

# 1. Introduction

Enhanced security for sensitive data transfer can be enabled by properly configuring Applications Manager and associated components to use Secure Sockets Layer (SSL) with HTTPS protocol. The purpose of this document is to present basic configuration options for using HTTPS/SSL in Applications Manager network communication.

It is assumed that a certificate will be purchased from a trusted certificate authority. Options of creating a self-signed certificate are not covered in this document.

For additional information about OpenLM Applications Manager configuration, please see [OpenLM Applications Manager Configuration](#) documentation.

## 2. Applications Manager configuration

To configure Applications Manager with HTTPS/SSL follow these steps:

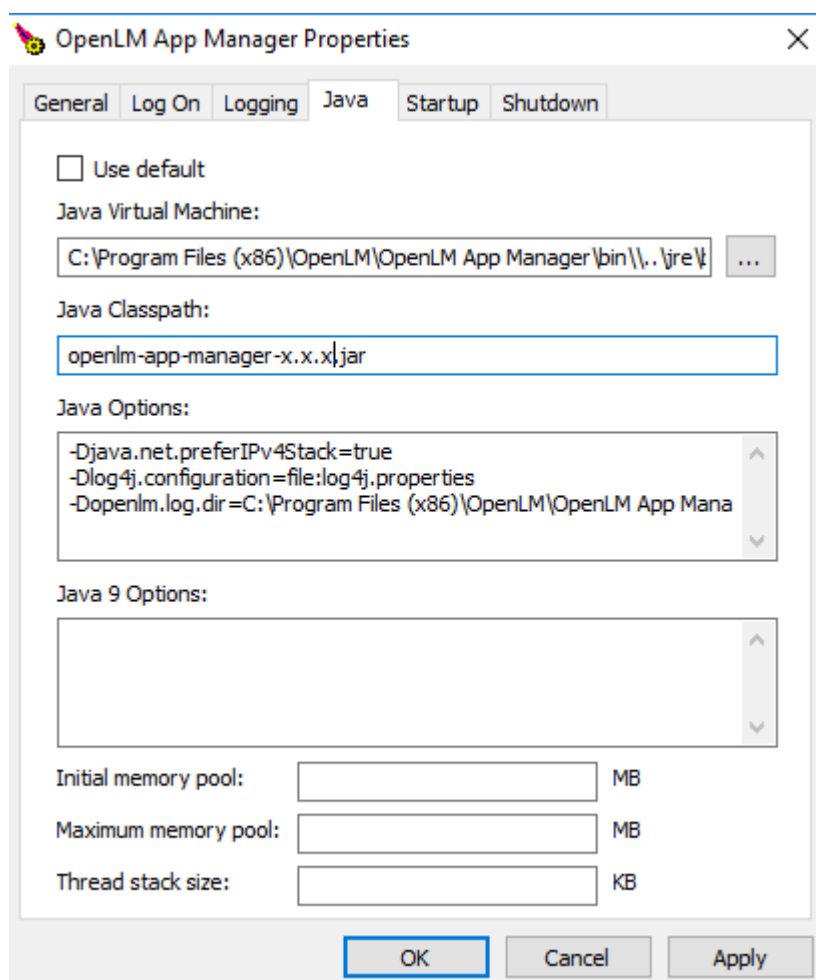
### 2.1 Adding certificate chain to keystore

Configure Applications Manager to use JKS (Java Key Storage) file as the keystore (repository for security certificates). Certificate file may need to be converted to JKS with synchronized passwords (matching for file and certificate) and Applications Manager needs to be configured to use the keystore. The source file has to include entire chain of certificates from a trusted certificate authority that produced the certificate, not just only the one that user got for a host name. "Openssl" tool can also be used in order to produce the required file. The process includes the next:

1. Purchase a Certificate File (from a trusted certificate authority).
2. Convert Certificate File to JKS format.
3. Synchronize certificate and JKS passwords.

### 2.2 Configuring Applications Manager to use keystore

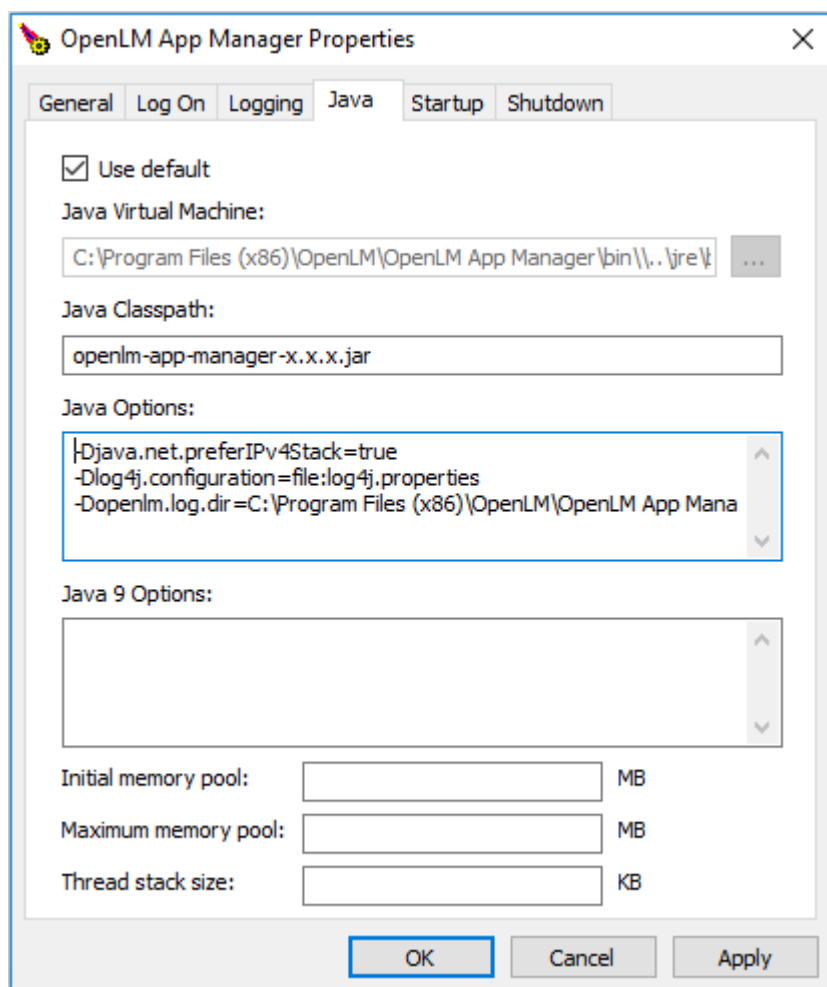
Run *C:/Program Files (x86)/OpenLM/OpenLM App Manager/bin/OpenLMAppManager.exe* and go to Java tab:



All parameters in Java tab are pre-configured by installer except for SSL:

***-Djavax.net.ssl.keyStore=<path to the JKS file>***

***-Djavax.net.ssl.keyStorePassword=<password>***



Nothing else is required if Server uses valid SSL certificates signed with a trusted authority.

