STIJ3044: ROUTING PROTOCOLS AND CONCEPTS

PROJECT 1: Packet Tracer-based Skills Assessment 1 (SBA 1)

DATE: 1 DECEMBER 2020, 10.00 AM

Instructions

SCORING MODEL

This exam is using automatic completion scoring point provided by and set in the Packet Tracer PKA exam file. However, grading is given based on the time to complete the configuration tasks 100% as the following.

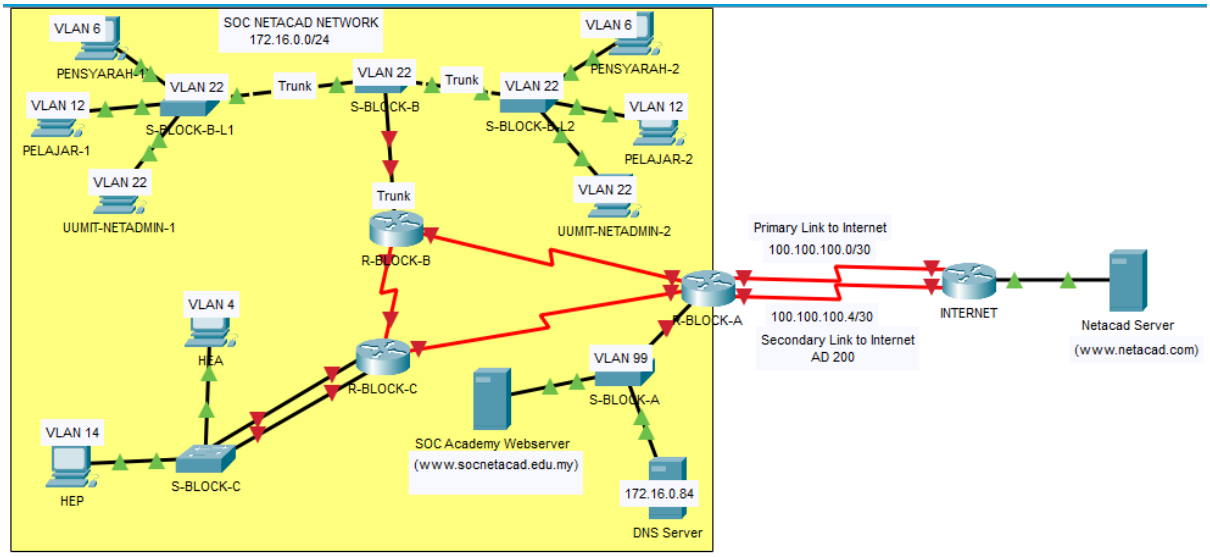
TIME/DURATION TO COMPLETE 100% AND SUBMIT THE CONFIGURATION TASKS	GRADE
1-120 MINUTES	A
121-240 MINUTES	B
241-360 MINUTES	C
361-480 MINUTES	D
481 MINUTES - 24 HOURS	E

NOTE: INCOMPLETE (less than 100%) AND AFTER 24 HOURS SUBMISSION WILL BE GRADED AS ZERO (0).

SUBMISSION OF PACKET TRACER (PKA) EXAM FILE

1. Download and rename the PKA file with your own name and matric number.
2. Open the exam file and complete the user profile before you start your configuration tasks. **NOTE**: DO NOT CHANGE YOUR USER PROFILE AS IT WILL RESET YOUR CONFIGURATION TO ZERO.
3. Save your work from time to time to avoid losing the configuration if power blackout is occurring.
4. E-mail your completed configuration Packet Tracer file to mohdsamsu@yahoo.com. Use the PKA file name as the e-mail subject. **Your submission time is used for the grading**.

Introduction



In this skills assessment, you will configure the SOC Networking Academy (SOC Netacad) network using Packet Tracer. You will perform basic router and switch configuration tasks, address router interfaces and hosts, and configure VLANs, trunking, and routing between VLANs. You will also configure RIPv2 and static routing. For a full list of tasks, see below.

