Single Sign On

Contents

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Chapter 1

Overview

Topics:

Overview of Single Sign-On

SSO is a process that allows pre-authenticated users to access APM, without having to re-enter their credentials.

The APM user logs on initially using a form-based enterprise login screen. SSO is a common procedure in enterprises, where a user logs in once and gains access to different applications without the need to re-enter log-in credentials at each application. SSO authentication facilitates seamless network resource usage. SSO mechanisms vary, depending on application type.

SSO advantages include:

- Eliminates credential re-authentication.
- Streamlines local and remote application and desktop workflow.
- Minimizes phishing.
- Improves compliance through a centralized database.
- Provides detailed user access reporting.

APM supports the following types of authentication for SSO:

- Pass-through authentication
  Enables the users to enter their Windows credentials in the APM login page and APM validates the credentials against Active Directory.
- Security Assertion Markup Language (SAML) authentication
  Enables the users to navigate to the SSO URL (hosted on the APM Application Server) that redirects the browser to a preconfigured URL (not hosted on the APM Application Server), which is the Identity Provider (IDP). If there are multiple databases, and when the user selects a database, the user account is then authenticated and the IDP provides the web browser a token through a cookie. If the token is valid, the user can access APM.

SSO Workflow

This workflow provides the basic, high-level steps for using this module. The steps and links provided in the workflow do not necessarily reference every possible procedure.

Procedure

1. Set up APM SSO by configuring an identity provider.
2. Enable SSO on-site or off-site authentication.
3. Configure the APM server.

Chapter 2

Set up APM SSO

Topics:

About Setting Up APM SSO

About Setting up APM SSO

To set up APM SSO, perform one of the following tasks:

- Configure Azure Active Directory as the Identity Provider (IDP)
- Configure IDP on Active Directory

Configure Azure Active Directory as the Identity Provider (IDP)

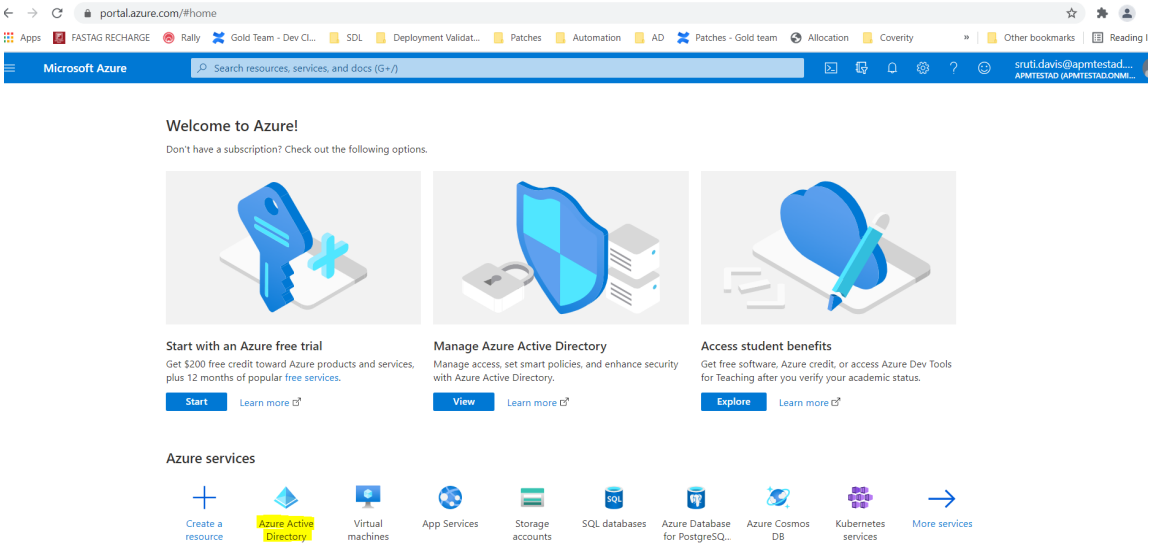
Configure Azure Active Directory as the Identity Provider (IDP)

Before You Begin

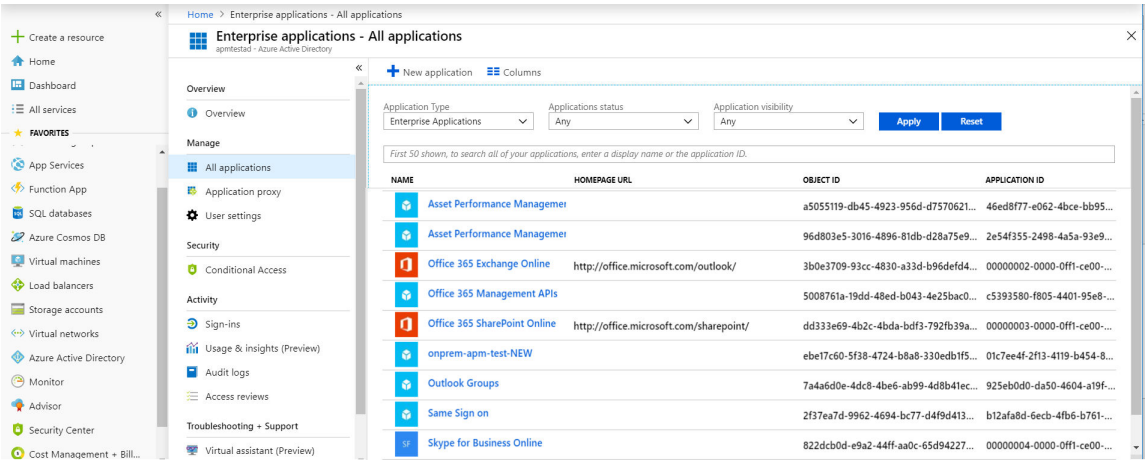
You must have an Azure Active Directory (Azure AD) instance.

Procedure

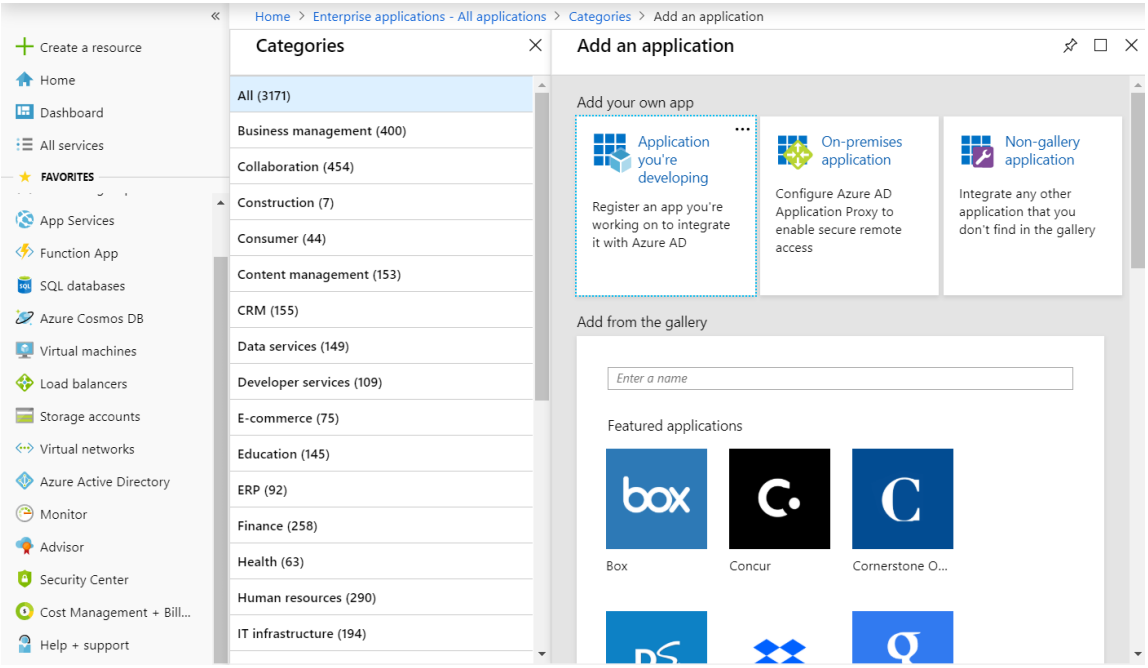
1. Sign in to the Azure portal and select **Azure Active Directory**.



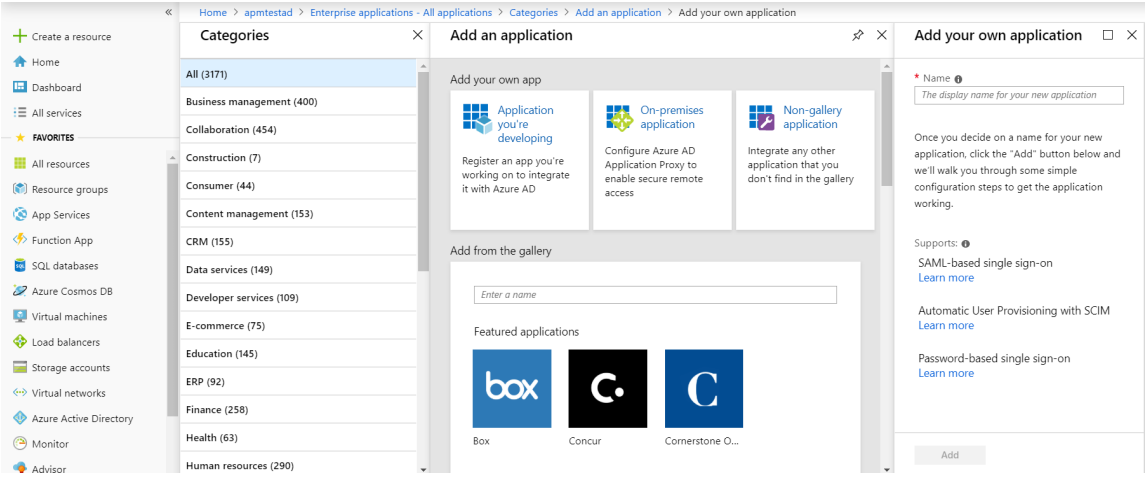
2. In the navigation pane, select **Enterprise applications**.
   The **Enterprise applications – All applications** page appears.



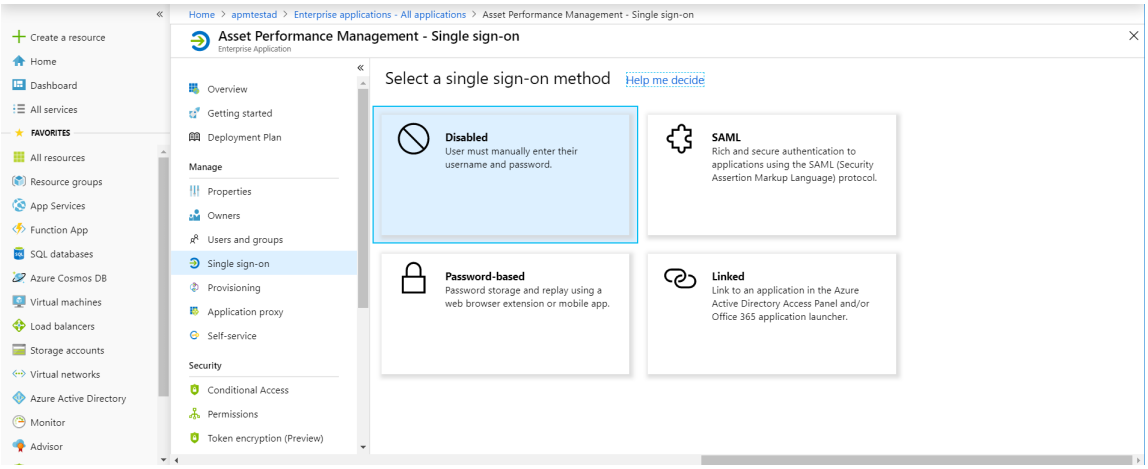
3. Select **New application**.
   The **Add an application** section appears.



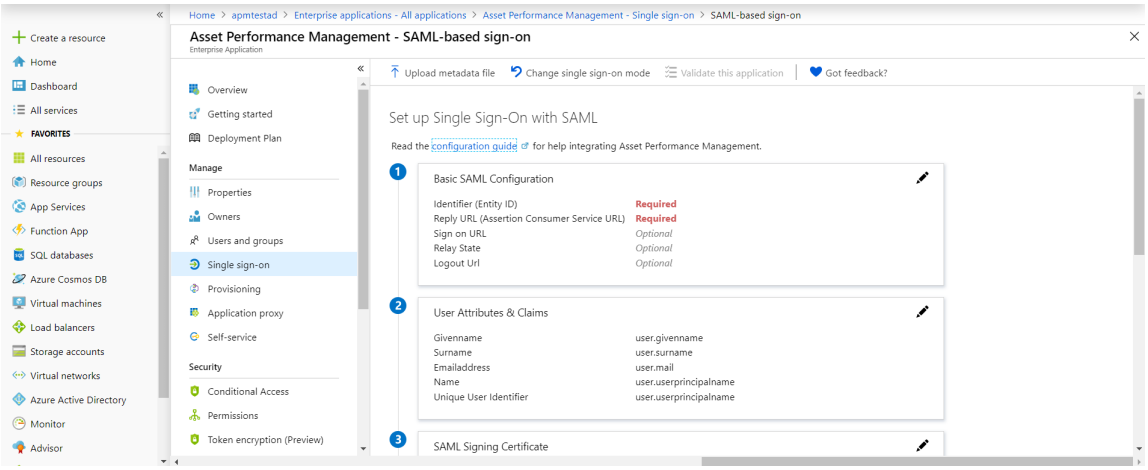
4. Select **Non-gallery application**.
   The **Add your own application** section appears.



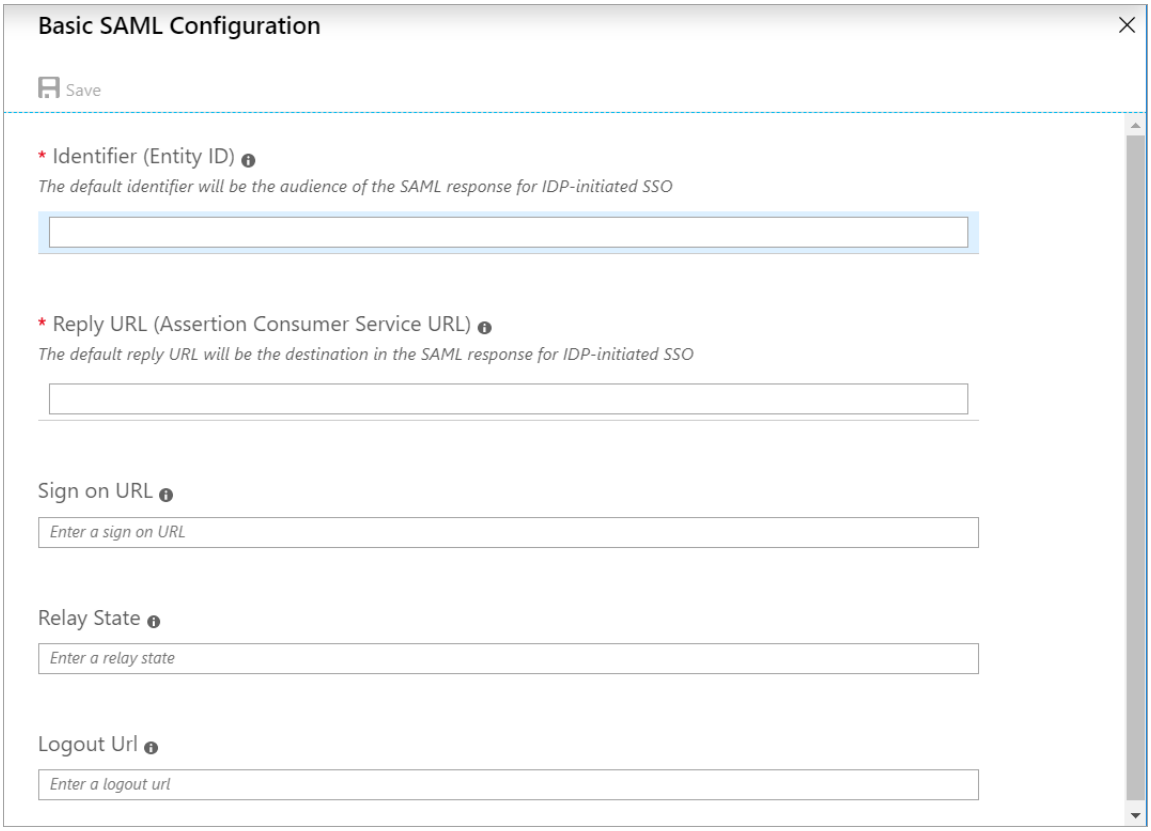
5. In the **Name** box, enter a name for the application that you want to configure with Azure AD, and then select **Add**.
   The page of the added application appears.
6. In the navigation pane of the application page, select **Single sign-on**.
   The **Select a single sign-on method** section appears.



7. Select **SAML**.
   The **Set up Single Sign-On with SAML** section appears.



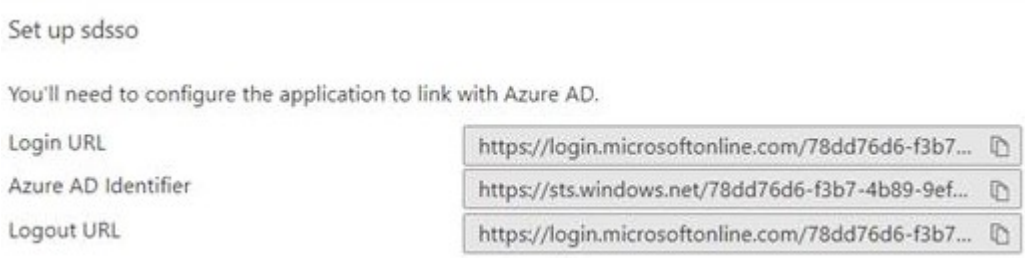
8. In the **Basic SAML Configuration** section, select .
   The **Basic SAML Configuration** window appears.



9. Enter the following details.

Identifier (Entity ID)	Enter a unique ID. **Note:** This ID will be used in the `saml.json` file for the service provider name. Therefore, note the ID.
Reply URL (Assertion Consumer Service URL)	The application callback URL where the response will be posted. Enter the URL in the following format: `https://`<APM `Server Name`>/`Meridium/api/core/security/ssologinauth`, where <APM *Server Name*> is the name of the APM server.
Sign on URL	The application URL, which initiates the same sign-on. Enter the URL in the following format: `https://`<APM `Server Name`>/`meridium/index.html`, where <APM *Server Name*> is the name of the APM server.

10. Select **Save**.
11. In the **SAML Signing Certificate** section, select **Download** corresponding to `Certificate (Base 64)`.
12. From the **Set up <Identifier>,** section copy the Login URL and Azure AD Identifier.



Note: The Login URL and Azure AD Identifier will be used in the `saml.json` file for SingleSignOnServiceURL and PartnerIdentityProviderConfigurations Name, respectively.

13. In the application server, copy the downloaded `Certificate (Base 64)` to `C:\Program Files\Meridium\ApplicationServer\api`. Please refer to section Install the Token Signing idp.cer Certificate on the Application Server on page 40 , steps 5 - 8 for installing the certificate.
14. Modify the `saml.json` file as follows:
    - `LocalServiceProviderConfiguration Name` with the value that you entered and noted for the **Identifier (Entity ID)** box.
    - `PartnerIdentityProviderConfigurations Name` with the Azure AD Identifier.
    - `SingleSignOnServiceURL` with the Login URL.
    - `AssertionConsumerServiceUrl` with the URL that you entered in the **Reply URL (Assertion Consumer Service URL)** box.
    - `PartnerCertificates FileName` with the downloaded certificate name.

```
{
    "SAML": {
        "$schema": "https://www.componentspace.com/schemas/saml-
config-schema-v1.0.json",
        "Configurations": [
            {
                "LocalServiceProviderConfiguration": {
                    "Name": "sdsso",
                    "AssertionConsumerServiceUrl": "https://<APM
Server Name>/Meridium/api/core/security/ssologinauth",
                    "LocalCertificates": [
                        {
                            "FileName": "sp.pfx",
                            "Password": "password"
                        }
                    ]
                },
                "PartnerIdentityProviderConfigurations": [
                    {
                        "Name": "https://sts.windows.net/78dd76d6-
f3b7-4b89-9efc-ef8d5483b7ea/",
                        "Description": "Azure AD",
                        "SignAuthnRequest": true,
                        "WantSamlResponseSigned": false,
                        "WantAssertionSigned": true,
                        "WantAssertionEncrypted": false,
                        "UseEmbeddedCertificate": false,
                        "SingleSignOnServiceUrl": "https://
login.microsoftonline.com/78dd76d6-f3b7-4b89-9efc-ef8d5483b7ea/
saml2",
                        "DigestAlgorithm": "http://www.w3.org/
2001/04/xmlenc#sha256",
                        "SignatureAlgorithm": "http://www.w3.org/
```

```
2001/04/xmldsig-more#rsa-sha256",
                        "PartnerCertificates": [
                            {
                                "FileName": "sdsso.cer"
                            }
                        ]
                    }
                ]
            }
        ]
    }
}
```

15. Add users to the enterprise application by accessing the **Users and groups** section.
    a) Select Users and groups section in the left navigation pane.
    b) Click on Add user/group button to add a new user to this enterprise application. Search for the user in the Users list and then click on Assign.

