



Application Notes

Customization Tool User Guide

Revision 0.5

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Revision history

Revision	Date	Owner	Changes
0.1	September 13, 2013	Pei Pei	Initial version release
0.2	November 18, 2013	Pei Pei	Modify the name of the program for picture modification, installation and execution. Add description for adding wall paper, file replacement and upgrade. Modify functions for settings loading, Key, advanced configuration, etc.
0.3	December 12, 2013	Pei Pei	Add function for wifi configuration and data, Media partition settings
0.4	January 14, 2014	Pei Pei	Modify tool details
0.5	April 17, 2014	Pei Pei	Modify tool extraction options which is divided to four levels. Different actions can be run at each level. Separate the parse of Key and DTD.

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1. Intro

After the reference source code of Amlogic tablet platform (hereinafter referred to as platform) is released to Openlinux, the customer can generate the upgrade package by compiling. Then the tablet customization tool (hereinafter referred to as tool) can be used to customize own upgrade package safely and effectively.

Amlogic Confidential!

2. Tool and Environment Setup

2.1 Tool Installation

Click the CustomizationTool.msi in the installation package to start installing the customization tool and simply choose Next to proceed. The user can manually select the installation path. The selected disc needs at least 2GB free space.

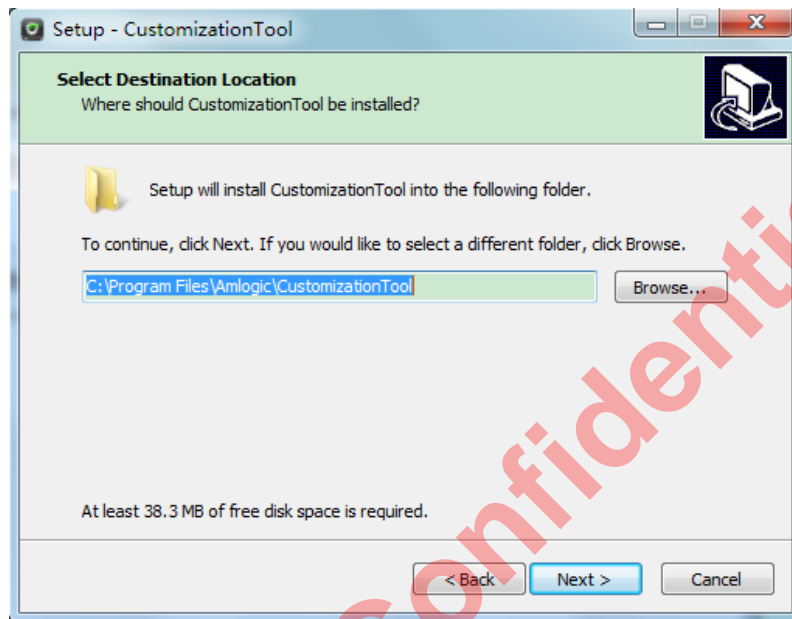


Figure 2.1 Select installation path

If the info “can not open file for writing msvcr7.dll” pops up during installing, please quit antivirus software and try again.

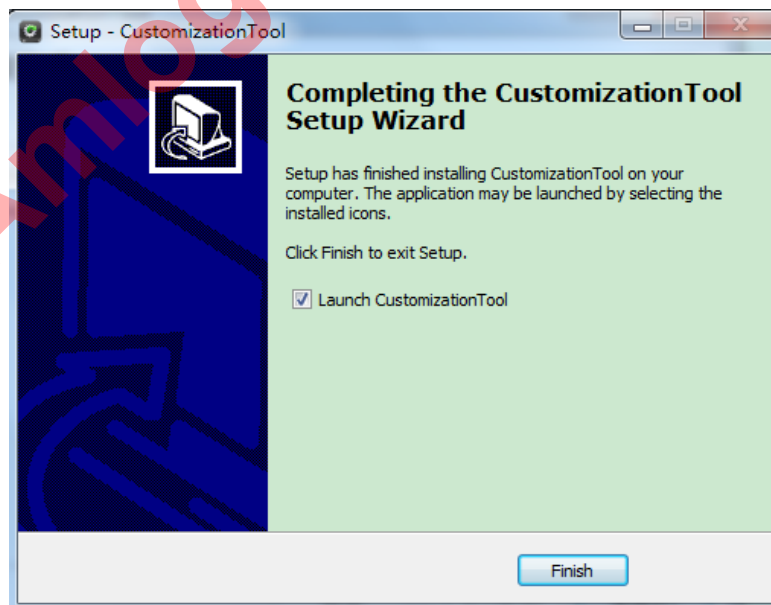


Figure 2.2 Complete customization tool

2.2 JDK Development Environment Installation

2.2.1 Download JDK

Download JDK on Sun official download page:

<http://www.oracle.com/technetwork/java/javase/downloads/index.html>.

The Windows users can download the 32bit/64bit version JDK according to their platforms respectively.

2.2.2 Install JDK

After downloading, install the JDK using the default configurations. If other disc is preferred, please change the following paths accordingly.

2.2.3 Enter System Variable Interface

To enter the environment variable interface:

Windows XP: My computer -> Property -> Advanced -> System variable

Windows7 (32bit): My computer -> Property -> Advanced System Settings -> System variable

2.2.4 Set System Variable JAVA_HOME

Click the New button in "System Variable" and enter the interface for "New User Variable" (Figure 2.1);

Enter JAVA_HOME in textbox "Variable name";

Enter JDK installation path in textbox "Variable value" (e.g., F:\jdk);

Click "OK" to exit "New User Variable" interface

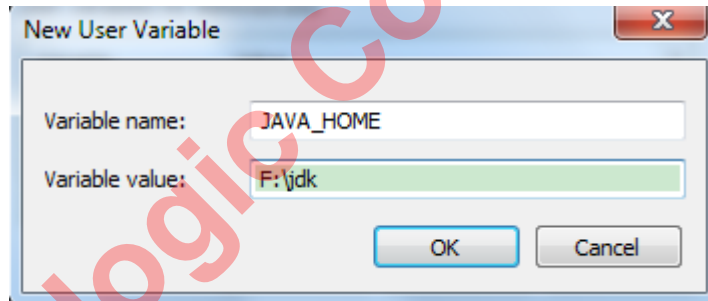


Figure 2.1 Set system variable JAVA_HOME

2.2.5 Set System Variable PATH

Double click the system variable PATH and enter "Edit System Variable" interface (Figure 2.2);

In the end of textbox "Variable Value", add ;%JAVA_HOME%\bin;

Click "OK" to exit "Edit System Variable" interface.

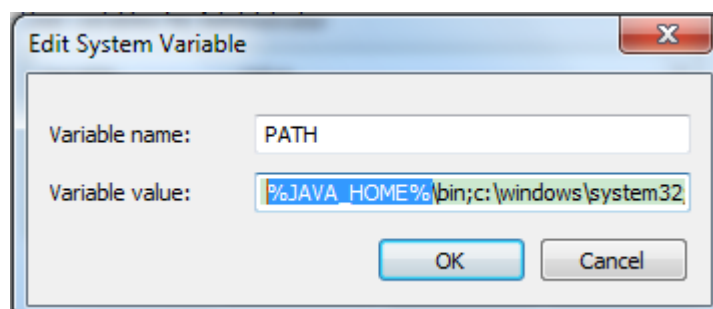


Figure 2.2 Set system variable PATH

2.2.6 Set System Variable CLASSPATH

If the environment variable CLASSPATH does not exist in the system variables:

Click the “New” button in “System Variable” and enter “Edit System variable” interface (Figure 2.3);

Enter CLASSPATH in textbox “System Variable”

In the textbox “Variable value”, enter. ;%JAVA_HOME%\lib\dt.jar;%JAVA_HOME%\lib\tools.jar;

Click “OK” to exit “Edit System Variable” interface.

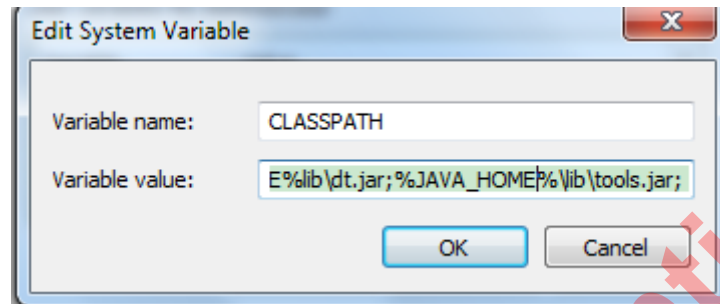


Figure 2.3 Set System Variable CLASSPATH

Please do not skip the “.” At the beginning of variable value.

2.2.7 Verify Working Environment

Start → Run, Enter cmd, press Enter and enter DOS. Type javac and press Enter. If the java help info is shown, it means the environment has been successfully set, otherwise it needs to be reconfigured.

3. Run the Tool

After finishing the installation, click the shortcut of CustomizationTool.exe, the main interface of the tool will be popped up (Figure 3.1). At this moment, all the tabs are un-editable except for image loading.

