

To allow the renewal of OCSP Response Signing certificates by using existing CA keys

1. On the computer running the CA role service, open a command prompt as administrator, and type:

   Copy

   ```
   certutil -setreg
   ca\UseDefinedCACertInRequest 1
   ```

2. Press ENTER.
3. Restart the CA service.

When using a Windows Server 2003–based CA, it is impossible to renew OCSP Response Signing certificates after the CA certificate was renewed. To overcome this limitation, issue *n*

OCSP signing certificates for each Online Responder computer from the Windows 2003–based CA, where *n* = (the number of weeks until the expiration date of the CA key)/2.

Important

This procedure must be performed before renewing the CA certificate.

Each of the issued certificates should have a validity period of two weeks longer than the previous one. For example:

- Signing Certificate 1: Valid from NOW until Now+2 weeks
- Signing Certificate 2: Valid from NOW until Now+4 weeks
- Signing Certificate 3: Valid from NOW until Now+6 weeks

The Online Responder service will select the signing certificate with the shorter validity period first and will use that certificate until it expires.

Enrolling for an OCSP Response Signing certificate against a stand-alone CA

Since stand-alone CAs do not support the version 2 or version 3 certificate template required to create an OCSP Response Signing certificate, you must manually create and submit an OCSP Response Signing certificate request. Use the following procedure to enroll for an OCSP Response Signing certificate against a stand-alone CA.

To enroll for an OCSP Response Signing certificate against a stand-alone CA

---

1. Click **Start**, point to **All Programs**, click **Accessories**, and then click **Notepad**.
2. Copy and paste the following request data into Notepad:

   Copy

   ```
   [NewRequest]
   Subject =
   "CN=<OCSPServerDistinguishedName>
   PrivateKeyArchive = FALSE
   Exportable = TRUE
   UserProtected = FALSE
   MachineKeySet = TRUE
   ```

```
ProviderName = "Microsoft Enhanced
Cryptographic Provider v1.0"
UseExistingKeySet = FALSE
RequestType = PKCS10
[ApplicationPolicyStatementExtension
]
Policies = OCSPSigning
Critical = false
[OCSPSigning]
OID = 1.3.6.1.5.5.7.3.9
[EnhancedKeyUsageExtension]
OID="1.3.6.1.5.5.7.3.9"
[Extensions]
1.3.6.1.5.5.7.48.1.5 = Empty
```

3. Save the file as ocsp.inf.

⚠**Warning**

For a CA running on Windows Server 2008 or Windows Server 2008 R2 the [ApplicationPolicyStatementExtension] section must include the OCSP Signing certificate OID (or reference to the OID as shown in the example). For a CA running on Windows Server 2012, the OCSP Signing certificate OID (or reference to it) can be placed in either the [ApplicationPolicyStatementExtension] or [EnhancedKeyUsageExtension] section.

4. Close Notepad.
5. At a command prompt, type:

   Copy

```
certreq.exe -New ocsp.inf ocsp.req
certreq.exe -Submit ocsp.req
ocsp.cer
certreq.exe -Accept ocsp.cer
certutil -v -setreg
policy\EnableRequestExtensionList
+1.3.6.1.5.5.7.48.1.5
net stop && net start certsvc
```

After the enrollment process is complete, you must modify the ACL of the private key to allow the Online Responder service to access the private key. For the required steps to configure private key permissions, see Configuring the OCSP Response Signing certificate template.

Using a hardware security module (HSM) to protect OCSP signing keys

---

The following configuration steps are required in case an HSM (or a smart card) is used to protect the OCSP signing keys.

Modifying the Online Responder service credentials

The Online Responder service uses Network Service credentials by default. To allow the Online Responder service to interact with an HSM, it is required to change the service credentials to Local System. Use the following steps to configure the Online Responder service credentials.

To configure the Online Responder service credentials

1. Open the Services snap-in.
2. Right-click the **Online Responder** service, and click **Properties**.
3. Click the **Log On** tab.
4. Click the **Local System** account.
5. Select the **Allow service to interact with desktop** check box, and click **OK**.

