

# 1.Foreword

This document bases on <https://github.com/esp8266/esp8266-wiki/wiki/Toolchain>

Also thanks jcmvbkbc for crosstool-NG

<https://github.com/jcmvbkbc/crosstool-NG/commit/7d1edb6968934e891e22006cde8f9c827ca1765a>

## 2.Virtual Machine

All development tools for ESP8266 Internet of Things Module-based secondary development have been installed on a virtual machine and users only have to install the virtual machine and import it before they can start development.

### 2.1. Virtual Machine Software

VirtualBox is used as our virtual machine, which can be downloaded at:

<https://www.virtualbox.org/wiki/Downloads>

Recommend to choose the version of 4.3.12 for the right platform.

### 2.2. Virtual Computer

#### 2.2.1.Image

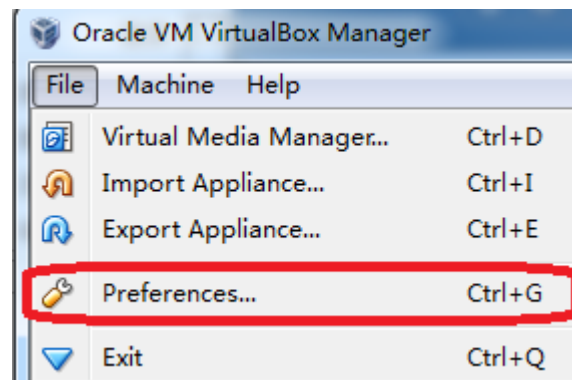
Open virtual format (\*.ova) is used for virtual computer image and the file is ESP8266\_lubuntu.ova which can be imported into other virtual machine software.

Note: user name is “ESP8266”, password is “espressif”.

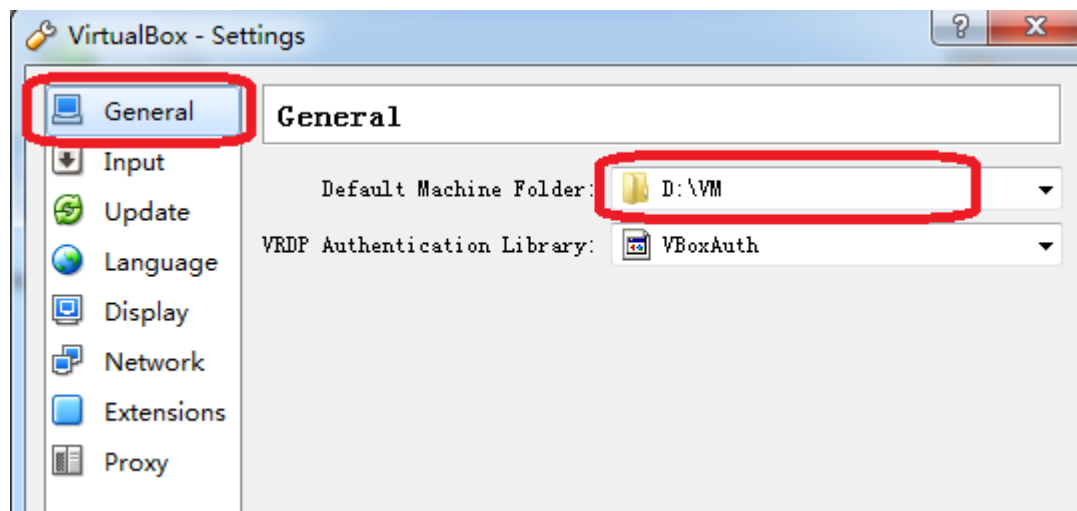
### 2.2.2.Import

In default condition, VirtualBox will import virtual computer into system disk and this import will take up a lot of system space as users use the virtual computer. Hence, it is recommended to install virtual computer on non-system disk.

