

flvAnalyser 使用说明书

2023-04-19 Win64 位版本 **v0.1.1.000** 发布

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1 功能概述

- 1) FLV 文件分析 (Tag 列表、时间戳、码率、音视频同步等), [HEVC\(12\)/AV1\(13\)](#)
- 2) RTMP/HTTP-FLV 接入和实时分析;
- 3) FLV 文件提取 ES 文件;
- 4) H.264/HEVC/AVS3 ES 数据分析 (picture 列表, NAL unit 列表, GOP 列表等)

具体内容请参考第二章

2 更新记录

版本由 0.0.5.003 迭代到现在的 0.1.1.000

2.1 最新版本(v0.1.1.000)

- 1、支持 RTMP/HTTP-FLV 接入和实时分析
- 2、支持 FLV 转存 MP4
- 3、优化图表坐标, 修复已知问题
- 4、支持单独呈现 AMF 数据

2.2 历史版本

版本说明(v0.0.5.003)

- 1、支持 tag 类型筛选
- 2、支持时间戳曲线缩放
- 3、支持最近分析过的文件列表

更早版本说明

v0.0.4.003 版本更新说明

- 1、FLV script Tag 数据解析及导出结果文件功能

v0.0.4.002 版本更新说明

- 1、FLV Tag 数据另存文件功能
- 2、FLV Video Tag 的 Nalu 另存文件功能

v0.0.4.001 版本更新说明

- 1、flv AV1 (type=0xD (13)) 格式支持

108_av1_aac_no_packetsize.flv

ES流导出信息 视图(V) 图表信息 FLV-AV1配置 工具 帮助(H)

H264/H265/AVS3 PICTURE

偏移地址	数据大小	图像	编码格式	时间(HH:MM:SS.MS)(ms)	帧间隔(ms)	备注
0x00000000	9					FLV file header(include previous tag len: always 0)
0x00000004	368			[00:00:00.000] (0)		
0x0000018c	32	I	av1	[00:00:00.000] (0)	0	AV1 sequence header
0x000001bb	7		aac	[00:00:00.000] (0)	0	AAC: audio specific config
0x000001d1	51		aac	[00:00:00.000] (0)	0	
0x00000213	61	I	av1	[00:00:00.021] (21)	21	SeqHdr
0x0000025f	76		aac	[00:00:00.021] (21)	21	
0x000002ba	73		aac			
0x00000312	100	P	av1			
0x00000385	92		aac			
0x000003f0	148		aac			
0x00000493	8	P	av1			
0x000004aa	140		aac			
0x00000545	581		aac			
0x00000799	37	P	av1			
0x000007cd	538		aac			
0x000009f6	670		aac			
0x00000ca3	8	P	av1			
0x00000eba	442		aac			
0x00000e83	586		aac			
0x000010de	92	P	av1			
0x00001147	245		aac			
0x0000124b	719		aac			
0x00001529	8	P	av1			
0x00001540	451		aac			
0x00001712	721		aac			
0x000019e2	32	P	av1			
0x00001a21	221		aac			
0x00001b0d	596		aac			
0x00001d70	8	P	av1			
0x00001d87	367		aac			
0x00001f05	519		aac			
0x0000211b	85	P	av1			
0x0000217f	539		aac			

Tag's hex analysis

Address	0	1	2	3	4	5	6	7	Field	Value (Description)
00000213:	09	00	00	3d	00	00	15	00	flv video tag()	<tag NO.4>
0000021B:	00	00	00	1d	01	00	00	00	{	
00000223:	0a	0e	00	00	00	fa	62	7f	tag header()	11 (bytes)
0000022B:	b8	88	42	ba	04	04	04	e8	tag data()	61 (bytes)
00000233:	32	26	10	02	28	47	52	3e	{	
0000023B:	fb	f9	c0	00	02	08	22	aa	frame type	1 (key frame) u(4b7-4)
00000243:	00	22	7f	db	38	8f	51	b9	video codec	0x0d (av1) u(4b3-0)
0000024B:	8e	bd	e4	85	b6	58	5d	2f	packet type	1 (av1 OBU)
00000253:	eb	c8	d8	27	1e	00	7e	40	composition time	0
0000025B:	00	00	00	48					obu[0]: type=1 (sequence header)	16 (bytes)
									obu[1]: type=6 (frame)	40 (bytes)
									{	
									obu_header()	
									{	
									obu_forbidden_bit	0
									obu_type	6 (frame)
									obu_extension_flag	0
									obu_has_size_field	1
									obu_reserved_bit	0
									if (has_size_field) {	
									size_field_bytes	1

type=0xD (13)

提示: 单击 "+" 或 "-" 图标行, 展开或折叠

其中 av1 sequence header config 参考如下

flvAnalyser - case108_av1_aac_no_packetsize.flv

FLV提取ES流 FLV导出信息 ES流导出信息 视图(V) 图表信息 FLV-AV1配置 工具 帮助(H)

H264

☒ low overhead bitstream format

☒ tencent's extension tag header configure parameters

类型	序号	偏移地址	数据大小	图像	编码格式	时间(HH:MM:SS.MS)(ms)	帧间隔(ms)	备注
FLV	File header	0x00000000	9					FLV file header(include previous tag len: always 0)
(S)	(18)	0	0x00000004			[00:00:00.000] (0)		
(S)	(9)	1	0x0000018c	I	av1	[00:00:00.000] (0)	0	AV1 sequence header
(S)	(8)	2	0x000001bb		aac	[00:00:00.000] (0)	0	AAC: audio specific config
(S)	(8)	3	0x000001d1					
(S)	(9)	4	0x00000213					
(S)	(8)	5	0x0000025f					
(S)	(6)	6	0x000002ba					
(S)	(7)	7	0x00000312					
(S)	(8)	8	0x00000385					
(S)	(9)	9	0x000003f0					
(S)	(10)	10	0x00000493					
(S)	(11)	11	0x000004aa					
(S)	(12)	12	0x00000545					
(S)	(13)	13	0x00000799					
(S)	(14)	14	0x000007cd					
(S)	(15)	15	0x000009f6					
(S)	(16)	16	0x00000ca3					
(S)	(17)	17	0x00000eba					
(S)	(18)	18	0x00000e83					
(S)	(19)	19	0x000010de					
(S)	(20)	20	0x00001147					
(S)	(21)	21	0x0000124b					
(S)	(22)	22	0x00001529					
(S)	(23)	23	0x00001540					
(S)	(24)	24	0x00001712					
(S)	(25)	25	0x000019e2					
(S)	(26)	26	0x00001a21					
(S)	(27)	27	0x00001b0d					
(S)	(28)	28	0x00001d70					
(S)	(29)	29	0x00001d87		aac	[00:00:00.362] (362)	21	
(S)	(30)	30	0x00001f05		aac	[00:00:00.383] (383)	21	
(S)	(31)	31	0x0000211b	P	av1	[00:00:00.396] (396)	41	
(S)	(32)	32	0x0000217f		aac	[00:00:00.405] (405)	22	
(S)	(33)	33	0x00002349		aac	[00:00:00.426] (426)	21	

Tag's hex analysis

Address	0	1	2	3	4	5	6	7	Field	Value (Description)
0000018C:	09	00	00	20	00	00	00	00	tag header()	11 (bytes)
00000194:	00	00	00	1d	00	00	00	00	tag data()	32 (bytes)
0000019C:	02	80	02	69	01	00	01	81	{	
000001A4:	1f	4d	00	0a	0e	00	00	00	frame type	1 (key frame) u(4b7-4)
000001AC:	fa	62	7f	b8	88	42	ba	04	video codec	0x0d (av1) u(4b3-0)
000001B4:	04	04	e8	00	00	00	2b		packet type	0 (av1 sequence header)
									composition time	0
									tencent extension configure header()	
									{	
									header byte	2 (u(8))
									width	640 (u(16 le))
									height	360 (u(16 le))
									profile	0 (u(8))
									---profile---	0 (Main)
									sample_aspect_ratio	1 (u(8))
									}	
									av1c()	
									{	
									marker bit	1 (u(1b7))
									version	1 (u(7b6-0))
									profile	0 (u(3b7-5))

