Configuring IPS TCP Reset Using IME

Document ID: 44903

Contents

Introduction

This document discusses the configuration of the Intrusion Prevention System (IPS) TCP Reset using the IPS Manager Express (IME). IME and IPS Sensors are used to manage a Cisco router for TCP Reset. When you review this configuration, remember these items:

- Install the Sensor and make sure the Sensor works properly.
- Make the sniffing interface span to the router outside the interface.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on these software and hardware versions:

- Cisco IPS Manager Express 7.0
- Cisco IPS Sensor 7.0(0.88)E3
- Cisco IOS® router with Cisco IOS Software Release 12.4

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

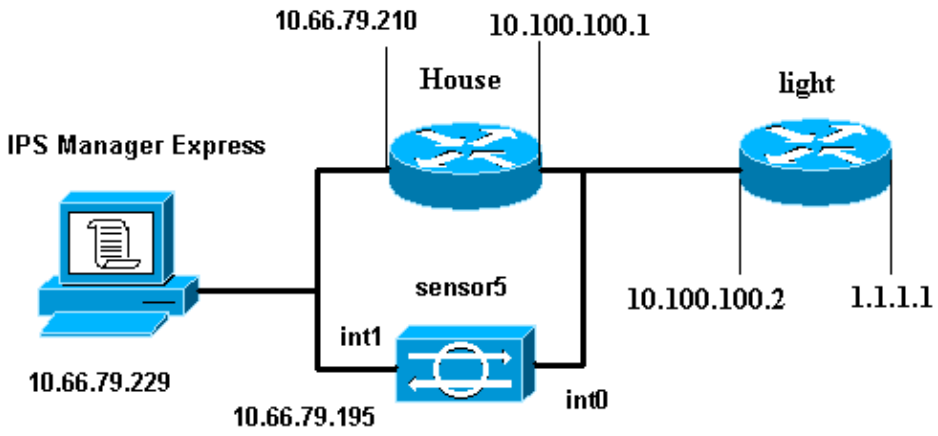
Conventions

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

Configure

Network Diagram

This document uses the network setup shown in this diagram.



Configurations

This document uses the configurations shown here.

- Router Light
- Router House

Router Light

`Current configuration : 906 bytes`
`!`
`version 12.4`
`service timestamps debug uptime`
`service timestamps log uptime`
`no service password-encryption`
`!`
`hostname light`
`!`
`enable password cisco`
`!`
`username cisco password 0 cisco`
`ip subnet-zero`
`!`
`!`
`!`
`ip ssh time-out 120`
`ip ssh authentication-retries 3`
`!`
`call rsvp-sync`
`!`
`!`
`!`

```
fax interface-type modem
mta receive maximum-recipients 0
!
controller E1 2/0
!
!
!
interface FastEthernet0/0
 ip address 10.100.100.2 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 1.1.1.1 255.255.255.0
 duplex auto
 speed auto
!
interface BRI4/0
 no ip address
 shutdown
!
interface BRI4/1
 no ip address
 shutdown
!
interface BRI4/2
 no ip address
 shutdown
!
interface BRI4/3
 no ip address
 shutdown
!
ip classless
ip route 0.0.0.0 0.0.0.0 10.100.100.1
ip http server
ip pim bidir-enable
!
!
dial-peer cor custom
!
!
line con 0
line 97 108
line aux 0
line vty 0 4
 login
!
end
```

Router House

```
Current configuration : 939 bytes
!
version 12.4
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname house
!
logging queue-limit 100
enable password cisco
!
ip subnet-zero
```

```
!
!
no ip cef
no ip domain lookup
!
ip audit notify log
ip audit po max-events 100
!
!
no voice hpi capture buffer
no voice hpi capture destination
!
!
!
!
interface FastEthernet0/0
 ip address 10.66.79.210 255.255.255.224
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 10.100.100.1 255.255.255.0
 duplex auto
 speed auto
!
interface ATM1/0
 no ip address
 shutdown
 no atm ilmi-keepalive
!
ip classless
ip route 0.0.0.0 0.0.0.0 10.66.79.193
ip route 1.1.1.0 255.255.255.0 10.100.100.2
no ip http server
no ip http secure-server
!
!
!
!
call rsvp-sync
!
!
mgcp profile default
!
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 exec-timeout 0 0
 password cisco
 login
line vty 5 15
 login
!
!
end
```

Start the Sensor Configuration

Complete these steps to start the configuration of the Sensor.

1. If this is your first time to log into the Sensor, you must enter **cisco** as the user name and **cisco** as the

password.
2. When the system prompts you, change your password.

