GNS3_4

Mininet

CLI

API

Mininet 2.2.2

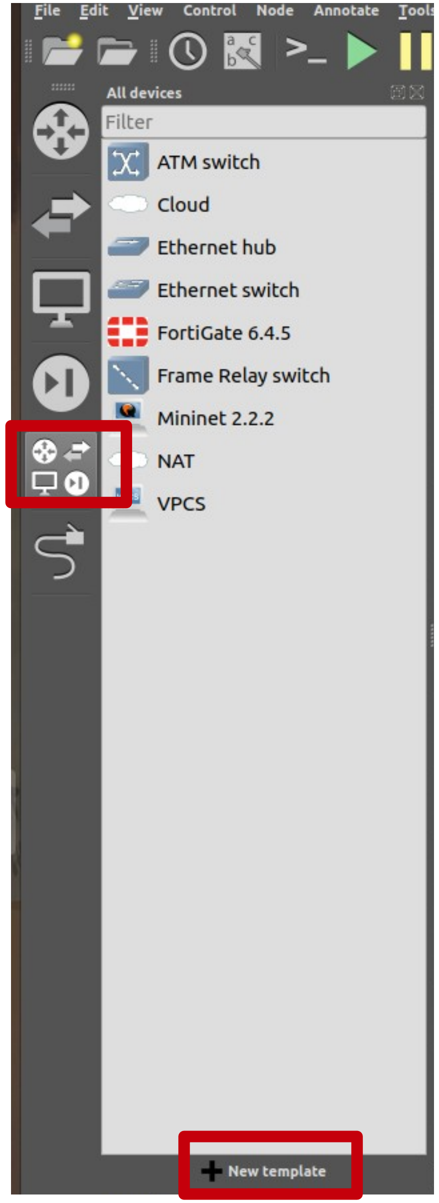
Current version supported by GNS3VM.

Download Mininet (GNS3)

Step 1

1)Click “Browse all devices”

2)Click “New Template”



ATM switch

Cloud

Ethernet hub

Ethernet switch

FortiGate 6.4.5

Frame Relay switch

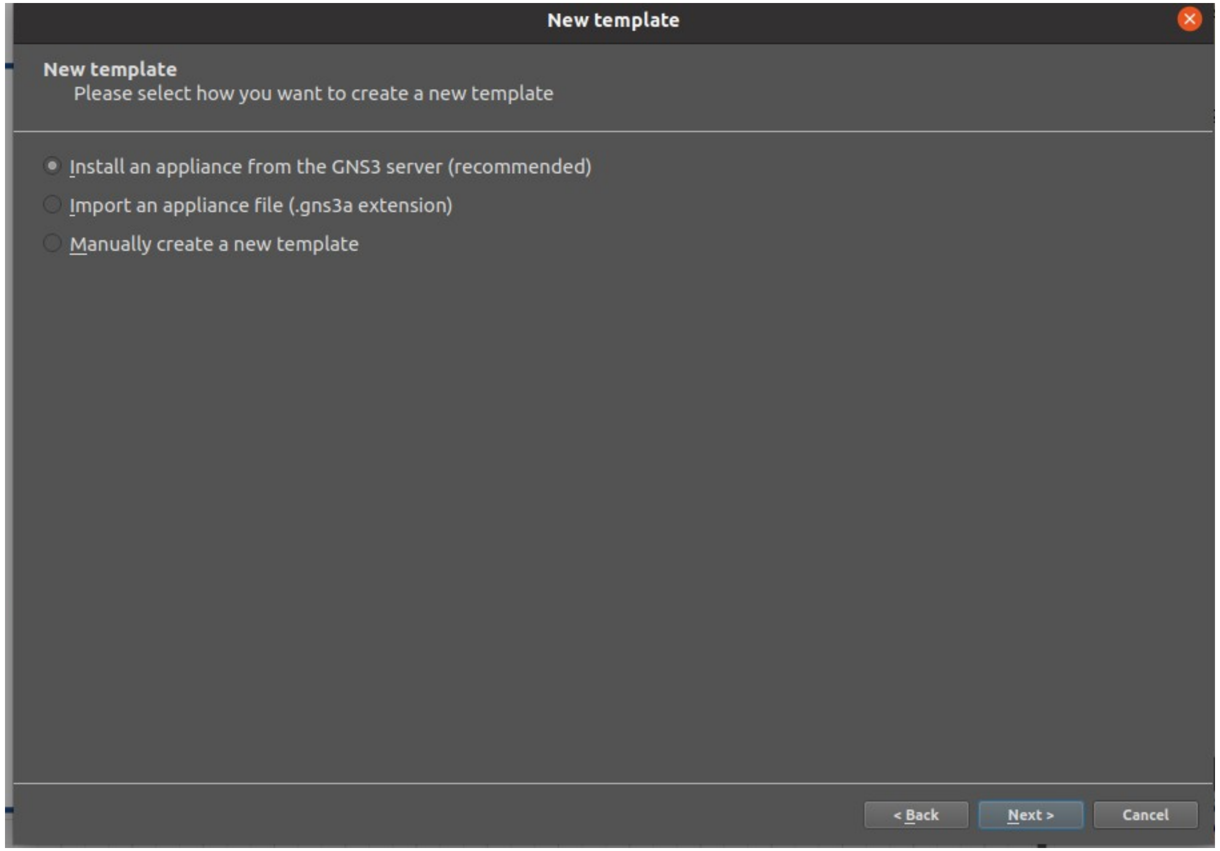
Mininet 2.2.2

NAT

VPCS

Step 2

Select '**Install an appliance for the GNS3 server (recommended)**', and click 'Next'



