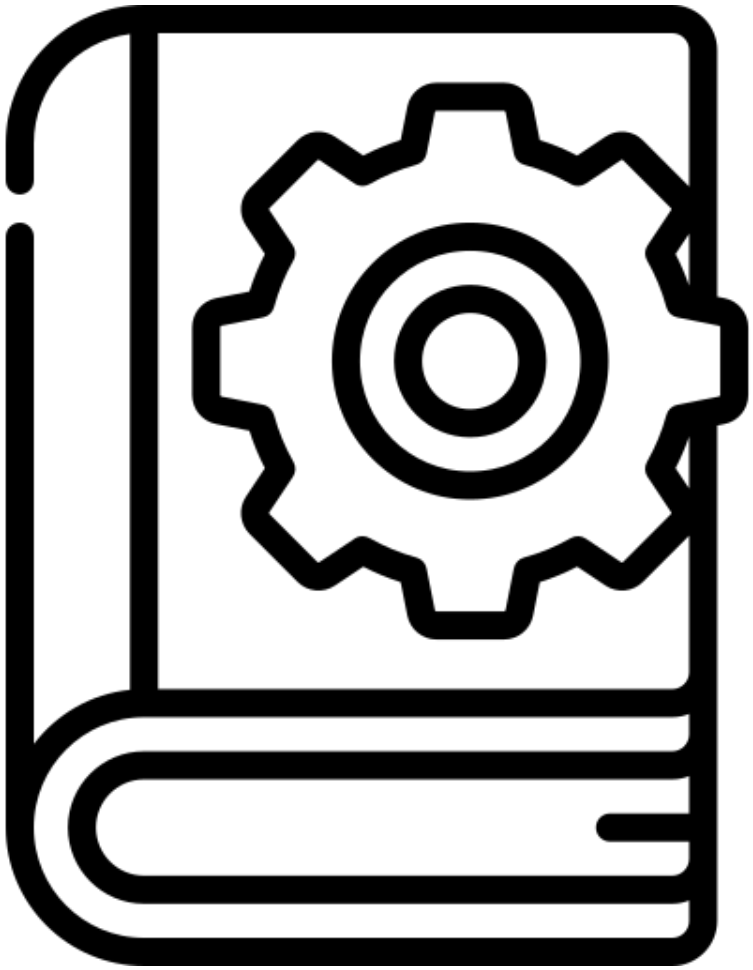
Network Management
User Guide

12/5/2022



SJSU Dept. of Computer Science

CS 158B • Paul Nguyen • Team 4

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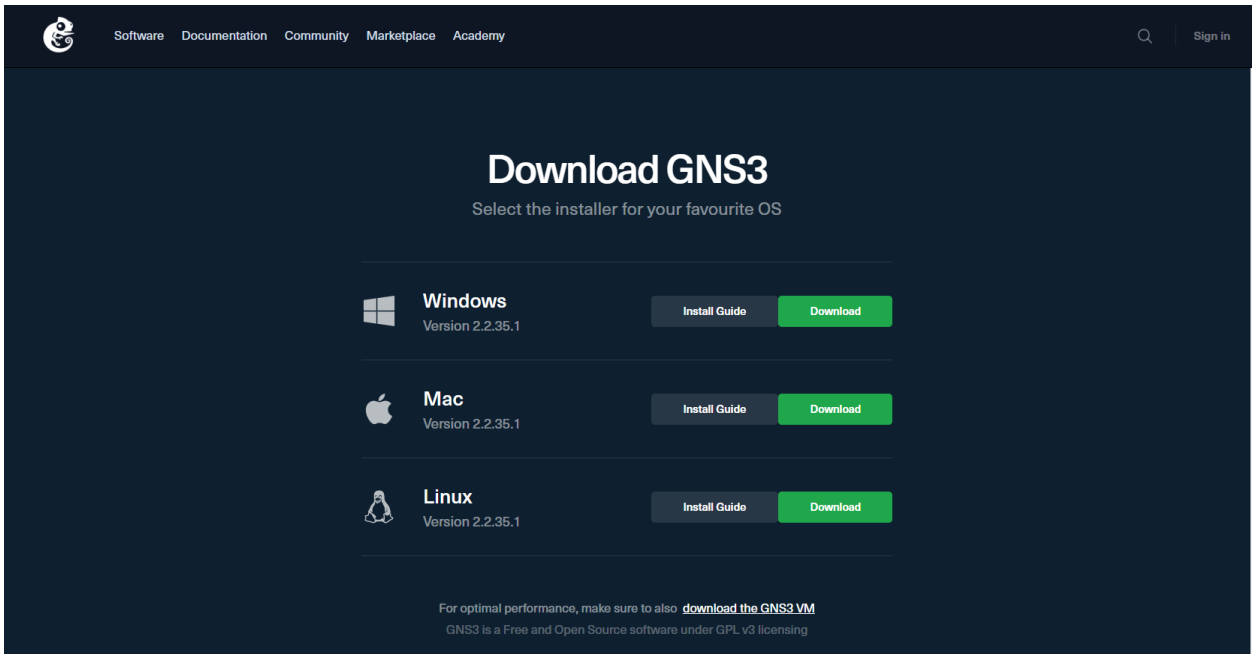
1 GNS3

