



**GadgEon**

Engineering Smartness

# YOCTO BSP CUSTOMIZATION



# Yocto BSP Customization



Customer had 6 board variants that differ in RAM size, Processor variant, Boot device type. They had to build separate u-boot /kernel images with separate build targets in Yocto and wanted to simplify the build and be able to deploy the same firmware image on different variant boards.

## The Solution

- Technology Used: U-boot, Linux kernel 4.x, Yocto, C, Shell scripting, SWUpdate

Customer had several boards which differ in

- RAM configuration. 512MB, 1GB, 2GB, 4GB
- Processor variant: imx6ul , imx6ull
- Boot device configuration : SPI Flash, eMMC
- WiFi module : QCA9377, QCA6234
- BLE module : BMD300, R41Z

Yocto

- Created a new machine configuration which will
- Added a bbappend file for the kernel recipe to pack dtb files and ulmage to kernel.tar.bz2 image.
- Added recipe to build the new u-boot image, qspi-header and pack them into u-boot.tar.bz2

## Results / Outcomes

- Customer is only required to build one image to flash on a variety of boards.
- Customer is able to deploy a single set of images on to the cloud to update a variety of boards
- Hardware board variant can now be swapped without changing the update and flashing process based on inventory availability.



# The Solution Description

## The Solution

- Added init scripts to load wifi driver
- Modified init scripts to load BLE module firmware

### Linux

- Integrated qca9377 WiFi drivers to the build.
- Upgraded BlueZ to support BLE 4.2

### U-boot

- Run time RAM initialization based on board ID.
- Run time DTB loading based on board ID
- Unification of bootcmd

### SWUpdate

- Modified swupdate scripts to generate unified image to be deployed in cloud
- Modified swupdate scripts on device to identify the board and flash the appropriate image from the cloud
- Build dtb files for all the individual boards
- Build two u-boot images each for two boot device types (SPI Flash, eMMC).

# THANK YOU



For More Details, Let's Connect



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