AVC Decoder Plugin for FFmpeg 3.1
Release Notes

Contents

1. General Overview

Nowadays FFmpeg is widely used in professional content production for file-based transcoding as well as live use cases. Although FFmpeg supports most video formats natively, there is no easy way to make use of MainConcept's industry-leading and professional codec libraries within an FFmpeg workflow. The MainConcept AVC Decoder Plugin for FFmpeg is a convenient way to solve this problem because it seamlessly integrates into FFmpeg, including the other MainConcept FFmpeg Plugins.

2. Software Requirements

To use MainConcept AVC Decoder Plugin for FFmpeg, you must have a compatible configuration.

Supported Operating Systems:
- Microsoft® Windows® 10, Windows 11 (64-bit, x86 only)
- Linux x86 Ubuntu 14.04 LTS (glibc2.17), CentOS 7.9 (64-bit)
- Linux ARM Ubuntu 18.04, Ubuntu 20.04 glibc 2.25 (64-bit)

Software Requirements:
MainConcept modified versions of FFmpeg (see available download below):

- FFmpeg 4.4 "Rao"
- FFmpeg 6.0 "Von Neumann"

To run the MainConcept AVC Decoder Plugin for FFmpeg the following software packages must be installed in this order:

1) Modified FFmpeg version (FFmpeg 4.4 or 6.0) as ready-to-use binary or as source code that you must compile yourself. The binaries can be found on the MainConcept website. The source code for both modified FFmpeg versions can be found on public GitHub: https://github.com/MainConcept/mc-ffmpeg-omx
2) For testing the plugin, download the free MainConcept AVC Decoder Plugin for FFmpeg Demo version installer from the MainConcept website: https://www.mainconcept.com/. It works for both FFmpeg 4.4 and 6.0.
3) For an already licensed plugin, install the full version of the MainConcept AVC Decoder Plugin for FFmpeg after purchase. It also works for both FFmpeg 4.4 and 6.0.

NOTE:
The demo version of the MainConcept AVC Decoder Plugin for FFmpeg is fully functional. It only adds a watermark to the processed video.

After installation, the FFmpeg Plugin's User Guide can be found here:

- **Windows:** *C:\Program Files\MainConcept\FFmpeg-PlugIns\doc*
- **Linux:** *~/share/doc/*

3. Installation

3.1   Installation on Windows

To run the MainConcept AVC Decoder Plugin for FFmpeg on Windows the following software packages must be installed in this order:

1. Install modified FFmpeg
2. Install MainConcept AVC Decoder Plugin for FFmpeg Demo version
3. Install licensed MainConcept AVC Decoder Plugin for FFmpeg Full version (optional)

3.1.1   Modified FFmpeg & Demo Plugin Installation on Windows

First, you need to install the required FFmpeg version for the MainConcept FFmpeg Plugins on your system. Please follow the steps below.

1. Run the "ffmpeg_static_4.4-omx_win64_3.0.0.exe" installer file to launch the installation wizard. In the **Welcome** dialog, click Next to proceed.

2. When the license agreement (EULA) appears on the screen, review it carefully. Click **I Agree** to accept the terms. If you do not agree, the installation process will be aborted.

3. You are asked for the destination folder, where FFmpeg should be installed. We recommend using the default location. Click **Next** to proceed.

   NOTE:
   You must also install the MainConcept AVC Decoder Plugin Demo or the MainConcept AVC Decoder Plugin for FFmpeg Full version to this folder later.

4. You can also choose a Start Menu folder. We recommend using the default location. Click **Next** to proceed.

5. Now the installation starts. An indicator will show the installation process.

6. When the following dialog box appears, click **Finish** to complete the setup.

FFmpeg is now installed on your computer!

You must now install the MainConcept AVC Decoder Plugin for FFmpeg Demo version for evaluation. It must be installed to the same location where you have installed FFmpeg before:

7. Run the "mainconcept_ffmepg_plugins_demo" installer file to launch the installation wizard. In the **Welcome** dialog, click **Next** to proceed.

8. When the license agreement (EULA) appears on the screen, review it carefully. Click **I Agree** to accept the terms. If you do not agree, the installation process will be aborted.

9. You are asked for the destination folder. However, the MainConcept FFmpeg Plugin Demo must be installed to the same folder where FFmpeg was installed before. Click **Next** to proceed.

10. You can also choose a Start Menu folder. We recommend using the default location. Click **Next** to proceed.

11. Now the installation starts. An indicator will show the installation process.

12. When the following dialog box appears, click **Finish** to complete the setup.

The MainConcept AVC Decoder Plugin for FFmpeg Demo is now installed on your computer! You can now start evaluating the software.

3.1.2   MainConcept AVC Decoder Plugin Full Version Installation on Windows

In this short chapter, we briefly describe how to install the full version of the MainConcept AVC Decoder Plugin for FFmpeg if you already own a valid license after purchase. It must be installed to the same location where you have installed FFmpeg before.