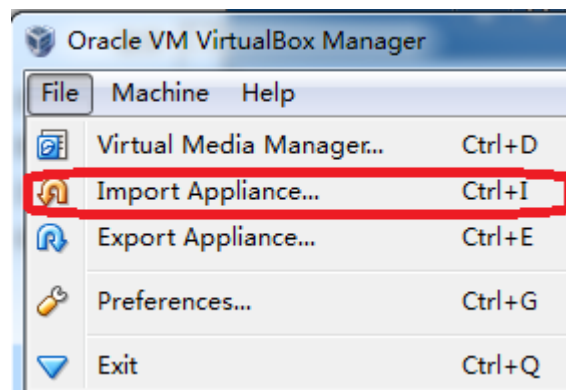
Step 1: Select "Preferences" in the management menu



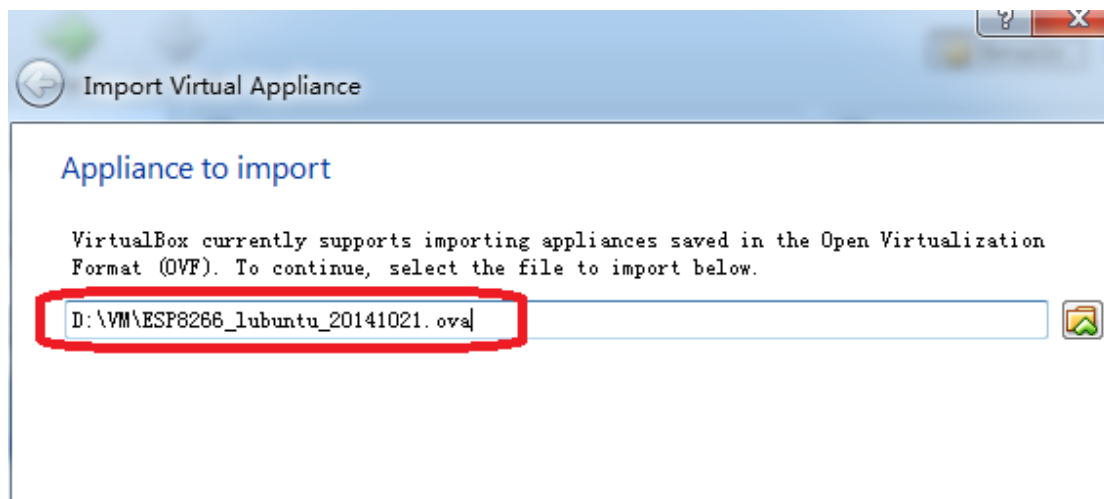
Step 2: Select "General" where you can set the path for virtual computer, for example: D:\vm



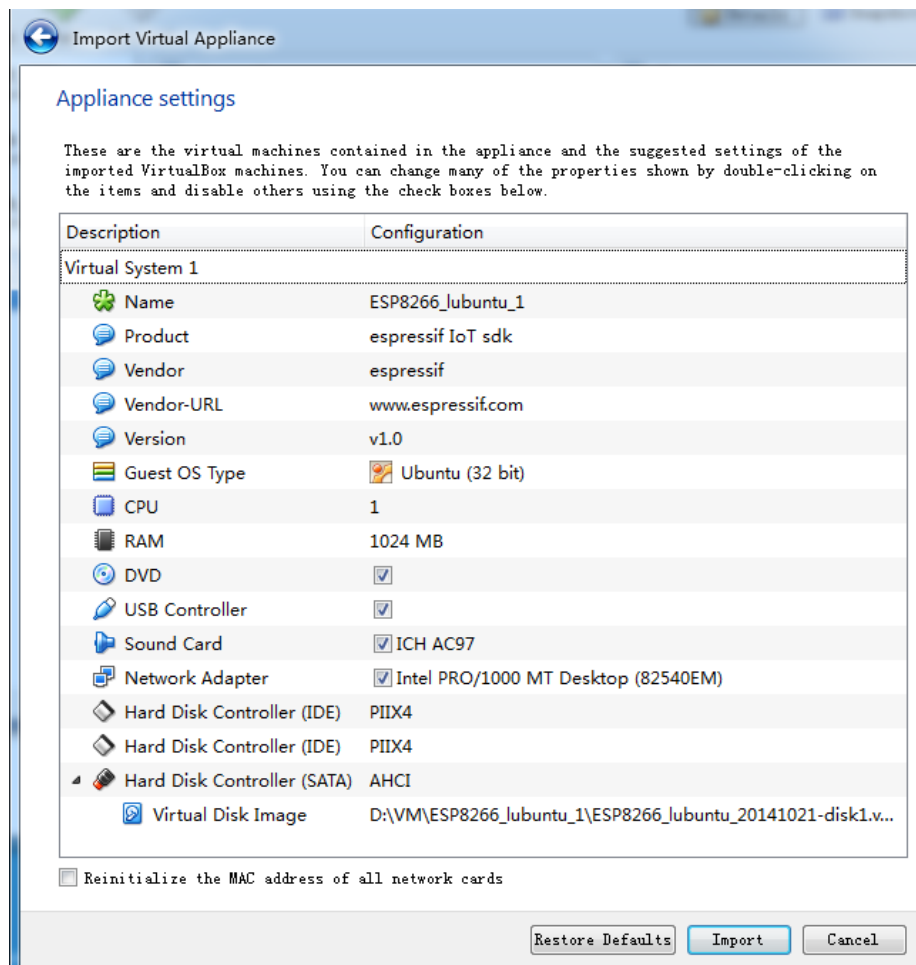
Step 3: Select "Import Appliance " in the management menu





