

망고 3358 Android 에서 USB Gadget으로 PC와 Ethernet 연결하기

1. 망고 3358 Kernel에서 다음의 설정을 선택합니다.

```
.config - Linux/arm 3.2.0 Kernel Configuration
--- USB Gadget Support
Arrow keys navigate the menu. <Enter> selects submenus --->. Highlighted letters are hotkeys.
Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to exit, <?> for Help,
</> for Search. Legend: [*] built-in [ ] excluded <M> module <> module capable

--- USB Gadget Support
[*] Debugging messages (DEVELOPMENT)
[ ] Debugging information files (DEVELOPMENT)
[ ] Debugging information files in debugfs (DEVELOPMENT)
(2) Maximum VBUS Power usage (2-500 mA)
(2) Number of storage pipeline buffers
<+> USB Peripheral Controller (Inventra HCD USB Peripheral (TI, ADI, ...)) --->
<+> USB Gadget Drivers (Ethernet Gadget (with CDC Ethernet support)) --->
    Ethernet Gadget (with CDC Ethernet support)
    [*] BNDIS support
    [*] Ethernet Emulation Model (EEM) support
```

```
--- USB Gadget Drivers
Use the arrow keys to navigate this window or press the hotkey of
the item you wish to select followed by the <SPACE BAR>. Press
<?> for additional information about this option.

( ) Gadget Zero (DEVELOPMENT)
( ) Audio Gadget (EXPERIMENTAL)
(X) Ethernet Gadget (with CDC Ethernet support)
( ) Network Control Model (NCM) support
( ) Gadget Filesystem (EXPERIMENTAL)
( ) Function Filesystem (EXPERIMENTAL)
v(+)
```

2. 다음의 설정도 변경을 합니다.

```
.config - Linux/arm 3.2.0 Kernel Configuration
--- USB Network Adapters
Arrow keys navigate the menu. <Enter> selects submenus --->. Highlighted letters are hotkeys.
Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to exit, <?> for Help,
</> for Search. Legend: [*] built-in [ ] excluded <M> module <> module capable

<+> USB CATC NetMate-based Ethernet device support (EXPERIMENTAL)
<> USB KLSI KL5USB101-based ethernet device support
<> USB Pegasus/Pegasus-II based ethernet device support
<> USB RTL8150 based ethernet device support (EXPERIMENTAL)
<+> Multi-purpose USB Networking Framework
    --- OHCI/USB2.0 based USB End Ethernet Adapters
    <+> CDC Ethernet support (smart devices such as cable modems)
    <+> CDC EEM support
    <+> CDC NCM support
    <+> Davicom DM9601 based USB 1.1 10/100 ethernet devices
    <> MSC LAN75XX based USB 2.0 gigabit ethernet devices
    <> MSC LAN95XX based USB 2.0 10/100 ethernet devices
    <> GeneSys GL620USB-A based cables
    <> NetChip 1080 based cables (Laplink, ...)
    <> Prolific PL-2301/2302/25A1 based cables
    <> MicChip MCS7830 based Ethernet adapters
    <> Host for BNDIS and ActiveSync devices (EXPERIMENTAL)
    <+> Simple USB Network Links (CDC Ethernet subset)
        [ ] ALi M5632 based 'USB 2.0 Data Link' cables
        [ ] AnchorChips 2720 based cables (Xircor PGLNET, ...)
        [ ] eTEK based host-to-host cables (Advance, Belkin, ...)
        [*] Embedded ARM Linux Links (iPag, ...)
    [ ] Epson 2866 based firmware (DEVELOPMENT)
    [ ] KT Technology KC2190 based cables (InstaNet)
    <> Sharp Zaurus (stock ROMs) and compatible
    <> Support D99210 USB ethernet port
```

3. 망고 3358 Kernel을 컴파일하고 boot media에 fusing을 하고 Linux Machine과 USB로 연결을 하고 보드의 전원을 켭니다.

다음은 망고 3358의 커널 로그입니다.

```
/ # dmesg | grep usb0
[ 0.143432] musb-ti81xx musb-ti81xx: musb0, board_mode=0x13, plat_mode=0x3
[ 0.176574] musb0: Enabled SW babble control
[ 1.792083] usb0: MAC ba:4e:92:c7:5f:31
[ 1.796081] usb0: HOST MAC 5e:9c:63:65:fb:0e
[ 2.311920] usb0: qlen 10
[ 2.312255] usb0: gether_disconnect
[ 2.312316] usb0: qlen 10
```

Ip를 설정합니다.

```
/ # ifconfig usb0 192.168.0.199 up
```

4. 다음은 망고 3358과 연결된 linux machine의 ifconfig -a 명령의 stdout입니다.

```
ybkim@ybkim-desktop:~/hdd/work/mango3358/m3358_jb4.2.2_20160122/kernel$ ifconfig
-a
```

```
eth0      Link encap:Ethernet  HWaddr 00:1c:c0:c9:49:32
          inet addr:192.168.0.4  Bcast:192.168.0.255  Mask:255.255.255.0
          inet6 addr: fe80::21c:c0ff:fec9:4932/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:4341826 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2468717 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:5656823922 (5.6 GB)  TX bytes:283916466 (283.9 MB)
```

```
lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:3110 errors:0 dropped:0 overruns:0 frame:0
          TX packets:3110 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
```

```
usb0 RX bytes:508115 (508.1 KB) TX bytes:508115 (508.1 KB)
Link encap:Ethernet HWaddr d6:a4:04:75:72:88
BROADCAST MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:1 errors:117 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:96 (96.0 B)
```

IP를 설정합니다.

```
ybkim@ybkim-desktop:~/hdd/work/mango3358/m3358_jb4.2.2_20160122/kernel$ sudo
ifconfig usb0 192.168.0.209 up
```

망고 보드에서 Linux Machine에 ping을 해봅니다.

```
/ # ping 192.168.0.209
```

```
PING 192.168.0.209 (192.168.0.209): 56 data bytes
```

```
64 bytes from 192.168.0.209: seq=0 ttl=64 time=0.794 ms
```

```
64 bytes from 192.168.0.209: seq=1 ttl=64 time=0.580 ms
```

```
64 bytes from 192.168.0.209: seq=2 ttl=64 time=0.427 ms
```

```
64 bytes from 192.168.0.209: seq=3 ttl=64 time=0.518 ms
```

Linux Machine에서도 마찬가지로 망고보드로 ping 명령을 하면 응답이 옵니다.

감사합니다.