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? (**I used the website ipconfig.me to get my public ip, and its 212.237.134.91. )**

* What is your private IP address right now (do this both at home and in school), and who/what gave you that address? **192.168.0.10, found it by typing ipconfig into my computer**
* What’s special about these address ranges?
* 10.0.0.0 – 10.255.255.255
* 172.16.0.0 – 172.31.255.255
* 192.168.0.0 – 192.168.255.255 **Theyre all private ip addresses. They are the ranges which private ip addresses go.**
* What’s special about this ip-address: 127.0.0.1? **it’s the IPv4 address called localhost or loopback address.**
* What kind of service would you expect to find on a server using these ports: 22, 23, 25, 53, 80, 443? **(22 is safe data transfer, same with 23. 25** **is for email, 53 is for dns. I mean basically its all data transfer in some way or another.**
* What is the IP address of studypoints.dk and how did you find it? **165.227.137.75, I used traceroute for mac to receive the ip address.**
* If you write https://studypoints.dk in your browser, how did “it” figure out that it should go to the IP address you discovered above?

Explain shortly the purpose of an ip-address and a port-number and why we need both **IP address is address of the system in the Network. Port is address of the service within the System.**

* What is your (nearest) DNS server,? **198.168.0.1**

What is (conceptually) the DNS system and the purpose with a DNS Server? **:  
DNS (Domain Name Server) is mainly used to convert human meaningful name (domain name) to computer meaningful name (IP address) in Internet. This is because computers can only recognize IP addresses.**

* What is your current Gateway, and how did you find it? **192.168.0.1, I used the terminal command: route get default | grep gateway**
* What is the address of your current DHCP-Server, and how did you find it? **192.168.0.1, I used the command scutil --dns | grep 'nameserver\[[0-9]\*\]'**

Explain (conceptually) about the TCP/IP-protocol stack **A set of network protocol layers that work together. The OSI Reference Model that defines seven protocol layers is often called a stack, as is the set of TCP/IP protocols that define communication over the internet. The term stack also refers to the actual software that processes the protocols.**

Explain about the HTTP Protocol (the following exercises will go much deeper into this protocol) **HTTP functions as a**[**request–response**](https://en.wikipedia.org/wiki/Request%E2%80%93response)**protocol in the client–server computing model. A**[**web browser**](https://en.wikipedia.org/wiki/Web_browser)**, for example, may be the *client* and an application running on a computer**[**hosting**](https://en.wikipedia.org/wiki/Host_(network))**a**[**website**](https://en.wikipedia.org/wiki/Website)**may be the *server*.**

* Explain (conceptually) how HTTP and TCP/IP are connected (what can HTTP do, and where does it fit into TCP/IP)

**TCP is a transport-layer protocol, and HTTP is an application-layer protocol that runs over TCP.**