



SERVICE SUPPORT AND BUSINESS APPLICATIONS
LOGISTICS APPLICATION SERVICES

How to use SSL/TLS to secure your LOGFAS sites

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Applies to: LOGFAS 6.3.1.

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1.2	Final revision	28 FEB 2019	Lukasz Pajak

1 References

001 Enter ref. here

1 Purpose

002 How to use SSL/TLS to secure your LOGFAS sites

2 Applicability

003 LOGFAS 6.4.1.and earlier versions up to 6.3.1

3 Overview

3.2 General Overview

004 Using SSL/TLS (to secure your LOGFAS sites) is recommended to protect user's privacy.

005 This document explains how to configure Secure Sockets Layer (SSL) for the Internet Information Services (IIS) site hosting ADAMSWEB and/or EVEWEB.

006 The required changes only affect server-platform installations; Client-workstation configurations are not affected when a proper certificate is used on the server.

3.3 Requirements

007 Local administrator permissions/rights at the target LOGFAS server.

008 LOGFAS ADAMSWEB and/or EVEWEB successfully deployed to the LOGFAS server.

4 How to set up SSL on IIS

009 If you need to configure SSL on your LOGFAS server, it's important to realize that the implementation of SSL has changed from IIS 6.0 and above.

0010 Depending on the scope and/or usage of ADAMWEB/EVEWEB some of the following steps will be optional. Note that those steps will be explained using the IIS Manager GUI although the same outcome could be achieved through other Microsoft/Windows tools and commands (i.e. AppCmd.exe, WMI scripts, PowerShell.exe, Certmgr.msc, etc.).

0011 The main steps are:

- Step 1 - Get an appropriated PKI certificate.
- Step 2 - Create an HTTPS binding at the IIS site.
- Step 3 - Configure SSL settings for the IIS site.
- Step 4 - Test SSL by making a request to the IIS site.

0012 Optional steps will be:

- Step 5 - Removing PKI certificate(s).
- Etc.

IMPORTANT NOTE

- The certificates deployed with ADAMSWEB and/or EVEWEB should be deleted (applicable to LOGFAS 6.4.1 and earlier versions up to 6.3.1)

4.1 Step 1.0 - Get an appropriated PKI certificate

0013 Depending on the scope and usage of ADAMWEB/EVEWEB the PKI certificate could be Self-Signed or issued by the Certification Authority (CA) of the Active Directory (AD) Domain.

0014

0015 In both cases the aim will be to obtain a Personal Information Exchange format certificate (PFX) protected with a password-based symmetric key. PFX is a predecessor to PKCS#12; It defines a file format that can be used for secure storage of certificates, containing both private and public keys, plus all of the certificates in a certification path.

0016

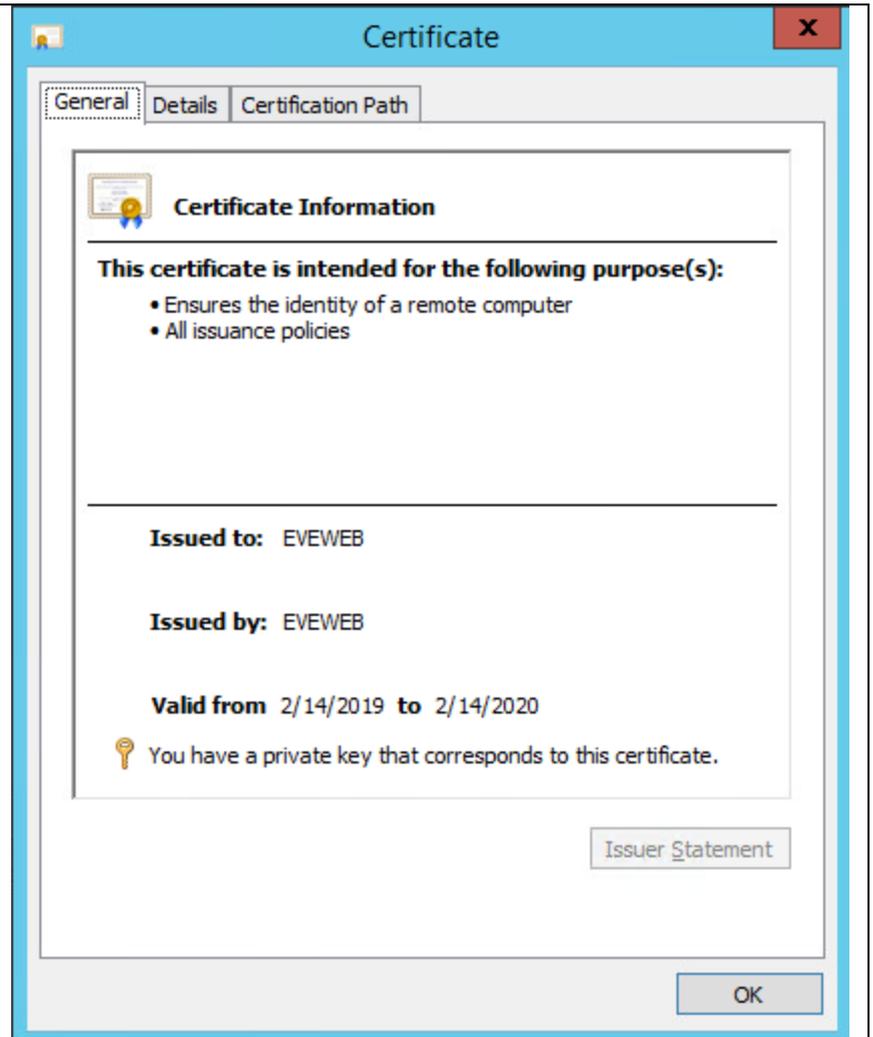
0017 When choosing a certificate, consider the following: Do you want end users to be able to verify your server's identity with your certificate? If yes, then either create a certificate request and send that request to a known certificate authority (CA) such as VeriSign or GeoTrust, or obtain a certificate from an online CA in your intranet domain. There are three things that a browser usually verifies in a server certificate:

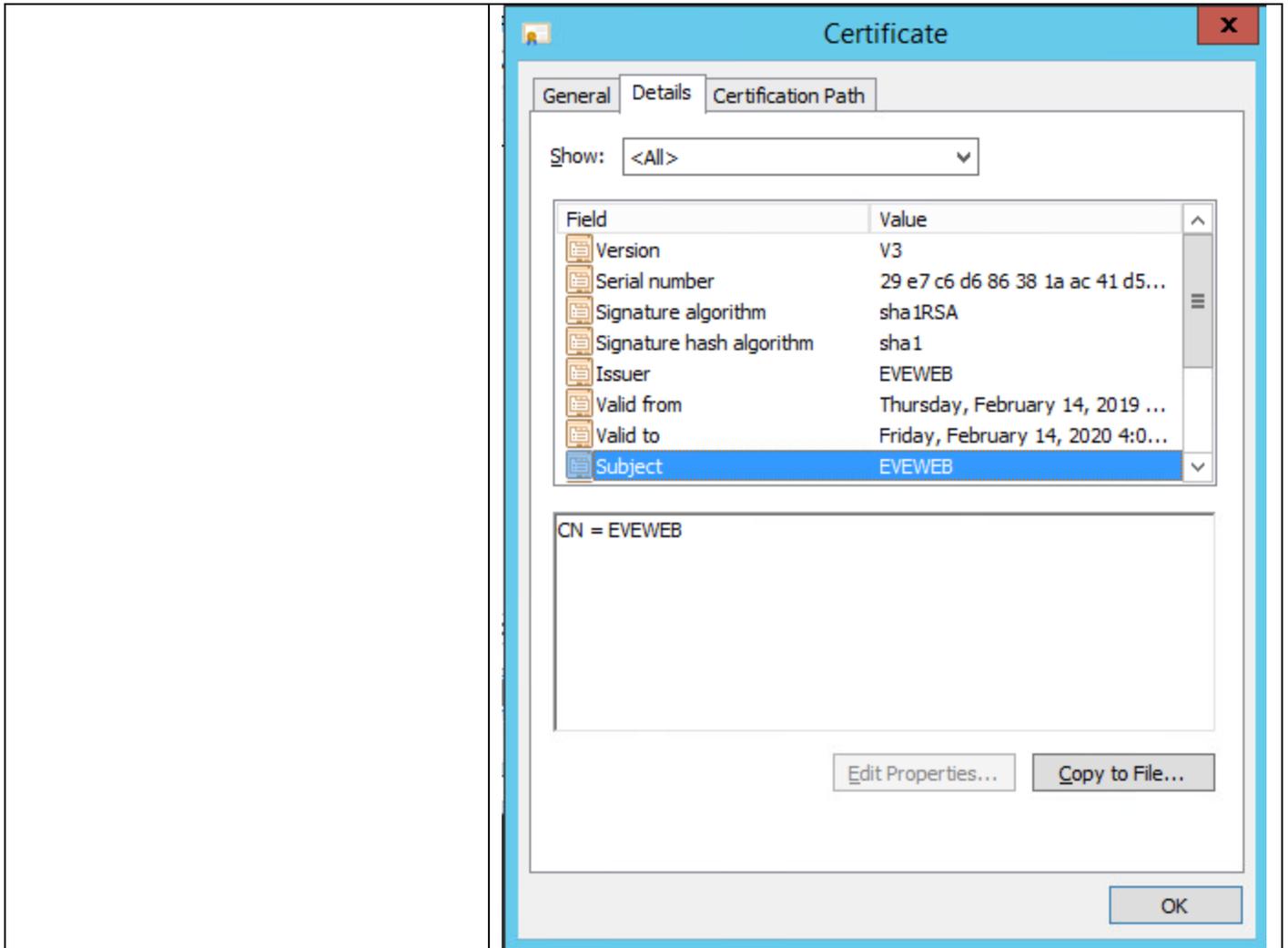
- That the current date and time is within the "Valid from" and "Valid to" date range on the certificate.
- That the certificate's "Common Name" (CN) matches the host header in the request. For example, if the client is making a request to <https://www.contoso.com/>, then the CN must be www.contoso.com.
- That the issuer of the certificate is a known and trusted CA.

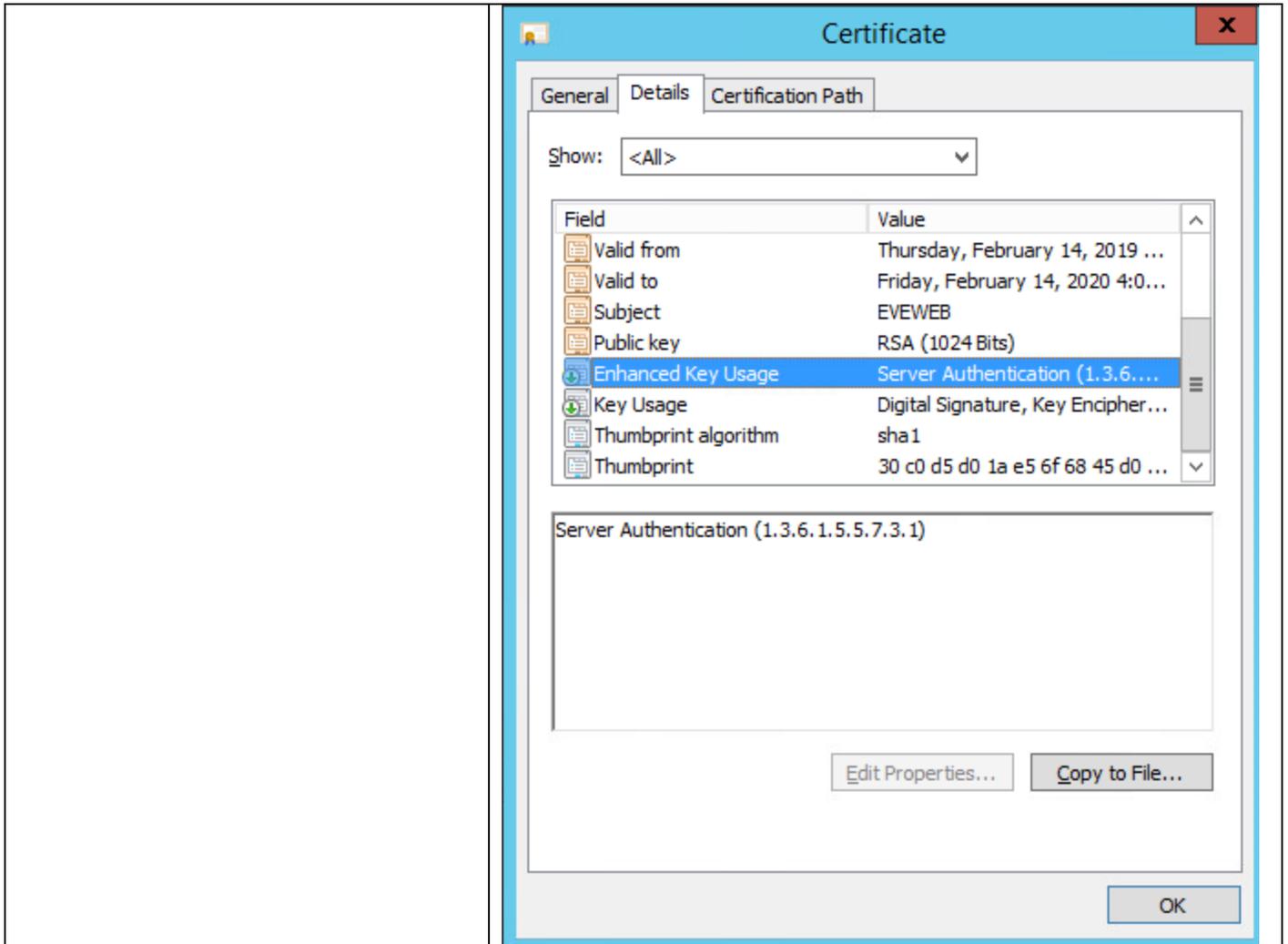
0018 If one or more of these checks fails, the browser prompts the user with warnings. If you have an Internet site or an intranet site where your end users are not people you know personally, then you should always ensure that these three parameters are valid.