    Users are added to the enterprise application.

Next Steps

- Enable SSO

Configure Identity Provider (IDP) on Active Directory

About Configuring Identity Provider (IDP) on Active Directory

About This Task

You must configure IDP on Active Directory using the Active Directory Federation System (AD FS) Management Console.

Note: The strings and the URLs in AD FS are case-sensitive.

To configure IDP on Active Directory, you must perform the following tasks:

Procedure

1. Add Relying Party Trusts on page 9
2. Add Claim Rules on page 20
3. Add Certificates on page 26
4. Federation Service Identifier from ADFS on page 42

Add Relying Party Trusts

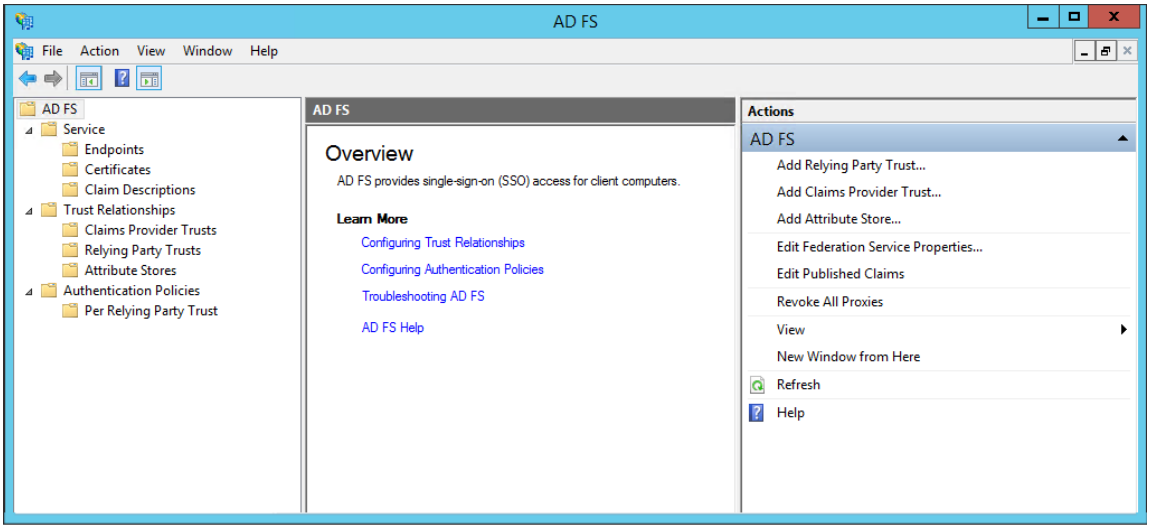
Before You Begin

- You must have administrative privileges to configure AD FS.
- Ensure that the /adfs/ls endpoint exists for SAML v2.0.

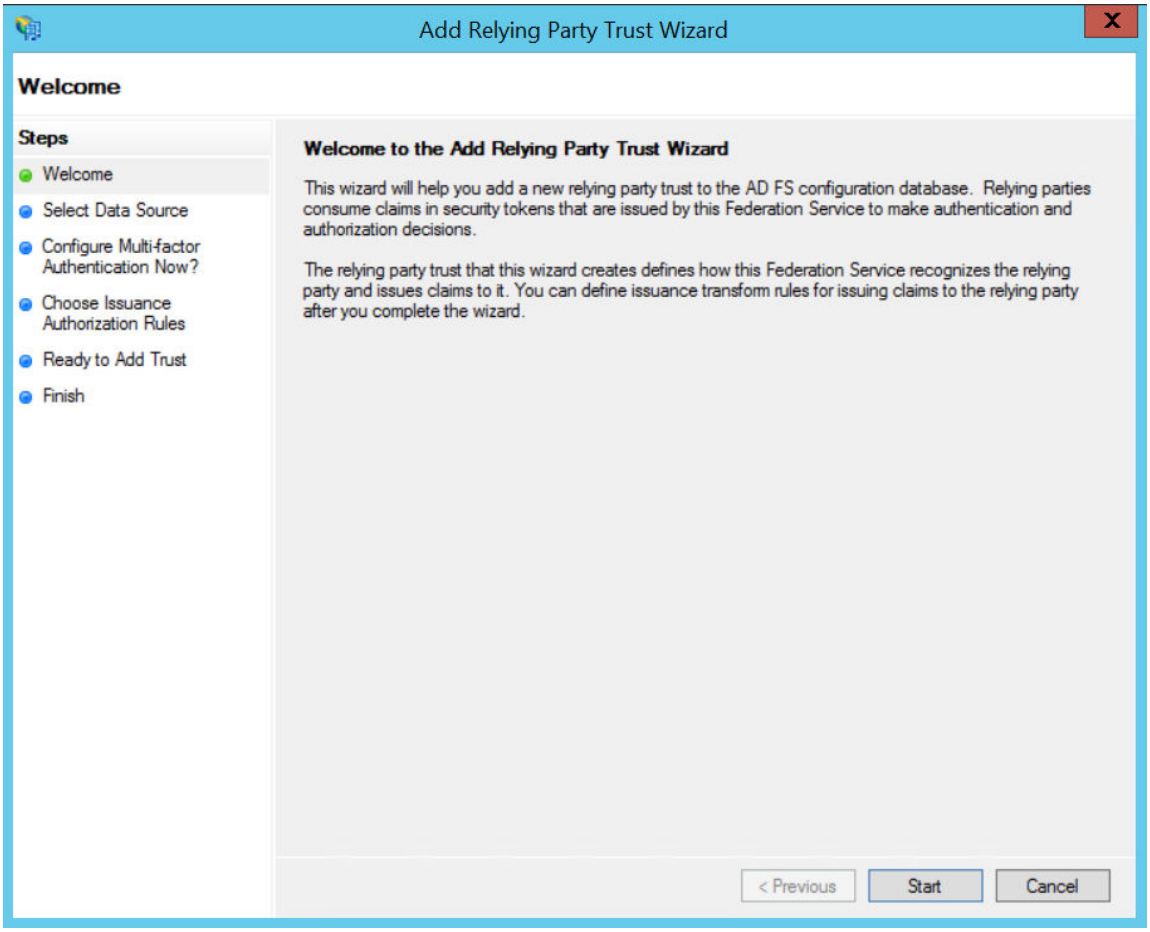
  Note: To add adfs/ls endpoint, refer to the AD FS documentation.
- Ensure that the token encrypting certificates exist.

Procedure

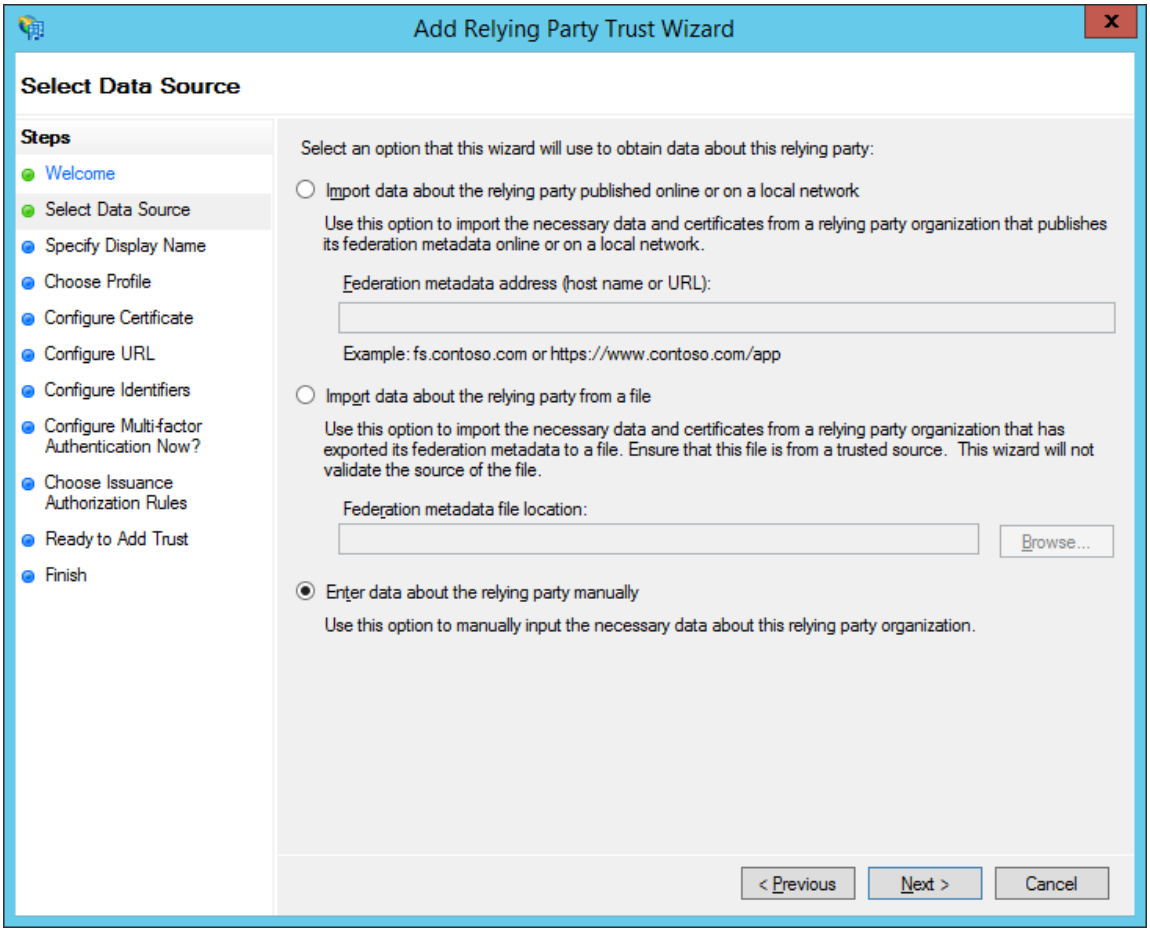
1. Access **Control Panel**, then select **System and Security**, and then select **Administrative Tools**.
2. Select **AD FS Management**.
   The **AD FS** window appears.



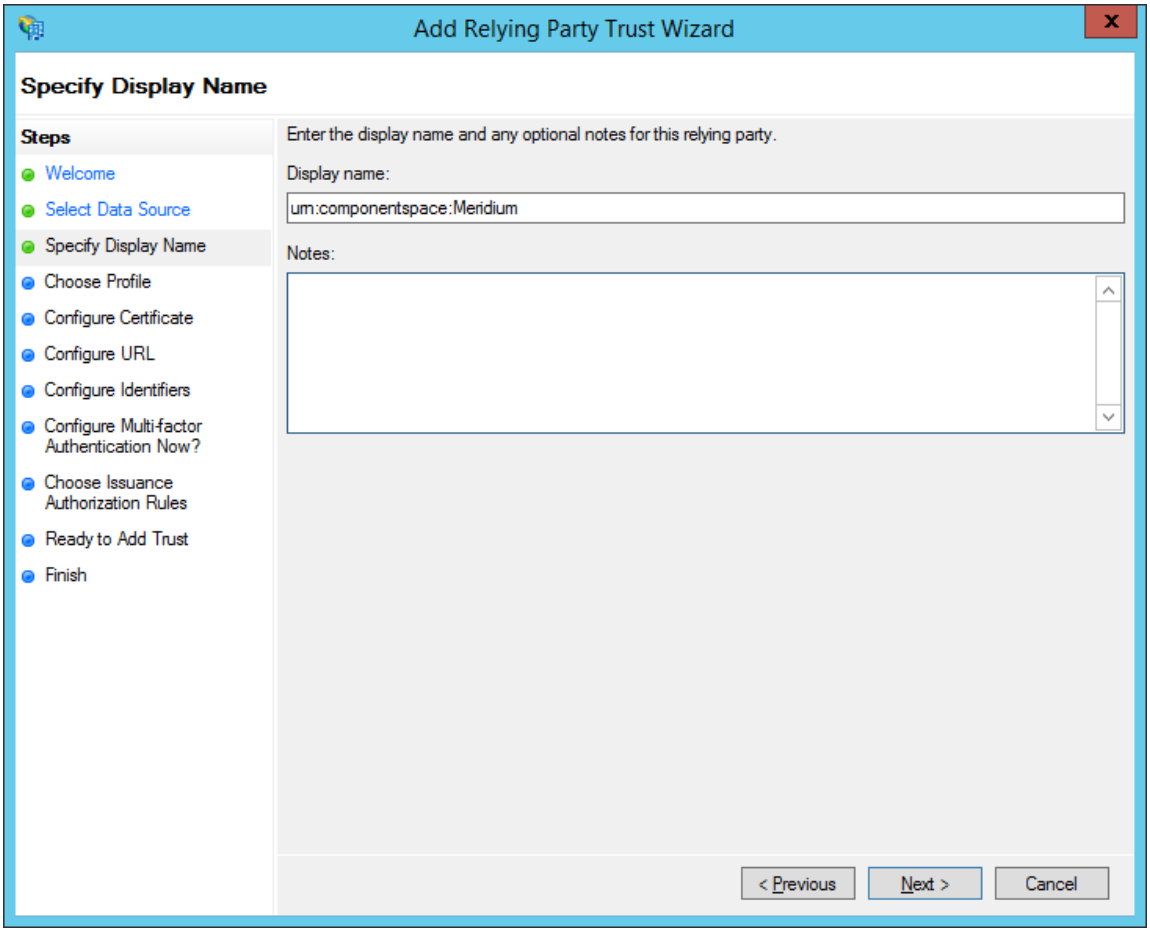
3. In the **Actions** section, select **Add Relying Party Trust**.
   The **Add Relying Party Trust Wizard** appears.



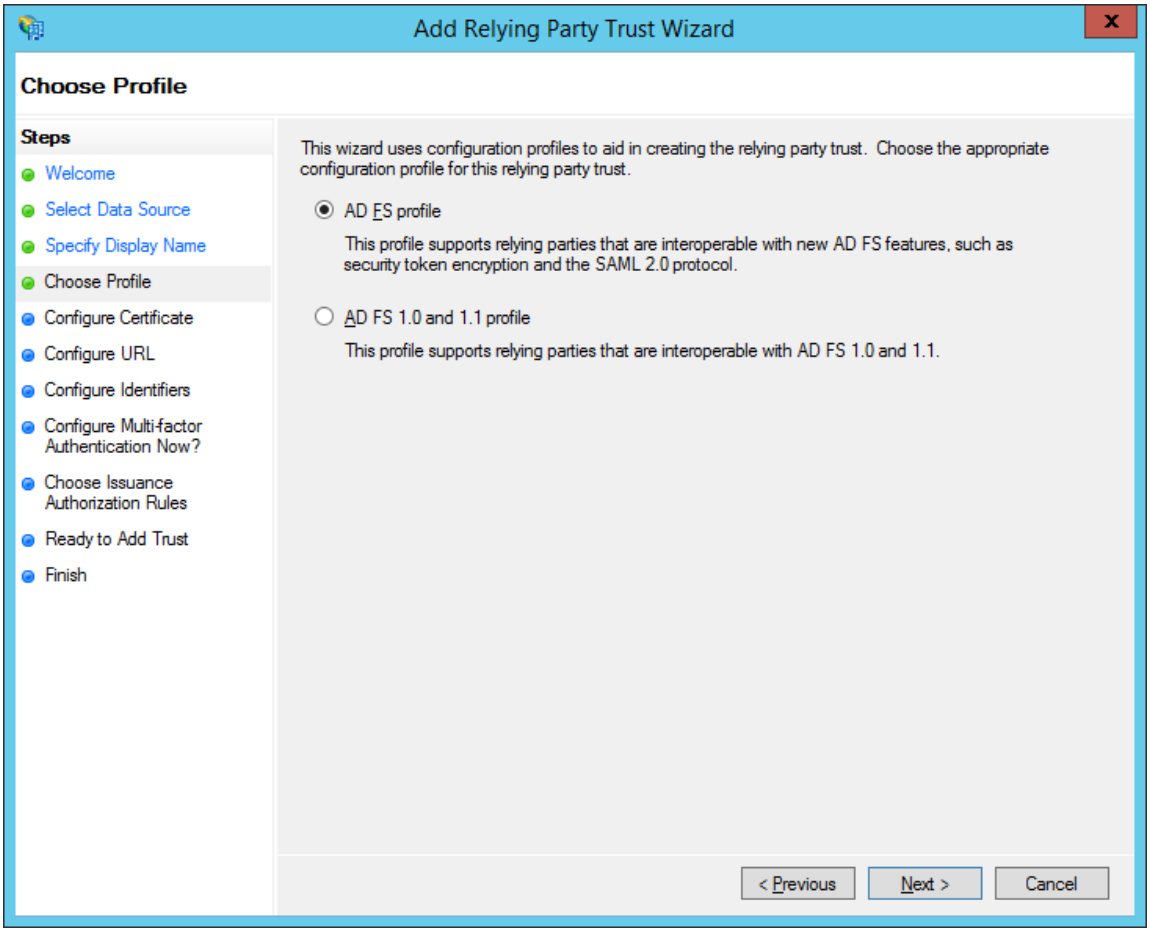
4. Select **Start**.
   The **Select Data Source** page appears.



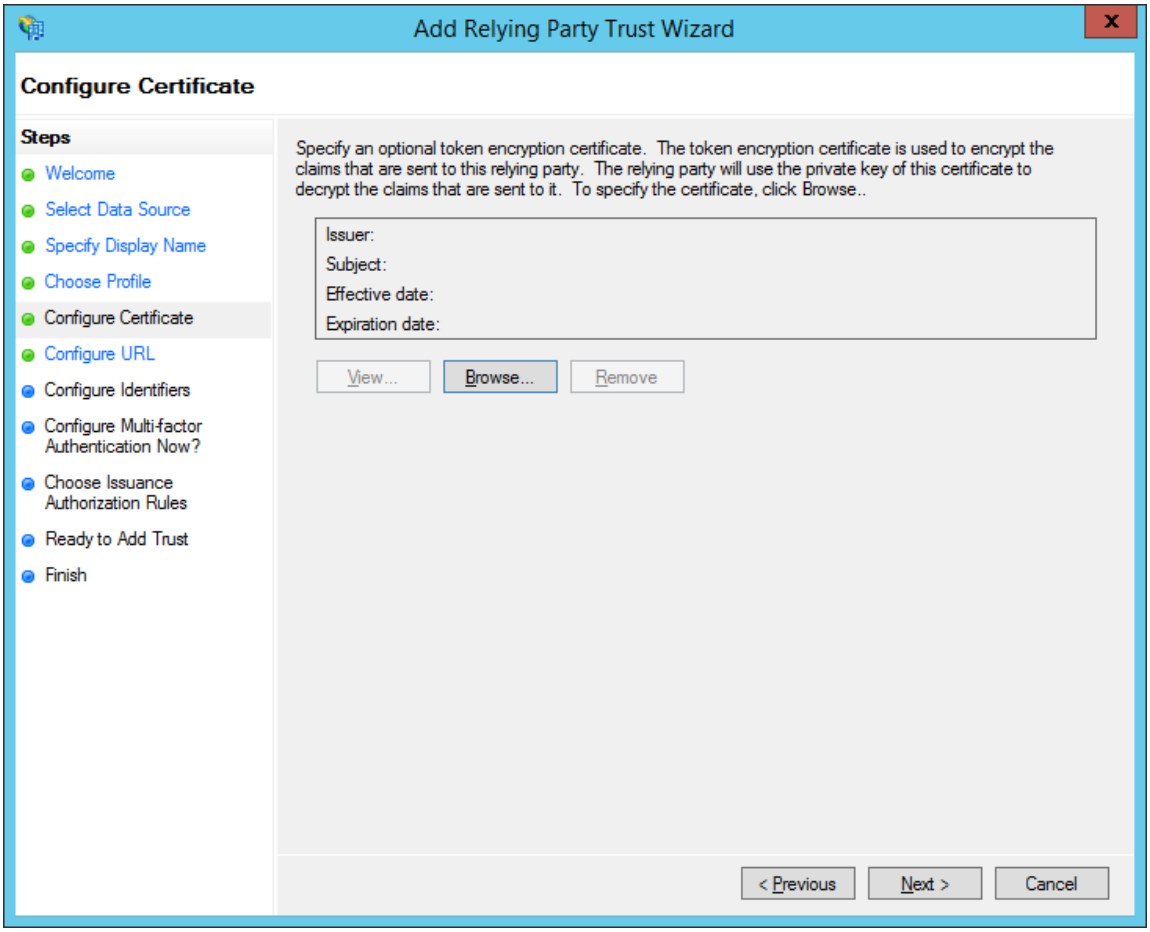
5. Select **Enter data about relying party manually**, and then select **Next**.
   The **Specify Display Name** page appears.