New template

Please select how you want to create a new template

● Install an appliance from the GNS3 server (recommended)

○ Import an appliance file (.gns3a extension)

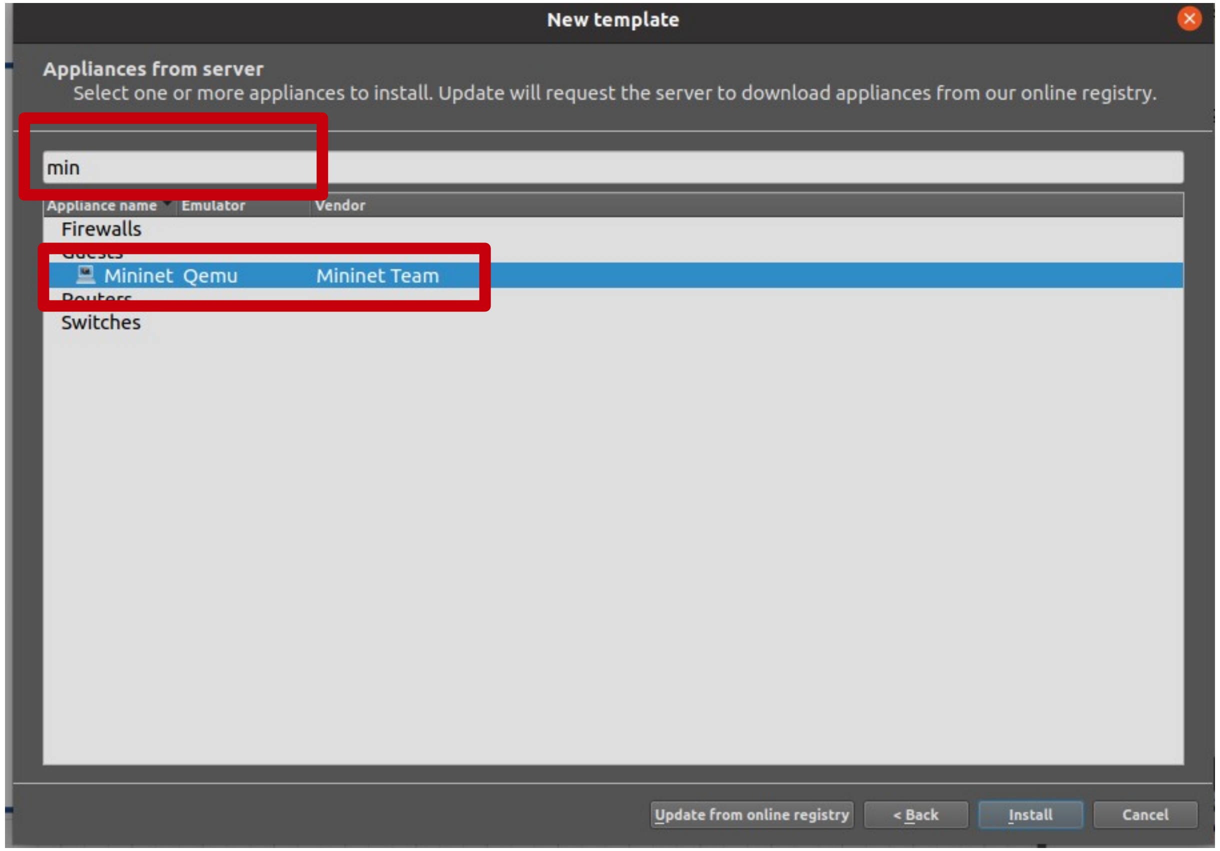
○ Manually create a new template

Step 3

- Use the browser and input “mininet”

- Select “Mininet Qemu”

- Click “Next”