Configuring the OCSP Response Signing template

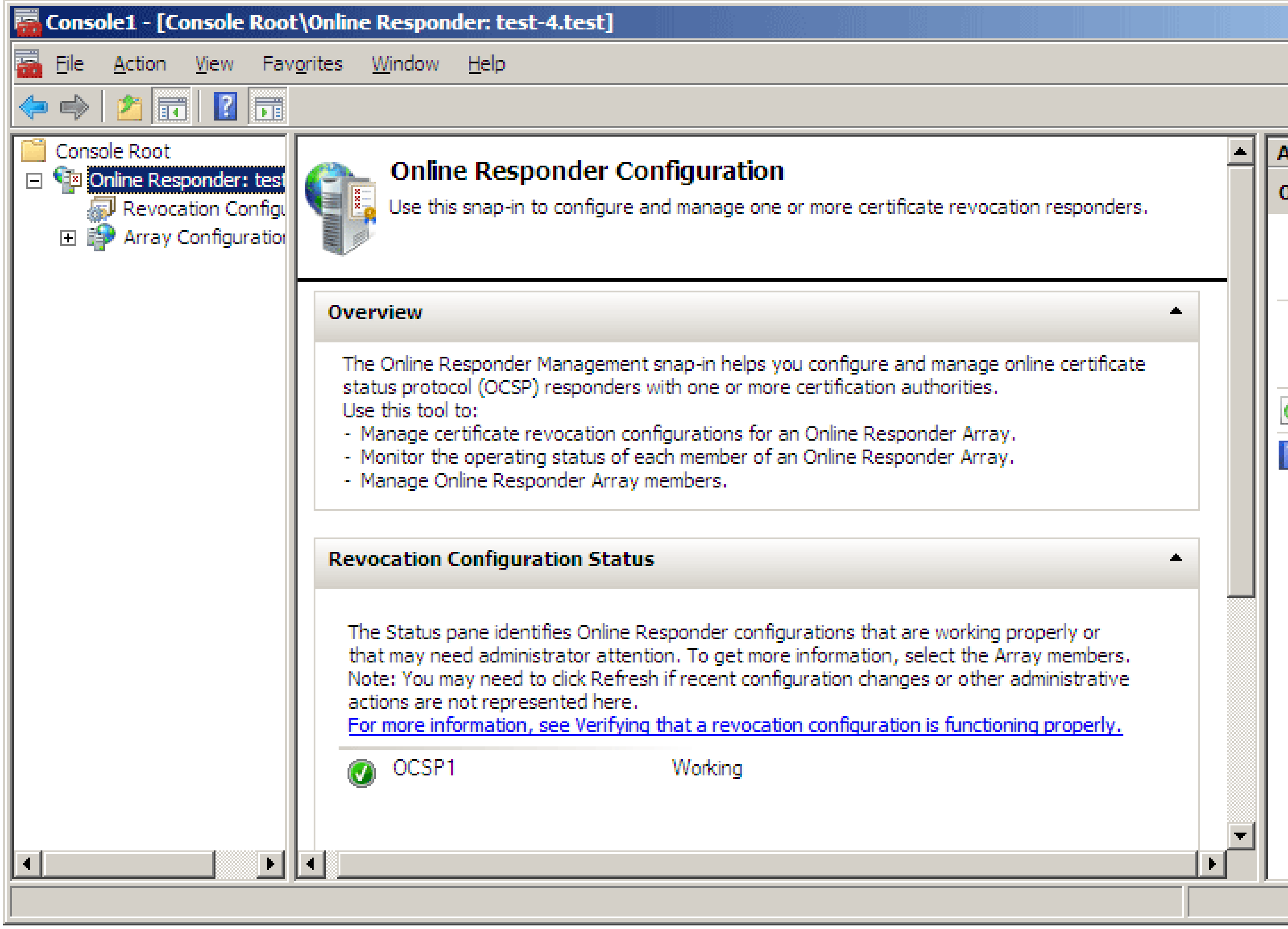
When you use an HSM to protect the OCSP signing keys, you must also configure the OCSP Response Signing template to use the HSM's CryptoAPI cryptographic service provider (CSP) or Cryptography Next Generation (CNG) provider. If only a CryptoAPI CSP is available, you must duplicate the version 3 OCSP Response Signing template and create a new version 2 template that supports CryptoAPI CSPs. See "Configuring the OCSP Response Signing certificate template when using the Windows Server 2003–based CA" in the Configuring the OCSP Response Signing certificate template section for the required steps to create a version 2 template.

Configuring the Online Responder

Whether the Online Responder is deployed on a single computer, clustered array, or multiple clustered arrays, the Online Responder management tools provide a single point of monitoring and configuration for Online Responder deployment.

The management tools installed by default on all Windows Server 2008 versions include the Online Responder snap-in (Figure 16), which provides all the required functionality for managing an Online Responder.

Figure 16: Online Responder snap-in



Online Responder Configuration

Use this snap-in to configure and manage one or more certificate revocation responders.

Overview

The Online Responder Management snap-in helps you configure and manage online certificate status protocol (OCSP) responders with one or more certification authorities.

Use this tool to:

- Manage certificate revocation configurations for an Online Responder Array.
- Monitor the operating status of each member of an Online Responder Array.
- Manage Online Responder Array members.

Revocation Configuration Status

The Status pane identifies Online Responder configurations that are working properly or that may need administrator attention. To get more information, select the Array members. Note: You may need to click Refresh if recent configuration changes or other administrative actions are not represented here.

For more information, see Verifying that a revocation configuration is functioning properly.

✓ OCSP1	Working

The Online Responder console tree includes the following views:

- **Online Responder**. This view provides general information about the Online Responder configuration status and allows configuring of Online Responder properties.
- **Revocation Configuration**. This view allows adding, modifying, and deleting revocation configurations. For more information about revocation configurations, see Managing revocation configurations.
- **Array Configuration**. This view allows configuring, monitoring, and troubleshooting Online Responder Array members. For more information about Array configurations, see Managing Array members.

Configuring Online Responder properties

The Online Responder provides a set of configurable properties that are Online Responder–wide and apply to the Online Responder's service operation.

To open the **Online Responder** dialog box, click **Responder Properties** on the **Action** menu or click **Responder Properties** in the **Action** pane.