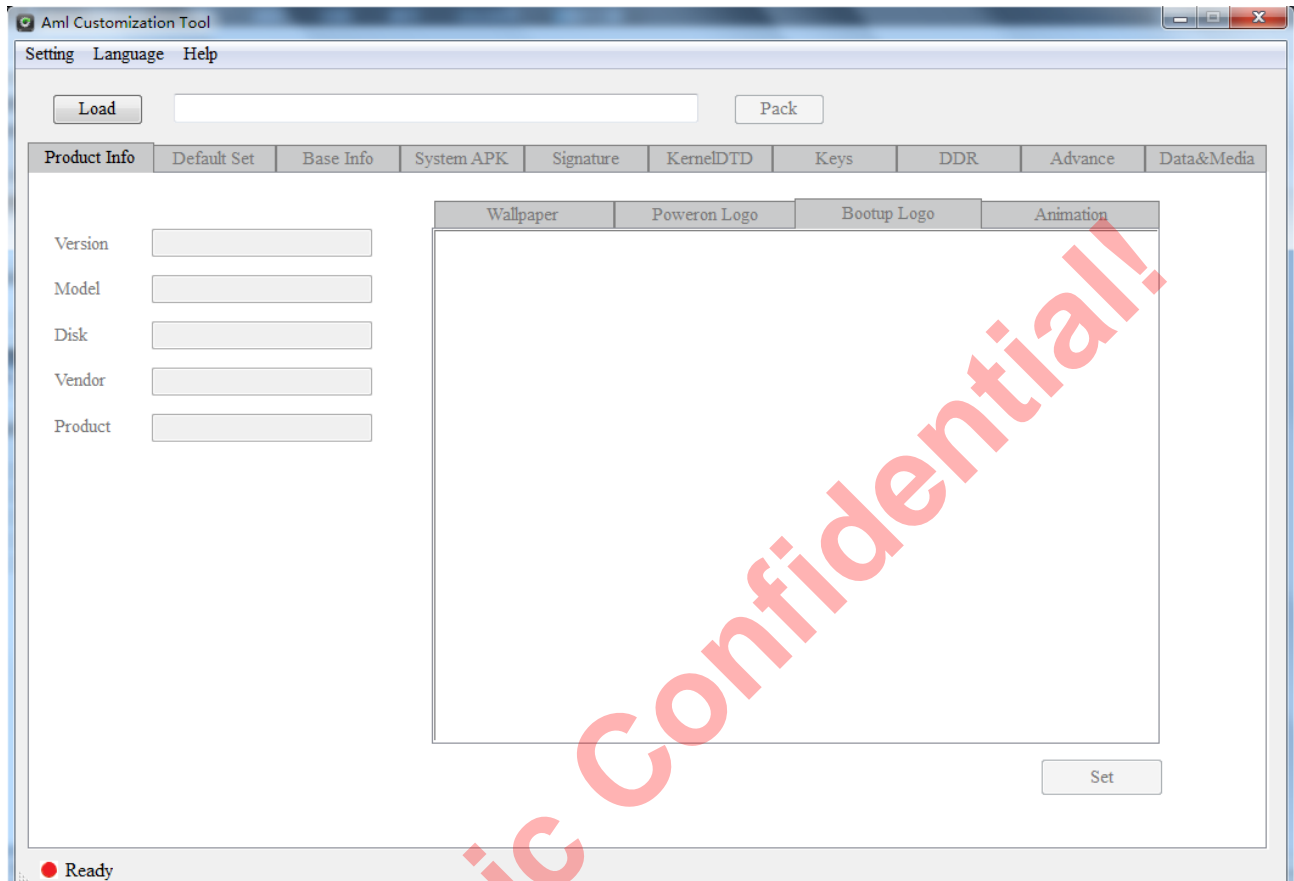


Figure 3.1 Tool main (in un-editable status)

4. Open Image Package

4.1 Unpack Image Package

In the tool main (Figure 3.1), click “load” and the unpack option dialog (Figure 4.1) is popped up. After loading the original image pack, it will enter the following unpack interface (Figure 4.2), which will show it is under unpacking. According to the different options, it will take 30 seconds to several minutes.

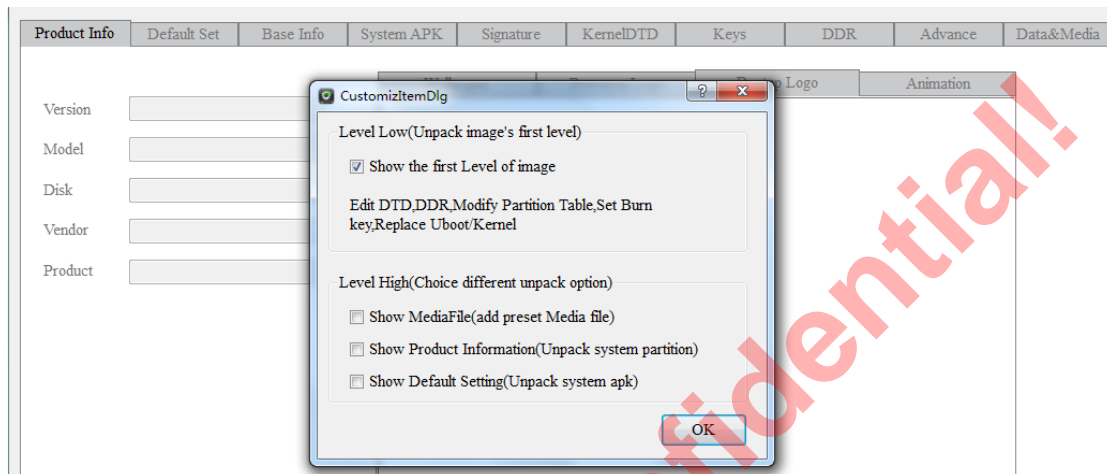


Figure 4.1 Unpack options

In the unpack option dialog, there are four options: Among them, When choosing the option “Show the first level of image”, the tool will unpack the first level. After successfully done, it will show tabs such as “Basic Info”, “Kernel DTD”, “Keys”, “DDR”, and “Advanced”. The user can edit DTD, DDR, modify partition table, set key to be burned and replace Uboot/Kernel, etc. (Figure 4.2).

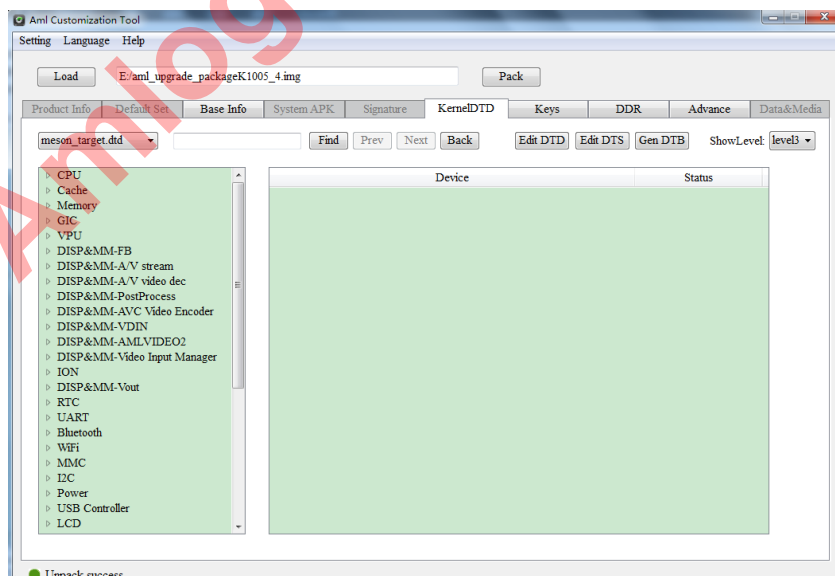


Figure 4.2 Choose “Show the first level of image ” to unpack

When Choose the option “Show Mediafile”, the tool will also upack the Data or Media partition based on the first level unpack. After successfully done, it will show the tab “Data&Media”. User can start adding preset media files (Figure 4.3) in the tab.

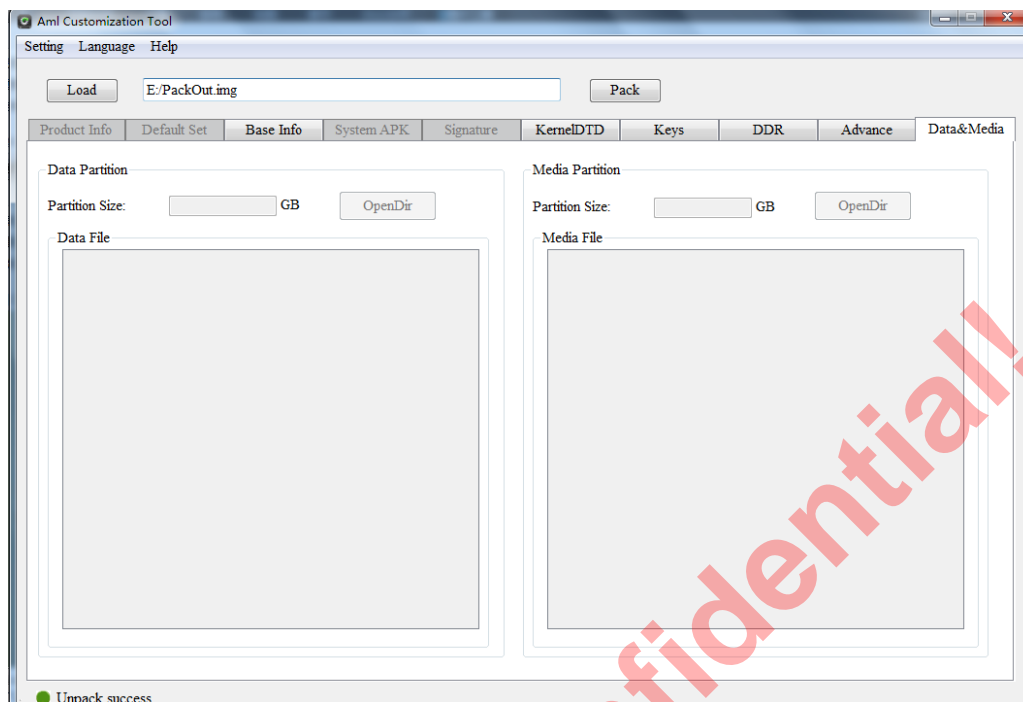


Figure 4.3 Choose “Show Mediafile” to unpack

When choosing the option “Show Product Information”, the tool will unpack the system image based on the first level unpacking. After successfully done, it will show “Product Info”, “System APK” tabs and activate part of buttons in “Advanced” tab. The user can modify product information, replace Poweron, bootup logo, boot animation, add/remove system APK, and edit files manually etc.



