

What is GNS3:

GNS3 is a graphical network simulator that allows simulation of network devices like routers & switches. This documents shows step by step instruction how to emulate Cisco IOS.

Further details can be found using following url.

<http://www.gns3.net/>

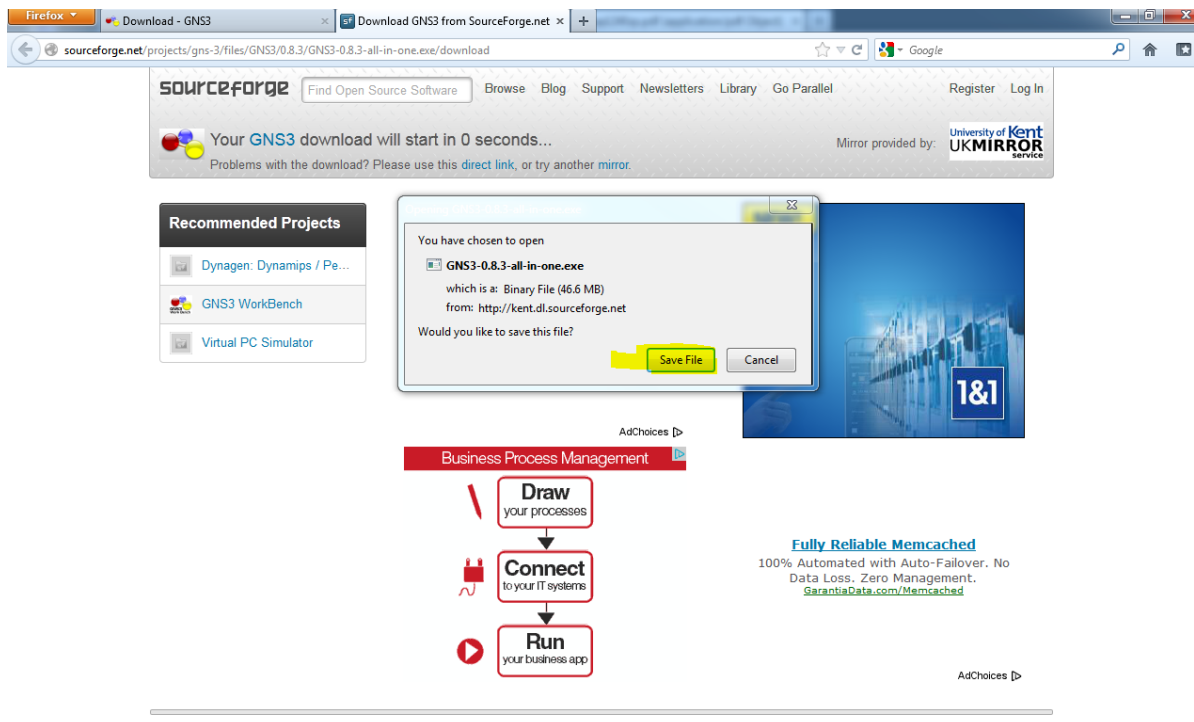
Install GNS3:

You can download GNS3 using following url.

<http://www.gns3.net/download/>

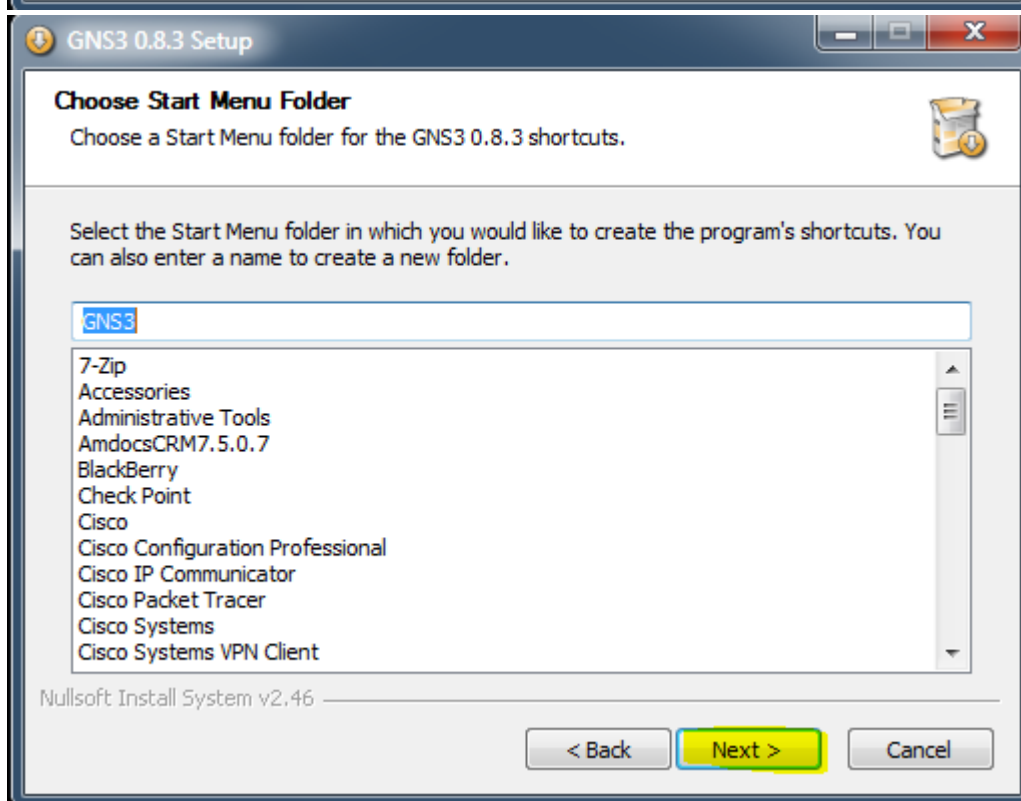
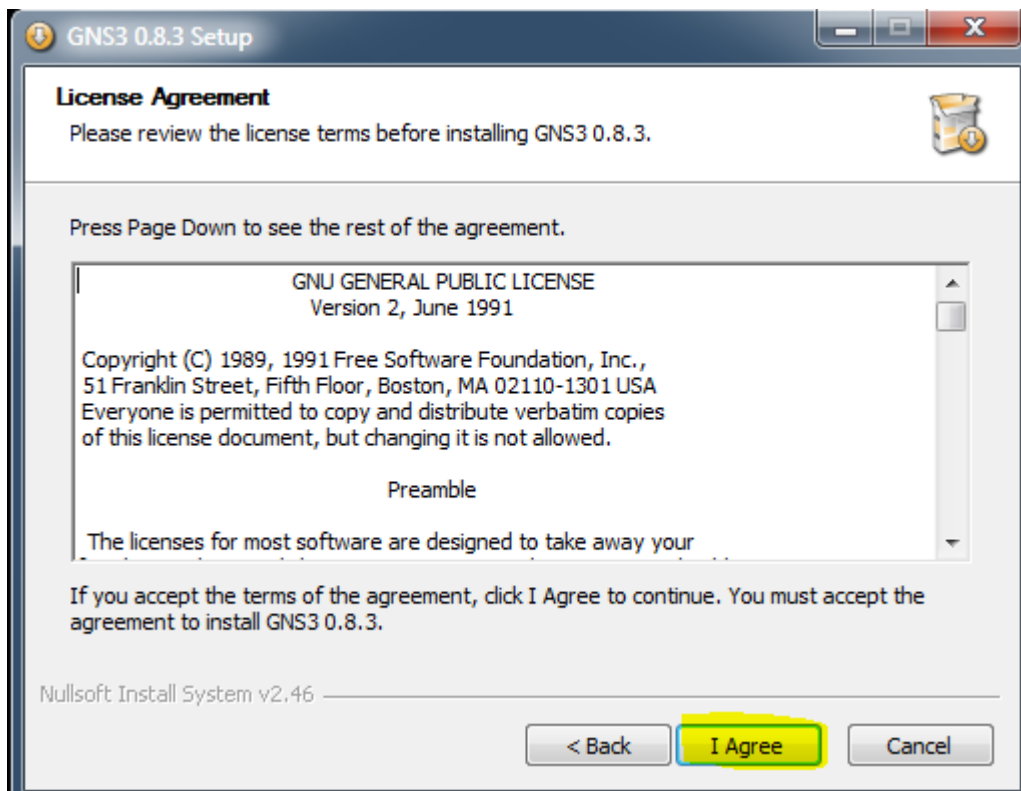


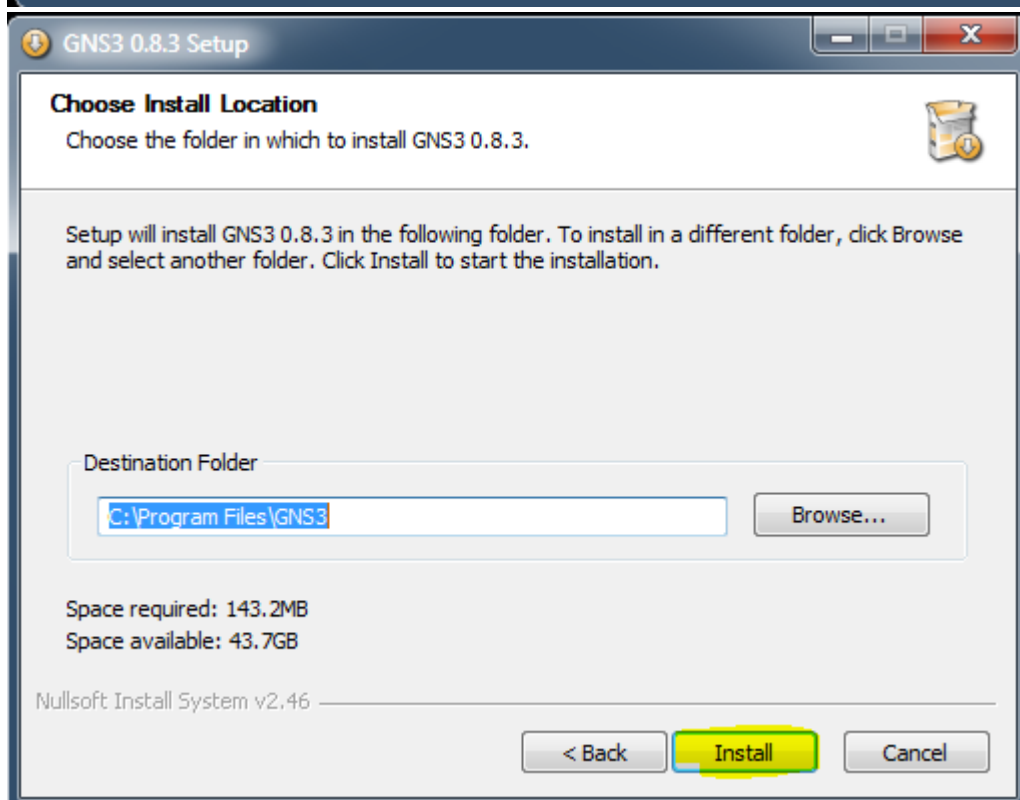
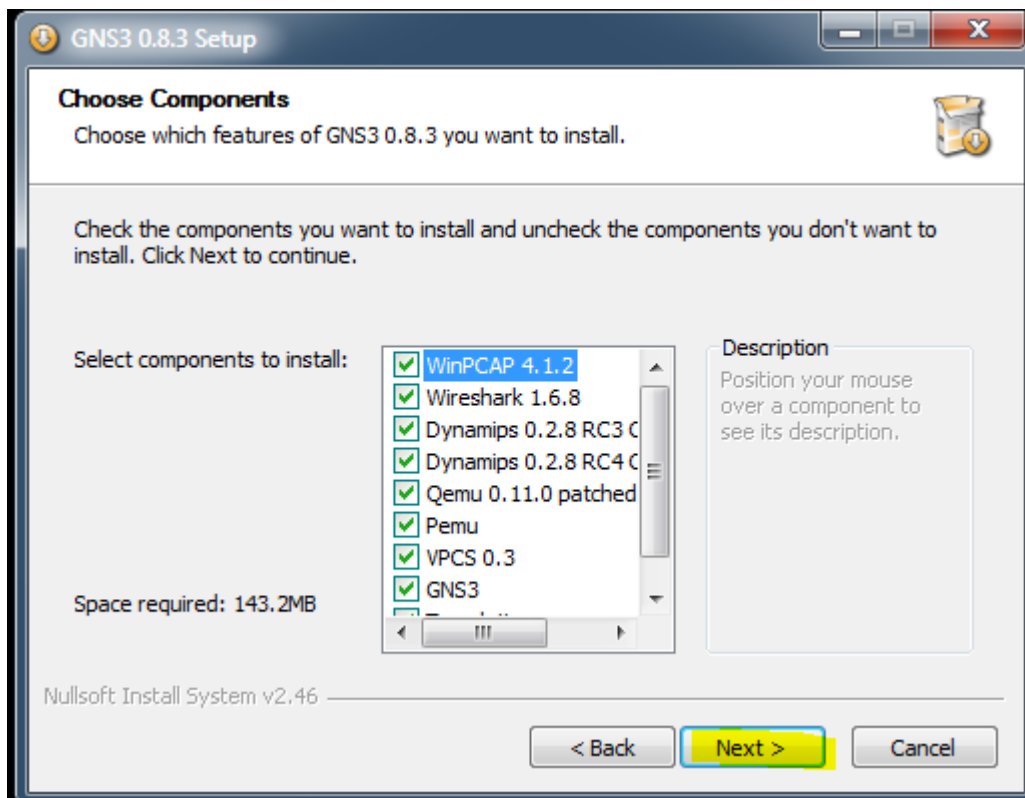
I am using GNS3 v0.8.3 all-in-one link. Click on this link, it will take you another page, which will allow you to download the software. Click on save once prompted.

