Microsoft NPS Configuration Guide

eduroam (UK)

Last Update: 12th April 2018

Contents

Changelog

Version	Modification	Author	Date
0.1	Original version posted to eduroam (UK) community site	Edward Wincott and eduroam (UK) team.	24 February 2015
0.2	Updated with further details and sections about CAs and Certificates.	Edward Wincott and Jon Agland	9th March 2018
0.5 (current release)	Updated screenshots to 2016 versions. Re-order guide and replace all screenshots Change guidance on EAP override in Connection Request Policies Update userPrincipalName / Network Access Identifier considerations	Jon Agland	12th April 2018

1. Introduction

This guide describes the setup of Microsoft Network Policy Server as your Organisational RADIUS Server (ORPS) for use with eduroam in the UK. Whilst the ORPS is the key component of your eduroam deployment there are a number of other important elements and this guide must be read in conjunction with the following documents:

i) Implementing eduroam Roadmap **https://community.ja.net/library/janet-services-documentation/implementing-eduroam-roadmap**

ii) the eduroam(UK) Technical Specification **https://community.ja.net/library/janet-services-documentation/eduroamuk-technical-specification**

iii) Attribute Filtering for Microsoft IAS and NPS: **https://community.ja.net/library/janet-services-documentation/radius-attribute-filtering-microsoft-ias-and-nps**

There are also additional technical reference documents and advisory notices published in the Jisc Community Library web site with which the eduroam sys admin should familiarise him or herself.

Whilst this guide is sufficient to enable you to set up a basic eduroam deployment, it does not cover setup of further (non-eduroam) VLANs and dynamic assignment of users to such VLANs, which you may wish to implement for the support of your local users connecting with their own devices or for connecting local users to VLANs giving access to restricted resources and/or which could have content filtering applied.

For Home sites, you will also need to consider 'on-boarding' of user devices, most effectively achieved through the use of automation tools such as **eduroam CAT** which generates installer utilities. If there are difficulties with internet access via mobile data, then possibly setting up a 'walled garden' service to provide users with access to your CAT installer utilities is also possible see **Walled Garden for on-boarding user devices to eduroam**

This guide does not cover logging and accounting, which is covered in Section 6 of the GÉANT guide: **CBP-13 Using Windows NPS as RADIUS in eduroam**

The examples in this document are collected from a mix of both Windows Server 2016, although will be relevant to older versions such as Windows Server 2012 and Windows Server 2008 R2 Enterprise. The dialogue screens differ slightly between the two versions, but the configuration items are very similar.

Pre-requisites:

It is assumed that you have provisioned a suitable server platform, installed Microsoft Windows Server and that suitable connectivity is in place to your wireless access points/controller and to the internet and that the server has a fully qualified domain name and fixed IP address reachable by the eduroam(UK) national proxy servers. It is also assumed that you have a basic setup of Active Directory.

Acknowledgements

This guide contains material drawn in part from the Best Practice Document 'Using Windows® NPS as RADIUS in eduroam' published by the GÉANT Association and such material is included in this guide under the free license terms specified on page (ii) of that document. Copyright of such material remains the property of GÉANT.

2.Limitations of Network Policy Server

Network Policy Server (NPS) is the Microsoft Windows implementation of a Remote Access Dial-in User Service (RADIUS) server and proxy. NPS is a popular choice amongst organisations deploying eduroam due to its accessibility, familiar graphical user interface and low cost. However, it should be recognised that for use as your organisational RADIUS proxy server (ORPS) it has certain limitations and lesser flexibility than the likes of FreeRADIUS and Radiator etc.

The limitations mean that whilst a perfectly serviceable solution can be put in place, your eduroam deployment will not meet all of the best practice recommendations described in the eduroam(UK) Technical Specification and certain 'warn' flags will be indicated in the eduroam(UK) Support portal.

The following limitations are addressed, where applicable, in the instructions contained later in this guide:

- You cannot add RADIUS attributes into outbound authentication requests your ORPS sends to the eduroam(UK) national proxies (NRPSs). In particular adding an 'Operator-Name' attribute to indicate the organisation where a visitor is connecting is not possible in NPS. Since the presence of Operator-Name is desirable for troubleshooting purposes (and also for working with CUI) it is on the eduroam(UK) development roadmap to introduce Operator-Name insertion at the NRPS, therefore this limitation can be mitigated.

- NPS does not support Status-Server and will not respond to Status Server requests. Status-Server is the best practice method for RADIUS servers to check the availability of peered servers, the alternative being to utilise retries and timeouts. It is on the eduroam(UK) development roadmap to introduce Status-Server checks with ORPS, but NPS servers will not be able to benefit from this and will continue to rely on current methods.

- RADIUS attributes cannot be stripped from authentication requests by NPS. They can only be overwritten. It is desirable for your ORPS to be able to strip or overwrite attributes, for instance an Access-Accept returned for a visitor by the user's home organisation may contain VLAN attributes that are only relevant for that user on the home campus (to enable the user to be connected to a group VLAN), but such VLAN attributes may cause problems on your network. To avoid these problems you will need to explicitly set VLAN values applicable to your environment if you work with VLANs and set other values to prevent invalid attributes.

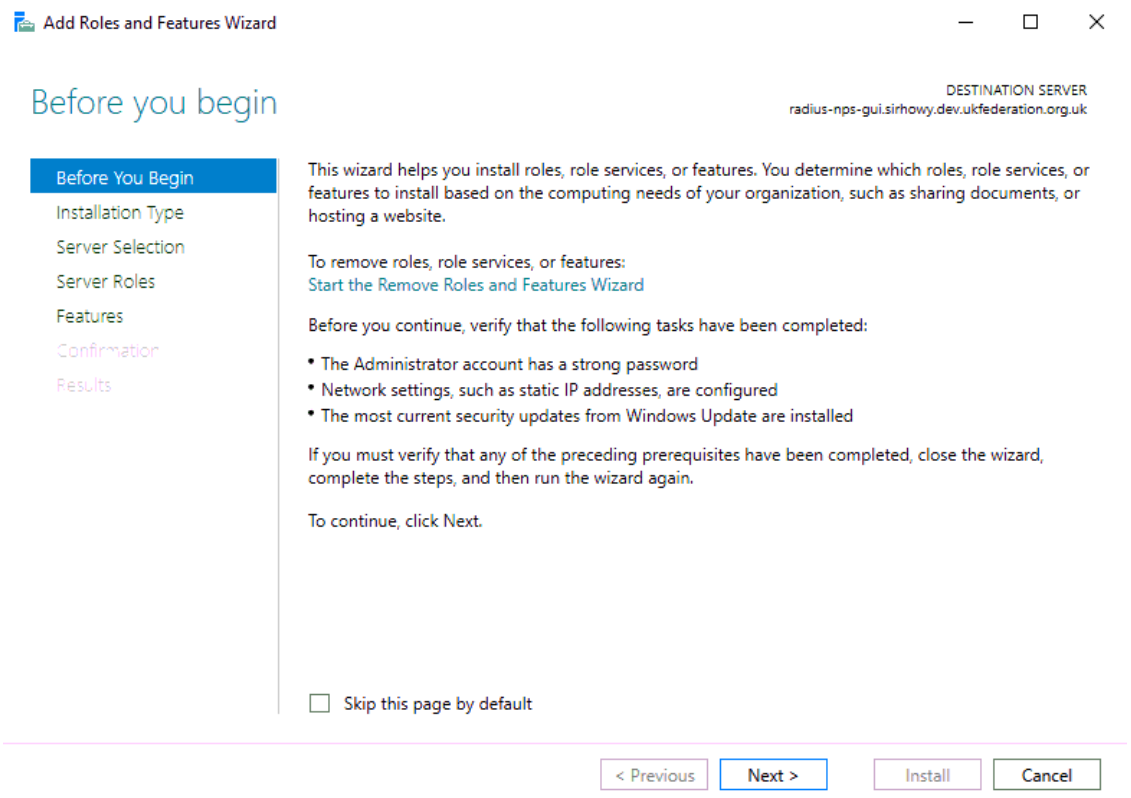
- The 'outer' username (used in phase 1 of the authentication process to identify the user's home organisation) can be rewritten (via the Connection Request Policy) as an 'anonymous@realm' , whereas the 'inner' username (the encrypted identifier used for user authentication) which is handled by the Network Policy, cannot be modified. (Nb. often users configure inner and outer identities to be the same).
    - The effect of this is that your users will have to use their respective userPrincipalName to authenticate as their user@realm -their Network Access Identifier (RFC7542)-, in many case this looks similar to an e-mail address.
    - If your UPN suffix and resulting userPrincipalName's use an unregistered domain name such as those ending '.local', then you may be best to consider adding a UPN Suffix and changing the userPrincipalName for affected users. If not, there will additional requirements such as:
        - Additional Connection Request Policies, with Attribute rules see **using the pattern matching syntax in NPS**
        - Users being mandated to use separate inner and outer identities.

- In respect of your Home (IdP) service provision, using anonymous outer identities is not possible, unless Override network policy authentication settings is enabled in the Connection Request Policies. We recommend that this is used, but this may have an effect on "Constraints and Settings" in "Network Policies".

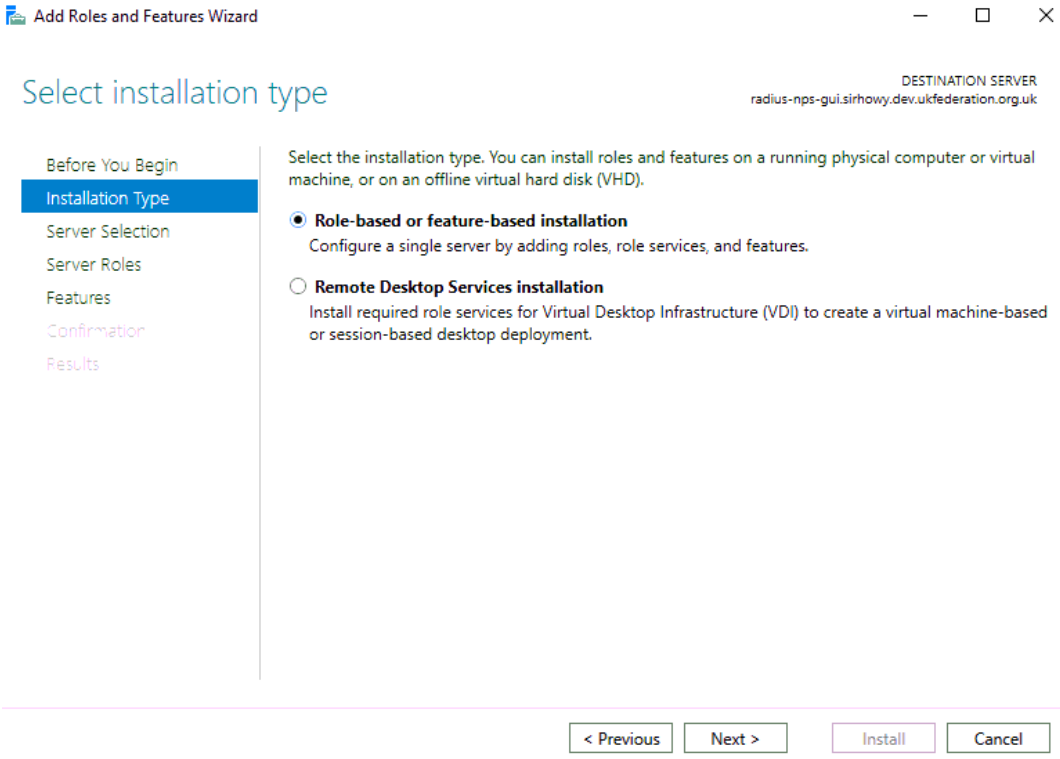
- Logging in Event Manager is rather poor (compared to FreeRADIUS) – there is not much detail shown, making the debugging of any connection problems difficult. Be prepared to install Wireshark for this purpose.

3. Installing NPS

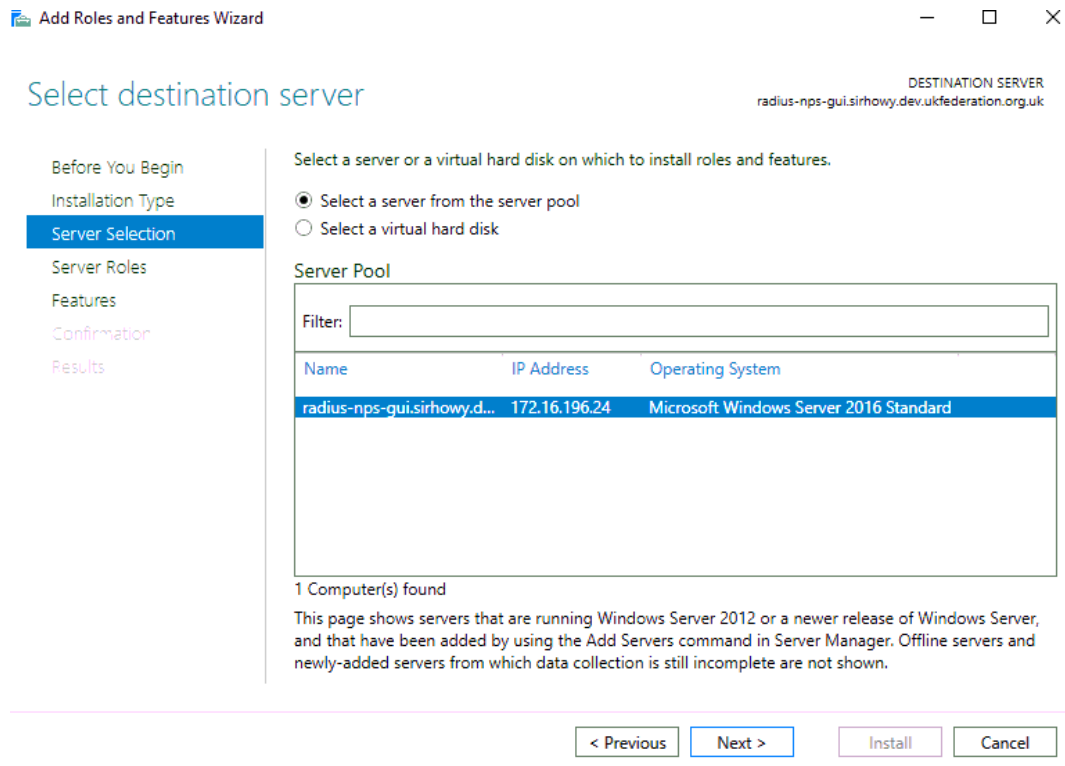
In your Windows server open **Server Manager,** right click **Roles** and select **Add Roles**. The Add Roles Wizard will open – read the information text and accept the default by clicking **Next** .



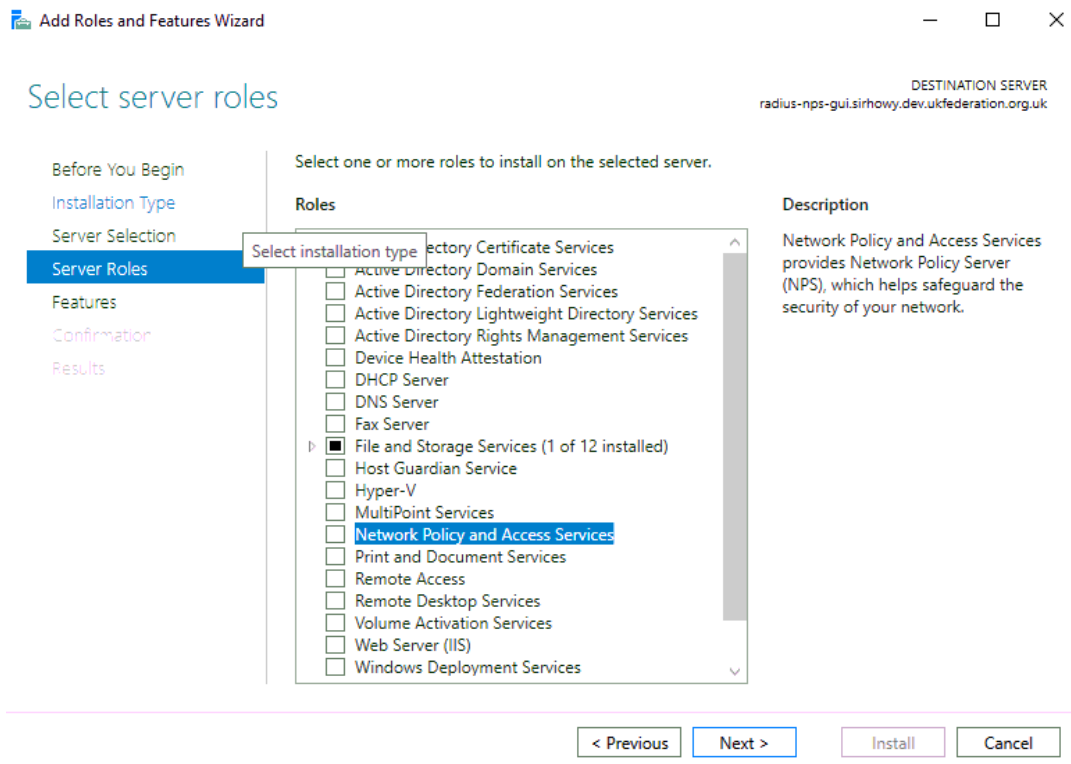
On the following screen you should choose **Role-based or feature-based installation**



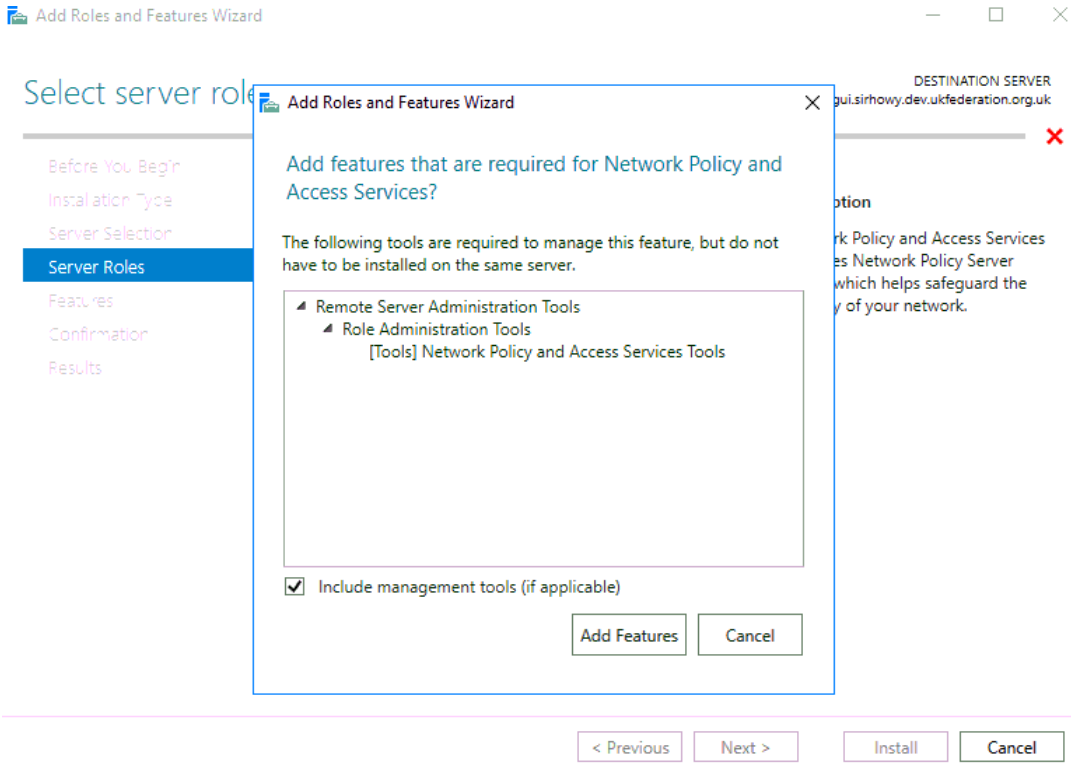
You wish to install **Select a server from the server pool** on. This is likely to be the server that you are currently using.



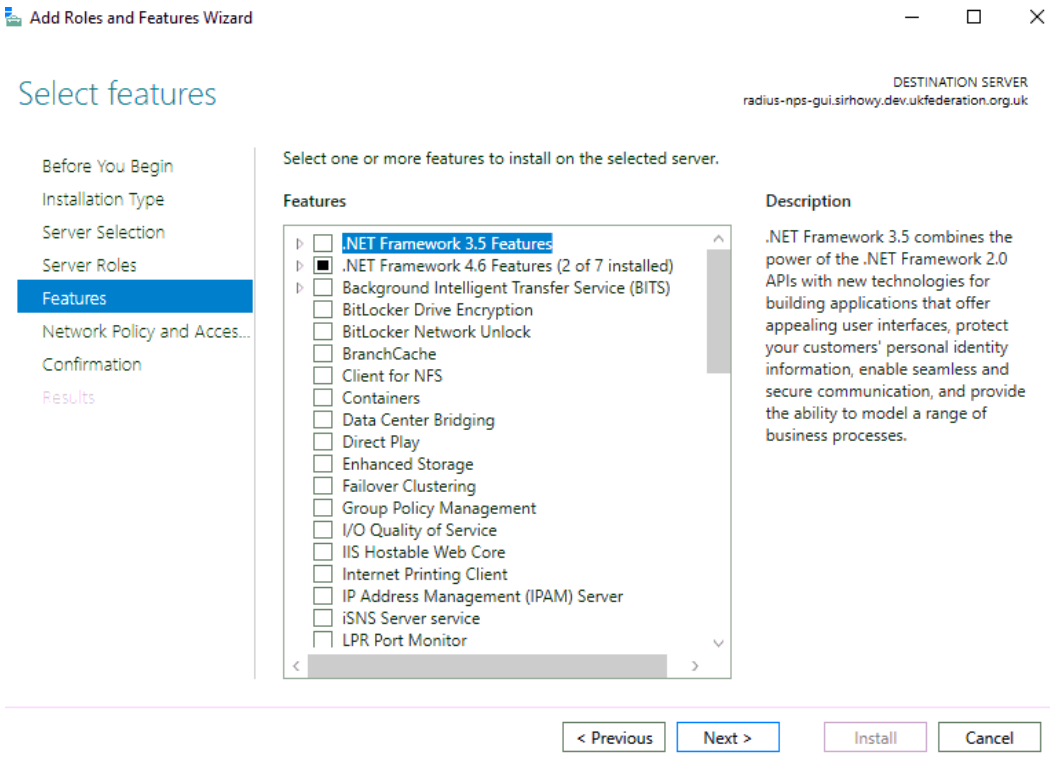
Select **Network Policy and Access Services** – then **Next**:



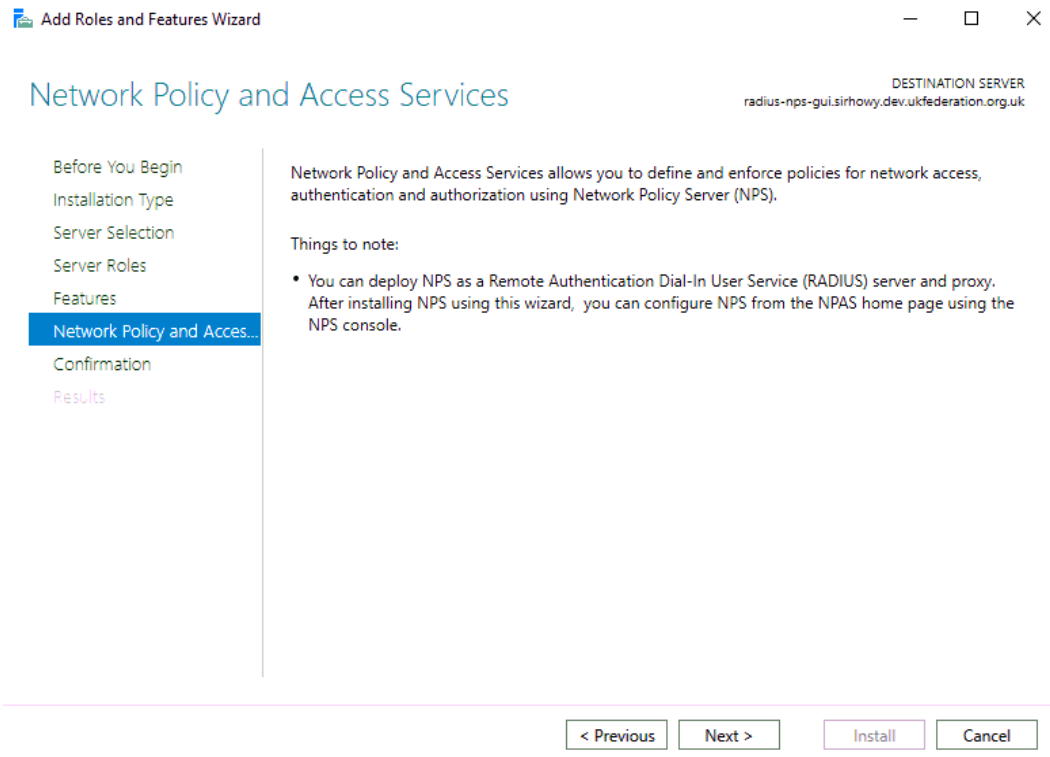
The following dialogue will appear, click **Add Features,** when you return to the **Add Roles and Features Wizard** click **Next**



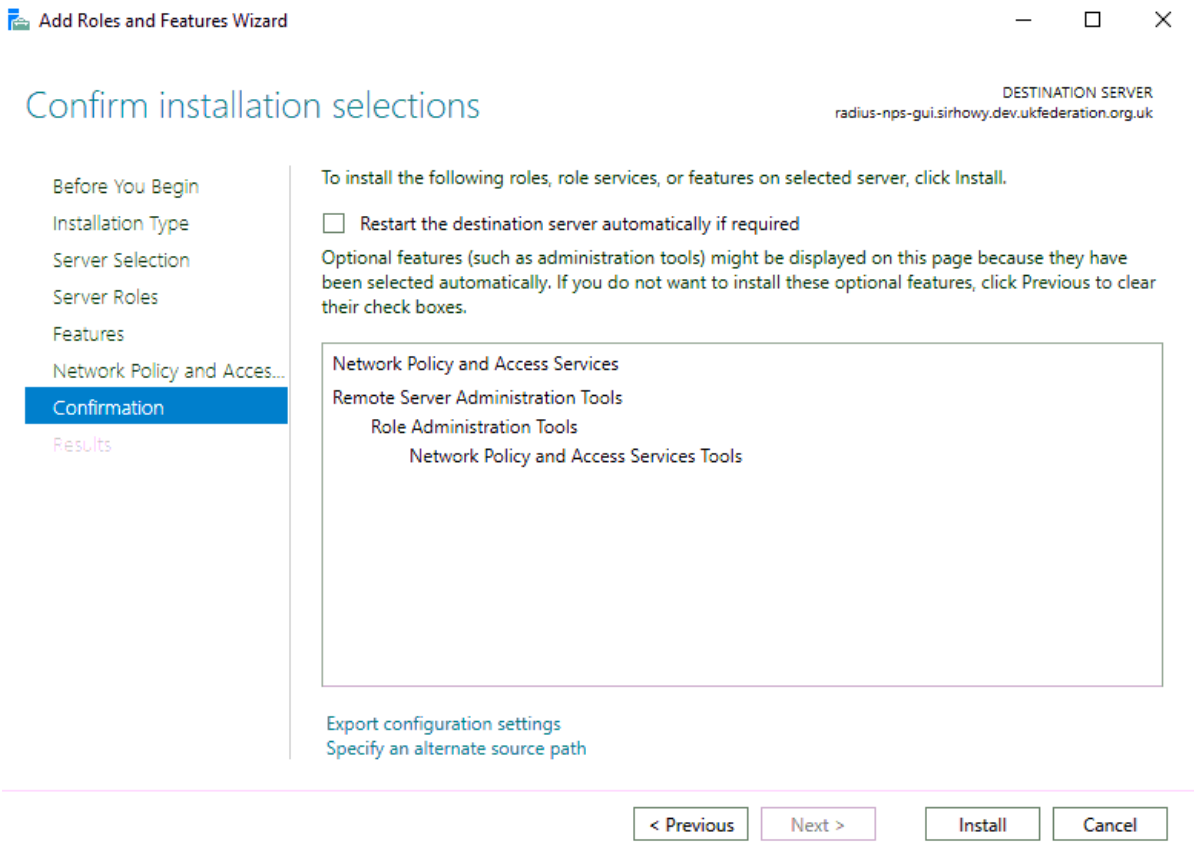
No additional features are required, click **Next**



Read this page, and click **Next**



Hit **Install** on the confirmation dialogue, it is unlikely you will need to restart the server.



4.Certificates and Certificate Authority

Most organizations would like to act as a Home participant (IdP) and to authenticate its own users. PEAP-MSCHAPv2 and EAP-TLS authentication methods, in common with all other EAP methods (with the exception of EAP-PWD - which is not supported in NPS) require an X.509 server certificate to be installed on the authenticating RADIUS server. The certificate is used to establish the secure authentication tunnel and by the RADIUS server to identify itself to the user's device.

Should you decide to participate only as a Visited (Wi-Fi service provider for visitors only) participant, you don't need a certificate and your ORPS can act as a proxy to receive requests from Wi-Fi access points, to log, filter, and forward authentication requests to the eduroam(UK) infrastructure. Most organisations participate as both Home and Visited service providers and so the ORPS needs to have a server certificate.

PEAP-MSCHAPv2 is the most commonly used authentication method in the Microsoft environment since it utilises username and password credentials, which are easy to distribute and PEAP is straightforward to set up on NPS.

PEAP (Protected Extensible Authentication Protocol) sets up a secure tunnel using TLS (just like HTTPS does for websites) in order to protect the credentials and is an important part of the mutual authentication. Firstly, the

authentication server needs to prove to the user that he or she will be providing credentials to the right authority, then the users need to prove who they are. The RADIUS server (NPS in this case) will send its certificate to the client before authentication of the user takes place. The client must have the public certificate of the Certification Authority (CA) installed already. This will issue and sign the NPS server's certificate. The CA certificate may be distributed using e-mail, a web page such as eduroam CAT (eduroam Configuration Assistant Tool), or a management system such as AD Group Policy. The client checks the validity of the RADIUS server's certificate using the CA certificate. The client should also check the name (CommonName and/or SubjectAltName) of the certificate.

You can use a server certificate from a public commercial certificate authority; such certificates are available from the very cost effective **Jisc Certificate Service** through which you will pay a fraction of the cost of commercial providers. This will save you having to set up your own 'local' CA service, manage certificates and distribute your public certificate to your users' devices. However commercial CAs certs do have an expiry date, so periodically a large administrative task will be encountered. If you are taking this option then you can skip to Section 8. Creating a Server Certificate.

If you set up your own 'local' CA, rather than using certificates from a large commercial CA, the possibility of phishing is reduced since commercial CA certificates are readily available and could be used in exploits such as Man-in-the-Middle attack, whereas as with a local CA you controls generation of the public CA certificate and can assure its use is restricted to your own servers. If you are taking this option you should continue into the next section; Section 5. Install and configure a Standalone Certificate Authority.

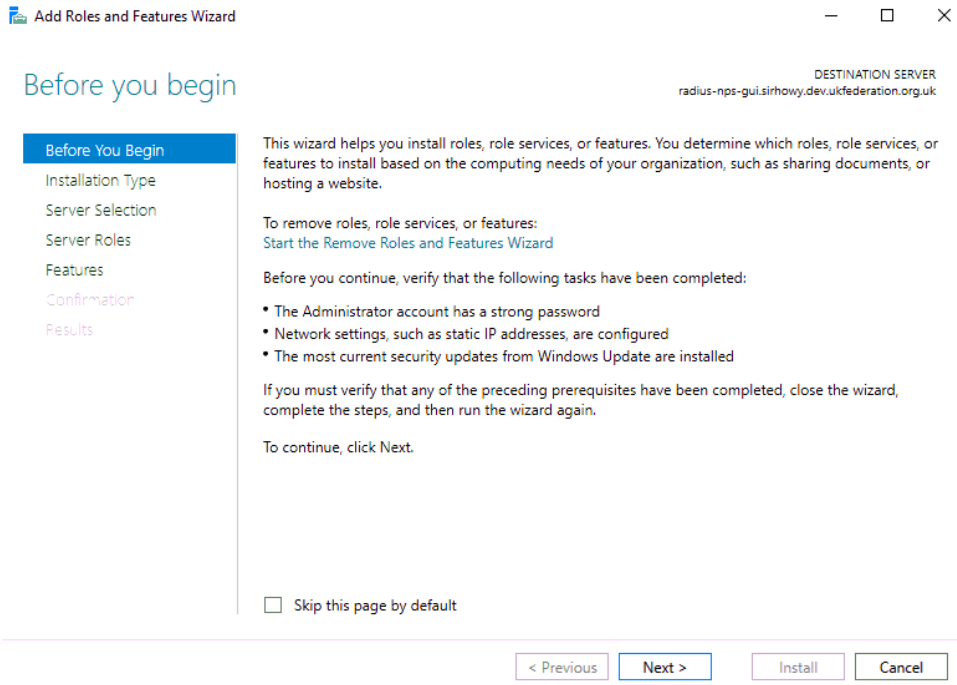
Other options such as using an existing Enterprise Certificate Authority are available too, but not documented here.

