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Secure IDS Configurations and Management

Module 08

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Lab 1

Configuring Snort IDS

Snort is an open-source network IDS/IPS.

ICON KEY

- Valuable information
- Test your knowledge
- Web exercise
- Workbook review

Lab Scenario

An IDS/IPS is an important network security measure which is used behind a firewall and works from inside the network. An ID inspects the network traffic and looks for heuristics and pattern matches for the intrusions. However, improper IDS configuration and management can make IDPS unworthy. So, IDS configuration and deployment should be performed with careful planning, preparation, prototyping, testing, and specialized training. As a network administrator, you should be able to configure IDS/IPS in your organization's network

Lab Objectives

The objective of this lab is to demonstrate how to configure snort IDS in a network.

In this lab, you will need to:

- Install Snort and verify Snort alerts
- Configure and validate the snort.conf file
- Test Snort is working by carrying out a test attack
- Perform Intrusion detection

Lab Environment

To complete this lab, you will need:

- A virtual machine running Windows Server 2012
- A virtual machine running Windows 10
- Snort located at **Z:\CND-Tools\CND Module 08 Secure IDS Configuration and Management\IDS and IPS Solutions\Snort**
- You can download the latest version of Snort from https://www.snort.org/downloads. If you decide to download the latest version, screenshots may differ
- WinPcap drivers installed in Windows Server 2012 virtual machine

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- Notepad++ installed in Windows Server 2012 virtual machine
- Administrative privileges to configure settings and run tools

Lab Duration

Time: 25 Minutes

Overview of IPSs and IDSs

An intrusion prevention system is a network security appliance that monitors a network and systems for malicious activity. The IPS's main functions are to identify malicious activity, log information about any activity, attempt to block/stop it, and report it.

An intrusion detection system is a device or software application that monitors a network and/or systems for malicious activity or policy violations and produces reports to a management station. The IDS performs intrusion detection and attempts to stop detected incidents.

Lab Tasks

TASK 1

Install Snort

Note: Before starting this lab Turn off Windows Firewall in the Administrator's machine i.e., **Windows Server 2012**, for the lab demonstration purpose. Later you can turn on the Firewall.

1. Launch **Windows server 2012** Virtual machine.
2. To install Snort, navigate to **Z:\CND-Tools\CND Module 08 Secure IDS Configuration and Management\IDS and IPS Solutions\Snort**
3. Double-click the **Snort_2_9_8_3_Installer.exe** file. The Snort installation wizard appears
4. If **Open File - Security Warning** pop-up appears, click **Run**

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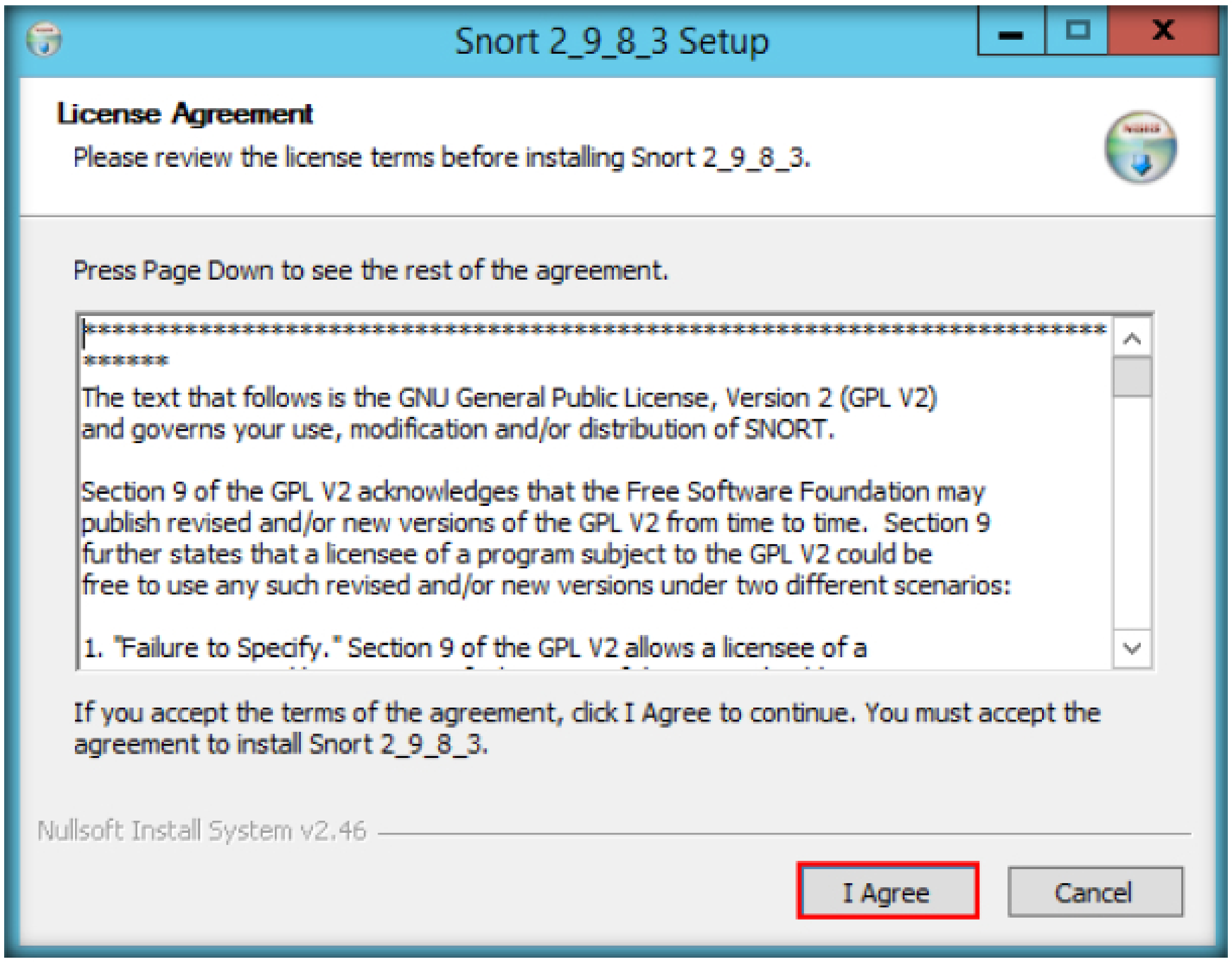
5. Accept the **License Agreement,** and install Snort by selecting the default options that appear **step by step** in the wizard



Snort 2_9_8_3 Setup

License Agreement

Please review the license terms before installing Snort 2_9_8_3.

Press Page Down to see the rest of the agreement.

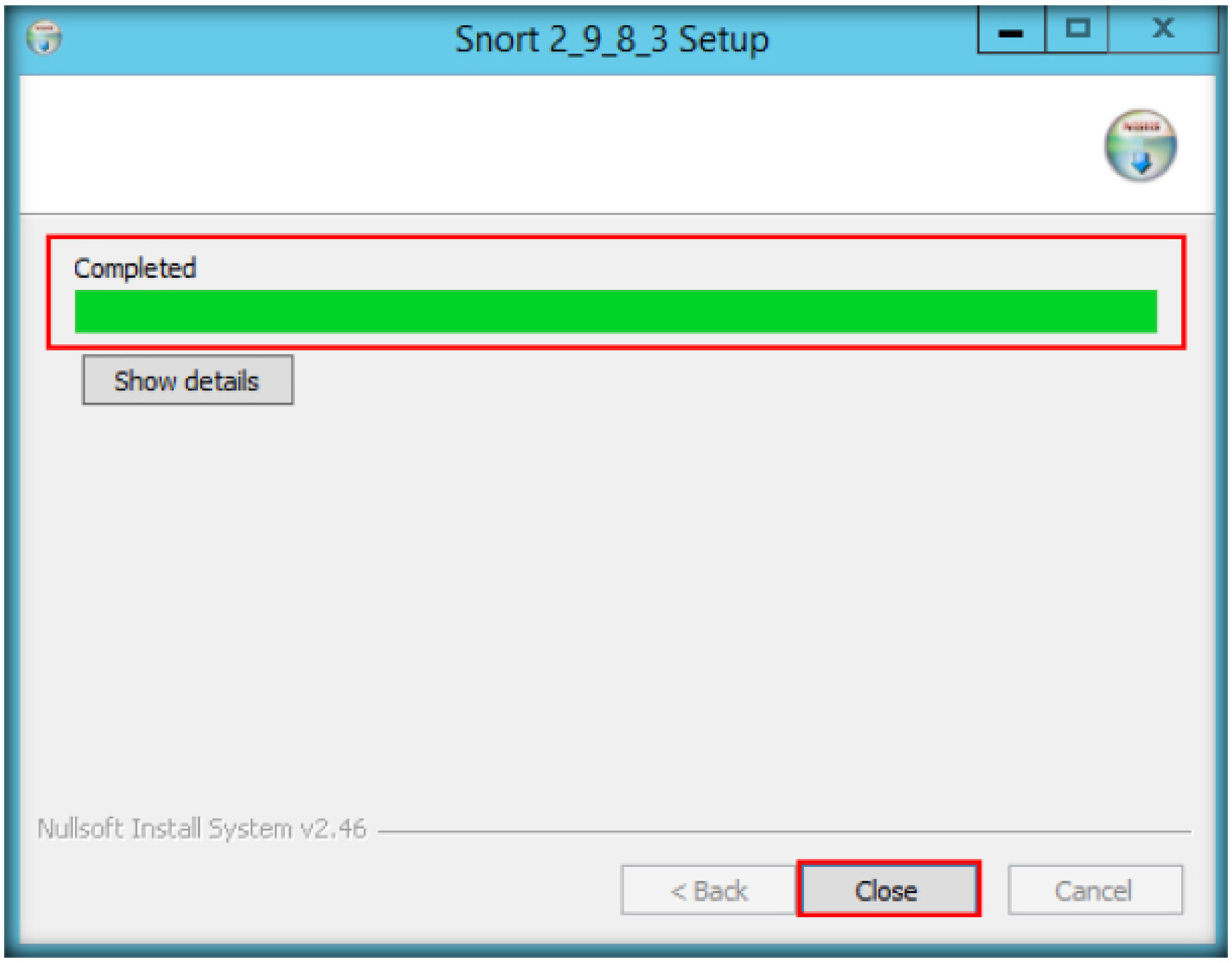
```
***************************************************************************
******
The text that follows is the GNU General Public License, Version 2 (GPL V2)
and governs your use, modification and/or distribution of SNORT.

Section 9 of the GPL V2 acknowledges that the Free Software Foundation may
publish revised and/or new versions of the GPL V2 from time to time.  Section 9
further states that a licensee of a program subject to the GPL V2 could be
free to use any such revised and/or new versions under two different scenarios:

1. "Failure to Specify." Section 9 of the GPL V2 allows a licensee of a
```

If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install Snort 2_9_8_3.

FIGURE 1.1: License Agreement

Snort is an open source network intrusion prevention and detection system (IDS/IPS).

6. A window appears after the successful installation of Snort. Click **Close**



Snort 2_9_8_3 Setup

Completed

FIGURE 1.2: Snort Setup completed

You can also download Snort from http://www.snort.org.

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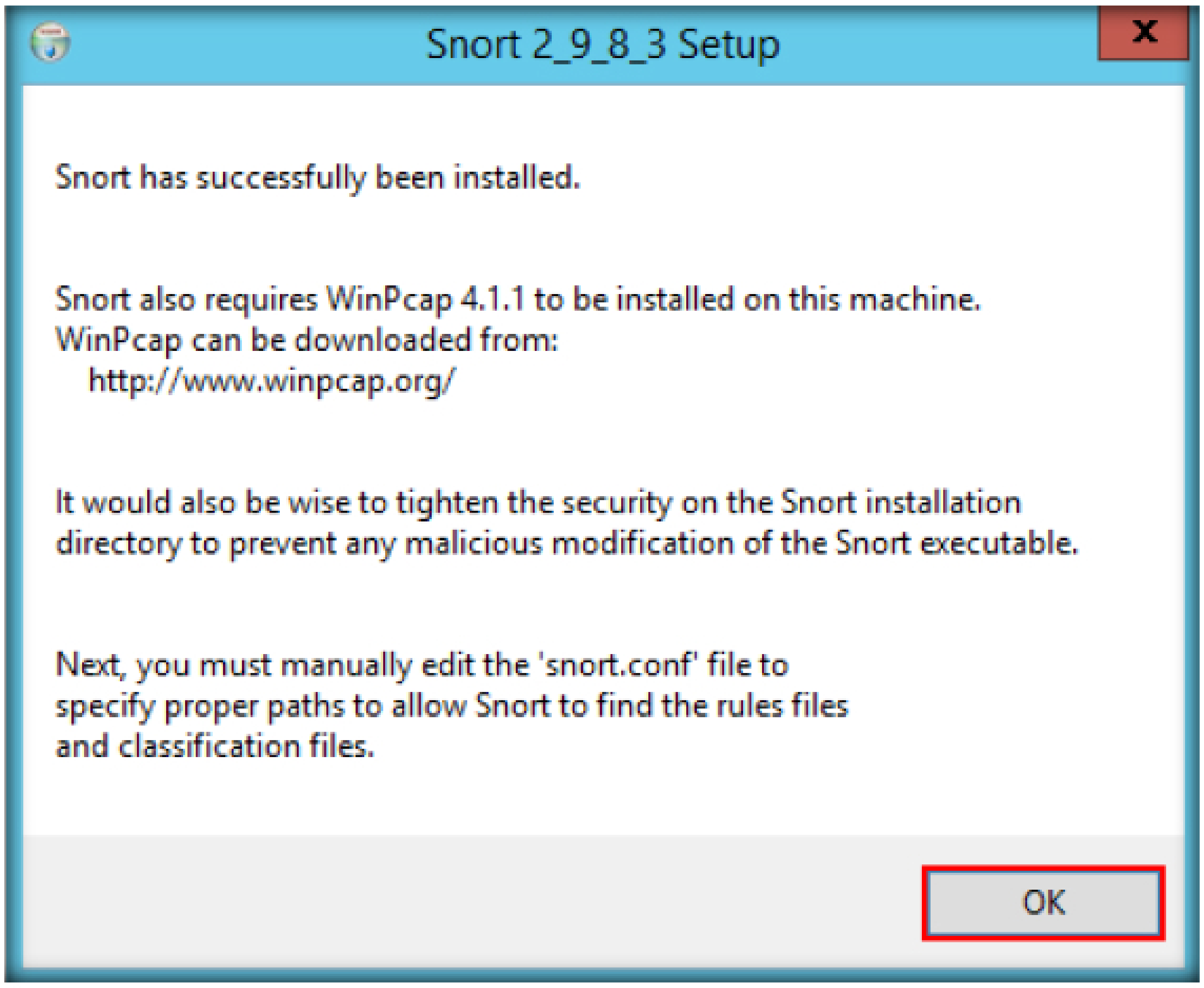
7. Snort requires **WinPcap** to be installed on your machine.