Step 4: Set the path for the virtual computer to be imported, for example: D:\vm\ ESP8266\_lubuntu\_20141021.ova



Step 5: import

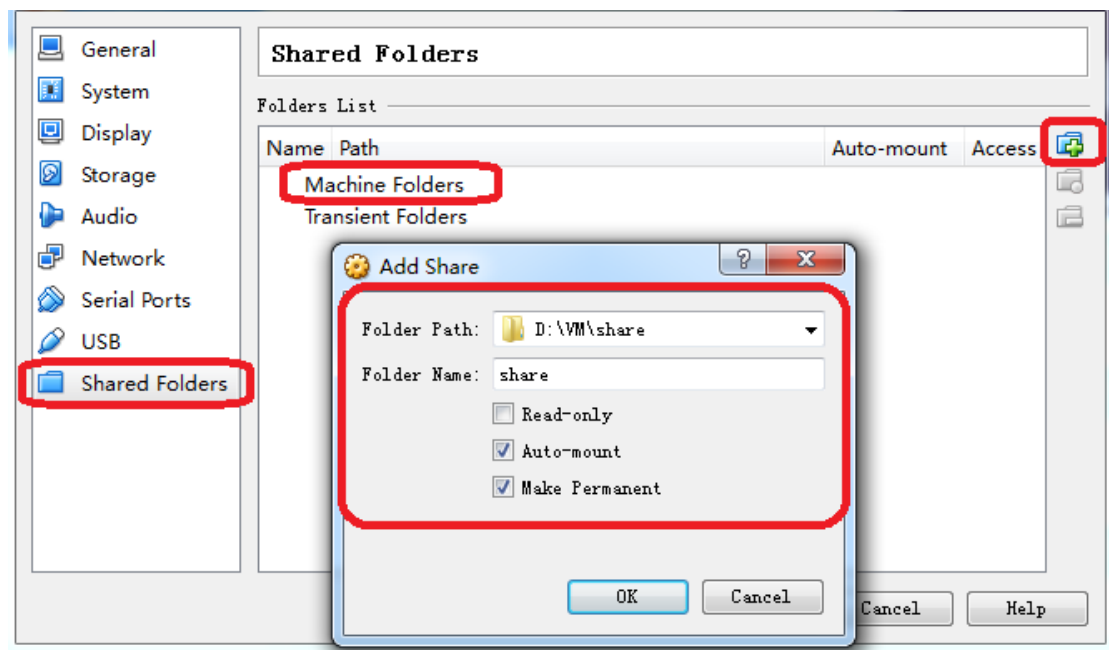
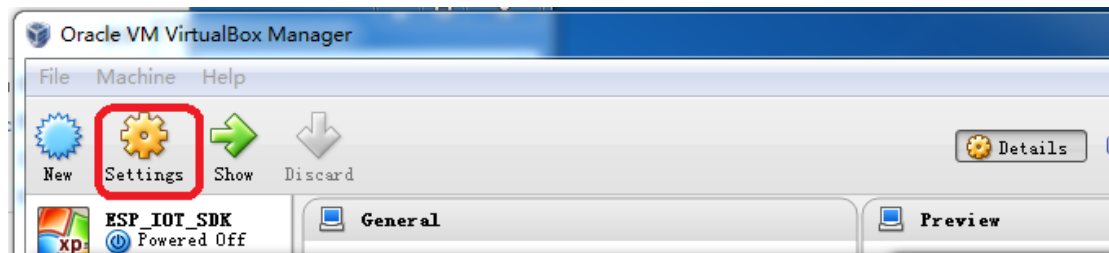