If taking that option ensure that your CAs lifetime is long for example 20+ years. This will be the certificate that goes onto end user devices, so you would like to avoid the need of replacement as little as possible. You should add a valid CRL Distribution point added, this will be a URL that should reference a domain name that you have control over and could feasibly host a file if required for example http://www.camford.ac.uk/eduroam-ca.crl. See Section 7. Change the Certificate Authority - CRL Distribution Points

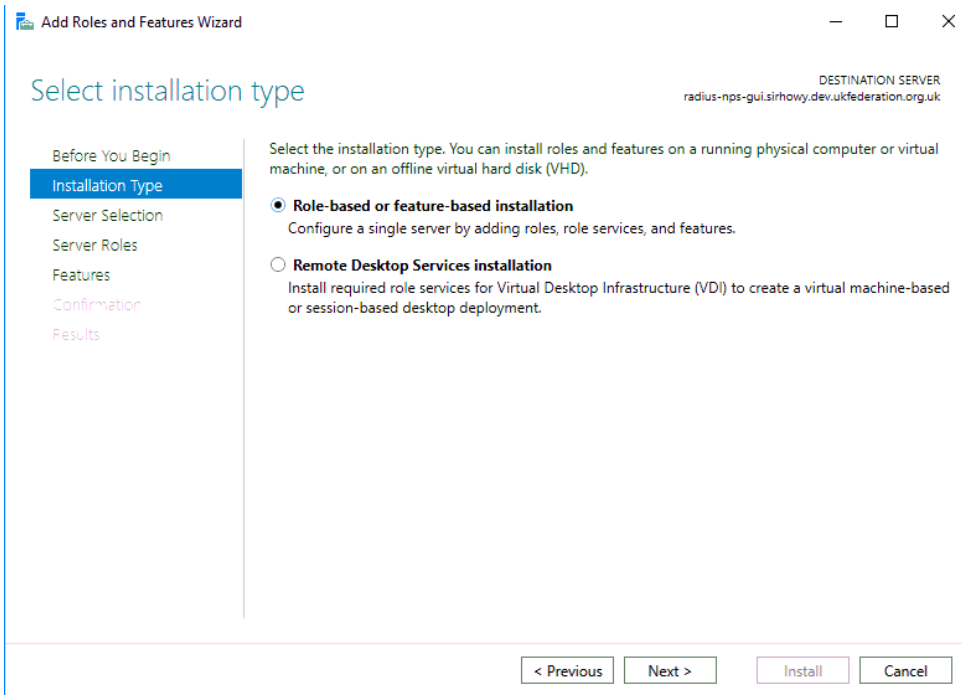
You should also tweak the default validity of the certificates issued by your CA as the default one year is too short, you could align this to the lifetime of the CA or slightly greater. See Section 8.Change the Certificate Authority - Validity period

5.Install and configure a Standalone Certificate Authority

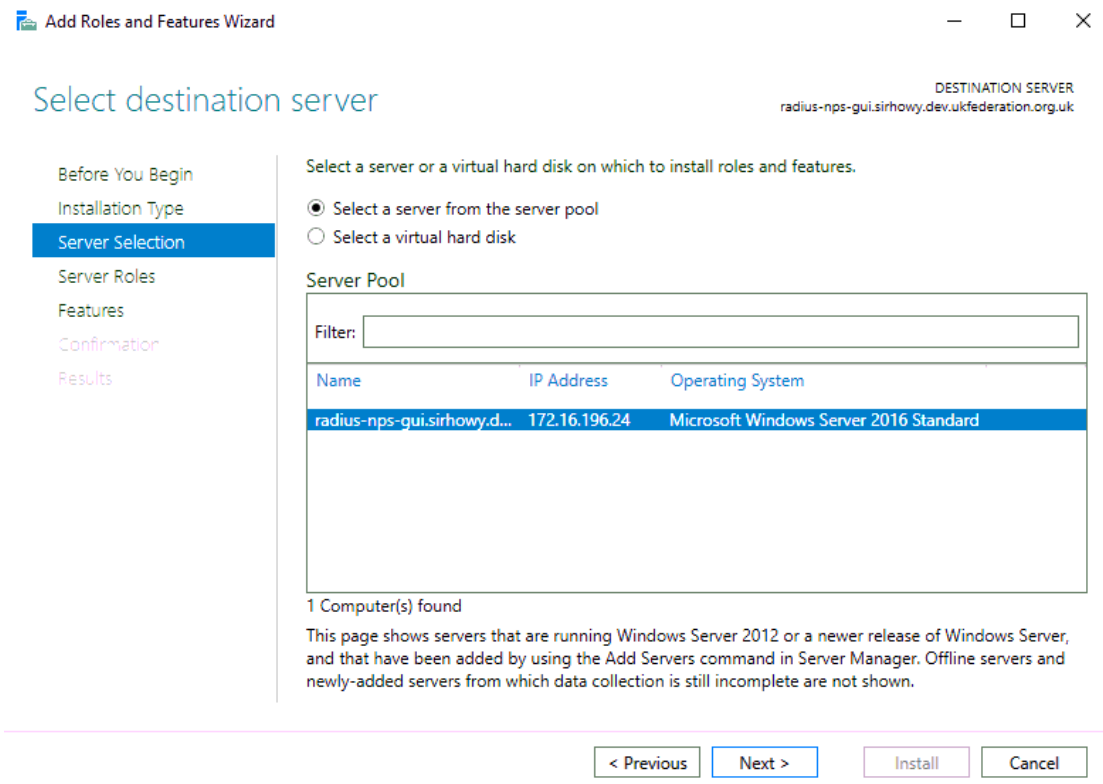
From **Server Manager,** Choose **Add and Remove Roles.**



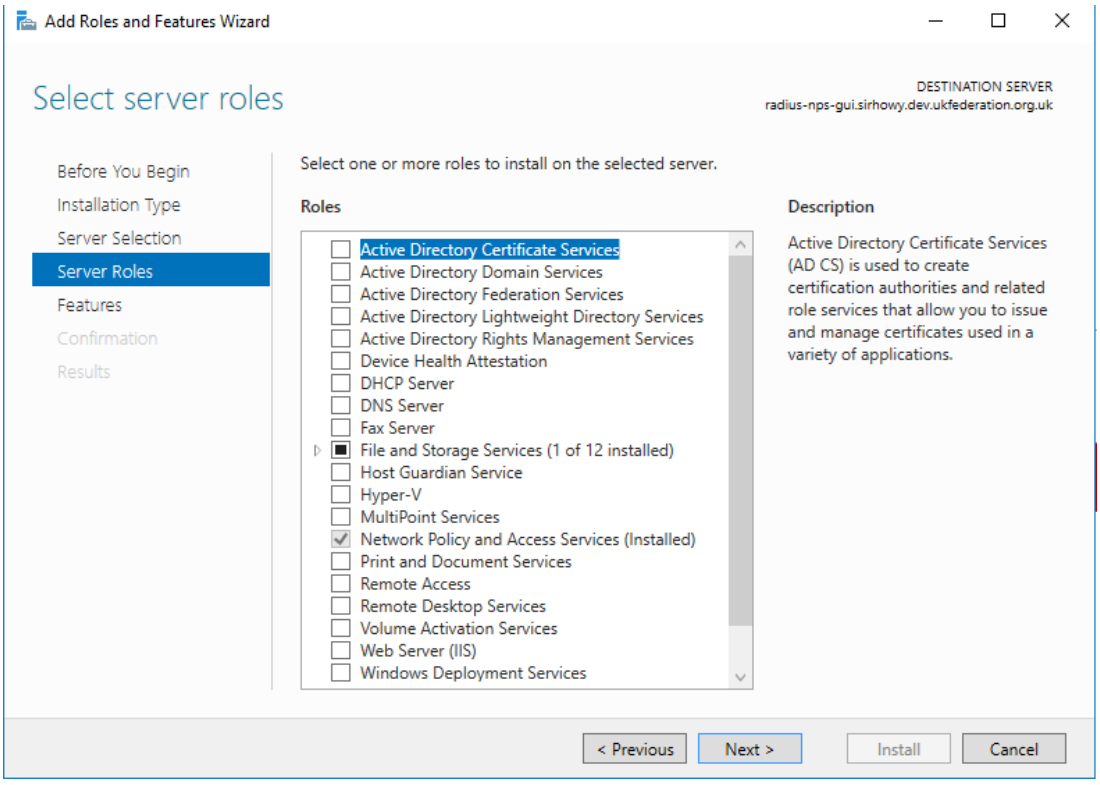
On the following screen you should choose **Role-based or feature-based installation**



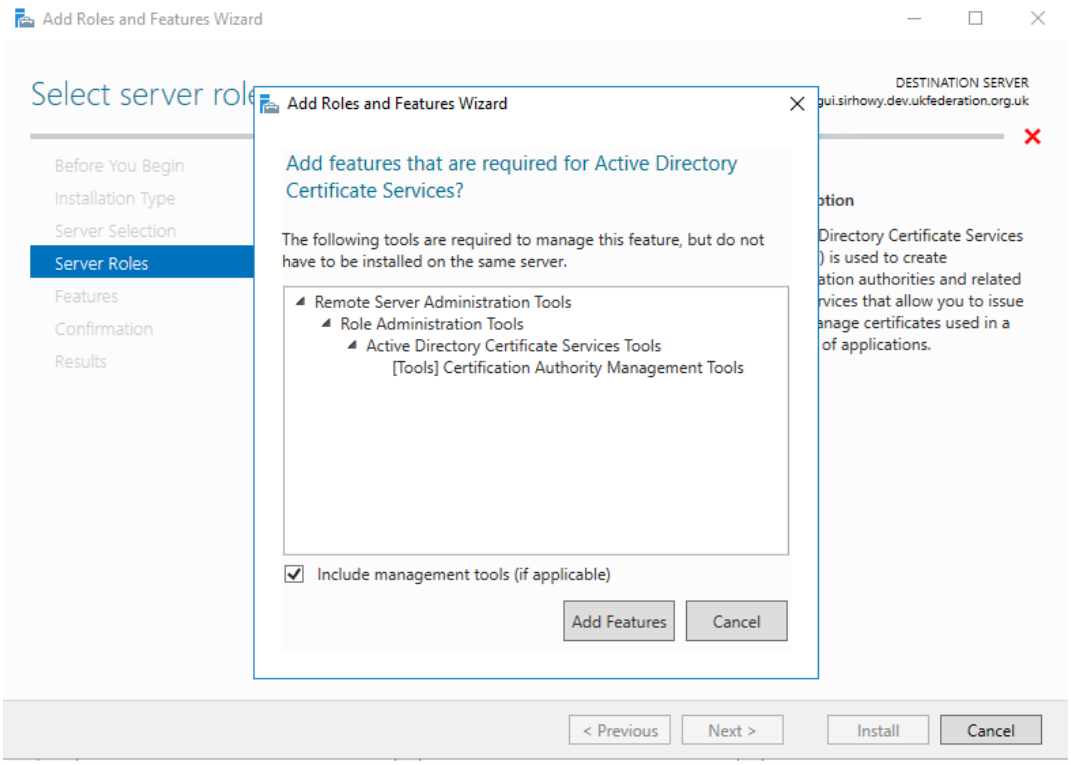
Select a server from the server pool you wish to install this on. This is like to be the server that you are currently using.



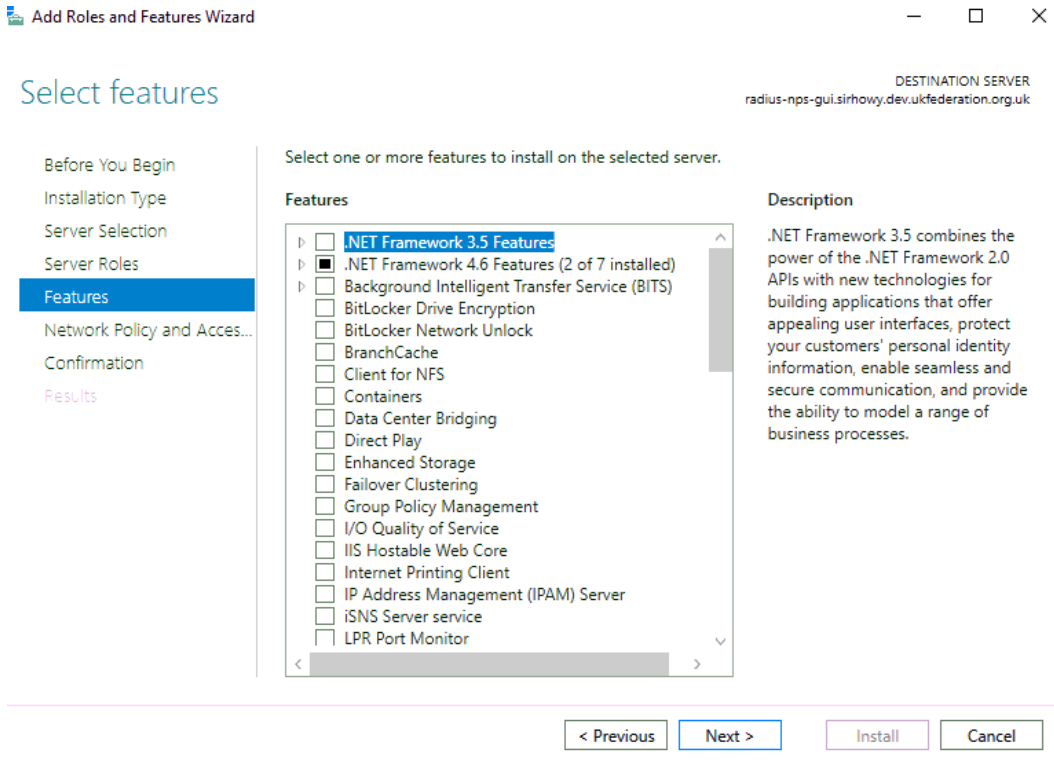
Select the **Active Directory Certificate Services** role



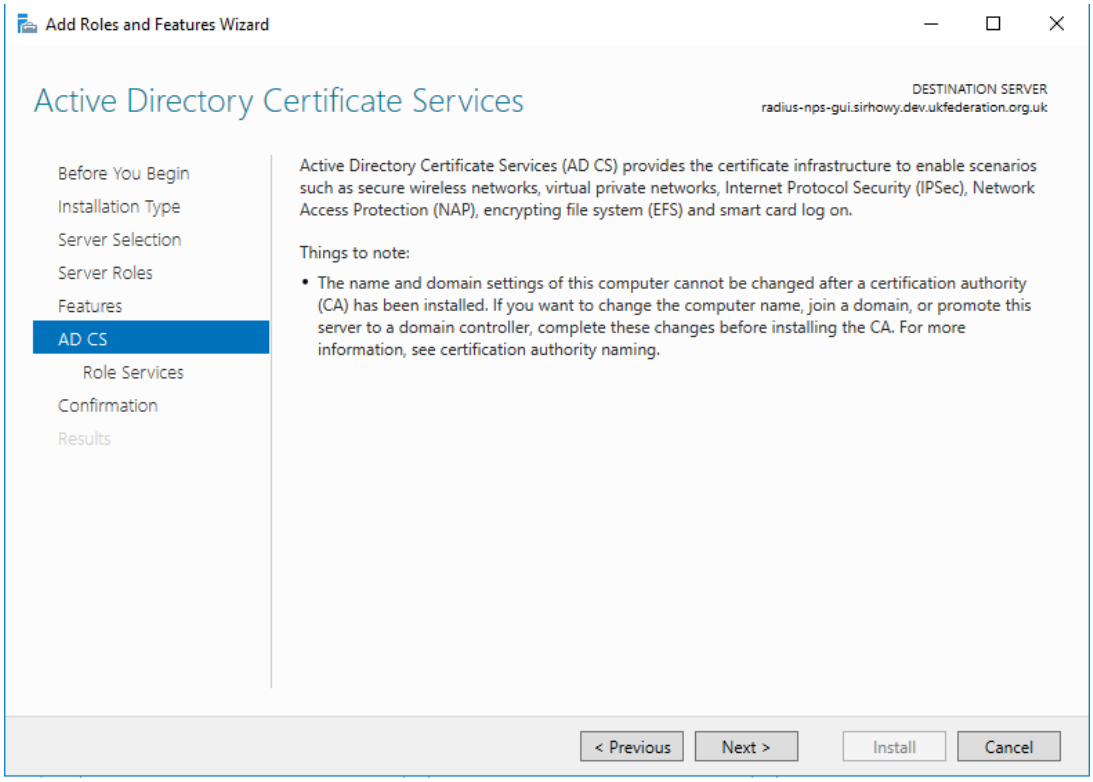
The following dialogue will appear, click **Add Features**. When you return to the **Add Roles and Features Wizard** click **Next**



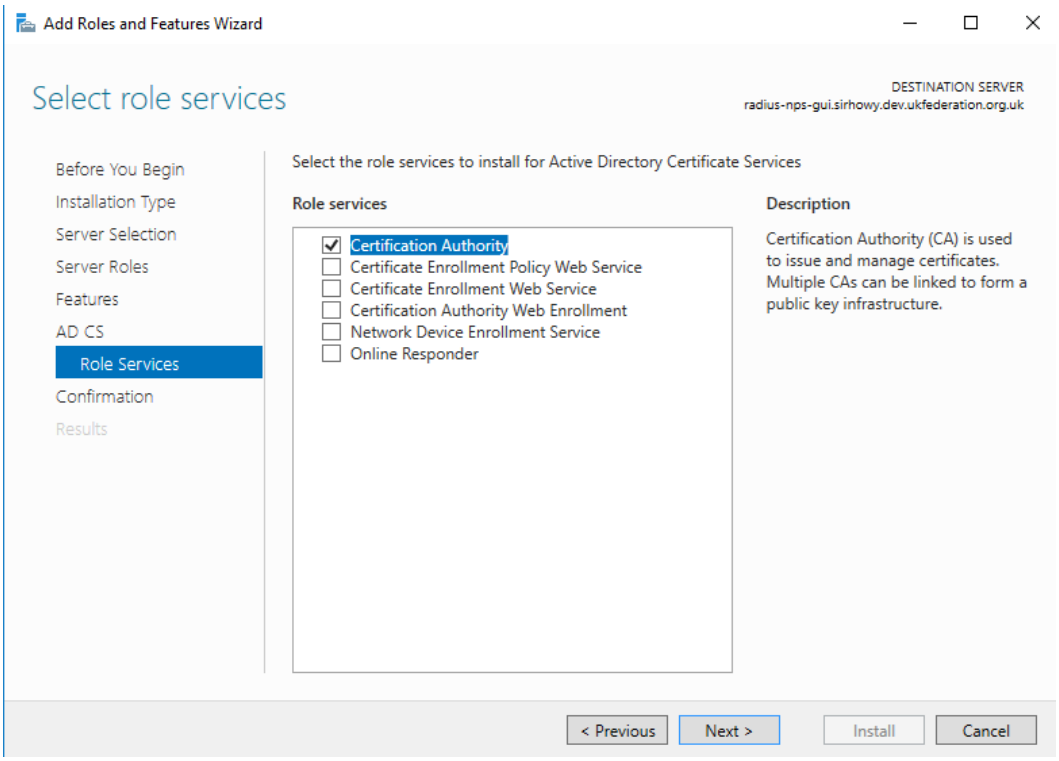
Click **Next .**



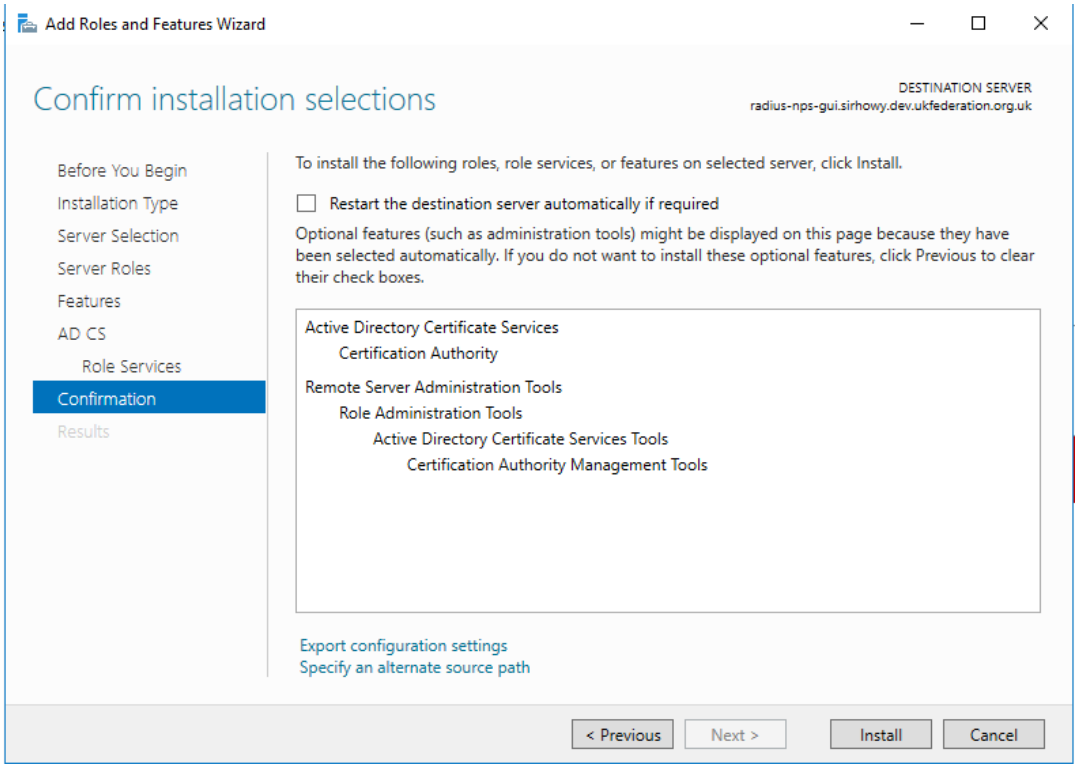
Take note of this dialogue in relation to DNS/Hostname of the server and then click **Next**



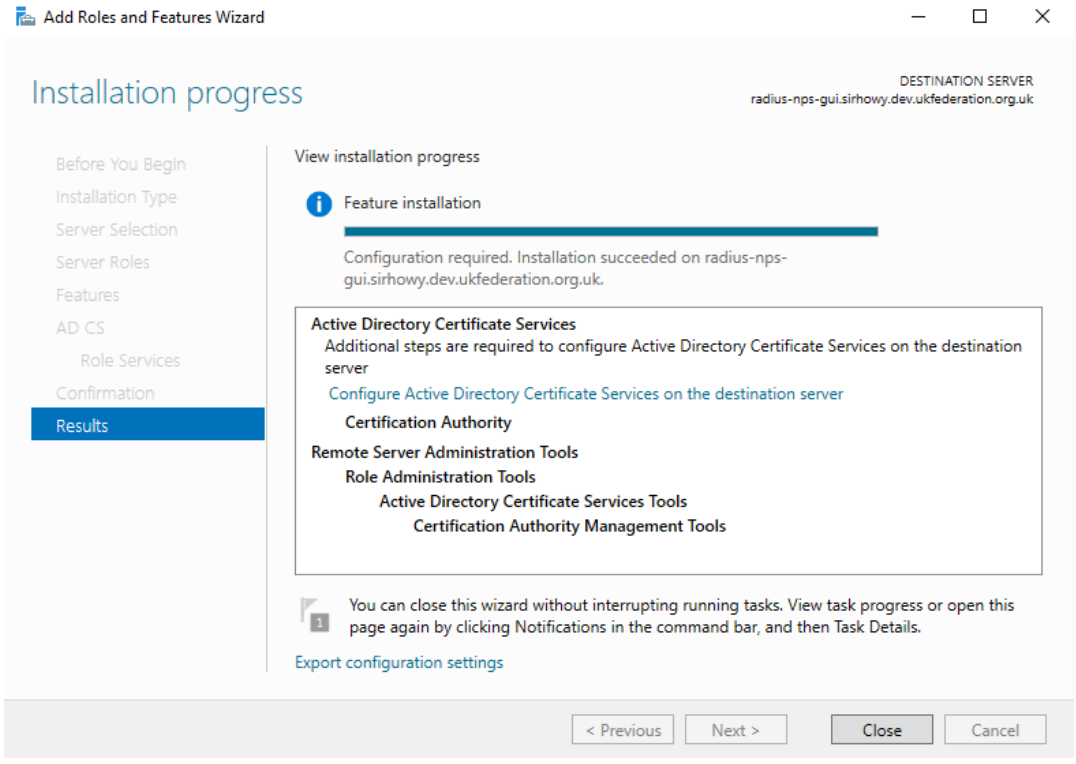
There is no need to select any additional **Role Services** and keep it as below



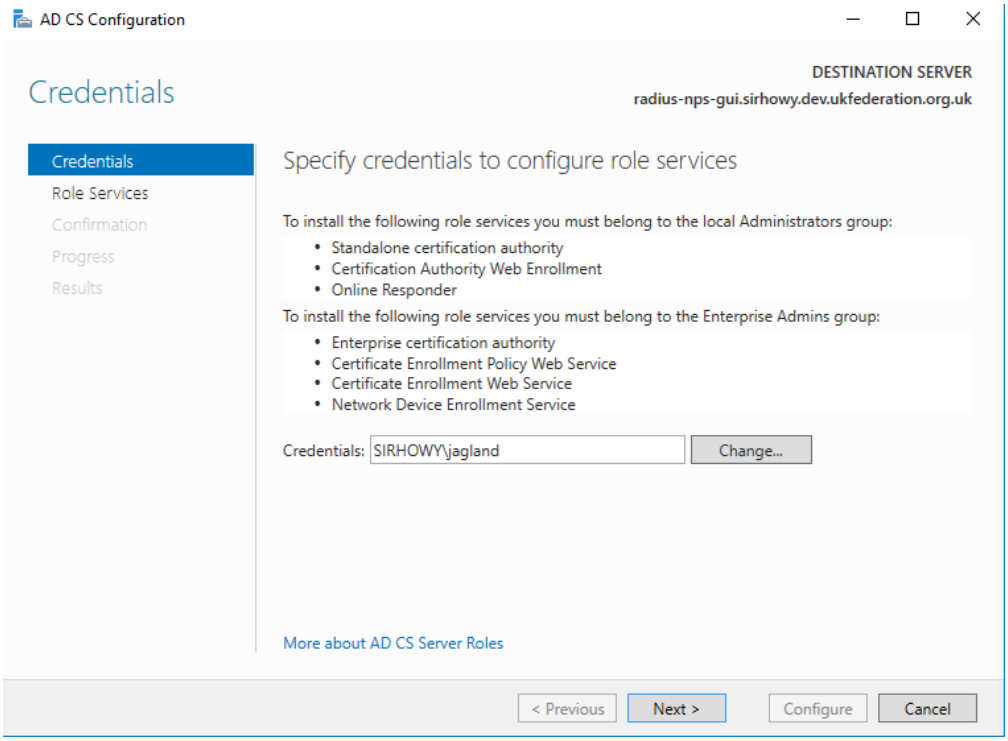
Hit **Install** on the confirmation dialogue, there is no need to tick the Restart



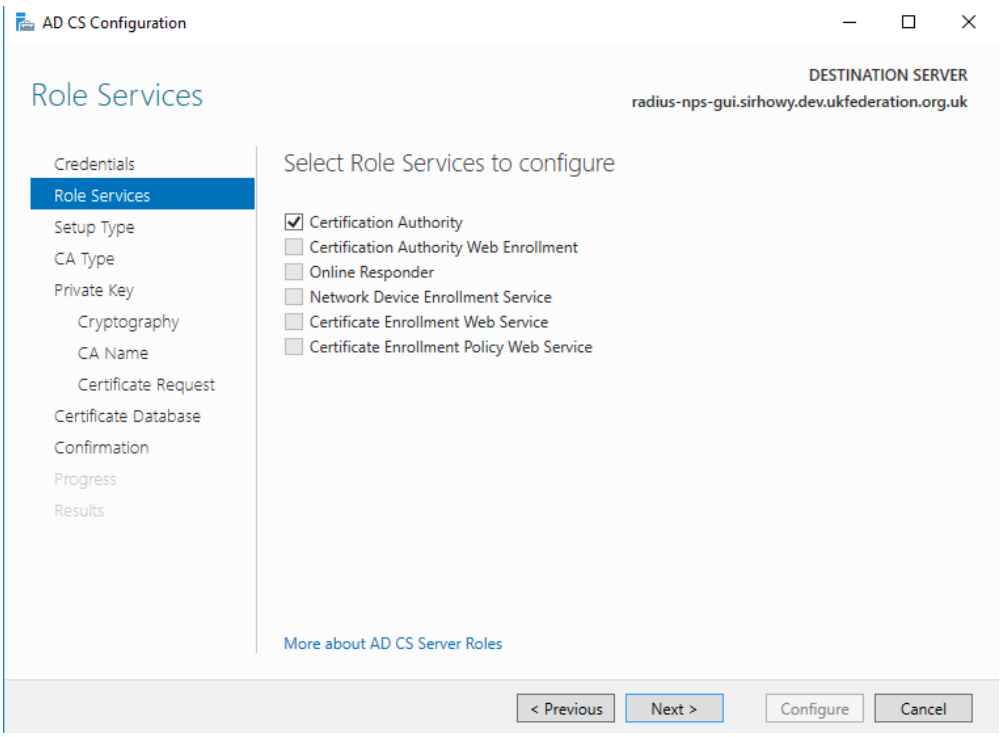
Once installed, click on **Configure Active Directory Certificate Services on the destination server**



You can now configure your Standalone CA. Here you will select the **credentials of the appropriate administrative account,** this can usually be left as default

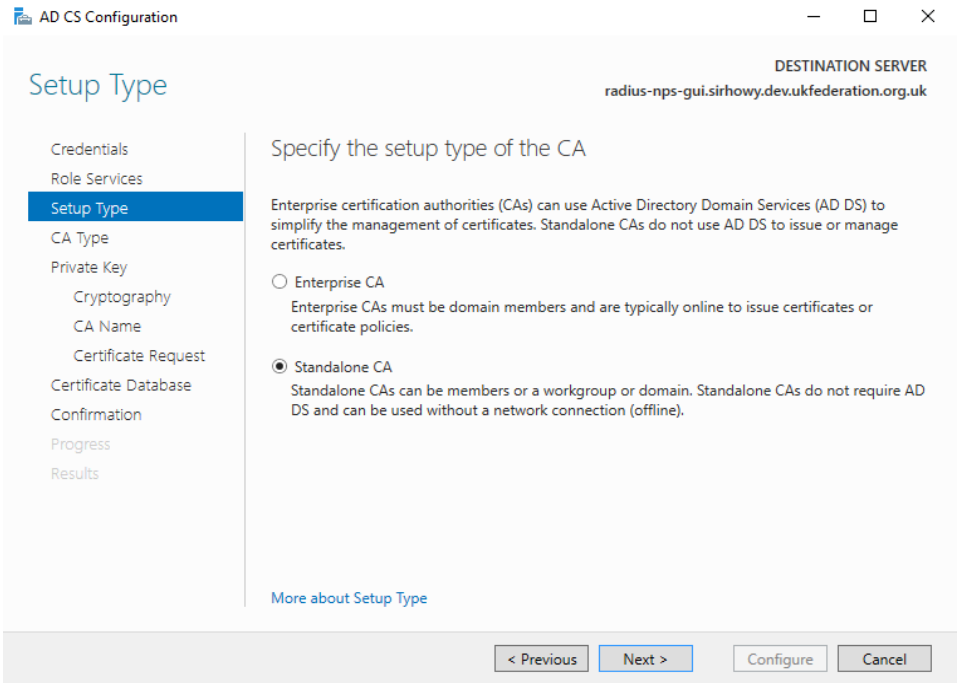


Select role services to configure, as there is only one **Certification Authority** then just hit **Next**

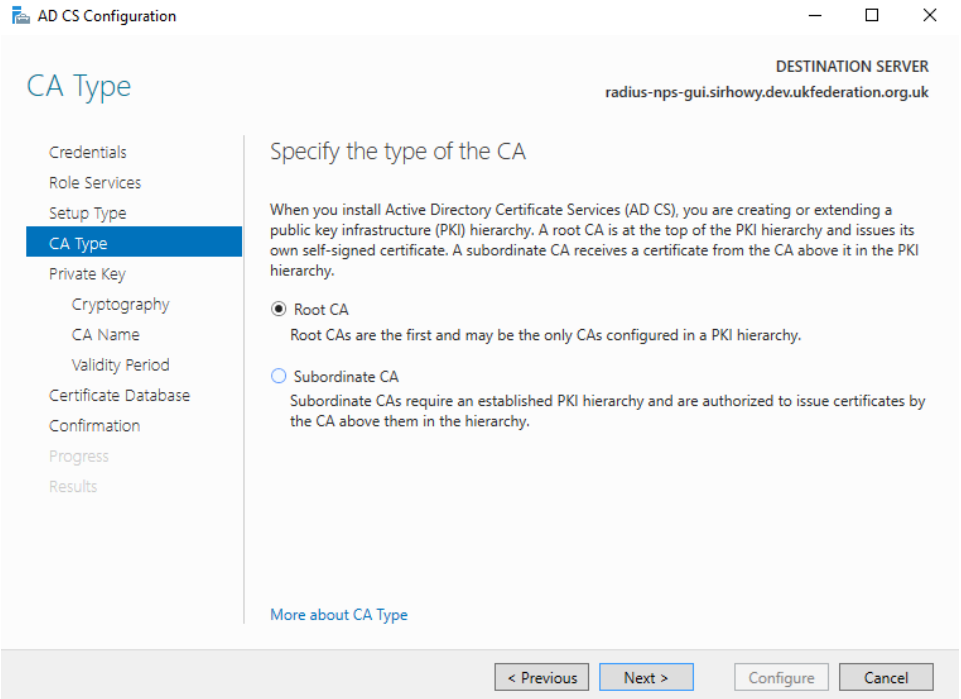


We recommend the use of a **Standalone CA**, as this should be more portable than an Enterprise CA, which is heavily integrated with Active Directory. Select **Standalone CA** and click **Next**

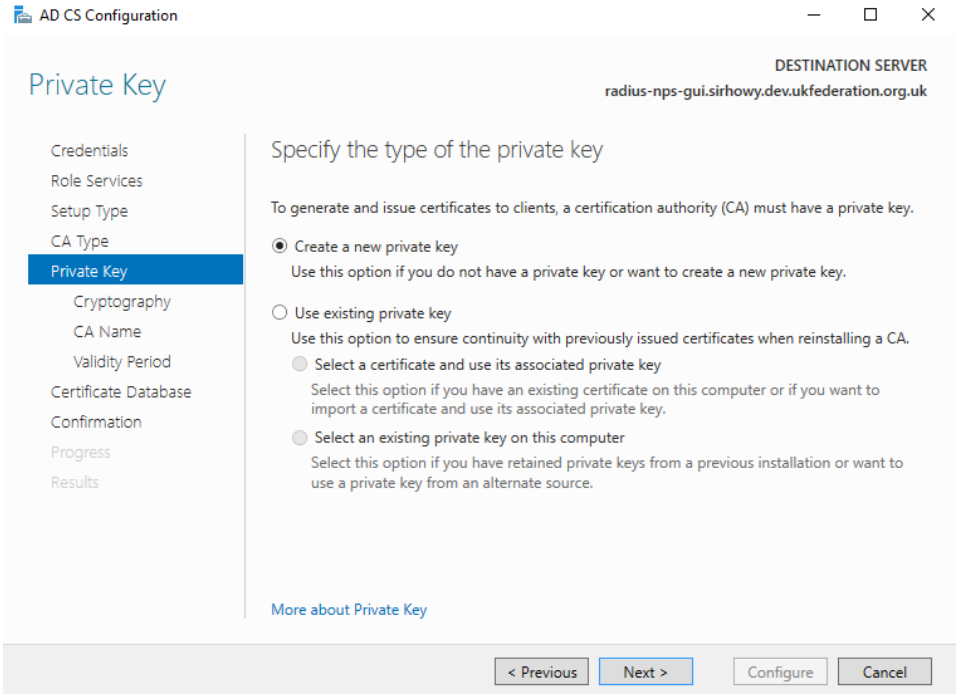
Tip: if you want to setup an Enterprise CA there are some instructions in the GÉANT guide.



