# MAINCONCEPT™

# MainConcept 2GO Canon XF-HEVC Converter
## User Guide

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## Contents

# 1. Introduction

MainConcept 2GO Canon XF-HEVC Converter is an optimized Docker container for ingesting XF-HEVC files created with the new professional Canon XF705 camcorder. It allows automated transcoding into common AVC/H.264 / PCM in MXF streams for further processing in video editing solutions like Adobe Premiere Pro, Apple Final Cut Pro, Avid Media Composer, etc.

## Features
- File-to-file-based transcoding module in three quality levels
- Only tool for ingesting interlaced and progressive Canon XF-HEVC 10-bit 4:2:2 content
- Powered by the industry-leading MainConcept AVC/H.264 and HEVC/H.265 codec libraries

## Presets
- AVC/H.264 10-bit 4:2:2 Video / PCM Audio in MXF

# 2. Installation

Before installing MainConcept 2GO, please ensure Docker is installed correctly.

## 2.1 Installing Docker

To download and install Docker on your server, please follow the instructions here:
www.docker.com/community-edition
After successful installation you should be able to run the Docker "hello-world" container.
Example output from the Docker hello-world container:

```
$ docker run hello-world

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub. (amd64)
3. The Docker daemon created a new container from that image which runs the executable
that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it to your
terminal.
```

If you see different output, please refer to the Docker installation guide.

## 2.2 Resources for Docker

On Windows machines there is a default limitation of resources available for Docker. It could be adjusted in the "Settings > Advanced" section. For more information, please check the official website: docs.docker.com/docker-for-windows.

## 2.3 Installing MainConcept 2GO

1) **Extract the MainConcept 2GO package**
   To install your MainConcept 2GO product, first unpack the ZIP file you downloaded into a new folder on your computer. The files within the folder depend on the 2GO product.

```
total 40
drwxrwxr-x 2 thomas thomas  4096 Apr 10 14:23 docker
-rw-rw-r-- 1 thomas thomas 17835 Apr 10 14:23 EULA.txt
-rw-rw-r-- 1 thomas thomas    77 Apr 10 14:23 info.txt
-rw-rw-r-- 1 thomas thomas  2721 Apr 10 14:23 readme.txt
-rw-rw-r-- 1 thomas thomas  4096 Apr 10 14:23 scripts
-rw-rw-r-- 1 thomas thomas  4096 Apr 10 15:10 volume
~/MainConcept/2GO/mc_2go_xfhevc_converter_demo# █
```

2) **Install the MainConcept 2GO docker image**
   To install the MainConcept 2GO image in your local Docker environment, "cd" into the docker folder and run the "install_image" script:

```
~/MainConcept/2GO/mc_2go_xfhevc_converter_demo# cd docker/
~/MainConcept/2GO/mc_2go_xfhevc_converter_demo/docker# ./install_image.sh
Installing MainConcept 2GO in your local Docker environment...
e6bc3d95b8d4: Loading layer [=============================>] 28.87MB/28.87MB
Loaded image: mc_2go_xfhevc_converter_demo:latest
~/MainConcept/2GO/mc_2go_xfhevc_converter_demo# █
```

Verify whether the 2GO container is installed properly by using the "docker image ls" command:

```
~/MainConcept/2GO/mc_2go_xfhevc_converter_demo/docker# docker image ls
REPOSITORY                      TAG      IMAGE ID     CREATED      SIZE
mc_2go_xfhevc_converter_demo    latest   2e15d1d96bd9 3 hours ago  39.9MB
~/MainConcept/2GO/mc_2go_xfhevc_converter_demo/docker# █
```

**NOTE:**

*For using both the demo and full version of MainConcept 2GO, you must allow the server running MC2GO a connection to https://taas-reporting-srv.mainconcept.com.*

*If you want to use the products offline (i.e. without internet connection), please contact customer.care@mainconcept.com. We will get in touch with you about the necessary steps.*

# 3. Settings

### 3.1 Supported Input Codecs & Formats

MainConcept 2GO XF-HEVC Converter supports the following input codecs and formats:

- Canon XF-HEVC (interlaced or progressive)

### 3.2 Supported Output Formats

MainConcept 2GO XF-HEVC Converter supports the following output formats:

- AVC/H.264 / PCM in MXF, 1080p, 10-bit, 4:2:2
- AVC/H.264 / PCM in MXF, 4K, 10-bit, 4:2:2

# 4. Configuration

With Docker installed most of the MainConcept 2GO configuration is complete. However, some 2GO products require shared folders, or specific parameters at startup.

### 4.1 Configuring shared folders

To read and write files located on the host computer, MainConcept 2GO uses shared volumes to access the filesystem of the host. Docker uses mounted volumes to share host folders with 2GO containers.

The "run" convenience script in the scripts folder runs the MainConcept 2GO container and automatically maps the required folders from your host computer into the 2GO container.

# 5. Usage

### 5.1 Starting MainConcept 2GO

Make sure you have successfully installed your MainConcept 2GO product on the computer by following the Installation instructions.

