Introduction to Networks

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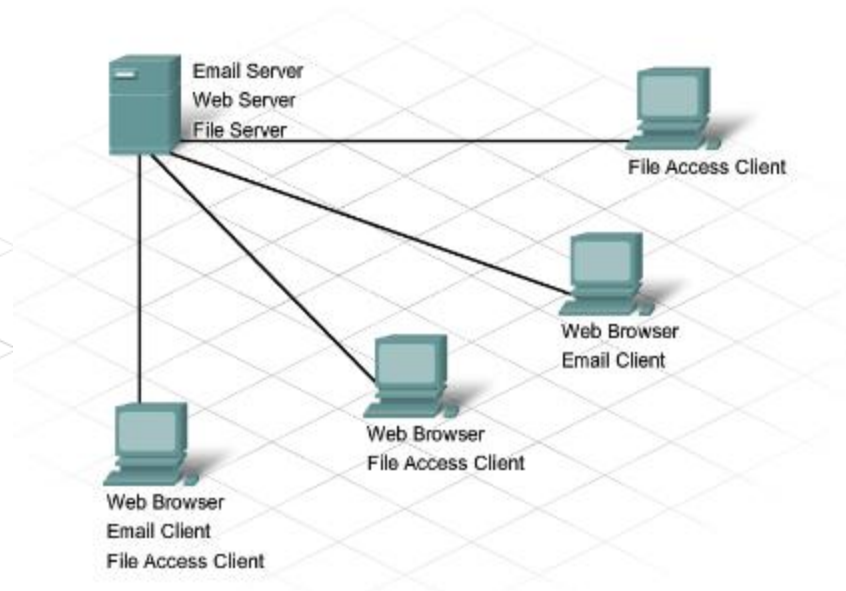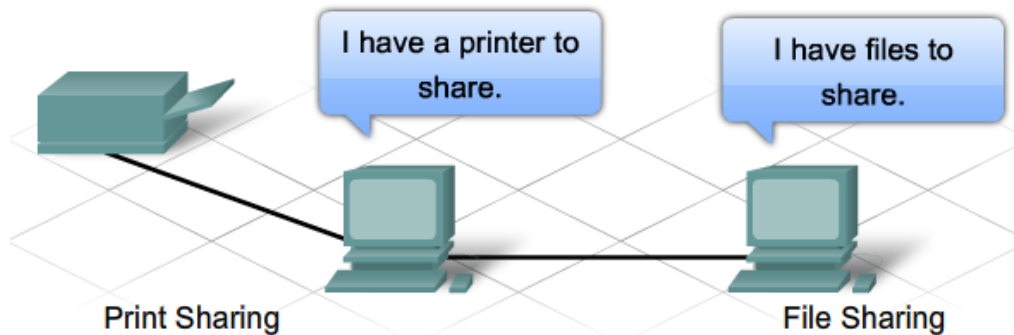http://cisco.uiu.ac.bd

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What is a Network ?

Network:

Enable Data Transfer among nodes.
→ More then two nodes
i.e. Home Network

Types of Networks

The two most common types of network infrastructures are:

- Local Area Network (LAN)

