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, found it by using external app on my computer. The only ip
* **What is your private IP address right now (do this both at home and in school), and who/what gave you that address?**
  + 10.50.137.162, giving be NAT, found it by checking my network settings.
  + The access point/ router at our school
* **What’s special about these address ranges?** Private ip addresses with different classes which is called subnets.
* **10.0.0.0 – 10.255.255.255**
  + Single class A, 24-bit
* **172.16.0.0 – 172.31.255.255**
  + Class B, 20-bit
* **192.168.0.0 – 192.168.255.255**
  + Class C, 16-bit
* **What’s special about this ip-address: 127.0.0.1?**
  + Also goes by the variable name localhost. It’s also known as a private address because it’s starting with 127.
* **What kind of service would you expect to find on a server using these ports: 22, 23, 25, 53, 80, 443?**
  + Port 22 - Secure Shell (SSH)
  + Port 23 - Telnet Protocol
  + Port 25 - Mail (SMTP)
  + Port 53 - Domain Name System (DNS)
  + Port 80 - HTTP
  + Port 443 - HTTPS over TLS/SSL
* **What is the IP address of studypoints.dk and how did you find it?**
  + Doesn’t have an IP or isn’t a server.
* **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?**
  + N/A
* **Explain shortly the purpose of an ip-address and a port-number and why we need both**
  + Ip-address is for a device or server which is unique. Port-number is which protocol we want to use. Which rules that works for the ip we are trying to reach or contact.
* **What is your (nearest) DNS server?**
  + Nianet server.
* **What is (conceptually) the DNS system and the purpose with a DNS Server?**
  + When you type in [www.facebook.com](http://www.facebook.com) in your browser and for it to find the ip-address connected to that server it uses DNS system.
* **What is your current Gateway, and how did you find it?**
  + 10.0.1.1, found it by checking my network settings.
* **What is the address of your current DHCP-Server, and how did you find it?**
  + 10.0.1.1, Same as above.
* **Explain (conceptually) about the TCP/IP-protocol stack**
  + So, it is the layers that happens when we for example search for a website that then goes through the DNS server being used. Then it goes to the next layer, which is the transport layer, which is either TCP or UDP. Then it continues to the next layer and so on.
* **Explain about the HTTP Protocol (the following exercises will go much deeper into this protocol)**
  + It’s a client to server protocol, where the client makes a request to the server which then sends back a response. The HTTP is a stateless protocol which means that it doesn’t remember the last input of the client request. It is also in the application layer.
* **Explain (conceptually) how HTTP and TCP/IP are connected (what can HTTP do, and where does it fit into TCP/IP)**
  + See the answer above.