Lab 4: SNMP in Linux

NET311 - Computer Networks Management

Instructor: Dr. Mostafa Dahshan

Objectives

1. Configure SNMP service in Linux Server.
2. Use a command line to interact with Linux SNMP agent.

References

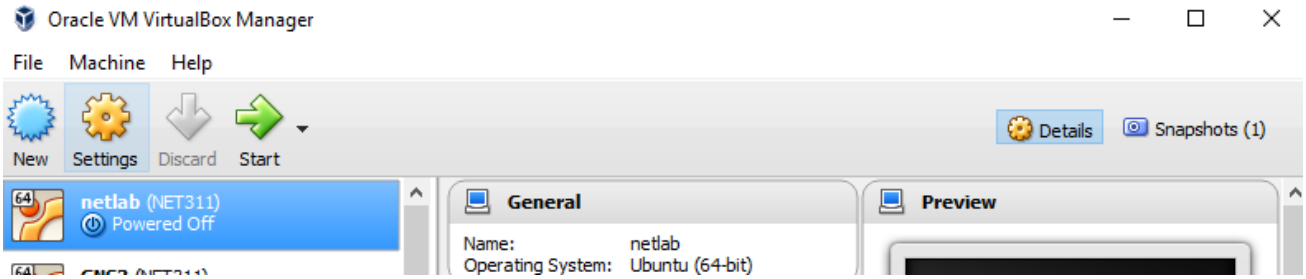
1. net-snmp tutorials.
2. snmpd examples.
3. Installing net-snmp MIBs on Ubuntu and Debian.
4. SNMP exercises, part I.

Instructions

1. Read the lab instructions.
2. Provide question answers and screenshots in the supplied answer sheet.
3. After finishing the lab, upload your saved answer sheet to LMS.

Part 1: Configure SNMP Service in Linux Server

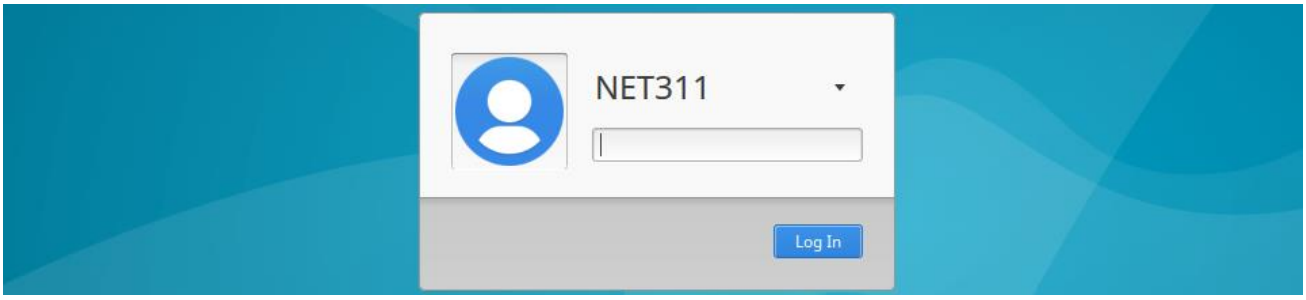
1. Start the netlab Linux virtual machine.



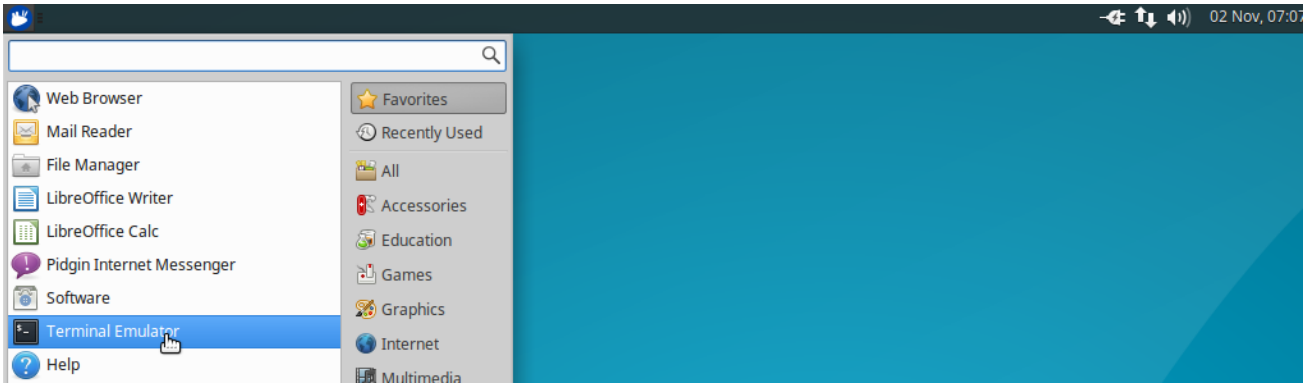
2. Login to the netlab Linux virtual machine.