Figure 4.4 Choose “Show Product Information” to unpack

When choosing the option “Show Default Setting”, the tool will unpack the APKs based on the first level unpacking. After successfully done, it will show “Default Set”, “Keys” tabs. The user can modify the default settings, replace APK signature/Keys, etc (Figure 4.5). At this moment, all the tabs are enabled and user is able to modify all the image information available in the tool.

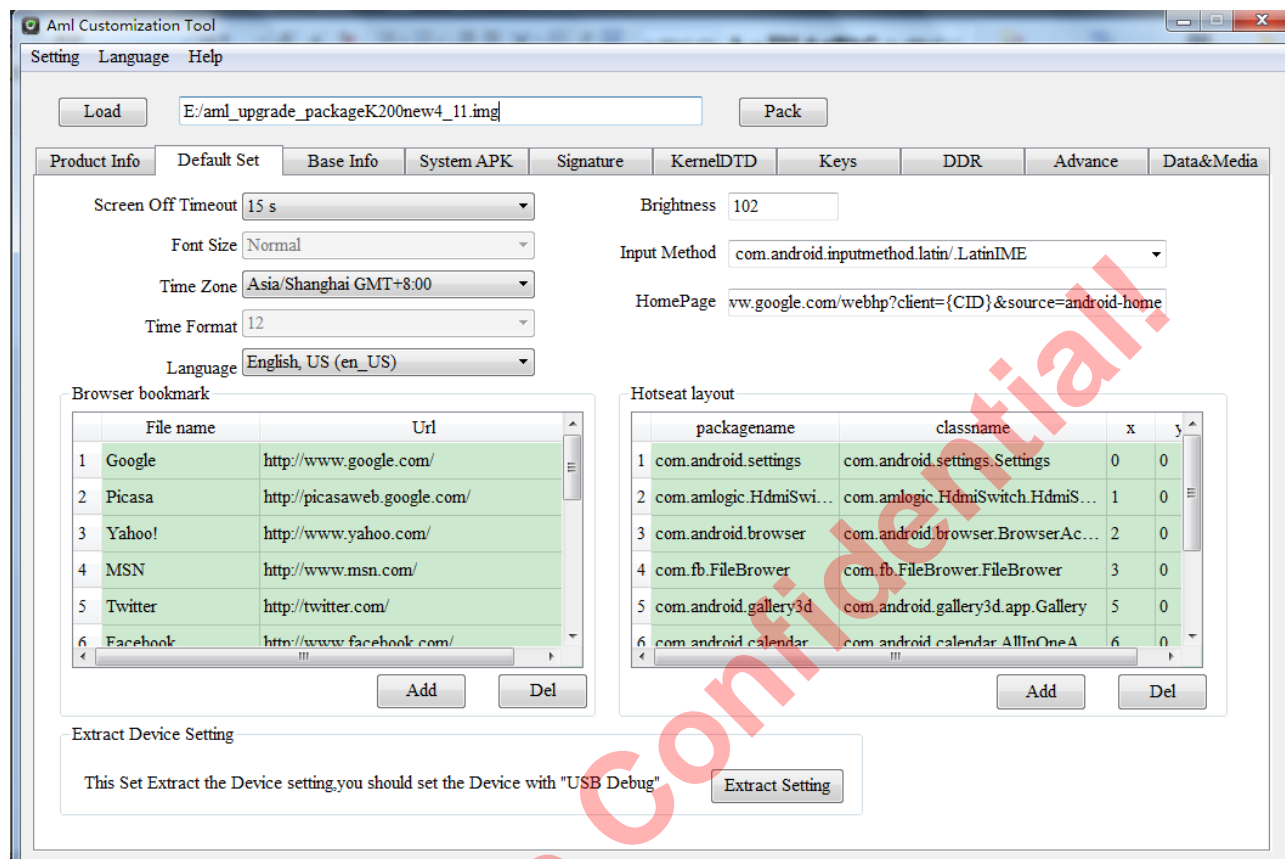


Figure 4.5 Choose “Show Default Setting” to unpack

5.Modify Product Information

5.1 Modify Product Name and Vendor

In the Product Info tab, enter the value in Model edit box to change the model name; enter the value in the Vendor edit box to change the system product vendor and enter the value in Product edit box to change the system product name.

The contents in android version and disk name edit box cannot be modified.

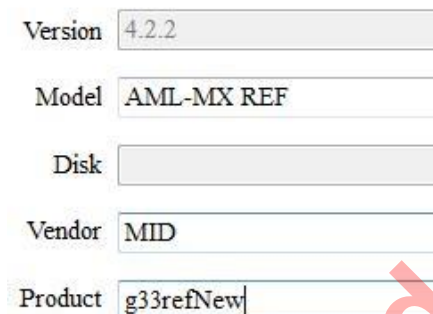


Figure 5.1 Modify product information

5.2 Modify Wallpaper

Click the Wallpaper tab (Figure 4.2) ,click <Set> at the bottom and open the wallpaper setting dialog (Figure 5.3). It will show the system default wallpapers. The user can choose one of the picture as the default wallpaper or add/remove the user defined pictures. The pictures need to be in jpg format. It is preferred to use high resolution pictures which will provides a better effect.



Figure 5.2 Change wallpaper



Figure 5.3 Add/remove wallpaper pictures and set as default

5.3 Modify Power-on Logo

Click the Power-on Logo tab (Figure 5.4), click <Open> at the bottom and load the power-on logo picture, which is in bmp format.



Figure 5.4 Modify power-on logo

5.4 Modify Boot-up Logo

Click the boot-up logo (Figure 5.5), click <Open> at the bottom and load the new boot-up logo picture, which is in jpg or bmp format.

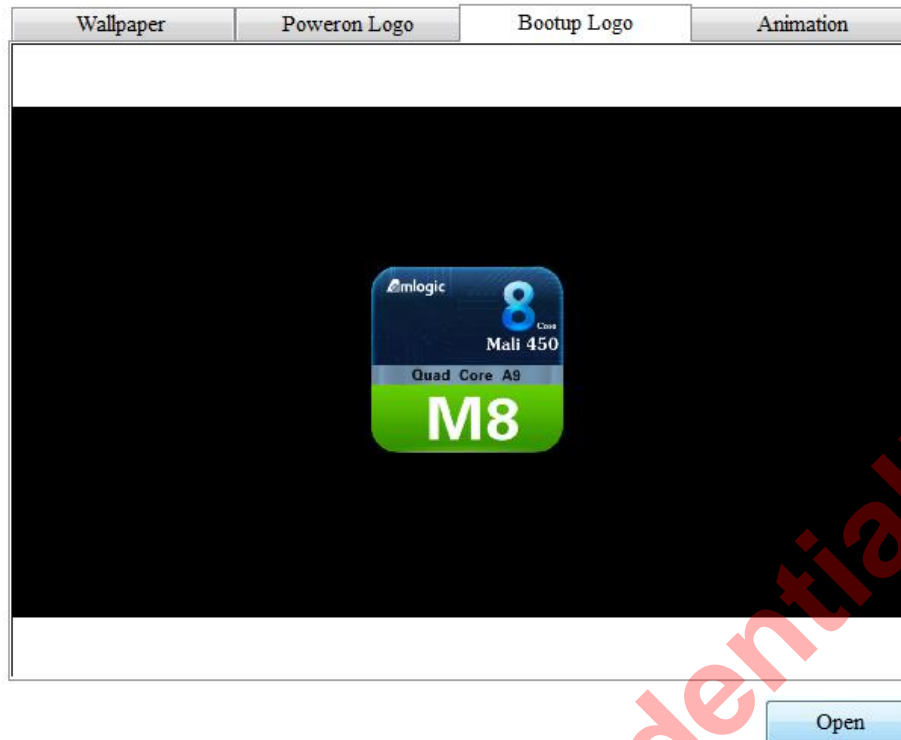


Figure 5.5 Modify boot-up logo

5.5 Modify Boot-up Animation

Click the animation tab (Figure 5.6), click <Open> at the bottom and load the new boot-up animation pack, which is in zip format.



Figure 5.6 Modify boot-up animation

6. Modify Default Settings

6.1 Modify Default Parameters

(Figure 6.1), select in Screen Off Timeout to change the screen off time;

Select in Font Size to change the system font;

Select in Time Zone to change the system time zone;

Select in Language to change the system language;

Enter in Brightness to change the panel brightness;

Enter in Input Method to change the system default IME ID or new IME ID provided that the related IME APK has been installed. Otherwise it will use Android default one.

Enter in HomePage to change the system default home page.