数据OBU采用 low overhead bitstream format

此段扩展待进一步确认

提示: 单击 "+" 或 "-" 图标行, 展开或折叠

该格式参考来源地址: (如果有错误, 欢迎及时指正)

<https://blog.csdn.net/karamos/article/details/103508790>

<https://cloud.tencent.com/developer/article/1560851> (经确认扩展字段未使用, 删除扩展选项)

2、Tag 列表中快速查找功能:

Video sequence header config

AAC ASC(Audio specific config)

FLV script

video Key frame 等

3、按序号或偏移地址快速定位; (如上图所示)

v0.0.3.001/v0.0.3.002/v0.0.3.003 版本更新说明

1、支持 AVS3 ES 分析

2、修复一些已知问题

v0.0.2.004 版本更新说明

1、提升 flv 文件最大到 36GB

v0.0.2.003 版本更新说明

1、支持 flv H265 (HEVC) 解析和提取 ES;

v0.0.2.002 版本更新说明

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;

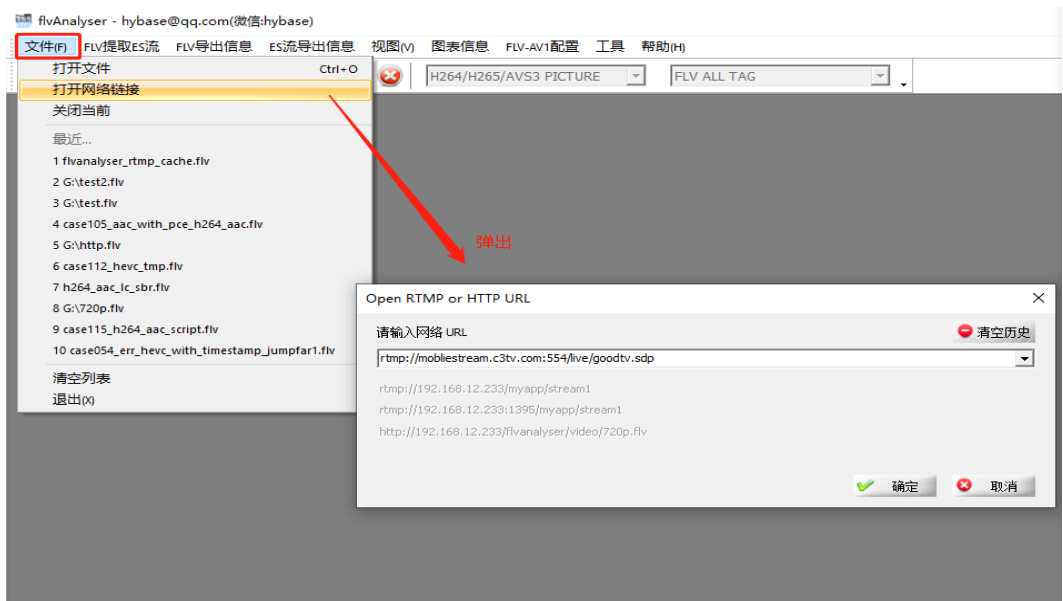
5、基于 GOP、Picture、NALU 三种列表方式的 H.264/H.265 ES 详情分析及 H.264/H.265 ES 预览视频, 并支持导出所需数据; (可以参考后面的介绍)

