

NUGU Issue with New Version of GTVS

Aug. 7th, 2019

NUGU doesn't work with New GTVS

Root Cause Analysis

- **Original Design of NUGU support:**

1. Google Assistant and NUGU use the same Android *AudioRecord()* API with the same audio source parameter "VOICE_RECOGNITION".
2. Google Assistant and NUGU needs to use different audio path to receive audio data from RCU for voice recognition.
3. ATVRemote Service is one app of GTVS. It responses for handling Google Assistant Key.
4. In old version of ATVRemote Service, when Google Assistant key is pressed, ATVRemote Service will add a VOICE_RECOGNITION rule into Android framework. This rule will help AudioRecord() API to use the audio path for Google Assistant. When Google Assistant is finished, ATVRemote Service will remove the VOICE_RECOGNITION rule.
5. When NUGU key is pressed, Android framework will use the default audio path for NUGU.

- **Root Cause of using New GTVS (ATVRemote Service Version: 2.2.04e.florentine.5751511):**

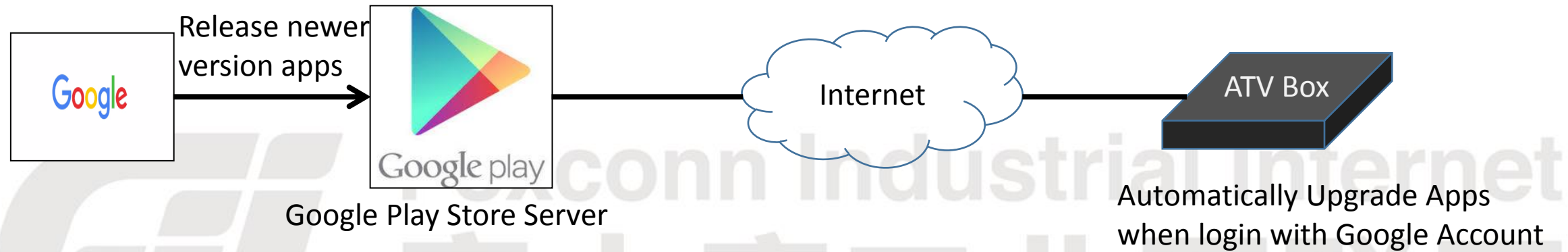
1. In new version of ATVRemote Service, it will add a VOICE_RECOGNITION rule into Android framework when **any** RCU key is pressed.
2. When NUGU key is pressed with new ATVRemote Service, AudioRecord() will use the audio path of Google Assistant because of new added VOICE_RECOGNITION rule. But since Google Assistant key is not pressed, no any audio data will be captured from RCU. This makes NUGU doesn't work with new GTVS.

Proposed Solution

- Because NUGU and Google Assistant uses the same API with the same parameters. It needs a way in Android framework to identify who calls AudioRecord() for Voice Recognition.
- **Since NUGU app can not be modified for specific project**, we decided to use the solution as below to modify code in AudioRecord() API and Android Framework:
 1. If AudioRecord() is used for Voice Recognition, then do Step 2. Otherwise, use original API flow.
 2. We check API caller for two cases:
 - 2.1 If the API caller is NUGU, we change the parameter of Audio Source to our new added type for NUGU Voice Recognition. And we also modify Android Framework to support this new type. Then Android Framework can identify which audio path should be used for NUGU now.
 - 2.2 If the API caller is not NUGU, use original API flow.

ATV Remote Service Version in Google Play Store

- The following figure shows how GTVS apps are upgraded.



- The current ATVRemote Service version is 2.1.02.4477839 (Released on Nov 30, 2017) in ATV Google Play Store. It's been a long time that Google doesn't update it to Google Play Store. But, Google did release several versions of ATVRemote service on Android TV Help Center for integration.

The Risk for ATV boxes with NUGU Capability

- Except our model AT100, other existing ATV boxes with NUGU capability also has a chance to get the same NUGU issue when Google releases new version of ATVRemote Service app in Google Play Store. Suggest to fix it as well.