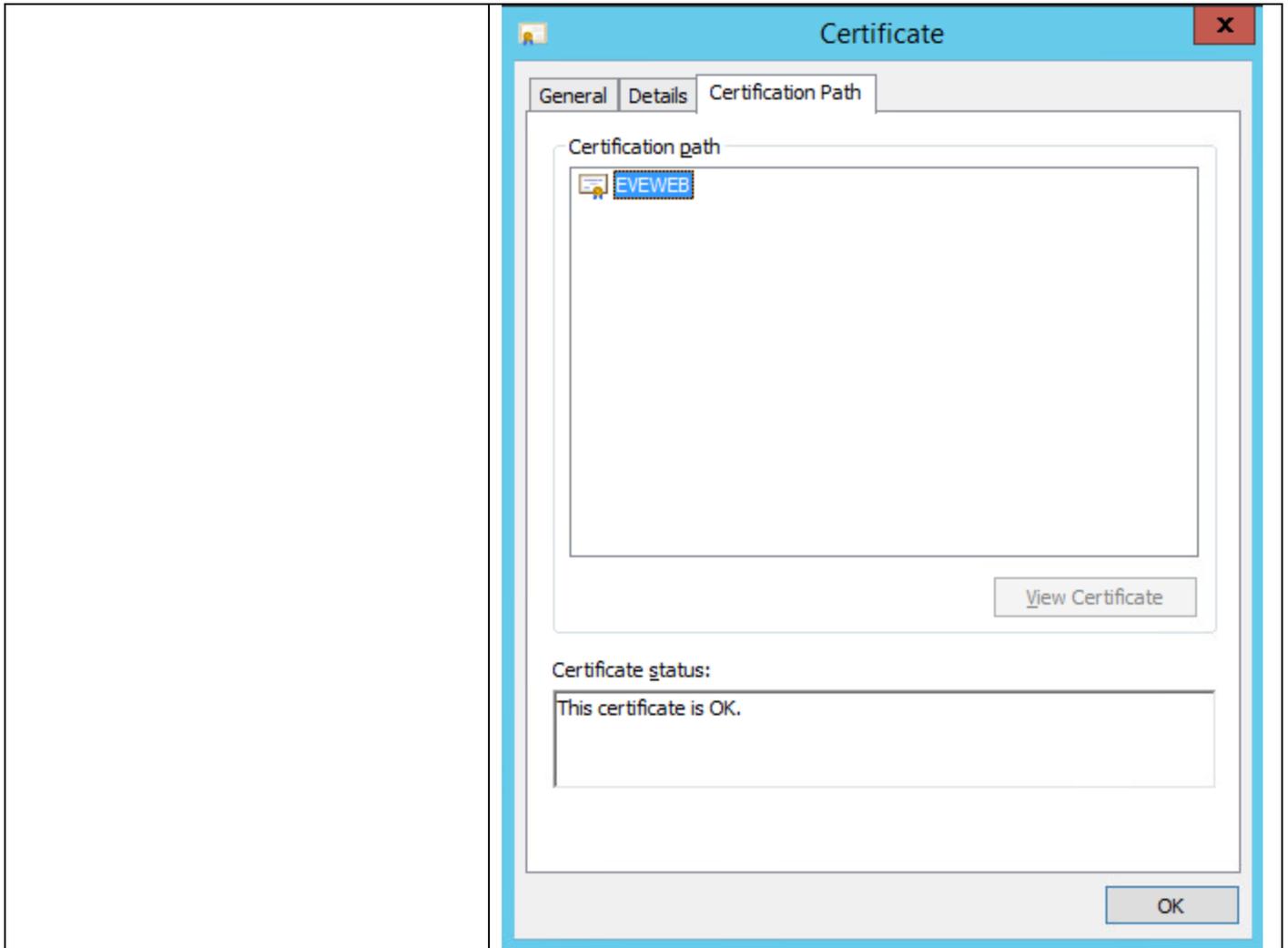
0019 Self-signed certificates are certificates created on your computer. They're useful in environments where it's not important for an end user to trust your server, such as a test environment.

Example of Self-Signed certificate deployed upon installation of EVEWEB.

