

# COMPUTER NETWORKS FOUNDATIONS

## Computer Networks

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# Outline

- 1 Classification
- 2 Communication
- 3 Standard Models
- 4 Security



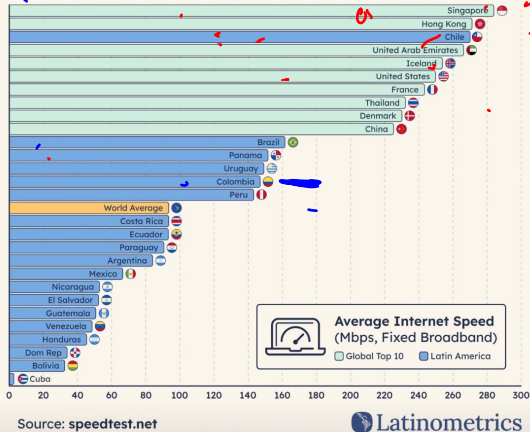
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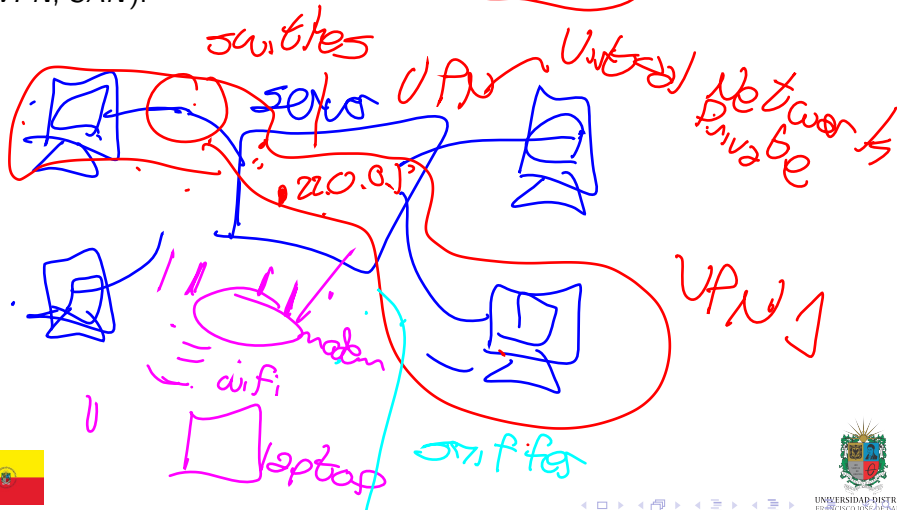
# LATAM Internet Speed

Chile's internet speed is faster than yours



# Basic Classification

**Classification** depends on geographical distribution or services shared (VPN, SAN).



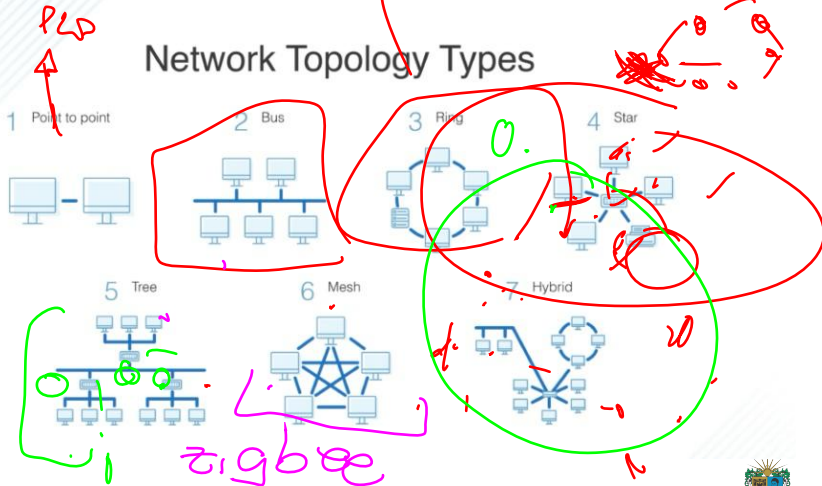
# Work Area Classification

Work area Classification depends on network size and geographical distribution. In this case, we have: PAN, LAN, MAN, and WAN.