Select **Root CA** and then hit **Next.**

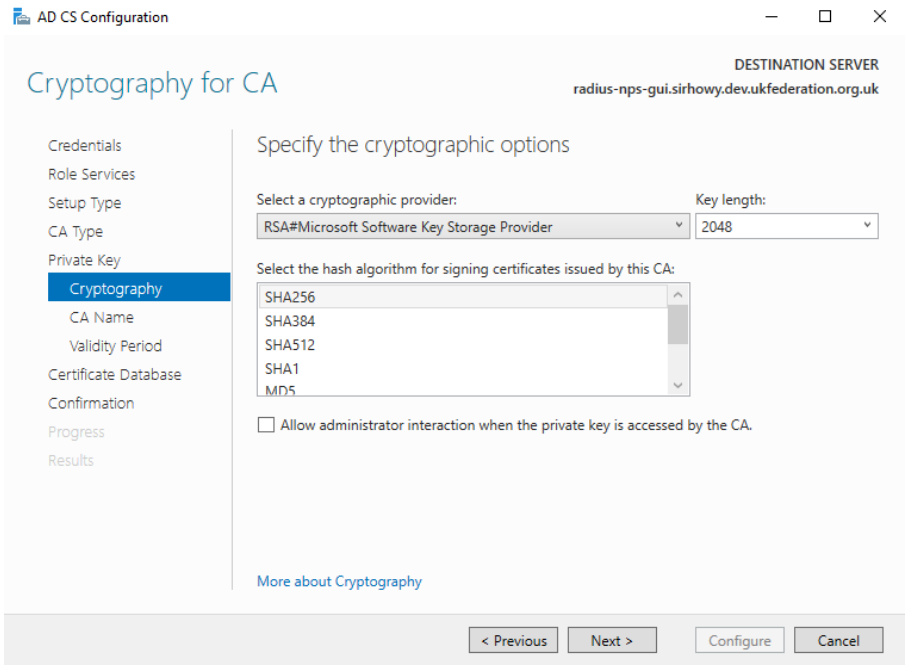


Select **Create a new private key** and hit **Next**

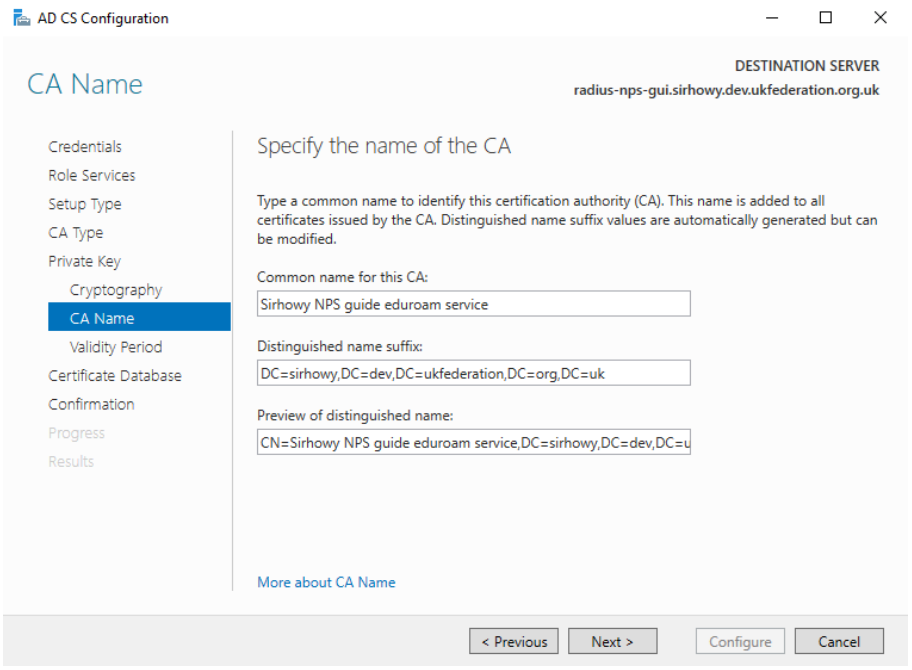


Set a minimum Key length of **2048,** and at least **SHA256** for your hash algorithm.

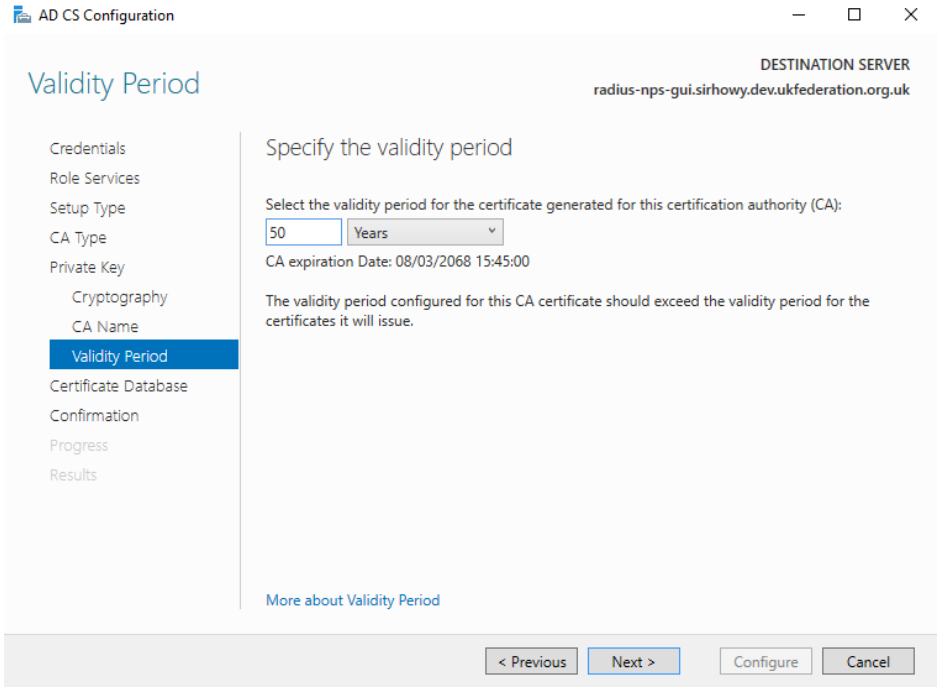
Nb.Do not use SHA1 or MD5.



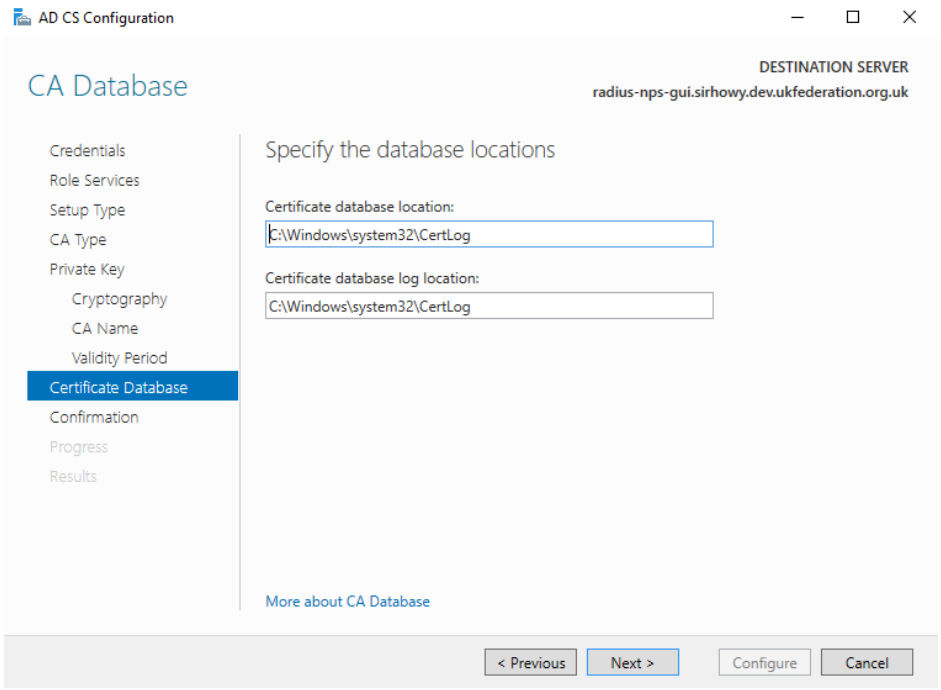
The **Common Name for this CA** can be modified, and should be something friendly for users, as they may see this whilst configuring their device. E.g. `Camford University eduroam service`



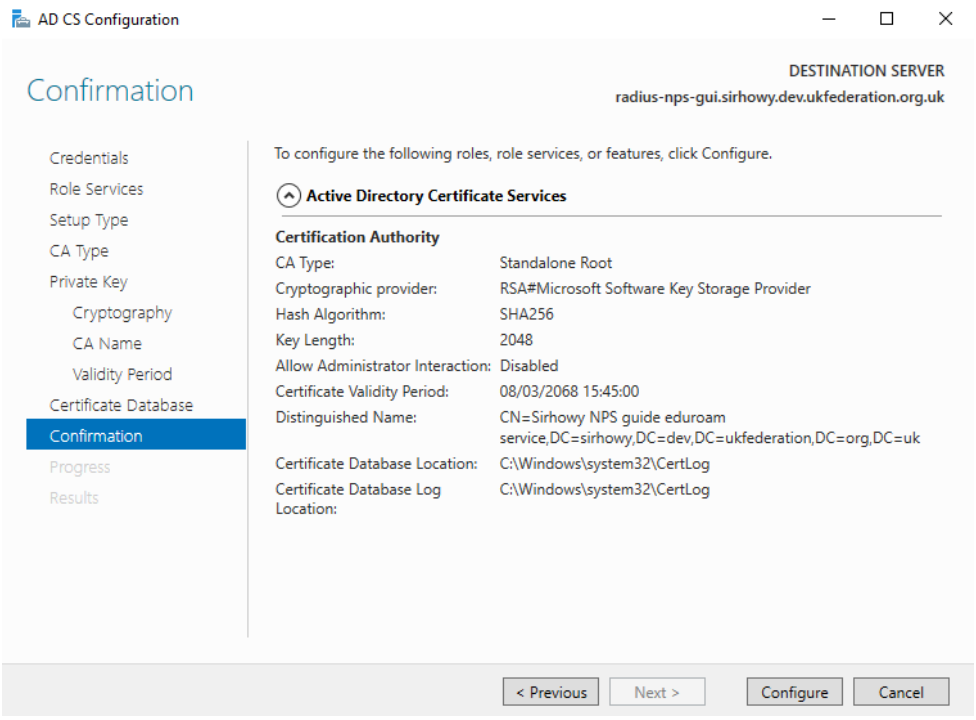
Please give the **Certificate Authority** a long-life, we recommendation **20 years or more.**



Your CA will be stored at the **Certificate database location,** ensure that it is backed up regularly to a secure location.



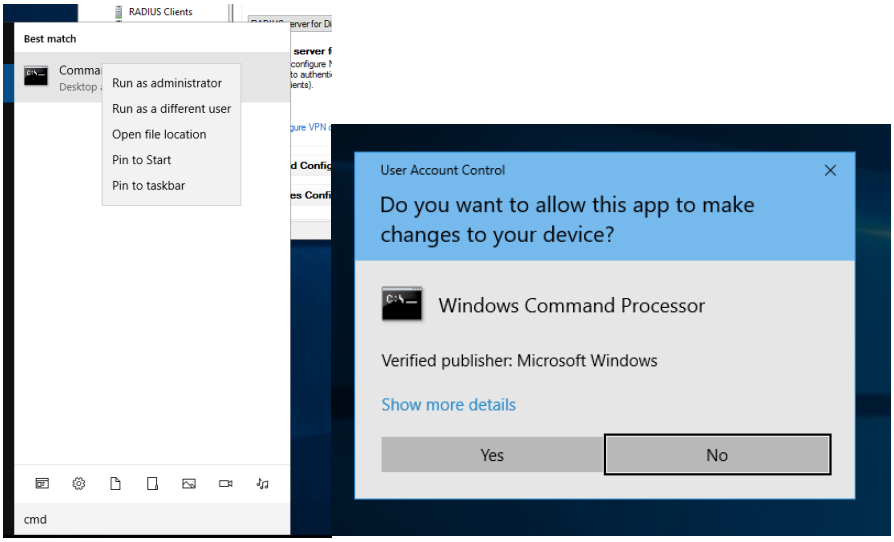
This is the final page of the wizard, click **Configure,** the next dialogue will advise that the "Configuration Succeeded" click **Close**. You should complete the additional tasks mentioned in **Sections 6 and 7** of this guide.



6. Change the Certificate Authority - Validity period

This means that the CA will issue certificates that are valid for a long period, align this with the validity period of the CA i.e. 20 years+.

Search for the command prompt `cmd` in Start, and then right click choose **Run as Administrator**, following this you will need to choose **Yes** in the User Account Control dialogue.

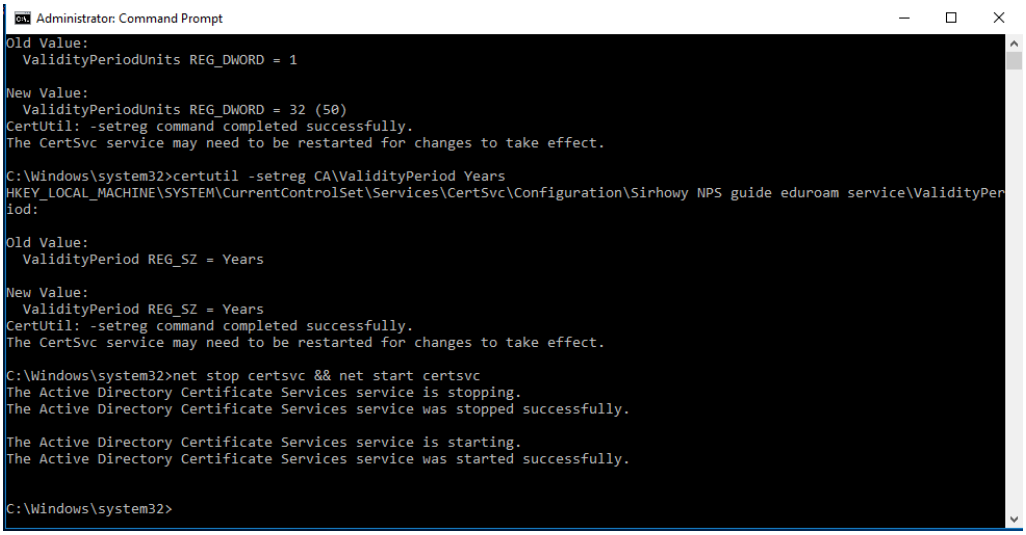


On the command prompt enter the following commands;

(the number `20` here is the number of years, so adjust this as required)

```
certutil -setreg CA\ValidityPeriodUnits 20
certutil -setreg CA\ValidityPeriod Years
net stop certsvc && net start certsvc
```

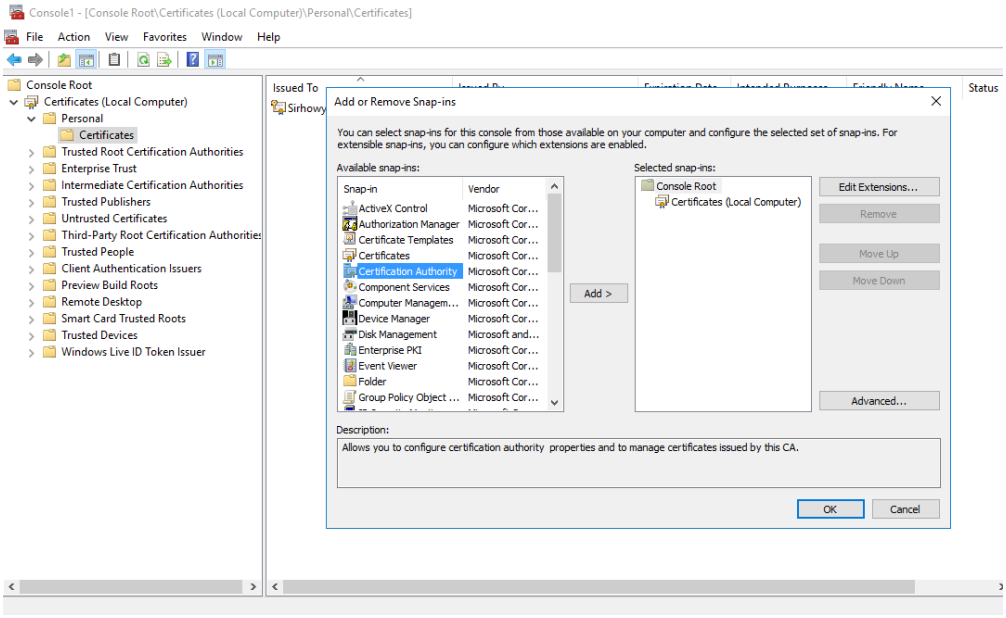
You can see the successful output of this below;



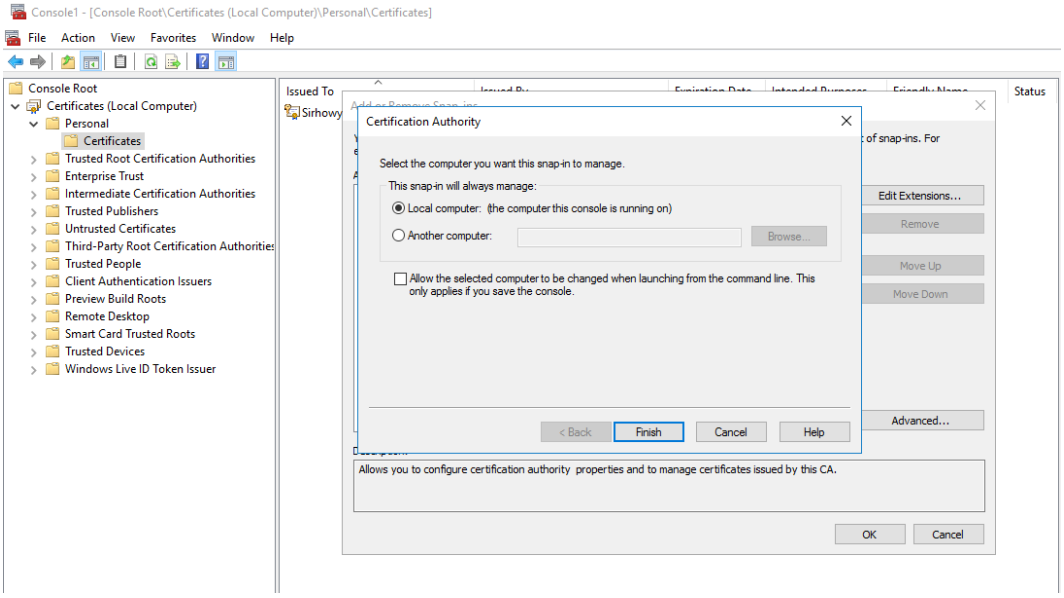
7. Change the Certificate Authority - CRL Distribution Points

The CRL Distribution points created by the CA in Windows may not be compatible with devices looking for a URL starting http://, as a result we would recommend the following steps.

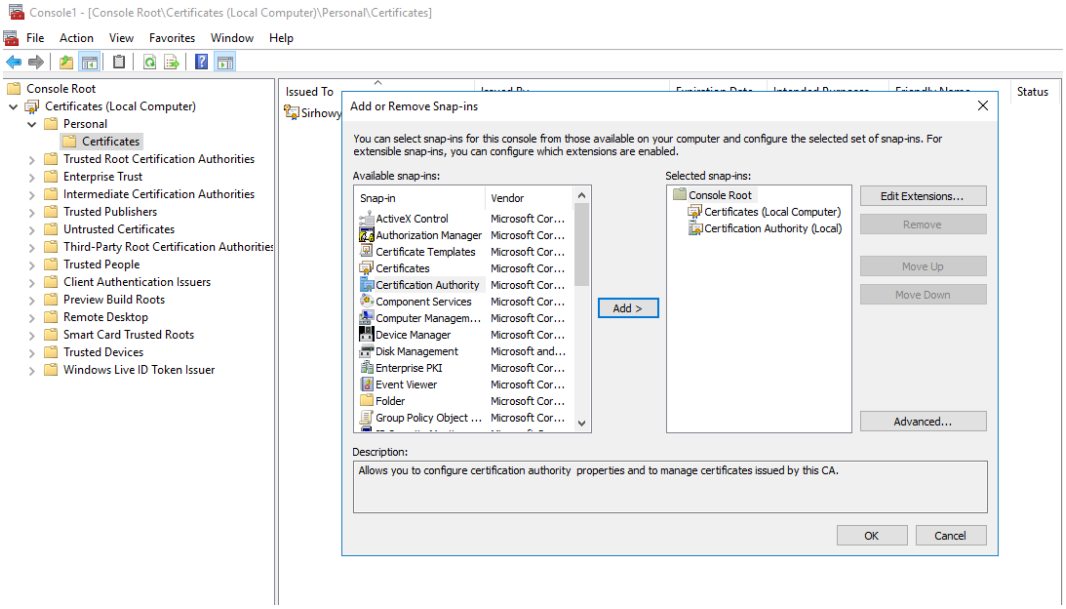
Add the **Certification Authority** Snap-in to MMC



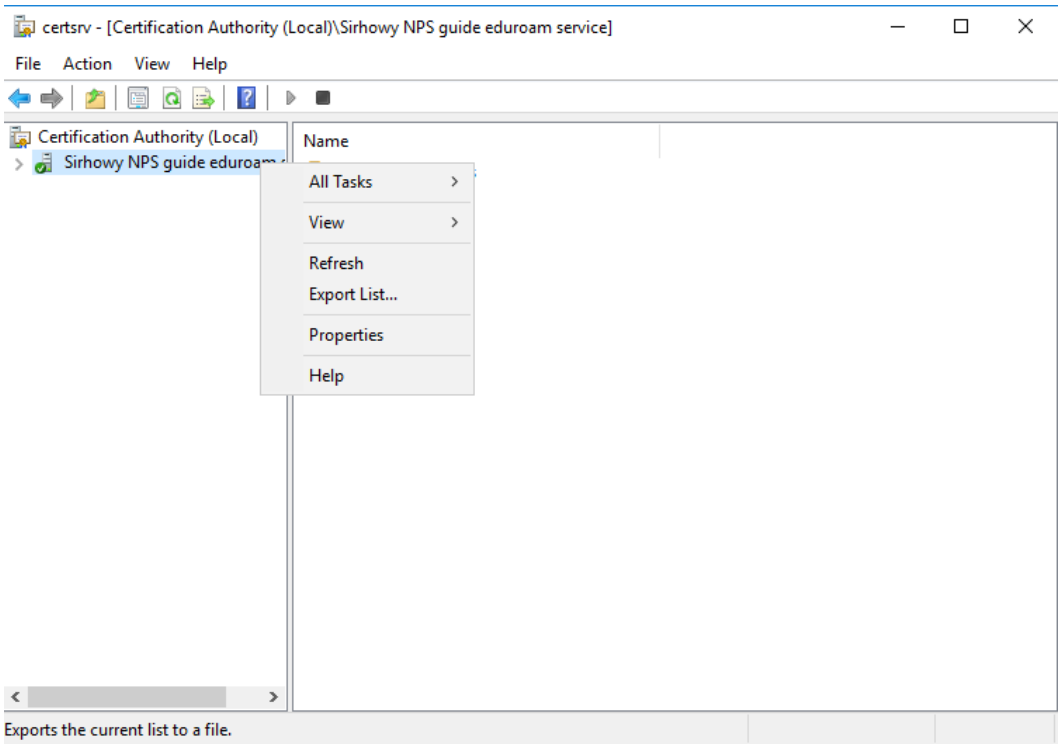
Choose **Local Computer**



You should see **Certification Authority** on the right hand side under **Selected Snap-ins**

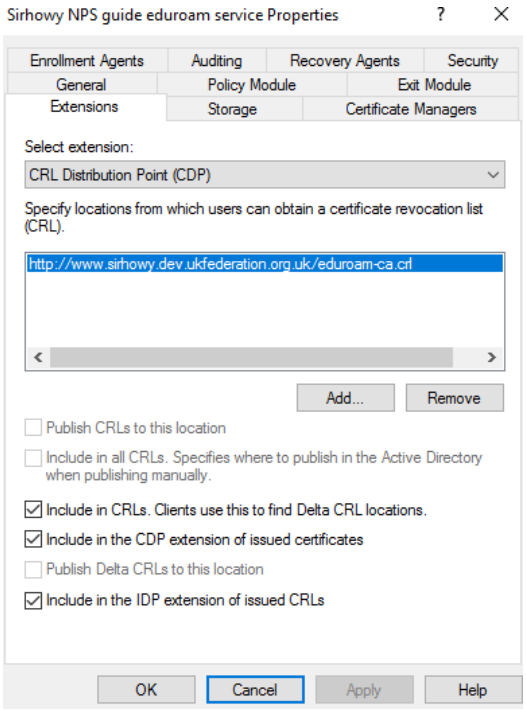


In MMC with certificate authority snap-in selected, right click and choose **Properties.**



In the **Extensions** tab, **Add** a **CRL Distribution Point (CDP)** location, this should be somewhere you could feasibly place a CRL distribution file, for our example `http://www.camford.ac.uk/eduroam-ca.crl`

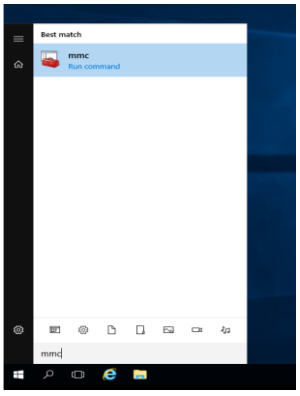
Choose **Include in the CDP extension of issued certificates** for the above CRL, make sure to untick this from any of the other CRLs or remove all other CRLs. There is no requirement for **Include in CRLs. Client us this to find Delta CRL locations** and, **Include in the IDP extension of issued CRLs** to be ticked or unticked.



8.Creating the Server Certificate

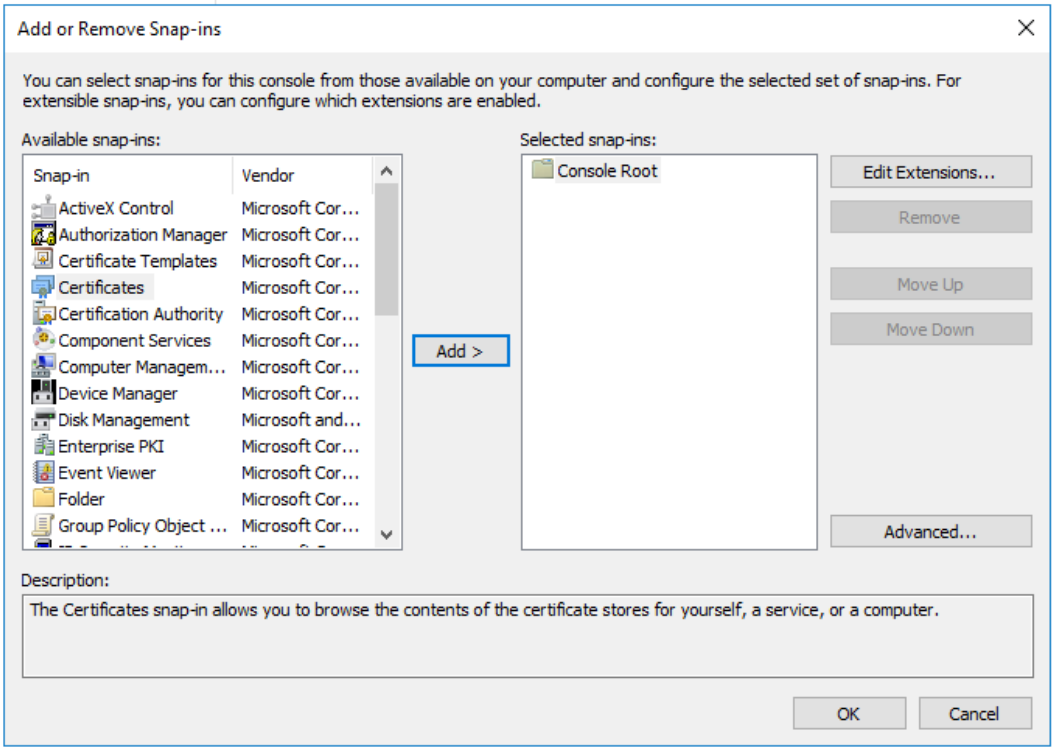
PEAP-MSCHAPv2 and EAP-TLS authentication methods, in common with all other EAP methods (with the exception of EAP-PWD - which is not supported in NPS) require an X.509 server certificate to be installed on the authenticating RADIUS server. The certificate is use to establish the secure authentication tunnel and is used by the RADIUS server to identify itself to the user's device.

To acquire a server certificate from your certificate provider you must generate a certificate signing request (CSR) on the NPS server that you want the certificate for. If deploying more than one ORPS, normally you acquire one certificate and then copy that and the private key to all ORPSs. The following describes how to generate your CSR for submission to your certificate provider (e.g. **Jisc Certificate Service**). If you operate you own private CA and generate self-signed certificates you should see the instructions provided in the GÉANT guide **GN3-NA3-T4-UFS140**.

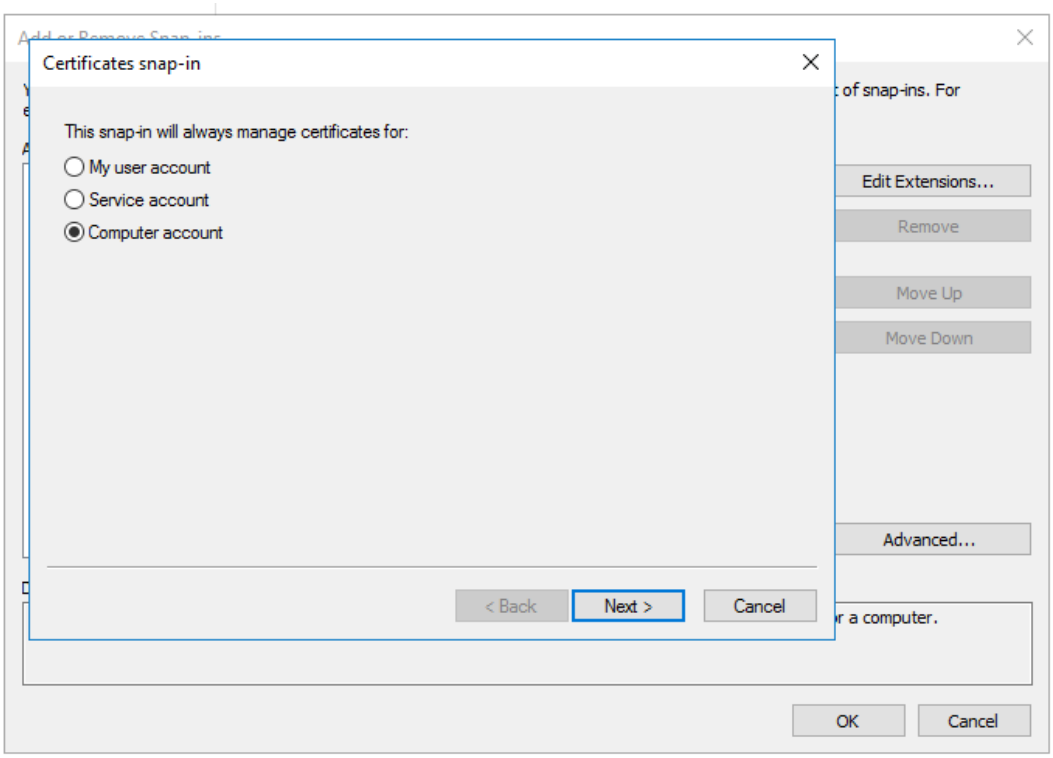


Go to **Start** , **run** and type **mmc** and click on it.

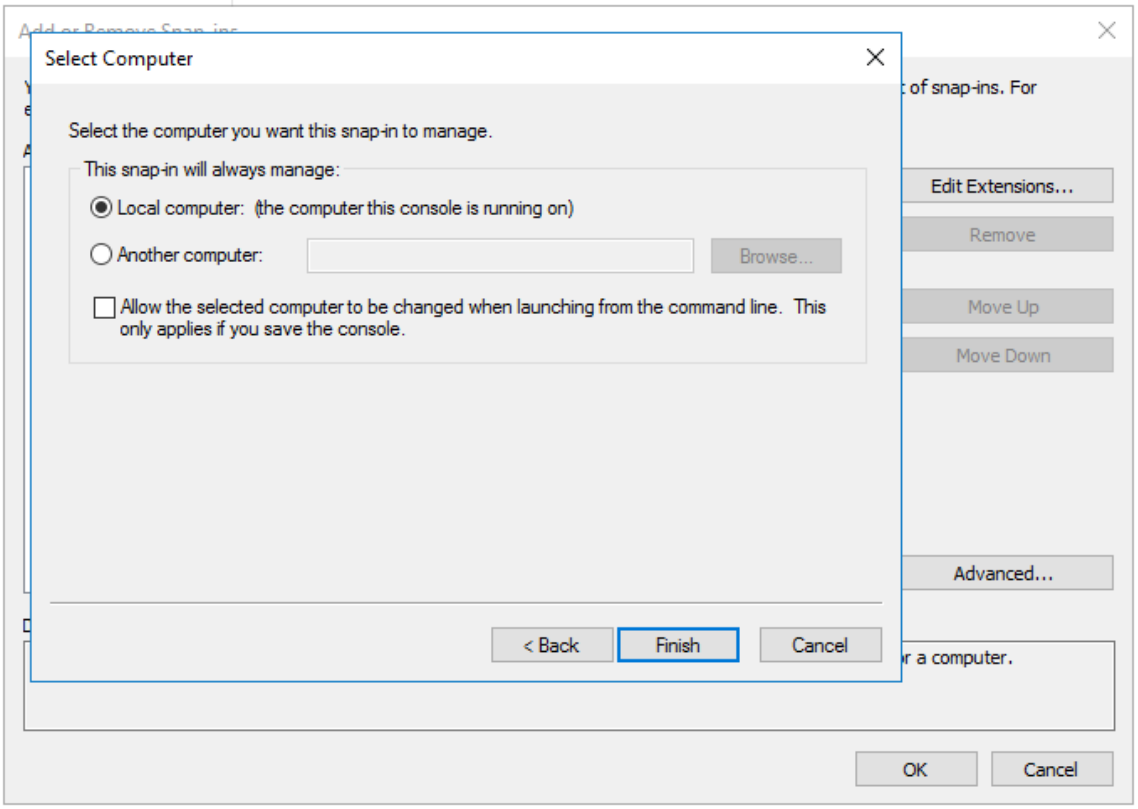
In the mmc console click **File, Add/Remove Snap-in...**. Then from the list of **Available snap-ins** choose **Certificates** and click **Add**.