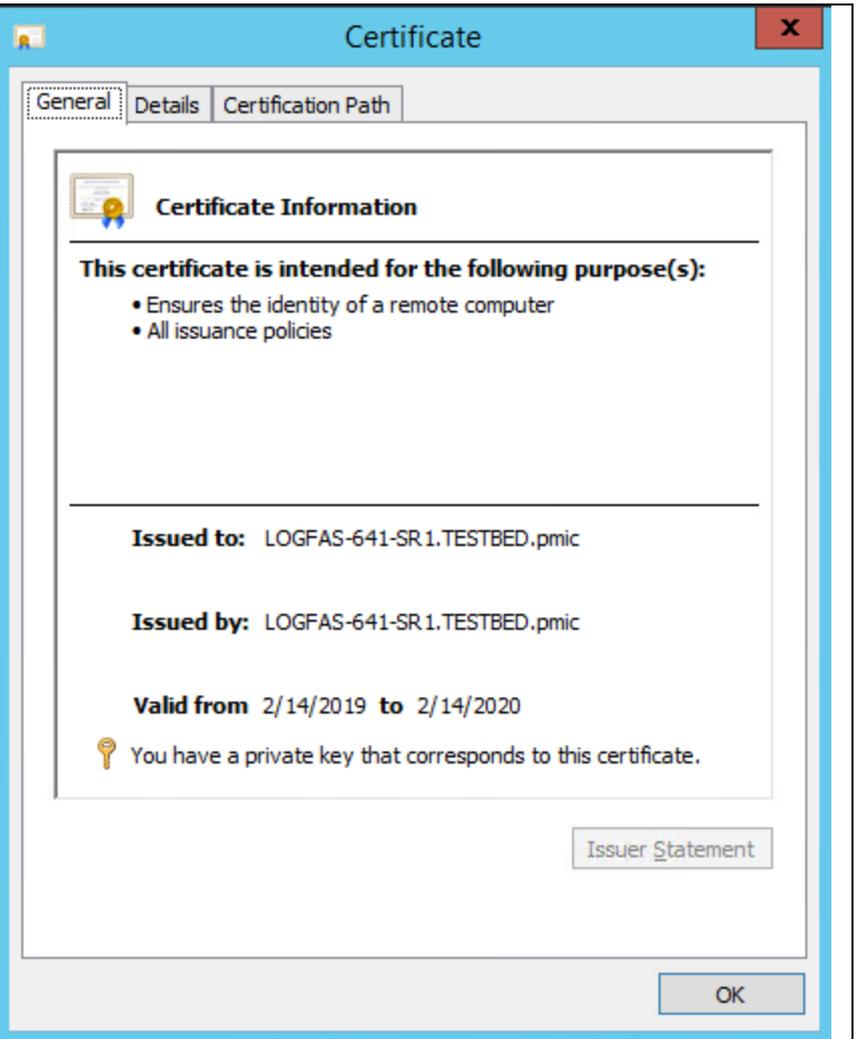


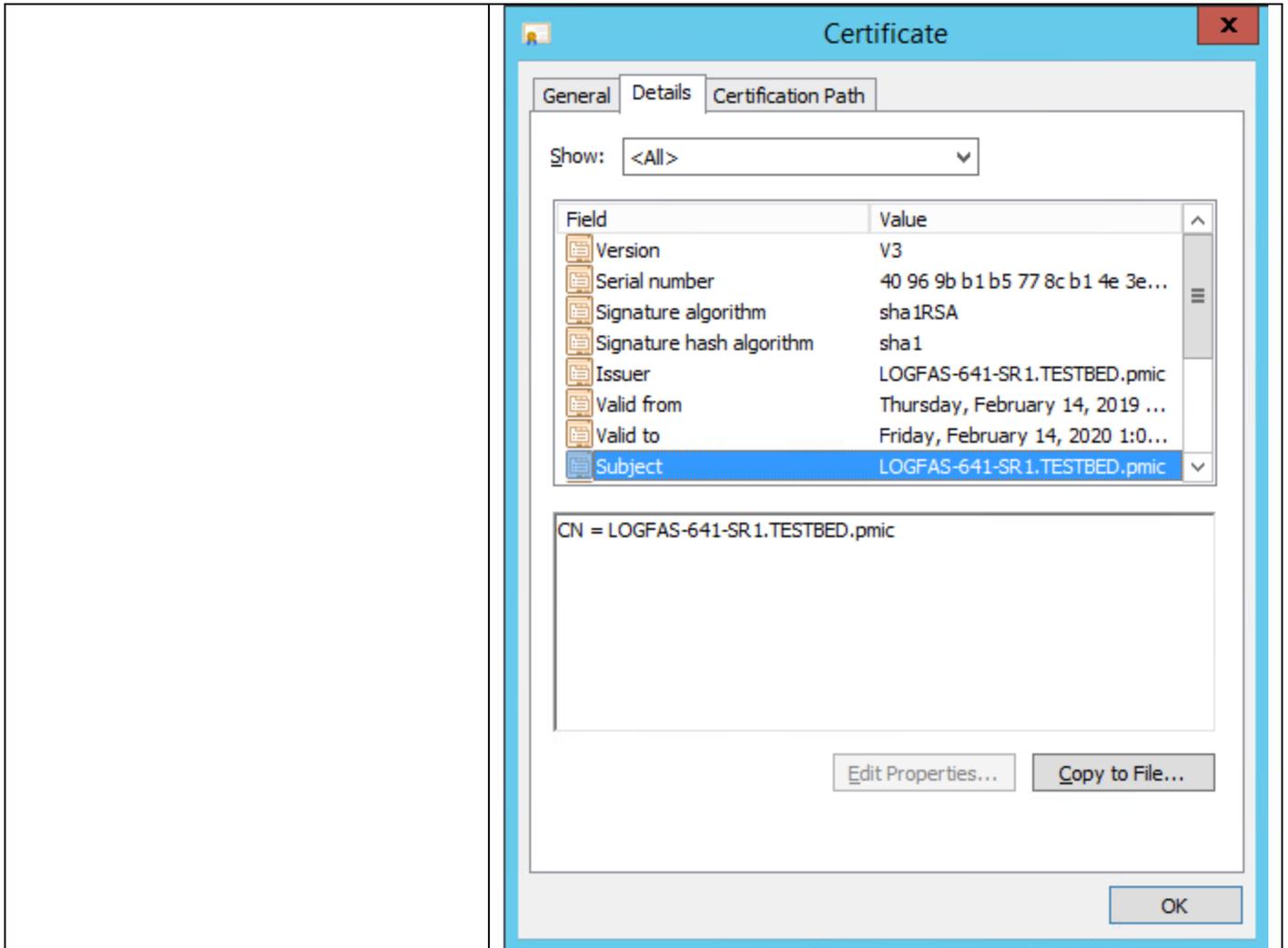


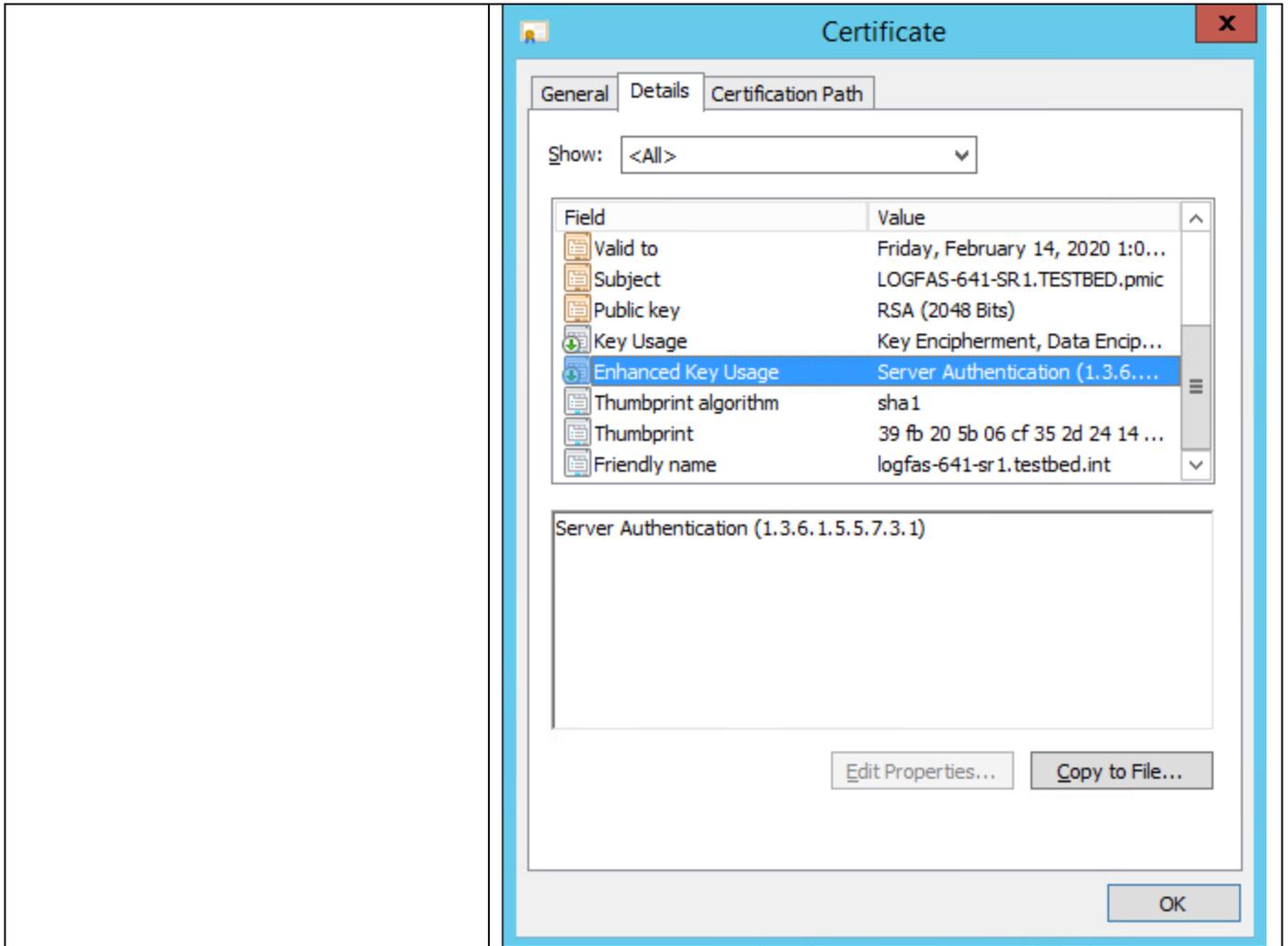


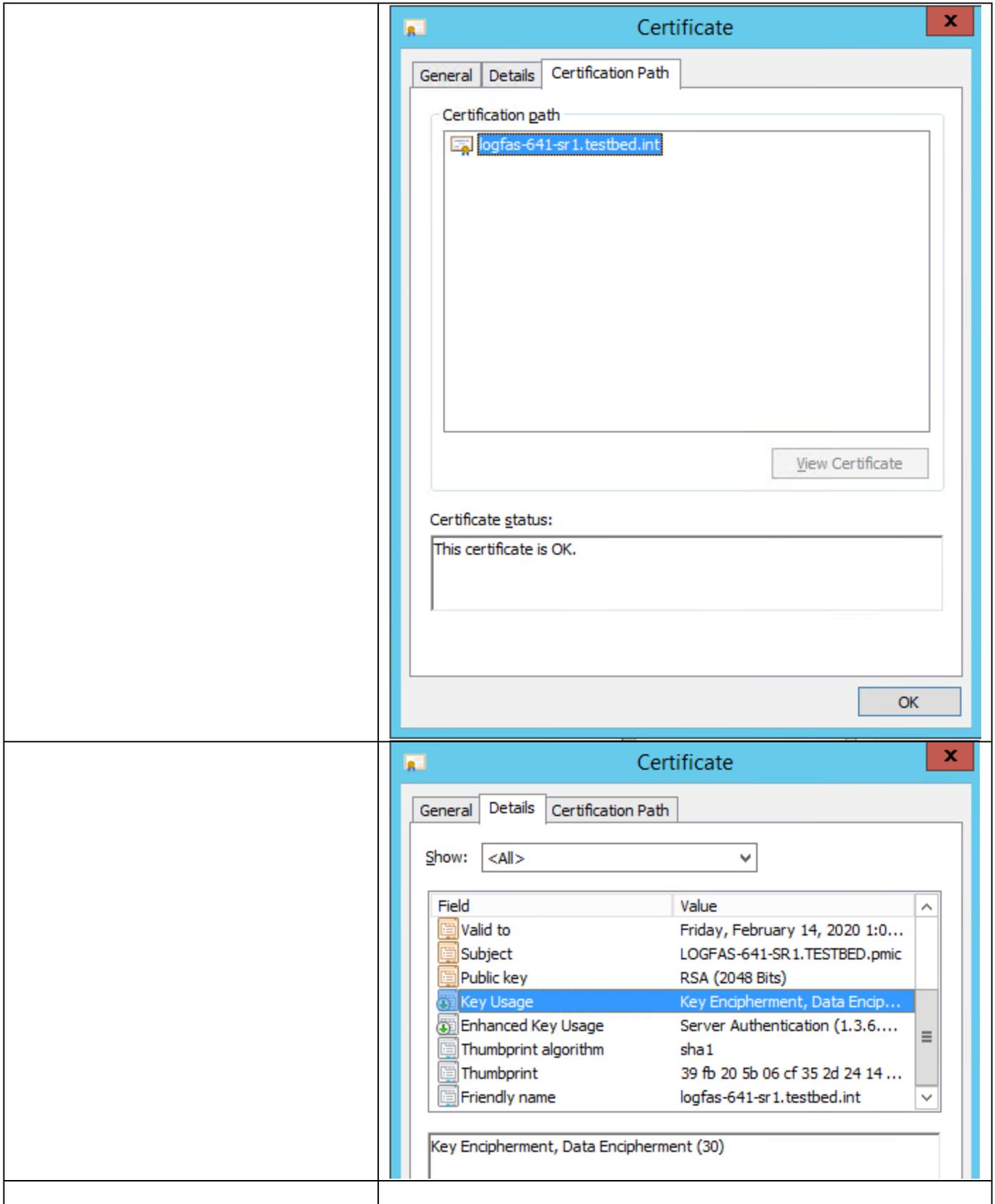


Example of IIS self-signed certificate









0020

0021 The following matrix display one example of usage;

Table 1 - LOGFAS Installation Summary

Procedure Step Description	Demo	Production
1. Removing a previous version of LOGFAS. If a previous version of LOGFAS is installed, you will need to remove it. Follow the section “ <i>Uninstalling LOGFAS (Client & Server)</i> ”. ¹ If this is a clean installation then proceed to the following step below.	✓	✓
2. Preparing LOGFAS Server for the Domain. Have your Domain Administrator create a service account for the POSTGRESQL service and issue the SETSPN commands as explained in “ <i>Preparing LOGFAS Server for the Domain with SETSPN</i> ” section.	x	✓
3. Creating SSL Certificates for LOGFAS Server. If you don’t have valid SSL certificate(s) for you server you must install OpenSSL and generate them. The procedures can be found below in “ <i>Installing OpenSSL & Creating Certificates</i> ” section.	x	✓
4. LOGFAS Client and Server Software Installation. Install the LOGFAS software as explained in “ <i>LOGFAS Software Installation Procedures</i> ” section.	✓	✓
5. LOGFAS Server Post-Installation Configuration. To configure the database Service, database, PGADMIN and SSPI, follow the steps described in “ <i>LOGFAS Server Post-Installation Procedures</i> ” section.	x	✓

4.1.1 Step 1.1 - Get an appropriated PKI certificate from Certification Authority (CA)

0022 Note that NATO/National policies and proceses related to the management of PKI certificates could be stablished/enforced on your environment. The following CA steps are just an example for informational purposes.

0023

0024 Requesting a certificate from the CA using the Web browser.

0025

0026 Who is my CA? How to find the Certificate Authority enabled for the Active Directory environment.

0027

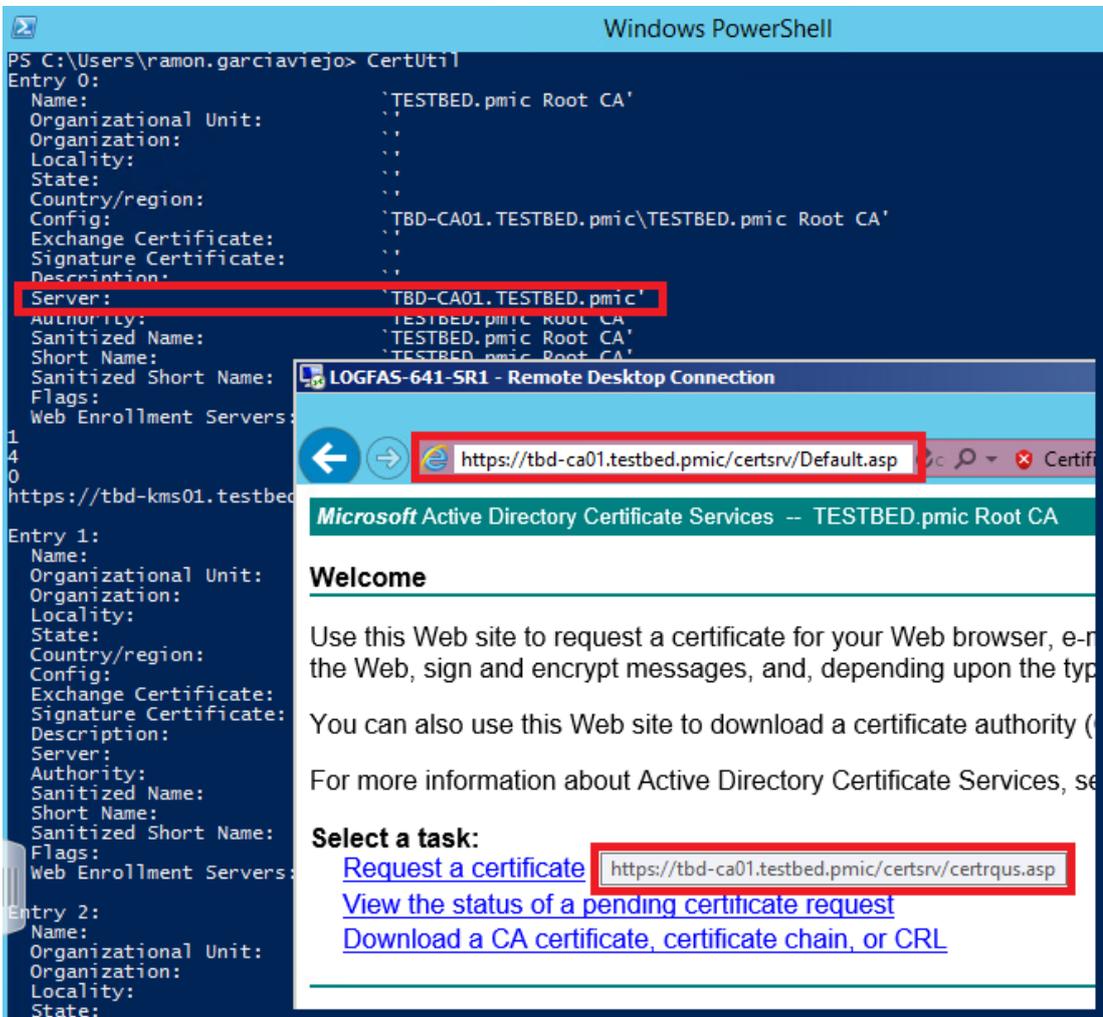
0028 At the target LOGFAS server: Use the CertUtil utility from a cmd or PowerShell command prompt to determine the CA information and the server(s) hosting the service.

```
PS C:\Windows\System32> CertUtil
```

https://docs.microsoft.com/en-us/windows-server/administration/windows-commands/certutil#BKMK_CAInfo

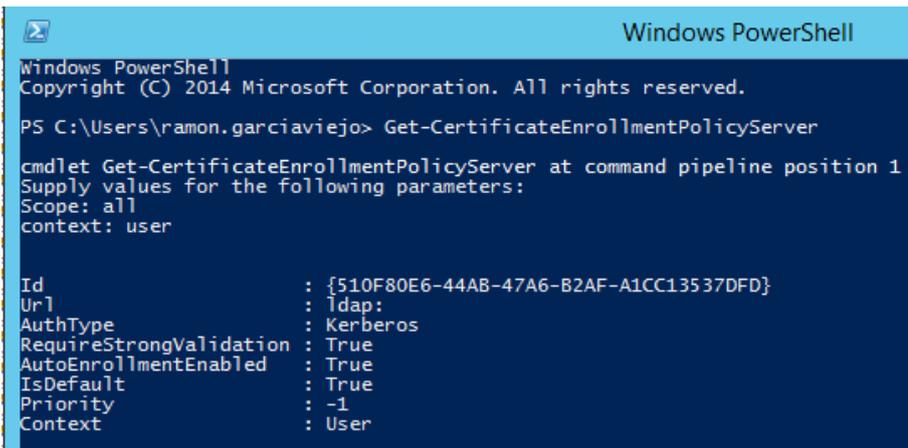
¹ This is only applicable to releases of 6.3.1 or later. Prior releases must first follow migration procedures outlined in the 6.3.1 installation package.

0029 If the CA has enabled the Web enrollment, It should be possible to request/download a certificate using the Web browser. The CA URL should be: <https://<fully qualified Domain name>/certsrv>



0030 Below PowerShell command should display the CA policy server information. The Id value should match with the one displayed—later on—during the certificate enrollment.

```
PS C:\Windows\System32> Get-CertificateEnrollmentPolicyServer
```



```
Windows PowerShell
Copyright (C) 2014 Microsoft Corporation. All rights reserved.

PS C:\Users\ramon.garciaviejo> Get-CertificateEnrollmentPolicyServer

cmdlet Get-CertificateEnrollmentPolicyServer at command pipeline position 1
Supply values for the following parameters:
Scope: all
context: user

Id                : {510F80E6-44AB-47A6-B2AF-A1CC13537DFD}
Url               : ldap:
AuthType          : Kerberos
RequireStrongValidation : True
AutoEnrollmentEnabled : True
IsDefault         : True
Priority           : -1
Context           : User
```

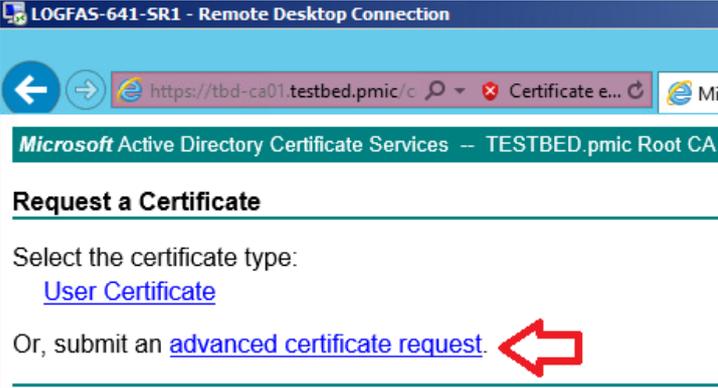
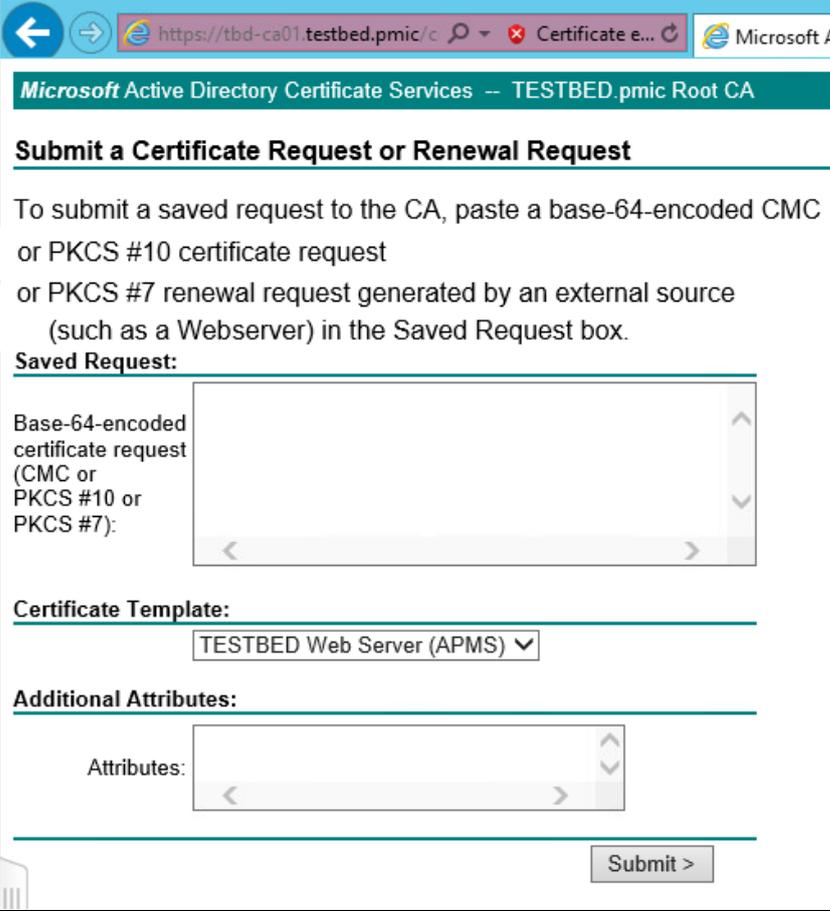
<https://docs.microsoft.com/en-us/powershell/module/pkiclient/get-certificateenrollmentpolicyserver?view=win10-ps>

0031 Log on to the LOGFAS server where you want to install a certificate.

0032 Start Internet Explorer, and then connect to the computer hosting Certificate Services (for example, <https://<servername>/certsrv>).

IMPORTANT NOTE

- Note the use of https (TCP port 443) and not http.

<p>0033 On the Microsoft Certificate Services Welcome page, click Request a certificate.</p> <p>0034 On the Request a Certificate page, click “Or, submit an advanced certificate request”</p>	
<p>0035 Depending on the CA settings you could have access to the full functionality. In the following example we have limited rights and it is only allowed to paste the contents of a previously generated certificate request.</p>	

0036 On the Advanced Certificate Request page, click Create and submit a request to this CA.

0037 On the Advanced Certificate Request page, do the following:

0038 Under Identifying Information, in the Name field, enter a unique name, for example, the fully qualified domain name (FQDN) of the computer you are requesting the certificate for. For the remaining fields, enter the applicable information.

Note

Event ID 20052 of type Error is generated if the FQDN entered into the Name field does not match the computer's name.