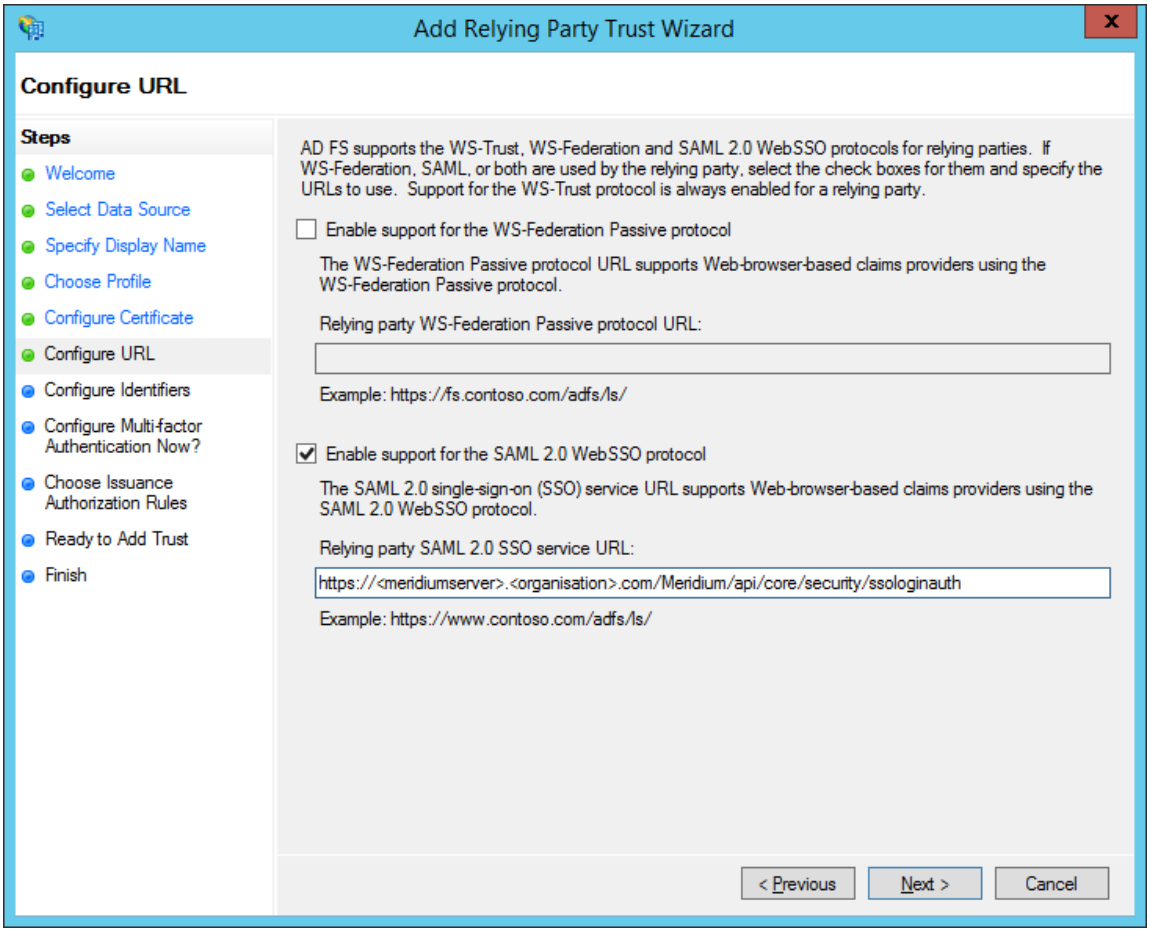
6. In the **Display name** box, enter **urn:componentspace:Meridium**, and then select **Next**.
   The **Choose Profile** page appears.



7. Select the **AD FS profile** option, and then select **Next**.
   The **Configure Certificate** page appears.



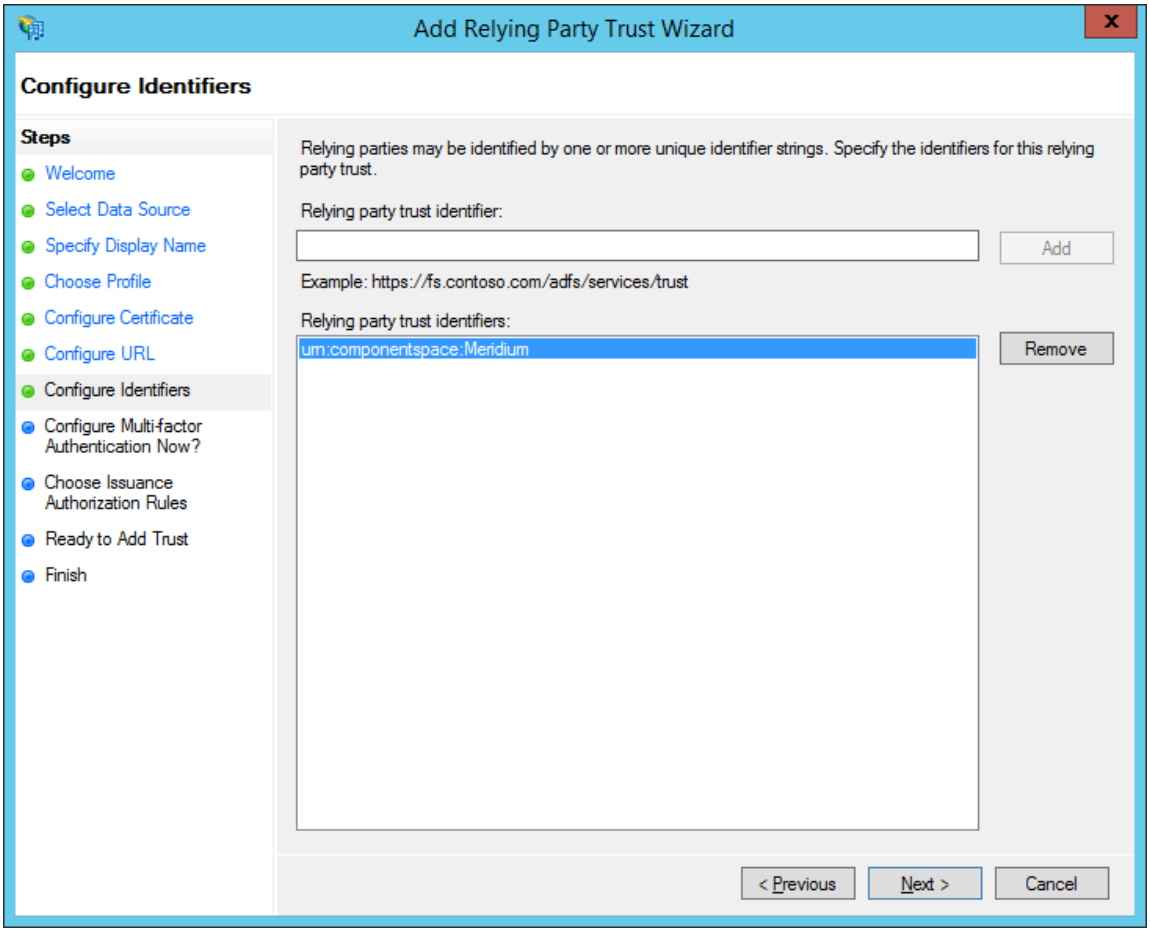
8. Select **Next**.
   The **Configure URL** page appears.



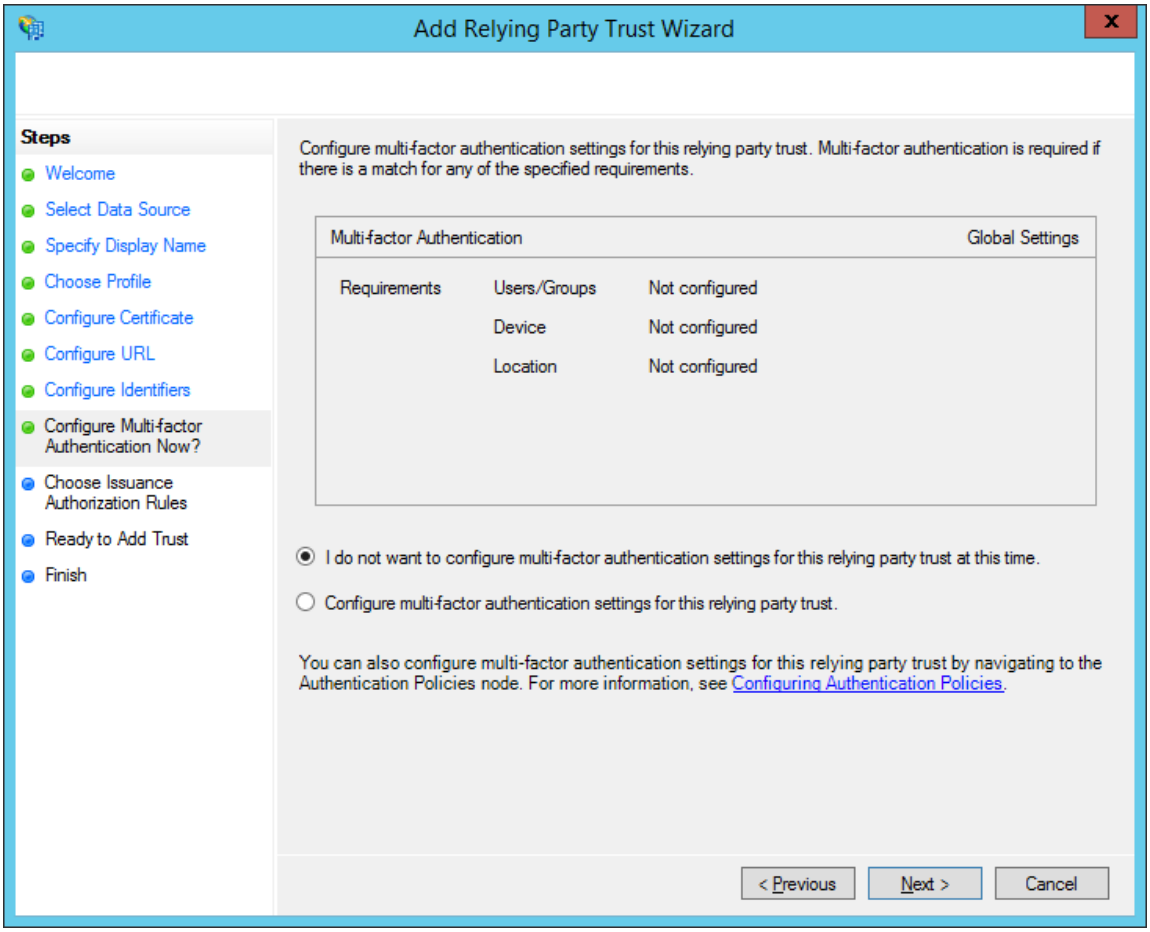
9. Select the **Enable Support for the SAML 2.0 WebSSO protocol** check box.
10. In the **Relying Party SAML 2.0 SSO service URL** box, enter `https://<APM Server Name>/Meridium/api/core/security/ssologinauth`, and then select **Next**.

    Note: The word Meridium is case-sensitive. Therefore, ensure that the first letter of the word is capitalized. Also, the URL must be same as the AssertionConsumerServiceUrl in the `saml.json` file.

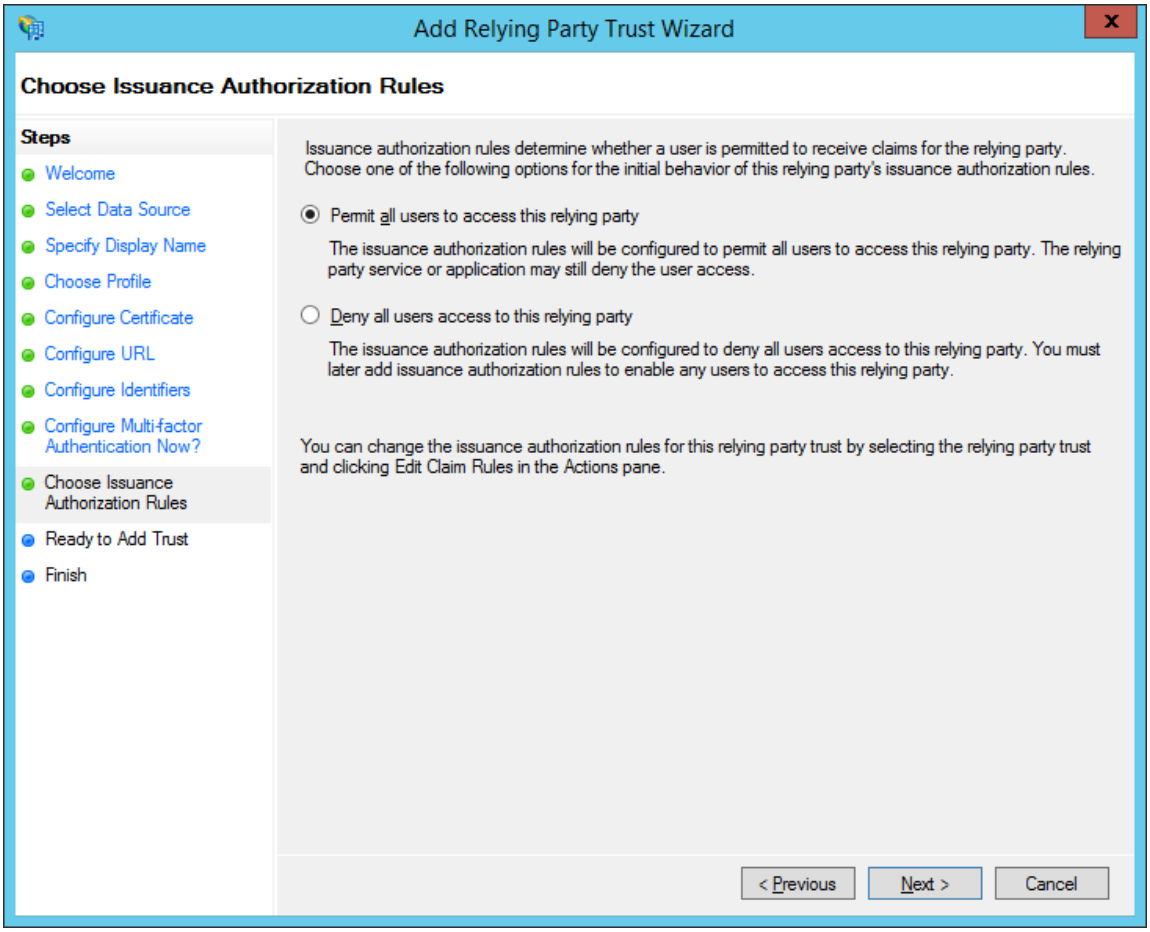
    The **Configure Identifiers** page appears.



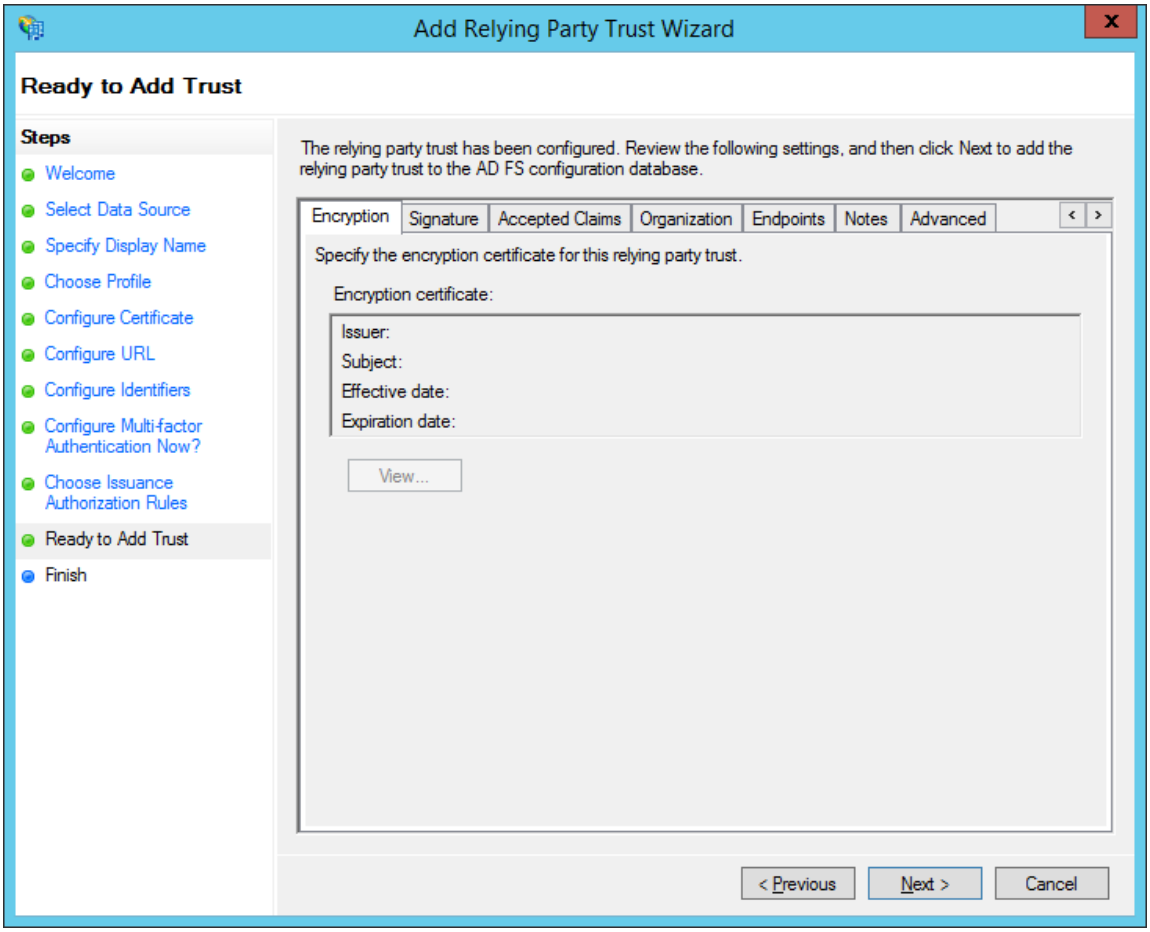
11. In the **Relying party trust identifier** box, enter `urn:componentspace:Meridium`, then select **Add**, and then select **Next**.
    The **Configure Multi-factor Authentication Now** page appears.



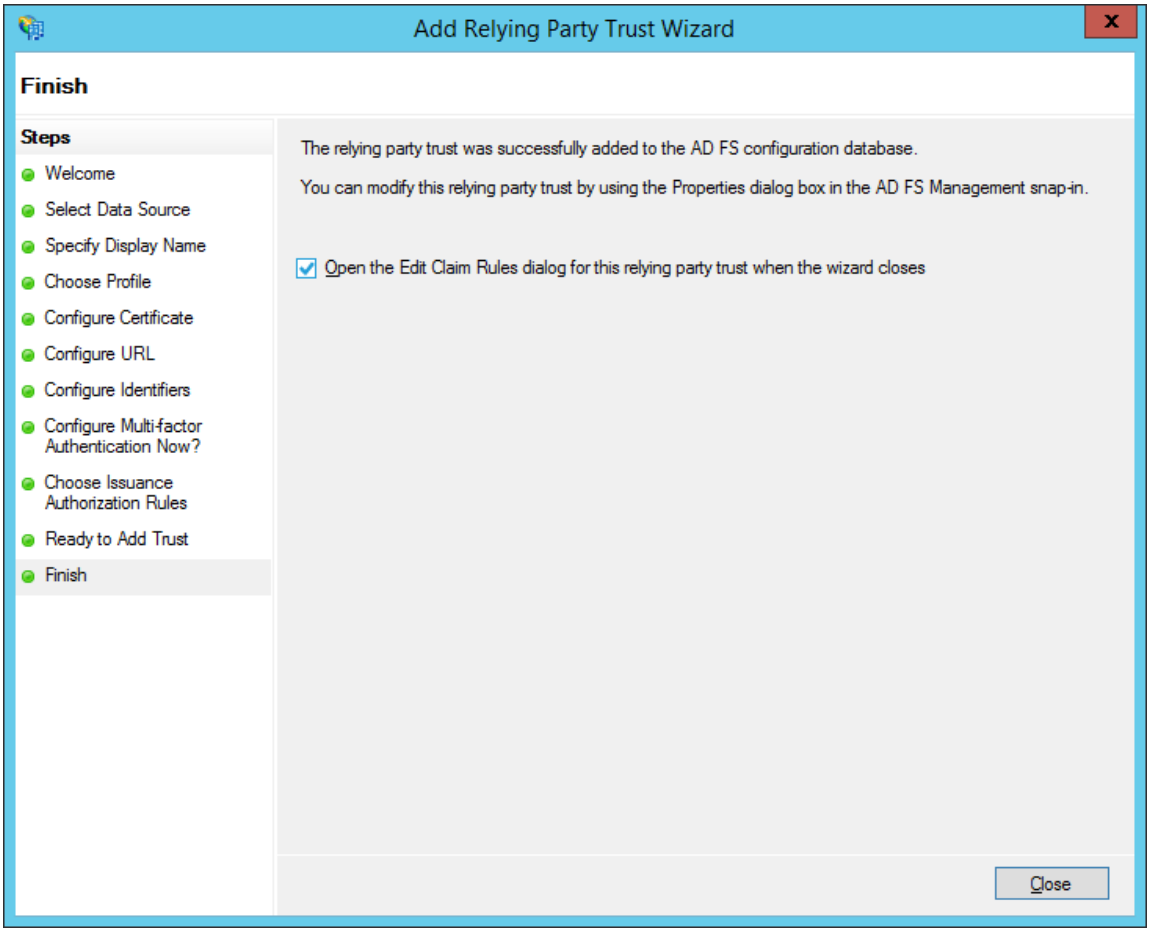
12. Select **I do not want to configure multi-factor authentication settings for this relying party trust at this time**, and then select **Next**.
    The **Choose Issuance Authorization Rules** page appears.