login: **net311**

password: **abc.311**



3. Run the Terminal Emulator



4. Type the following commands to install SNMP server and tools:

```
sudo apt install snmp snmpd snmp-mibs-downloader
```

When asked for a password, always use: **abc.311**

This step can be skipped if the packages are already installed.

The snmp-mibs-downloader package allows us to use textual representation instead of numeric OIDs.

5. Backup the default **snmpd.conf** file using the command:

```
sudo mv /etc/snmp/snmpd.conf /etc/snmp/snmpd.conf.orig
```

When asked for a password, always use: **abc.311**

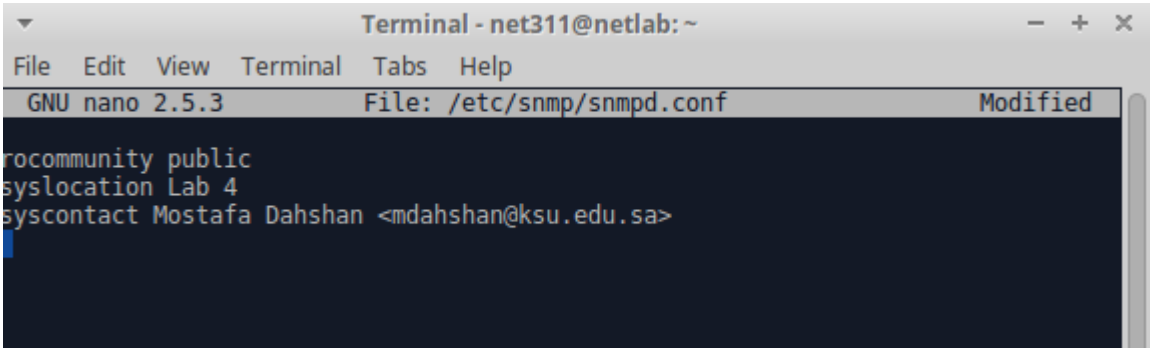
6. Use create a new **snmpd.conf** file.

```
sudo nano /etc/snmp/snmpd.conf
```

7. Add the following lines:

```
rocommunity  public
syslocation  Lab 4
syscontact  Mostafa Dahshan <mdahshan@ksu.edu.sa>
```

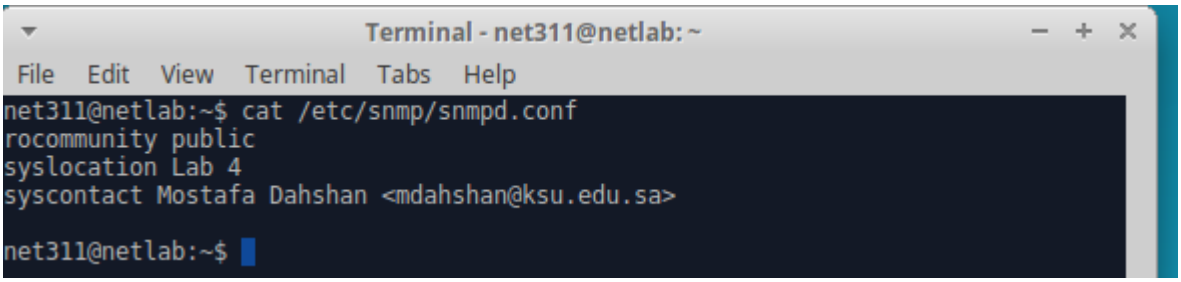
Use your own name and email address.



8. Press **CTRL-X** to exit. Type **Y** to save. Press **ENTER** to accept file name.

9. Verify the contents of the snmpd.conf file

```
sudo cat /etc/snmp/snmpd.conf
```



Lab sheet 1.1: Provide a screenshot showing the contents of the snmpd.conf file

10. Restart the snmpd service to use the new configuration file.

```
sudo service snmpd restart
```

Part 2: Interaction with SNMP in Linux

In this part, we use some of the SNMP toolkit commands to interact with the SNMP agent that was installed and configured in Part 1.