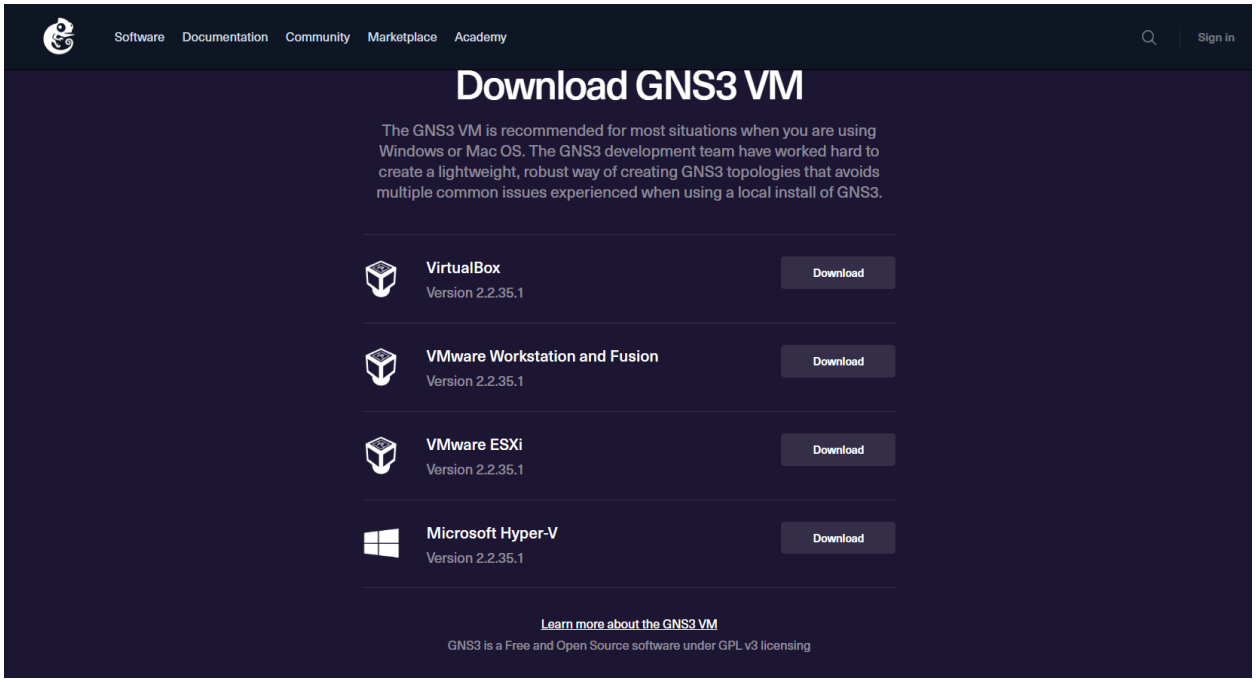
1.1. Download GNS3

Download GNS3 at https://gns3.com/software/download. It is compatible with Windows, Mac, and Linux. Follow the instructions on the GNS3 Setup wizard to complete download.



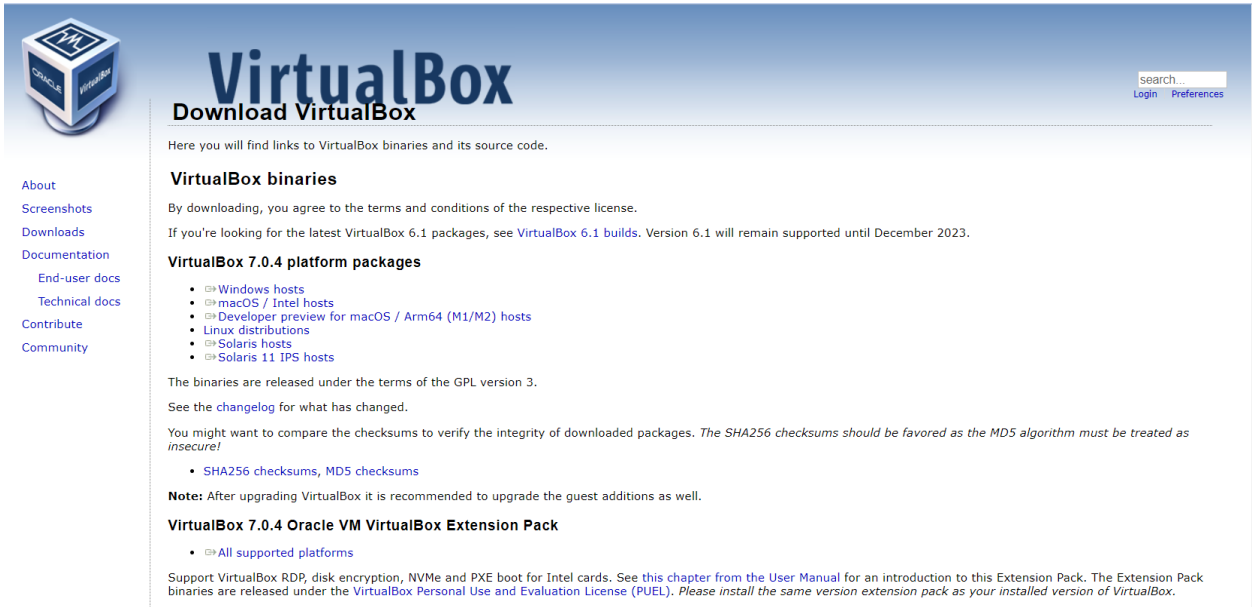
1.2. Download GNS3 VM

Download GNS3 VM at https://gns3.com/software/download-vm. The VM is essential for running the virtual devices in the network.