13. Select **Permit all users to access this relying party**, and then select **Next**.
    The **Ready to Add Trust** page appears.



14. Select **Next**.
    The **Finish** page appears.



15. Clear the **Open the Edit Claim Rules dialog for this relying party trust when the wizard closes** check box, and then select **Close**.

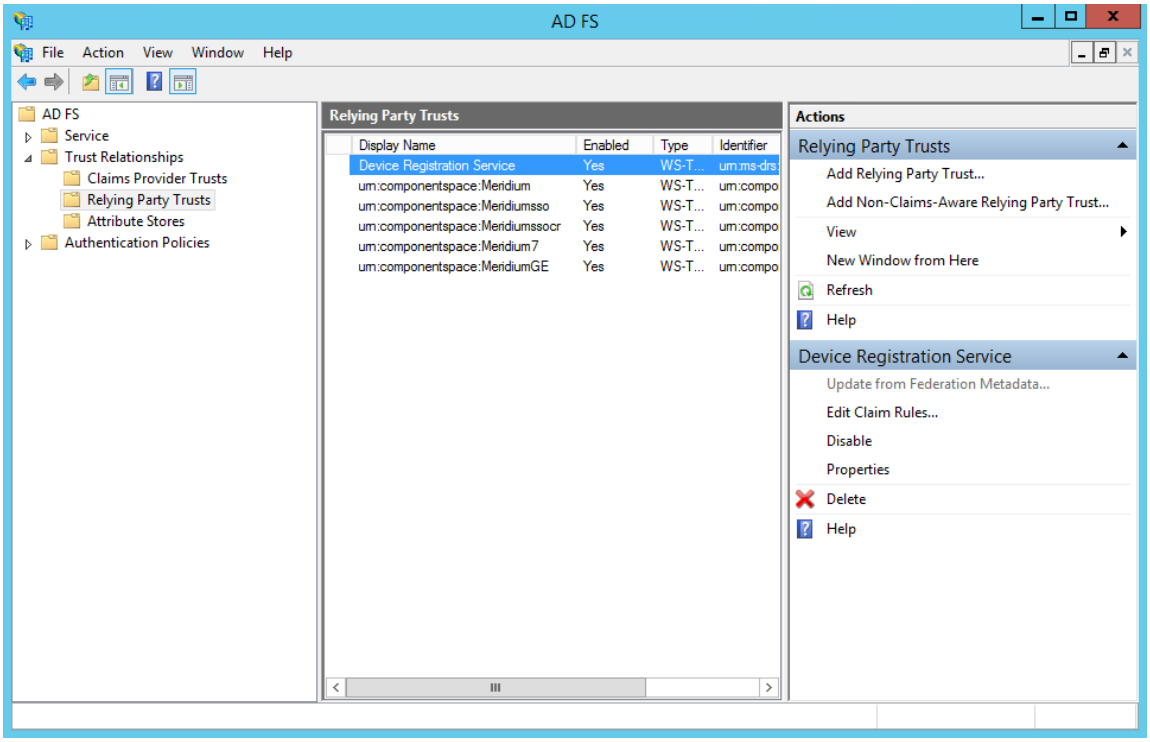
Next Steps

- Add Claim Rules on page 20

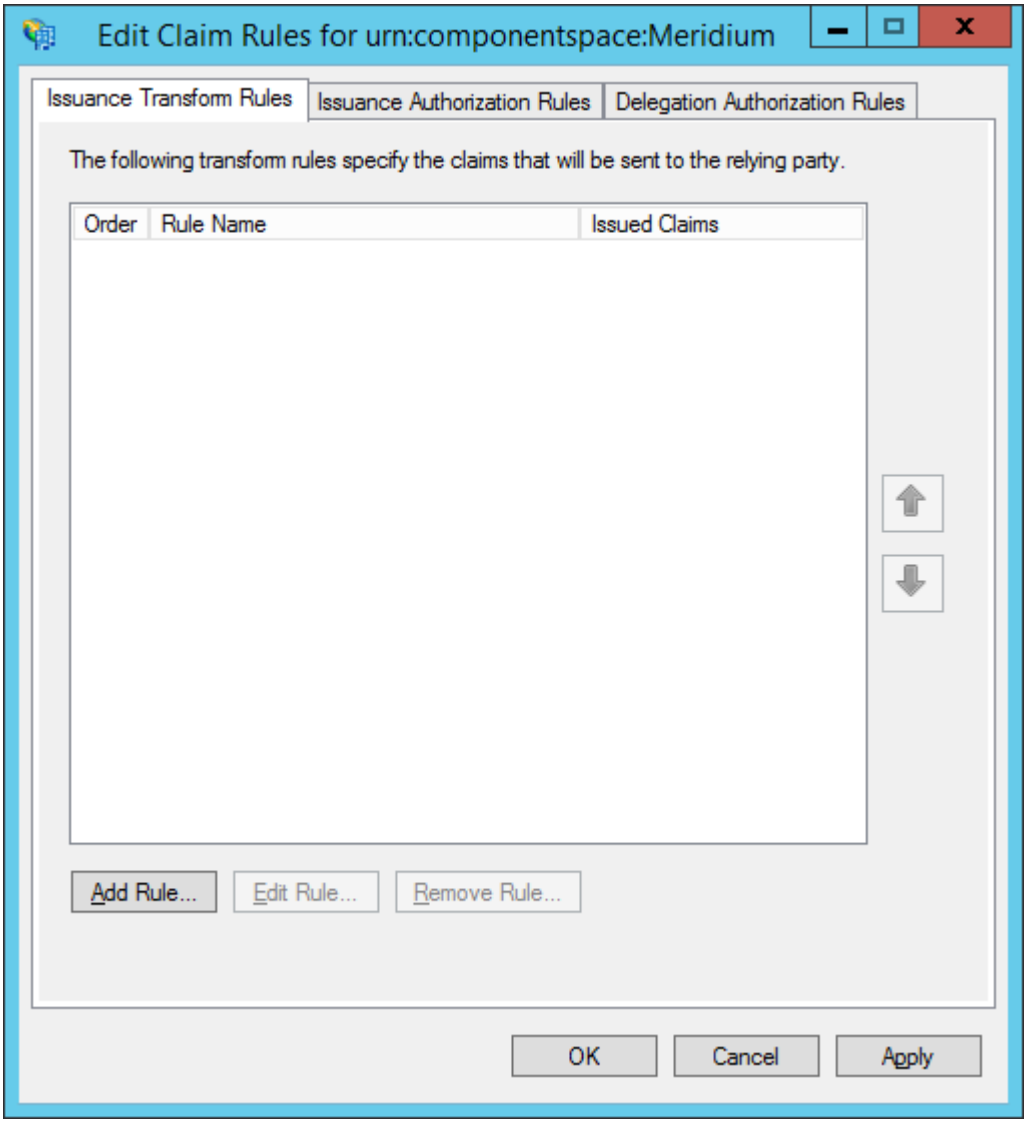
Add Claim Rules

Procedure

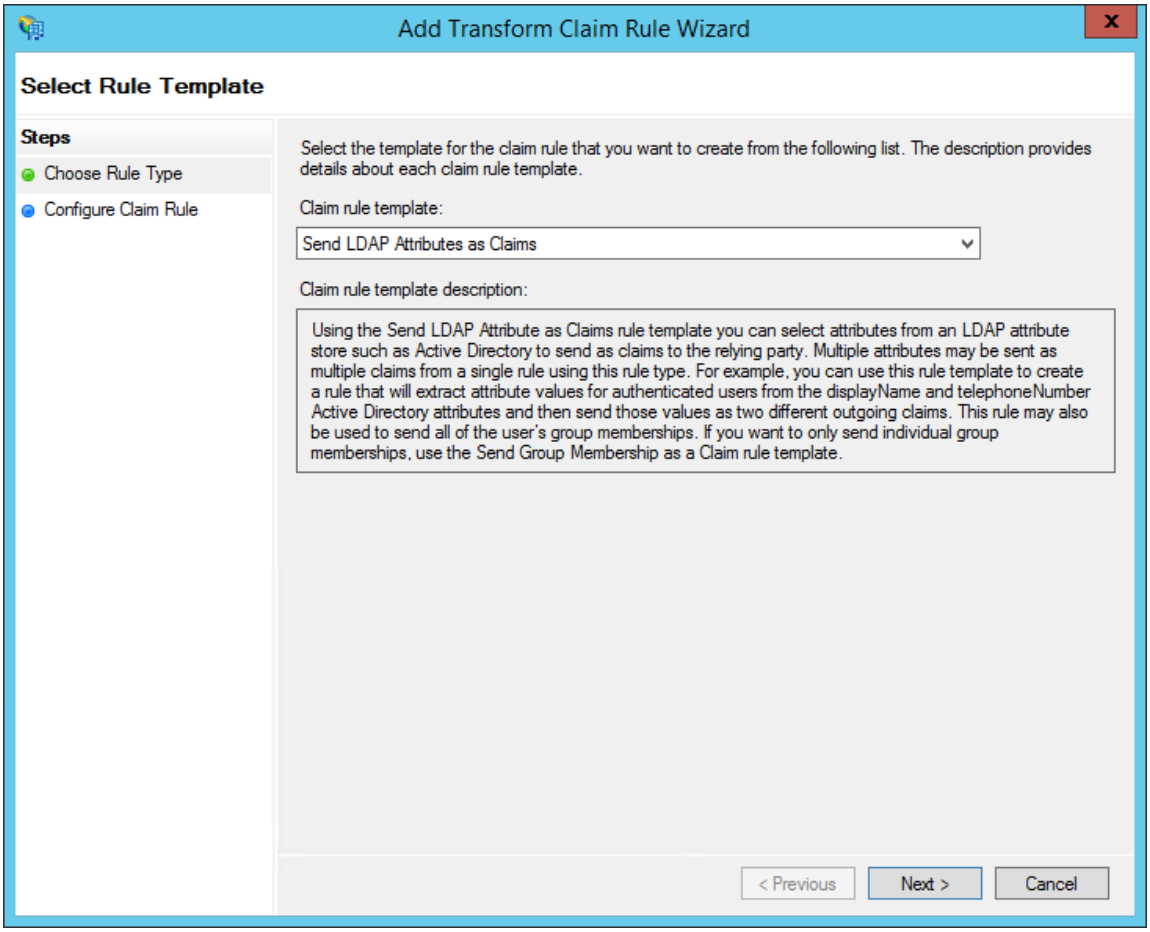
1. In the **AD FS** window, expand the **Trust Relationships** folder, and then select **Relying Party Trusts**. The **Relying Party Trusts** page appears.



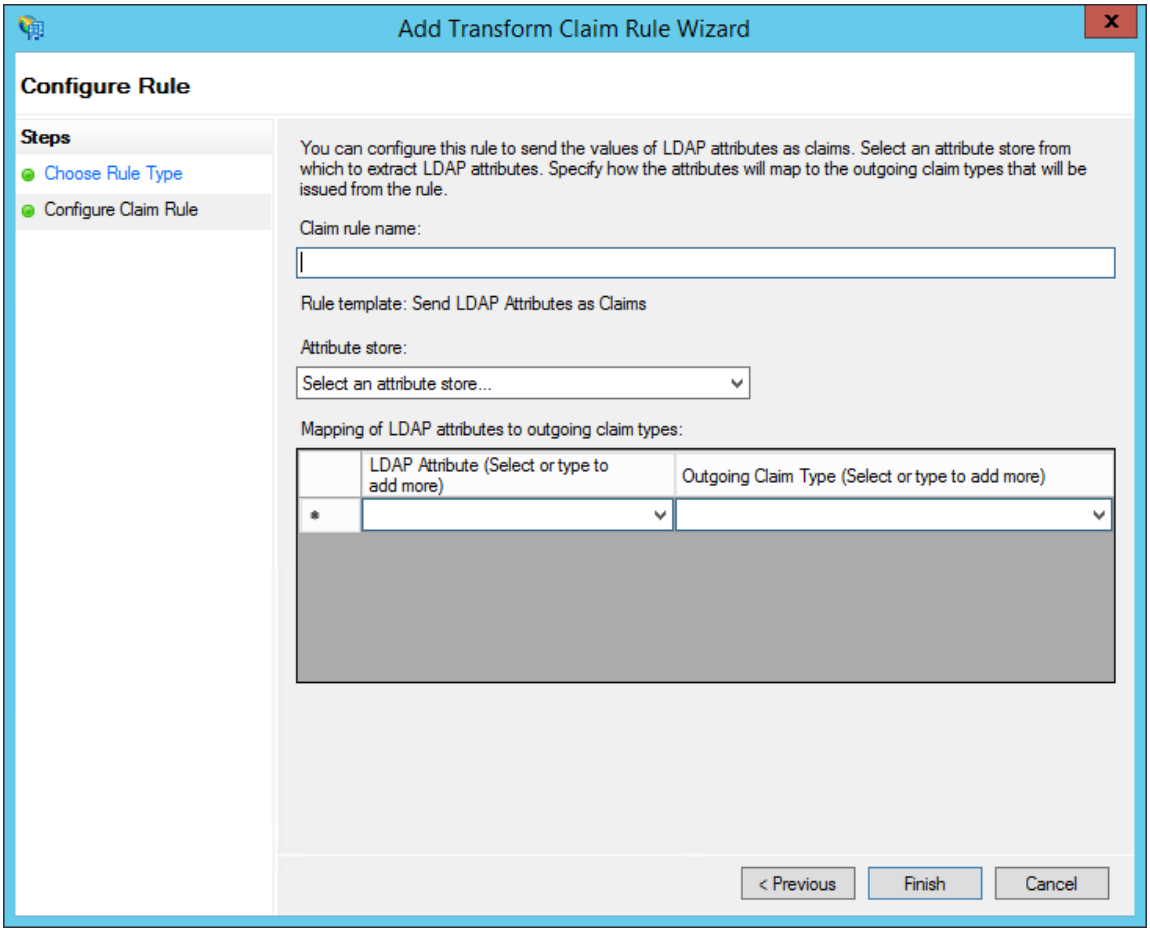
2. Select **urn:componentspace:Meridium**, and then, in the **Actions** section, select **Edit Claim Rules**. The **Edit Claim Rules for urn:componentspace:Meridium** window appears. Select **Issuance Transform Rules** tab.



3. Select **Add Rule**.
   The **Add Transform Claim Rule Wizard** window appears.

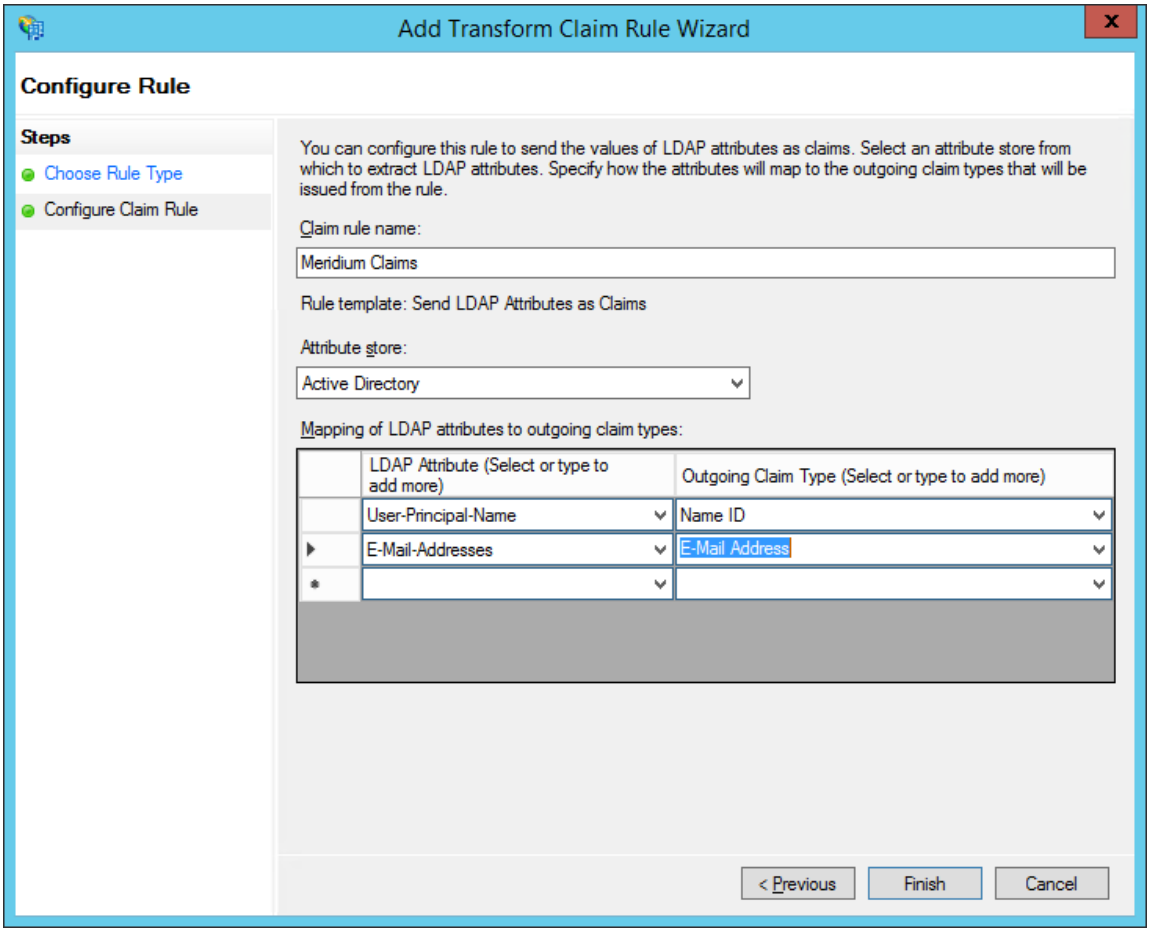


4. In the **Claim rule template** drop-down list box, select **Send LDAP Attributes as Claims**, and then select **Next**.
   The **Configure Rule** page appears.