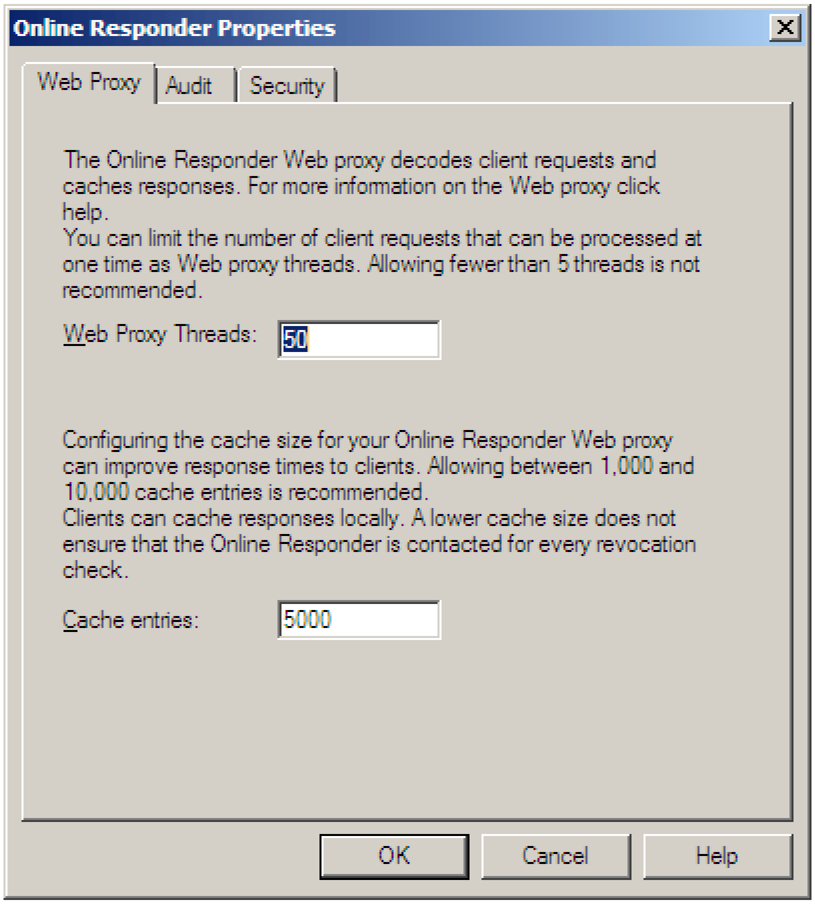
Web proxy settings

The Online Responder Web proxy cache is implemented as an ISAPI extension hosted by IIS. The following configurable settings are enabled (Figure 17).

- **Web proxy threads**. This setting refers to the number of threads that will be allocated by the Online Responder ISAPI extension for handling requests. Increasing the number of threads will use more of the server's memory and reducing the number of threads will reduce the number of clients that can be served concurrently. The minimum thread number allowed is five.

- **Cache entries allowed**. The cache is implemented as part of the Online Responder's ISAPI extension and is an in-memory cache only. The recommended cache size is between 1,000 and 10,000 entries. A small cache size will cause more cache faults and will result in a higher load on the Online Responder service for lookup and signing operations; a large cache size will increase the Online Responder's memory usage. If the CA certificate is used to sign responses, the size of the cache entries in memory is approximately 200 bytes; if a delegated signer certificate is used to sign responses, the size of the cache entries in memory is approximately 2 KB (assuming a key size of 1,024 bytes).

Figure 17: Web proxy settings



The Online Responder Web proxy decodes client requests and caches responses. For more information on the Web proxy click help.
You can limit the number of client requests that can be processed at one time as Web proxy threads. Allowing fewer than 5 threads is not recommended.

Web Proxy Threads: 50

Configuring the cache size for your Online Responder Web proxy can improve response times to clients. Allowing between 1,000 and 10,000 cache entries is recommended.
Clients can cache responses locally. A lower cache size does not ensure that the Online Responder is contacted for every revocation check.

Cache entries: 5000

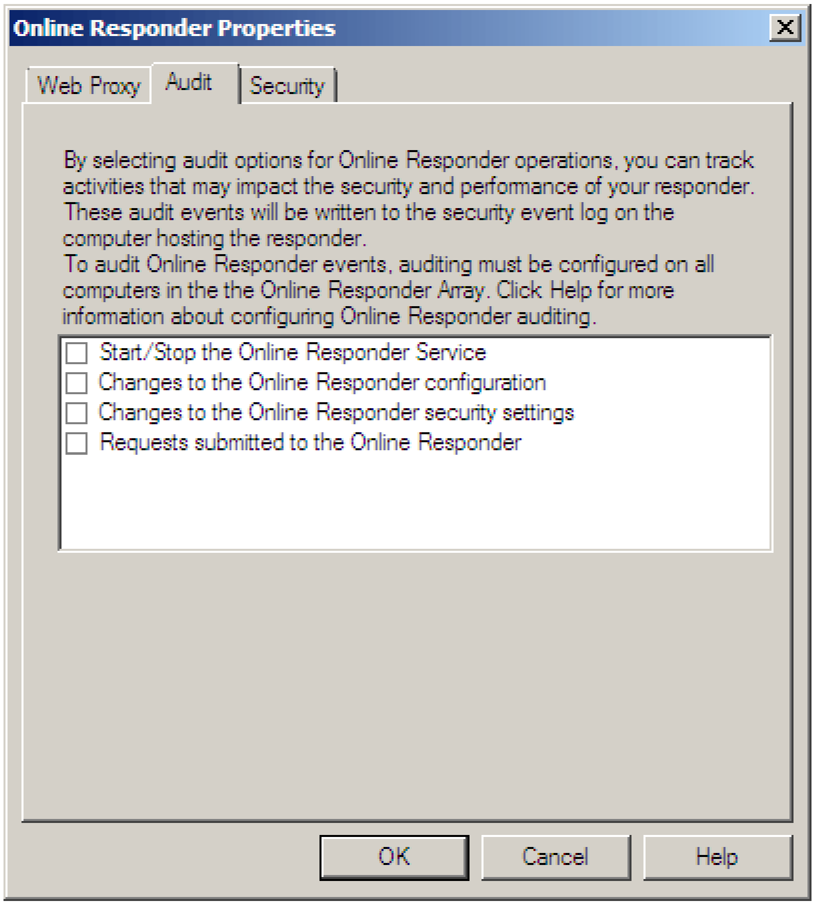
Audit settings

To comply with Common Criteria requirements for secure certificate issuance systems and to provide a secure platform, certain event and configuration settings are logged to the Windows security event log. The Online Responder allows the configuration of the following audit events (Figure 18).

- **Start/Stop the Online Responder Service**. Every Start/Stop event of the Online Responder service will be logged.
- **Changes to the Online Responder configuration**. All Online Responder configuration changes, including audit settings changes, will be logged.
- **Changes to the Online Responder security settings**. All changes to the Online Responder service request and management interfaces ACL will be logged.

- **Requests submitted to the Online Responder**. All requests processed by the Online Responder service will be logged. This option can create a high load on the service and should be evaluated on a case-by-case basis. Note that only requests that require a signing operation by the Online Responder will generate audit events; requests for previously cached responses will not be logged.