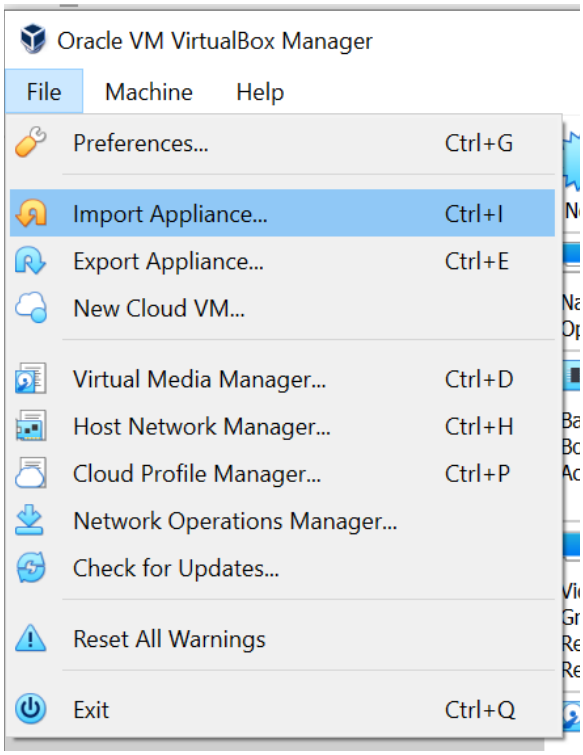


1.3. Download VirtualBox

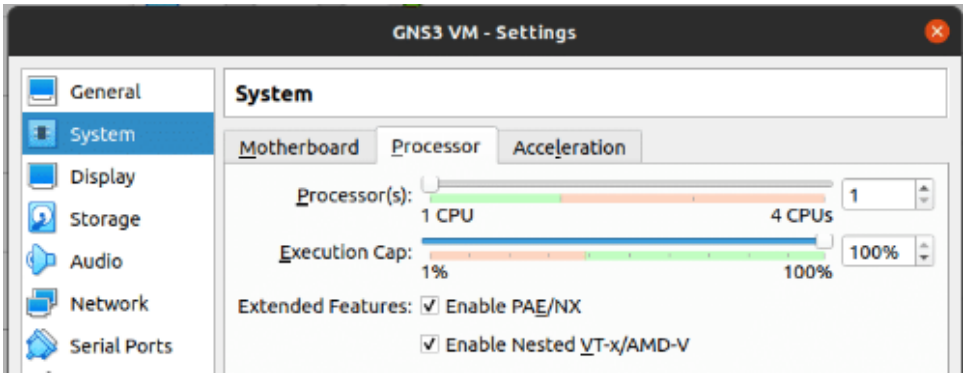
For this project, our group runned GNS3 VM using VirtualBox, which can be downloaded at https://www.virtualbox.org/wiki/Downloads.



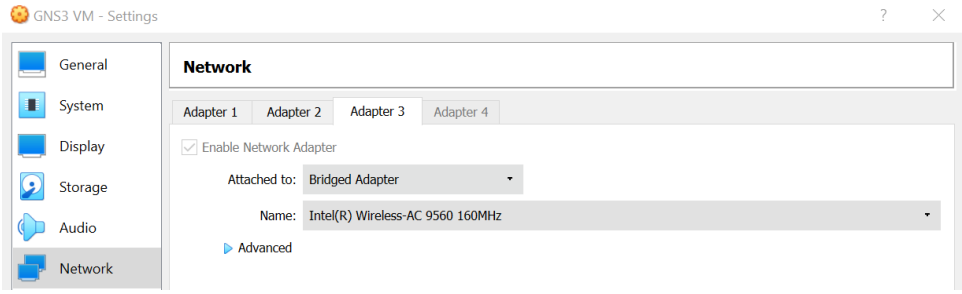
1.4. Import GNS3 VM into VirtualBox



a. In GNS3 VM Settings > System, make sure the "Enable Nested VT-x/AMD-V" option is selected.

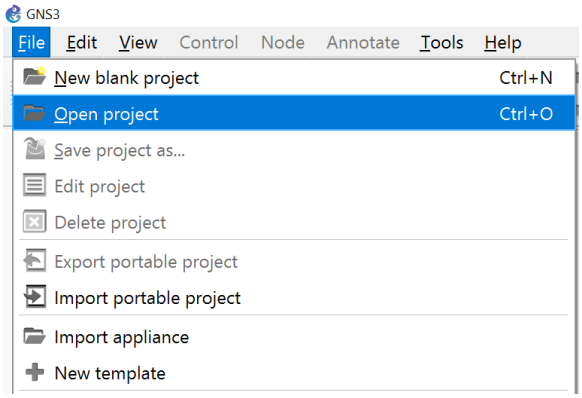


b. In GNS3 VM Settings > Network, make sure the adapter is set to the "Bridged Adapter" option.



1.5. Start GNS3

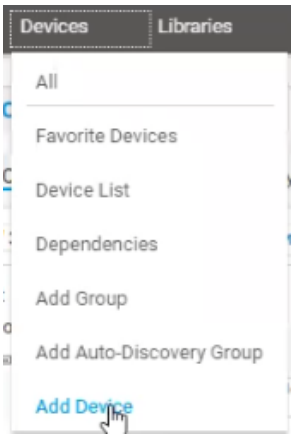
Opening GNS3 should automatically start the VM. Open the "Team4_Project.gns3project" file in GNS3.



2 PRTG

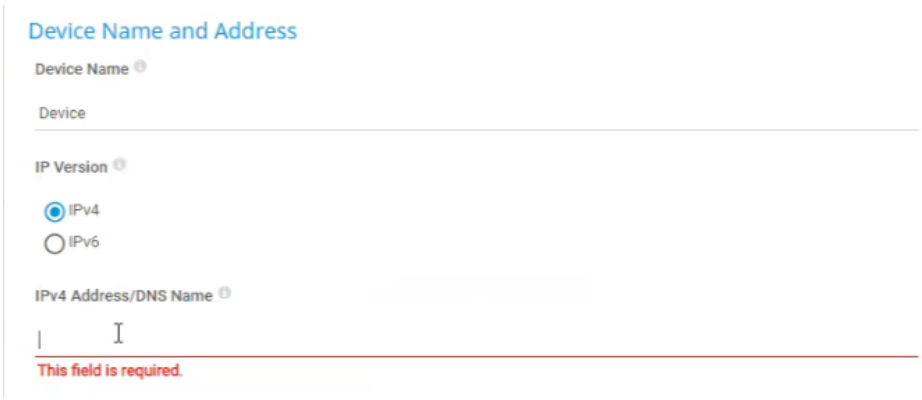
2.1. Add a device

a. Select 'Devices' from the navigation bar, and then select 'Add Device'.



b. When prompted to select a Parent, click on 'Network Infrastructure'.

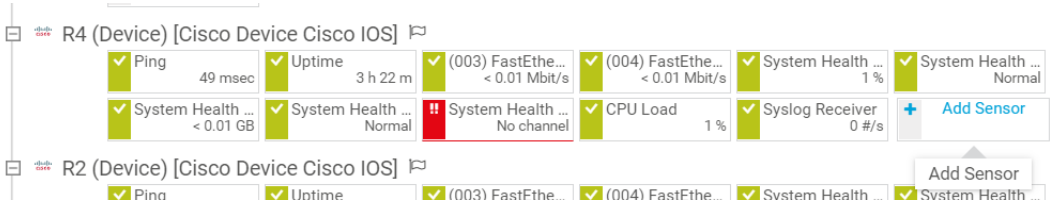
c. Input the IP address of the device.



