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. You can find it in http://pan.baidu.com/s/1gd3T14n Password: qudl

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

4	۶ vi	rtualBox - Se	ttings	? X
l		General	General	
	€	Input	Defende Herbine Relder III Della	
	9	Update	Deradit machine rolder.	
	9	Language	VRDP Authentication Library: 🔤 VBoxAuth	-
		Display		
	₽	Network		
		Extensions		
	B	Proxy		

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

1.00			
ſ	🥡 O)racle VM VirtualBox Manager	
	File	Machine Help	
	Ø	Virtual Media Manager	Ctrl+D
	n	Import Appliance	Ctrl+I
	R	Export Appliance	Ctrl+E
	Þ	Preferences	Ctrl+G
1	\bigtriangledown	Exit	Ctrl+Q

Step 4: Set the path for the virtual computer to be imported, for example: D:\vm\ ESP8266_lubuntu_20141021.ova

Import Virtual Appliance	
Appliance to import	
VirtualBox currently supports importing Format (OVF). To continue, select the f	appliances saved in the Open Virtualization ile to import below.
D:\VM\ESP8266_lubuntu_20141021.ova	

Step 5: import

These are the virtual machines contained in the appliance and the suggested settings of the imported VirtualBox machines. You can change many of the properties shown by double-clicking on the items and disable others using the check boxes below.								
Description	Configuration							
Virtual System 1								
😸 Name	ESP8266_lubuntu_1							
🥥 Product	espressif IoT sdk							
🥥 Vendor	espressif							
🥥 Vendor-URL	www.espressif.com							
🥥 Version	v1.0							
🗮 Guest OS Type	👺 Ubuntu (32 bit)							
CPU	1							
RAM	1024 MB							
💿 dvd								
🖉 USB Controller								
뒑 Sound Card	VICH AC97							
🛃 Network Adapter	☑ Intel PRO/1000 MT Desktop (82540EM)							
🛇 Hard Disk Controller (IDE)	PIIX4							
🔷 Hard Disk Controller (IDE)	PIIX4							
4 🟈 Hard Disk Controller (SATA)	AHCI							
😰 Virtual Disk Image	D:\VM\ESP8266_lubuntu_1\ESP8266_lubuntu_20141021-disk1.v							

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.vm	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:

ſ	🎯 Oracle VM VirtualBox	Manager	
	File Machine Help		
	New Settings Show	Discard	😳 Details 🛛
	ESP_IOT_SDK	🧵 General	📃 Preview



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"



Password is "espressif", input it, press "Enter"

			esp8266@esp8266-VirtualBox: ~
File	Edit	Tabs	Help
esp82 [sudo esp82	266@es 0] pas 266@es	p8266 sword p8266	-VirtualBox:~\$./mount.sh for esp8266: -VirtualBox:~\$

•	File Edit View Be	ekmasks Ca	esp_iot_sdk			- + ×
	File Edit View Boo	/home/esp	8266/Share/e	sp_iot_sdk		Ŷ
	Places ¹ Home Folder ¹ Desktop ¹ Trash Can ¹ Applications ¹ Documents ¹ Music ¹ Pictures ¹ Videos ¹ Downloads	app include Makefile	bin Id	document	examples tools	
		Macn82				
			sp_ior_sok		Ø	••• == 🚍 🗣 公 💿

(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.



-		esp8	3266@es	p8266-Vi	rtualBox:	~/Share	/esp_id	t_sdk/	арр	-	+ ×
File	Edit	Tabs	Help								
DEPEN -func H -I / make[make[xt-xc -nost lude clude	D: xt tions inclu /incl 1]: L 1]: E c -Os dlib -I ./	-xcc -nos de -I ude/e eavin nteri -g - -mlon -I .	-M -Os - tdlib -m ./ -I . agle use g direct ng direc 02 -Wpoi gcalls - .//inc	g -02 -Wp llongcalls .//incl er_esp_pla ory `/mnt tory `/mnt .nter-arit mtext-sec clude/ets	ointer-ar -mtext-s ude/ets - tform.c /Share/es t/Share/es t/Share/e tion-lite -I/inc	Tith -Wur Section-1 I/ind Sp_iot_sc esp_iot_s -Werron erals -E clude -I	ndef -W literal clude - dk/app/ sdk/app r -Wl,- 0_ets_ ./ -I	error - s -De I ./ -I user' /user' EL -fno DICA /.i	Wl,-EL tsDJ //i -inline CHE_FLAS nclude	fno-i ICACHE includ funct H - I/	nline _FLAS e -I ions I inc /in
.c xt-ar form.	ru.	outpu	t/eagle/	/debug/lib	/libuser.	a .outpu	_ptatio	e/debug	/obj/use	er_esp	_plat
make[make[make[1]: L 1]: E 1]: L	eavin nteri eavin	g direct ng direc g direct	cory `/mnt ctory `/mn cory `/mnt	/Share/es t/Share/e /Share/es	sp_iot_so sp_iot_so sp_iot_so	dk/app/ sdk/app dk/app/	user' /driver driver'			
xt-xc ll_us wip - ib/li	c -L er_st lwpa buser	/li art - -lmai .a dr	b -nostd Wl,-stat n -ljson iver/.ou	llib -T/ tic -Wl,) -lssl -l)tput/eagl	ld/eagle. start-gro upgrade e/debug/l	app.v6. oup -lc lupgrade ib/libd	ld -Wl, -lgcc - e_ssl u river.a	no-ch lhal -l ser/.ou -Wl,	eck-sect phy -lne tput/eag end-grou	tions et8021 gle/de up -o	-u ca 1 -ll bug/l .outp
ut/ea xt-ob bug/b esp82	jcopy in/ea 66@es	-0 b gle.a p8266	image/ea inary .o pp.v6.bi -Virtual	output/eag .n .Box:~/ <u>S</u> ha	le/debug/	′image/ea ot sdk/ar	agle.ap	p.v6.ou en misc	t .outpu .sh	ut/eag	le/de

(7) After compiled, bins are in "D:\VM\share\esp_iot_sdk\bin"



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:\$PATHor add it to the end of .bashrc or .profile