Week 35 - Tuesday

**Fundamental Network Topics**

You can do most of the exercises in this document by yourself, but they are meant as exercises with a supplementary discussion in the class, so you will gain a lot more from participating in the class.

Understanding Basic Network Terms like IP, TCP/IP, DNS, DHCP and more.

Most of these exercises are meant to be answered with text, so write down your reply so you will remember.

* What is your public IP address right now, and how did you find it?
  + 5.179.80.204, via ip4.me
* What is your private IP address right now (do this both at home and in school), and who/what gave you that address?
  + School: 10.50.131.26
    - Windows powerShell – ipconfig
* What’s special about these address ranges?
  + **Reserved private IPv4 network ranges**
* 10.0.0.0 – 10.255.255.255
  + 24 bits: single class A network
* 172.16.0.0 – 172.31.255.255
  + 20 bit block: 16 contiguous class B networks
* 192.168.0.0 – 192.168.255.255
  + 16 bit block: 256 contiguous class C networks
* What’s special about this ip-address: 127.0.0.1?
  + IPv4 address called localhost
* What kind of service would you expect to find on a server using these ports: 22, 23, 25, 53, 80, 443?
  + 22: bruges til sikker login
  + 23: Telnet protocol—unencrypted text communication
  + 25: Simple Mail Transfer Protocol (SMTP),[10][24] used for email routing between mail servers
  + 53: Domain Name System (DNS)
  + 80: Hypertext Transfer Protocol (HTTP), Hyppigt anvendt (usikker) web-protokol
  + 443: Hyppigt anvendt krypteret (sikker) web-protokol
    - Hypertext Transfer Protocol over TLS/SSL (HTTPS)
* What is the IP address of studypoints.info and how did you find it?
  + 157.230.21.145, via “tracert”
* If you write https://studypoints.info in your browser, how did “it” figure out that it should go to the IP address you discovered above?
  + The DNS gets the ip and then sends you there.
* Explain shortly the purpose of an ip-address and a port-number and why we need both
  + Ip address, is an identification for your computer, like an id-card.
  + a port is a logical construct that identifies a specific process or a type of network service.
* What is your (nearest) DNS server?
  + 5.179.80.211
  + Nianet A/S
* What is (conceptually) the DNS system and the purpose with a DNS Server?
  + When you browse to a URL (website address), the DNS server tells your web browser where to go (the address on the internet where that website is found).
* What is your current Gateway, and how did you find it?
  + 10.50.128.1, by writing: ipconfig | findstr /i "Gateway" in commands
* What is the address of your current DHCP-Server, and how did you find it?
  + 10.255.1.9, by writing: ipconfig /all | find /i “DHCP Server”
* Explain (conceptually) about the TCP/IP-protocol stack
  + It has 4 layers
    - Application layer
    - Transport layer
    - Internet layer
    - Network access layer
  + Starting from the first layer the data moves downwards and over to the receiver.
* Explain about the HTTP Protocol (the following exercises will go much deeper into this protocol)
  + Connectionless
  + Media independent
  + This protocol stateless
  + Request / responses
* Explain (conceptually) how HTTP and TCP/IP are connected (what can HTTP do, and where does it fit into TCP/IP)
  + HTTP uses TCP, whilst requesting and responding between web-client and web server.
  + Non-persistent
  + Persistent