1. If you haven't installed the modified FFmpeg yet, please follow the steps 1 – 6 from the previous chapter.

2. Run the "mainconcept_avc_decoder_plugin_full" installer file to launch the installation wizard. In the **Welcome** dialog, click **Next** to proceed.

3. When the license agreement (EULA) appears on the screen, review it carefully. Click **I Agree** to accept the terms. If you do not agree, the installation process will be aborted.

4. You are asked for the destination folder. However, the MainConcept MainConcept AVC Decoder Plugin must be installed to the same folder where FFmpeg was installed before. Click **Next** to proceed.

5. You can also choose a Start Menu folder. We recommend using the default location. Click **Next** to proceed.

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6. When the following dialog box appears, click **Finish** to complete the setup.

The MainConcept AVC Decoder Plugin for FFmpeg is now installed on your computer! You now need to activate the licensed version of the software before it can be used.

3.2   Installation on Linux

To run the MainConcept AVC Decoder Plugin for FFmpeg on Debian-based Linux the following software packages must be installed in this order:

1. Install modified FFmpeg
2. Install MainConceg AVC Decoder Plugin for FFmpeg Demo version
3. Install licensed MainConcept AVC Decoder Plugin for FFmpeg Full version (optional)

3.2.1   Modified FFmpeg & Demo Plugin Installation on Linux

As a first package, you must install the MainConcept modified version of FFmpeg that enables MainConcept FFmpeg Plugins:

1. Unpack the downloaded package and run the self-extracting executable and accept the EULA:

```
tar xf mc_ffmpeg_installer_gcc_linux64_x64_<version_id>.tar.bz2
./ffmpeg_static_4.4-omx_linux64_3.0.0.run
```

2. Install the package file according to your Linux base system:

   Debian-based Linux:

```
sudo dpkg -i ffmpeg_omx/deb/ffmpeg-static_4.4-0omx.0~3992_amd64.deb
```

   RPM-based Linux:

```
sudo yum localinstall ffmpeg_omx/rpm/ffmpeg-static-4.4-0omx.0.3992.el7.x86_64.rpm
```

3. Verify that the MainConcept modified FFmpeg is correctly installed by calling *ffmpeg* from the installation folder:

   /opt/mainconcept/ffmpeg-omx/bin/ffmpeg

```
ffmpeg version n4.4-456-g7af8b3b Copyright (c) 2000-2019 the FFmpeg developers built with
gcc 4.8.5 (GCC) 20150623 (Red Hat 4.8.5-39) configuration: --disable-ffplay --disable-doc
--enable-static --disable-shared --disable-debug --enable-asm --cc=gcc --enable-x86asm --
enable-omx --enable-omx_enc_avc --enable-omx_enc_hevc --enable-omx_enc_xheaac --extra-
cflags=-I../omxil_common/include/omx --prefix=../dist/linux-x64
```

NOTE:

You should see output containing "--enable-omx --enable-omx_enc_avc --enable-omx_enc_hevc --enable-omx_enc_xheaac"

FFmpeg is now installed on your computer!

You must now install the MainConcept AVC Decoder Plugin for FFmpeg Demo version for evaluation:

4. Unpack the demo plugin tarball, then run the self-extracting executable and accept the EULA:

```
tar xf mc_ffmpeg_plugins_demo_installer_gcc_linux64_x64_sfx-<build_id>.tar.bz2

./mainconcept_ffmpeg_plugin_linux64_demo_<version_id>.run
```

5. Install the package files according to your Linux base system:

Debian-based Linux:

```
cd mc_ffmpeg_plugins/deb/
sudo dpkg -i -f mcomx-core_<version_id>_amd64.deb
sudo dpkg -i -f mcomx-decavc_<version_id>_amd64.deb
sudo dpkg -i -f mc-decavc-demo_<version_id>_amd64.deb
sudo dpkg -i -f mc-sdk-conf_<version_id>_amd64.deb

Alternatively, you can install all at once:

sudo dpkg -i *.deb
```

RPM-based Linux:

```
cd mc_ffmpeg_plugins/rpm/
sudo yum localinstall mcomx-core_<version_id>.x86_64.rpm
sudo yum localinstall mcomx-decavc_<version_id>.x86_64.rpm
sudo yum localinstall mc-decavc-demo_<version_id>.x86_64.rpm
sudo yum localinstall mc-sdk-conf_<version_id>.x86_64.rpm

Alternatively, you can install all at once:

sudo yum localinstall *
```

The MainConcept AVC Decoder Plugin for FFmpeg Demo is now installed on your computer! You can now start evaluating the software.