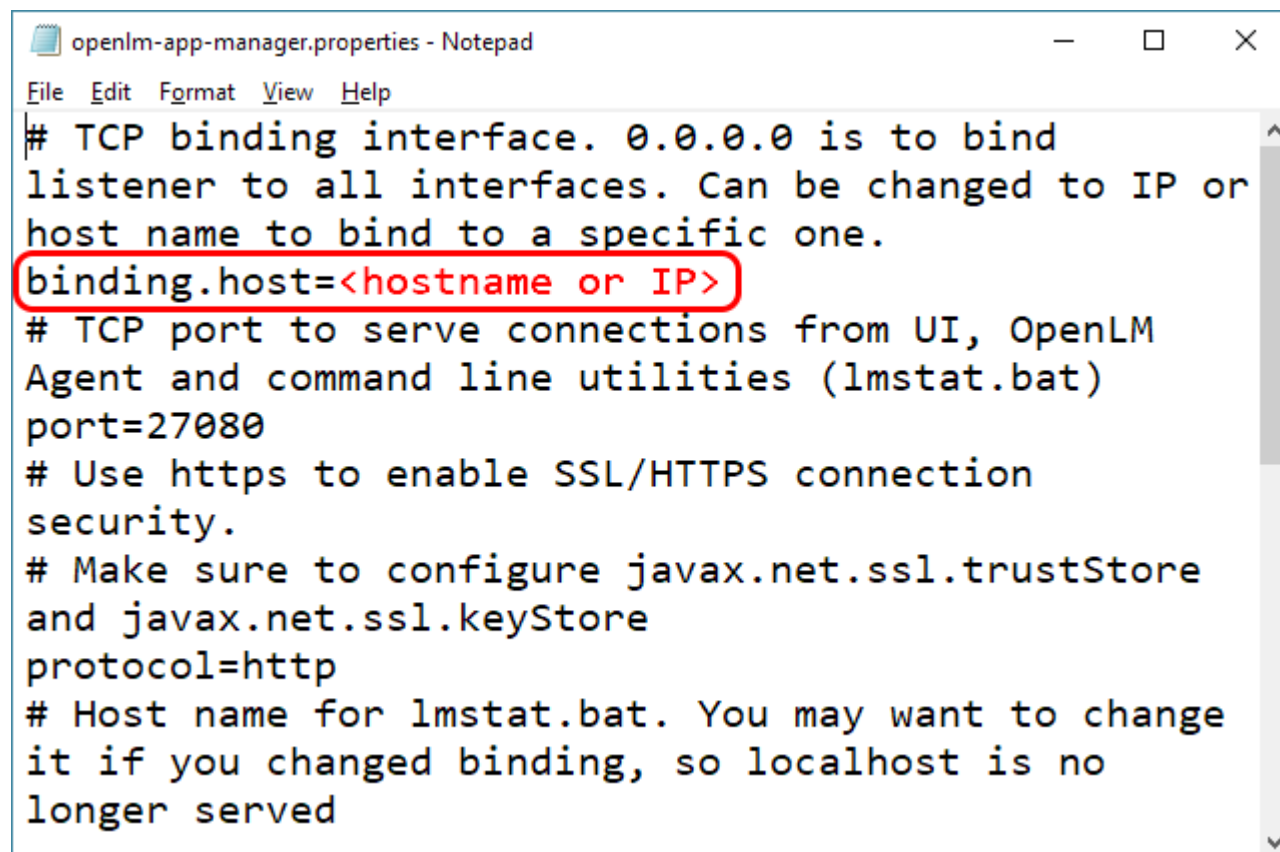
In case of a self-signed certificate it has to be added to Java trust store.

## 2.3 Updating Applications Manager properties file

Several parameters need to be updated in ***openlm-app-manager.properties*** file which is used to configure Applications Manager. HTTPS/SSL needs to be enabled using properties and **binding.host** parameters. A secure connection between Applications Manager and OpenLM Server is established with **openlm.server.protocol** parameter.

1. Locate *openlm-app-manager.properties* file (e.g., *C:\Program Files (x86)\OpenLM\OpenLM App Manager\openlm-app-manager.properties*) and open it in a text editor (e.g., Notepad).