   Note: Cisco123 is a dictionary word and is not allowed in the system.
3. Type **setup** and complete the system prompt in order to set up the basic parameters for the Sensors.
4. Enter this information:

```
sensor5#setup

    --- System Configuration Dialog ---


!--- At any point you may enter a question mark '?' for help.
!--- Use ctrl-c to abort the configuration dialog at any prompt.
!--- Default settings are in square brackets '[]'.


Current Configuration:

networkParams
ipAddress 10.66.79.195
netmask 255.255.255.224
defaultGateway 10.66.79.193
hostname Corp-IPS
telnetOption enabled

!--- Permit the IP address of workstation or network with IME

accessList ipAddress 10.66.79.0 netmask 255.255.255.0
exit
timeParams
summerTimeParams
active-selection none
exit
exit
service webServer
general
ports 443
exit
exit
```

5. Save the configuration.

   It can take a few minutes in order for the Sensor to save the configuration.

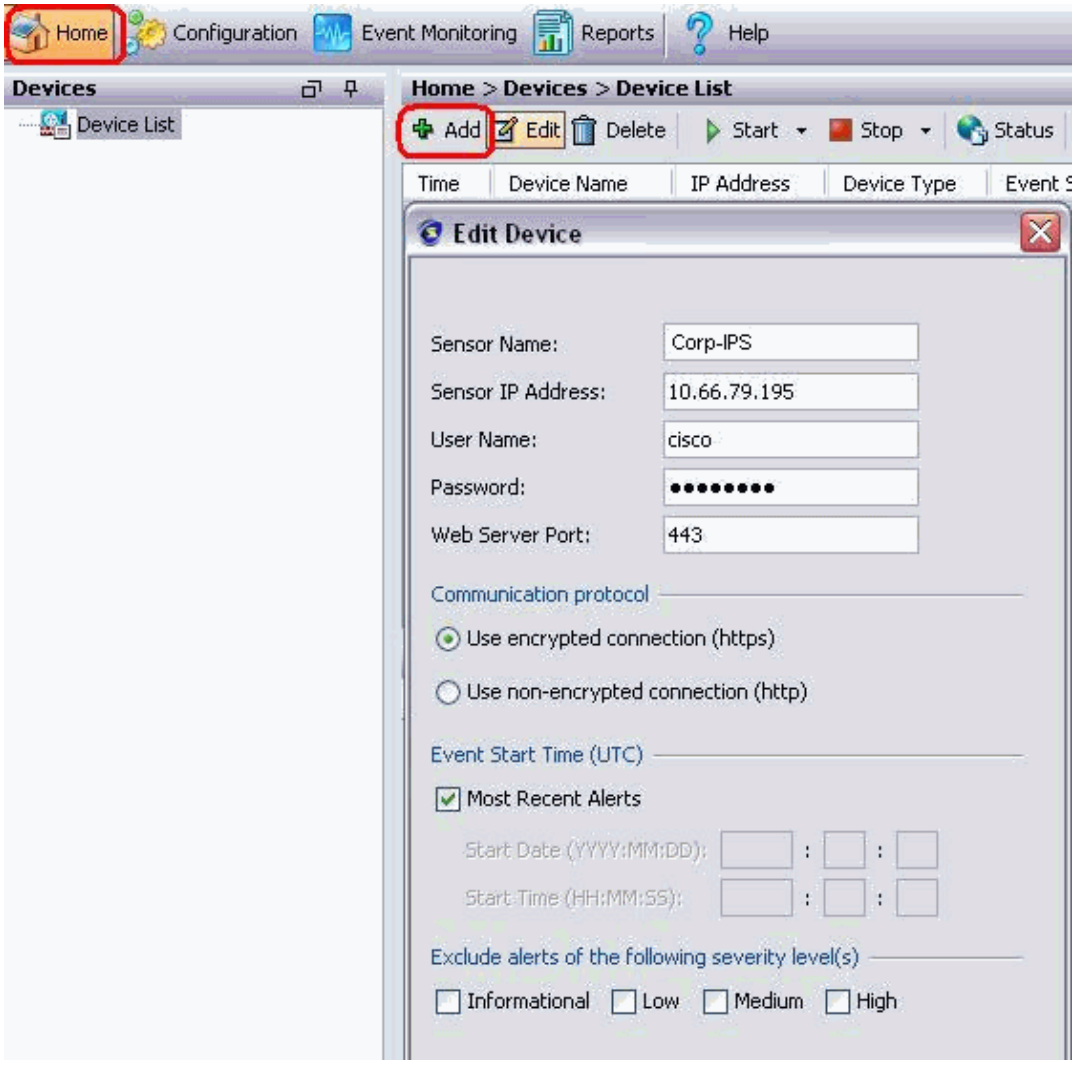
```
[0] Go to the command prompt without saving this config.
[1] Return back to the setup without saving this config.
[2] Save this configuration and exit setup.

Enter your selection[2]: 2
```

Add the Sensor into the IME

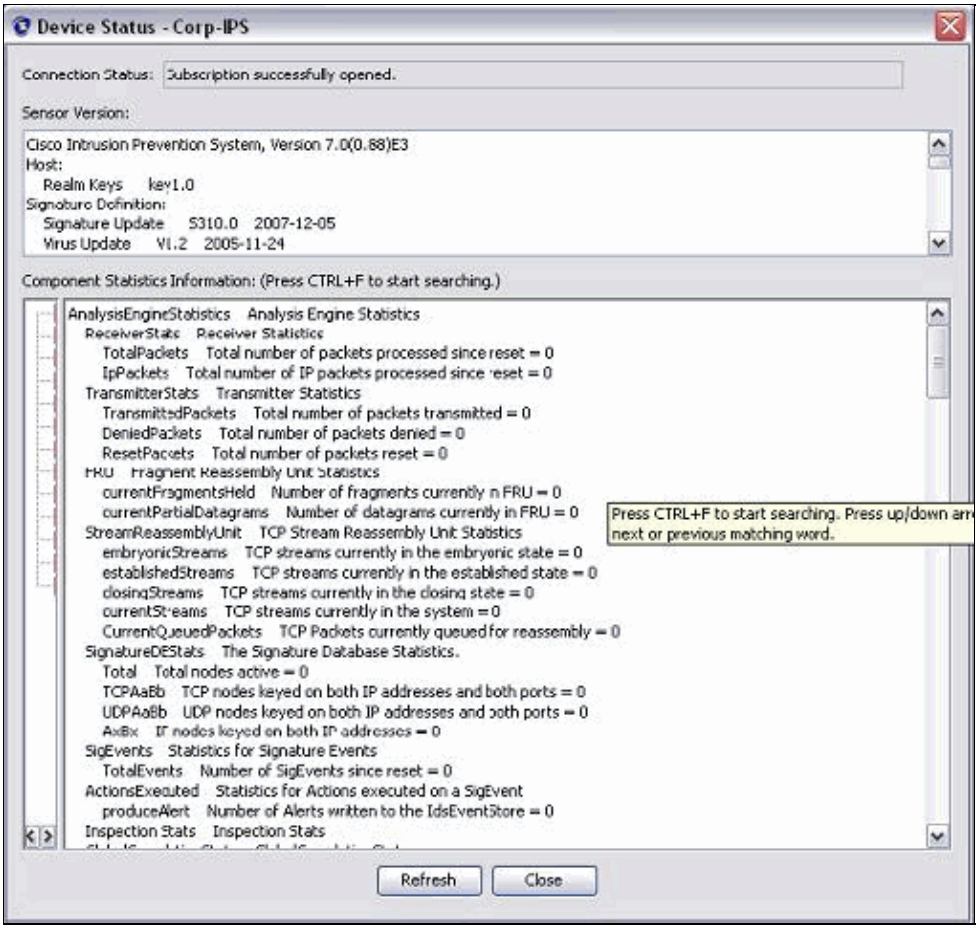
Complete these steps in order to add the Sensor into the IME:

1. Go to the Windows PC, which installed the IPS Manager Express, and open the IPS Manager Express.
2. Choose **Home** > **Add** .



3. Type in this information and click **OK** in order to finish the configuration.
4. Choose **Devices > Corp−IPS** in order to verify the Sensor status and then right−click in order to choose **Device Status**.

   Make sure that you can see `Subscription successfully opened.`

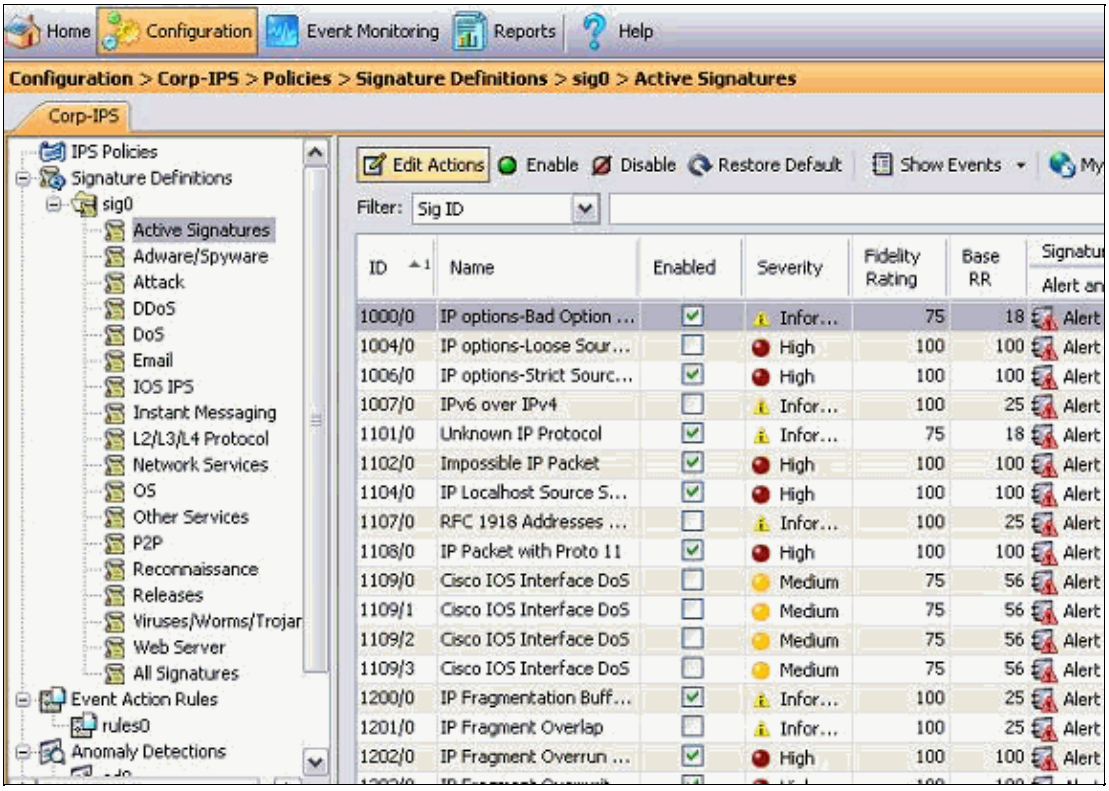


Configure the TCP Reset for the Cisco IOS Router

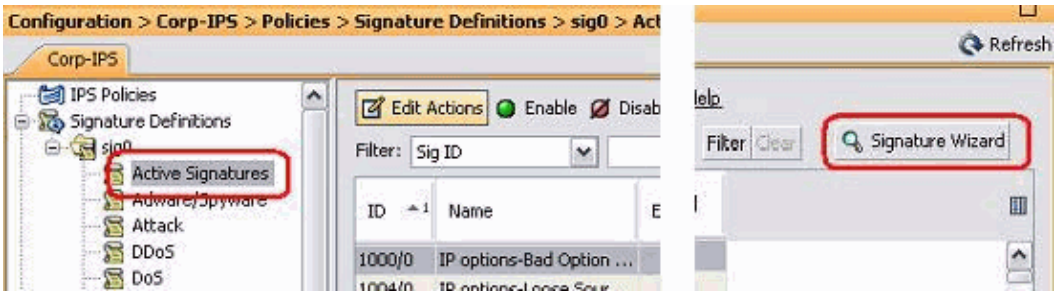
Complete these steps in order to configure the TCP Reset for the Cisco IOS router:

1. From the IME PC, open your web browser and go to **https://10.66.79.195**.
2. Click **OK** in order to accept the HTTPS certificate downloaded from the Sensor.
3. In the login window, enter **cisco** for the user name and **123cisco123** for the password.

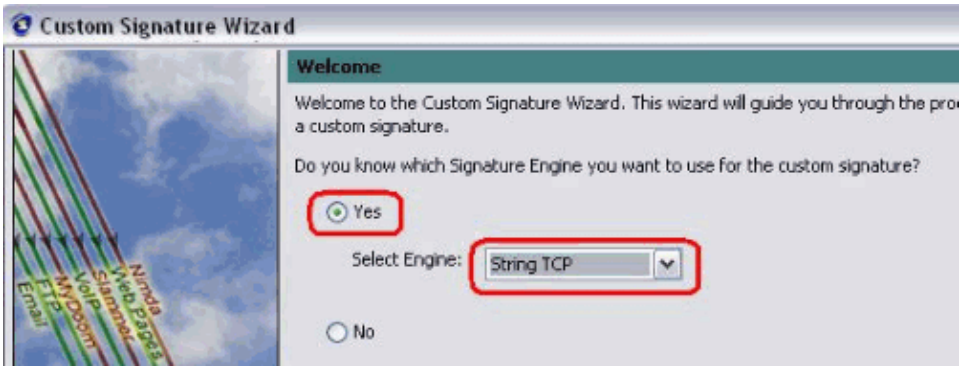
   This IME management interface appears:



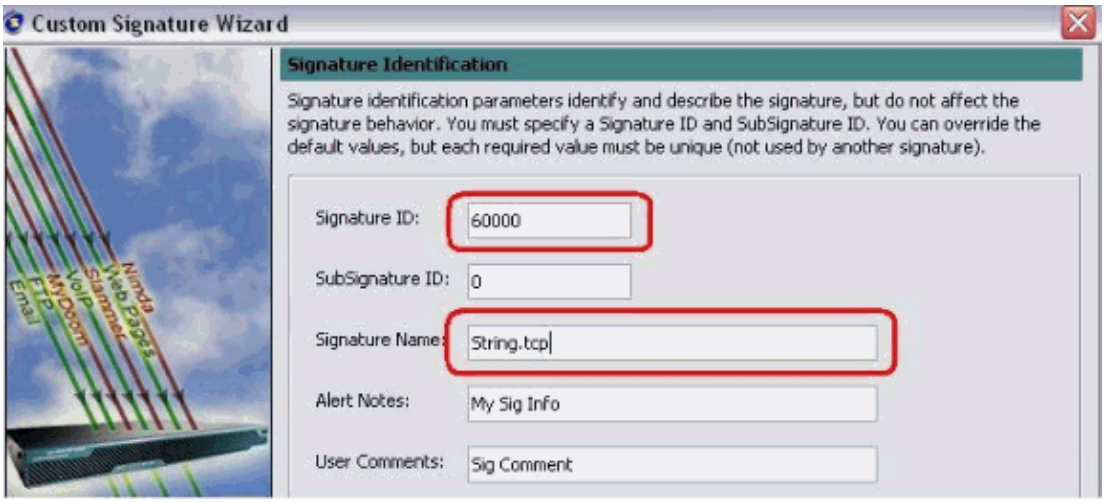
4. From the Configuration tab, click **Active Signatures**.
5. Then click **Signature Wizard.**



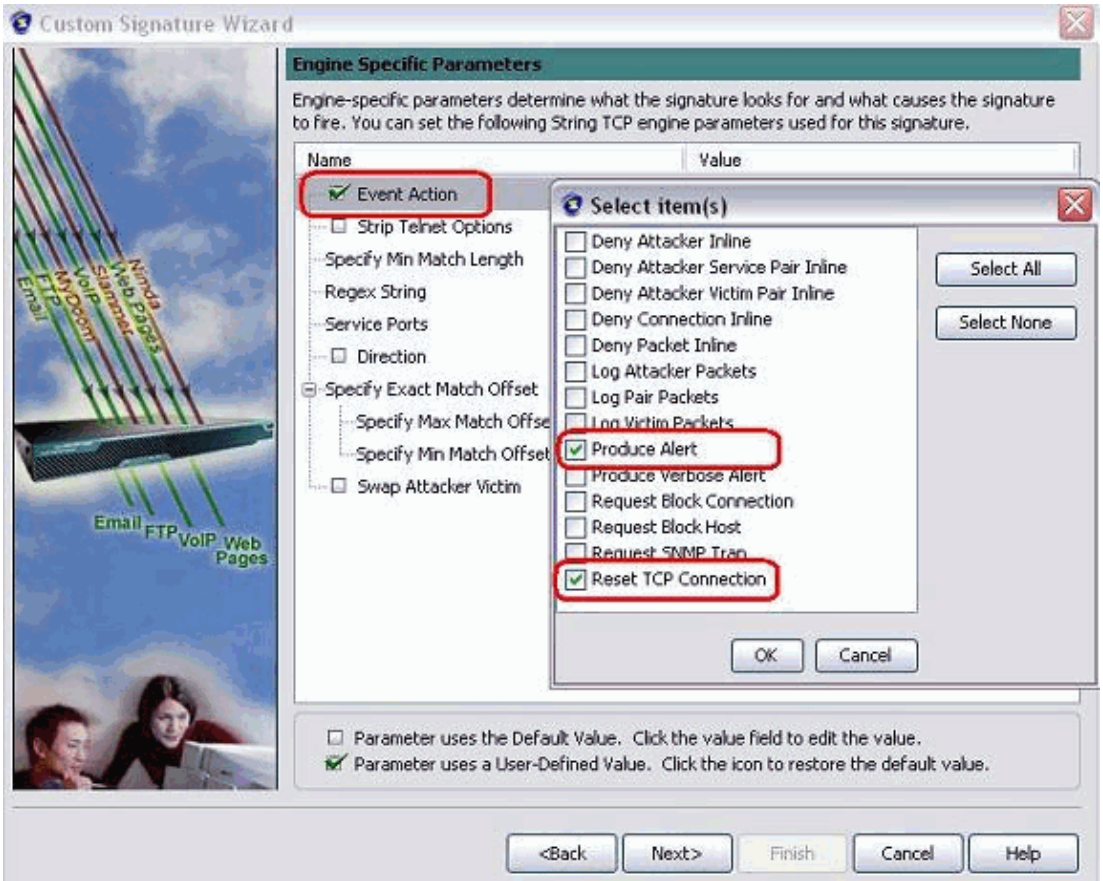
6. In the wizard, choose **Yes** and choose **String TCP** as the Signature engine. Click **Next**.



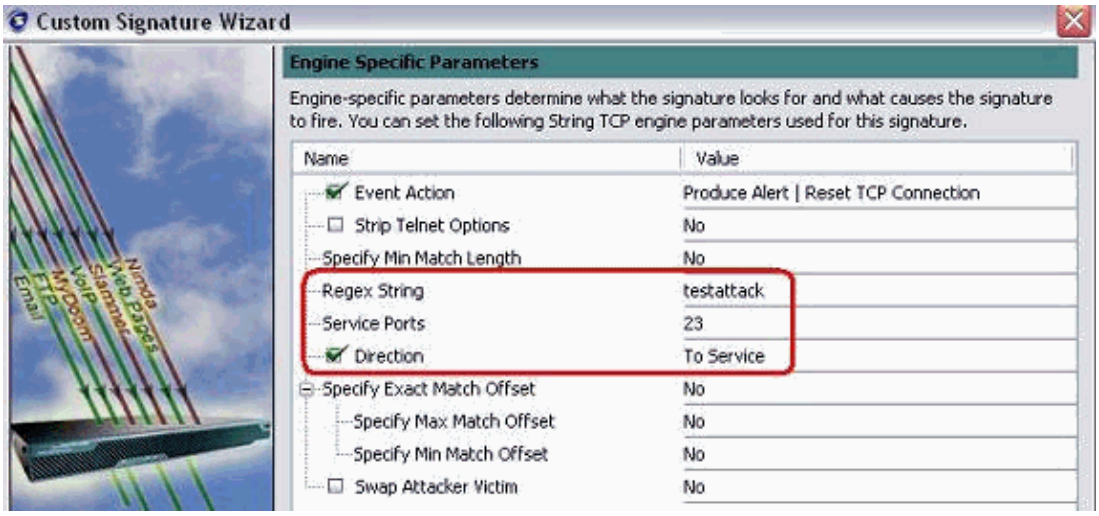
7. You can leave this information as efdault or enter your own Signature ID, Signature Name and User Notes. Click **Next**.



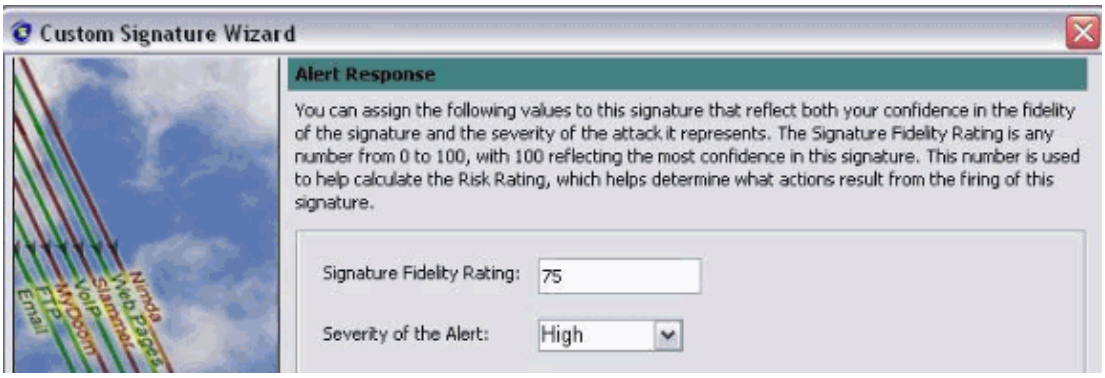
8. Choose **Event Action**, and choose **Produce Alert** and **Reset TCP Connection**. Click **OK** and then **Next** in order to continue.



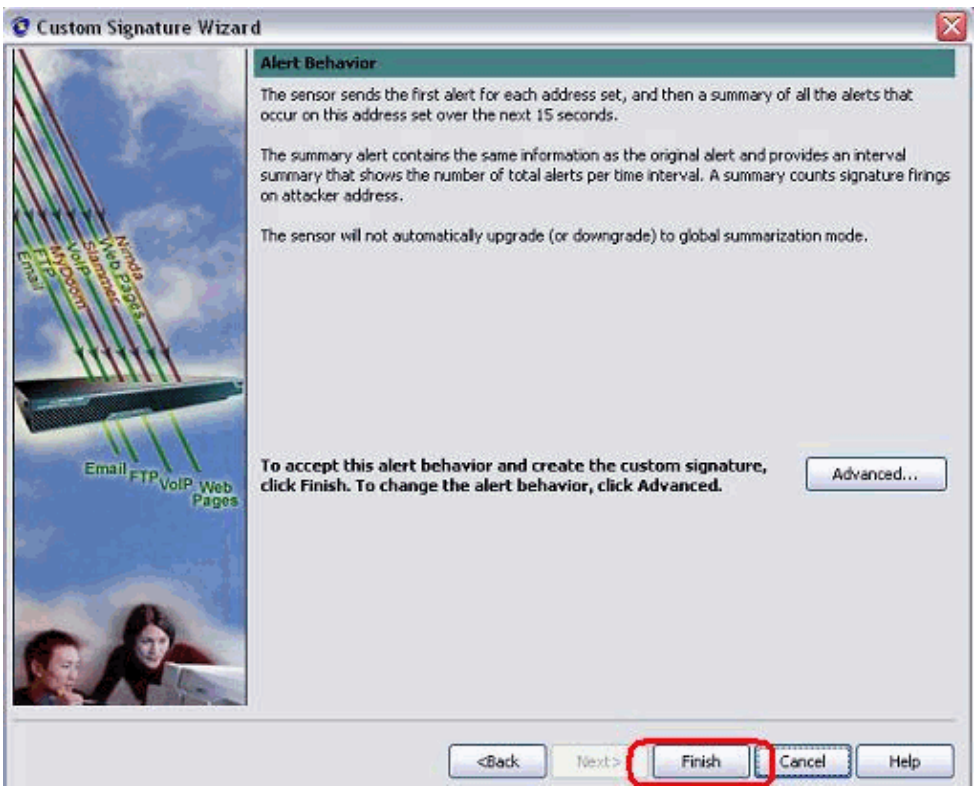
9. Enter a Regular Expression, and `testattack` is used in this example. Enter **23** for Service Ports, choose **To Service** for the Direction, and click **Next** in order to continue.



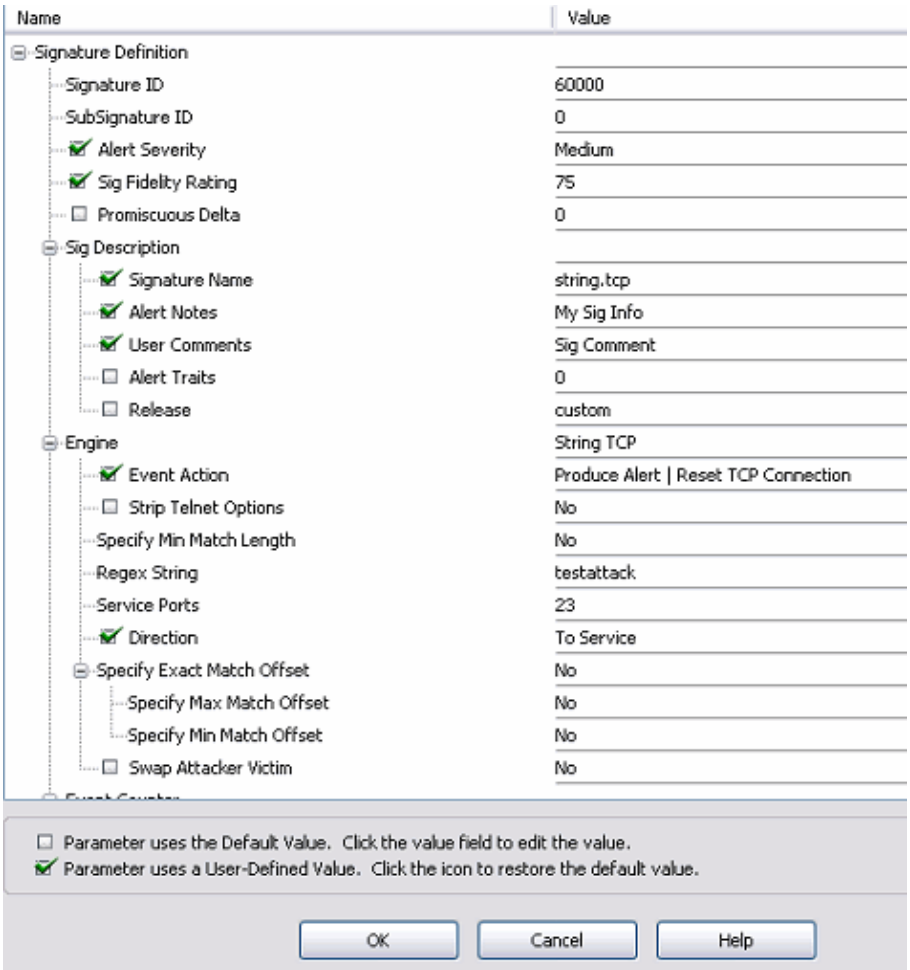
10. You can leave this information as Default. Click **Next**.



11. Click **Finish** in order to finish the Wizard.



12. Choose **Configuration > sig0 > Active Signatures** in order to locate the newly created signature by **Sig ID** or **Sig Name**. Click **Edit** in order to view the Signature.



13. Click **OK** after you confirm and click the **Apply** button in order to apply the signature to the Sensor.

Verify

Launch the Attack and the TCP Reset

Complete these steps in order to launch the attack and the TCP Reset:

1. Before you launch the attack, go to the **IME**, choose **Event Monitoring** > **Dropped Attacks View** and choose the sensor on the right.
2. From the Router Light, Telnet to Router House and enter **testattack**.

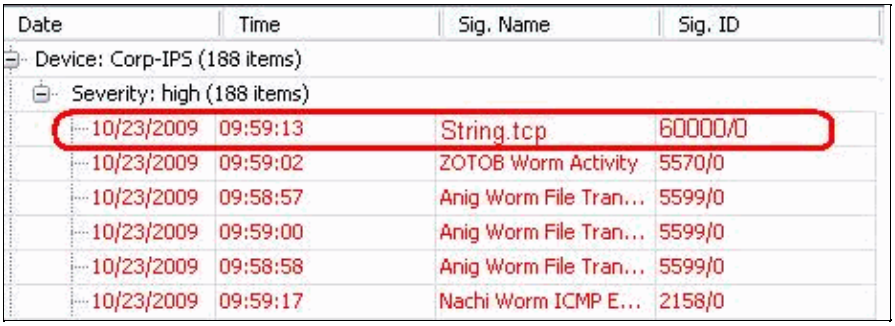
   Hit either **<space>** or **<enter>** in order to reset your Telnet session.

```
light#telnet 10.100.100.1
    Trying 10.100.100.1 ... Open

    User Access Verification
    Password:
    house>en
    Password:
    house#testattack
    [Connection to 10.100.100.1 closed by foreign host]

!--- Telnet session has been reset due to the
   !--- signature "String.tcp" triggered.
```

3. From the Dashboard of the IPS Event Viewer, the Red Alarm appears once the attack is launched.



Date	Time	Sig. Name	Sig. ID
Device: Corp-IPS (188 items)			
Severity: high (188 items)			
10/23/2009	09:59:13	String.tcp	60000/0
10/23/2009	09:59:02	ZOTOB Worm Activity	5570/0
10/23/2009	09:58:57	Anig Worm File Tran...	5599/0
10/23/2009	09:59:00	Anig Worm File Tran...	5599/0
10/23/2009	09:58:58	Anig Worm File Tran...	5599/0
10/23/2009	09:59:17	Nachi Worm ICMP E...	2158/0

Troubleshoot

This section provides information you can use to troubleshoot your configuration.

Tips

Use these troubleshooting tips:

- Shunning works out of the command and control port to reprogram the router access control lists (ACLs). The TCP Resets are sent from the **sniffing interface** of the Sensor. When you **set span** in the switch, use the **set span <src_mod/src_port><dest_mod/dest_port>** command with both incoming packets enabled as shown here.

```
banana (enable)set span 2/12 3/6 both inpkts enable
Overwrote Port 3/6 to monitor transmit/receive traffic of Port 2/12
Incoming Packets enabled. Learning enabled. Multicast enabled.
banana (enable)
banana (enable)
banana (enable)show span

Destination      : Port 3/6
!--- connect to sniffing interface of the sensor
Admin Source     : Port 2/12
!--- connect to FastEthernet0/0 of Router House
Oper Source      : Port 2/12
Direction        : transmit/receive
Incoming Packets: enabled
Multicast        : enabled
```

- If the TCP Resets are working, check if the alarm is triggered for action type TCP Reset. If the alarm appears, check that the signature type is set to TCP reset.

  Login using the service account su to root and issue this command. This command assumes the sensing interface is set to eth0.

```
[root@sensor1 root]#tcpdump -i eth0 -n
```

  Note: One−hundred tcp resets get sent to the victim/target then one−hundred get sent to the attacker/client.

  This is example output:

```
03:06:00.598777 64.104.209.205.1409 >
 10.66.79.38.telnet: R 107:107(0) ack 72 win 0
03:06:00.598794 64.104.209.205.1409 >
 10.66.79.38.telnet: R 108:108(0) ack 72 win 0

03:06:00.599360 10.66.79.38.telnet >
 64.104.209.205.1409: R 72:72(0) ack 46 win 0
```

```
03:06:00.599377 10.66.79.38.telnet >
 64.104.209.205.1409: R 73:73(0) ack 46 win 0
```

Related Information

- **Cisco Secure Intrusion Prevention Support Page**
- **Documentation for Cisco Secure Intrusion Prevention System**
- **Technical Support & Documentation − Cisco Systems**

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