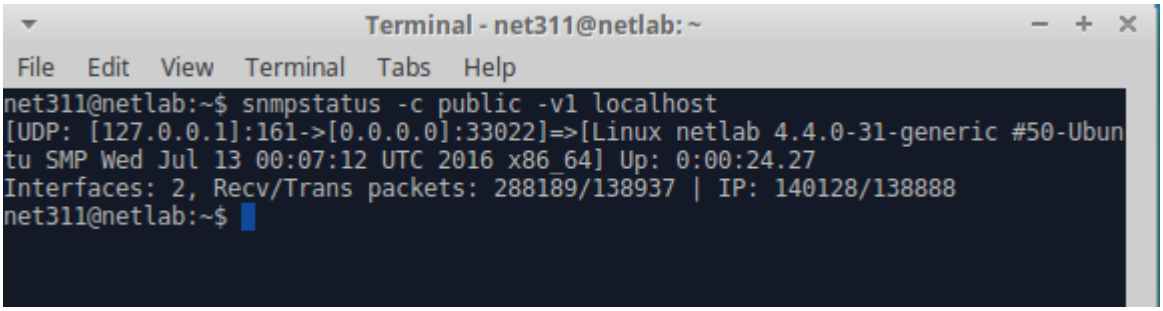
1. To verify that SNMP agent is working, run the snmpstatus command:

```
snmpstatus -c public -v1 localhost
```

You can also test for SNMPv2c

```
snmpstatus -c public -v2c localhost
```

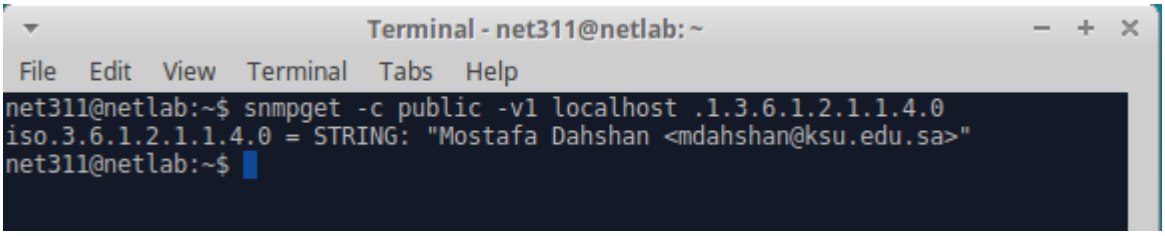
The output can look similar to the following:



2. Use snmpget to retrieve the system.sysContact information using numeric OID:

```
snmpget -c public -v1 localhost .1.3.6.1.2.1.1.4.0
```

The output can look similar to the following:



The GET request is one of the basic operations of the SNMP protocol, retrieving the information associated with the specified OID from the target agent.
[Net-SNMP Wiki]

Lab sheet 2.1: Provide a screenshot showing output of the snmpget command of this step.

3. Use the snmpgetnext to retrieve the same information with less exact OID:

```
snmpgetnext -c public -v1 localhost .1.3.6.1.2.1.1.4
```

The other main SNMP operation for retrieving information is the GETNEXT request - a "fuzzy-matching" version of GET, and is implemented by the snmpgetnext tool.
[Net-SNMP Wiki]

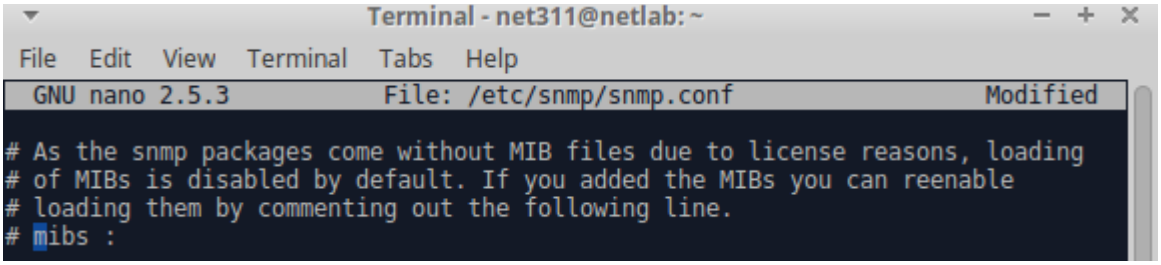
As you see, it is difficult to remember the numeric value for each OID.