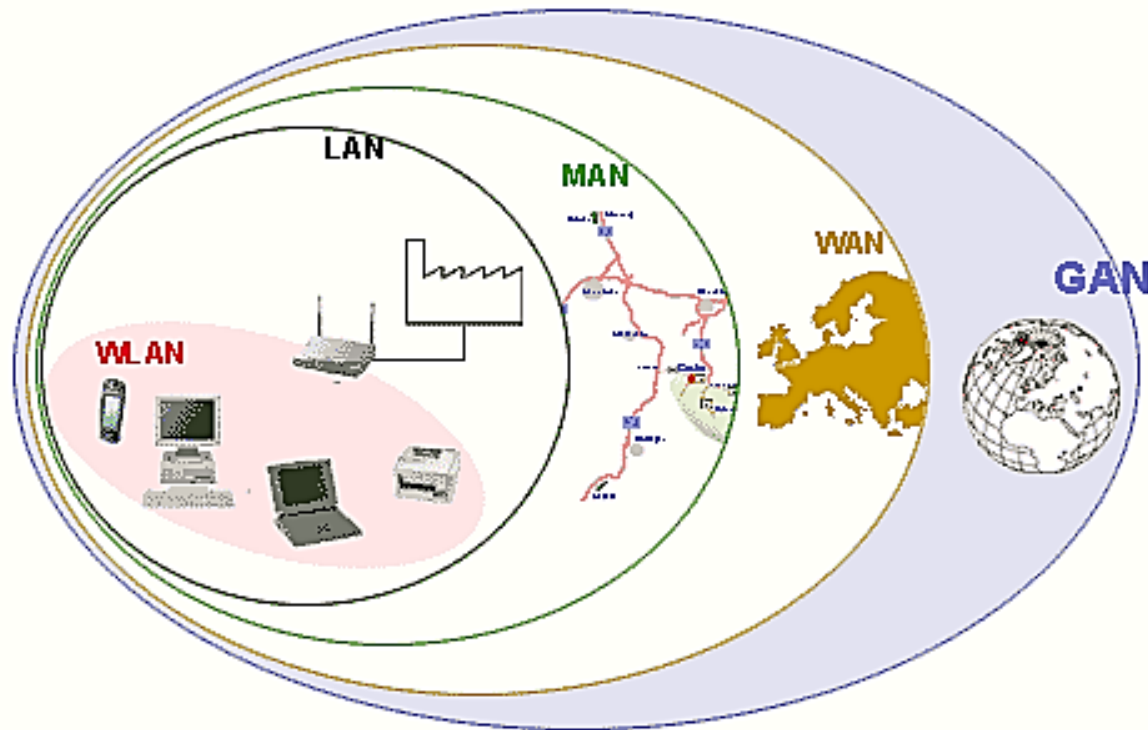- Wide Area Network (WAN).

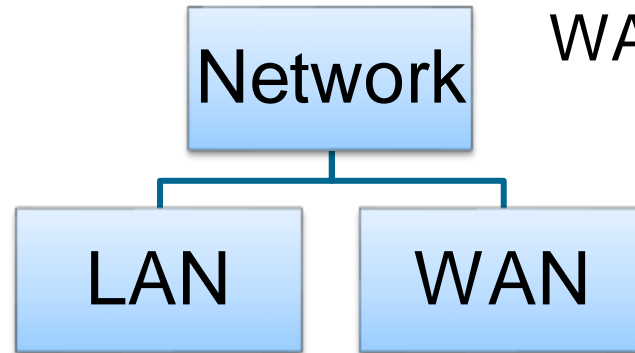Other types of networks include:

- Metropolitan Area Network (MAN)

- Wireless LAN (WLAN)

- Storage Area Network (SAN)

Types of Networks

LAN: Local Area Network
WAN: Wide Area Network

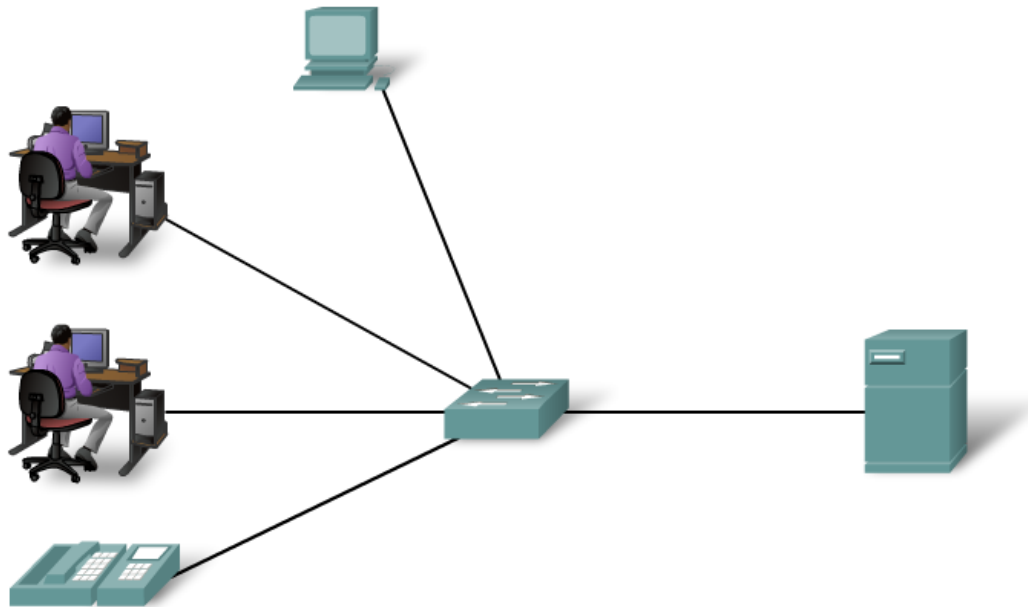# Local Area Networks (LAN)

