GNS3 Lab Setup (v2.2.31)

GNS3 Client Host Hardware Information:

Below table shows the GNS3 client hardware information.

Hardware	Hardware Details
Model	Dell XPS 15 9570
CPU	Intel(R) Core(TM) i7-8750H CPU @2.20GHz, 2208Mhz 6 Core(s), 12 Log- ical Processor(s)
RAM	16 GB
NIC	Network Controller - Realtek GbE Family Controller, Killer Wireless-n/a/ac 1535 Wireless Network Adapter

Table 1 - GNS3 Client Host Hardware Info

GNS3 Client Host Software Information:

The table provides software and ip address information.

Software	Software Details
OS	Microsoft Windows 10 Enterprise
Lab Setup	GNS3 Client
Client Version	GNS3 2.2.31
IP Address (LAN)	192.168.1. 11
IP Address (Wi-Fi)	192.168.1.9

Table 2 - GNS3 Client Host Software Info

GNS3 Remote Server Hardware Info:

The table shows GNS3 remote server hardware information.

Hardware	Hardware Details
Model	Dell Precision M4700
CPU	Intel(R) Core(TM) i7-3740QM CPU @ 2.70GHz
RAM	32GB
NIC	Network controller - Broadcom Inc. and subsidiaries BCM4313 802.11bgn Wireless Network Adapter

Table 3 - GNS3 Remote Server Hardware Info

GNS3 Remote Server Software Info:

The below tables shows the software information for GNS3 Remote Server.

Software	Software Details
OS	Ubuntu 20.04.4 LTS (GNU/Linux 5.13.0-35-generic x86 64)
Lab	GNS3 Server
Version	Version 2.2.31
IP Address (LAN)	192.168.1.17
IP Address (Wi-Fi)	192.168.1.12
QEMU Emulator Package	Qemu-system-x86
QEMU Version	1:4.2-3ubuntu6.21
Dynamips	Cisco Router Simulation Platform (version 0.2.21-amd64/Linux stable)

Table 4 - GNS3 Remote Server Software Info

Home Lab Setup:

The below figure represents the physical topology of the lab setup infrastructure

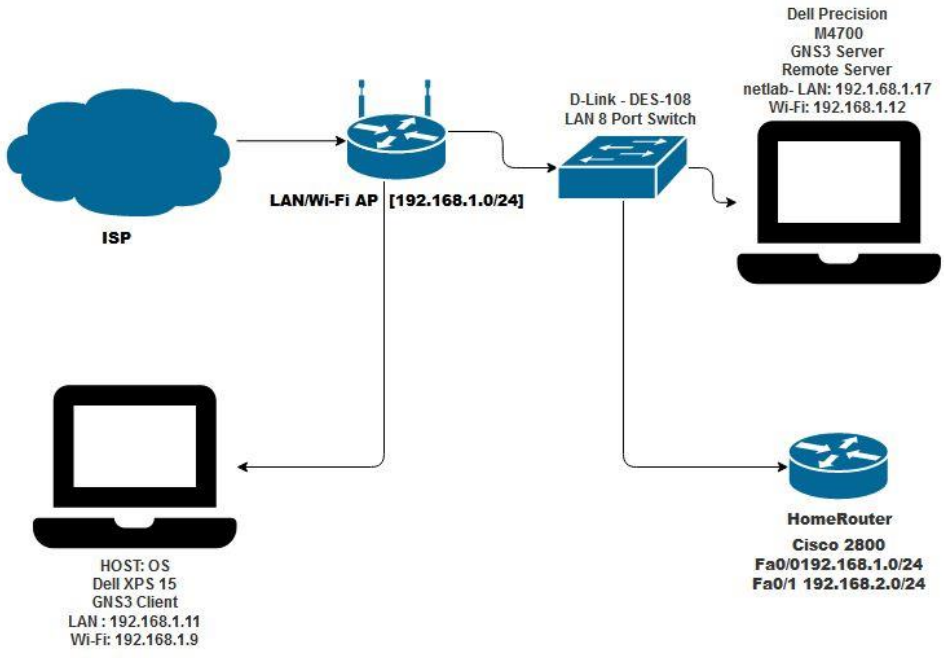


Figure 1 – Home Lab Setup

Adding GNS3 Remote Server to GNS3 Client.