You need to enable loading MIBs (downloaded using snmp-mibs-downloader) by editing the file **/etc/snmp/snmp.conf**.

4. Edit the /etc/snmp/snmp.conf file

```
sudo nano /etc/snmp/snmp.conf
```

5. Add "#" at the beginning of the line containing "mibs :" to comment this line.

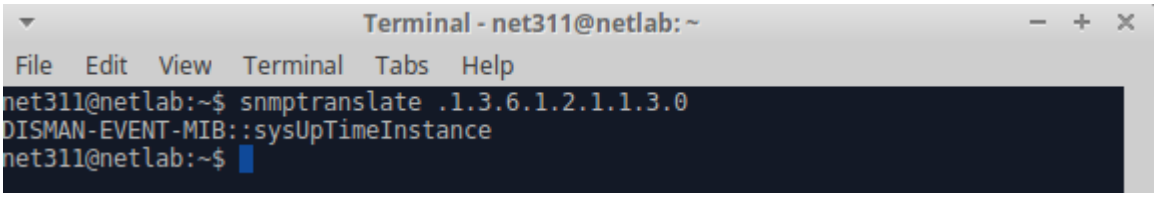


6. Press **CTRL-X** to exit. Type **Y** to save. Press **ENTER** to accept file name.

Now you can use **snmptranslate** command to translate between numeric OID and textual MIB name.

7. Use the **snmptranslate** command to find the MIB name of .1.3.6.1.2.1.1.3.0

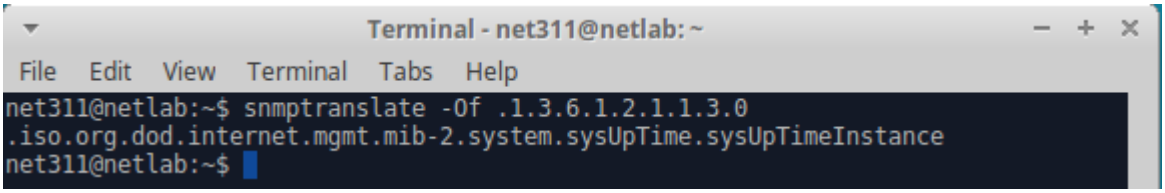
```
snmptranslate .1.3.6.1.2.1.1.3.0
```



You can show the full list of MIB sub identifier by adding -Of flag

8. Use the **snmptranslate** command to find the full MIB name of .1.3.6.1.2.1.1.3.0

```
snmptranslate -Of .1.3.6.1.2.1.1.3.0
```

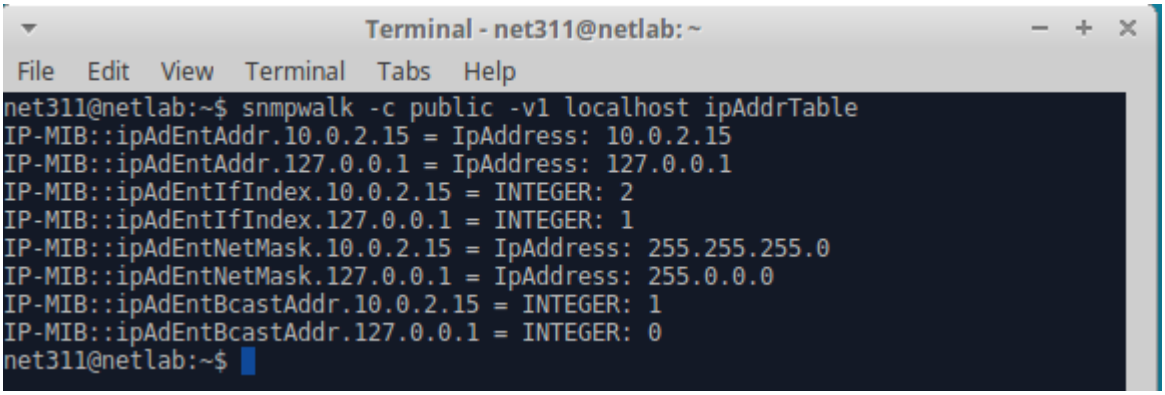


Lab sheet 2.2: Provide a screenshot showing output of the snmptranslate command of this step.