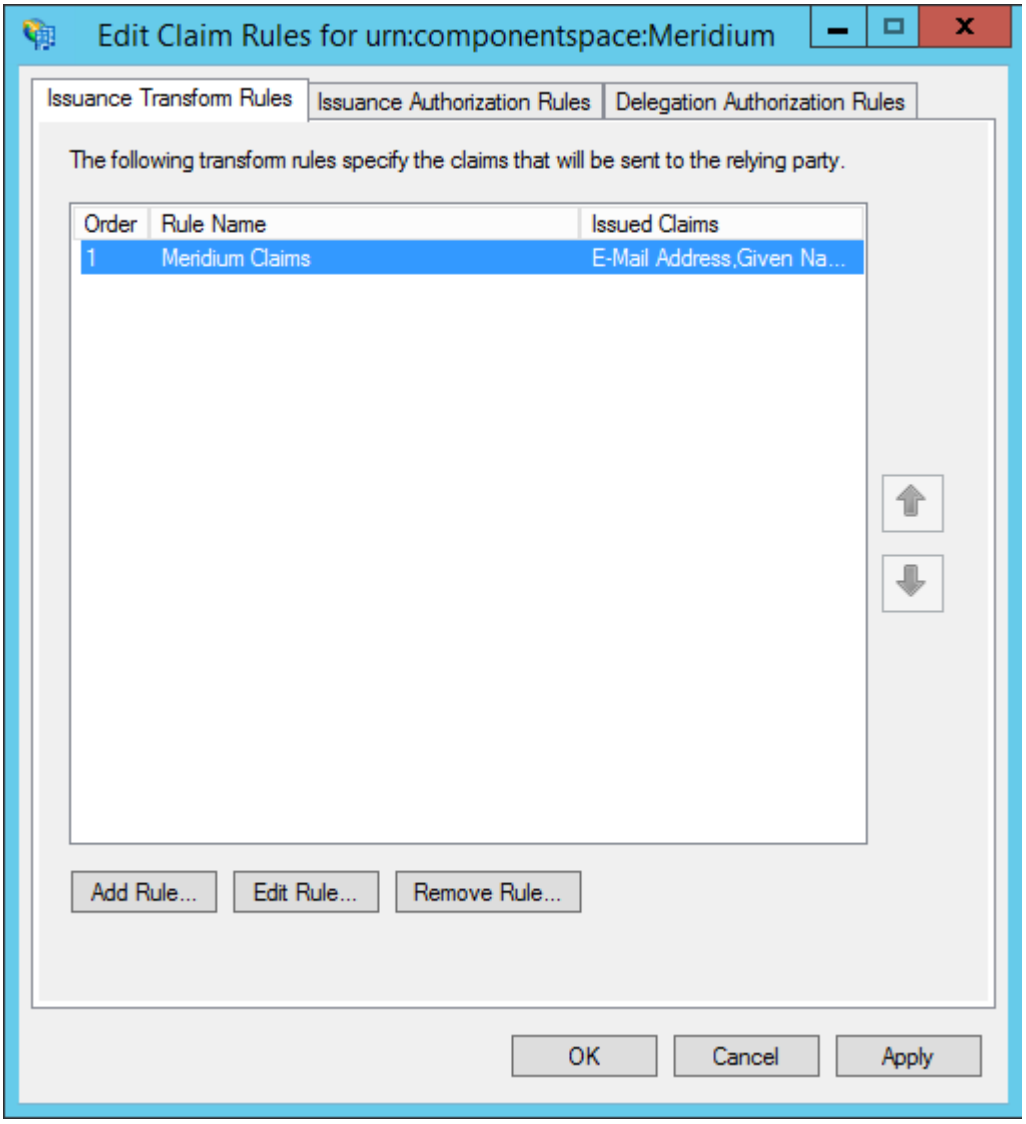


5. In the **Claim rule name** box, enter **Meridium Claims**, and then, in the **Attribute store** drop-down list box, select **Active Directory**.
6. Perform the following steps:
   - In the first drop-down list box in the **LDAP Attribute** column, select **User-Principal-Name**, and then, in the corresponding **Outgoing Claim Type** drop-down list box, select **Name ID**.
   - In the second drop-down list box in the **LDAP Attribute** column, select **E-mail-Addresses**, and then, in the corresponding **Outgoing Claim Type** drop-down list box, select **E-Mail Address**.

   The **Configure Rule** page is populated with the selected values.



7. Select **Finish**.
   The **Edit Claim Rules for urn:componentspace:Meridium** window appears.



8. Select **OK**.
   The claim rule is added to the **Edit Claim Rules for urn:componentspace:Meridium** window.

Next Steps

- Add Certificates on page 26

Add Certificates

About This Task

To add certificates, you must perform the following tasks:

Procedure

1. Install the Service Provider certificate (sp.pfx) on page 27
2. Export the Public Key Certificate on page 31
3. Copy the Certificate to Active Directory on page 38

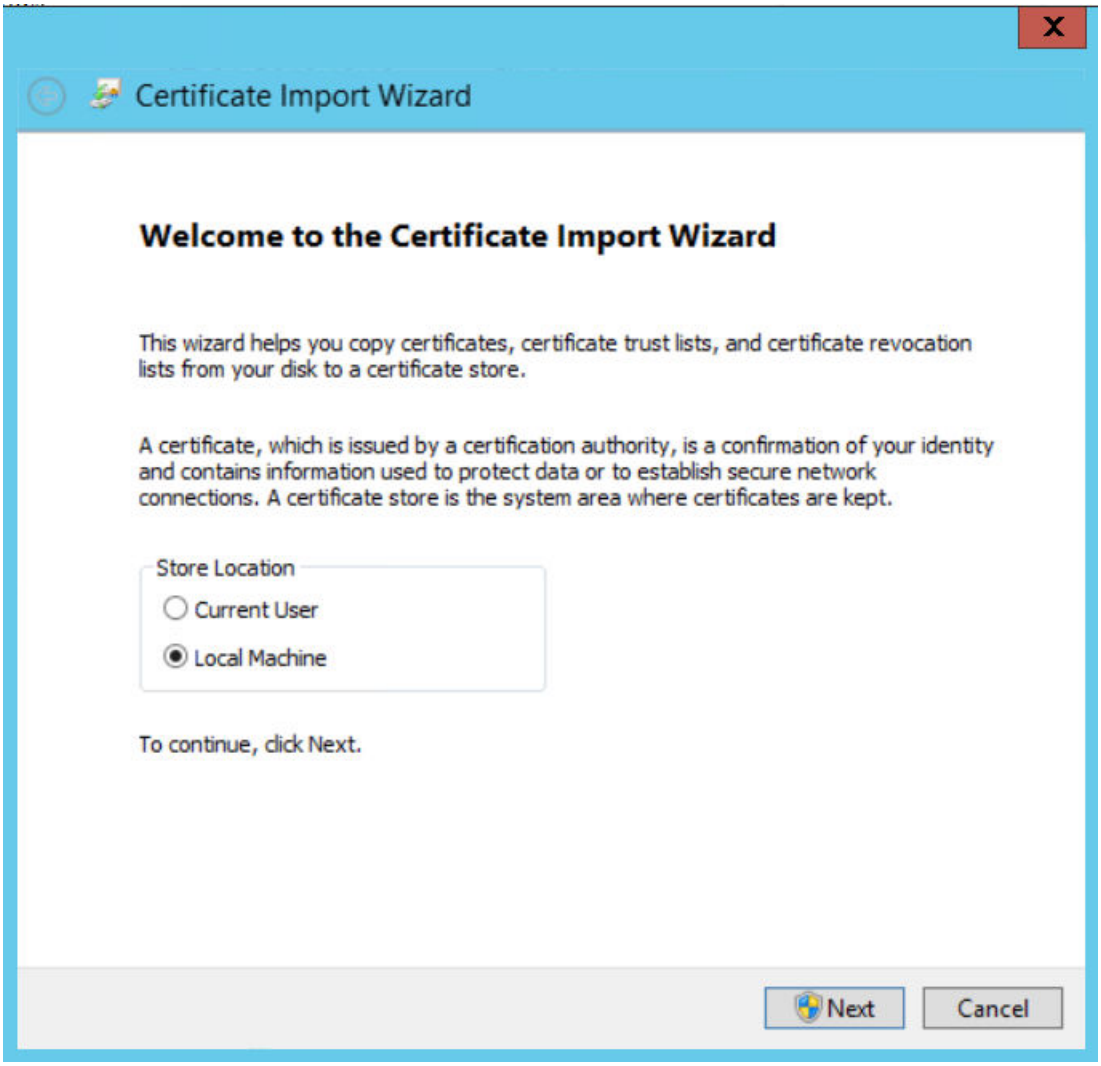
4. Install the Token Signing idp.cer Certificate on the Application Server on page 40

Install the Service Provider certificate (sp.pfx)

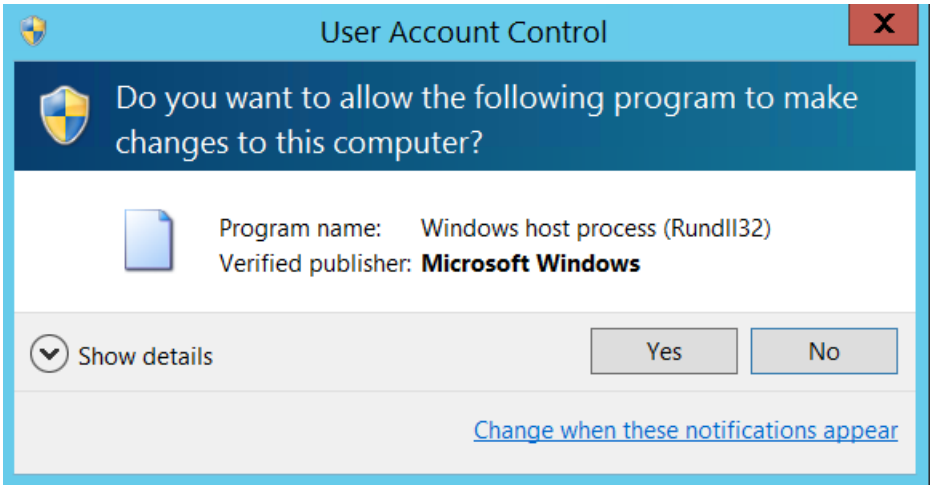
Procedure

1. Navigate to C:\Program Files\Meridium\ApplicationServer\api, where the service provider certificate file (sp.pfx) is located.

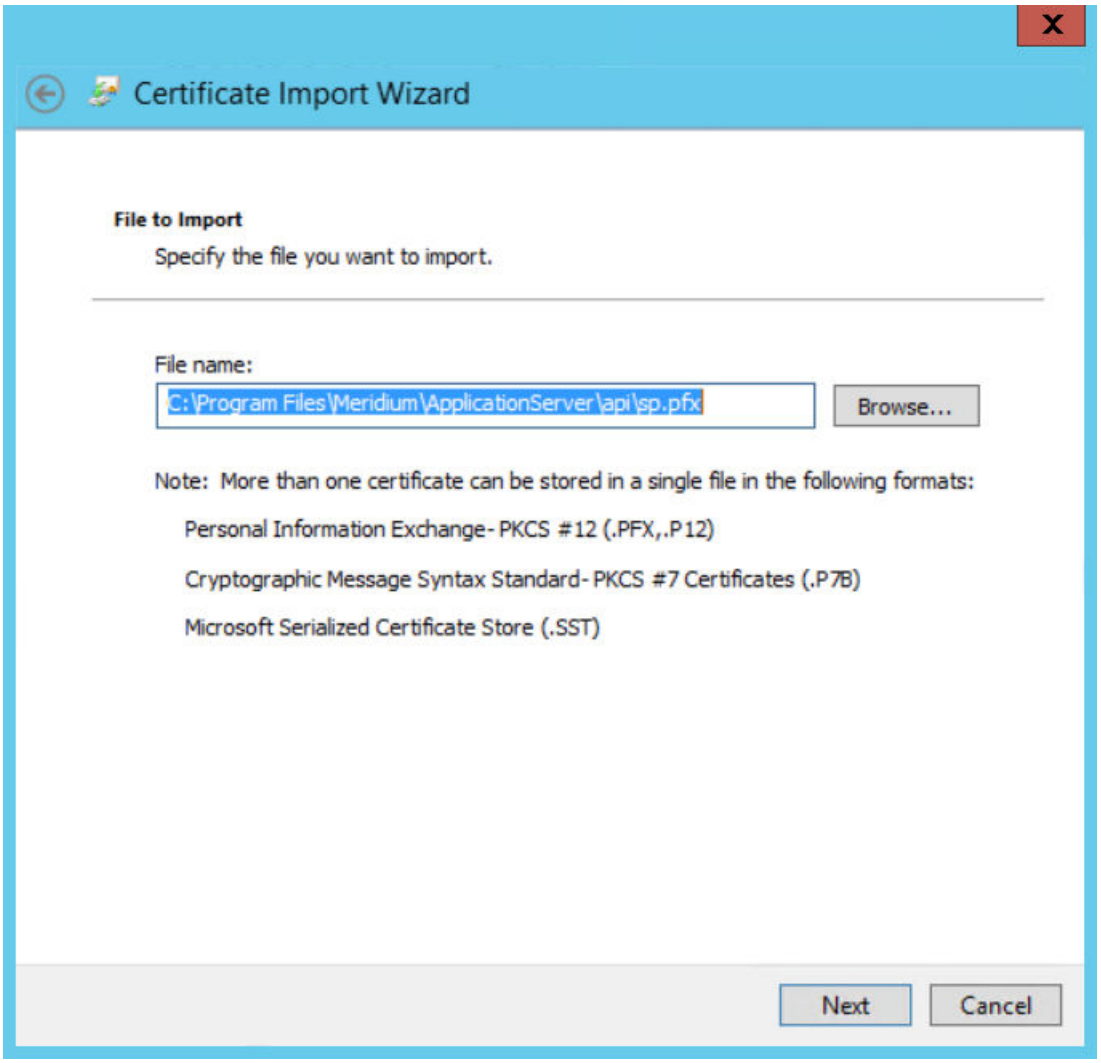
   Note: GE Vernova provides the service provider certificate file (sp.pfx). pfx is personal information exchange.
2. Right-click **sp**, and then select **Install PFX**.
   The **Certificate Import Wizard** appears.



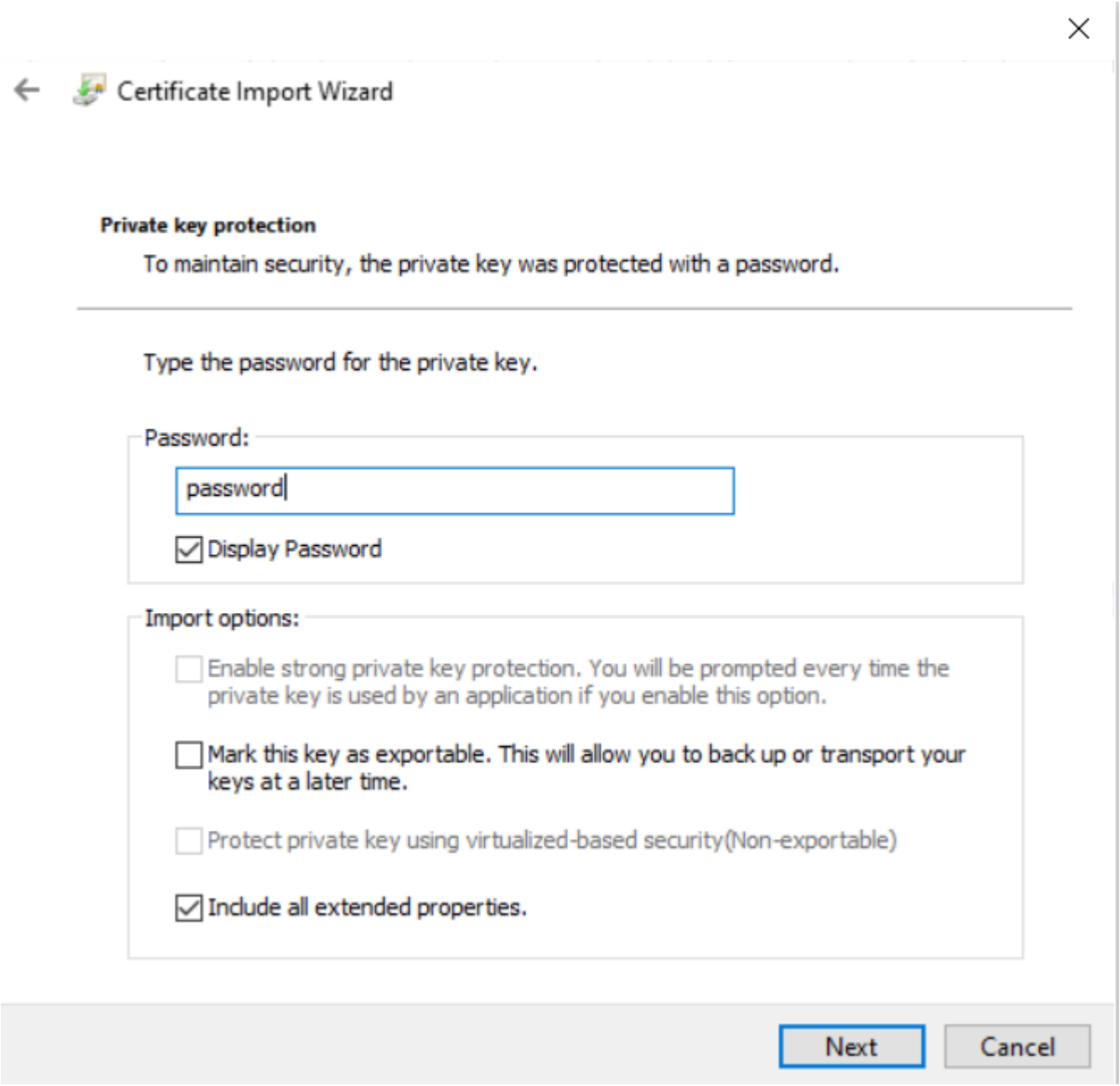
3. Select **Local Machine**, and then select **Next**.
   The **User Account Control** window appears.



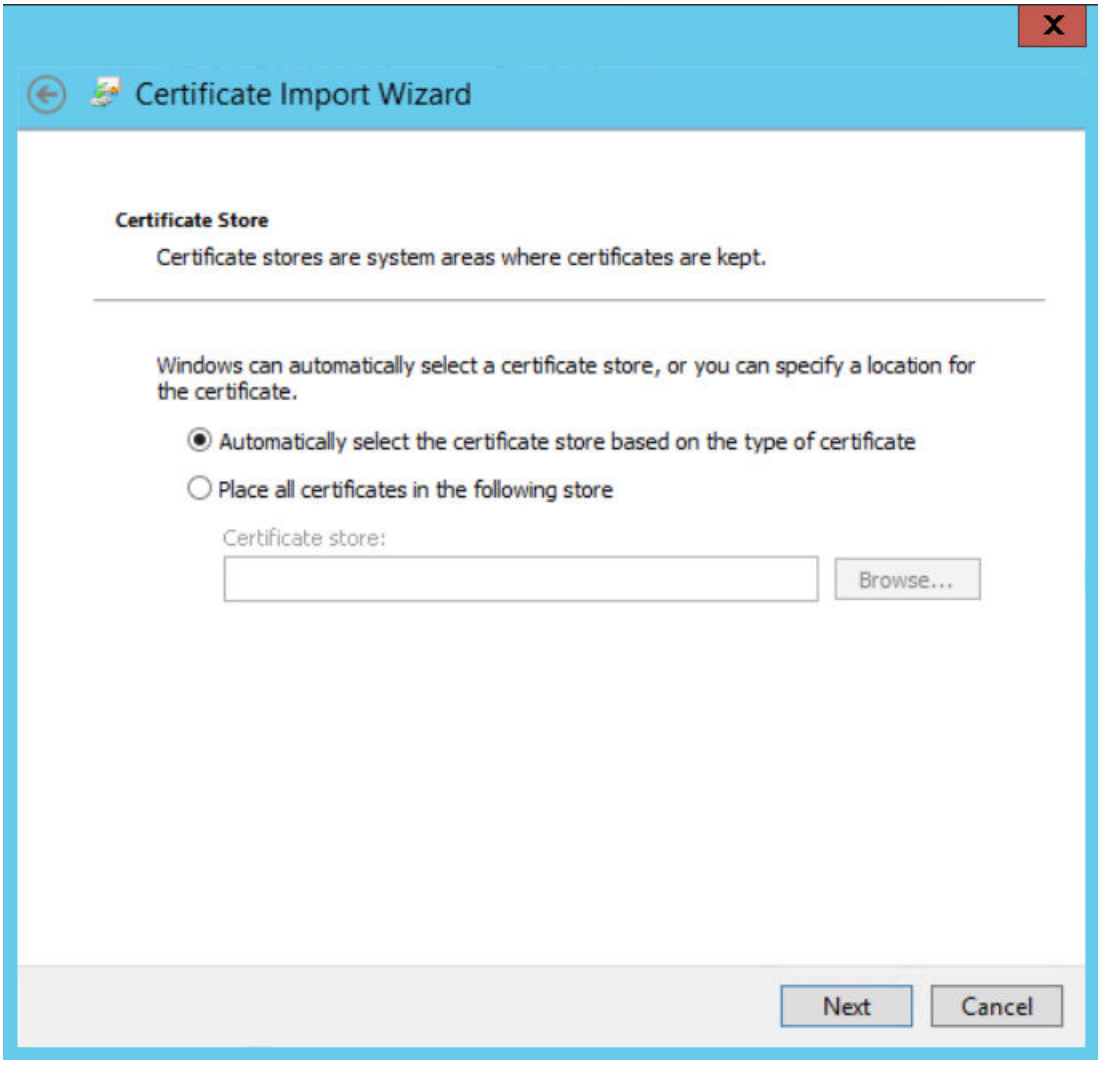
4. Select **Yes**.
   The **Certificate Import Wizard** appears, and the **File Name** box displays the file path where the certificate is located.