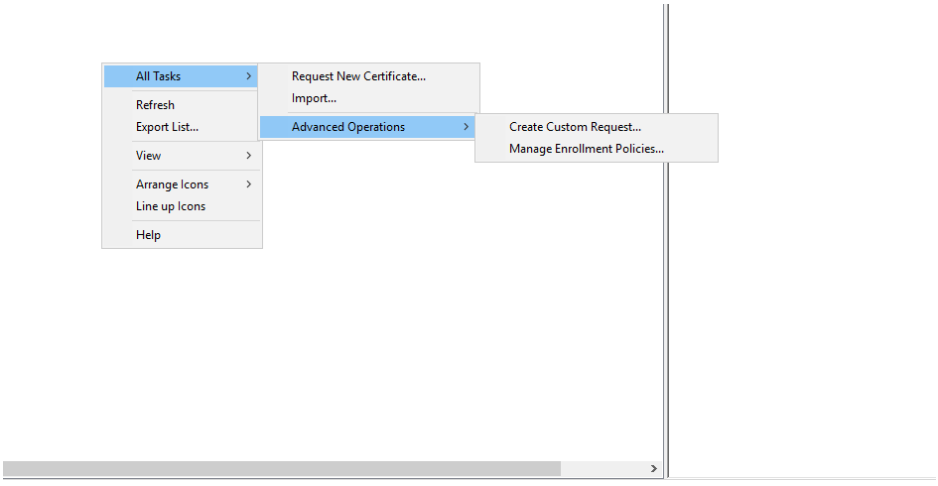
Choose **Computer account** and click **Next**.



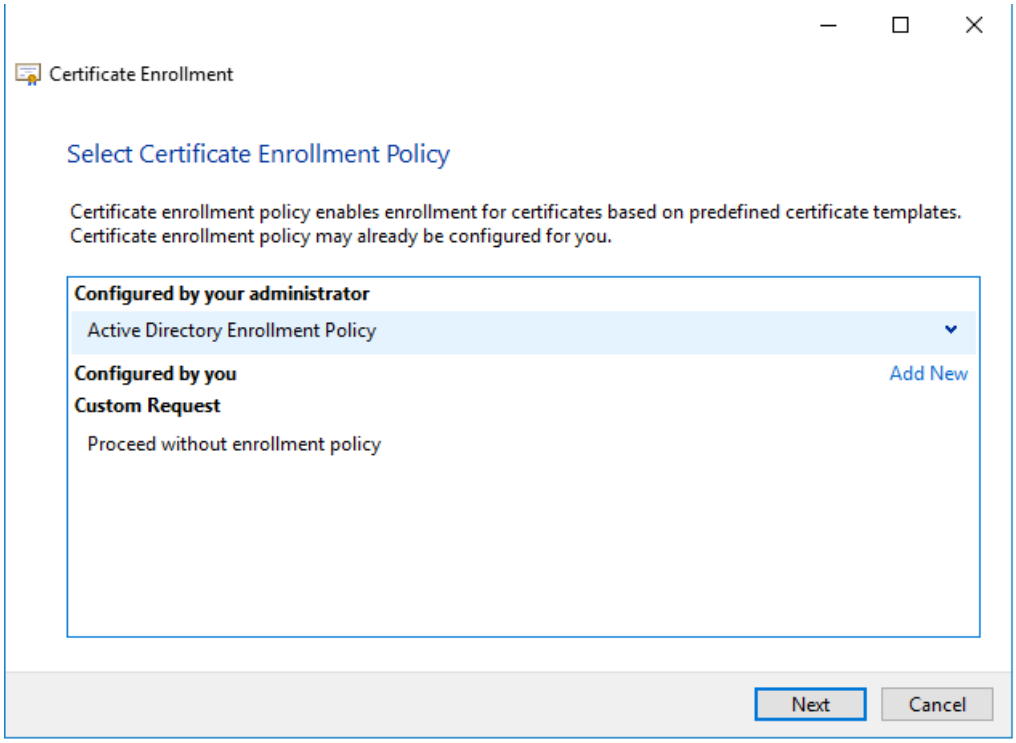
Choose **Local Computer:** and then click **Finish**. Then click **OK**



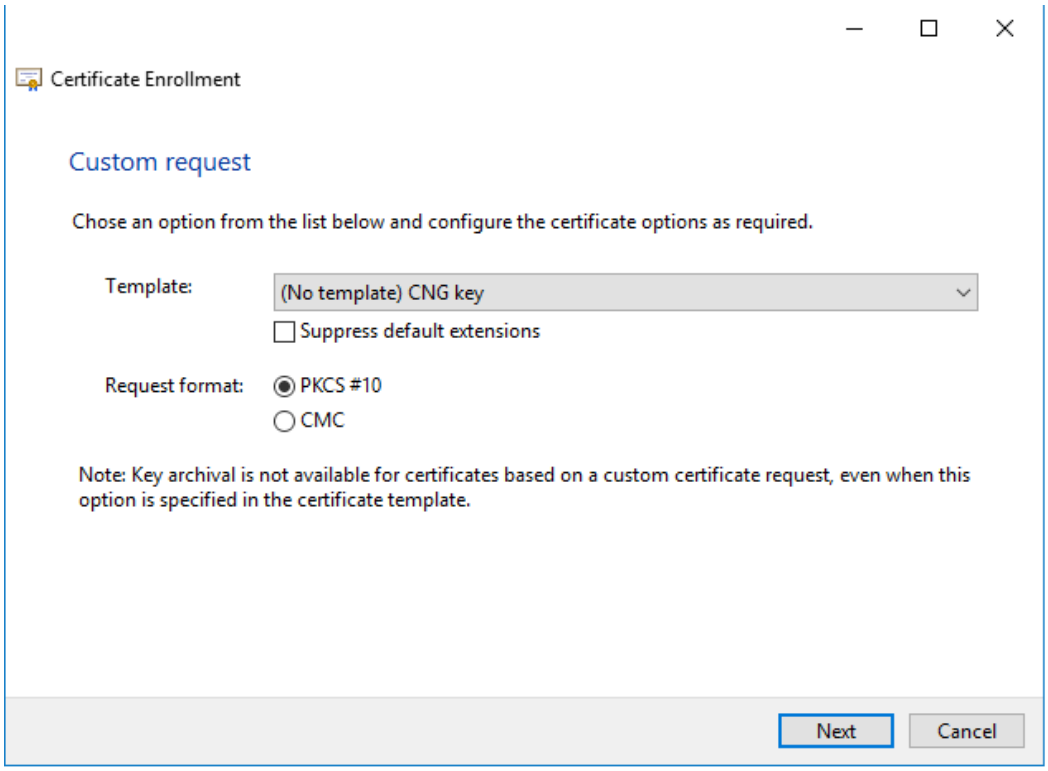
In the menu on the left, under **Certificates (Local Computer),** right click on **Certificates** under **Personal**. Then under **All Tasks, Advanced Operations,** click **Create Custom Request...**.



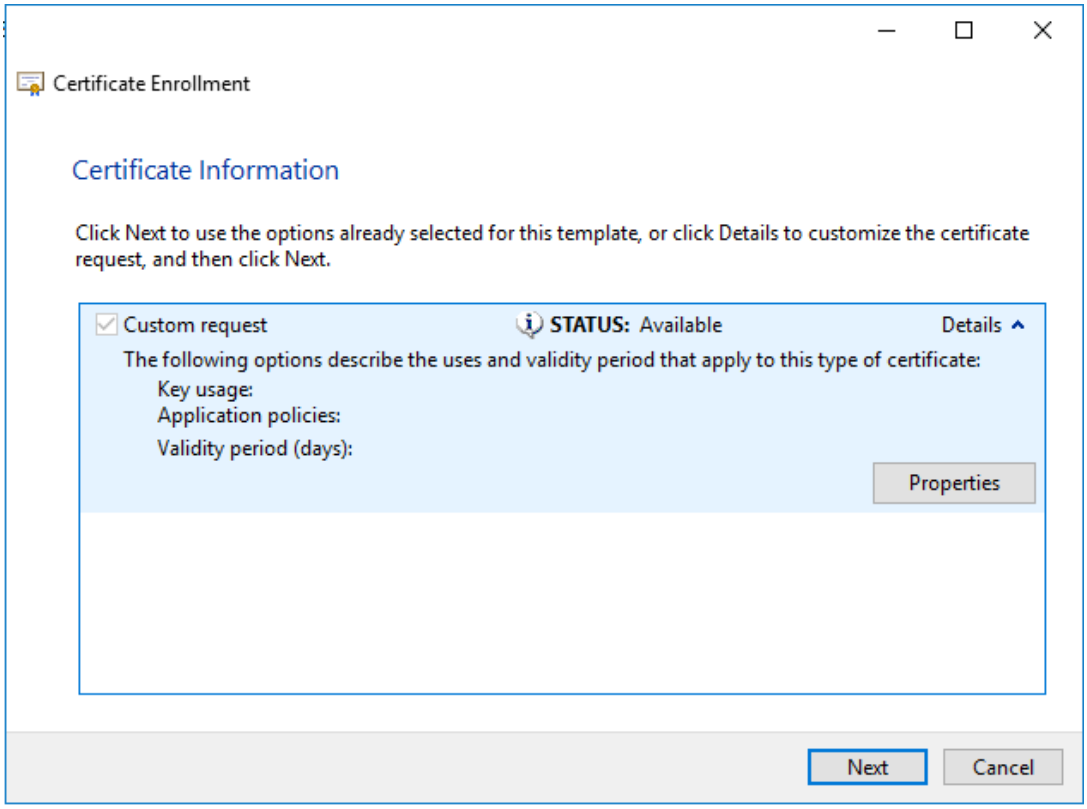
Click **Next** on the **Certificate Enrollment – Before your begin** page, on the **Select Certificate Enrollment Policy** page shown below choose '**Proceed without enrollment policy** under **Custom Request**. Then click **Next**.



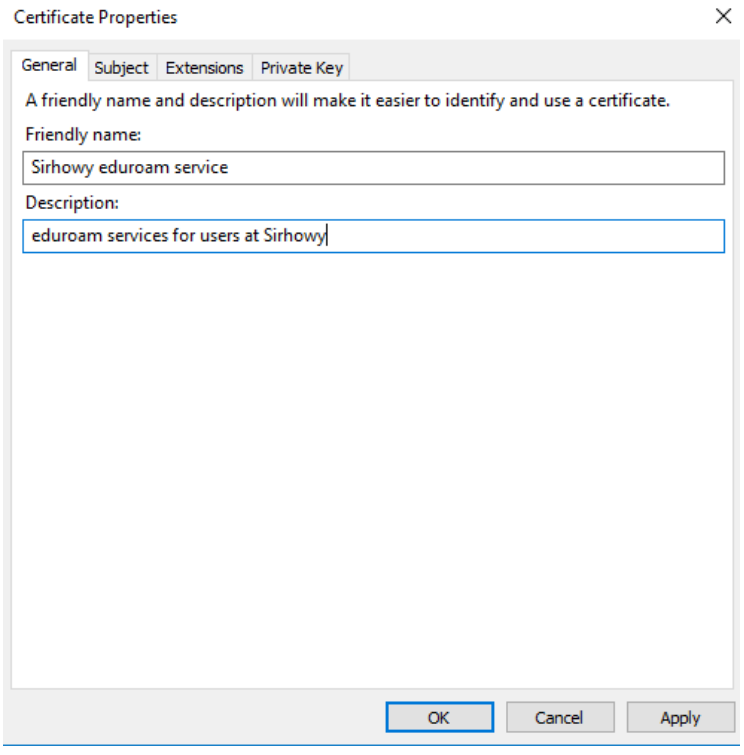
Choose **Request format: PKCS #10** and click **Next**.



On the **Certificate Information** page click the **Details** button and click **Properties**.



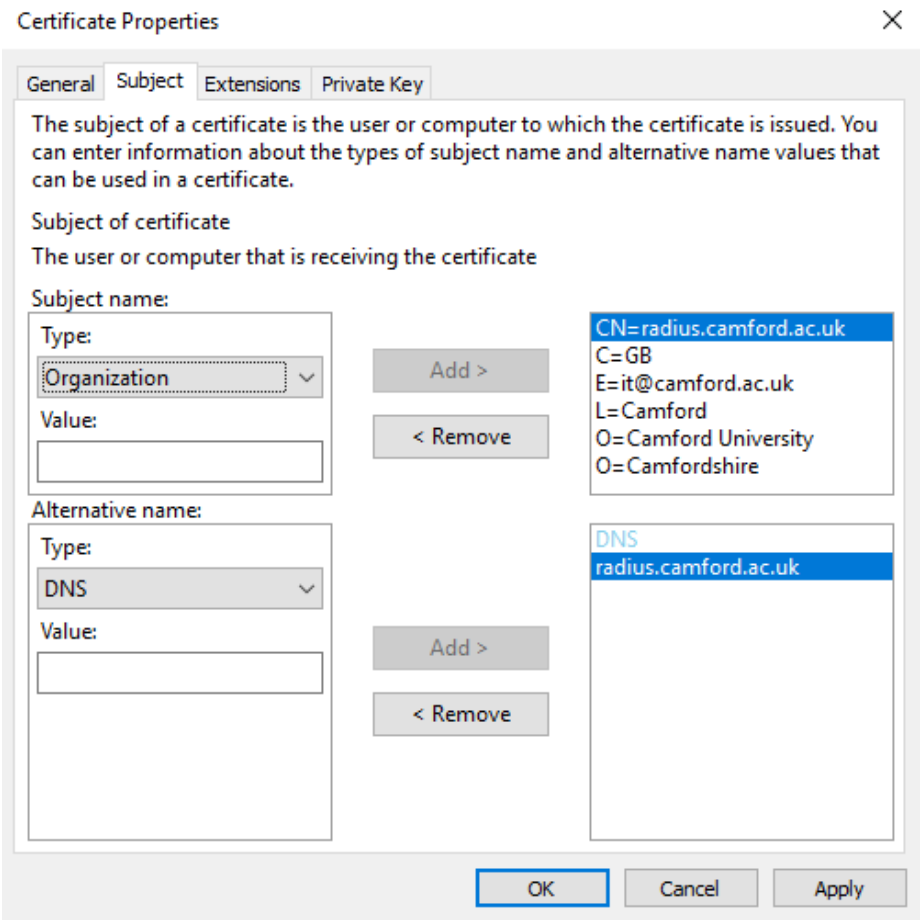
Enter a **Friendly name**: for the certificate reflecting your organisation name e.g. `Camford University eduroam service.`



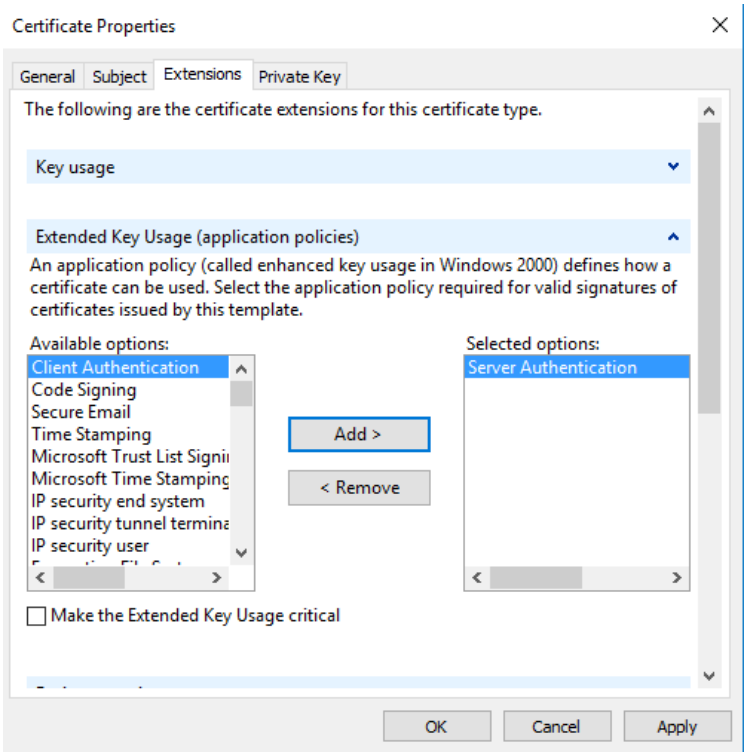
Click on the **Subject** tab then enter relevant information for your server in the **Subject name**:

- Common name – CN (fully-qualified domain name - FQDN) e.g. `radius.camford.ac.uk`
- Country – C (country) i.e. `GB`
- Email – E (a contact e-mail address) e.g. `it@camford.ac.uk`
- Locality – L (town / city) e.g. `Camford`
- Organization – O (Organisation Name) e.g. `Camford University`
- State – S (County) e.g. `Camfordshire`

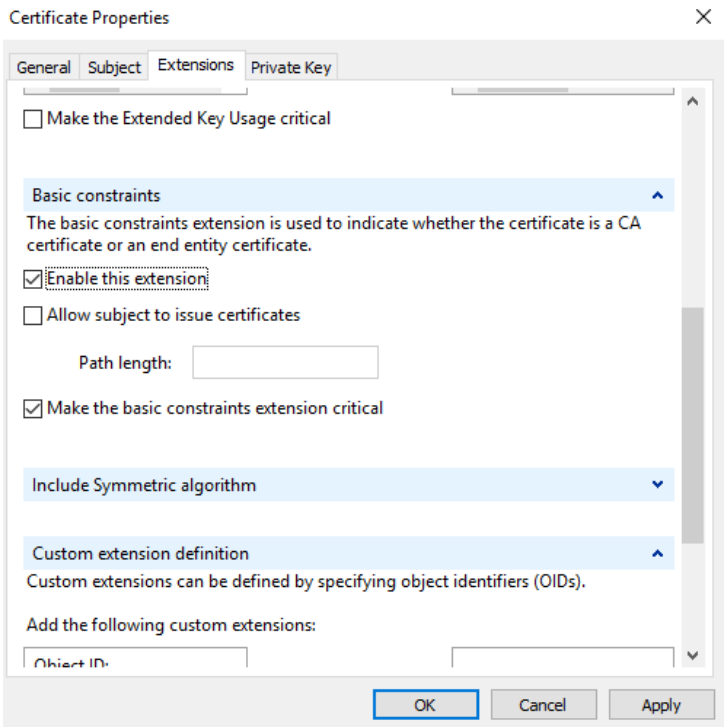
Under **Alternate Name** choose **DNS,** enter the fully-qualified domain name - FQDN e.g. `radius.camford.ac.uk`



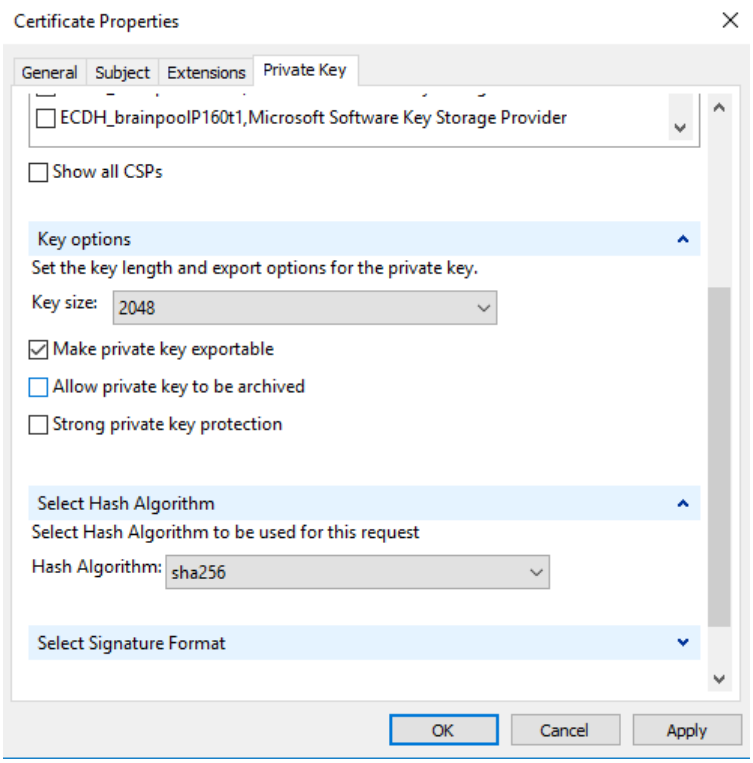
Click on the **Extensions** tab and then under **Extended Key Usage (application policies)** from the available options add **Server Authentication**.



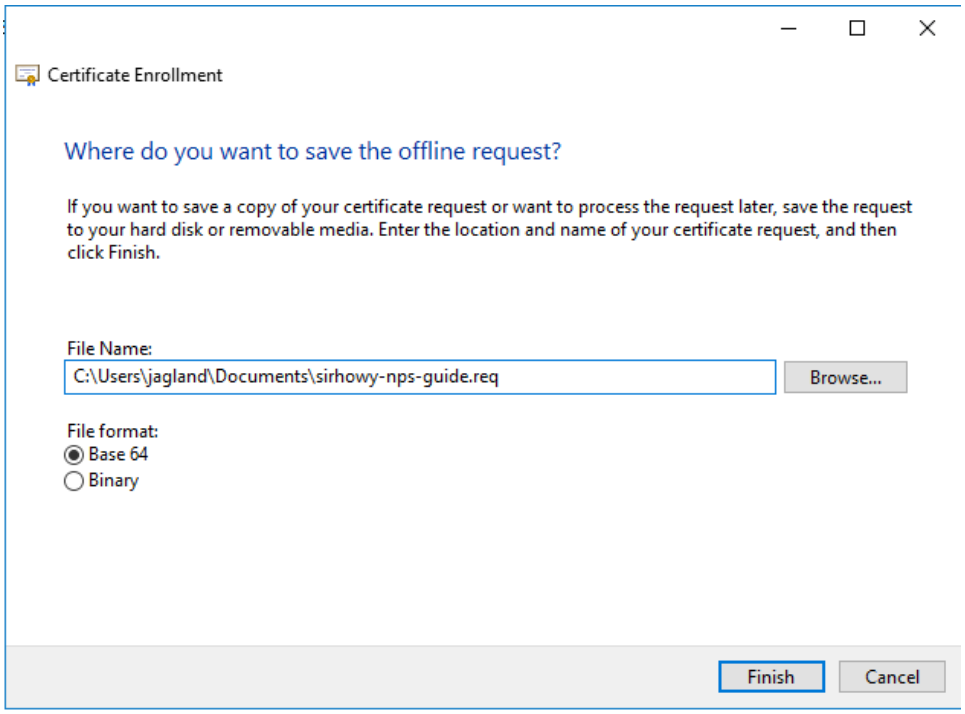
Under **Basic Constraints,** choose **Enable this extension** and **Make the basic constraints extension critical**



Click on the **Private Key** tab, under **Key options** choose a **Key size:** of **2048**, tick **Make private key exportable**. Then under **Select Hash Algorithm** choose **sha256**.



Then click **OK** and click **Next**. Browse to a location e.g. Desktop and save the certificate signing request in base 64 format, e.g. as **server.req,** then click **Finish**.

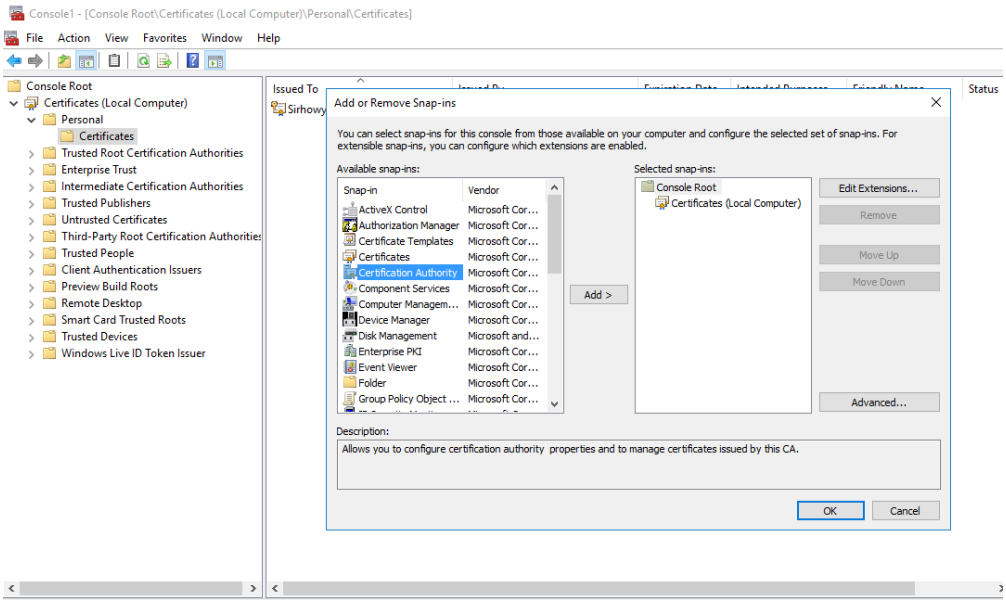


Send the CSR file to your **Certificate Authority,** if using your own CA then follow Section 9. If sending to an external CA for signing e.g. **Jisc Certificate Service,** then skip to Section 10.

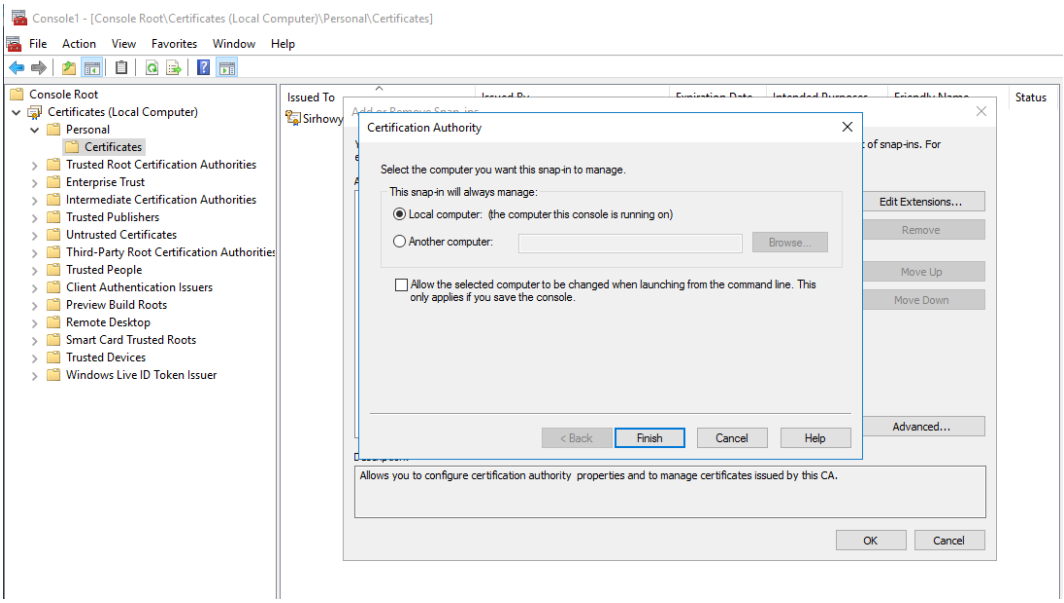
9. Signing your certificate requests with your CA

If you've completed Section 7 you will already have the **Certification Authority** Snap-in added to MMC and can skip the next three steps.

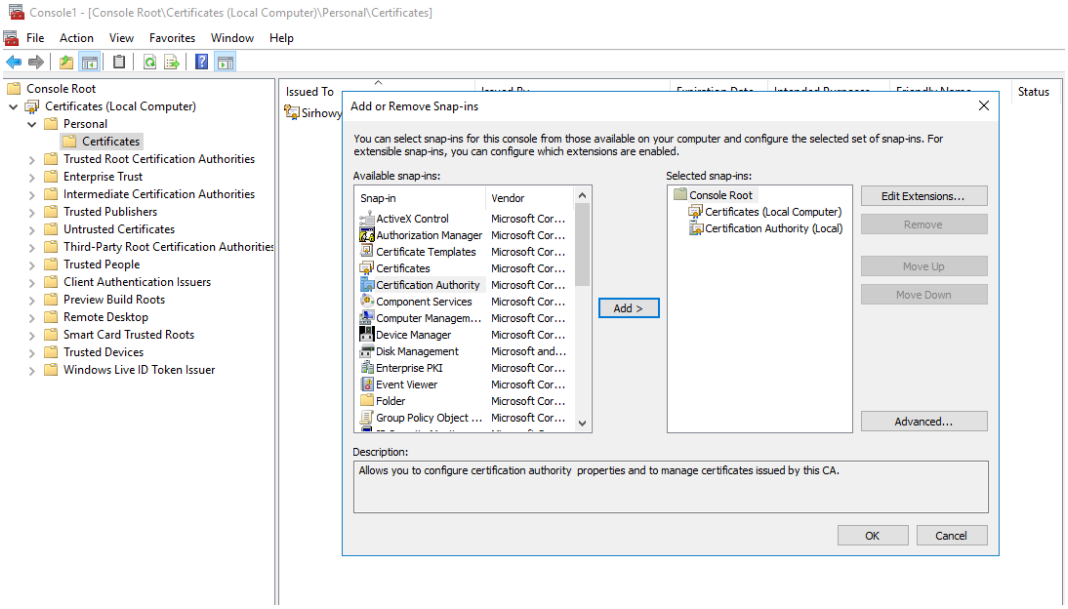
Add the **Certification Authority** Snap-in to MMC



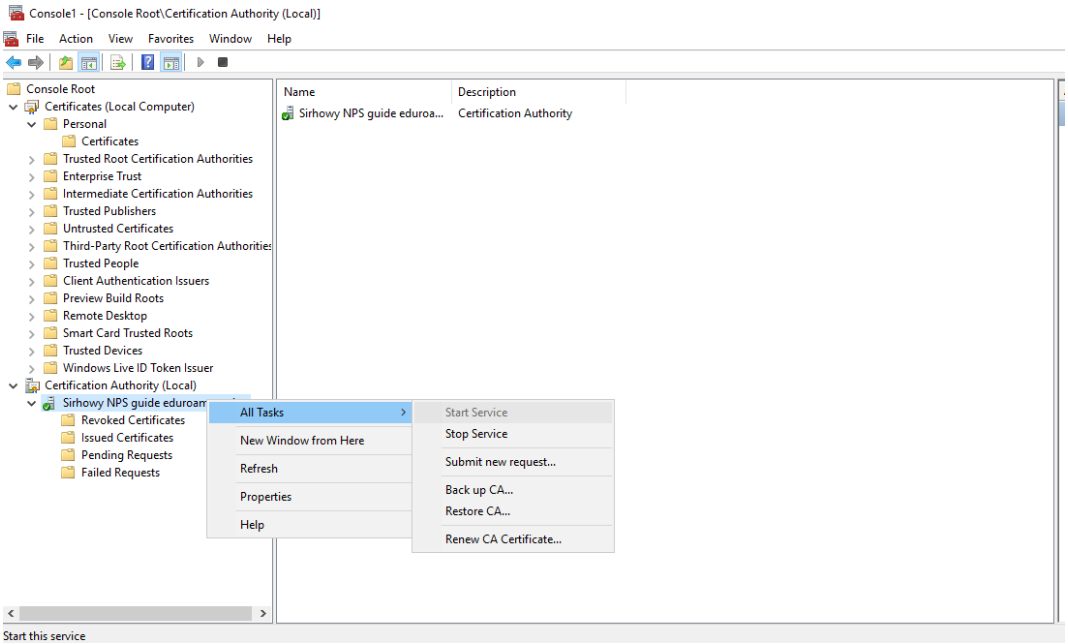
Choose **Local Computer**



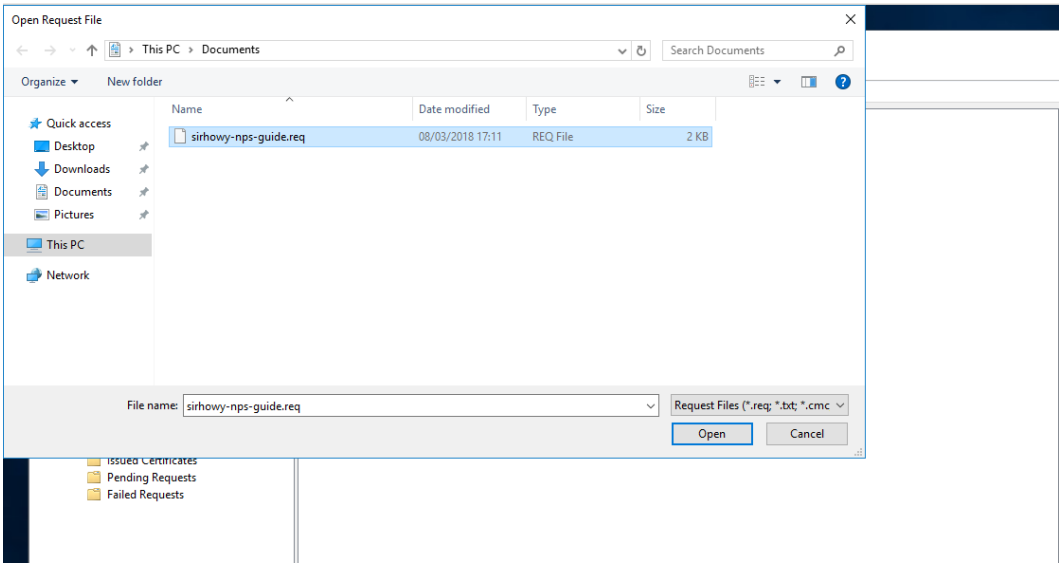
You should see **Certification Authority** on the right hand side under **Selected Snap-ins**



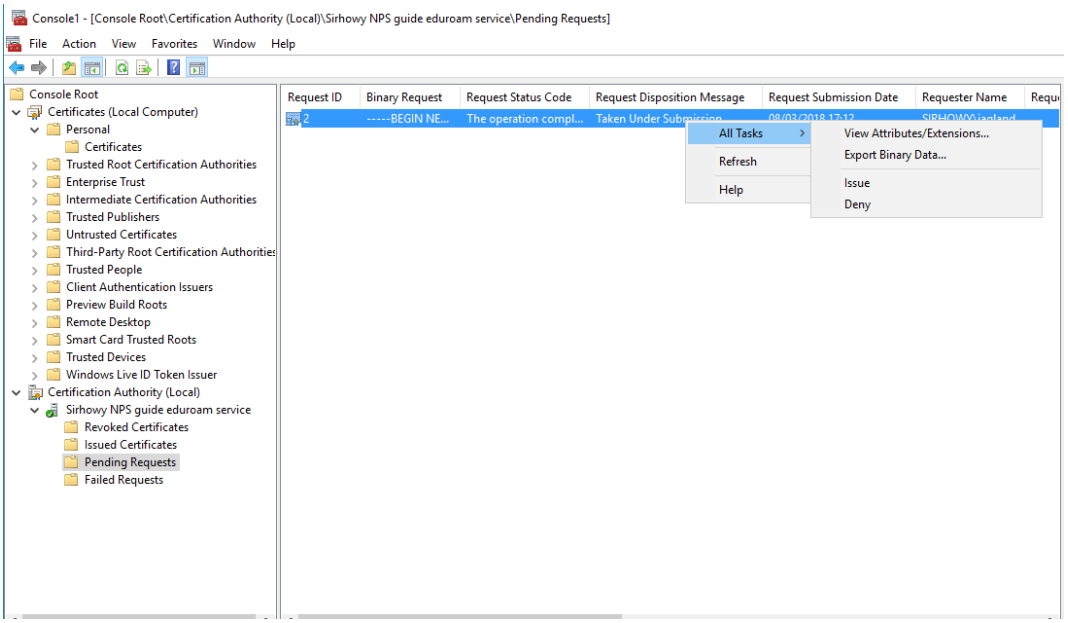
Right click on the **Certificate Authority (Local),** and choose under **All Tasks, Submit new Request**