New template

Appliances from server

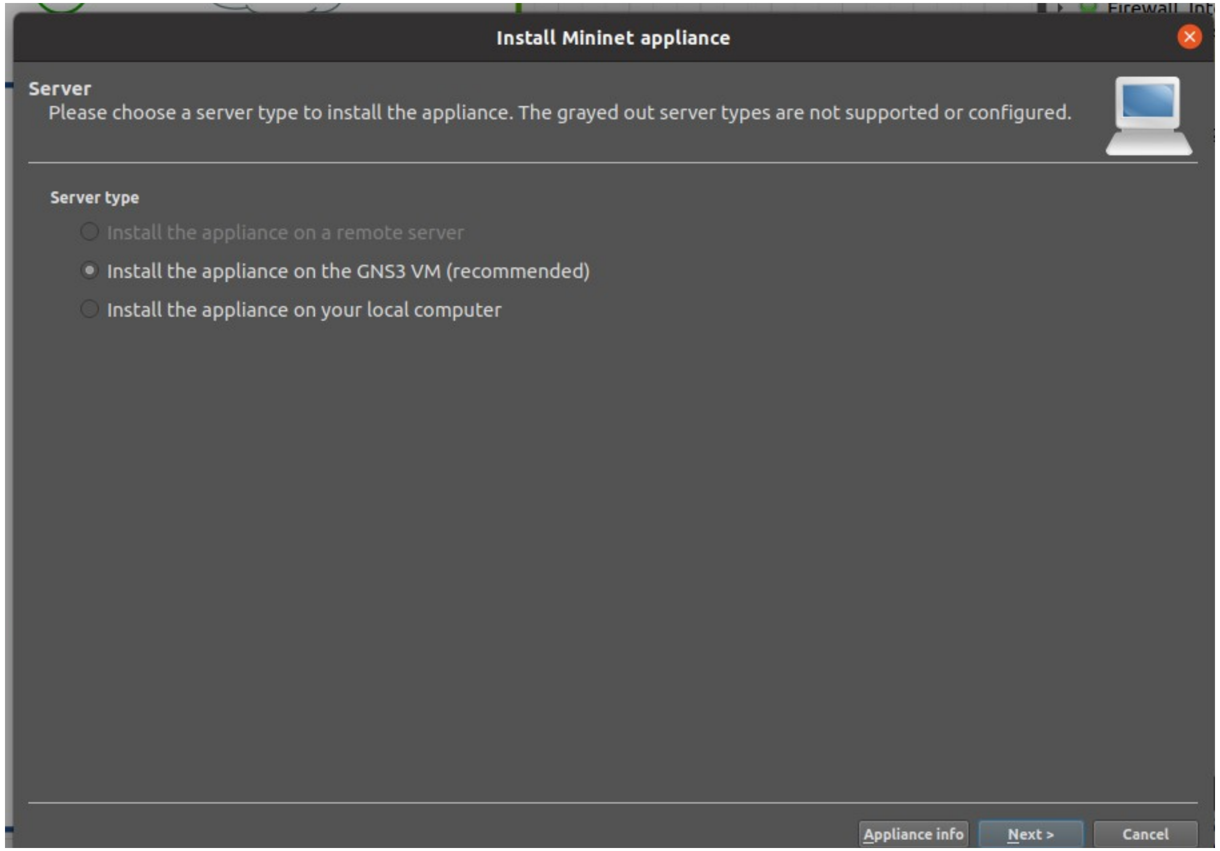
Select one or more appliances to install. Update will request the server to download appliances from our online registry.

min

Appliance name	Emulator	Vendor
Firewalls		
Guests		
Mininet	Qemu	Mininet Team
Routers		
Switches		

Step 4

Select “Install the appliance on the GNS3 VM”



Install Mininet appliance

Server

Please choose a server type to install the appliance. The grayed out server types are not supported or configured.

Server type

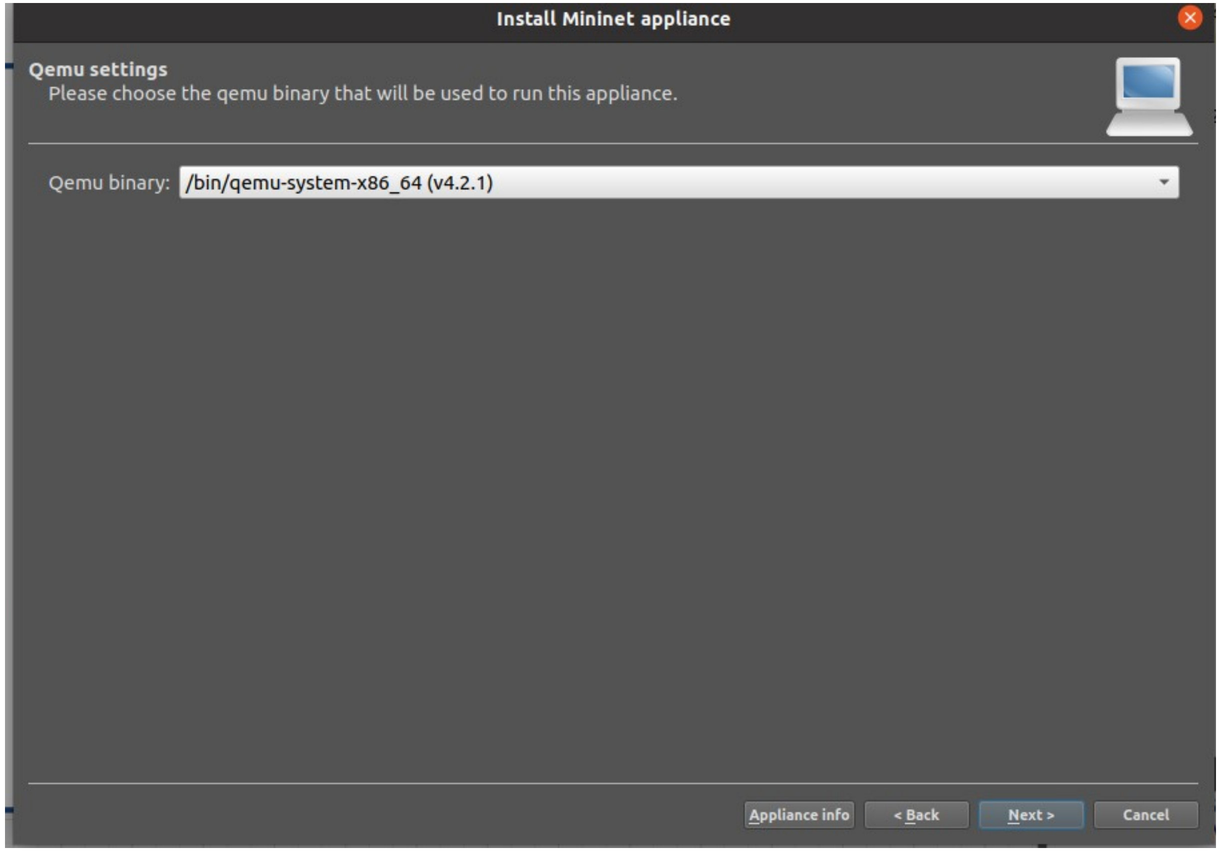
○ Install the appliance on a remote server

