Purpose

This document describes how to install the required certificate on the Nagios Log Server for use with LDAP or Active Directory (AD) Integration in Nagios Log Server. This process is required if your LDAP / AD server has a self signed certificate.

Target Audience

This document is intended for use by Nagios Log Server Administrators that require secure LDAP / AD connectivity. You may already have the LDAP / AD Integration configured in Nagios Log Server, this documentation will allow you to update your integration to use certificates.

Prerequisites

You will need the following prerequisites in order to follow the documentation:

- Nagios Log Server 1.5 or newer
- A separate Microsoft Windows-based AD infrastructure that is accessible to the Nagios Log Server machine
  - OR
- A separate LDAP infrastructure (like OpenLDAP) that is accessible to the Nagios Log Server machine

Certificate Overview

A "brief" explanation of certificates is required to be able to explain which certificate needs to be uploaded to your Nagios Log Server instance and why.

You will be familiar with certificates when shopping online using your web browser. When you connect to a server using SSL/TLS, the server you are connecting to will provide a certificate to use for encryption and security. Your computer will verify that the certificate provided is actually valid, but how does it do this? The certificate you are presented with is generated by a trusted source, a certificate authority (CA). Your computer has a copy of the CA certificate and can validate that the certificate you are being provided is actually a valid

certificate. Your computer's operating system keeps the public list of CA certificates up to date, it's not something that you need to worry about.

Certificates are also used for user authentication on private networks, such as communicating with an AD / LDAP server. If you have a Windows computer that is joined to an AD, certificates are used by the domain controller(s) (DC) to securely transmit username and password information. In this scenario the domain controller(s) have certificates that are issued by a private CA in the Windows domain. For all of this to work, the CA certificate of the Windows domain needs exist on your local computer. Computers that participate in a Windows domain automatically have a copy of this CA certificate, it happens automatically.

Why did all of that need explaining? When Nagios Log Server connects to an LDAP / AD server to authenticate a user, the domain controller you are authenticating with provides the Nagios Log Server instance with a certificate to use for encryption and security. Nagios Log Server is running on a Linux server, there is no way that it would have a copy of your Windows domain CA certificate, so it will not be able to verify the certificate of the domain controller you are authenticating against. The purpose of this documentation is to upload the CA certificate onto your Nagios Log Server so that Nagios Log Server can trust the certificate the domain controller provides.

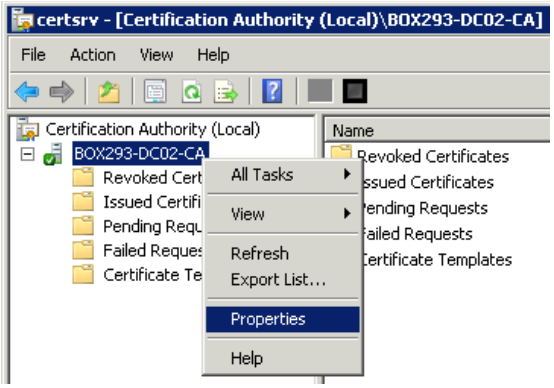
It does need to be made clear that it is the CA certificate that is required. Even in simple single-server AD domains (like Windows Server Essentials), the CA certificate is a different certificate to the certificate of the server itself. This might be clearer in a larger AD domain. You might have three separate DC's however they all have certificates issued to them by the CA. To be able to authenticate against all three servers you need to upload the CA to your Nagios Log Server. The following documentation will walk you through the steps to obtain and then upload the CA certificate.

Obtaining The Certificate - Microsoft Windows

These steps are based on obtaining the CA certificate from your Microsoft Windows CA server. There are two methods explained here.