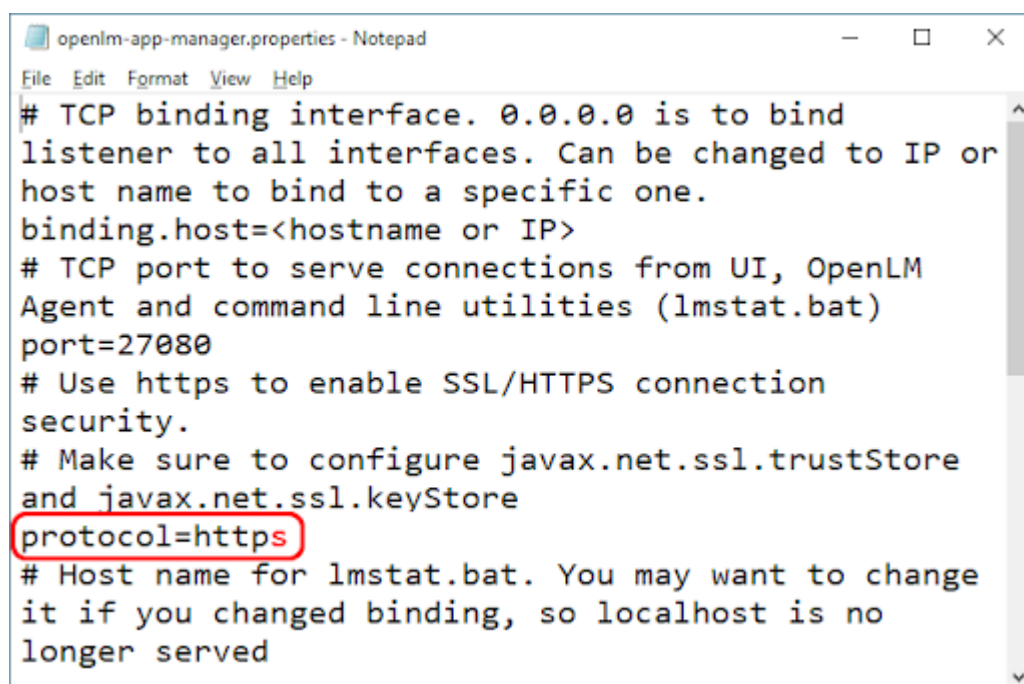
2. Locate **binding.host** parameter and change it to actual host name or IP address (see Figure 1).



```
openlm-app-manager.properties - Notepad
File Edit Format View Help
# TCP binding interface. 0.0.0.0 is to bind
listener to all interfaces. Can be changed to IP or
host name to bind to a specific one.
binding.host=<hostname or IP>
# TCP port to serve connections from UI, OpenLM
Agent and command line utilities (lmstat.bat)
port=27080
# Use https to enable SSL/HTTPS connection
security.
# Make sure to configure javax.net.ssl.trustStore
and javax.net.ssl.keyStore
protocol=http
# Host name for lmstat.bat. You may want to change
it if you changed binding, so localhost is no
longer served
```

**Figure 1: Changing Protocol parameter to “https.”**

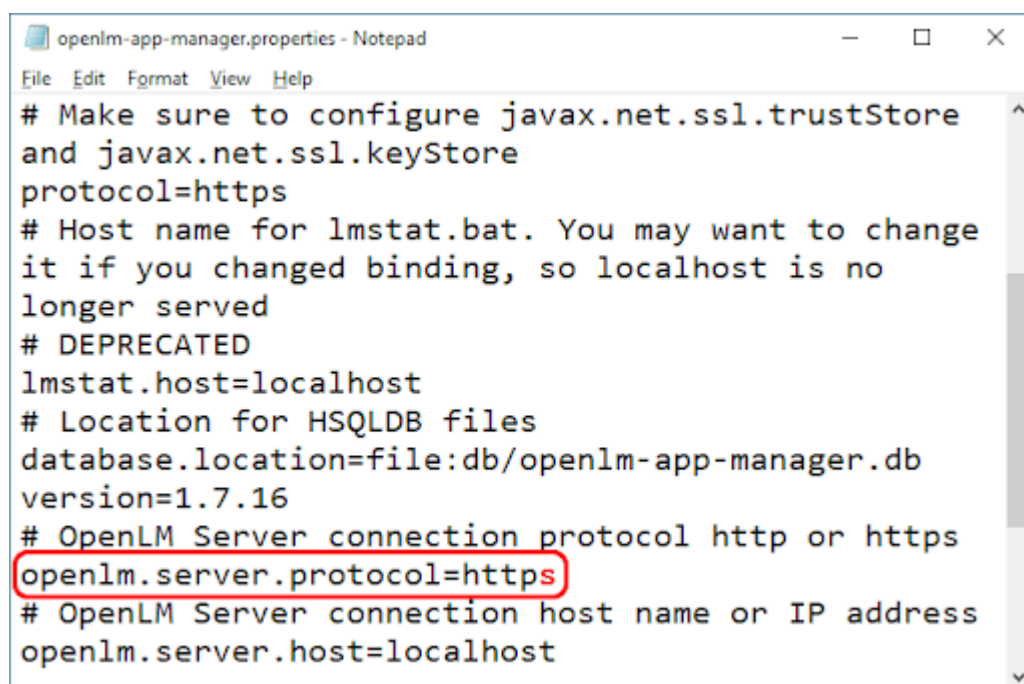
3. Change protocol parameter to “https” (see **Figure 2**).



```
openlm-app-manager.properties - Notepad
File Edit Format View Help
# TCP binding interface. 0.0.0.0 is to bind
listener to all interfaces. Can be changed to IP or
host name to bind to a specific one.
binding.host=<hostname or IP>
# TCP port to serve connections from UI, OpenLM
Agent and command line utilities (lmstat.bat)
port=27080
# Use https to enable SSL/HTTPS connection
security.
# Make sure to configure javax.net.ssl.trustStore
and javax.net.ssl.keyStore
protocol=https
# Host name for lmstat.bat. You may want to change
it if you changed binding, so localhost is no
longer served
```

**Figure 2: Changing Protocol parameter to “https.”**

4. If your OpenLM Server is running with SSL, change **openlm.server.protocol** parameter to “**https**” (see **Figure 3**).



```
openlm-app-manager.properties - Notepad
File Edit Format View Help
# Make sure to configure javax.net.ssl.trustStore
and javax.net.ssl.keyStore
protocol=https
# Host name for lmstat.bat. You may want to change
it if you changed binding, so localhost is no
longer served
# DEPRECATED
lmstat.host=localhost
# Location for HSQLDB files
database.location=file:db/openlm-app-manager.db
version=1.7.16
# OpenLM Server connection protocol http or https
openlm.server.protocol=https
# OpenLM Server connection host name or IP address
openlm.server.host=localhost
```