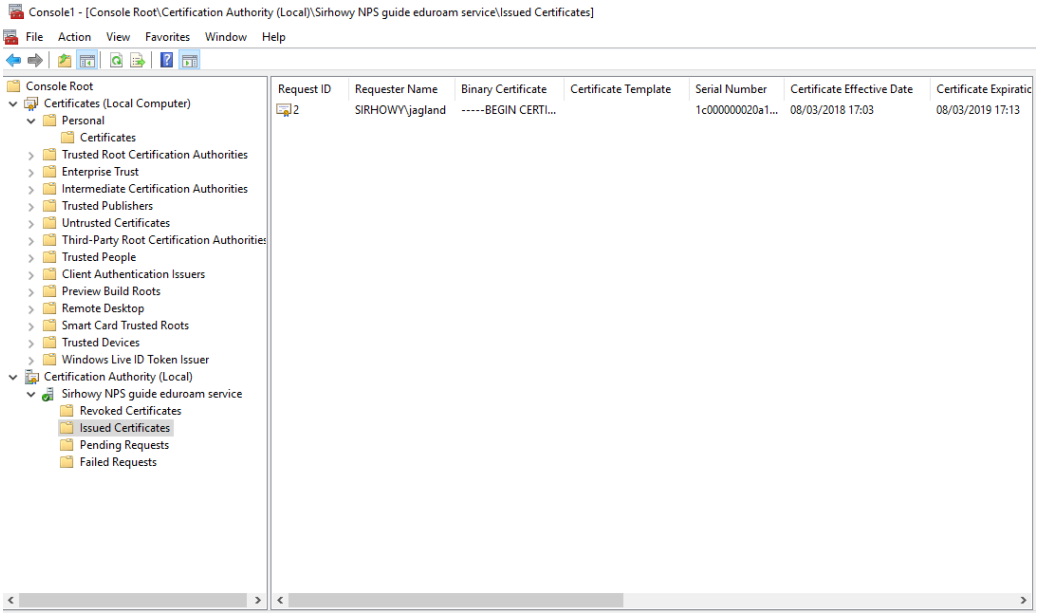
Select your existing certificate request file (.req file)



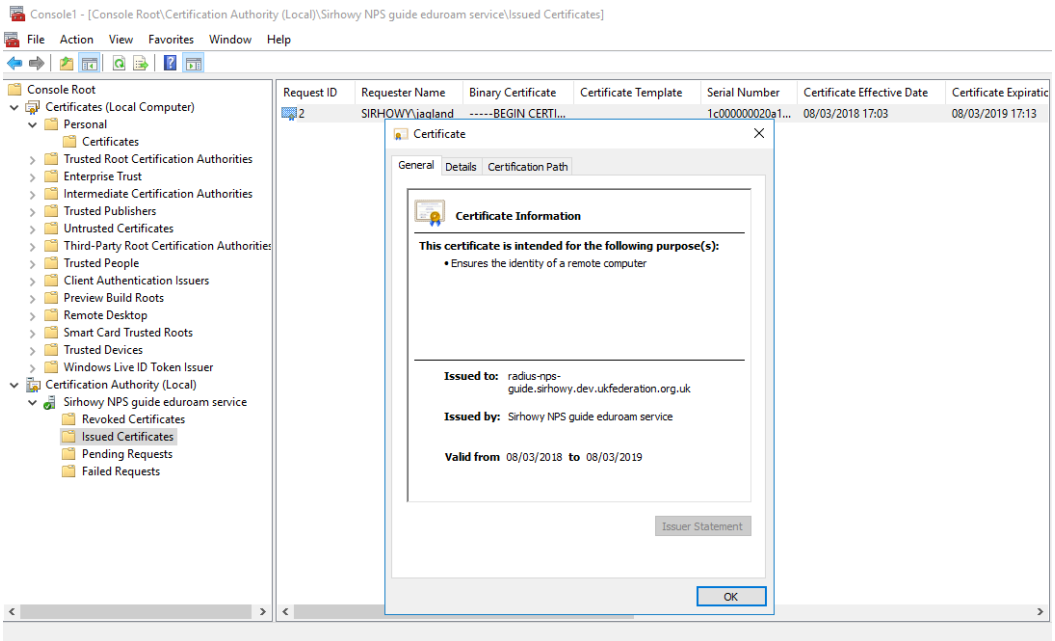
You will now see your request under **Pending Request,** right click and choose **Issue**



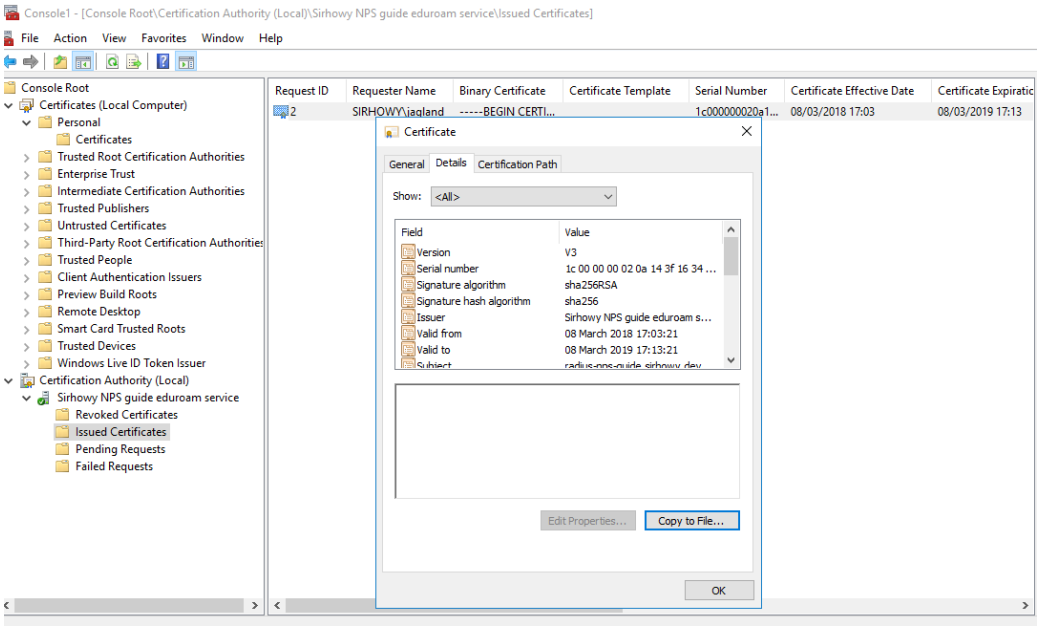
The certificate will now appear under **Issued Certificates**



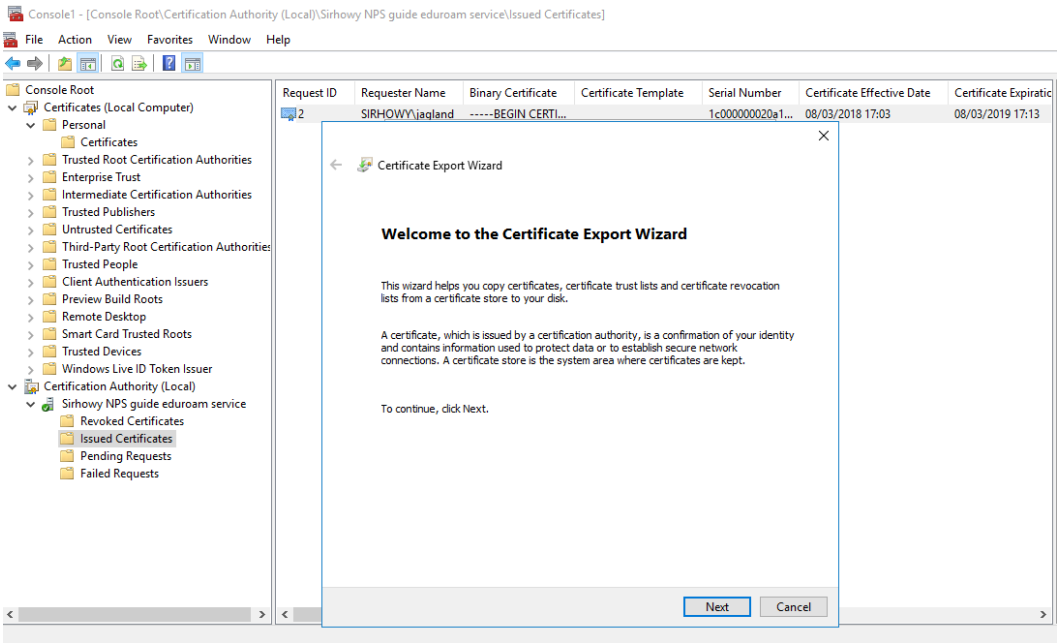
Double-click on the certificate to open the properties window.



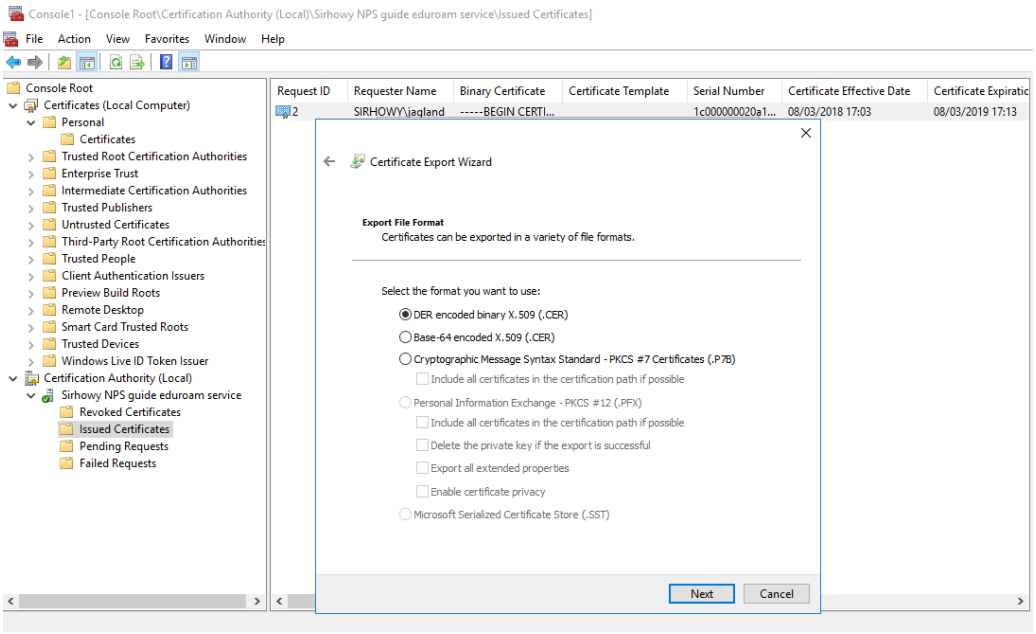
Move to the **details** tab and choose **Copy to File…**



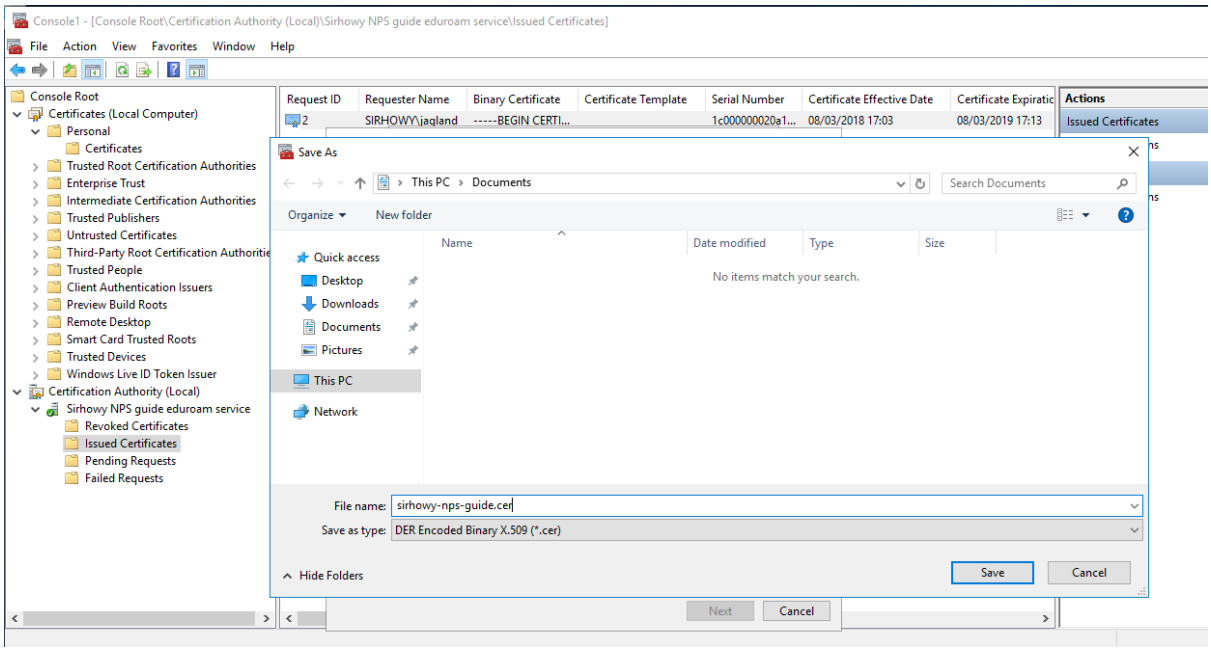
This will launch the **Certificate Export Wizard**



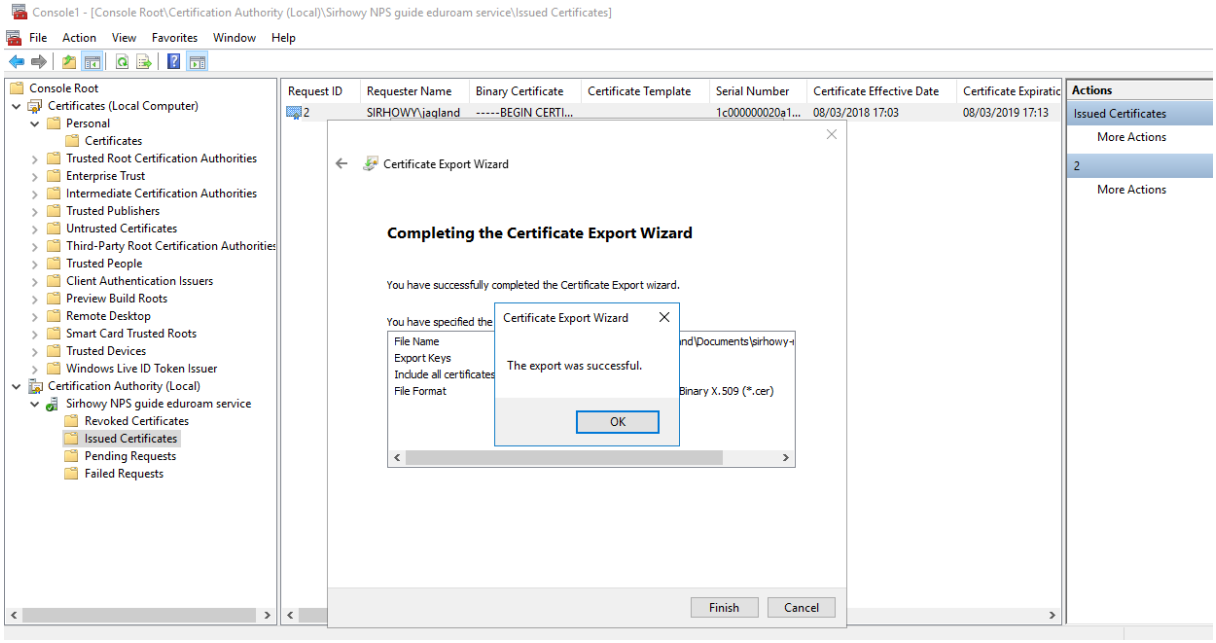
You can use the default format of **DER Encoded Binary x.509 (.cer)**



Specify a **.cer** filename e.g. **server.cer**



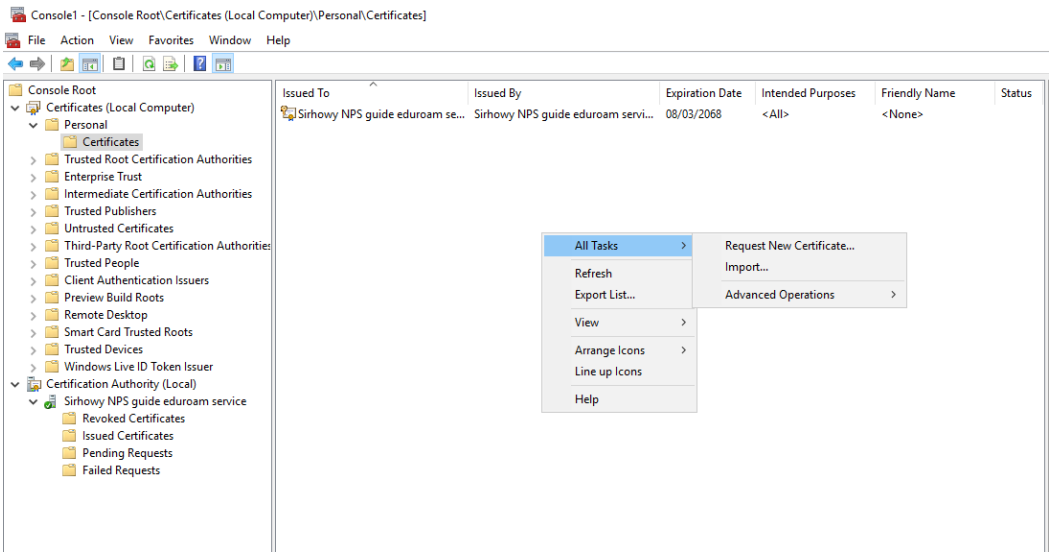
You can now complete the Certificate Export Wizard, click **Finish** and you should get a message to say "The export was successful", click **OK**



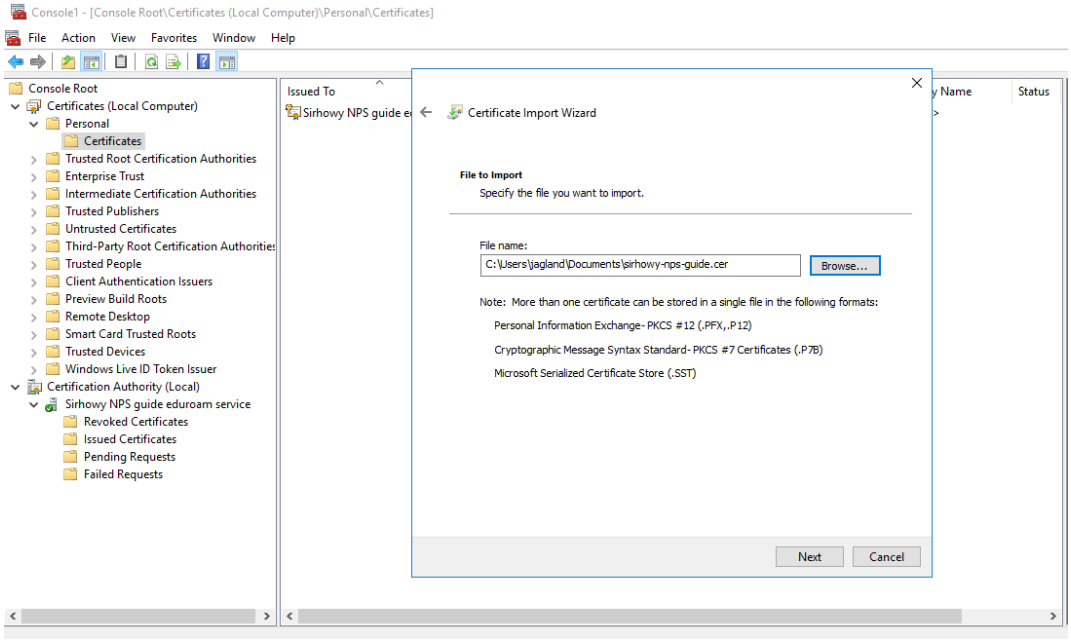
10. Import the Server Certificate

Once you receive your Certificate from the Certificate Authority you will need to install it together with any root Certificate Authority or Intermediate certificates.

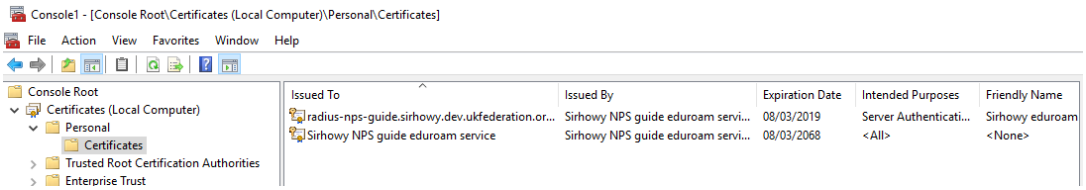
To install your new certificate, download it to your NPS server Desktop and go back to the MMC console. Under **Certificates (Local Computer)** and **Personal**, right click on **Certificates** and under **All Tasks** click **Import....**



In the Certificate Import Wizard window click **Browse…** and go to your server certificate file and click **Next**.



Click 'Next' and the certificate will be imported into the certificate store.

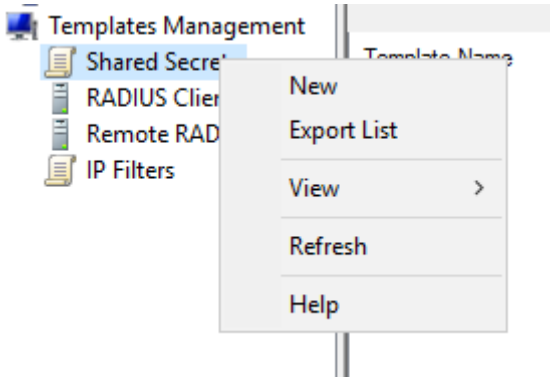


Nb. Repeat this procedure for any root or intermediate certificates.

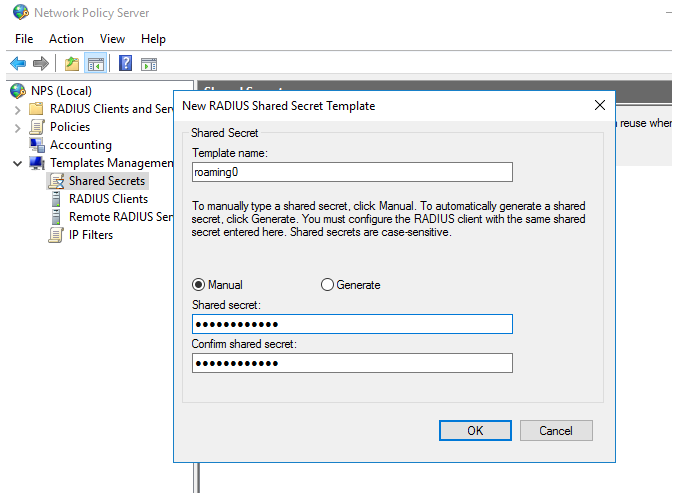
11. Configure NRPS Shared Secrets Template

Your NPS ORPS will need to configure each of the NRPS as both RADIUS Client and Remote RADIUS Server Group. Using a Shared Secret template will reduce duplication. You can obtain your Shared secrets from the **eduroam UK support site**.

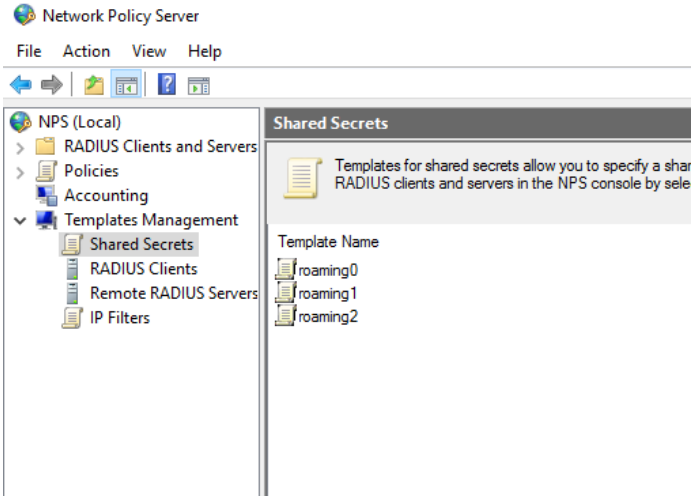
In **Network Policy Server,** choose **Templates Management,** then right click **Shared Secrets** and choose **New**



Enter a template name corresponding to the NRPS (`roaming0`) and enter the **Shared Secret** and **repeat,** clicking **OK.**



Nb.Repeat this for each NRPS (`roaming1` and `roaming2`)



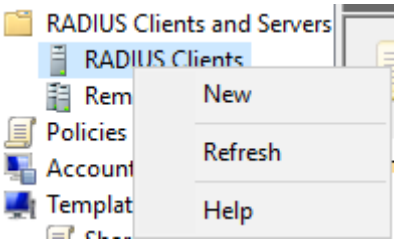
12. Add NRPS as RADIUS Clients

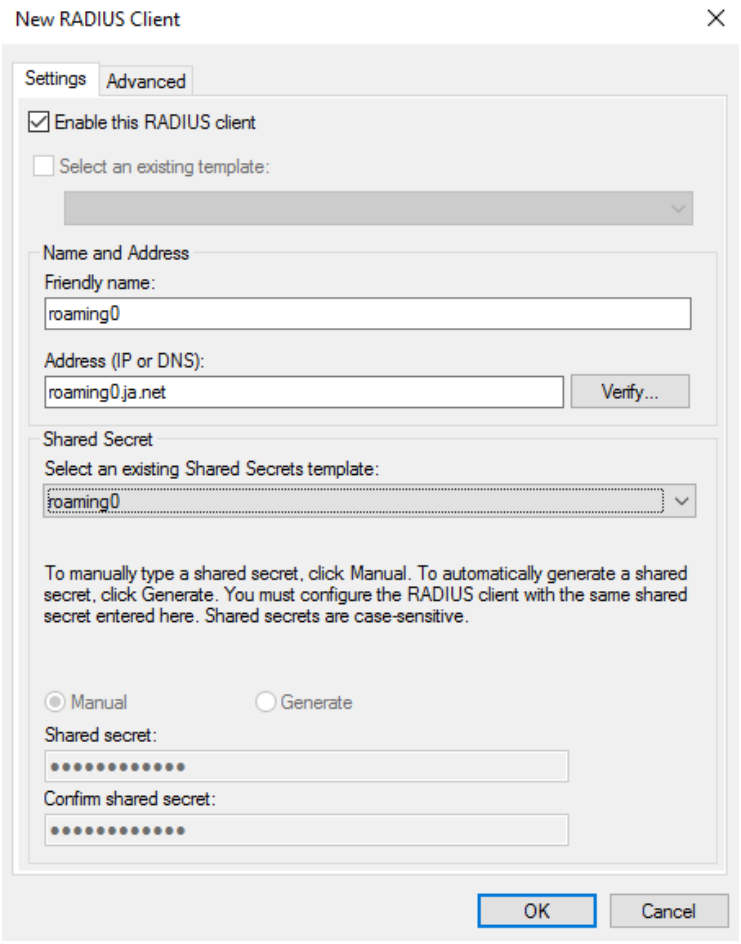
For your NPS ORPS to receive incoming RADIUS requests from the NRPS servers, these must be added to your NPS server as RADIUS clients. To do this, in **Network Policy Server** under **RADIUS Clients and Servers**, right click on **RADIUS Clients** and click **New**

Then in the New RADIUS Client box enter the following:

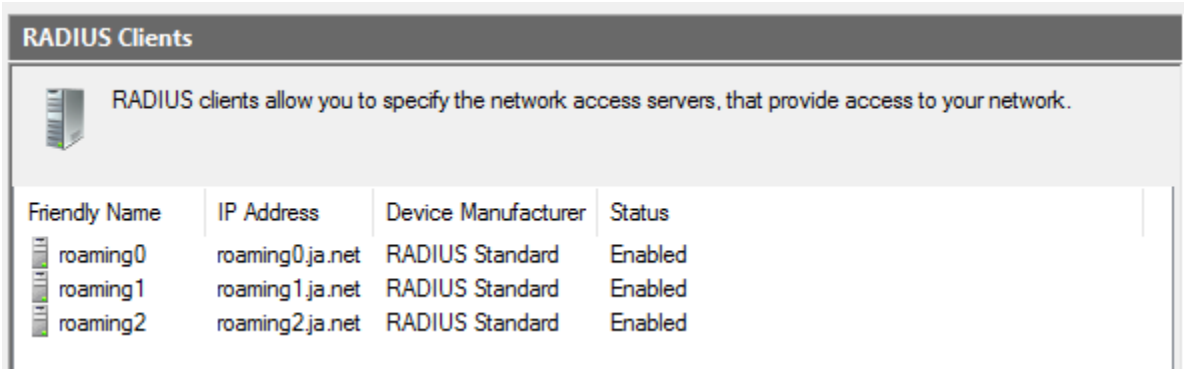
- Friendly name: `roaming0`
- Address: `roaming0.ja.net`
- Shared secret: Selected an existing Shared Secrets template: `roaming0`

And click 'OK'



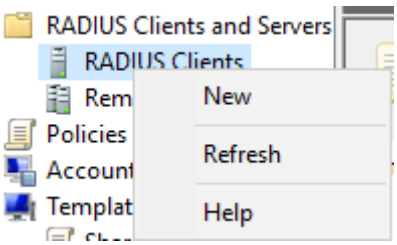


Nb.Repeat this procedure to add `roaming1` and `roaming2`.

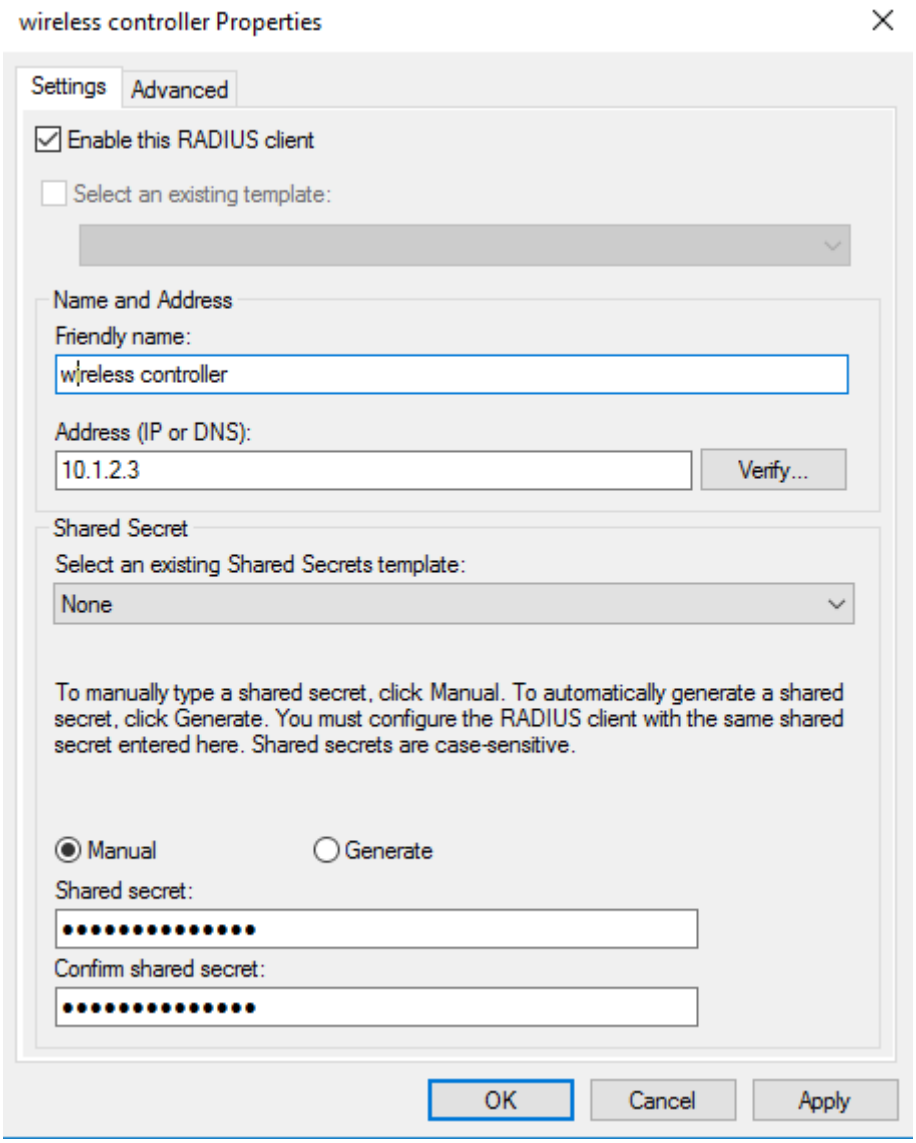


13. Add local Access Points / Wireless Infrastructure RADIUS Clients

To receive incoming RADIUS requests from the wireless infrastructure, access points / controllers must be added to the NPS server as RADIUS clients. To do this, in **Network Policy Server** under **RADIUS Clients and Servers**, right click on **RADIUS Clients** and click **New**



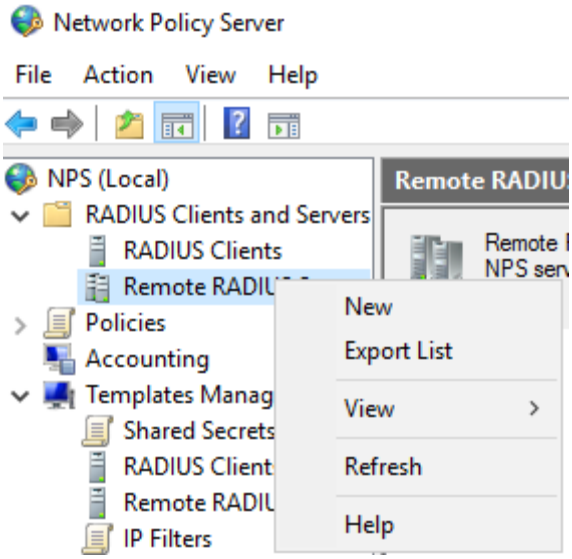
Then enter a **Friendly name, Address,** and **Shared secret** for your wireless device. Then click **OK**.