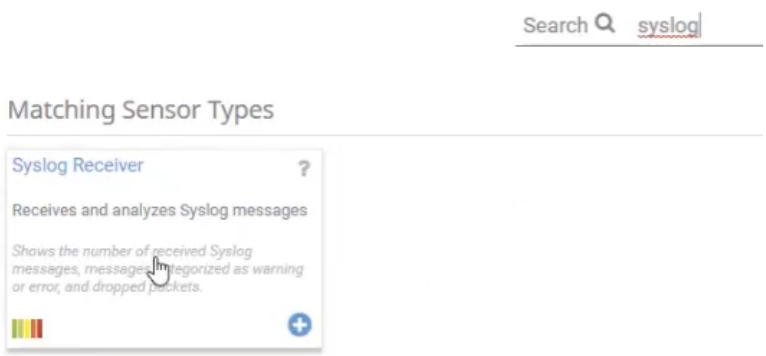
d. Make sure to turn off 'Credentials for SNMP Devices'.

2.2. Add Syslog Receiver sensor

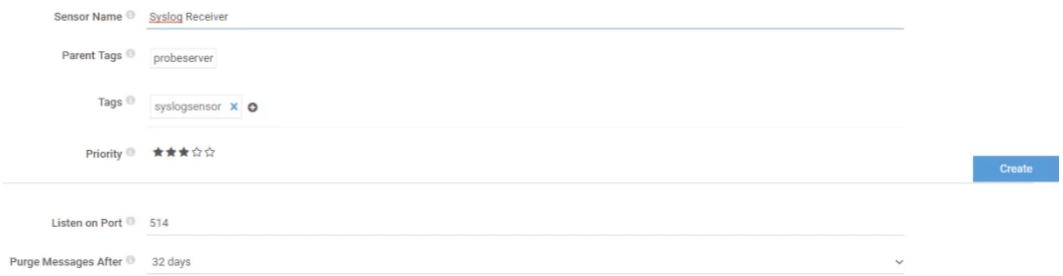
a. Navigate to the PRTG website. Under the desired router, click on 'Add Sensor'.



b. In the search bar, type in 'Syslog Receiver'. Then, click on the blue plus icon.

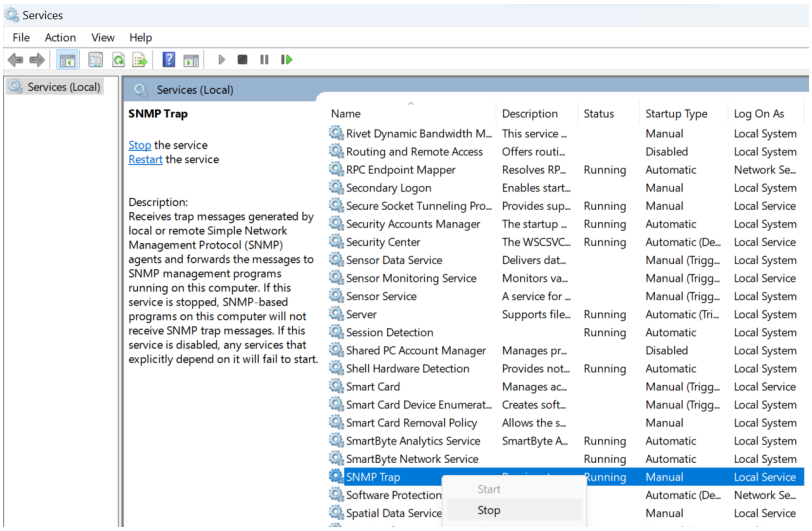


c. Keep default settings. Press 'Create'.



2.3. Setup SNMP trap alert sensor

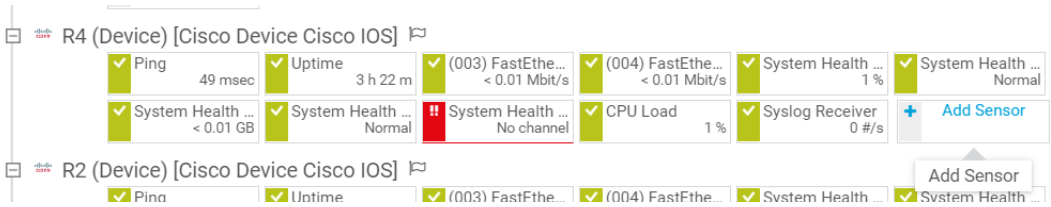
a. To ensure that the port used for SNMP communication, port 161, is not being used by another application, access Services, scroll to SNMP Trap and right click to manually stop.



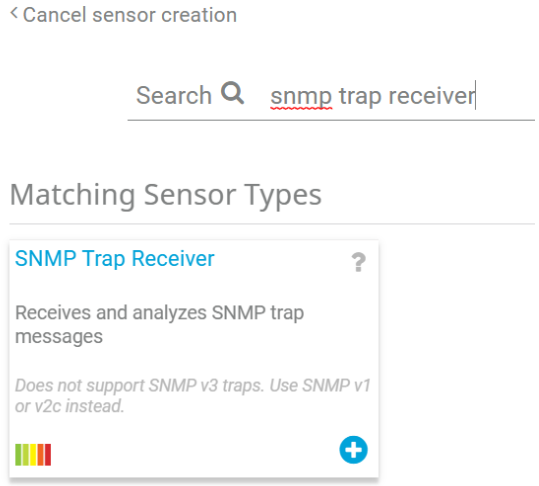
b. In the console of the desired router in GNS3, type in the following commands (x.x.x.x is the IP address of your local machine):

```
en
config t
snmp-server host x.x.x.x version 2c public ds3 snmp
Snmp-server enable traps
end
wr mem
```

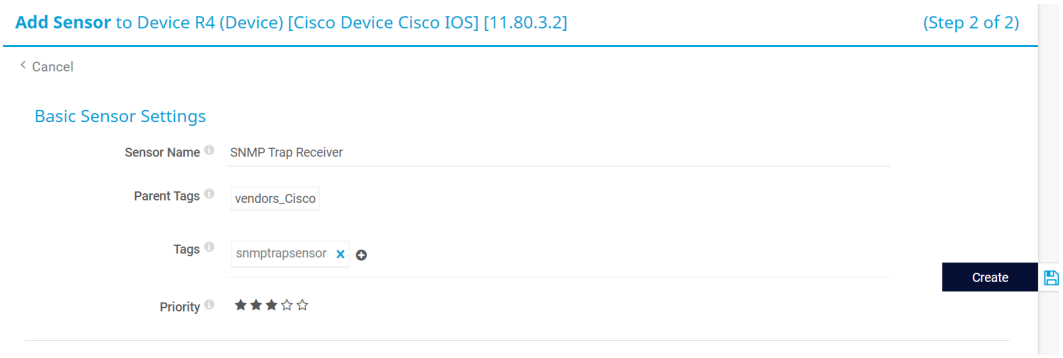
c. Navigate to the PRTG website. Under the desired router, click on 'Add Sensor'.



d. In the search bar, type in ‘SNMP Trap Receiver’. Then, click on the blue plus icon.