Screen Off Timeout	1 min	Brightness	102
Font Size	Normal	Input Method	com.android.inputmethod.latin/.LatinIME
Time Zone	Africa/Abidjan GMT+0:00	HomePage	google.com/webhp?client={CID}&source=android-home
Time Format	24		
Language	English, US (en_US)		

Figure 6.1 Modify default parameters

6.2 Modify Brower Bookmark

Click the Add/Del button (Figure 6.2) in Brower bookmark to add/remove.

	file name	Url
1	Google	http://www.google.com/
2	Picasa	http://picasaweb.google.com/
3	Yahoo!	http://www.yahoo.com/
4	MSN	http://www.msn.com/
5	Twitter	http://twitter.com/
6	Facebook	http://www.facebook.com/

Add Del

Figure 6.2 Modify browser bookmark

6.3 Modify Hotseat Layout

Click Add/Del button (Figure 6.3) in Hotseat layout to add/remove an application on navigation bar.

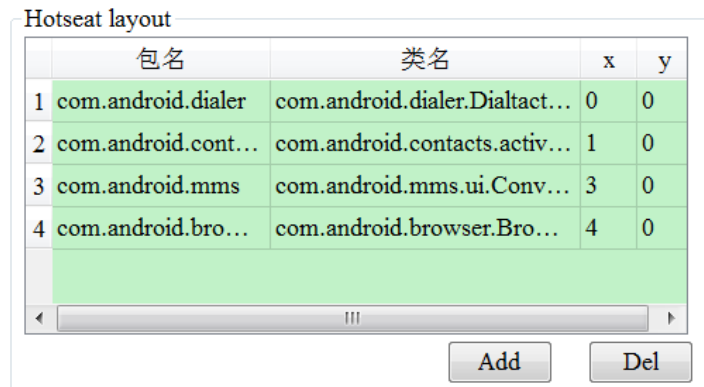


Figure 6.3 Modify hotseat layout

6.4 Import and Export Settings

When selecting ExportSetting in the Setting pull-down menu, the export setting option dialog will be popped up. Choose the required export options including product information, default setting and partition size and then compress the setting info into a zip file;

When selecting ImportSetting in the Setting pull-down menu, the import setting option dialog will be popped up. The user can decompress the zip file and load the setting info into the current setting. The settings to be loaded can be chosen accordingly.

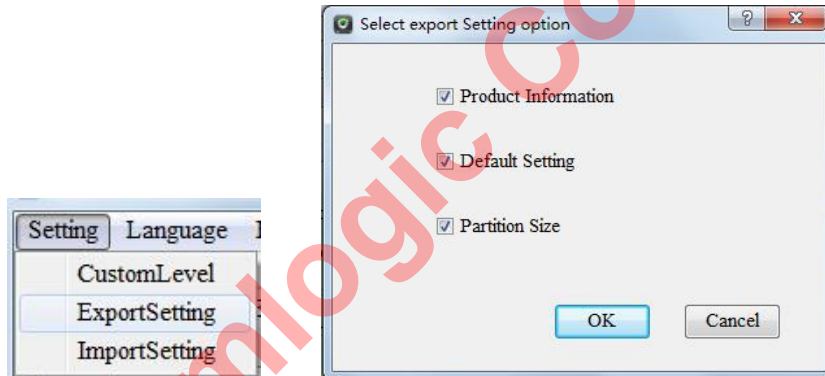


Figure6.4 Export default settings

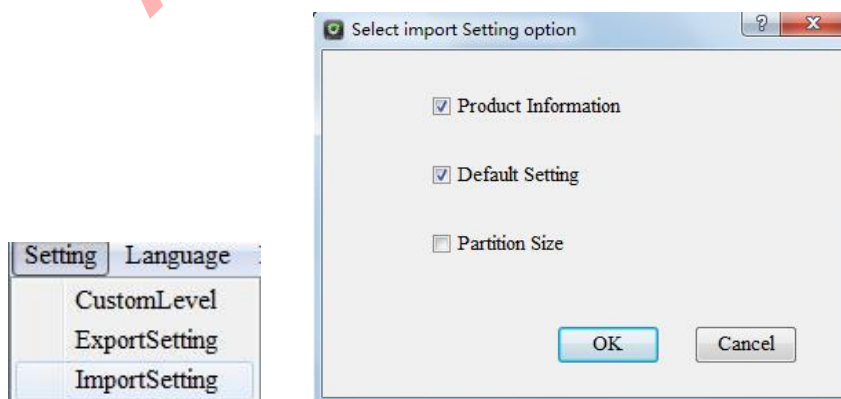


Figure 6.5 Import export settings

6.5 Extract Device Settings

To use this function, it is required to **connect the target device and enable the USB debug option**. After the target device is connected, click Extract Setting button (Figure 6.6) to extract the current device settings to show in Default Set interface.



Figure 6.6 Extract default device settings

7.Partition Table Info

In the partition table info, it lists three items including table name, image size and partition size. The user can edit the partition size (Figure 7.1). After editing, click “Save” to save the modification. In addition, the partition can be also add or remove. Click “Add Partition” (Figure 7.2) and enter the name, size, offset and device location (1: code device, 2: data device) of the partition to be added.

	name	image size(Hex)	partition size(Hex)
1	logo	49eab0	2000000
2	recovery	7d754a	2000000
3	misc		2000000
4	boot	746cb7	2000000
5	system	1088edfc	40000000
6	cache		10000000
7	data		

Add Partion

Del Partion

Save

Figure 7.1 Partition table settings

DlgPartion

Name

Media

Size

20000000

(Hex)

Offset

0

(Hex)

MaskFlag

2

OK

Cancel

Figure 7.2 Add partition

8.Modify System APK

In System APK interface, it shows all the system APKs (Figure 8.1). The APK name and icon are in the 1st column and APK size is in the 2nd column. The user can click Add and Del at the bottom to add and remove. For APK adding, the user can also use dragging while for removing, the user can right click the APK, choose Del in the pop-up menu and delete it (Figure 8.2).

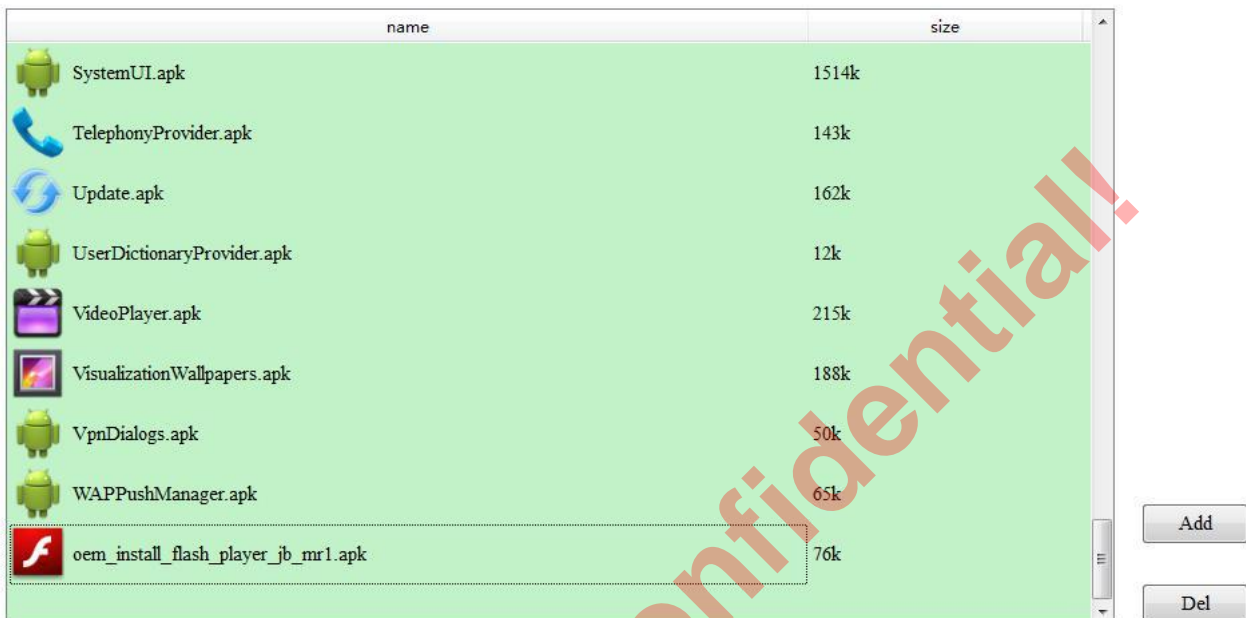


Figure 8.1 System APK



Figure 8.2 Delete system APK in right click menu

9. Replace APK Signature File

The packed APK need signature before using. If the user needs to replace the APK signature Key file, click Assign PWD radio button. The follow four checkbox will be enabled (Figure 9.1). Choose the right checkbox and replace with the corresponding key files. OTA uses testkey.x509.pem public key and testkey.pk8 private key. Platform use platform.x509.pem public key and platform.pk8 private key. Media uses media.x509.pem public key and media.pk8 private key. Shared uses shared.x509.pem public key and shared.pk8 private key.

☐ Default PWD

☒ Assign PWD

OTA	<input type="text" value="E:/security/testkey.x509.pem; E:/security/testkey.pk8"/>	<input type="button" value="Select"/>
Platform	<input type="text"/>	<input type="button" value="Select"/>
Media	<input type="text"/>	<input type="button" value="Select"/>
Shared	<input type="text"/>	<input type="button" value="Select"/>

Figure 9.1 Replace APK signature file

10.Edit Dtd File

The user can view and modify Dtd file in KernelDtd tab where the left category tree is divided into three levels, Module, Device and Property. Each modules contains several Device and each devices contains several Property. When clicking one Module, the right panel will show the status of all Device under this Module (Figure 10.1), such as Uart. It will also show whether the Device is able to set up and whether it is enabled, etc.