8. If you have already installed the application click **OK** to exit the **Snort Installation** window and skip to the next step

WinPcap is a tool for link-layer network access that allows applications to capture and transmit network packets to bypass the protocol stack.



Snort has successfully been installed.

Snort also requires WinPcap 4.1.1 to be installed on this machine.
WinPcap can be downloaded from:
http://www.winpcap.org/

It would also be wise to tighten the security on the Snort installation directory to prevent any malicious modification of the Snort executable.

Next, you must manually edit the 'snort.conf' file to specify proper paths to allow Snort to find the rules files and classification files.

FIGURE 1.3: Snort Successful Installation Window

9. By default, Snort installs itself in **C:\Snort** (depending on the disk drive in which the OS is installed)

10. Navigate to the **etc** folder in the specified location, **Z:\CND-Tools\CND Module 08 Secure IDS Configuration and Management\IDS and IPS Solutions\Snort\snortrules\etc** copy **snort.conf**, and paste it in **C:\Snort\etc**

11. If **Snort.conf** is already present in **C:\Snort\etc**; replace it with the snortrule's **snort.conf** file

12. Copy the **so_rules** folder from **Z:\CND-Tools\CND Module 08 Secure IDS Configuration and Management\IDS and IPS Solutions\Snort\snortrules**, and paste it in **C:\Snort**

To print out the TCP/IP packet headers to the screen (i.e., sniffer mode), type: snort –v.

13. Copy the **preproc_rules** folder from **Z:\CND-Tools\CND Module 08 Secure IDS Configuration and Management\IDS and IPS Solutions\Snort\snortrules**, and paste it in **C:\Snort**. The **preproc_rules** folder is already present in **C:\Snort**; replace this folder with the **preproc_rules** folder taken from snortrules

14. In the same way, copy the **rules** folder from **Z:\CND-Tools\CND Module 08 Secure IDS Configuration and Management\IDS and IPS Solutions\Snort\snortrules**, and paste it in **C:\Snort**. The **rules** folder is already present in **C:\Snort**; replace the folder

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TASK 2

Verify Snort

15. Now navigate to **C:\Snort,** and press **Shift** + **right-click** on **bin;** click **Open command window here** from the context menu to open it in a command prompt

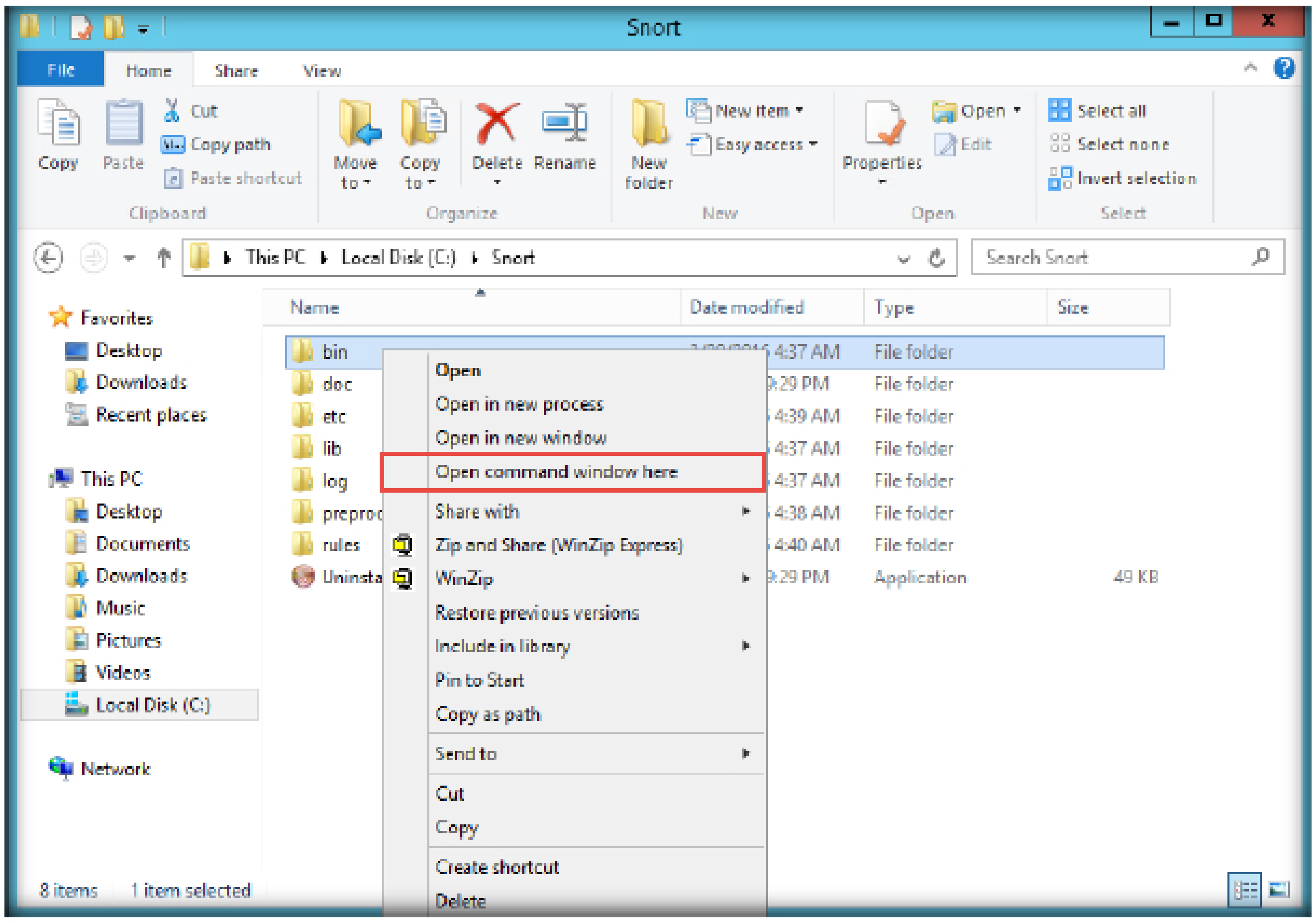
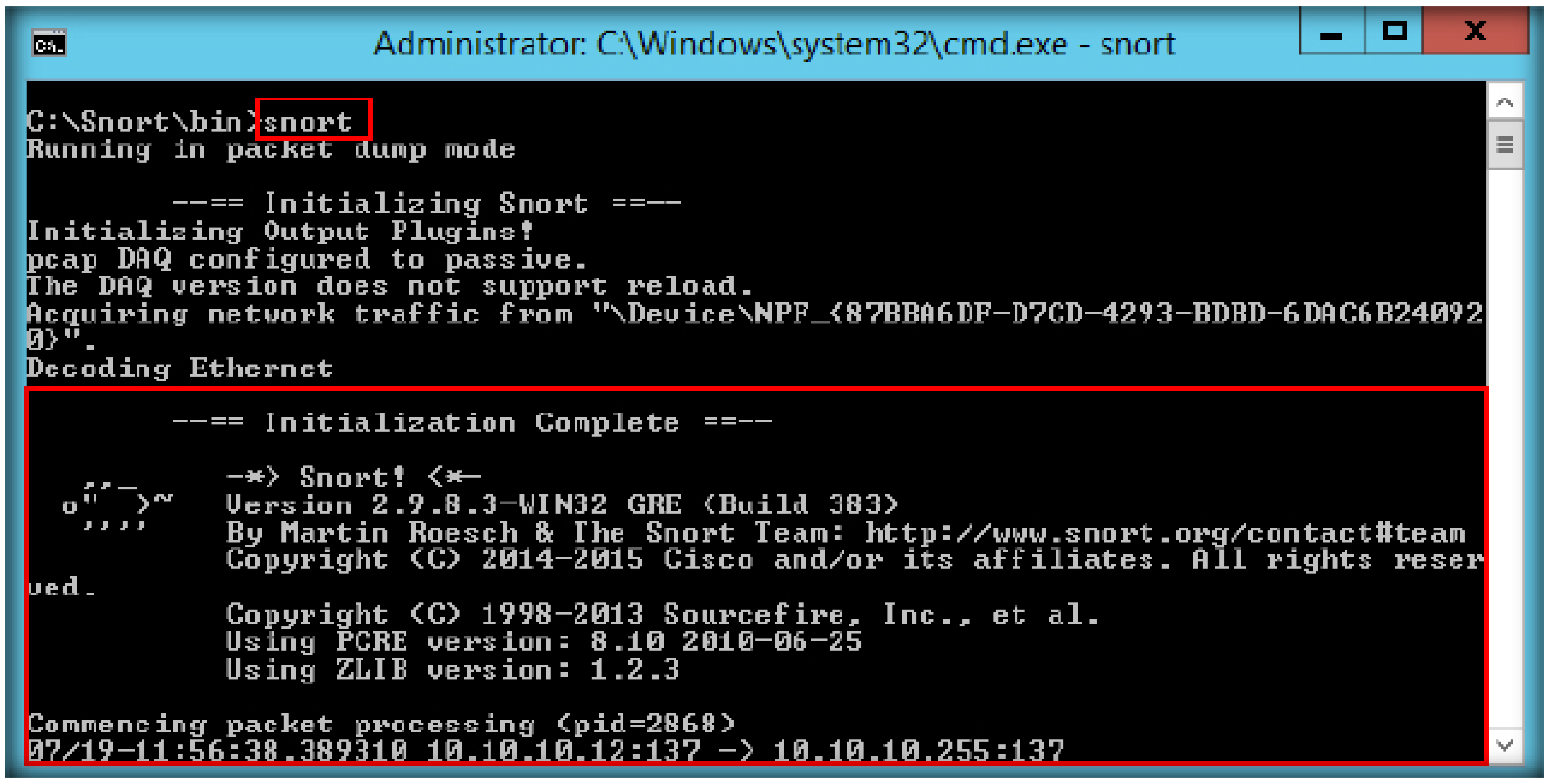


FIGURE 1.4: Starting Command Prompt from Snort\bin

16. The **Command Prompt** window appears. Type **snort** and press **Enter**

17. A rapid scrolling text will appear in the command terminal, scroll up. This command will show you that snort is configured in your machine successfully. The Process ID will differ in your lab environment.



```
C:\Snort\bin>snort
Running in packet dump mode

        --== Initializing Snort ==--
Initializing Output Plugins!
pcap DAQ configured to passive.
The DAQ version does not support reload.
Acquiring network traffic from "\Device\NPF_{87BBA6DF-D7CD-4293-BDBD-6DAC6B24092
0}".
Decoding Ethernet

        --== Initialization Complete ==--

   ,,_     -*> Snort! <*-
  o"  )~   Version 2.9.8.3-WIN32 GRE (Build 383)
   ''''    By Martin Roesch & The Snort Team: http://www.snort.org/contact#team
           Copyright (C) 2014-2015 Cisco and/or its affiliates. All rights reser
ved.
           Copyright (C) 1998-2013 Sourcefire, Inc., et al.
           Using PCRE version: 8.10 2010-06-25
           Using ZLIB version: 1.2.3

Commencing packet processing (pid=2868)
07/19-11:56:38.389310 10.10.10.12:137 -> 10.10.10.255:137
```

FIGURE 1.5: Basic Snort Command

To specify a log into logging directory, type snort –dev –l /logdirectorylocationand, Snort automatically knows to go into packet logger mode.

18. The **Initialization Complete** message displays. Press **Ctrl+C**. Snort exits and comes back to **C:\Snort\bin**

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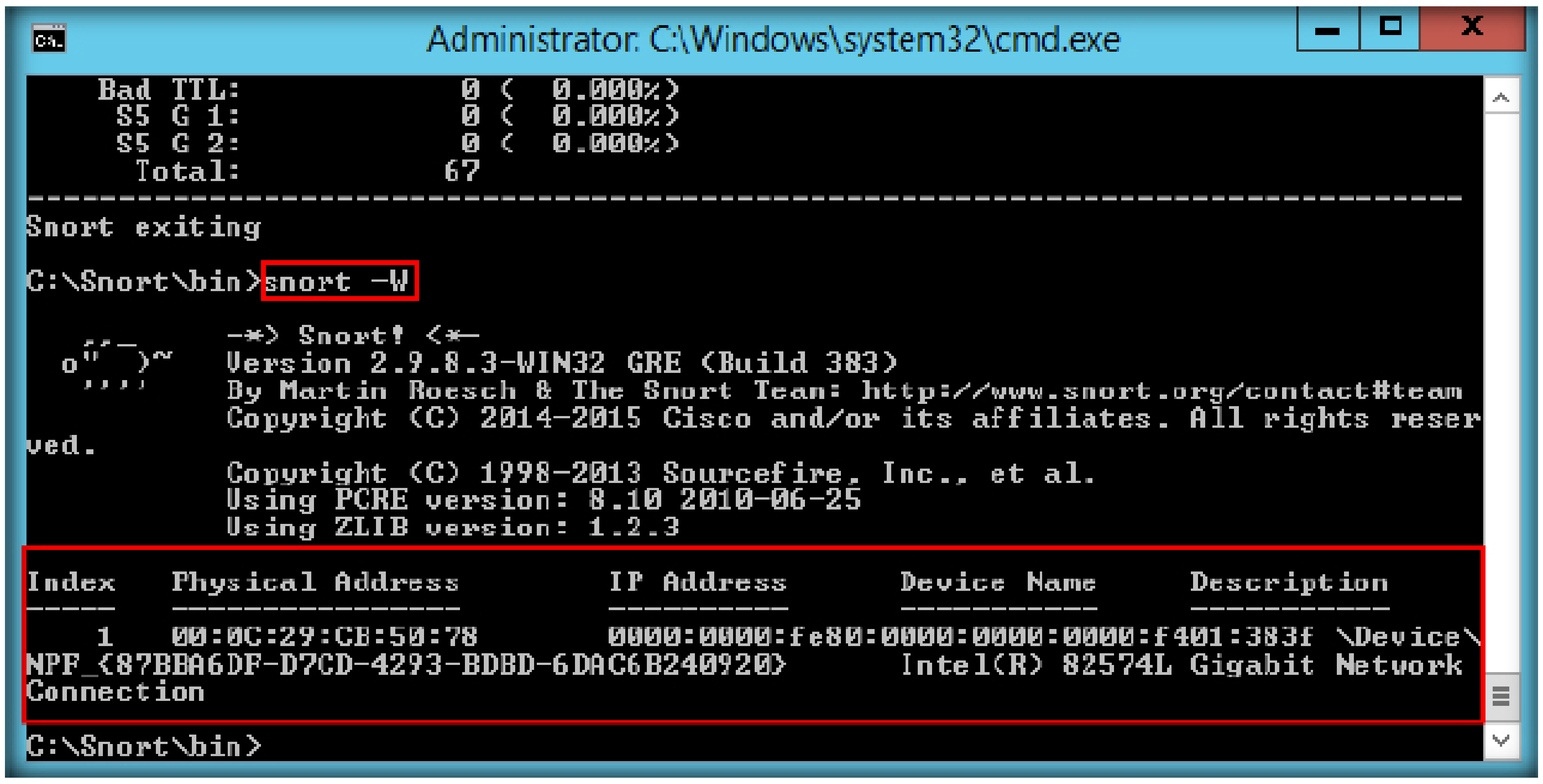
19. Now type **snort -W**. This command lists your machine's Physical Address, IP Address, and Ethernet Drivers, but all are disabled by default