3 基本功能点

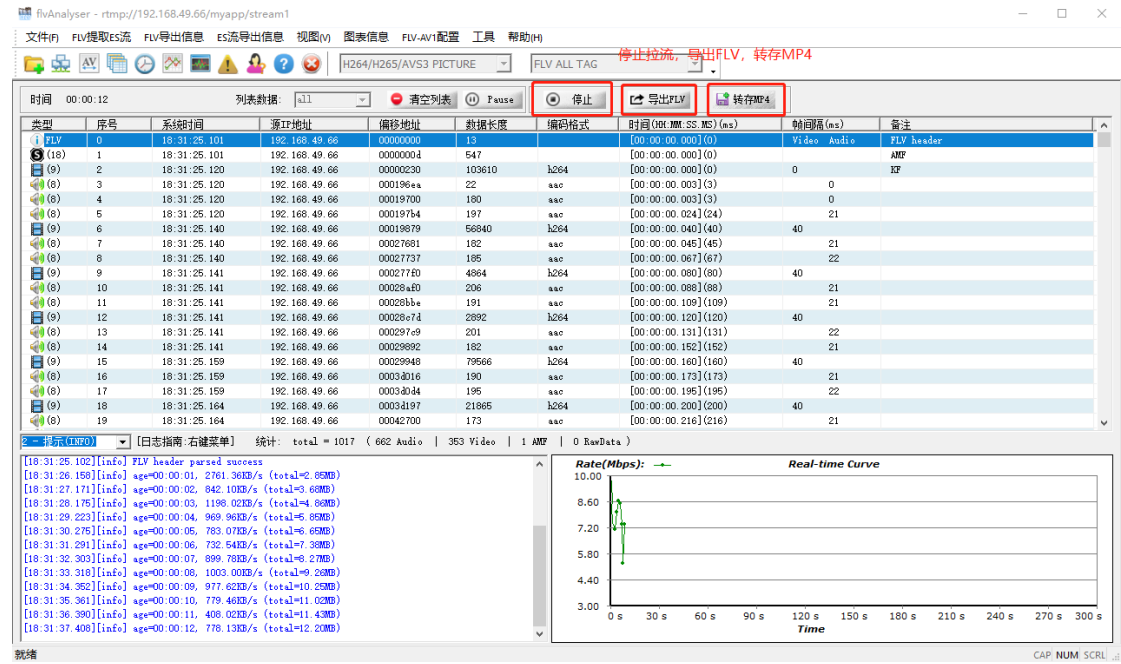
3.1 媒体格式



3.2 文件和网络接入

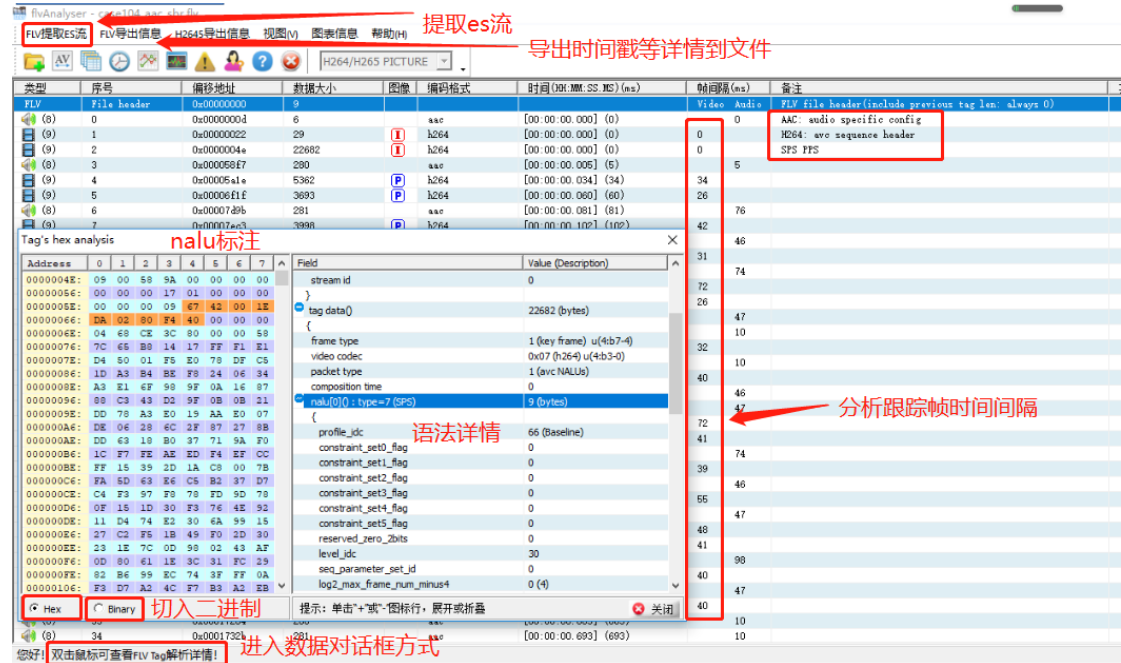


网络接入实时状态



3.3 flv tag 列表（含数据分析，HEVC/AV1 扩展）

主界面和对话框



Tag 数据筛选(all/audio/video/AMF)

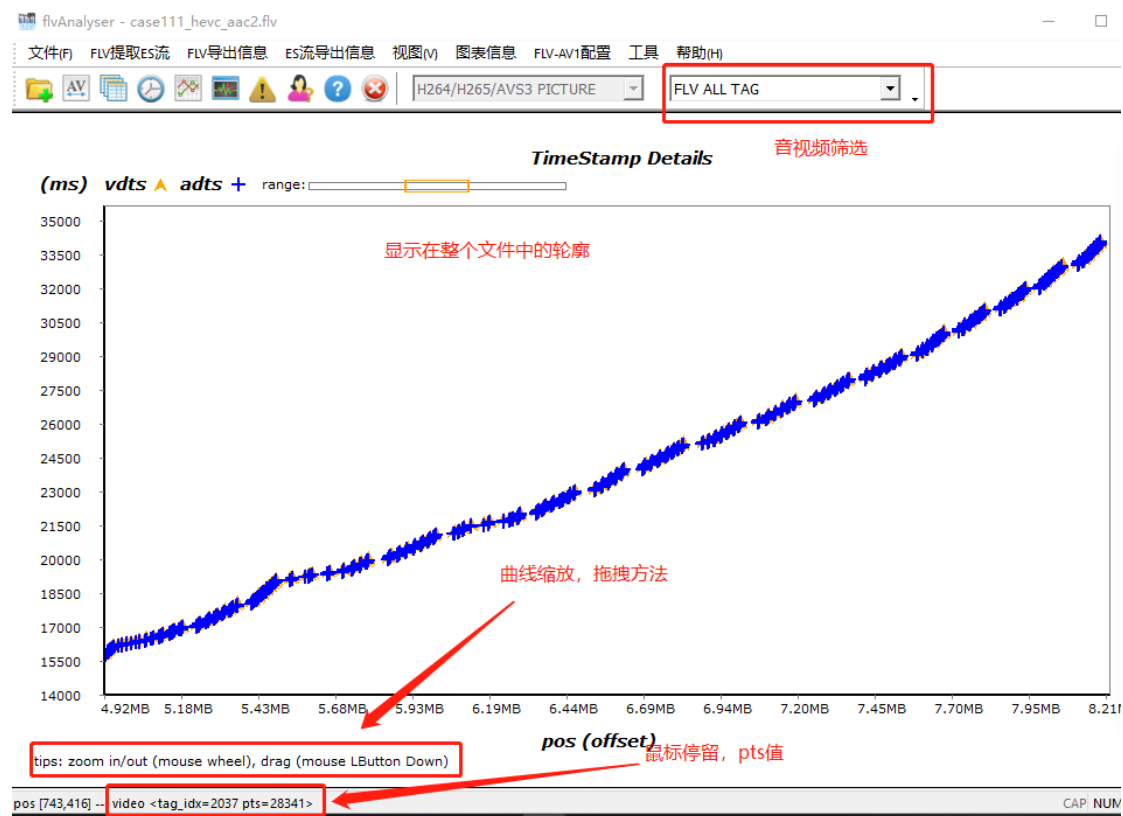
flvAnalyser - case111_hevc_aac2.flv

文件(F) FLV提取ES流 FLV导出信息 ES流导出信息 视图(V) 图表信息 FLV-AV1配置 工具 帮助(H)

H264/H265/AVS3 PICTURE FLV ONLY VIDEO TAG

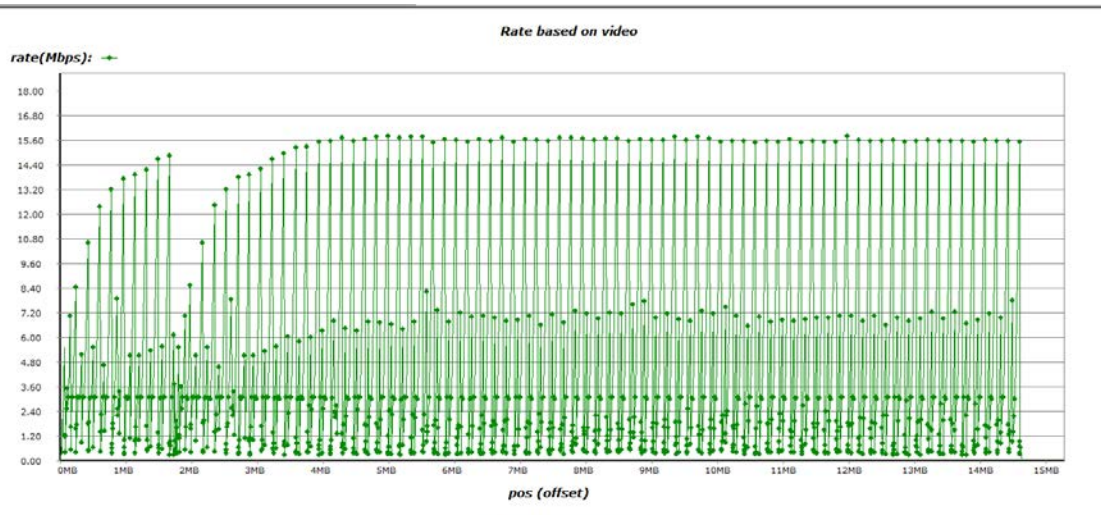
类型	序号	偏移地址	数据大小	图像	编码格式	时间(HH:MM:SS.MS)(ms)	帧间隔(ms)
FLV	File header	0x00000000	9				Video Audio
(9)	1	0x00000141	2393	I	hevc	[00:00:00.000] (0)	0
(9)	10	0x000012e4	13479	I	hevc	[00:00:00.141] (141)	141
(9)	13	0x00004a69	6431	P	hevc	[00:00:00.181] (181)	40
(9)	16	0x00006651	1568	B	hevc	[00:00:00.221] (221)	40
(9)	19	0x00006f6a	7320	P	hevc	[00:00:00.261] (261)	40
(9)	22	0x00008ee2	14954	P	hevc	[00:00:00.301] (301)	40
(9)	24	0x0000cacb	4357	B	hevc	[00:00:00.341] (341)	40
(9)	27	0x0000de34	2006	B	hevc	[00:00:00.381] (381)	40
(9)	30	0x0000e98a	2123	B	hevc	[00:00:00.421] (421)	40
(9)	33	0x0000f4bf	19860	P	hevc	[00:00:00.461] (461)	40
(9)	36	0x00014532	4385	B	hevc	[00:00:00.501] (501)	40
(9)	39	0x00015949	1720	B	hevc	[00:00:00.541] (541)	40
(9)	42	0x00016239	1866	B	hevc	[00:00:00.581] (581)	40
(9)	45	0x00016d15	17507	P	hevc	[00:00:00.621] (621)	40
(9)	47	0x0001b2e7	3228	B	hevc	[00:00:00.661] (661)	40