Method 1) Console / RDP Session To CA Server

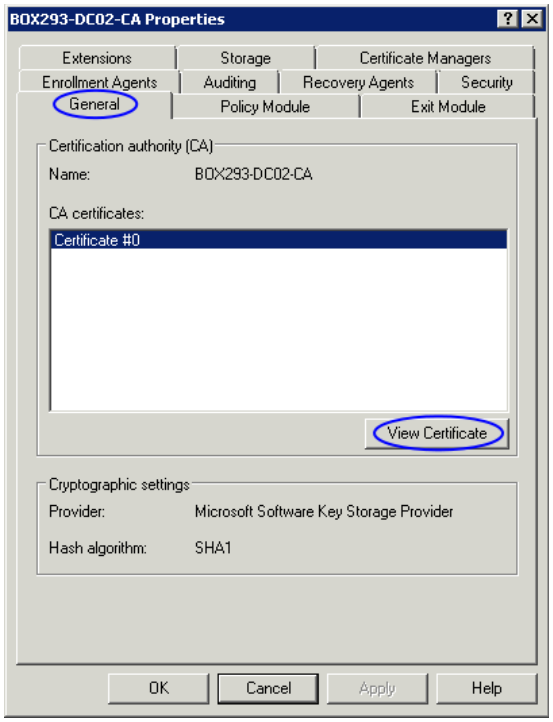
Using this method you will need a console or RDP session to your CA server.



Navigate to **Administrative Tools** (commonly found in the control panel) and open **Certification Authority**.

When the Certification Authority opens **right** click on the CA server and select **Properties**.

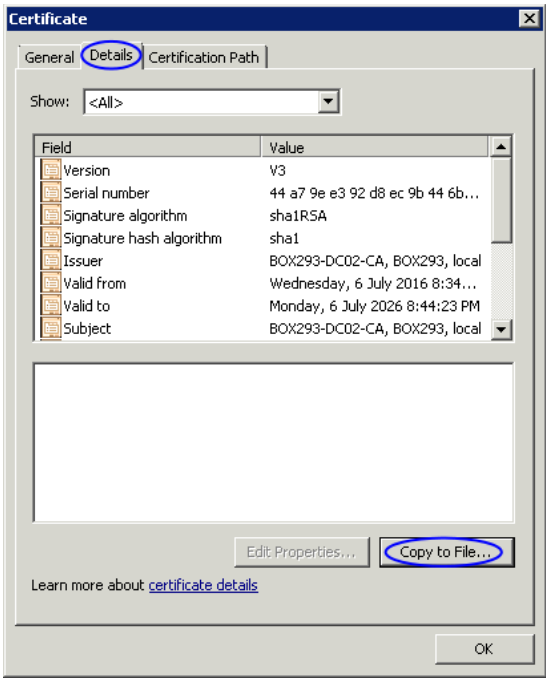
When the Properties window appears you will be on the **General** tab.



Click the **View Certificate** button.

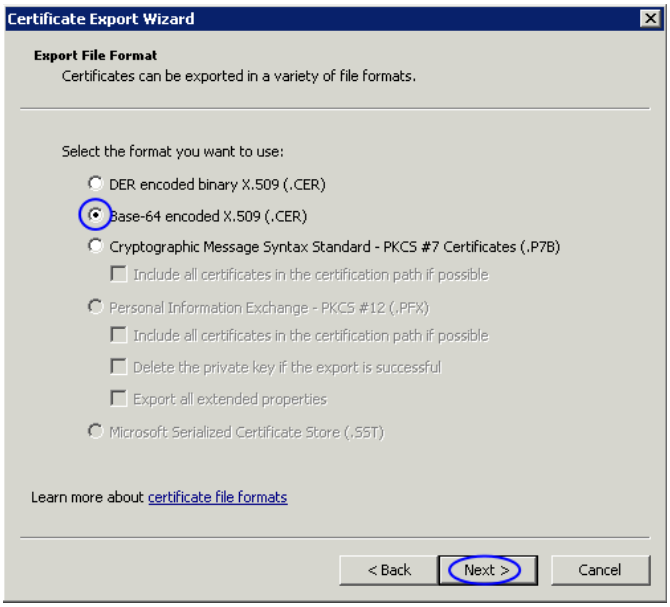
When the Certificate window appears, click on the **Details** tab.

Click the **Copy to File** button.