Ping [-t] [-a] [-n count] [-l size] [-f] [-i TTL] [-v TOS] [-r count] [-s count] [[-j host-list] | [-k host-list]] [-w timeout] destination-list.



```
    Bad TTL:              0 (   0.000%)
     S5 G 1:              0 (   0.000%)
     S5 G 2:              0 (   0.000%)
      Total:             67
===============================================================================
Snort exiting

C:\Snort\bin>snort -W

   ,,_     -*> Snort! <*-
  o"  )~   Version 2.9.8.3-WIN32 GRE (Build 383)
   ''''    By Martin Roesch & The Snort Team: http://www.snort.org/contact#team
           Copyright (C) 2014-2015 Cisco and/or its affiliates. All rights reser
ved.
           Copyright (C) 1998-2013 Sourcefire, Inc., et al.
           Using PCRE version: 8.10 2010-06-25
           Using ZLIB version: 1.2.3

Index   Physical Address          IP Address         Device Name        Description
-----   ----------------          ----------         -----------        -----------
    1   00:0C:29:CB:50:78         0000:0000:fe80:0000:0000:0000:f401:383f  \Device\
NPF_{87BBA6DF-D7CD-4293-BDBD-6DAC6B240920}         Intel(R) 82574L Gigabit Network
Connection

C:\Snort\bin>
```

FIGURE 1.6: Snort -W Command

20. Observe your Ethernet Driver **index number** and write it down (in this lab, it is **1**)

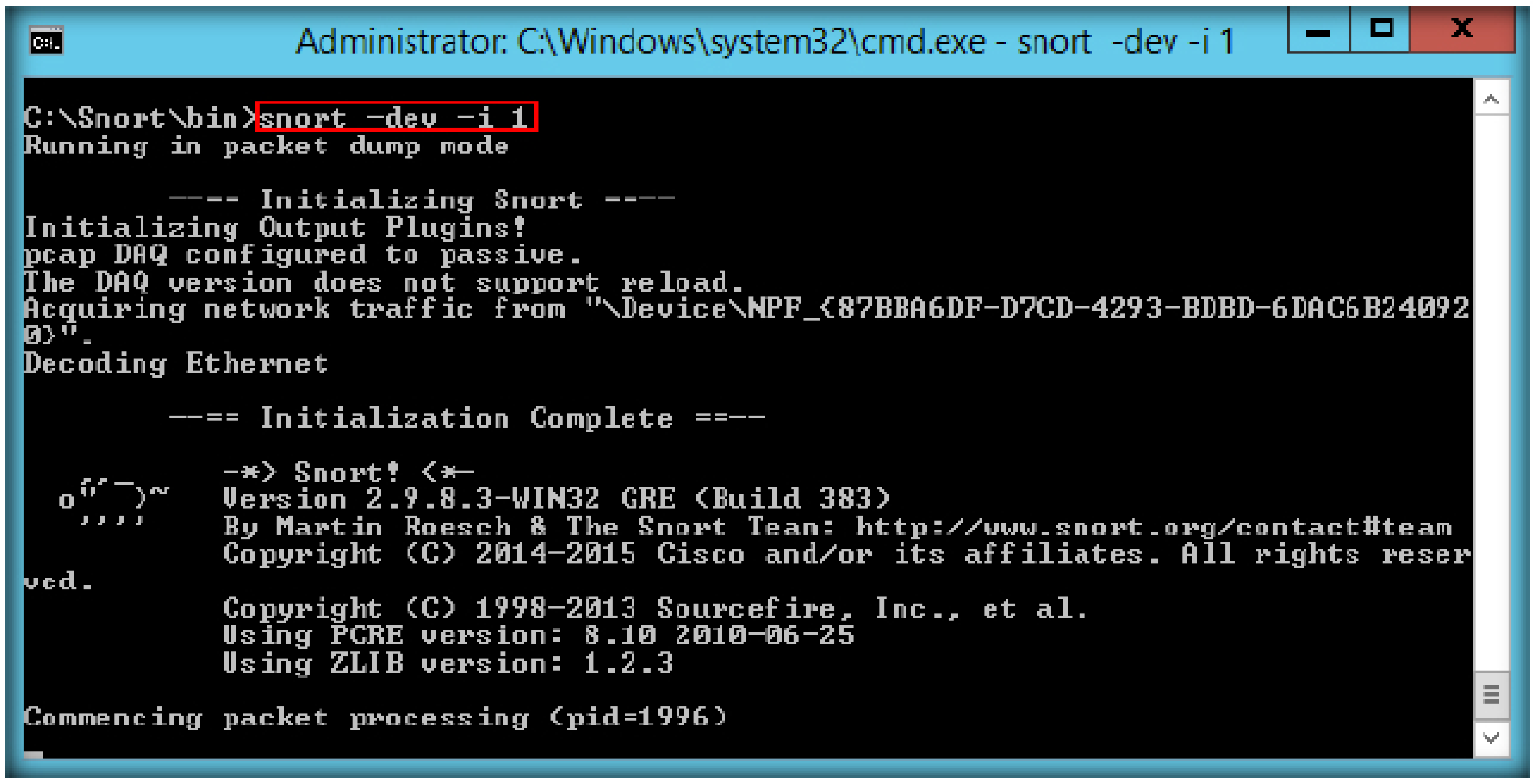
Note: Ethernet Index numbers may vary in your lab environment, if two or more drivers are installed.

21. To enable the Ethernet Driver, in the command prompt, type **snort –dev –i 1** and press **Enter**

Note: In the command 1 is nothing but the Index number of the Ethernet adapter installed in your machine.

22. You see a rapid scroll text in the command prompt, which means that the Ethernet Driver is enabled and working properly

To enable Network Intrusion Detect ion System (NIDS) mode so that you don't record every single packet sent down the wire, type: snort -dev -l ./log -h 192.168.1.0/24 -c snort.conf.


Administrator: C:\Windows\system32\cmd.exe - snort -dev -i 1

```
C:\Snort\bin>snort -dev -i 1
Running in packet dump mode

        --== Initializing Snort ==--
Initializing Output Plugins!
pcap DAQ configured to passive.
The DAQ version does not support reload.
Acquiring network traffic from "\Device\NPF_{87BBA6DF-D7CD-4293-BDBD-6DAC6B24092
0}".
Decoding Ethernet

        --== Initialization Complete ==--

   ,,_     -*> Snort! <*-
  o"  )~   Version 2.9.8.3-WIN32 GRE (Build 383)
   ''''    By Martin Roesch & The Snort Team: http://www.snort.org/contact#team
           Copyright (C) 2014-2015 Cisco and/or its affiliates. All rights reser
ved.
           Copyright (C) 1998-2013 Sourcefire, Inc., et al.
           Using PCRE version: 8.10 2010-06-25
           Using ZLIB version: 1.2.3

Commencing packet processing (pid=1996)
```

FIGURE 1.7: Snort –dev –i 1 Command

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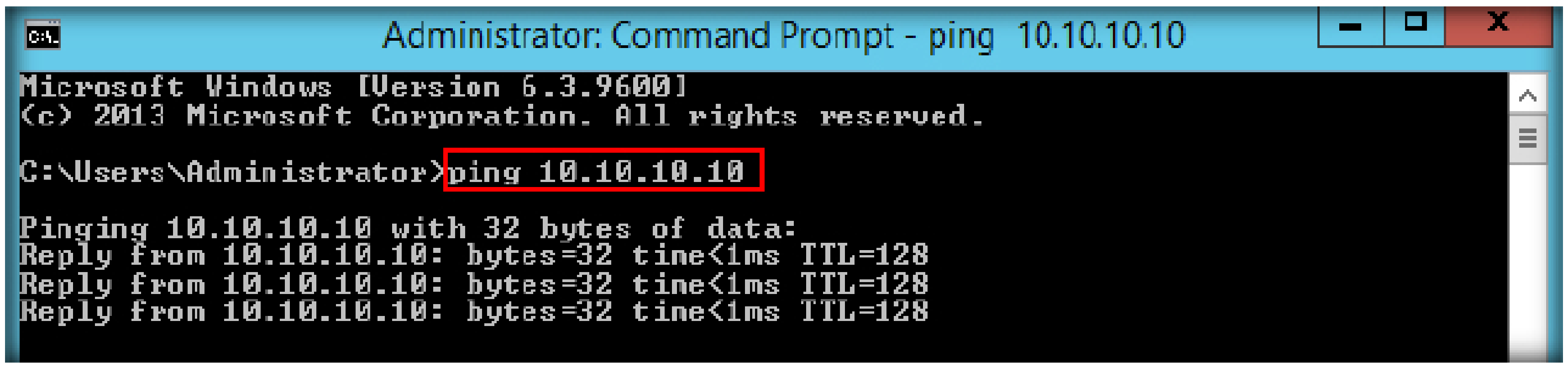
23. Leave the Snort command prompt window open, and launch another command prompt. Right-click on the **Start** icon and click the **Command Prompt** from the context menu.

The frag3 preprocessor is a target-based IP defragmentation module for Snort.

24. In a new command prompt type **ping 10.10.10.10** and press **Enter**

Note: 10.10.10.10 is the IP address of Windows 10 machine.



Administrator: Command Prompt - ping 10.10.10.10

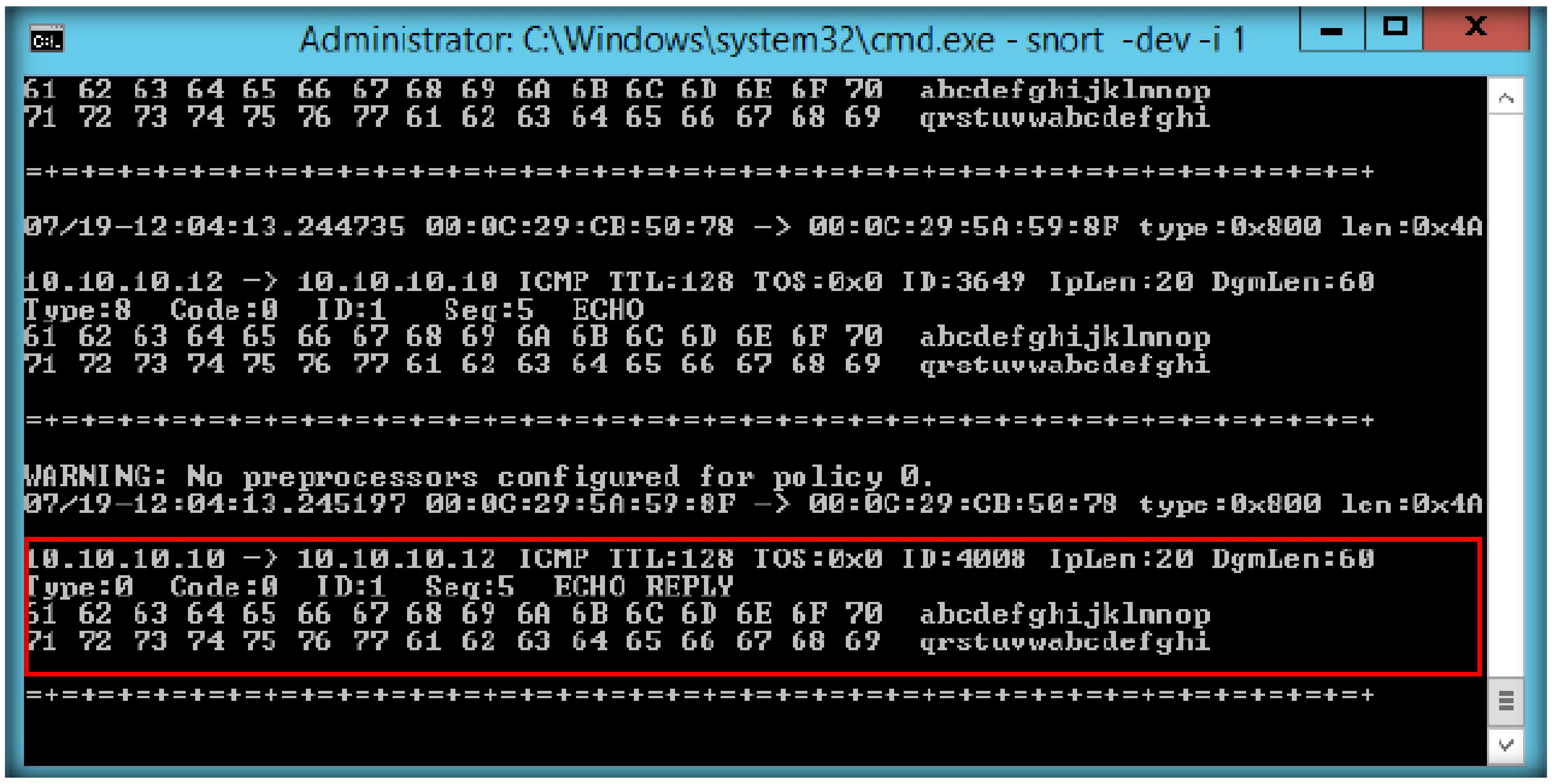
```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>ping 10.10.10.10

Pinging 10.10.10.10 with 32 bytes of data:
Reply from 10.10.10.10: bytes=32 time<1ms TTL=128
Reply from 10.10.10.10: bytes=32 time<1ms TTL=128
Reply from 10.10.10.10: bytes=32 time<1ms TTL=128
```

