

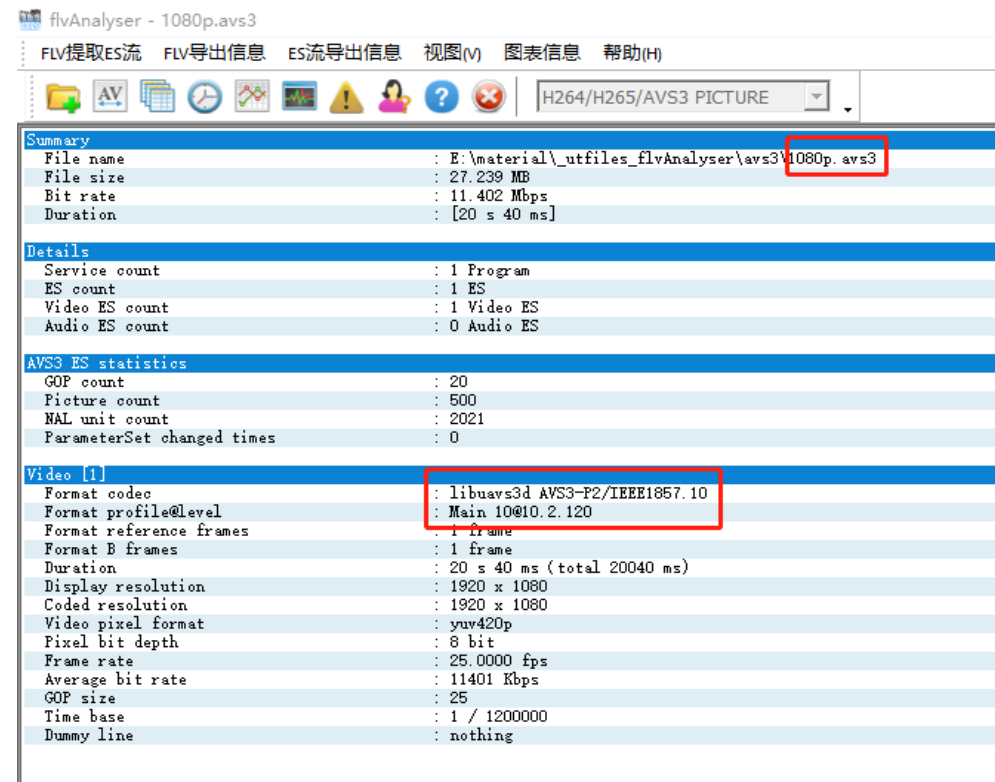
flvAnalyser 使用说明书

2021-06-06 Win64 位版本 **v0.0.3.001** 发布

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一、版本更新说明（相对于 v0.0.2.004 而言）

1、增加 AVS3 ES 的 GOP、Picture、NALU 列表语法分析及 GOP 解码预览；



flvAnalyser - 1080p.av3

FLV提取ES流 FLV导出信息 ES流导出信息 视图(V) 图表信息 帮助(H)

H264/H265 AVS3 NAL

NAL序号	偏移地址	NAL类型(N)	数据量(Byte)	类型	图像结构	总编号(POC)	MBAddr0	时间(HH:MM:SS.ms)(ms)
Summary		AVS3 ES	27.239 MB			总数: 500		20040 ms
0	0x00000000	(0xB0) SeqHdr	113		Progressive			
1	0x00000071	(0xB3) IntraPicHdr	26	I	Frame	0 (0:0)		[00:00:00.000](0)
2	0x0000008b	(0xB2) UserData	23					
3	0x000000a2	(0x00) FirstPatch	338069					
4	0x000052937	(0x8F) EndPatch	4					
5	0x00005293b	(0xB6) InterPicHdr	24	B	Frame	1 (1:0)		[00:00:00.040](40)
6	0x000052953	(0xB2) UserData	23					
7	0x00005296a	(0x00) FirstPatch	2919					
8	0x00005344d	(0x8F) EndPatch	4					

Tag's hex analysis

Address	0	1	2	3	4	5	6	7	Field	Value (Description)
00000000:	00	00	01	B0	22	6A	88	F0	Start Code	00 00 01 (3 bytes)
00000008:	11	0E	12	62	70	00	02	00	AVS3 NAL Unit()	110 (bytes)
00000010:	0F	FF	FF	FD	08	90	22	08	{	
00000018:	82	56	12	2B	09	95	85	0A	nal_unit_type	176 (SeqHdr)
00000020:	C2	A0	A5	B0	50	CA	09	99	seqhdr_demulate()	
00000028:	81	31	18	A0	99	89	04	8C	{	
00000030:	50	24	62	C1	21	18	50	24	profile_id	34 (Main10)
00000038:	21	42	41	21	0C	12	09	0A	level_id	106 (10.2.120)
00000040:	C5	09	04	81	16	11	04	4D	progressive_sequence	1
00000048:	01	09	A2	11	11	0A	88	88	field_coded_sequence	0
00000050:	42	11	19	88	44	31	18	82	library_stream_flag	0
00000058:	31	45	68	28	44	41	46	40	if (library_stream_flag == 0) {	
00000060:	A3	1C	15	69	38	C2	01	D4	library_picture_enable_flag	0
00000068:	A8	83	3B	EC	7F	45	71	E2	}	
00000070:	48								marker bit	1
									horizontal_size	1920
									marker bit	1
									vertical_size	1080
									chroma_format	1
									sample_precision	1
									if (seqhdr.profile_id == 0x22) {	

Hex Binary 提示: 单击 "+" 或 "-" 图标行, 展开或折叠 关闭

您好! 双击鼠标可查看NAL Unit解析详情!