● Install the appliance on the GNS3 VM (recommended)

○ Install the appliance on your local computer

Step 5

Select the default Qemu binary



Install Mininet appliance

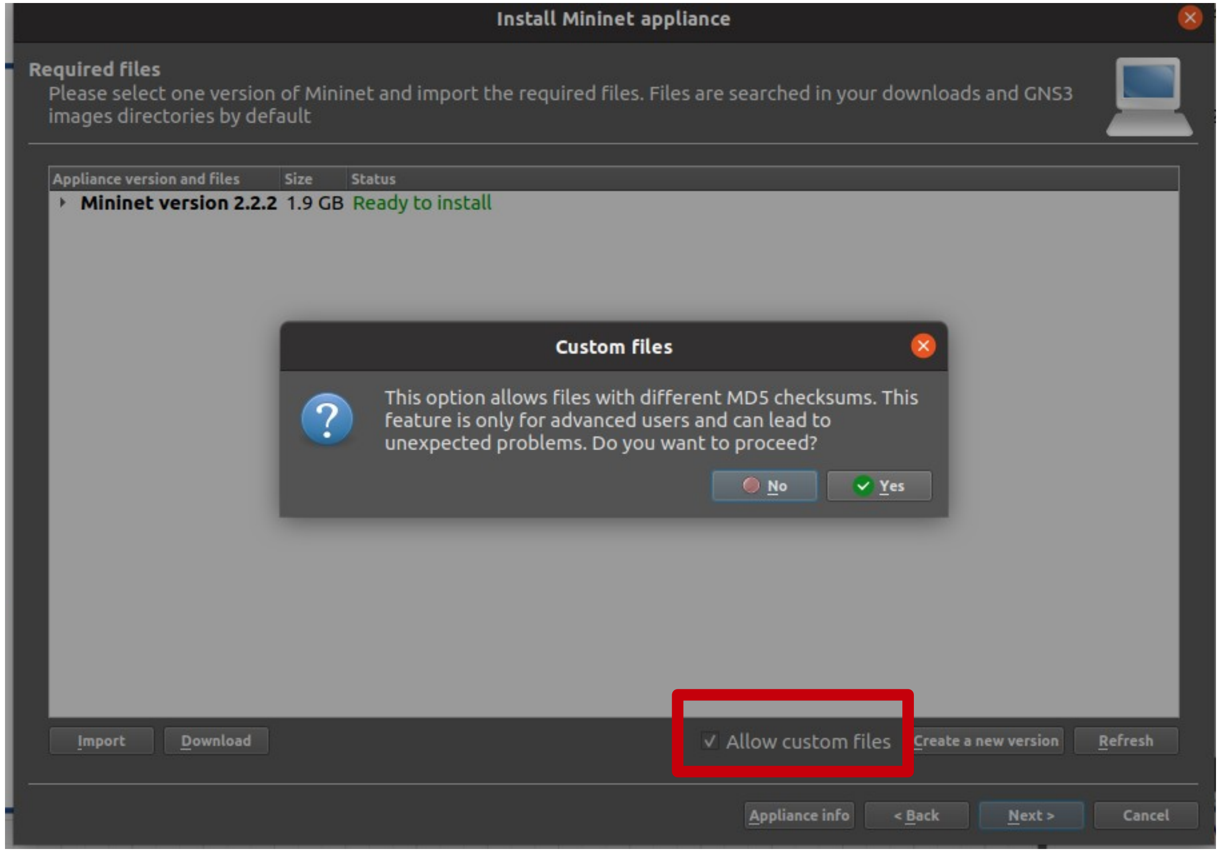
Qemu settings

Please choose the qemu binary that will be used to run this appliance.

Qemu binary: /bin/qemu-system-x86_64 (v4.2.1)

Step 6

Select “Allow custom files” and click on “Yes”



Install Mininet appliance

Required files

Please select one version of Mininet and import the required files. Files are searched in your downloads and GNS3 images directories by default