4.1.2 Requesting a certificate from the CA using the Certificate Management tool.

IMPORTANT NOTE

- On Windows 2012R1/Win8 and/or later Operating Systems: You can use **certlm.msc** (Certificates Local Machine) to open the computer certificate store. Note that certmgr.msc (Certificates User) will open the user certificate store. Otherwise use mmc.exe to access to the Local machine certificate store.

```
C:\Windows\System32> certlm.msc
```

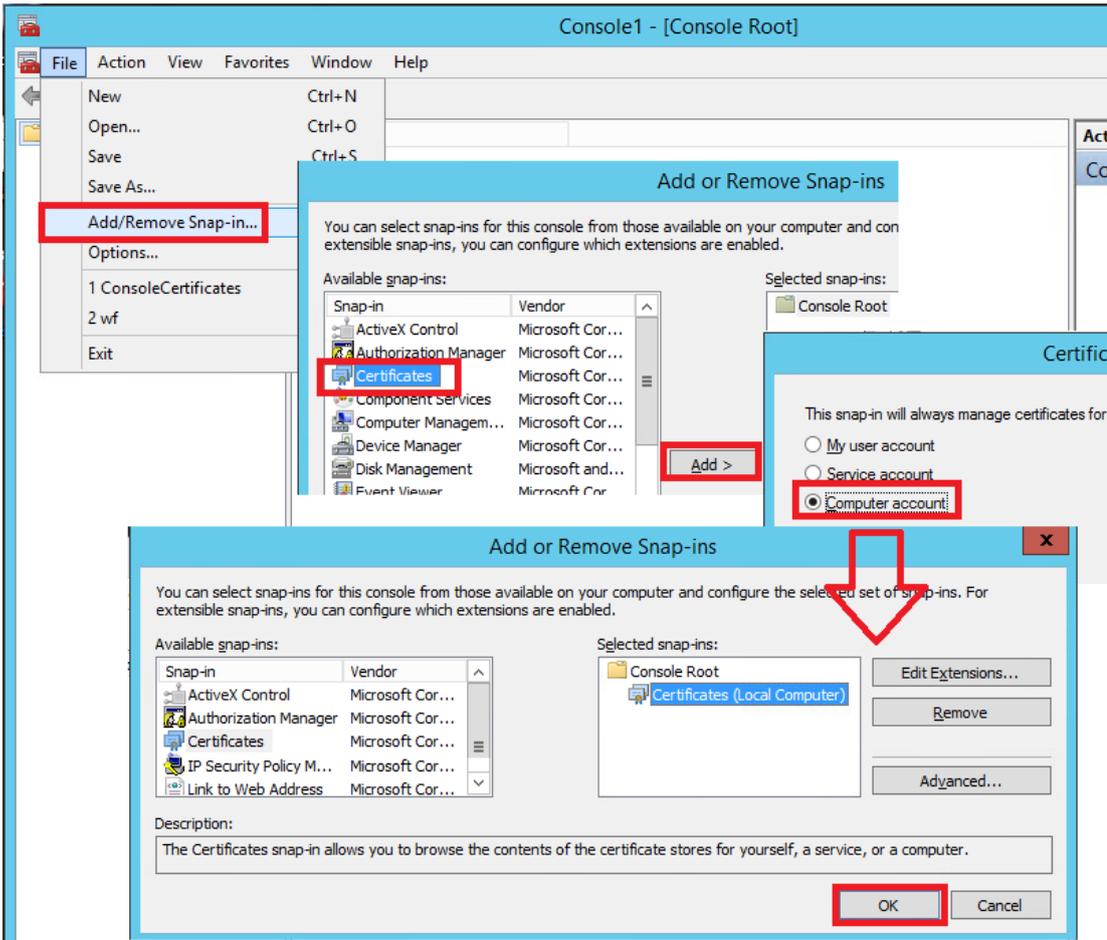
0039 start / mmc.exe / File / Add-Remove Snap-in.../ Certificates / Add

IMPORTANT NOTE

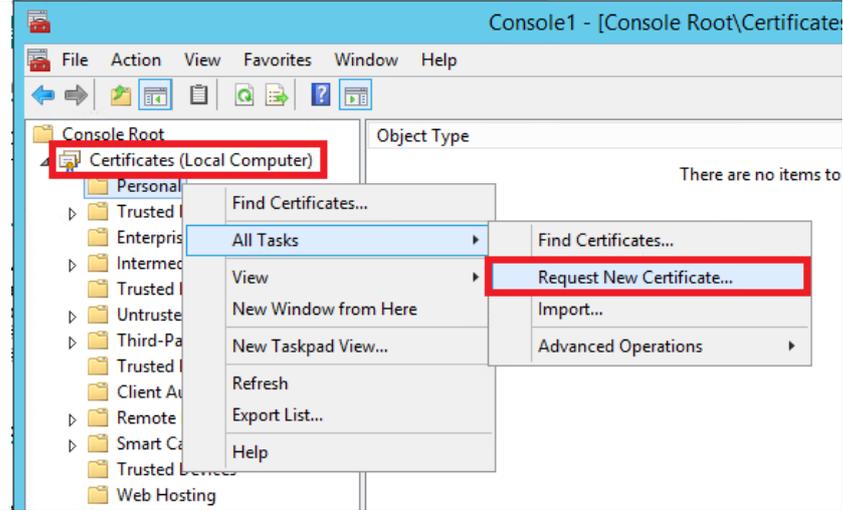
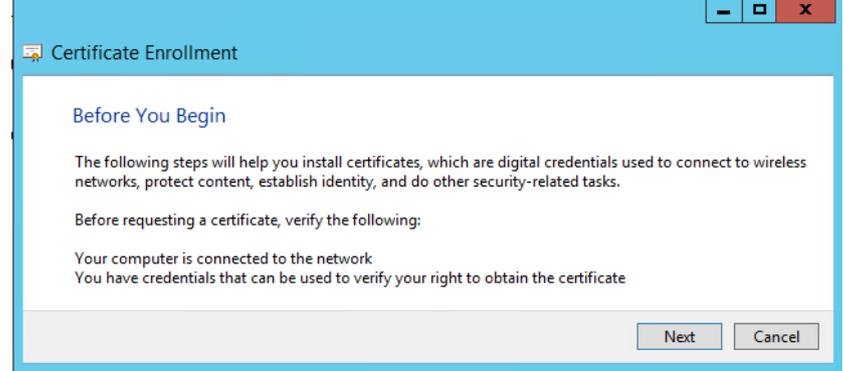
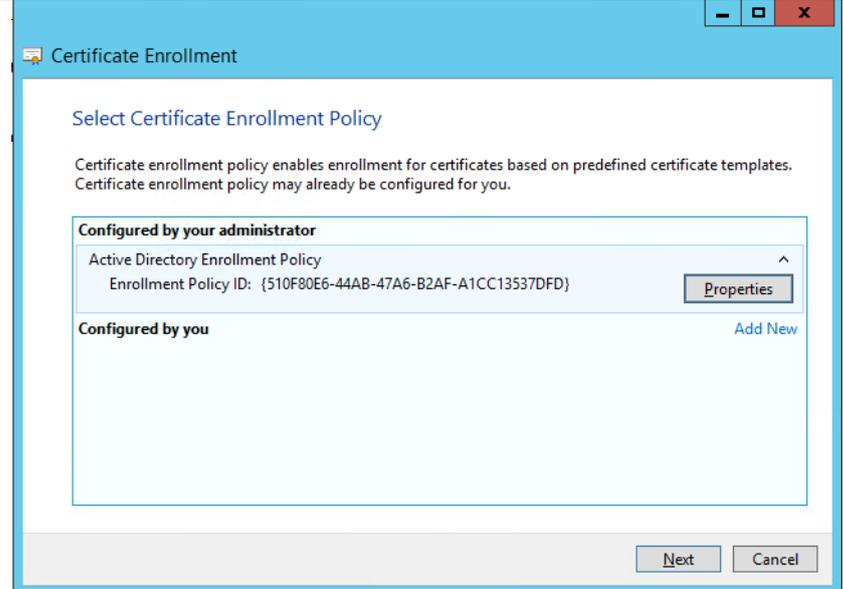
User must have granted permissions as a "local administrator" to manage the certificates of the local computer (all computer's users affected)

0040 mmc console -> certificates > request a new certificate...

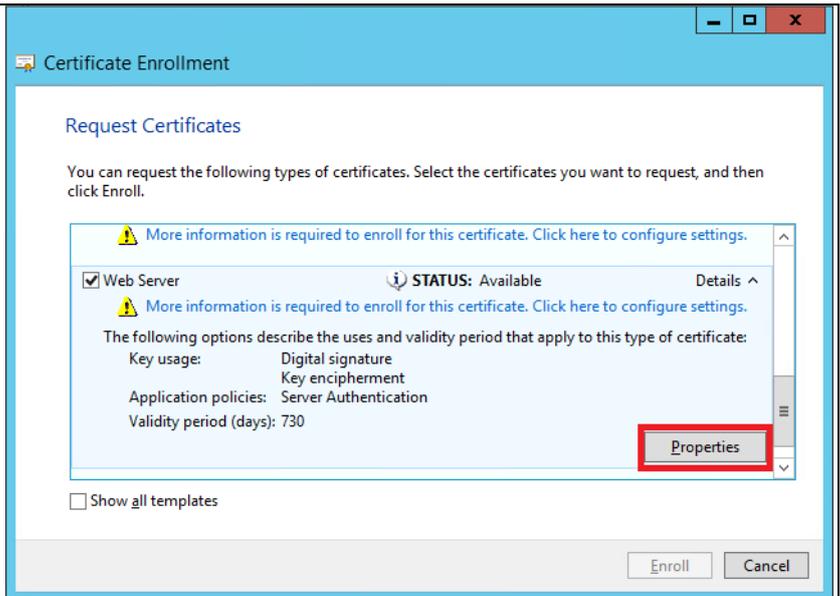
0041



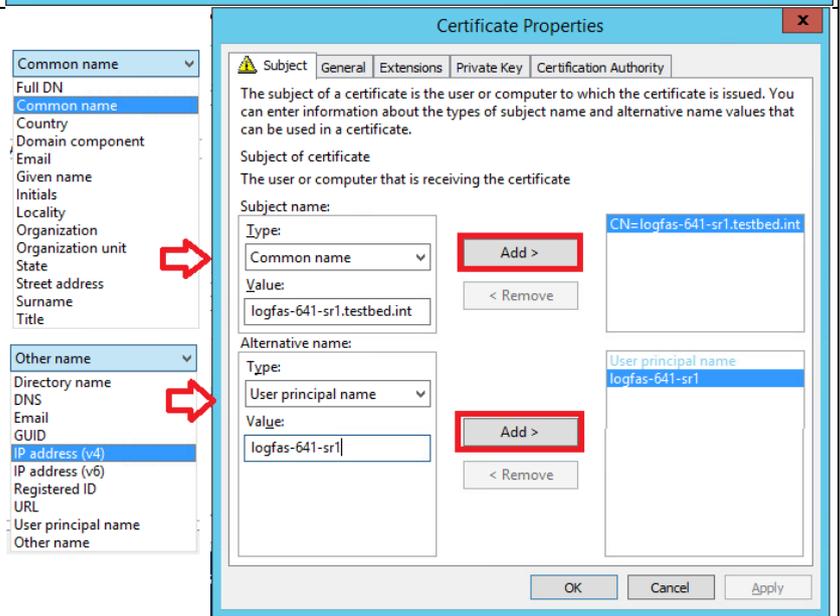
0042 The following steps are just one example about how to request a certificate from your CA.

<p>0043 At the local computer certificates: request a new certificate.</p>	 <p>The screenshot shows the 'Certificates (Local Computer)' folder in the console. A context menu is open, and the 'Request New Certificate...' option is highlighted with a red box. Other options in the menu include 'Find Certificates...', 'All Tasks', 'View', 'New Window from Here', 'New Taskpad View...', 'Refresh', 'Export List...', and 'Help'.</p>
<p>0044 Click "Next" to continue.</p>	 <p>The screenshot shows the 'Certificate Enrollment' dialog box. The 'Before You Begin' section contains instructions and a list of requirements. At the bottom right, there are 'Next' and 'Cancel' buttons.</p>
<p>0045 Optional: Click "Properties" to get more details.</p>	 <p>The screenshot shows the 'Certificate Enrollment' dialog box. The 'Select Certificate Enrollment Policy' section is visible. Under 'Configured by your administrator', the 'Active Directory Enrollment Policy' is selected, and the 'Properties' button is highlighted with a red box. There is also an 'Add New' link and 'Next' and 'Cancel' buttons at the bottom.</p>

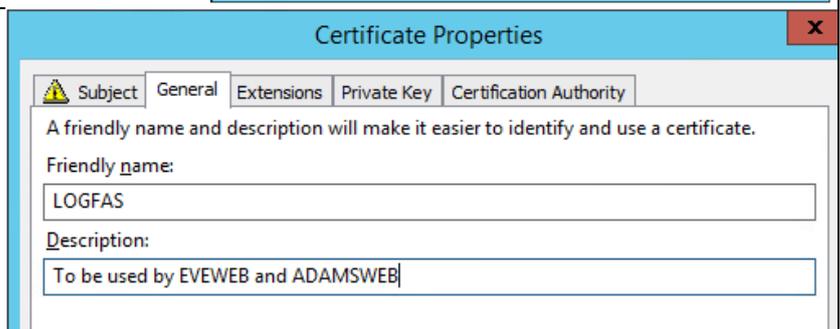
0046 Once selected the certificates' template Click "Properties" to fill in required values.



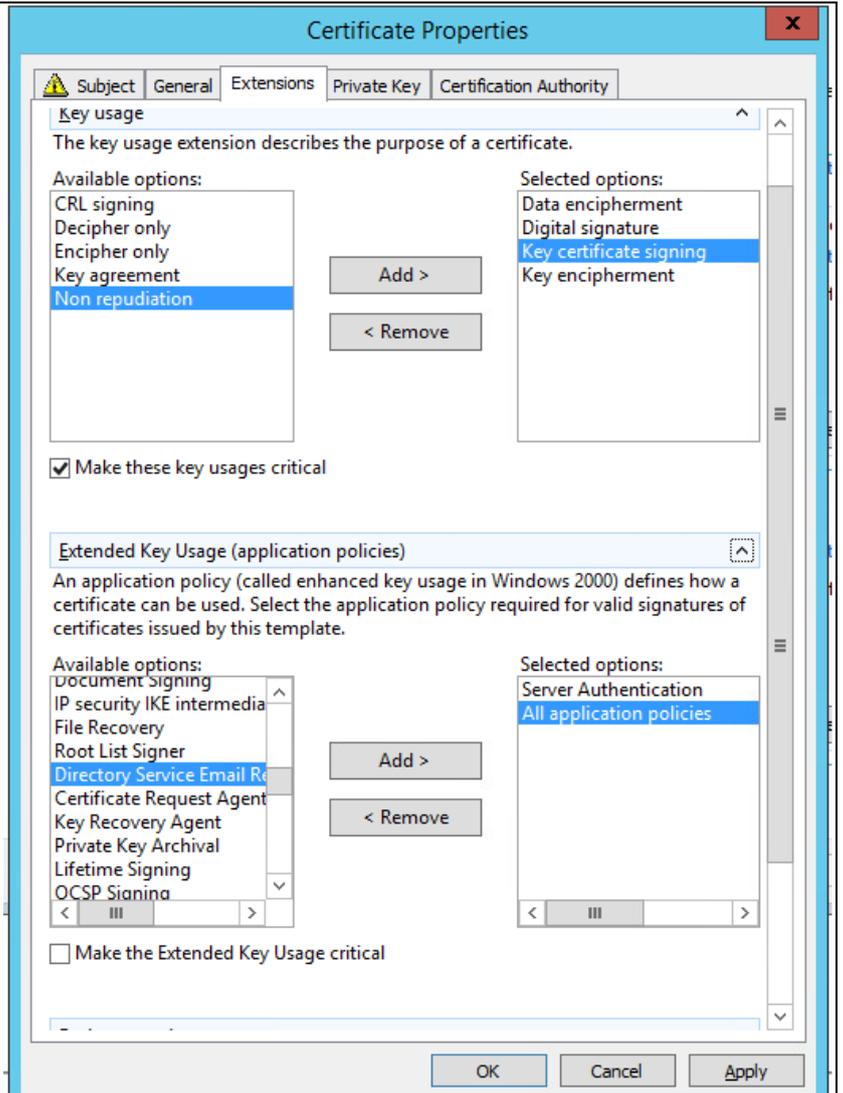
0047 Give a Subject name and optionally an alternative name (e.g. adding localhost will not raise certificate' errors when browsing https:\\localhost\)



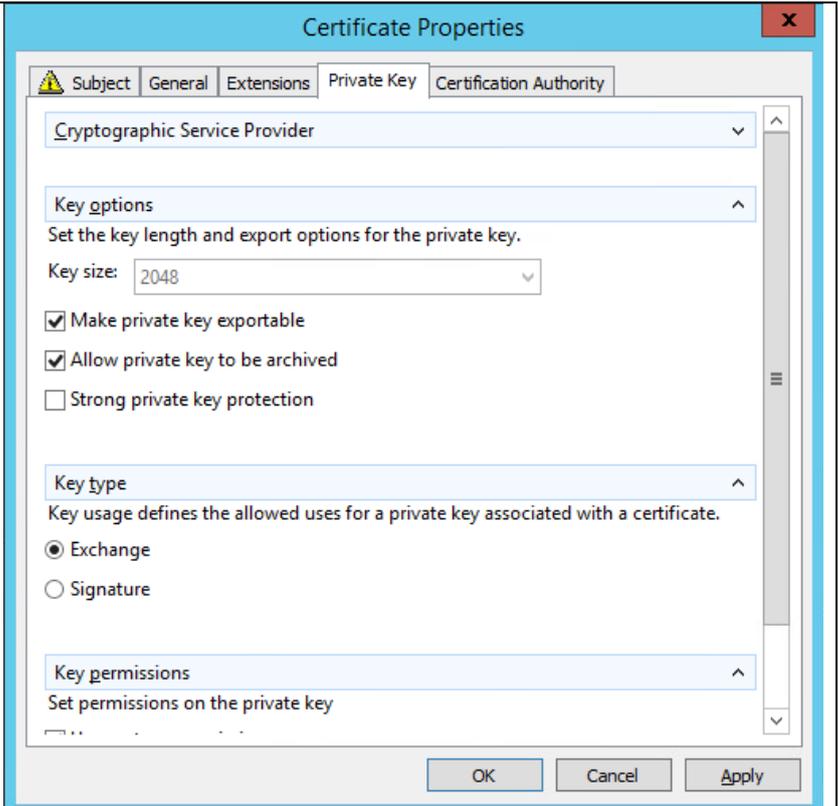
0048 A friendly name helps to identify the certificate.