The "run" script inside the scripts folder makes starting MainConcept 2GO easy and lets you understand how 2GO docker containers are actually run. If you plan to run MainConcept 2GO through container management tools like Docker Compose, Kubernetes or Docker Swarm, it is recommended that you understand the parameters required for 2GO containers by reading the "run" script.

MainConcept 2GO products require passing configuration parameters to the container at startup. These can include input and output filenames, serial keys, shared volume folders or external URLs. These parameters can be specified in a properties file or via the command line.

## 5.2 Using job description file

MainConcept 2GO v2.1 introduces a REST API and provides users an interface that is more suitable for integration with their existing environment or tools. This API covers functionality to create jobs and query their status using standard REST API over HTTP. A job description file is posted to the endpoint, which must be in JSON format. This JSON file must contain all the necessary parameters required for the submitted jobs.

| Option | Sample value | Description |
|---|---|---|
| INPUT | CANON_01.MXF | Source filename for audio conversion; must be in or under SHARED_PATH_IN |
| OUTPUT | out_8Mbit.mxf | Target filename for encoded output; you also need to add the file extension; must be in or under SHARED_PATH_OUT<br><br>File Extension: *.mxf |
| QUALITY | high | Quality level for transcoding. 2GO automatically takes over all parameters from the input file except for codec (AVC) and bitrate.<br><br>Available options are:<br><br>• low – source bitrate is used<br>• mid – source bitrate is multiplied by 1.5x<br>• high – source bitrate is multiplied by 2x |
| VERBOSITY | SILENT | Sets verbose level. Available options are:<br><br>• SILENT (0) - Prints only error messages<br>• DEFAULT (1) - Default level if verbose level is not specified. Prints information about input file, output file, preset. Prints information about REST API calls (target URLs with parameters, no BODY info).<br>• FULL (2) - Prints all available information, including processing status, file transfer, REST API calls (target URLs with parameters with BODY info), complete information from processing step. |
| KEEP_CONTENT | TRUE | Prevents deletion of temporary content (e.g. downloaded, transcoded). Default value is FALSE. |

| TRIM_IN | 3.330s | In point in seconds (e.g. 3.330s) or in frames (e.g. 250f). Regarded as the start point if specified. |
|---|---|---|
| TRIM_OUT | 250f | Out point in seconds (e.g. 3.330s) or in frames (e.g. 250f). Regarded as the end point if specified. |
| LOGO_PATH | | Path to the file. Overlays PNG image onto video stream.<br><br>Note: Path to local file should be relative to SHARED_PATH_IN. |
| LOGO_OFFSET_LEFT | 123 | Horizontal offset from left-top corner of the frame in pixels. |
| LOGO_OFFSET_TOP | 45 | Vertical offset from left-top corner of the frame in pixels. |
| LOGO_BEGIN_TIME | 3.330s | The time from which the logo appears in seconds (e.g. 3.330s). |
| LOGO_END_TIME | 8.330s | The time from which the logo disappears in seconds (e.g. 8.330s). |

To edit the parameters of the JSON file, use a text editor. Here are some examples:

```
{
  "INPUT": "ftp://10.144.41.202:2121/CANON_01.MXF",
  "OUTPUT": "ftp://10.144.41.202:2121/test/avc_high_quality.mxf",
  "QUALITY": "high",
  "KEEP_CONTENT": "TRUE",
  "VERBOSITY": "SILENT"
}
{
  "INPUT": "/volume/CANON_01.MXF",
  "OUTPUT": "/volume_out/avc_mid_quality.mxf",
  "PRESET": "mid",
  "KEEP_CONTENT: "TRUE",
  "VERBOSITY": "SILENT"
}
```

## 5.3 Using properties file

The easiest way to start MainConcept 2GO is by editing the "properties.txt" file to your needs and then executing the "run" script with this file.

```
~/MainConcept/2GO/mc_2go_xfhevc_converter_demo# ./scripts/run.sh scripts/properties.txt
```

The MainConcept 2GO XF-HEVC Converter supports the following configuration options:

| Option | Sample value | Description |
|---|---|---|
| ACCEPT_EULA | YES | Required |
| SHARED_PATH_IN | /path/source_folder | Optional: Folder where the input file is located |
| SHARED_PATH_OUT | /path/target_folder | Optional: Folder for the encoded output file |
| JOBS | /path/to/json_file | Optional: Specify a job JSON file for immediate processing |
| PORT | 8082 | Specify port for REST API. Default value is 8080. |
| AUTOSTART | TRUE, FALSE | Disable/enable job queue processing when Docker runs. FALSE sets the service to a stopped state after the Docker runs. Default value is TRUE. |
| VERBOSITY | SILENT | Sets verbose level. Available options are:<br><br>• SILENT (0) - Prints only error messages<br>• DEFAULT (1) - Default level if verbose level is not specified. Prints information about input file, output file, preset. Prints information about REST API calls (target URLs with parameters, no BODY info).<br>• FULL (2) - Prints all available information, including processing status, file transfer, REST API calls (target URLs with parameters with BODY info), complete information from processing step. |
| TRIM_IN | 3.330s | In point in seconds (e.g. 3.330s) or in frames (e.g. 250f). Regarded as the start point if specified. |
| TRIM_OUT | 250f | Out point in seconds (e.g. 3.330s) or in frames (e.g. 250f). Regarded as the end point if specified. |
| LOGO_PATH | | Path to the file. Overlays PNG image onto video stream.<br><br>Note: Path to local file should be relative to SHARED_PATH_IN. |
| LOGO_OFFSET_LEFT | 123 | Horizontal offset from left-top corner of the frame in pixels. |
| LOGO_OFFSET_TOP | 45 | Vertical offset from left-top corner of the frame in pixels. |
| LOGO_BEGIN_TIME | 3.330s | The time from which the logo appears in seconds (e.g. 3.330s). |