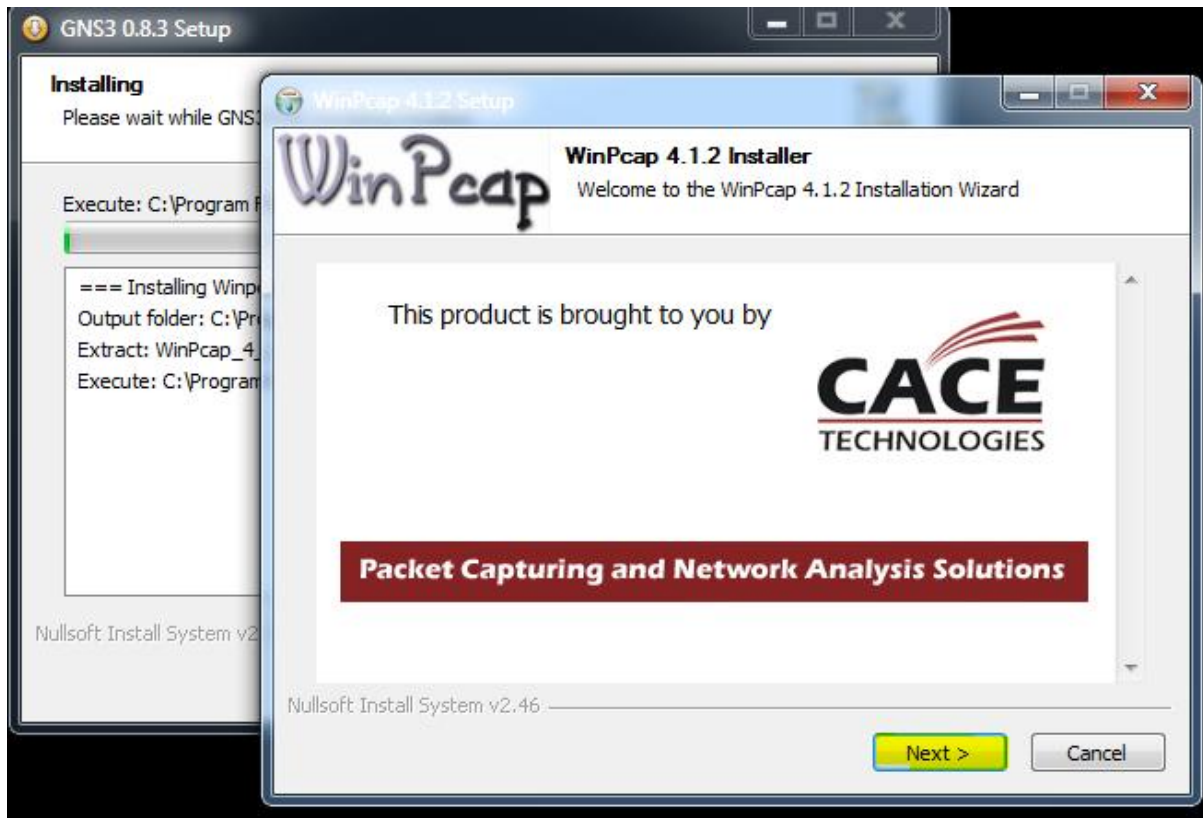


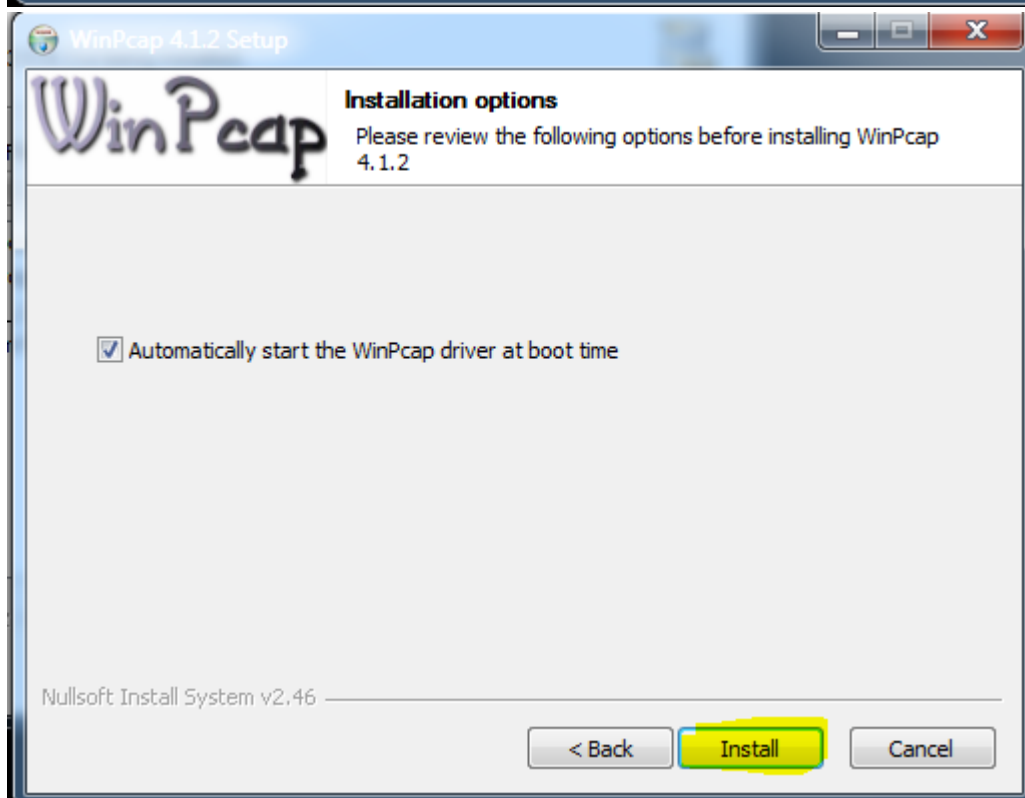
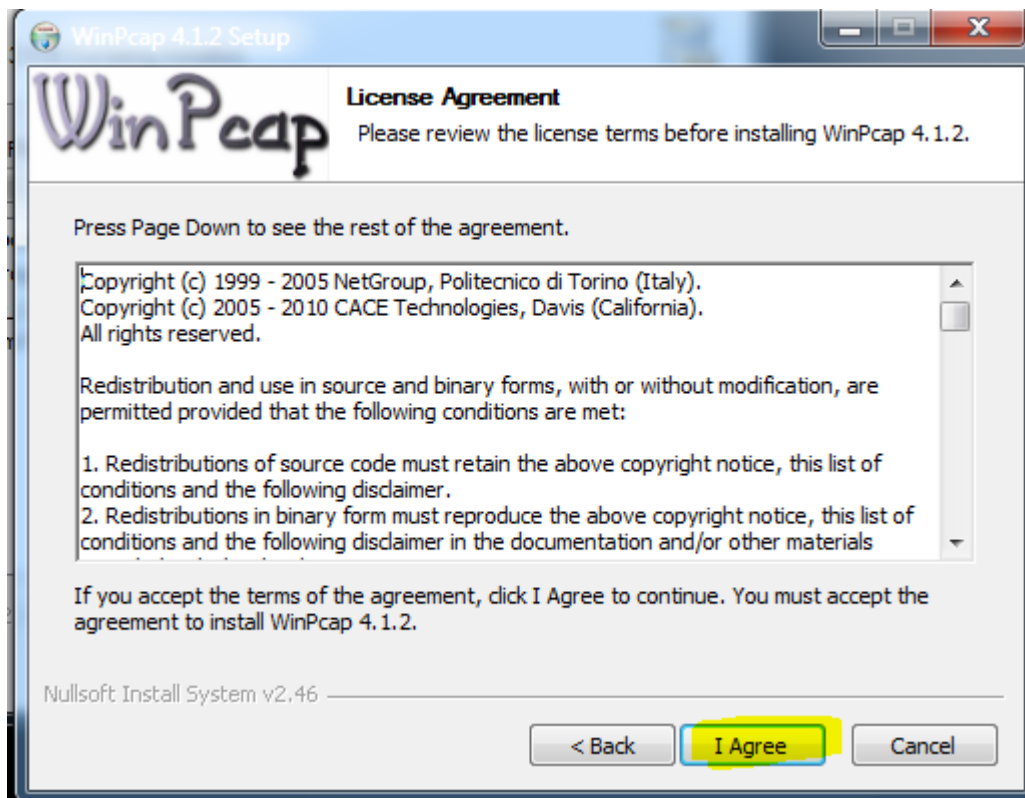
Once downloaded, double click to install the software. Following is the screen shot of each screen I get after that, just click highlighted section.

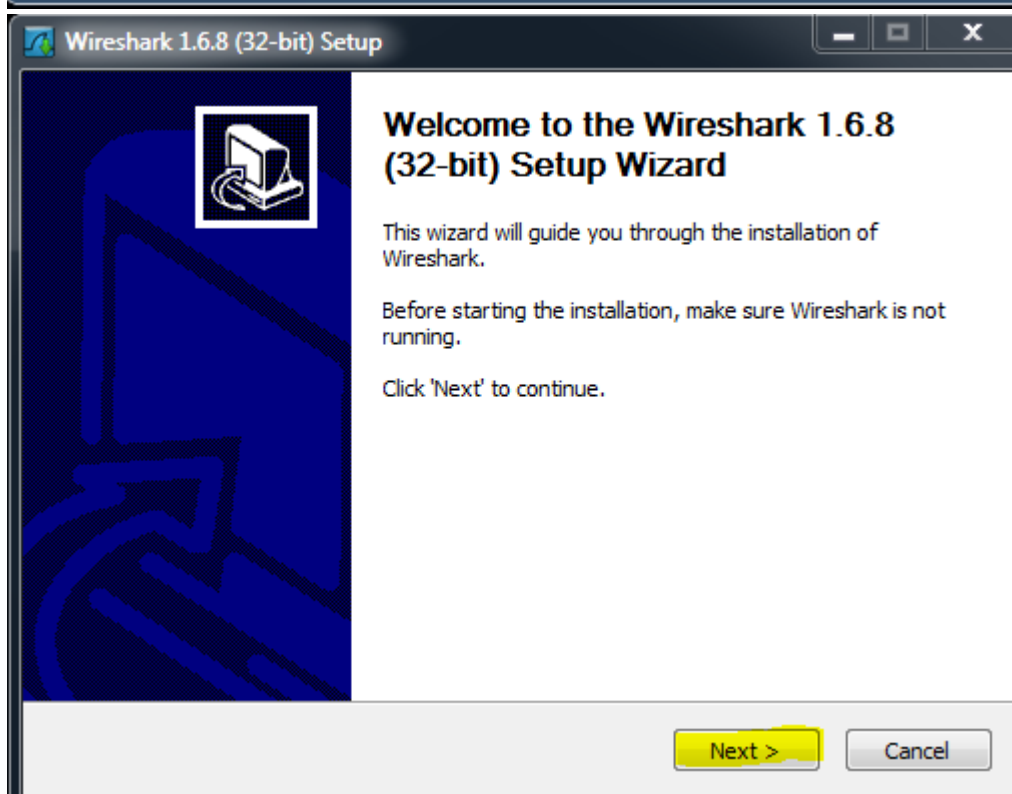
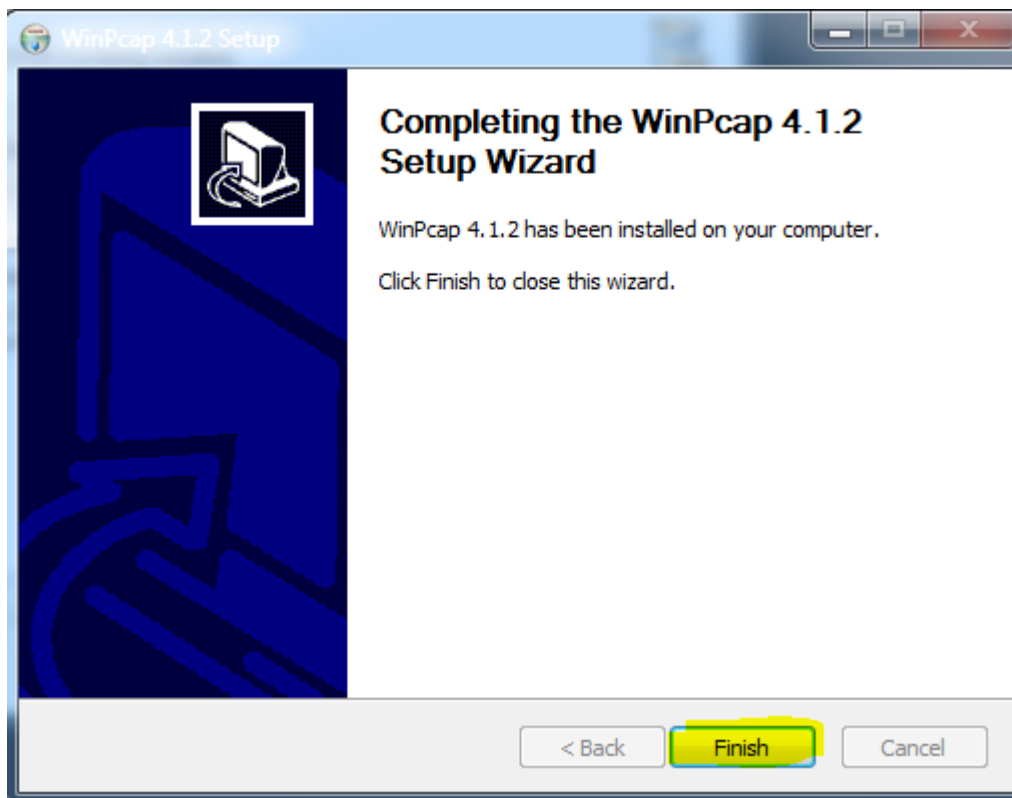


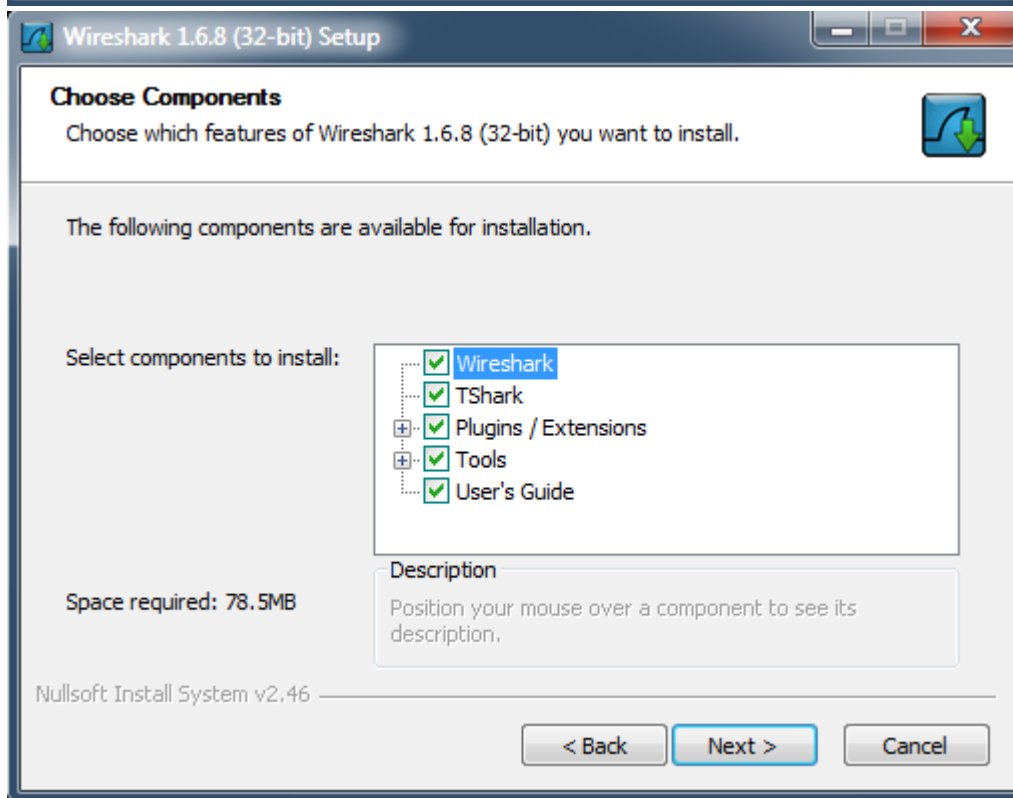
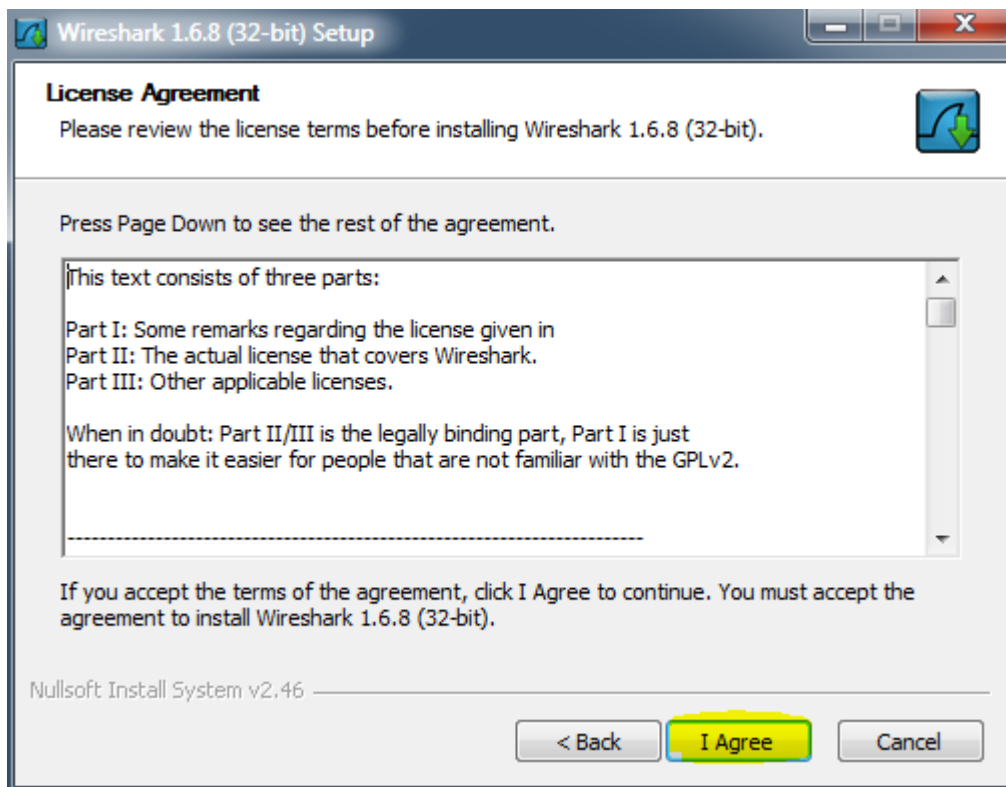


