Mittuniversitetet
MID SWEDEN UNIVERSITY

DT153G Network Technology A

Homework Assignment 2

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Contents

Aids Course literature, dictionary and lecture materials.

Maximum points 30

Questions 7

Homework assignment 2

This homework assignment is part of the second half of the course Network Technology A.

1 Aim

After completion of Homework II, you will have shown that you:

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- Are able to identify the various componentes of VLAN.
- Can describe the difference between static and dynamic routes.
- Know when it is more suitable to use a static route over a dynamic route and vice versa.
- Have an understanding of the IPv6 address hierarchy and address allocation.

2 Reading Instructions

Before being able to finish Homework II, you must have read [1, Chapters 1-11], and attended or read all the lectures given in the second part of this course. *After a lecture you should be able to answer one or more questions found in this homework assignment. Therefore make a habit of after you have read a chapter or attended a lecture, check the homework assignment and see if you can answer some of its questions.*

3 Tasks

(3p) 1. 'The only difference between an expensive switch and a cheap one is the number of ports and what layer it works on'. *Explain why this statement is wrong, and what the differences are between a layer 2, 3 or 4 switch.*

(2p) 2. (a) Explain about the two ethernet standards that are used on a modern VLAN compatible switch today.

(2p) (b) In the context of VLAN, explain when these ethernet standard are used. Your explanation should contain VLAN tagging and VLAN trunking.

(2p) 3. Inform about the *two types of attacks on VLANs* that are mentioned in the course literature, and *how to protect the network from those attacks.*

(2p) 4. *Explain the difference between routed ports and SVI, and in what situations it is suitable to use them.*

(2p) 5. *What are the four main types of static routes and when each type is used.*

6. With regards to the topology shown in Figure 1 on the next page.

(2p) (a) Calculate what path the packets will take when sent from a LAN connected to router A to network connected to router F, when the routing protocol in use is RIPv2.

(2p) (b) What will the cost of this path(RIPv2) be?

(2p) (c) Calculate what path the packets will take when sent from router A to router F, when the routing protocol in use is OSPF.

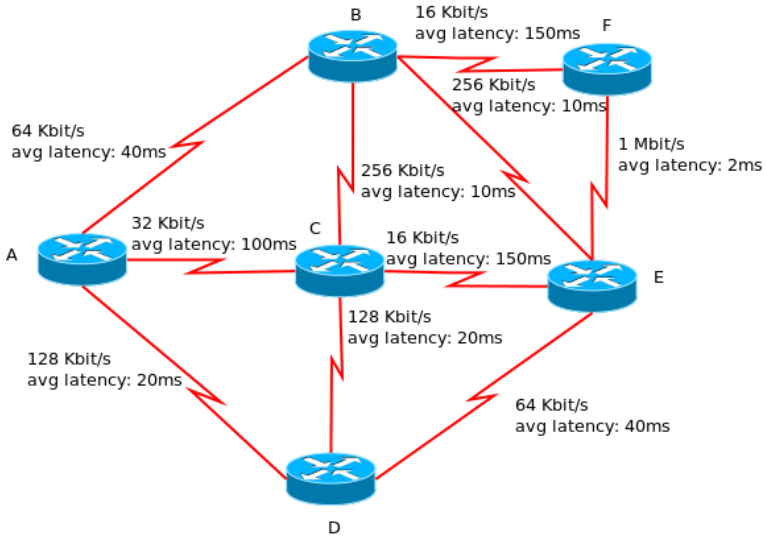

Figure 1: Network topology over company routers.

(2p) (d) What will the cost of this path(OSPF) be? Assume that the correct bandwidth has been configured.

(2p) (e) Which routing protocol do you think would be suitable for this network, if they would choose to continue running a routing protocol.

(2p) (f) Based on your new knowledge about the network, would it be better to configure static routes or use a routing protocol?

7. *IPv6* can self generate the suffix to create a unique IP-address, *EUI-64, or to just randomly generate the last 64 bits*). *'Then what is the point with DHCPv6??*

(2p) (a) Give an explanation of how the address hierachy of IPv6 is built.

(1p) (b) Inform about Stateless Address Autoconfiguration (SLAAC)

(1p) (c) Inform about SLAAC with DHCPv6

(1p) (d) Finally explain stateful DHCPv6.

4 Submissions

This assignment should not be submitted, instead each question will be discussed during a tutoring session.

References

[1] Scott Empson and Cheryl Schmidt. *Routing and Switching Essentials – Companion Guide*. Cisco Press, 2014. ISBN: 978-1-58713-320-6.