



# DOORROOS EMULATOR

**doorroos.realtime**

**Install Guide**

**Manual**

**Manual**

**(doorroos emulator on PC)**

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**Version 0.2**

# INTRODUCTION

The purpose of this description is setting up the dooroos EMULATOR that emulates the “dooroos” operating system’s platform and run dooroos operating systems and it’s applications. To user friendly development environment, dooroos EMULATOR is released.

## 1 PURPOSE

- 1) Target board is emulated on PC platform.
- 2) One stop service for development of the embedded system.
- 3) Easy development of software for dooroos.

## 2 Setup dooroos EMULATOR

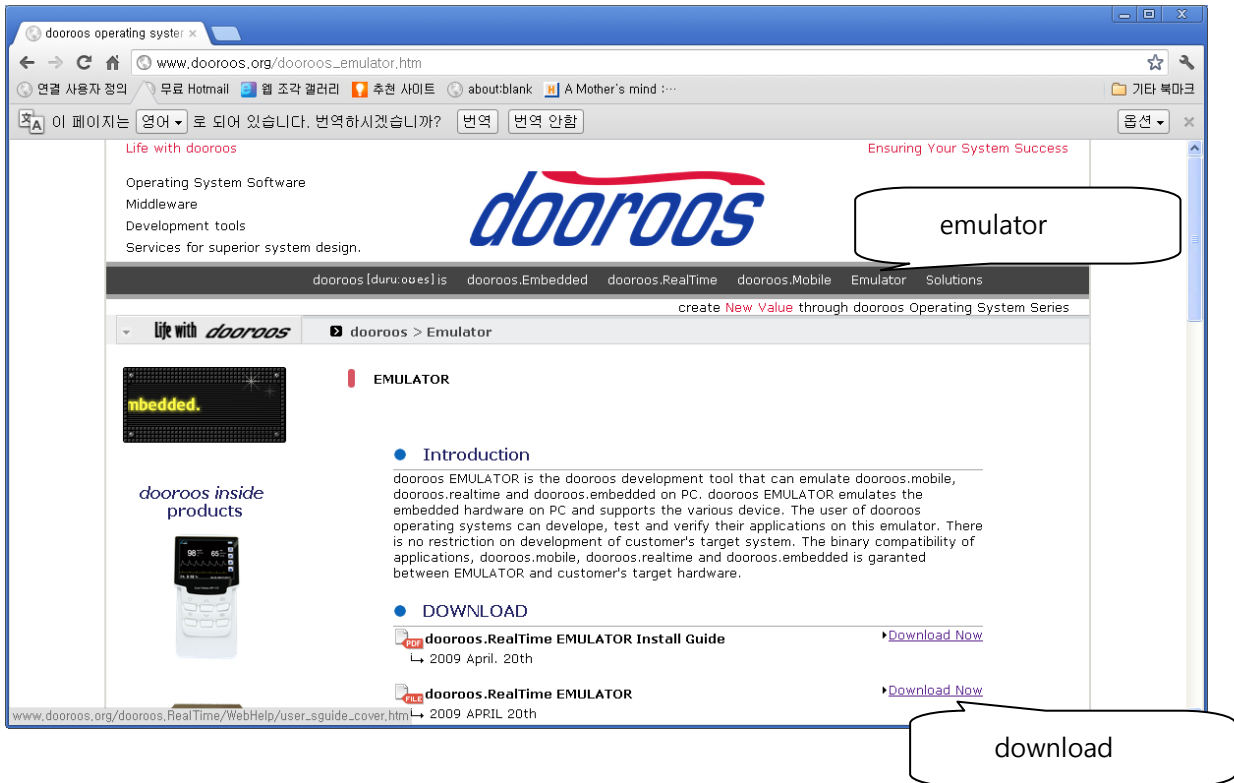
Download the dooroos operating system packages, and Install. Please refer the document “Install\_dooroos.pdf”.

You can see that the emulator is already installed with “dooroos” operating systems. Check the directory “c:\dooroos\emulator”.

But, the newest version of dooroos EMULATOR can be downloaded here also.

### 2.1 Where to download

Browse the dooroos operating systems web-site (<http://www.dooroos.org>). Download the dooroos Emulator file “dooroos-emulator.exe”. The given file is the “dooroos EMULATOR” that is already compiled for dooroos operating systmes. Copy the downloaded file into the absolute default directory “C:\dooroos\emulator”.



## 2.2 How to Install

Replace the execution file. **YOU SHOULD INSTALL INTO DEFAULT INSTALL DIRECTORY.(C:\dooroos\emulator)**