0049 Add any required extensions.

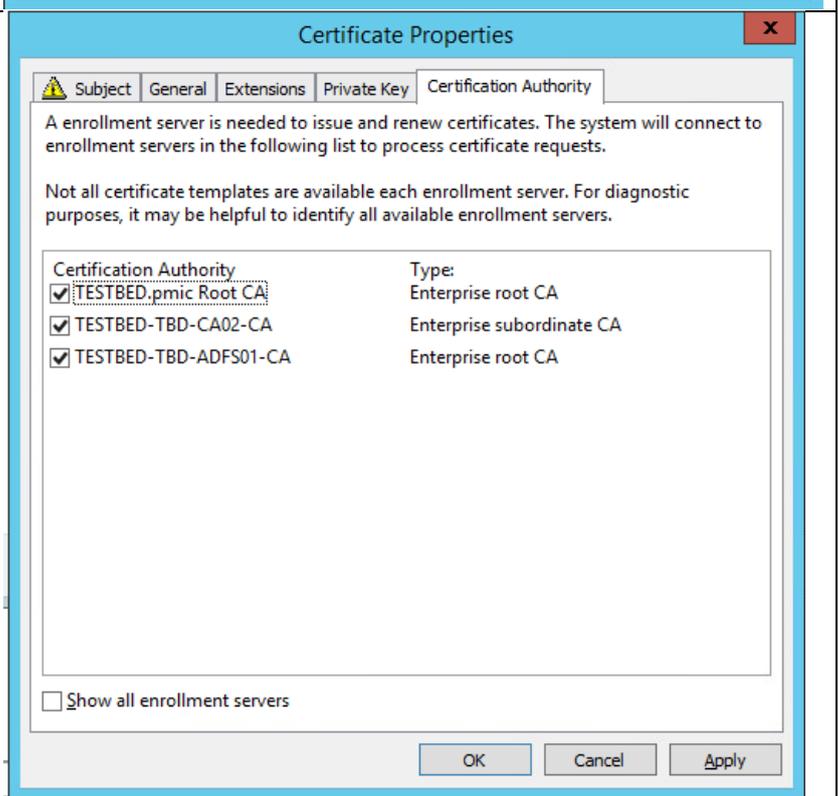


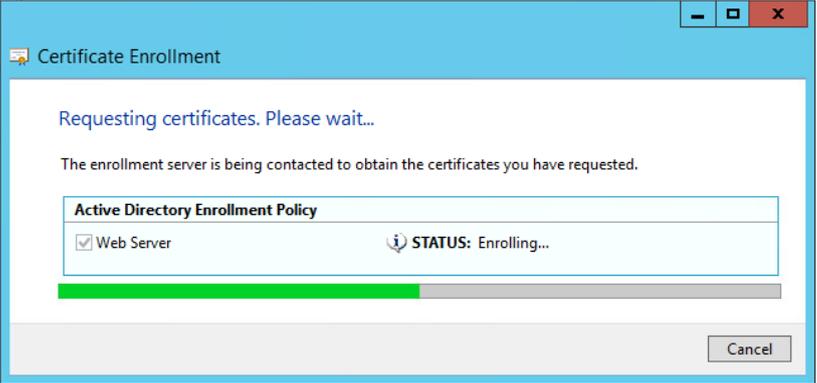
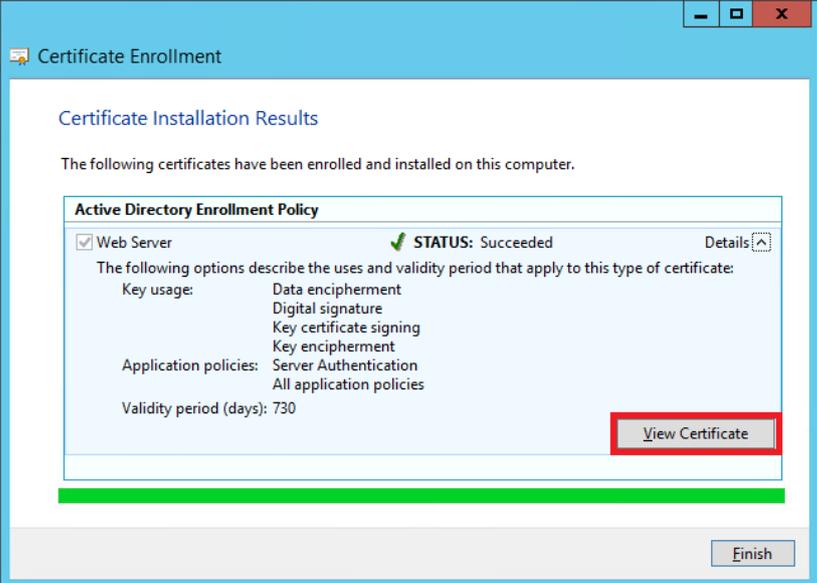
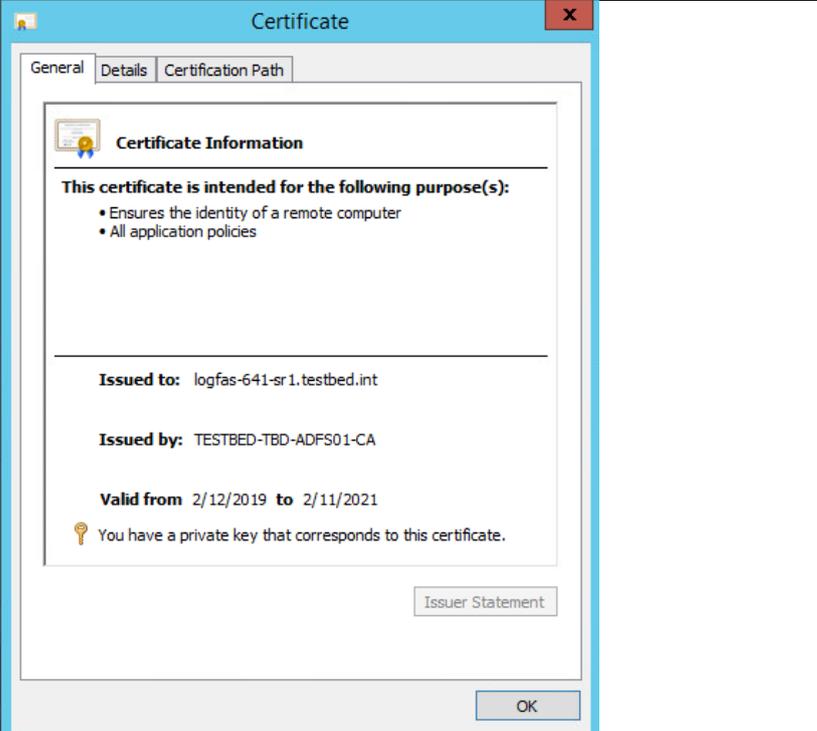
0050 Set the restrictions for the private key.



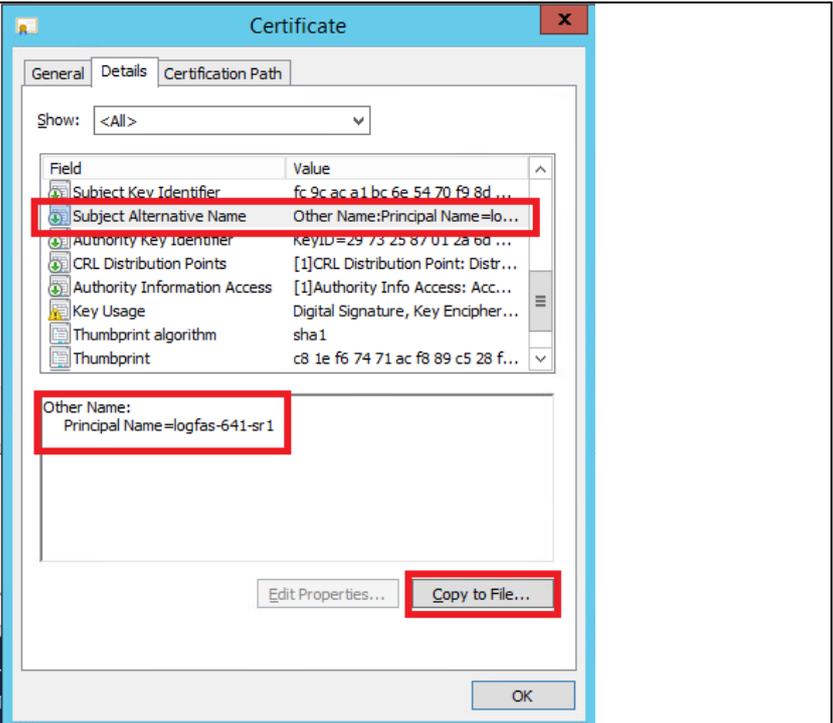
0051 The CAs for enrolment will be listed and at least one of them must be selected.

0052 Click "Apply".



<p>0053 The enrolment process starts to contact the CA.</p> <p>0054 Depending on the CA settings the request could be waiting for manual intervention (authorization process) or it will be processed in case that automatic enrollment is available.</p>	 <p>The screenshot shows a 'Certificate Enrollment' dialog box. The title bar says 'Certificate Enrollment'. The main text reads 'Requesting certificates. Please wait...' and 'The enrollment server is being contacted to obtain the certificates you have requested.' Below this is a section titled 'Active Directory Enrollment Policy' with a checkbox for 'Web Server' which is checked. To the right of the checkbox, it says 'STATUS: Enrolling...'. A green progress bar is visible at the bottom of the dialog. A 'Cancel' button is in the bottom right corner.</p>
<p>0055 Once the request was processed and authorized a certificate will be issued.</p> <p>0056 Optionally: Click on "View Certificate" to check its properties and export it to a file.pfx</p>	 <p>The screenshot shows the 'Certificate Enrollment' dialog box at the 'Certificate Installation Results' stage. The title bar says 'Certificate Enrollment'. The main text reads 'Certificate Installation Results' and 'The following certificates have been enrolled and installed on this computer.' Below this is a section titled 'Active Directory Enrollment Policy' with a checkbox for 'Web Server' which is checked. To the right of the checkbox, it says 'STATUS: Succeeded'. Below the checkbox, there is a list of certificate options: 'Key usage: Data encipherment, Digital signature, Key certificate signing, Key encipherment' and 'Application policies: Server Authentication, All application policies'. The 'Validity period (days): 730' is also shown. A 'View Certificate' button is highlighted with a red box. An 'Finish' button is in the bottom right corner.</p>
<p>0057 The picture shows how a certificate should look like when Clicking on the button "View certificate"</p> <p>0058 It is important to notice the existence of a private key</p>	 <p>The screenshot shows a 'Certificate' dialog box with three tabs: 'General', 'Details', and 'Certification Path'. The 'General' tab is selected. The title bar says 'Certificate'. The main content area is titled 'Certificate Information' and contains the following text: 'This certificate is intended for the following purpose(s):' followed by a bulleted list: 'Ensures the identity of a remote computer' and 'All application policies'. Below this, it says 'Issued to: logfas-641-sr1.testbed.int', 'Issued by: TESTBED-TBD-ADFS01-CA', and 'Valid from 2/12/2019 to 2/11/2021'. At the bottom, there is a key icon and the text 'You have a private key that corresponds to this certificate.' There are 'Issuer Statement' and 'OK' buttons at the bottom of the dialog.</p>

0059 Review other values
 0060 Clicking “Copy to File” allows to export the certificate to a .pfx file. The export could be done later on using the Certificate Manager.



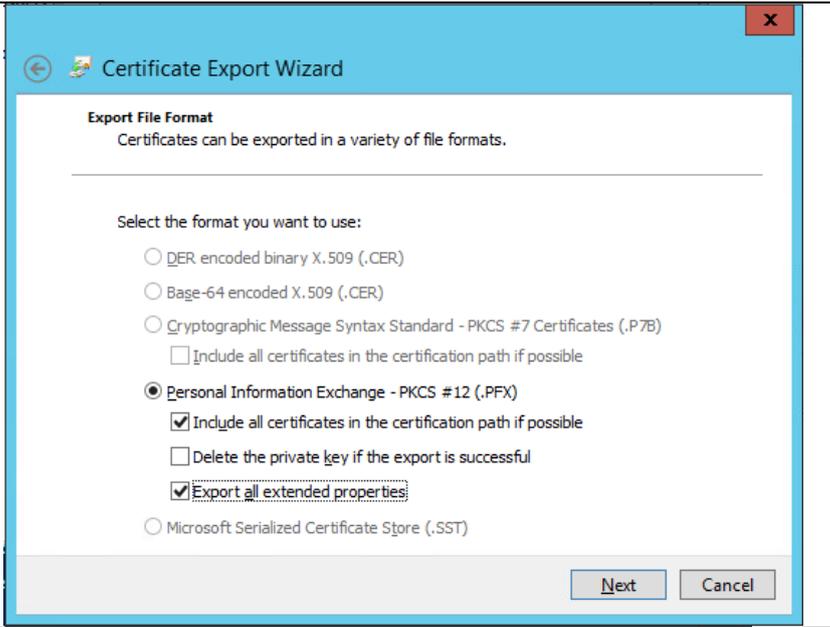
0061 In this case the bottom “Copy to File” was clicked to export the certificate.



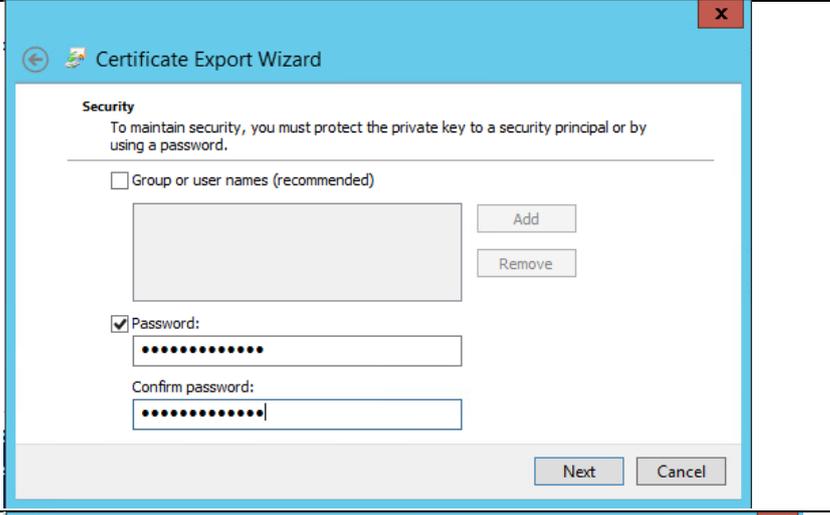
0062 Make sure to export the private key.



