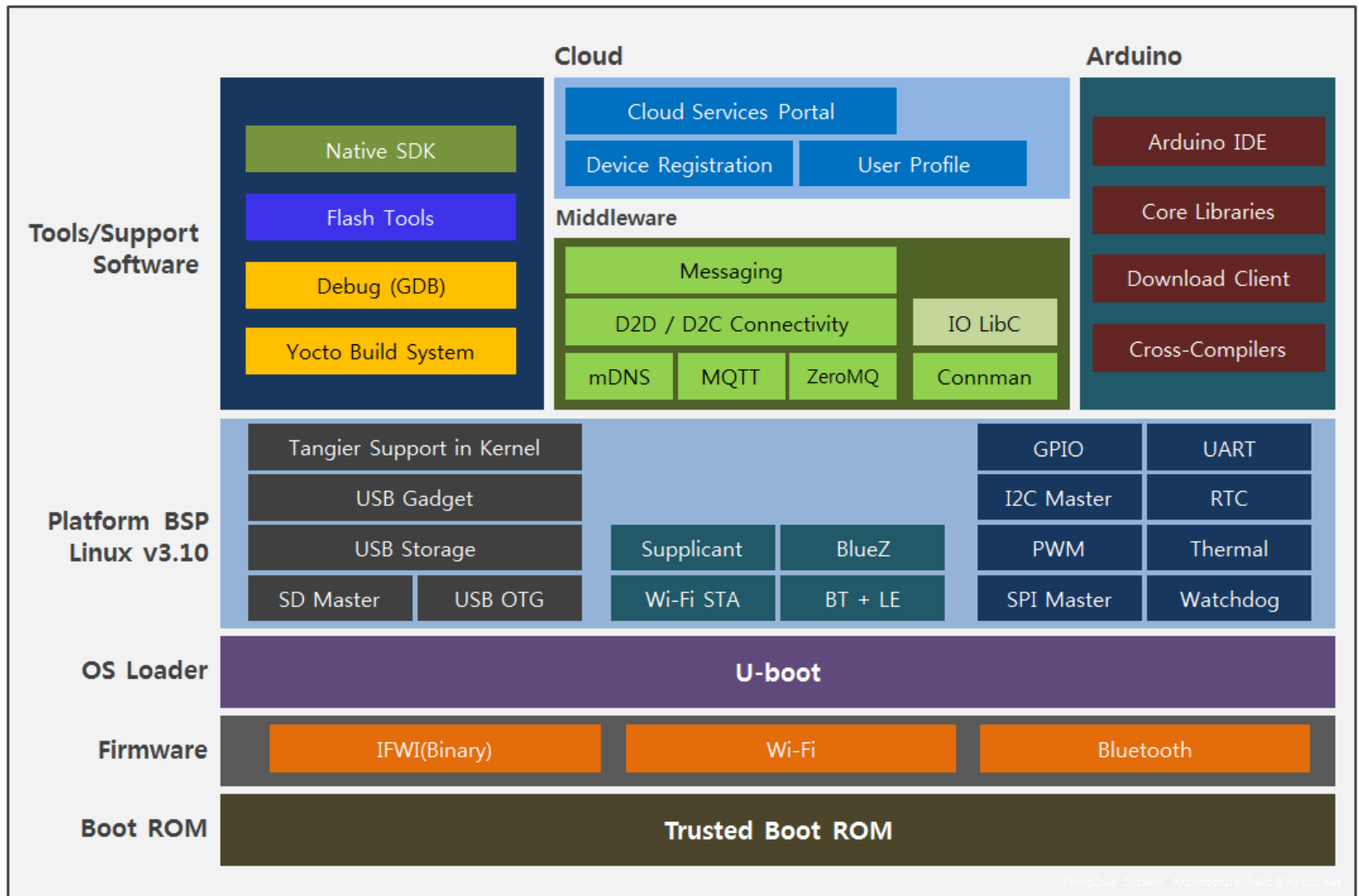


[illegible]

Software Architecture



Software Architecture

OS Loader (Bootloader)	U-Boot version
OS/BSP	Linux(Yocto Linux 1.6, Poky 1.7.2) Linux Kernel v3.10.17
Tools	Native SDK - Standard compiler support (GCC 4.9.1), GLIB 2.38.2 - Standard debugger support GDB 7.6.2 Custom Tools: Flash tools (DFU-Util ; XFSTK for stitching & flashing)
Developer Tools	Arduino IDE - Cross compilers for each of the host - core Arduino Libraries Node.js (Supported by Intel XDK) 0.10.38 Python(2.7.3)
WLAN/BT	Firmware in Binary : WI-FI STA and BT+LE Driver in source : BRCM kernel drivers, Wi-Fi Supplicant and BlueZ
Middleware	Connectivity framework for simplified D2D and D2C - Networking, Messaging, privacy/security Connectivity Framework Enhancements - Bluetooth Support Expanded I/O Library Support - JavaScript & Python Bindings, Additional Sensors
Cloud	<ul style="list-style-type: none">• Web Portal, Identity Management, User Profile• Device Registration, Device Data Upload/Visualization• Portal Enhancements & Back-end Integration• RESTful Device Data Access• Device Messaging & Notification with Third-Party Service Integration• OTA Software Installation & Update• Logging Features• Hosted IDE for Cloud-based Services• Online Forums

Software



IDE

Arduino IDE

Intel XDK

Eclipse

Wylodrin

Firmware

Programming
Language

Arduino Sketch
C++

JavaScript
Node JS

C/C++
Python

Visual
Java Script

C/C++

Tools
Libraries

Arduino
Libraries

Intel XDK

ISS

Wylodrin

MCU SDK


OS

Yocto Linux 1.6

RTOS


Get started with Intel Edison technology

<https://software.intel.com/en-us/iot/hardware/edison/downloads>

 Developer Zone


Join Today > Log in


powered by Google


IoT  About > Hardware > Software > Documentation Support


Intel® Edison Board Software Downloads


Download drivers, installers, new firmware images, IDEs and components like cloud analytics and gateway software.





