CCNA 3 Lab 1 Instructions

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Part 1. Physical and logical network design

Step a) Physical topology

- Placement of wiring closets
  - In office: One for each floor or one for the whole building?
  - In factory: Is one enough (max. 100 m with copper cabling)?
- Cabling
  - Building regulation: at least two connections per work place (use more!)
  - Between office building wiring closets: both copper UTP and multi-mode fiber can be considered
  - Between office and factory building: multi-mode fiber (or a repeater?)

Step b) Devices

- No one right answer… Today, network design tends to be more switch centric. Do we have public servers or have we outsourced them? Do we need a firewall? How many routers we need? Is the edge router owned by us or by the ISP?

Step c) IP addressing

- Start with the logical groups: managers, an accounting team, a design and office team and a production team → at least 4 VLANs (however, you want to prepare for the future and there might be some technical needs for extra VLANs – how about the management VLAN, for example)

Part 2. Selecting the device models

- Check the Cisco materials in NetAcad
  - Chapter 1.2.1.X describes the switches
  - Chapter 1.2.2.X describes the routers
- Think about the **switch requirements in your environment** based on your topology plan
  - Port density
  - Forwarding rate
  - Do you need PoE? If yes, where?
  - Do you need multilayer switches? If yes, where?
- Also think about the **router requirements**
  - Where are they placed? How many ports do each of them need? Copper/fiber?
  - What kind of security features?

- Look for the devices in some web shop, for example Amazon, CDW, Router-Switch.com, etc.

Part 3. Implementing the network with Packet Tracer

- Build your network in practice with Packet Tracer
  - Every group member should build one floor of the plan
  - Each floor is built on a separate computer and stored in a separate Packet Tracer file

- Remember to include both physical and logical topology
  - Use the **Physical** and **Logical Workspace** (SHIFT+P and SHIFT+L) in Packet Tracer

- Use the Packet Tracer **Multiuser connection** functionality to connect the computers together (use the Packet Tracer Help, online Tutorial, or Google for instructions)

- Remember to do all basic network configurations (hostnames, IP addresses, routing)
  - No need for security-related configurations!

- When ready, all the devices should be able to ping each other (also over the Multiuser connection between the physical computers)

Tunne huominen - All for the future.