## 3 Setup TAP adapter for network emulation

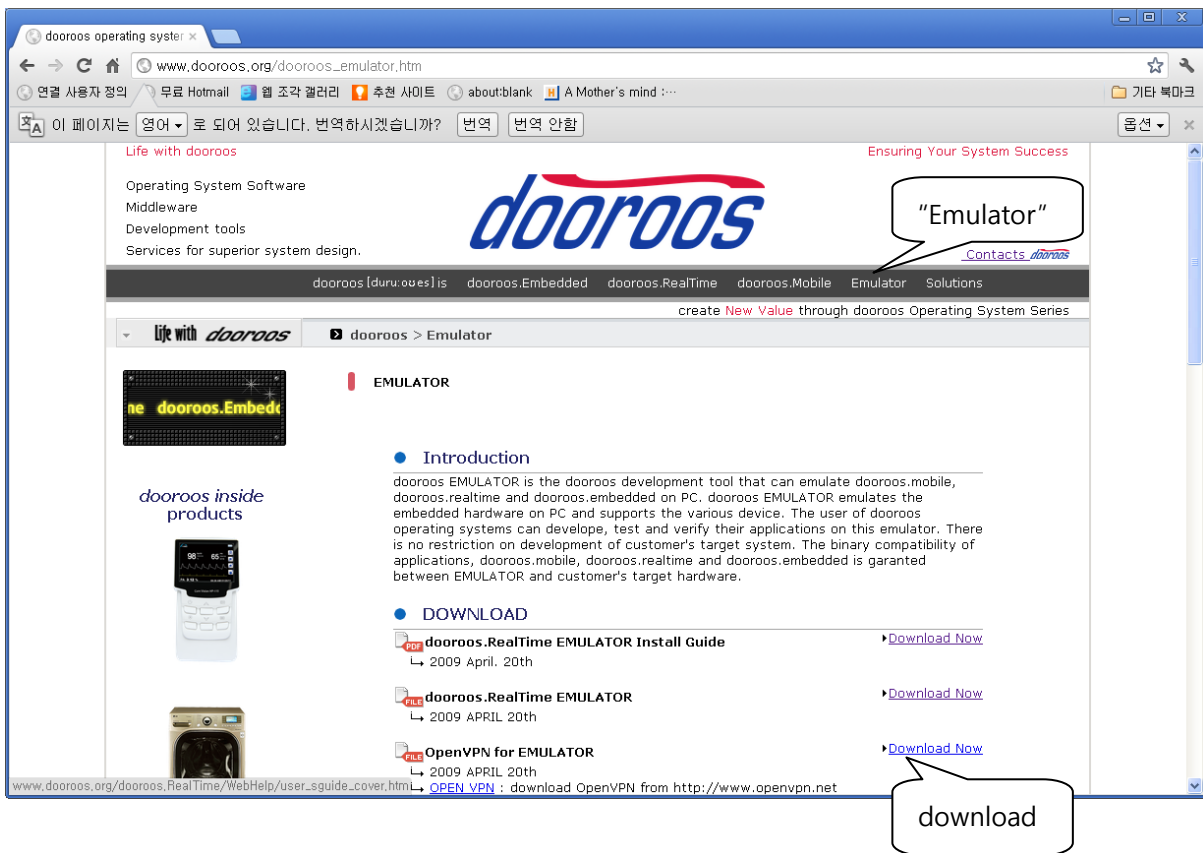
In this chapter, installation procedures of the TAP adapter for network emulator of dooroos EMULATOR will be described. It supports on Windows2000/XP. Windows 98/Me are not supported. The name is a name of connection of TAP-Win32 Adapter V8 in Network and Dial-up connections in control panel.