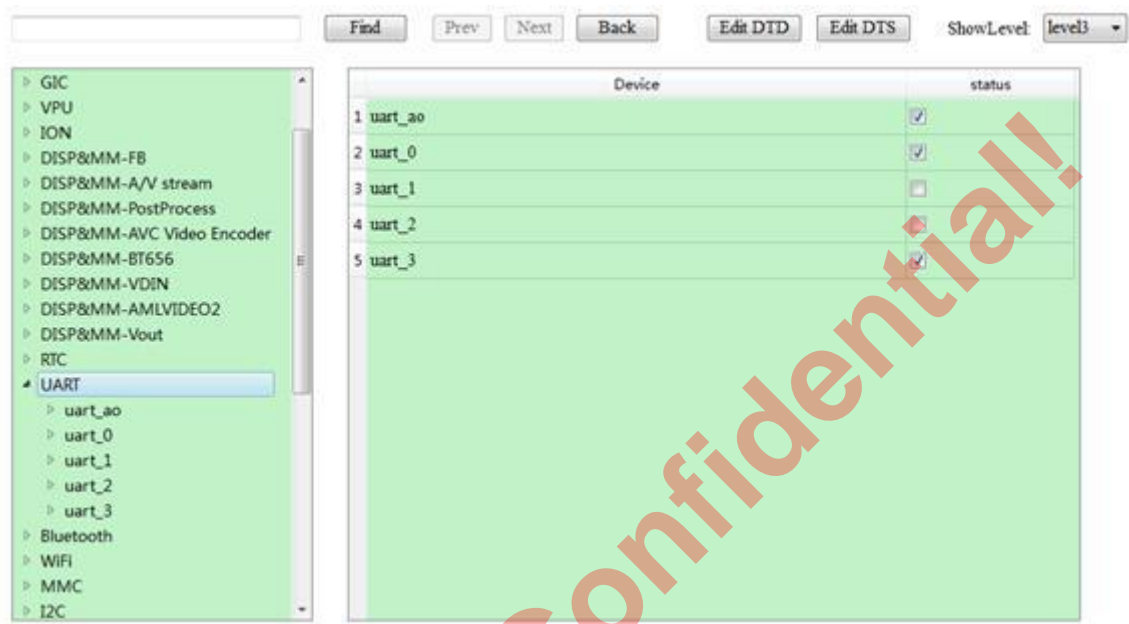


Figure 10.1 Module related device under Kernel Dtd

When clicking one of the devices, the property names and related descriptions of this device will be shown in the right panel (figure 10.2), such as uart_ao.

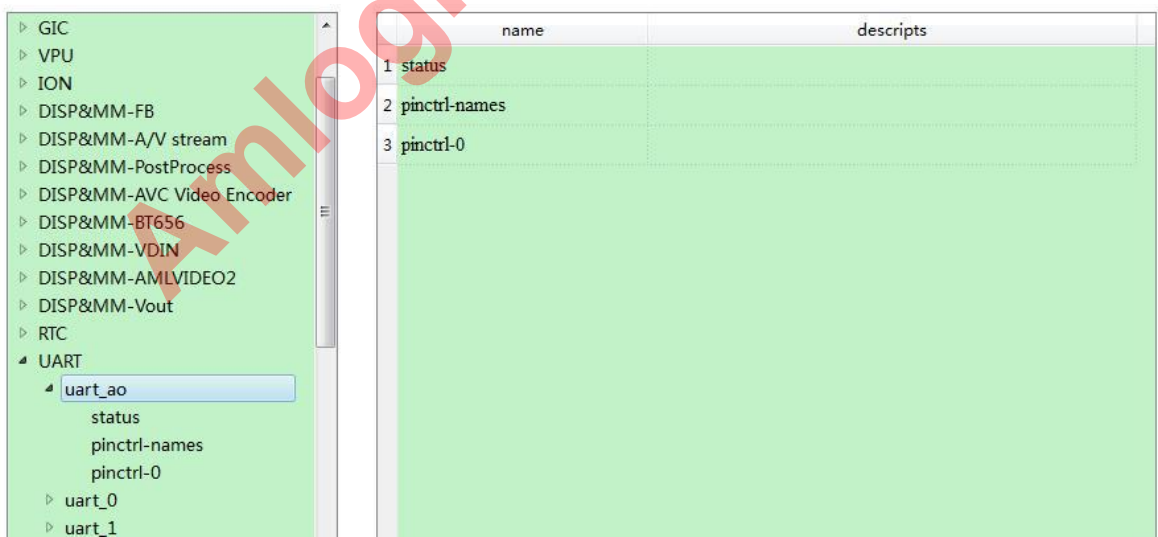


Figure 10.2 Device related property

When click one of the properties or double click in the right panel, it will show the specific settings of this property (Figure 10.3). To modify the property, click Modify and the dialog will pop up (Figure 10.4), where the

user can modify the values, such as String, U32. For property in Choice type, it is also possible to jump into the related property to set up.

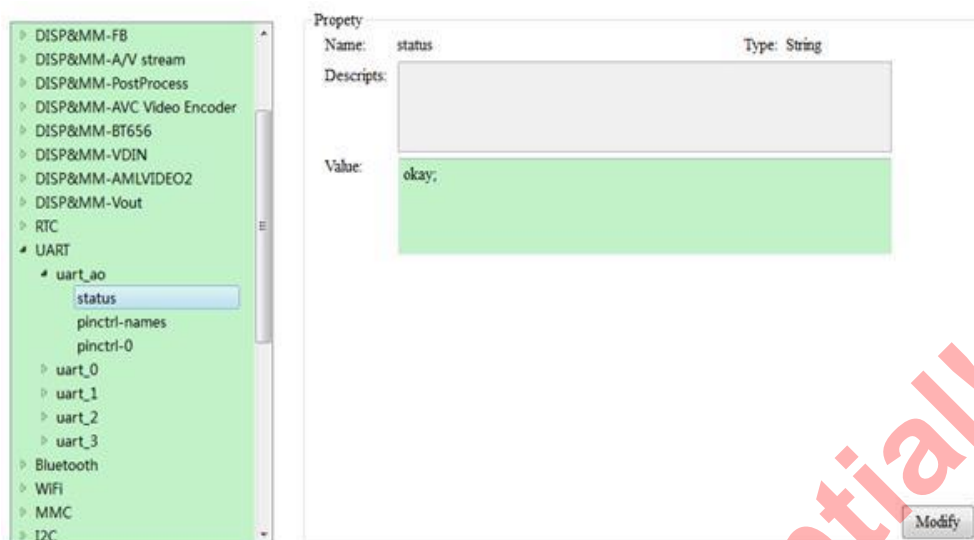


Figure 10.3 Property settings

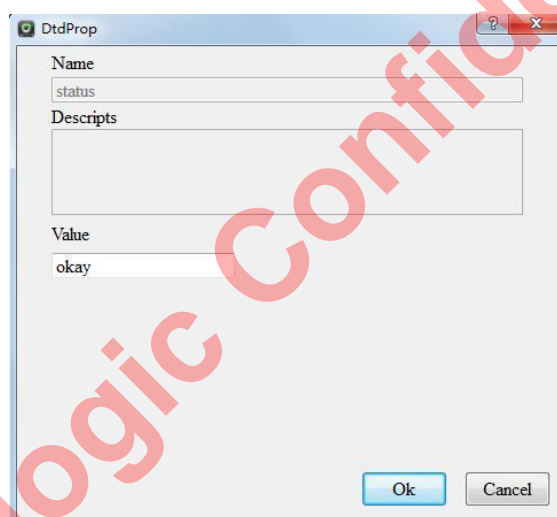


Figure 10.4 Modify property settings

By clicking “Edit DTD”, the user can manually edit the DTD file and by clicking “Edit DTS”, the user can manually edit the DTS file generated by the DTS (Figure 10.5).

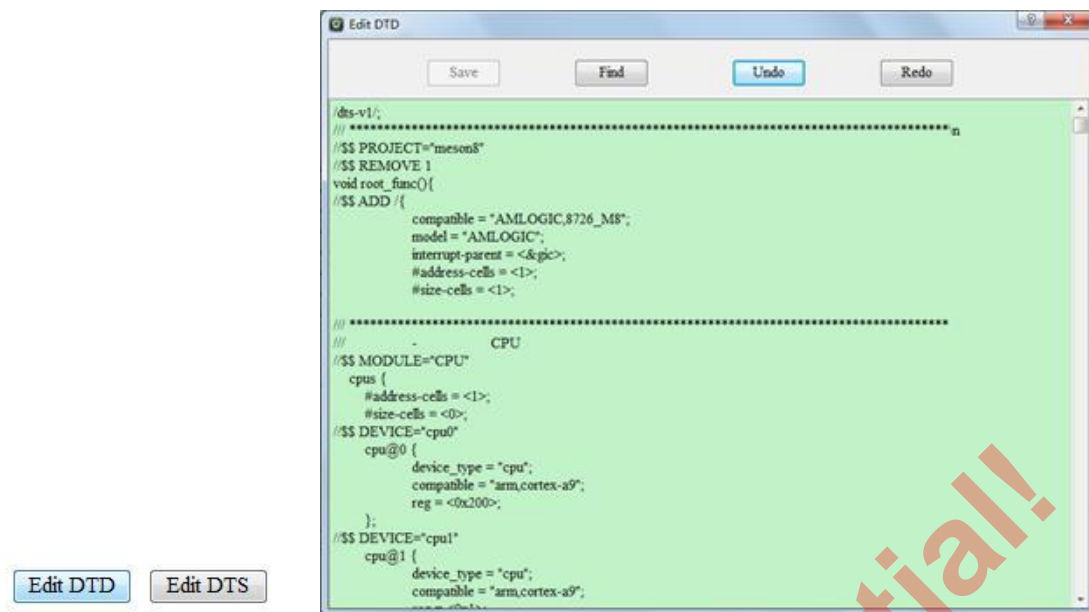


Figure 10.5 Manually edit DTD, DTS file

If the user has modified the DTD or DTS, DTB file will need to be re-generated by clicking "Gen DTB". If successful, it will show as Figure 10.6.