FIGURE 1.8: Ping Command in New Command Prompt

25. This ping command triggers a Snort alert in the Snort command prompt with rapid scrolling text.



Administrator: C:\Windows\system32\cmd.exe - snort -dev -i 1

```
61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70  abcdefghijklmnop
71 72 73 74 75 76 77 61 62 63 64 65 66 67 68 69  qrstuvwabcdefghi

=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+

07/19-12:04:13.244735 00:0C:29:CB:50:78 -> 00:0C:29:5A:59:8F type:0x800 len:0x4A

10.10.10.12 -> 10.10.10.10 ICMP TTL:128 TOS:0x0 ID:3649 IpLen:20 DgmLen:60
Type:8  Code:0  ID:1   Seq:5  ECHO
61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70  abcdefghijklmnop
71 72 73 74 75 76 77 61 62 63 64 65 66 67 68 69  qrstuvwabcdefghi

=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+

WARNING: No preprocessors configured for policy 0.
07/19-12:04:13.245197 00:0C:29:5A:59:8F -> 00:0C:29:CB:50:78 type:0x800 len:0x4A

10.10.10.10 -> 10.10.10.12 ICMP TTL:128 TOS:0x0 ID:4008 IpLen:20 DgmLen:60
Type:0  Code:0  ID:1  Seq:5  ECHO REPLY
61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70  abcdefghijklmnop
71 72 73 74 75 76 77 61 62 63 64 65 66 67 68 69  qrstuvwabcdefghi

=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+
```

Notepad++ is a free source code editor and Notepad replacement that supports several languages. It runs in the MS Windows environment.

FIGURE 1.9: Snort Showing Captured Ping Request

26. Close both command prompt windows. The verification of the Snort installation and triggering alerts is complete, and Snort is working correctly in verbose mode.

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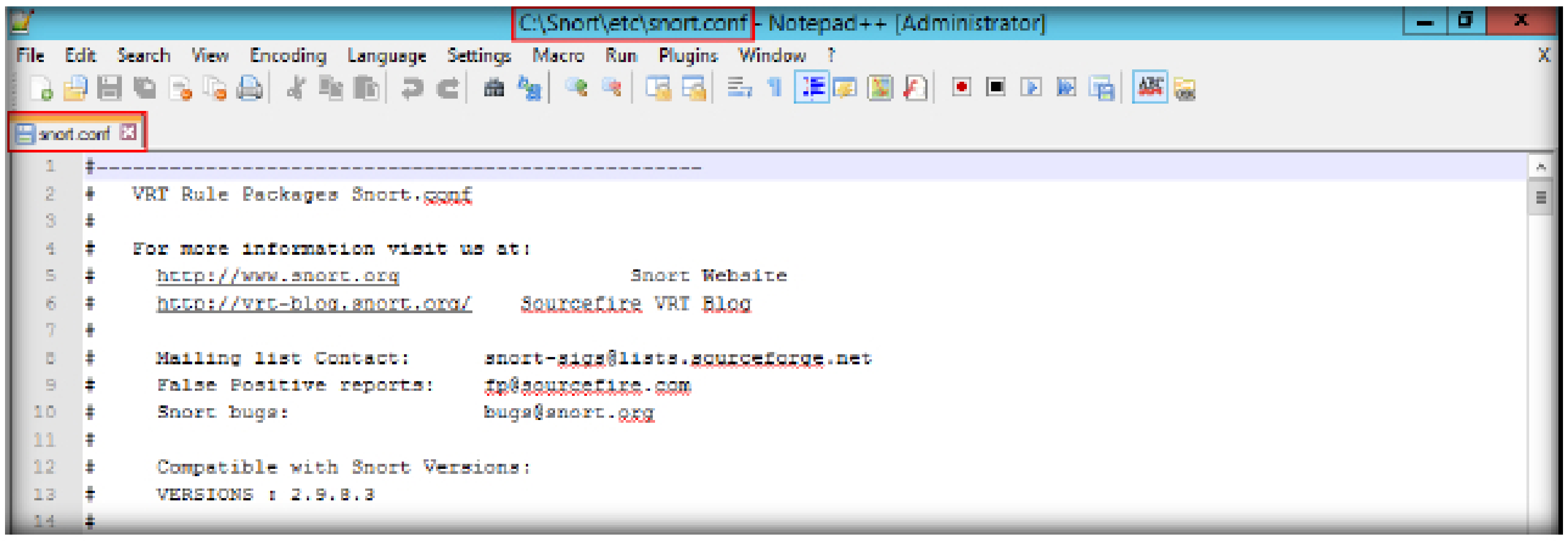
TASK 3

Configure snort.conf File

27. Configure the **snort.conf** file, located at **C:\Snort\etc**
28. Open the **snort.conf** file with Notepad++ using the right-click menu
29. The **snort.conf** file opens in Notepad++, as shown in the screenshot

    Note: If any Notepad ++ update pop-up appears close them

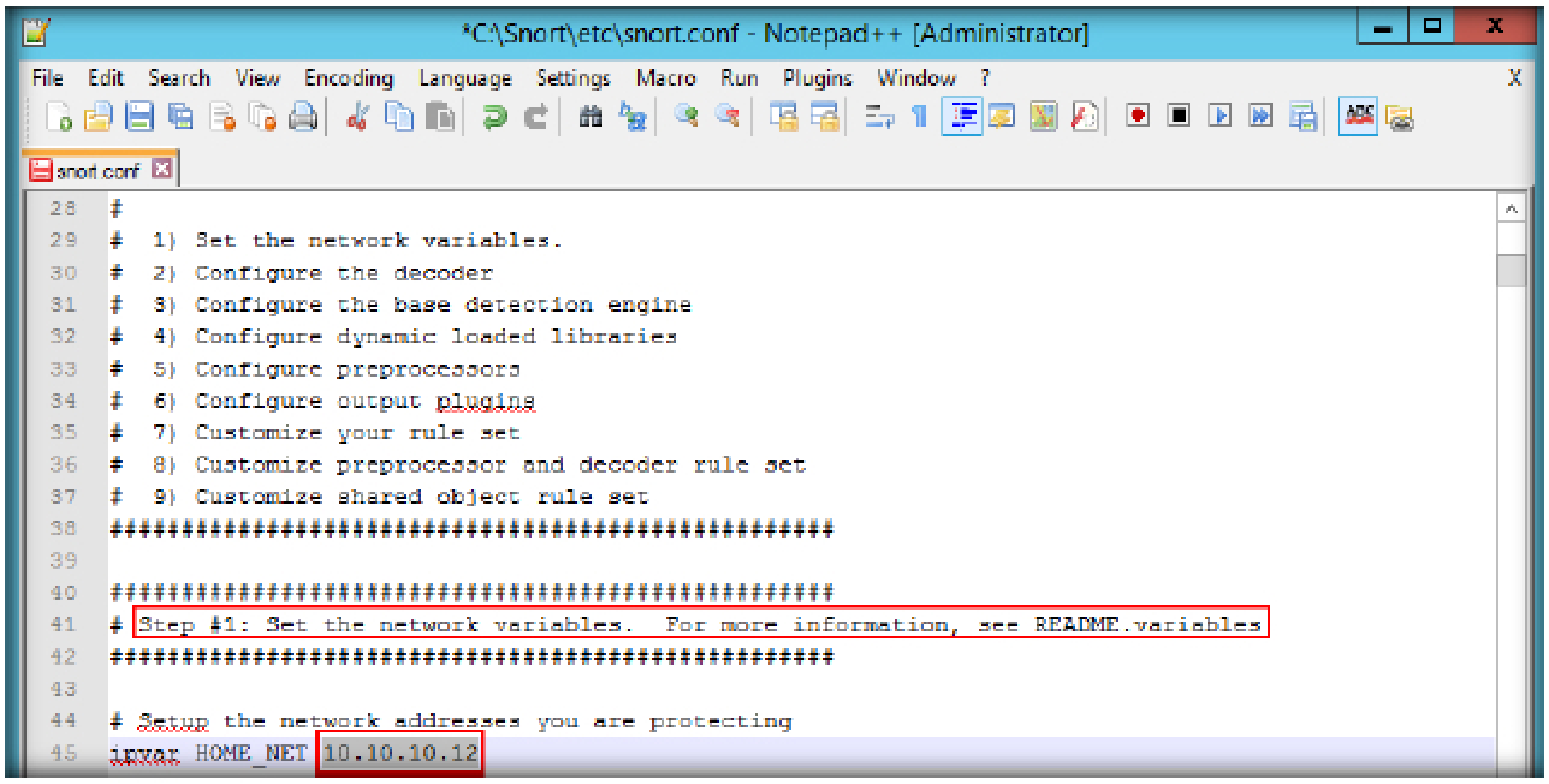

C:\Snort\etc\snort.conf - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
snort.conf

```
1  #----------------------------------------------------
2  #   VRT Rule Packages Snort.conf
3  #
4  #   For more information visit us at:
5  #     http://www.snort.org                     Snort Website
6  #     http://vrt-blog.snort.org/    Sourcefire VRT Blog
7  #
8  #     Mailing list Contact:      snort-sigs@lists.sourceforge.net
9  #     False Positive reports:    fp@sourcefire.com
10 #     Snort bugs:                bugs@snort.org
11 #
12 #     Compatible with Snort Versions:
13 #     VERSIONS : 2.9.8.3
14 #
```

FIGURE 1.10: Snort.conf File in Notepad++

30. Scroll down to **Step #1: Set the network variables** section (Line 41) of snort.conf file. In the **HOME_NET** line (Line 45), replace **any** with the IP address of the machine (Network Administrator Machine) on which Snort is running. Here, the Network Administrator Machine is Windows Server 2012, and the IP address is 10.10.10.12

Note: This IP address may vary in your lab environment


*C:\Snort\etc\snort.conf - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
snort.conf

```
28  #
29  #  1) Set the network variables.
30  #  2) Configure the decoder
31  #  3) Configure the base detection engine
32  #  4) Configure dynamic loaded libraries
33  #  5) Configure preprocessors
34  #  6) Configure output plugins
35  #  7) Customize your rule set
36  #  8) Customize preprocessor and decoder rule set
37  #  9) Customize shared object rule set
38  ###################################################
39
40  ###################################################
41  # Step #1: Set the network variables.  For more information, see README.variables
42  ###################################################
43
44  # Setup the network addresses you are protecting
45  ipvar HOME_NET 10.10.10.12
```

FIGURE 1.11: Configuring Snort.conf File in Notepad++

The element 'any' can be used to match all IPs, although 'any' is not allowed. Also, negated IP ranges that are more general than non-negated IP ranges are not allowed.

31. Leave the **EXTERNAL_NET any** line as it is

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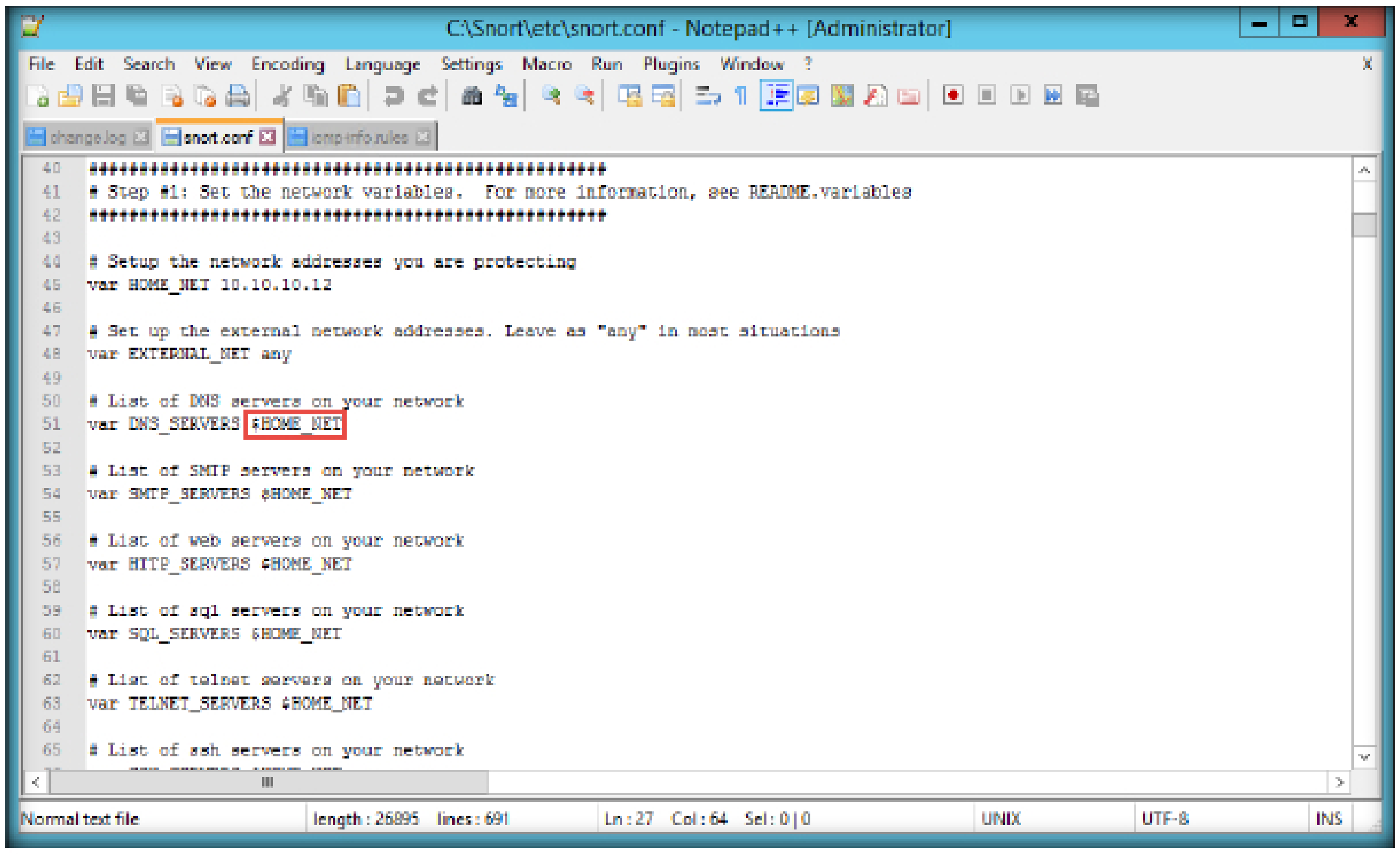
32. If you have a **DNS Server**, then make changes in the **DNS_SERVERS** line by replacing **$HOME_NET** with your DNS Server IP address; otherwise, leave this line as it is

Log packets in tcpdump format and to produce minimal alerts, type: snort -b -A fast -c snort.conf.