### 3.1 Where to download

0. If you do not use the network emulation, skip this step.

1. Browses the "OpenVPN" ver.2.0 from OpenVPN(<http://www.openvpn.net>). OR

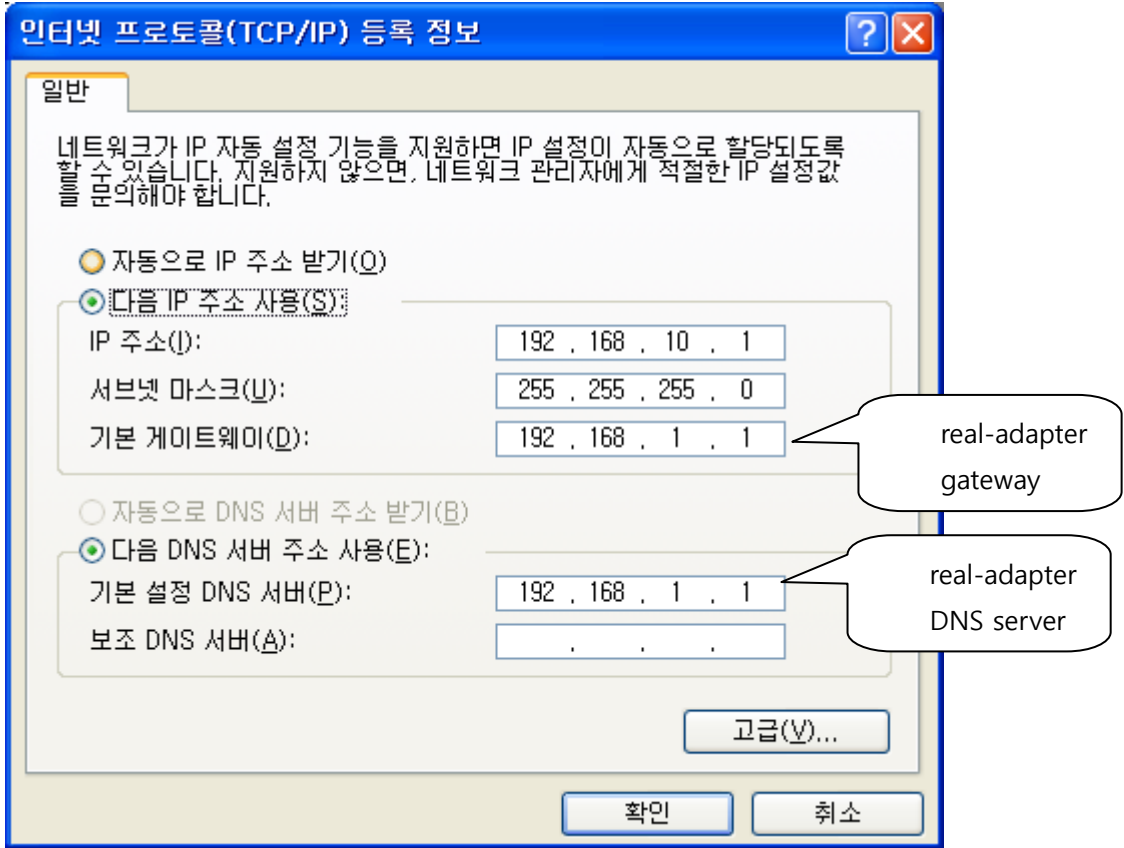
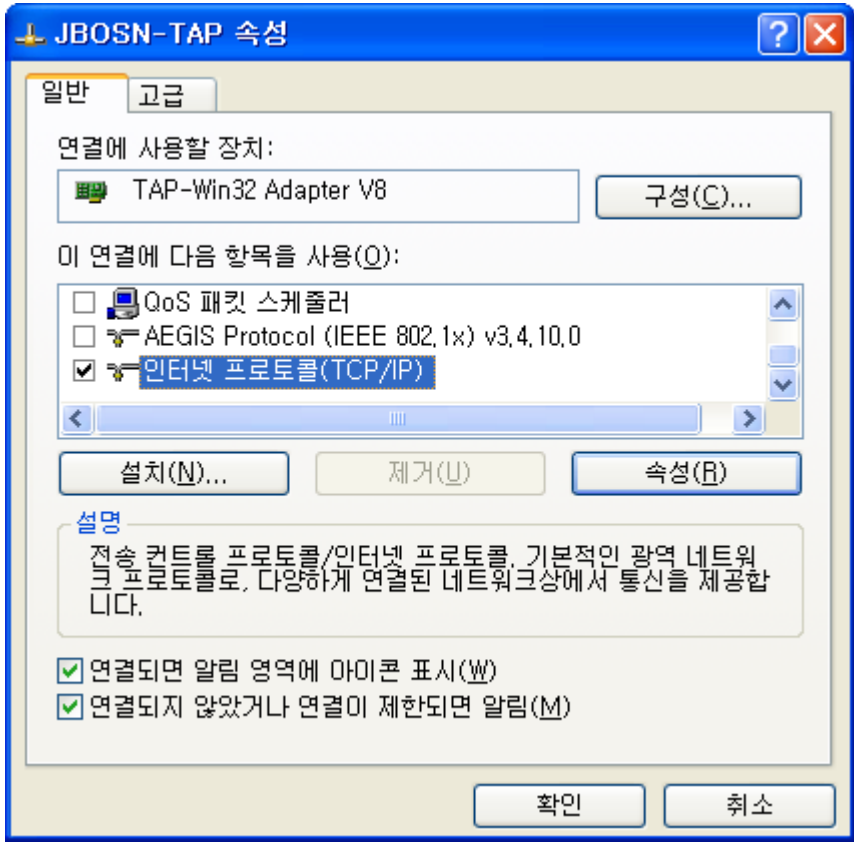
2. Browses the dooroos operating system website(<http://www.dooroos.org>). Download the “dooroos Emulator” compressed file “openvpn-2.0.9-install.exe”.



### 3.2 How to Install

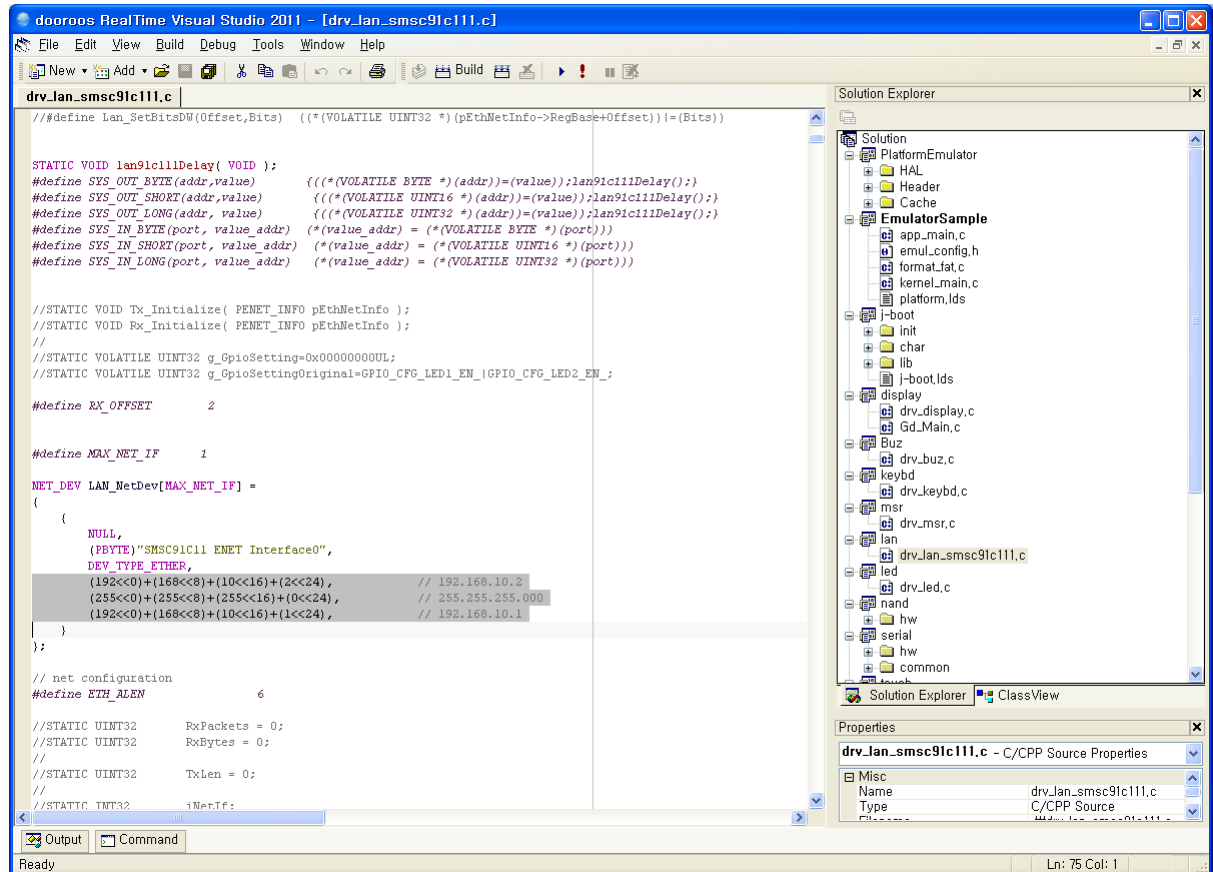
1. Executes the downloaded file “openvpn-2.0.9-install.exe”.
2. Now unselects all except TAP-Win32 Virtual Ethernet Adapter.