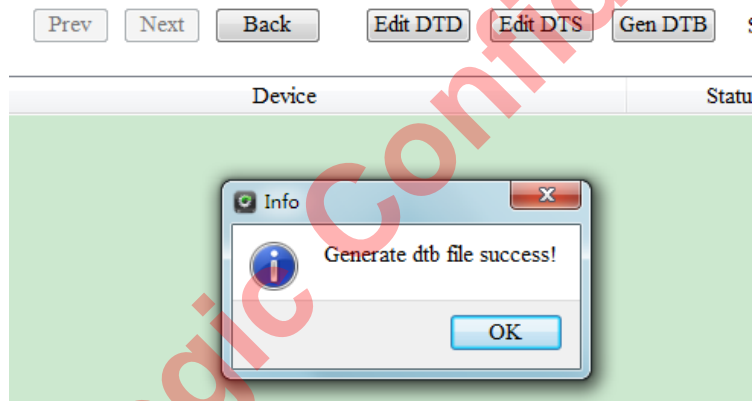


Figure 10.6 Generate DTB file

11.Set Key File

There are some key option to be chosen in the Key configuration interface. The user can select the related key names, check the checkbox and click SetKeycfg button (Key 11.1). The tool will set the keys to be burnt into keys.conf file. This file is needed when re-generating the image package. If the required key is not listed in the interface, the user can double click the items in the first column and edit the key name.

	Key	Status
1	mac	<input type="checkbox"/>
2	mac_bt	<input type="checkbox"/>
3	mac_wifi	<input type="checkbox"/>
4	usid	<input type="checkbox"/>
5	hdcp	<input type="checkbox"/>
6	customerid	<input type="checkbox"/>
7	secure_boot_set	<input type="checkbox"/>
8	uuid1	<input type="checkbox"/>
9	uuid2	<input type="checkbox"/>
10	boardid	<input type="checkbox"/>
11	boardInfo	<input type="checkbox"/>
12	widevine L1 keybox	<input type="checkbox"/>
13		<input type="checkbox"/>
14		<input type="checkbox"/>

if you want modify key name, chose the first column of table to modify or edit that key name

SetKeycfg

Figure 11.1 Set the configuration file of the keys to be burnt

12.Add Data Partition and Media Partition

In Data&Media set-up menu, choose Add option in top-left menu to add Data partition or Media partition (Figure 12.1). If the partition is already in the partition table, then we can add the related partition files.

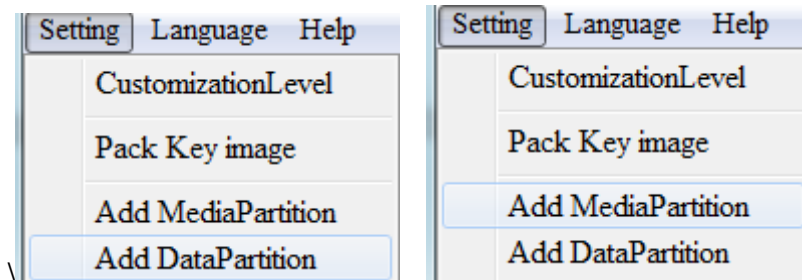


Figure 12.1 Add Data partition and Media partition

Double clicking "DataFile" button will open the corresponding Data partition file folder. Then the user can add the file here (Figure 12.2) or simply drag the files in the "Data File" table.

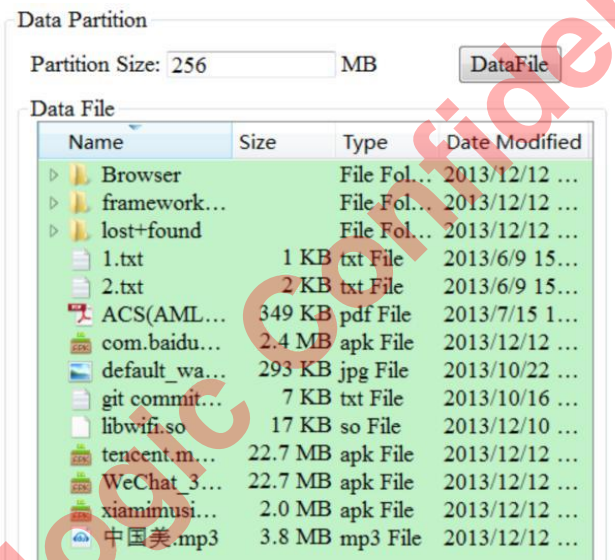


Figure 12.2 Add Data partition files

Before adding Media partition, the user needs to make Media partition exist in the partition table. Otherwise the actual partition will not be created (Figure 12.3).

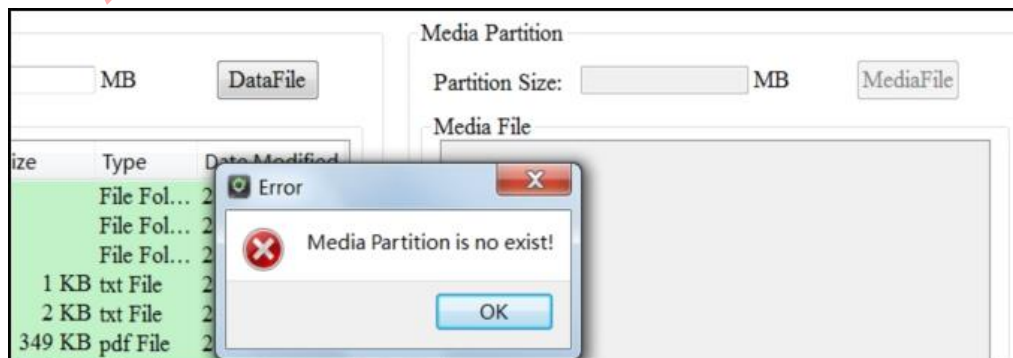


Figure 12.3 Unable to create actual Media partition when not existing in partition table

Double clicking “MediaFile” button will open the corresponding Media partition file folder. Then the user can add the file here (Figure 12.4) or simply drag the files in the “Media File” table.

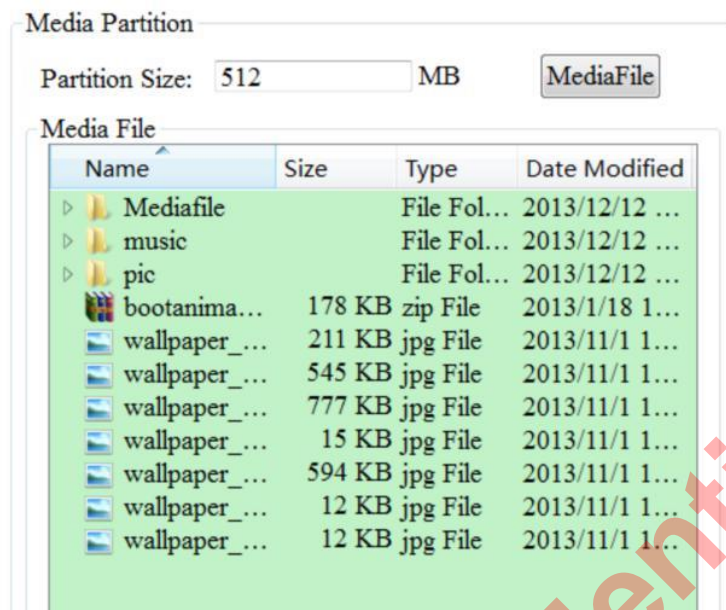


Figure 12.4 Add Media partition files

13.Advance

The advance tab is for manually editing the configuration file to change the system settings (Figure 13.1).

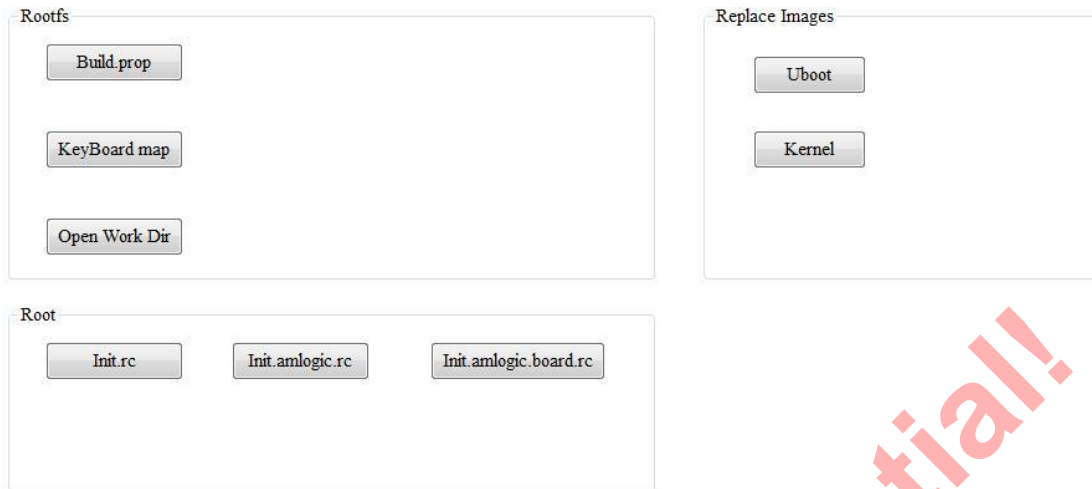


Figure 13.1 Advanced configurations

Clicking Build prop button will open the Build.prop for manual edit (Figure 13.2).