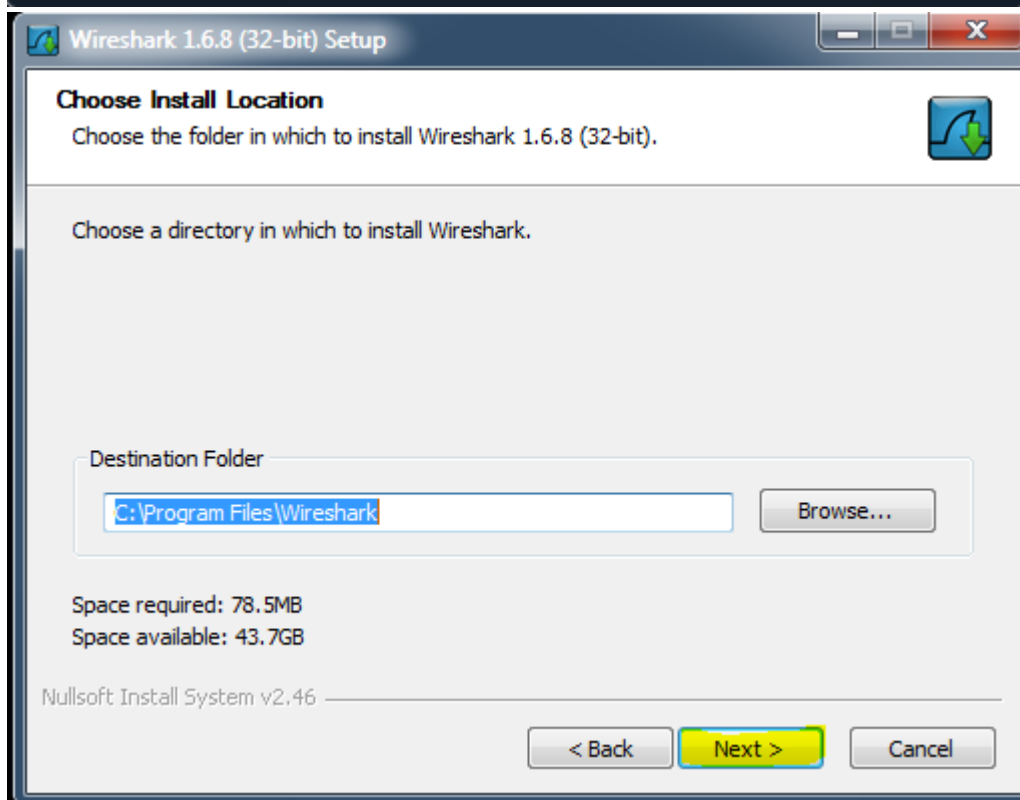
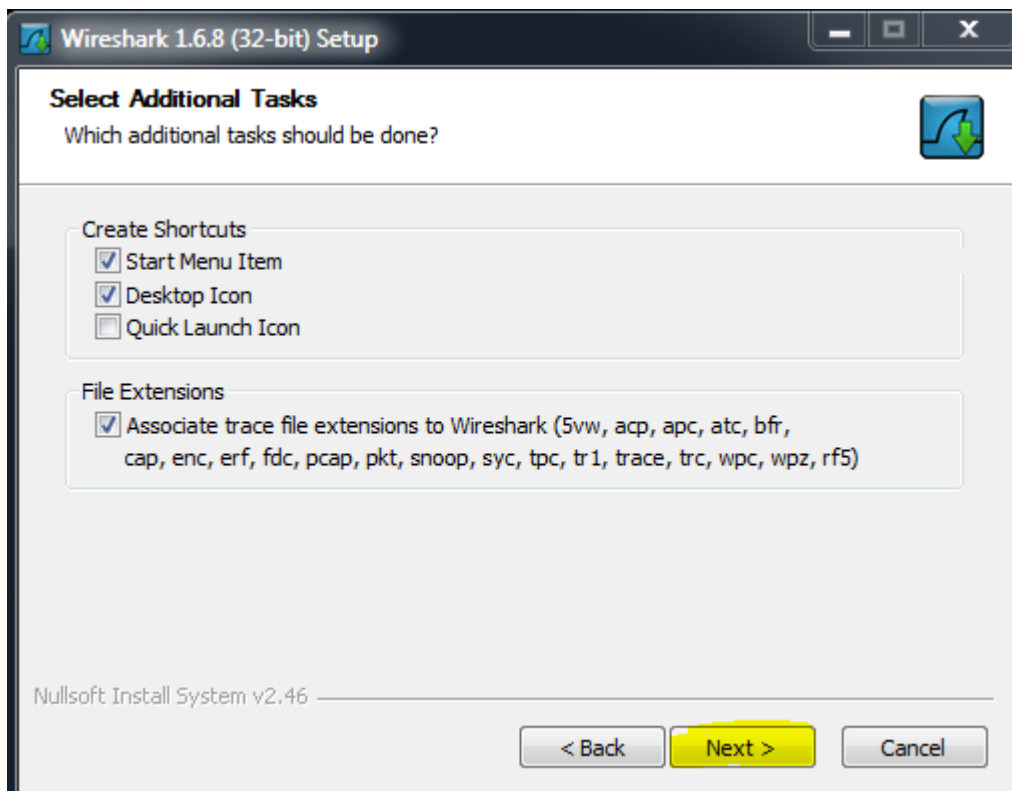


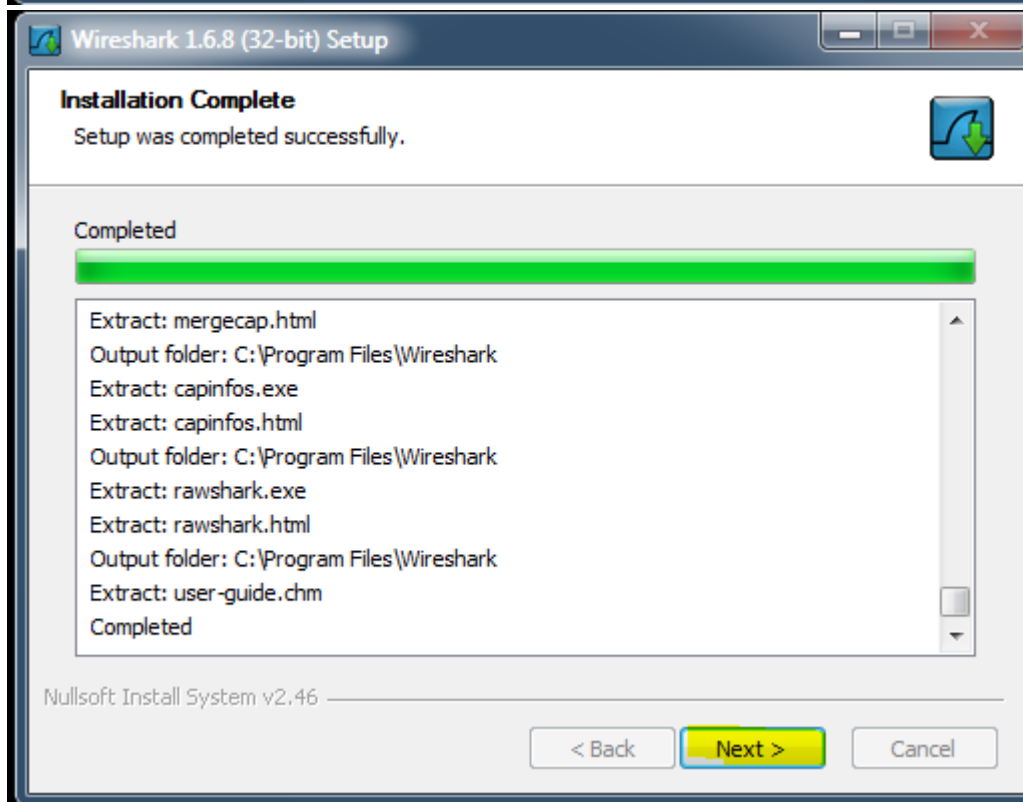
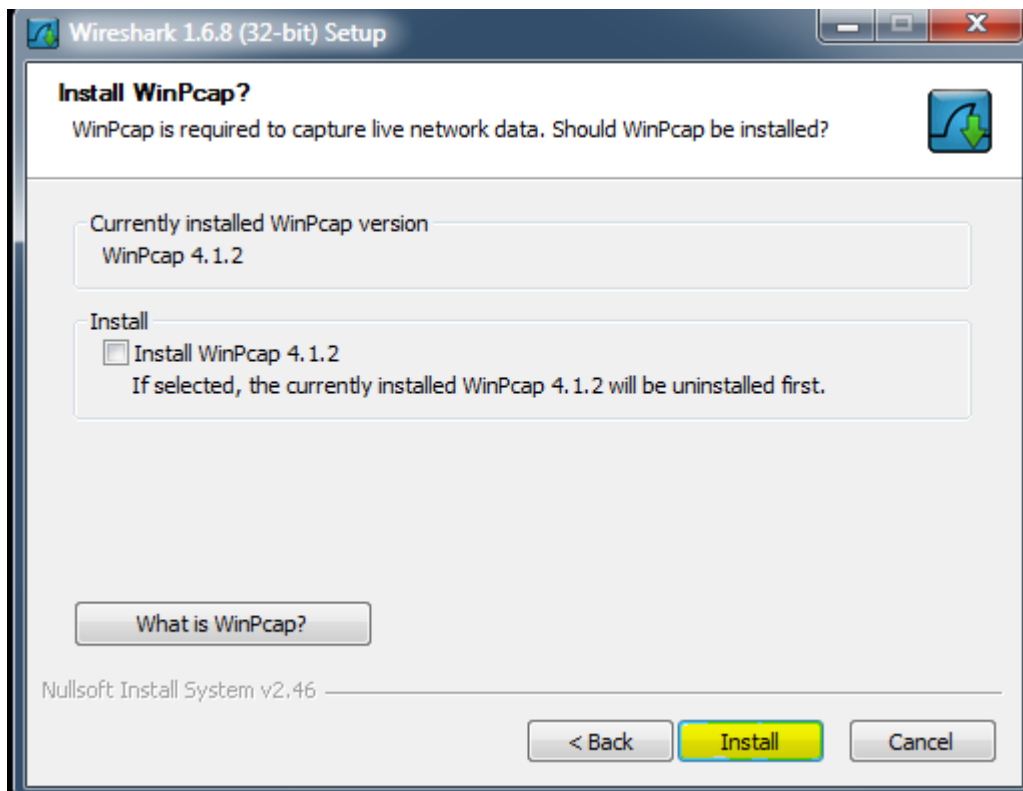


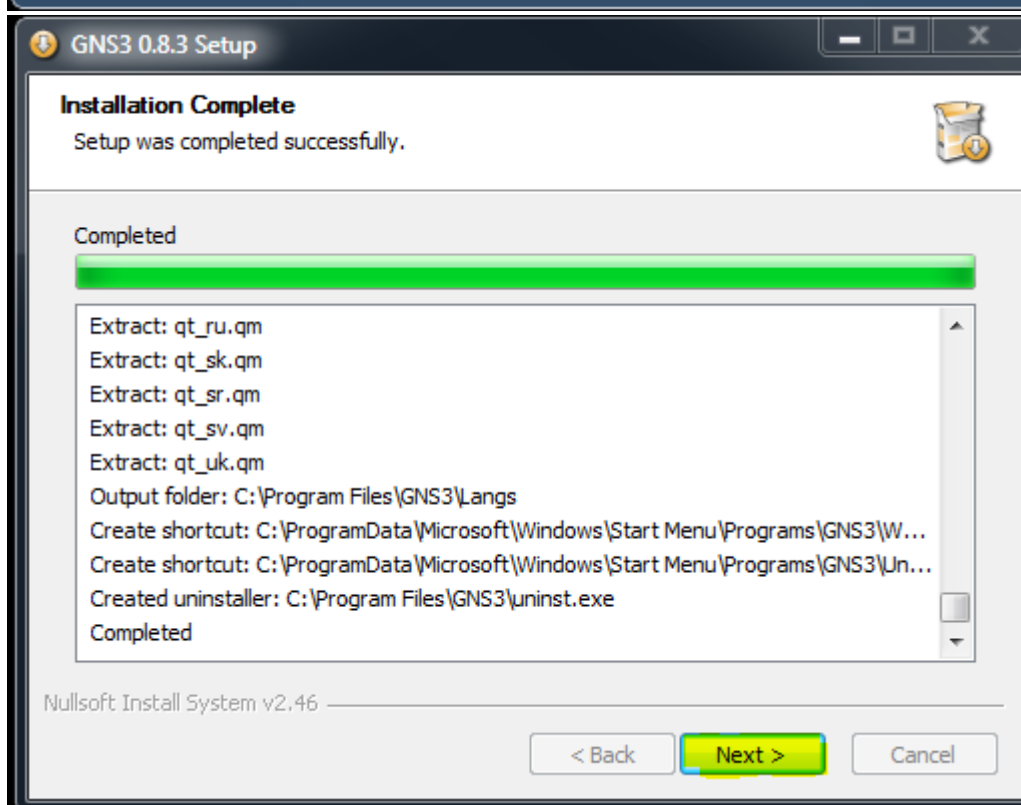
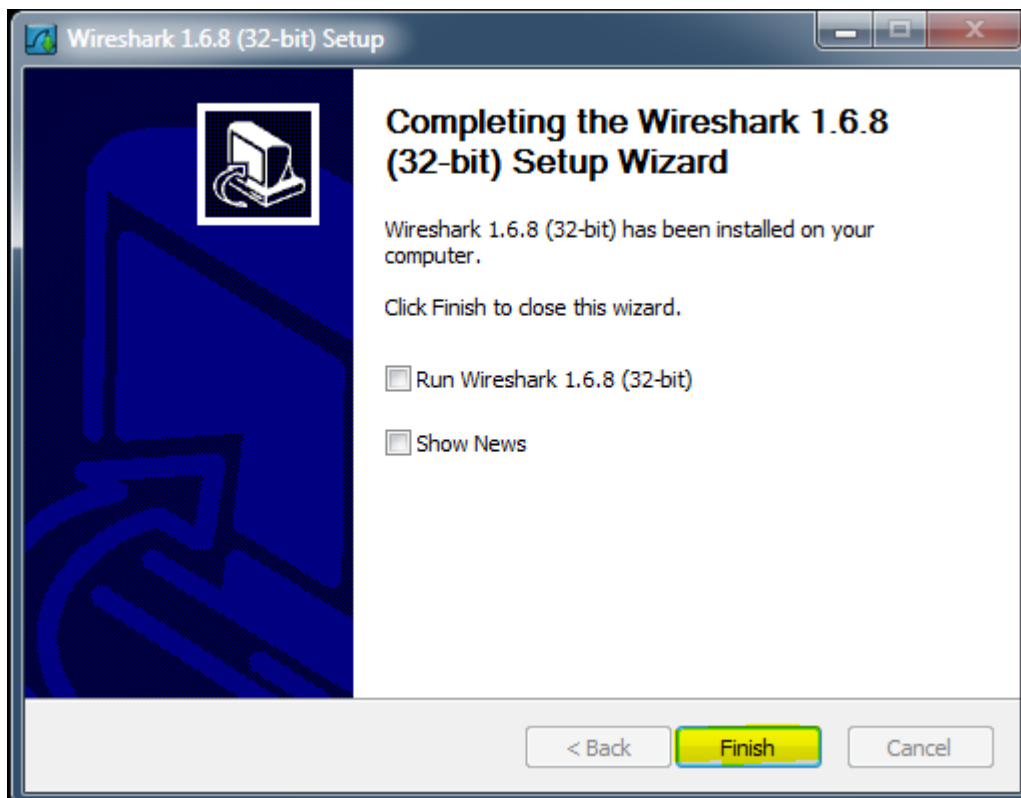


