



Sri Lanka Institute of Information Technology
Network Design & Management

IT3060

Lab Report 05

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STEP 01

Stop all the running services.

```
CentOS Linux 7 (Core)
Kernel 3.10.0-1160.el7.x86_64 on an x86_64

mlb-dc1-centos7 login: root
Password:
Last login: Sun Mar 23 19:55:45 on tty1
[root@mlb-dc1-centos7 ~]# service dhcpd stop
Redirecting to /bin/systemctl stop dhcpd.service
[root@mlb-dc1-centos7 ~]# service named stop
Redirecting to /bin/systemctl stop named.service
[root@mlb-dc1-centos7 ~]# _
```

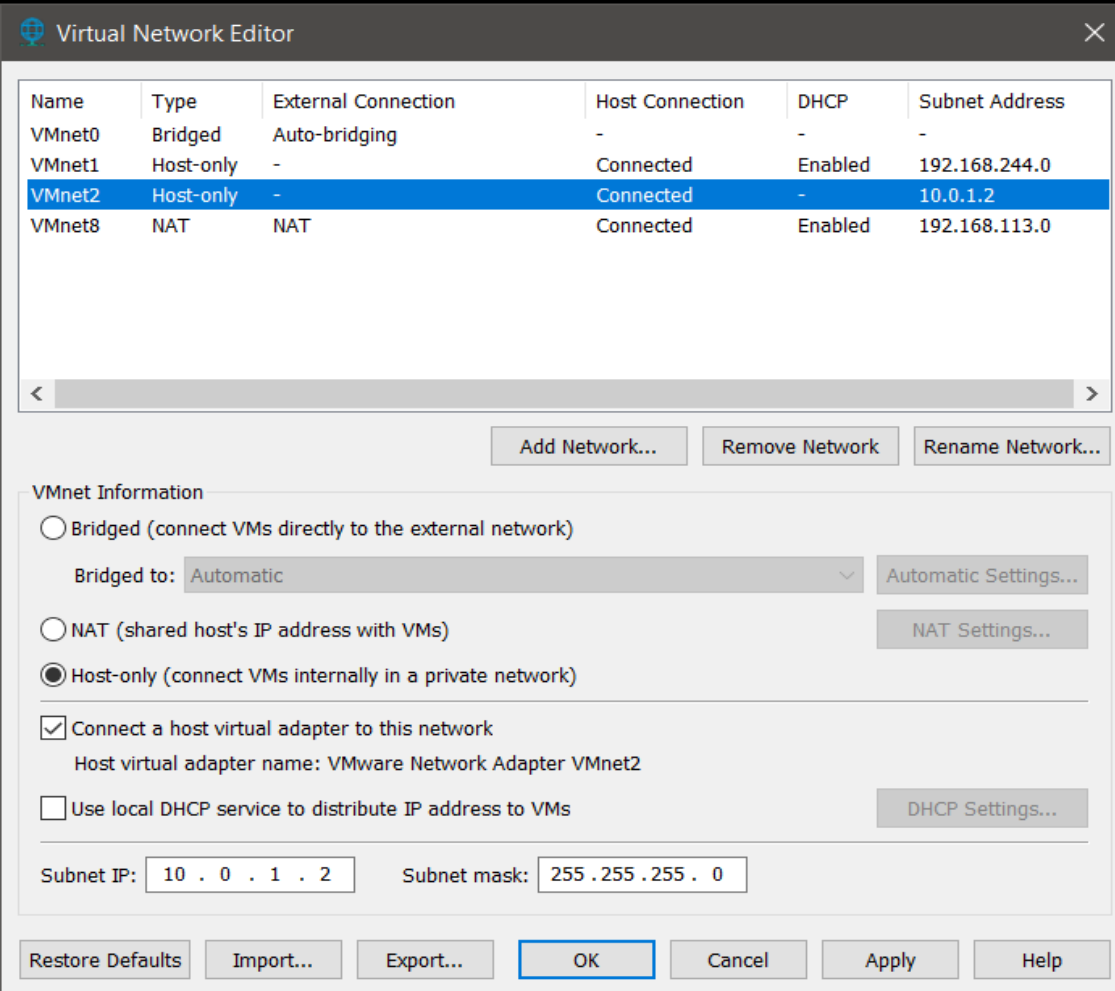
STEP 02

Install SNMP

```
[root@mlb-dc1-centos7 ~]# yum install -y net-snmp net-snmp-utils
Loaded plugins: fastestmirror
Determining fastest mirrors
http://vault.centos.org/centos/7/os/x86_64/repodata/repomd.xml: [Errno 14] curl#6 - "Could not resolve host: vault.centos.org; Unknown error"
Trying other mirror.
http://vault.centos.org/centos/7/extras/x86_64/repodata/repomd.xml: [Errno 14] curl#6 - "Could not resolve host: vault.centos.org; Unknown error"
Trying other mirror.
http://vault.centos.org/centos/7/updates/x86_64/repodata/repomd.xml: [Errno 14] curl#6 - "Could not resolve host: vault.centos.org; Unknown error"
Trying other mirror.
Package 1:net-snmp-5.7.2-49.el7_9.4.x86_64 already installed and latest version
Package 1:net-snmp-utils-5.7.2-49.el7_9.4.x86_64 already installed and latest version
Nothing to do
[root@mlb-dc1-centos7 ~]# _
```

STEP 03

Set VMware network settings to vmnet2-Host_only



The screenshot shows the 'Virtual Network Editor' window. At the top, there is a table listing several virtual networks. 'VMnet2' is selected and highlighted in blue. Below the table, there are three buttons: 'Add Network...', 'Remove Network', and 'Rename Network...'. The 'VMnet Information' section is expanded, showing three radio button options: 'Bridged', 'NAT', and 'Host-only'. The 'Host-only' option is selected. Below these options, there are checkboxes for 'Connect a host virtual adapter to this network' (checked) and 'Use local DHCP service to distribute IP address to VMs' (unchecked). At the bottom, there are input fields for 'Subnet IP' (10 . 0 . 1 . 2) and 'Subnet mask' (255 . 255 . 255 . 0). The 'OK' button is highlighted with a blue border.

Name	Type	External Connection	Host Connection	DHCP	Subnet Address
VMnet0	Bridged	Auto-bridging	-	-	-
VMnet1	Host-only	-	Connected	Enabled	192.168.244.0
VMnet2	Host-only	-	Connected	-	10.0.1.2