C:\Snort\etc\snort.conf - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
change.log
snort.conf
icmp-info.rules
Normal text file
length : 26895 lines : 691
Ln : 27 Col : 64 Sel : 0 | 0
UNIX
UTF-8
INS

```
###################################################
# Step #1: Set the network variables.  For more information, see README.variables
###################################################

# Setup the network addresses you are protecting
var HOME_NET 10.10.10.12

# Set up the external network addresses. Leave as "any" in most situations
var EXTERNAL_NET any

# List of DNS servers on your network
var DNS_SERVERS $HOME_NET

# List of SMTP servers on your network
var SMTP_SERVERS $HOME_NET

# List of web servers on your network
var HTTP_SERVERS $HOME_NET

# List of sql servers on your network
var SQL_SERVERS $HOME_NET

# List of telnet servers on your network
var TELNET_SERVERS $HOME_NET

# List of ssh servers on your network
```

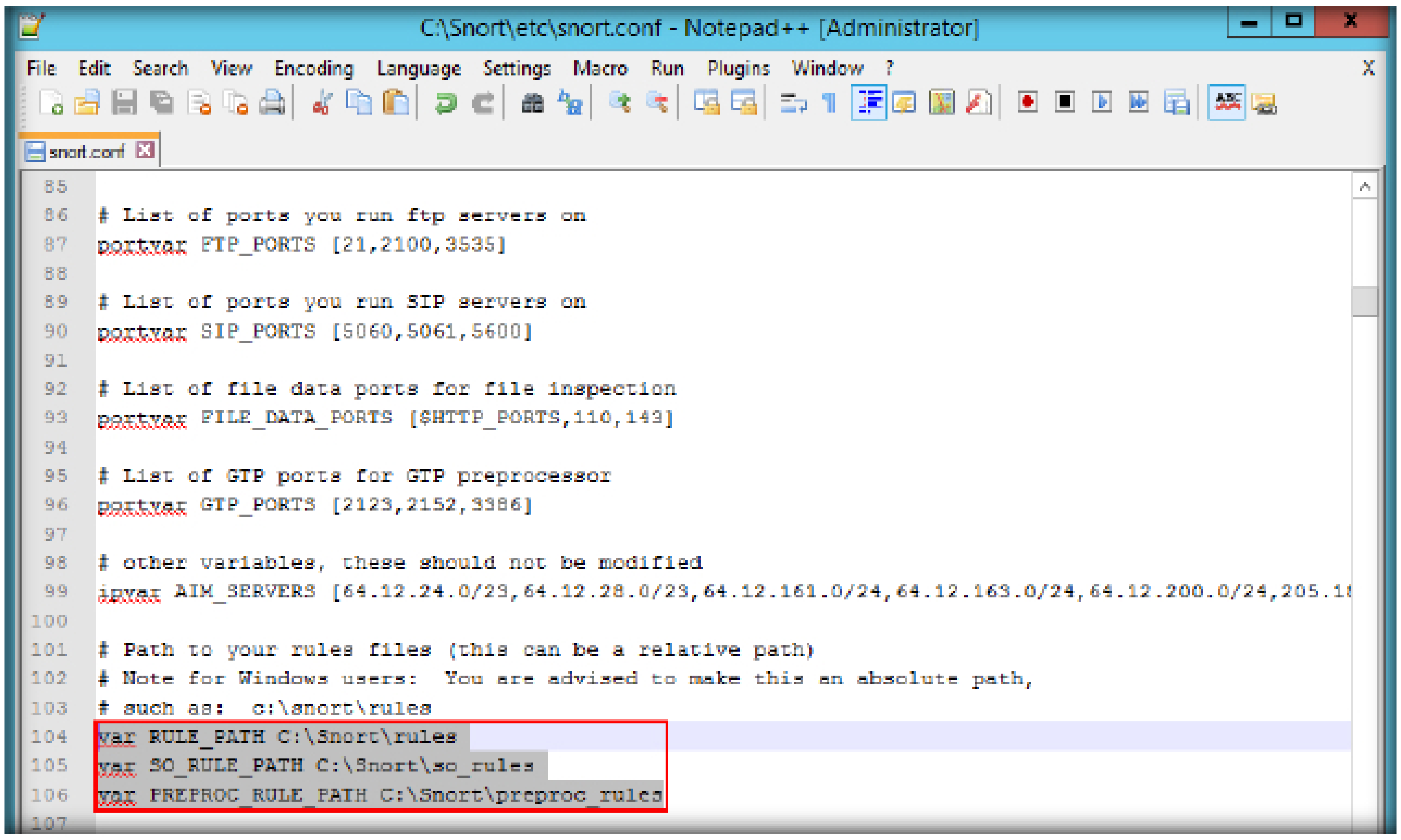
FIGURE 1.12: Configuring Snort.conf File in Notepad++

33. The same applies to SMTP_SERVERS, HTTP_SERVERS, SQL_SERVERS, TELNET_SERVERS, and SSH_SERVERS

34. Remember that if you don't have any servers running on your machine, leave the line as it is. **DO NOT** make any changes in that line

35. Scroll down to **RULE_PATH** (Line 104). In Line 104 replace **../rules** with **C:\Snort\rules**, in Line 105 **../so_rules** replace with **C:\Snort\so_rules**, and in Line 106 replace **../preproc_rules** with **C:\Snort\preproc_rules**

Rule variable names can be modified in several ways. You can define meta-variables using the $ operator. These can be used with the variable modifier operators ? and -.


C:\Snort\etc\snort.conf - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
snort.conf

```
 85
 86  # List of ports you run ftp servers on
 87  portvar FTP_PORTS [21,2100,3535]
 88
 89  # List of ports you run SIP servers on
 90  portvar SIP_PORTS [5060,5061,5600]
 91
 92  # List of file data ports for file inspection
 93  portvar FILE_DATA_PORTS [$HTTP_PORTS,110,143]
 94
 95  # List of GTP ports for GTP preprocessor
 96  portvar GTP_PORTS [2123,2152,3386]
 97
 98  # other variables, these should not be modified
 99  ipvar AIM_SERVERS [64.12.24.0/23,64.12.28.0/23,64.12.161.0/24,64.12.163.0/24,64.12.200.0/24,205.1
100
101  # Path to your rules files (this can be a relative path)
102  # Note for Windows users:  You are advised to make this an absolute path,
103  # such as:  c:\snort\rules
104  var RULE_PATH C:\Snort\rules
105  var SO_RULE_PATH C:\Snort\so_rules
106  var PREPROC_RULE_PATH C:\Snort\preproc_rules
107
```

FIGURE 1.13: Configuring Snort.conf File in Notepad++

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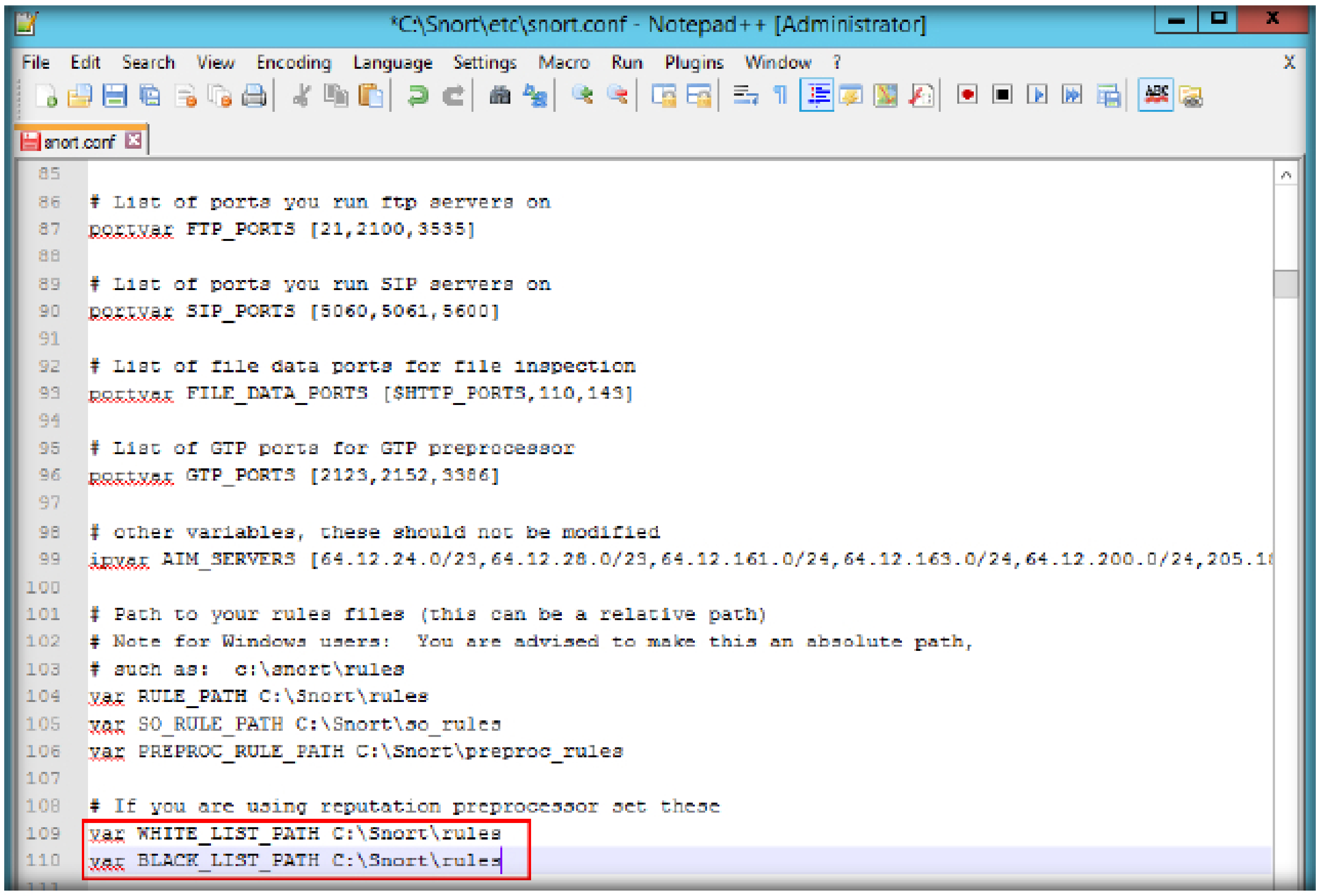
36. In Lines 109 and 110, replace **../rules** with **C:\Snort\rules**


*C:\Snort\etc\snort.conf - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
snort.conf

```
 85
 86 # List of ports you run ftp servers on
 87 portvar FTP_PORTS [21,2100,3535]
 88
 89 # List of ports you run SIP servers on
 90 portvar SIP_PORTS [5060,5061,5600]
 91
 92 # List of file data ports for file inspection
 93 portvar FILE_DATA_PORTS [$HTTP_PORTS,110,143]
 94
 95 # List of GTP ports for GTP preprocessor
 96 portvar GTP_PORTS [2123,2152,3386]
 97
 98 # other variables, these should not be modified
 99 ipvar AIM_SERVERS [64.12.24.0/23,64.12.28.0/23,64.12.161.0/24,64.12.163.0/24,64.12.200.0/24,205.1
100
101 # Path to your rules files (this can be a relative path)
102 # Note for Windows users:  You are advised to make this an absolute path,
103 # such as:  c:\snort\rules
104 var RULE_PATH C:\Snort\rules
105 var SO_RULE_PATH C:\Snort\so_rules
106 var PREPROC_RULE_PATH C:\Snort\preproc_rules
107
108 # If you are using reputation preprocessor set these
109 var WHITE_LIST_PATH C:\Snort\rules
110 var BLACK_LIST_PATH C:\Snort\rules
```

FIGURE 1.14: Configuring Snort.conf File in Notepad++

The include keyword allows other rule files to be included within the rule file indicated on the Snort command line. It works much like an #include from the C programming language, reading the contents of the named file and adding the contents in the place where the include statement appears in the file.

37. Navigate to **C:\Snort\rules,** and create two text files; name them **white_list** and **black_list** and change their file extensions from **.txt** to **.rules**

38. While changing the extension, if any pop-up appears, click **Yes**

39. Switch back to Notepad ++, scroll down to **Step #4: Configure dynamic loaded libraries** section (Line 238). Configure **dynamic loaded libraries** in this section

40. At the path to dynamic preprocessor libraries (Line 243), replace **/usr/local/lib/snort_dynamicpreprocessor/** with your dynamic preprocessor libraries folder location

41. In this lab, dynamic preprocessor libraries are located at **C:\Snort\lib\snort_dynamicpreprocessor**

42. At the path to base preprocessor (or dynamic) engine (Line 246); replace **/usr/local/lib/snort_dynamicengine/libsf_engine.so** with your base preprocessor engine **C:\Snort\lib\snort_dynamicengine\sf_engine.dll**

Preprocessors allow the functionality of Snort to be extended by allowing users and programmers to drop modular plug-ins into Snort fairly easily.

