

Assignment 3: Network Security

This assignment is due on Wednesday 19th December, 2018 at 11:59 pm. Late submissions will be penalised by 15% per day. If you have a conflict due to travel, interviews, etc., please plan accordingly and turn in your assignment early.

Introduction

This assignment will introduce you to the common network protocols, security techniques, and basic CISCO IOS configurations and commands.

Objective

- Gain exposure to core network protocols and concepts
- Gain exposure to security techniques
- Practice the network configuration using the CISCO IOS configurations and commands using CISCO Packet Tracer software

Read this first

This assignment asks you to write the answers in ENGLISH. Plagiarism, paraphrasing and downloading large amounts of information from external sources, will not be tolerated and will be dealt with severely. Although you should make full use of any source material, which would normally be an occasional sentence and/or paragraph (referenced) followed by your own critical analysis/evaluation, you will receive no marks for work that is not your own. Your work may be subject to checks for originality which can include use of an electronic plagiarism detection service.

1. (50 pts, 5 pts each) Write a brief paragraph to explain each of the following terms. Clearly note the source of your answer (paper, web page, text book, etc.).
 - a. security zone
 - b. message authentication
 - c. VPN
 - d. IPsec
 - e. certificate-based authentication
2. (30 pts) Draw a network diagram for each of the following scripts. Explain what each of the scripts would accomplish.
 - a. switch & vlan

```
hostname Switch-B
vtp mode transparent
vlan 10 name Engineering
vlan 20 name Sales
vlan 30 name Marketing
interface range fastEthernet0/1 - 16
    switchport mode access
    switchport access vlan 10
interface range fastEthernet0/17 - 32
    switchport mode access
    switchport access vlan 20
interface range fastEthernet0/33 - 48
    switchport mode access
    switchport access vlan 30
interface vlan 10
    ip address 192.168.10.1 255.255.255.0
```

b. switches & routers

```
! L3-Switch-A Configuration
hostname L3-Switch-A
ip routing
ip multicast-routing
interface fastEthernet0/1
    no switchport
    ip address 10.2.1.1 255.255.0.0
    ip pim dense-mode
interface fastEthernet0/2
    no switchport
    ip address 10.3.1.1 255.255.0.0
    ip pim dense-mode
interface fastEthernet0/3
    no switchport
    ip address 10.1.1.1 255.255.0.0
    ip pim dense-mode
```

```

router eigrp 10
 network 10.0.0.0
! L3-Switch-B Configuration
hostname L3-Switch-B
ip routing
ip multicast-routing
interface fastEthernet0/1
 no switchport
 ip address 10.2.1.2 255.255.0.0
 ip pim dense-mode
interface fastEthernet0/2
 no switchport
 ip address 10.4.1.2 255.255.0.0
 ip pim dense-mode
interface fastEthernet0/3
 no switchport
 ip address 10.5.1.2 255.255.0.0
 ip pim dense-mode
interface fastEthernet0/4
 no switchport
 ip address 10.6.1.1 255.255.0.0
 ip pim dense-mode
router eigrp 10
 network 10.0.0.0
! Router-B Configuration
hostname Router-B
ip routing
interface fastEthernet0/0
 no shutdown
 ip address 10.6.1.10 255.255.0.0
 ip igmp join-group 239.1.1.1
router eigrp 10
 network 10.0.0.0
! Router-C Configuration
hostname Router-C
ip routing
interface fastEthernet0/0
 no shutdown
 ip address 10.5.1.10 255.255.0.0
 ip igmp join-group 239.1.1.1
router eigrp 10
 network 10.0.0.0

```

3. (20 pts) Suppose you are asked to **merge** the switch in script #1 (i.e., Switch-B) with the network in script #2. What additional commands do you need to enter? Show the **complete** script to accomplish this task.