VMnet8	NAT	NAT	Connected	Enabled	192.168.113.0

Buttons: Add Network..., Remove Network, Rename Network...

VMnet Information

☐ Bridged (connect VMs directly to the external network)
Bridged to: Automatic Automatic Settings...

☐ NAT (shared host's IP address with VMs) NAT Settings...

☒ Host-only (connect VMs internally in a private network)

☒ Connect a host virtual adapter to this network
Host virtual adapter name: VMware Network Adapter VMnet2

☐ Use local DHCP service to distribute IP address to VMs DHCP Settings...

Subnet IP: 10 . 0 . 1 . 2 Subnet mask: 255 . 255 . 255 . 0

Buttons: Restore Defaults, Import..., Export..., OK, Cancel, Apply, Help

STEP 04

View the SNMP configuration file

```
mlb-dc1-centos7 login: root
Password:
Last login: Sun Mar 30 15:22:32 on tty1
[root@mlb-dc1-centos7 ~]# vi /etc/snmp/snmpd.conf_
```

```
#####
#
# snmpd.conf:
#   An example configuration file for configuring the ucd-snmp snmpd agent.
#
#####
# This file is intended to only be as a starting point.  Many more
# configuration directives exist than are mentioned in this file.  For
# full details, see the snmpd.conf(5) manual page.
#
# All lines beginning with a '#' are comments and are intended for you
# to read.  All other lines are configuration commands for the agent.
#####
# Access Control
#####

# As shipped, the snmpd demon will only respond to queries on the
# system mib group until this file is replaced or modified for
# security purposes.  Examples are shown below about how to increase the
# level of access.

# By far, the most common question I get about the agent is "why won't
# it work?", when really it should be "how do I configure the agent to
# allow me to access it?"
#
# By default, the agent responds to the "public" community for read
# only access, if run out of the box without any configuration file in
# place.  The following examples show you other ways of configuring
# the agent so that you can change the community names, and give
# yourself write access to the mib tree as well.
#
# For more information, read the FAQ as well as the snmpd.conf(5)
# manual page.

"/etc/snmp/snmpd.conf" 469L, 18979C
```

Add below configuration to /etc/snmp/snmpd.conf

```
rocommunity public 127.0.0.1
rocommunity public 127.0.0.1 syslocation
"HYD, UM DataCenter" syscontact
admin@ndm.lk
```

Start SNMP service

```
"/etc/snmp/snmpd.conf" 476L, 18990C written
[root@mlb-dc1-centos? ~]# service snmpd start
Redirecting to /bin/systemctl start snmpd.service
[root@mlb-dc1-centos? ~]# _
```