Figure 18: Audit settings



By selecting audit options for Online Responder operations, you can track activities that may impact the security and performance of your responder. These audit events will be written to the security event log on the computer hosting the responder.
To audit Online Responder events, auditing must be configured on all computers in the the Online Responder Array. Click Help for more information about configuring Online Responder auditing.

☐ Start/Stop the Online Responder Service
☐ Changes to the Online Responder configuration
☐ Changes to the Online Responder security settings
☐ Requests submitted to the Online Responder

Audit events will be logged to the Windows security log only if the **Audit object access** policy is enabled.

To enable the Audit object access policy

1. Open the Local Group Policy Editor.

2. Under **Computer Configuration**, expand **Windows Settings**, **Security Settings**, and **Local Policies**, and then click **Audit Policy**.
3. Double-click the **Audit object access** policy.
4. Select the **Success** and **Failure** check boxes, and click **OK**.

Security settings

The security settings for the Online Responder include two permission entries that can be set for users and services to allow or deny access to the request and administration interfaces.

- **Manage Online Responder**. The Online Responder exposes a management interface (IOCSPAdmin) that provides the ability to perform administrative tasks such as creating and managing revocation configurations and to modify the Online Responder's global settings.

- **Proxy Requests**. The Online Responder exposes a request interface (IOCSPRequestD) that allows the Online Responder Web proxy component to submit requests for certificate status to the Online Responder service. This interface is not used by applications that submit the OCSP request.

Managing revocation configurations

Revocation configurations include a set of definitions that enable the Online Responder to provide a signed OCSP response. These definitions include the CA certificate, the signing certificate, and the source of the revocation information. Each revocation configuration serves requests for a specific CA key pair and certificate. The following rules apply:

- A separate revocation configuration should be created for each CA that was configured to include the Online Responder authority information access in issued certificates.

- A separate revocation configuration should be created for each CA that is renewed with a new key pair.

The Revocation Configuration view allows adding, modifying, and deleting revocation configurations.

Creating a revocation configuration

This section explores the process of creating, modifying, and deleting revocation configurations.

To create a revocation configuration

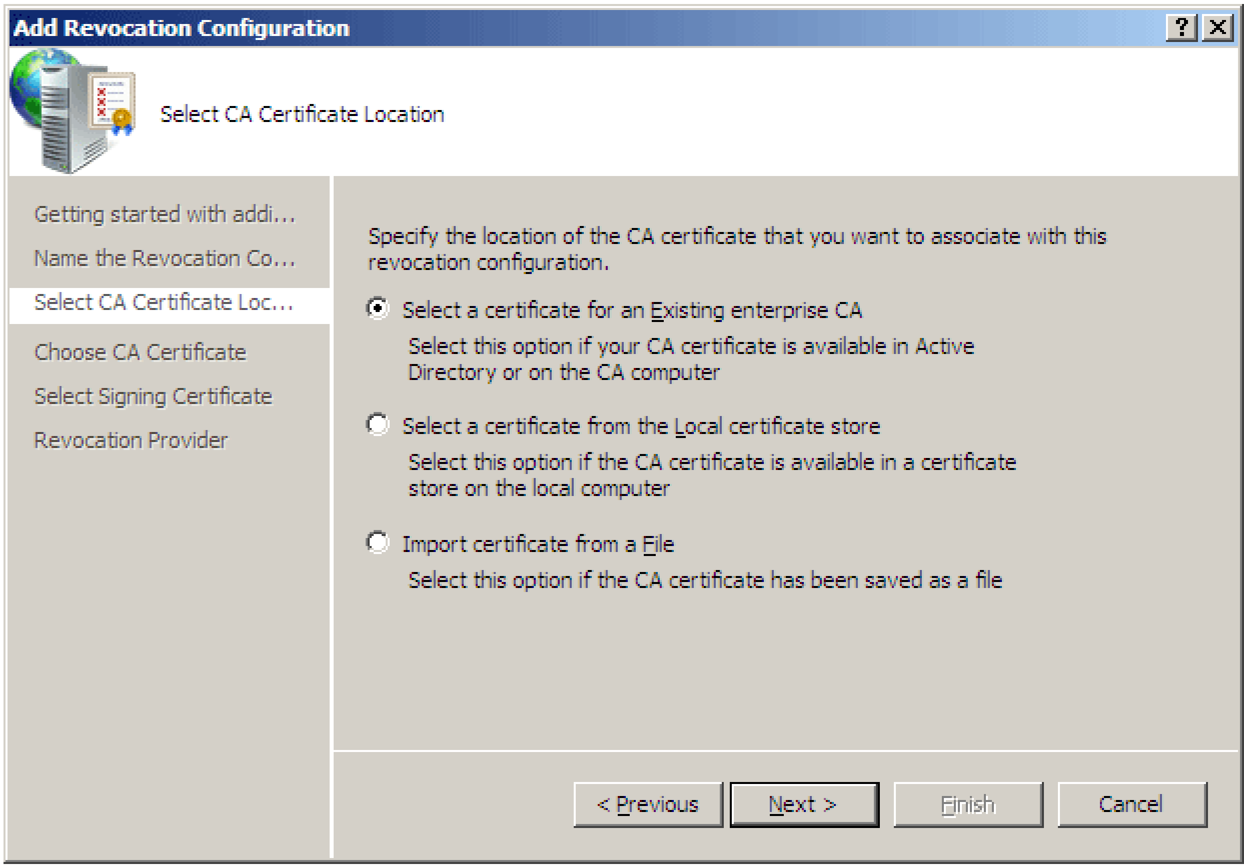
1. On the **Action** menu or in the **Actions** pane, click **Add Revocation Configuration**.

   The Add Revocation Configuration wizard appears.

2. Click **Next**.
3. In the **Name** box of the **Name the Revocation Configuration** page, enter a friendly name for the revocation configuration (which will help identify the revocation configuration from the available revocation configurations), and then click **Next**.
4. On the **Select CA Certificate Location** page, select the location of the CA certificate for which this revocation configuration provides certificate status responses.