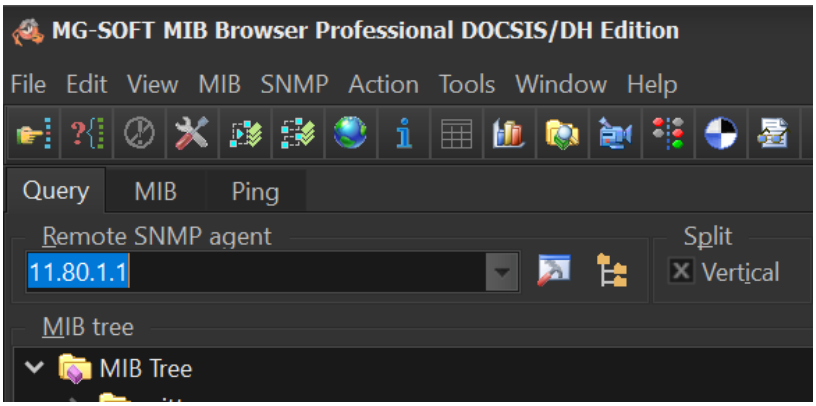
e. Keep default settings. Press ‘Create’.



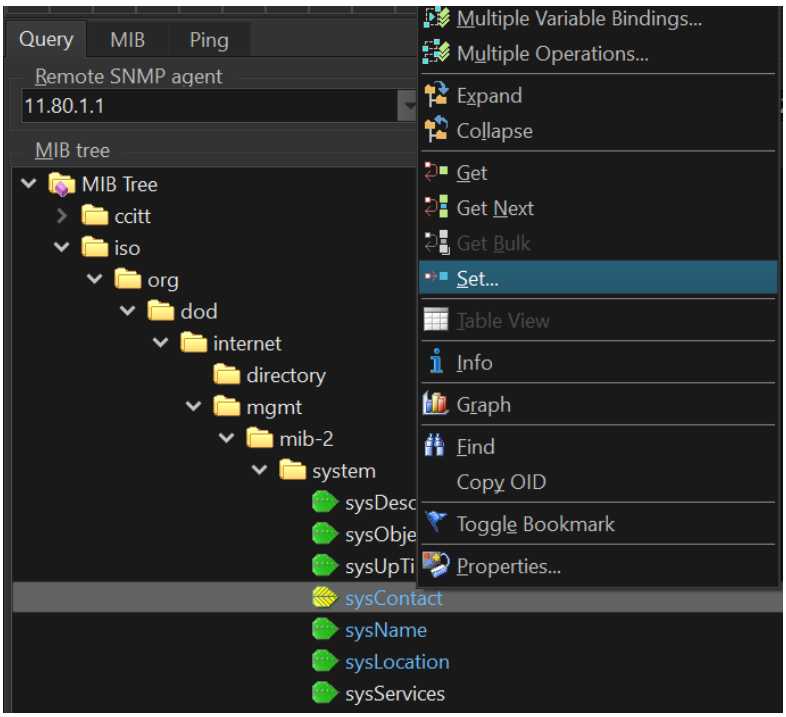
3 MGSoft

3.1. Make changes through SNMP set operation

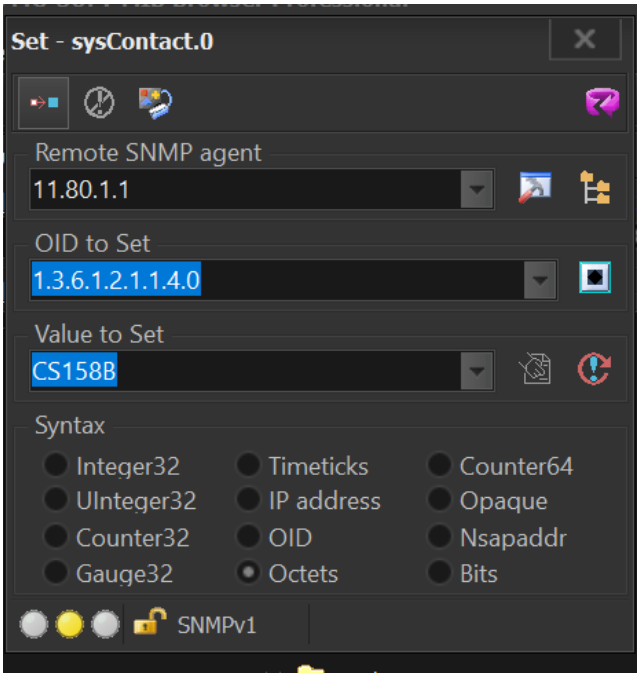
a. In MIB Browser, input the IP address of the remote SNMP agent to change.



b. Right click on any variable and click on 'Set'.

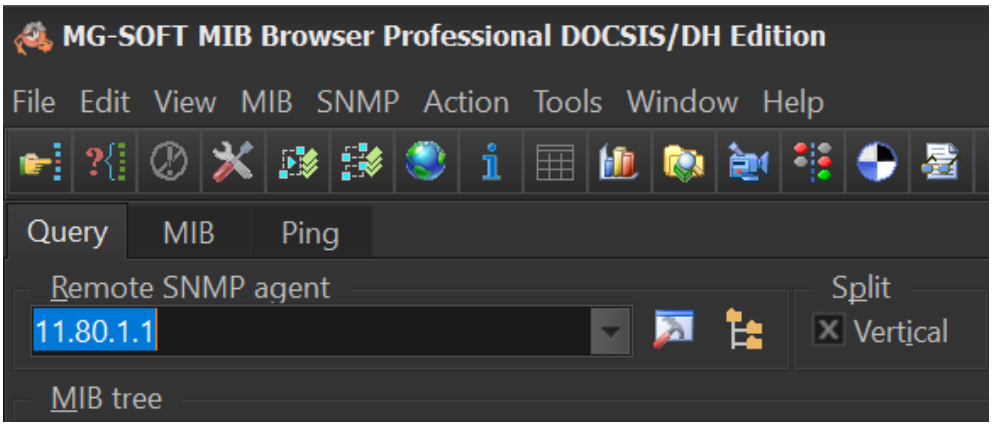


c. Change the value in the textbox labeled 'Value to Set' and press 'Enter'.