A network serving a home, building or campus is considered a Local Area Network (LAN).

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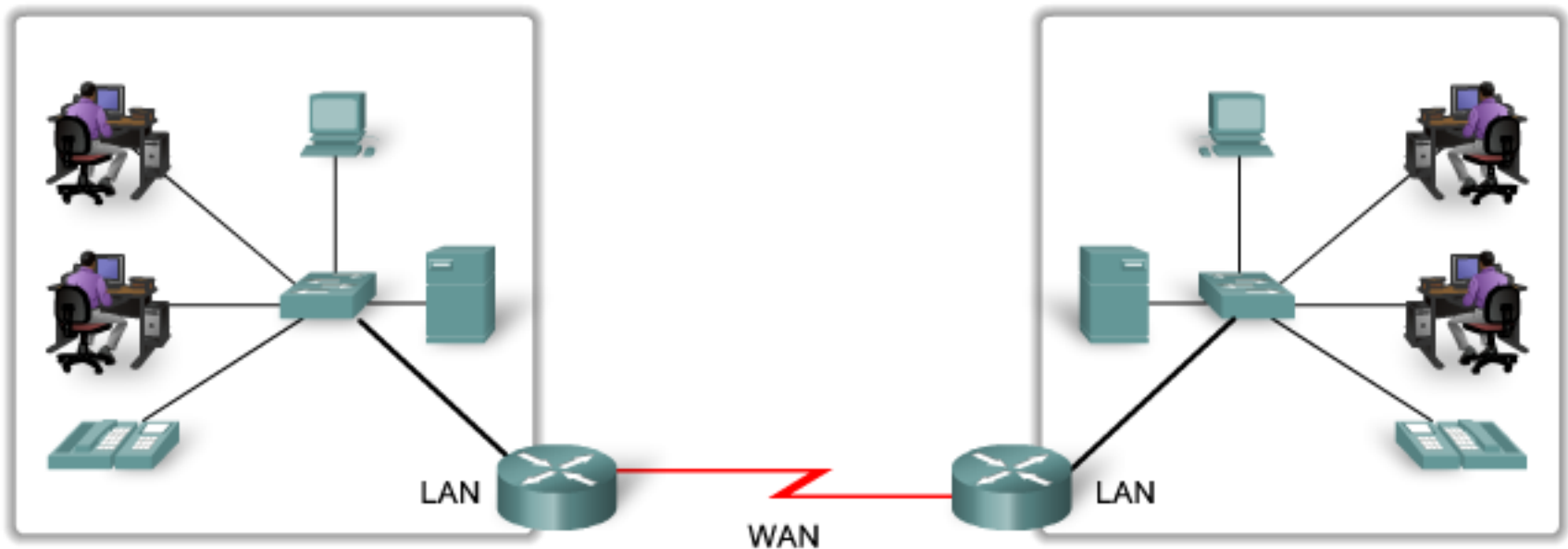
Wide Area Networks (WAN)

LANs separated by geographic distance are connected by a network known as a Wide Area Network (WAN).