   For the Online Responder to check a certificate's status, the revocation configuration must identify the CA that issued the certificate. The following options are available:

   Figure 19: Select CA Certificate Location


Add Revocation Configuration
Getting started with addi...
Name the Revocation Co...
Select CA Certificate Loc...
Choose CA Certificate
Select Signing Certificate
Revocation Provider
< Previous
Next >
Finish
Cancel

Select CA Certificate Location

Specify the location of the CA certificate that you want to associate with this revocation configuration.

● Select a certificate for an Existing enterprise CA

Select this option if your CA certificate is available in Active Directory or on the CA computer

○ Select a certificate from the Local certificate store

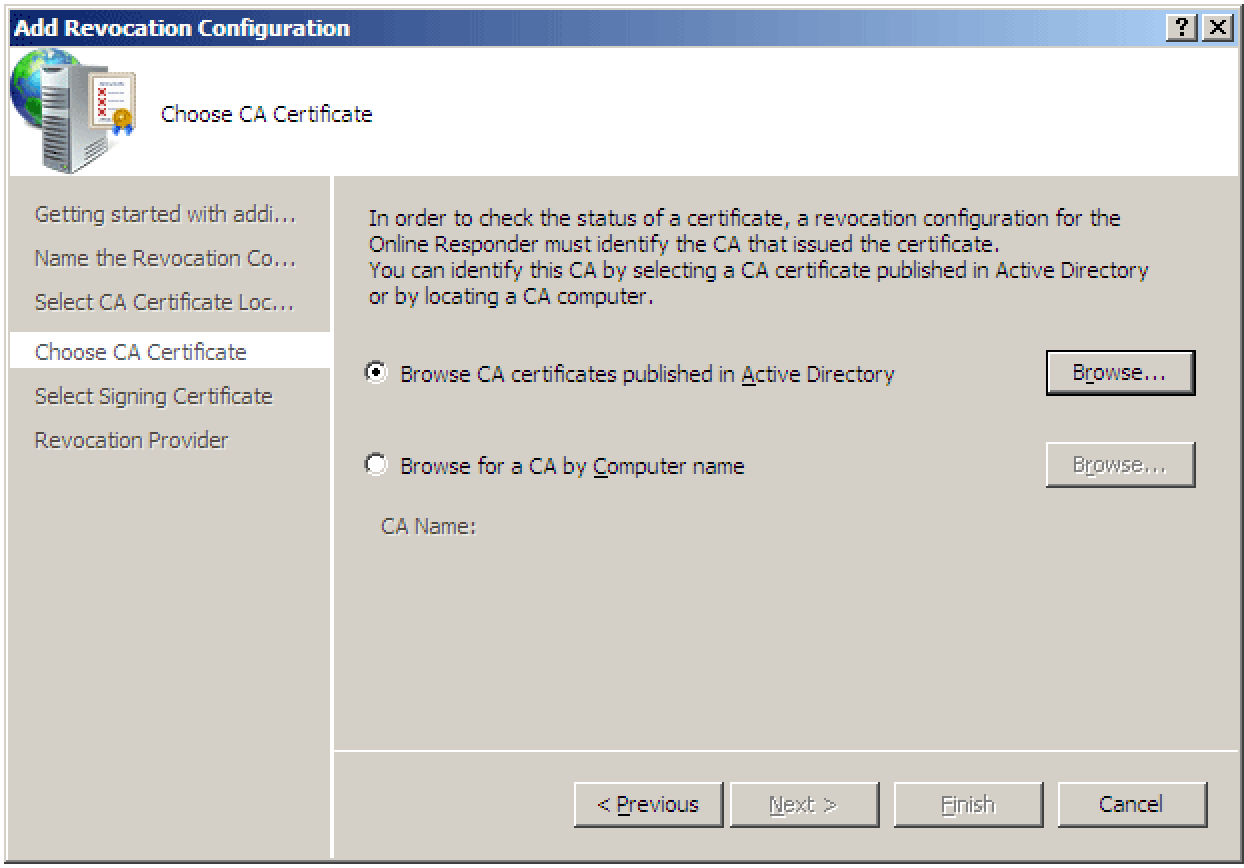
Select this option if the CA certificate is available in a certificate store on the local computer

○ Import certificate from a File

Select this option if the CA certificate has been saved as a file

Select a certificate for an existing enterprise CA. This option allows selecting the CA certificate from the available CA certificates published in AD DS or by querying a specific CA directly for its certificate. If this option is selected in step 4, the wizard will prompt the user to select the CA certificate by browsing AD DS for published CAs or for CA computer names (Figure 20). After identifying the CA certificate, you can verify the certificate details by clicking the **View Selected CA certificate** link on the wizard page.

Figure 20: Choose CA Certificate


Add Revocation Configuration
Getting started with addi…
Name the Revocation Co…
Select CA Certificate Loc…
Choose CA Certificate
Select Signing Certificate
Revocation Provider
Browse…
Browse…
< Previous
Next >
Finish
Cancel

Choose CA Certificate

In order to check the status of a certificate, a revocation configuration for the Online Responder must identify the CA that issued the certificate.
You can identify this CA by selecting a CA certificate published in Active Directory or by locating a CA computer.

● Browse CA certificates published in Active Directory

○ Browse for a CA by Computer name

CA Name:

Select a certificate from the local certificate store. This option allows selecting a CA certificate by browsing the certificate store on the current computer. If this option is selected in step 4, the wizard will prompt the user to select the CA certificate by browsing the local certificate store.

Import certificate from a file. This option allows selecting a certificate file with a *.cer extension. If this option is selected in step 4, the wizard will prompt the user to select the CA certificate by browsing the file system for a certificate file with a *.cer extension.