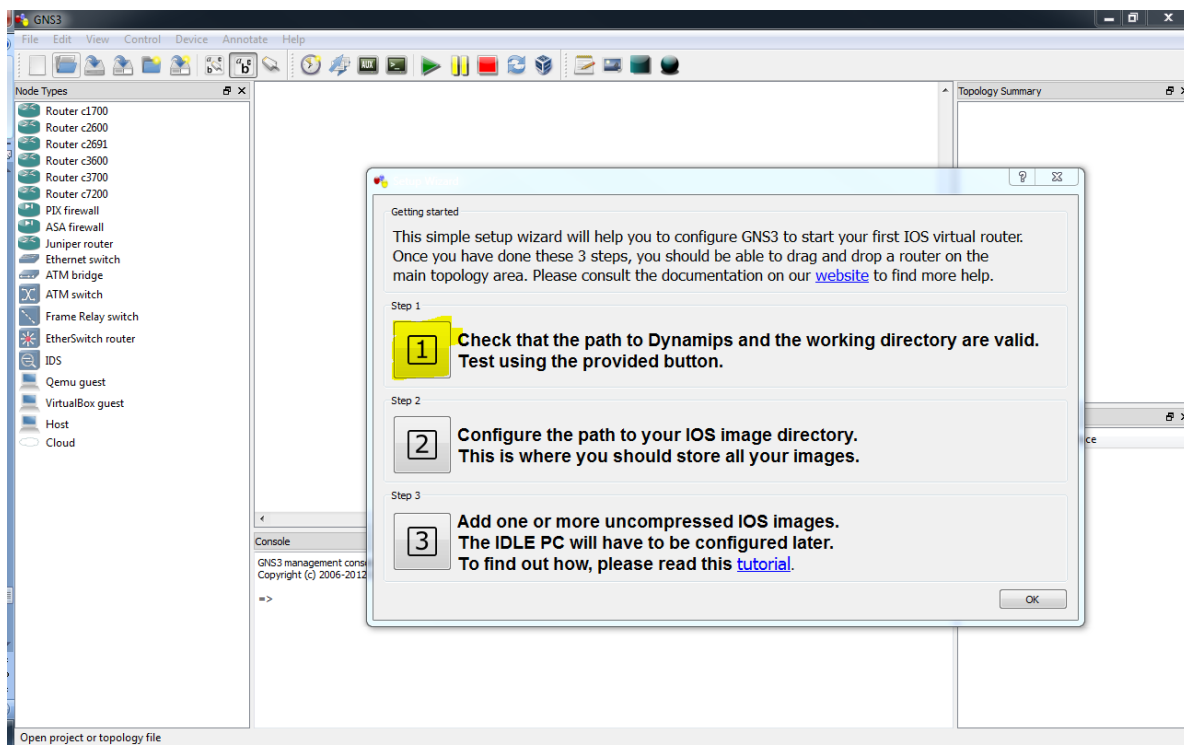


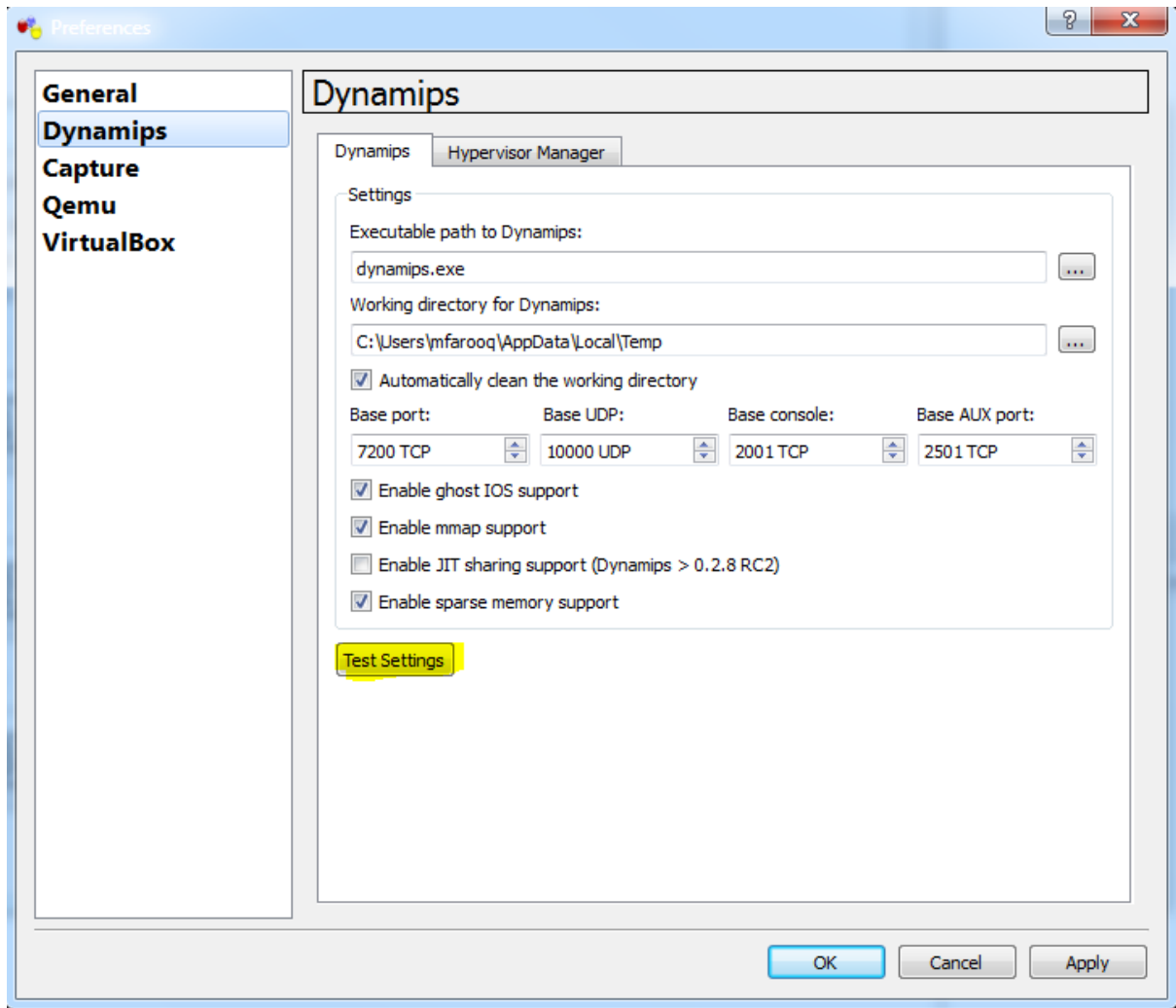




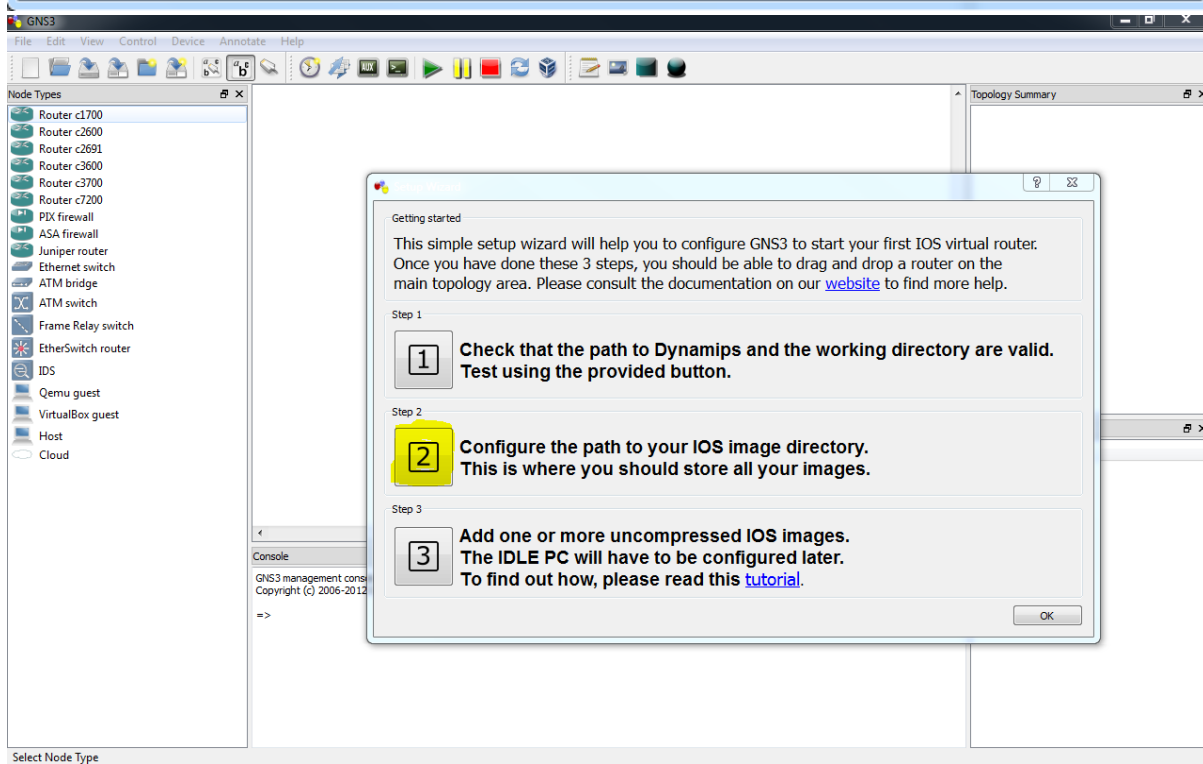
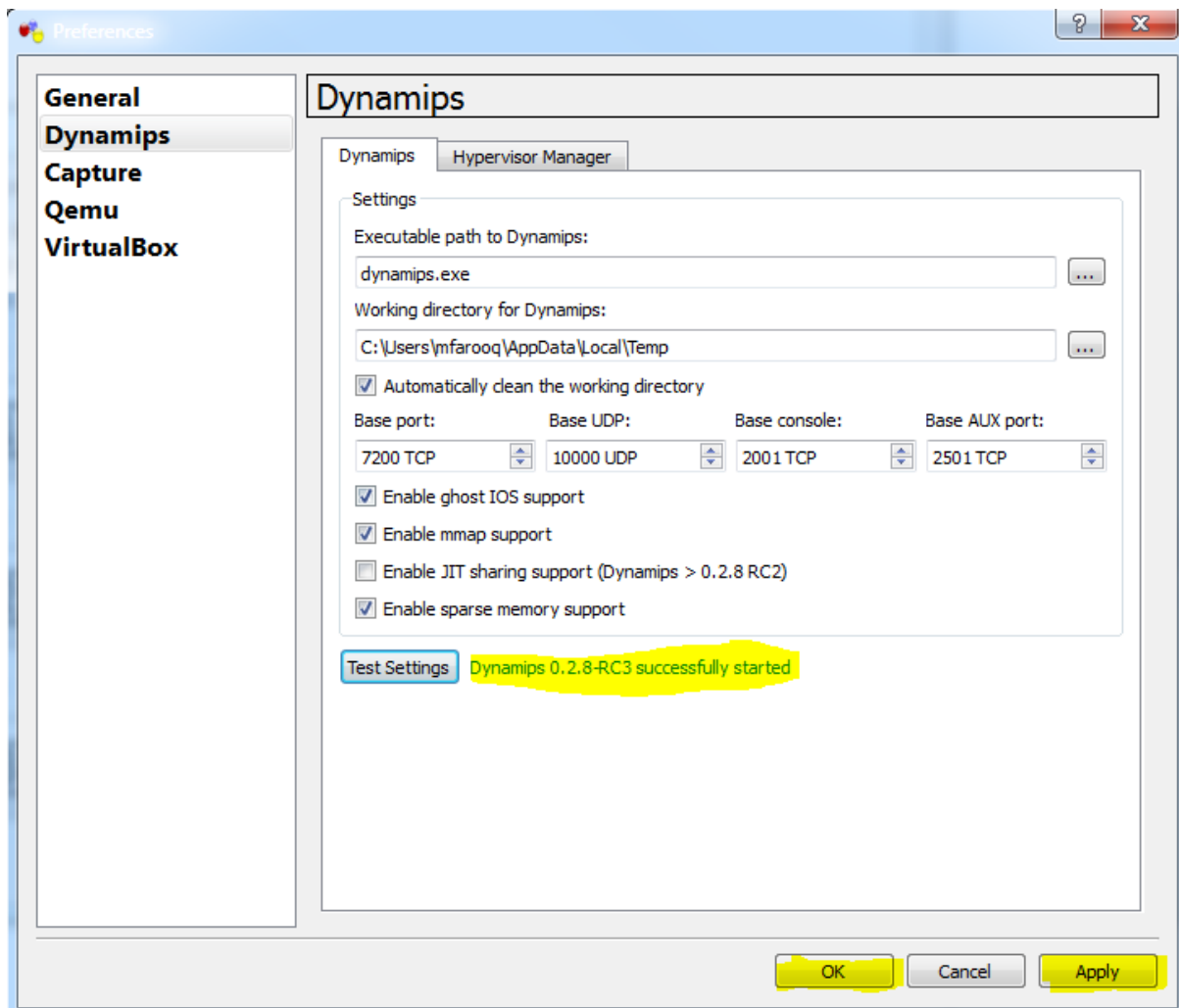