STEP 05

Snmpttranslate - learning about the MIB tree.

```
"/etc/snmp/snmpd.conf" 476L, 18990C written
[root@mlb-dc1-centos? ~]# service snmpd start
Redirecting to /bin/systemctl start snmpd.service
[root@mlb-dc1-centos? ~]# snmpttranslate .1.3.6.1.2.1.1.3.0
DISMAN-EVENT-MIB::sysUpTimeInstance
[root@mlb-dc1-centos? ~]# snmpttranslate -On SNMPv2-MIB::system.sysUpTime.0
.1.3.6.1.2.1.1.3.0
[root@mlb-dc1-centos? ~]# snmpttranslate .iso.3.6.1.private.enterprises.2021.2.1.prNames.0
UCD-SNMP-MIB::prNames.0
[root@mlb-dc1-centos? ~]# snmpttranslate -On .iso.3.6.1.private.enterprises.2021.2.1.prNames.0
.1.3.6.1.4.1.2021.2.1.2.0
[root@mlb-dc1-centos? ~]# snmpttranslate -Of .iso.3.6.1.private.enterprises.2021.2.1.prNames.0
.iso.org.dod.internet.private.enterprises.ucdavis.prTable.prEntry.prNames.0
[root@mlb-dc1-centos? ~]# snmpttranslate sysUpTime.0
sysUpTime.0: Unknown Object Identifier (Sub-id not found: (top) -> sysUpTime)
[root@mlb-dc1-centos? ~]# snmpttranslate -IR sysUpTime.0
DISMAN-EVENT-MIB::sysUpTimeInstance
[root@mlb-dc1-centos? ~]# snmpttranslate -Ib 'sys.*ime'
SNMPv2-MIB::sysORUpTime
[root@mlb-dc1-centos? ~]# snmpttranslate -TB 'vacm.*table'
SNMP-VIEW-BASED-ACM-MIB::vacmViewTreeFamilyTable
SNMP-VIEW-BASED-ACM-MIB::vacmAccessTable
SNMP-VIEW-BASED-ACM-MIB::vacmSecurityToGroupTable
SNMP-VIEW-BASED-ACM-MIB::vacmContextTable
NET-SNMP-VACM-MIB::nsVacmAccessTable
[root@mlb-dc1-centos? ~]# snmpttranslate -On -Td -Ib 'sys.*ime'
.1.3.6.1.2.1.1.9.1.4
sysORUpTime OBJECT-TYPE
    -- FROM          SNMPv2-MIB
    -- TEXTUAL CONVENTION TimeStamp
    SYNTAX            TimeTicks
    MAX-ACCESS        read-only
    STATUS             current
    DESCRIPTION       "The value of sysUpTime at the time this conceptual
                        row was last instantiated."
 ::= { iso(1) org(3) dod(6) internet(1) mgmt(2) mib-2(1) system(1) sysORTable(9) sysOREntry(1) 4 }
[root@mlb-dc1-centos? ~]# _
```

```

|
+-- -R-- String    sysDescr(1)
|           Textual Convention: DisplayString
|           Size: 0..255
+-- -R-- ObjID     sysObjectID(2)
+-- -R-- TimeTicks sysUpTime(3)
|   |
|   +--sysUpTimeInstance(0)
|
+-- -RW- String    sysContact(4)
|           Textual Convention: DisplayString
|           Size: 0..255
+-- -RW- String    sysName(5)
|           Textual Convention: DisplayString
|           Size: 0..255
+-- -RW- String    sysLocation(6)
|           Textual Convention: DisplayString
|           Size: 0..255
+-- -R-- INTEGER   sysServices(7)
|           Range: 0..127
+-- -R-- TimeTicks sysORLastChange(8)
|           Textual Convention: TimeStamp
|
+--sysORTable(9)
|
|   +--sysOREntry(1)
|   |   Index: sysORIndex
|   |
|   |   +-- ---- INTEGER   sysORIndex(1)
|   |   |           Range: 1..2147483647
|   |   +-- -R-- ObjID     sysORID(2)
|   |   +-- -R-- String    sysORDescr(3)
|   |   |           Textual Convention: DisplayString
|   |   |           Size: 0..255
|   |   +-- -R-- TimeTicks sysORUpTime(4)
|   |   |           Textual Convention: TimeStamp
|
[root@mlb-dc1-centos7 ~]# _