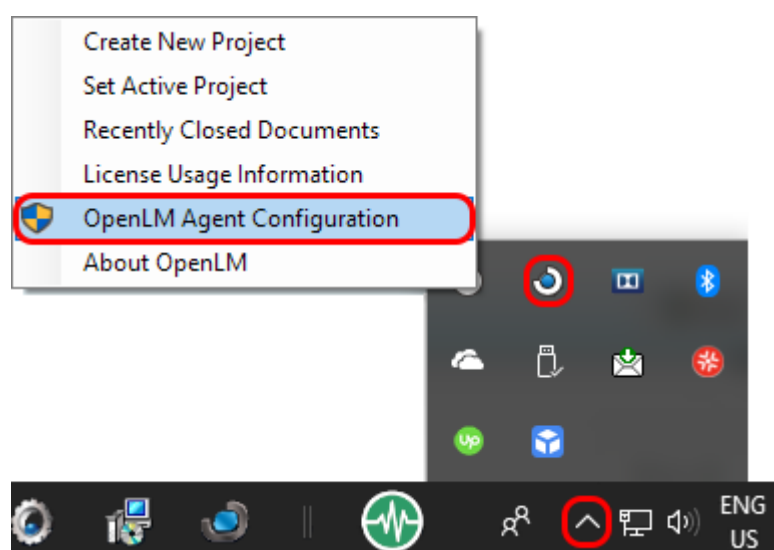
**Figure 3: Changing Protocol parameter to “https.”**

5. Save **openlm-app-manager.properties** file.
6. Restart Applications Manager to activate the changes.

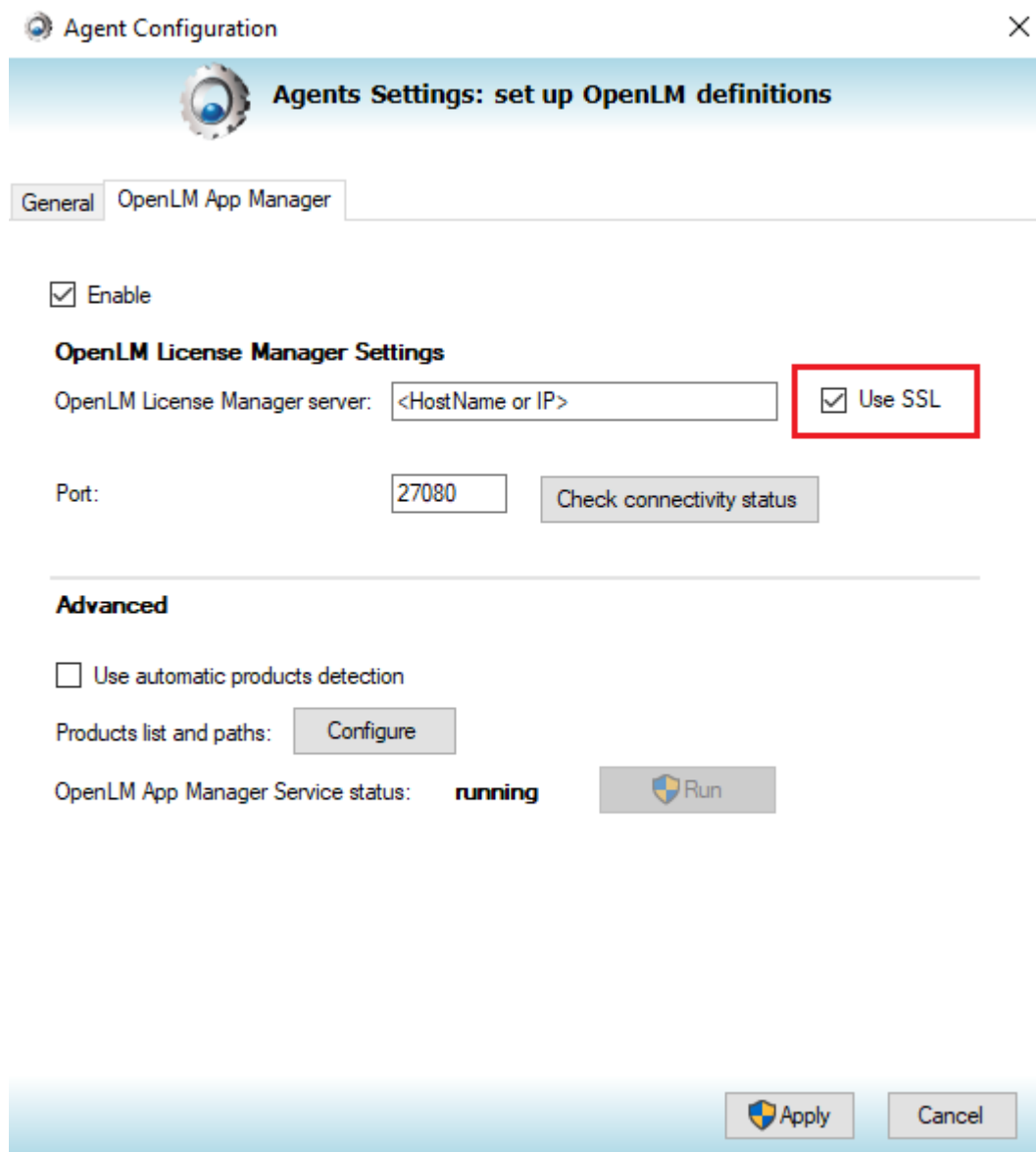
## 2.4 Securing Applications Manager Web Services

Applications Manager web service is used by both Active Agent and User Interface (also known as EasyAdmin or Dashboard). User Interface implements a fallback approach. If plain HTTP connection fails, it tries to connect with HTTPS. OpenLM Agent services need to be configured to work with SSL using the following steps.

1. Open OpenLM Agent Configuration screen (**[Show Hidden Icons] > [right click - OpenLM Agent icon] > [OpenLM Agent Configuration]**).

**Figure 4: Choosing OpenLM Agent Configuration.**

2. Click OpenLM Applications Manager tab to reveal Applications Manager configuration options.
3. Fill OpenLM License Manager server field with the same hostname or IP as **binding.host** parameter in **openlm-app-manager.properties** file.
4. Check SSL checkbox to the right of server name field (see **Figure 5**).