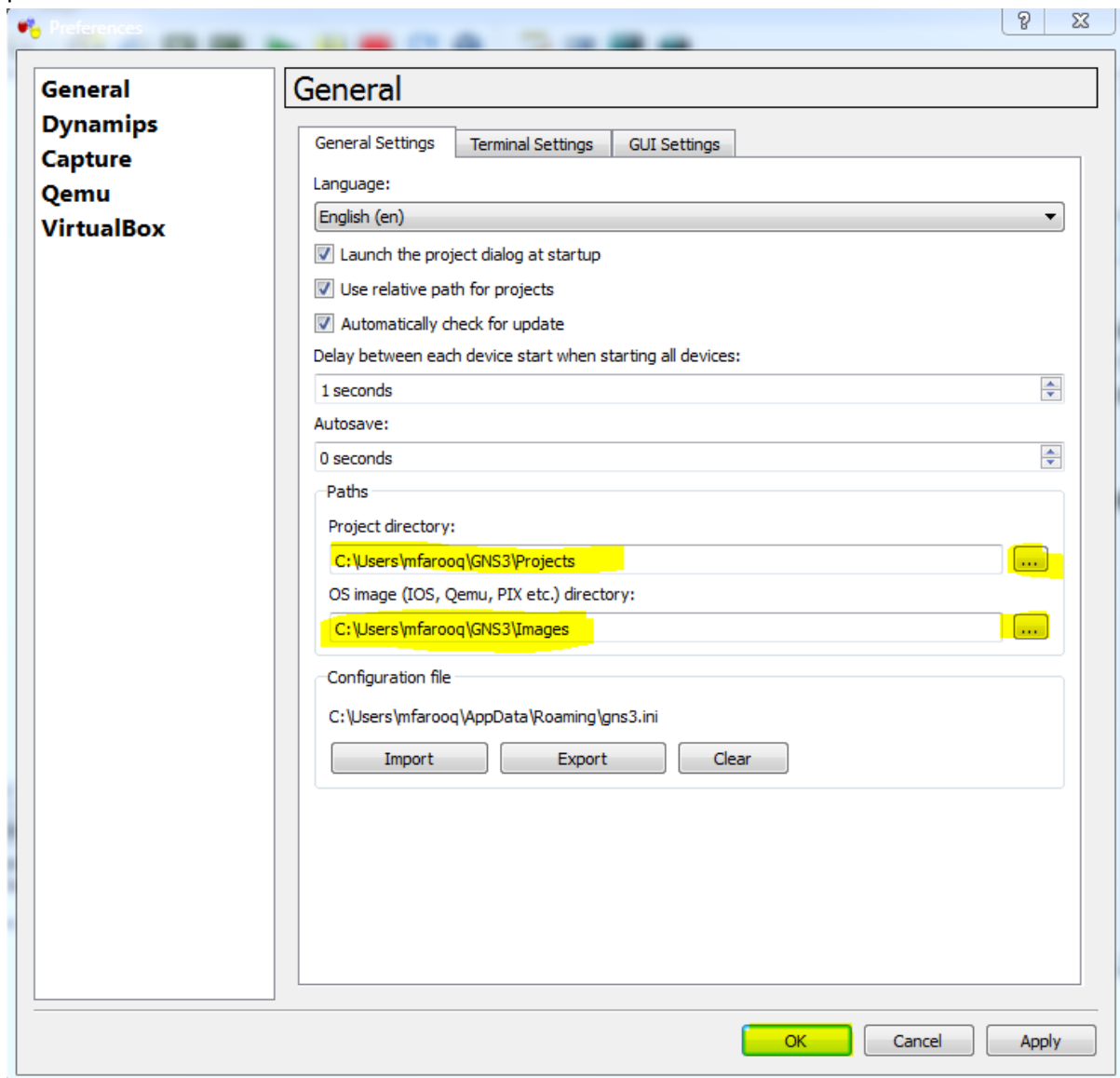


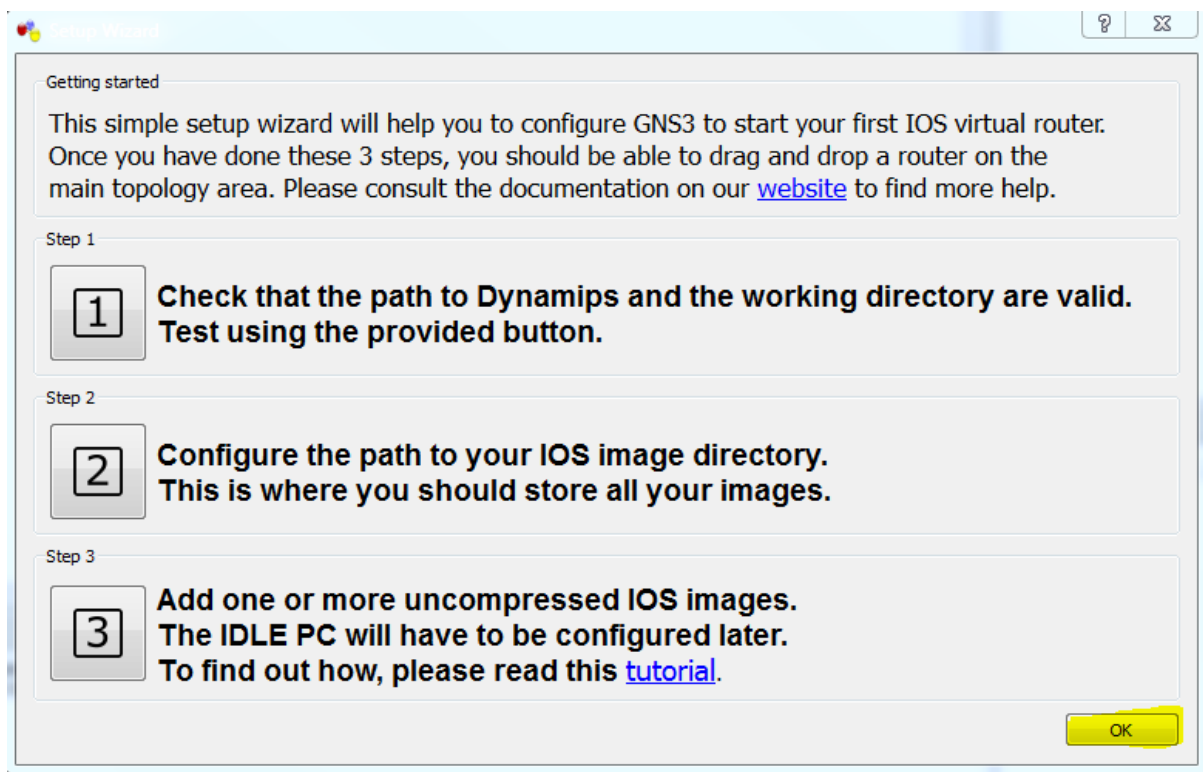
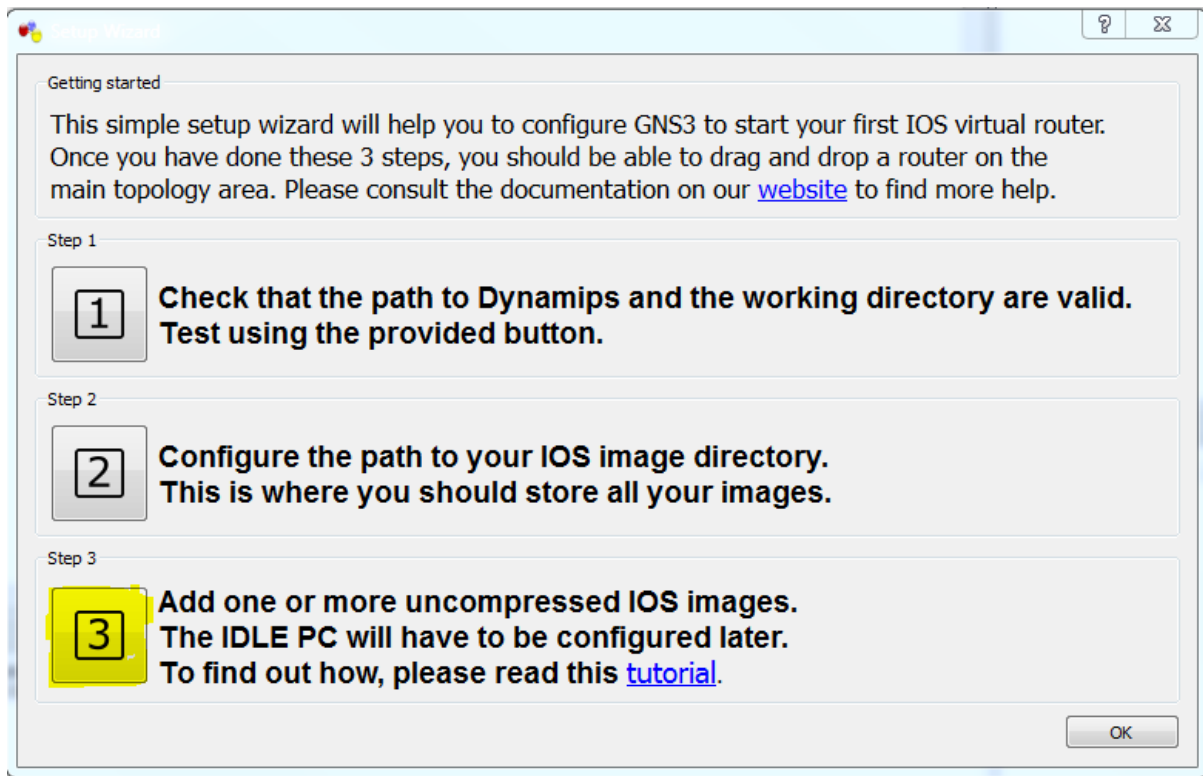


Press Apply and then OK.

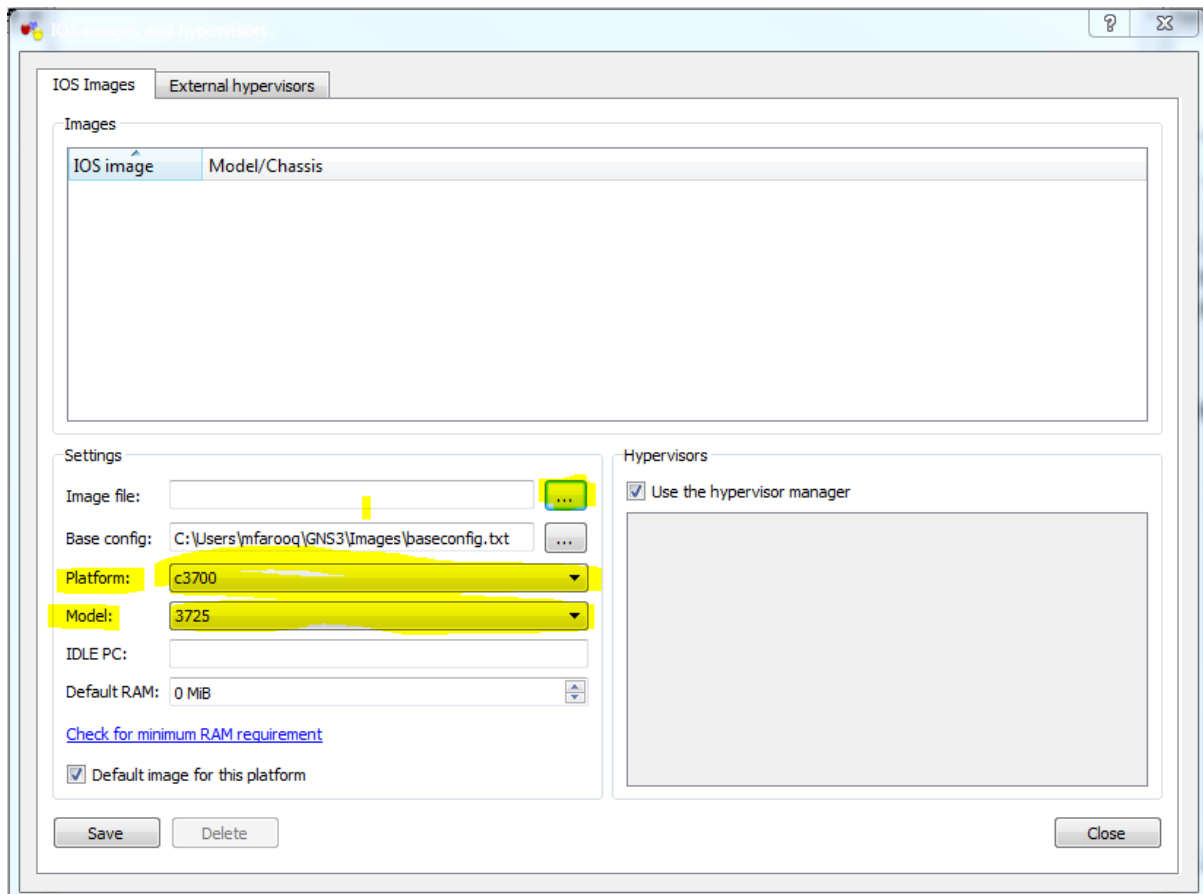


You can change the directory to save projects and also folder where Cisco IOS are located and then press OK.

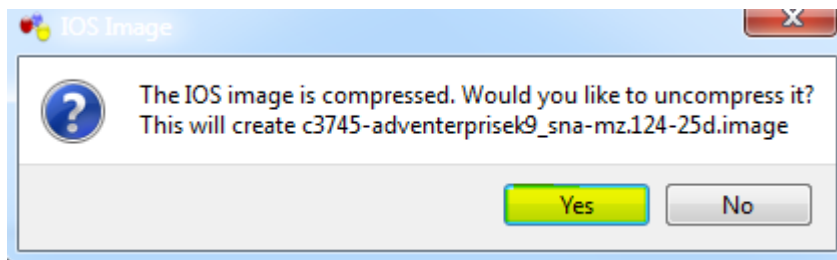




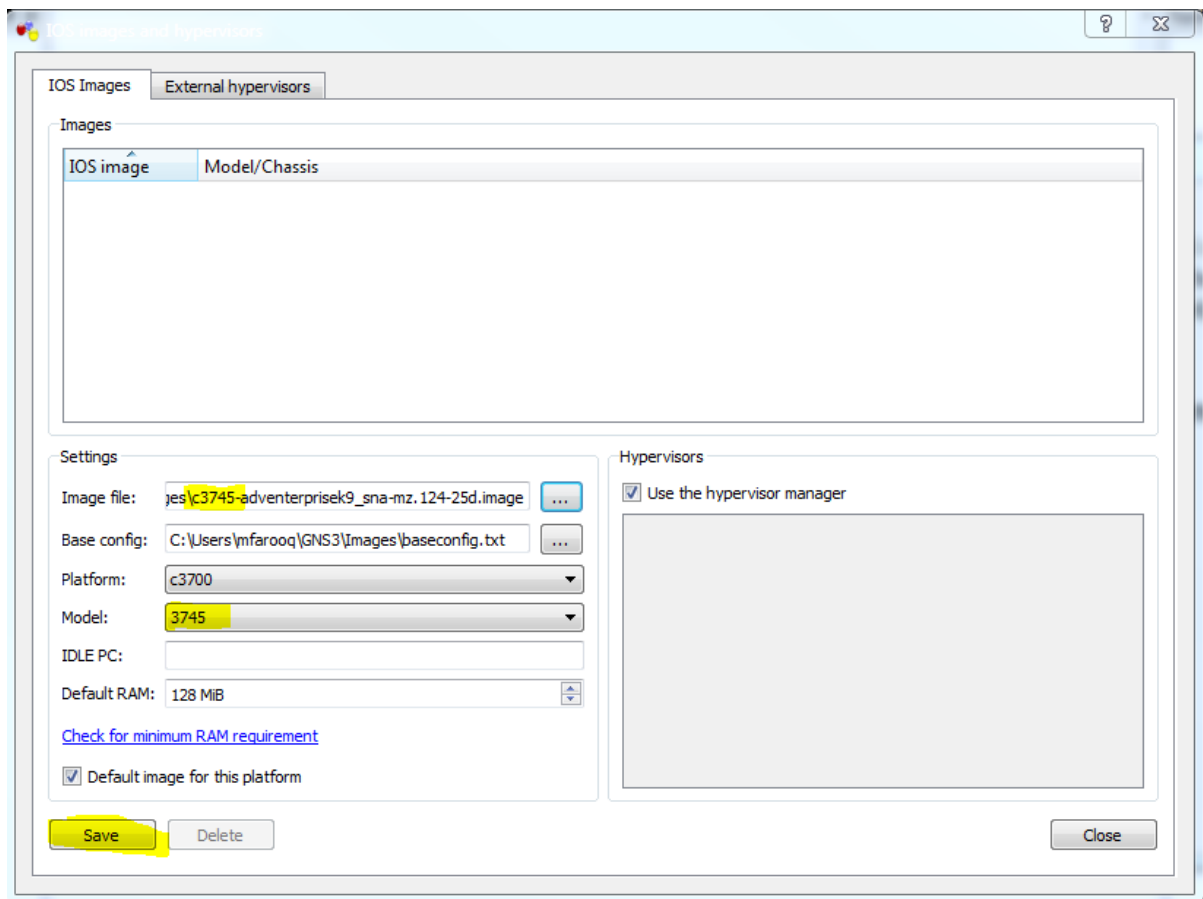
Select the image file for the IOS you have like c3700 and model 3725, you can change this depending upon IOS you have. Note that not all IOS will work, use only mentioned in platform & model dropdown menu.



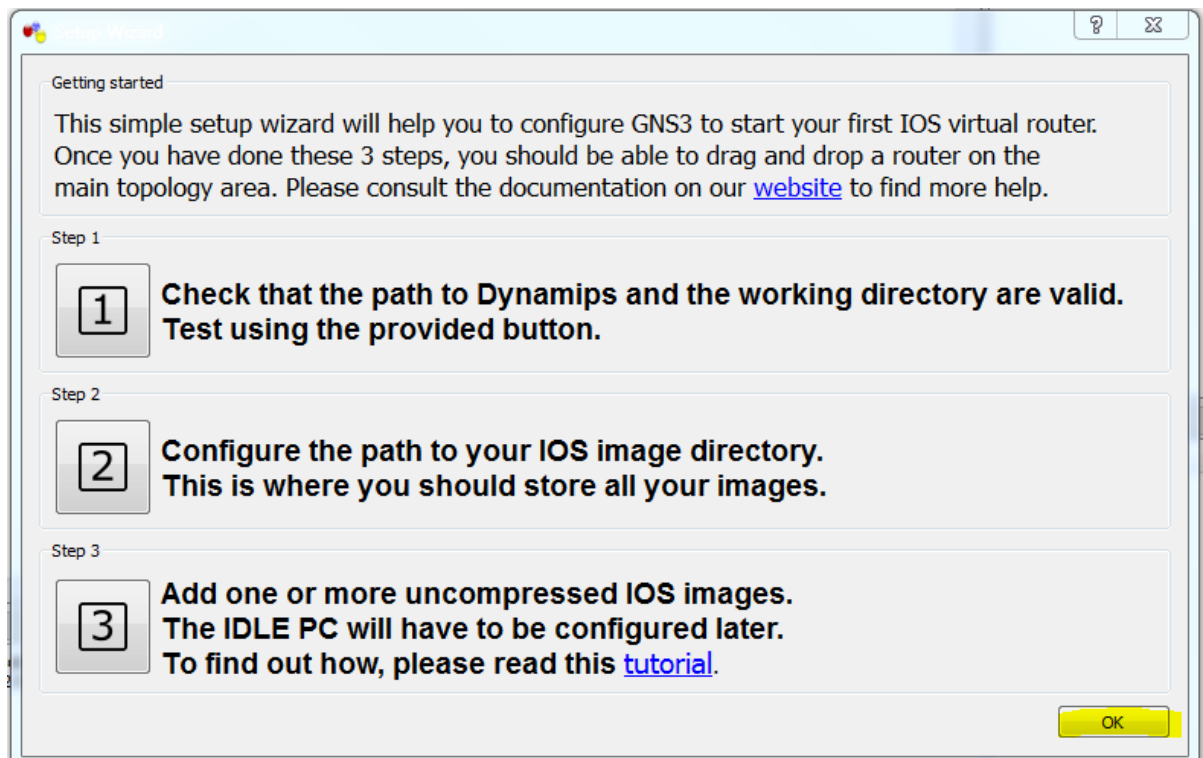
It will prompt you to decompress the IOS file, click on yes will enable GNS3 to start IOS very quickly.



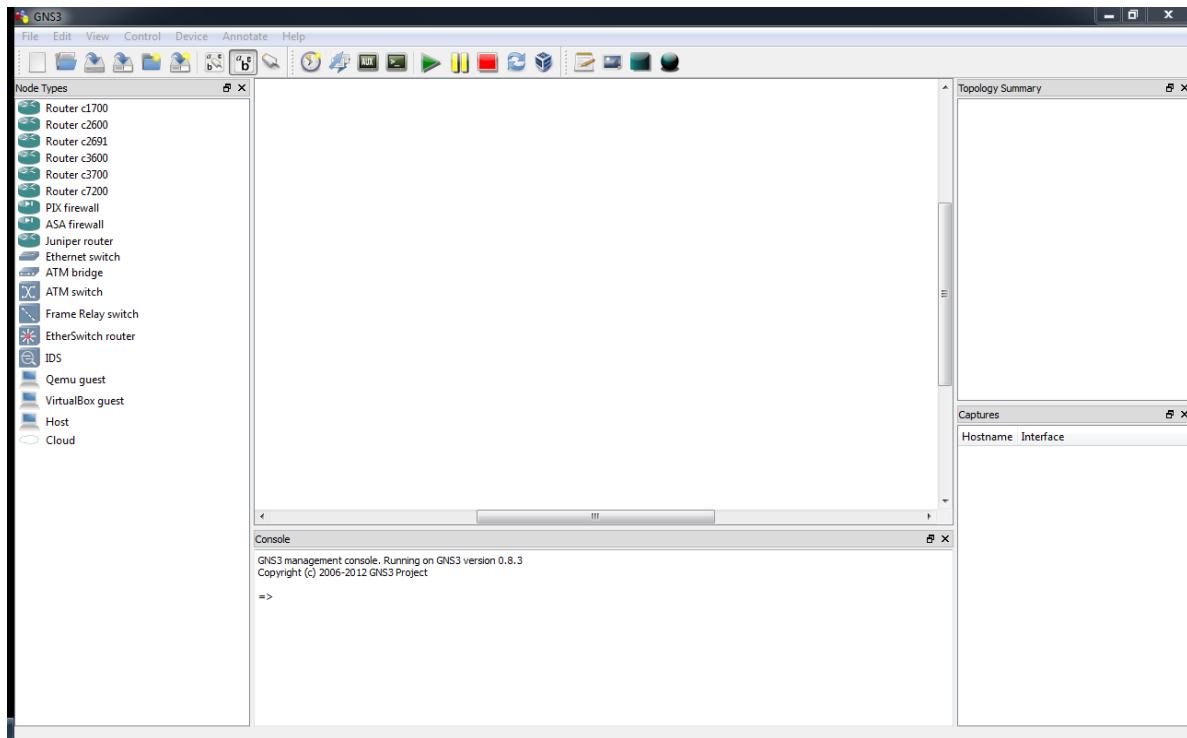
Once you select the IOS, GNS3 will select model it self, click save at the end.



Click close the close this window.