8K 视频 GOP 预览

flvAnalyser - tt.av3

FLV提取ES流 FLV导出信息 ES流导出信息 视图(V) 图表信息 帮助(H)

H264/H265 AVS3 GOP

GOP序号	偏移地址	类型及Profile@Level, 分辨率	数据(KB)
Summary		AVS3 GOP	53.466 MB
0	0x00000000	Open: Main10@10.2.60 768...	7465.56
1	0x0074a63e	Open: Main10@10.2.60 768...	6997.60
2	0x00e1fca0	Open: Main10@10.2.60 768...	7349.63
3	0x0154d320	Open: Main10@10.2.60 768...	7150.08
4	0x01c48b70	Open: Main10@10.2.60 768...	7225.67
5	0x02357221	Open: Main10@10.2.60 768...	6980.62
6	0x02a2649f	Open: Main10@10.2.60 768...	6478.03
7	0x0307bec9	Open: Main10@10.2.60 768...	5102.27

GOP Preview

控制

切换预览方式

导出分类数据

视频顺序: 播放

GOPInfo	Description
概述	
序号	0
Profile	Main10
Level	10.2.60
模式	Open
扫描	Progressive
分辨率	
编码	7680 x 4320
显示	7680 x 4320
色域	
位深	10
空间	yuv420p10le
数据	
容量	7465.56 KB
帧率	25/1
图像数	25 frame
时长	520 ms
码率	117611.26 K...

CCTV 8K 超高清

2、修复一些旧版本隐藏问题

v0.0.2.004 版本更新说明（相对于 v0.0.2.003 而言）

1、提升 flv 文件最大到 36GB

v0.0.2.003 版本更新说明（相对于 v0.0.2.002 而言）

1、支持 flv H265（HEVC）解析和提取 ES；

v0.0.2.002 版本更新说明（相对于 v0.0.1.002 而言）

1、支持二进制显示，和十六进制能相互切换；

2、支持数据标注，便于快速定位；

3、补充了 H264、AAC 两种常用格式的语法解析详情结果；

4、在 tag 列表中，增加了音频和视频各自独立的帧时间间隔；

5、界面上的一些优化，修复一些发现 bug；

6、[试用功能]基于 GOP、Picture、NALU 三种列表方式的 H.264/H.265 ES 详情分析及 H.264/H.265 ES 预览视频，并支持导出所需数据；（可以参考后面的介绍）

二、基本功能点

1 文件概况



flvAnalyser - case103_h264_aac_720p.flv

FLV提取ES流 FLV导出信息 H264导出信息 视图(V) 图表信息 帮助(H)

H264/H265 PICTURE

Summary

File name	: E:\material_utfiles_flvAnalyser\case_flv\case103_h264_aac_720p.flv
File size	: 14.643 MB
Bit rate	: 3.004 Mbps
Duration	: [40 s 896 ms]

Details

Service count	: 1 Program
ES count	: 2 ES
Video ES count	: 1 Video ES
Audio ES count	: 1 Audio ES

Video [1]

Format codec	: H.264 / AVC / MPEG-4 AVC / MPEG-4 part 10
Format profile@level	: Main@L3.1
Format reference frames	: 1 frame
Format B frames	: 1 frame
Duration	: 40 s 896 ms (total 40896 ms)
Display resolution	: 1280 x 720
Coded resolution	: 1280 x 720
Video pixel format	: yuv420p
Pixel bit depth	: 8 bit
Frame rate	: 25.0000 fps
Average bit rate	: 0 Kbps
Scan type	: Progressive
GOP size	: 12
Chroma sample location	: left
Time base	: 1 / 1000
Dummy line	: nothing

Audio [1]

Format codec	: AAC (Advanced Audio Coding)
Format profile@level	: LC
Duration	: 40 s 896 ms (total 40896 ms)
Sample rate	: 44100 Hz
Sample bits	: 32 bit (fltp)
Channel number	: 2 channels
Channel layout	: stereo
Start video delay	: 0 ms
Current video delay	: 21 ms
Average bit rate	: 131 Kbps