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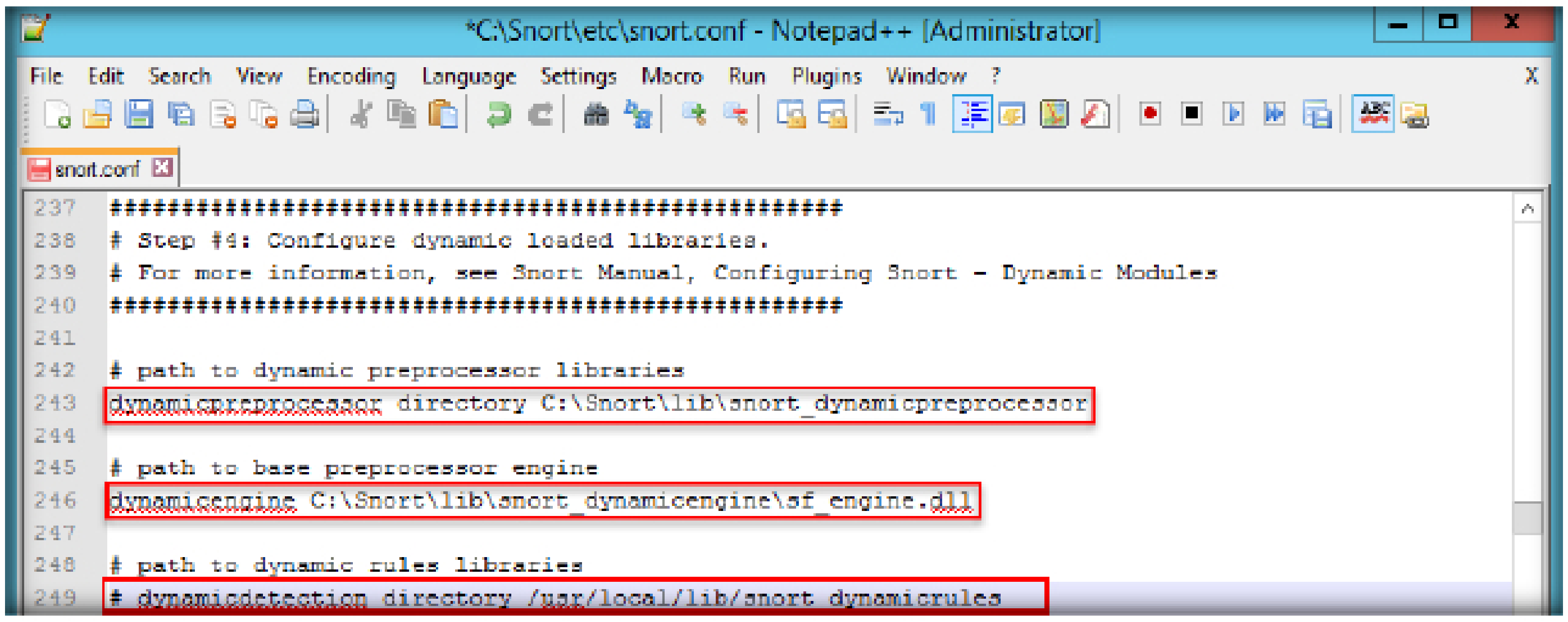
43. **Comment (#)** the dynamic rules libraries line as you already configured the libraries in dynamic preprocessor libraries (Line 249)


*C:\Snort\etc\snort.conf - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
snort.conf

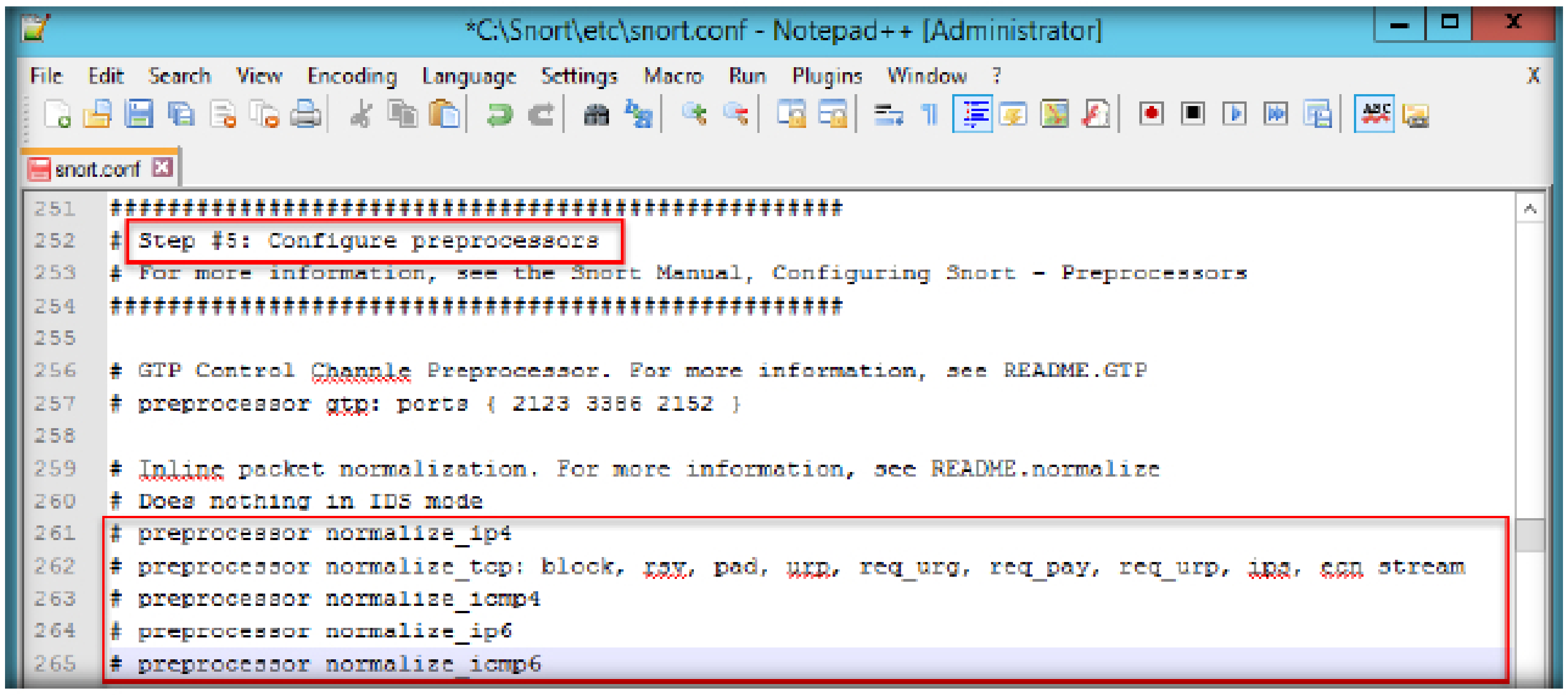
```
237 ####################################################
238 # Step #4: Configure dynamic loaded libraries.
239 # For more information, see Snort Manual, Configuring Snort - Dynamic Modules
240 ####################################################
241 
242 # path to dynamic preprocessor libraries
243 dynamicpreprocessor directory C:\Snort\lib\snort_dynamicpreprocessor
244 
245 # path to base preprocessor engine
246 dynamicengine C:\Snort\lib\snort_dynamicengine\sf_engine.dll
247 
248 # path to dynamic rules libraries
249 # dynamicdetection directory /usr/local/lib/snort_dynamicrules
```

FIGURE 1.15: Configuring Snort.conf File in Notepad++

Note: Preprocessor code is run before the detection engine is called, but after the packet has been decoded. The packet can be modified or analyzed in an out-of-band manner using this mechanism.

44. Scroll down to **Step #5: Configure Preprocessors** section (Line 252), the listed preprocessor. Do nothing in IDS mode, but generate errors at runtime

45. Comment all the preprocessors listed in this section by adding **#** before each preprocessor rule (261-265)


*C:\Snort\etc\snort.conf - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
snort.conf

```
251 ####################################################
252 # Step #5: Configure preprocessors
253 # For more information, see the Snort Manual, Configuring Snort - Preprocessors
254 ####################################################
255 
256 # GTP Control Channle Preprocessor. For more information, see README.GTP
257 # preprocessor gtp: ports { 2123 3386 2152 }
258 
259 # Inline packet normalization. For more information, see README.normalize
260 # Does nothing in IDS mode
261 # preprocessor normalize_ip4
262 # preprocessor normalize_tcp: block, rsv, pad, urp, req_urg, req_pay, req_urp, ips, ecn stream
263 # preprocessor normalize_icmp4
264 # preprocessor normalize_ip6
265 # preprocessor normalize_icmp6
```

FIGURE 1.16: Configuring Snort.conf File in Notepad++

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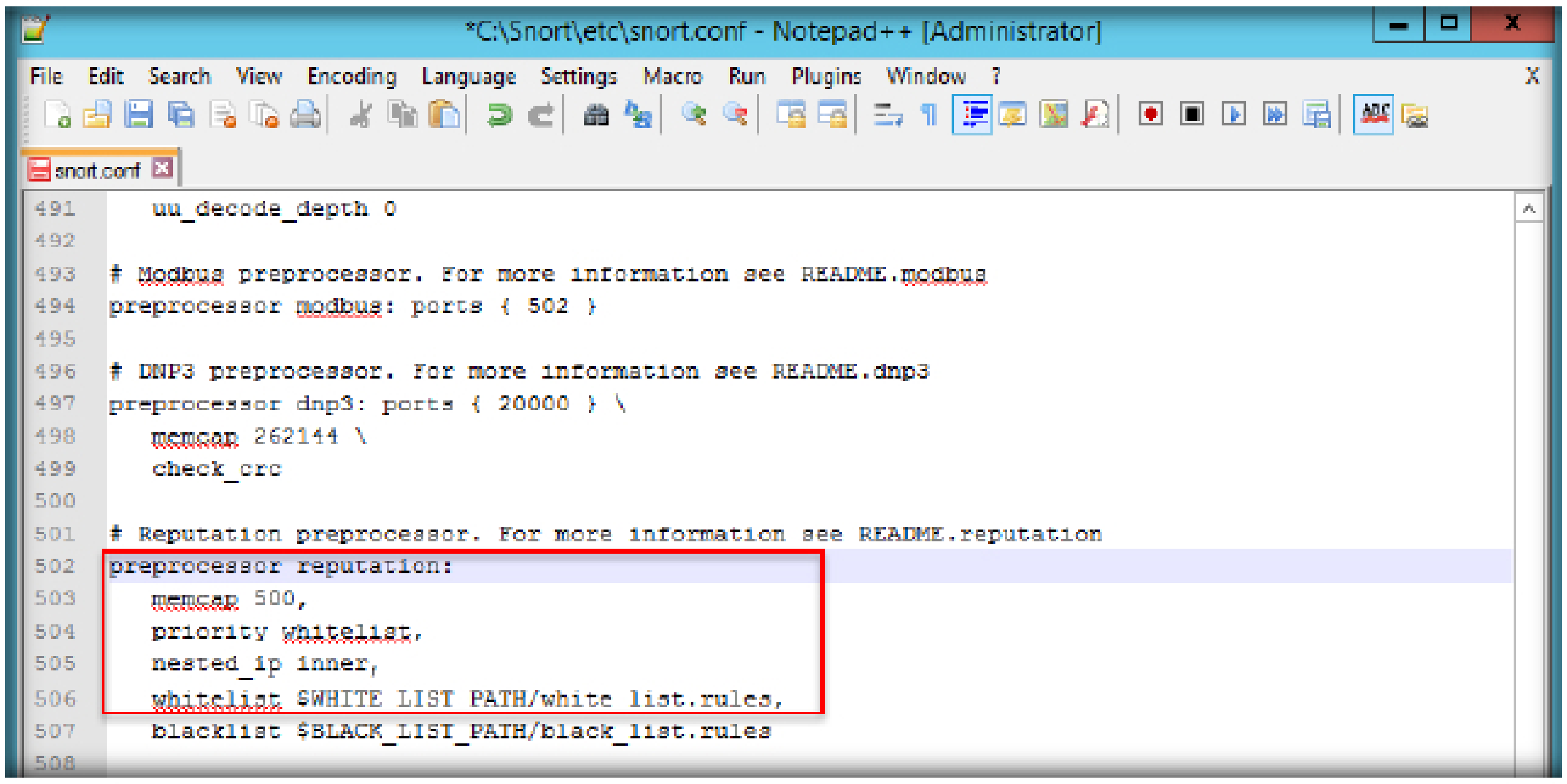
46. Go to lines **502-506** and remove the backslash at the end of each line

Make sure to grab the rules for the version of Snort you are installing.