0063 Check all of the possible options but DO NOT delete the private key unless the certificate does not need to be installed on the computer used to submit the request.



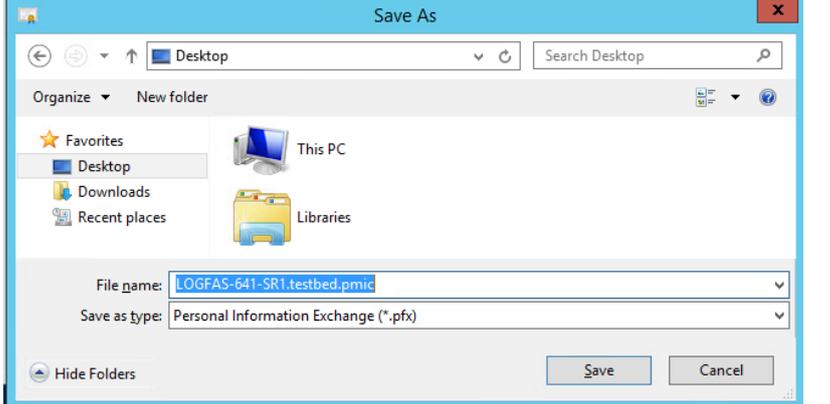
0064 Using password will be recommended but note that without the password it won't be possible to import the certificate.

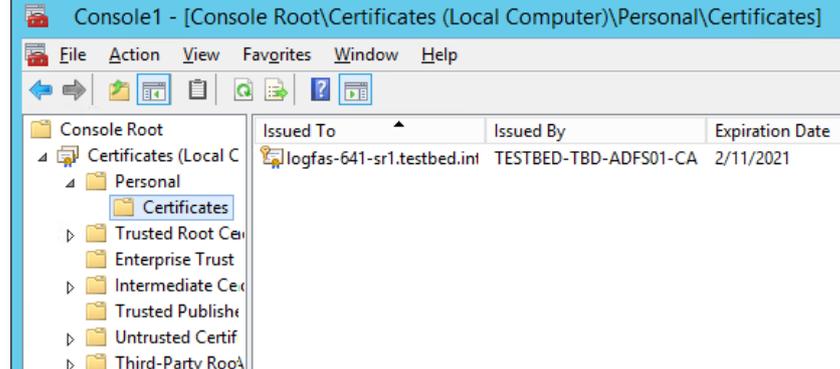


0065 Click "Save" to continue with the export. The expected result will be to get a pop-up window saying "The export was successful"

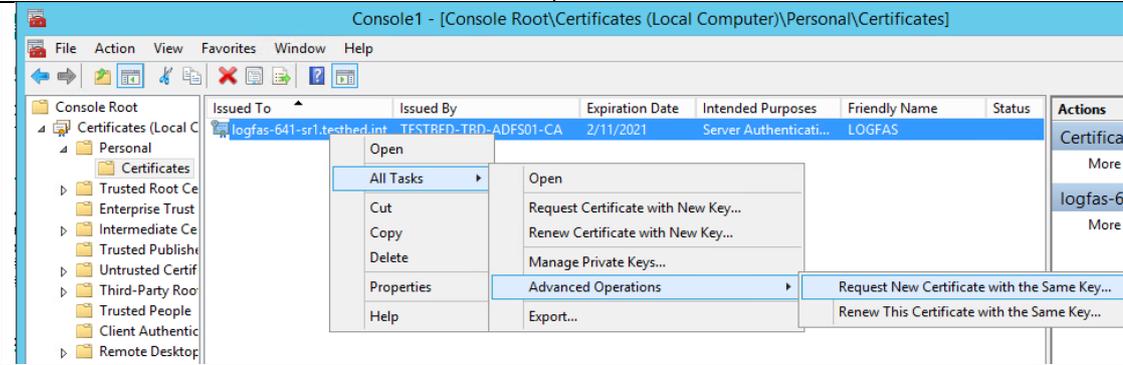
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<p>0068 At this time the requested certificate is available at two locations:</p> <p>0069 Installed at the Personal store of the Local Computer</p> <p>0070 And as .pfx file at the specified location (i.e. user's Desktop) because it was exported.</p>	 <p>The screenshot shows the Windows Certificate console window titled "Console 1 - [Console Root\Certificates (Local Computer)\Personal\Certificates]". The left pane shows the tree structure: Console Root > Certificates (Local Computer) > Personal > Certificates. The right pane displays a table with columns: Issued To, Issued By, and Expiration Date. The table contains one entry: logfas-641-sr1.testbed.int, TESTBED-TBD-ADFS01-CA, 2/11/2021.</p>
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<p>0071 Explore the task available for the certificate.</p>	
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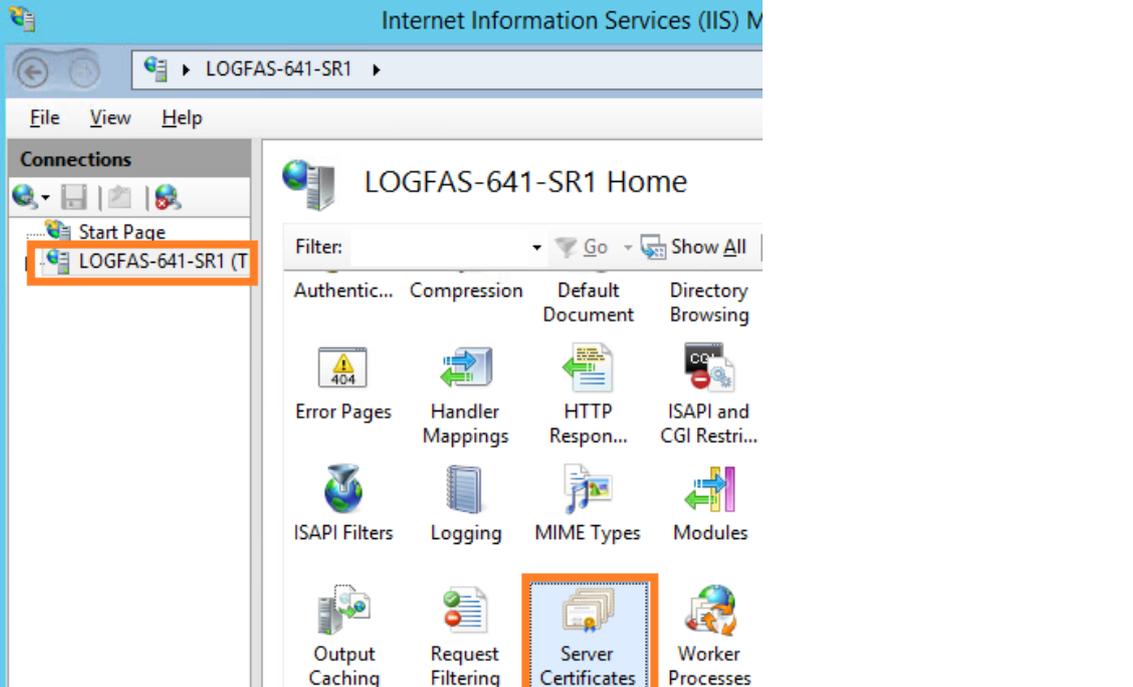
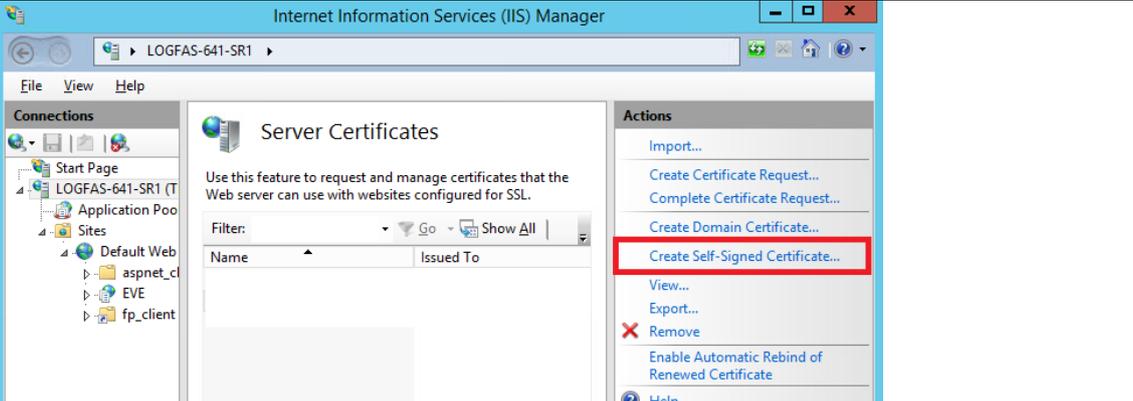
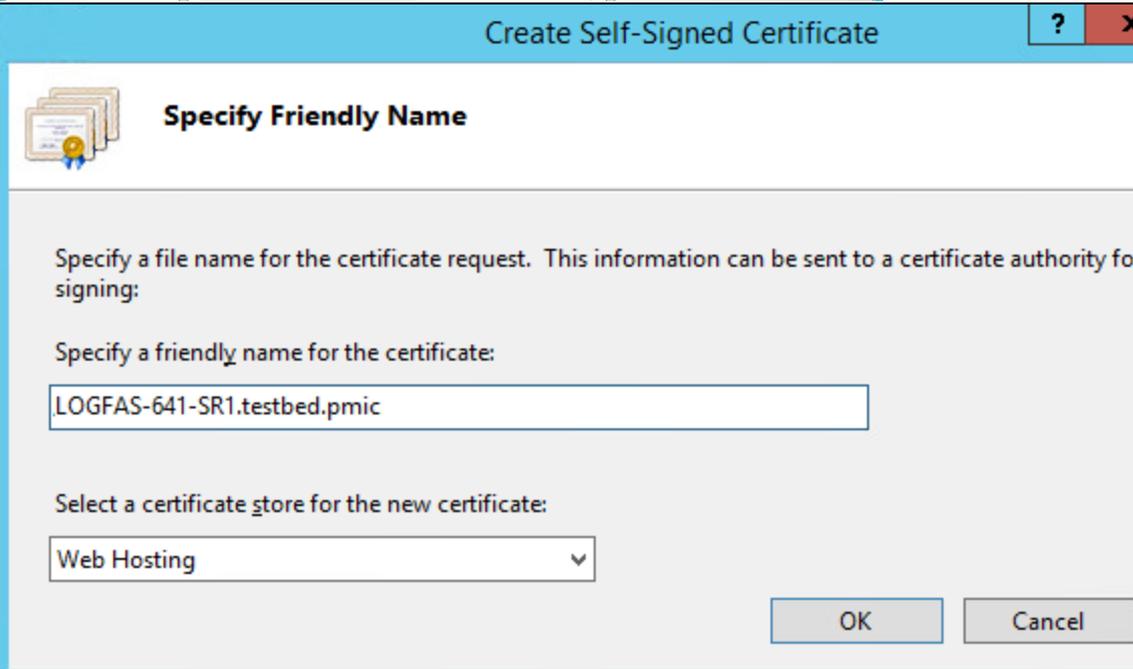
 <p>The screenshot shows the Windows Certificate console window with a context menu open over a certificate. The menu options are: Open, All Tasks, Cut, Copy, Delete, Properties, Help. The 'All Tasks' menu is expanded, showing: Open, Request Certificate with New Key..., Renew Certificate with New Key..., Manage Private Keys..., Advanced Operations, Export... The 'Advanced Operations' menu is further expanded, showing: Request New Certificate with the Same Key..., Renew This Certificate with the Same Key... The background table shows columns: Issued To, Issued By, Expiration Date, Intended Purposes, Friendly Name, Status, and Actions. The table contains one entry: logfas-641-sr1.testbed.int, TESTBED-TBD-ADFS01-CA, 2/11/2021, Server Authenticati..., LOGFAS.</p>	

4.1.3 Step 1.2 Get an appropriated PKI certificate (Self-Signed)

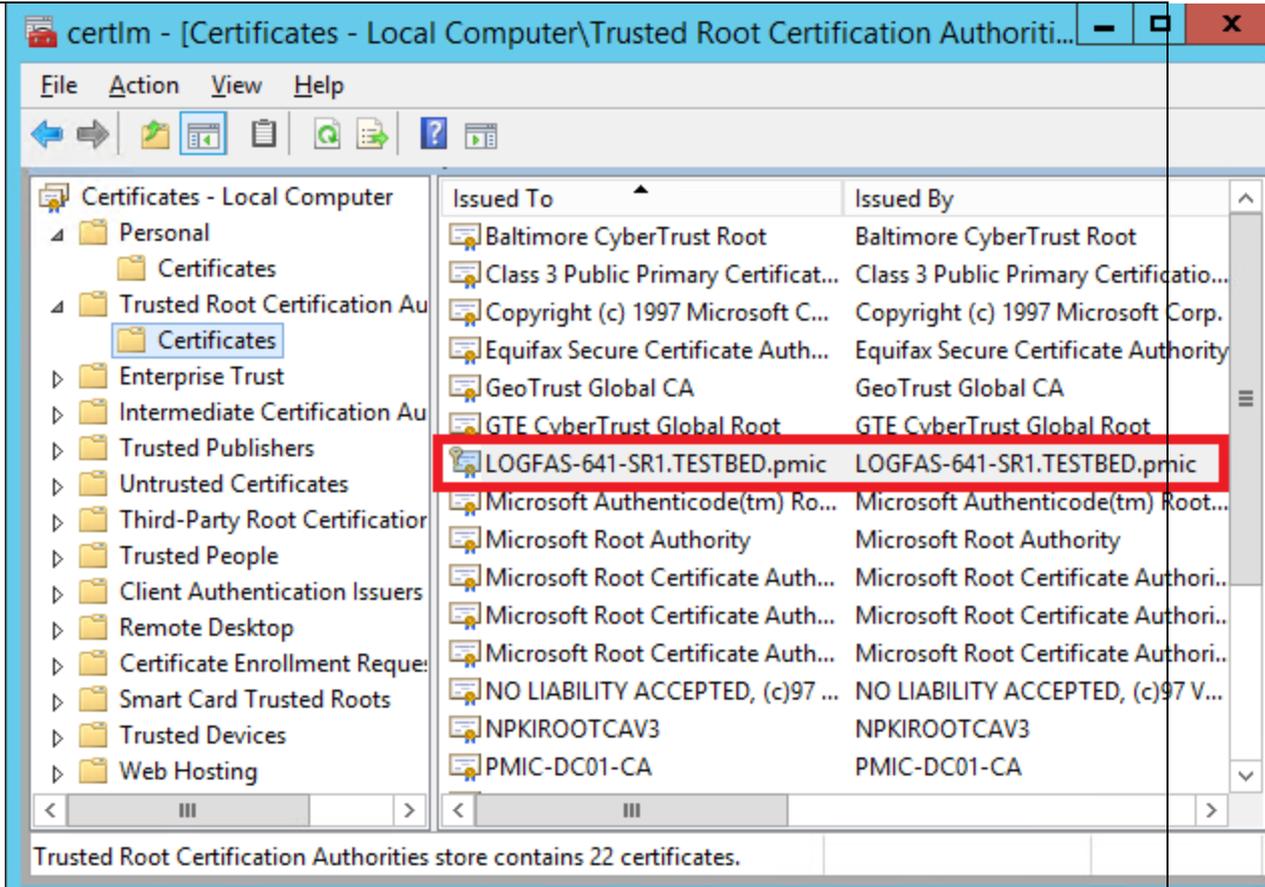
0072 How to create a Self-Signed certificate using the IIS manager that will be used on the same computer hosting LOGFAS ADAMSWEB/EVEWEB.