2 flv tag 列表（含数据分析）

FlvAnalyser - case104_aac_h264.flv

FLV提取ES流 FLV导出信息 H264导出信息 视图(V) 图表信息 帮助(H) 提取es流 导出时间戳等详情到文件

类型	序号	偏移地址	数据大小	图像	编码格式	时间(00:MM:SS.ms)(ms)	帧间隔(ms)	备注
FLV	0	0x00000000	9		aac	[00:00:00.000] (0)	0	FLV file header(include previous tag len: always 0)
(9)	1	0x00000022	29	I	h264	[00:00:00.000] (0)	0	AAC: audio specific config
(9)	2	0x0000004e	22682	I	h264	[00:00:00.000] (0)	0	H264: avc sequence header
(9)	3	0x000058f7	280		aac	[00:00:00.005] (5)	5	SFS PPS
(9)	4	0x00005a1e	5362	P	h264	[00:00:00.034] (34)	34	
(9)	5	0x00006f1f	3693	P	h264	[00:00:00.060] (60)	26	
(9)	6	0x00007d9b	281		aac	[00:00:00.081] (81)	76	
(9)	7	0x00007ee3	3693	P	h264	[00:00:00.102] (102)	42	

Tag's hex analysis

Address 0 1 2 3 4 5 6 7

Field Value (Description)

stream id 0

tag data() 22682 (bytes)

frame type 1 (key frame) u(4b7-4)

video codec 0x07 (h264) u(4b3-0)

packet type 1 (avc NALUs)

composition time 0

nal[0](0 : type=7 (SPS)) 9 (bytes)

profile_idc 65 (Baseline)

constraint_set0_flag 0

constraint_set1_flag 0

constraint_set2_flag 0

constraint_set3_flag 0

constraint_set4_flag 0

reserved_zero_2bits 0

level_idc 30

seq_parameter_set_id 0

log2_max_frame_num_minus4 0 (4)

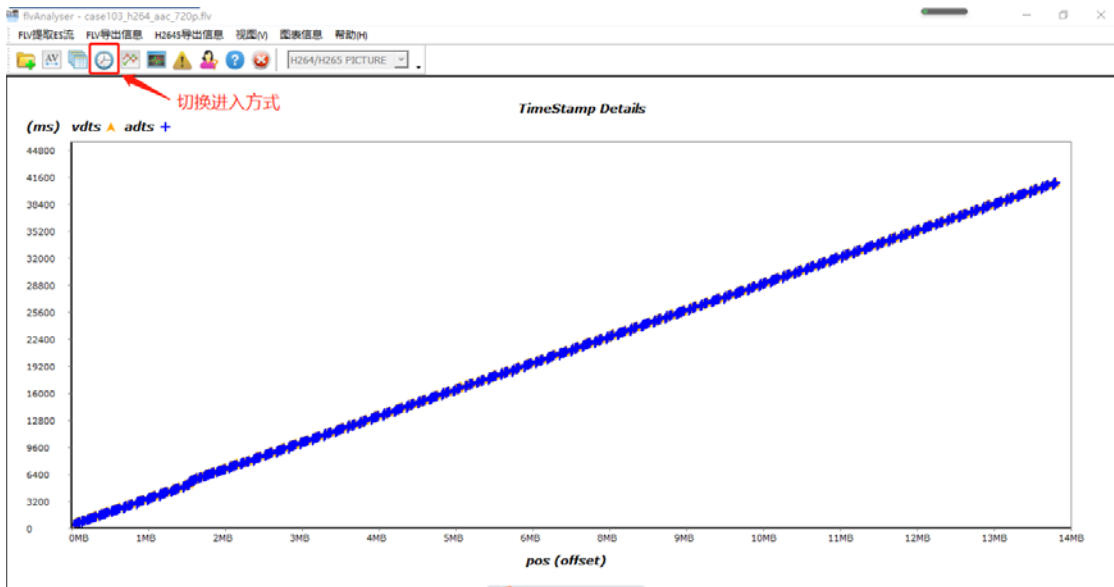
提示: 单击 "+" 或 "-" 图标行, 展开或折叠

Hex Binary 切二进制

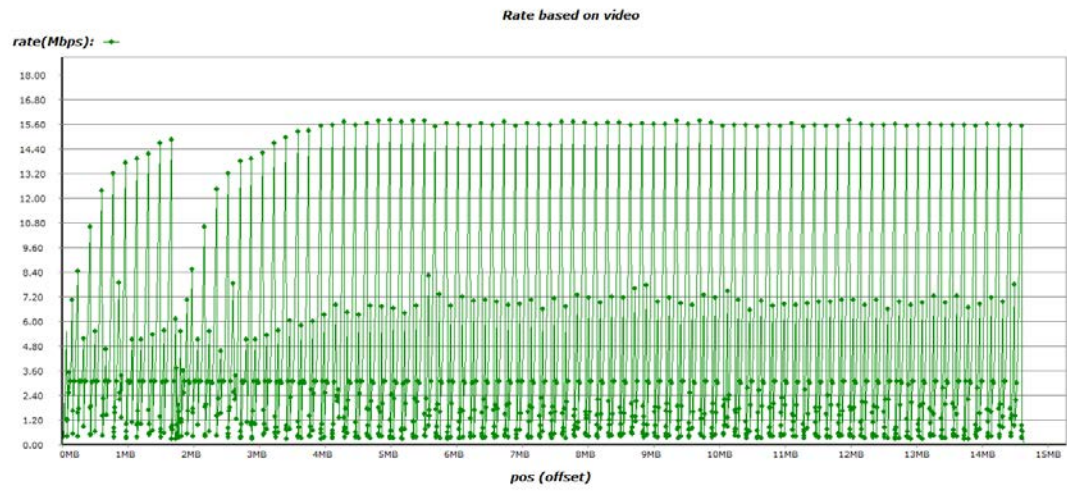
您好! 双击鼠标可查看FLV Tag解析详情! 进入数据对话框方式

分析跟踪帧时间间隔

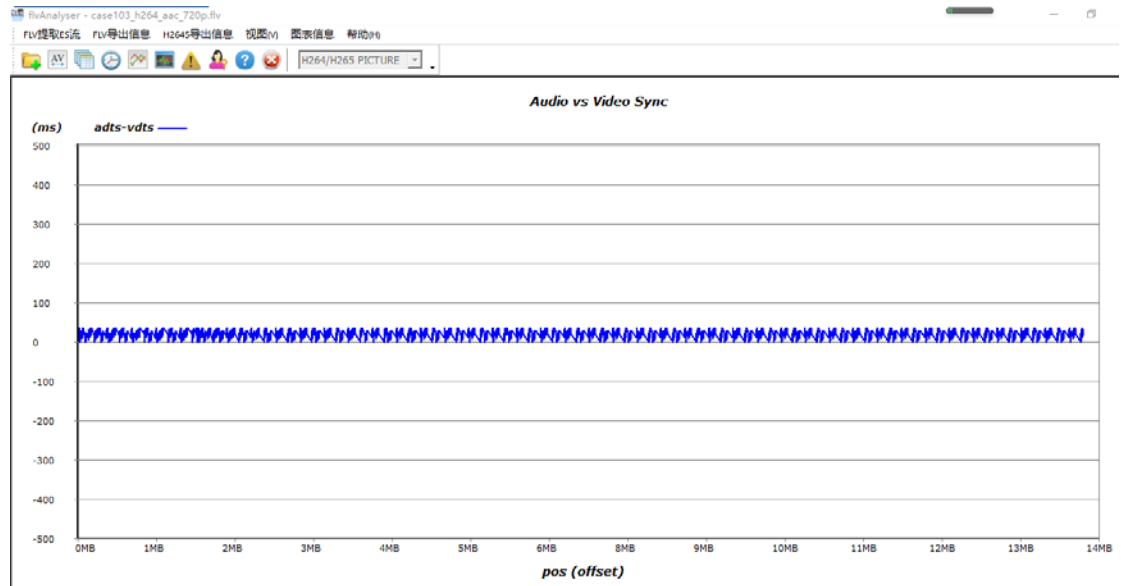
3 时间分析



4 码率分析



5 音视频同步分析



6 H264/H265/AVS3 ES 数据分析 (以 H.265 文件为例, 如图所示) [试用功能]

6.1 Picture 列表

The screenshot shows the 'H264/H265 PICTURE' list in the software. The main table displays the following columns: Pic序号, 偏移地址, Slice类型, 数据量(Byte), 类型, 图像结构, POC, 时间(H:MM:SS.ms), and 备注. The table lists several frames, including I-frames and P-frames. A red box highlights the 'picture列表模式' (Picture List Mode) button. Another red box highlights the 'nalu标注' (NAL Unit Annotation) button. A third red box highlights the 'h265语法详情' (H.265 Syntax Details) button. A fourth red box highlights the '进入数据分析对话框' (Enter Data Analysis Dialog) button. The 'Tag's hex analysis' dialog is also visible, showing the hex and binary representation of the NAL unit data.

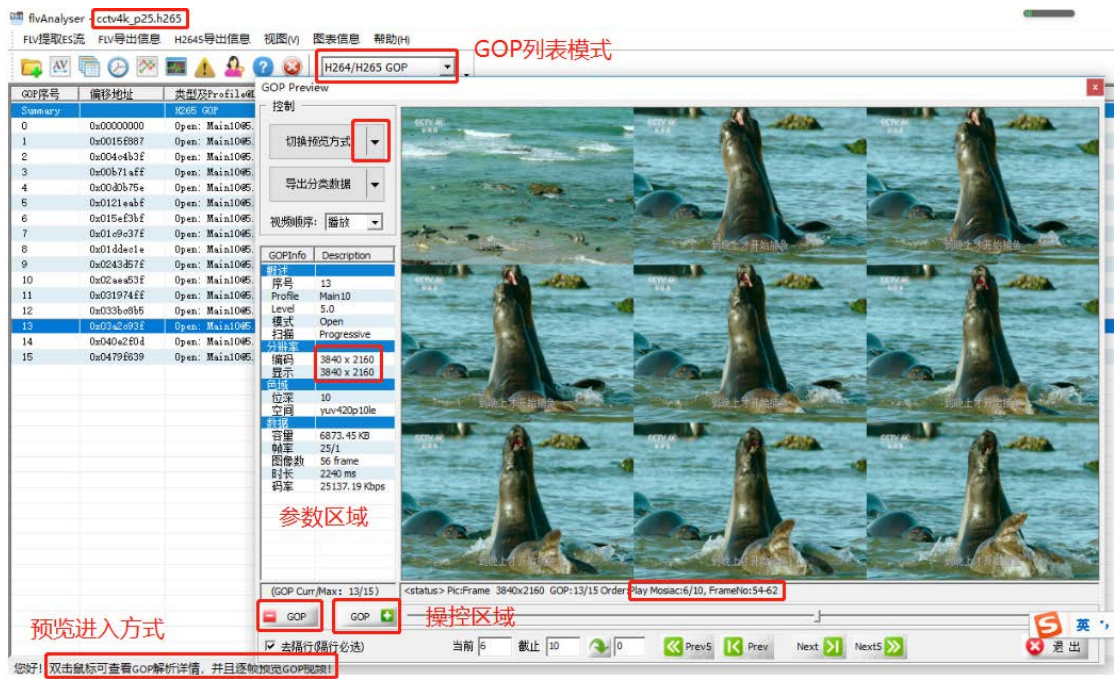
Pic序号	偏移地址	Slice类型	数据量(Byte)	类型	图像结构	POC	时间(H:MM:SS.ms)	备注
0	0x00000000	CRA_NUT(clean random...	999061	I	Frame	0.0	[00:00:00.000](0)	AUD VPS SPS PPS
1	0x00000000	NALU_B (9)	189043	P	Frame	0.0	[00:00:00.040](40)	AUD PPS
2	0x00000000	NALU_B (9)	51455	P	Frame	0.0	[00:00:00.090](90)	AUD PPS
3	0x00000000	NALU_B (9)	47054	P	Frame	0.0	[00:00:00.120](120)	AUD PPS
4	0x00000000	NALU_B (9)	28119	P	Frame	0.0	[00:00:00.160](160)	AUD PPS
5	0x00000000	NALU_B (9)	53828	P	Frame	0.0	[00:00:00.200](200)	AUD PPS
6	0x00000000	NALU_B (9)	38573	P	Frame	0.0	[00:00:00.240](240)	AUD PPS
7	0x00000000	NALU_B (9)	32546	P	Frame	0.0	[00:00:00.280](280)	AUD PPS

6.2 Nal unit 列表

The screenshot shows the 'H264/H265 NAL' list in the software. The main table displays the following columns: NAL序号, 偏移地址, NAL类型, 数据量(Byte), 类型, 图像结构, POC, 时间(H:MM:SS.ms), and 备注. The table lists various NAL units, including VPS, SPS, PPS, and CRA_NUT. A red box highlights the 'NAL unit列表模式' (NAL Unit List Mode) button. Another red box highlights the 'h265语法详情' (H.265 Syntax Details) button. A third red box highlights the '进入数据分析对话框' (Enter Data Analysis Dialog) button. The 'Tag's hex analysis' dialog is also visible, showing the hex and binary representation of the NAL unit data.