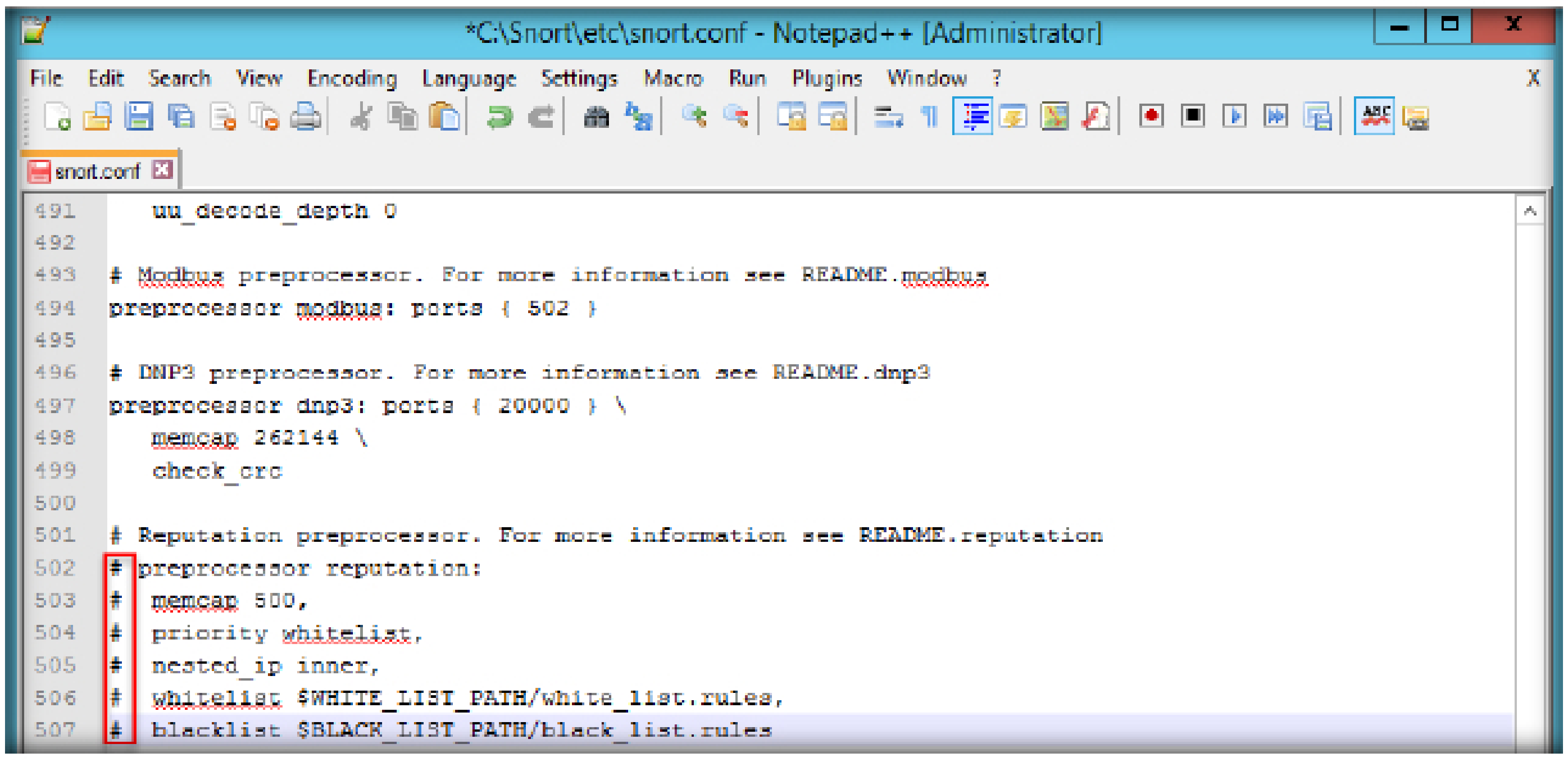


```
491     uu_decode_depth 0
492
493 # Modbus preprocessor. For more information see README.modbus
494 preprocessor modbus: ports { 502 }
495
496 # DNP3 preprocessor. For more information see README.dnp3
497 preprocessor dnp3: ports { 20000 } \
498     memcap 262144 \
499     check_crc
500
501 # Reputation preprocessor. For more information see README.reputation
502 preprocessor reputation:
503     memcap 500,
504     priority whitelist,
505     nested_ip inner,
506     whitelist $WHITE_LIST_PATH/white_list.rules,
507     blacklist $BLACK_LIST_PATH/black_list.rules
508
```

FIGURE 1.17: Configuring Snort.conf File in Notepad++

47. Comment (add **#**) the lines **502-507,** as shown in the screenshot

Frag3 is intended as a replacement for the frag2 defragmentation module and was designed with the following goals:
1. Faster execution than frag2 with less complex data management.
2. Target-based host modeling anti-evasion techniques.



```
491     uu_decode_depth 0
492
493 # Modbus preprocessor. For more information see README.modbus
494 preprocessor modbus: ports { 502 }
495
496 # DNP3 preprocessor. For more information see README.dnp3
497 preprocessor dnp3: ports { 20000 } \
498     memcap 262144 \
499     check_crc
500
501 # Reputation preprocessor. For more information see README.reputation
502 #preprocessor reputation:
503 #   memcap 500,
504 #   priority whitelist,
505 #   nested_ip inner,
506 #   whitelist $WHITE_LIST_PATH/white_list.rules,
507 #   blacklist $BLACK_LIST_PATH/black_list.rules
```

FIGURE 1.18: Configuring Snort.conf File in Notepad++

48. Scroll down to **Step #6: Configure output plugins** (Line 510). In this step, provide the location of the **classification.config** and **reference.config** files

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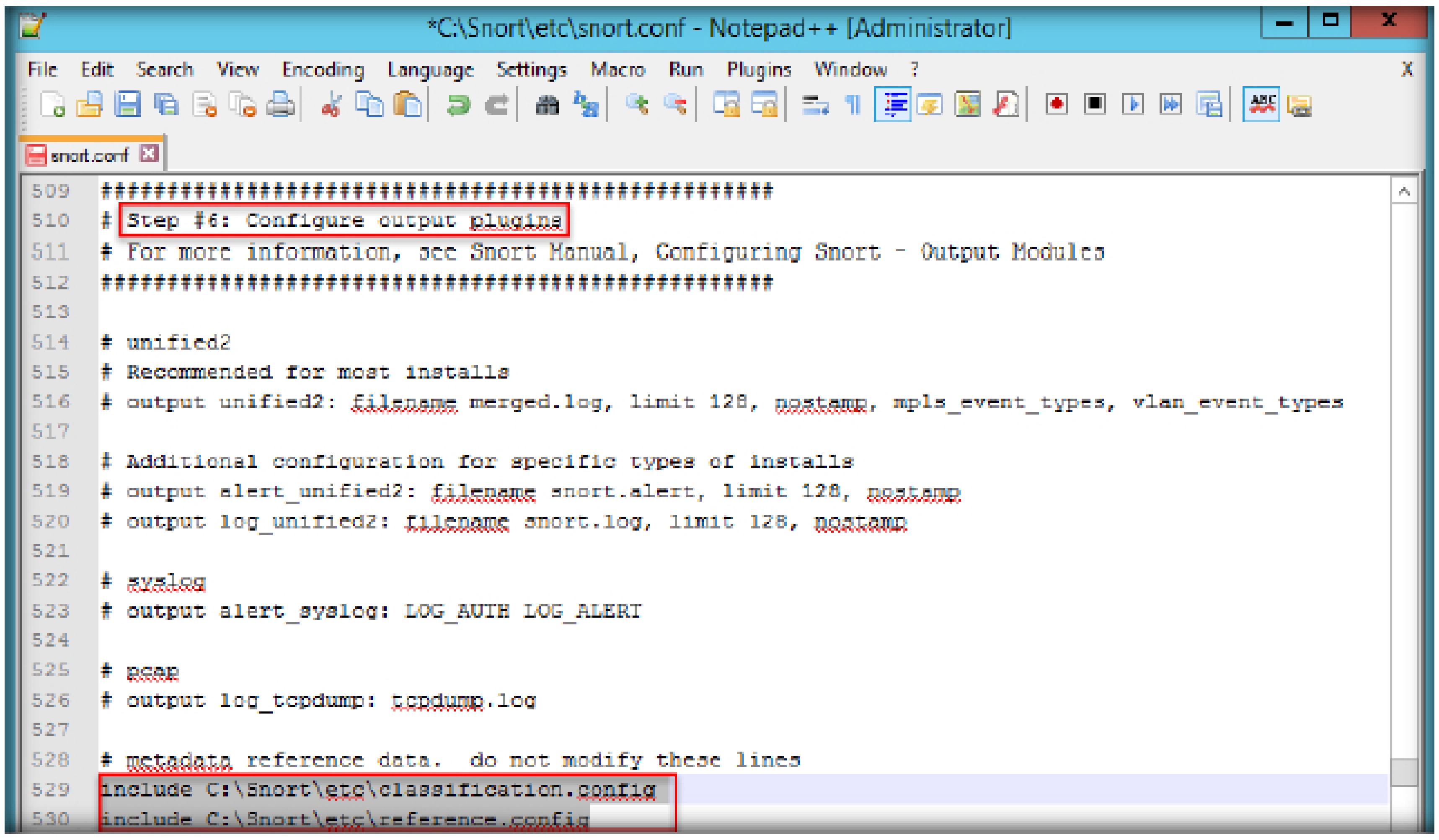
49. These two files are in **C:\Snort\etc**. Provide this location of files in configure output plugins (in Lines 529 and 530) i.e., **C:\Snort\etc\classification.config** and **C:\Snort\etc\reference.config**

Many configuration and command line options of Snort can be specified in the configuration file. Format: config <directive> [: <value>].

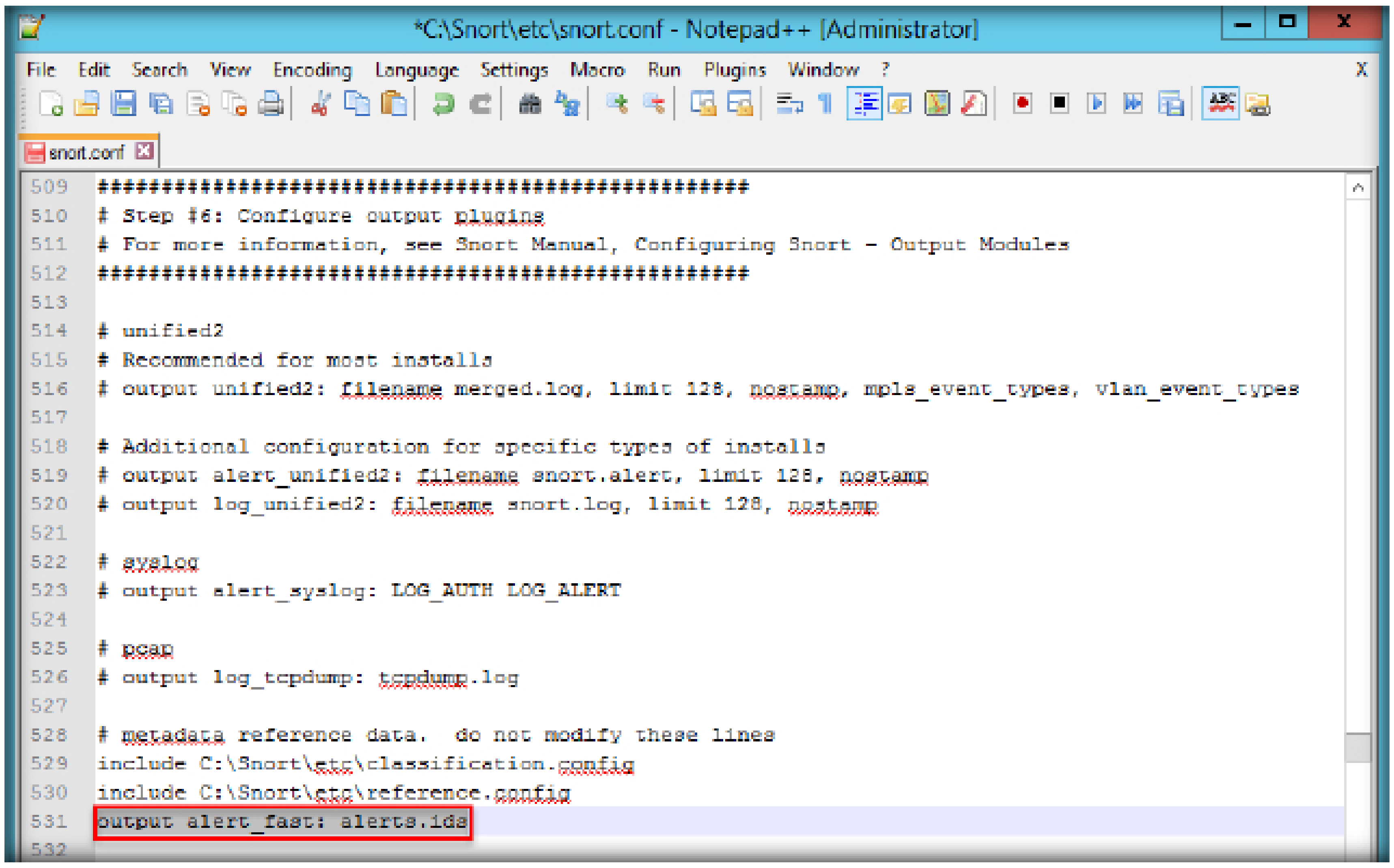

*C:\Snort\etc\snort.conf - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
snort.conf

```
509 ###################################################
510 # Step #6: Configure output plugins
511 # For more information, see Snort Manual, Configuring Snort - Output Modules
512 ###################################################
513
514 # unified2
515 # Recommended for most installs
516 # output unified2: filename merged.log, limit 128, nostamp, mpls_event_types, vlan_event_types
517
518 # Additional configuration for specific types of installs
519 # output alert_unified2: filename snort.alert, limit 128, nostamp
520 # output log_unified2: filename snort.log, limit 128, nostamp
521
522 # syslog
523 # output alert_syslog: LOG_AUTH LOG_ALERT
524
525 # pcap
526 # output log_tcpdump: tcpdump.log
527
528 # metadata reference data.  do not modify these lines
529 include C:\Snort\etc\classification.config
530 include C:\Snort\etc\reference.config
```

FIGURE 1.19: Configuring Snort.conf File in Notepad++

50. In **Step #6**, add the line (531) **output alert_fast: alerts.ids**, for Snort to dump all logs in the **alerts.ids** file

Note: 'ipvar's are enabled only with IPv6 support. Without IPv6 support, use a regular 'var.'