Steps to add Remote GNS3-Server to the GNS3 Client

```
Configure GNS3 Client
Open GNS3 Client on Host Machine
Go to Edit Menu
Select Preferences
Click on Server on the Left pan, second option from top left
Click on Remote servers Tab
Click on Add
Enter Name of the remote server
Protocol
Host IP
And Port is by default 3080 TCP
Click Ok
Add GNS3 Server to your GNS3 client as a server.
On Host machine Add
```

Figure 2 - Add GNS3 Server to GNS3 Client

Figure 3 shows the dialogue box on GNS3 client to add remote server.

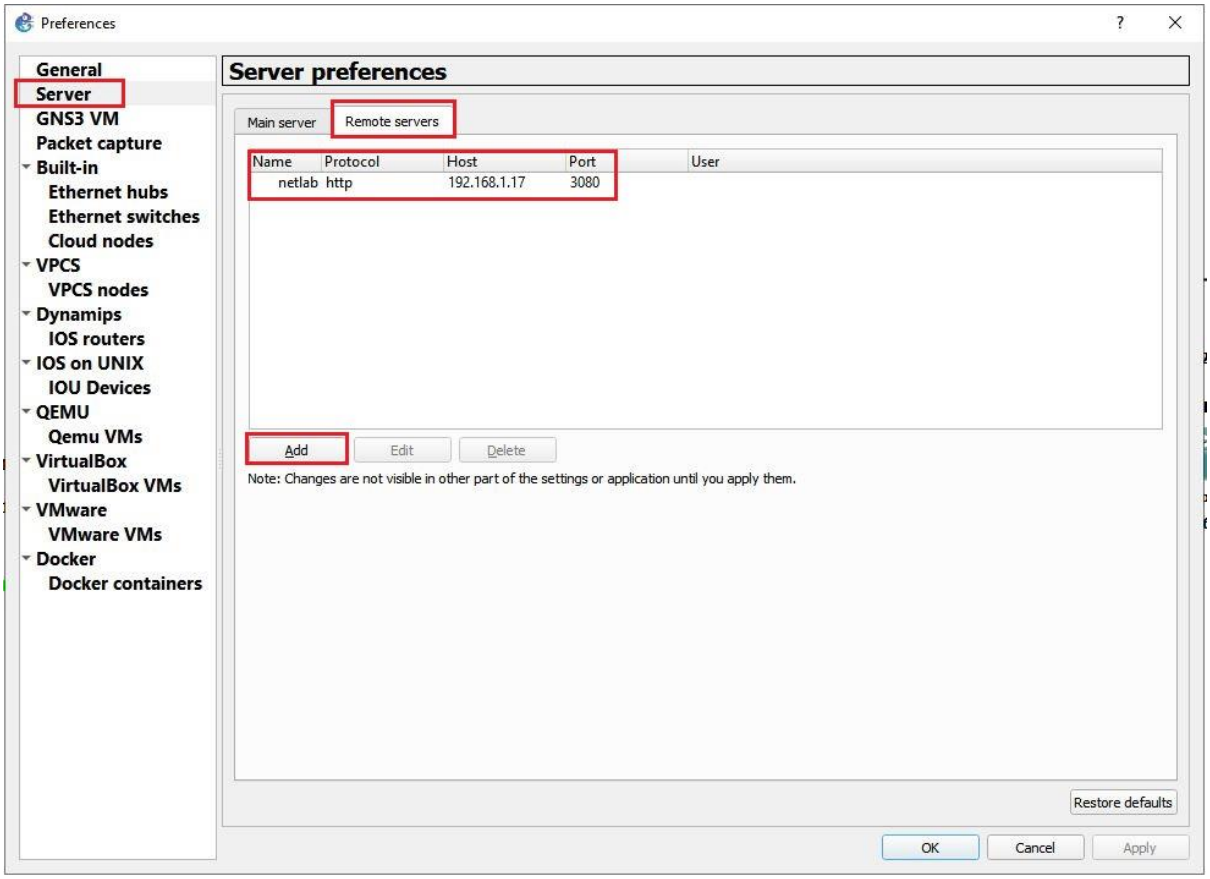


Figure 3 - Add GNS3 Server - GNS3 Client Preferences

GNS3 Remote Server Setup:

Commands to install gns3 on remote server, step by step guide.

