



DEVELOPMENT GUIDE

VIA VAB-950

Yocto 2.6 BSP



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Revision History

Version	Date	Remarks
1.00	23/11/2020	Initial Release



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1. Introduction

This Development Guide explains how to set up the necessary build environment in order for users to customize the Yocto source code and create their own OS image for the VIA VAB-950.

The VIA VAB-950 Yocto 2.6 BSP is developed based on the MediaTek Yocto 2.6 BSP and it enables the hardware features of the VIA VAB-950.

1.1 BSP Package Contents

There are four folders in the package as listed below.

Source Code Folder	Description
VIA_VAB-950_Yocto_2.6_BSP.tgz	Yocto source code
Firmware Folder	Description
VIA_VAB-950_Yocto_2.6_EVK.zip	Yocto image and scatter-loading file
Document Folder	Description
VIA_VAB-950_Yocto_2.6_EVK_Quick_Start_Guide.pdf	Quick Start Guide
VIA_VAB-950_Yocto_2.6_BSP_Development_Guide.pdf	Development Guide
Tool Folder	Description
Driver_Auto_Installer_EXE.zip	MTK USB cable driver
UniversalAdbDriverSetup.zip	Universal ADB driver
SP_Flash_Tool_exe_Windows.zip	MTK SP Flash Tool

1.1.1 Source Code Folder Contents

VIA_VAB-950_Yocto_2.6_BSP.tgz: Includes MediaTek Yocto 2.6 source codes with required meta and prebuilt files.

1.1.2 Firmware Folder Contents

VIA_VAB-950_Yocto_2.6_EVK.zip: Contains scatter-loading file and the precompiled Yocto image for evaluating the VAB-950.

1.1.3 Document Folder Contents

VIA_VAB-950_Yocto_2.6_EVK_Quick_Start_Guide.pdf: This Quick Start Guide provides an overview on how to boot the Yocto image on the VAB-950 and configure the supported hardware functions in the build.

VIA_VAB-950_Yocto_2.6_BSP_Development_Guide.pdf: This Development Guide explains how to set up the necessary build environment in order for users to customize the Yocto source code and create their own system image for the VIA VAB-950.

1.2 Version Information and Supported Features

- Kernel version: 4.4.146
- Evaluation image: Yocto 2.6
- Development based on MediaTek Yocto 2.6 BSP
- Supports eMMC boot
- Supports HDMI display
- Supports HDMI audio output
- Supports MIPI DSI capacitive touch panel
 - AUO 10.1 B101UAN01.7 (1920×1200)
 - eGalax I2C touch
- Supports COM1 as RS-232 mode (TX/RX) and COM as debug port
- Supports two 10/100Mbps Ethernet
- Supports MediaTek MT6358 Headphone and Mic-in
- Supports MediaTek MT7668 Wi-Fi 802.11ac and Bluetooth 5.0
- Supports EMIO-2574 (SIM7600JC-H) 4G LTE miniPCIe module
- Supports MIPI CSI OV5648 camera module

2. Build Environment Setup

This section guides you through setting up the build environment for development. All instructions are based on using Ubuntu 14.04 LTS 64bit.

To make sure the build process is completed successfully, we recommend at least 120GB of disk space, 16GB of combined memory, and 15GB swap space on the host machine.

2.1 Configuring Linux Host Machine

The following packages are required for the Yocto development environment. The required packages can be installed using the commands below:

```
$ sudo apt-get install gawk wget git-core diffstat unzip texinfo gcc-multilib bash
build-essential chrpath socat cpio python python3 python3-pip python3-pexpect xz-utils
debianutils iputils-ping python-git python3-jinja2 libgl1-mesa-dev libegl1-mesa-dev
libstdl1.2-dev pylint xterm gcc g++ libstdc++6 lib32stdc++6 libpulse-dev libevent-dev
ninja-build rpm2cpio
```

The following gn tools are required and can be installed using the commands below:

```
$ wget -O gn http://storage.googleapis.com/chromium-gn/3fd43e5e0dcc674f0a0c004ec290d04bb2e1
c60e
$ sudo chmod 777 gn
$ sudo mv gn /usr/bin/
```

3. Image Build

This section explains how to use the source code to build the image for the firmware installer on the VIA VAB-950.

3.1 Building the Yocto Image

The first step is to extract the **VIA_VAB-950_Yocto_2.6_BSP.tgz** using the following command.

```
$ cp VIA_VAB-950_Yocto_2.6_BSP.tgz ${PWD}
$ cd ${PWD}
$ tar zxvf VIA_VAB-950_Yocto_2.6_BSP.tgz
```

Type the commands below to build the image.

```
$ cd yocto2.6
$ export TEMPLATECONF=${PWD}/meta/meta-mediatek-mt8385/conf/base/aiv8385-linux.aiot-emmc
$ source meta/poky/oe-init-build-env
$ bitbake mtk-image-openmm-aiv
```



Note:

If you need a clean build, first remove the build and sstate-cache folders; then start from the beginning.

3.2 Replace and Update Firmware

After the compilation, the **/yocto2.6/build/tmp/deploy/images/aiv8385-linux.aiot-emmc/** directory will contain the resulting binaries as shown in the table below.

Binary
bl2.img
boot.img
cam_vpu_a.img
cam_vpu_b.img
cam_vpu_c.img
spmfw.img
sspm-fit.img
tee.img
system.ext4
userdata.ext4

Next, extract the EVK and copy the newly-generated image files to replace the original files.

Refer to Chapter 2 of the Quick Start Guide for instructions on how to update the firmware images.



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