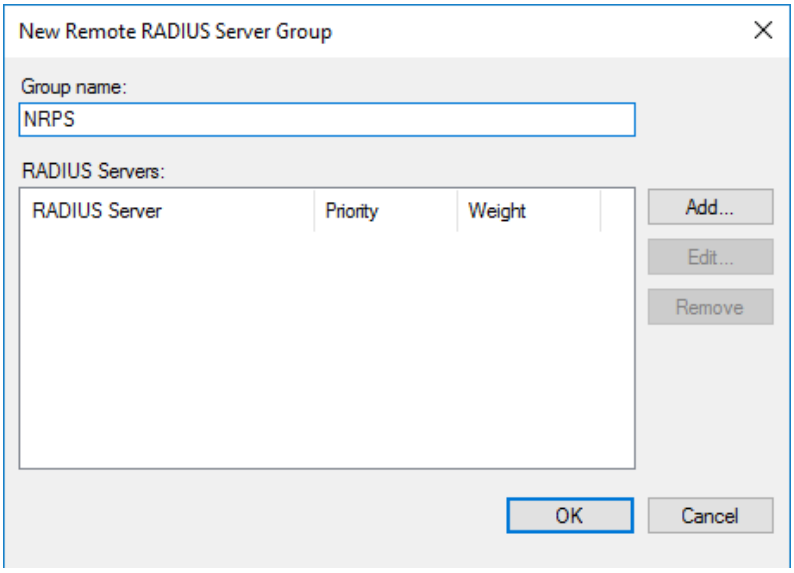
Repeat this step for any additional access points / controllers.

14. Add NRPS as RADIUS Proxy Servers

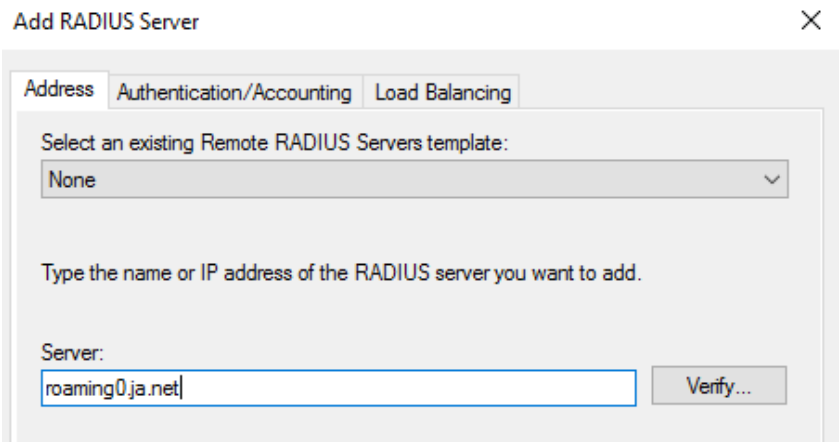
To be able to forward visitor authentications to the NRPS, Remote RADIUS servers need to be added to the configuration. To do this, in **Network Policy Server** under **RADIUS Clients and Servers**, right click on **Remote RADIUS Server Groups** and click **New**



For the **Group name** enter NRPS then click **Add**.

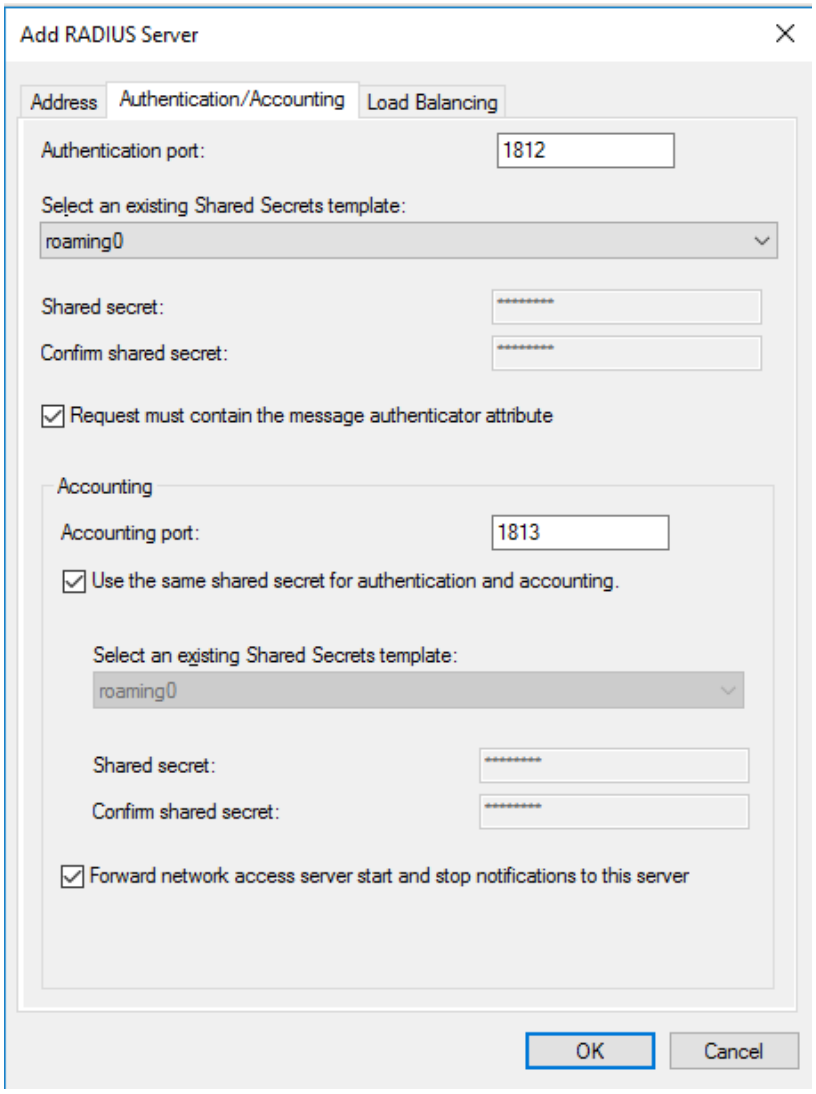


In **Server** enter `roaming0.ja.net` then click on the **Authentication/Accounting** tab.



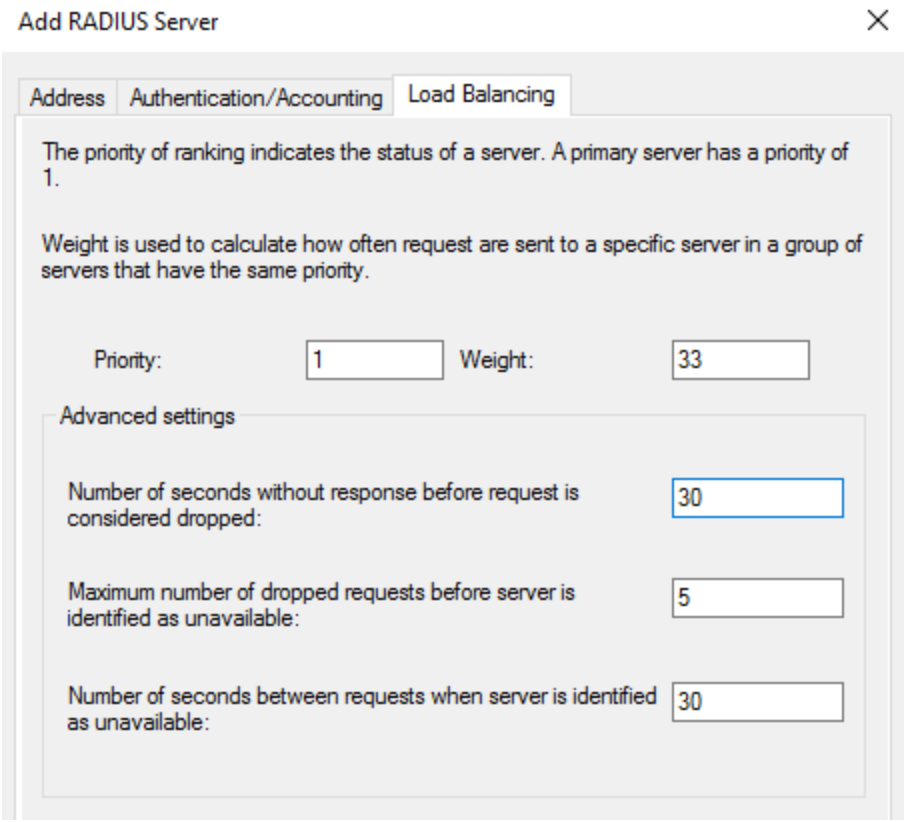
Enter the following settings:

- Shared secret – Select an existing Shared Secrets template: `roaming0`
- Request must contain the message authenticator attribute **– Ticked**
- Forward network access server start and stop notifications to this server – **Unticked**

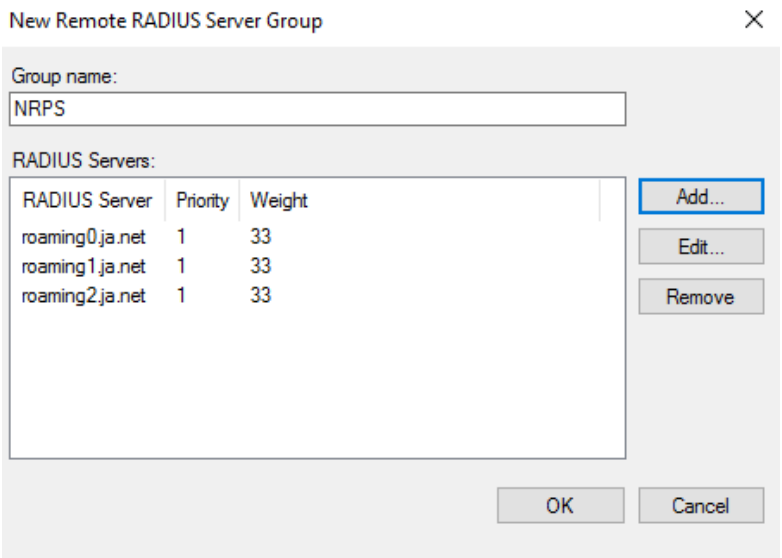


Click on the '**Load Balancing**' tab. Then enter the following settings:

- Priority – a number between 1 and 3 (choose a random priority for the three NRPS)
- Weight – 33
- Number of seconds without a response before request is considered dropped – 30

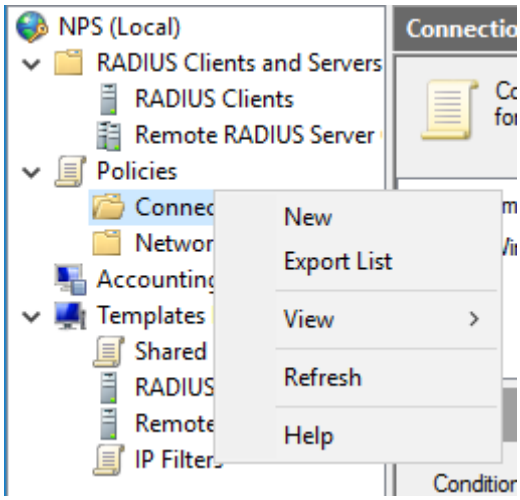


Click **OK** to add the server and then repeat the process for `roaming1` and `roaming2`.

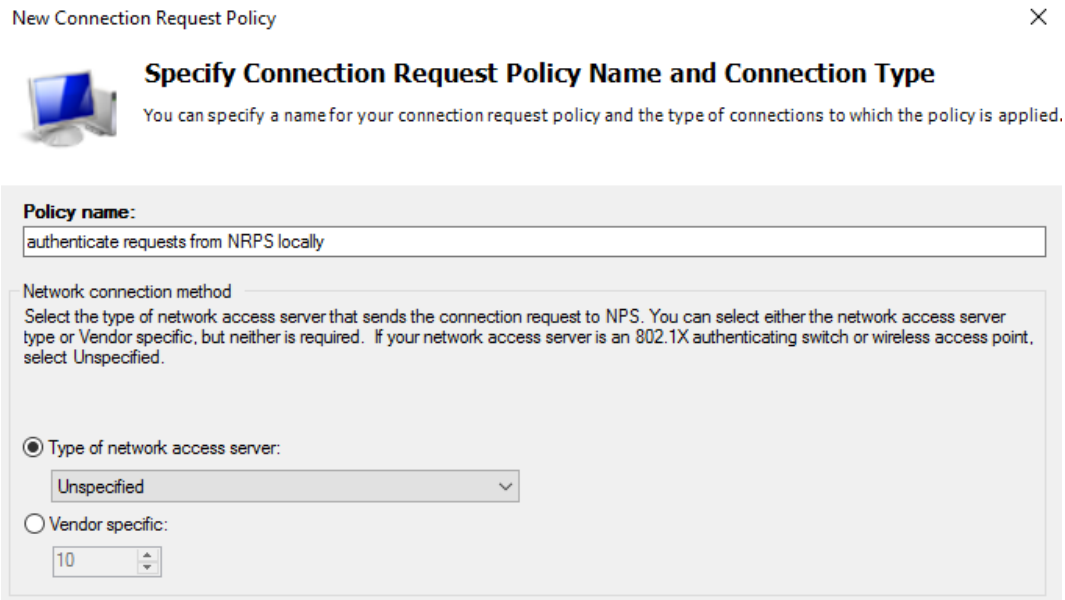


15. Add a Connection Request Policy for your roaming users

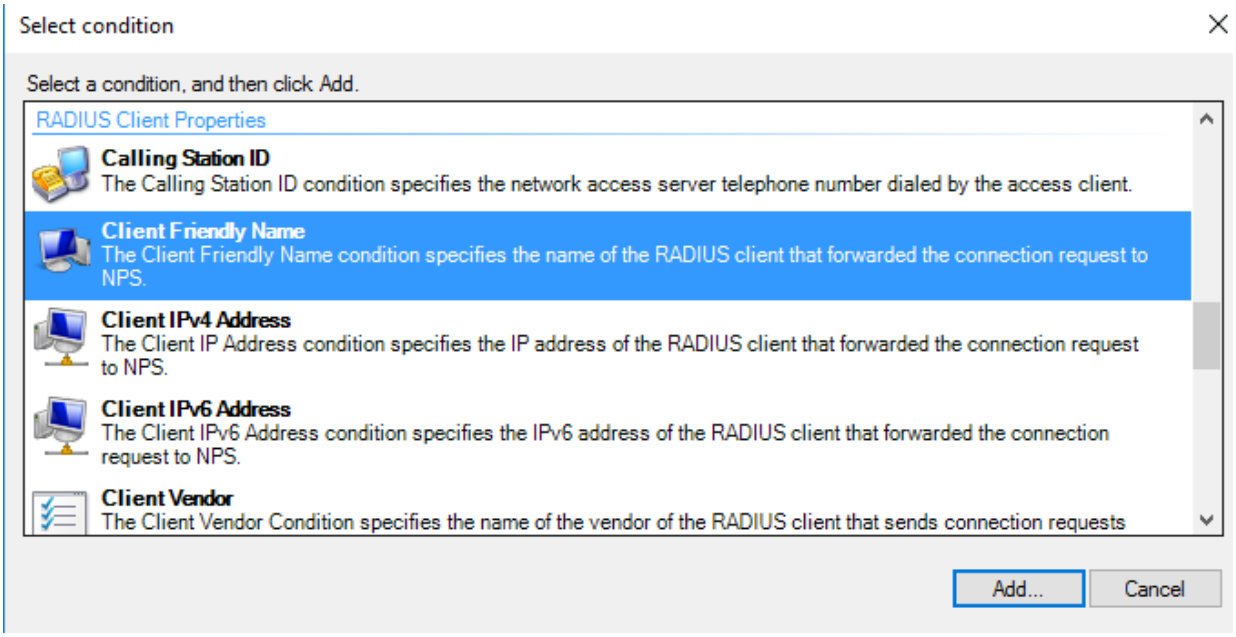
This step adds a connection request policy for authentication requests incoming from NRPS from your roaming users. Authentication requests coming from the NRPS servers must always be responded to by the ORPS. Therefore a policy should be added to authenticate requests coming from the NRPS locally. To do this, in **Network Policy Server** under **Policies**, right click on **Connection Request Policies** and click **New**.



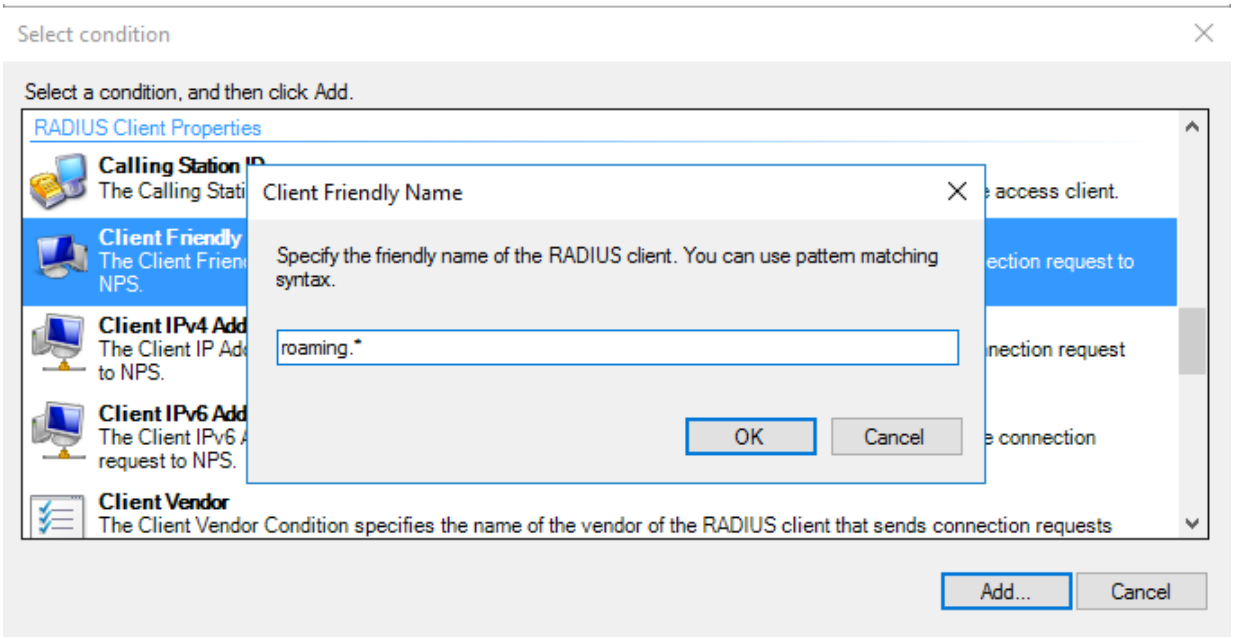
In **Policy name** enter "authenticate requests from NRPS locally", then click **Next**.



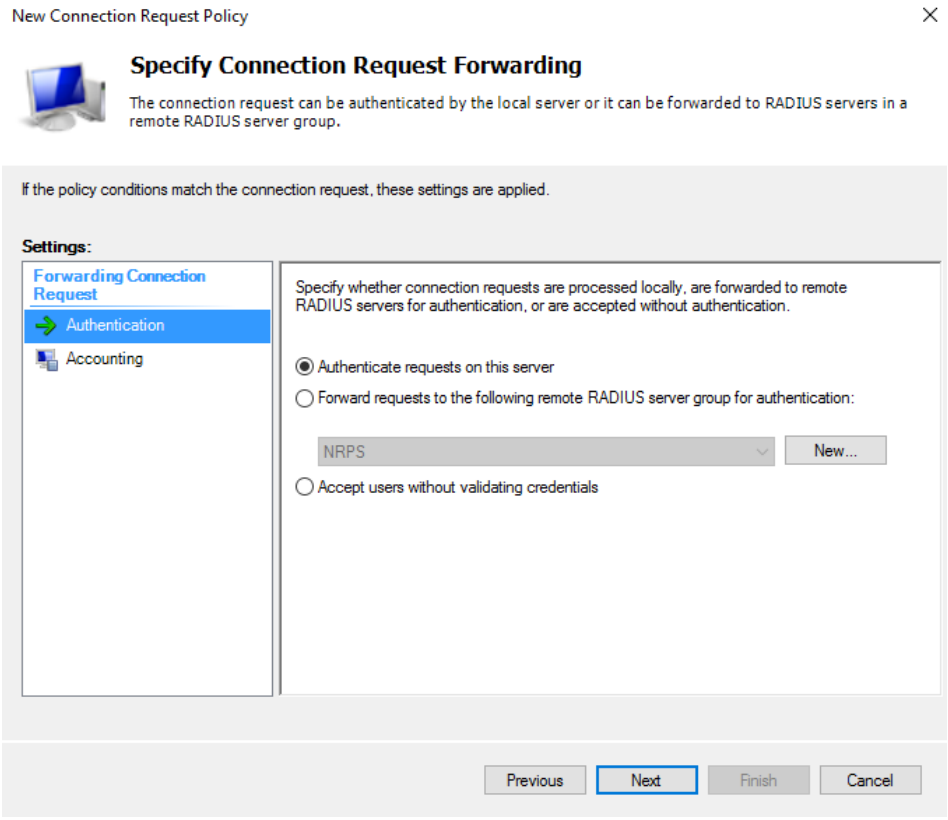
On the **Specify Conditions** page click **Add** the click on **Client Friendly Name** then click **Add**.



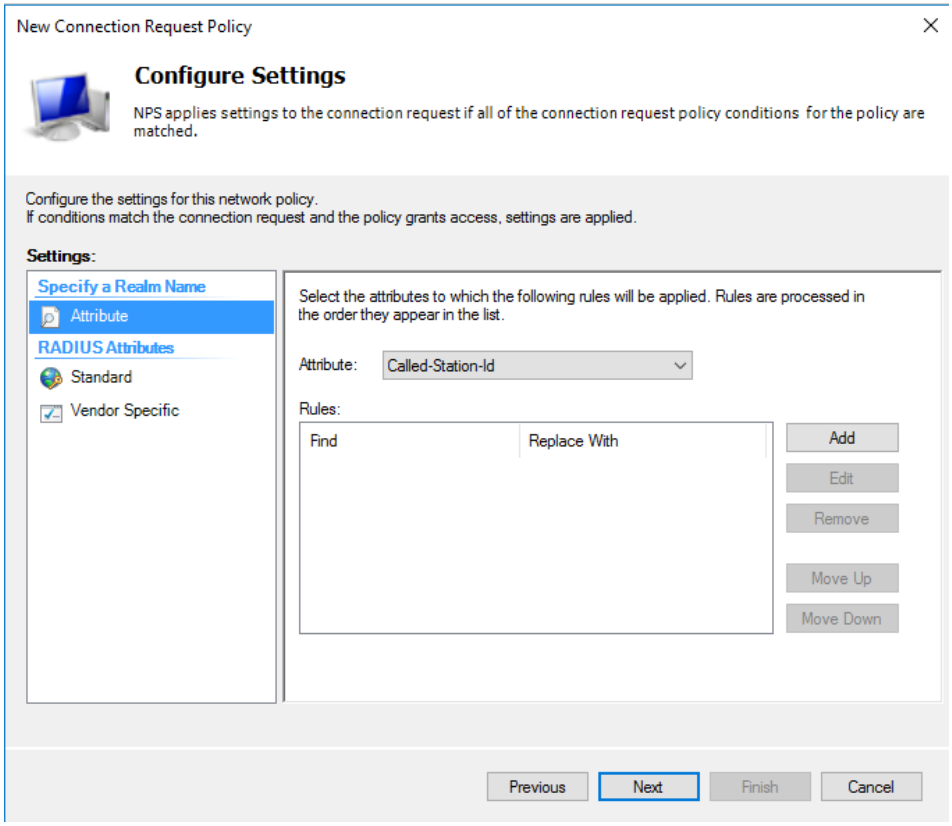
In the **Client Friendly Name** box enter `roaming.*` then click **OK** and the **Next** on the following screen.



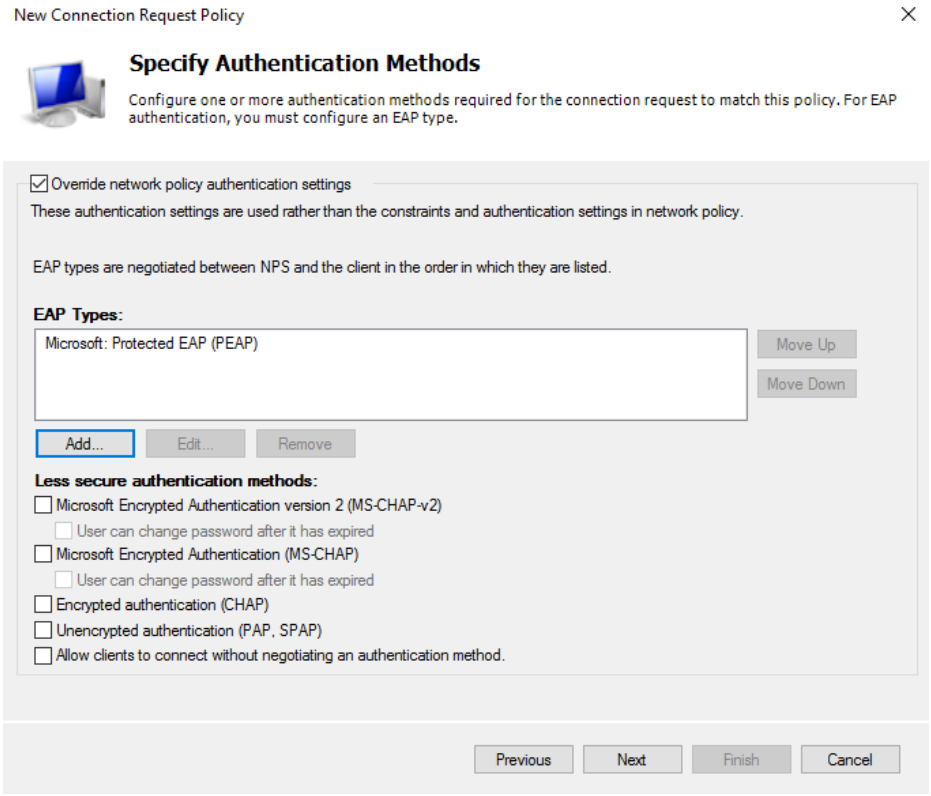
For Authentication select **Authenticate requests on this server** and click **Next**.



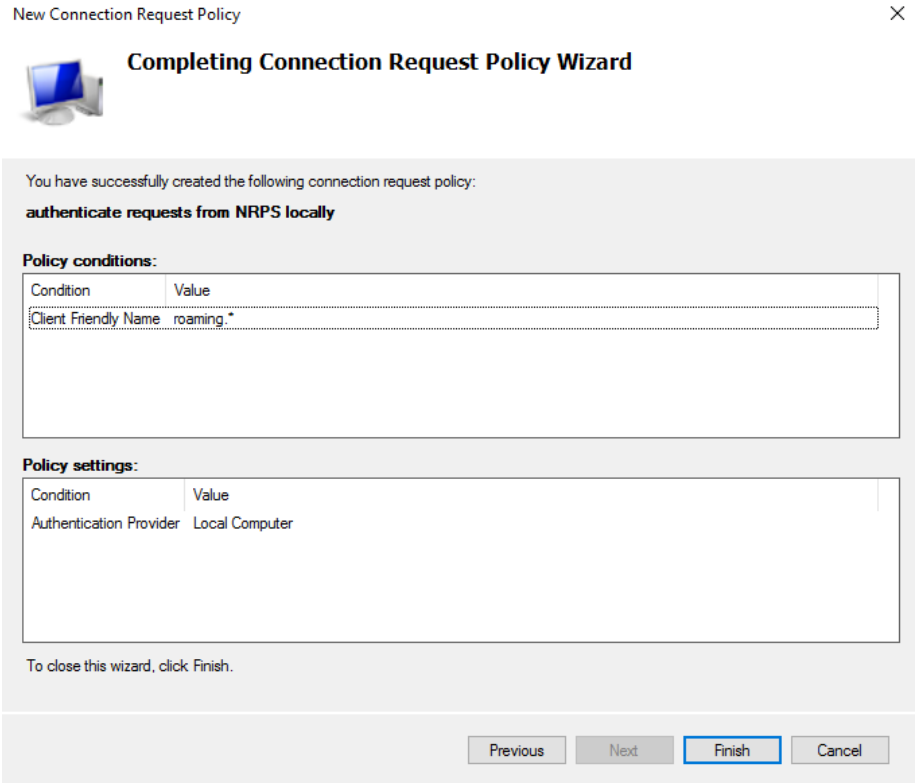
Click **Next** on the **Configure Settings** screen.



We recommend you support anonymous outer identities, so choose **Override-network policy authentication setting'** and **Add** EAP Type of **Microsoft: Protected EAP (PEAP)**

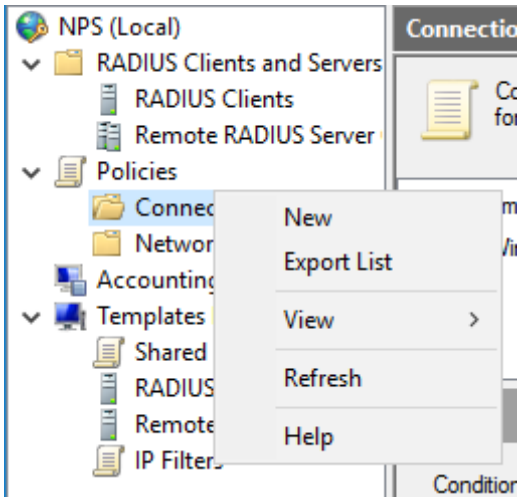


Click **Finish** on the final screen.

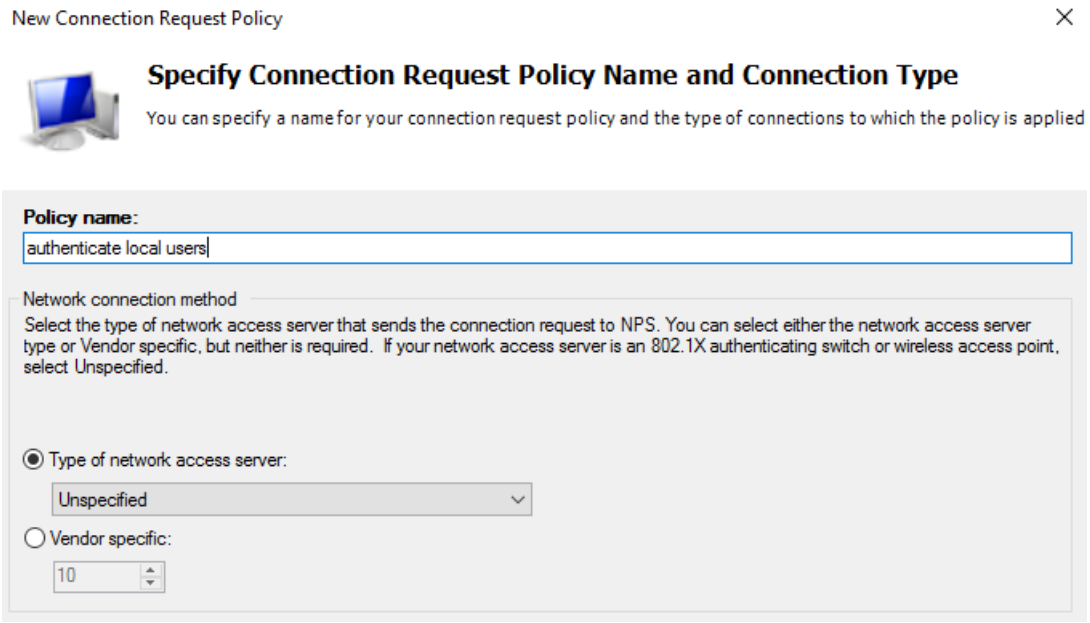


16. Add a Connection Request Policy for local users

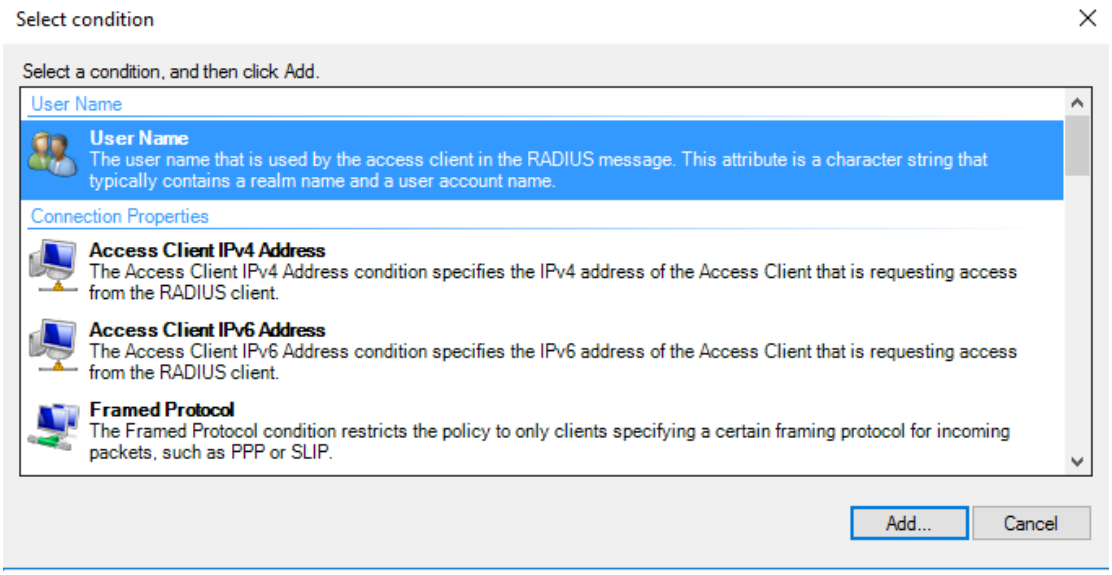
To authenticate local users a policy needs to be created. To do this, in **Network Policy Server** under **Policies,** right click on **Connection Request Policies** and click **New**.



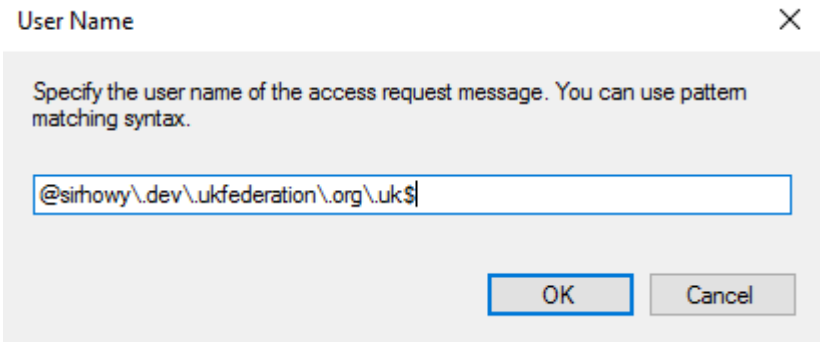
In **Policy name** enter `authenticate local users`, and then click **Next**.



On the **Specify Conditions** page click **Add**, then click on **User Name**, then click **Add**.