After the import, the following files can be found in D:\vm\ESP8266\_lubuntu\_1:

 ESP8266_lubuntu_1.vbox	10/21/2014 5:15...	VirtualBox Mach...	9 KB
 ESP8266_lubuntu_20141021-disk1.v...	10/21/2014 5:15...	Virtual Machine ...	2,910,720...

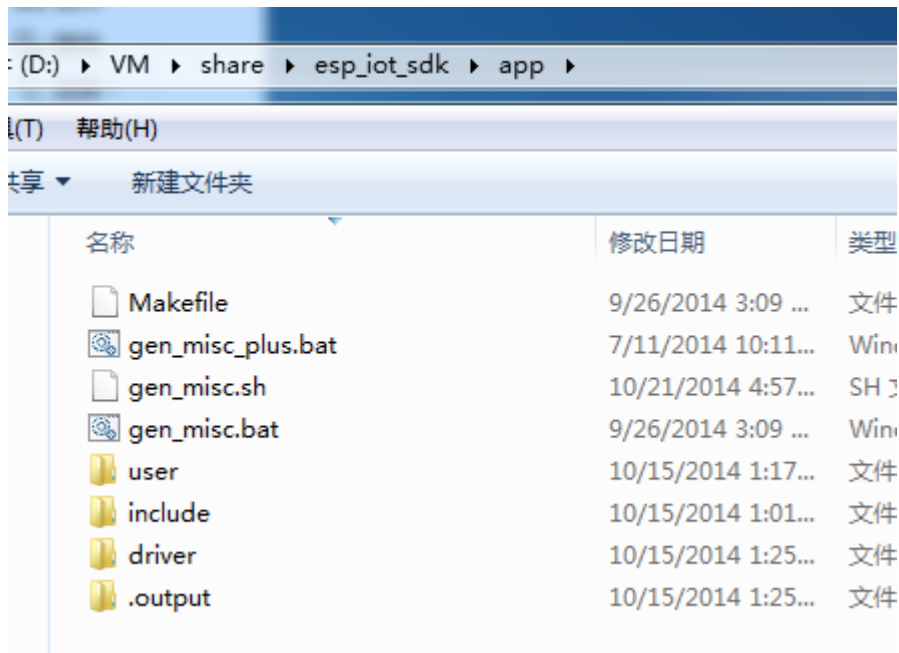
### 2.2.3.Shared folders

Please share the folders in the hosting machine with the virtual machine before using the virtual machine, for example: create a file holder named "share", which is dedicated to mapping the virtual computer, and the hosting machine can share files with the virtual machine by copying files into this file holder. The specific steps are as follows:

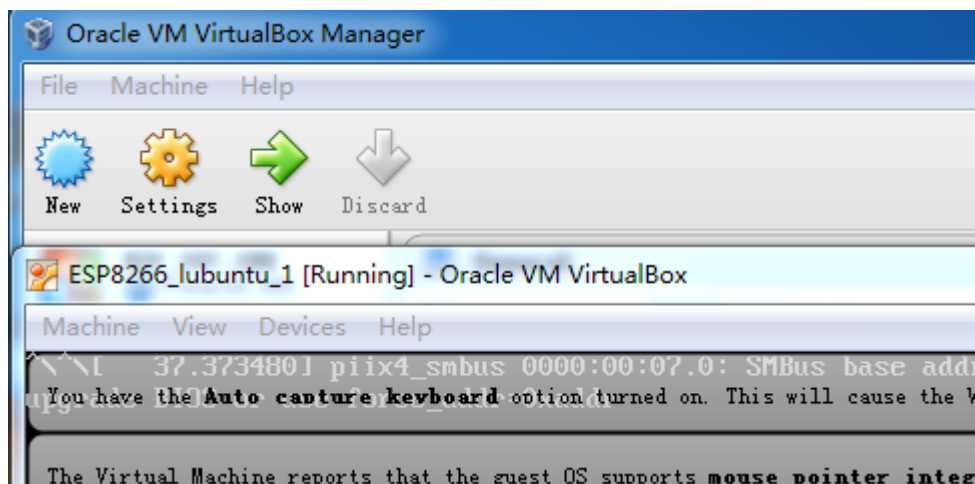


### 3.Compile

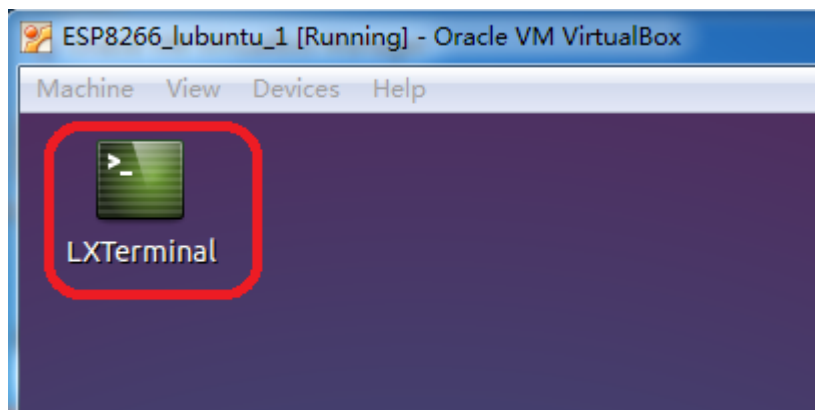
- (1) Copy esp\_iot\_sdk source code to D:\VM\share\ , copy IOT\_DEMO(which in \esp\_iot\_sdk\examples) or AT source code to D:\VM\share\esp\_iot\_sdk\app



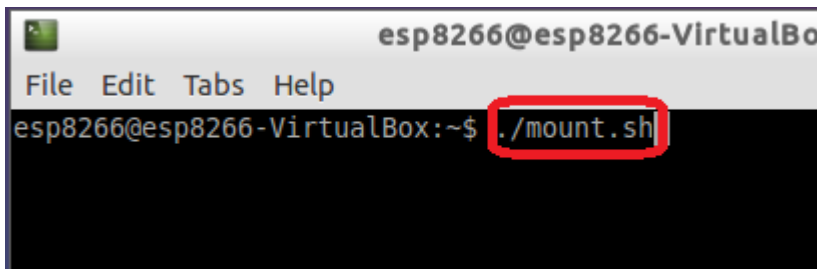
(2) Run the VirtualBox



(3) Run the “LXTerminal”

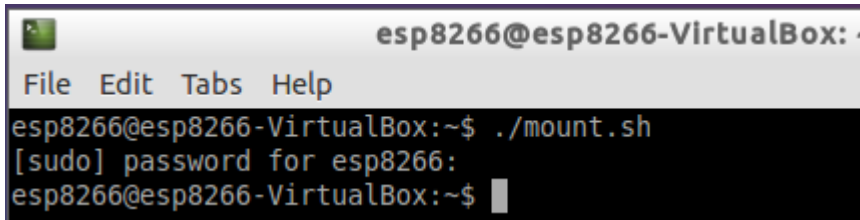


(4) Mount the shared folder first. Input “./mount.sh” , press “Enter”