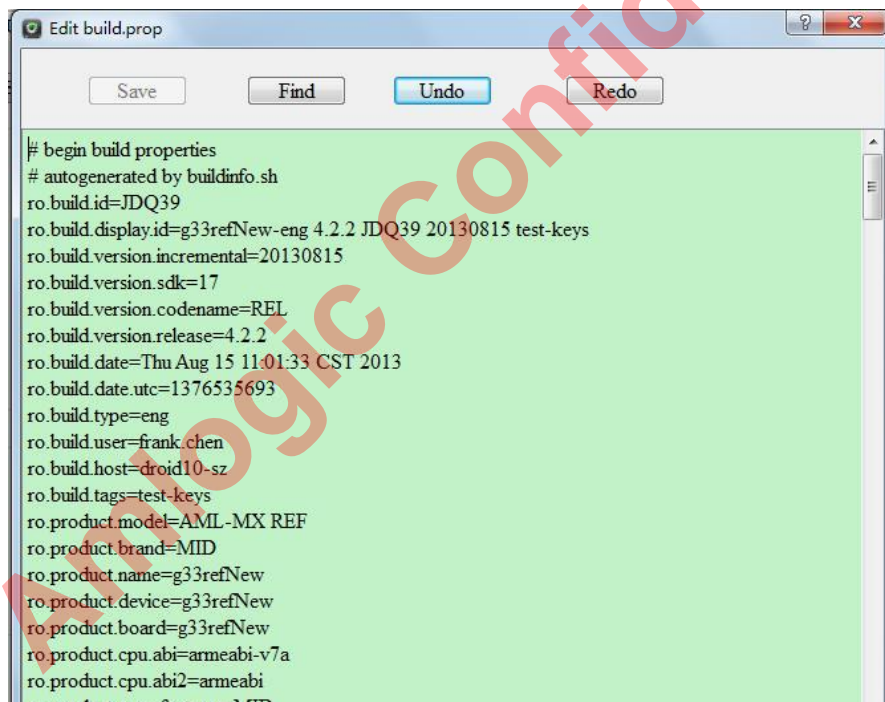


Figure 13.2 Edit Build.prop file

Clicking the Keyboard map button will open the \tmp\level2\system\usr\keylayout folder under the executive file folder (Figure 13.3).

名称	修改日期	类型	大小
AVRCP.kl	2013/9/9 11:16	KL 文件	1 KB
Generic.kl	2013/9/9 11:16	KL 文件	9 KB
qwerty.kl	2013/9/9 11:16	KL 文件	3 KB
Vendor_0001_Product_0001.kl	2013/9/9 11:16	KL 文件	1 KB
Vendor_1b8e_Product_0cec_Version_...	2013/9/9 11:16	KL 文件	8 KB
Vendor_05ac_Product_0239.kl	2013/9/9 11:16	KL 文件	3 KB
Vendor_22b8_Product_093d.kl	2013/9/9 11:16	KL 文件	2 KB
Vendor_045e_Product_028e.kl	2013/9/9 11:16	KL 文件	2 KB
Vendor_046d_Product_c216.kl	2013/9/9 11:16	KL 文件	2 KB
Vendor_046d_Product_c294.kl	2013/9/9 11:16	KL 文件	2 KB
Vendor_046d_Product_c299.kl	2013/9/9 11:16	KL 文件	2 KB
Vendor_046d_Product_c532.kl	2013/9/9 11:16	KL 文件	3 KB
Vendor_054c_Product_0268.kl	2013/9/9 11:16	KL 文件	2 KB

Figure 13.3 Open \tmp\level2\system\usr\keylayout folder

Clicking open work dir button will open the installation directory (Figure 13.4).

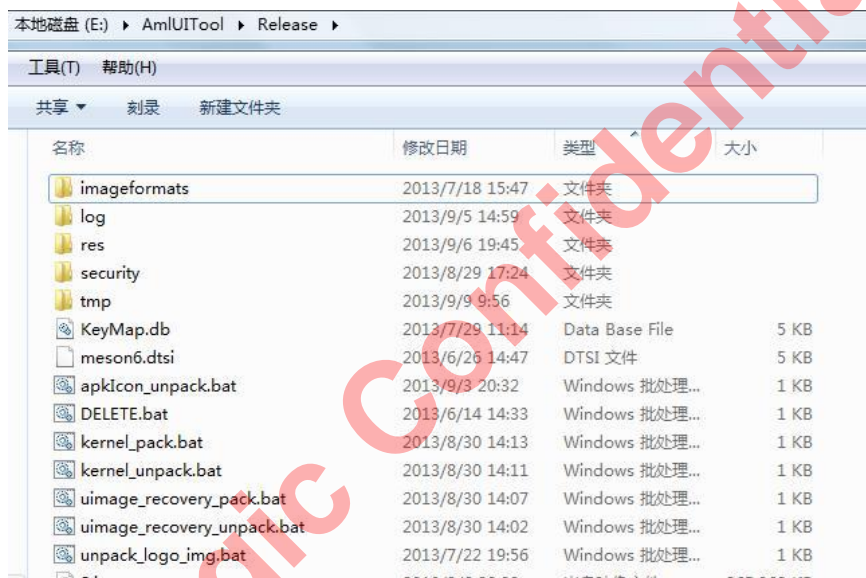


Figure 13.4 Open the installation directory

Click "Init.rc", "Init.amlogic.rc", "Init.amlogic.board.rc" will open Init.rc, Init.amlogic.rc, Init.amlogic.board.rc file respectively for editing (Figure 13.5).

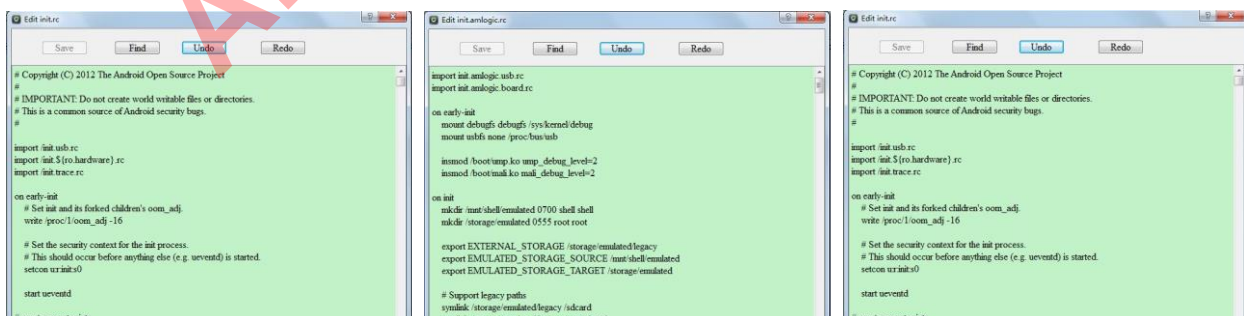


Figure 13.5 Edit Init.rc、Init.amlogic.rc、Init.amlogic.board.rc files

Clicking “Uboot”, “Kernel” button under Replace Images will open the configuration page for replacing Uboot and kernel (Figure 13.6). For uboot, it will need to replace three files while for kernel, only one file need to be replaced (Figure 13.7). During replacing, the messenger that no boot.partition is generated will not be given.

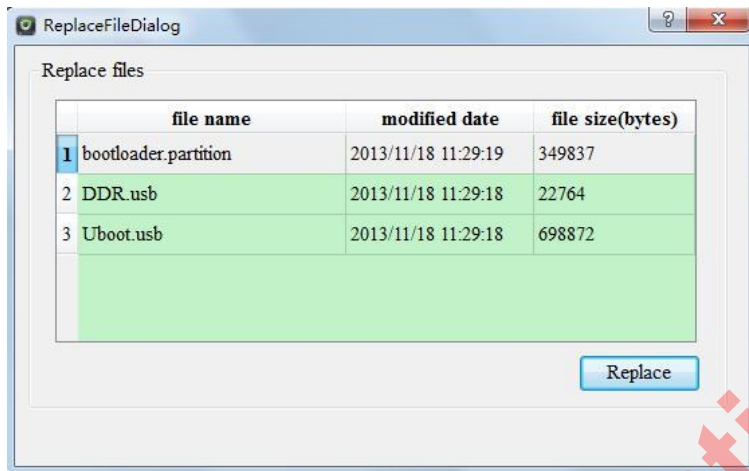


Figure 13.6 Replace file in Uboot

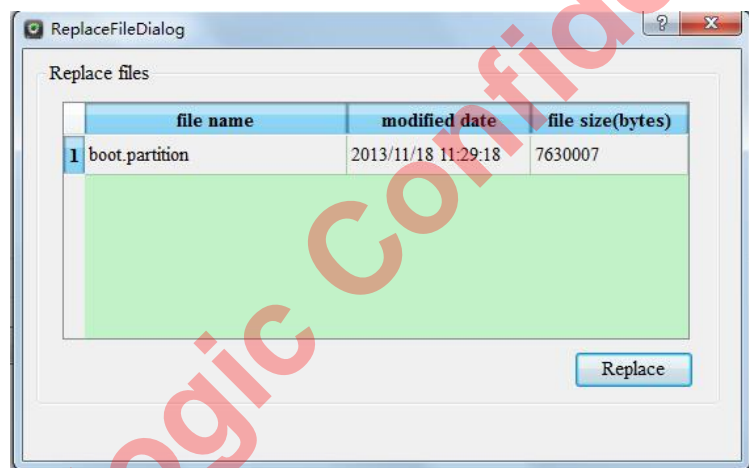


Figure 13.7 Replace file in Kernel

When “WifiConfig” button is activated, click it will pop up the customization page for WIFI device configuration. The user can select the corresponding module of the target device and assign the driver and lib files. For example for K200-A device, checking rtl8188eu device status checkbox will replace the driver and lib files under system/wifi/, which implements the wWIFI device customization (Figure 13.8).