```

Snmpget - retrieving data from a host

```
[root@mlb-dc1-centos7 ~]# snmpget -v 1 -c public 10.0.1.2 system.sysUpTime.0
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (219792) 0:36:37.92
[root@mlb-dc1-centos7 ~]# snmpget -v 2c -c public 10.0.1.2 system.sysUpTime.0
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (221713) 0:36:57.13
[root@mlb-dc1-centos7 ~]#
[root@mlb-dc1-centos7 ~]# snmpget -v 1 -c public 10.0.1.2 sysUpTime
Error in packet
Reason: (noSuchName) There is no such variable name in this MIB.
Failed object: SNMPv2-MIB::sysUpTime

[root@mlb-dc1-centos7 ~]#
[root@mlb-dc1-centos7 ~]# snmpget -v 2c -c public 10.0.1.2 sysUpTime
SNMPv2-MIB::sysUpTime = No Such Instance currently exists at this OID
[root@mlb-dc1-centos7 ~]# snmpget -v 2c -c public 10.0.1.2 sysUpTime.0 ucdDemoUserList.0
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (229451) 0:38:14.51
UCD-DEMO-MIB::ucdDemoUserList.0 = No Such Object available on this agent at this OID
[root@mlb-dc1-centos7 ~]#
[root@mlb-dc1-centos7 ~]#
```

Snmpgetnext - retrieving unknown indexed data.

```
[root@mlb-dc1-centos7 ~]# snmpgetnext -v 2c -c public 10.0.1.2 system.sysUpTime.0
SNMPv2-MIB::sysContact.0 = STRING: Root <root@localhost> (configure /etc/snmp/snmp.local.conf)
[root@mlb-dc1-centos7 ~]#
[root@mlb-dc1-centos7 ~]# snmpgetnext -v 2c -c public 10.0.1.2 system.sysUpTime.0
SNMPv2-MIB::sysContact.0 = STRING: Root <root@localhost> (configure /etc/snmp/snmp.local.conf)
[root@mlb-dc1-centos7 ~]# snmpgetnext -v 2c -c public 10.0.1.2 system.sysContact.0
SNMPv2-MIB::sysName.0 = STRING: mlb-dc1-centos7.csa.lk
[root@mlb-dc1-centos7 ~]# snmpgetnext -v 2c -c public 10.0.1.2 system.sysName.0
SNMPv2-MIB::sysLocation.0 = STRING: Unknown (edit /etc/snmp/snmpd.conf)
[root@mlb-dc1-centos7 ~]# snmpgetnext -v 2c -c public 10.0.1.2 system.sysUpTime
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (260830) 0:43:28.30
[root@mlb-dc1-centos7 ~]# snmpgetnext -v 2c -c public 10.0.1.2 system
SNMPv2-MIB::sysDescr.0 = STRING: Linux mlb-dc1-centos7.csa.lk 3.10.0-1160.el7.x86_64 #1 SMP Mon Oct
19 16:18:59 UTC 2020 x86_64
[root@mlb-dc1-centos7 ~]# snmpgetnext -v 2c -c public 10.0.1.2 .1.3.6
SNMPv2-MIB::sysDescr.0 = STRING: Linux mlb-dc1-centos7.csa.lk 3.10.0-1160.el7.x86_64 #1 SMP Mon Oct
19 16:18:59 UTC 2020 x86_64
[root@mlb-dc1-centos7 ~]#
```

