CVR Feature validation in RPI-3 target

Introduction

This page dedicated to bringing up and validation of Continuous video recording functionality in RPI 3B+ target.

CVR uses Kinesis Video Streams and supporting 24/7 video recording support.Allows the feature of storing the recorded content AWS server.

Build Procedure

Refer below link to build camera image

RDK-C Build Instruction for RPI-3

Image Flash Procedure

Image Flash step

```
$ sudo dd if="Image Name" of="Device Name" bs=4M

Example:
sudo dd if=rdk-generic-camera-image_default_20200130060729.rootfs.rpi-sdimg of=/dev/sdb bs=4M
```

AWS Account creation steps

STEP 1:

Can't able to validate without AWS account. so,Refer below link to create AWS account.

Procedure To Create AWS Account

After AWS account creation ,Refer same link to create Access key ID ,Secret Access Key and Region Name.

STEP 2:

Follow below steps to create kinese video stream or refer below link.

https://docs.aws.amazon.com/kinesisvideostreams/latest/dg/gs-createstream.html

Video Stream creation step

```
1.Sign in to the AWS Management Console and open the Kinesis console at https://eu-west-1.console.aws.amazon.com
/kinesisvideo/home?region=eu-west-1#/.
2.On the Video streams page, choose Create video stream.
3.On the Create a new video stream page, type ExampleStream for the stream name. Leave the Default
configuration radio button selected.
4.Choose Create video stream.
5.After Kinesis Video Streams creates the stream, review the details on the ExampleStream page.
```

CVR Validation Procedure

STEP 1:

Add require SSID and PSK in /etc/wpa_supplicant.conf file in below format

network={

ssid="username"

psk="password"

}

Console output

```
ctrl_interface=/var/run/wpa_supplicant
ctrl_interface_group=0
update_config=1

network={
ssid="XXX"
psk="YYYY"
}
```

STEP 2:

Reboot the Target

After Reboot don't do step 1 and 2.

Note : Step 1 & 2 is only applicable for fresh target boot-up with new image.

STEP 3:

WiFi connection is must needed for CVR-AWS validation.

Check WiFi connection by using below command.

ifconfig

Console output

```
root@raspberrypi3-rdk-camera:~# ifconfig
eth0      Link encap:Ethernet  HWaddr B8:27:EB:87:67:91
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:24 errors:0 dropped:0 overruns:0 frame:0
          TX packets:24 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:1766 (1.7 KiB)  TX bytes:1766 (1.7 KiB)

wlan0     Link encap:Ethernet  HWaddr B8:27:EB:D2:32:C4
          inet addr:192.168.43.247  Bcast:192.168.43.255  Mask:255.255.255.0
          inet6 addr: fe80::ba27:ebff:fed2:32c4/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:24 errors:0 dropped:0 overruns:0 frame:0
          TX packets:39 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:3249 (3.1 KiB)  TX bytes:5817 (5.6 KiB)
```

STEP 4:

Export Created Stream Name,Access key id, Secret access key and Region name in RPI target.

export STREAM_NAME="samplestream"

export ACCESS_KEY="XXXXXXXXXXXXXX"

export SECRET_KEY="yyyyyyyyyyyyyyyyyyyyyy"

export AWS_DEFAULT_REGION="eu-west-1"

Console output

```
root@raspberrypi3-rdk-camera:~# export STREAM_NAME="Samplestream"
root@raspberrypi3-rdk-camera:~# export ACCESS_KEY="XXXXXXXXXXXXX"
root@raspberrypi3-rdk-camera:~# export SECRET_KEY="yyyyyyyyyyyyyyyyyyyyyyyyy"
root@raspberrypi3-rdk-camera:~# export AWS_DEFAULT_REGION="eu-west-1"
```

STEP 5:

Check exported Access key id,Secret access key,Stream name and Region name by using below command.

printenv

Console output

```
root@raspberrypi3-rdk-camera:~# printenv
PLAYERSINKBIN_USE_WESTEROSSINK=1
WAYLAND_DISPLAY=wayland-0
SHELL=/bin/sh
TERM=xterm
LD_PRELOAD=/usr/lib/libopenmaxil.so:/usr/lib/libwayland-client.so.0
HUSHLOGIN=FALSE
USER=root
SYSTEMD_PAGER=/bin/cat
ACCESS_KEY=XXXXXXXXXXXXXX
STREAM_NAME=samplestream
MAIL=/var/spool/mail/root
PATH=/usr/local/bin:/usr/bin:/bin:/usr/local/sbin:/usr/sbin:/sbin
AWS_DEFAULT_REGION=eu-west-1
SECRET_KEY=yyyyyyyyyyyyyyyyyyyyyyy
PWD=/home/root
EDITOR=vi
PS1=\u@\h:\w\$
SHLVL=1
HOME=/home/root
LOGNAME=root
XDG_RUNTIME_DIR=/run
_=/usr/bin/printenv
```