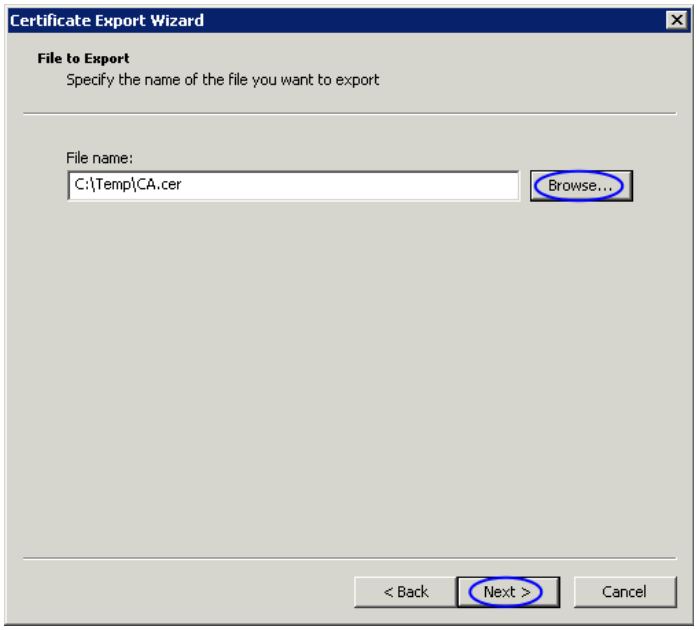
The Certificate Export Wizard window appears, click **Next**.

Select **Base-64 encoded X.509 (.CER)** and then click **Next**.

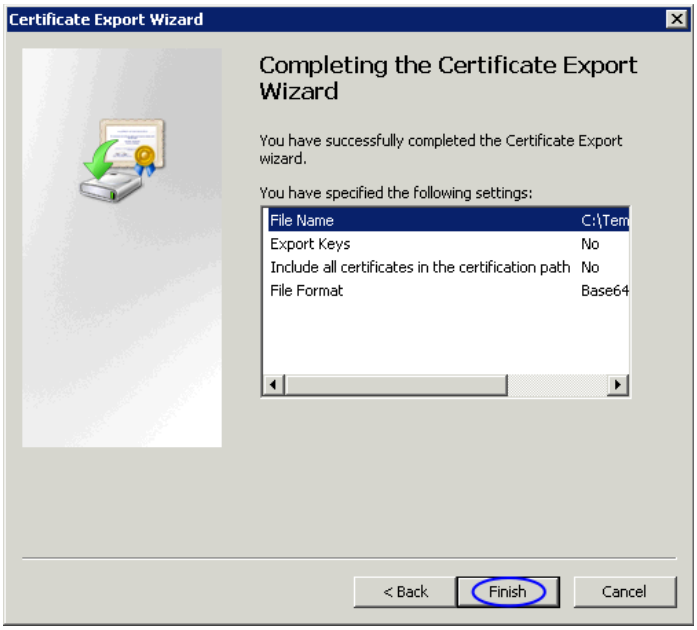


Use the **Browse** button to select a location to save the certificate file to, you will need to provide a name for the certificate.

Click **Next** to continue.



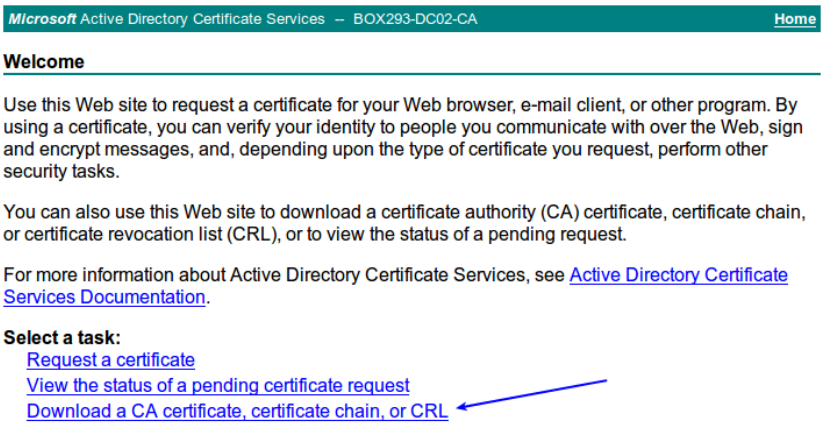
Click the **Finish** button to export the certificate.