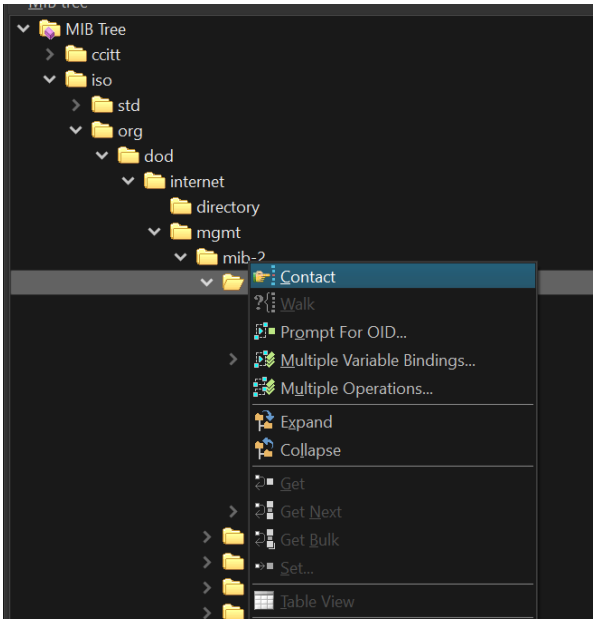


3.2. SNMP Mibwalk

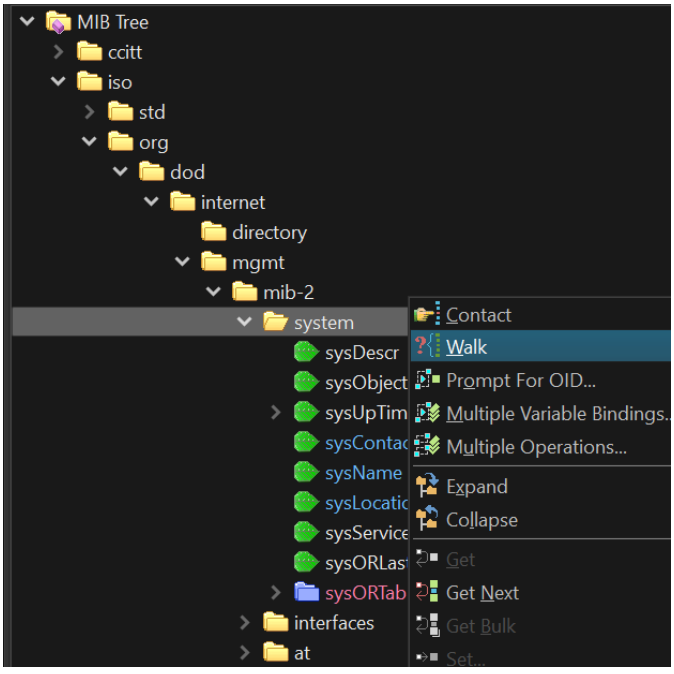
a. In MIB Browser, input the IP address of the remote SNMP agent to walk through.



b. Right click on any folder and click on ‘Contact’.

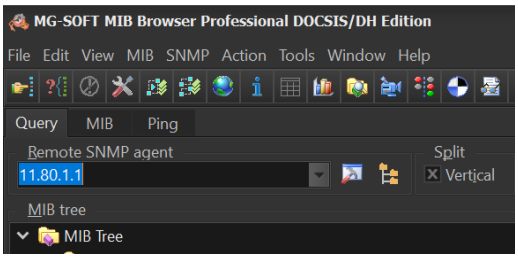


c. Right click on any folder and click on ‘Walk’. View results on the right in the ‘Query results’ tab.

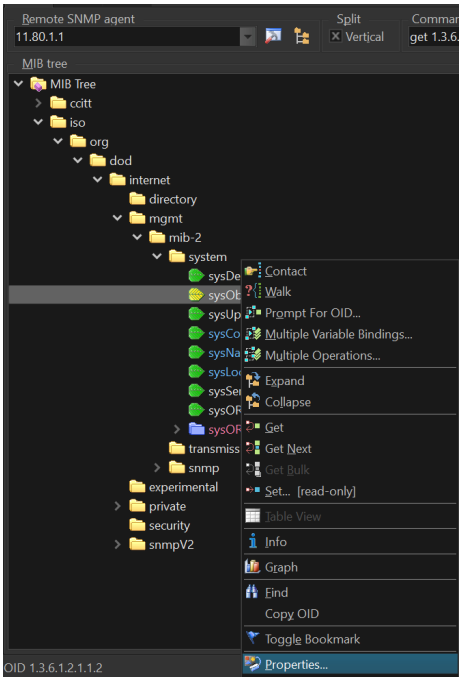


3.3. Browse OIDs

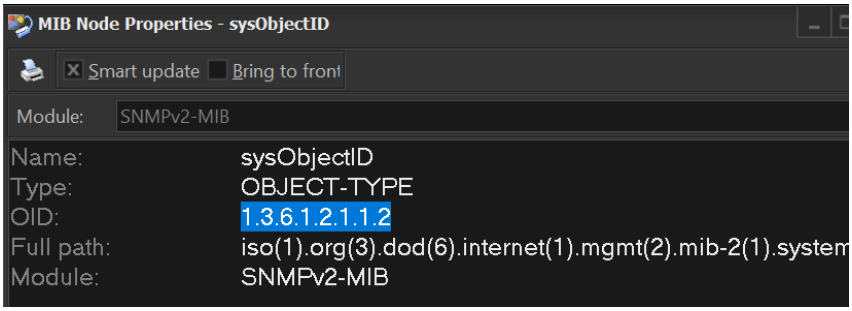
a. In MIB Browser, input the IP address of the remote SNMP agent to find the OID of.



