RDKB RPI Firmware Upgrade with support of HTTP protocol - Design - 2020 M6

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Introduction

- This document covers the design approach used for upgrading firmware for RPI RDK Broadband devices using XCONF server & HTTP/TFTP protocol.
- Downloaded firmware from local/public http server with support of http protocol.
- Also modified the firmware script with support of both protocols. If user configured http protocol support in xconf UI, On that time firmware will be downloaded by http protocol else firmware will be downloaded by tftp protocol(By default,tftp protocol will be selected).

Design approach

On considering above described requirement,design approach for RDKB firmware upgrade for RPI device as follows,

- Initially we need to do firmware configuration in XCONF server i.e we need to create firmware config ,firmware rule,download filter info(protocol (TFTP/HTTP),IP address) etc corresponding to RPI Board MAC address.
- Next we need to have HTTP server in public/local network,so that it can be accessed by the device.
- In RPI we have to create a script which will be called by the systemd service file on boot up,When the systemd service starts the script will read the cloud firmware version using a curl request and it will check with the local FW version,If the device FW version and cloud FW version are different then it will go with further processing as below
- RPI will send curl request to XCONF and XCONF will send firmware config info(protocol,firmware location,firmware version,etc..) to RPI & it will process the response and based on the protocol it will download from TFTP/HTTP server and proceeds with flashing by using bcm_flasher command.
- After booting we will be upgrading the new image.
- By default, firmware systemd service was enabled in RPI.

How to Enable Firmware Upgrade

1. Using the below command to re-start the firmware service in RPI,

    systemctl restart swupdate.service

2. swupdate logs will be generated in below folder,

    cat /rdklogs/logs/swupdate.log

Sequence Diagram

XCONF   **RPI Device**   **HTTP server**

1: REQ Cloud FW Version

Get the cloud FW Version

2: RESP Cloud FW version

Cloud FW Version

3: Compare Cloud and Dev FW Version

Compare RPI Device Fw version and Cloud FW Version is different(Lower or Higher), call upgraded scripts

4: REQ for FW config

Send CURL Request to XCONF using MAC Address

5: RESP for FW Config Info

Process CURL Response and check the IP,Protocol,Image version etc, If the protocol is HTTP

6: HTTP REQ to Download Image

HTTP Request to Download the image from HTTP server

7: DOWNLOAD image from HTTP server

8: Call UPGRADED Scripts

Do Upgrade and reboot the RPI Device