

Computer networks - Administration 1DV202 – Lab 1

Network design, implementation, configuration and documentation

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Instructions

Organisation and implementation

The assignment should be completed over the duration of the first part of the course. Dates are given in the subtasks in the assignment.

Preparations

Before you attend the labs, discussions or seminars linked to the assignment you have to make relevant preparations. This may include, but is not limited to, the following:

- Questions answered and reflected upon
- An understanding of the techniques used discussed
- The look-up of terms

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1 Introduction

This is the first lab, it will be divided into four subtasks which should be finished at the given dates.

2 Scenario

The company consists of offices equal to the number of students in the group. Each office has its own switch and router. Every office has two groups of users; administrators (economy, directors ...) and sales personnel. Each office also has a subnet dedicated to IT and the administration of network equipment. The company has one (1) Internet connection on a dedicated router.

2.1 Requirements

Each student should complete the design of his or her LAN with regard to subnetting, separation of users and basic configuration. Each student should also write a short description (max 1 A4 page, 12 pt Times New Roman) describing how the following goals could be obtained in the network (for the whole network):

- Users should have a theoretical Internet access bandwidth of 100 Mbit/s
- Users and equipment belonging to different groups shouldn't share broadcast domain
- The use of IPv4 addresses should be conservative to save addresses for later use
- The internal network should enable IPv6 communication
- Internal routers should have redundant connections to other offices

2.2 Equipment

Each student will have access to and be responsible for:

- One switch (Cisco Catalyst 2950, 2960 or 3560) – 24 ports 100 Mbps Ethernet
- One router (Cisco 2611 or 2811) – 2 ports 100 Mbps Ethernet and minimum 2 ports serial WAN connection

Each device has the ports described available. Each group of students (3-4 persons) will have one extra router (same as above) for the Internet connection (the "Internet" is the local lab-network "CSlab" in Kalmar).

3 Task 1 – completed to the 12th of April

This is an individual task.

Create a physical and logical design for your office and the routed parts of the network (ignoring the other offices LANs). This design should include information detailing how devices are to be interconnected and relevant information about protocols and addressing. This design will be discussed during the lab.

4 Task 2 – completed to the 15th of April

This is an individual task.

Create an implementation and configuration plan for you office and routed parts of the network (ignoring the other offices LANs). This plan will be used during the lab.

5 Task 3 – should be completed in Kalmar during the lab

This task has two subtasks.

5.1 Subtask A

This is an individual task.

Turn your plan for the office network into a functioning network with the help of your design (Task 1) and your plan (Task 2).

5.2 Subtask B

This is a group task.

Connect the offices and connect the offices to the “Internet”. Examine routing tables, MAC address tables and how traffic moves through the network.

6 Task 4 – completed to the 19th of April

This is an individual task.

Document the network with the help of your plan (Task 2), design (Task 1) and experience from the implementation (Task 3). Pay extra attention to deviation from the plan or design and document the reasons for making the changes.