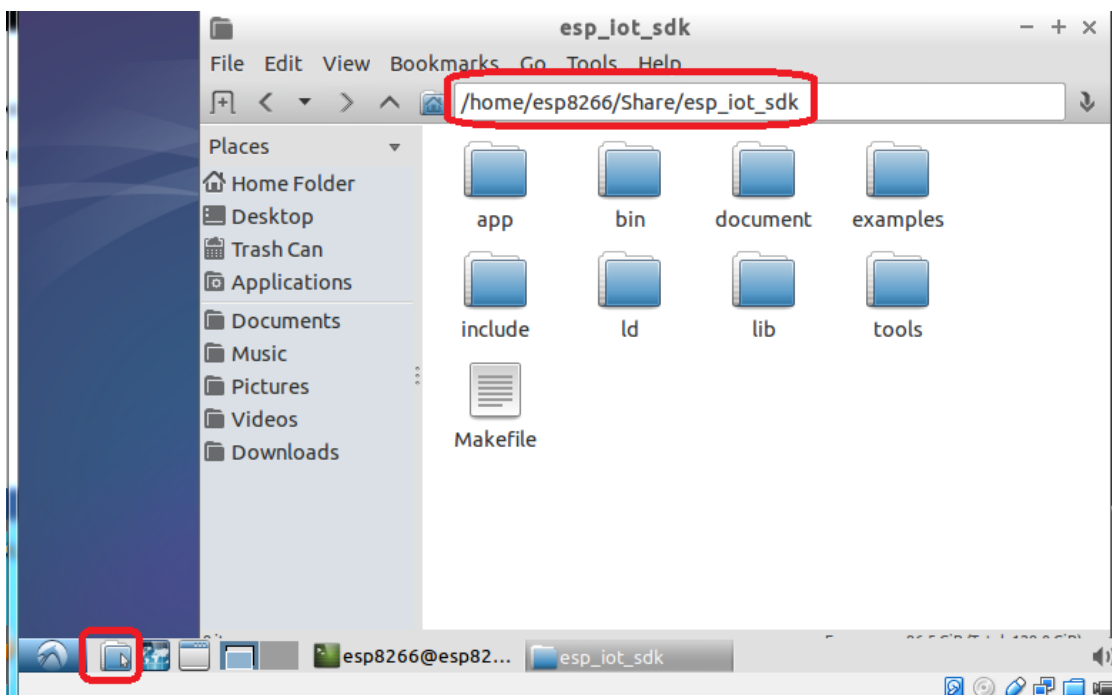
```
esp8266@esp8266-VirtualBo
File Edit Tabs Help
esp8266@esp8266-VirtualBox:~$ ./mount.sh
```

Password is “**espressif**”, input it, press “Enter”

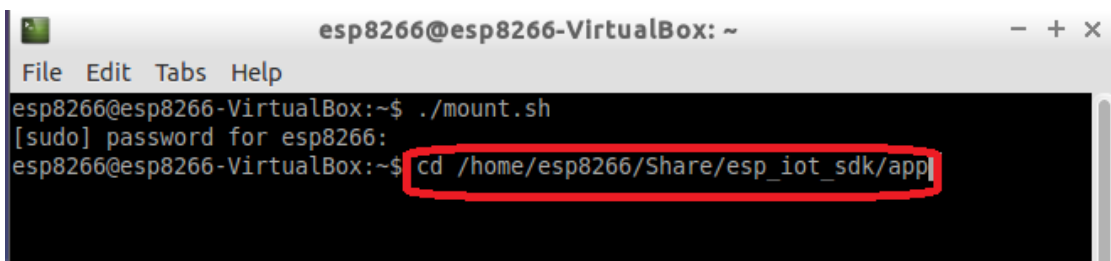


```
esp8266@esp8266-VirtualBox: ~
File Edit Tabs Help
esp8266@esp8266-VirtualBox:~$ ./mount.sh
[sudo] password for esp8266:
esp8266@esp8266-VirtualBox:~$
```

(5) Check if the shared folder can be find in the VirtualBox



Open the directory that will be compiled.



```
esp8266@esp8266-VirtualBox: ~
File Edit Tabs Help
esp8266@esp8266-VirtualBox:~$ ./mount.sh
[sudo] password for esp8266:
esp8266@esp8266-VirtualBox:~$ cd /home/esp8266/Share/esp_iot_sdk/app
```

