# Addressing

What is meant by addressing?

Assignment of an identifying address to each node on a network

How are network nodes assigned addresses?

Using automatically using a DHCP server, or manually

What is an address?

A way of identifying a node and locating a node on a network.

What is a MAC address?

Media access control address

Unique identifier assigned to network interfaces for communication over the physical network segment

Used by several common LAN technologies (ethernet, WI-FI)

Assigned by makers of NIC

What is the difference between a MAC and an IP address?

# Routing

What is meant by routing?

Directing of packets between nodes either within one network or located in different networks.

How is traffic passed between subnets / networks?

Using routers

When the routing prefix of a source address differs from the routing prefix of a target address, traffic must be routed between the networks using a special gateway called a router.

If the routing prefix is the same, packets may be directly sent to other hosts on the network.

Are routers used in local routing?

No, they are bypassed completely

Aside from routing traffic between networks, what other purpose does a router serve?

# Ethernet

What is Ethernet?

A family of network computing technologies used for LAN’s

How has ethernet evolved?

Has been improved to support longer links and higher bit-rates

How is data transmitted over Ethernet?

Using frames.

Original transmission medium was coaxial cable, later migrated to fiber and twisted pair.

# IP Network

What is an IP network?

# Data

How is data transmitted within and between networks?

In an IP ethernet network, data is transmitted using frames

How is a frame structured?

Contains source and destination addresses and error checking data to support retransmission

# Concepts

Subnetting

# Terms

Network prefix

Portion of an ip address indicating the common network all subnets belong to

Subnet number

Following the network prefix, identifies the subnet.

Subnet mask

TODO

Routing prefix

The first address of a network followed by a slash and count of bytes referred to by the address.

For example 192.169.1/24

Router

Special gateway computer

Manages traffic between networks.

Each subnet is managed by a single gateway router

Default gateway

IP packet

Host portion

Specifies an individual host on a subnet or network.

Network address

IP Network

WI-FI

An alternative LAN technology to Ethernet

Non-wired

Subnet

The network to which a host belongs

A portion of a larger network

Networks can be divided into smaller networks, which is called subnetting

Ethernet segment

Network switch

Bridge

Segment

NIC

network interface controller