5. On the **Select Signing Certificate** page (Figure 21), the signing certificate must be specified for each revocation configuration. The following options are available:

Automatically select a signing certificate. If this option is selected, the Online Responder will automatically search the Personal certificate store for the computer hosting the Online Responder for a certificate that meets the following conditions:

- The certificate has an OCSP Signing EKU.
- The certificate was issued by the CA that was selected in step 4.
- The certificate is valid.
- The certificate has a matching private key.

If more than one signing certificate is available, then the one with the shortest validity period is selected.

The **Auto-Enroll for an OCSP signing certificate** check box allows configuring the Online Responder to automatically enroll and renew OCSP Response Signing certificates for the specified revocation configuration. If the CA that was selected in step 4 is configured to issue the OCSP Response Signing template, this check box will be selected and the **Certification Authority** and **Certificate Template** boxes will be filled in automatically. Otherwise, the **Auto-Enroll for an OCSP signing certificate** check box will not be selected.

Note

When the Online Responder's autoenrollment functionality is enabled, the enrolled certificates will be stored in the certificate store for the Online Responder service and not in the certificate store of the local computer. You can view the current configuration signing certificate by using the following procedure.

To view the current configuration signing certificate, use the following steps:

5. Open the Certificates snap-in.

6. Click **Service account**, and click **Next**.

7. Click **Local computer**, and click **Next**.

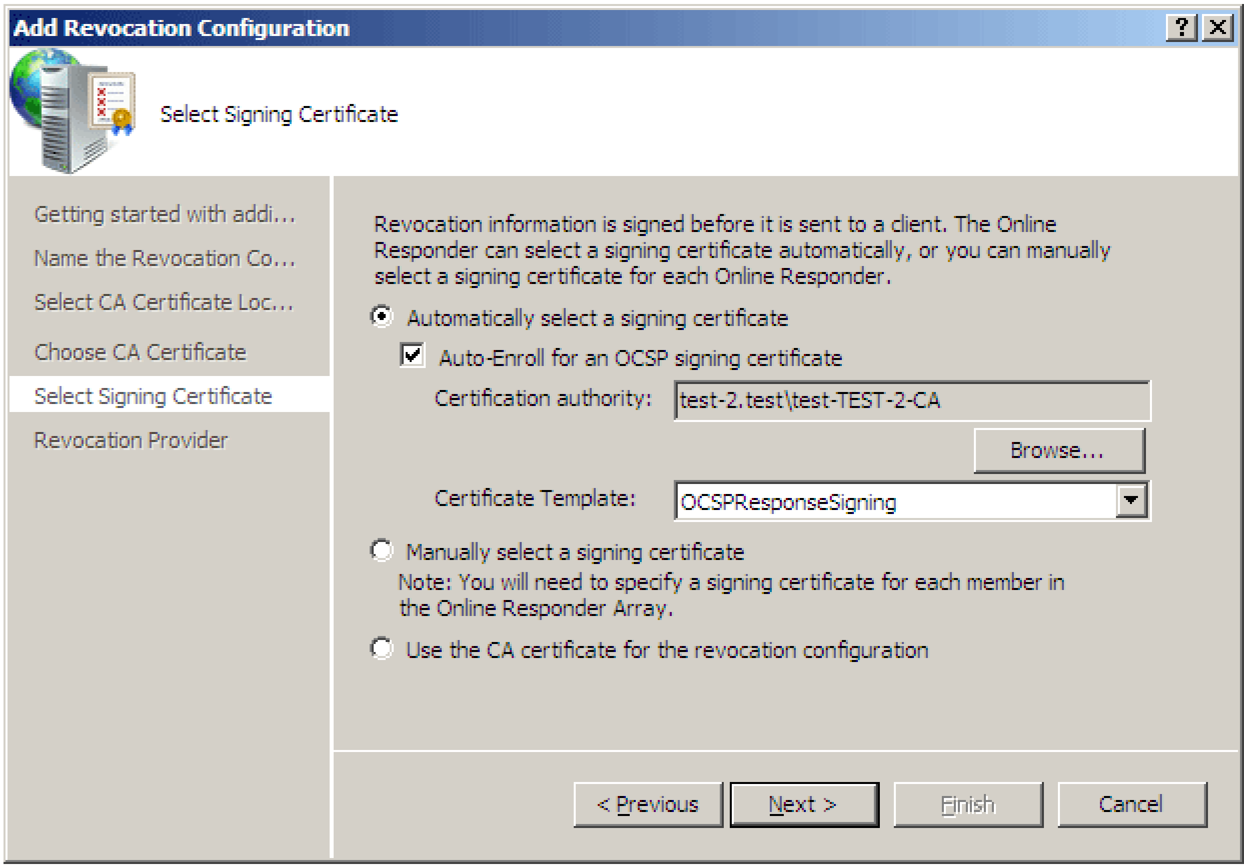
8. Select the Online Responder service from the available services list, and click **Finish**.

9. The signing certificate for the current configuration can be found at the store named: OCSPSVC\<*configuration name*>.

Manually select a signing certificate. If this option is selected, the Online Responder will not assign a signing certificate for the revocation configuration. After the wizard has finished and the revocation configuration is created, it is required to manually select a signing certificate for each of the Online Responder Array members. Until this operation is accomplished, the revocation configuration will not be operational.

Use the CA certificate for the revocation configuration. If this option is selected, the Online Responder will use the CA certificate that was selected in step 4 as the signing certificate. This option is available only if the Online Responder is installed on the CA computer.

Figure 21: Select Signing Certificate



Add Revocation Configuration
Getting started with addi...
Name the Revocation Co...
Select CA Certificate Loc...
Choose CA Certificate
Select Signing Certificate
Revocation Provider
Browse...
< Previous
Next >
Finish
Cancel

Select Signing Certificate

Revocation information is signed before it is sent to a client. The Online Responder can select a signing certificate automatically, or you can manually select a signing certificate for each Online Responder.

● Automatically select a signing certificate

☑ Auto-Enroll for an OCSP signing certificate

Certification authority: test-2.test\test-TEST-2-CA

Certificate Template: OCSPResponseSigning

○ Manually select a signing certificate

Note: You will need to specify a signing certificate for each member in the Online Responder Array.