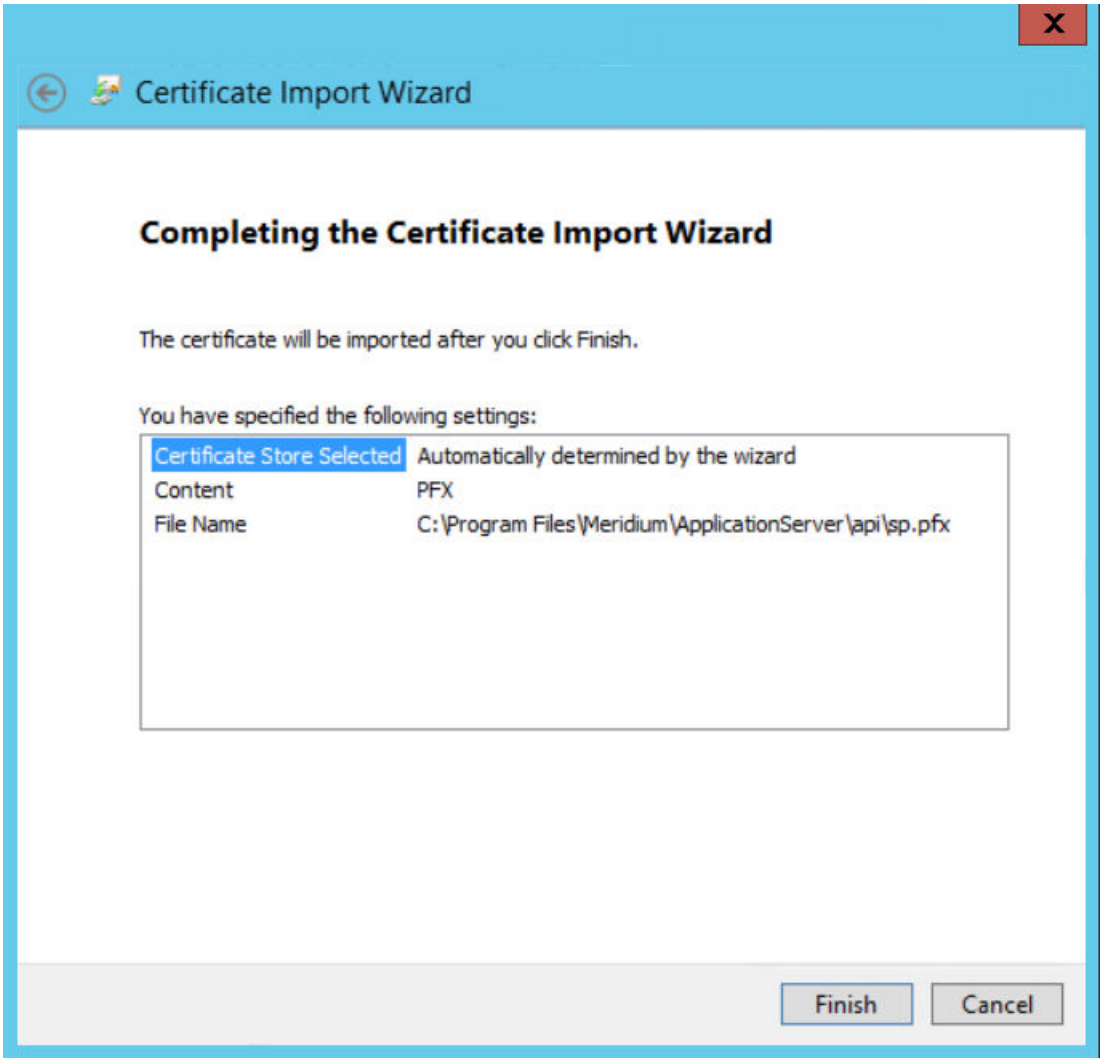
5. Select **Next**.



6. Enter a password ***password***, and then select **Next**.



7. Select **Automatically select the certificate store based on the type of certificate**.
   The **Completing the Certificate Import Wizard** appears.



8. Select **Finish**.

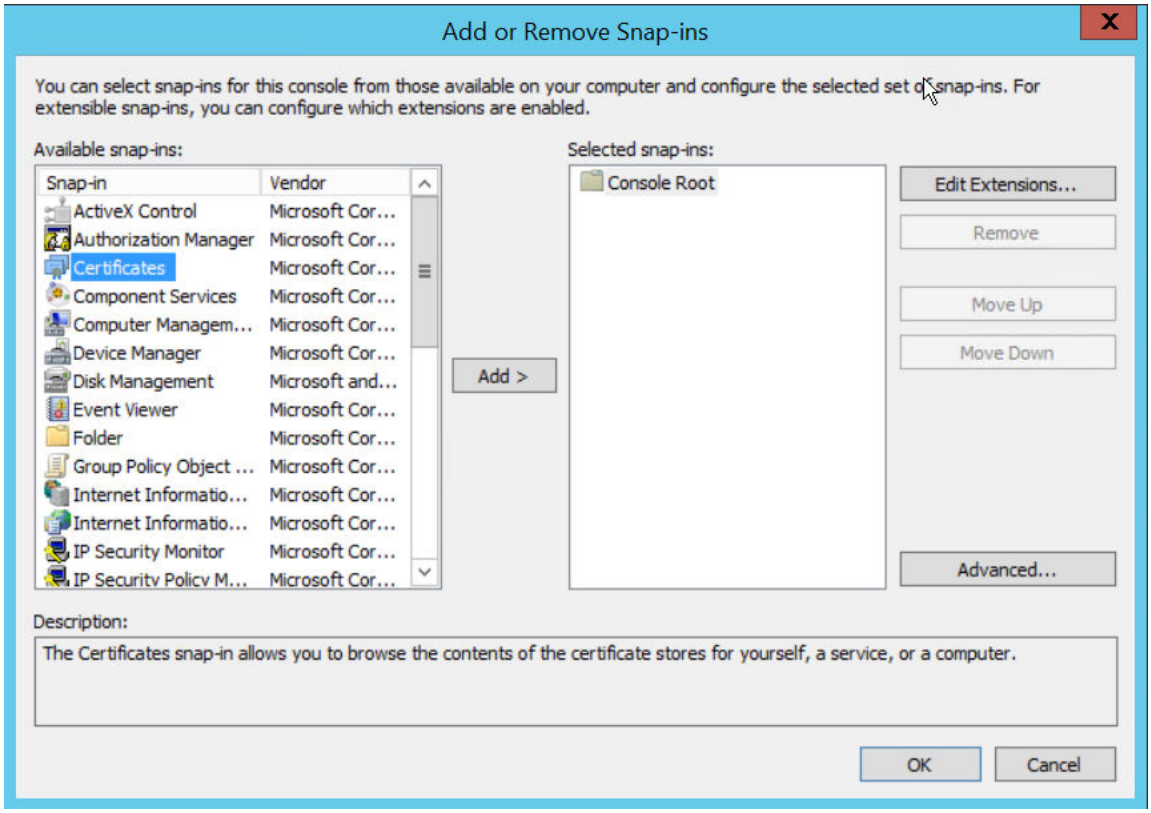
Next Steps

- Export the Public Key Certificate on page 31

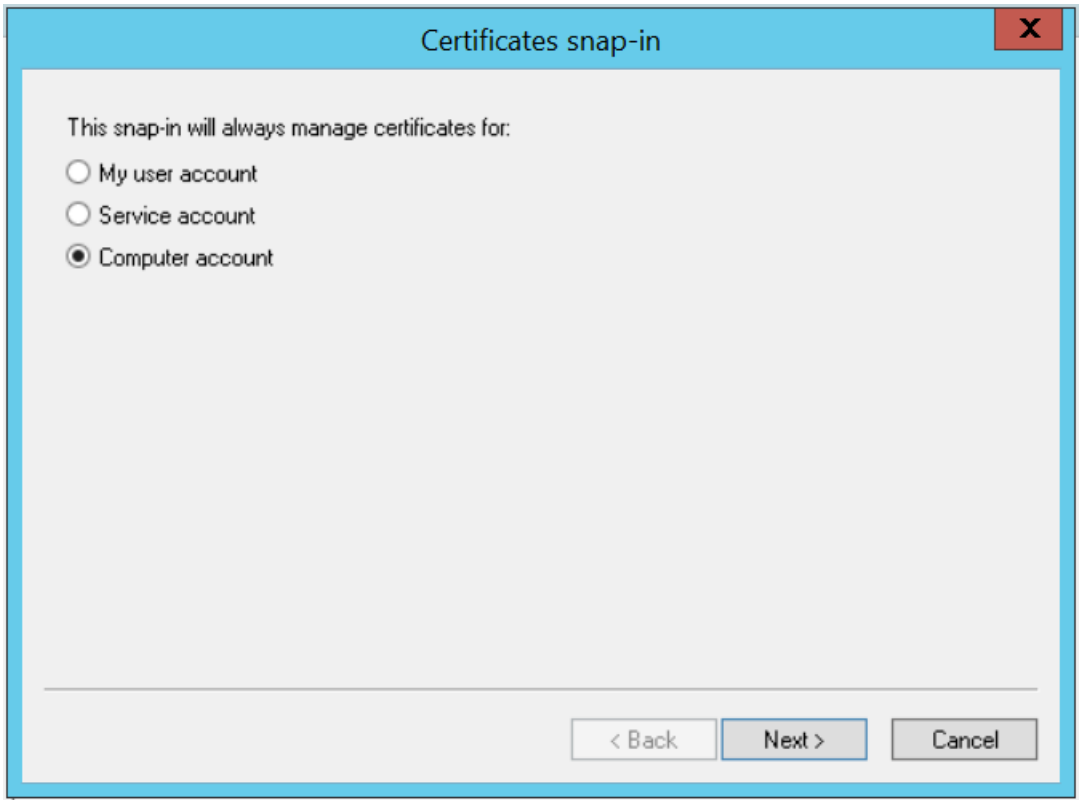
Export the Public Key Certificate

Procedure

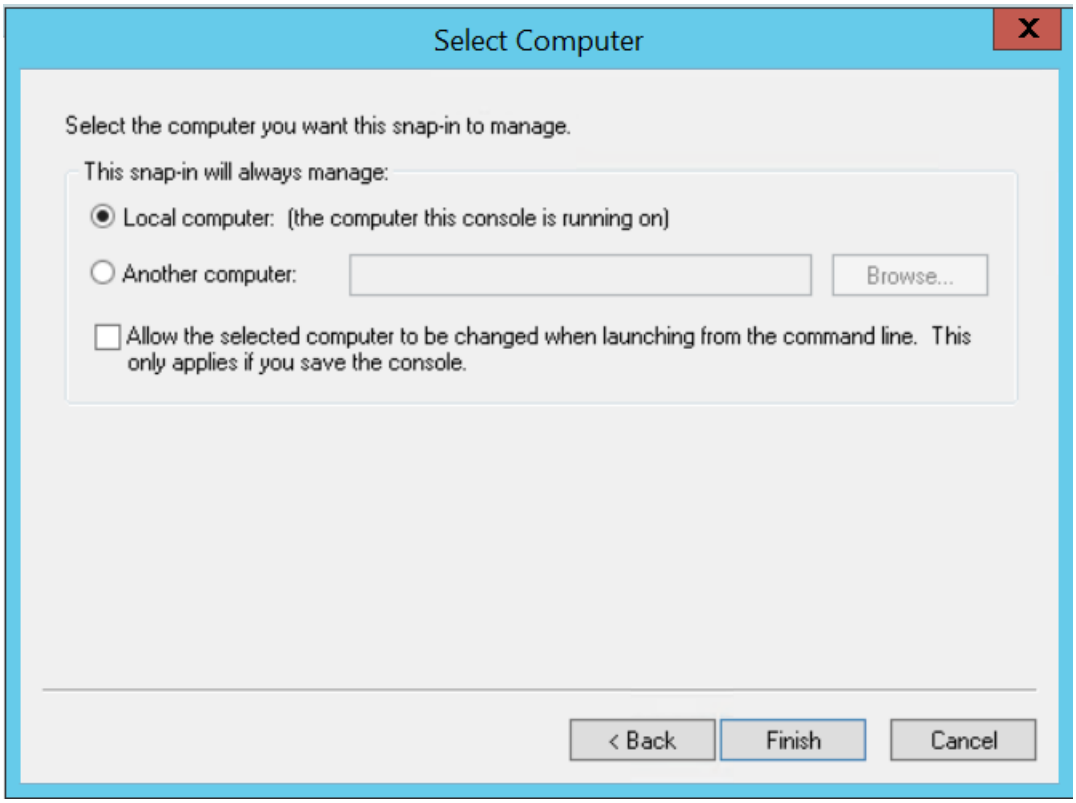
1. Access **Microsoft Management Console**.
2. In the main navigation bar, select **File**, then select **Add/Remove Snap-in**, and then select **Certificates**.
   The **Add or Remove Snap-ins** window appears.



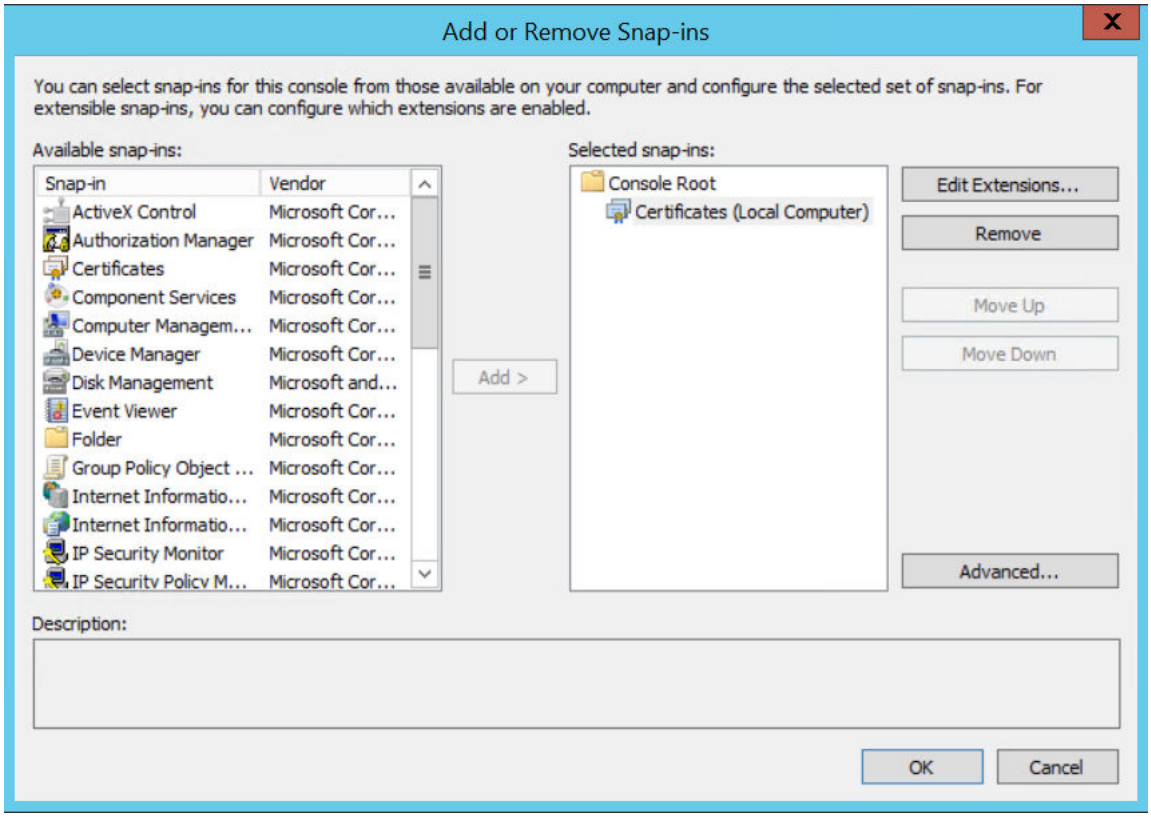
3. Select **Add**.
   The **Certificates snap-in** window appears.



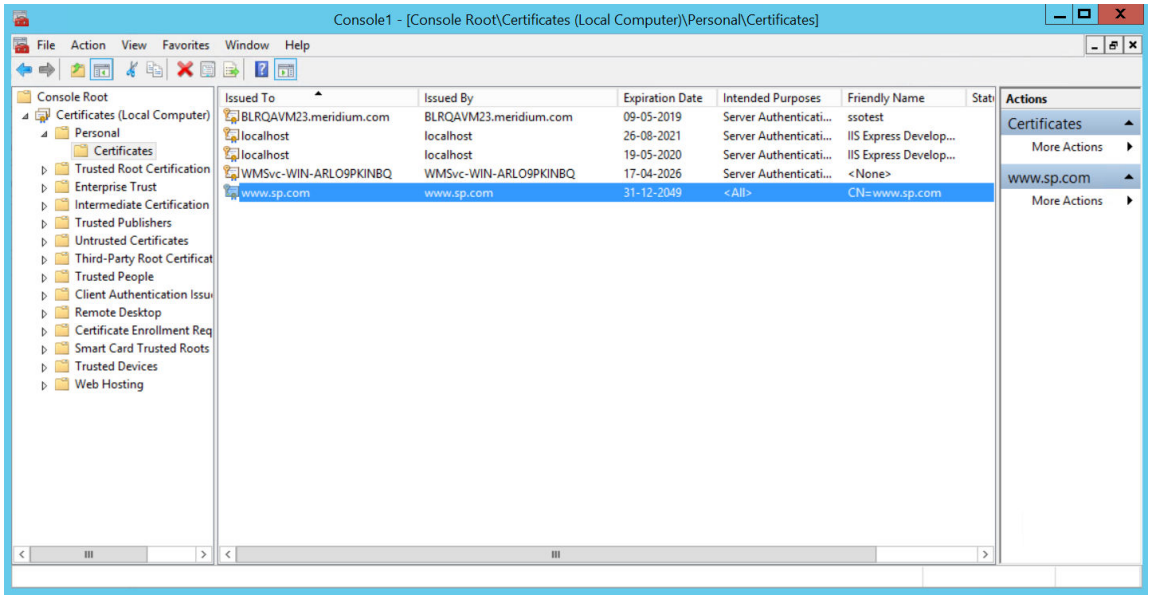
4. Select the **Computer account** option, and then select **Next**.
   The **Select Computer** window appears.



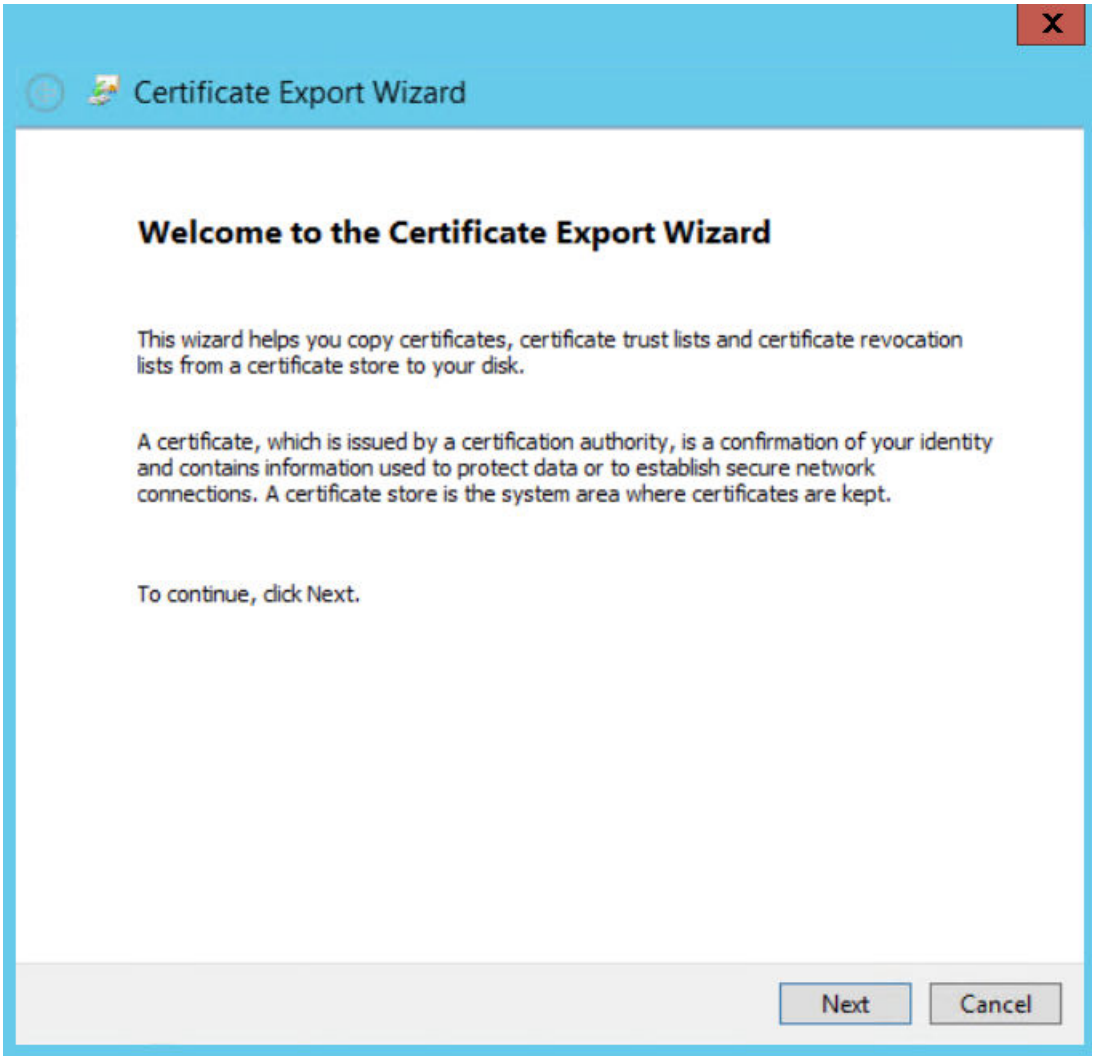
5. Select the **Local computer** option, and then select **Finish**.