1. GNS3 Server Installation Guide

1. sudo apt-get update
2. sudo apt-get upgrade
3. sudo add-apt-repository ppa:gns3/ppa

1.1 Installation of GNS3-Server and GNS3-GUI Version 2.2.31

1. sudo apt-get install gns3-server gns3-gui
2. sudo dpkg –add-architecture i386
3. sudo apt-get update

Figure 4 -GNS3 Server Installation Guide

Add IOU Support and Installation, Docker CE Installation :

2. Add support for IOU & Installation

1. sudo dpkg –add-architecture i386
2. sudo apt-get update
3. sudo apt-get install gns3-iou

3. Docker CE installation and add support for Docker on GNS3

1. sudo apt-get update
2. sudo apt remove docker docker-engine docker.io 2>/dev/null
3. sudo apt update

Figure 5 IOU & Docker Installation

3.1 Get stable repository over https for Docker

1. sudo apt -y install apt-transport-https ca-certificates curl software-properties-common
2. curl -fsSL https://download.docker.com/linux/ubuntu/gpg — sudo apt-key add -
3. sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu ($lsb_release - cs$) stable"

3.2 Installation of Docker CLI

1. sudo apt update
2. sudo apt -y install docker-ce docker-ce-cli containerd.io

3.2 Check Docker Status

- sudo systemctl status docker

Figure 6 - Docker repository and CLI and Status check

Just make sure the docker is running on GNS3 remote server.

```
netlab@lab:~$ systemctl status docker
● docker.service - Docker Application Container Engine
     Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor preset: enabled)
     Active: active (running) since Wed 2022-05-04 08:45:41 IST; 3h 32min ago
TriggeredBy: ● docker.socket
       Docs: https://docs.docker.com
   Main PID: 1406 (dockerd)
      Tasks: 52
     Memory: 1.6G
     CGroup: /system.slice/docker.service
             └─1406 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

May 04 08:45:27 lab dockerd[1406]: time="2022-05-04T08:45:27.706144157+01:00" level=info msg="Loading containers: start."
May 04 08:45:32 lab dockerd[1406]: time="2022-05-04T08:45:32.006125246+01:00" level=info msg="Default bridge (docker0) is assigned with an IP address 172.17.0.0/16. Daemon option --bip >
May 04 08:45:32 lab dockerd[1406]: time="2022-05-04T08:45:32.946336660+01:00" level=info msg="Loading containers: done."
May 04 08:45:40 lab dockerd[1406]: time="2022-05-04T08:45:40.444557973+01:00" level=info msg="Docker daemon" commit=87a90dc graphdriver(s)=overlay2 version=20.10.14
May 04 08:45:40 lab dockerd[1406]: time="2022-05-04T08:45:40.773330813+01:00" level=info msg="Daemon has completed initialization"
May 04 08:45:41 lab systemd[1]: Started Docker Application Container Engine.
May 04 08:45:41 lab dockerd[1406]: time="2022-05-04T08:45:41.313532195+01:00" level=info msg="API listen on /run/docker.sock"
```

Figure 7 - GNS3 Docker Service Status

After installation of we need to make some modification to the groups and create GNS3 service and configure GNS3 server as a service.