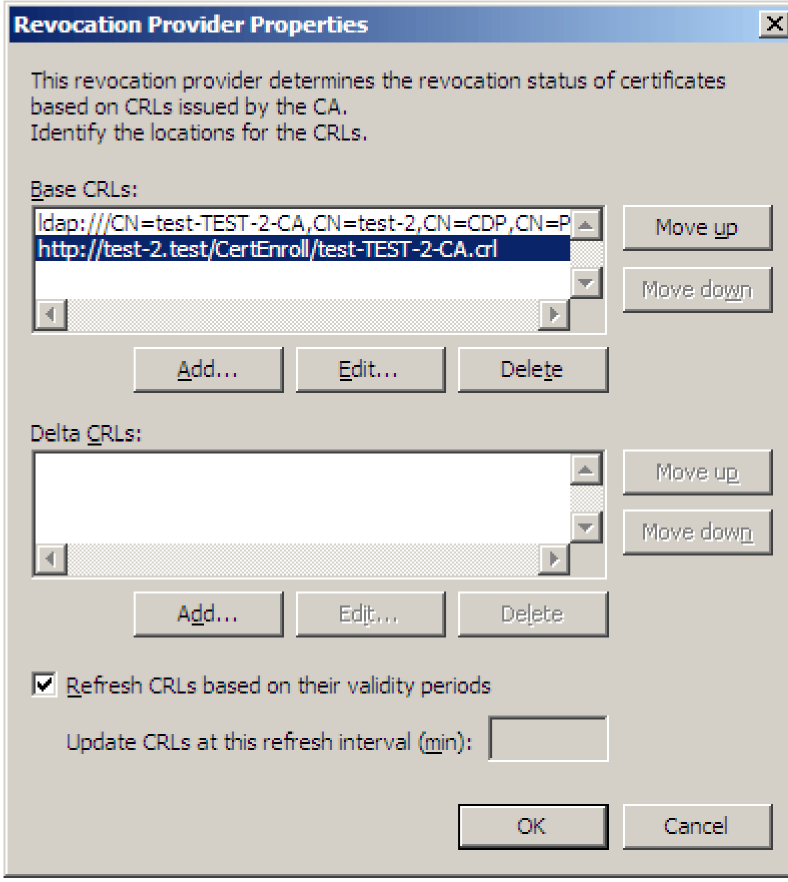
○ Use the CA certificate for the revocation configuration

6. After selecting the signing certificate, click **Next**.
7. On the **Revocation Provider** page, click **Provider**.

   Additional information is required to configure the revocation provider. The **Revocation Provider Properties** dialog box allows configuring the revocation provider by selecting the CRLs and the delta CRLs for the revocation configuration. The Online Responder will use this information to retrieve and cache the CRLs and delta CRLs that will be used to provide certificate status responses. In some cases, the locations of the CRLs will be populated based on information in AD DS. By default, the revocation provider will retrieve a new CRL and delta CRL based on the validity period specified in the CRL. The refresh interval can be manually set by entering a specific refresh interval rate. The minimum interval is five minutes.

If the CA is configured to issue delta CRLs, the revocation provider will use the URL provided in the **Base CRLs** list to retrieve the base CRL and will use the information included in the base CRL itself to retrieve the delta CRLs. The **Delta CRLs** list should be used only if you would like the revocation provider to retrieve the delta CRLs from a different location than the one specified in the base CRL.

Figure 22: Revocation Provider Properties



Revocation Provider Properties

This revocation provider determines the revocation status of certificates based on CRLs issued by the CA.
Identify the locations for the CRLs.

Base CRLs:

```
ldap:///CN=test-TEST-2-CA,CN=test-2,CN=CDP,CN=P
http://test-2.test/CertEnroll/test-TEST-2-CA.crl
```

Delta CRLs:

☑ Refresh CRLs based on their validity periods

Update CRLs at this refresh interval (min):

8. To close the **Revocation Provider Properties** dialog box, click **OK**.
9. To create the revocation configuration, click **Finish**.

Note

The revocation provider will always look for a valid CRL and a delta CRL on the local computer before trying to retrieve them from the network. If the Online Responder is installed on the same computer as the CA, the values configured in the revocation provider are ignored.

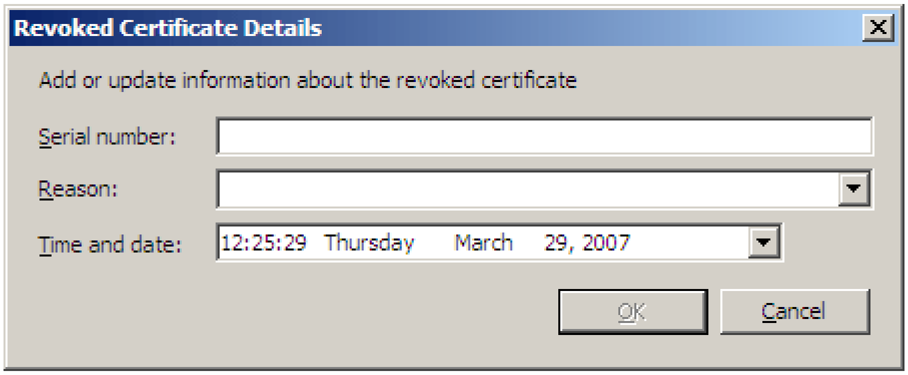
Modifying a revocation configuration

After a revocation configuration is created, it can be modified. This is done by selecting the revocation configuration to be edited from the Revocation Configurations view, and then clicking **Edit Properties** on the **Action** menu or in the **Actions** pane.

