

Introduction to Computer Networking

The TCP/IP Five-Layer Network Model

The Basics of Networking Devices

The Physical Layer

The Data Link Layer

Graded Assessments

Reading: Module 1 Glossary

10 min

Reading: Graded Plugin

10 min

Quiz: Layers in Networking Models

1 question

Quiz: Networking Basics

12 questions

Module 1 Glossary

New terms and their definitions: Course 2 Week 1

Bit: The smallest representation of data that a computer can understand

Border Gateway Protocol (BGP): A protocol by which routers share data with each other

Broadcast: A type of Ethernet transmission, sent to every single device on a LAN

Broadcast address: A special destination used by an Ethernet broadcast composed by all Fs

Cable categories: Groups of cables that are made with the same material. Most network cables used today can be split into two categories, copper and fiber

Cables: Insulated wires that connect different devices to each other allowing data to be transmitted over them

Carrier-Sense Multiple Access with Collision Detection (CSMA/CD): CSMA/CD is used to determine when the communications channels are clear and when the device is free to transmit data

Client: A device that receives data from a server

Collision domain: A network segment where only one device can communicate at a time

Computer networking: The full scope of how computers communicate with each other

Copper cable categories : These categories have different physical characteristics like the number of twists in the pair of copper wires. These are defined as names like category (or cat) 5, 5e, or 6, and how quickly data can be sent across them and how resistant they are to outside interference are all related to the way the twisted pairs inside are arranged

Crosstalk: Crosstalk is when an electrical pulse on one wire is accidentally detected on another wire

Cyclical Redundancy Check (CRC): A mathematical transformation that uses polynomial division to create a number that represents a larger set of data. It is an important concept for data integrity and is used all over computing, not just network transmissions

Data packet: An all-encompassing term that represents any single set of binary data being sent across a network link

Datalink layer: The layer in which the first protocols are introduced. This layer is responsible for defining a common way of interpreting signals, so network devices can communicate

Destination MAC address: The hardware address of the intended recipient that immediately follows the start frame delimiter

Duplex communication: A form of communication where information can flow in both directions across a cable

Ethernet: The protocol most widely used to send data across individual links

Ethernet frame: A highly structured collection of information presented in a specific order

EtherType field: It follows the Source MAC Address in a dataframe. It's 16 bits long and used to describe the protocol of the contents of the frame

Fiber cable: Fiber optic cables contain individual optical fibers which are tiny tubes made of glass about the width of a human hair. Unlike copper, which uses electrical voltages, fiber cables use pulses of light to represent the ones and zeros of the underlying data

Five layer model: A model used to explain how network devices communicate. This model has five layers that stack on top of each other: Physical, Data Link, Network, Transport, and Application

Frame check sequence: It is a 4-byte or 32-bit number that represents a checksum value for the entire frame

Full duplex: The capacity of devices on either side of a networking link to communicate with each other at the exact same time

Half-duplex: It means that, while communication is possible in each direction, only one device can be communicating at a time

Hexadecimal: A way to represent numbers using a numerical base of 16

Hub: It is a physical layer device that broadcasts data to everything computer connected to it

Internet Protocol (IP): The most common protocol used in the network layer

Internet Service Provider (ISP): A company that provides a consumer an internet connection

Internetwork: A collection of networks connected together through routers - the most famous of these being the Internet

Line coding: Modulation used for computer networks

Local Area Network (LAN): A single network in which multiple devices are connected

MAC(Media Access Control) address: A globally unique identifier attached to an individual network interface. It's a 48-bit number normally represented by six groupings of two hexadecimal numbers

Modulation: A way of varying the voltage of a constant electrical charge moving across a standard copper network cable

Multicast frame: If the least significant bit in the first octet of a destination address is set to one, it means you're dealing with a multicast frame. A multicast frame is similarly set to all devices on the local network signal, and it will be accepted or discarded by each device depending on criteria aside from their own hardware MAC address

Network layer: It's the layer that allows different networks to communicate with each other through devices known as routers. It is responsible for getting data delivered across a collection of networks

Network port: The physical connector to be able to connect a device to the network. This may be attached directly to a device on a computer network, or could also be located on a wall or on a patch panel

Network switch: It is a level 2 or data link device that can connect to many devices so they can communicate. It can inspect the contents of the Ethernet protocol data being sent around the network, determine which system the data is intended for and then only send that data to that one system

Node: Any device connected to a network. On most networks, each node will typically act as a server or a client

Octet: Any number that can be represented by 8 bits

Organizationally Unique Identifier (OUI): The first three octets of a MAC address

OSI model: A model used to define how network devices communicate. This model has seven layers that stack on top of each other: Physical, Data Link, Network, Transport, Session, Presentation, and Application

Patch panel: A device containing many physical network ports

Payload: The actual data being transported, which is everything that isn't a header

Physical layer: It represents the physical devices that interconnect computers

Preamble: The first part of an Ethernet frame, it is 8 bytes or 64 bits long and can itself be split into two sections

Protocol: A defined set of standards that computers must follow in order to communicate properly is called a protocol

Router: A device that knows how to forward data between independent networks

Server: A device that provides data to another device that is requesting that data, also known as a client

Simplex communication: A form of data communication that only goes in one direction across a cable

Source MAC address: The hardware address of the device that sent the ethernet frame or data packet. In the data packet it follows the destination MAC address

Start Frame Delimiter (SFD): The last byte in the preamble, that signals to a receiving device that the preamble is over and that the actual frame contents will now follow

Transmission Control Protocol (TCP): The data transfer protocol most commonly used in the fourth layer. This protocol requires an established connection between the client and server

Transport layer: The network layer that sorts out which client and server programs are supposed to get the data

Twisted pair cable: The most common type of cabling used for connecting computing devices. It features pairs of copper wires that are twisted together

Unicast transmission: A unicast transmission is always meant for just one receiving address

User Datagram Protocol (UDP): A transfer protocol that does not rely on connections. This protocol does not support the concept of an acknowledgement. With UDP, you just set a destination port and send the data packet

Virtual LAN (VLAN): It is a technique that lets you have multiple logical LANs operating on the same physical equipment

VLAN header: A piece of data that indicates what the frame itself is. In a data packet it is followed by the EtherType

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