# M1. The Internet

Explain the OSI model, how is it related to the Internet Protocol Stack (5 layers). Explain Circuit and Packet switching (pros and cons, how do they diﬀer?)

The OSI model (Open System Interconnection)  
Is an expansion of the Internet Protocol  
 Added 2 layers (7 layers)  
 Presentation, Session

Both models (OSI and Internet Protocol)  
 Layers, which all represent some sort of service  
 Think of the airport protocol

* Application layer
  + Function: Network process to application
  + HTTP, SMTP, FTP, DNS
  + Used to exchange information between two end systems with the same protocol, called *messages*
* Presentation layer (OSI)
  + Function: Interprets the data, so the applications won’t have to
* Session Layer (OSI)
  + Function: Synchronization, ensures that the connection is withhold, establish connection if it’s lost.
* Transport layer
  + Function: “Administration”
  + TCP (Transport Control Protocol)
    - Connects applications got flow control and congestion control
    - Ensures no packages are lost
  + UDP (User Datagram Protocol)
    - Doesn’t ensure that all packages have been received, speed!
    - Used to connect streams, YouTube
* Network layer
  + Function: The postman
  + Passes transport layer segment (information) to the destination host
* Link layer
  + Function: Links nodes on a package route
* Physical layer
  + Function: Transports entire frames from one network element to the next network element
  + Moves the individual bits within the frame from one node to the next.

## Circuit and package switching:

### Circuit switching

Establish a connection before sending information.  
Creates a dedicated connection, without interruption, removes most delays.  
Establishing connection is time consuming, and only one at the time on each frequency. (Telefon metode)

**Pros**No disturbance  
Almost no delay

**Cons**Only one connection at the time

### Package switching

Splits data in packages sent over a network, routers analyzes packages and sends them in the correct direction.

**Pros**Better traffic usage  
Relatively small delays in routers

**Cons**Data is more likely to get lost.