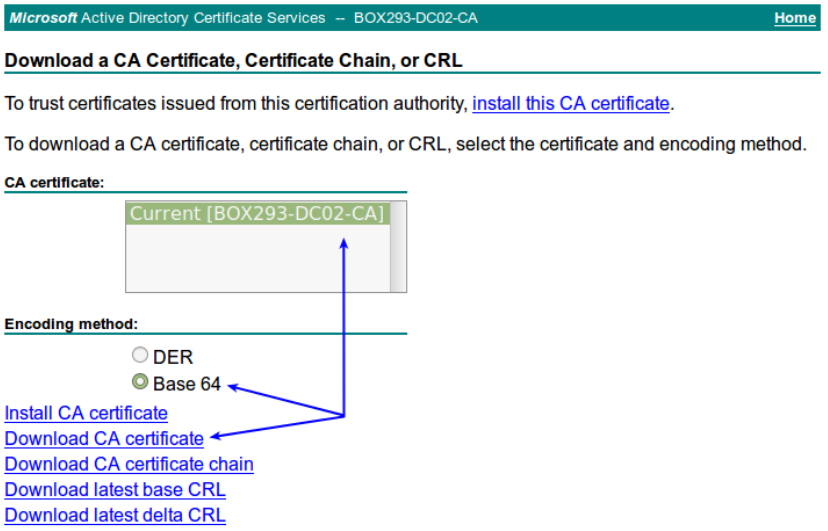
You will receive a message to confirm the certificate export was a success. Click **OK**. You can now close all the open windows. You can now proceed to the Upload Certificate section of this document. Make sure you have access to the exported `.cer` file from the computer you will upload the certificate to Nagios Log Server from.

Method 2) CA Server Web Interface

If the CA server publishes the Certificate Services web page you can download the CA certificate from this page.



Navigate to `http://caservername/certsrv` and provide valid credentials when prompted. Replace *caservername* with the address of your CA server. You will be presented with a page similar to the screenshot to the right.



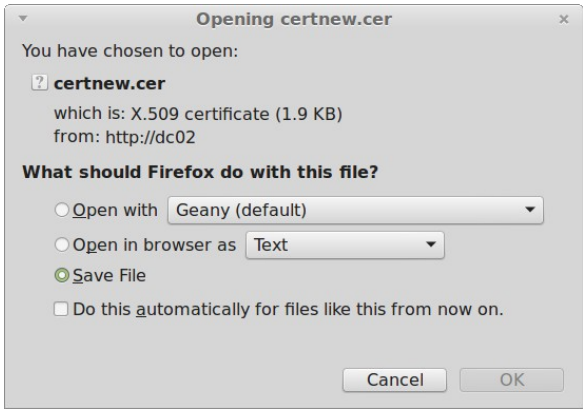
Click the **Download a CA certificate, certificate chain, or CRL** link.

Select the CA certificate from the list of available certificates.

Select **Base 64**.

Click the **Download CA certificate** link.

You will be prompted by your web browser to save the file, it should be named `certnew.cer`. This will vary depending on the web browser you are using.



You can now proceed to the Upload Certificate section of this document. Make sure you have access to the exported `.cer` file from the computer you will upload the certificate to Nagios Log Server from.

Obtaining The Certificate - LDAP Server

There are many implementations of LDAP servers so it is hard to clearly document exactly where your CA certificate file exists.

NOTE: Debian/Ubuntu systems: You will most likely need to replace the /etc/openldap/ directory in the following examples with /etc/ldap/

One method is to search the `cn=config` for the `olcTLSCACertificateFile` attribute. Execute the following command on your LDAP server:

```
slapcat -b cn=config | grep olcTLSCACertificateFile
```

An example of the output is as follows:

```
olcTLSCACertificateFile: /etc/openldap/certs/ca_box293_cert.pem
```

You can see in the output the location of the CA certificate file. In the Upload Certificate section of this document you will be required to copy and paste the contents of this file. To view the contents execute the following command:

```
cat /etc/openldap/certs/ca_box293_cert.pem
```

You can now proceed to the Upload Certificate section of this document.