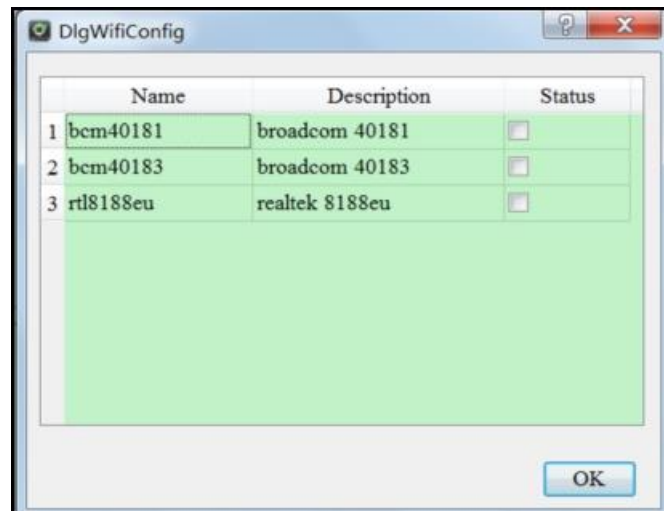


Figure 13.8 Choose the corresponding WIFI module of the target device

14.Generate New Image Package

After finish the system customization, new image package needs to be generated. Click Pack button (Figure 14.1), enter the new customization image pack in the pop-up directory section dialog and start the new image packing. According to different options, the whole packing time will take 30 second to 2 minutes.

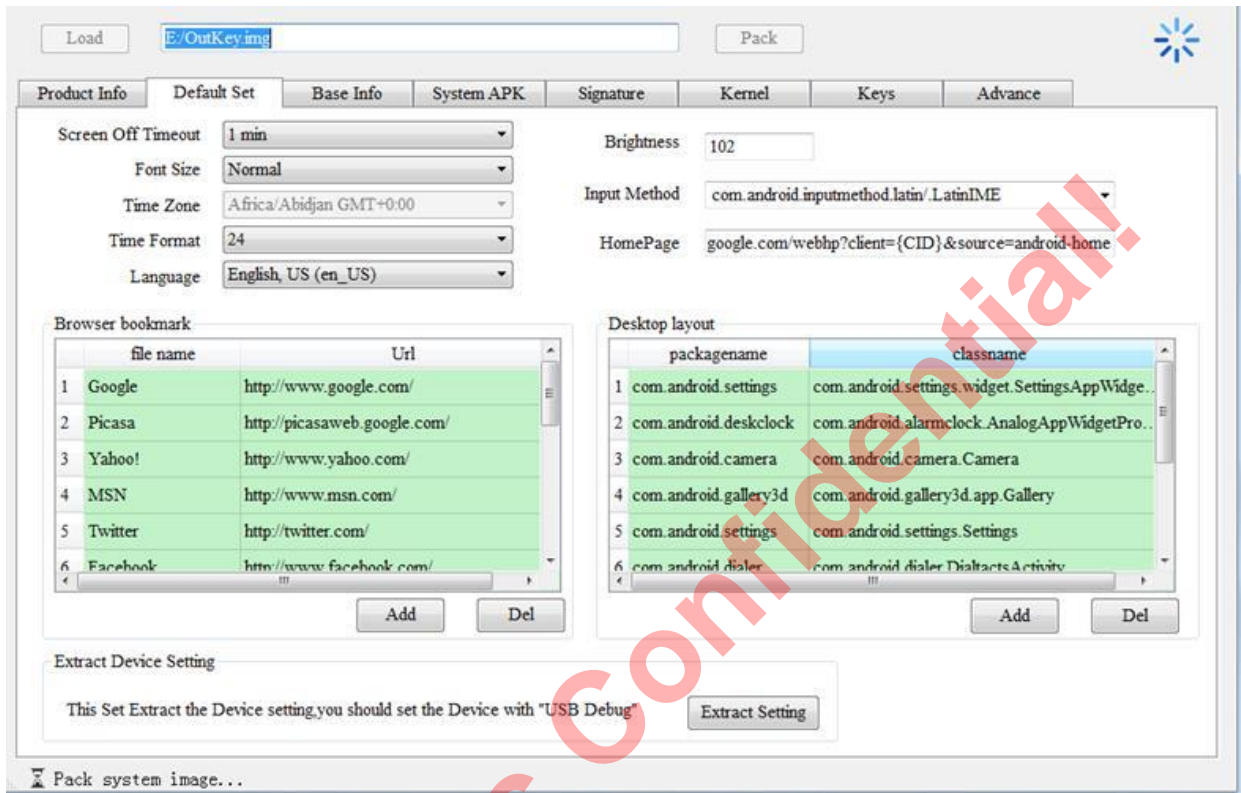


Figure 14.1 Pack new image

15. Set Tool Language

By setting the language in Language menu, the user can configure the tool language (Figure 15.1). The tool can switch between Chinese and English (Figure 15.2).

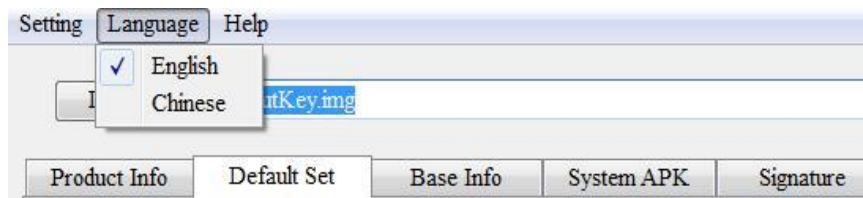


Figure 15.1 Set to English



Figure 15.2 Set to Chinese

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16. Online Upgrade

By selecting Upgrade under the Help menu, the tool will connect to Amlogic FTP server to obtain the latest version of customization tool (Figure 16.1). Make sure the network is connected (Figure 16.2).

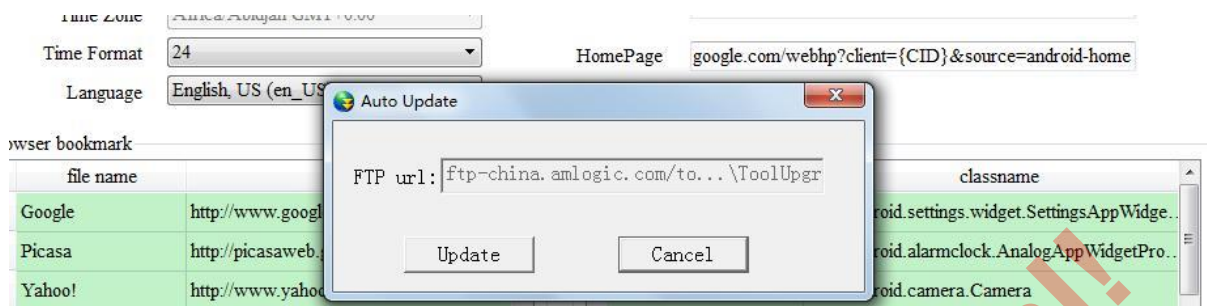


Figure 16.1 Choose to upgrading to the latest version

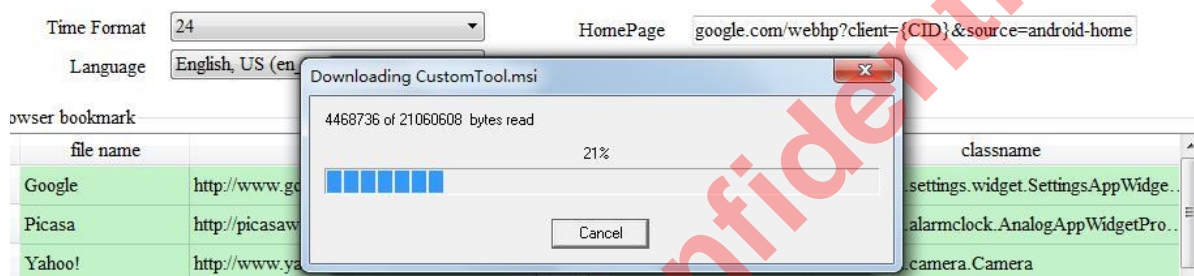


Figure 16.2 Upgrading the latest version