Components of a Network
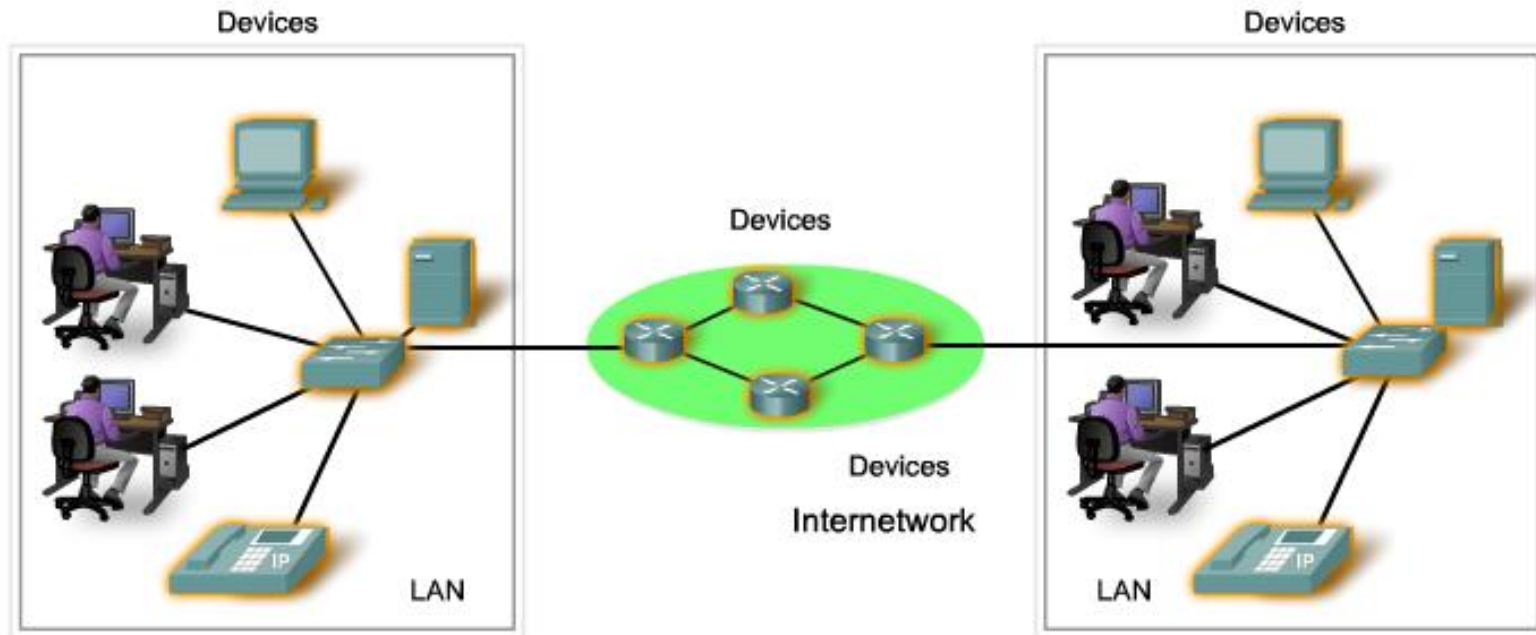
There are three categories of network components:

- Devices

- Media

- Services

Components of a Network

Devices

End Device:

- Computers (work stations (i.e. Desktop ,Laptops), Servers)

- Network printers

- VoIP phones

- TelePresence endpoint

- Security cameras

- Mobile handheld devices (such as smartphones, tablets, PDAs, and wireless debit / credit card readers and barcode scanners)
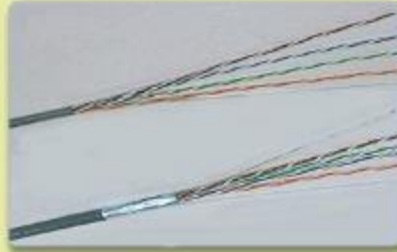
Components of a Network

Devices

Intermediate Device:

- Network Access Devices

  (switches, and wireless access points)

- Internetworking Devices (Routers)

- Security Devices (Firewalls)

Components of a Network

Copper

Fiber Optic

Wireless

Components of a Network
Network Representations

End Devices

Desktop Computer   Laptop   Printer

IP Phone   Wireless Tablet   TelePresence Endpoint

Intermediary Devices

Wireless Router   LAN Switch   Router

Multilayer Switch   Firewall Appliance

Network Media

Wireless Media

LAN Media

WAN Media

Address

Two Type of in Computer Networks

1. Physical Address/MAC Address
→MAC (**M**edia **A**ccess **C**ontrol) is A Unique Identifier
→ 48bits Hexadecimal Address
→ Ex. 00:0a:95:9d:68:16
→ First Three Octets are Manufacturers ID
•**Dell: 00-14-22**
•**Cisco: 00-40-96**