6. On dooroos.realtime visual studio, Open the solution of your emulator project file.

For example  
 "c:\dooroos\realtime\workspace\ EMULATOR\_SAMP\ EMULATOR\_SAMP.sln. Then, edit the IP address of dooroos.realtime network device driver like the followings  
 The IP address has the same address range with the above, The gateway IP address is the IP address of TAP-Win32 adapter IP address.



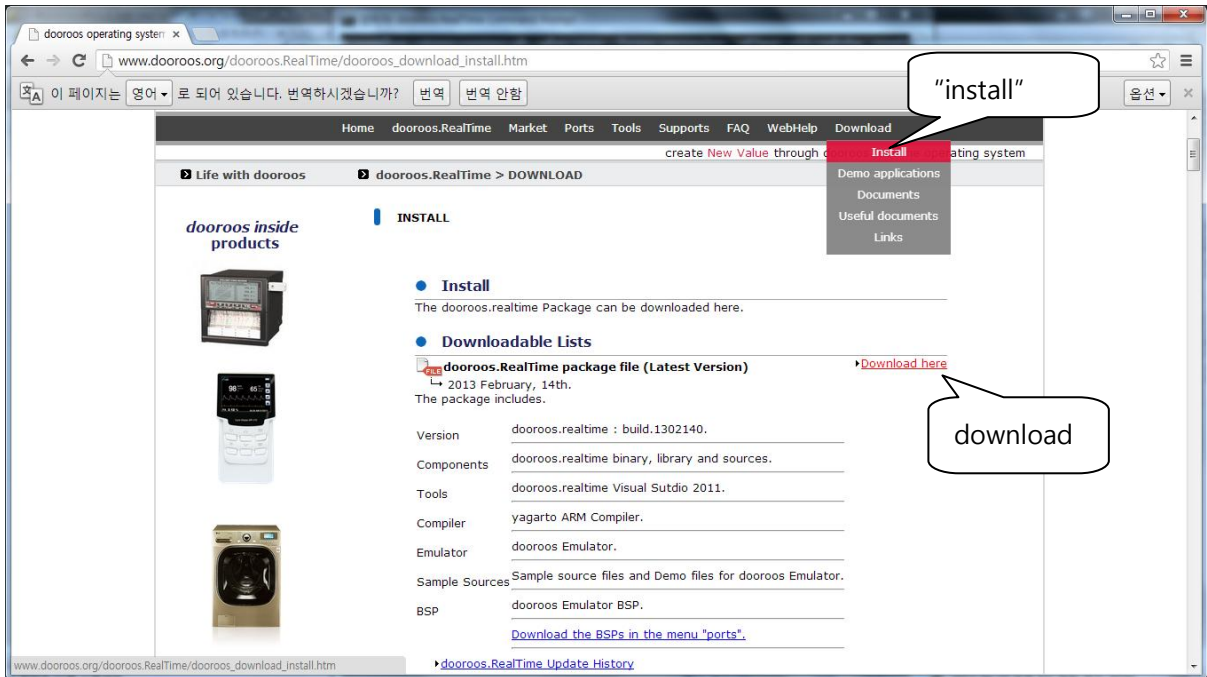
7. If you do not want to re-compile the project again, please set the IP address on the above example value.
8. You can ping. "ping 192.168.10.2"

#### 4 Download and install the dooroos.realtime

In this chapter, installation procedures of the dooroos.realtime will be described.