 Get Started Guide

 Docs

 Downloads

 Software Support

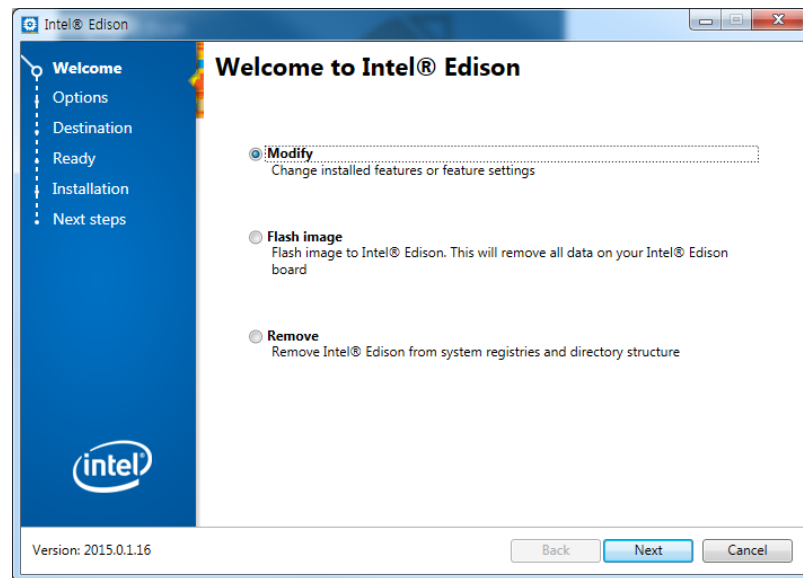
 Hardware Support

 Forum

Intel® Edison Board Windows* Installer

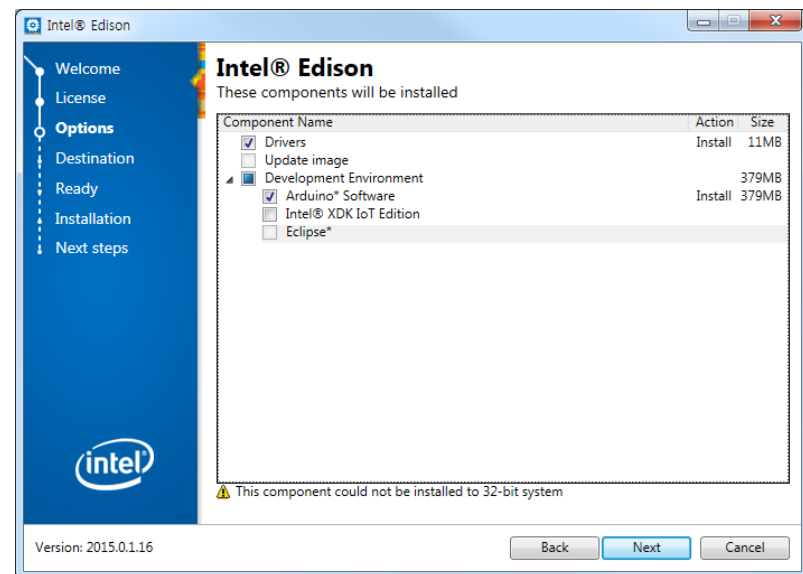
Start coding in minutes using the comprehensive installation program. Installs drivers, IDEs, and the newest firmware image via a simple wizard.

Download Windows* 64-bit Installer >

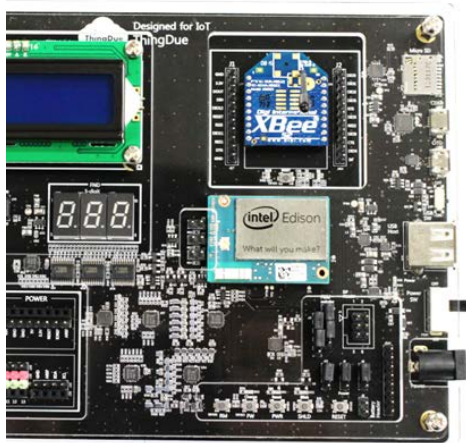


Drivers & IDE Install

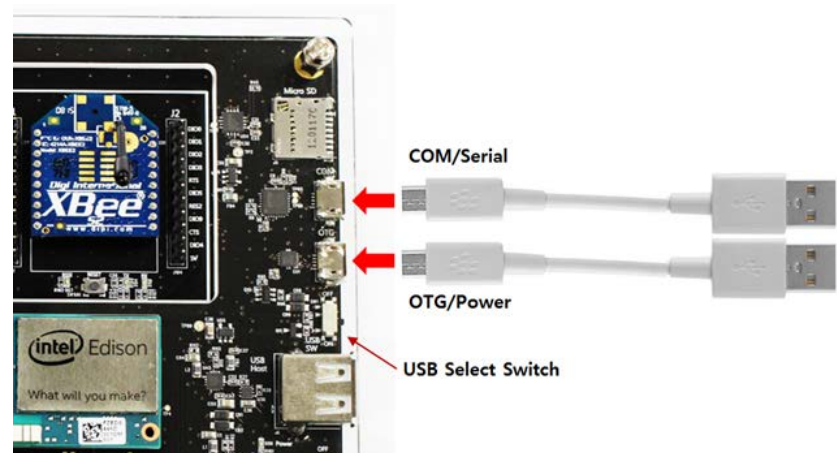
- Intel XDK IoT Edition
 - Node.js 기반 프로젝트 생성, 수정, 관리, 삭제 기능
 - 디바이스 연결 기능(시리얼, SSH 연결)
 - 로그 출력 기능
 - 디버그 기능
 - 프로그램 업로드 기능
 - 앱 실행, 중지 기능



Device Connection

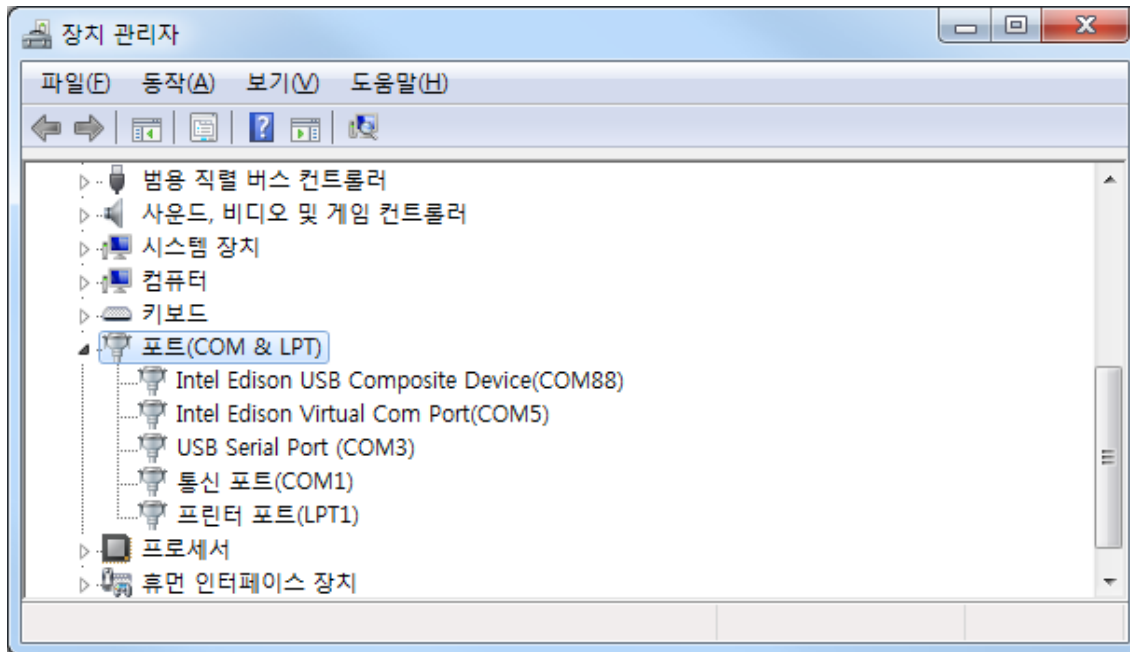


전원을 인가하고 Power 스위치를 ON상태로 변경하면 LCD와 LED가 동작



상단(COM)에 있는 Port는 시리얼 디버깅(Debugging)으로 사용되며 하단(OTG)에 있는 Port는 Virtual Com Port 또는 flash메모리(eMMC) 장치를 사용

Device Connection



- Intel Edison USB Composite Device : 내장메모리(eMMC) 장치 정보
- Intel Edison Virtual Com Port : Arduino에서 사용되는 Com Port 정보
- USB Serial Port : Linux Debugging Port(Com)