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<p>0075 Select the server node in the treeview and double-click the Server Certificates feature in the listview:</p>	 <p>The screenshot shows the IIS Manager console for the 'LOGFAS-641-SR1' server. In the left-hand 'Connections' treeview, the 'LOGFAS-641-SR1 (T)' node is selected and highlighted with an orange box. In the main listview, the 'Server Certificates' feature is also highlighted with an orange box.</p>
<p>0076 Click "Create Self-Signed Certificate.." in the Actions pane.</p>	 <p>The screenshot shows the 'Server Certificates' page in IIS Manager. The 'Actions' pane on the right side of the window has 'Create Self-Signed Certificate...' highlighted with a red box.</p>
<p>0077</p>	 <p>The screenshot shows the 'Create Self-Signed Certificate' dialog box. It has a title bar with a question mark and a close button. The main content area is titled 'Specify Friendly Name'. It contains the following text and controls:</p> <ul style="list-style-type: none"> Text: "Specify a file name for the certificate request. This information can be sent to a certificate authority for signing:" Text: "Specify a friendly name for the certificate:" Text input field containing: ".LOGFAS-641-SR1.testbed.pmic" Text: "Select a certificate store for the new certificate:" Dropdown menu showing: "Web Hosting" Buttons: "OK" and "Cancel"

0078



0079 Enter a friendly name for the new certificate and click OK.

0080 Now you have a self-signed certificate. The certificate is marked for "Server Authentication" use that could be used as a server-side certificate for HTTP SSL encryption and for authenticating the identity of the server.

0081 Note that Viewing the certificate will also allow to export it.

4.2 Step 2. Create an HTTPS binding at the IIS site

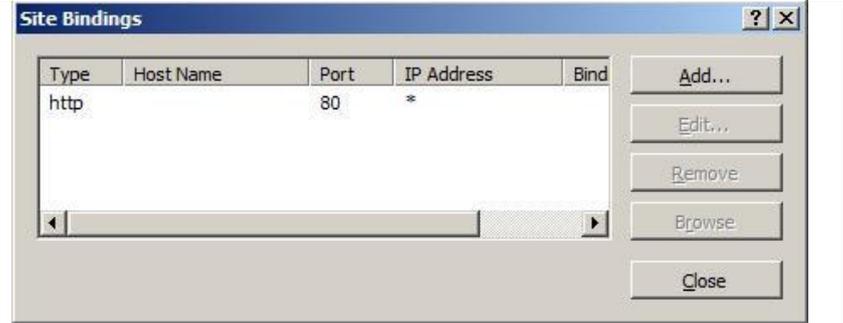
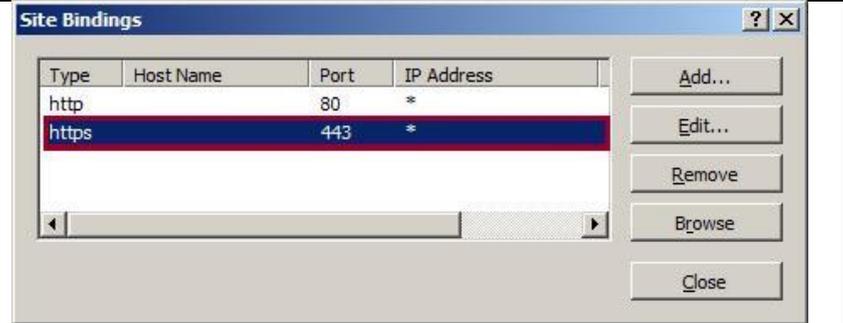
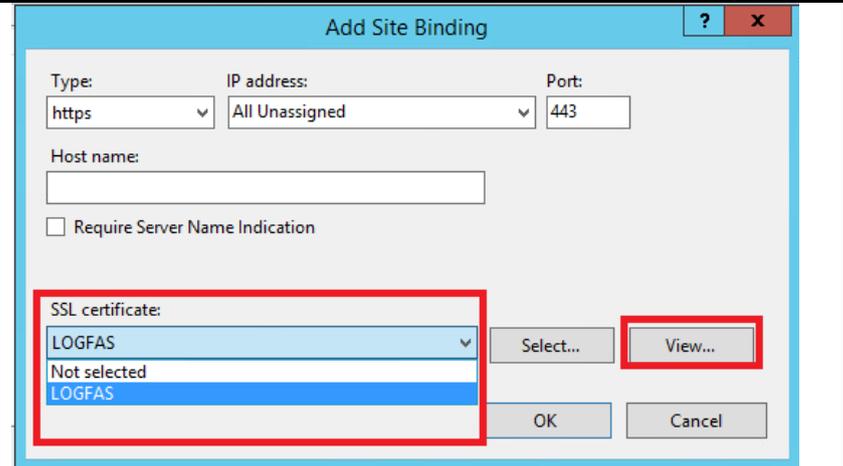
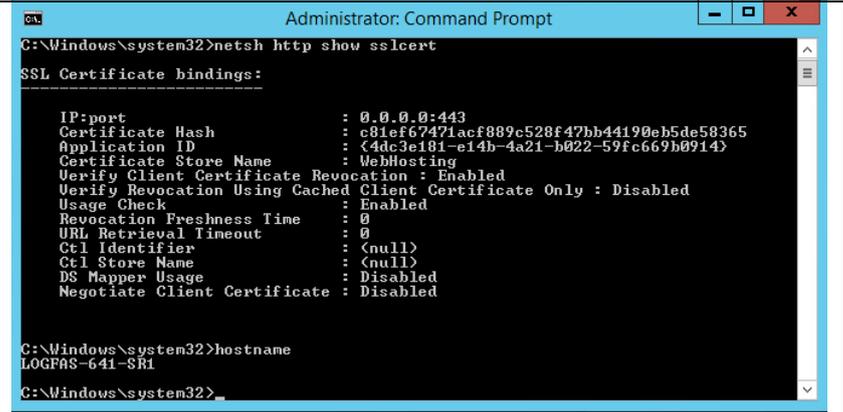
0082 The default IIS binding settings are set to HTTP on port 80.

0083

0084 Select the the parent, ADAMSWEB and/or EVEWEB site in the tree view and click Bindings... in the Actions pane. This brings up the bindings editor that lets you create, edit, and delete bindings for your Web site.

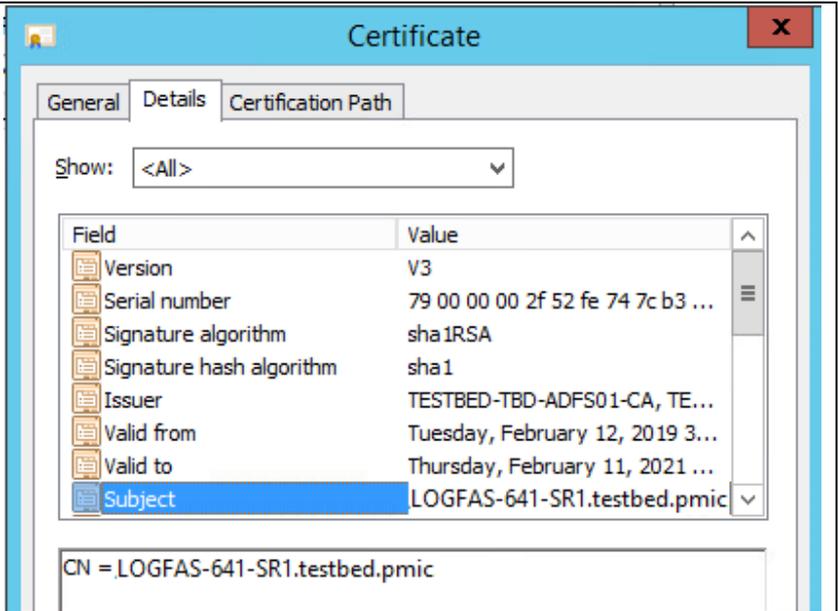
0085

0086 Using a unique certificate assigned to the parent site will make sense on most scenarios.

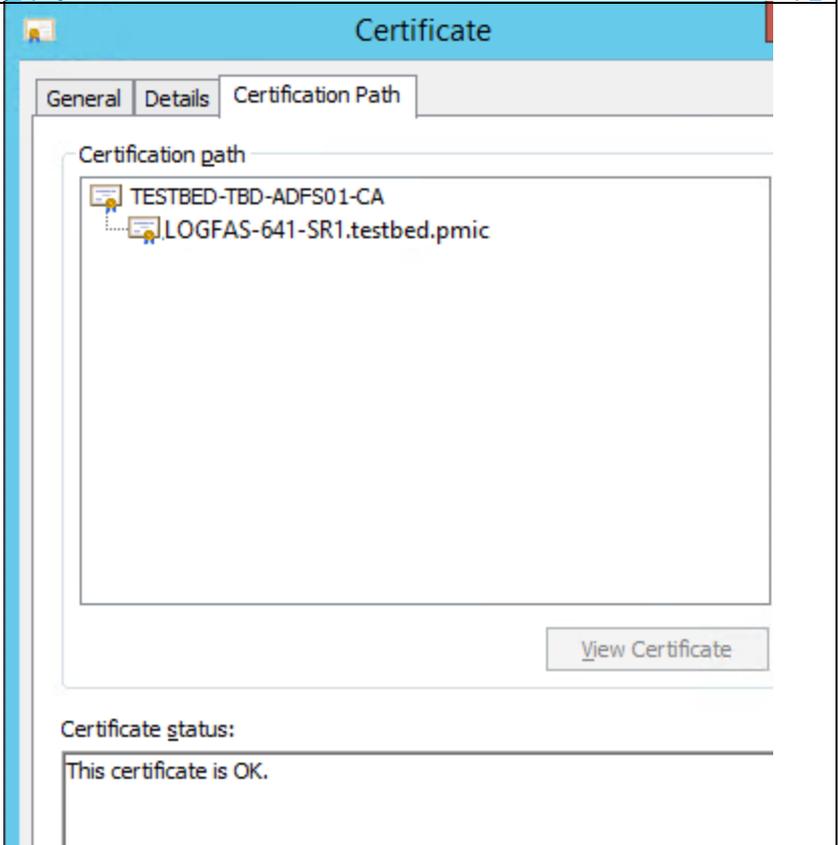
<p>0087 Click Add... to add your new SSL binding to the site (TCP port 443) and assign the proper certificate.</p> <p>0088</p> <p>0089</p>	 <p>The screenshot shows the 'Site Bindings' dialog box with a table containing one entry: 'http' on port 80. The 'Add...' button is highlighted.</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Host Name</th> <th>Port</th> <th>IP Address</th> <th>Bind</th> </tr> </thead> <tbody> <tr> <td>http</td> <td></td> <td>80</td> <td>*</td> <td></td> </tr> </tbody> </table>	Type	Host Name	Port	IP Address	Bind	http		80	*						
Type	Host Name	Port	IP Address	Bind												
http		80	*													
<p>0090 It is possible to change the certificate: Select https in the Type drop-down list and Click Edit.</p>	 <p>The screenshot shows the 'Site Bindings' dialog box with a table containing two entries: 'http' on port 80 and 'https' on port 443. The 'https' entry is selected and highlighted.</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Host Name</th> <th>Port</th> <th>IP Address</th> <th>Bind</th> </tr> </thead> <tbody> <tr> <td>http</td> <td></td> <td>80</td> <td>*</td> <td></td> </tr> <tr> <td>https</td> <td></td> <td>443</td> <td>*</td> <td></td> </tr> </tbody> </table>	Type	Host Name	Port	IP Address	Bind	http		80	*		https		443	*	
Type	Host Name	Port	IP Address	Bind												
http		80	*													
https		443	*													
<p>0091 Select the required certificate issued by your CA and/or Self-Signed and then click OK.</p>	 <p>The screenshot shows the 'Add Site Binding' dialog box. The 'Type' is set to 'https' and the 'Port' is 443. The 'SSL certificate' dropdown is highlighted with a red box, showing 'LOGFAS' selected. The 'View...' button is also highlighted with a red box.</p>															
<p>0092 The SSL binding is –now- available on your site and all that remains is to verify that it works.</p>	 <p>The screenshot shows an Administrator Command Prompt window with the following output:</p> <pre> C:\Windows\system32>netsh http show sslcert SSL Certificate bindings: ----- IP:port : 0.0.0.0:443 Certificate Hash : c81ef67471acf889c528f47bb44190eb5de58365 Application ID : {4dc3e181-e14b-4a21-b022-59fc669b0914} Certificate Store Name : WebHosting Verify Client Certificate Revocation : Enabled Verify Revocation Using Cached Client Certificate Only : Disabled Usage Check : Enabled Revocation Freshness Time : 0 URL Retrieval Timeout : 0 Ctl Identifien : <null> Ctl Store Name : <null> DS Mapper Usage : Disabled Negotiate Client Certificate : Disabled C:\Windows\system32>hostname LOGFAS-641-SR1 C:\Windows\system32> </pre>															

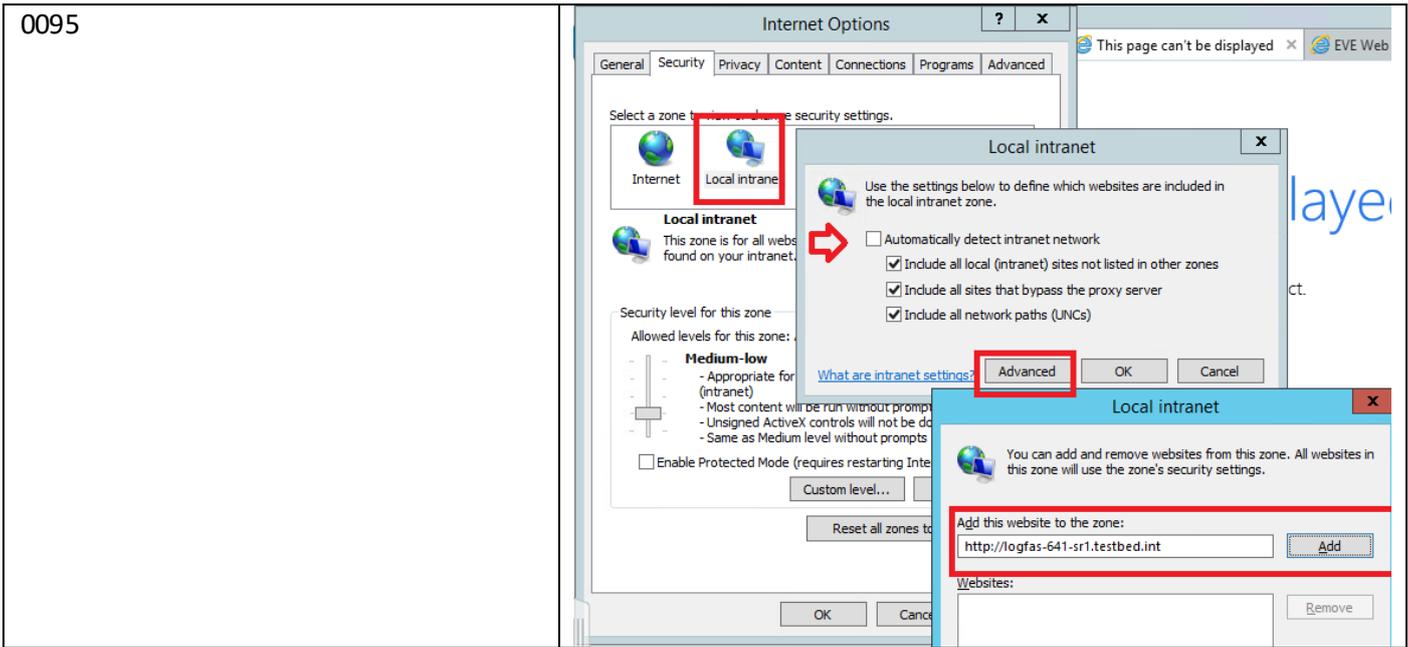
0093 Use the IIS manager to browse the site (or use the subject of the certificate to build the required URL)

