On-premises MPS sdk for Video Encoding
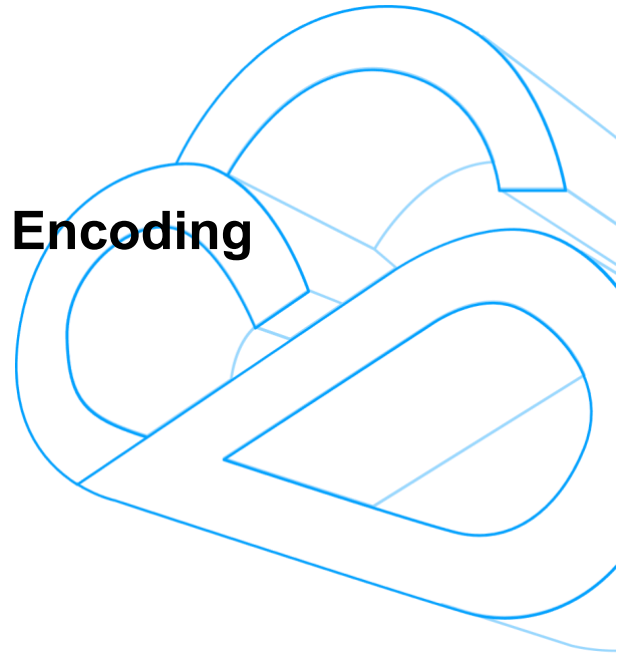
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Update Recoding

| Version	Launch time	Owner	Comments
V1.0	2022-05-10	yankeetian@tencent.com	This is v1.0 version release, as new document

Contents

1 Overview

1.1 About the Solution

Media Processing Service (MPS) is a multimedia transcoding and processing service, with cloud-based and on-premises sdk. It can handle vast amounts of multimedia data. MPS performs adaptive transcoding on demand for audio and video files. You can flexibly adjust bitrates and resolutions of multimedia data, making them suitable for OTT services or playback on PC and mobile devices. MPS also offers video processing services such as watermarking, screencapturing, intelligent cover generating, and intelligent editing.

In this guidance, we will introduce on-premises MPS sdk.

1.2 The Solution Architecture Diagram
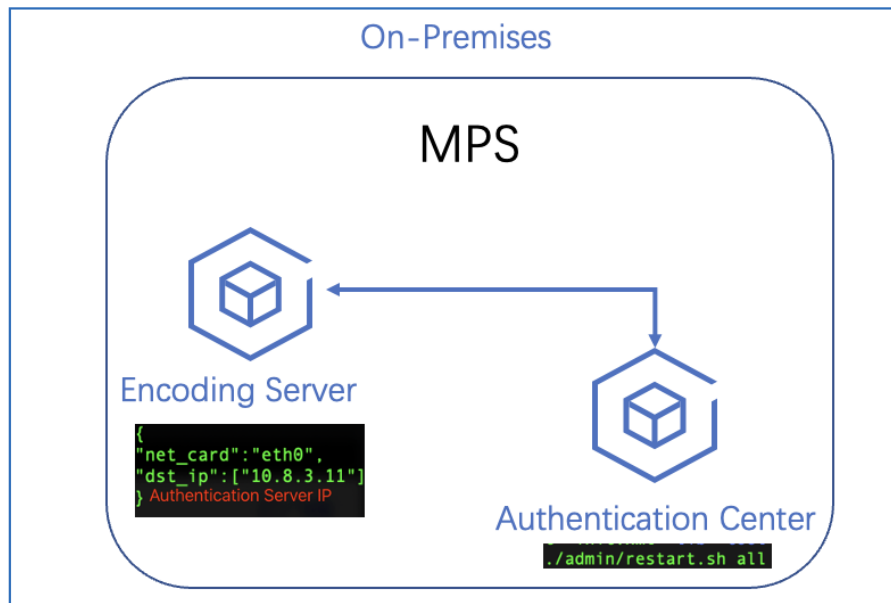
2 Procedure Guidance

2.1 Preparations

Recommended configuration for deployment environment

✓ Authentication Center Server

CPU: 4 cores and above

Memory: 8GB and above

Disks: 100GB and above

✓ Encoding Server

CPU: recommend 16 cores and above, main frequency is greater than 2GHz

GPU: recommend Tesla T4

Memory: recommend 32GB and above

Disks: 1000GB and above

Tips: the networks must interact between Authentication Center Server and Encoding Server

2.2 Experiment Procedure

Step 1: Install Authentication Center

Login to the first server, and install lshw tool as follow:


```
yum install lshw
```

Then get information about this server via 'get_server_info' tool, that can be downloaded from [this link](#), or contact us to get it.

```
chmod +x get_server_info
./get_server_info
```

If the execution is successful, you will see a ' [the IP of this server].csr' file, please send it to us, we will provide the installation package.

Install Authentication Center package, and start it.

```
mkdir -p /usr/local/services/
tar -zxvf video_sls-1.0_10.8.3.11.tar.gz -C /usr/local/services/
cd /usr/local/services/video_sls-1.0/
./admin/restart.sh all
```

Check if the startup is successful

Step 2: Deploy Encoding Server

Please contact us to get the TSC SDK package. Upload and decompress the installation package, then enter TSC SDK dir, configure environment variables.

```
export LD_LIBRARY_PATH=./fflib_gpu/:$LD_LIBRARY_PATH
```

Edit 'sdk_config' file, update the "net_card" and "dst_ip", save And quit.

