RDK-C : WebPA Support

Introduction

- This page dedicated to bringing up and validation of Webpa functionality in R-Pi Zero.
- WebPA is the communication channel from Cloud to RDK based home gateway devices. It helps to manage devices from Cloud. WEBPA protocol provides functionality of read/write access to device management parameters.

Environment Setup

Refer below link for RPI-0 Environment setup

RDK-C Environment Setup

Build Procedure

Refer below link to build camera image

RDK-C Build Instructions for R-Pi

Image Flash Procedure

Refer below link for Image flash Procedure.

Image Flash Procedure

WEBPA 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="RDK"
psk="Comcast1"
}
```

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 WEBPA validation.

Check WiFi connection by using below command.

ifconfig

Console output

```
root@raspberrypi0-rdk-camera:~# ifconfig
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:87 errors:0 dropped:0 overruns:0 frame:0
          TX packets:87 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:4552 (4.4 KiB)  TX bytes:4552 (4.4 KiB)

wlan0     Link encap:Ethernet  HWaddr B8:27:EB:2E:72:2B
          inet addr:192.168.43.246  Bcast:192.168.43.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:23 errors:0 dropped:0 overruns:0 frame:0
          TX packets:44 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:2893 (2.8 KiB)  TX bytes:5887 (5.7 KiB)
```

STEP 4:

check Parodus binary running status in RPI by using below command

ps -Af | grep parodus

```
root@raspberrypi0-wifi-camera:~# ps -Af | grep parodus
root       293     1  1 16:03 ?        00:00:50 /usr/bin/parodus --hw-mac=B827EB2E722B --webpa-ping-time=60 --webpa-interface-used=wlan0
root     29774   298  0 17:06 ttyS0    00:00:00 grep parodus
root@raspberrypi0-wifi-camera:~#
```

STEP 5:

check Webpacamera binary running status in RPI by using below command

ps -Af | grep webpacamera

```
root@raspberrypi0-wifi-camera:~# ps -Af | grep webpacamera
root       347     1  0 16:03 ?        00:00:09 webpacamera
root     10920   298  0 17:17 ttyS0    00:00:00 grep webpacamera
root@raspberrypi0-wifi-camera:~#
```

STEP 6:

Parameter fetching from client(RPI) device

Fetch device or feature parameter detail from client(RPI) device through parodus by using webpa server.

Command :

curl -H ' Authorization:Basic <AUTH_TOKEN>' -i http://<WEBPA_URL>/api/v2/devices

Example :

curl -H 'Authorization:Basic dXNlcjp3ZWJwYQo=' -i 'http://192.168.2.75:9003/api/v2/device/mac:b827eb2e722b/config?names=Device.DeviceInfo.X_RDKCENTRAL-COM_IMAGENAME'

Output :

{"parameters":[{"name":"Device.DeviceInfo.X_RDKCENTRAL-COM_IMAGENAME","value":"RPI-CAM_stable2_20200318070913","dataType":0,"parameterCount":1,"

message":"Success"}],"statusCode":200}

```
root@raspberrypi0-wifi-camera:/lib/systemd/system# curl -H 'Authorization:Basic dXNlcjp3ZWJwYQo=' -i 'http://34.244.61.191:9003/api/v2/de
c:b827eb2e722b/config?names=Device.DeviceInfo.X_RDKCENTRAL-COM_IMAGENAME'
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8
X-Scytale-Build: 0.1.4-1
X-Scytale-Flavor: mint
X-Scytale-Region: east
X-Scytale-Server: 34.244.61.191
X-Scytale-Start-Time: 10 Mar 20 14:26 UTC
X-Talaria-Build: 0.1.3-1
X-Talaria-Flavor: mint
X-Talaria-Region: east
X-Talaria-Server: 34.244.61.191
X-Talaria-Start-Time: 10 Mar 20 14:26 UTC
X-Tr1d1um-Build: 0.1.3-434
X-Tr1d1um-Flavor: mint
X-Tr1d1um-Region: east
X-Tr1d1um-Server: 34.244.61.191
X-Tr1d1um-Start-Time: 10 Mar 20 14:27 UTC
X-Webpa-Transaction-Id: sfD6VCTN259QWkP5B73hfQ
X-Xmidt-Span: "http://127.0.0.1:8080/api/v2/device/send","2020-03-31T10:36:14Z","335.943528ms"
Date: Tue, 31 Mar 2020 10:36:14 GMT
Content-Length: 182

{"parameters":[{"name":"Device.DeviceInfo.X_RDKCENTRAL-COM_IMAGENAME","value":"RPI-CAM_stable2_20200318070913","dataType":0,"parameterCou
message":"Success"}],"statusCode":200}root@raspberrypi0-wifi-camera:/lib/systemd/system#
```

Able to fetch below list of parameter from client(RPI) device.

Sl#	WebPA Parameter	WebPA Output (Example)
1	Device.DeviceInfo.X_RDKCENTRAL-COM_IMAGENAME	RPI-CAM_stable2_20200318070913
2	Device.DeviceInfo.Manufacturer	RPI
3	Device.DeviceInfo.X_RDKCENTRAL-COM_MAC	b8:27:eb:2e:72:2b
4	Device.DeviceInfo.UpTime	477 sec
5	Device.DeviceInfo.MemoryStatus.Total	309732.000000 KB
6	Device.DeviceInfo.MemoryStatus.Free	276588.000000 KB
7	Device.WiFi.X_RDKCENTRAL-COM_IPv4Address	192.168.43.246
8	Device.WiFi.X_RDKCENTRAL-COM_PublicIP	157.46.55.67
9	Device.WiFi.X_RDKCENTRAL-COM_HostName	raspberrypi0-wifi-camera
10	Device.WiFi.X_RDKCENTRAL-COM_NetMask	168.109.28.0
11	Device.WiFi.X_RDKCENTRAL-COM_Gateway	192.168.43.218
12	Device.WiFi.X_RDKCENTRAL-COM_UserName	root
13	Device.DeviceInfo.ModelName	RPIMC
14	Device.DeviceInfo.Description	RPIMC Home Security Device
15	Device.DeviceInfo.SerialNumber	000000009e7b277e
16	Device.X_RDKCENTRAL-COM_Camera.LiveStream.EvoStream.ServerIP	192.168.0.107
17	Device.X_RDKCENTRAL-COM_Camera.LiveStream.EvoStream.ServerPort	81

18	Device.X_RDKCENTRAL-COM_Camera.LiveStream.EvoStream.RoomName	rpi0

Limitations

- Validated only the above get parameters mentioned.

Troubleshooting

- ### Error Message

Following are the error message that user may taken into considerations:

1. "message":"Invalid parameter value"}],"statusCode":520

   For Invalid parameter value, check for correct parameter name and the unwanted space in the command.
2. "message":"Error unsupported namespace","statusCode":520

   For Unsupported namespace, check for the respective services that are essential to fetch tha data. For example, WiFi related information can be accessed only if ccspwifiagent service is active.
3. "message":Service Unavailable", "statusCode":531

   For this error, ensure the network connection and the server and client-side services are up.

Special Considerations

Since different services are involved in the communication, port-number specification should be taken into account.

1. In Client-side, along with ServerURL Port number of Talaria should be specified.
2. From user-end, while requesting for information Tr1d1um's Port number should be given.