2. Internet Protocol(IP)
Two Types of IP:
→ IPv4: Internet Protocol version 4
• IPv4 Length: 32 bits
→ IPv6: Internet Protocol version 6
• IPv6 Length: 128 bits

Internet Protocol (IP)

Type of IP:
> → IPv4: Internet Protocol version 4
>> • IPv4 Length: 32 bits
> → IPv6: Internet Protocol version 6
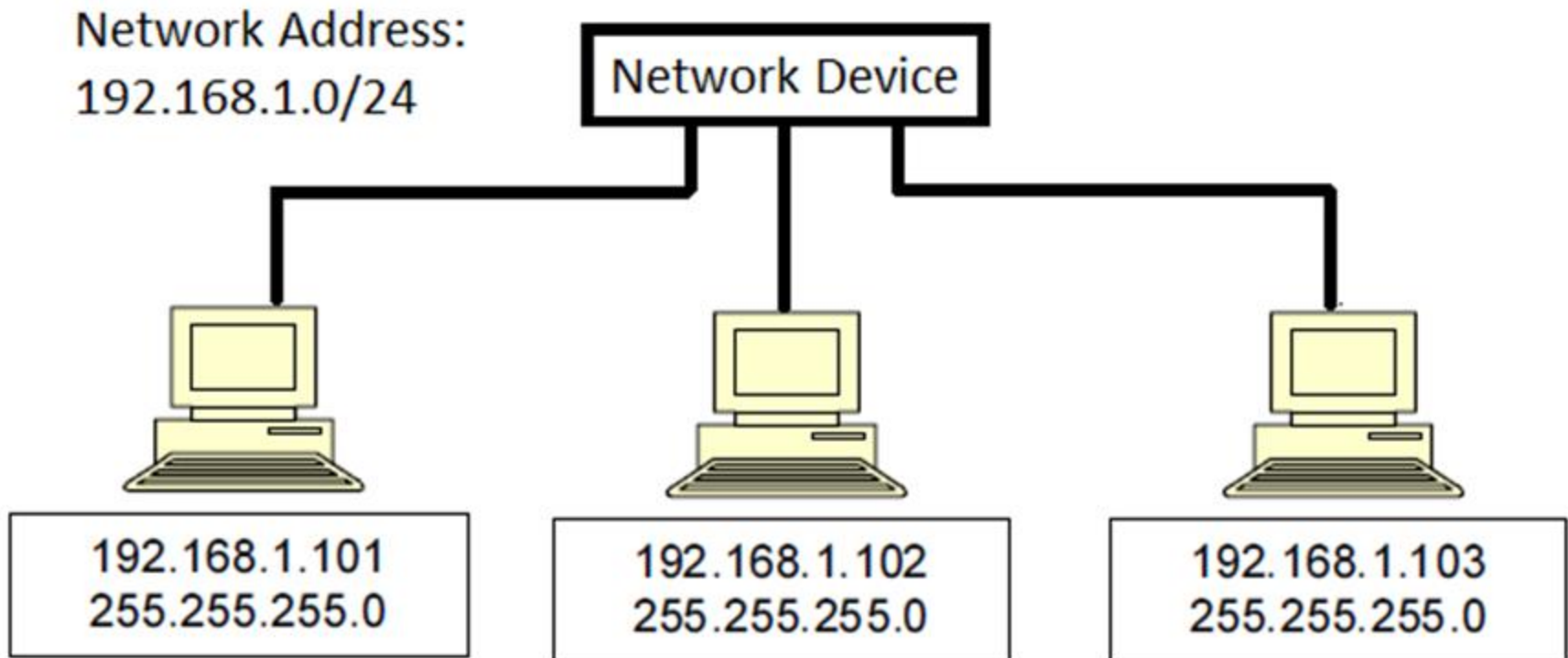>> • IPv6 Length: 128 bits