(6) Call “make” followed by “./gen\_misc.sh” to compile.

```
esp8266@esp8266-VirtualBox: ~/Share/esp_iot_sdk/app
File Edit Tabs Help
esp8266@esp8266-VirtualBox:~$ ./mount.sh
[sudo] password for esp8266:
esp8266@esp8266-VirtualBox:~$ cd /home/esp8266/Share/esp_iot_sdk/app
esp8266@esp8266-VirtualBox:~/Share/esp_iot_sdk/app$ make
```

```
esp8266@esp8266-VirtualBox: ~/Share/esp_iot_sdk/app
File Edit Tabs Help
DEPEND: xt-ccc -M -Os -g -O2 -Wpointer-arith -Wundef -Werror -WL,-EL -fno-inline
-functions -nostdlib -mlongcalls -mtext-section-literals -D_ets_ -DICACHE_FLASH
-I include -I ./ -I ../../include/ets -I ../include -I ./ -I ../../include -I
../../include/eagle user_esp_platform.c
make[1]: Leaving directory `/mnt/Share/esp_iot_sdk/app/user'
make[1]: Entering directory `/mnt/Share/esp_iot_sdk/app/user'
xt-ccc -Os -g -O2 -Wpointer-arith -Wundef -Werror -WL,-EL -fno-inline-functions
-nostdlib -mlongcalls -mtext-section-literals -D_ets_ -DICACHE_FLASH -I inc
lude -I ./ -I ../../include/ets -I ../include -I ./ -I ../../include -I ../in
clude/eagle -o .output/eagle/debug/obj/user_esp_platform.o -c user_esp_platform
.c
xt-ar ru .output/eagle/debug/lib/libuser.a .output/eagle/debug/obj/user_esp_plat
form.o
make[1]: Leaving directory `/mnt/Share/esp_iot_sdk/app/user'
make[1]: Entering directory `/mnt/Share/esp_iot_sdk/app/driver'
make[1]: Leaving directory `/mnt/Share/esp_iot_sdk/app/driver'
xt-ccc -L../lib -nostdlib -T../ld/eagle.app.v6.ld -WL,--no-check-sections -u ca
ll_user_start -WL,-static -WL,--start-group -lc -lgcc -lhal -lphy -lnet80211 -ll
wip -lwpa -lmain -ljson -lssl -lupgrade -lupgrade_ssl user/.output/eagle/debug/l
ib/libuser.a driver/.output/eagle/debug/lib/libdriver.a -WL,--end-group -o .outp
ut/eagle/debug/image/eagle.app.v6.out
xt-objcopy -O binary .output/eagle/debug/image/eagle.app.v6.out .output/eagle/de
bug/bin/eagle.app.v6.bin
esp8266@esp8266-VirtualBox:~/Share/esp_iot_sdk/app$ ./gen_misc.sh
```

(7) After compiled, bins are in “D:\VM\share\esp\_iot\_sdk\bin”

(D:) ► VM ► share ► esp_iot_sdk ► bin ►		
(T) 帮助(H)		
享 ▼ 新建文件夹		
名称	修改日期	类
at	10/10/2014 9:49...	文
upgrade	10/10/2014 11:5...	文
blank.bin	9/26/2014 3:09 ...	BI
boot.bin	9/9/2014 5:09 PM	BI
eagle.app.v6.dump	10/21/2014 5:49...	DI
eagle.app.v6.flash.bin	10/21/2014 5:49...	BI
eagle.app.v6.irom0text.bin	10/21/2014 5:49...	BI
eagle.app.v6.S	10/21/2014 5:49...	S
esp_init_data_default.bin	7/4/2014 10:02 ...	BI



## 4.xtensa-lx106-elf.tar.bz2

If you want to use xtensa-lx106-elf.tar.bz2 directly, you need only two steps:

- (1) `tar jxcv xtensa-lx106-elf.tar.bz2 -C /opt`
- (2) `export PATH=/opt/xtensa-lx106-elf/bin:$PATH`  
or add it to the end of `.bashrc` or `.profile`