Local CRL. The **Local CRL** tab allows locally managing revoked certificates for a revocation configuration. When this option is used, the Online Responder manages a local list of revoked certificates in addition to the CA CRL and delta CRL. This feature is useful when the CA is not responding and cannot publish CRLs or when the Online Responder cannot retrieve the CRL. The local revocation information supersedes information in a CA-published CRL. For example, if a certificate is listed as revoked in the local CRL but is not listed in the CA-published CRL, the Online Responder will still issue a response in which the specified certificate is revoked.

To add a certificate to the **Local revoked certificates** list, you first need to select the **Enable local CRL** check box and then click **Add**. The **Revoked Certificate Details** dialog box (Figure 23) requires the certificate's serial number, the revocation reason, and the effective date for the revocation.

Figure 23: Revoked Certificate Details dialog box



Revoked Certificate Details

Add or update information about the revoked certificate

Serial number:

Reason:

Time and date: 12:25:29 Thursday March 29, 2007

Revocation Provider. The **Revocation Provider** tab allows reconfiguring the revocation provider for the specified revocation configuration. Clicking the **Provider** button will display the same dialog box as in the Creating Revocation Configuration wizard.

Signing. The **Signing** tab (Figure 24) allows configuring the following response signing options:

- **Hash algorithm**. The hash algorithm to be used when signing the response.
- **Do not prompt for credentials for cryptographic operations**. If the signing key is strongly protected by an additional password, selecting this option means the Online Responder will not prompt the user for the password and will fail silently. Understanding this option is important when using HSMs to store the OCSP signing key. If using an HSM and this option is selected, CryptoAPI is instructed not to show the PIN dialog box for accessing the private key, and the signing operation will fail. If this option is not selected, the PIN dialog box will be displayed the first time the configuration is loaded, which can occur when the service starts or when the revocation configuration is loaded for the first time.

Note

Do not select this option if HSM is used to protect private keys.

- **Automatically use renewed signing certificates**. This option instructs the Online Responder to automatically use renewed signing certificates without asking the Online Responder administrator to manually assign them.
- **Allow Nonce requests**. This option instructs the Online Responder to inspect and process an OCSP request nonce extension. If a nonce extension is included in the OCSP request and this option is selected, the Online Responder will ignore any cached OCSP response and will create a new response that includes the nonce provided in the request. If this option is disabled and a request that includes a nonce extension is received, the Online Responder will reject the request with an "unauthorized" error.

Note

The Microsoft OCSP client does not support the nonce extension.

Note

If a non-critical extension is included in the request, the Online Responder ignores the extension and provides a response. If a critical extension is included in the request the Online Responder will reject the request with an "unauthorized" error.

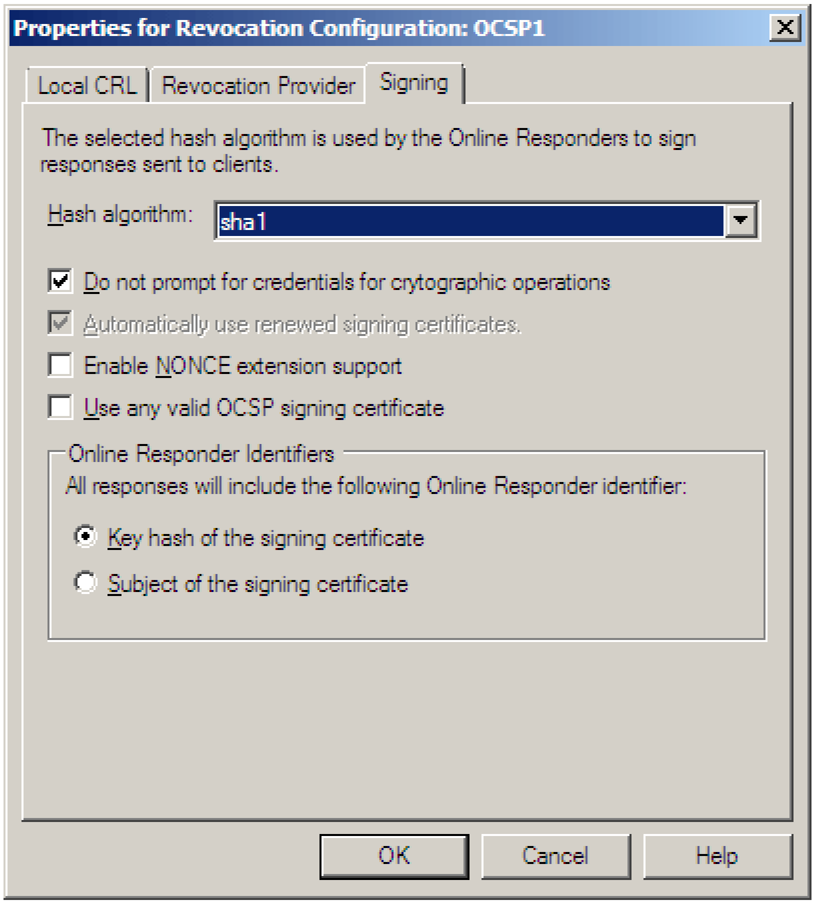
- **Use any valid OCSP signing certificate**. By default the Online Responder will only use signing certificates that are issued by the same CA that issued that certificate being validated. This option allows modifying the default behavior and instructs the Online Responder to use any valid existing certificate that includes the OCSP Signing EKU extension.

Note

Starting with Windows Vista this deployment model is not supported and will fail if this option is selected.

- **Online Responder Identifiers**. This option is used to select whether to include the key hash or the subject of the signing certificate in the response. This is required per RFC 2560.

Figure 24: Revocation Configuration dialog box, Signing tab



Properties for Revocation Configuration: OCSP1

The selected hash algorithm is used by the Online Responders to sign responses sent to clients.

Hash algorithm: sha1

☑ Do not prompt for credentials for crytographic operations

☑ Automatically use renewed signing certificates.

☐ Enable NONCE extension support

☐ Use any valid OCSP signing certificate

Online Responder Identifiers

All responses will include the following Online Responder identifier:

● Key hash of the signing certificate

○ Subject of the signing certificate