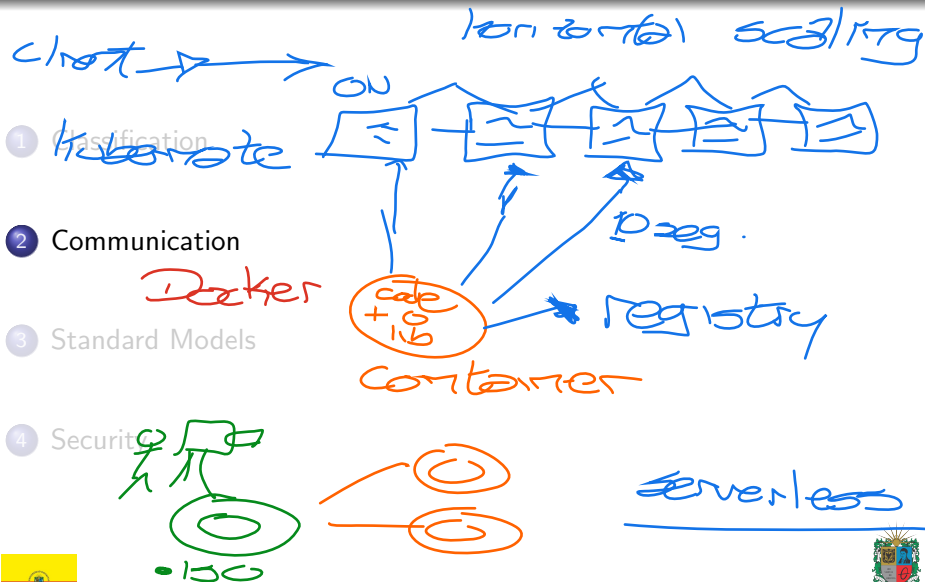
PAN → Personal Area Networks  
 LAN → Local Area Networks  
 MAN → Medium Area Networks  
 WAN → Wide area networks



# Network Topologies



# Outline

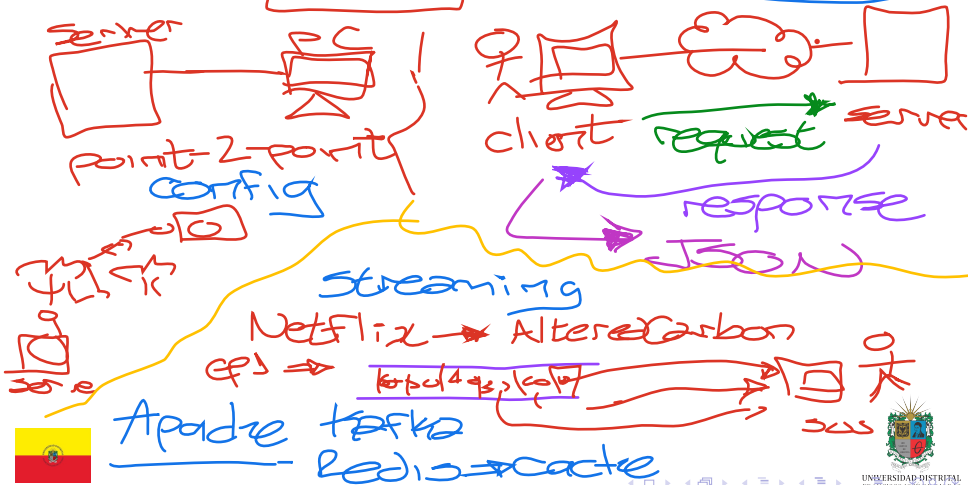




# Communication Models

Communication models must be chosen depending of domain needs.

Typical models are: point-to-point, client-server, and publish-subscribe.



# Communication Standards

First at all, protocols are defined as set of standardized rules. There are two types of protocols: de facto and de jure.

manufacturers

Organizations

IPv4

voice-2-voice

IPv6  
(2007)

250<sup>4</sup>



# Outline

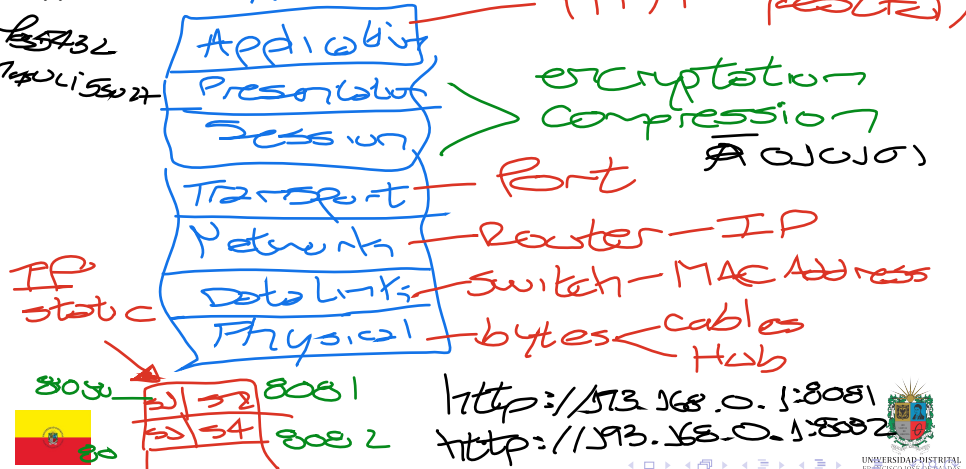
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## OSI Model

The Signal and the Noise

Open Systems Interconnection (OSI) model describes seven layers: physical, data link, network, transport, session, presentation, and application.



http://193.168.0.1:8081  
http://193.168.0.1:8082



# DoD Model

Department of Defense (DoD) model describes four layers: *application*, *transport*, *internet*, and *network access*.



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# Networks Security

Protocol and standard **compliance** protects data, resources and networks. Important aspects here are: *interoperability*, *security baseline*, and *vulnerability management*.



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# Thanks!

## Questions?



Repo: <https://github.com/EngAndres/ud-public/tree/main/courses/computer-networking>