Self-Study

Snmpwalk - Retrieve all available OIDs under a specified branch

```
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (296503) 0:49:25.03
SNMPv2-MIB::sysContact.0 = STRING: Root <root@localhost> (configure /etc/snmp/snmp.local.conf)
SNMPv2-MIB::sysName.0 = STRING: m1b-dc1-centos7.csa.lk
SNMPv2-MIB::sysLocation.0 = STRING: Unknown (edit /etc/snmp/snmpd.conf)
SNMPv2-MIB::sysORLastChange.0 = Timeticks: (2) 0:00:00.02
SNMPv2-MIB::sysORID.1 = OID: SNMP-MPD-MIB::snmpMPDCompliance
SNMPv2-MIB::sysORID.2 = OID: SNMP-USER-BASED-SM-MIB::usmMIBCompliance
SNMPv2-MIB::sysORID.3 = OID: SNMP-FRAMEWORK-MIB::snmpFrameworkMIBCompliance
SNMPv2-MIB::sysORID.4 = OID: SNMPv2-MIB::snmpMIB
SNMPv2-MIB::sysORID.5 = OID: TCP-MIB::tcpMIB
SNMPv2-MIB::sysORID.6 = OID: IP-MIB::ip
SNMPv2-MIB::sysORID.7 = OID: UDP-MIB::udpMIB
SNMPv2-MIB::sysORID.8 = OID: SNMP-VIEW-BASED-ACM-MIB::vacmBasicGroup
SNMPv2-MIB::sysORID.9 = OID: SNMP-NOTIFICATION-MIB::snmpNotifyFullCompliance
SNMPv2-MIB::sysORID.10 = OID: NOTIFICATION-LOG-MIB::notificationLogMIB
SNMPv2-MIB::sysORDescr.1 = STRING: The MIB for Message Processing and Dispatching.
SNMPv2-MIB::sysORDescr.2 = STRING: The management information definitions for the SNMP User-based Security Model.
SNMPv2-MIB::sysORDescr.3 = STRING: The SNMP Management Architecture MIB.
SNMPv2-MIB::sysORDescr.4 = STRING: The MIB module for SNMPv2 entities
SNMPv2-MIB::sysORDescr.5 = STRING: The MIB module for managing TCP implementations
SNMPv2-MIB::sysORDescr.6 = STRING: The MIB module for managing IP and ICMP implementations
SNMPv2-MIB::sysORDescr.7 = STRING: The MIB module for managing UDP implementations
SNMPv2-MIB::sysORDescr.8 = STRING: View-based Access Control Model for SNMP.
SNMPv2-MIB::sysORDescr.9 = STRING: The MIB modules for managing SNMP Notification, plus filtering.
SNMPv2-MIB::sysORDescr.10 = STRING: The MIB module for logging SNMP Notifications.
SNMPv2-MIB::sysORUpTime.1 = Timeticks: (2) 0:00:00.02
SNMPv2-MIB::sysORUpTime.2 = Timeticks: (2) 0:00:00.02
SNMPv2-MIB::sysORUpTime.3 = Timeticks: (2) 0:00:00.02
SNMPv2-MIB::sysORUpTime.4 = Timeticks: (2) 0:00:00.02
SNMPv2-MIB::sysORUpTime.5 = Timeticks: (2) 0:00:00.02
SNMPv2-MIB::sysORUpTime.6 = Timeticks: (2) 0:00:00.02
SNMPv2-MIB::sysORUpTime.7 = Timeticks: (2) 0:00:00.02
SNMPv2-MIB::sysORUpTime.8 = Timeticks: (2) 0:00:00.02
SNMPv2-MIB::sysORUpTime.9 = Timeticks: (2) 0:00:00.02
SNMPv2-MIB::sysORUpTime.10 = Timeticks: (2) 0:00:00.02
[root@m1b-dc1-centos7 ~]#
```

Snmpshow - Display SNMP tables in readable format

```
Redirecting to /bin/systemctl restart snmpd.service
[root@m1b-dc1-centos7 ~]# snmpshow -v 2c -c public -Ci 10.0.1.2 ifTable
SNMP table: IF-MIB::ifTable

  index ifIndex ifDescr          ifType ifMtu   ifSpeed   ifPhysAddress ifAdminStatus ifOperStatus
ifLastChange ifInOctets ifInUcastPkts ifInNUcastPkts ifInDiscards ifInErrors ifInUnknownProts ifOutOctets ifOutUcastPkts ifOutNUcastPkts ifOutDiscards ifOutErrors ifOutQLen ifSpecific
1         1         lo softwareLoopback 65536   100000000
0:0:00:00.00 7831         96         0         0         0         0         0
7831        96         0         0         0         0 SNMPv2-SMI::zeroDotZero
2         2        ens33 ethernetCsmacd 1500   1000000000 0:c:29:a0:2c:bf
0:0:00:00.00 480         8         0         0         0         0         0
3122        8         0         0         0         0 SNMPv2-SMI::zeroDotZero
3         3        ens36 ethernetCsmacd 1500   1000000000 0:c:29:a0:2c:c9
0:0:00:00.00 3500        30         0         0         0         0         0
3868       41         0         0         0         0 SNMPv2-SMI::zeroDotZero
[root@m1b-dc1-centos7 ~]# snmpshow -v 2c -c public -Ci 10.0.1.2 ifXTable
IF-MIB::ifXTable: No entries
[root@m1b-dc1-centos7 ~]# SNMP table: IF-HIB::iTable
-bash: SNMP: command not found
[root@m1b-dc1-centos7 ~]#
```