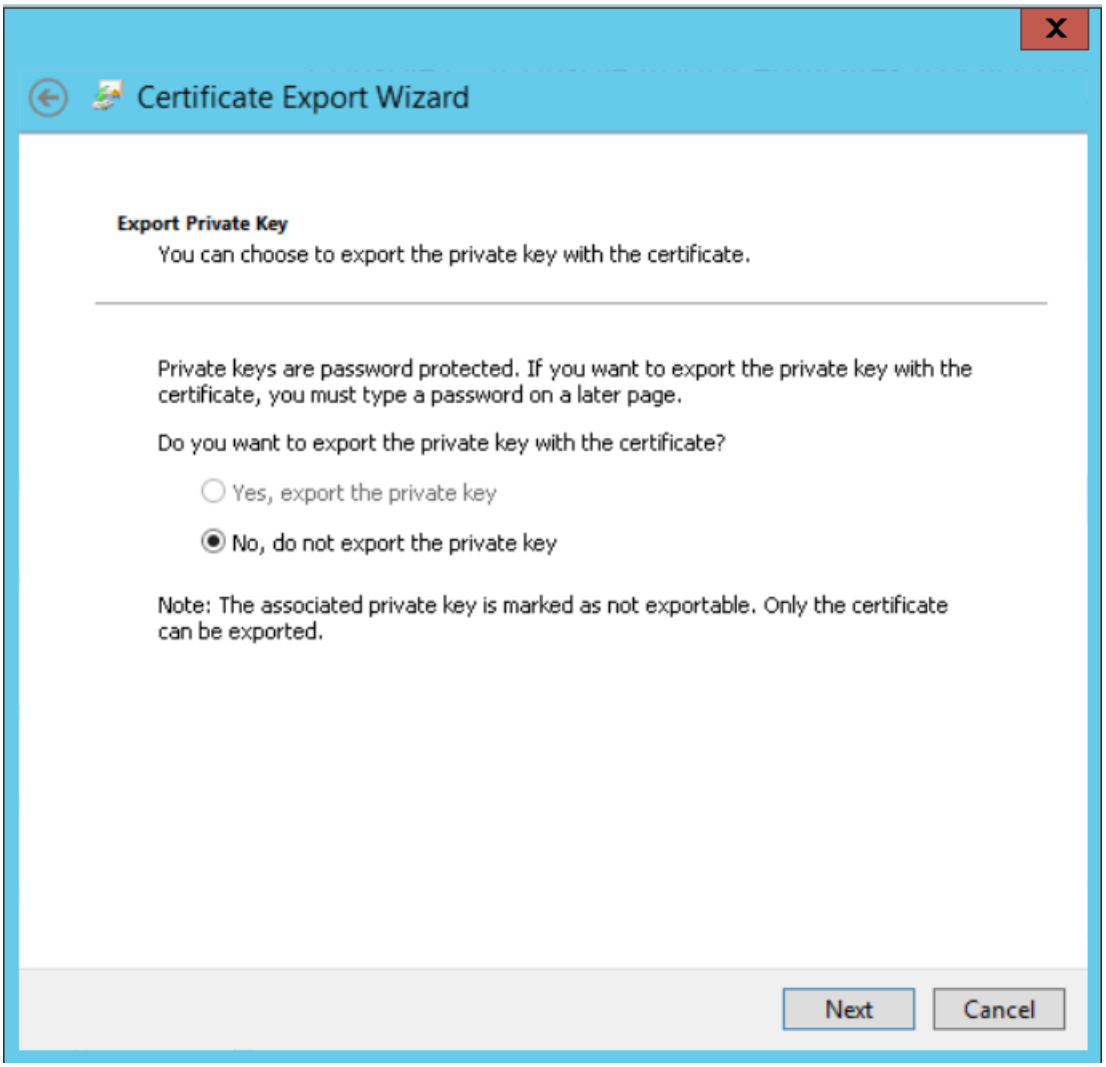
6. In the **Add or Remove Snap-ins** window, select **OK**.
   The certificate appears in the **Personal** > **Certificates** folder of the **Certificates (Local Computer)** folder.
7. Select **Certificates (Local Computer)**, then select **Personal**, and then select **Certificates**.



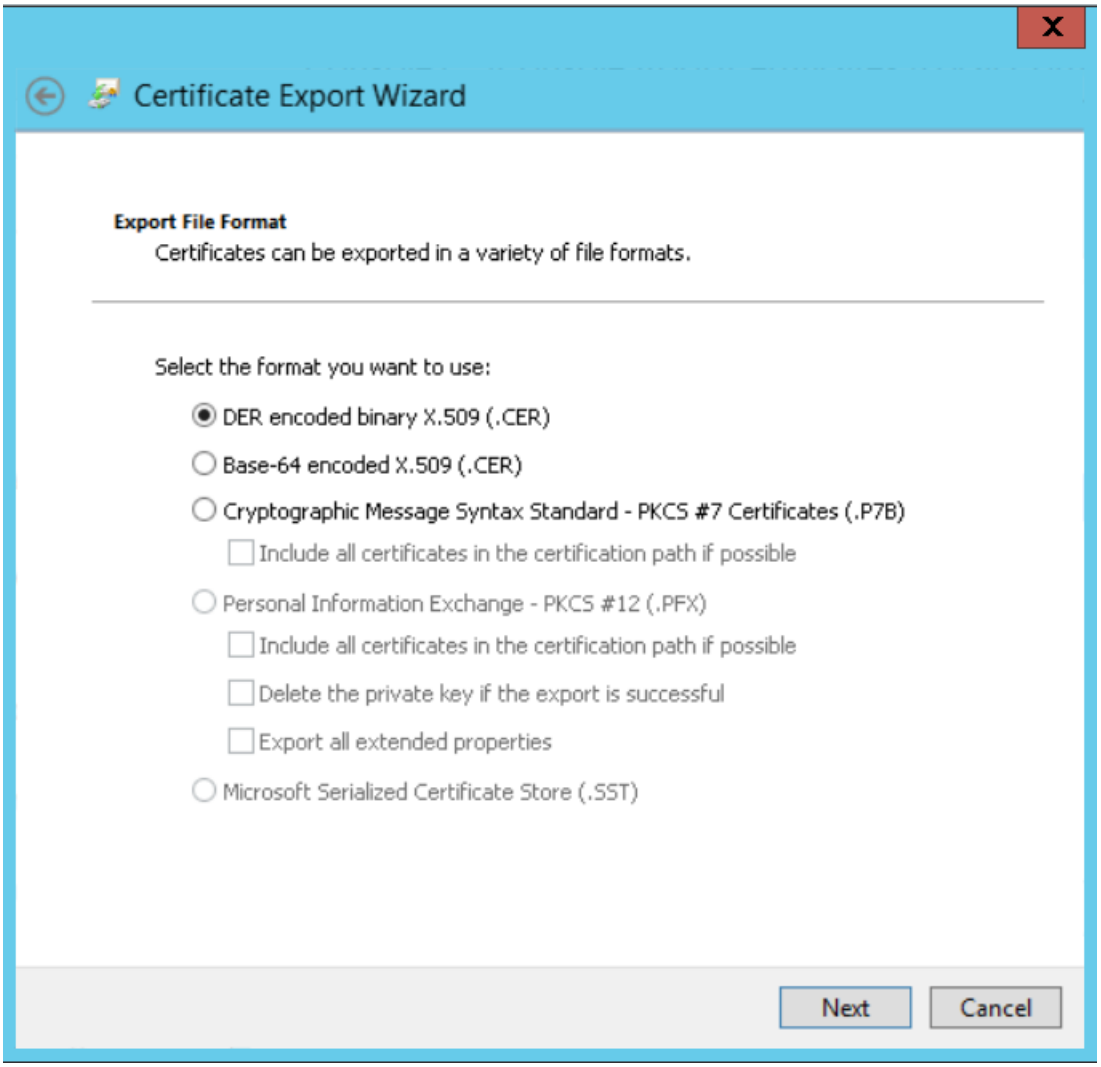
8. Right-click the certificate that you have installed, select **All Tasks**, and then select **Export**.
   The **Certificate Export Wizard** appears.



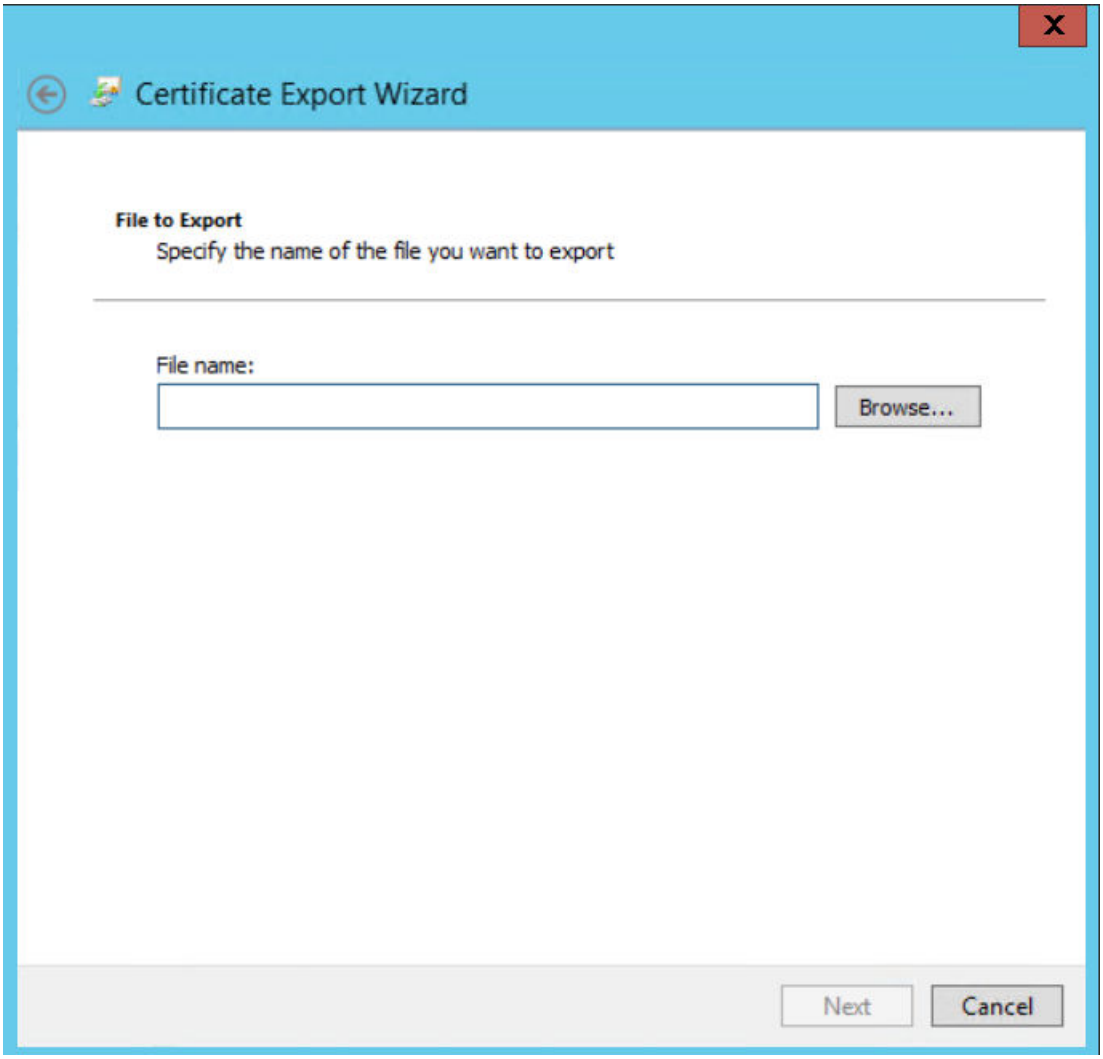
9. Select **Next**.



10. Select the **No, do not export the private key** option, and then select **Next**.



11. Select **DER encoded binary X.509 (.CER)**, and then select **Next**.



12. Select **Browse**, and then navigate to the location to which you want to export the certificate.
13. In the **File name** box, enter the same name that was mentioned while installing the certificate, and then, in the **Save as type** drop-down list box, select **DER Encoded Binary X.509 (.cer)**.
14. Select **Next**, and then select **Finish**.
15. Copy the exported certificate to Active Directory and install it. Please refer to section Install the Token Signing idp.cer Certificate on the Application Server on page 40, steps 5 - 8 for detailed process of installing the certificate.

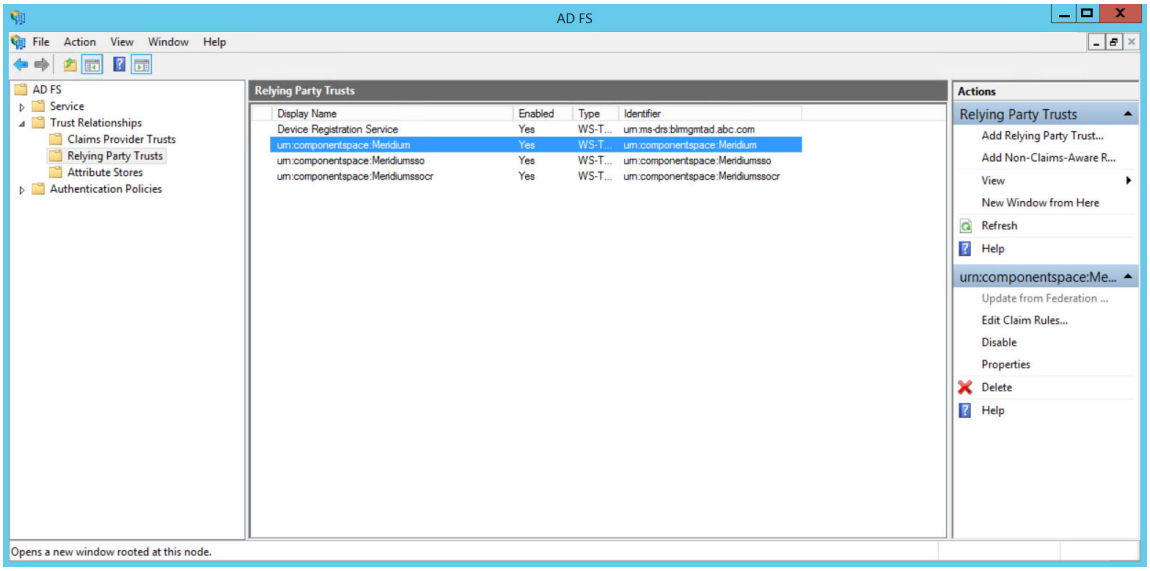
Next Steps

- Copy the Certificate to Active Directory on page 38

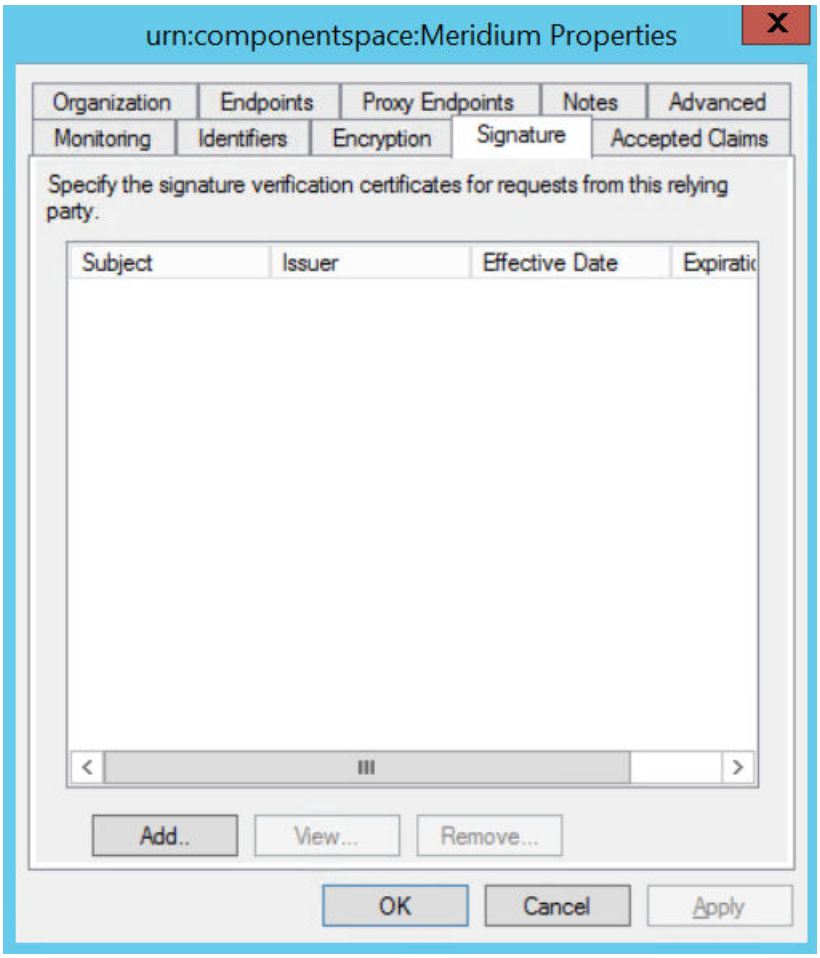
Copy the Certificate to Active Directory

Procedure

1. Access **Control Panel**, then select **System and Security**, and then select **Administrative Tools**.
2. Select **AD FS Management**.
   The **AD FS** window appears.

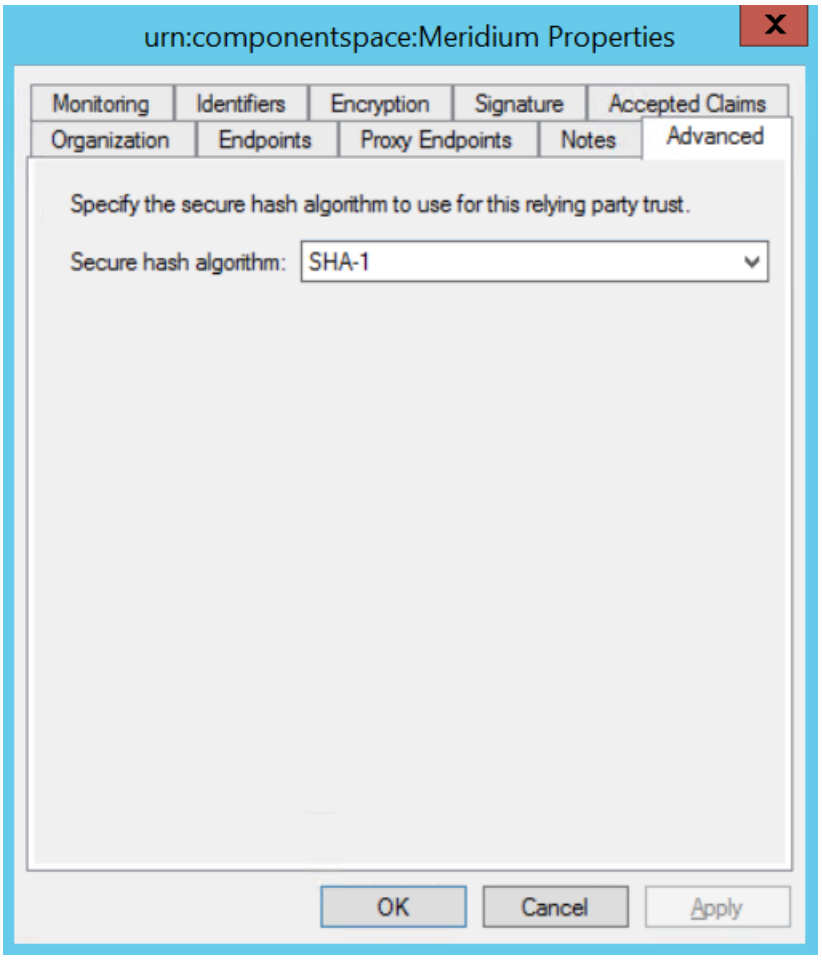


3. Expand **Trust Relationships**, and then select **Relying Party Trusts**.
4. Select **urn:componentspace:Meridium**, and then, in the **Actions** section, select **Properties**. The **urn:componentspace:Meridium Properties** window appears.



5. Select the **Signature** tab, and then select **Add**.
6. Navigate to the location in which you have saved the certificate, and then select the file.

7. Select **Yes** to ignore the warning about certificate key length.
8. Select the **Advanced** tab.
9. In the **Secure hash algorithm** drop-down list box, based on the policy of your organization, select **SHA-1** or **SHA-256**.