The image shows a dialog box titled "Agent Configuration" with a close button (X) in the top right corner. Below the title bar is a header area with a gear icon and the text "Agents Settings: set up OpenLM definitions". There are two tabs: "General" and "OpenLM App Manager", with "OpenLM App Manager" selected. Under the "General" tab, there is a checked checkbox for "Enable". Below that is the section "OpenLM License Manager Settings". It contains a text field for "OpenLM License Manager server:" with the placeholder "<HostName or IP>". To the right of this field is a checked checkbox for "Use SSL", which is highlighted with a red rectangular box. Below the server field is a "Port:" label followed by a text field containing "27080" and a "Check connectivity status" button. A horizontal line separates the "General" section from the "Advanced" section. Under "Advanced", there is an unchecked checkbox for "Use automatic products detection". Below that is a "Products list and paths:" label followed by a "Configure" button. At the bottom of the "Advanced" section, it shows "OpenLM App Manager Service status:" followed by the word "running" and a "Run" button with a play icon. At the very bottom of the dialog box are "Apply" and "Cancel" buttons.

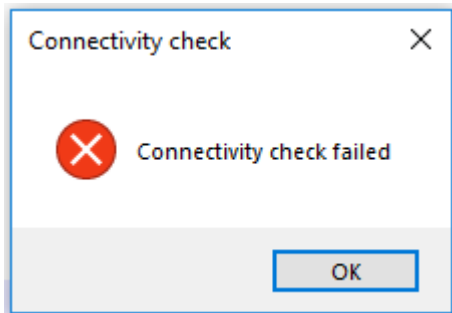
**Figure 5: Agent Configuration screen with SSL checked.**

5. Click **[Check Connectivity status]** button. A screen should appear confirming connection to Applications Manager (see **Figure 6**). If attempt to connect is not successful there will be a warning screen (see **Figure 7**). If warning appears, check that OpenLM License Manager server field and port field are filled with the same hostname (you need exactly the same host address as the one your SSL certificate is released for. Purpose of the certificate is to ensure Agent is connecting to the right Applications Manager instance) and port as **binding.host** parameter and port in the **openlm-app-manager.properties** file, and repeat this step. If connection is still not successful contact OpenLM support

([support@openlm.com](mailto:support@openlm.com)).



**Figure 6: Server connection check success screen.**



**Figure 7: Server connection warning screen.**

6. Click **[OK]** to close success screen.

7. Click **[Apply]** to save changes. OpenLM Agent Configuration Tool will close.

## 3. Broker Configuration

When Applications Manager is bound to a host name (as opposed to 'localhost') and SSL is enabled for Agent, host name and secure parameters have to be added to OpenLM Broker configurations in [OpenLM Broker Configurations Tool](#) and [lmstat.bat](#) file (lmstat.sh for Linux/Unix).

### 3.1 Modifying lmstat.bat file

1. Locate **lmstat.bat** file in OpenLM Applications Manager folder (e.g., *C:\Program Files (x86)\OpenLM\OpenLM App Manager\lmstat.bat*).



2. Open **lmstat.bat** file in any text editor (e.g., Notepad).
3. Locate **set host** parameter and change its value to correct HostName \ IP for your system (see **Figure 9**).

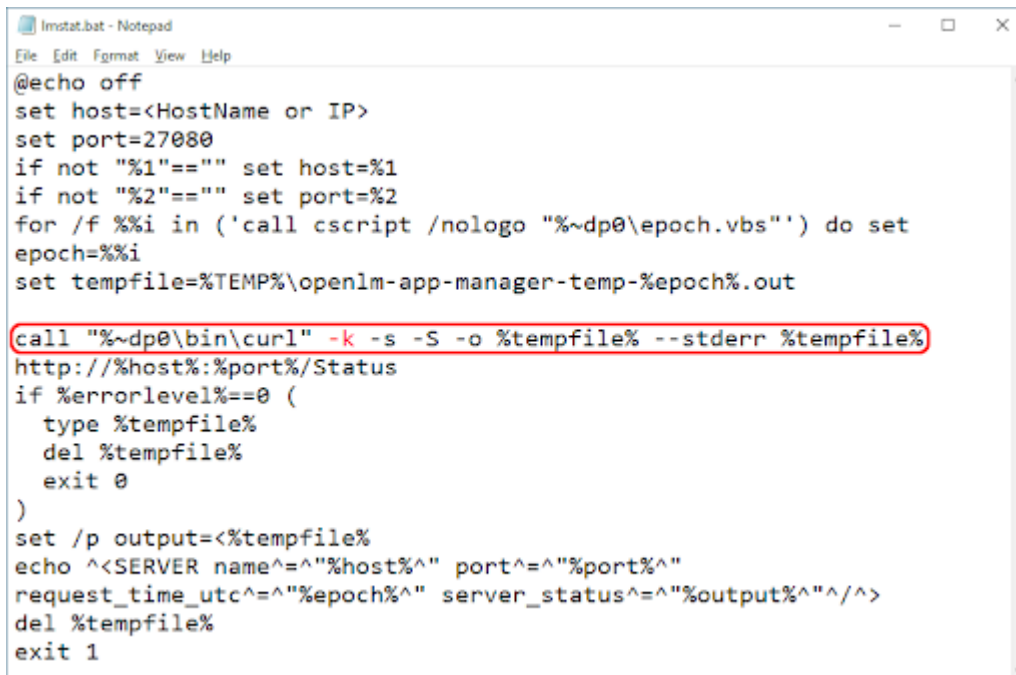


```
lmstat.bat - Notepad
File Edit Format View Help
@echo off
set host=<HostName or IP>
set port=27080
if not "%1"==" " set host=%1
if not "%2"==" " set port=%2
for /f %%i in ('call cscript /nologo "%~dp0\epoch.vbs"') do set
epoch=%%i
set tempfile=%TEMP%\openlm-app-manager-temp-%%epoch%.out

call "%~dp0\bin\curl" -s -S -o %tempfile% --stderr %tempfile%
http://%host%:%port%/Status
if %errorlevel%==0 (
    type %tempfile%
    del %tempfile%
    exit 0
)
set /p output=<%tempfile%
echo ^<SERVER name^=^"%host%^" port^=^"%port%^"
request_time_utc^=^"%epoch%^" server_status^=^"%output%^"^^>
del %tempfile%
exit 1
```

**Figure 9: Locating and changing *set host* parameter.**

4. [Optional] Locate **call** parameter and add **-k** to call string if accepting self-signed certificates (see **Figure 10**).

