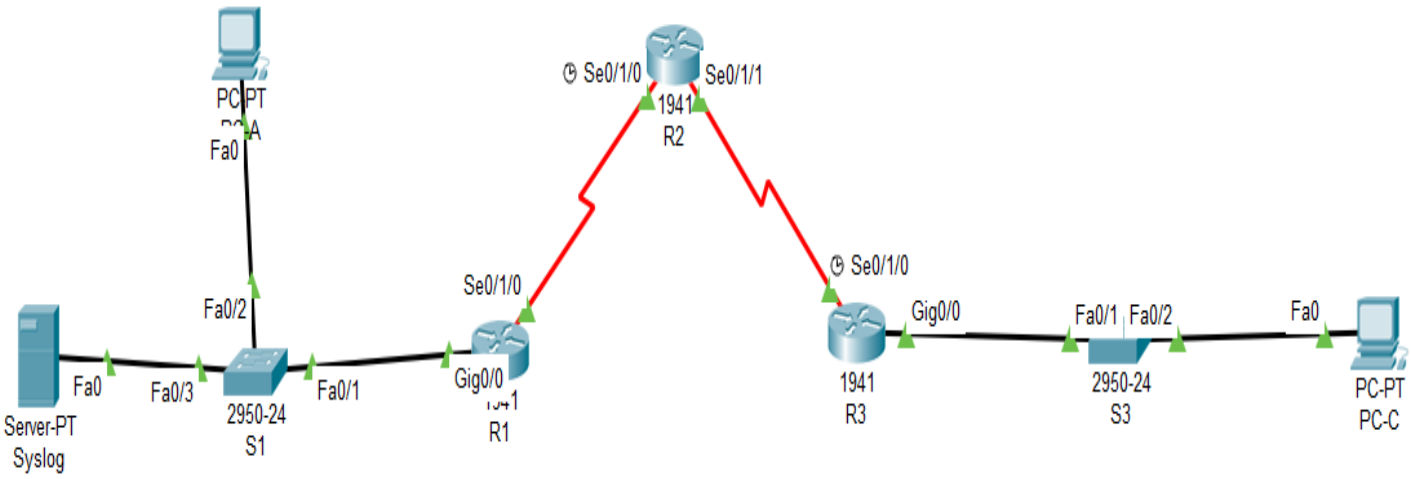
Security In Computing Practical's

Practical 6: Configure IOS Intrusion Prevention System (IPS) Using the CLI

Topology:



Addressing Table:

Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	gig0/0	192.168.1.1	255.255.255.0	N/A
	Se0/1/0	10.1.1.1	255.255.255.252	N/A
R2	Se0/1/0	10.1.1.2	255.255.255.252	N/A
	Se0/1/1	10.2.2.2	255.255.255.252	N/A
R3	gig0/0	192.168.3.1	255.255.255.0	N/A
	Se0/1/0	10.2.2.1	255.255.255.252	N/A
Syslog	NIC	192.168.1.50	255.255.255.0	192.168.1.1
PC-A	NIC	192.168.1.2	255.255.255.0	192.168.1.1
PC-C	NIC	192.168.3.2	255.255.255.0	192.168.3.1