3.4 时间分析

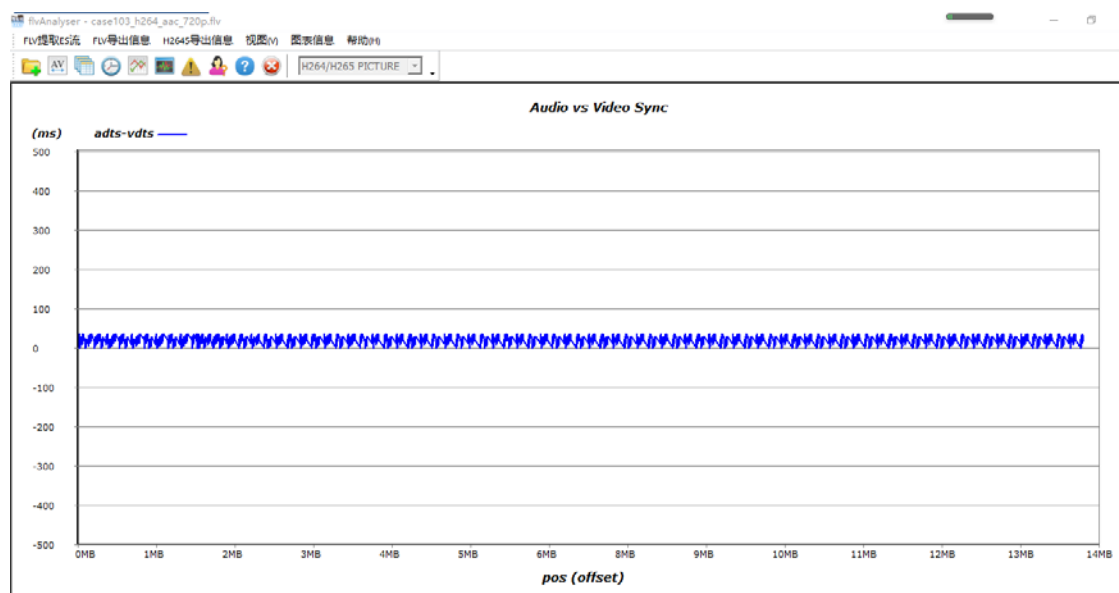


3.5 码率分析

基于视频帧的曲线（不采用时间是因为时间戳有错误时，无法正常显示）



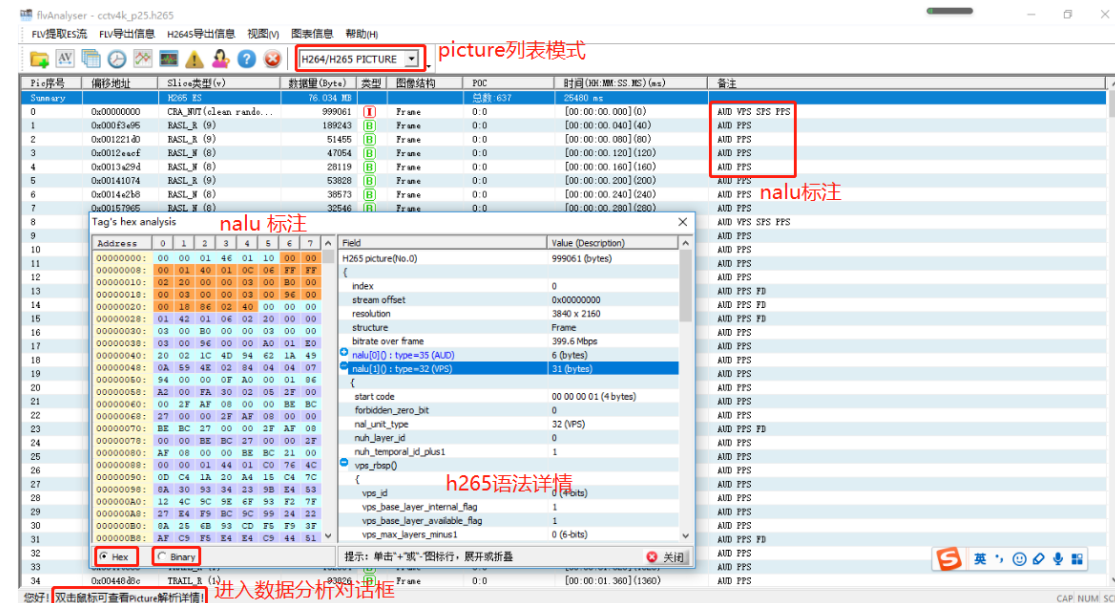
3.6 音视频同步分析



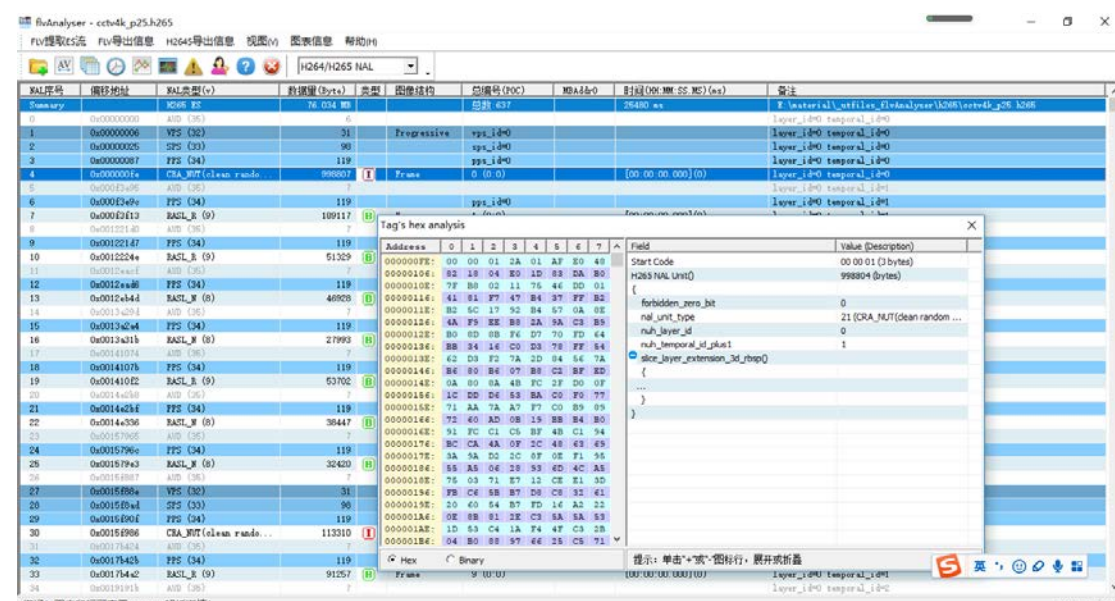
3.7 H.264/HEVC/AVS3 ES 数据分析

(以 H.265 文件为例, 如图所示)