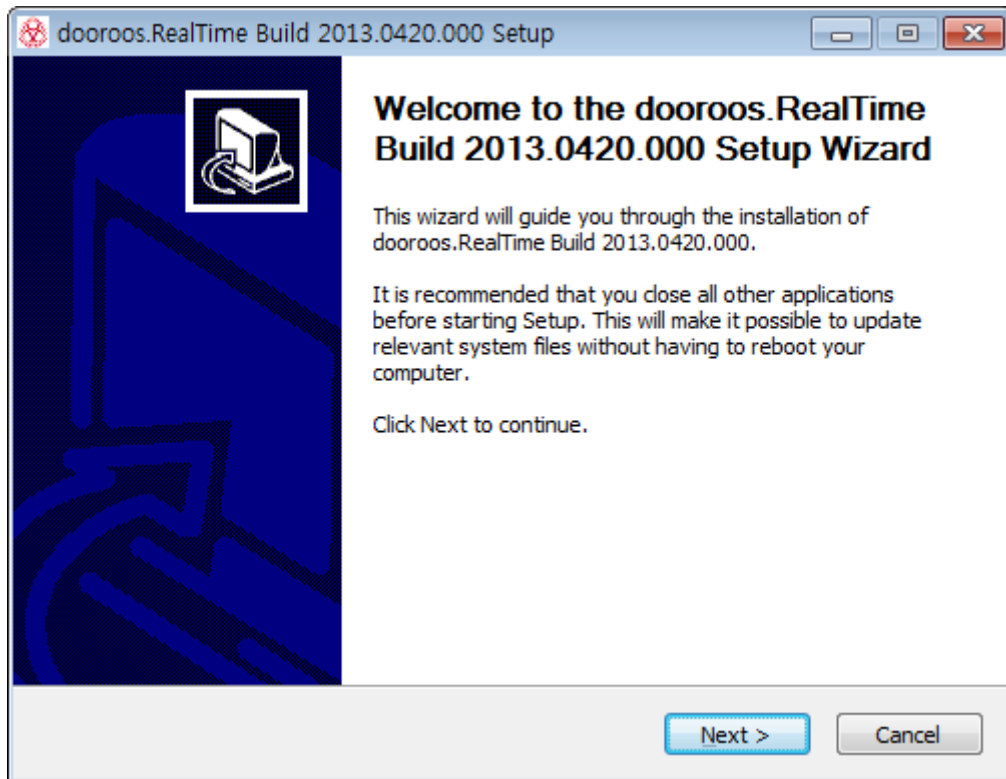
##### 4.1 Where to download

1. Browses the dooroos operating system website(<http://www.dooroos.org>). Download the "dooroos.realtime" compressed file "dooroos.realtime\_install.exe".