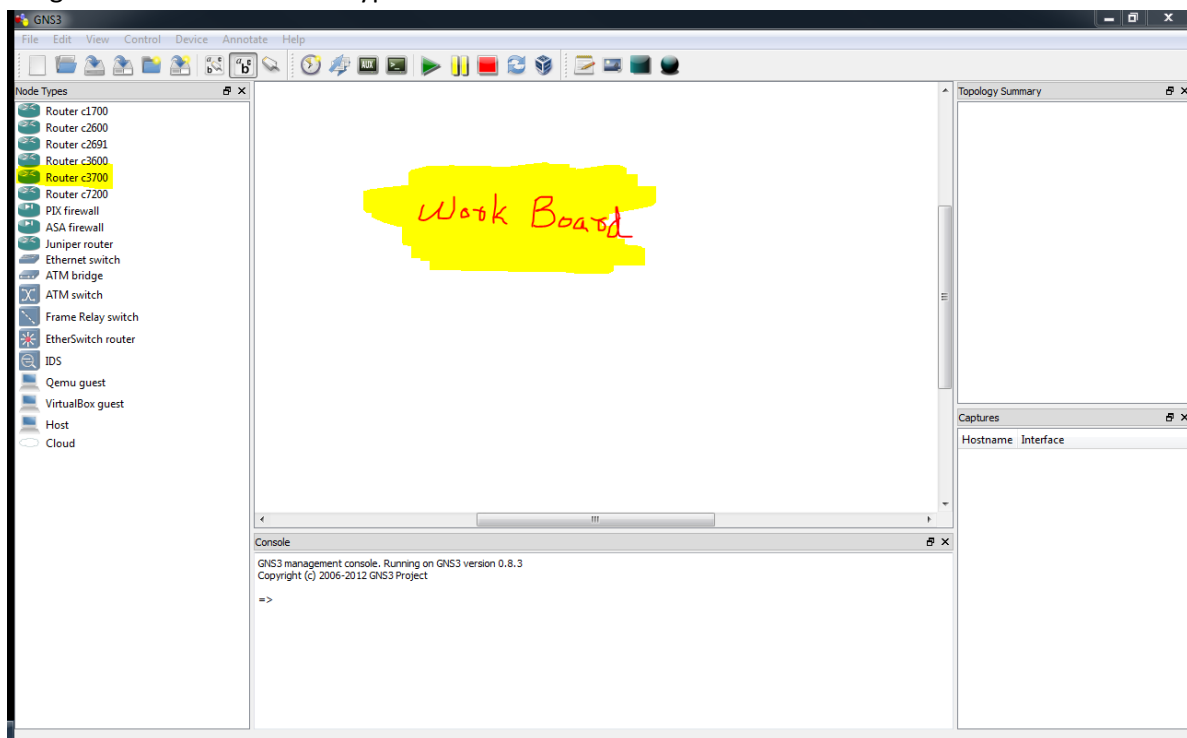


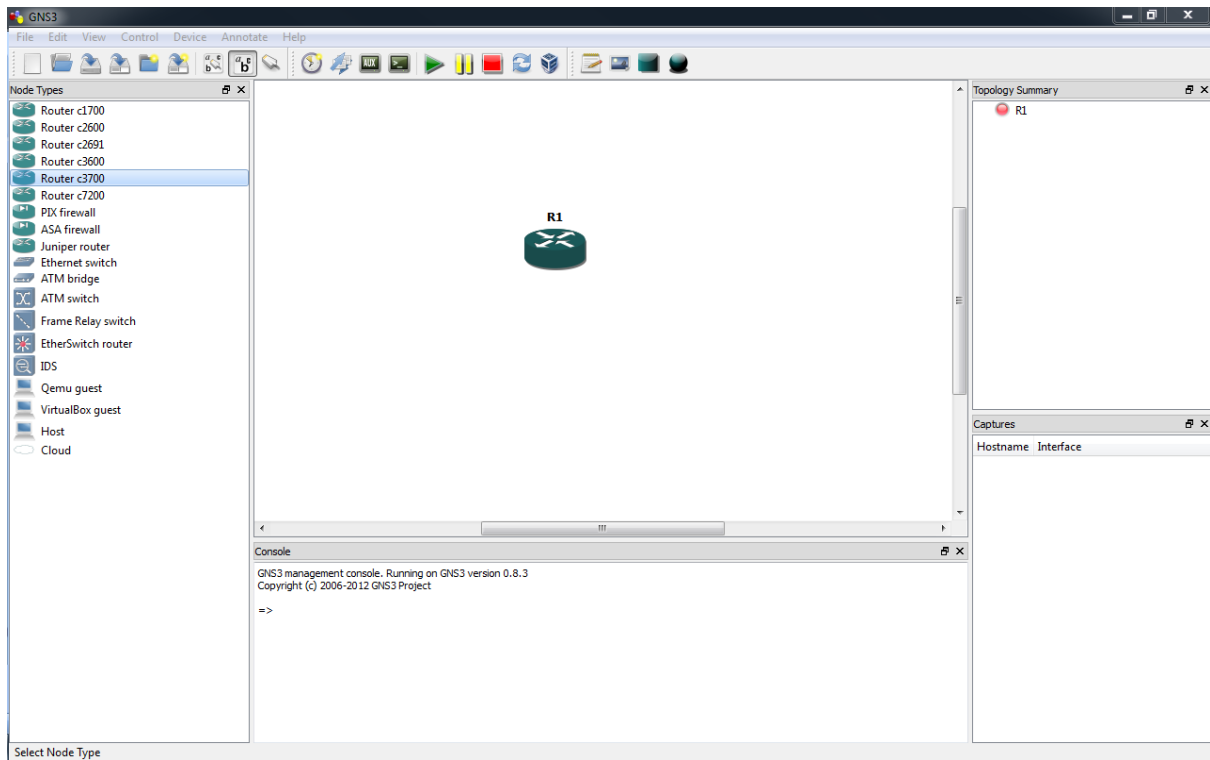
Click ok to close this window as well.



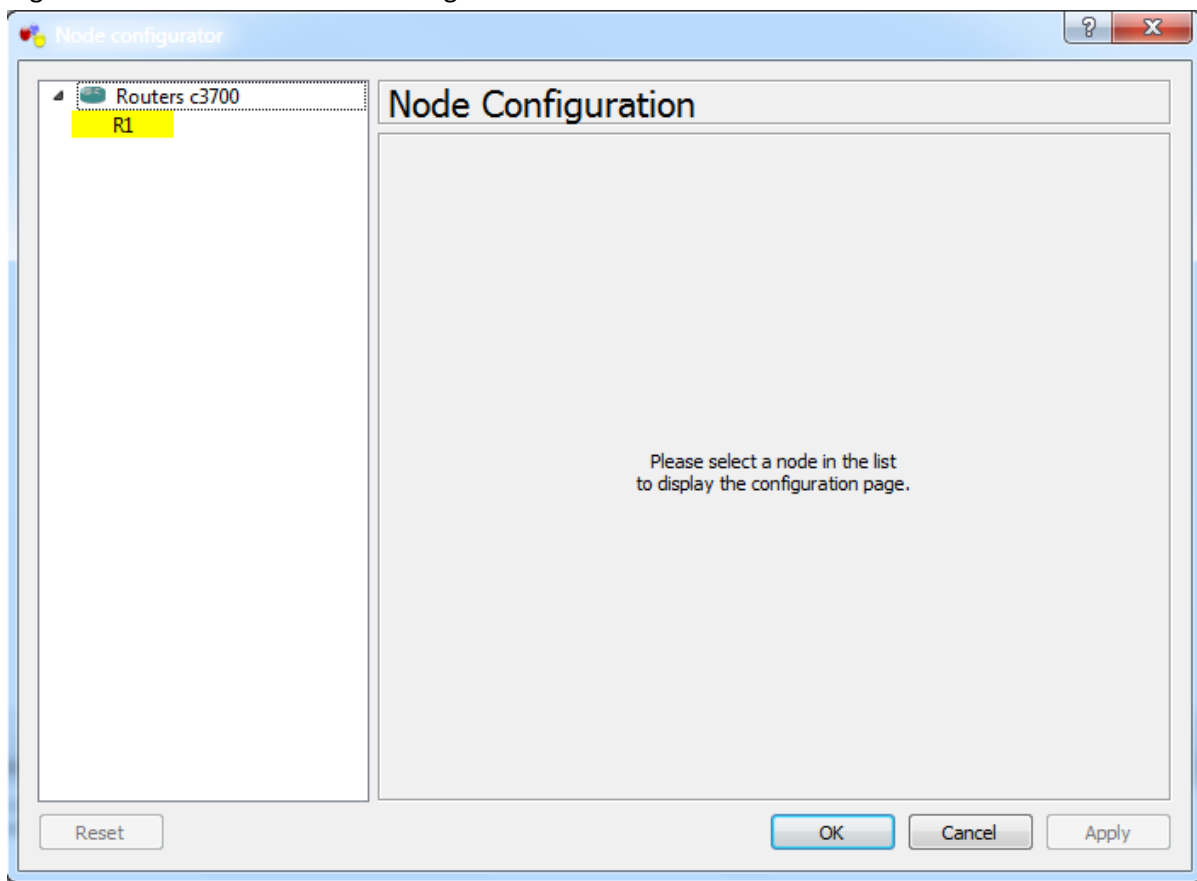
This is main interface for GNS3.

Drag router 3700 from Note types to work board

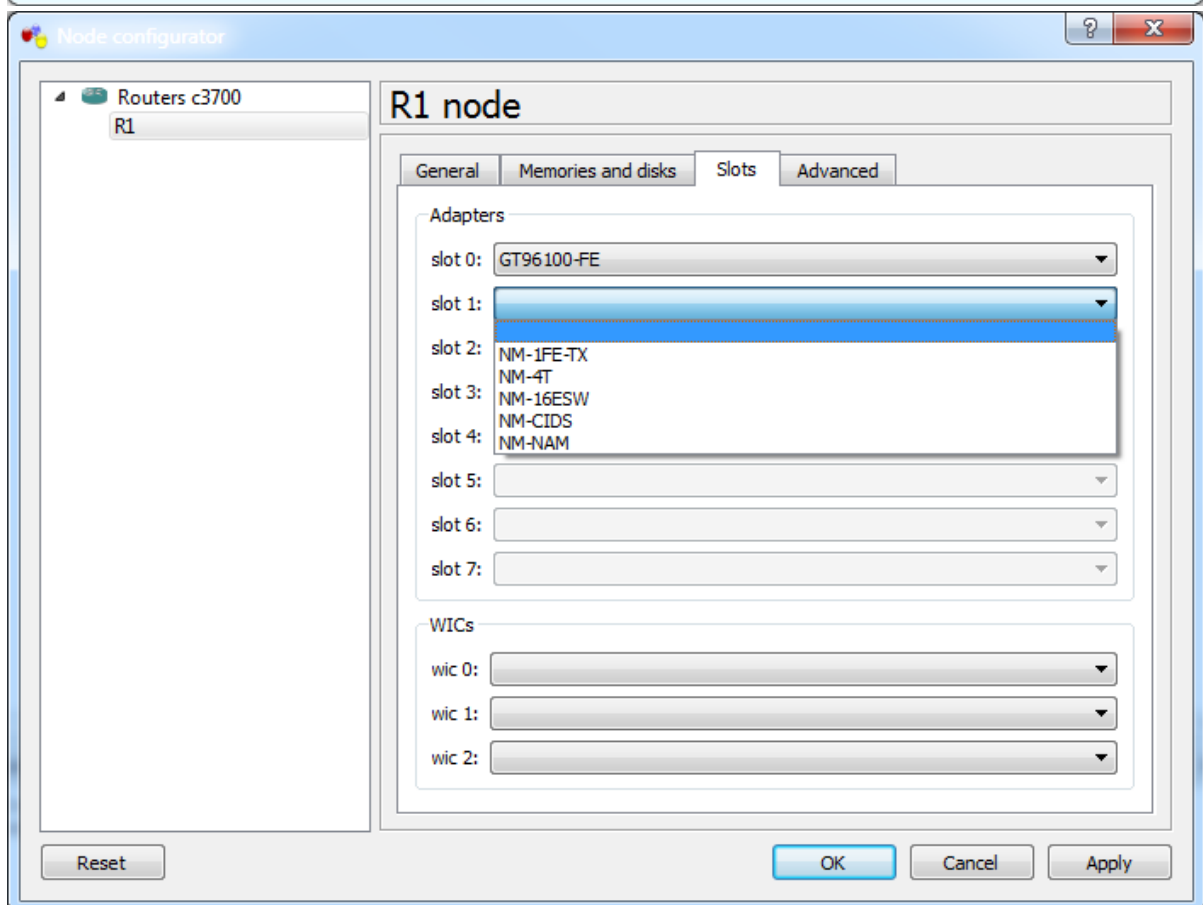
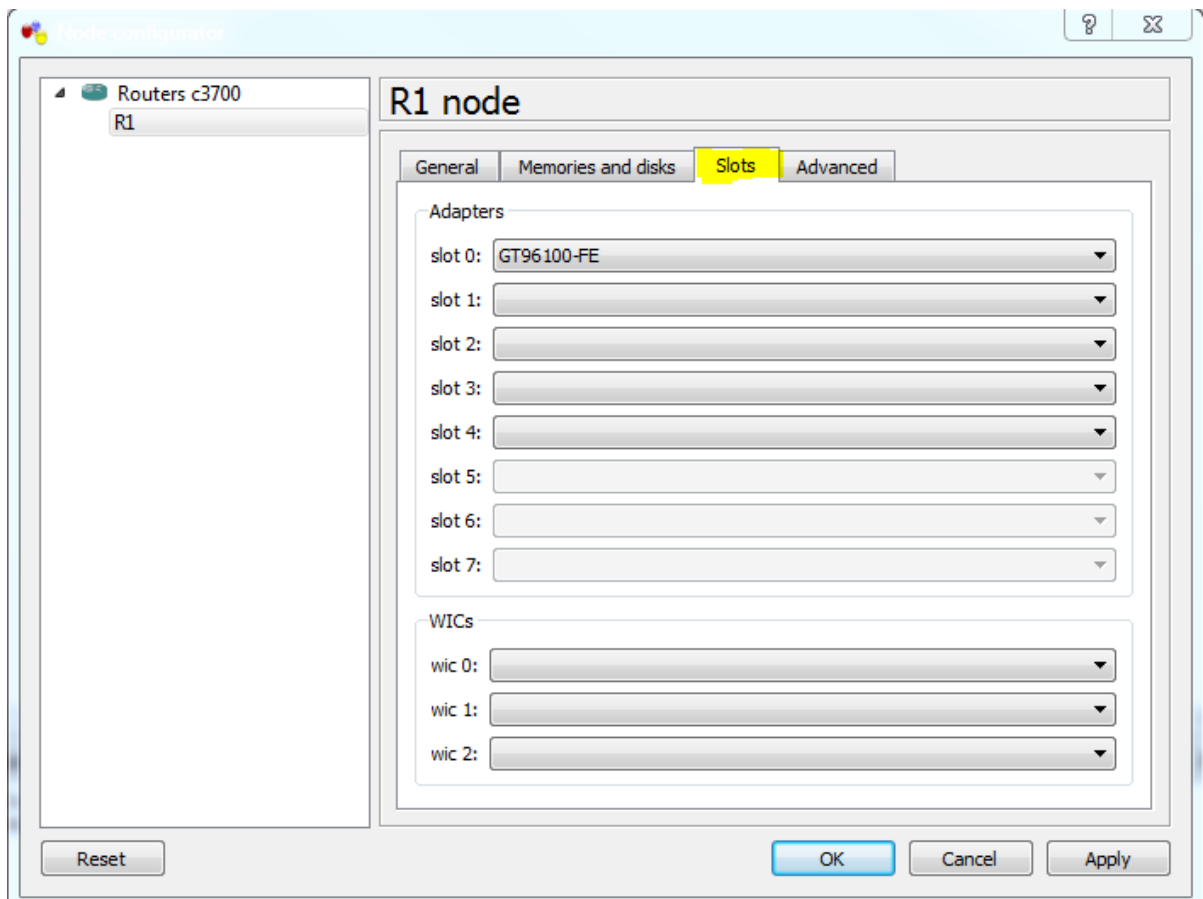




Right Click on router and select configure.