You are <u>not</u> required to configure the following:

- Internet router
- Netacad server (www.netacad.com)
- Hosts/servers attached to S-BLOCK-A

You will be assessed on the following skills:

- IPv4 address subnetting using equal size subnet or Fixed Length Subnet Mask (FLSM)
- Configuration of initial device settings
- Interface addressing
- Configuration of VLANs and trunking
- Routing between VLANs
- Dynamic routing with RIPv2
- Static and default routing
- Switch port security configuration
- Remote switch management configuration

You will configure specific devices with the following:

R-BLOCK-A:

- Hostname configuration
- Interface addressing
- RIPv2 routing

- Default routing to Internet

R-BLOCK-B:

- Hostname configuration
- Interface addressing
- Routing between VLANs
- RIPv2 routing

R-BLOCK-C:

- Hostname configuration
- Interface addressing
- RIPv2 routing

S-BLOCK-A:

- VLAN
- Switchport security

S-BLOCK-B:

- VLANs and trunking
- Management interface

S-BLOCK-B-L1:

- VLANs and trunking
- Management interface

S-BLOCK-B-L2:

- VLANs and trunking
- Management interface

S-BLOCK-C

- VLANs

All Hosts except VLAN 99 hosts/servers:

- IP addresses
- Subnet masks
- Default gateways
- DNS address

Addressing Table

Use the following addresses to configure the network. Some addresses are preconfigured on devices that you are not required to configure and are provided for reference purposes only.

Device	Interface	Host/Interface Address
R-BLOCK-B	S0/0/0	7th subnet, 2nd address
	S0/0/1	9th subnet, 1st address
	G0/0.6	3rd subnet, 1st address
	G0/0.12	4th subnet, 1st address
	G0/0.22	5th subnet, 1st address
S-BLOCK-B	SVI	5th subnet, 2nd address
S-BLOCK-B-L1	SVI	5th subnet, 3rd address
S-BLOCK-B-L2	SVI	5th subnet, 4th address
R-BLOCK-C	S0/0/0	9th subnet, 2nd address
	S0/0/1	8th subnet, 2nd address
	G0/0	1st subnet, 1st address
	G0/1	2nd subnet, 1st address
R-BLOCK-A	S0/0/1	7th subnet, 1st address
	S0/1/0	8th subnet, 1st address
	G0/1	6th subnet, 1st address
	S0/1/1	100.100.100.1/30
	S0/0/0	100.100.100.5/30
PENSYARAH-1	NIC	3rd subnet, last address
PENSYARAH-2	NIC	3rd subnet, 2nd last address
PELAJAR-1	NIC	4th subnet, last address
PELAJAR-2	NIC	4th subnet, 2nd last address
UUMIT-NETADMIN-1	NIC	5th subnet, last address
UUMIT-NETADMIN-2	NIC	5th subnet, 2nd last address
HEA	NIC	1st subnet, last address
HEP	NIC	2nd subnet, last address

VLAN Table

VLAN	Name	Network Address	Port Assignments
4	HEA	1st subnet	S-BLOCK-C: Fa0/1-12, G0/1
14	HEP	2nd subnet	S-BLOCK-C: Fa0/13-24, G0/2
6	PENSYARAH	3rd subnet	S-BLOCK-B-L1: Fa0/6 S-BLOCK-B-L2: Fa0/6 S-BLOCK-B:SVI
12	PELAJAR	4th subnet	S-BLOCK-B-L1: Fa0/12 S-BLOCK-B-L2: Fa0/12 S-BLOCK-B:SVI
22	UUMIT-NETADMIN	5th subnet	S-BLOCK-B-L1: Fa0/22 S-BLOCK-B-L2: Fa0/22 S-BLOCK-B:SVI
99	SERVER	6th subnet	S-BLOCK-A: ALL PORTS

Step 1: IPv4 Address Subnetting

- You are required to subnet the 172.16.0.0/24 address space using equal size subnet or Fixed Length Subnet Mask (FLSM) and assign the subnet address as the following:

- VLAN 4 - HEA: 1st subnet
- VLAN 14 - HEP: 2nd subnet
- VLAN 6 -PENSYARAH: 3rd subnet
- VLAN 12 - PELAJAR: 4th subnet
- VLAN 22 - UUMIT-NETADMIN: 5th subnet
- VLAN 99 - SERVER: 6th Subnet
- R-Block-A to R-Block-B: 7th subnet
- R-Block-A to R-Block-C: 8th subnet
- R-Block-B to R-Block-C: 9th subnet

Step 2: Basic Device Configuration

Complete a basic device configuration on the **R-BLOCK-B** router. Perform the following tasks:

a) Configure the device with the name shown in the addressing table.
b) Configure the VTY ports to only accept connections over SSH. Use the following values:

Domain Name: **cisco.com**
Local Username: **admin**

User Password: **class**
Modulus: **1024**
Version: **2**

The values for your SSH configuration must match these values exactly in order for you to receive credit for your configuration.

Step 3: Interface Addressing of the Routers

Activate and configure all connected interfaces of the **SOC NETACAD** routers with the IP addresses given in the Addressing Table. The G0/0 interface of R-BLOCK-B will be configured later in the assessment.

Step 4: VLANs and Trunking

Configure the **ALL** switches in the SOC NETACAD with VLANs and trunking according to the values in the VLAN table.

a) Add the VLANs to the switches.
b) Name the VLANs exactly as shown in the VLAN table.
c) Configure the links between the S-BLOCK-B-L1, S-BLOCK-B, and S-BLOCK-B-L2 switches as trunks. Configure the link between S-BLOCK-B switch and R-BLOCK-B router as a trunk. All trunking interfaces should be statically configured as trunks.
d) Assign the appropriate ports to the VLANs.

Step 5: Routing Between VLANs

Configure routing between VLANs (inter-VLAN routing) on the R-BLOCK-B router. Use the information in the addressing and VLAN tables.

Step 6: Switch Virtual Interface (SVI) Configuration

Configure the switch virtual management interfaces (SVI) on S-BLOCK-B-L1, S-BLOCK-B, and S-BLOCK-B-L2. Use the information in the addressing and VLAN tables for your configuration. All switches should be reachable from hosts on other networks for the purpose of this assessment.

Step 7: Switch Port Security Configuration

Improve network security by configuring the S-BLOCK-A switch with the following. You are only required to configure these settings on this one switch for this assessment.

a) Disable ALL unused switch ports.
b) Activate port security on all ports that have hosts/servers connected.
c) Allow only a maximum of one MAC addresses to access the active switch ports.
d) Configure the switch ports with static MAC address of the host connected to the port.
e) Configure the switch ports so that, if other hosts are connected to the port, the port must be shutdown

Step 8: Static Routing

Configure static route to Internet on R-BLOCK-A router.

a) Configure static default route on R-BLOCK-A to Internet for the primary link using exit interface.
b) Configure static default route on R-BLOCK-A to Internet for the secondary link using next hop and given administrative value. Refer to the address in the topology and the addressing table.

Step 9: Dynamic Routing

Configure RIPv2 routing on **R-BLOCK-A, R-BLOCK-B and R-BLOCK-C routers**.

a) Configure RIPv2 on **R-BLOCK-A, R-BLOCK-B and R-BLOCK-C** so that all networks are reachable.
b) Configure all LAN interfaces so that RIP updates are not sent out to the LANs. This includes physical and logical interfaces where required.
c) Be sure to use the version of RIP that supports classless routing.
d) Prevent RIP from automatically summarizing networks.
e) Configure RIP to automatically send the default route that you have configured on **R-BLOCK-A above** to **R-BLOCK-B and R-BLOCK-C.**

Step 10: Configure Host Addressing

Address the hosts that are connected to **all switches except S-BLOCK-A** so that they have connectivity to the IP address of the **Cisco NETACAD web server** on the Internet and also **SOC NETACAD web server**. Use the information provided in the Addressing Table and the topology diagram. You should be able to open the **www.netacad.com** and **www.socnetacad.edu.my** using your PT desktop browser from any PCs.