4. Modify Users/Create GNS3 Service

Modify usergroups by adding user to ubridge, libvirt, kvm and docker

1. sudo usermod -aG docker $USER
2. sudo usermod -aG ubridge libvirt kvm wireshark $USER

Create GNS3 service and configure GNS3 Server as a service

3. sudo nano /etc/systemd/system/gns3.service

Edit the following parameters to this blank file[gns3.service]:

```
[Unit]
Description=GNS3 Server

[Service]
ExecStart=/usr/share/gns3/gns3-server/bin/gns3server

[Install]
WantedBy=multi-user.target

Save the file and exit.

To make this file executable, enable and start the created service:

sudo chmod +x /etc/systemd/system/gns3.service
sudo systemctl enable gns3
sudo systemctl start gns3
```

Now check to see if the service is properly working :

sudo systemctl status gns3

Figure 8 - GNS3 Service & Configuration

GNS3 Service Status:

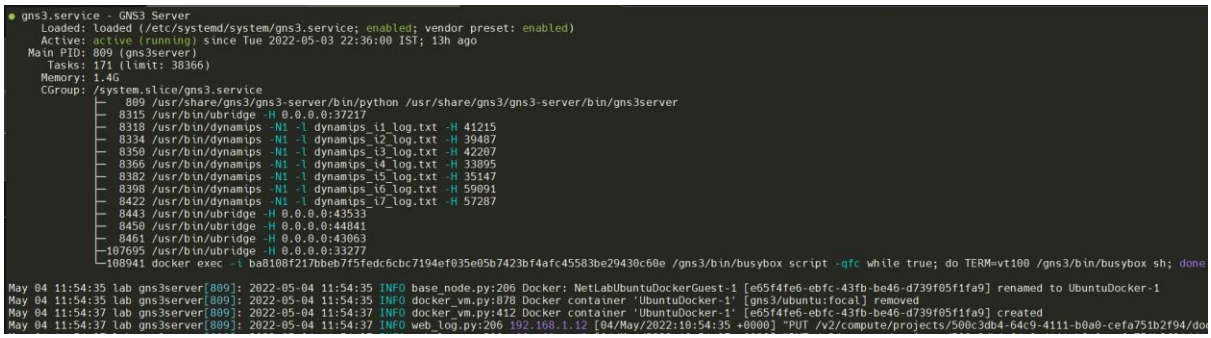
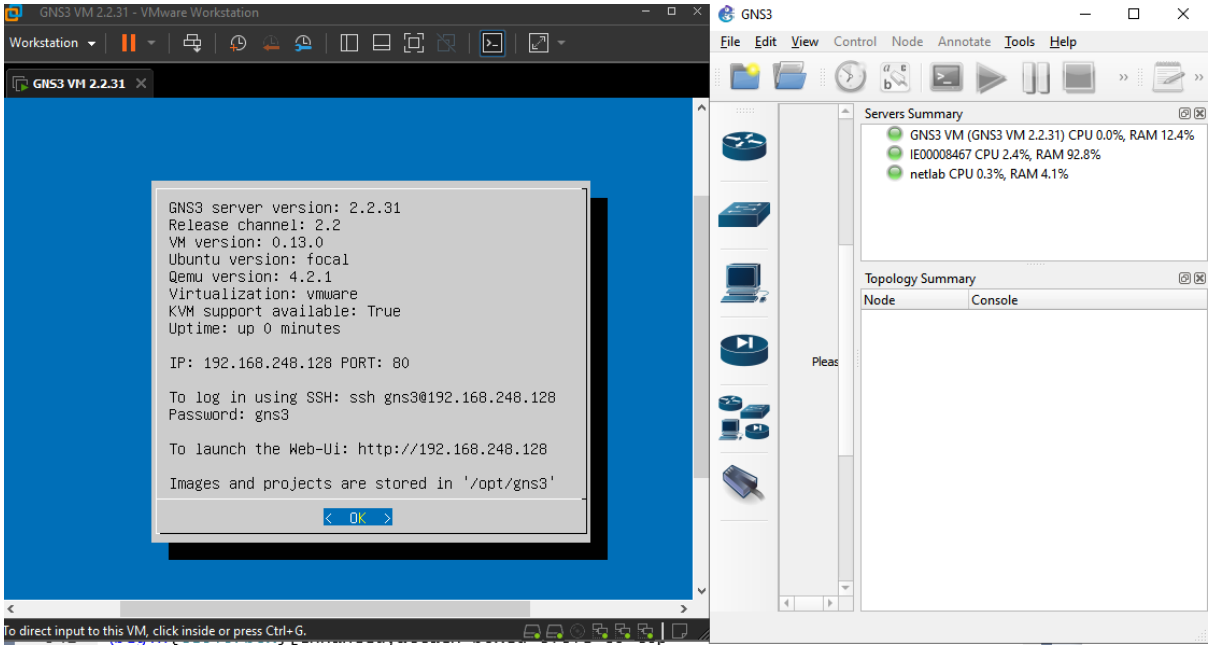
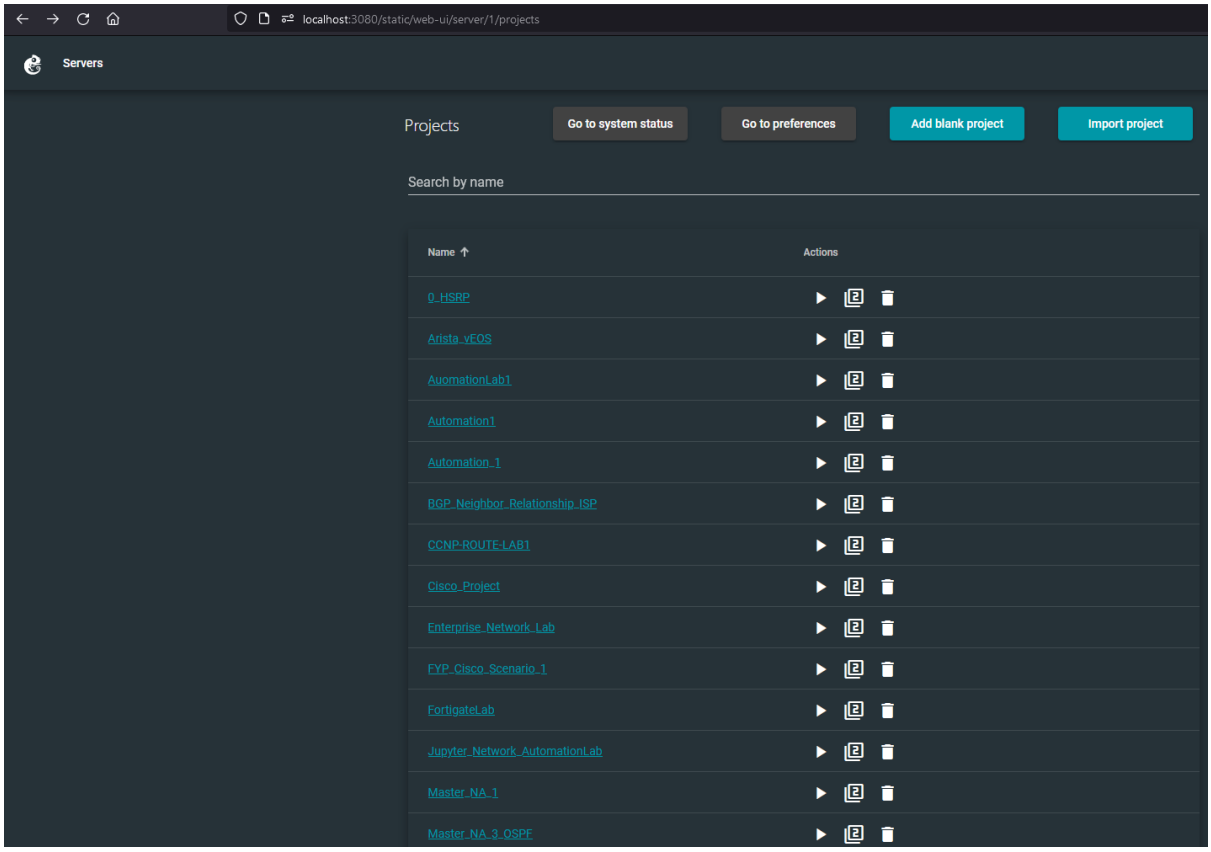


Figure 9 - GNS3 Server Status Check

GNS3 Client Host, GNS3 VM Server & GNS3 Remote Server(netlab):



GSN3 Server – Web- User Interface: