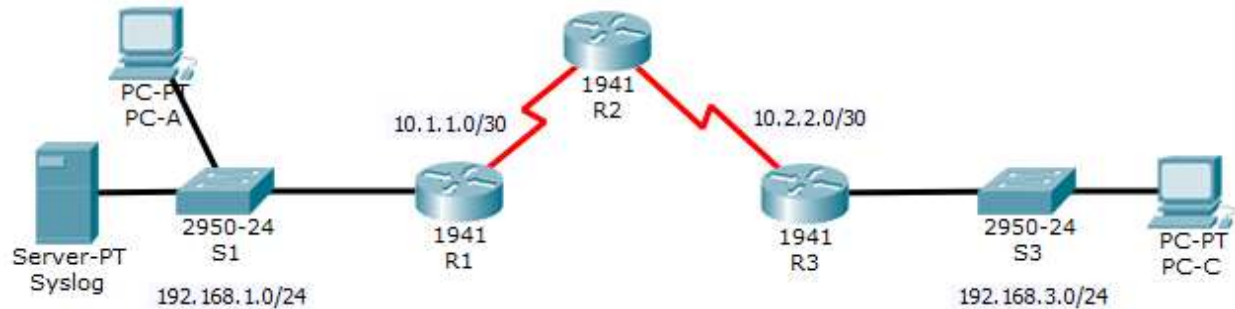


# Packet Tracer - Configure IOS Intrusion Prevention System (IPS) Using the CLI

## Topology



## Addressing Table

| Device | Interface    | IP Address   | Subnet Mask     | Default Gateway | Switch Port |
|--------|--------------|--------------|-----------------|-----------------|-------------|
| R1     | G0/1         | 192.168.1.1  | 255.255.255.0   | N/A             | S1 F0/1     |
|        | S0/0/0       | 10.1.1.1     | 255.255.255.252 | N/A             | N/A         |
| R2     | S0/0/0 (DCE) | 10.1.1.2     | 255.255.255.252 | N/A             | N/A         |
|        | S0/0/1 (DCE) | 10.2.2.2     | 255.255.255.252 | N/A             | N/A         |
| R3     | G0/1         | 192.168.3.1  | 255.255.255.0   | N/A             | S3 F0/1     |
|        | S0/0/0       | 10.2.2.1     | 255.255.255.252 | N/A             | N/A         |
| Syslog | NIC          | 192.168.1.50 | 255.255.255.0   | 192.168.1.1     | S1 F0/2     |
| PC-A   | NIC          | 192.168.1.2  | 255.255.255.0   | 192.168.1.1     | S1 F0/3     |
| PC-C   | NIC          | 192.168.3.2  | 255.255.255.0   | 192.168.3.1     | S3 F0/2     |

## Objectives

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

## Background / Scenario

Your task is to enable IPS on R1 to scan traffic entering the 192.168.1.0 network.

The server labeled Syslog is used to log IPS messages. You must configure the router to identify the syslog server to receive logging messages. Displaying the correct time and date in syslog messages is vital when using syslog to monitor the network. Set the clock and configure the timestamp service for logging on the routers. Finally, enable IPS to produce an alert and drop ICMP echo reply packets inline.

The server and PCs have been preconfigured. The routers have also been preconfigured with the following:

- o Enable password: **ciscoenpa55**
- o Console password: **ciscoconpa55**
- o SSH username and password: **SSHadmin / ciscosshpa55**
- o OSPF 101

### Part 1: Enable IOS IPS

**Note:** Within Packet Tracer, the routers already have the signature files imported and in place. They are the default xml files in flash. For this reason, it is not necessary to configure the public crypto key and complete a manual import of the signature files.

#### Step 1: Enable the Security Technology package.

- On **R1**, issue the **show version** command to view the Technology Package license information.
- If the Security Technology package has not been enabled, use the following command to enable the package.

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

- Accept the end user license agreement.
- Save the running-config and reload the router to enable the security license.
- Verify that the Security Technology package has been enabled by using the **show version** command.

#### Step 2: Verify network connectivity.

- Ping from **PC-C** to **PC-A**. The ping should be successful.
- Ping from **PC-A** to **PC-C**. The ping should be successful.

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

On **R1**, create a directory in flash using the **mkdir** command. Name the directory **ipsdir**.

#### Step 4: Configure the IPS signature storage location.

On **R1**, configure the IPS signature storage location to be the directory you just created.

#### Step 5: Create an IPS rule.

On **R1**, create an IPS rule name using the **ip ips name name** command in global configuration mode. Name the IPS rule **iosips**.

#### Step 6: Enable logging.

IOS IPS supports the use of syslog to send event notification. Syslog notification is enabled by default. If logging console is enabled, IPS syslog messages display.

- Enable syslog if it is not enabled.
- If necessary, use the **clock set** command from privileged EXEC mode to reset the clock.
- Verify that the timestamp service for logging is enabled on the router using the **show run** command. Enable the timestamp service if it is not enabled.
- Send log messages to the syslog server at IP address 192.168.1.50.

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

Retire the **all** signature category with the **retired true** command (all signatures within the signature release).  
Unretire the **IOS\_IPS Basic** category with the **retired false** command.

### Step 8: Apply the IPS rule to an interface.

Apply the IPS rule to an interface with the **ip ips name direction** command in interface configuration mode.  
Apply the rule outbound on the G0/1 interface of **R1**. After you enable IPS, some log messages will be sent to the console line indicating that the IPS engines are being initialized.

**Note:** The direction **in** means that IPS inspects only traffic going into the interface. Similarly, **out** means that IPS inspects only traffic going out of the interface.

## Part 2: Modify the Signature

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

Un-retire the echo request signature (signature 2004, subsig ID 0), enable it, and change the signature action to alert and drop.

### Step 2: Use show commands to verify IPS.

Use the **show ip ips all** command to view the IPS configuration status summary.

To which interfaces and in which direction is the **iosips** rule applied?

### Step 3: Verify that IPS is working properly.

- a. From **PC-C**, attempt to ping **PC-A**. Were the pings successful? Explain.
  
- b. From **PC-A**, attempt to ping **PC-C**. Were the pings successful? Explain.

### Step 4: View the syslog messages.

- a. Click the **Syslog** server.
- b. Select the **Services** tab.
- c. In the left navigation menu, select **SYSLOG** to view the log file.

### Step 5: Check results.

Your completion percentage should be 100%. Click **Check Results** to see feedback and verification of which required components have been completed.