H5S Video Platform AV1

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With the popularity of B/S architecture video playback, more and more IoT projects have adopted B/S architecture, and recent versions of Chrome also support H265 decoding technology. The H5S video platform also supports H265 decoding technology. Refer to the "Real-time Video -> RTC WS Playback Mode Switching" section of the H5S video platform manual.

However, the H265 decoding technology is not yet available in WebRTC. If you want to achieve a delay of 300ms on the client side, you can only use WebRTC technology at present. In recent years, the video surveillance industry has made extensive use of H265 video streams. The current practice is to convert H265 to H264,But this will lose image quality.

With the popularization of AV1 technology, most PCs and mobile phones support AV1 hardware decoding, and Web protocol stacks also support AV1 hardware transcoding. Therefore, Zero Vision Technology has launched a TAV1 hardware transcoding card to support H265 to AV1 transcoding. The delay (8ms) caused by the hardware transcoding card can be basically ignored. This technology can achieve low-latency browser native video playback while preserving the quality of H265 video on the B-side.

The left image is the TAV1 transcoding card, which supports PCIe full-height and half-height and requires no additional power supply ,

32x1080P@25 H265 ➔ 32x1080P@25 AV1
8x4K@25 H265 ➔ 8x4K@25 AV1

Interface: PCIe 4.0 x 4
Power dissipation: 20W
Temperature: 0-50 degrees Celsius

The dav1d decoder based on CPU and some acceleration technologies has been relatively mature. Intel core series 12th generation and later generations all support AV1 hardware decoding, Nvidia and AMD graphics cards also support AV1 hardware decoding, and Chrome already supports it. Therefore, this technology is basically mature. Refer to the following figure:

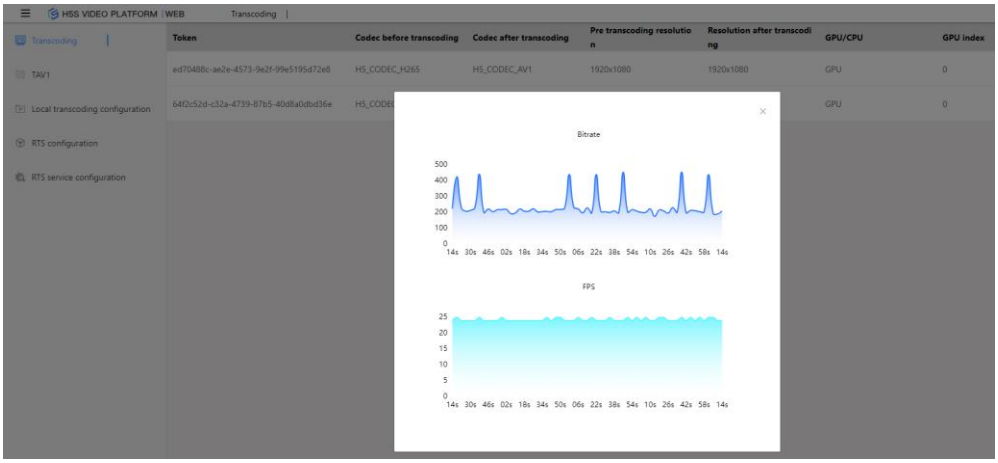
▸ certificate (id=CFA5:18:DA:68:52:E5:1A:43:16:F5:18:30:A4:AF:3A:34:83:16:A0:BA:16:47:9D:51:D7:FE:A7:0D:5A:D3:34:AC)
▸ codec (mimeType=video/AV1, payloadType=35, id=CIT01_35)
▸ **candidate-pair (state=succeeded, id=CPuLIcoRfx_6P6Rre96)**
▸ local-candidate (candidateType=host, tcpType=active, id=I67QOdLDm)
▸ **remote-candidate (candidateType=host, tcpType=passive, id=I6P6Rre96)**
▸ inbound-rtp (kind=video, mid=0, ssrc=1883838896, rtxSsrc=2559078813, decoderImplementation=dav1d, powerEfficientDecoder=false, [codec]=AV1 (35), id=IT01V1883838896)
▾ local-candidate (candidateType=host, tcpType=active, id=IbkiDzDpy)

Statistics IbkiDzDpy

timestamp	2023/9/14 10:33:10
transportId	T01
isRemote	false
networkType	unknown
ip	
address	
port	9
protocol	tcp
candidateType	host
priority	1509957375
foundation	239626895

Filter statistics by type including separate multiple values by `,`
▸ media-playout (kind=audio, id=AP)
▸ certificate (id=CF00:53:BA:B0:90:77:A6:F7:0C:08:1D:F9:6C:87:60:DA:18:66:CE:1C:FC:31:4F:EF:A7:3B:68:9E:A3:E8:41:D8)
▸ certificate (id=CFBC:82:D0:55:CE:ED:5E:55:9E:71:2A:CC:60:5C:1A:BF:0D:51:E2:A6:D1:4C:0C:81:ED:F9:C3:A1:BE:A6:6B:03)
▸ codec (mimeType=video/AV1, payloadType=35, id=CIT01_35)
▸ **candidate-pair (state=succeeded, id=CPQzuvo3H4_tfK5Uc7d)**
▸ local-candidate (candidateType=host, id=IBf4NHSHL)
▸ local-candidate (candidateType=host, tcpType=active, id=IDJWA6yYS)
▸ **local-candidate (candidateType=prflx, tcpType=active, id=IQzuvo3H4)**
▸ inbound-rtp (kind=video, mid=0, ssrc=2170315454, rtxSsrc=918033207, decoderImplementation=ExternalDecoder (D3D11VideoDecoder), powerEfficientDecoder=true, [codec]=AV1 (35), id=IT01V2170315454)
▸ local-candidate (candidateType=host, tcpType=active, id=Ia0QrOJP8)
▸ local-candidate (candidateType=host, id=IgRZxXD0M)
▸ **remote-candidate (candidateType=host, tcpType=passive, id=ItfK5Uc7d)**
▸ peer-connection (id=P)
▸ transport (iceState=connected, dtlsState=connected, id=T01)
Filter statistics graphs by type including separate multiple values by `,`

The right image is the real-time transcoding monitoring panel, which allows you to view the number of transcodes and the details of transcoding in real time.



For specific details, please refer to the release notes and manuals of the H5S video platform r17.