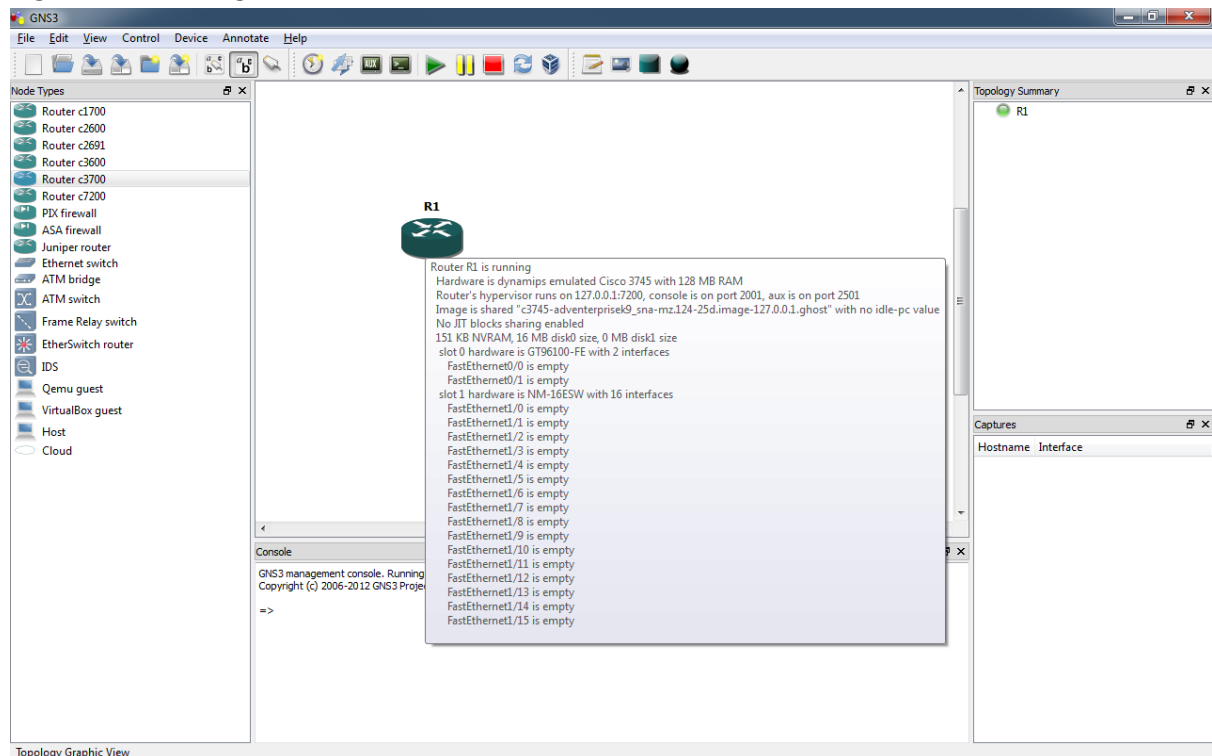


Go to Slots tab.

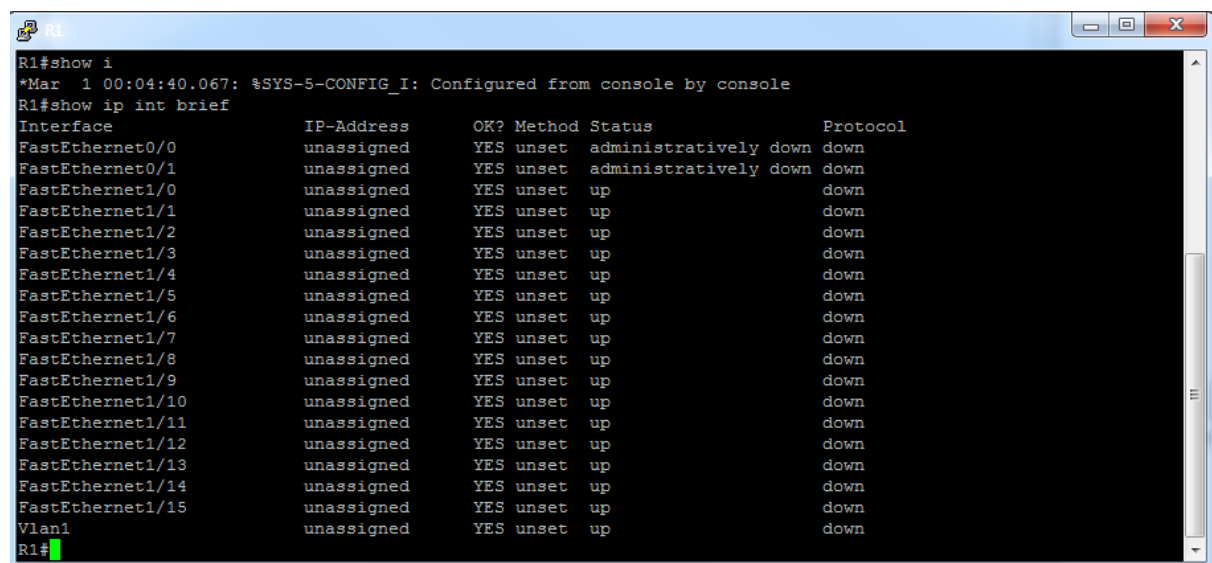


In slot 2 select any daughter card you need to use and press apply and then ok. I am using NM-16ESW as it gives 16 FastEthernet interfaces as well.

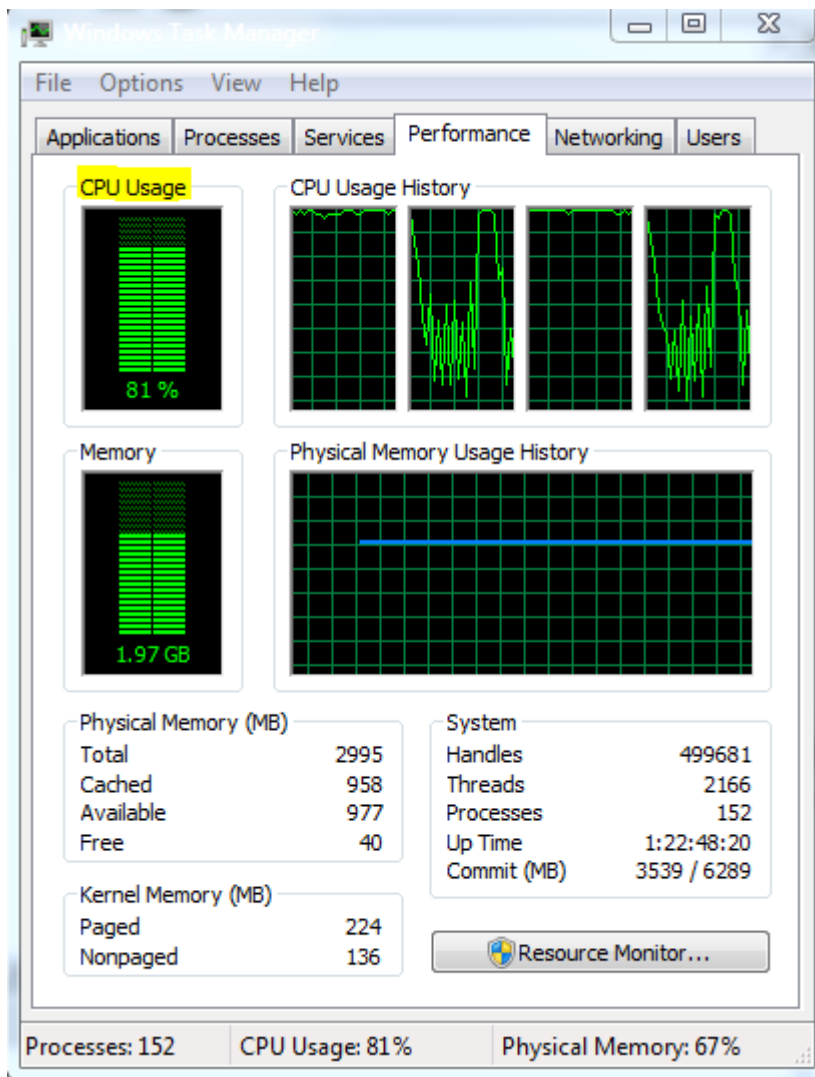
Right click router again and select start from the menu.



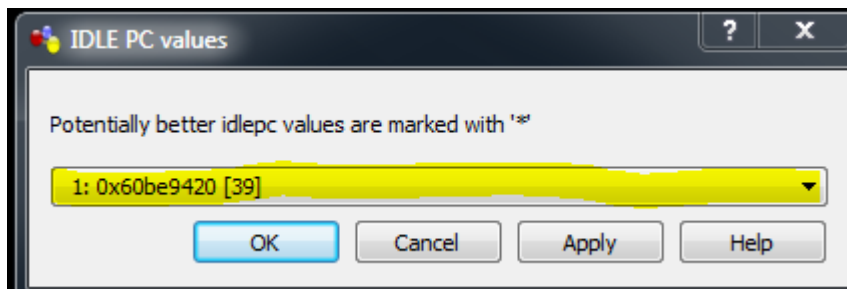
Right click router and press Console, it opens the console of the router and works as live router.



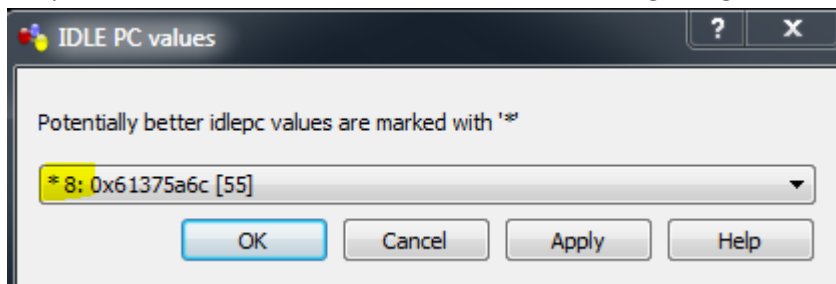
This makes your system slow, as it is processor taking part of software and if we drag few routers on work board it makes really slow. So we use one option called Idle PC which decreases the processor cycle when not in use. Using only one router you can see below, it peaked the processor to above 80%.



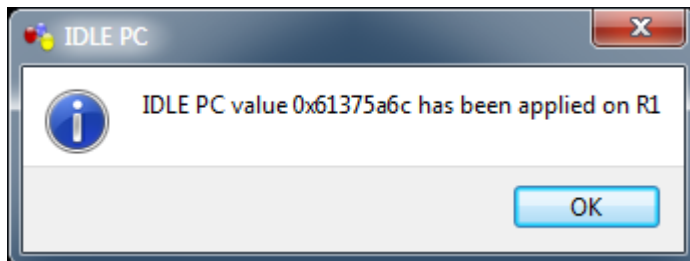
Right click on router again and select Idle PC option, it takes some time and prompter you following window.



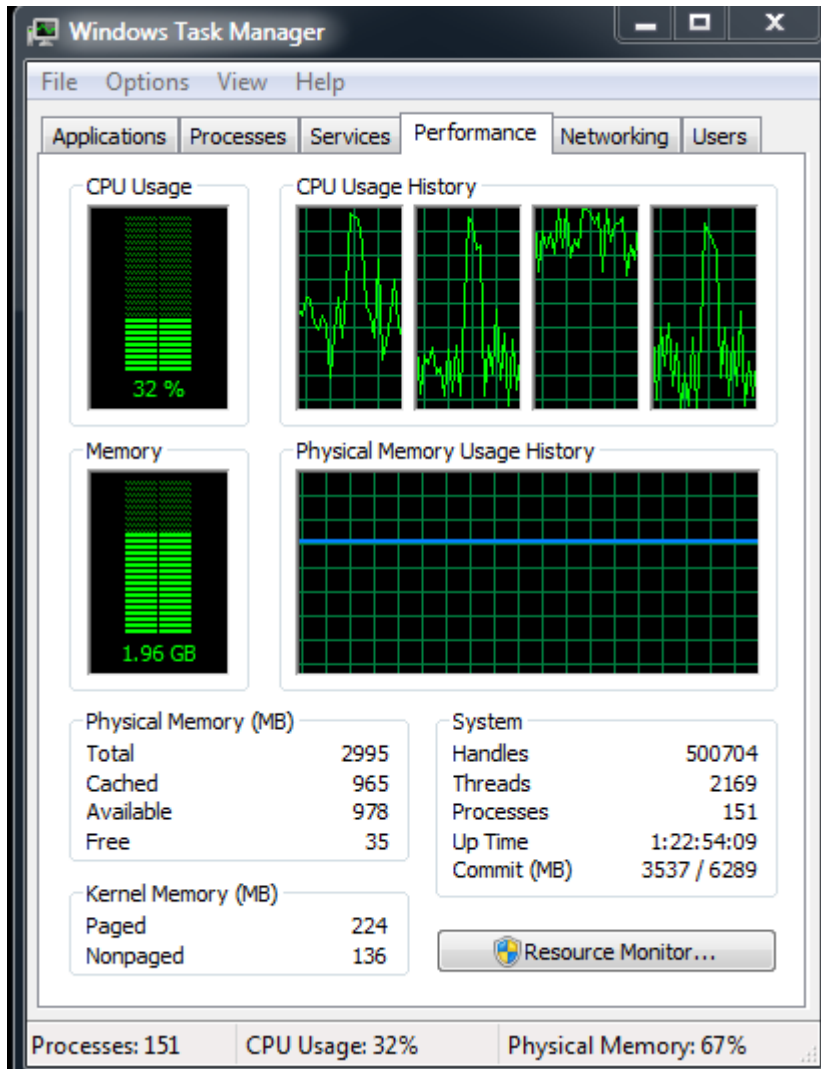
Dropdown the menu and select the value with * in beginning.



Press apply and then click ok. Following windows comes up for confirmation, click ok to apply.



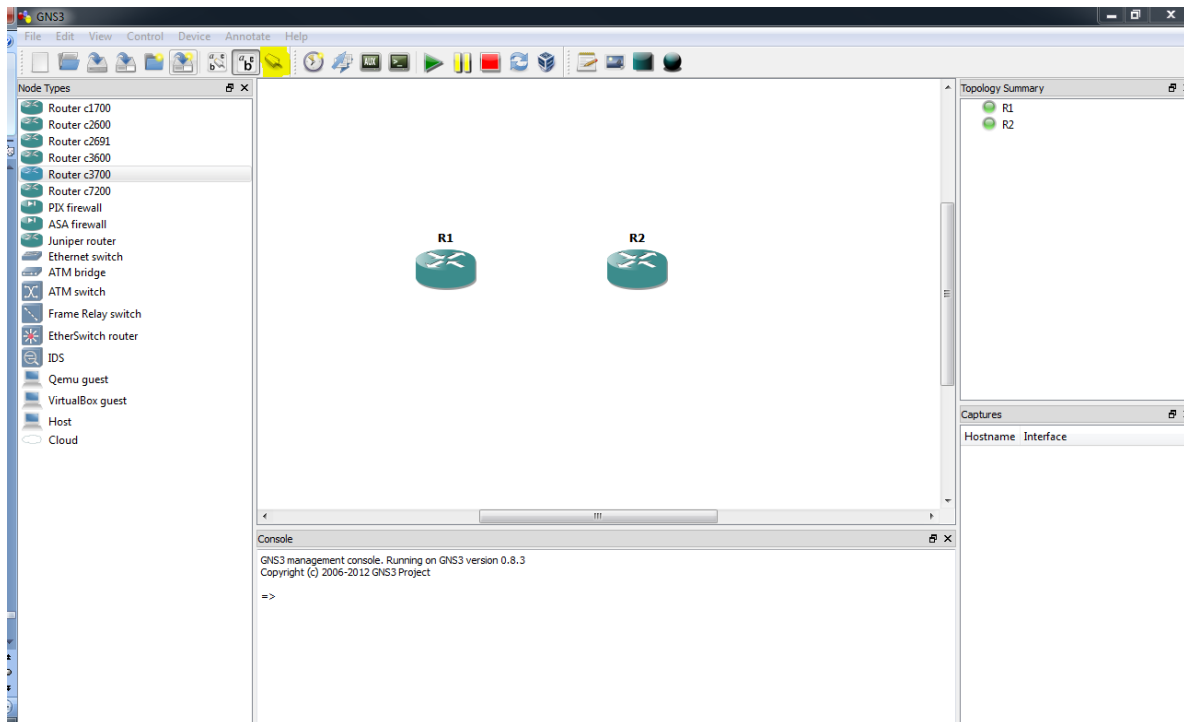
You can see now it is 32 %, if it is not dropping then click idle pc again and chose other value.



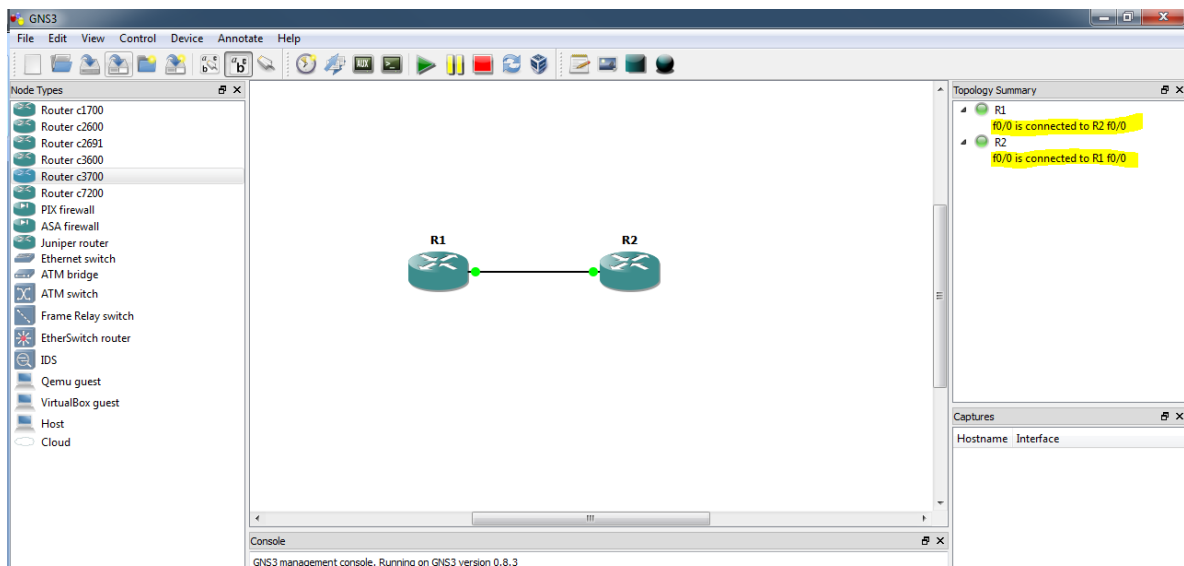
Enjoy using your own router.