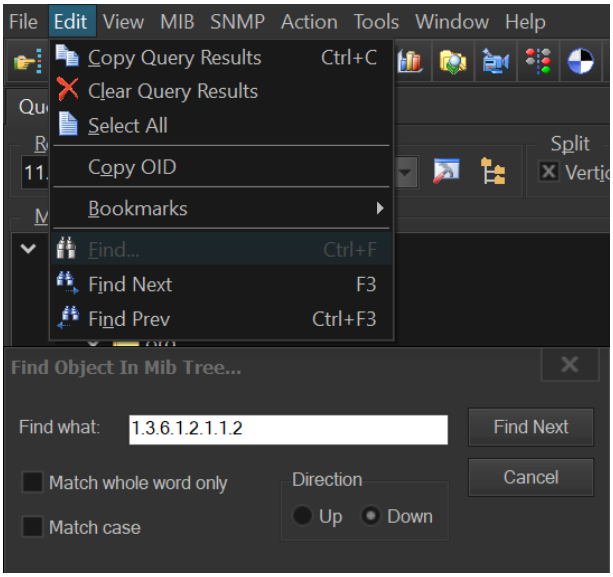
b. Right click on any variable and click on 'Properties'.



c. Copy the OID.

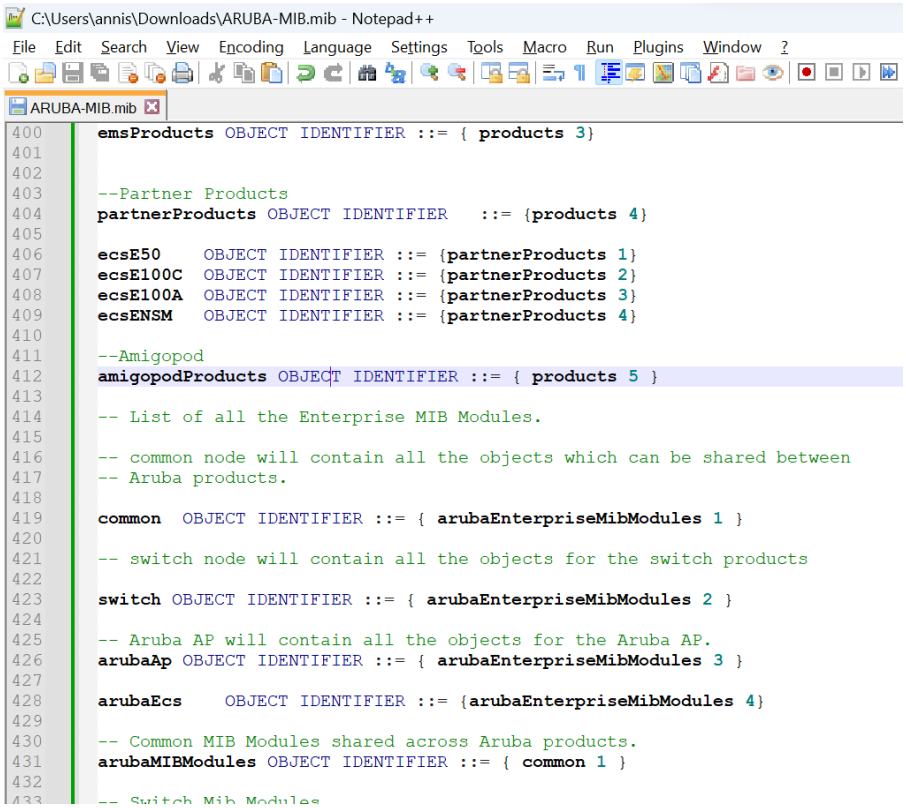


d. Go to Edit -> Find. A new tab will appear. Paste the OID into the text box and press enter.

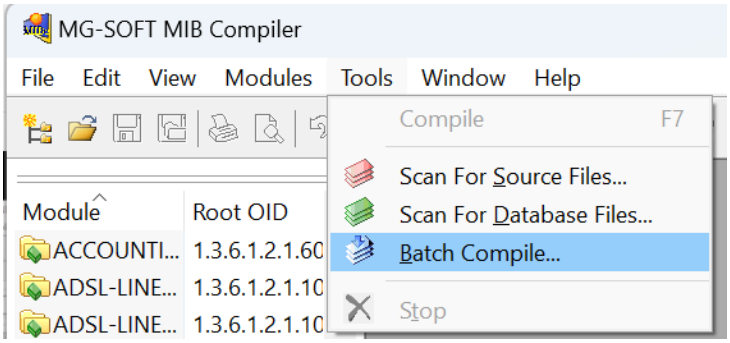


3.4. Compile a new MIB and add to MIB tree

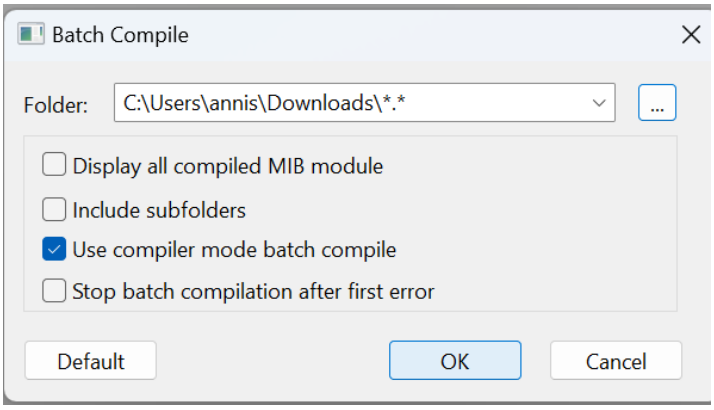
a. Prepare some source code for a new MIB and store it in a directory.