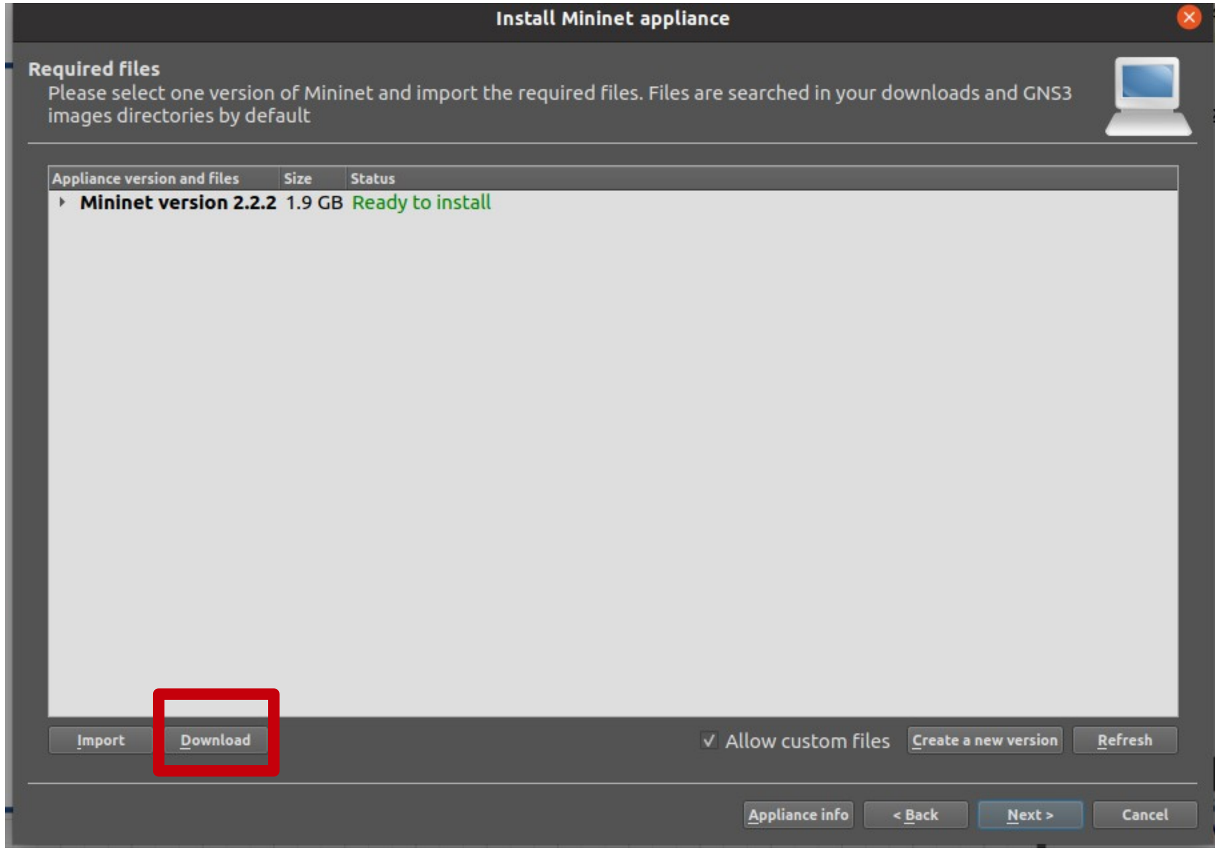
Appliance version and files	Size	Status
Mininet version 2.2.2	1.9 GB	Ready to install

Custom files

This option allows files with different MD5 checksums. This feature is only for advanced users and can lead to unexpected problems. Do you want to proceed?

Step 7

Click on “Download”



Install Mininet appliance

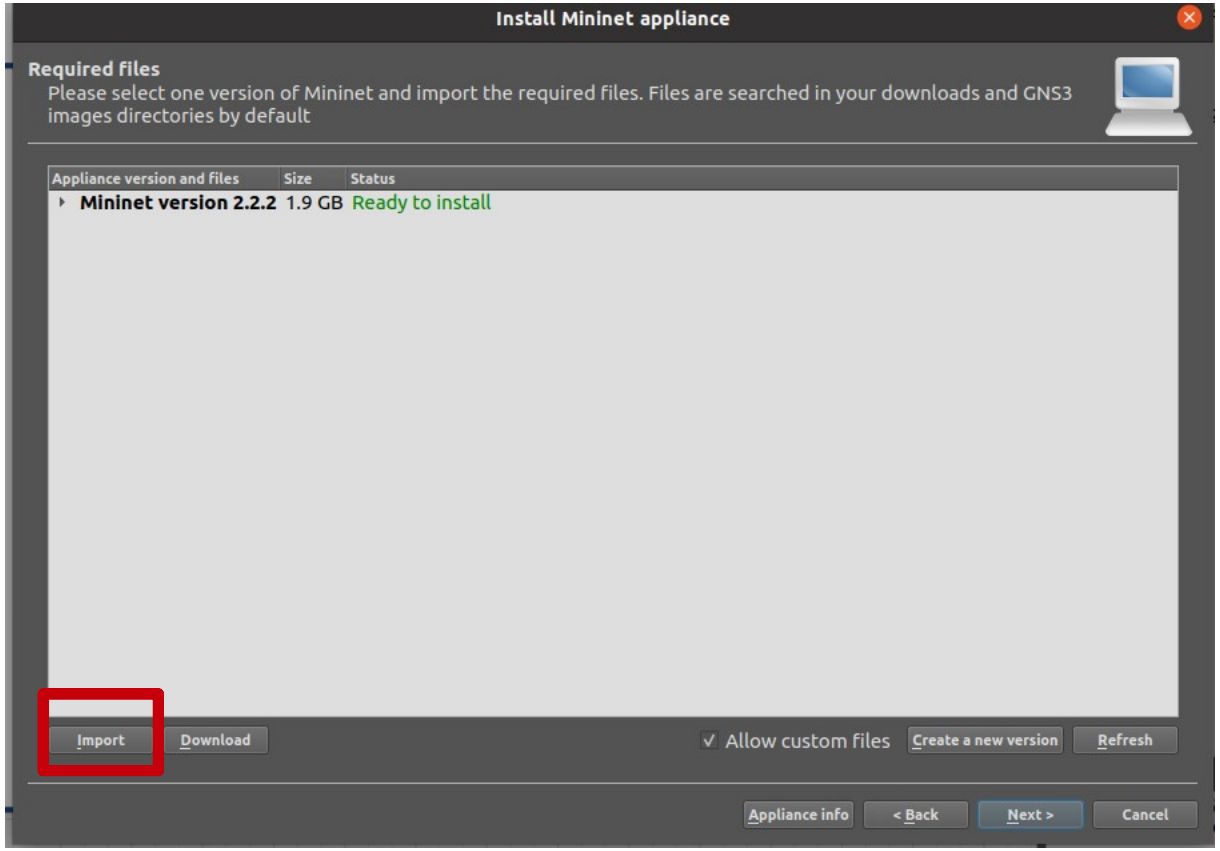
Required files

Please select one version of Mininet and import the required files. Files are searched in your downloads and GNS3 images directories by default