3.7.1 Picture 列表

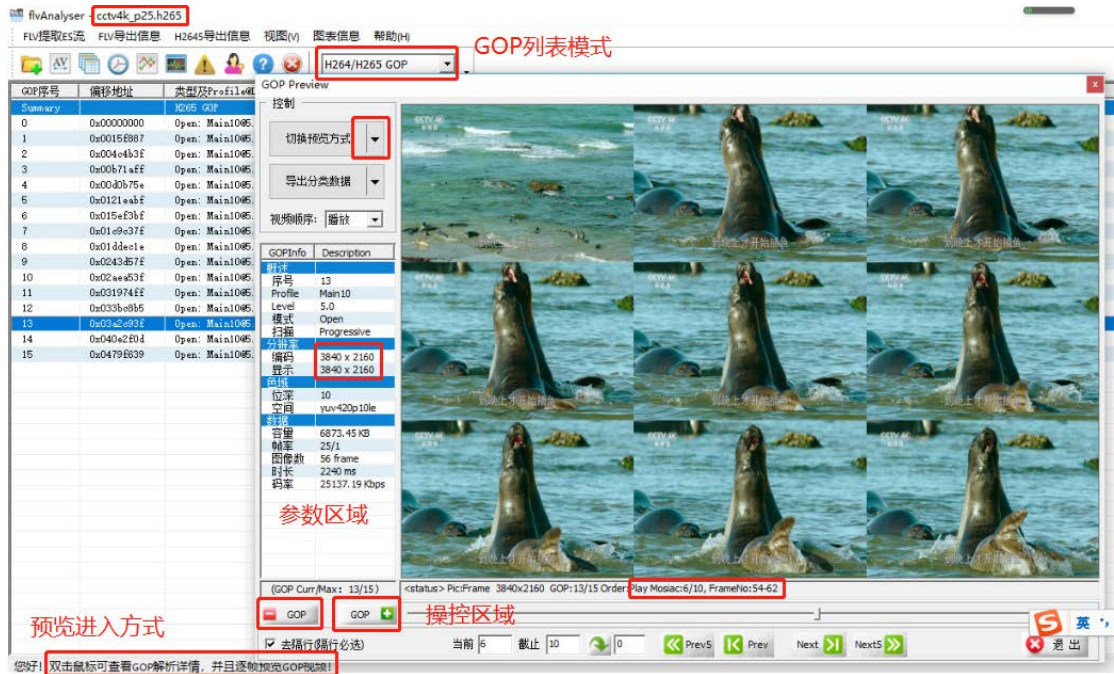


3.7.2 Nal unit 列表

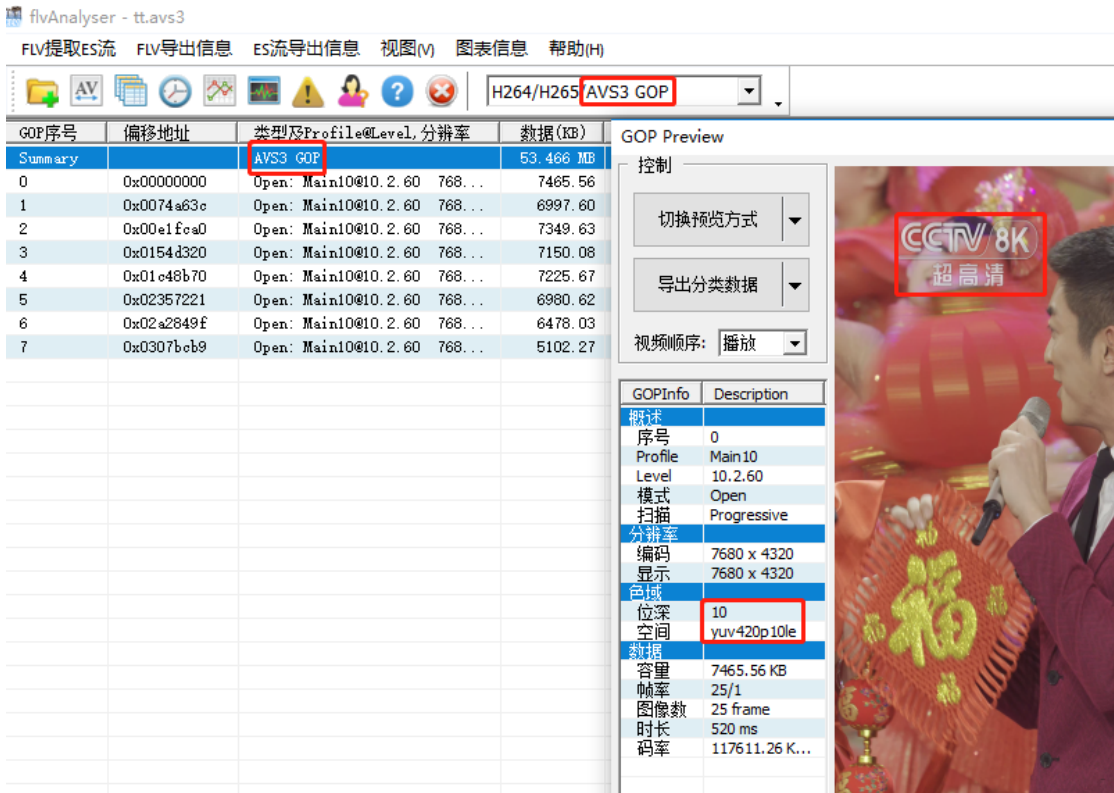


3.7.3 GOP 列表

HEVC(H.265)



AVS-3



3.8 日志记录

正常文件 INFO 级别为主

flvAnalyser - rm_flv_mp3_640x480.flv					
流提取 信息导出 视图(V) 图表信息 帮助(H)					
NO	Level	Address	Log Id	Log Desc	Details
1	info	0x0000...	0x3102...	parsed file header	have audio and video
2	info	0x0000...	0x3100...	start to parse file body...	2017-12-17 11:20:38
3	info	0x0000...	0x3104...	parsed video info	h263
4	info	0x0000...	0x3103...	parsed audio info	mp3: 44100Hz_2ch_16-bit
5	info	0x0343...	0x3101...	end of parse file body.	2017-12-17 11:20:39, spent 689 ms, filesize KB

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)					
类型	序号	日志Id	偏移地址	日志描述	详情
FLV				Summary info	fatal=2 err=3100 warning=0 info=0
✖ (0)	1	0x020b(523)	0x00000000	not found h264 seq header	
✖ (0)	2	0x020a(522)	0x00000000	not found aac audio specific config	
i (3)	3	0x3102(12546)	0x00000000	parsed file header	have audio and video
i (3)	4	0x3100(12544)	0x0000000d	start to parse file body...	2019-9-20 17:40:34
⚠ (1)	5	0x120a(4622)	0x00000141	invalid AAC audio specific configuration	
⚠ (1)	6	0x120f(4623)	0x00000152	not avc data format	meet unexpected H264 start code 00 00 00 01
⚠ (1)	7	0x1213(4627)	0x00000152	err h264 nalu data	data not enough, nal len=32
⚠ (1)	8	0x120f(4623)	0x00000eda	not avc data format	meet unexpected H264 start code 00 00 00 01
⚠ (1)	9	0x1213(4627)	0x00000eda	err h264 nalu data	data not enough, nal len=208
⚠ (1)	10	0x120f(4623)	0x00001e6a	not avc data format	meet unexpected H264 start code 00 00 00 01
⚠ (1)	11	0x1213(4627)	0x00001e6a	err h264 nalu data	data not enough, nal len=219
⚠ (1)	12	0x120f(4623)	0x00001ec9	not avc data format	meet unexpected H264 start code 00 00 00 01
⚠ (1)	13	0x1213(4627)	0x00001ec9	err h264 nalu data	data not enough, nal len=224
⚠ (1)	14	0x120f(4623)	0x00001fe2	not avc data format	meet unexpected H264 start code 00 00 00 01
⚠ (1)	15	0x1213(4627)	0x00001fe2	err h264 nalu data	data not enough, nal len=224
⚠ (1)	16	0x120f(4623)	0x00002120	not avc data format	meet unexpected H264 start code 00 00 00 01
⚠ (1)	17	0x1213(4627)	0x00002120	err h264 nalu data	data not enough, nal len=224
⚠ (1)	18	0x120f(4623)	0x00002335	not avc data format	meet unexpected H264 start code 00 00 00 01
⚠ (1)	19	0x1213(4627)	0x00002335	err h264 nalu data	data not enough, nal len=224
⚠ (1)	20	0x120f(4623)	0x000025a1	not avc data format	meet unexpected H264 start code 00 00 00 01
⚠ (1)	21	0x1213(4627)	0x000025a1	err h264 nalu data	data not enough, nal len=80
⚠ (1)	22	0x120f(4623)	0x00002816	not avc data format	meet unexpected H264 start code 00 00 00 01
⚠ (1)	23	0x1213(4627)	0x00002816	err h264 nalu data	data not enough, nal len=224

3.9 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.

3.10 视频、音频 ES 提取存文件；

flvAnalyser - rm_flv_mp3_640x480.flv

流提取 信息导出 视图(V) 图表信息 帮助(H)

另存为

组织 新建文件夹

名称 日期

没有与搜索条件匹配的项。

Subversion 视频 图片 文档

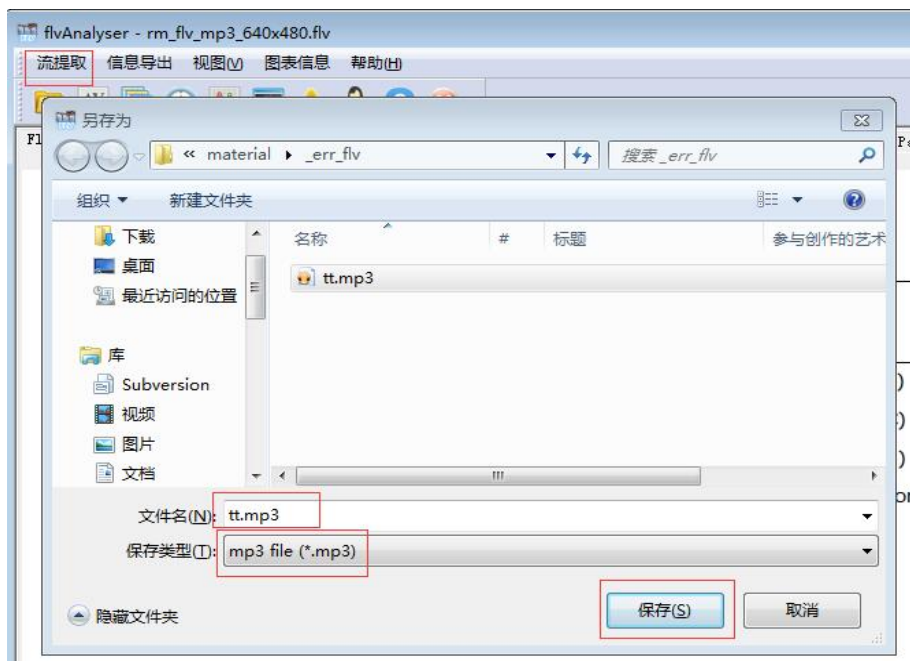
文件名(N): tt.h263

保存类型(T): h263 file (*.h263)

隐藏文件夹

保存(S) 取消

TypeFlagsVideo UB11 Video tags are present



3.11 时间信息提取存文件;

[可选纯视频，纯音频，音视频交叉]

tt.log									
<pre> 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= 280257 (0x 3f8a1) pts= 280 (ms) 40 (ms) avsync= 18 (ms) 20 video idx= 7 offset= 278954 (0x 441aa) pts= 320 (ms) 40 (ms) avsync= 8 (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) </pre>									
				timestamp	delta	av differ			

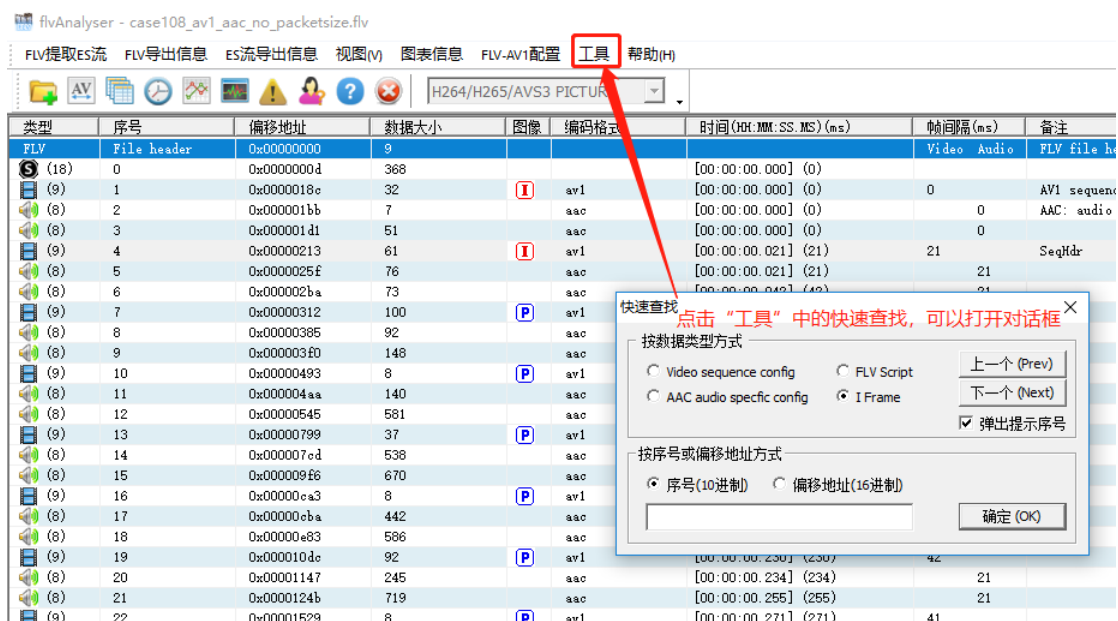


3.12 辅助工具

3.12.1 转存 MP4



3.12.2 快速查找



3.12.3 保存 Tag

flvAnalyser - case103_h264_aac_720p.flv

FLV提取ES流 FLV导出信息 ES流导出信息 视图(V) 图表信息 FLV-AV1配置 工具

H264/H265/AVS3 PICTURE

类型	序号	偏移地址	数据大小	图像	编码格式
FLV	File header	0x00000000	9		
(18)	0	0x00000004	293		
(9)	1	0x00000141	54	I	h264
(8)	2	0x00000186	4		aac
(9)	3	0x00000199	3889	P	h264
(8)	4	0x000010d9	223		aac
(8)	5	0x000011e7	350		aac
(9)	6	0x0001334	1489	B	h264
(8)	7	0x0001014	340		aac
(8)	8	0x0			
(9)	9	0x0			
(8)	10	0x0			
(8)	11	0x0			
(8)	12	0x0			
(8)	13	0x0			
(8)	14	0x0			
(9)	15	0x0			
(8)	16	0x0			
(8)	17	0x0			
(8)	18	0x0			
(8)	19	0x0			
(8)	20	0x0			
(9)	21	0x0			
(8)	22	0x0			
(8)	23	0x0			
(8)	24	0x0			
(8)	25	0x0			
(8)	26	0x0			
(8)	27	0x0			
(8)	28	0x0			
(8)	29	0x0			
(8)	30	0x0			
(8)	31	0x0			
(8)	32	0x0			
(8)	33	0x0			
(8)	34	0x0			