IPv4 : Dotted Decimal Address
   Ex. 192.168.10.0/24

IPv6 : Hexadecimal Address separated by colons (:)
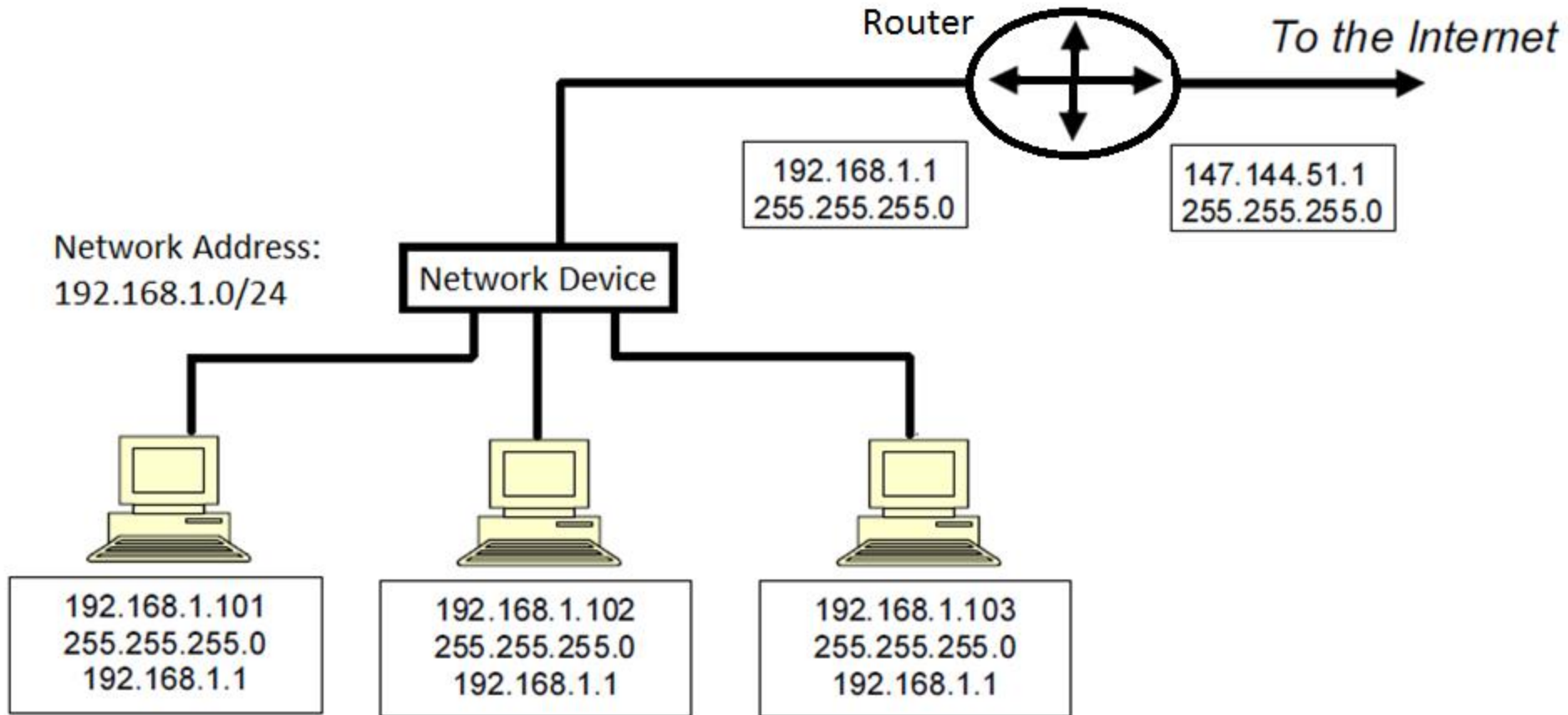   Ex. 2001:0db8:85a3:0000:0000:8a2e:0370:7334/64

LAN

Network Address:
192.168.1.0/24

Network Device

192.168.1.101
255.255.255.0

192.168.1.102
255.255.255.0

192.168.1.103
255.255.255.0

LAN

Some PC Commands

→ Computer Network configuration
→ Connectivity Test : ping(Packet Internet Groper) command

PC command:

Ifconfig
Ifconfig /all
Ping
tracert

Thank You