Use 'ffmpeg' command to check the status, If the command can be executed normally, the deployment is successful. If an error message appears, it is recommended to first confirm whether the environment variable configuration is loaded. If the issue has not been resolved, please contact us directly.

```
./ffmpeg -i test-720-video.mp4
```

Step 3: Start testing

Prepare test video files, then start testing. Such as the source video file(testvideo-1080-30.mp4), output video file(test-sharp.mp4).

```
./ffmpeg -i testvideo-1080-30.mp4 -vf
tenfilter=unsharp_size=7:unsharp_amount=0.5 -c:v libten265 -crf 28
-preset 2 ./test-sharp.mp4
```

Comparison of indicators before and after compression as follows:

Video file size comparison before and after compression as follows:

```
[root@VM-3-2-centos tscsdk-center-4.2]# ll -a
总用量 66120
drwxr-xr-x 6 root root     4096 5月  11 10:22 .
drwxr-xr-x 3 root root     4096 5月  10 12:14 ..
drwxr-xr-x 2 root root     4096 4月  29 20:25 fflib_gpu
-rwxr-xr-x 1 root root 20134944 4月  29 20:23 ffmpeg
drwxr-xr-x 2 root root     4096 4月  29 20:25 lib
-rw-r--r-- 1 root root       50 5月  10 19:36 sdk_config
drwxr-xr-x 2 root root     4096 2月  24 22:21 src
drwxr-xr-x 2 root root     4096 4月  28 22:21 tenmodel
-rw-r--r-- 1 root root  5015256 5月  10 19:41 test-1080-28f-video.avi
-rw-r--r-- 1 root root  2301817 5月  10 19:41 test-1080-video.mp4
-rw-r--r-- 1 root root  3554548 5月  10 19:41 test-720-video.mp4
-rw-r--r-- 1 root root  3616418 5月  11 10:34 test-sharp.mp4
-rw------- 1 root root 33048951 5月  11 10:22 testvideo-1080-30.mp4
[root@VM-3-2-centos tscsdk-center-4.2]#
```

Using the same test method and the same test video sample file, it can be obtained the comparison test data with X265 and X264 encoding, as shown in the following figure:
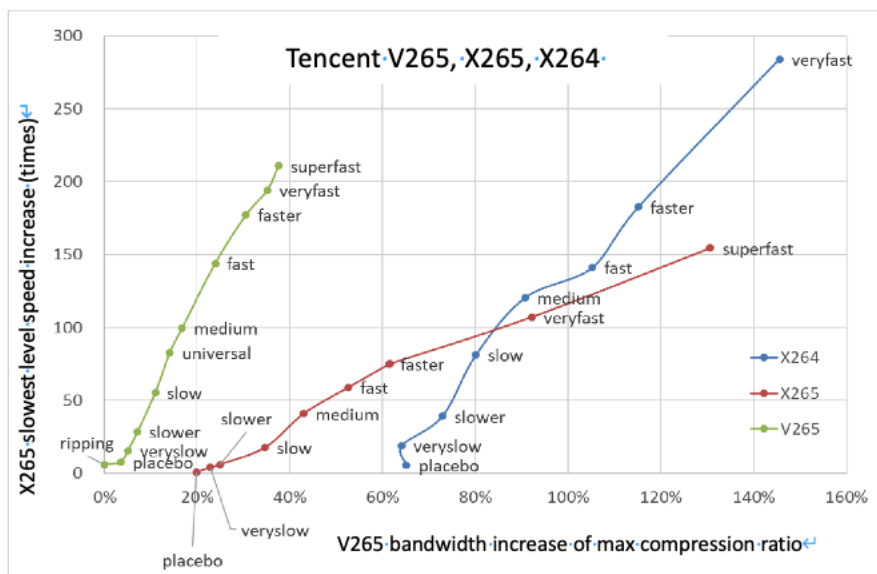
2.3 Command reference

Parameters

--log_level

0-2,

--gop_size

GOP size of the encoded frame structure (the default value is 8. Only values of 4, 8, and 16 have any effect. We generally recommend you not modify this value)

--wpp

Indicates whether to enable the WPP feature. 0: disabled; 1: enabled (it is enabled by default and we generally recommend you not modify this value)

--preset

Specifies the configuration of the encoder's encoding parameter set, which affects the encoding speed. -1: ripping; 0: placebo; 1: very slow; 2: slower; 3: slow; 4: universal; 5 medium; 6: fast; 7: faster; 8: very fast; 9: super fast; 10: ultra fast

--crf

CRF bitrate control method. Value range: [0-51]. The bitrates can roughly correspond to those of V265

--vbv_maxrate

Maximum VBV bitrate (this value is the same as the configured bitrate by default)

--vbv_bufsize

VBV buffer size (this value is four times the configured bitrate by default)

--lag_in_frames

Lookahead length (it can be any positive integer; the greater this value in the live streaming scenario, the higher the encoding delay)

--enable_scenecut

Indicates whether to enable scene switch. 0: disabled; 1; enabled; 2: enabled for simple scenes (it is enabled by default and we generally recommend you keep it enabled)

--scenecut_threshold

Scene switch threshold. Value range: [0,100] (0: disabled. It is enabled by default and we generally recommend you keep it enabled)

--open_gop

Indicates whether to enable open GOP. 0: disabled; 1: enabled (it is enabled by default; in order to support random access in the live streaming scenario, we recommend you disable it)

--keyint

Maximum keyframe interval (it is 256 by default and can be configured according to actual business needs; it must be a multiple of 8 greater than 50)

--pool_threads

Number of threads in the thread pool used by WPP (it is the same as the number of CPU cores by default; if you want to reduce the CPU usage, lower this number)