

Test 2: NET3011 – Advanced Switching

Winter 2013

Time: 50 minutes; Test scored out of: 45 Total Marks available: up to 48
(Allocation of marks is shown beside each question)

Instructions:

1. **BEFORE** answering any questions, please check that your copy of the test has all pages (as indicated in the footer at the bottom of each page). Please read all questions carefully, then answer question 0 first!
2. This is a closed book test. No textbooks, notes, electronic devices, or any other aids are permitted. (The only exception is ASL interpreters.)
3. Make note of multi-part questions! Hints or answers *may* be available to assist you with later parts, but you will *not* get any credit for the parts where help is given.
4. If you are uncertain what a question is asking, make reasonable assumptions, write those assumptions down on this test paper, and continue answering the question.

0. What is your:

NAME? _____

Student Id? _____

(Continued on next page)

6. Consider the following configuration commands:

```
SwMain(config)# vlan 12
SwMain(config-vlan)# private-vlan community
SwMain(config-vlan)# vlan 14
SwMain(config-vlan)# private-vlan isolated
SwMain(config-vlan)# vlan 16
SwMain(config-vlan)# private-vlan community
SwMain(config-vlan)# vlan 10
SwMain(config-vlan)# private-vlan primary
SwMain(config-vlan)# private-vlan association 12,14,16

SwMain(config-vlan)# interface fastethernet 0/10
SwMain(config-if)# switchport mode private-vlan promiscuous
SwMain(config-if)# switchport private-vlan mapping 10 12,14

SwMain(config-if)# interface fastethernet 0/11
SwMain(config-if)# switchport mode private-vlan promiscuous
SwMain(config-if)# switchport private-vlan mapping 10 12,16

SwMain(config-if)# interface range fastethernet 0/12 - 13
SwMain(config-if)# switchport mode private-vlan host
SwMain(config-if)# switchport private-vlan host-association 10 12

SwMain(config-if)# interface range fastethernet 0/14 - 15
SwMain(config-if)# switchport mode private-vlan host
SwMain(config-if)# switchport private-vlan host-association 10 14

SwMain(config-if)# interface range fastethernet 0/16 - 17
SwMain(config-if)# switchport mode private-vlan host
SwMain(config-if)# switchport private-vlan host-association 10 16
```

- a. [3 marks] Draw a **clear** diagram showing the logical organization created by the configuration above.

- b. [5 marks] Assume: devices **A, B, ... F** are connected to ports **fa0/12, fa0/13, ... fa0/17**, consecutively; devices **X & Y** are connected to **fa0/10 & fa0/11**, all of which are “up/up”.
Important: marks will be deducted for incorrect answers so **NO** guessing!
- b.1. A ping originating from host X (fa0/10) could successfully reach which host(s)?

 - b.2. A ping originating from host Y (fa0/11) could successfully reach which host(s)?