2.2.2 MainConcept AVC Decoder Plugin Full Version Installation on Linux

To install the MainConcept AVC Decoder Plugin for FFmpeg Full version, you must first install the modified FFmpeg version as described in the previous sections. Afterwards, continue here:

1. Unpack the full version plugin tarball, then run the self-extracting executable and accept the EULA:

```
tar xf mc_ffmpeg_plugin_avc_decoder_installer_gcc_linux64_x64_sfx-
installer4_b4003.tar.bz2

./mainconcept_avc_decoder_plugin_linux64_full_3.0.0.run
```

2. Install the package files according to your Linux base system:

   Debian-based Linux:

```
sudo dpkg --force-depends -i codemeter_7.0.3918.500_amd64.deb
sudo dpkg -i mc-decavc_<version_id>_amd64.deb

We recommend the full WIBU runtime installer described above. However, if you require
a CLI only version, you can alternatively install the lite version as described below
and follow the section "1.10 CMU - CodeMeter Universal Support Tool" in WIBU CodeMeter
Administrator Manual from here:

sudo dpkg --force-depends -i codemeter-lite_7.0.3918.500_amd64.deb
```

   RPM-based Linux:

```
sudo dpkg --force-depends -i codemeter_7.0.3918.500_amd64.deb
sudo dpkg -i mc-decavc_<version_id>_amd64.deb

We recommend the full WIBU runtime installer described above. However, if you require
a CLI only version, you can alternatively install the lite version as described below
and follow the section "1.10 CMU - CodeMeter Universal Support Tool" in WIBU CodeMeter
Administrator Manual from here:

sudo yum localinstall codemeter-lite_7.0.3918.500_amd64.deb
```

The MainConcept AVC Decoder Plugin for FFmpeg is now installed on your computer! You now need to activate the licensed version of the software before it can be used.

4. License Activation

4.1 Online Activation

When you purchased the full licensed product, you have received a license activation link. Use this link only on the computer where you installed the software with the steps below:

1. Activation requires WIBU-Systems' CodeMeter, a product that provides secure protection and effective license management of software and digital content such as encoding technologies. It should not be necessary to manually setup the CodeMeter Runtime because the MainConcept FFmpeg Plugin installer will do this automatically.

2. After successfully installing the **CodeMeter Runtime**, you will find the CodeMeter icon on your Windows taskbar:
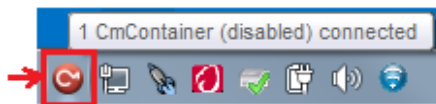
    On Linux, verify that the CodeMeter daemon process is running:

    ```
    $ ps ax | grep "[C]odeMeter"
    ```


    You can check if CodeMeter Control Center is running correctly on Linux in the menu **Applications > Accessories > CodeMeter Control Center**. You can also run this with the following command line:

    ```
    $ /usr/bin/CodeMeterCC –m
    ```

3. If you have been sent a license that requires online activation, please proceed with the following steps. You will need the Ticket ID as provided by your sales contact person. The Ticket ID is a link that will look like the example below:

    http://licensecentral.mainconcept.com/ticket/C2TLS-5RRVK-AALNP-P59QE-36NDV

    Click or copy and paste the link provided by your sales representative or our webshop into your browser.
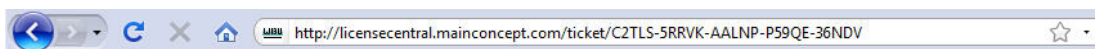
The activation link will open the CodeMeter License Central web page below. Here you can choose whether to use a USB hardware dongle (**CMDongle**) or a software license (**CMActLicense**) to activate the full version of the MainConcept FFmpeg Plugin. In this release, please use the software activation, i.e. the **CmActLicense** on the right side by clicking it.