Appliance version and files	Size	Status
Mininet version 2.2.2	1.9 GB	Ready to install

Step 8

Click on “Import”



Install Mininet appliance

Required files

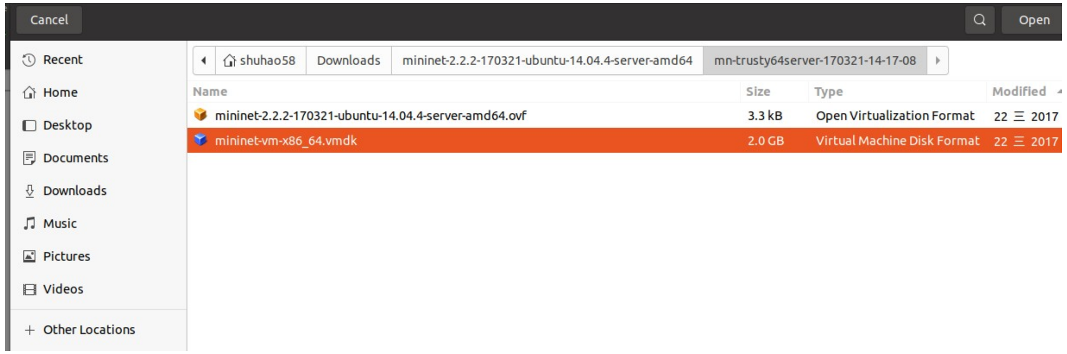
Please select one version of Mininet and import the required files. Files are searched in your downloads and GNS3 images directories by default

Appliance version and files	Size	Status
Mininet version 2.2.2	1.9 GB	Ready to install

Step 9

There are two files (.vmdk, .ovf)

Import both files into GNS3

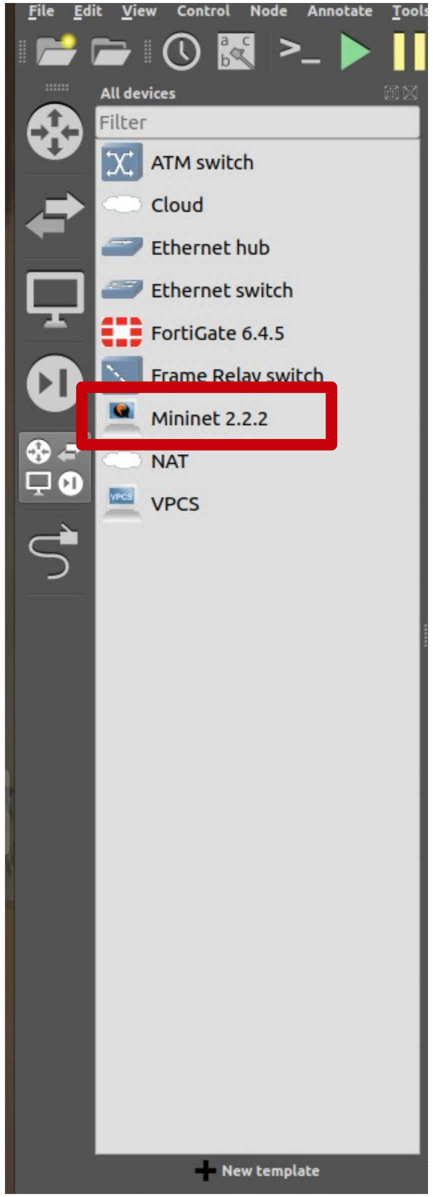


Name	Size	Type	Modified
mininet-2.2.2-170321-ubuntu-14.04.4-server-amd64.ovf	3.3 kB	Open Virtualization Format	22 三 2017
mininet-vm-x86_64.vmdk	2.0 GB	Virtual Machine Disk Format	22 三 2017

Step 10

Wait until the import is finished

Find the new template in the list of templates

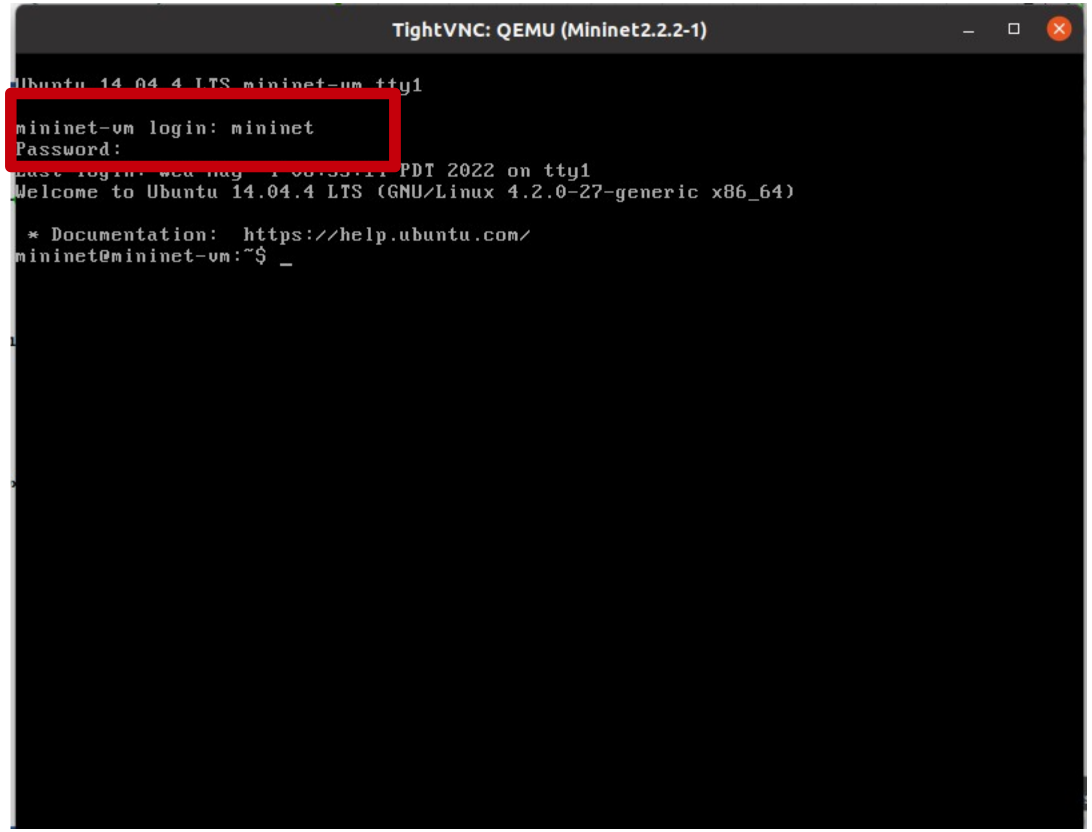


Step 11

To open Mininet, left click on the icon (Console)

Input default credentials

User: mininet
PWD: mininet



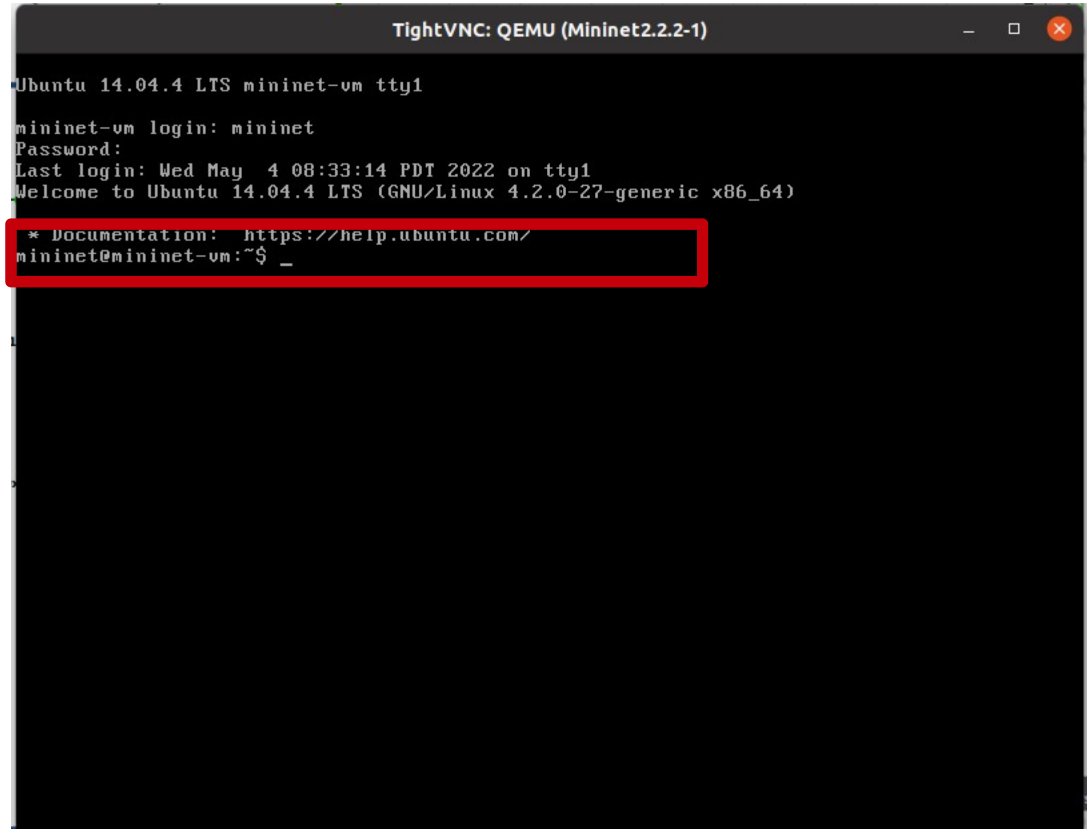
```
Ubuntu 14.04.4 LTS mininet-vm tty1

mininet-vm login: mininet
Password:
Last login: Wed Aug  [illegible] PDT 2022 on tty1
Welcome to Ubuntu 14.04.4 LTS (GNU/Linux 4.2.0-27-generic x86_64)

 * Documentation:  https://help.ubuntu.com/
mininet@mininet-vm:~$ _
```