Tag's hex analysis

Address 0 1 2 3 4 5 6 7

0x0000199: 09 00 0F 31 00 00 00 00

0x00001A1: 00 00 00 02 09 30 00 00

0x00001A9: 00 00 00 02 09 30 00 00

0x00001B1: 00 00 05 A4 41 5A 26 D8

0x00001B9: 00 00 05 A4 41 5A 26 D8

0x00001C1: 99 FF 01 56 BF B0 92 59

0x00001C9: 26 11 63 E4 AD BE 17 5F

0x00001D1: 8A 98 1F D6 8E 91 C8 D5

0x00001D9: DA 80 C9 CF 39 85 2F 04

0x00001E1: 0D 87 15 90 61 B5 52 A6

0x00001E9: EB 94 D7 B0 48 31 06 21

0x00001F1: 92 C5 E4 69 94 A3 64 26

0x00001F9: 53 B4 EB 42 5F 42 E0 1B

0x0000201: 5B 81 72 5A EB CC 6E 1D

0x0000209: DF 94 36 48 4B E4 0C C9

0x0000211: D3 68 4E 78 C7 BA F6 34

0x0000219: F3 67 B4 78 BE 9E DA 8F

0x0000221: 5D D0 E1 5B 0A 44 D0 A4

0x0000229: 49 A6 43 AA AB DC 49 23

0x0000231: EC BD ED 78 FD D6 17 91

0x0000239: 14 79 44 B7 45 9F 5B DB

0x0000241: 8C 3F 23 0E 1E 94 AF 46

0x0000249: 7E 29 6D 35 CD 77 0A 4A

0x0000251: 5E 69 2C 52 83 A9 12

写入数据 3884 字节 (不含Tag头部)
(文件: E:\material\utfiles_flvAnalyser\case_flv\tag3.data)

可自行选择是否包含Tag头部

提示: 单击"+"或"-图标行, 展开或折叠

3.12.4 AMF 导出

flvAnalyser - case113_h264_aac_script.flv

FLV提取ES流 FLV导出信息 ES流导出信息 视图(V) 图表信息 FLV-AV1配置 工具 帮助(H)

H264/H265/AVS3 PICTURE

类型	序号	偏移地址	数据大小	图像	编码格式	时间(HH:MM:SS.MS)(ms)	帧间隔(ms)
FLV	File header	0x00000000	9				
(18)	0	0x0000000d	41599			[00:00:00.000] (0)	
(9)	1	0x0000a29b	45	I	h264	[00:00:00.000] (0)	0
(8)	2	0x0000a2d7	7		aac	[00:00:00.000] (0)	0
(9)	3	0x0000a2ed	360988	I	h264	[00:00:00.000] (0)	0
(8)	4	0x0000a2518	360		aac	[00:00:00.004] (4)	4
(9)	5	0x0000a268f	30466	P	h264	[00:00:00.017] (17)	17
(8)	6	0x0000a9da0	290		aac	[00:00:00.025] (25)	21
(9)	7	0x0000a9ed1	4463	B	h264	[00:00:00.033] (33)	16
(8)	8	0x0000a04f	291		aac	[00:00:00.047] (47)	22

Tag's hex analysis

Address 0 1 2 3 4 5 6 7

0x000000D: 12 00 A2 7F 00 00 00 00

0x0000015: 00 00 00 02 00 0A 6F 6E

0x000001D: 4D 65 74 E1 44 61 74 E1

0x0000025: 08 00 00 00 23 00 0F 6D

0x000002D: 65 74 E1 64 61 74 E1 63

0x0000035: 72 65 61 74 6F 72 02 00

0x000003D: 06 64 6D 61 67 69 63 00

0x0000045: 0C 69 61 73 4B 65 79 66

0x000004D: 72 61 6D 65 73 01 01 00

0x0000055: 09 69 61 73 56 69 64 65

0x000005D: 6F 01 01 00 08 69 61 73

0x0000065: 41 75 64 69 6F 01 01 00

0x000006D: 0B 69 61 73 4D 65 74 61

0x0000075: 64 61 74 61 01 01 00 0C

0x000007D: 63 61 6E 53 65 65 6B 54

0x0000085: 6F 45 6E 64 01 01 00 08

0x000008D: 64 75 72 61 74 69 6F 6E

0x0000095: 00 40 B1 9E 71 68 72 B0

0x000009D: 21 00 08 64 61 74 61 73

0x00000A5: 69 7A 65 00 41 F5 0C A7

0x00000AD: B4 F0 00 00 00 70 75

0x00000B5: 62 60 69 73 68 65 64 74

Field Value (Description)

flv script tag() <tag NO.0>

tag header() 11 (bytes)

script data()

onMetaData meta(string len=10)

onMetaData's mixed array size 35

metadatacreator dmagic (string len=6)

hasKeyframes 1 (bool len=1)

hasVideo 1 (bool len=1)

hasAudio 1 (bool len=1)

hasMetadata 1 (bool len=1)

canSeekToEnd 1 (bool len=1)

duration 4510.4430 (number len=8)

datasize 5650414415 (number len=8)

publishedtime 1586332118 (number len=8)

currenttime 1586332118 (number len=8)

videotime 5573135811 (number len=8)

framerate 59.9127 (number len=8)

导出Script数据到文件

导出样例

```
set_video_surface.md script1.txt script.txt
1
2 Author : hybase@qq.com (QQ: 23207689)
3 Date : 2021-11-21 20:21:22
4 ===== [Start] =====
5
6 file name : E:\material\_utfiles_flvAnalyser\case_flv\script1.txt
7 data row : 26
8
9 flv script tag() <tag NO.0>
10 {
11     tag header() : 11 (bytes)
12     script data() :
13     {
14         onMetaData : meta(string len=10)
15         {
16             onMetaData's mixed array size : 13
17             duration : 60.2210 (number len=8)
18             width : 1920 (number len=8)
19             height : 1080 (number len=8)
20             videodatarate : 0 (number len=8)
21             framerate : 25 (number len=8)
22             videoodecid : 12 (number len=8)
23             audiodatarate : 125 (number len=8)
24             audiosamplerate : 48000 (number len=8)
25             audiosamplesize : 16 (number len=8)
26             stereo : 1 (bool len=1)
27             audiocodecid : 10 (number len=8)
28             encoder : Lavf58.76.100 (string len=13)
29             filesize : 13769070 (number len=8)
30         }
31     } object end : u(24)
32 } :
33 previous tag len : 304
34 }
35
36 Author : hybase@qq.com (QQ: 23207689)
37 Date : 2021-11-21 20:21:22
```

导出结果样例1

```
set_video_surface.md script1.txt script.txt
16 onMetaData's mixed array size : 35
17 metadatacreator : dnmagic (string len=6)
18 hasKeyframes : 1 (bool len=1)
19 hasVideo : 1 (bool len=1)
20 hasAudio : 1 (bool len=1)
21 hasMetadata : 1 (bool len=1)
22 canSeekToEnd : 1 (bool len=1)
23 duration : 4510.4430 (number len=8)
24 datasize : 5650414415 (number len=8)
25 publishedtime : 1586332118 (number len=8)
26 currenttime : 1586332118 (number len=8)
27 videosize : 5573135811 (number len=8)
28 framerate : 59.9127 (number len=8)
29 videodatarate : 9648.1373 (number len=8)
30 videocodecid : 7 (number len=8)
31 width : 1920 (number len=8)
32 height : 1080 (number len=8)
33 audiosize : 75351972 (number len=8)
34 audiodatarate : 126.4893 (number len=8)
35 audiocodecid : 10 (number len=8)
36 audiosamplerate : 3 (number len=8)
37 audiosamplesize : 1 (number len=8)
38 stereo : 1 (bool len=1)
39 filesize : 5650456042 (number len=8)
40 lasttimestamp : 4510.4030 (number len=8)
41 videokeyframe_frequency : 2 (string len=1)
42 audiochannels : 2 (string len=1)
43 audiodevice : Elemental Technologies Live (string len=27)
44 language : (string len=0)
45 videodevice : Elemental Technologies Live (string len=27)
46 server : SRS/3.0.88(OuXuli) (string len=18)
47 server_version : 3.0.88 (string len=6)
48 encoder : Lavf57.0.100 (string len=12)
49 lastkeyframetimestamp : 4510.0940 (number len=8)
50 lastkeyframeolocation : 5649775916 (number len=8)
51 keyframes : (object len=1)
52 filepositions's array size : 2265
53 : 41627 (number len=8)
54 : 41700 (number len=8)
```