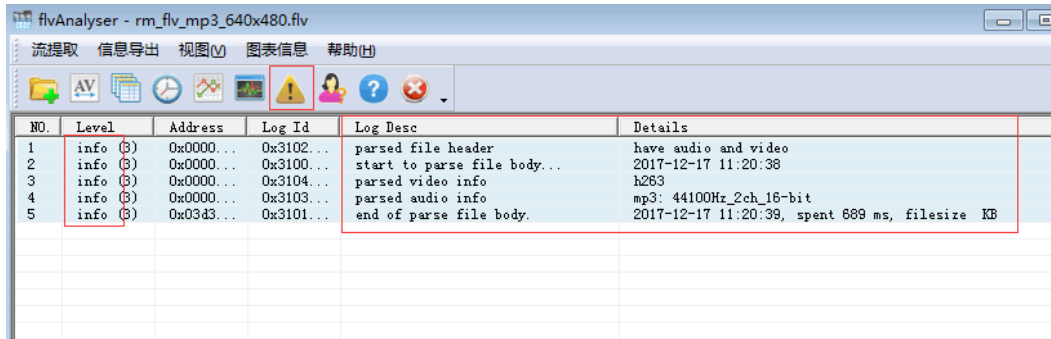
NAL序号	偏移地址	NAL类型	数据量(Byte)	类型	图像结构	POC	时间(H:MM:SS.ms)	备注
0	0x00000000	AUD (35)	6				25400 ms	Material: c:\data\p25_h265\...
1	0x00000000	VPS (32)	31	Progressive	vps_id=0			layer_id=0 temporal_id=0
2	0x00000000	SPS (33)	90		vps_id=0			layer_id=0 temporal_id=0
3	0x00000000	PPS (34)	119		vps_id=0			layer_id=0 temporal_id=0
4	0x00000000	CRA_NUT(clean random...	999061	I	Frame	0.0	[00:00:00.000](0)	layer_id=0 temporal_id=0
5	0x00000000	AUD (35)	6					layer_id=0 temporal_id=0
6	0x00000000	PPS (34)	119		vps_id=0			layer_id=0 temporal_id=0
7	0x00000000	NALU_B (9)	189117	P	Frame	0.0	[00:00:00.040](40)	layer_id=0 temporal_id=0
8	0x00000000	AUD (35)	6					layer_id=0 temporal_id=0
9	0x00000000	PPS (34)	119		vps_id=0			layer_id=0 temporal_id=0
10	0x00000000	NALU_B (9)	51329	P	Frame	0.0	[00:00:00.090](90)	layer_id=0 temporal_id=0
11	0x00000000	AUD (35)	6					layer_id=0 temporal_id=0
12	0x00000000	PPS (34)	119		vps_id=0			layer_id=0 temporal_id=0
13	0x00000000	NALU_B (9)	49020	P	Frame	0.0	[00:00:00.120](120)	layer_id=0 temporal_id=0
14	0x00000000	AUD (35)	6					layer_id=0 temporal_id=0
15	0x00000000	PPS (34)	119		vps_id=0			layer_id=0 temporal_id=0
16	0x00000000	NALU_B (9)	27993	P	Frame	0.0	[00:00:00.160](160)	layer_id=0 temporal_id=0
17	0x00000000	AUD (35)	6					layer_id=0 temporal_id=0
18	0x00000000	PPS (34)	119		vps_id=0			layer_id=0 temporal_id=0
19	0x00000000	NALU_B (9)	53702	P	Frame	0.0	[00:00:00.200](200)	layer_id=0 temporal_id=0
20	0x00000000	AUD (35)	6					layer_id=0 temporal_id=0
21	0x00000000	PPS (34)	119		vps_id=0			layer_id=0 temporal_id=0
22	0x00000000	NALU_B (9)	38447	P	Frame	0.0	[00:00:00.240](240)	layer_id=0 temporal_id=0
23	0x00000000	AUD (35)	6					layer_id=0 temporal_id=0
24	0x00000000	PPS (34)	119		vps_id=0			layer_id=0 temporal_id=0
25	0x00000000	NALU_B (9)	32420	P	Frame	0.0	[00:00:00.280](280)	layer_id=0 temporal_id=0
26	0x00000000	AUD (35)	6					layer_id=0 temporal_id=0
27	0x00000000	VPS (32)	31	Progressive	vps_id=0			layer_id=0 temporal_id=0
28	0x00000000	SPS (33)	90		vps_id=0			layer_id=0 temporal_id=0
29	0x00000000	PPS (34)	119		vps_id=0			layer_id=0 temporal_id=0
30	0x00000000	CRA_NUT(clean random...	113310	I	Frame	0.0	[00:00:00.300](300)	layer_id=0 temporal_id=0
31	0x00000000	AUD (35)	6					layer_id=0 temporal_id=0
32	0x00000000	PPS (34)	119		vps_id=0			layer_id=0 temporal_id=0
33	0x00000000	NALU_B (9)	91257	P	Frame	0.0	[00:00:00.360](360)	layer_id=0 temporal_id=0
34	0x00000000	AUD (35)	6					layer_id=0 temporal_id=0

6.3 GOP 列表



7 日志记录

正常文件 INFO 级别为主



遇到错误, 黄色, 红色, 橙色提示

flvAnalyser - case009_not_found_avc_seq_hdr_aac_asc.flv

FLV提取ES流 FLV导出信息 H264导出信息 视图(V) 图表信息 帮助(H) 进入日志

H264/H265 PICTURE

类型	序号	日志Id	偏移地址	日志描述	详情
FLV	(0)	1	0x020b(523)	Summary info	fatal=2 err=3100 warning=0 info=0
FLV	(0)	2	0x020a(522)	not found h264 seq header	
FLV	(3)	3	0x3102(12546)	not found aac audio specific config	
FLV	(3)	4	0x3100(12544)	parsed file header	have audio and video
FLV	(1)	5	0x120e(4622)	start to parse file body...	2019-9-20 17:40:34
FLV	(1)	6	0x120e(4622)	invalid AAC audio specific configuration	
FLV	(1)	7	0x120f(4623)	not avc data format	meet unexpected H264 start code 00 00 00 01
FLV	(1)	8	0x1213(4627)	err h264 nalu data	data not enough, nal len=32
FLV	(1)	9	0x120f(4623)	not avc data format	meet unexpected H264 start code 00 00 00 01
FLV	(1)	10	0x1213(4627)	err h264 nalu data	data not enough, nal len=208
FLV	(1)	11	0x120f(4623)	not avc data format	meet unexpected H264 start code 00 00 00 01
FLV	(1)	12	0x1213(4627)	err h264 nalu data	data not enough, nal len=219
FLV	(1)	13	0x120f(4623)	not avc data format	meet unexpected H264 start code 00 00 00 01
FLV	(1)	14	0x1213(4627)	err h264 nalu data	data not enough, nal len=224
FLV	(1)	15	0x120f(4623)	not avc data format	meet unexpected H264 start code 00 00 00 01
FLV	(1)	16	0x1213(4627)	err h264 nalu data	data not enough, nal len=224
FLV	(1)	17	0x120f(4623)	not avc data format	meet unexpected H264 start code 00 00 00 01
FLV	(1)	18	0x1213(4627)	err h264 nalu data	data not enough, nal len=224
FLV	(1)	19	0x120f(4623)	not avc data format	meet unexpected H264 start code 00 00 00 01
FLV	(1)	20	0x1213(4627)	err h264 nalu data	data not enough, nal len=224
FLV	(1)	21	0x120f(4623)	not avc data format	meet unexpected H264 start code 00 00 00 01
FLV	(1)	22	0x1213(4627)	err h264 nalu data	data not enough, nal len=80
FLV	(1)	23	0x120f(4623)	not avc data format	meet unexpected H264 start code 00 00 00 01
FLV	(1)	24	0x1213(4627)	err h264 nalu data	data not enough, nal len=224