Upload Certificate

Establish a terminal session to your Nagios Log Server. The next command has a value that need changing:

- `ca_box293.crt`
  - This is the name of file you are storing the CA certificate in
  - It can be named whatever you want as long as it ends in `.crt`

Execute the following commands to create a new file (using the name above) **Debian/Ubuntu systems:** You will most likely need to replace the /etc/openldap/ directory in the following examples with /etc/ldap/:

```
cd /etc/openldap
vi certs/ca_box293.crt
```

When using the vi editor, to make changes press ***`i`*** *on the keyboard first to enter insert mode. Press* ***`Esc`*** *to exit insert mode.*

Open the certificate you obtained in the last step with a text editor like Notepad. Copy and paste the certificate text into the new file, including the `-----BEGIN CERTIFICATE-----` and `-----END CERTIFICATE-----` lines.

Note: When you paste the certificate into vi, it's possible that blank lines are added between each line. You will need to remove these blank lines as they will cause the certificate file to break.

When you have finished, save the changes in vi by typing:

```
:wq
```

and press Enter.

The next step is to convert the certificate to the correct format.

Convert Certificate

Execute the following command to convert the CA certificate to a `.pem` file. The file will have the same name as the `.crt` file you are converting.

```
openssl x509 -text -in certs/ca_box293.crt > certs/ca_box293.pem
```

The next step is to create a directory and create a symbolic link to the `.pem` file into the new directory.

```
mkdir cacerts
hash=$(openssl x509 -in certs/ca_box293.pem -hash -noout)
ln -s /etc/openldap/certs/ca_box293.pem cacerts/$hash.0
```

On my server the symbolic file created was `/etc/openldap/cacerts/467b6a1d.0` but on your server it will be different. It's very important that the file has this specific hash generated name otherwise OpenLDAP will simply ignore the CA `.pem` file it is linked to.

The next step will be to configure OpenLDAP to use this certificate.

Configure OpenLDAP/LDAP

You need to make a change to the OpenLDAP/LDAP configuration file so that it uses any certificate in the `/etc/openldap/cacerts/` directory. The change is made to the `/etc/openldap/ldap.conf` file and the line in the file needs to look like this:

```
TLS_CACERTDIR /etc/openldap/cacerts
```

The following command will make that change:

```
sed -i 's/^TLS_CACERTDIR.*/TLS_CACERTDIR \/etc\/openldap\/cacerts/g' ldap.conf
```

Restart Apache

The last step requires you to restart the Apache Web Server so it knows about the CA certificate.

RHEL | CentOS | CentOS Stream | Oracle Linux

```
systemctl restart httpd.service
```

Debian

```
systemctl restart apache2.service
```

Ubuntu

```
cp root.crt /usr/local/share/ca-certificates/
sudo update-ca-certificates
systemctl restart apache2.service
```

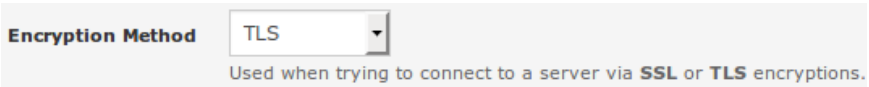
Repeat On All Nagios Log Server Instances

You will now need to repeat the above steps on all Nagios Log Server instances that participate in this cluster so the CA certificate is available on every instance.

Configure Authentication Server

This guide does not explain how to add an Authentication Server to Nagios Log Server, please refer to the Authenticating and Importing Users with AD and LDAP documentation.

The following screenshot shows the Security setting that requires authentication to use SSL / TLS with certificates.



You don't actually define which CA certificate is used. When Nagios Log Server is presented with a certificate from the LDAP / AD server, the Nagios Log Server checks it's local CA store for the CA certificate to validate the certificate provided by the LDAP / AD server.

Finishing Up

This completes the documentation on how to use SSL/TLS with Active Directory / LDAP in Nagios Log Server. If you have additional questions or other support related questions, please visit us at our Nagios Support Forums:

https://support.nagios.com/forum

The Nagios Support Knowledgebase is also a great support resource:

https://support.nagios.com/kb