Port Driver

- Intel Edison USB Composite Device
- Intel Edison Virtual Com Port : Arduino IDE Port
- USB Serial Port : Edison Serial Port

Sketch Start

- Board : Intel® Edison
- Port : Virtual Com Port
- Blink Test

- Blink Test

- ① Sketch 실행
- ② USB 연결
- ③ Serial Port Setting
- ④ Blink Code 작성
- ⑤ 확인/컴파일

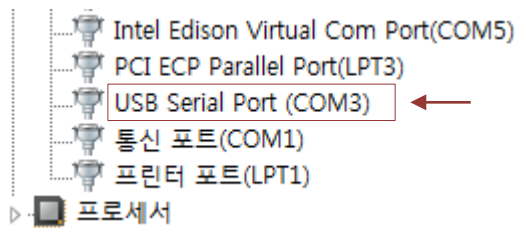
```
void setup() {  
  pinMode(13, OUTPUT);  
}  
  
void loop() {  
  digitalWrite(13, HIGH);  
  delay(500);  
  digitalWrite(13, LOW);  
  delay(500);  
}
```

Example code

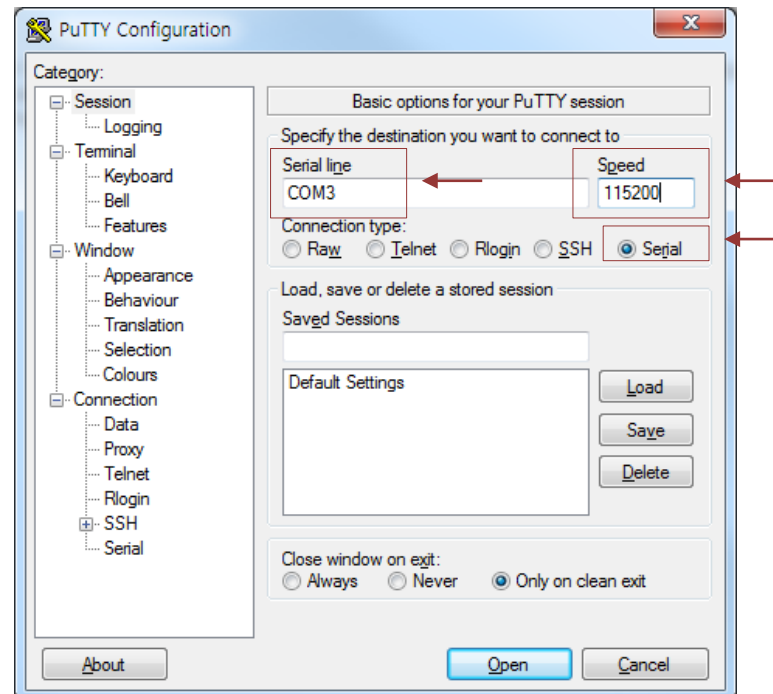
Setting up serial terminal on a OS system

1. Set up PuTTY

- Download the PuTTY terminal emulator : <http://the.earth.li/~sgtatham/putty/latest/x86/putty.exe>
- Double-click the **putty.exe** file you downloaded to run it.
- Configure the PuTTY menu as follows:
 - a. Under Connection type, select **Serial**.
 - b. In the **Serial line** field, enter the COM# for your board, such as COM12. **Note:** If you did not note your COM# earlier, navigate to the Device Manager and check for an entry called **USB Serial Port** (not Intel Edison Virtual Com Port). The COM# is displayed next to the USB Serial Port entry, as highlighted below.



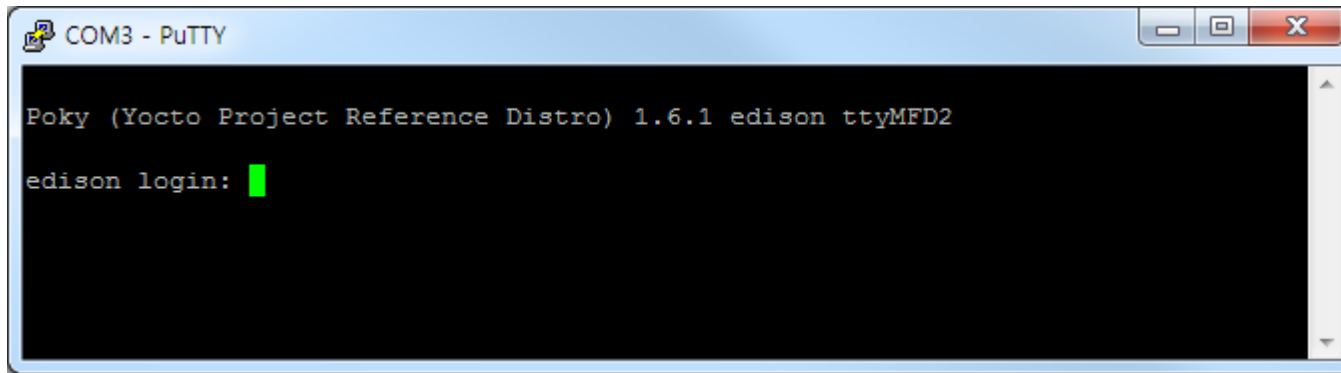
- c. In the **Speed** field, type 115200



Setting up serial terminal on a OS system

1. Set up PuTTY

- Open your serial terminal
- When you see a blank screen, press the **Enter** key twice. A login prompt is displayed.



```
COM3 - PuTTY

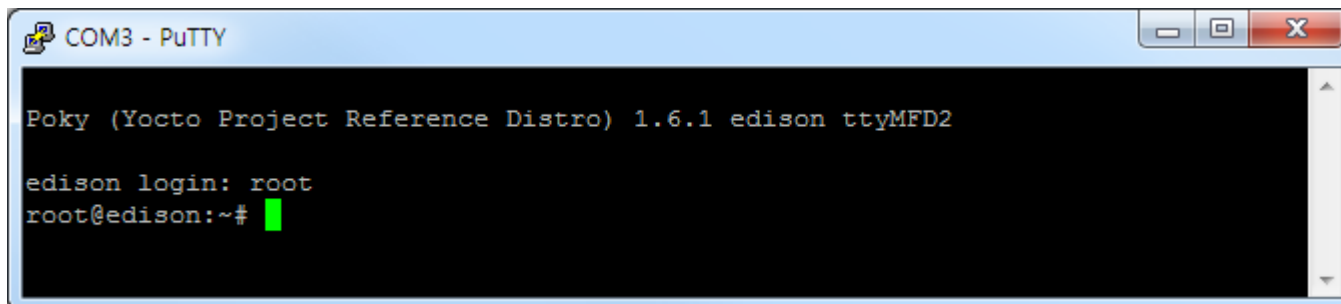
Poky (Yocto Project Reference Distro) 1.6.1 edison ttyMFD2
edison login: █
```

- At the login prompt, type root and press **Enter**.



```
edison login : root
```