<https://logfas-641-sr1.testbed.pmic/eve/>



0094





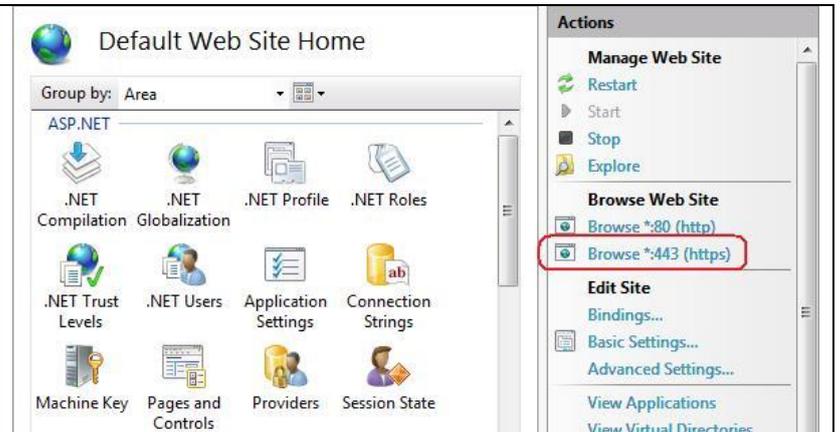
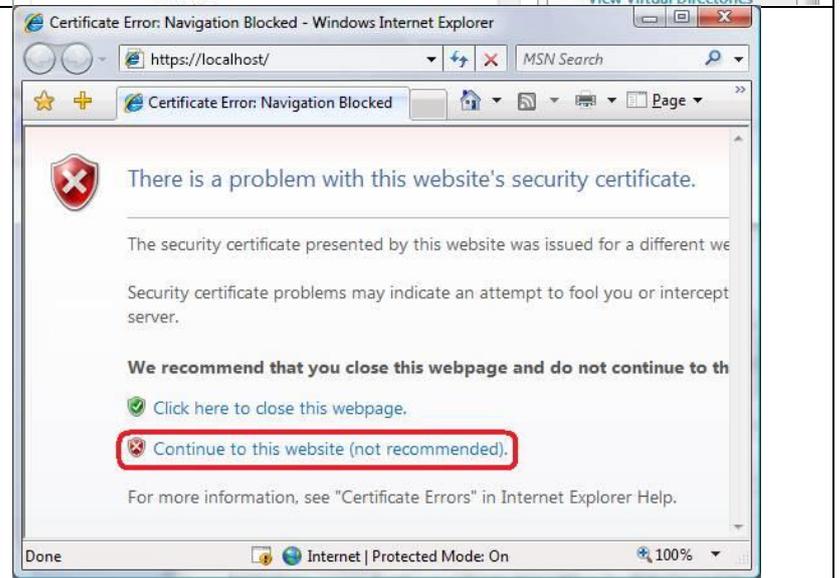
4.3 Step 3. Configure SSL settings for the IIS site

0096 Configure SSL settings if you want your site to require SSL, or to interact in a specific way with client certificates. Click the site node in the tree view to go back to the site's home page. Double-click the SSL Settings feature in the middle pane.

<p>0097 If the box "Require SSL" is checked then HTTPS browsing will be required for that website. Furthermore, a 403.4 Forbidden error message will be raised when the user tries to browse the website over HTTP.</p> <p>0098 Check recommended configuration values at the LOGFAS ADAMSWEB/EVEWEB installation guide.</p>		<p>Actions</p> <ul style="list-style-type: none"> Apply Cancel Help Online Help
--	--	---

4.4 Step 4. Test SSL by making a request to the IIS site

0099 Depending on the scope and usage of ADAMWEB/EVEWEB the PKI certificate could be Self-Signed or issued by the Certification Authority (CA) of the Active Directory (AD) Domain.

<p>00100 Verify the SSL Binding: In the Actions pane, under Browse Web Site, click the link associated with the binding you just created.</p>	
<p>00101 Internet Explorer (IE) 7 and above: it will display an error page because the self-signed certificate was issued by your computer, not by a trusted Certificate Authority (CA). IE 7 and above will trust the certificate if it was imported on the Trusted Root Certification Authorities (certificates store) of the local computer, or at the Group Policy for the domain.</p> <p>00102 Click "Continue to this website (not recommended)" will allow to continue navigating to the site.</p> <p>00103</p>	

4.5 Step 5. Install the public server's certificate to the client's certificate store

00104 Browse to the URL of the server's Web site (i.e. ADAMSWEB and/or EVEWEB), ignore the error, click on the certificate icon, view it and install it onto the Trusted Root Certification Authorities.

The URL should match with the subject's name of the server's certificate

- Include example here

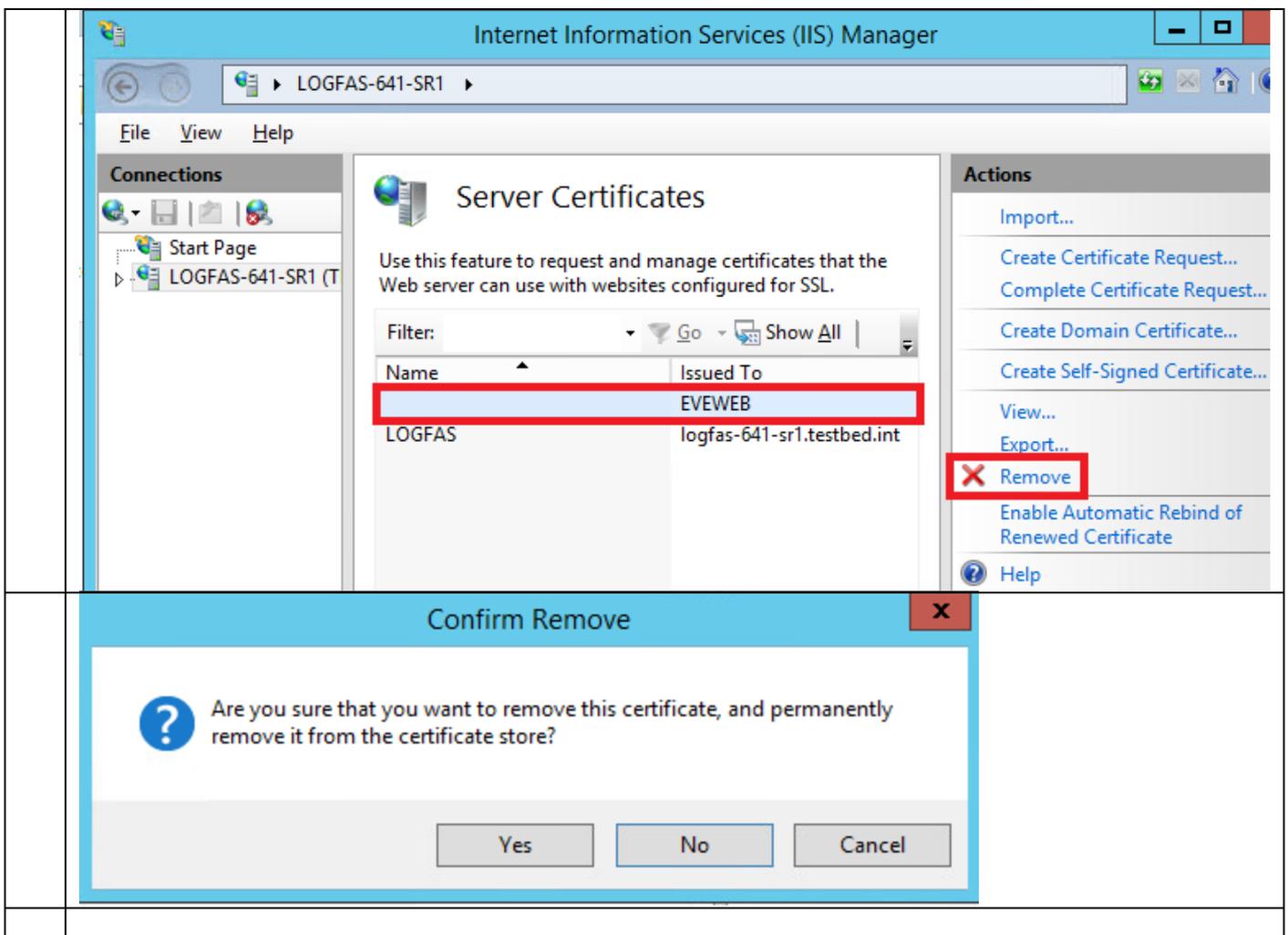
5 Step x. Removing PKI certificate(s)

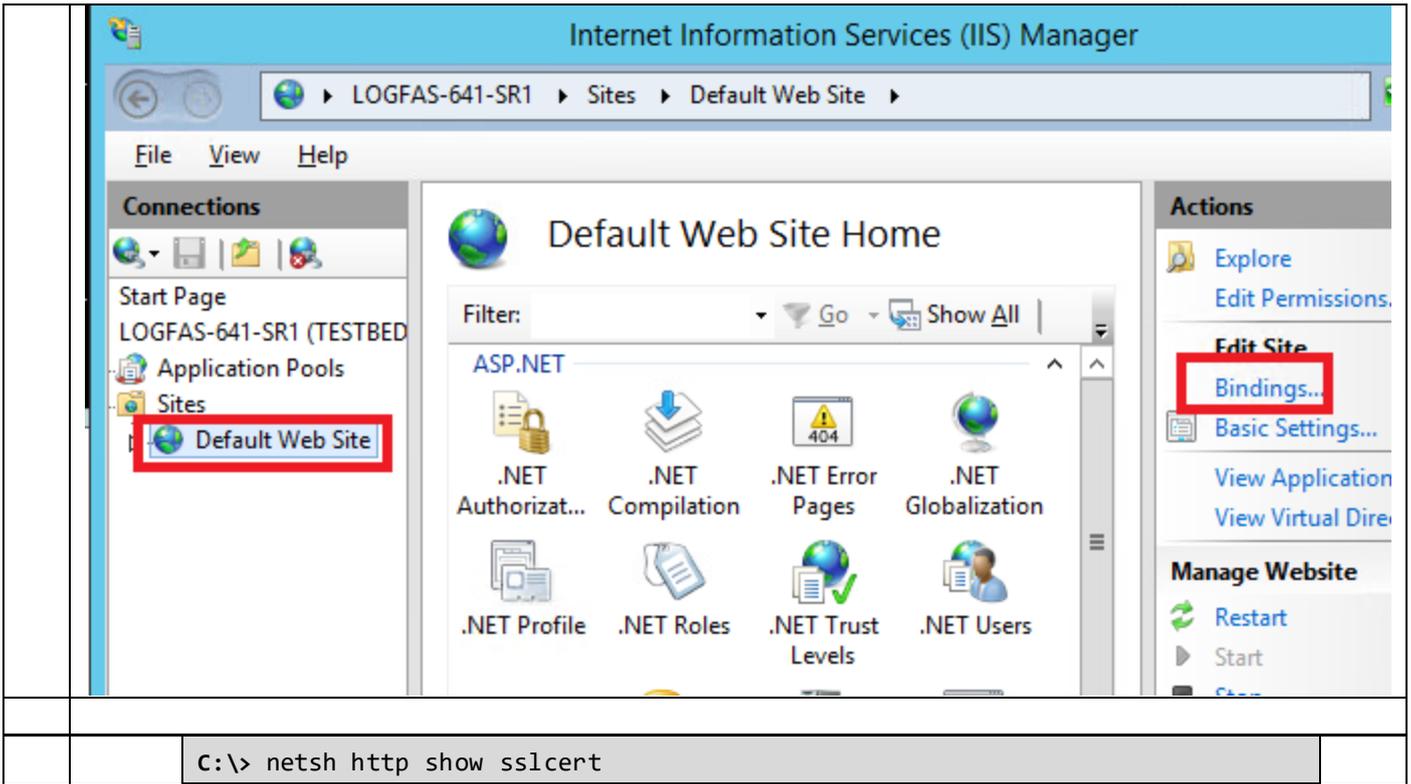
IMPORTANT NOTE

- The certificates deployed with ADAMSWEB and/or EVEWEB should be deleted (applicable to LOGFAS 6.4.1 and earlier versions up to 6.3.1)

00105 the Check the certificate in used by IIS

00106 Use the Internet Information Services (IIS) Manager as previously directed, but remove the certificate or binding instead of adding it.





00107 Remove the computer certificate by using a Windows command (CMD Run As Administrator).

1. <https://docs.microsoft.com/en-us/dotnet/framework/wcf/feature-details/configuring-http-and-https>
2. <https://docs.microsoft.com/en-us/windows/desktop/http/netsh-commands-for-http>
3. Windows XP / Server 2003

```
C:\> httpcfg delete ssl -i 0.0.0.0:443
```

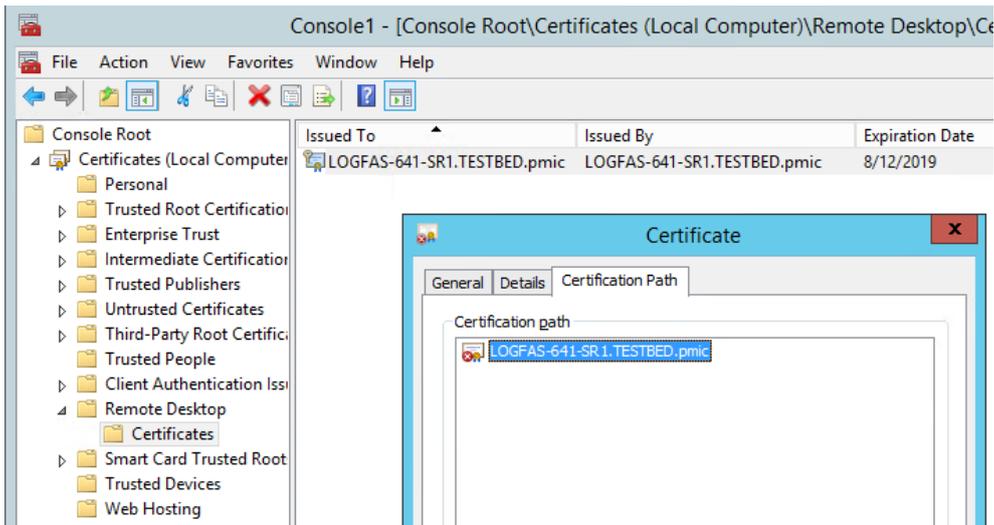
00108 Windows Vista / Windows 7

```
C:\> netsh http delete sslcert ipport=0.0.0.0:443
```

00109

00110

00111 The Certificate Manager tool (Certmgr.exe) manages certificates, certificate trust lists (CTLs), and certificate revocation lists (CRLs).



2

¹ Read how to customize the configuration file at the "EVE Web - Installation Manual.docx", section "Web.config file configuration (optional)" that was supplied along with the product.