4. The following page will appear on the screen. You should ensure that the MainConcept FFmpeg Plugin is selected. The **Select CMContainer** drop-down menu should show **Get CmContainer** automatically. To proceed with the activation, simply click the **Activate Selected Licenses Now** button.
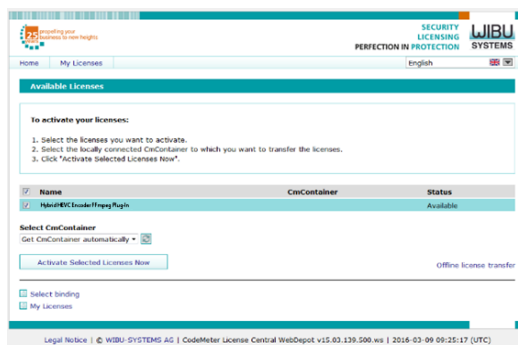
The MainConcept FFmpeg Plugin will connect to the License Server and try to activate the application:
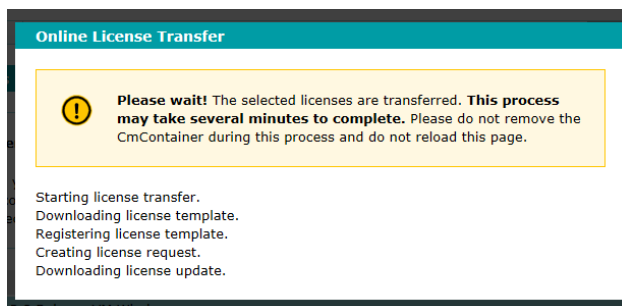
5. If successful, you will get the following notification. Press **OK** to proceed.
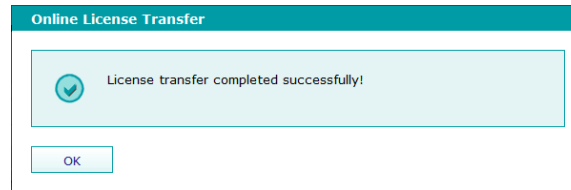
6. After a few seconds, the status will change to **Activated**. The license is now activated and can be used.
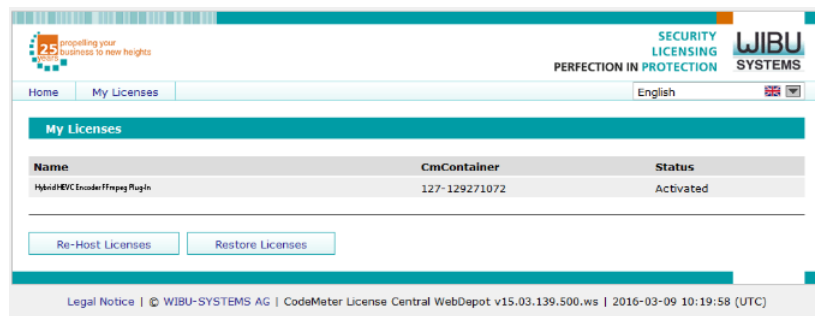
7. If you open **CodeMeter Control Center** you will also see the last activated product as confirmation. The status will change to **License activated**.
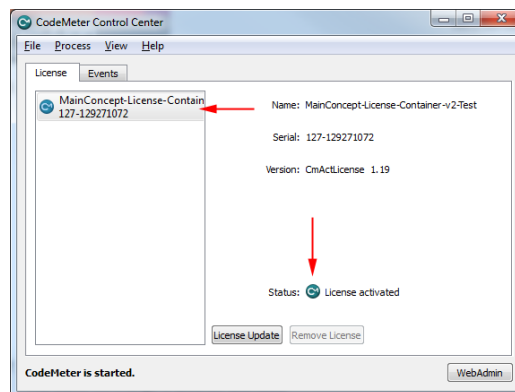
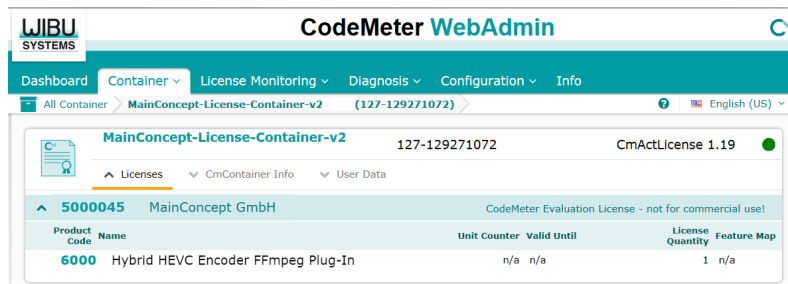8. You will also notice that the CodeMeter icon in your task bar has changed from red to green:

9. In case you have activated more than one license you get a more detailed overview in WebAdmin.

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WebAdmin will open in a browser window. By choosing **Container > Licenses** you will get an overview about all installed licenses:

4.2 Offline Activation:

A license can be activated on a system without internet connectivity, although you still need a system that is online to start the process. However, the actual system, where the MainConcept FFmpeg Plugin is running, can remain offline the whole time.