8 语法指南（FLV 基本语法）

flvAnalyser - rm_flv_mp3_640x480.flv

流提取 信息导出 视图(V) 图表信息 帮助(H)

Flv File Header | Flv File Body | Flv Tag Header | Flv Audio Tag | Flv Video Tag | Flv AAC Data | Flv H264 Data Packet

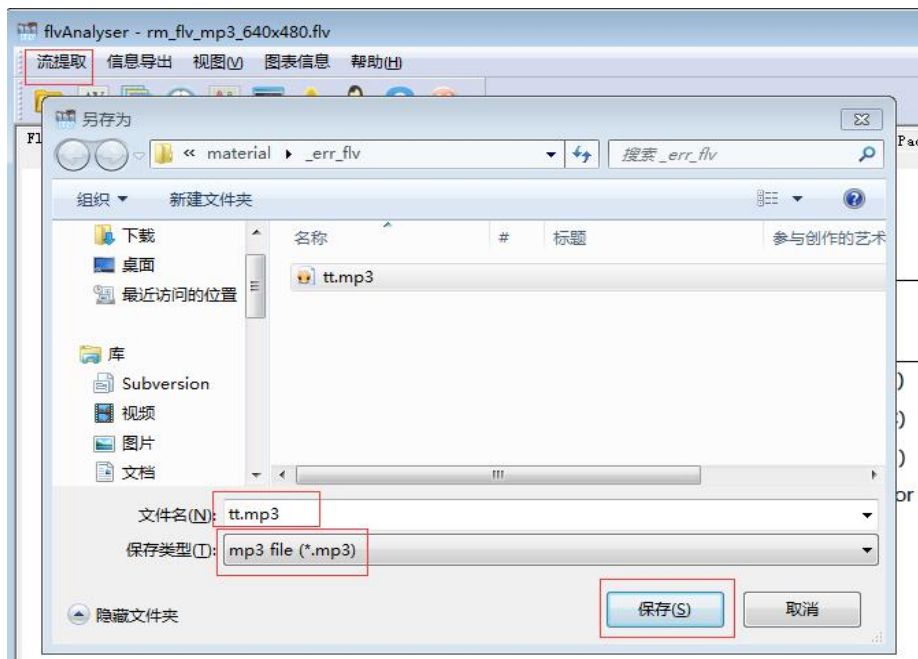
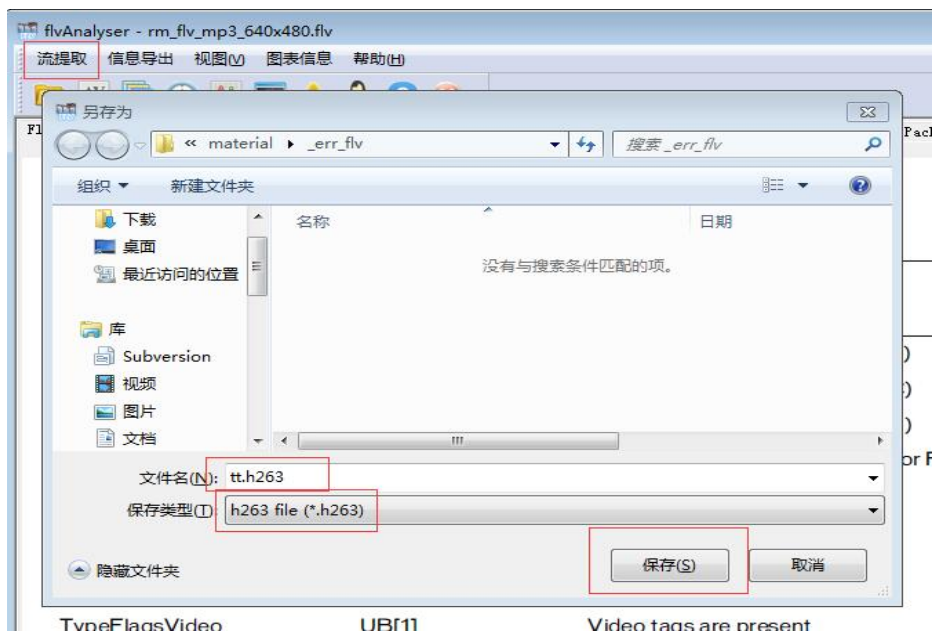
The FLV header

All FLV files begin with the following header:

Field	Type	Comment
Signature	UI8	Signature byte always 'F' (0x46)
Signature	UI8	Signature byte always 'L' (0x4C)
Signature	UI8	Signature byte always 'V' (0x56)
Version	UI8	File version (for example, 0x01 for FLV version 1)
TypeFlagsReserved	UB[5]	Must be 0
TypeFlagsAudio	UB[1]	Audio tags are present
TypeFlagsReserved	UB[1]	Must be 0
TypeFlagsVideo	UB[1]	Video tags are present
DataOffset	UI32	Offset in bytes from start of file to start of body (that is, size of header)

The DataOffset field usually has a value of 9 for FLV version 1. This field is present to accommodate larger headers in future versions.