导出结果样例2

3.12.5 保存 Nalu 数据

flvAnalyser - case103_h264_aac_720p.flv

FLV提取ES流 FLV导出信息 ES流导出信息 视图(V) 图表信息 FLV-AV1配置 工具 帮助(H)

H264/H265/AVS3 PICTURE

类型	序号	偏移地址	数据大小	图像	编码格式	时间(HH:MM:SS.ms)(ms)	帧间隔(ms)	备注
FLV	File header	0x00000000	9					Video Audio FLV
(S)	(18)	0	0x0000000d			[00:00:00.000] (0)		
(9)	1	0x000000141	54	I	h264	[00:00:00.000] (0)	0	AVC s
(8)	2	0x000000186	4		aac	[00:00:00.000] (0)	0	AAC:
(9)	3	0x000000199	3889	P	h264	[00:00:00.000] (0)	0	AUD S
(8)	4	0x0000001d9	223		aac	[00:00:00.000] (0)	0	
(8)	5	0x0000001e7	350		aac	[00:00:00.021] (21)	21	
(9)	6	0x0000001334	1489	B	h264	[00:00:00.040] (40)	40	AUD S
(8)	7	0x0000001914	340		aac	[00:00:00.043] (43)	22	

Tag's hex analysis

Address	0	1	2	3	4	5	6	7	Field	Value (Description)
00000199:	09	00	0F	31	00	00	00	00	flv video tag() <tag NO.3>	
000001A1:	00	00	00	27	01	00	00	00	tag header()	11 (bytes)
000001A9:	00	00	00	02	09	30	00	00	tag data()	3889 (bytes)
000001B1:	00	06	06	01	02	01	0D	80	{	
000001B9:	00	00	05	A4	41	5A	26	D8	frame type	2 (P/B frame) u(4:b7-4)
000001C1:	99	FF	01	56	BF	B0	92	59	video codec	0x07 (h264) u(4:b3-0)
000001C9:	26	11	63	E4	AD	BE	17	5F	packet type	1 (avc NALUs)
000001D1:	8A	98	1F	D6	8E	91	C8	D5	composition time	0
000001D9:	DA	80	C9	CF	39	85	2F	04	nalul[0]: type=9 (AUD)	2 (bytes)
000001E1:	0D	87	15	90	61	B5	52	A6	nalul[1]: type=6 (SEI)	6 (bytes)
000001E9:	EB	94	D7	B0	49	31	06	21	nalul[2]: type=1 (non-IDR Slice)	1444 (bytes)
000001F1:	9E	C5	E4	69	94	A3	64	26	nalul[3]: type=1 (non-IDR Slice)	753 (bytes)
000001F9:	53	B4	EB	42	5F	42	E0	1B	nalul[4]: type=1 (non-IDR Slice)	640 (bytes)
00000201:	5B	81	72	5A	EB	CC	6E	1D	nalul[5]: type=1 (non-IDR Slice)	92 (bytes)
00000209:	DF	94	36	48	4B	E4	0C	C9	nalul[6]: type=1 (non-IDR Slice)	80 (bytes)
00000211:	D3	68	4E	78	C7	BA	F6	34	}	
00000219:	F3	67	B4	78	BE	9E	DA	8F	previous tag len	3900
00000221:	5D	D0	E1	5B	0A	44	D0	A4		
00000229:	49	A6	43	AA	AB	DC	48	E3		
00000231:	EC	BD	6D	78	FD	D6	17	91		
00000239:	14	79	44	B7	45	9F	5B	DB		
00000241:	8C	3F	23	0E	1E	94	AF	46		
00000249:	7E	29	5D	35	CD	77	0B	4A		

视图(V) 图表信息 FLV-AV1配置 工具 帮助(H)

H264/H265/AVS3 PICTURE

数据大小	图像	编码格式	时间(HH:MM:SS.ms)(ms)	帧间隔(ms)	备注
293			[00:00:00.000] (0)		FLV file ha
54	I	h264	[00:00:00.000] (0)	0	AVC sequenc
4		aac	[00:00:00.000] (0)	0	AAC: audio
3889	P	h264	[00:00:00.000] (0)	0	AUD SEI
223		aac	[00:00:00.000] (0)	0	
350		aac	[00:00:00.021] (21)	21	
1489	B	h264	[00:00:00.040] (40)	40	AUD SEI
340		aac	[00:00:00.043] (43)	22	

Tag's hex analysis

Address	0	1	2	3	4	5	6	7	Field	Value (Description)
00000199:	09	00	0F	31	00	00	00	00	flv video tag() <tag NO.3>	
000001A1:	00	00	00	27	01	00	00	00	tag header()	11 (bytes)
000001A9:	00	00	00	02	09	30	00	00	tag data()	3889 (bytes)
000001B1:	00	06	06	01	02	01	0D	80	{	
000001B9:	00	00	05	A4	41	5A	26	D8	frame type	2 (P/B frame)
000001C1:	99	FF	01	56	BF	B0	92	59	video codec	0x07 (h264)
000001C9:	26	11	63	E4	AD	BE	17	5F	packet type	1 (avc NALUs)
000001D1:	8A	98	1F	D6	8E	91	C8	D5	composition time	0
000001D9:	DA	80	C9	CF	39	85	2F	04	nalul[0]: type=9 (AUD)	2 (bytes)
000001E1:	0D	87	15	90	61	B5	52	A6	nalul[1]: type=6 (SEI)	6 (bytes)
000001E9:	EB	94	D7	B0	49	31	06	21	nalul[2]: type=1 (non-IDR Slice)	1444 (bytes)
000001F1:	9E	C5	E4	69	94	A3	64	26	nalul[3]: type=1 (non-IDR Slice)	753 (bytes)
000001F9:	53	B4	EB	42	5F	42	E0	1B	nalul[4]: type=1 (non-IDR Slice)	640 (bytes)
00000201:	5B	81	72	5A	EB	CC	6E	1D	nalul[5]: type=1 (non-IDR Slice)	92 (bytes)
00000209:	DF	94	36	48	4B	E4	0C	C9	nalul[6]: type=1 (non-IDR Slice)	80 (bytes)
00000211:	D3	68	4E	78	C7	BA	F6	34	}	
00000219:	F3	67	B4	78	BE	9E	DA	8F	previous tag len	3900
00000221:	5D	D0	E1	5B	0A	44	D0	A4		
00000229:	49	A6	43	AA	AB	DC	48	E3		
00000231:	EC	BD	6D	78	FD	D6	17	91		
00000239:	14	79	44	B7	45	9F	5B	DB		
00000241:	8C	3F	23	0E	1E	94	AF	46		
00000249:	7E	29	5D	35	CD	77	0B	4A		
00000251:	5E	69	2C	52	83	FC	A9	12		

存储文件包含Nalu长度描述字段

输出 nalu[2] 总大小 1448 字节(长度 4 字节 数据 1444 字节)
(文件: E:\material_utfiles_flvAnalyser\case_flv\nalu2.data)

确定

4 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，反馈给作者。另外，如果您有新的建议，也可以通过以下步骤反馈问题。(E-mail: hybase@qq.com 微信 hybase)

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；

5 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。