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| LOGO_END_TIME | 8.330s | The time from which the logo disappears in seconds (e.g. 8.330s). |
|---|---|---|

To edit the parameters, use a text editor:

```
1  ACCEPT_EULA=Y
2  SHARED_PATH_IN=~/MainConcept/2GO/mc_2go_xfhevc_converter_demo/volume
3  SHARED_PATH_OUT=~/MainConcept/2GO/mc_2go_xfhevc_converter_demo/volume
4  JOBS=~/path/to/json_file
5  PORT=8082
6  AUTOSTART=TRUE
7  CUSTOMER_ID=xxx
8  VERBOSITY=DEFAULT
```

## Using command line options

Instead of editing a properties file, all configuration parameters can also be specified on the command line directly.

```
~/MainConcept/2GO/mc_2go_xfhevc_converter_demo/docker# ./scripts/run.sh \
>    ACCEPT_EULA=Y \
>    SHARED_PATH_IN=~/MainConcept/2GO/mc_2go_xfhevc_converter_demo/volume \
>    SHARED_PATH_OUT=~/MainConcept/2GO/mc_2go_xfhevc_converter_demo/volume \
>
>    JOBS=~/path/to/json_file \
>    PORT=8082 \
>    AUTOSTART=TRUE \
>    CUSTOMER_ID= xxx \
>    VERBOSITY=DEFAULT
```

## Using docker-compose

Docker Compose lets you start multiple replicas of the same image. It also significantly simplifies starting MainConcept 2GO products.

Docker Compose is a separate tool that must be installed in addition to Docker. Please refer to the documentation about how to install and setup Compose: docs.docker.com/compose/

To run MainConcept 2GO with Docker Compose you create a compose file in YAML. All parameters to run the 2GO product via Docker Compose are specified inside this YAML file. To simplify deployment of MainConcept 2GO containers, setting environment variables for the 2GO configuration and then using them in the YAML file is recommended.

This is a basic "docker-compose.yml" file showing how to configure MainConcept 2GO.

```
1  version: '2.2'
2  services:
3    2go:
4      image: 2go_xfhevc_converter_demo
5      network_mode: host
6      volumes:
7      -${2GO_VOLUME}:/volume
8      environment:
9      -2GO_PARAMS=${2GO_PARAMS}
```

It uses two environment variables 2GO_VOLUME and 2GO_PARAMS. These must be set before starting docker-compose.

```
~# export 2GO_VOLUME=~/MainConcept/2GO/mc_2go_xfhevc_converter_demo/volume/
~# export 2GO_PARAMS="INPUT=xfhevch_camera_testfile.mts OUTPUT=out_file QUALITY=high
CUSTOMER_ID=xxx"
```

After that starting 2GO using Docker Compose is as easy as:

```
~/MainConcept/2GO/mc_2go_xfhevc_converter_demo# docker-compose up -d
Starting mc2goxfhevcconverterdemo_2go_1 ...
Starting mc2goxfhevcconverterdemo_2go_1 ... done
~/MainConcept/2GO/mc_2go_xfhevc_converter_demo#
```

### 5.5 Stopping MainConcept 2GO execution

MainConcept 2GO containers should be stopped using the convenience "stop" script provided in the scripts folder.

To execute the script on an active container you first need to know the container ID. This can be found from the first column of the docker ps command:

```
~/MainConcept/2GO/mc_2go_xfhevc_converter_demo# docker ps
CONTAINER ID   IMAGE                            COMMAND                 CREATED
bc45686deb0e   mc_2go_xfhevc_converter_demo    "/opt/bin/reporting_..."   4seconds ago
```

Then use the convenience "stop" script in the scripts folder to abort the 2GO execution:

```
~/MainConcept/2GO/mc_2go_xfhevc_converter_demo# ./scripts/stop.sh bc45686deb0e
Stopping the Canon XF-HEVC Converter...
Canon XF-HEVC Transcoder stopped.
~/MainConcept/2GO/mc_2go_xfhevc_converter_demo# █
```

If you are using the REST API, you also have the opportunity to shut down the container by using DELETE /service. If a job is currently active, the container is not shut down and this function is ignored. In this case you need to abort the job first using POST /jobs/{jobID}/abort

## 6. Technical Support

If you need additional assistance, the MainConcept Technical Support team is standing by to help. Send an e-mail to apps.support@mainconcept.com or go to the MainConcept Support page and we'll assist you as quickly as possible.

# 7. Credits

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