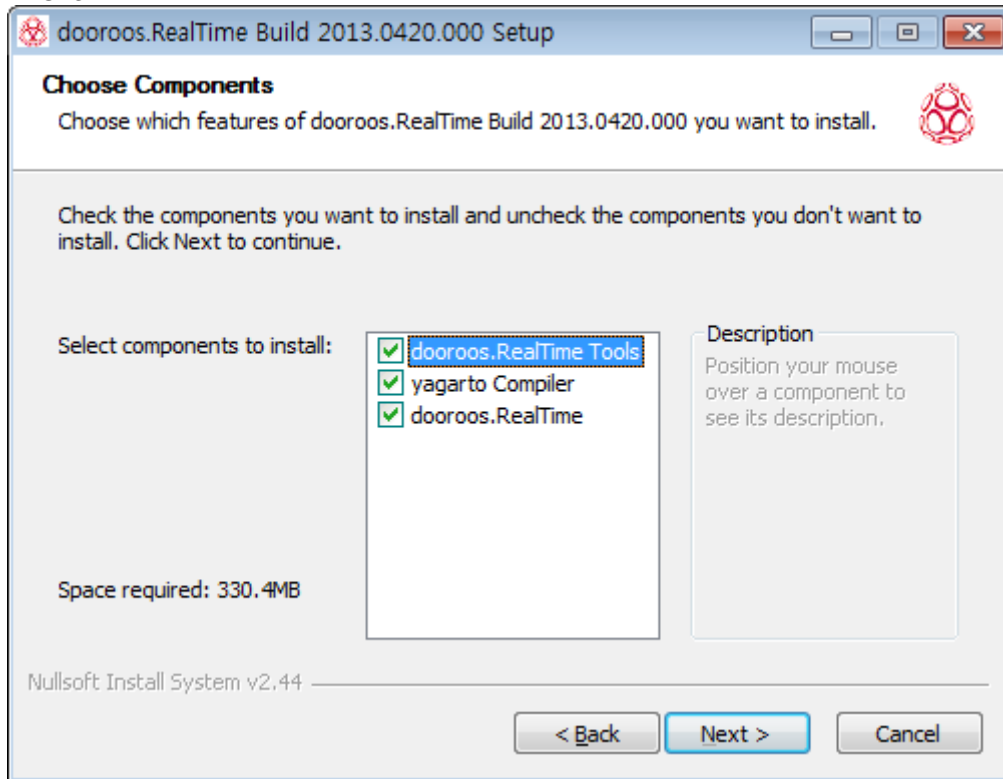
## 4.2 How to Install

1. Executes the downloaded file "dooroos.realtime\_install.exe".
2. Now install.





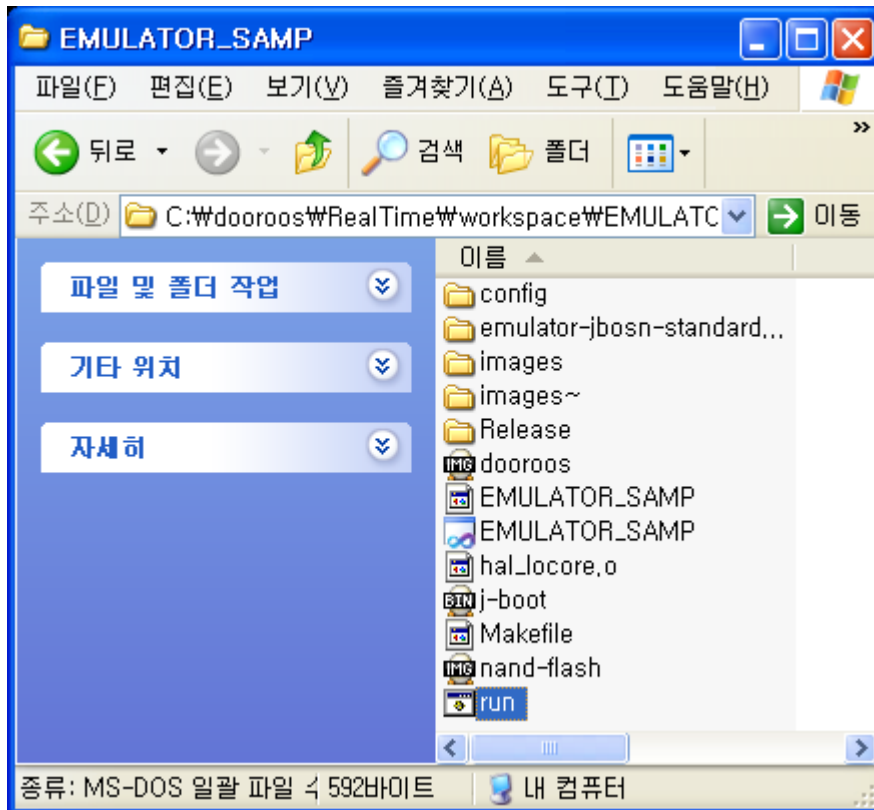
3. Press the button "Next" then you can see the following message. You can select the install components. If it is your first install, select all and press the button "Next".



4. Please install the components into the default directory. If you change the install directory, YOU SHOULD change all the scripts and projects.
5. Before the step 5, YOU first compile the emulator BSP and make the doorroos.realtime emulator image. Please refer the "doorroos.realtime build guide manual for emulator" in the directory "c:\doorroos\realtime\workspace\emulator\_samp\doc\EMULATOR-Manual.pdf".

## 5 Run the doorroos EMULATOR

Double click the batch file "run.bat" in the workspace directory of your emulator project. For example, "C:\doorroos\realtime\workspace\EMLATOR\_SAMP\run.bat". But, If you get some problem, please edit the batch file "run.bat" for re-configuration.



#### Needed file list for dooroos EMULATOR

1. dooroos-emulator.exe : emulator execution file in the directory "c:\Wdooroos\Wemulator".
2. J-boot.bin : j-boot binary of emulated machine.
3. nand-flash.img : emptied nand-flash image.
4. dooroos.img : dooroos downloadable image with root filesystem.
5. run.bat : dos batch file with configuration of your system.

#### Configuration Examples of run.bat:

c:\Wdooroos\Wemulator\Wdooroos-emulator.exe -M jbosn -m 240 -mtdblock nand-flash.img -kernel dooroos.img -serial con: -serial COM4: -net nic,vlan=0 -net tap,ifname="DOOROOS-TAP" -usb -show-cursor

1. "C:\Wdooroos\Wemulator\Wdooroos-emulator.exe" is EMULATOR execution files. (fixed)
2. "-M jbosn" is machine type. (fixed)
3. "-m 240" means 240MByte memory is allocated. (you can change, but not recommended)
4. "-mtdblock nand-flash.img" means nand-flash emulation file. (fixed)
5. "-kernel dooroos.img" is dooroos operating system image file. (fixed)
6. "-serial con:" means the debug message is display on console. (you can change, but not recommended.)
7. "-serial COMx:", means that the serial port of dooroos EMULATOR is connected to the PC

serial port. The maximum supported serial port is currently 4, but will be expanded.

YOU SHOULD MATCH the serial port on your PC com port. If not, you will get the problem.

8. "-net nic,vlan=0 -net tap,ifname="DOOROOS-TAP" is network support option. If you not need the network, erase this option. Then The above TAP-Win32 adapter installation is not needed.
9. "-usb" means usb support option.
10. "-show-cursor" means show-cursor option.

The default bat file is followings:

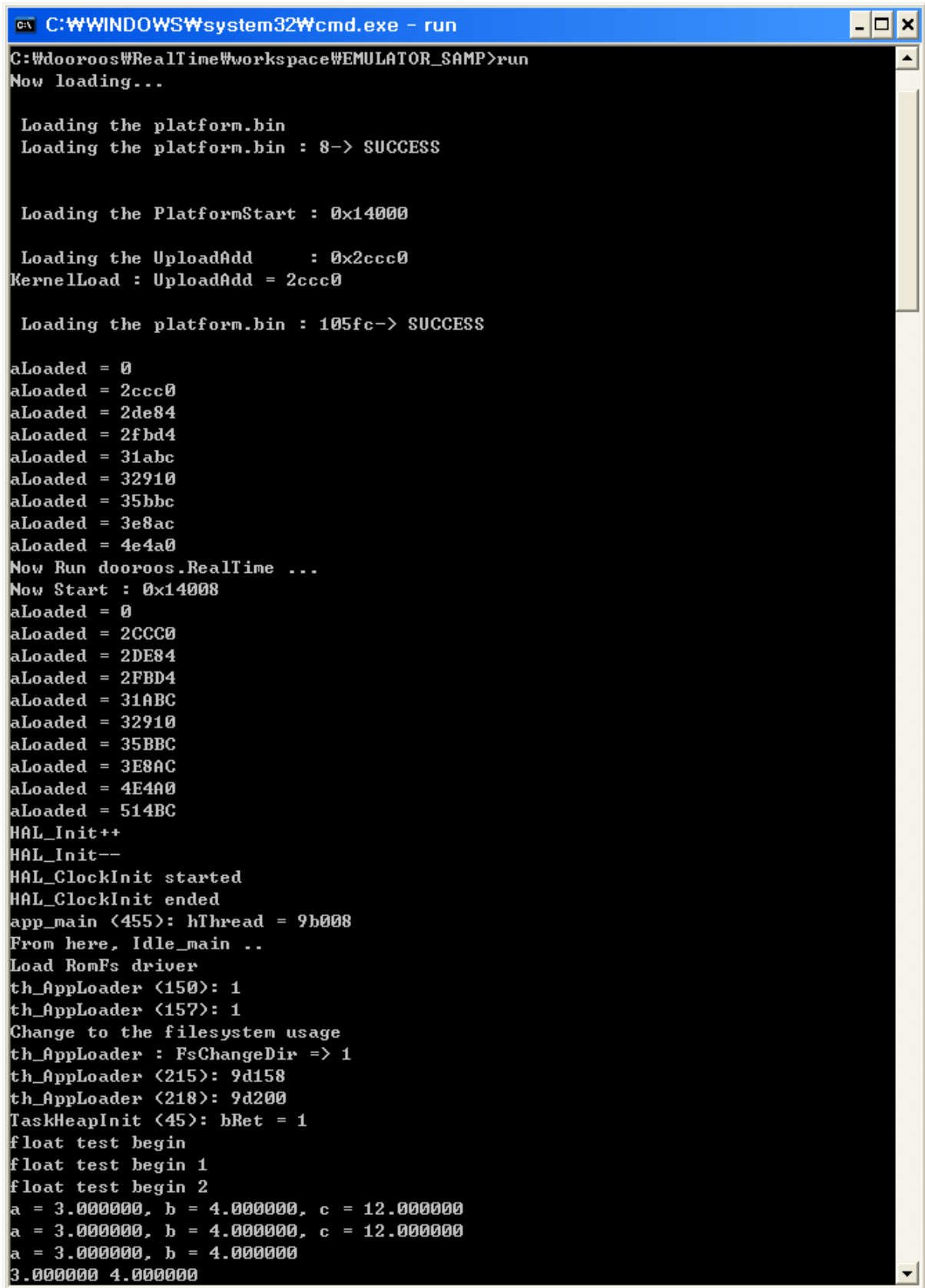
```
@echo off

set SDL_VIDEODRIVER=directx
rem set SDL_AUDIODRIVER=dsound

rem c:\jbossn200\bin\jbossn-emulator.exe -M jbossn -m 240 -mtdblock nand-flash.img -kernel jbossn.img -
serial con: -serial COM4: -net nic,vlan=0 -net tap,ifname="JBOSN-TAP" -usb -show-cursor
c:\dooroos\emulator\dooroos-emulator.exe -M jbossn -m 240 -mtdblock nand-flash.img -kernel
dooroos.img -serial con: -usb -show-cursor
```