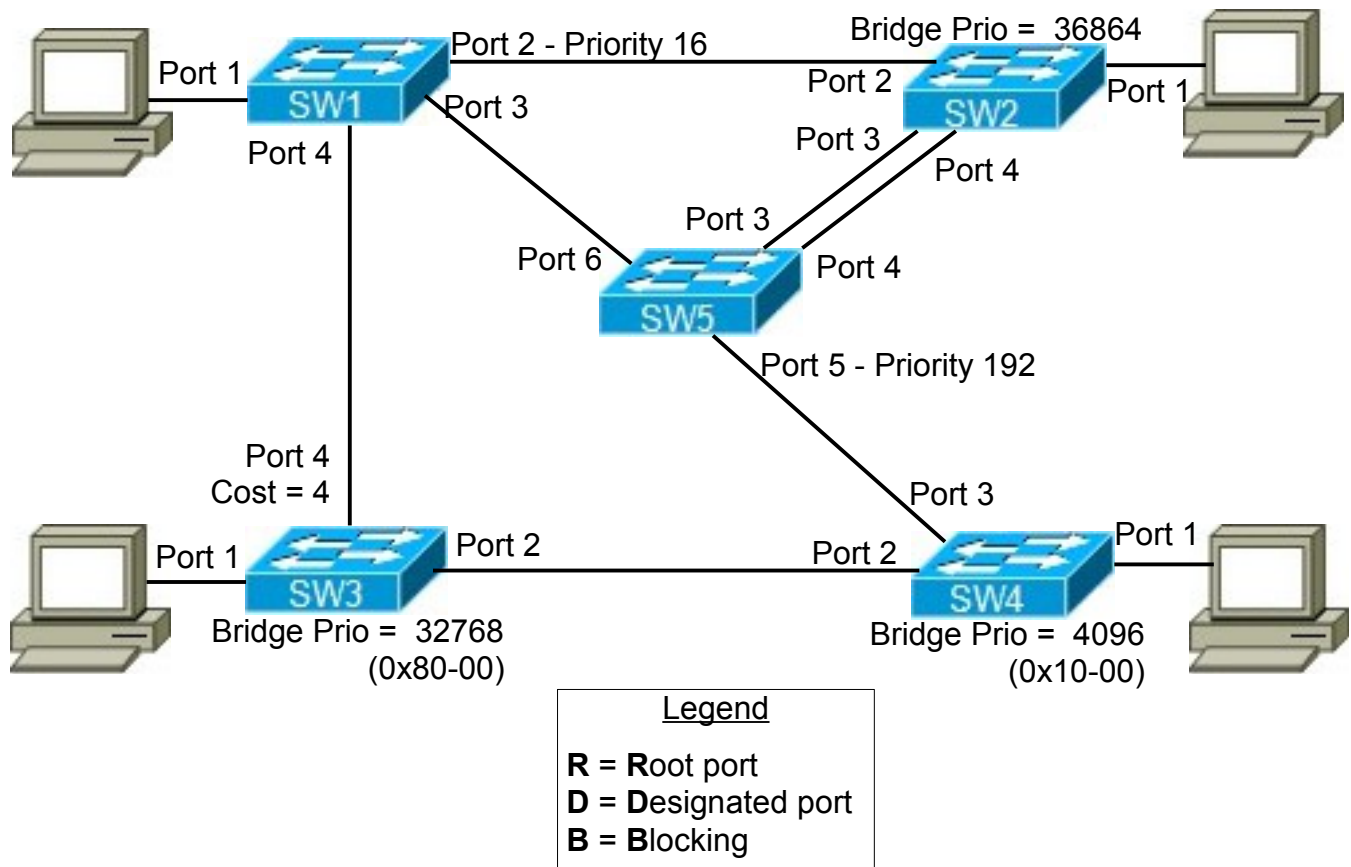
 - b.3. A ping originating from host A (fa0/12) could successfully reach which host(s)?

 - b.4. A ping originating from host C (fa0/14) could successfully reach which host(s)?

 - b.5. A ping originating from host E (fa0/16) could successfully reach which host(s)?
- c. [3 marks] Give real-world examples for each category of device in the above scenario.

7. [3 marks] **Clearly** explain the **difference(s)** and **similarity(ies)** between Etherchannel and Flexlink connections. Under what circumstances (at what moments) would the two be acting "identically"?

8. Study the diagram below carefully. Assume 100 Mb links, all priorities and other values are at their **default**, and MAC ID of SW(n) is 00-nn-nn-nn-nn-nn, unless otherwise shown.



- A. [1 mark] Circle the root bridge.
- B. [5 marks] Label the diagram with the state of all ports after the network has converged.
- C. [2 marks] What is the **exact BID** for Switch 1? **Clearly** state any required assumptions.
- D. [1 mark] After convergence, an administrator connects to SW5 and types:
`Sw5(config)# spanning-tree vlan 1 root primary`
 What is the new priority for Switch 5?
- E. [1 mark] Later we decide that for Switch2, the **cost** associated with the link for port 4 should be 10. **Where** should that value be set?
- F. [1 mark] Later we decide that for Switch 2, the **port priority** used for STP calculations should be 112. **Where** should that value be set?
- G. [1 mark] What is the **port priority** for port 6 on Switch 5?

9. **A.** [2 marks] **Clearly** explain the attack that the command: `switchport port-security` is designed to protect against. (ie. What does the attacker do?)

B. [2 marks] There are two possible consequences of the above attack. **Clearly** explain both of them. (ie. What does the attacker get? What happens in the network?)

C. [3 marks] There are three possible responses once `switchport port-security` has been activated. **Name** each of the responses and **clearly** explain what each does.

10. **A.** [1 marks] Some people describe VLAN hopping as a "one-way" or "unidirectional" attack. **Clearly** explain the reason for this description.

B. [1 mark] Give an example of another attack that can be used in conjunction with a VLAN hopping attack (ie. an attack that works even in "one-way" or "unidirectional" situations).

11. **A.** [3 marks] There are **three** Spanning Tree enhancements that provide both additional network stability **and** extra security against hackers. **Name** and **clearly** describe each of the three enhancements. **Clearly** differentiate any similar enhancements.

B. [1 mark] Which of the above enhancements work for **both** 802.1D and 802.1w ?

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Additional work, notes, or rough work