10. Select **Apply**, and then select **OK**.

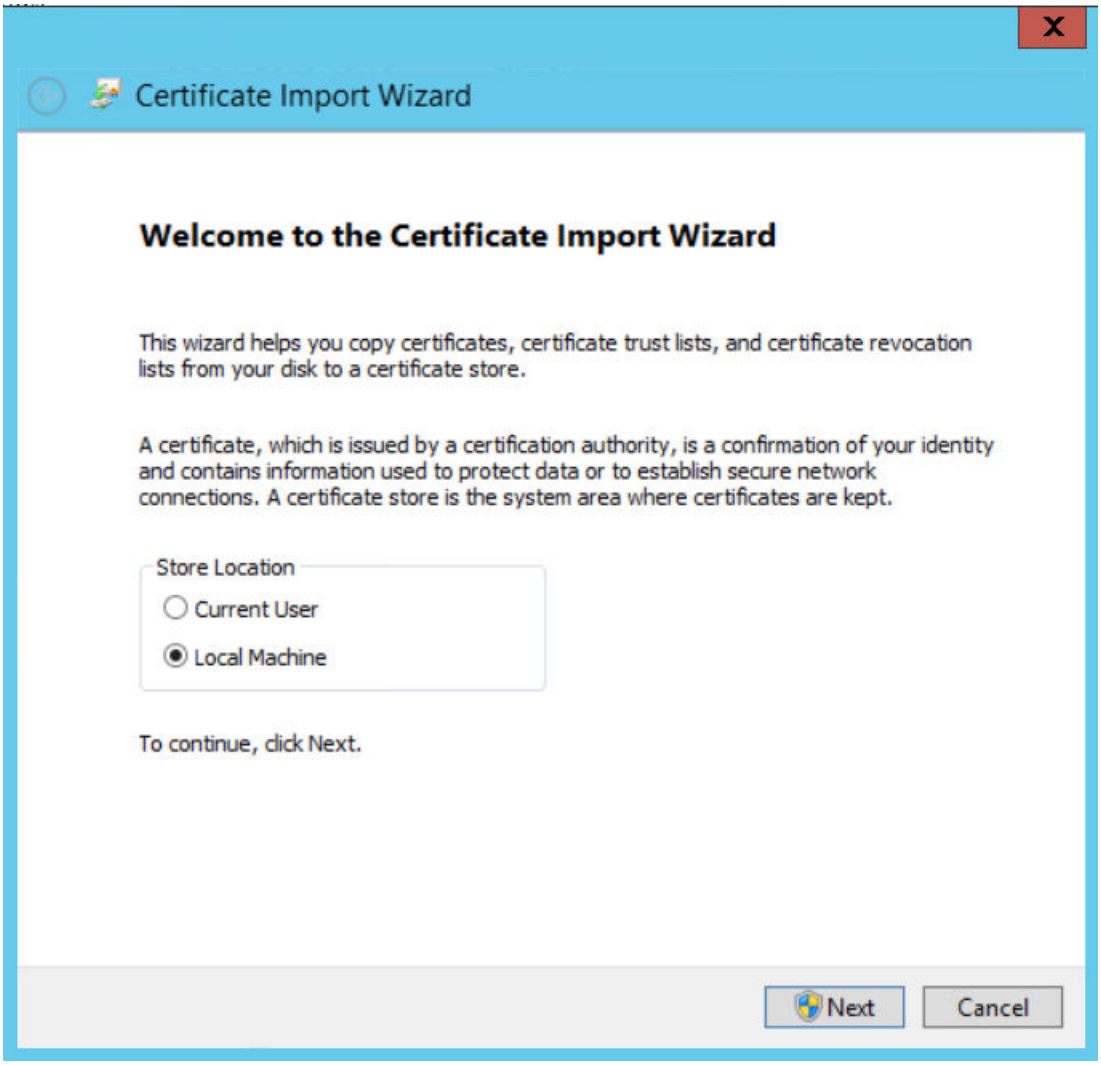
Next Steps

- Install the Token Signing idp.cer Certificate on the Application Server on page 40

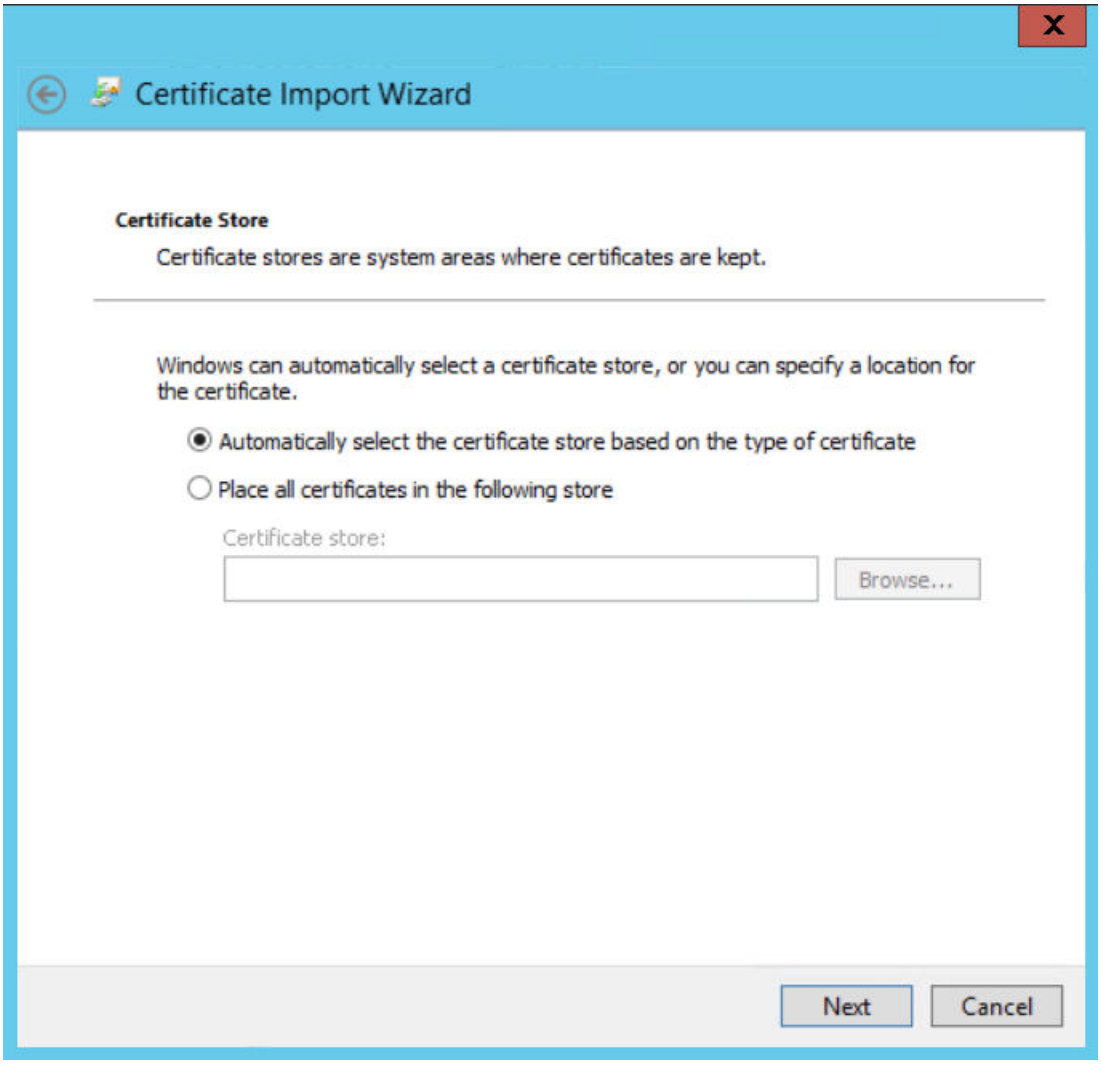
Install the Token Signing idp.cer Certificate on the Application Server

Procedure

1. Access the Active Directory.
2. Export the token signing certificate and save the certificate.
3. Select **Finish**.
4. Copy the certificate to the api folder of the application server.
5. Right-click the file, and then select **Install Certificate**.
   The **Certificate Import wizard** appears.



6. Select **Local Machine**, and then select **Next**.



7. Select **Automatically select the certificate store based on the type of certificate.**
8. Select **Next**, and then select **Finish**.

Federation Service Identifier from ADFS

To get Federation Service Identifier from ADFS.

Procedure

1. Open AD FS management console.
2. Select AD FS from left navigation and select 'Edit Federation Service Properties' from Actions pane on the right.
3. On the **Federation Service Properties** dialog window, you can find the Federation Service identifier value.
4. Navigate to `C:\Program Files\Meridium\ApplicationServer\api` folder and open saml.json file in a text editor. Update the `PartnerIdentityProviderConfigurations` **Name** value with the Federation Service Identifier.

Next Steps

- About Enabling APM SSO on page 45

Chapter 3

Enable SSO

Topics:

About Enabling APM SSO

To enable APM SSO, perform one of the following tasks:

- Enable SSO On Site Authentication Using Active Directory on page 45
- Enable SSO Off-Site Authentication Using APM Server Setup on page 45

About Host Names

Using the Host Names feature, you can:

- Enable Single Sign-On (SSO) off-site authentication and SSO on-site authentication.
- Filter Data Sources to access the related APM database.
- Create a unique URL to access APM.

When you use a URL to access APM, you can access the data sources that are mapped to the host name. For example, if two data sources (data_source1 and data_source2) are associated with a APM server, you can create two different URLs (https://data_source1/meridium/index.html and https://data_source2/meridium/index.html) using the host names that are mapped to the data sources. If you log in to APM with https://data_source1/meridium/index.html or https://data_source2/meridium/index.html, you can access data_source1 or data_source2, respectively.

In the **Host Names** page, you can add multiple host names. However, only the host name of the URL with which you have logged in to APM is listed.

Enable SSO On Site Authentication Using Active Directory

Procedure

1. Run the LDAP Synchronization Process Manually or Schedule a LDAP Synchronization Process .
2. Log out of APM.
3. Log in to APM with the Windows user name and password.
   You are logged in.

Results

- SSO On-Site Authentication is enabled.

Next Steps

- Configure APM Server on page 49

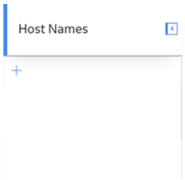
Enable SSO Off-Site Authentication Using APM Server Setup

About This Task

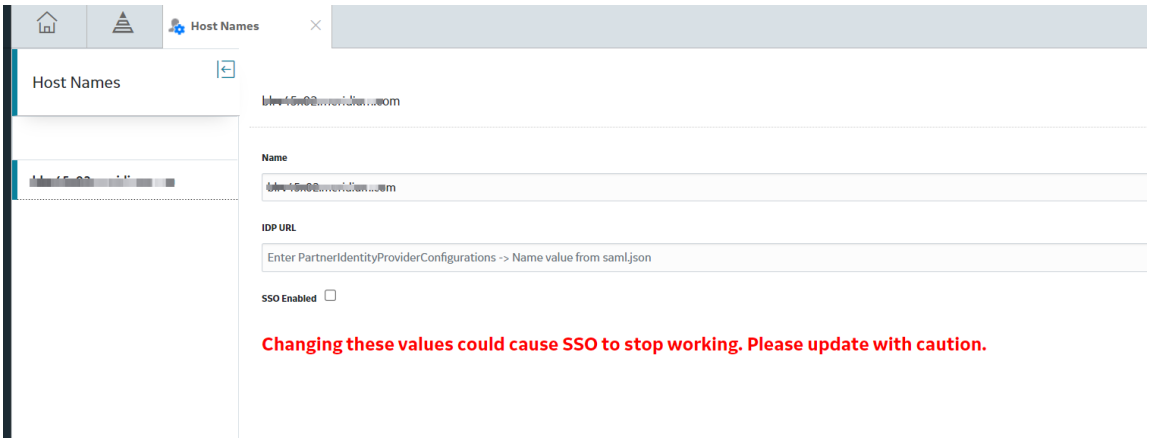
Note: The settings shown below may vary depending on your system.

Procedure

1. In the module navigation menu, select **Admin** > **Operations Manager** > **Host Names**.
   The **Host Names** page appears.



2. In the left pane, select .
   The workspace for a new host name appears, displaying default values.



3. In the **Name** box, replace the default text with the APM Server's fully qualified hostname.

   Note: This value must match with the server name in the URL used to navigate to APM in the browser. i.e. https://<Server Name>/Meridium.

4. In the **IDP URL** box, enter the `PartnerIdentityProviderConfigurations` **`Name`** value that was configured on the C:\Program Files\Meridium\ApplicationServer\api \saml.json file.
5. Select the **SSO Enabled** check box.
6. Select .
   The host name is saved.
7. Log out of APM.
8. On the APM Server, in the APM program files, navigate to the folder `..\ApplicationServer\api`.

   Note:

   - If you installed the software in the default location, the folder location will be `C:\Program Files\Meridium\ApplicationServer\api`.
   - The settings in saml.json must be configured to match the environment to which you are connecting. For example, the URL listed in `SingleSignOnServiceUrl` should point to the URL where you want to authorize the users.

9. Modify the assertion and response signing settings to match the signing settings that are specified on the IDP, and then save and close the file.
10. Reset IIS.
    IIS is reset.
11. Access APM via a web browser.
    The user is logged in, and SSO off-site authentication is enabled.

Next Steps

- Configure APM Server on page 49

Chapter 4

Configure APM Server

Topics:

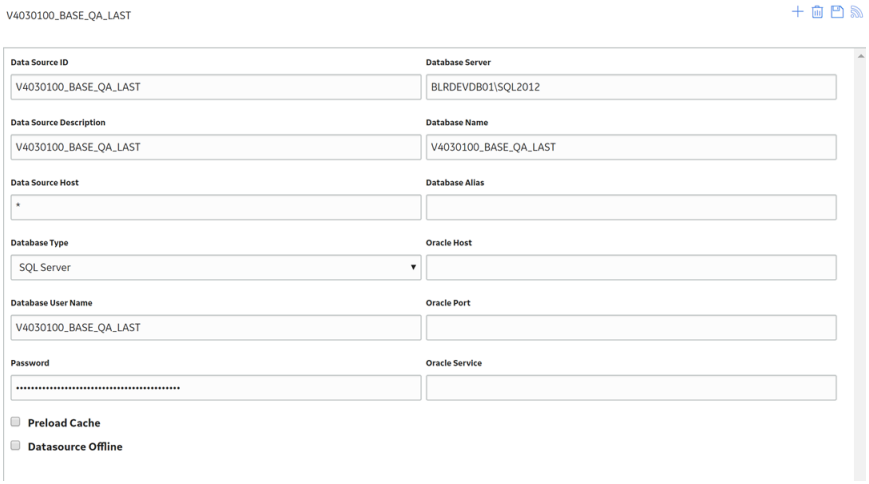
Configure APM Server

Before You Begin

- Ensure that the APM Server is installed and the server is configured to use SSL.
- Ensure that you can access the APM application in a web browser using HTTPS protocol.
- Ensure that the GE Vernova data source is configured and you can log in with administrative privileges.

Procedure

1. Using a web browser, log in to APM as an Administrator.
2. In the module navigation menu, select **Admin**, then select **Operations Manager**, and then select **Data Sources**.
   The **Data Sources** page appears.



3. In the **Data Source Host** box, enter the name of the APM server, and then select **Save**.
4. Enable LDAP Integration, configure Domain Record, and then schedule and run LDAP synchronization.

   Note: For more information on how to enable LDAP Integration, configure a Domain Record, and schedule LDAP synchronization, refer to the Lightweight Directory Access Protocol documentation.

   The users from Active Directory are now imported to APM and are assigned the appropriate Security Roles and Groups.
5. Stop IIS, the Redis service, and all Meridium Windows services.
6. Navigate to `C:\Program Files\Meridium\ApplicationServer\api`
7. Using a json or text editor, access the file `saml.json`.
8. Add a new configuration to `<PartnerIdentityProviderConfigurations>` json array or update the existing configuration by setting the following attributes:
   - Name: As described in sections Configure Azure Active Directory as the Identity Provider (IDP) on page 4 and About Configuring Identity Provider (IDP) on Active Directory on page 9.
   - WantSAMLResponseSigned: false
   - WantAssertionSigned: true
   - WantAssertionEncrypted: false
   - UseEmbeddedCertificate: false

- SingleSignOnServiceUrl: In the case of ADFS, it is of the form: {https version of Federation Service identifier} + "/adfs/ls". For example, https://myadfsserver/adfs/ls. This information must be obtained from the ADFS team. In the case of Azure AD, please refer to section Configure Azure Active Directory as the Identity Provider (IDP) on page 4.

  Note:

  For SHA-256, you must add the following two attributes to the `saml.json` file:

  - "DigestAlgorithm":"http://www.w3.org/2001/04/xmlenc#sha256"
  - "SignatureAlgorithm":"http://www.w3.org/2001/04/xmldsig-more#rsa-sha256"

The following example shows the configured `saml.json` file:

```
{
    "SAML": {
        "$schema": "https://www.componentspace.com/schemas/saml-
config-schema-v1.0.json",
        "Configurations": [
            {
                "LocalServiceProviderConfiguration": {
                    "Name": "urn:componentspace:Meridium",
                    "AssertionConsumerServiceUrl": "~/core/security/
ssologinauth",
                    "LocalCertificates": [
                        {
                            "FileName": "sp.pfx",
                            "Password": "password"
                        }
                    ]
                },
                "PartnerIdentityProviderConfigurations": [
                    {
                        "Name": "http://fs.xyz.com/adfs/services/
trust",
                        "Description": "ADFS",
                        "SignAuthnRequest": true,
                        "WantSamlResponseSigned": false,
                        "UseEmbeddedCertificate": true,
                        "WantAssertionEncrypted": false,
                        "WantAssertionSigned": true,
                        "SingleSignOnServiceUrl": "https://
fs.xyz.com/adfs/ls/idpinitiatedsignon.aspx",
                        "PartnerCertificates": [
                            {
                                "FileName": "idp.cer"
                            }
                        ]
                    }
                ]
            }
        ]
    }
}
```

9. Save and close the file `saml.json`.
10. Start IIS, the Redis service, and all Meridium Windows Services.

Chapter 5

Troubleshooting

Topics:

Troubleshooting Scenarios

Troubleshooting Scenarios

The following topics can help you troubleshoot issues that you may have with the SSO module:

- Enable ComponentSpace SAML trace on page 52

Enable ComponentSpace SAML trace

Description

Enable ComponentSpace SAML trace for troubleshooting SSO issues

Cause

None

Solution

Perform the following steps:

1. Navigate to `C:\Program Files\Meridium\ApplicationServer\api`
2. Access `Nlog.config`
3. In the `<Targets>` section, add the following line of code: `<target xsi:type="File" name="spFile" fileName="c:\ProgramData\Meridium\Logs\sp.log" layout="${liteLayout}" />`
4. In the `<Rules>` section, add the following line of code: `<logger name="ComponentSpace.*" minlevel="Debug" writeTo="spFile" />`

   As shown below:

```
1  <?xml version="1.0" encoding="utf-8" ?>
2  <nlog xmlns="http://www.nlog-project.org/schemas/NLog.
3        xmlns:xsi="http://www.w3.org/2001/XMLSchema-inst
4        autoReload="true"
5        internalLogLevel="Warn"
6        internalLogFile="internal-nlog.txt">
7
8    <!-- import extensions and liteLayout -->
9    <include file="nlog.Shared.config" />
10
11   <!-- the targets to write to -->
12   <targets>
13     <!-- write logs to file -->
14     <target xsi:type="File" name="allfile" fileName="c
15     <target name="scheduler" type="File" fileName="c:\
16     <target xsi:type="File" name="mechanicalIntegrity"
        />
17     <target xsi:type="File" name="dlFramework" fileNam
18     <!-- write to the void aka just remove -->
19     <target xsi:type="Null" name="blackhole" />
20     <target xsi:type="File" name="spFile" fileName="c:
21   </targets>
22
23   <!-- rules to map from logger name to target -->
24   <rules>
25     <!--Skip Microsoft logs and so log only own logs--
26     <logger name="Microsoft.*" minlevel="Trace" writeT
27     <!--Skip Quartz logs till Info and so log only own
28     <logger name="Quartz.*" minlevel="Info" maxlevel="
29     <logger name="Meridium.Core.Scheduling.*" minlevel
30     <logger name="Meridium.MechanicalIntegrity.*" minl
31     <logger name="Meridium.Api.Connect.*" minlevel="In
32     <logger name="Meridium.Integration.*" minlevel="In
33     <logger name="ComponentSpace.*" minlevel="Debug" w
34     <logger name="*" minlevel="Info" writeTo="allfile"
35   </rules>
36 </nlog>
```

The ComponentSpace SAML trace is enabled.

IIS reset and Redis restart are not required after this change. You must refresh the browser and complete the SSO workflow. This will create a file, `sp.log` in the `C:\ProgramData\Meridium\Logs` folder and write the SAML trace to it.

Note: It is recommended to disable the SAML trace after the troubleshooting is complete as it may impact performance of the production system.

Frequently Asked Questions

FAQs for SSO

Is Azure AD supported as an Identity Provider in APM?

Yes, Azure AD for SAML SSO can be configured in APM. For more information, refer to Configure Azure Active Directory as the Identity Provider (IDP) on page 4.

How to enable ComponentSpace SAML trace?

You can enable ComponentSpace SAML trace to generate logs for troubleshooting. For more information, refer to Enable ComponentSpace SAML trace on page 52.