BITC 426 FEB APRIL 2025 SEMESTER CAT 2. UNIVERSITY OF ELDORET. MATHS& COMPUTER SCIENCE DEPARTMENT. DATE: 18/3/25. DURATION TWO WEEKS. DELIVERABLES: A DETAILED REPORT FOR EACH CASE,DEMONSTRATIONS

GROUP 1

1. Describe in detail SNMPv1,SNMPv2 and SNMPv3.*(Use appropriate illustrations)*
2. Demonstrate the usage of the following tools noting/capturing all the network data therein

- *ipconfig, ifconfig, ping, nslookup, dig, host, bing, tcpdump, getethers, iptrace, netstat, arp, rarp, traceroute and tracert*

3. Install ***wireshark*** and ***ethereal*** on your laptop.Use the application to capture atmost eight packets of each host(s) on a network while examining their headers and contents.
4. Install **OpenNM**S on your pc. Required:
4.1 Examine the functions of the application in relation to network management
4.2 Demonstrate its usage in a network
5. Install SNMP **MIB Browser** application on your pc.
5.1 Examine the functions of the application in relation to network management
5.2 Demonstrate its usage in a network
6. Demonstrate the usage of the following SNMP commands:-

- *snmpget, snmpgetnext, snmpwalk, snmpset, snmptrap and snmpsniff.*

7. What is the role of a protocol analyzer in network management?
7.1 Install an appropriate protocol analyzer on your pc and demostrate its usage in networks.
8. Describe TMN architecture as applied in network management

GROUP 2

1. Describe in detail SNMPv1,SNMPv2 and SNMPv3.*(Use appropriate illustrations)*
2. Demonstrate the usage of the following tools noting/capturing all the network data therein

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- *snmpget, snmpgetnext, snmpwalk, snmpset, snmptrap and snmpsniff.*

7. What is the role of a protocol analyzer in network management?
7.1 Install an appropriate protocol analyzer on your pc and demostrate its usage in networks.
8. Discuss in detail about the SNMP Network Management Architecture *(Use appropriate illustrations*)

GROUP 3

1. Describe in detail SNMPv1,SNMPv2 and SNMPv3.*(Use appropriate illustrations)*
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7. What is the role of a protocol analyzer in network management?
7.1 Install an appropriate protocol analyzer on your pc and demostrate its usage in networks.
8. Describe in detail the structure of an object identifier

GROUP 4

1. Describe in detail SNMPv1,SNMPv2 and SNMPv3.*(Use appropriate illustrations)*
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- *snmpget, snmpgetnext, snmpwalk, snmpset, snmptrap and snmpsniff.*

7. What is the role of a protocol analyzer in network management?
7.1 Install an appropriate protocol analyzer on your pc and demostrate its usage in networks.
8. Describe the relationship between SMI and MIB

GROUP 5

1. Describe in detail SNMPv1,SNMPv2 and SNMPv3.*(Use appropriate illustrations)*
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- *snmpget, snmpgetnext, snmpwalk, snmpset, snmptrap and snmpsniff.*

7. What is the role of a protocol analyzer in network management?
7.1 Install an appropriate protocol analyzer on your pc and demostrate its usage in networks.
8. Draw the route diagram identifying each node for the following data obtained using a trace routing tool. What is the average time a packet takes to travel from noc2 host to *netman* host?

- noc2% traceroute netman.cc.gatech.edu
- traceroute to netman.cc.gatech.edu (130.207.8.31), 30 hops max, 40 byte packets
- main-rtr.gcatt.gatech.edu (199.77.147.1) 1.045 ms 1.012 ms 0.971 ms.
- 130.207.251.2 (130.207.251.2) 2.198 ms 1.404 ms 1.837 ms.
- netman.cc.gatech.edu (130.207.8.31) 3.528 ms 1.671 ms 1.602 ms.

GROUP 6

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- *snmpget, snmpgetnext, snmpwalk, snmpset, snmptrap and snmpsniff.*

7. What is the role of a protocol analyzer in network management?
7.1 Install an appropriate protocol analyzer on your pc and demostrate its usage in networks.
8. Describe CORBA architecture as applied in network management

GROUP 7

1. Describe in detail SNMPv1,SNMPv2 and SNMPv3.*(Use appropriate illustrations)*
2. Demonstrate the usage of the following tools noting/capturing all the network data therein

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4. Install **OpenNM**S on your pc. Required:
4.1 Examine the functions of the application in relation to network management
4.2 Demonstrate its usage in a network
5. Install SNMP **MIB Browser** application on your pc.
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5.2 Demonstrate its usage in a network
6. Demonstrate the usage of the following SNMP commands:-

- *snmpget, snmpgetnext, snmpwalk, snmpset, snmptrap and snmpsniff.*

7. What is the role of a protocol analyzer in network management?
7.1 Install an appropriate protocol analyzer on your pc and demostrate its usage in networks.
8. Describe ATM architecture as applied in network management

GROUP 8

1. Describe in detail SNMPv1,SNMPv2 and SNMPv3.*(Use appropriate illustrations)*
2. Demonstrate the usage of the following tools noting/capturing all the network data therein

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3. Install ***wireshark*** and ***ethereal*** on your laptop.Use the application to capture atmost eight packets of each host(s) on a network while examining their headers and contents.
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- *snmpget, snmpgetnext, snmpwalk, snmpset, snmptrap and snmpsniff.*

7. What is the role of a protocol analyzer in network management?
7.1 Install an appropriate protocol analyzer on your pc and demostrate its usage in networks.

8. What is the role of MRTG in network management?
8.1 Demonstrate its usage in network management.

GROUP 9

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3. Install ***wireshark*** and ***ethereal*** on your laptop.Use the application to capture atmost eight packets of each host(s) on a network while examining their headers and contents.
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- *snmpget, snmpgetnext, snmpwalk, snmpset, snmptrap and snmpsniff.*

7. What is the role of a protocol analyzer in network management?
7.1 Install an appropriate protocol analyzer on your pc and demostrate its usage in networks.
8. Describe the challenges inherent in network management
9. Describe the need of NMS.

GROUP 10

1. Describe in detail SNMPv1,SNMPv2 and SNMPv3.*(Use appropriate illustrations)*
2. Demonstrate the usage of the following tools noting/capturing all the network data therein

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7. What is the role of a protocol analyzer in network management?
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8. Consider the following report on management information (*configuration information as well as operational data*) for a router's fast ethernet interface

```
Router# show interfaces fastethernet 5/4
FastEthernet5/4 is up, line protocol is up
Hardware is Cat6K 100Mb Ethernet, address is 0050.f0ac.3058 (bia 0050.f0ac.3058)
Internet address is 172.20.52.106/29
MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
Full-duplex, 100Mb/s
ARP type: ARPA, ARP Timeout 04:00:00
Last input 00:00:01, output never, output hang never
Last clearing of "show interface" counters never
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
7 packets input, 871 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
0 input packets with dribble condition detected
8 packets output, 1658 bytes, 0 underruns
0 output errors, 0 collisions, 4 interface resets
0 babbles, 0 late collision, 0 deferred
0 lost carrier, 0 no carrier
0 output buffer failures, 0 output buffers swapped out
Router#
```

Required: As a network manager, you are required to identify and explain the importance of the types of management information depicted by the router interface.