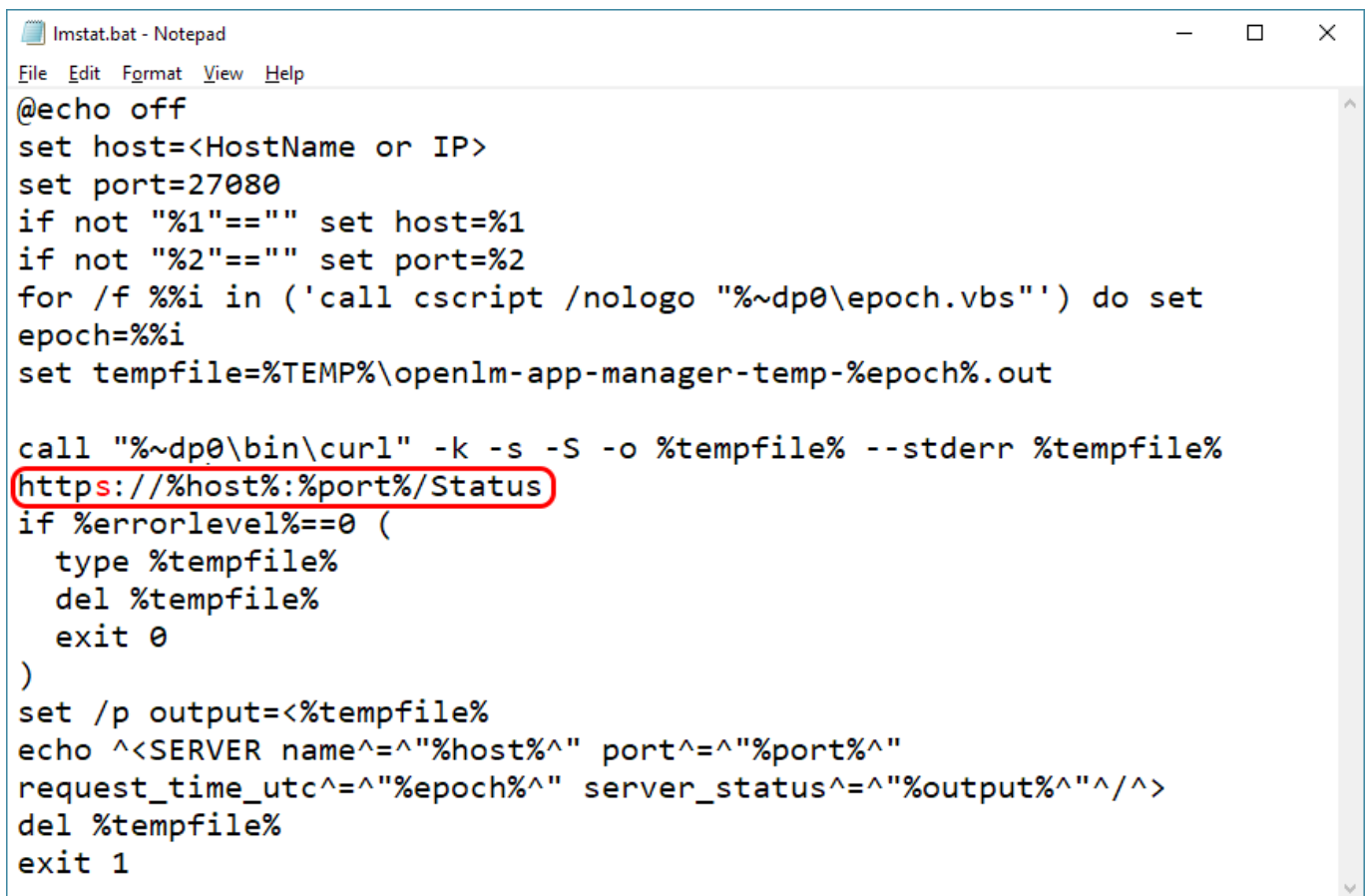


```
lmsat.bat - Notepad
File Edit Format View Help
@echo off
set host=<HostName or IP>
set port=27080
if not "%1"==" " set host=%1
if not "%2"==" " set port=%2
for /f %%i in ('call cscript /nologo "%~dp0\epoch.vbs"') do set
epoch=%%i
set tempfile=%TEMP%\openlm-app-manager-temp-epoch%.out

call "%~dp0\bin\curl" -k -s -S -o %tempfile% --stderr %tempfile%
http://%host%:%port%/Status
if %errorlevel%==0 (
    type %tempfile%
    del %tempfile%
    exit 0
)
set /p output=<%tempfile%
echo ^<SERVER name^="^"%host%" port^="^"%port%"^"
request_time_utc^="^"%epoch%"^" server_status^="^"%output%"^"/^>
del %tempfile%
exit 1
```

**Figure 10: Locating and changing call string parameter.**

5. Locate and change **http** parameter to **https**.



```

lmstat.bat - Notepad
File Edit Format View Help
@echo off
set host=<HostName or IP>
set port=27080
if not "%1"==" " set host=%1
if not "%2"==" " set port=%2
for /f %%i in ('call cscript /nologo "%~dp0\epoch.vbs"') do set
epoch=%%i
set tempfile=%TEMP%\openlm-app-manager-temp-%epoch%.out

call "%~dp0\bin\curl" -k -s -S -o %tempfile% --stderr %tempfile%
https://%host%:%port%/Status
if %errorlevel%==0 (
    type %tempfile%
    del %tempfile%
    exit 0
)
set /p output=<%tempfile%
echo ^<SERVER name^="^"%host%^" port^="^"%port%^"
request_time_utc^="^"%epoch%^" server_status^="^"%output%^"^^/^^>
del %tempfile%
exit 1