Topology:

Now I am showing you how to create a simple topology. Drag one more router to work board and then start. Clicks on add a link option and then choose manual.



Right click on R1 and select f0/0 (interface to connect to R2) and then click on R2 and select interface.



Use following sample config to check connectivity.

On router 1

R1#

R1#conf t

Enter configuration commands, one per line. End with CNTL/Z.

R1(config)#int

R1(config)#interface fas

R1(config)#interface fastEthernet 0/0

R1(config-if)#no shut

```
R1(config-if)#
*Mar 1 00:38:10.207: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar 1 00:38:11.207: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to up
R1(config-if)#ip add
R1(config-if)#ip address 192.168.0.1 255.255.255.0
R1(config-if)#
```

On router 2

```
R2#conf
R2#configure t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int
R2(config)#interface fas
R2(config)#interface fastEthernet 0/0
R2(config-if)#no shut
R2(config-if)#ip add
*Mar 1 00:14:26.703: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar 1 00:14:27.703: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to up
R2(config-if)#ip add
R2(config-if)#ip address 192.168.0.2 255.255.255.0
R2(config-if)#exit
R2(config)#exit
R2#
*Mar 1 00:14:41.231: %SYS-5-CONFIG_I: Configured from console by console
R2#ping 192.168.0.1
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.0.1, timeout is 2 seconds:

.!!!!

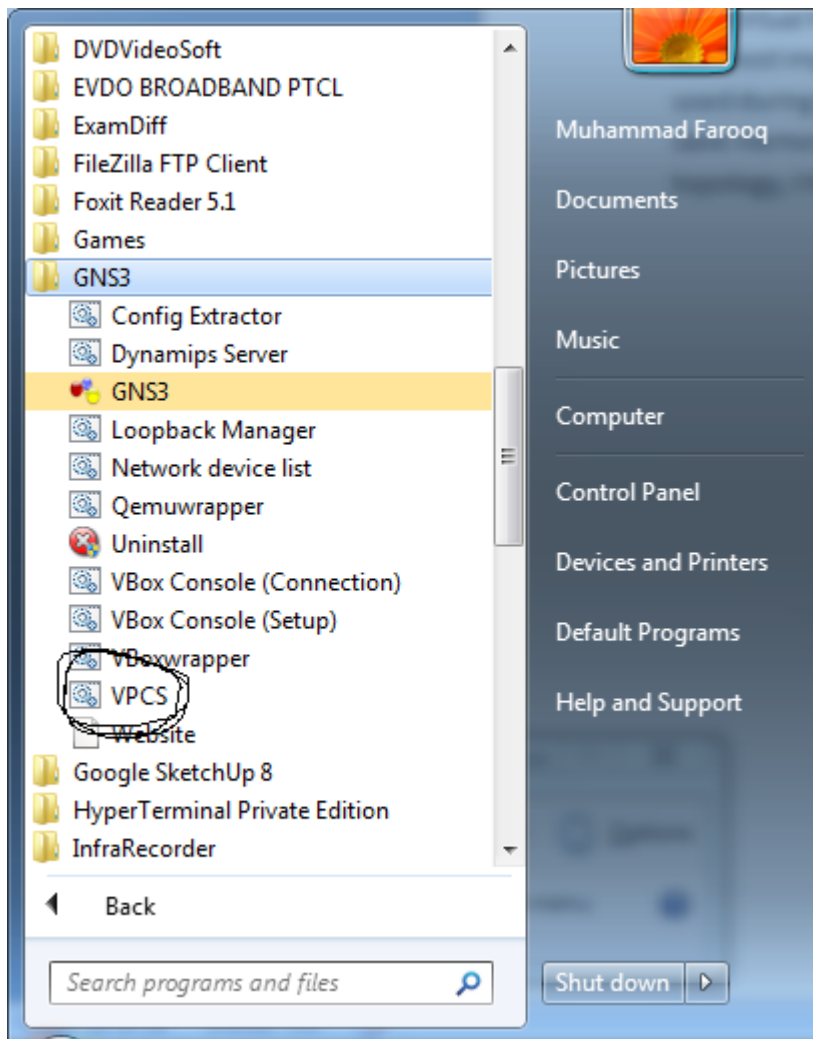
Success rate is 80 percent (4/5), round-trip min/avg/max = 20/29/48 ms

R2#

Virtual PC:

Now I show you how to add PC to complete the topology. The Virtual PC Simulator is a program that runs within Windows or Linux. It has limited functionality, but most important, it allows pings and traceroutes. These are the most common testing commands used during CCNA or CCNP training and are often the only commands needed. Using VPCS you will save memory and CPU cycles. If you do not need more functionality in a workstation within your topology, I highly recommend VPCS. The Virtual PC Simulator is a free product





Click VPCS and it is best to open the Virtual PC Simulator before starting GNS3.

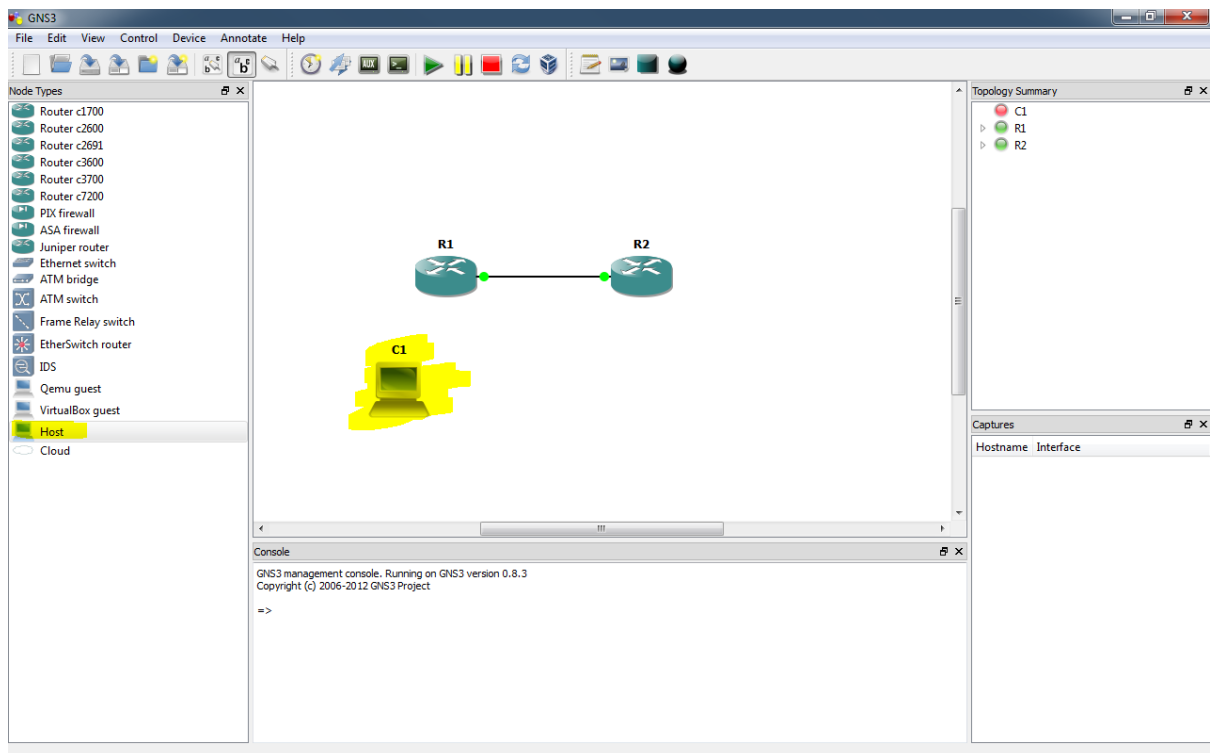
For help, just type `?` at the prompt. VPCS supports up to nine PCs. Just type a number to switch to another PC. Use the `Show` command to view a PC's IP or MAC address. To assign an IP address, subnet mask, and default gateway to a PC, follows this format at the prompt.

```
ip 192.168.1.1 192.168.1.254 24
```

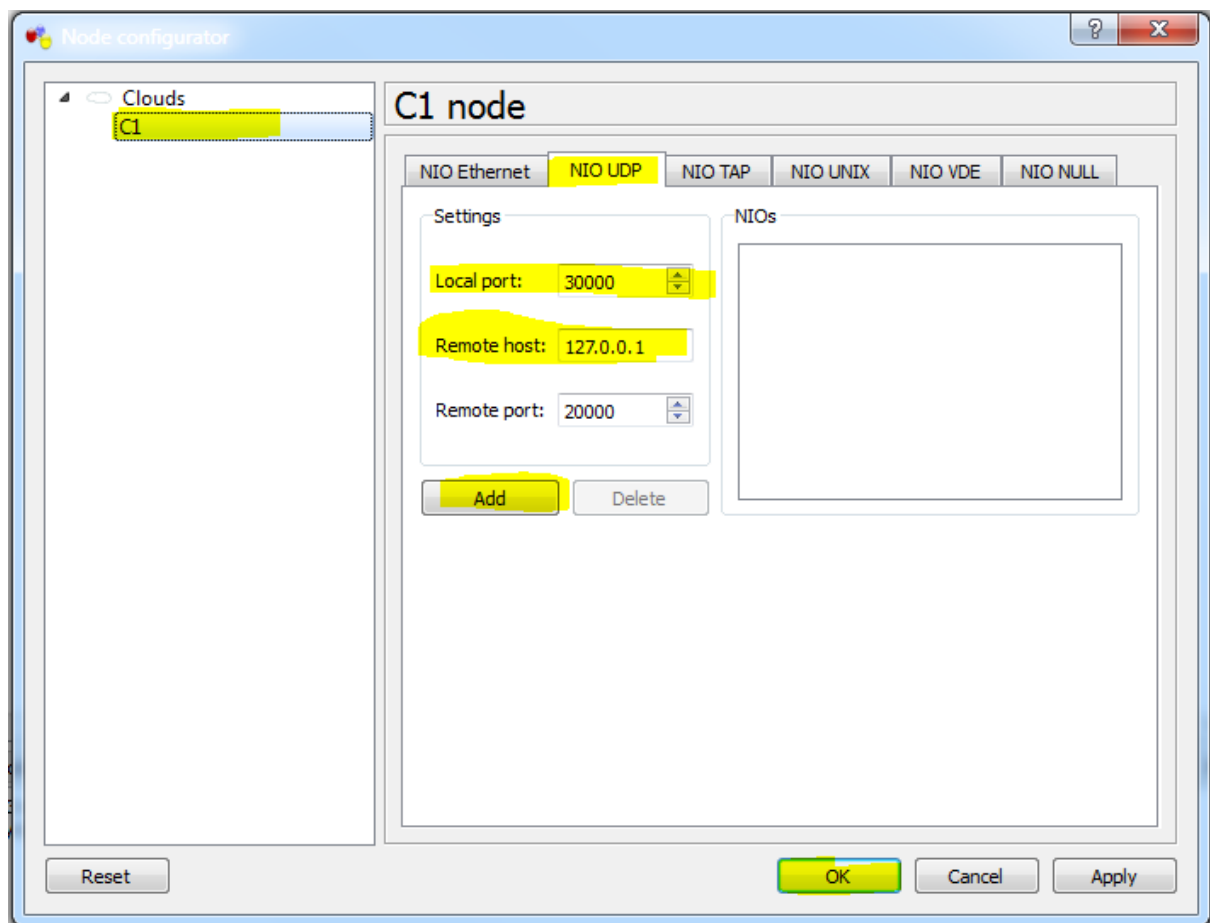
The above command assigns the PC an IP address of 192.168.1.1 with a /24 subnet mask and a default gateway of 192.168.1.254. To switch to PC2, just type a **2** and press *Enter* and assign connectivity settings to PC2:

```
ip 192.168.2.1 192.168.2.254 24
```

Now go to GNS3 and drag host on to work board.



Right click C1 and choose configure. Then go to NIO UDP.



Local port: 30000

Remote host: 127.0.0.1

Remote port: 20000

These settings correspond to VPCS 1. Click the *Add* button and then OK.

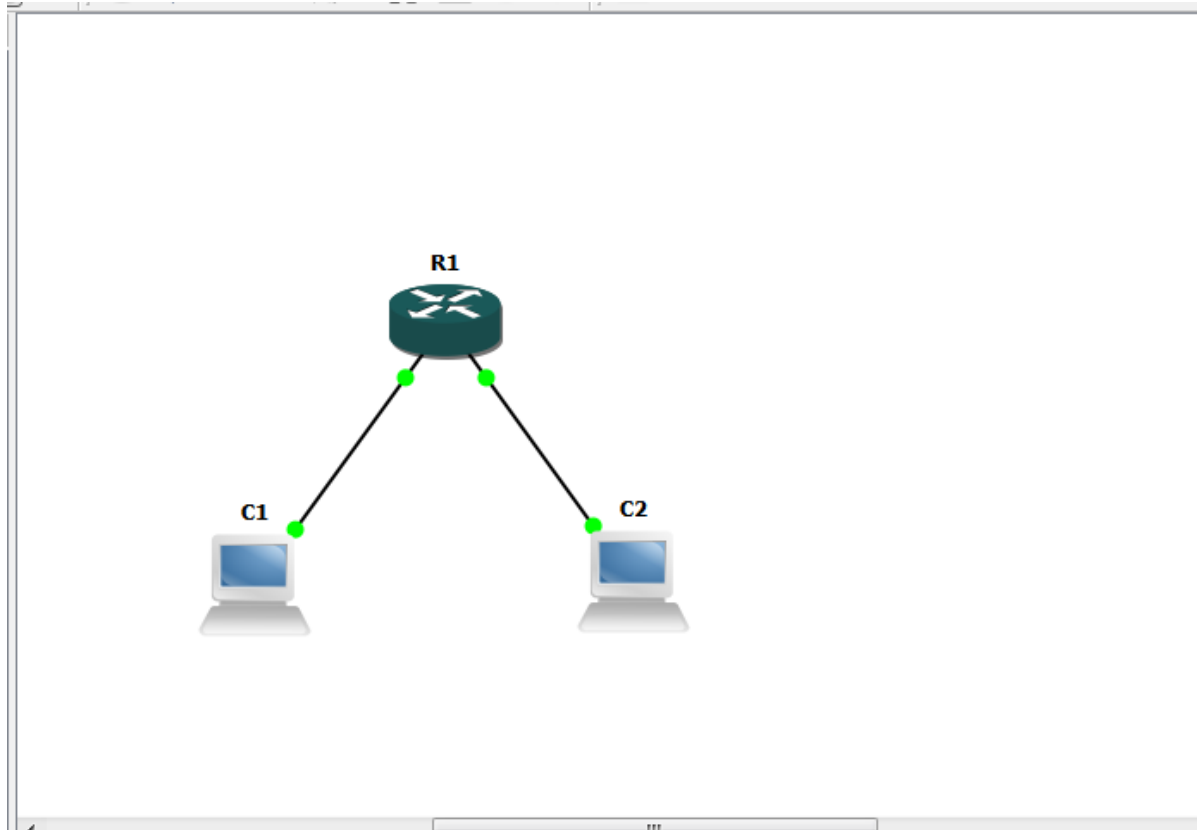
Assign the following settings to C2 in the same way as C1:

Local port: 30001

Remote host: 127.0.0.1

Remote port: 20001

To keep topology simple I am using one router & two host, I have given following config to router and tested connected between hosts.



```
R1#  
R1#conf  
R1#configure t  
R1(config)#int fastEthernet 0/0  
R1(config-if)#ip add 192.168.1.254 255.255.255.0  
R1(config-if)#no shut  
R1(config-if)#exit  
R1(config)#int fastEthernet 0/1  
R1(config-if)#ip address 192.168.2.254 255.255.255.0  
R1(config-if)#no shut  
R1(config-if)#
```

And then tested on VPCS prompted.

Usefull links if any one fancy to learn more.

<http://www.gns3.net>

GNS3's primary Web site

<http://wiki.gns3.net>

GNS3's Wiki site

http://www.ipflow.utc.fr/index.php/Cisco_7200_Simulator

Dynamips – the actual emulator

<http://www.ipflow.utc.fr/blog>

Dynamips blog

<http://dyna-gen.sourceforge.net>

Dynagen

<http://www.ipflow.utc.fr/bts>

Dynamips/Dynagen bug tracking

<http://7200emu.hacki.at>

Hacki's forum