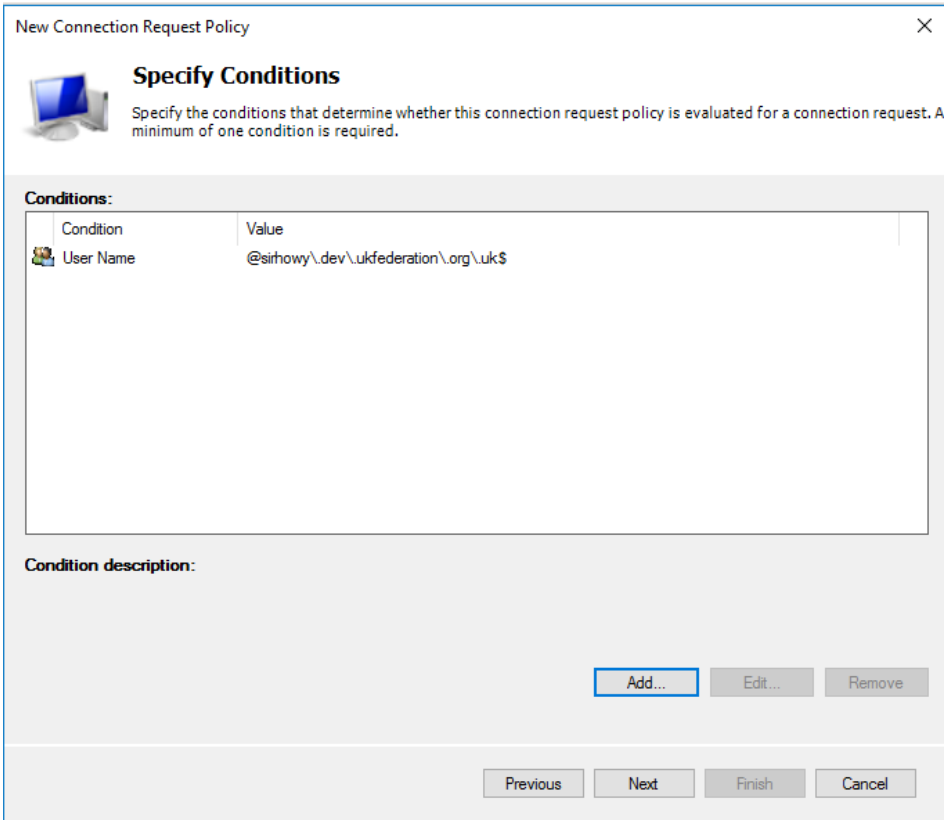


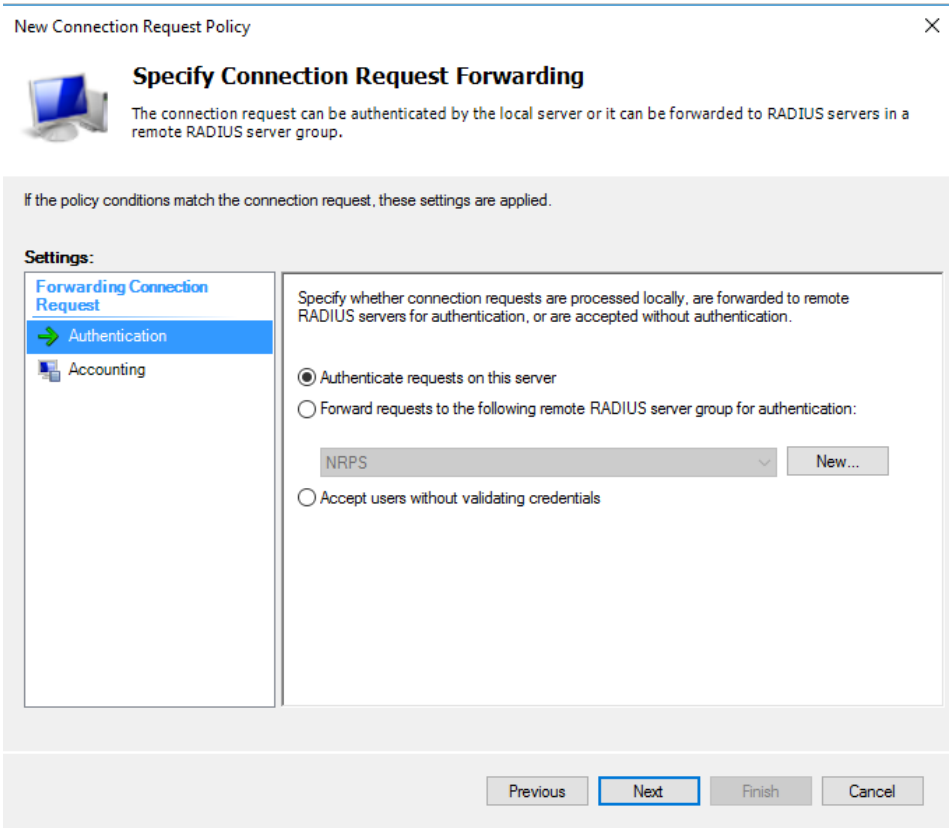
In the '**User Name'** box enter a regularly expression formatted as `@realm$`, where realm is your organization's realm e.g. camford.ac.uk, ensure to put a backslash before each full-stop `@camford\.ac\.uk$` then click **OK**.



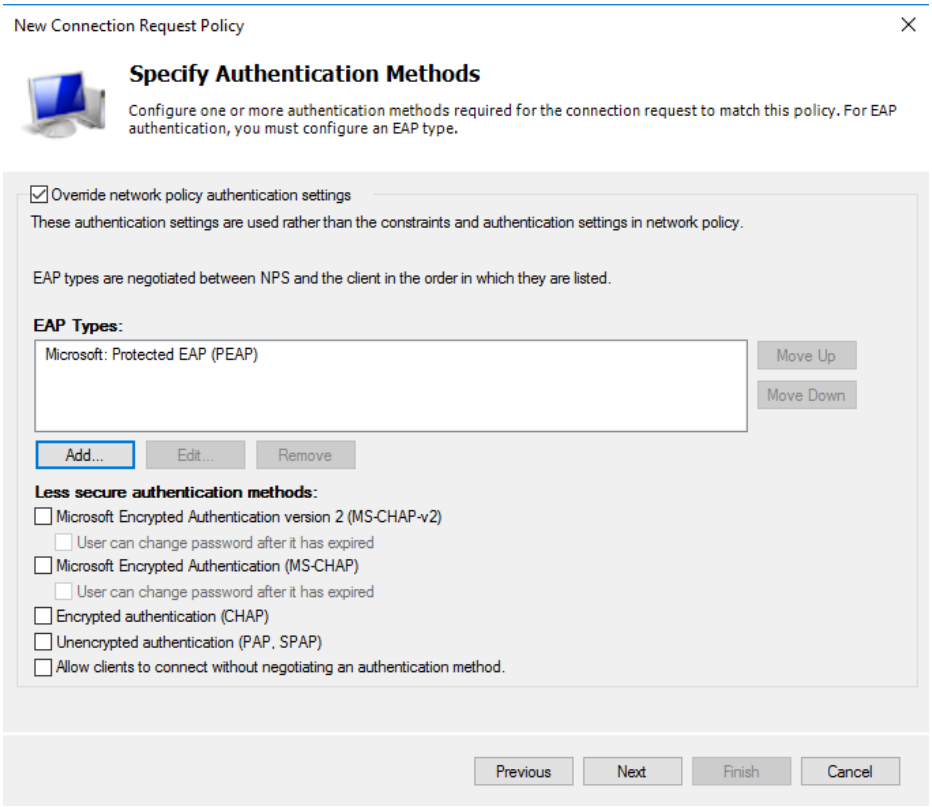
See **using the pattern matching syntax in NPS**

Click **Next** then for Authentication choose **Authenticate requests on this server** and click **Next**.

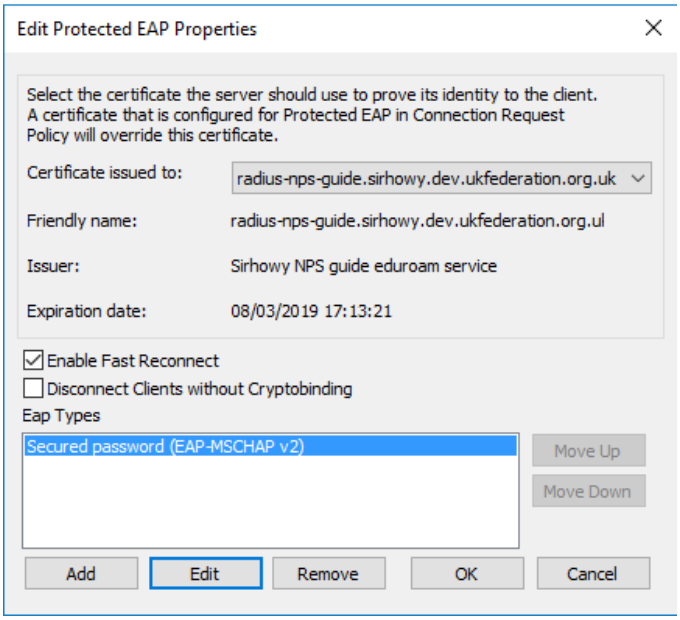




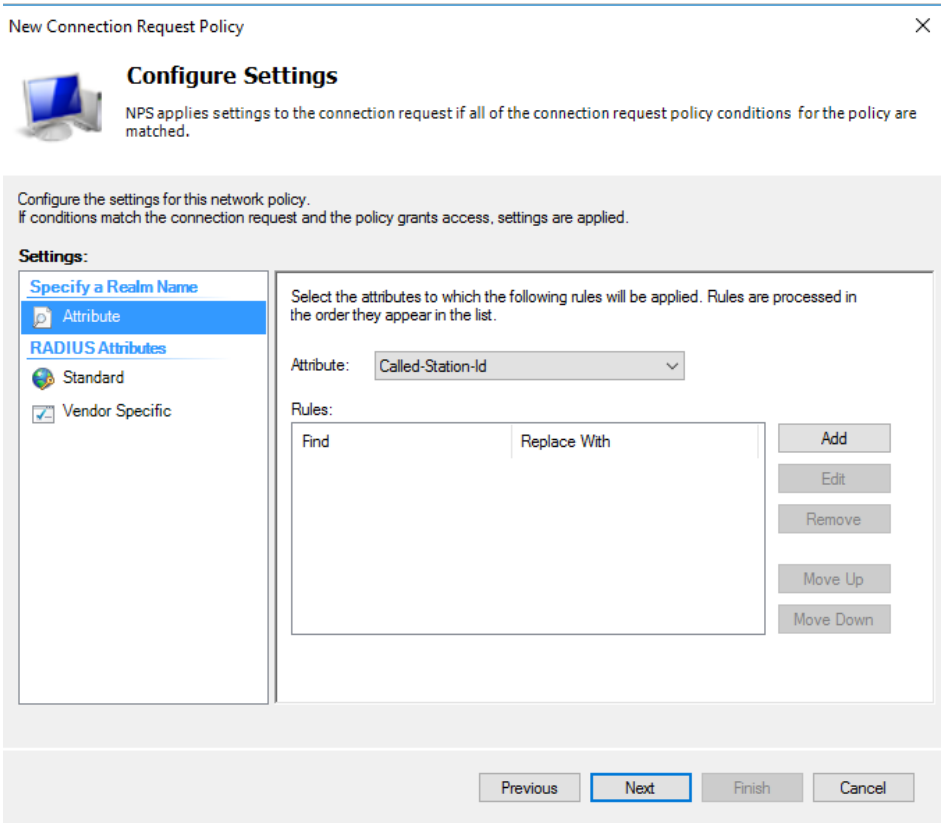
We recommend you support anonymous outer identities, so choose **Override-network policy authentication setting'** and **Add** EAP Type of **Microsoft: Protected EAP (PEAP)**



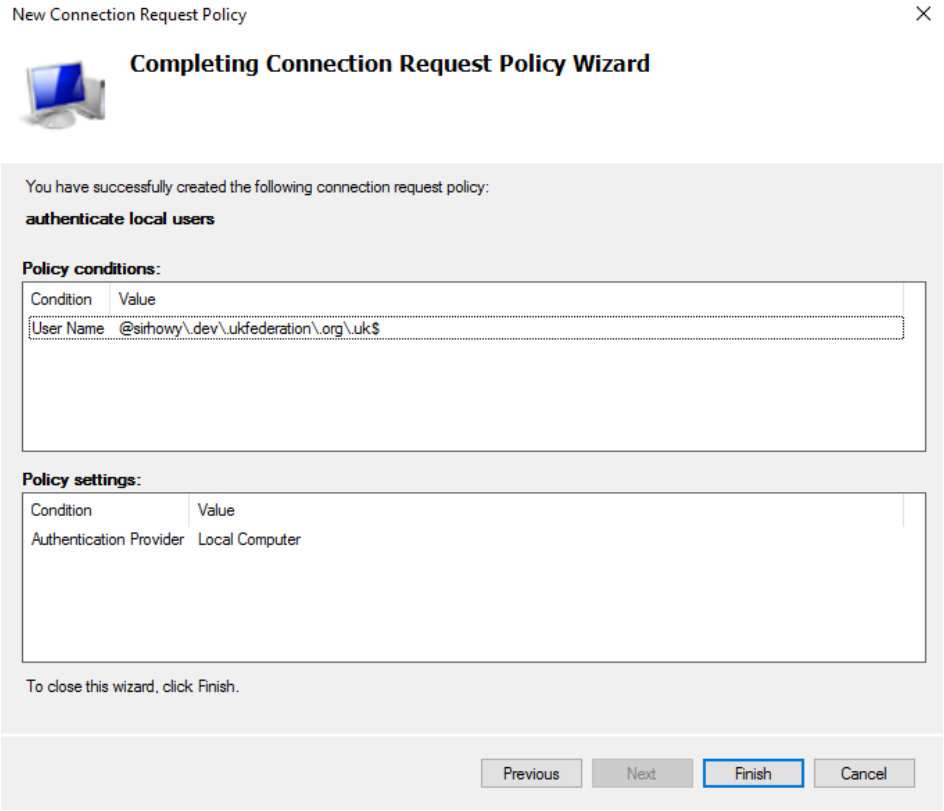
In the list of **EAP Types**: select **Microsoft: Protected EAP (PEAP)** and click **Edit...**. Then select the correct certificate in the **Certificate issued** list and ensure **Secured password (EAP-MSCHAP v2)** is in the list of **EAP Types**. Then click **OK**.



Click **Next** on the **Configure Settings** screen.

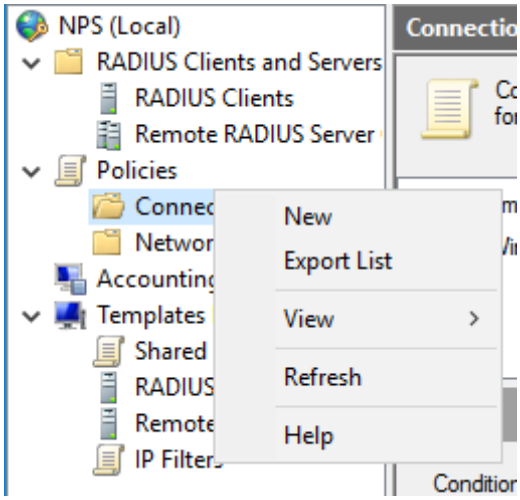


Click **Finish** on the final screen.

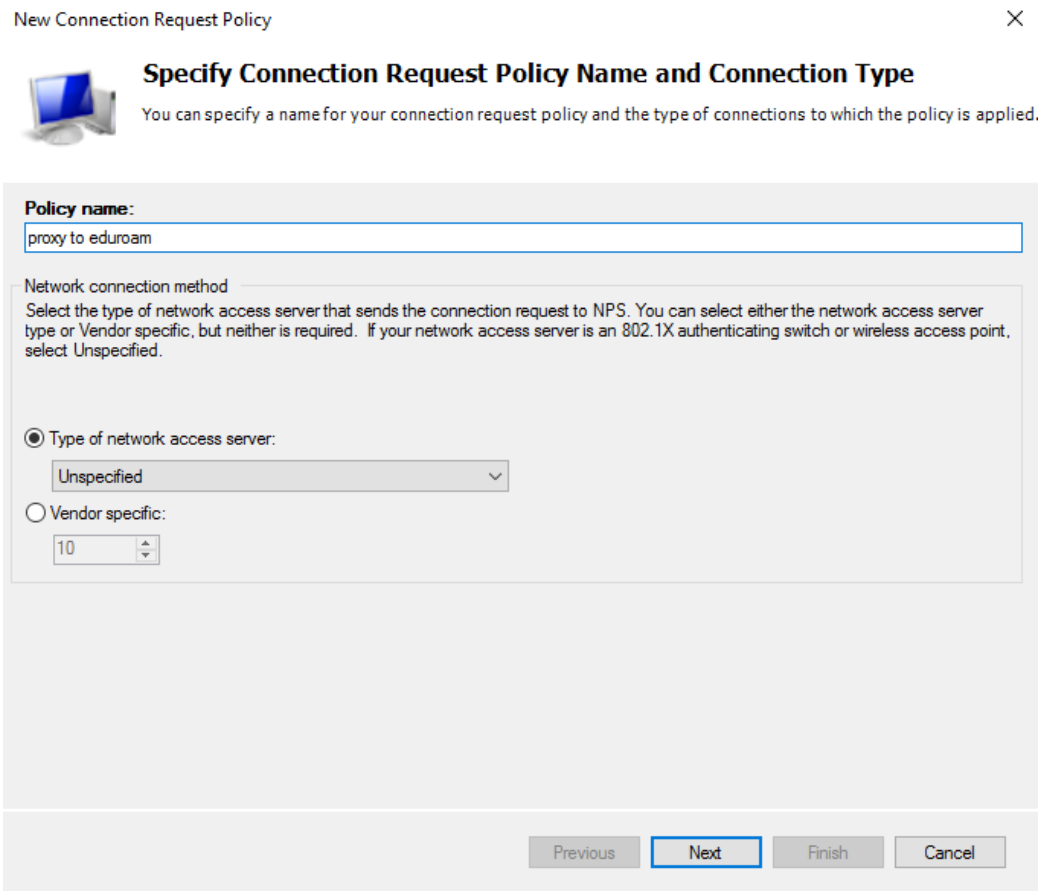


17. Add a Connection Request Policy for eduroam visitors

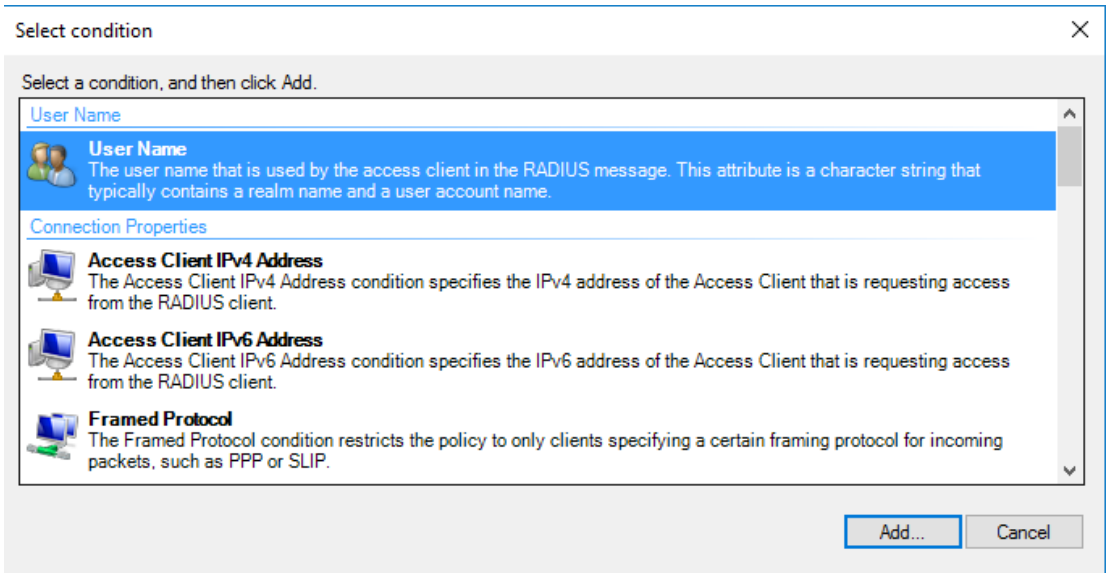
To proxy visitor authentications to the NRPS a policy needs to be created. To do this, in **Network Policy Server** under **Policies,** right click on **Connection Request Policies** and click **New**.



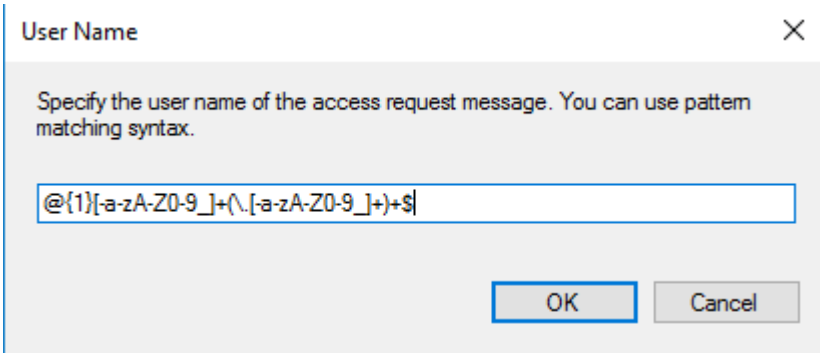
In **Policy name** enter proxy to eduroam, then click **Next**.



On the **Specify Conditions** page click **Add** the click on **User Name** then click **Add**.



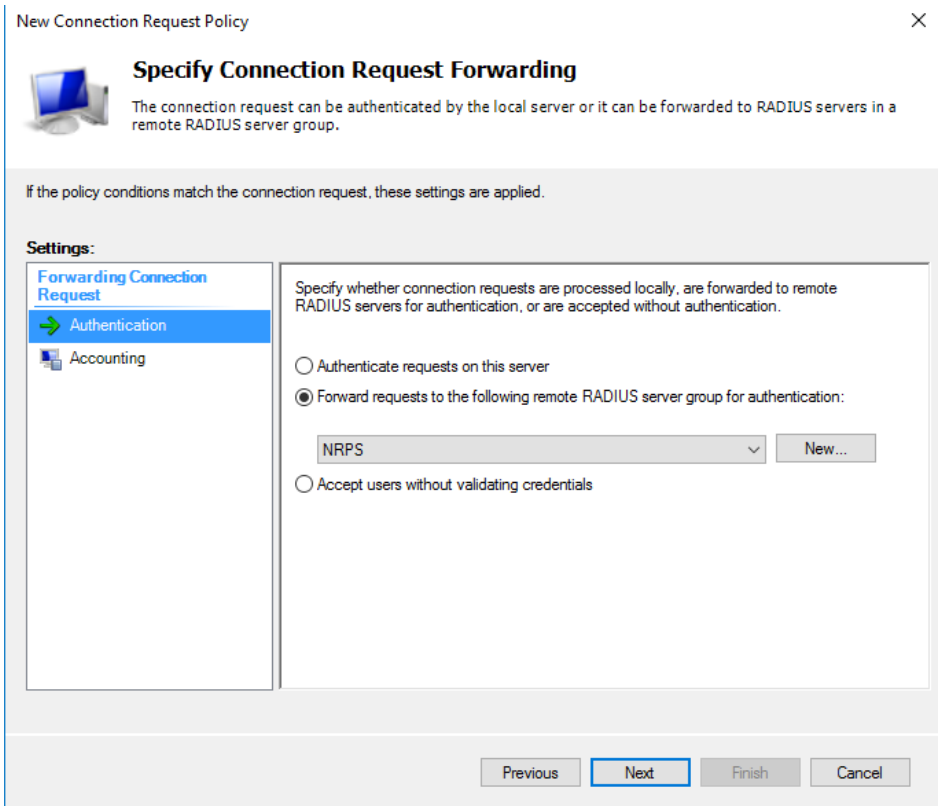
In the **User Name** box enter `@{1}[-a-zA-Z0-9_]+(\.[-a-zA-Z0-9_]+)+$` then click **OK**.

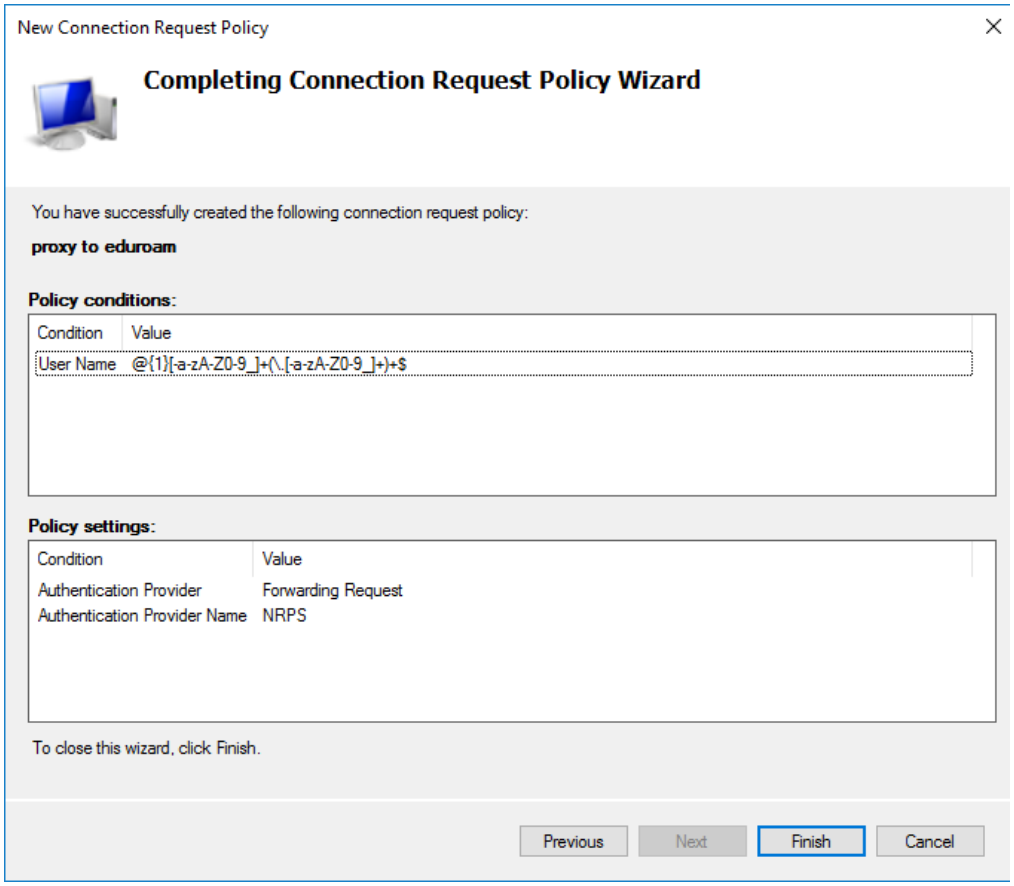


Click **Next** then for Authenticate tick **Forward requests to the following RADIUS server group for authentication:** and select **NRPS** from the dropdown list.

See **using the pattern matching syntax in NPS**

Click **Next** then click **Finish** on the final screen.



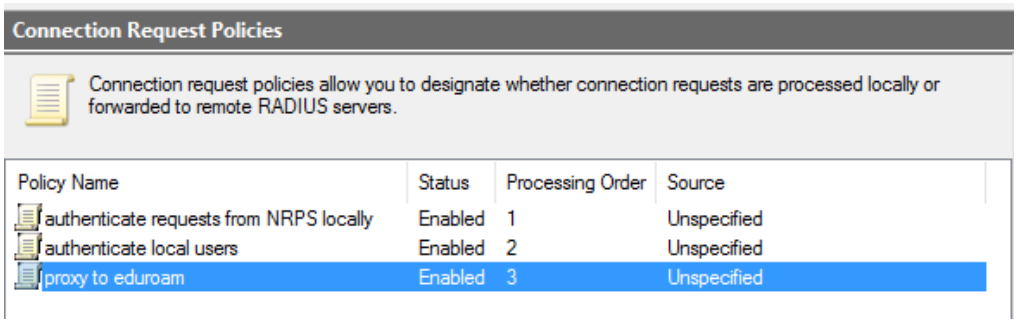


18. Reorder Connection Request Policies

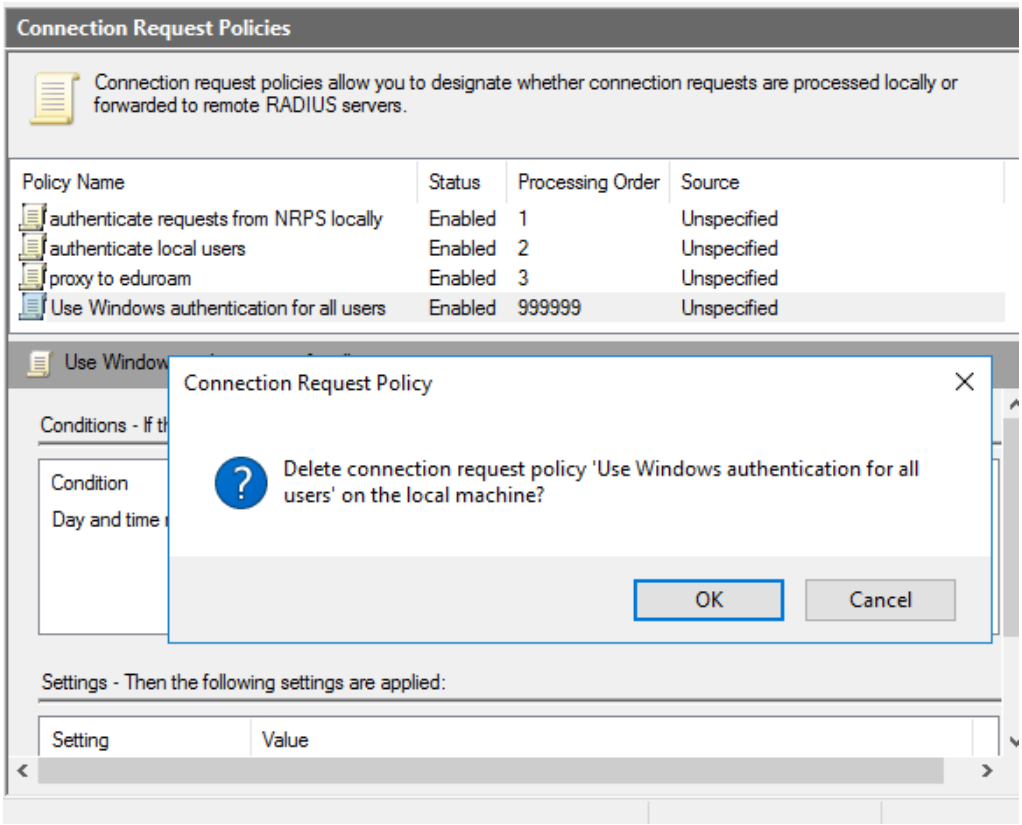
To ensure that local requests are processed first before proxying to eduroam, reorder the list into the following order:

1. authenticate requests from NRPS locally
2. authenticate local users
3. proxy to eduroam

To do this right click on a policy and then click **Move up** or **Move down** until it is in the correct position in the list.

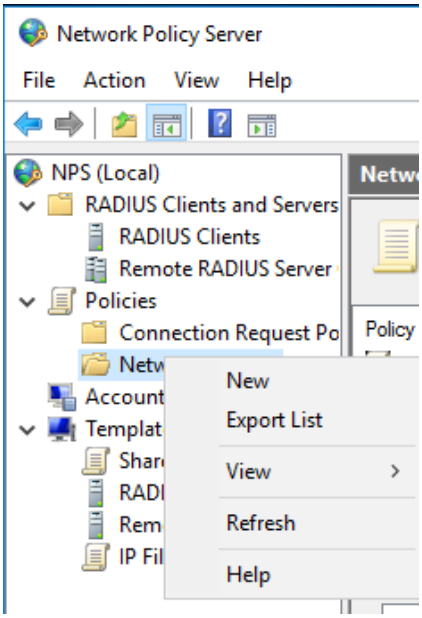


If the "Use Windows authentication for all users" policy exists, then delete it.

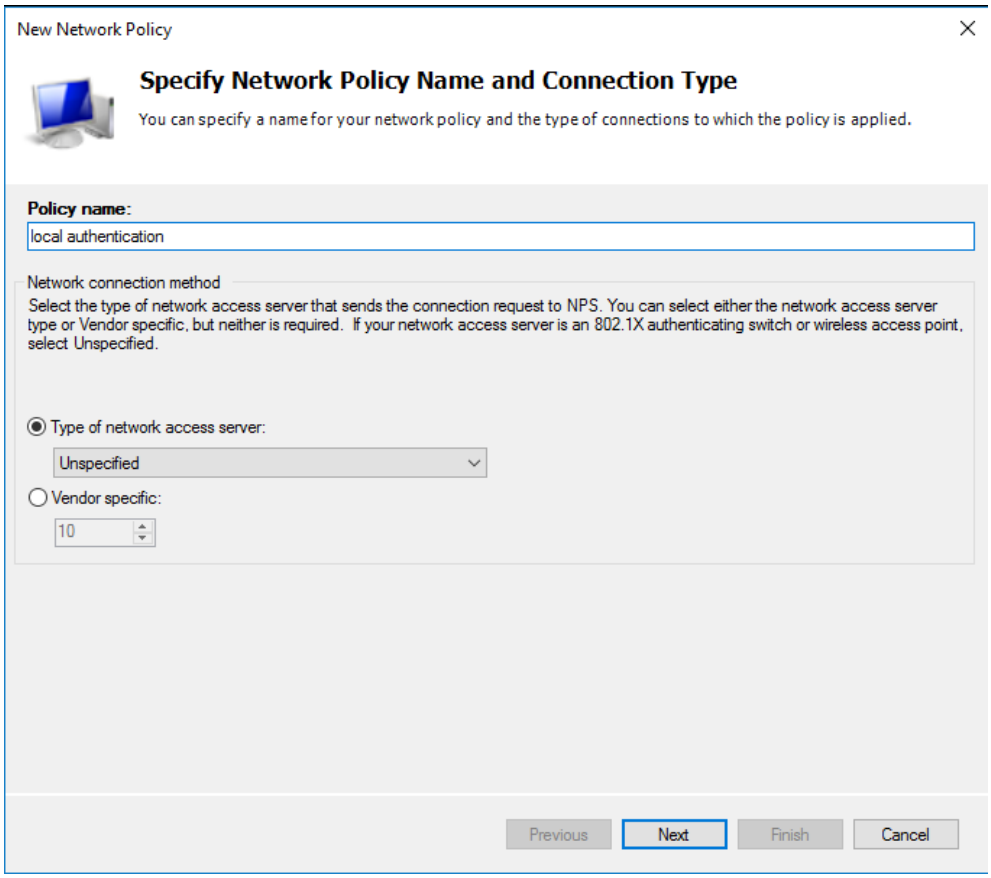


19. Create Network Policy

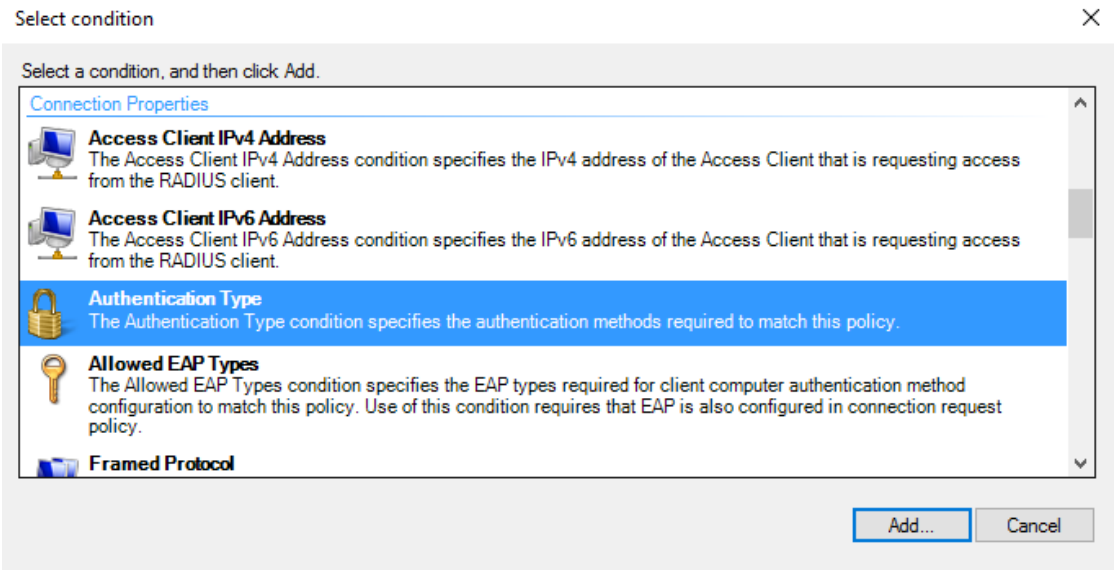
To authenticate users on the server a Network Policy needs to be created. To do this, in **Network Policy Server** under **Policies**, right click on **Network Policies** and click **New**.