```

**Figure 11: Locating and changing http parameter to https.**

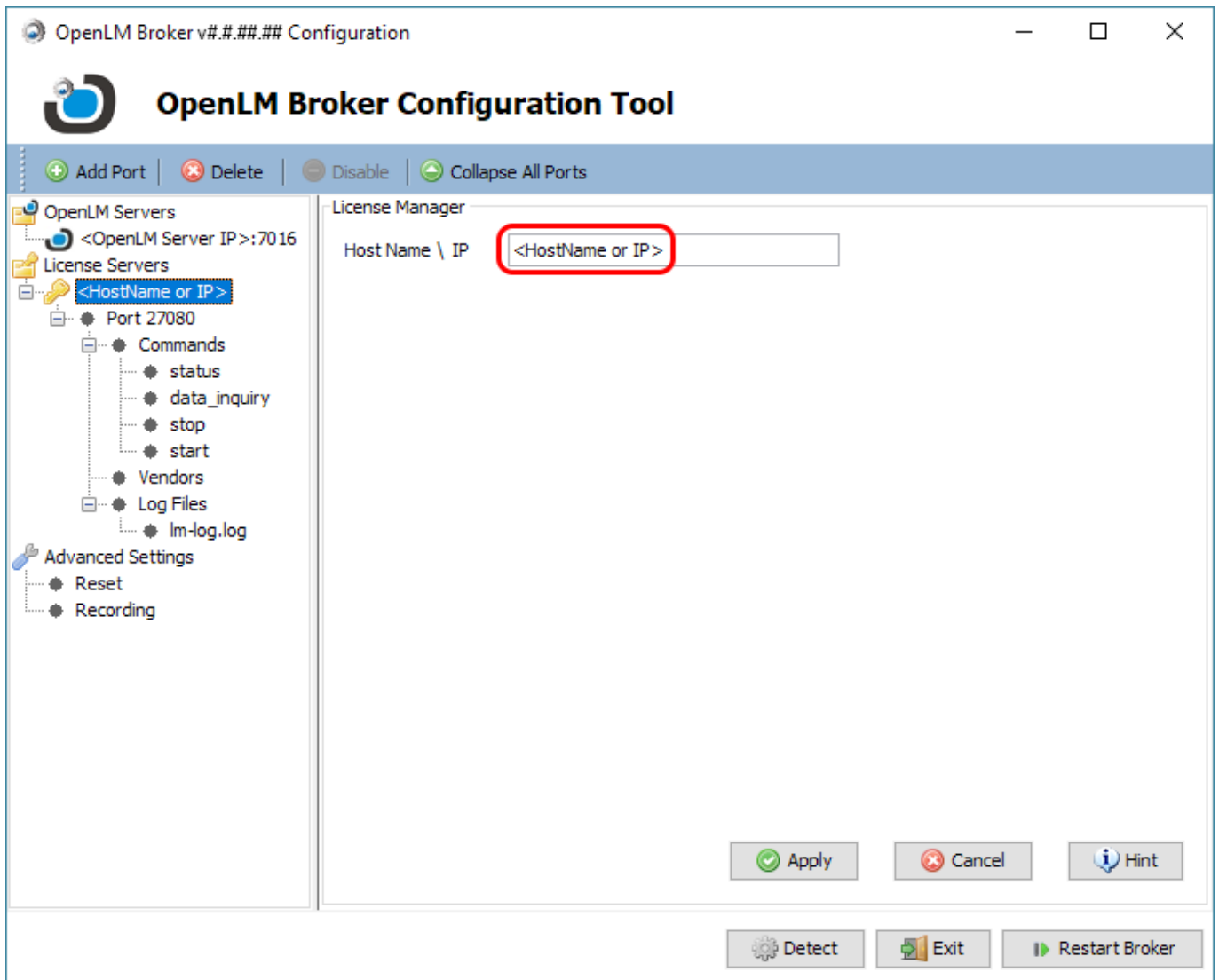
6. **Save and close** lmstat.bat file.

## 3.2 OpenLM Broker Configuration Tool

1. Run OpenLM Broker Configuration Tool (**[Start] > [OpenLM] > [OpenLM Broker Configuration Tool]**). OpenLM Broker Configuration Tool will open.

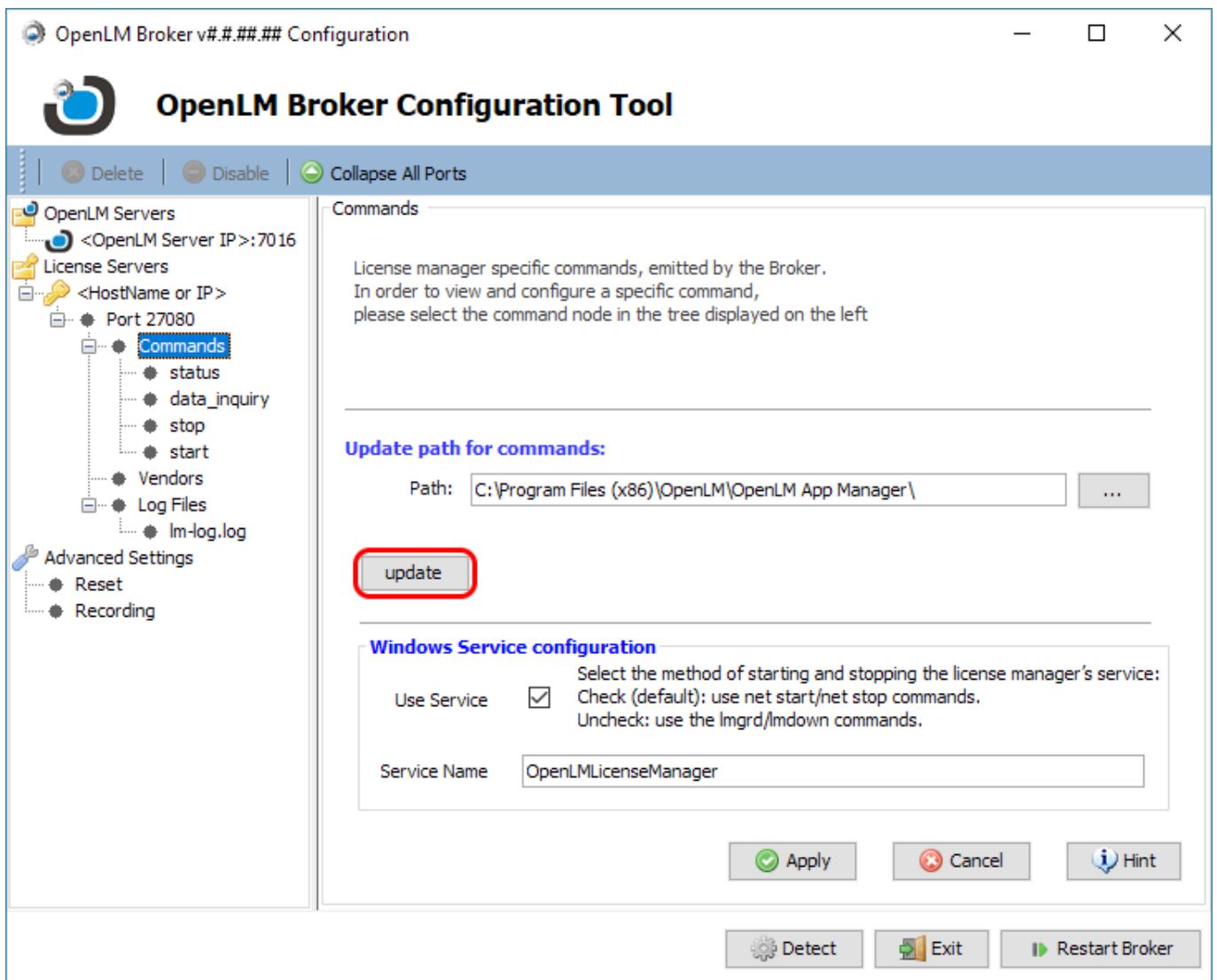
2. Check Host Name \ IP for License Servers. It should match binding host (e.g., it should not be 'localhost'). If value needs to be changed, click on localhost node and enter Host Name \ IP in the field (see **Figure 6**).