Objectives

- Enable IOS IPS.
- Configure logging.
- Modify an IPS signature.
- Verify IPS

Security In Computing Practical's

Part 1: Configure router

Step 1: Configure secret on router

Execute command on all routers

R(config)# enable secret enpa55

Step 2: Configure console password on router

Execute command on all routers

R(config)# line console 0

R(config-line)# password conpa55

R(config-line)# login

Step 3: Configure SSH login on router

Execute command on all routers

R(config)# ip domain-name ccnasecurity.com

R(config)# username admin secret adminpa55

R(config)# line vty 0 4

R(config-line)# login local

R(config)# crypto key generate rsa

How many bits in the modulus [512]: 1024

Step 4: Configure OSPF on routers

Execute command on router 1

R1(config)#router ospf 1

R1(config-router)# network 192.168.1.0 0.0.0.255 area 0

R1(config-router)# network 10.1.1.0 0.0.0.3 area 0

Execute command on router 2

R2(config)#router ospf 1

R2(config-router)# network 10.1.1.0 0.0.0.3 area 0

R2(config-router)# network 10.2.2.0 0.0.0.3 area 0

Execute command on router 3

R3(config)#router ospf 1

R3(config-router)# network 10.2.2.0 0.0.0.3 area 0

R3(config-router)# network 192.168.3.0 0.0.0.255 area 0

Part 2: Enable IOS IPS

Step 1: Enable the Security Technology package

R1# show version

```
Technology Package License Information for Module:'c1900'

-----------------------------------------------------------------
Technology     Technology-package          Technology-package
               Current        Type         Next reboot
-----------------------------------------------------------------
ipbase         ipbasek9       Permanent    ipbasek9
security       None           None         None
data           None           None         None
```

(When command "show version" is given the above result comes, remember for further practical's)

R1(config)# license boot module c1900 technology-package securityk9

(Type yes)

R1# copy run start

R1# reload

R1# show version

```
Technology Package License Information for Module:'c1900'

-----------------------------------------------------------------
Technology     Technology-package          Technology-package
               Current        Type         Next reboot
-----------------------------------------------------------------
ipbase         ipbasek9       Permanent    ipbasek9
security       securityk9     Evaluation   securityk9
data           disable        None         None
```

Security In Computing Practical's

(When command "show version" is given again the above result comes to check If security is enabled or not, remember for further practical's)

Step 2: Verify network connectivity

PCA> ping 192.168.3.2

(Successful)

PCC> ping 192.168.1.2

(Successful)

Step 3: Create an IOS IPS configuration directory in flash.

R1# mkdir ipsdir

Create directory filename [ipsdir]? <Enter>

Step 4: Configure the IPS signature storage location.

R1(config)# ip ips config location flash:ipsdir

Step 5: Create an IPS rule

R1(config)# ip ips name iosips

Step 6: Enable logging.

R1(config)# ip ips notify log

R1# clock set hr:min:sec date month year

R1(config)# service timestamps log datetime msec

R1(config)# logging host 192.168.1.50

Step 7: Configure IOS IPS to use the signature categories.

R1(config)# ip ips signature-category

R1(config-ips-category)# category all

R1(config-ips-category-action)# retired true

R1(config-ips-category-action)# exit

R1(config-ips-category)# category ios_ips basic

R1(config-ips-category-action)# retired false

R1(config-ips-category-action)# exit

R1(config-ips-cateogry)# exit

Do you want to accept these changes? [confirm] <Enter>

Step 8: Apply the IPS rule to an interface.

R1(config)# int gig0/0

R1(config-if)# ip ips iosips out

Step 9: Use show commands to verify IPS.

R1# show ip ips all

(Output)

Step 10: View the syslog messages.

Click the Syslog server->Services tab-> SYSLOG

(Output)

Part 3: Modify the Signature

Step 1: Change the event-action of a signature.

R1(config)# ip ips signature-definition

R1(config-sigdef)# signature 2004 0

R1(config-sigdef-sig)# status

R1(config-sigdef-sig-status)# retired false

R1(config-sigdef-sig-status)# enabled true

R1(config-sigdef-sig-status)# exit

R1(config-sigdef-sig)# engine

R1(config-sigdef-sig-engine)# event-action produce-alert

R1(config-sigdef-sig-engine)# event-action deny-packet-inline

R1(config-sigdef-sig-engine)# exit

R1(config-sigdef-sig)# exit

R1(config-sigdef)# exit

Do you want to accept these changes? [confirm] <Enter>

Step 2: Use show commands to verify IPS.

R1# show ip ips all

(Output)

Step 3: Verify that IPS is working properly.

PCC> ping 192.168.1.2(Unsuccessful – Request timed out)

PCA> ping 192.168.3.2(Successful)

Step 4: View the syslog messages.

Click the Syslog server->Services tab-> SYSLOG