We can use **snmpwalk** command to perform a sequence of chained GETNEXT requests, rather than using multiple snmpgetnext commands.

9. Use the **snmpwalk** command to list all the results which lie within the subtree rooted on this OID:

```
snmpwalk -c public -v1 localhost ipAddrTable
```

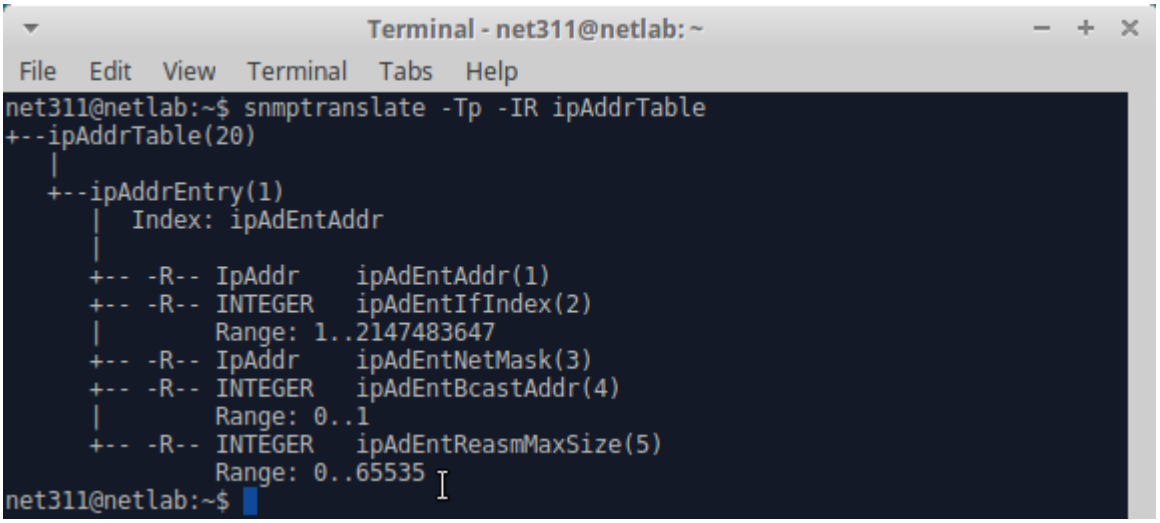


Lab sheet 2.3: Provide a screenshot showing output of the snmpwalk command of this step.

You can view the MIB tree using the -Tp with the -IR option

10. Type the following command to get the tree of the ipAddrTable:

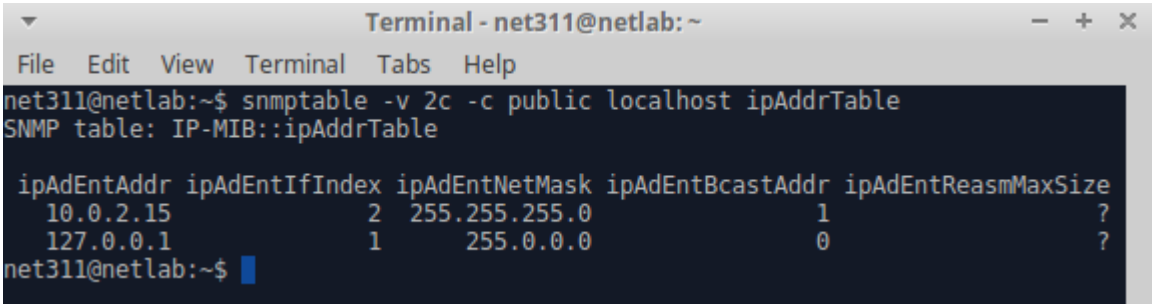
```
snmptranslate -Tp -IR ipAddrTable
```



Lab sheet 2.4: Provide a screenshot showing the output of the snmptranslate -Tp -IR command.

11. Type the following command to get a tabular representation of the ipAddrTable:

```
snmptable -v 2c -c public localhost ipAddrTable
```



Lab sheet 2.5: Provide a screenshot showing the output of the snmptable command.

Extra Tasks

Familiarize yourself with more SNMP commands. You can try the following examples:

```
snmptranslate -Of -IR ipAddrTable

snmptranslate -Tp -IR system

snmptable -v 2c -c public -Os localhost sysORTable
```