1. On the online system with an internet connection, click or copy and paste the Wibu activation link into your default internet browser. A page like the one below will appear on the screen. You might need to click on the **File-based license transfer** link at the bottom right corner.
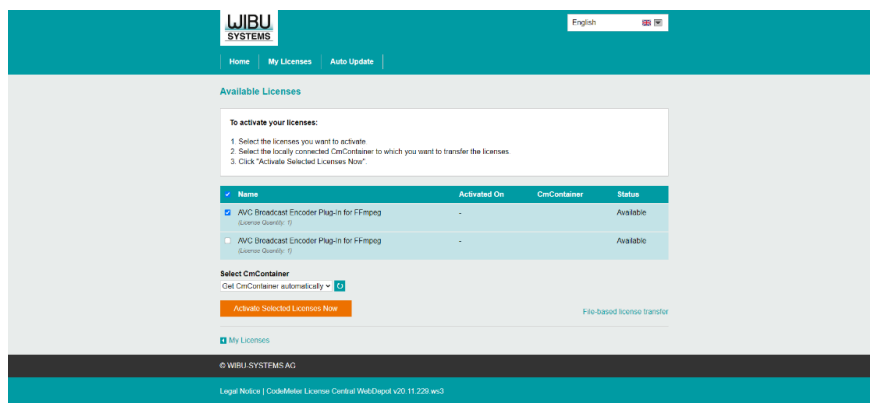
2. In the following page, you need to expand the information by clicking the **How it works** link. Here you can download a Wibu License Container template file to your local hard drive. Click the **Download template now** link to start downloading this License Container. You need to transfer this file to the system where the MainConcept FFmpeg Plugin is installed (e.g. by using a USB stick).
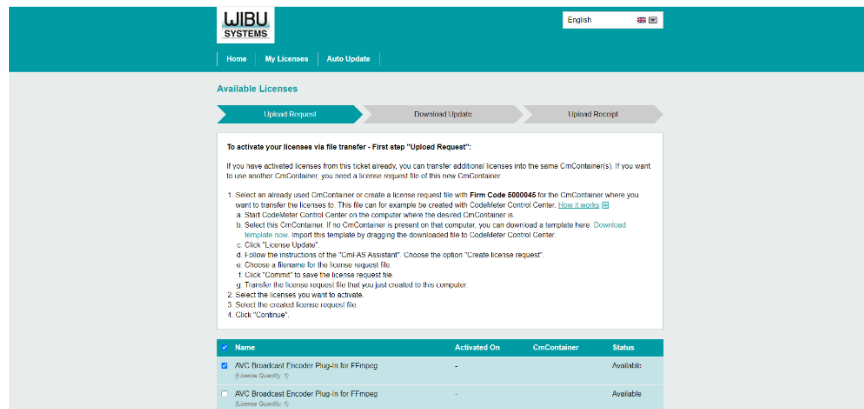
3. Switch to the offline system where the MainConcept FFmpeg Plugin is installed and copy the Wibu License Container template file to its local hard drive. Open the CodeMeter Control Center. Import this file by dragging and dropping it into the CodeMeter Control Center. Once this is done, press the **Activate License** button.
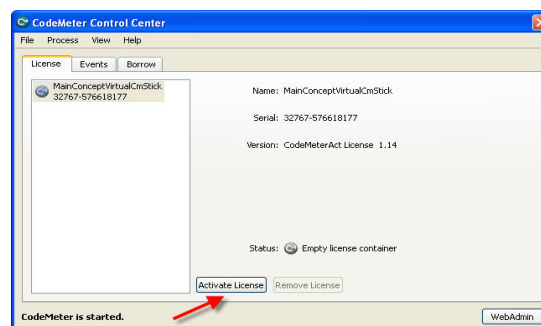

4. Confirm the **Welcome** screen with **Next**.

5. Tick the option **Create license request** and confirm with **Next**.
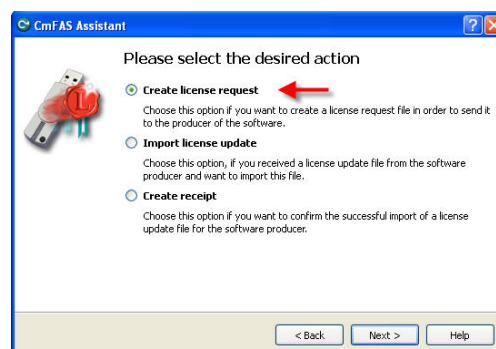
6. Select a file name. The dialog will make a suggestion. However, you can enter your own. Please note that the suffix ".WibuCmRaC" is required.

7. Transfer the stored file to a PC with internet connectivity (e.g. by using a USB stick).

8. During the purchasing process you received a License Ticket ID. Click or copy and paste the provided link into your browser.

http://licensecentral.mainconcept.com/ticket/C2TLS-5RRVK-AALNP-P59QE-36NDV
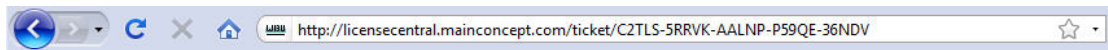
    The browser will access the MainConcept License Center where the product will automatically show up.

9. Tick **Remote** in the **Programming type** section.

10. Pick the context file (license request) you previously created on your target system. Press **Activate now**.

11. Confirm the activation process. After a few seconds, the status will change to **Activated** and a new file with the extension ".WibuCmRaU" is created.

12. The download of the update file ("*.WibuCmRaU") should start automatically. If browser problems arise, such as pop-up blockers or extended security settings, please go to the activated item and press **Download update** in the drop-down menu. You should now be able to save the file.
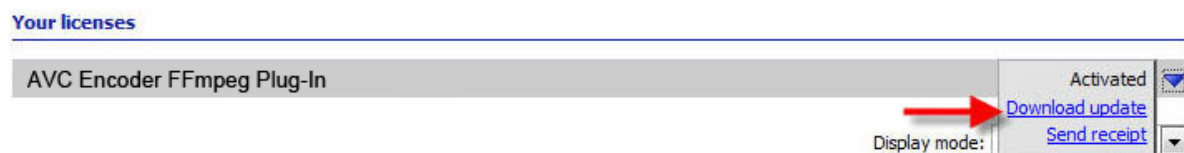
13. Transfer the activation file ("*.WibuCmRaU") to your target system where the MainConcept FFmpeg Plugin is installed. Open the **Control Center** again, go to **Activate License**, then select **Import license update**, and choose the file you saved before. Click **Commit** to activate the license.
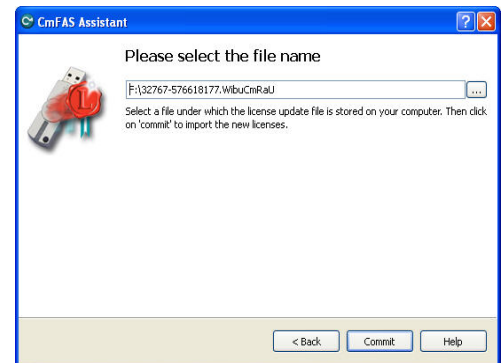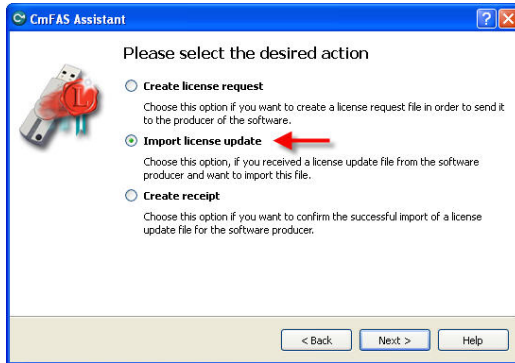
The license is now activated.

4.3   Offline Activation via Command-Line on Linux

This section describes the process of setting up a license container for the MainConcept FFmpeg Plugin and how to install license updates from a Linux command-line interface, e.g. via SSH or on a system with no graphical desktop environment.

The installer package comes with easy-to-use shell script-based tools. These are located in the */opt/MainConcept/FFmpeg-PlugIns/activation_tools* folder:

- RequestLicense.sh
- InstallLicense.sh

In a terminal or console, change directory to a to a writeable folder, such as *~/Downloads*. The remaining instructions in this section assume you are running the sample commands from this location.

Requirements:

For the sake of convenience, we assume you have downloaded and installed an appropriate version of the CodeMeter Runtime for your Linux host and the "codemeter" service is already running. Depending on the installation status, the activation tools may display the following error messages:

```
Command "cmu" could not be found. Please ensure that the CodeMeter Runtime
is correctly installed.
```

This message is shown when CodeMeter runtime is not installed. Please make sure to follow the product installation instructions for CodeMeter Runtime. To obtain the latest CodeMeter Runtime installer, please visit: https://www.wibu.com/support/user/user-software.html

```
The "codemeter" service is not running.
```

This message is shown when the CodeMeter runtime is installed but is not running. Please execute the following line to start the service:

```
sudo systemctl start codemeter.service
```

After you have purchased a valid license, you receive an activation link that looks like this:
http://lc.codemeter.com/41712/depot/get.php?id=xxxxx-xxxxx-xxxxx-xxxxx-xxxxx

The link hosts your purchased license and can be used to activate the MainConcept FFmpeg Plugin. The license can also be removed from your computer and re-hosted on a different system using this personal activation link.

If you are performing activation on a computer without internet connection or without GUI, the license must be activated on another computer with an internet browser and transferred to the offline system by files via SSH or a USB stick.

Activate License:

To start the license transfer process, please execute the "RequestLicense.sh" shell script that can be found in the "activation_tools" folder on the system where the MainConcept FFmpeg Plugin is installed (i.e. the system without internet connection).

```
/opt/MainConcept/FFmpeg-PlugIns/activation_tools/RequestLicense.sh
```

If there is no existing license container, the tool will create a new container to store your license. If there is already one or more existing license containers, the tool will ask you which one to use. If you are uncertain, type "c" to create a new license container. If this is successful, the activation tool will generate a license request file named with the suffix "*_request.WibuCmRaC".

Please transfer the license request file to a computer with a GUI and internet connection. Then open the activation link (similar to: *http://lc.codemeter.com/41712/depot/get.php?id=xxxxx-xxxxx-xxxxx-xxxxx-xxxxx*) in the browser. You need to proceed with file-based license transfer by selecting "Pick a license request file (*.WibuCmRaC) of another CmContainer" and continue with the activation. Once your license request is processed, you will receive a license update file (*.WibuCmRaU) in return.

Now transfer the license update file to the offline system where the MainConcept FFmpeg Plugin is present. You can install the license update file with the following parameter:

```
/opt/MainConcept/FFmpeg-PlugIns/activation_tools/InstallLicense.sh
<license update file(*.WibuCmRaU)>
```

If the license is imported successfully, the tool will generate a license receipt file with suffix (*_receipt.WibuCmRaC). This license receipt can be uploaded back to License Central from the other system with the online connection to complete the transaction.

4.4   Network License Usage

You can run the MainConcept FFmpeg Plugins also as a network server license in your LAN (Local Area Network). This requires some additional steps to your regular installation.

1. Install the corresponding MainConcept FFmpeg Plugin full version, including Wibu CodeMeter.

2. Download Wibu CodeMeter Runtime installer file from the Wibu Systems website separately: https://www.wibu.com/support/user/user-software.html. Install the CodeMeter Runtime on the system that should be used as the network license server for managing your activations (License Server).

3. Activate the FFmpeg Plugin on the system that should work as a network license server, i.e. on the system where you have just installed Wibu CodeMeter Runtime separately. Write down the IP address of the system you will use as a License Server.

4. On the License Server, open the **CodeMeter Control Center** by clicking the **CmContainer** icon in the taskbar.
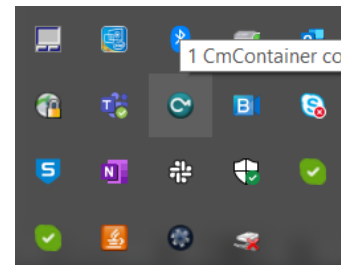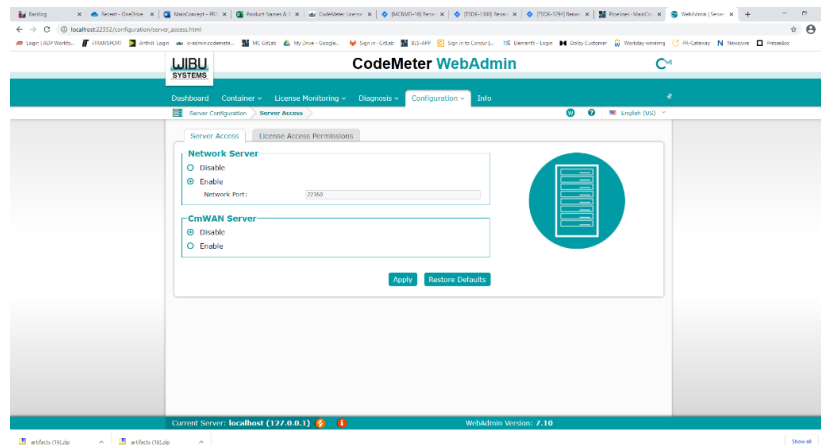

5. In the CodeMeter Control Center, open the **WebAdmin** by clicking the corresponding button or go to **File > WebAdmin**.
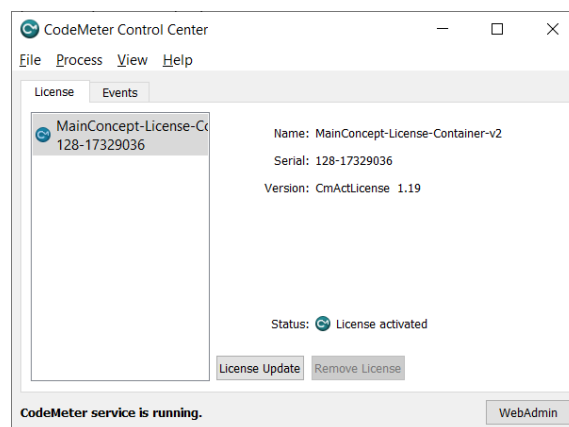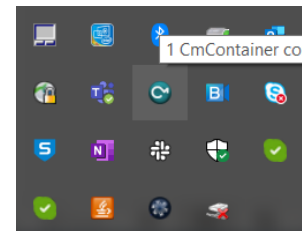
6. Your default internet browser will open the Wibu Systems **CodeMeter WebAdmin**. Go to **Configurations > Server > Server Access**. Set the radio button under **Network Server** to **Enable**. Leave the **Network Port** default settings. When you are done, click the **Apply** button.
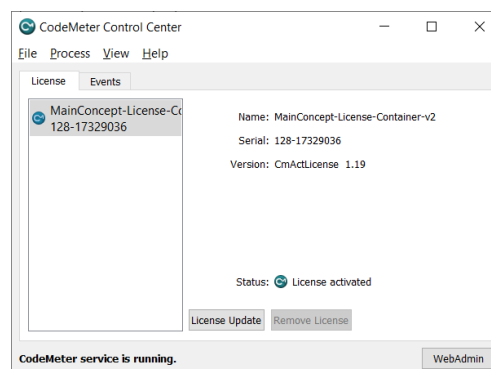

Now switch to the system where the FFmpeg Plugin is installed and start working with it. When you now encode a file, the demo restrictions should be removed and the FFmpeg Plugin works as full version.

If you still see the watermark in the encoded video now, please additionally follow the steps 7 – 10 outlined below.

7. Switch to the system where the FFmpeg Plugin full version is installed. Open the **CodeMeter Control Center** by clicking the **CmContainer** icon in the taskbar.


8. In the CodeMeter Control Center, open the **WebAdmin** by clicking the corresponding button or go to **File > WebAdmin**.

9. Your default internet browser will open the Wibu Systems **CodeMeter WebAdmin**. Go to **Configurations > Basic > Server Search List**. Click the **add new server** button. Enter the IP address of your network License Server. Click the **Add** button. When you are done, click the **Apply** button.
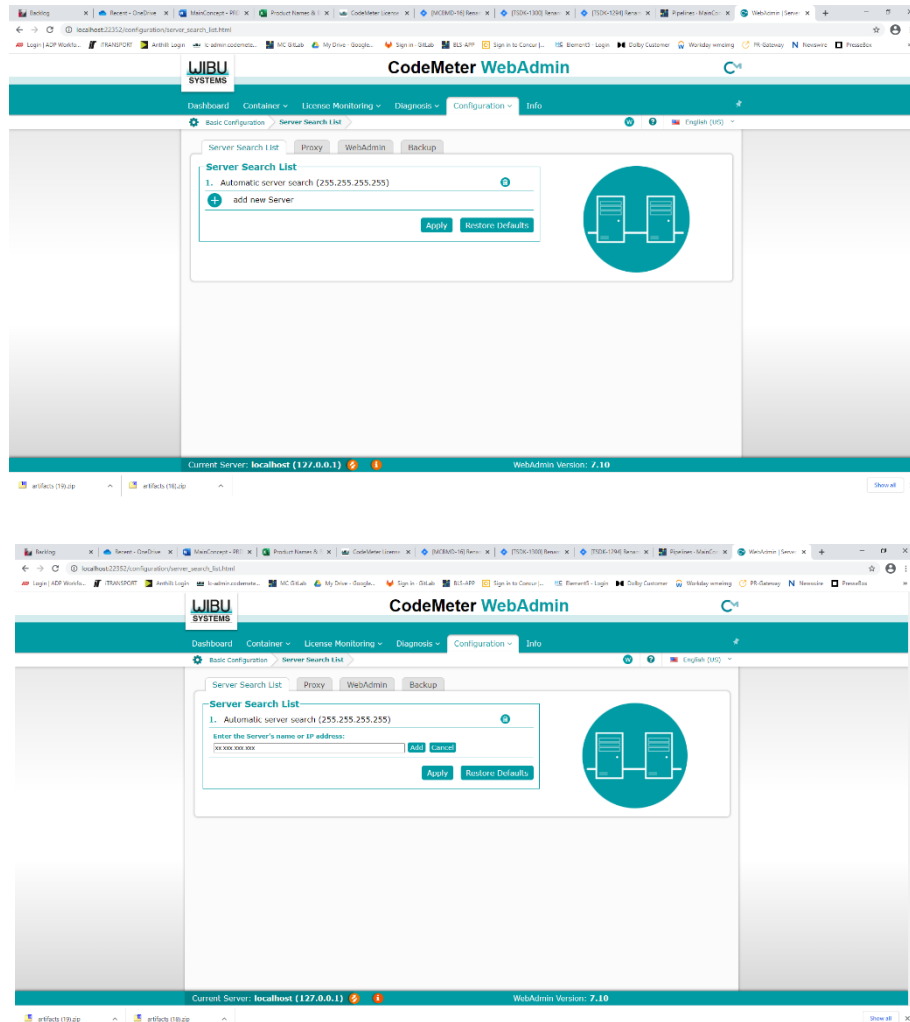
10. Now switch to the system where the FFmpeg Plugin is installed and start working with it. When you now encode a file, the demo restrictions should be removed and the FFmpeg Plugin works as full version.

5. Features

New Features in AVC Decoder Plugin 3.1:

- Plugin now uses the MainConcept AVC/H.264 Decoder from Codec SDK 14.3.

New Features in AVC Decoder Plugin 3.0:

- Plugin now also works with latest FFmpeg 6.0 "Von Neumann".
- Plugin now uses the MainConcept AVC/H.264 Decoder from Codec SDK 14.2.
- Added version and copyright information to OMX plugins and common FFmpeg plugins libraries.

New Features in AVC Decoder Plugin 2.3:

- Plugin now uses the MainConcept AVC/H.264 Decoder from Codec SDK 14.0.

New Features in AVC Decoder Plugin 2.2:

- Use MainConcept's industry leading AVC/H.264 software decoder natively in FFmpeg
- Optimized for decoding and transcoding workflows in superior quality and speed
- Hardware decoding support powered by Intel Quick Sync Video and NVIDIA NVDEC
- Baseline, Main, High, High 4:2:2 / 4:4:4 profile support
- Optimized for most efficient CPU usage
- 8-bit / 10-bit / 12-bit support
- Low Delay flag (no latency)
- Color space conversion
- Chroma upsampling
- Double rate (generating a progressive frame from every field)
- Plugin now uses the MainConcept AVC/H.264 Decoder from Codec SDK 13.4

6. Resolved Issues

Resolved issues in AVC Decoder Plugin 2.3:

- [MCFFMPEG-42] Fixed crash when using *smp_mode=1* setting.

7. Known Issues

- [MCFFMPEG-16] Once you have one full version MainConcept FFmpeg Plugin installed, it is not possible to use the other plugins in demo mode anymore.

8. Customer Care

For feedback and assistance with using the MainConcept AVC Decoder Plugin for FFmpeg, please contact our Customer Care team at apps.support@mainconcept.com.

9. Copyright Notice