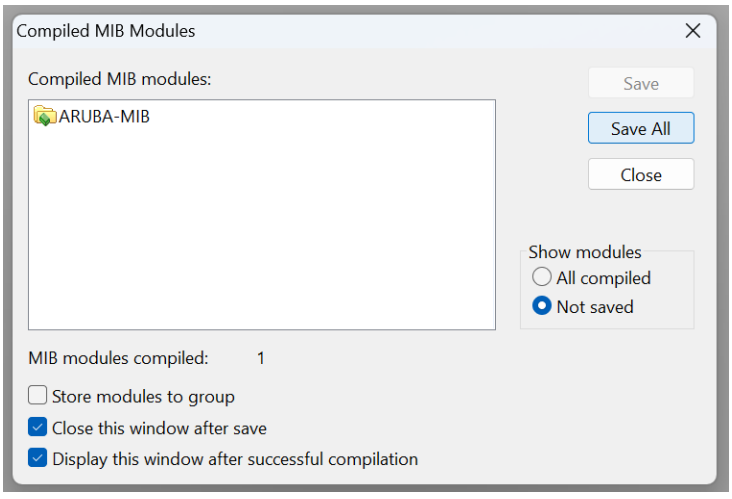
b. In MIB Compiler, go to Tools -> Batch Compile.



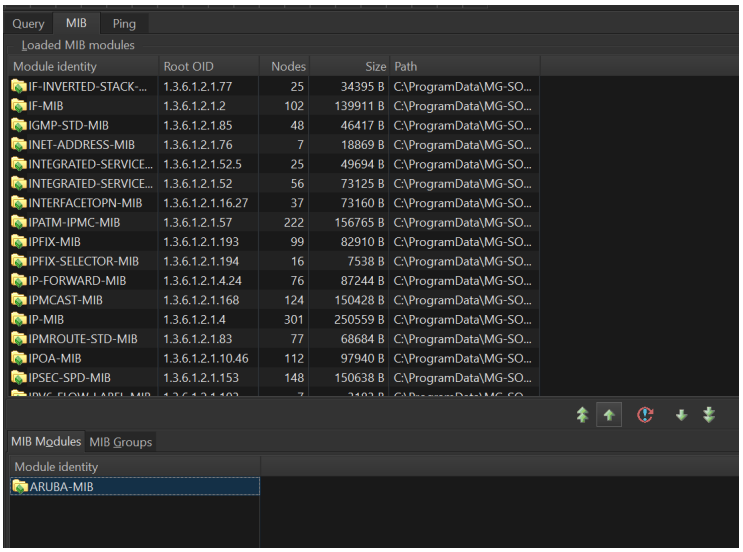
c. Provide the directory where the source code was saved. Keep default changes and press OK.



d. Press save all.



e. Now, navigate to MIB Browser MIB tab. There should be a new module under the MIB Modules tab. Click on the green up arrow key to load it into the MIB tree.

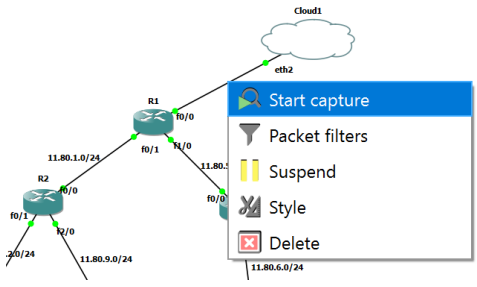


3.5. SNMP Trap Ringer Console

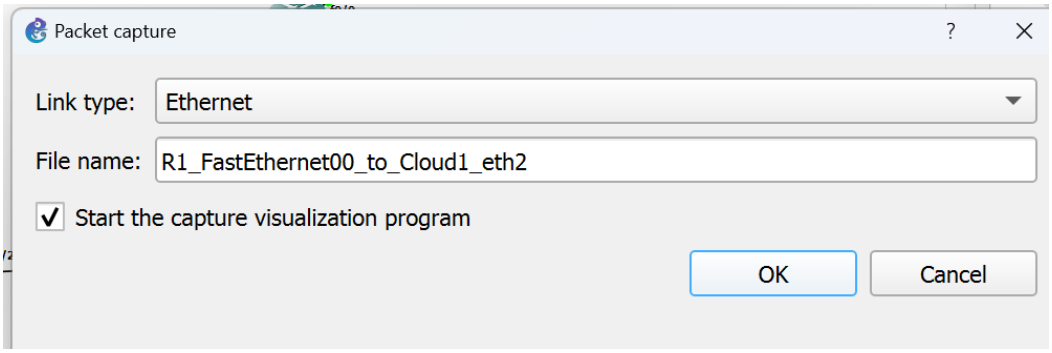
a. In the console of all routers in GNS3, type in the following commands (x.x.x.x is the IP address of your local machine):

```
en
config t
snmp-server host x.x.x.x version 2c public ds3 snmp
Snmp-server enable traps
end
wr mem
```

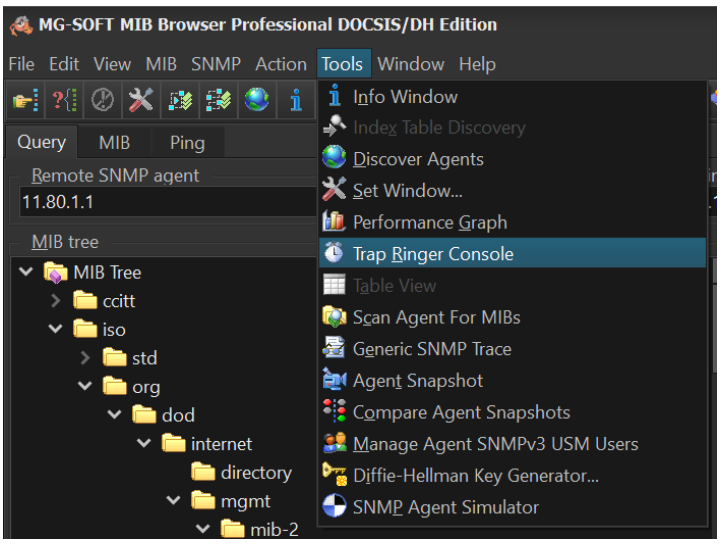
b. In GNS3, right click on a link to start capturing packets.



c. Keep default settings and press OK.



d. In MIB Browser, go to Tools -> Trap Ringer Console.



4 Automation Script

4.1. Run automation python script config.py

a. Navigate to the directory with config.py and run it.

b. Enter the IP address of the router you want to configure.

c. Enter your telnet username to access the specified router.

d. Enter the interface you would like to configure.

e. Set an IP address for the specified interface.

f. Set a protocol (RIP or OSPF) for the specified router.

g. Enter your password to complete configuration.