## 6 Start Screen of the dooroos EMULATOR

Start the screen shot of dooroos.realtime.



```
C:\WINDOWS\system32\cmd.exe - run
C:\Wdooroos\RealTime\workspace\EMULATOR_SAMP>run
Now loading...

Loading the platform.bin
Loading the platform.bin : 8-> SUCCESS

Loading the PlatformStart : 0x14000

Loading the UploadAdd      : 0x2cccc0
KernelLoad : UploadAdd = 2cccc0

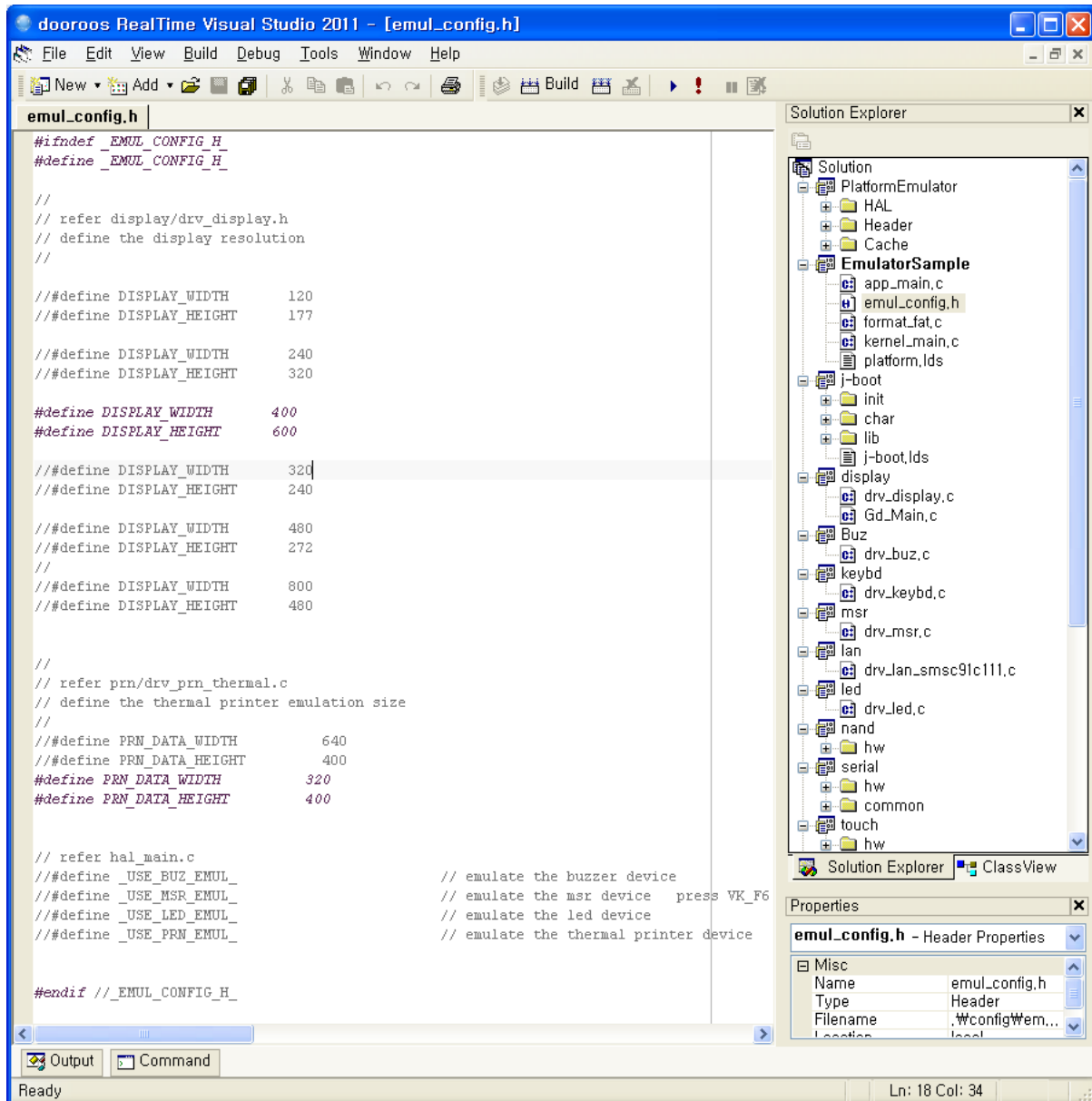
Loading the platform.bin : 105fc-> SUCCESS

aLoaded = 0
aLoaded = 2cccc0
aLoaded = 2de84
aLoaded = 2fbfd4
aLoaded = 31abc
aLoaded = 32910
aLoaded = 35bbc
aLoaded = 3e8ac
aLoaded = 4e4a0
Now Run dooroos.RealTime ...
Now Start : 0x14008
aLoaded = 0
aLoaded = 2CCC0
aLoaded = 2DE84
aLoaded = 2FBD4
aLoaded = 31ABC
aLoaded = 32910
aLoaded = 35BBC
aLoaded = 3E8AC
aLoaded = 4E4A0
aLoaded = 514BC
HAL_Init++
HAL_Init--
HAL_ClockInit started
HAL_ClockInit ended
app_main (455): hThread = 9b008
From here, Idle_main ..
Load RomFs driver
th_AppLoader (150): 1
th_AppLoader (157): 1
Change to the filesystem usage
th_AppLoader : FsChangeDir => 1
th_AppLoader (215): 9d158
th_AppLoader (218): 9d200
TaskHeapInit (45): bRet = 1
float test begin
float test begin 1
float test begin 2
a = 3.000000, b = 4.000000, c = 12.000000
a = 3.000000, b = 4.000000, c = 12.000000
a = 3.000000, b = 4.000000
3.000000 4.000000
```



## 7 How to Set the supported device driver

1. On dooroos.realtime visual studio, open your emulator solution.
2. Open the file "emul\_config.h" on the project file list, and edit.



## 7.1 Display resolution setting

```
//  
// refer display/drv_display.h  
// define the display resolution  
//  
#define DISPLAY_WIDTH      240  
#define DISPLAY_HEIGHT    320
```

1. Change the defined resolution.
2. On next compilation, the changed value is applied.

## 7.2 Thermal printer device driver

```
//  
// refer prn/drv_prn_thermal.c  
// define the thermal printer emulation size  
//  
#define PRN_DATA_WIDTH      640  
#define PRN_DATA_HEIGHT    400  
  
// refer hal_main.c  
#define _USE_PRN_EMUL_      // emulate the PRINTER device
```

1. Change the defined resolution.
2. On next compilation, the changed value is applied automatically.
3. You will get the printer emulated window.
4. This option is applied if you define "\_USE\_PRN\_EMUL\_".

## 7.3 LED device driver

```
// refer hal_main.c  
#define _USE_LED_EMUL_      // emulate the led device
```

1. Define "\_USE\_LED\_EMUL\_", if you want use LED device driver.

## 7.4 BUZ device driver

```
// refer hal_main.c  
#define _USE_BUZ_EMUL_      // emulate the buzzer device
```

1. Define "\_USE\_BUZ\_EMUL\_", if you want use BUZZER device driver.

## 7.5 MSR device driver

```
// refer hal_main.c
#define _USE_MSR_EMUL_ // emulate the MSR device
```

1. Define "\_USE\_MSR\_EMUL\_", if you want use MSR device driver.

## 7.6 Touch and Keyboard device driver

1. Touch panel device driver: touch panel is automatically calibrated on your display resolution.
2. Keyboard device driver: Open the file "drv\_keybd.c" and add like this

```
//
// the input value is scancode of your pc keyboard,
// then should convert to the virtual code of JBOSN RTOS
// please refer <dev/kbd.h>
//
struct __KEY_CONV__ {
    UINT32 ScanCode;
    UINT32 VirtCode;
    UINT32 State;
} tConvKey[] =
{
    {0x3b, VK_F1, FALSE},
    {0x3c, VK_F2, FALSE},
};
```

## 8 Other device emulation

1. Contact us to request the other device emulation. (email : dooroos@dooroos.org)