STEP 6:

Before triggering CVR binary we should stop rms binary and mediastreamer binary with below command because currently we can't able to validate RMS and CVR feature at the same time.

systemctl stop rms-launcher

systemctl stop mst-launcher

STEP 7:

Preload the below library files for omxh264enc plugin.

export LD_PRELOAD=/usr/lib/libwayland-client.so.0:/usr/lib/libwayland-egl.so:/usr/lib/libopenmaxil.so

STEP 8:

Run cvr-gst-rpi binary to transmit data into AWS server.

cvr-gst-rpi

Console output

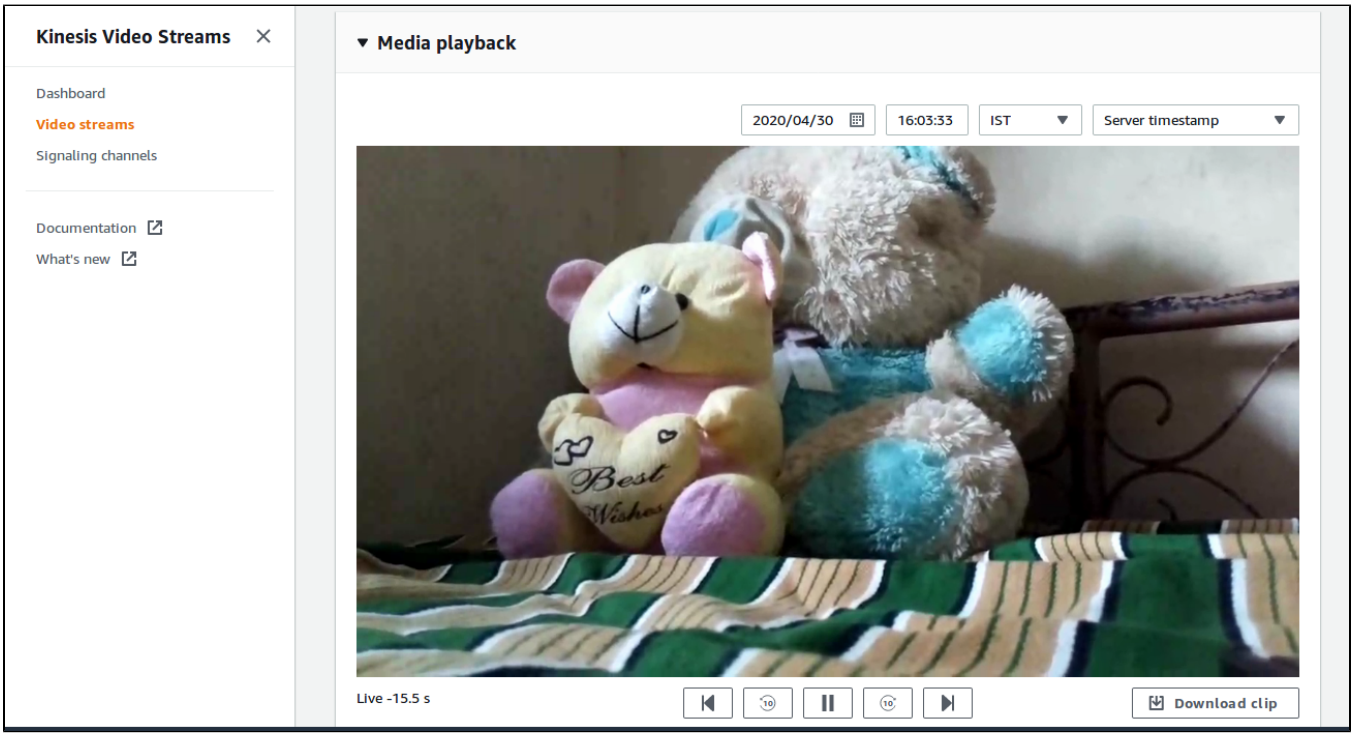
```
root@raspberrypi3-rdk-camera:~# cvr-gst-rpi
Conf file /etc/debug.ini open success
rdk_logger_init /etc/debug.ini Already Stack Level Logging processed... not processing again.
200430-10:37:21.578891 [mod=GSTREAMER, lvl=DEBUG] [tid=7305] /usr/src/debug/cvr/git-r0/git/cvr-gst-rpi
/cvr_gst_rpi.c(176):Element linking succes
s for pipelin
```

STEP 8:

Enter into AWS account and select the corresponding video stream service which was we created for streaming.

Press "Media Playback" option on the video stream player.

Streaming video content should decode properly on AWS.



Limitations

CVR Support in AWS cloud through gstreamer kvs sink.