Mininet CLI

https://hackmd.io/@pmanzoni/BklqpKddS

CLI 1

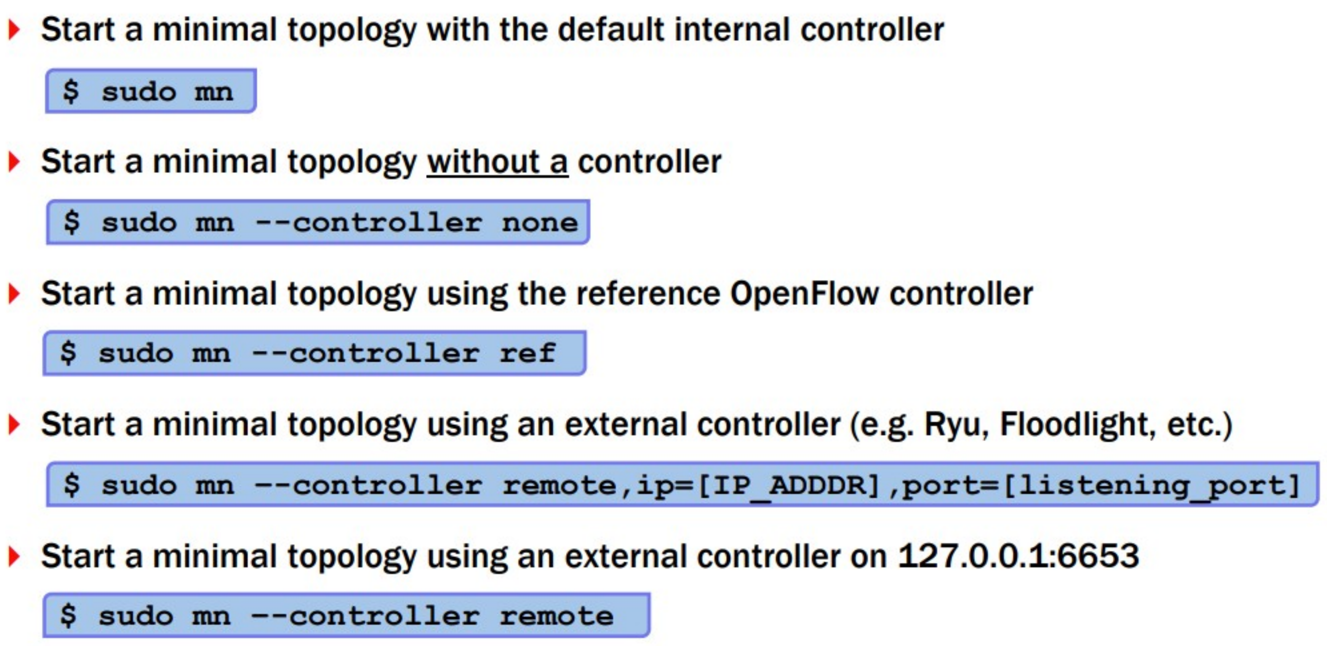
By default, mininet will work with its CLI.



```
Ubuntu 14.04.4 LTS mininet-vm tty1

mininet-vm login: mininet
Password:
Last login: Wed May  4 08:33:14 PDT 2022 on tty1
Welcome to Ubuntu 14.04.4 LTS (GNU/Linux 4.2.0-27-generic x86_64)

 * Documentation:  https://help.ubuntu.com/
mininet@mininet-vm:~$ _
```

CLI 2

The most basic commands are:



- Start a minimal topology with the default internal controller

```
$ sudo mn
```

- Start a minimal topology without a controller

```
$ sudo mn --controller none
```

- Start a minimal topology using the reference OpenFlow controller

```
$ sudo mn --controller ref
```

- Start a minimal topology using an external controller (e.g. Ryu, Floodlight, etc.)

```
$ sudo mn --controller remote,ip=[IP_ADDDR],port=[listening_port]
```

- Start a minimal topology using an external controller on 127.0.0.1:6653

```
$ sudo mn --controller remote
```

Mininet API

https://hackmd.io/@pmanzoni/BklqpKddS

API 1

The use of scripting methods is also allowed in mininet by using sudo commands, for example;

```
sudo python test1.py
```

API 2

The following is a basic example of how to start a basic testing using mininet, the template has been uploaded in moodle as well

basicmininet.py

API 3

```
#!/usr/bin/python
from mininet.topo import Topo
from mininet.net import Mininet
from mininet.util import dumpNodeConnections
from mininet.log import setLogLevel

#Step 1. Define a basic topology (customizable)
class SingleSwitchTopo(Topo):
    "Single switch connected to n hosts."
        def build(self, n=2):
            switch = self.addSwitch('s1')

            # Automate the topology based on the number of switches (default=2)
            for h in range(n):
                host = self.addHost('h%s' % (h+1))
                self.addLink(host, switch)

#Step 2. Define a basic test for the topology (Dump host, Ping all Switches)
def simpleTest():

    "Input the number of Switches (n=>2)"
    topo = SingleSwitchTopo(n=4)
    net = Mininet(topo)
    net.start()

    print("Dumping host connections")
    dumpNodeConnections(net.hosts)

    #Step 2.1 Ping all the switches
    print("Testing network connectivity")
    net.pingAll()
    net.stop()

#Step 3. Start the script
if __name__ == '__main__':
    # Step 3.1 Tell mininet to print useful information
    setLogLevel('info')

    # Step 3.2 Run simpleTest()
    simpleTest()
    # Step 3.3 Dump node connections
    # Step 3.4 Ping all the switches(n=4)
```

Thank you