



DEVELOPMENT GUIDE

# VIA VAB-950

Android 10.0 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 Android source code and create their own OS image for the VIA VAB-950.

The VIA VAB-950 Android 10.0 BSP is developed based on the MediaTek Android 10.0 BSP and it enables the hardware features of the VAB-950.

## 1.1 BSP Package Contents

There are four folders in the package as listed below.

Source code folder	Description
VIA_VAB-950_Android_10.0_BSP.tgz	Android source code
Firmware folder	Description
VIA_VAB-950_Android_10.0_EVK.zip	Android image and scatter-loading file
Document folder	Description
VIA_VAB-950_Android_10.0_EVK_Quick_Start_Guide.pdf	Quick Start Guide
VIA_VAB-950_Android_10.0_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\_Android\_10.0\_BSP.tgz:** includes MediaTek Android 10.0 source codes with required binary files.

### 1.1.2 Firmware Folder Contents

**VIA\_VAB-950\_Android\_10.0\_EVK.zip:** contains scatter-loading file and the precompiled Android image for evaluating the VIA VAB-950.

### 1.1.3 Document Folder Contents

**VIA\_VAB-950\_Android\_10.0\_EVK\_Quick\_Start\_Guide.pdf:** This Quick Start Guide provides an overview of how to boot the Android image on the VIA VAB-950 and configure the supported hardware functions in the build.

**VIA\_VAB-950\_Android\_10.0\_BSP\_Development\_Guide.pdf:** This Development Guide explains how to set up the necessary build environment in order for users to customize the Android source code and create their own system image for the VIA VAB-950.

## 1.1.4 Tool Folder Contents

**Driver\_Auto\_Installer\_EXE.zip:** MTK USB cable driver.

**UniversalAdbDriverSetup.zip:** Universal ADB driver.

**SSP\_Flash\_Tool\_exe\_Windows.zip:** MTK SP Flash Tool.

## 1.2 Version Information and Supported Features

- Kernel version: 4.14.141
- Evaluation image: Android 10.0
- Development based on MediaTek Android 10.0 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
- Supports MediaTek NeuroPilot AI APU hardware acceleration

## 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 500GB of disk space and 16GB of combined memory and 20GB swap space on the host machine.

### 2.1 Configuring Linux Host Machine

The first step is to install the OpenJDK 8 using the following commands.

```
$ sudo add-apt-repository ppa:openjdk-r/ppa
$ sudo apt-get update
$ sudo apt-get install openjdk-8-jdk
```

To check the Java version using the following command.

```
$ java -version
openjdk version "1.8.0_141"
OpenJDK Runtime Environment (build 1.8.0_141-8u141-b15-3~14.04-b15)
OpenJDK 64-Bit Server VM (build 25.141-b15, mixed mode)
```

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

```
$ sudo apt-get install git-core gnupg flex bison gperf build-essential zip curl zlib1g-dev
gcc-multilib g++-multilib libc6-dev-i386 lib32ncurses5-dev x11proto-core-dev libx11-dev
lib32z-dev libgl1-mesa-dev libxml2-utils xsltproc unzip make python-networkx mingw32
zlib1g-dev:i386 tofrodos libswitch-perl
```

## 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 Android Image

The first step is to extract the VIA\_VAB-950\_Android\_10.0\_BSP.tgz using the following command.

```
$ cp VIA_VAB-950_Android_10.0_BSP.tgz ${PWD}
$ cd ${PWD}
$ tar zxvf VIA_VAB-950_Android_10.0_BSP.tgz
```

Type below commands for the image building.

```
$ cd android10
$ source build/envsetup.sh; lunch full_tb8788p1_64_wifi-userdebug
$ make 2>&1 | tee build.log
```

### 3.2 Replace and Update Firmware

After the compilation, the /android10/out/target/product/tb8788p1\_64\_wifi/ directory will contain the resulting binaries as shown in the table below.

Binary
preloader_tb8788p1_64_wifi.bin
recovery.img
vbmeta.img
vbmeta_system.img
vbmeta_vendor.img
spmfw-verified.img
scp-verified.img
sspm-verified.img
cam_vpu1-verified.img
cam_vpu2-verified.img
cam_vpu3-verified.img
lk-verified.img
boot.img
logo-verified.bin
dtbo-verified.img
tee-verified.img
super.img
cache.img
userdata.img

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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