9 视频、音频 ES 提取存文件：



10 时间信息提取存文件;
[可选纯视频, 纯音频, 音视频交叉]

tt.log x

0102030405060708090100110120130

1
2 Author : hybase@qq.com (QQ: 23207689)
3 Date : 2017-12-17 12:23:09
4 ===== [Start] =====
5
6 文件名称: E:\material_err_flv_rm_flv_mp3_640x480.flv
7 视频: 1 h263 音频: 1 mp3
8
9
10 ===== start video =====
11 pts 数目: 5492
12
13 video idx= 0 offset= 348 (0x 15c) KF pts= 0 (ms) 0 (ms) avsync= 0 (ms)
14 video idx= 1 offset= 49370 (0x c0da) pts= 80 (ms) 80 (ms) avsync= 1 (ms)
15 video idx= 2 offset= 106245 (0x 19f05) pts= 120 (ms) 40 (ms) avsync= 15 (ms)
16 video idx= 3 offset= 150517 (0x 24bf5) pts= 160 (ms) 40 (ms) avsync= 2 (ms)
17 video idx= 4 offset= 193149 (0x 2f27d) pts= 200 (ms) 40 (ms) avsync= 16 (ms)
18 video idx= 5 offset= 234591 (0x 3945f) pts= 240 (ms) 40 (ms) avsync= 4 (ms)
19 video idx= 6 offset= 260257 (0x 3f8a1) pts= 280 (ms) 40 (ms) avsync= 18 (ms)
20 video idx= 7 offset= 278954 (0x 441aa) pts= 320 (ms) 40 (ms) avsync= 6 (ms)
21 video idx= 8 offset= 293900 (0x 47c0c) pts= 360 (ms) 40 (ms) avsync= 20 (ms)
22 video idx= 9 offset= 306500 (0x 4ad44) pts= 400 (ms) 40 (ms) avsync= 7 (ms)
23 video idx= 10 offset= 318343 (0x 4db87) pts= 440 (ms) 40 (ms) avsync= 21 (ms)
24 video idx= 11 offset= 329635 (0x 5086b) pts= 480 (ms) 40 (ms) avsync= 9 (ms)
25 video idx= 12 offset= 347171 (0x 54c23) KF pts= 520 (ms) 40 (ms) avsync= 23 (ms)
26 video idx= 13 offset= 378833 (0x 5c7d1) pts= 560 (ms) 40 (ms) avsync= 11 (ms)
27 video idx= 14 offset= 386643 (0x 5e653) pts= 600 (ms) 40 (ms) avsync= 24 (ms)
28 video idx= 15 offset= 393638 (0x 601a6) pts= 640 (ms) 40 (ms) avsync= 12 (ms)
29 video idx= 16 offset= 398293 (0x 613d5) pts= 680 (ms) 40 (ms) avsync= 26 (ms)
30 video idx= 17 offset= 406714 (0x 634ba) pts= 720 (ms) 40 (ms) avsync= 14 (ms)
31 video idx= 18 offset= 414632 (0x 653a8) pts= 760 (ms) 40 (ms) avsync= 2 (ms)
32 video idx= 19 offset= 422719 (0x 6733f) pts= 800 (ms) 40 (ms) avsync= 15 (ms)
33 video idx= 20 offset= 433621 (0x 69dd5) pts= 840 (ms) 40 (ms) avsync= 3 (ms)
34 video idx= 21 offset= 440894 (0x 6ba3e) pts= 880 (ms) 40 (ms) avsync= 17 (ms)
35 video idx= 22 offset= 451199 (0x 6e27f) pts= 920 (ms) 40 (ms) avsync= 5 (ms)

timestamp

delta

av differ



三、软件 bug 和改进建议

为了改进工具使用体验，热切盼望使用工具的您，将遇到的问题，反馈给笔者。另外，如果您有新的建议，也可以通过以下步骤反馈问题。保证网络畅通下，笔者承诺 48 小时以内，一定响应并回馈您。(E-mail: hybase@qq.com QQ: 23207689)

在沟通充分的情况下，评估实施修改或开发的工作量，并做出实质性的修改，最终更新版本给大家。

1，问题说明

如果能提供抓图，匹配文字补充最佳；

2，测试素材

如果遇到的 bug，是特定的媒体文件，还请能提供对应的分析文件；

3, 联系回馈方式

请留下您的快捷联系方式, 方便及时反馈和沟通。

4, 期望更新时间;

请留下期望更新的时间, 以便做出及时安排;

四、下载软件的途径

发布地址一

<https://blog.csdn.net/zymill>

发布地址二

<https://github.com/zymill/flvAnalyser>

也可以直接通过百度等 搜索关键词 flvAnalyser 查询。