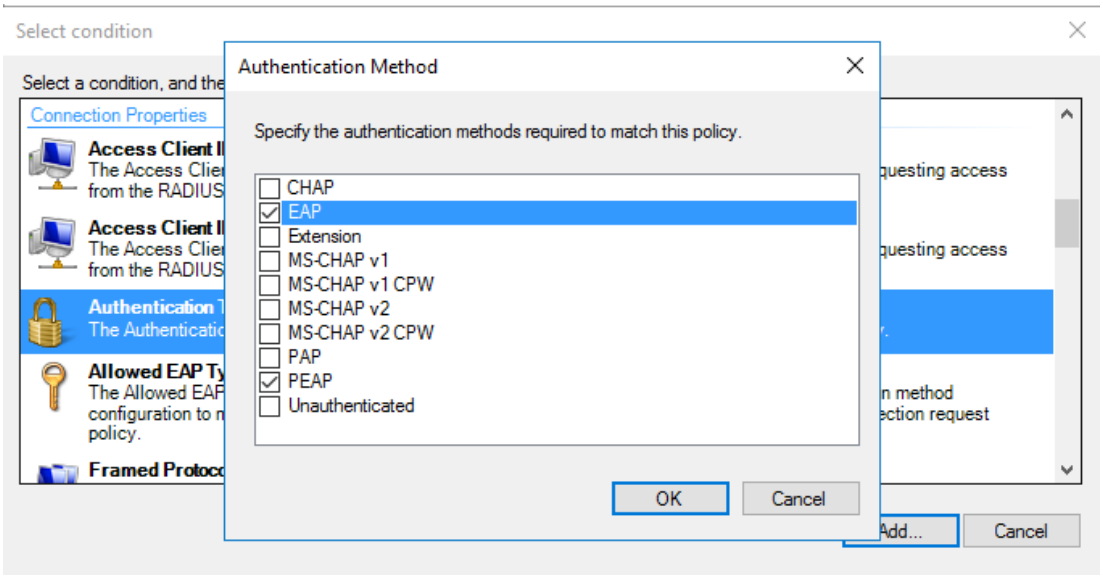
In the **Policy name:** box enter **local authentication** and then click **Next**.



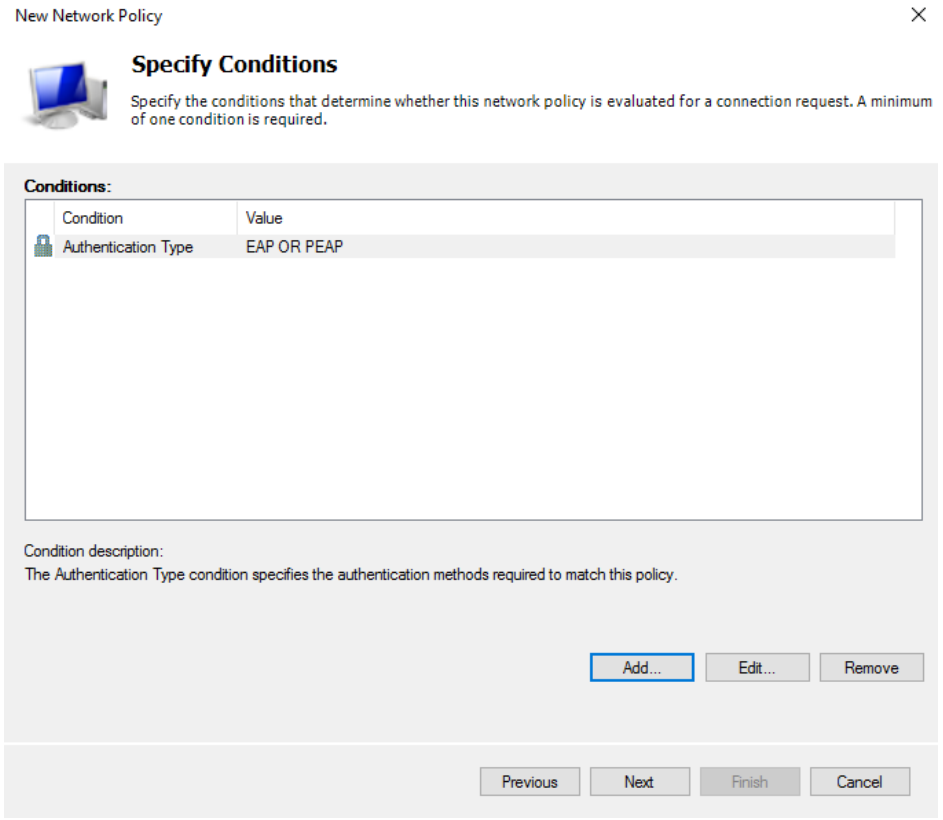
In the **Specify Conditions** window click **Add…** then from the list choose **Authentication Type** and click **Add…**.

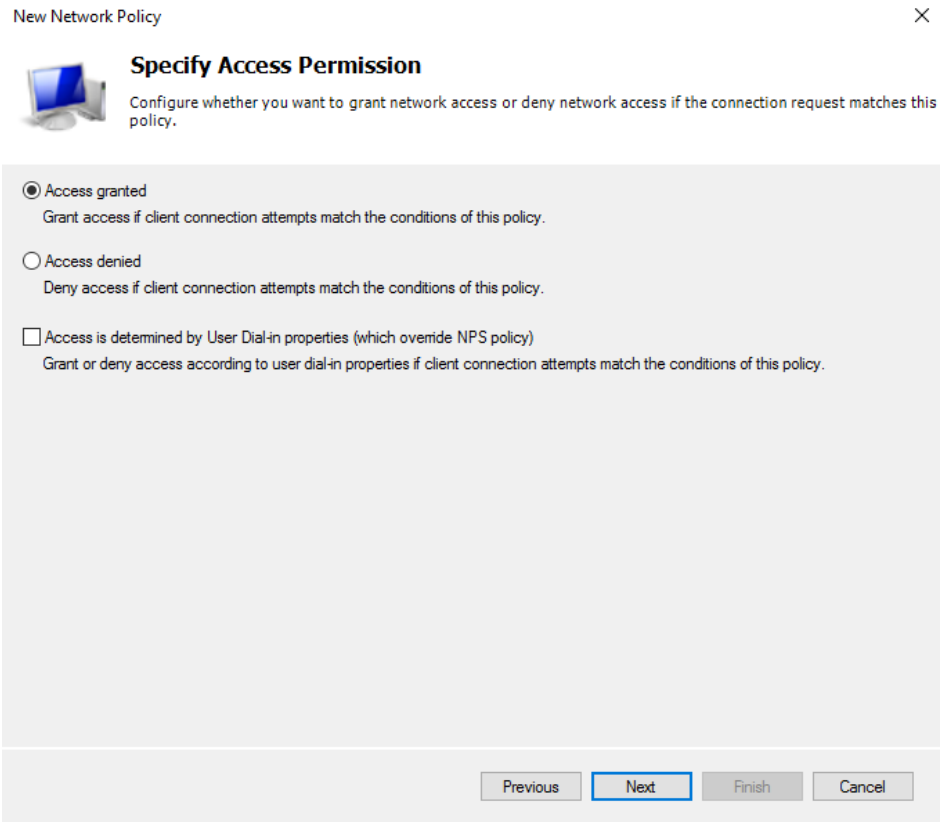


From the **Authentication Method** list choose **EAP** and **PEAP** then click **OK**.

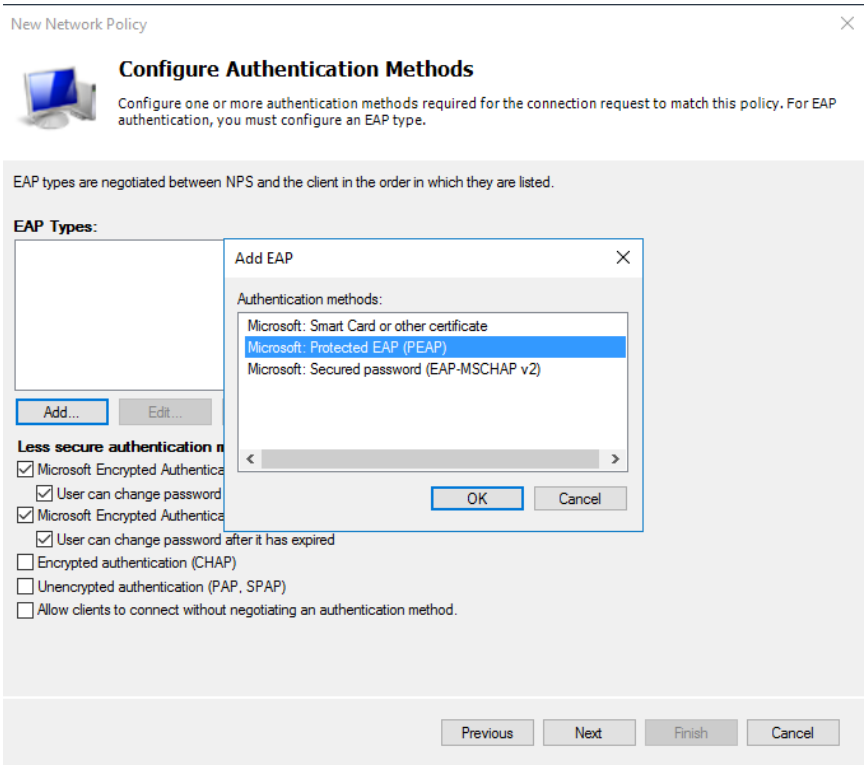


Click **Next** then tick **Access granted** on the **Specify Access Permission** page, then click **Next** again.

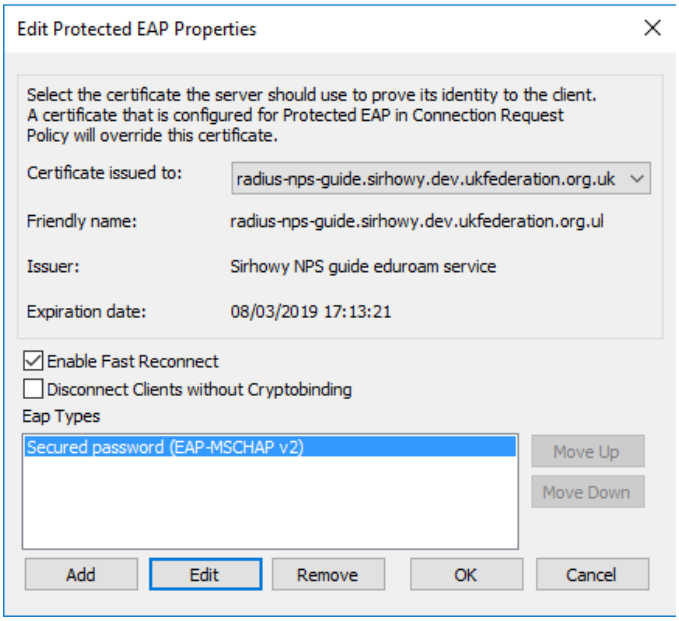




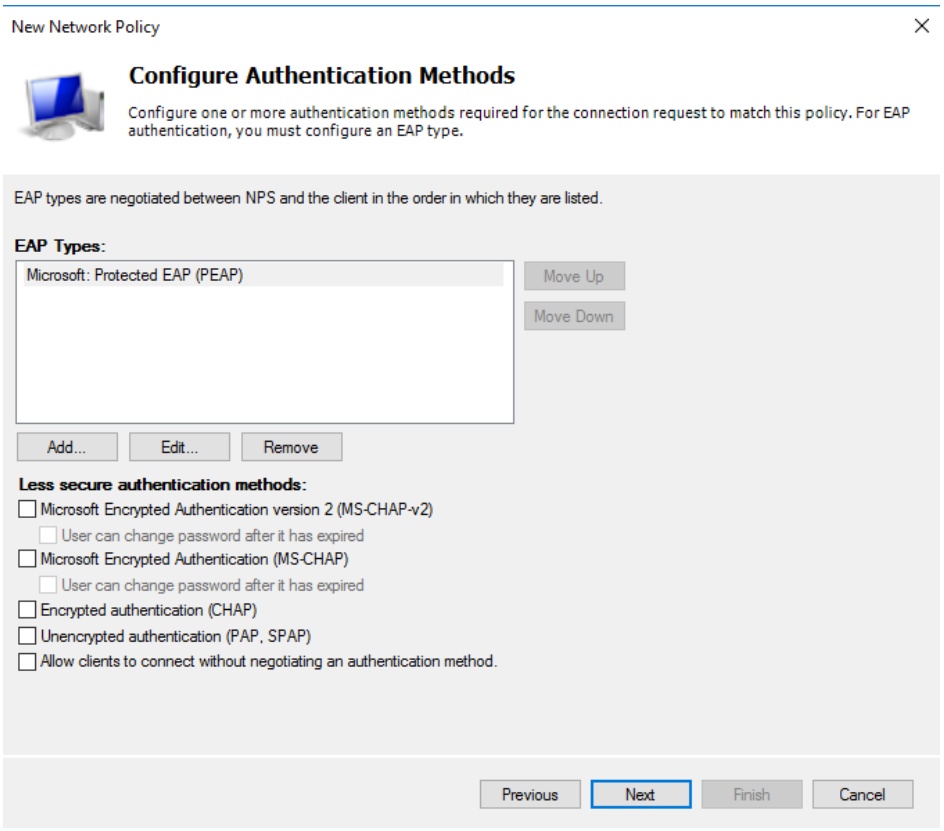
On the **Configure Authentication Methods** page click **Add…**



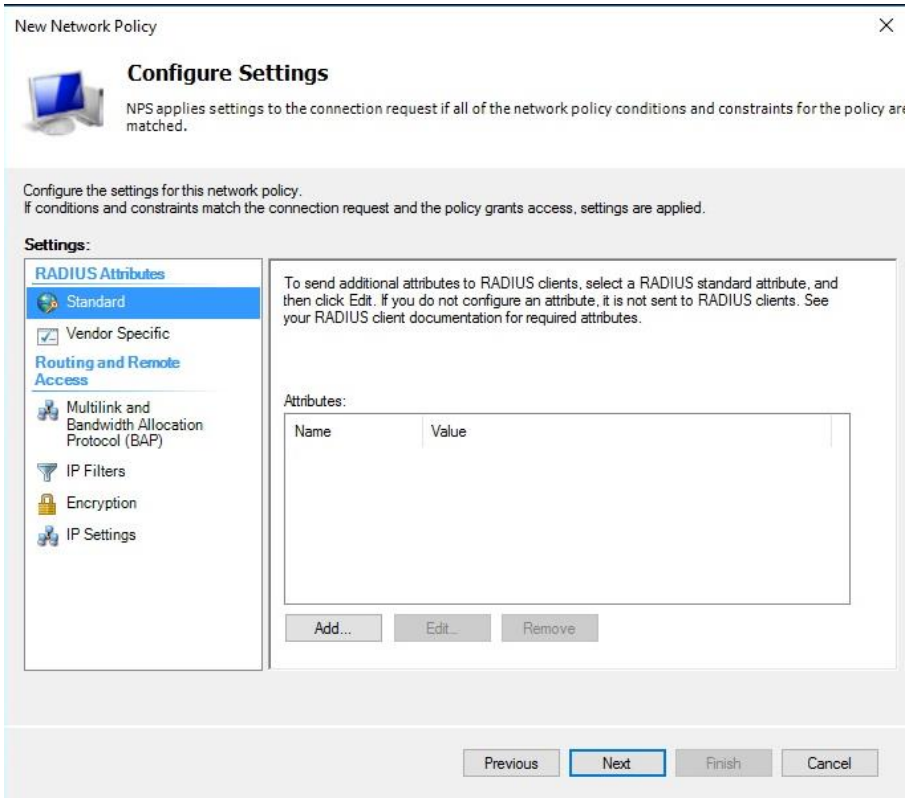
In the list of **EAP Types**: select **Microsoft: Protected EAP (PEAP)** and click **'Edit…'**. Then select the correct certificate in the **Certificate issued** list and ensure **Secured password (EAP-MSCHAP v2)** is in the list of **EAP Type'**. Then click **OK.**



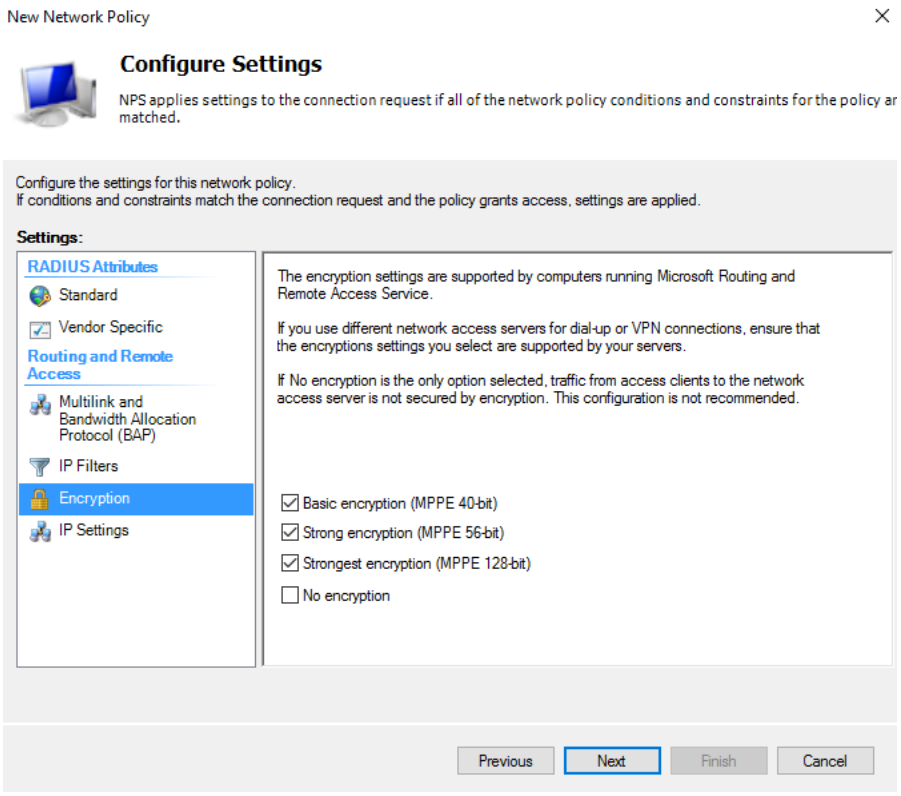
On **the Configure Authentication Methods** page untick all **Less secure authentication methods.** Then click **Next.**



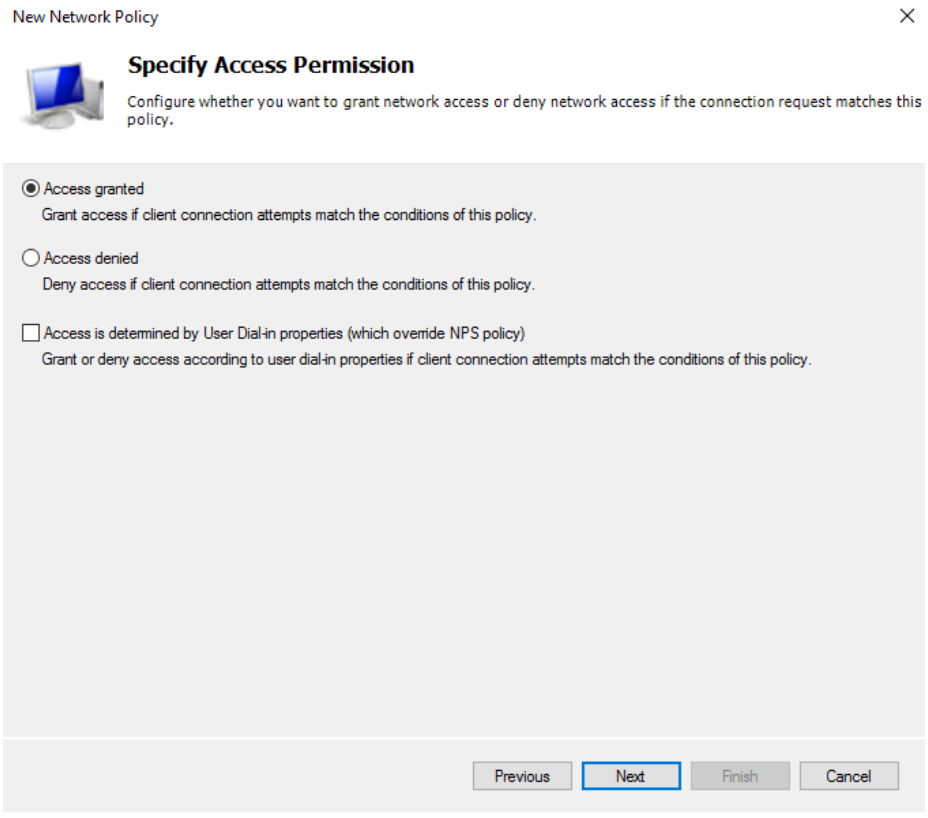
On the **Configure Constraints** page click **Next**. Then on the **Configure Settings** page, under **RADIUS Attributes, Standard** remove both **Framed-Protocol PPP** and **Service-Type Framed** from the list.



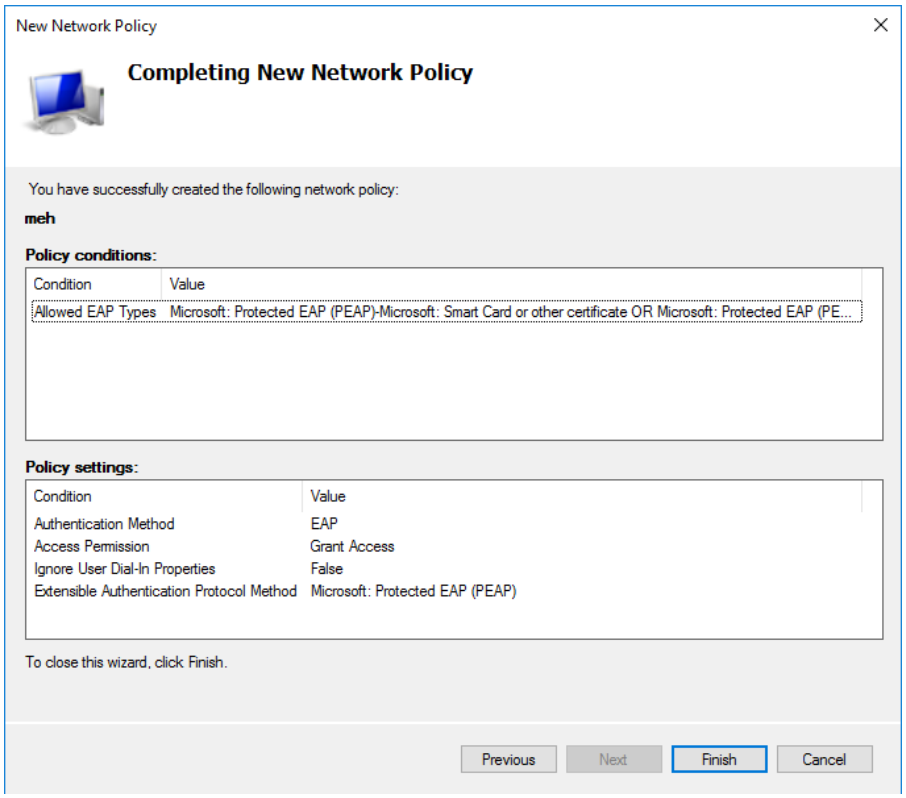
Under **Routing and Remote Access**, **Encryption** untick **No encryption**. Then click **Next**.



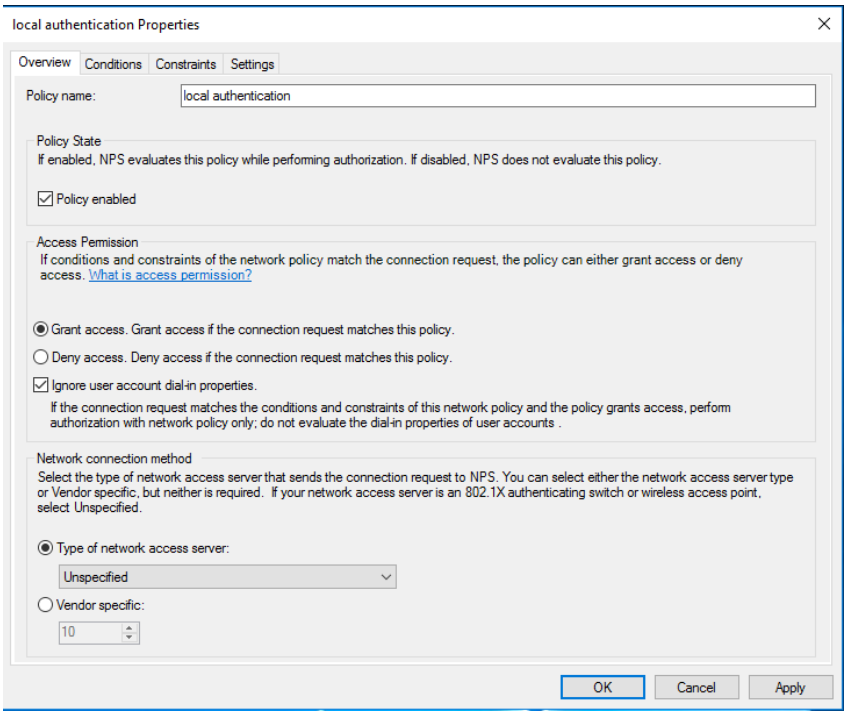
Next, in the **Access Permission** area, choose **Access Granted**

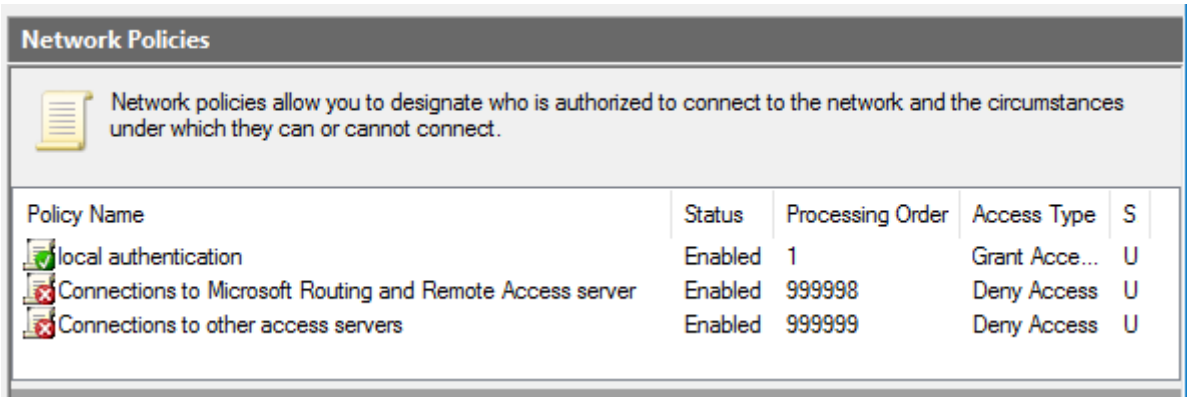


Then click **Finish** on the **Completing New Network Policy** page.



Optional: This setting will depend on whether you would like to control access via the Dial-in Properties in Active Directory Users and Computers on a per user basis. If not, change the settings to **Ignore user account dial-in properties** from the Active Directory. To do this double click on the **local authentication** policy.



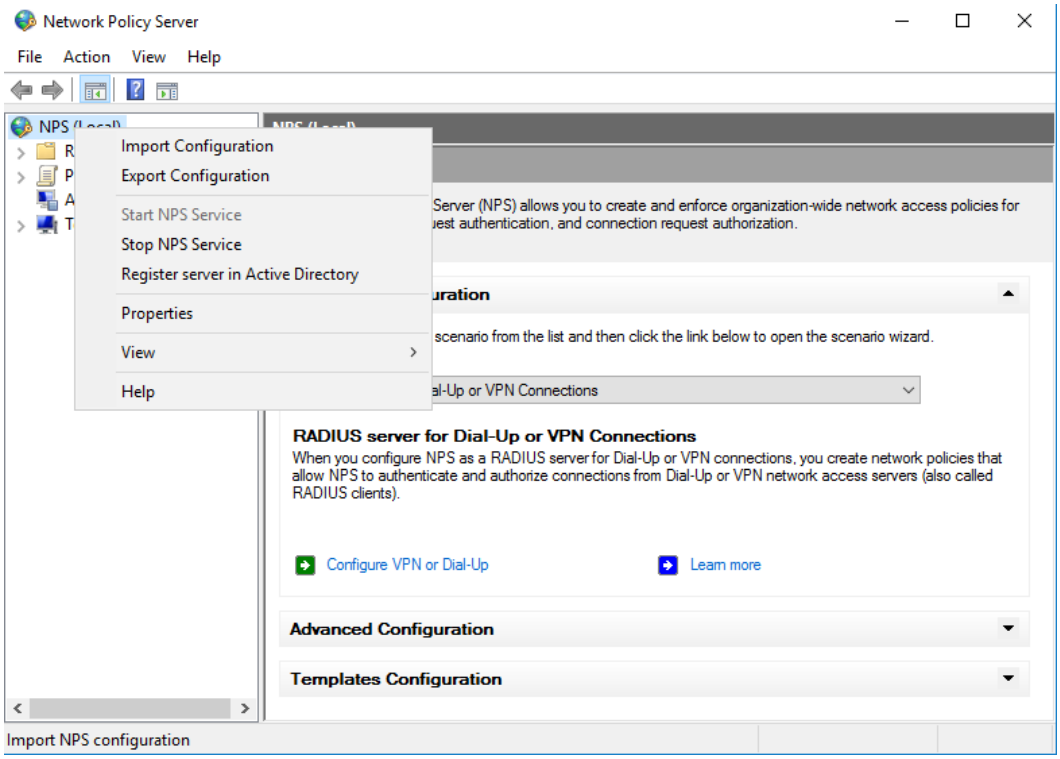


To ensure that local authentication is processed first, reorder the list so that local authentication is first. To do this right click on a policy and then click **Move up** or **Move down** until it is in the correct position in the list.

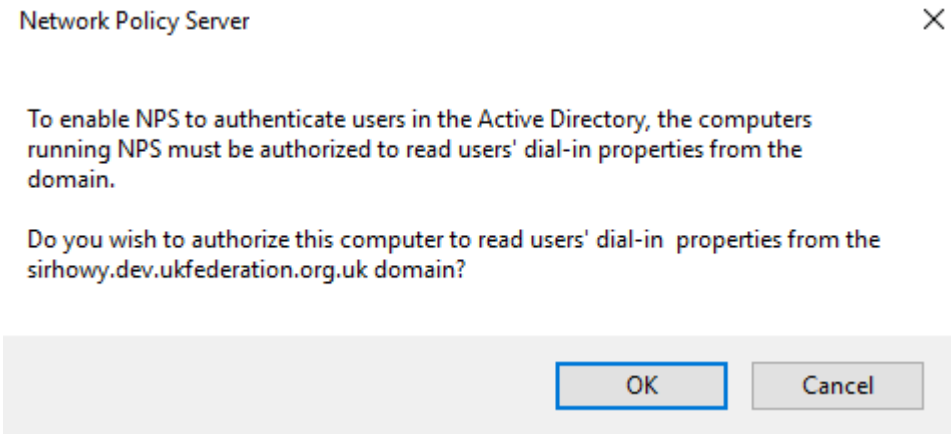
20. Register server in Active Directory

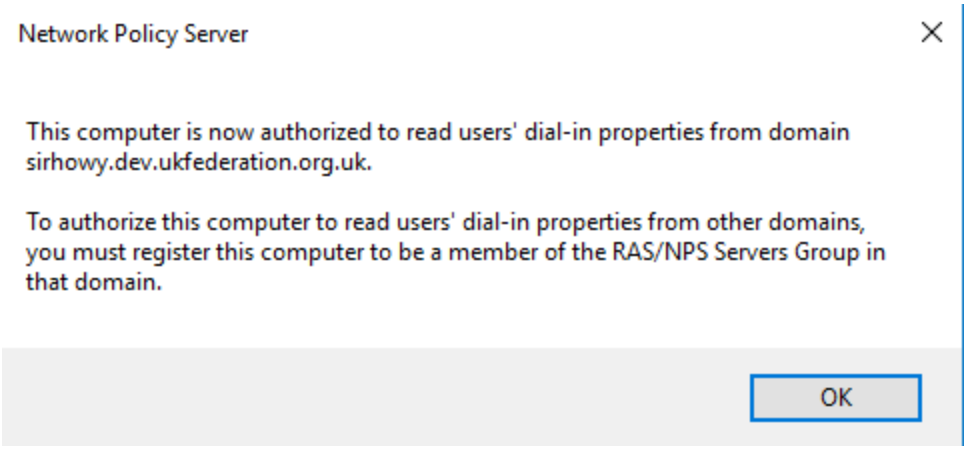
You should follow the process of registering the server in Active Directory.

Right click on **NPS (Local),** choose **Register server in Active Directory**



Click **OK** on the next two dialogues.


Network Policy Server
To enable NPS to authenticate users in the Active Directory, the computers running NPS must be authorized to read users' dial-in properties from the domain.
Do you wish to authorize this computer to read users' dial-in properties from the sirhowy.dev.ukfederation.org.uk domain?
OK
Cancel


Network Policy Server
This computer is now authorized to read users' dial-in properties from domain sirhowy.dev.ukfederation.org.uk.
To authorize this computer to read users' dial-in properties from other domains, you must register this computer to be a member of the RAS/NPS Servers Group in that domain.
OK