3. Click **[Apply]** button to commit changes.



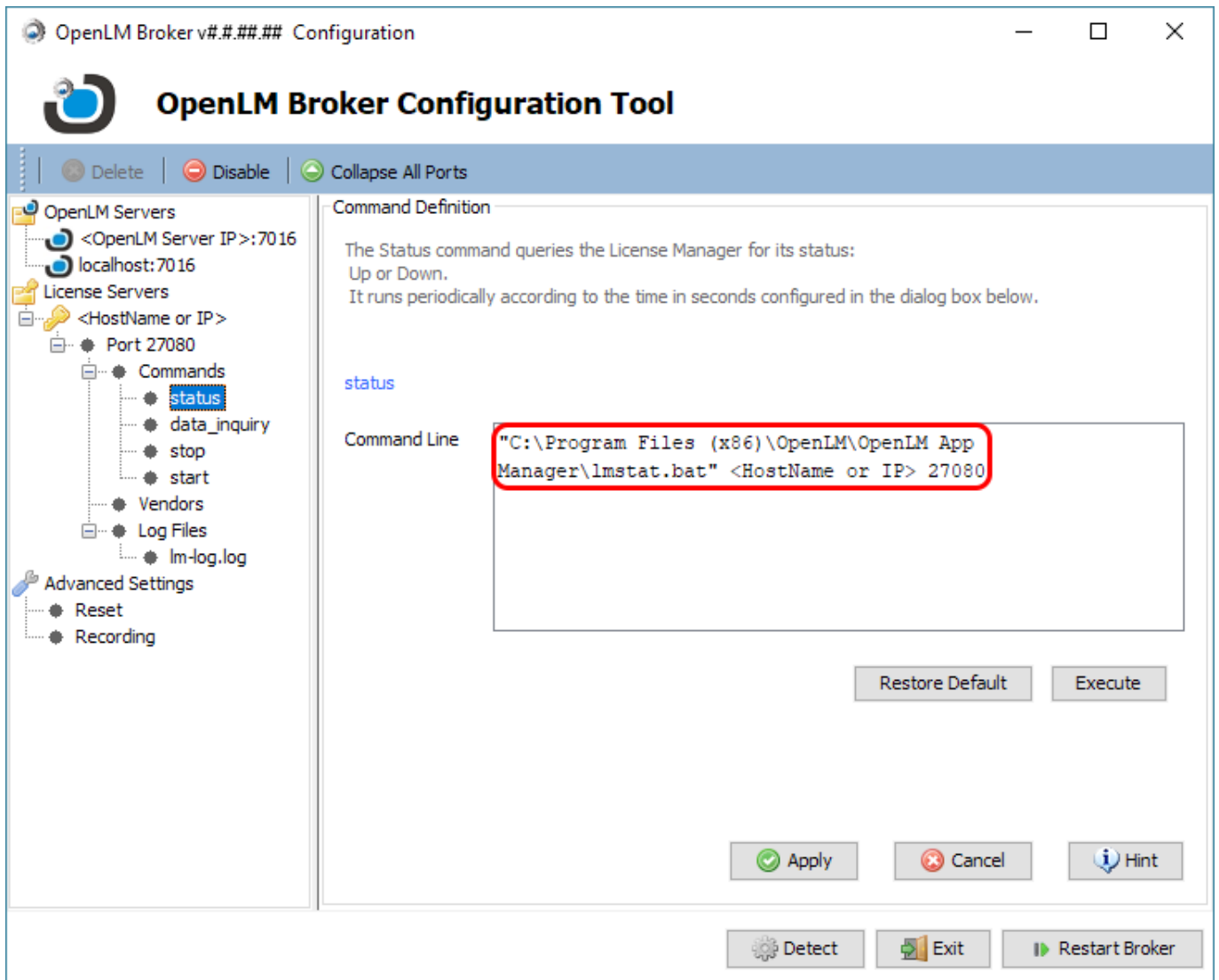
**Figure 6: Locating Host Name \ IP field on License Manager panel.**

4. Click **Commands** node for Applications Manager (e.g., Commands under Port 27080).
5. Click **[Update]** button on Commands panel (see **Figure 7**).



**Figure 7: Locating [Update] button on Command panel.**

6. Click on **data\_inquiry** node to be sure that Command Line has been updated successfully. Click **Execute** button to make sure that it works. <server\_status="ok"> message will be displayed. The path should look like on **Figure 8**.



**Figure 8: Locating Command Lines.**