- Press **Enter** when prompted for a password. You should see a terminal prompt



```
COM3 - PuTTY

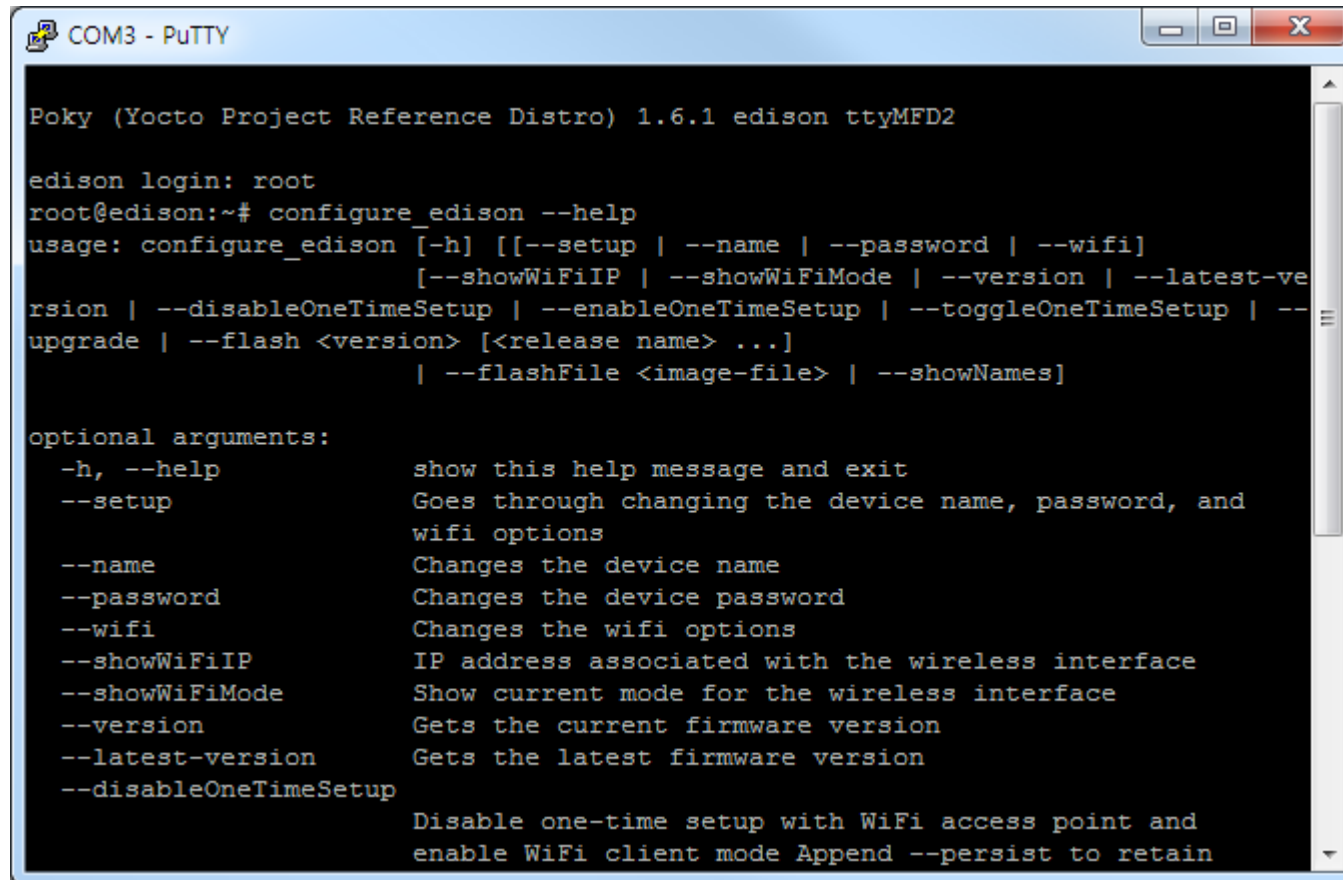
Poky (Yocto Project Reference Distro) 1.6.1 edison ttyMFD2
edison login: root
root@edison:~# █
```

console command

1. 명령어 정보

```
root@edison:~# configure_edison --help
```

terminal



```
COM3 - PuTTY

Poky (Yocto Project Reference Distro) 1.6.1 edison ttyMFD2

edison login: root
root@edison:~# configure_edison --help
usage: configure_edison [-h] [--setup | --name | --password | --wifi]
                        [--showWiFiIP | --showWiFiMode | --version | --latest-version | --disableOneTimeSetup | --enableOneTimeSetup | --toggleOneTimeSetup | --upgrade | --flash <version> [<release name> ...]
                        | --flashFile <image-file> | --showNames]

optional arguments:
  -h, --help            show this help message and exit
  --setup               Goes through changing the device name, password, and
                        wifi options
  --name               Changes the device name
  --password            Changes the device password
  --wifi               Changes the wifi options
  --showWiFiIP          IP address associated with the wireless interface
  --showWiFiMode        Show current mode for the wireless interface
  --version             Gets the current firmware version
  --latest-version      Gets the latest firmware version
  --disableOneTimeSetup Disable one-time setup with WiFi access point and
                        enable WiFi client mode Append --persist to retain
```

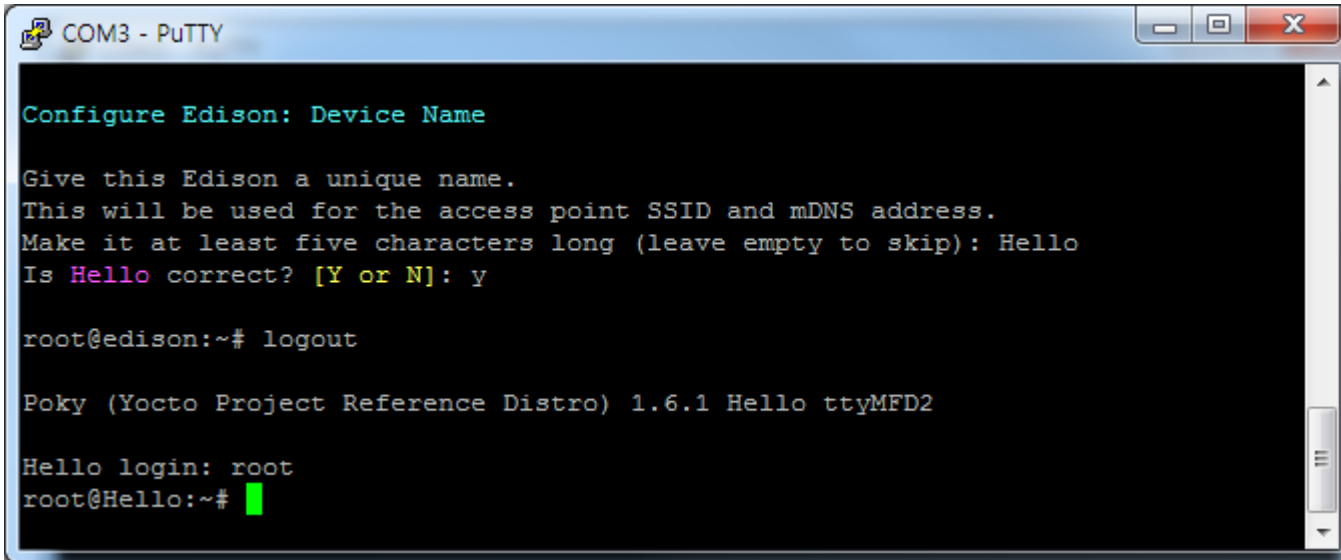
console command

2. device name setting

```
root@edison:~# configure_edison --name
....

root@edison:~# logout
Hello login: root
root@Hello:~#
```

terminal



```
COM3 - PuTTY

Configure Edison: Device Name

Give this Edison a unique name.
This will be used for the access point SSID and mDNS address.
Make it at least five characters long (leave empty to skip): Hello
Is Hello correct? [Y or N]: y

root@edison:~# logout

Poky (Yocto Project Reference Distro) 1.6.1 Hello ttyMFD2

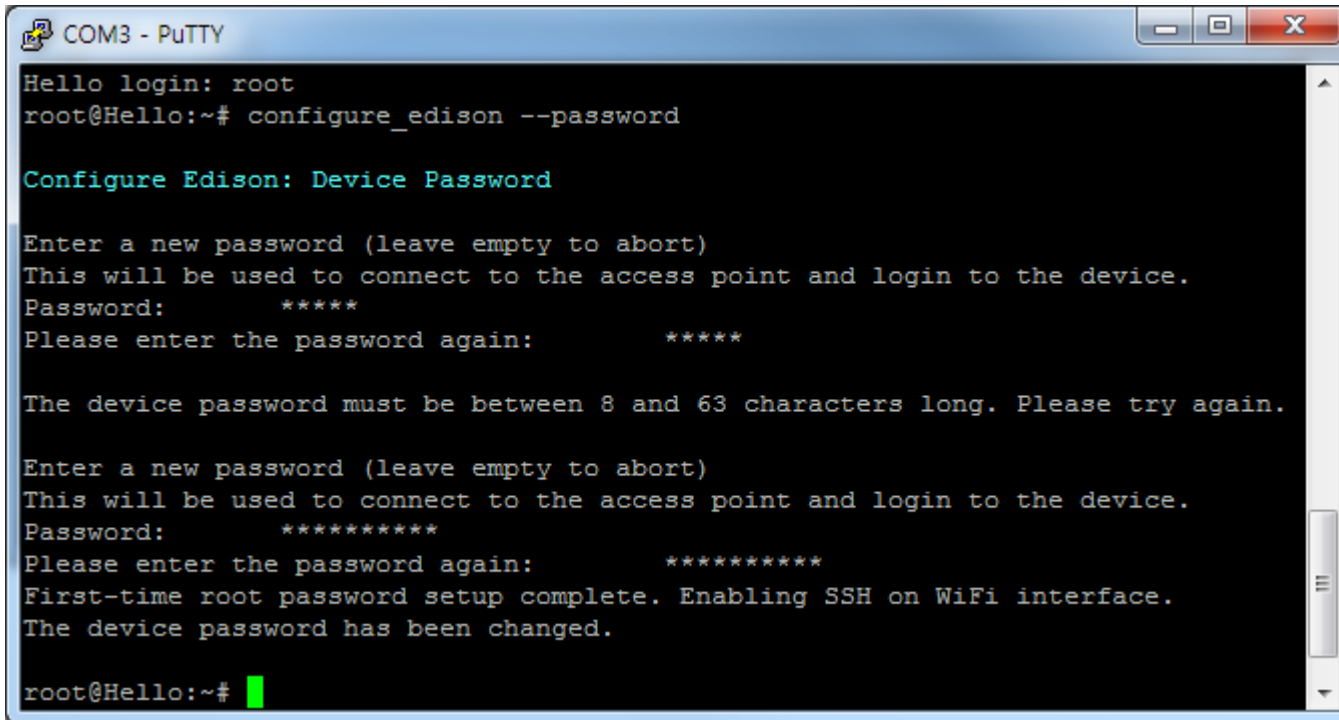
Hello login: root
root@Hello:~#
```

console command

3. Change Password

```
root@Hello:~# configure_edison --password
```

terminal



```
COM3 - PuTTY
Hello login: root
root@Hello:~# configure_edison --password

Configure Edison: Device Password

Enter a new password (leave empty to abort)
This will be used to connect to the access point and login to the device.
Password: *****
Please enter the password again: *****

The device password must be between 8 and 63 characters long. Please try again.

Enter a new password (leave empty to abort)
This will be used to connect to the access point and login to the device.
Password: *****
Please enter the password again: *****
First-time root password setup complete. Enabling SSH on WiFi interface.
The device password has been changed.

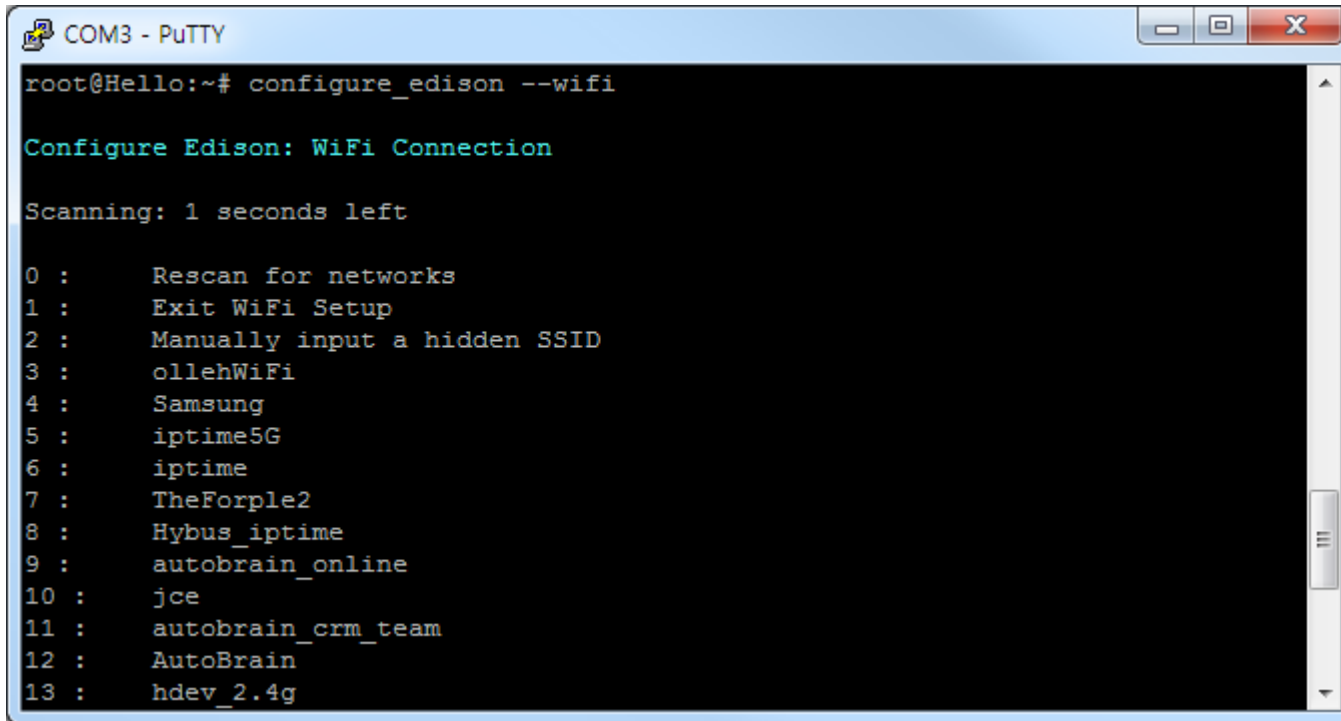
root@Hello:~#
```

console command

4. Wi-Fi Setting

```
root@Hello:~# configure_edison --wifi
```

terminal



```
COM3 - PuTTY
root@Hello:~# configure_edison --wifi

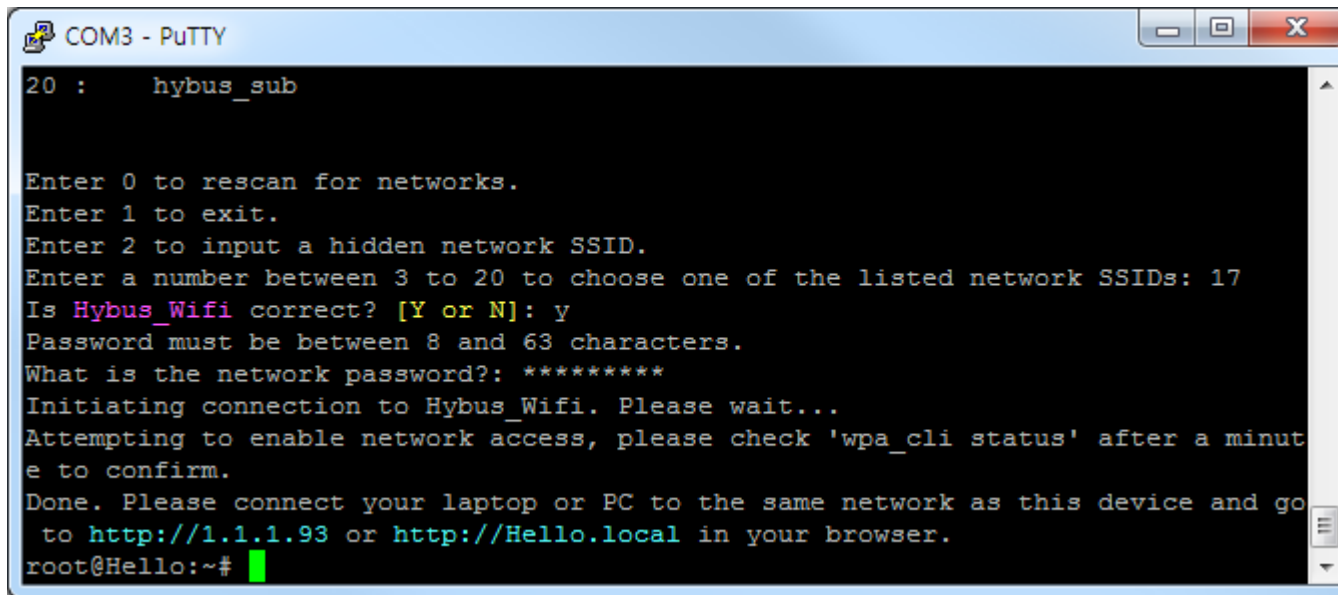
Configure Edison: WiFi Connection

Scanning: 1 seconds left

0 :      Rescan for networks
1 :      Exit WiFi Setup
2 :      Manually input a hidden SSID
3 :      ollehWiFi
4 :      Samsung
5 :      iptime5G
6 :      iptime
7 :      TheForple2
8 :      Hybus_iptime
9 :      autobrain_online
10 :     jce
11 :     autobrain_crm_team
12 :     AutoBrain
13 :     hdev_2.4g
```

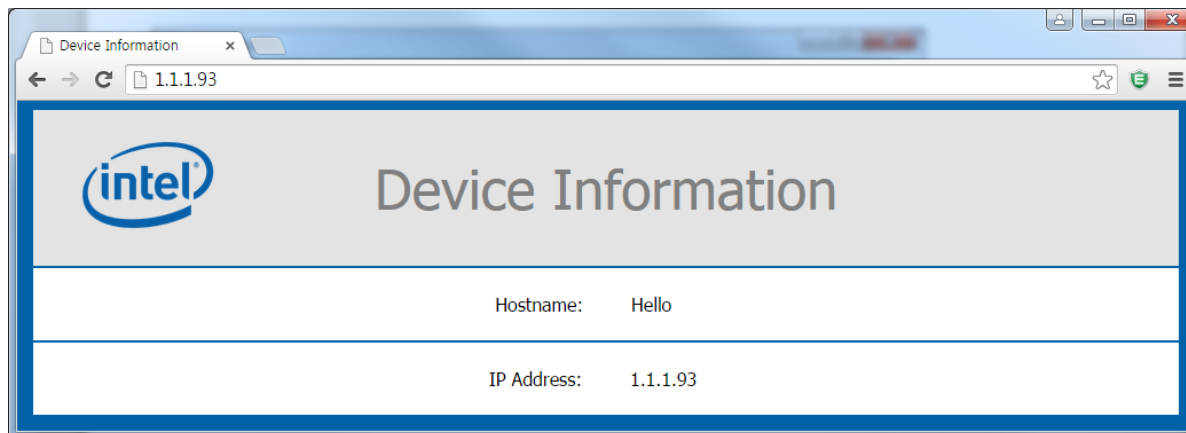
console command

4. Wi-Fi Setting



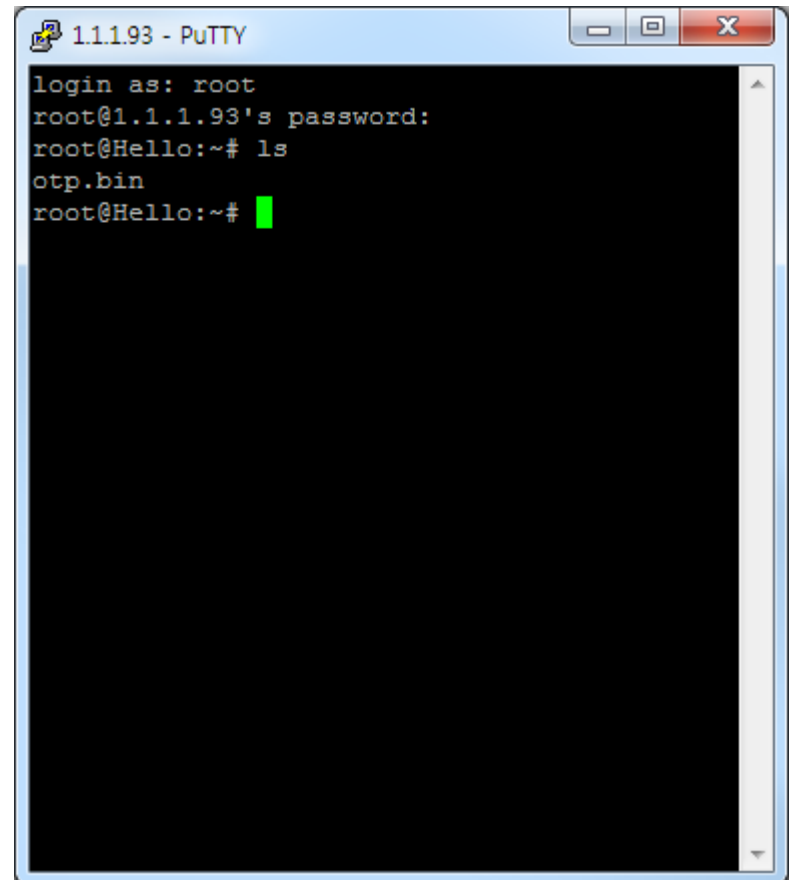
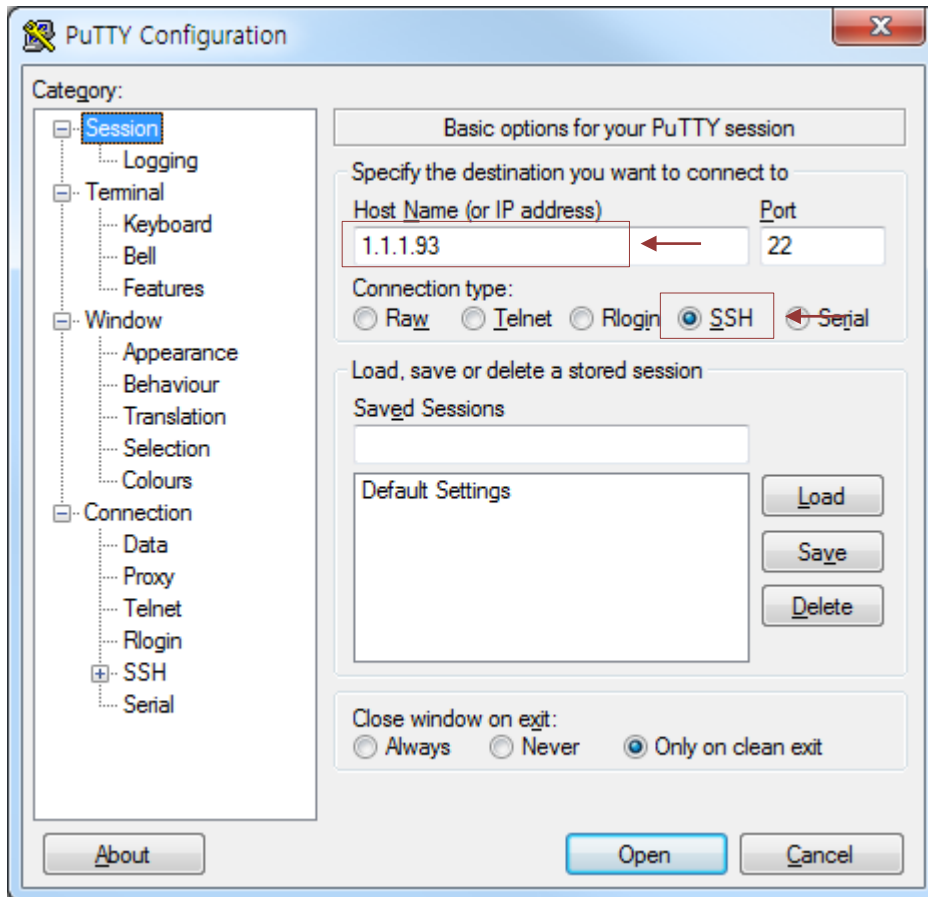
```
COM3 - PuTTY
20 :    hybus_sub

Enter 0 to rescan for networks.
Enter 1 to exit.
Enter 2 to input a hidden network SSID.
Enter a number between 3 to 20 to choose one of the listed network SSIDs: 17
Is Hybus_Wifi correct? [Y or N]: y
Password must be between 8 and 63 characters.
What is the network password?: *****
Initiating connection to Hybus_Wifi. Please wait...
Attempting to enable network access, please check 'wpa_cli status' after a minute to confirm.
Done. Please connect your laptop or PC to the same network as this device and go to http://1.1.1.93 or http://Hello.local in your browser.
root@Hello:~#
```



SSH(secure shell) Connection

- SSH : 암호화 기법을 이용해 원격 서버에 로그인해서 명령을 수행할 때 사용하는 프로토콜
- 원격 컴퓨터에 안전하게 접근하기 위한 방법으로 LAN상에서 스니퍼를 당하더라도 그 내용을 쉽게 파악할 수 없다.



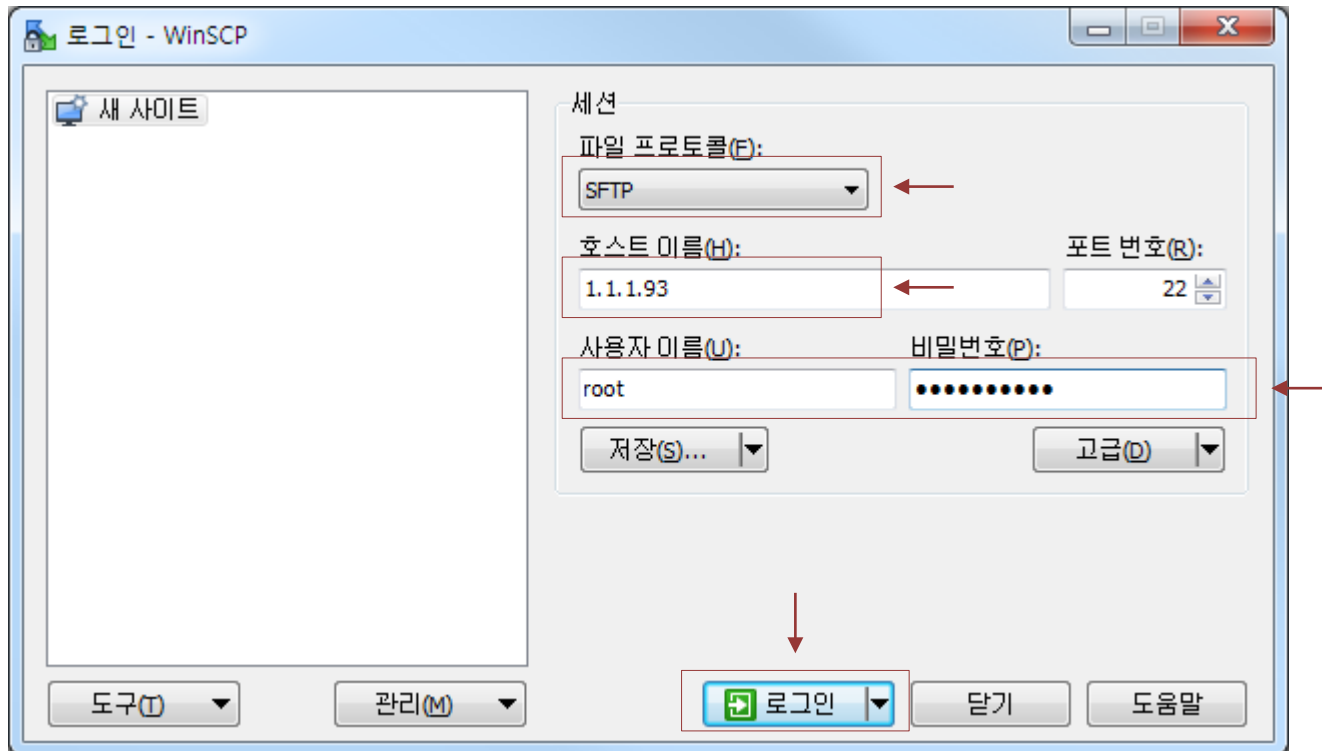
SFTP(Secure FTP) File 전송

- FTP(File Transfer Protocol) : 인터넷상에서 일반적으로 사용되는 암호화되지 않는 프로토콜이다.
- SFTP(Secure FTP) : 파일전송을 위해 SSH를 이용하는 FTP

1. SFTP 전송 프로그램 설치

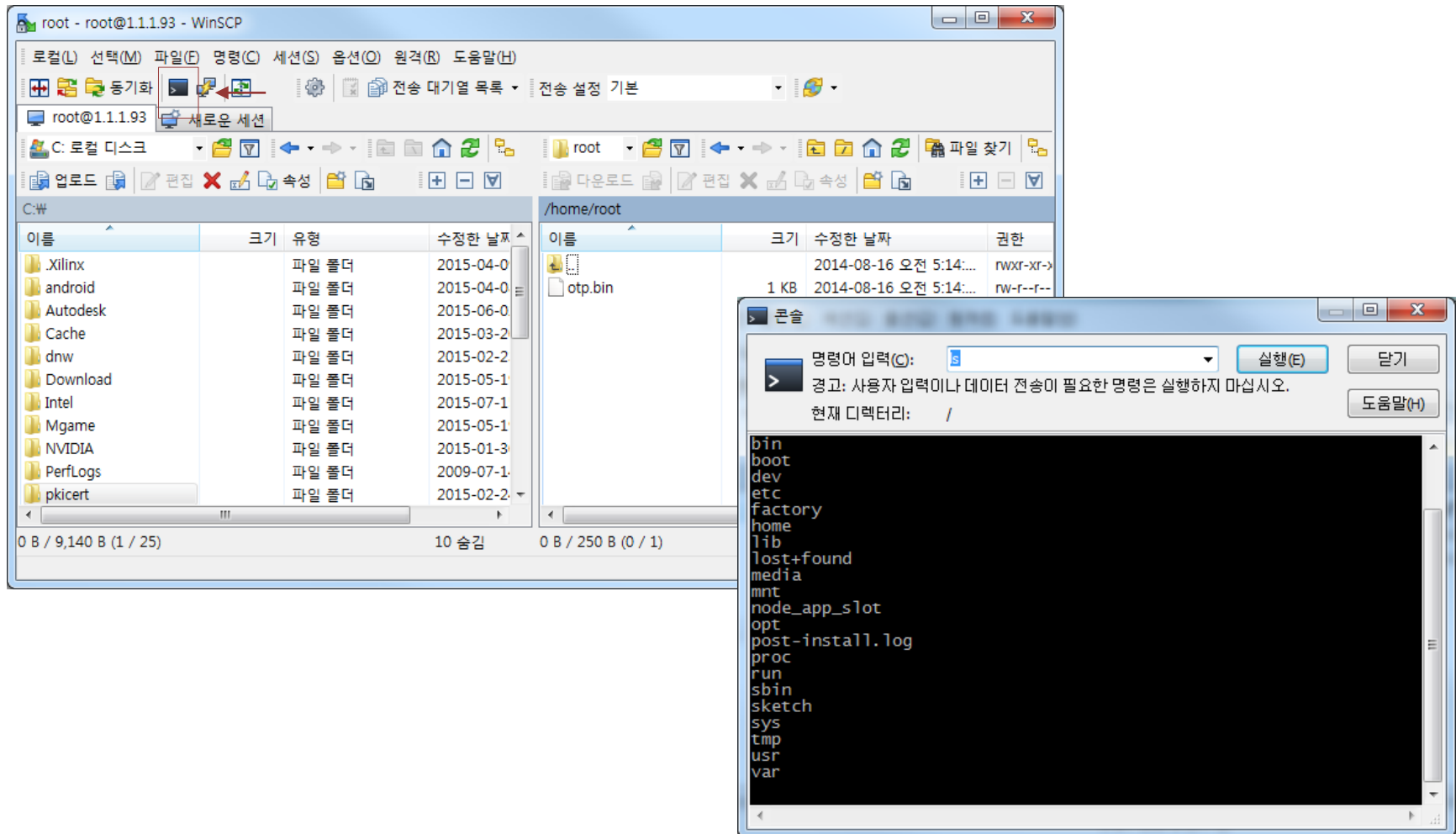
- <http://winscp.net>

2. 로그인



SFTP(Secure FTP) File 전송

- WinSCP는 [동기화]로 없거나 바뀐 파일만 업로드 하거나 다운로드 받을 수 있다.
- Text Editor, Terminal 지원

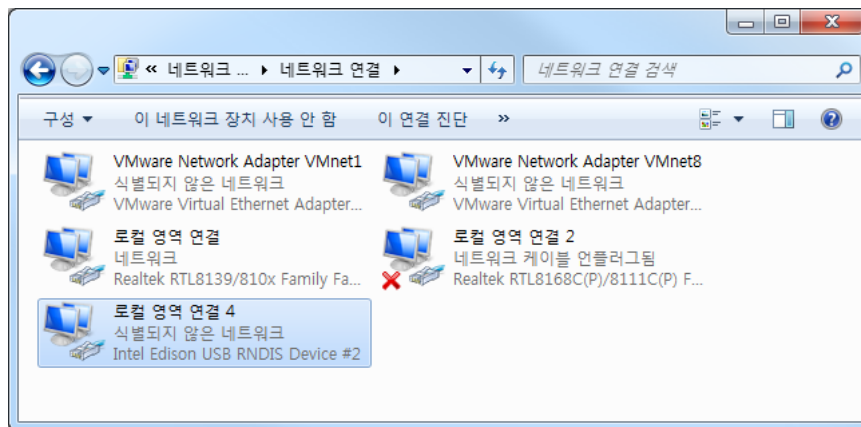


Edison board using Ethernet over USB

- Note : This section contains steps to update your system's network adapter configuration with a static IP address to use Ethernet over USB.

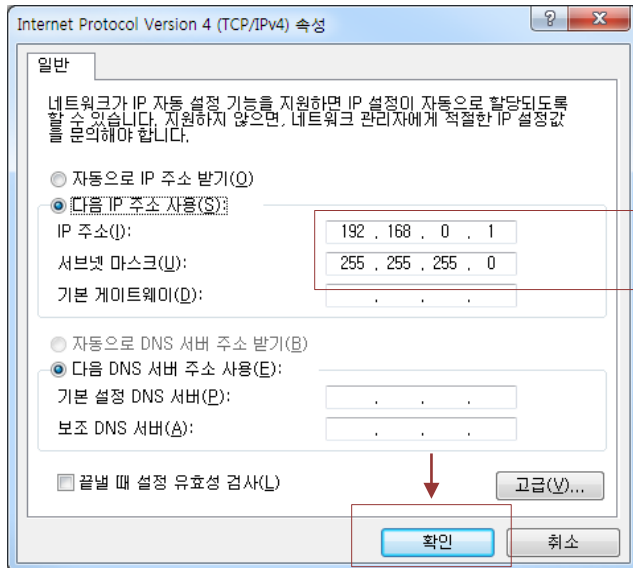
1. Plug the micro-USB cable into the micro-USB port closest to the middle of the board.

2. Network status



Edison board using Ethernet over USB

3. Change the IP information as follows



192.168.0.1
255.255.255.0

4. Use the ifconfig command to forward connections to the IP address through the USB cable

terminal

```
root@Hello:~# ipconfig
root@Hello:~# ipconfig usb0 192.168.0.2
```