*C:\Snort\etc\snort.conf - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
snort.conf

```
509 ###################################################
510 # Step #6: Configure output plugins
511 # For more information, see Snort Manual, Configuring Snort - Output Modules
512 ###################################################
513
514 # unified2
515 # Recommended for most installs
516 # output unified2: filename merged.log, limit 128, nostamp, mpls_event_types, vlan_event_types
517
518 # Additional configuration for specific types of installs
519 # output alert_unified2: filename snort.alert, limit 128, nostamp
520 # output log_unified2: filename snort.log, limit 128, nostamp
521
522 # syslog
523 # output alert_syslog: LOG_AUTH LOG_ALERT
524
525 # pcap
526 # output log_tcpdump: tcpdump.log
527
528 # metadata reference data.  do not modify these lines
529 include C:\Snort\etc\classification.config
530 include C:\Snort\etc\reference.config
531 output alert_fast: alerts.ids
532
```

FIGURE 1.20: Configuring Snort.conf File in Notepad++

51. Save the **snort.conf** file

52. Before running Snort, you need to enable detection rules in the Snort rules file. For this lab, we have enabled the ICMP rule so that Snort can detect any host discovery ping probes to the system running Snort

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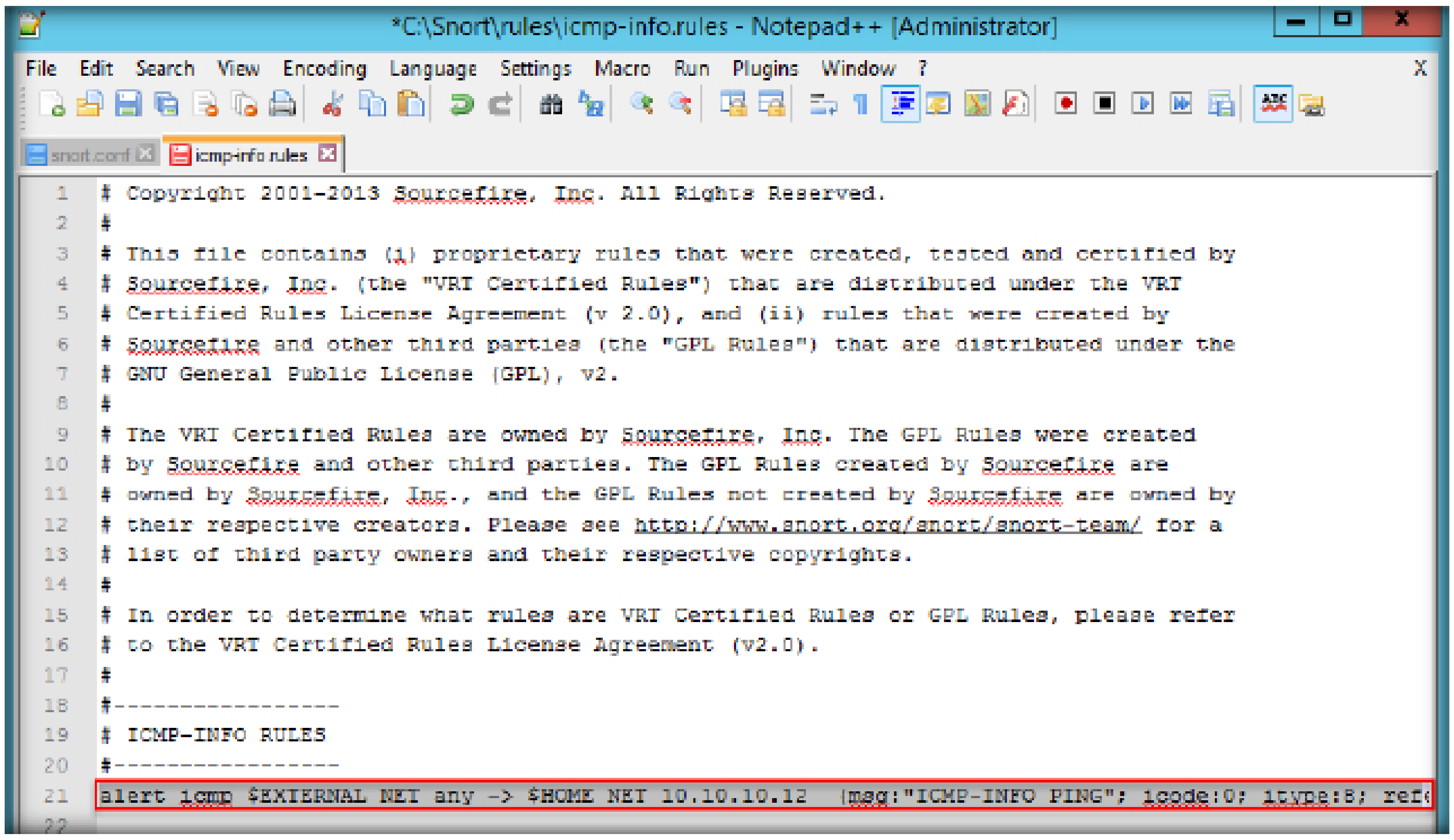
53. Navigate to **C:\Snort\rules** and open the **icmp-info.rules** file with Notepad ++

54. Type **alert icmp $EXTERNAL_NET any -> $HOME_NET 10.10.10.12 (msg:"ICMP-INFO PING"; icode:0; itype:8; reference:arachnids,135; reference:cve,1999-0265; classtype:bad-unknown; sid:472; rev:7;)** in line 21, and save it

To run Snort as a daemon, add -D switch to any combination. Notice that if you want to be able to restart Snort by sending a SIGHUP signal to the daemon, specify the full path to the Snort binary when you start it, for example: /usr/local/bin/snort -d -h 192.x.x.x/24 \ -l /var/log/snortlogs -c /usr/local/etc/snort.conf -s -D

Note: The IP address (10.10.10.12) mentioned in $HOME_NET may vary in your lab environment


*C:\Snort\rules\icmp-info.rules - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
snort.conf
icmp-info.rules

```
1  # Copyright 2001-2013 Sourcefire, Inc. All Rights Reserved.
2  #
3  # This file contains (i) proprietary rules that were created, tested and certified by
4  # Sourcefire, Inc. (the "VRT Certified Rules") that are distributed under the VRT
5  # Certified Rules License Agreement (v 2.0), and (ii) rules that were created by
6  # Sourcefire and other third parties (the "GPL Rules") that are distributed under the
7  # GNU General Public License (GPL), v2.
8  #
9  # The VRT Certified Rules are owned by Sourcefire, Inc. The GPL Rules were created
10 # by Sourcefire and other third parties. The GPL Rules created by Sourcefire are
11 # owned by Sourcefire, Inc., and the GPL Rules not created by Sourcefire are owned by
12 # their respective creators. Please see http://www.snort.org/snort/snort-team/ for a
13 # list of third party owners and their respective copyrights.
14 #
15 # In order to determine what rules are VRT Certified Rules or GPL Rules, please refer
16 # to the VRT Certified Rules License Agreement (v2.0).
17 #
18 #-----------------
19 # ICMP-INFO RULES
20 #-----------------
21 alert icmp $EXTERNAL_NET any -> $HOME_NET 10.10.10.12  (msg:"ICMP-INFO PING"; icode:0; itype:8; ref
22
```

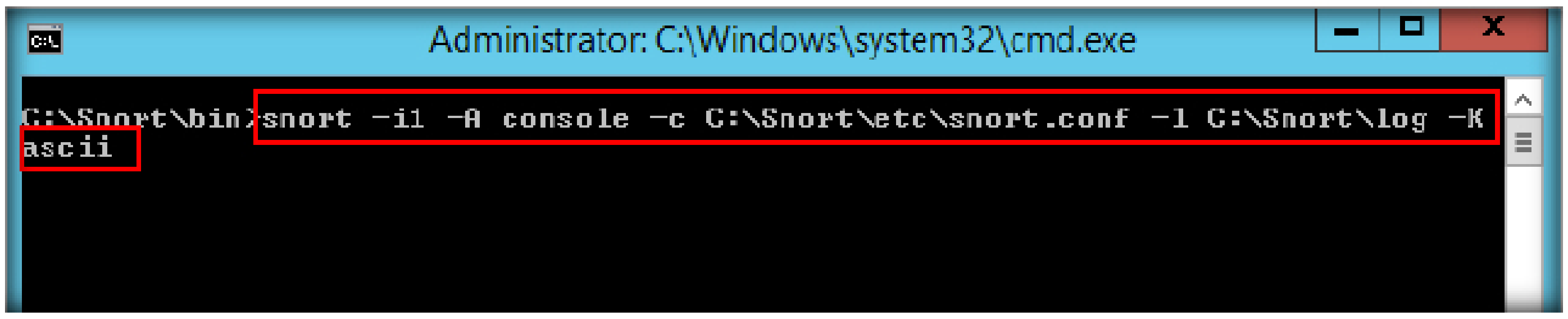
FIGURE 1.21: Configuring icmp-info.rules File in Notepad++

TASK 4

Validate Configurations

55. Minimize all the windows that were open and navigate to **C:\Snort** and select **bin** folder, and press **Shift** + **right-click**, and then click **Open command window here** from the context menu to open it in the command prompt

56. Type **snort -iX -A console -c C:\Snort\etc\snort.conf -l C:\Snort\log -K ascii** and press **Enter** to start Snort (replace **X** with your device index number; in this lab: **X** is 1)



```
C:\Snort\bin>snort -i1 -A console -c C:\Snort\etc\snort.conf -l C:\Snort\log -K
ascii
```

FIGURE 1.22: Command to activate Snort and save the stored log files

57. If you receive a **fatal error**, you should first **verify** that you have typed all modifications correctly into the **snort.conf** file, and then search through the file for **entries** matching your fatal error message

58. If you receive an error stating "**Could not create the registry key**," then run the command prompt as an **Administrator**

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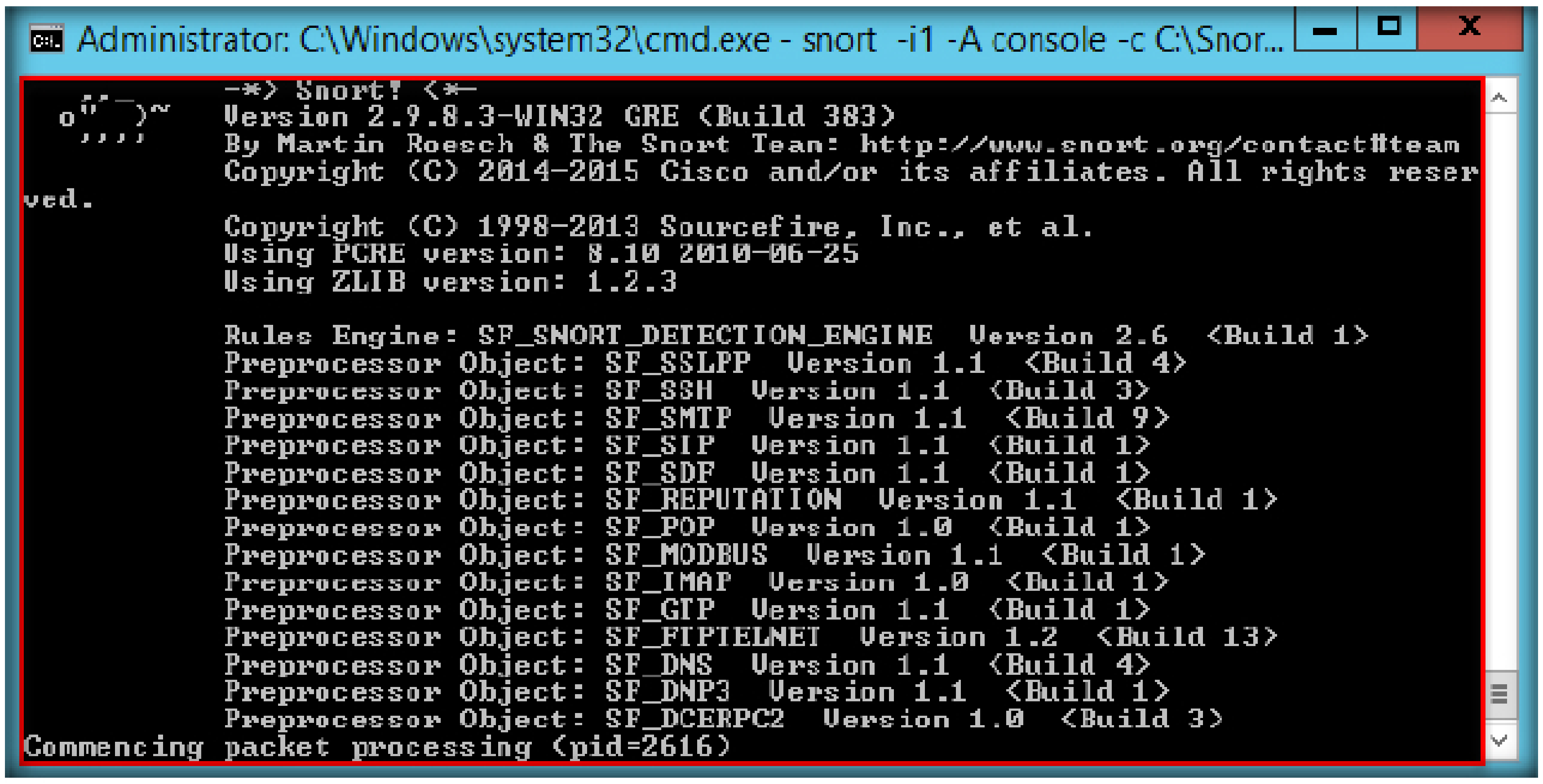
59. Snort starts running in IDS mode. It first initializes output plug-ins, preprocessors, plug-ins, load dynamic preprocessors libraries, rule chains of Snort, and then logs all signatures

Preprocessors are loaded and configured using the 'preprocessor' keyword. The format of the preprocessor directive in the Snort rules file is: preprocessor <name>: <options>.

60. If you enter all the command information correctly, you receive a comment stating **Commencing packet processing <pid=xxxx>** (the value of xxxx may be any number; in this lab, it is 2616), as shown in the screenshot


Administrator: C:\Windows\system32\cmd.exe - snort -i1 -A console -c C:\Snor...

```
   ,,_     -*> Snort! <*-
  o"  )~   Version 2.9.8.3-WIN32 GRE (Build 383)
   ''''    By Martin Roesch & The Snort Team: http://www.snort.org/contact#team
           Copyright (C) 2014-2015 Cisco and/or its affiliates. All rights reser
ved.
           Copyright (C) 1998-2013 Sourcefire, Inc., et al.
           Using PCRE version: 8.10 2010-06-25
           Using ZLIB version: 1.2.3

           Rules Engine: SF_SNORT_DETECTION_ENGINE  Version 2.6  <Build 1>
           Preprocessor Object: SF_SSLPP  Version 1.1  <Build 4>
           Preprocessor Object: SF_SSH  Version 1.1  <Build 3>
           Preprocessor Object: SF_SMTP  Version 1.1  <Build 9>
           Preprocessor Object: SF_SIP  Version 1.1  <Build 1>
           Preprocessor Object: SF_SDF  Version 1.1  <Build 1>
           Preprocessor Object: SF_REPUTATION  Version 1.1  <Build 1>
           Preprocessor Object: SF_POP  Version 1.0  <Build 1>
           Preprocessor Object: SF_MODBUS  Version 1.1  <Build 1>
           Preprocessor Object: SF_IMAP  Version 1.0  <Build 1>
           Preprocessor Object: SF_GTP  Version 1.1  <Build 1>
           Preprocessor Object: SF_FTPTELNET  Version 1.2  <Build 13>
           Preprocessor Object: SF_DNS  Version 1.1  <Build 4>
           Preprocessor Object: SF_DNP3  Version 1.1  <Build 1>
           Preprocessor Object: SF_DCERPC2  Version 1.0  <Build 3>
Commencing packet processing (pid=2616)
```

FIGURE 1.23: Initializing Snort Rule Chains Window

61. After initializing the interface and logged signatures, Snort starts and waits for an attack and triggers an alert when attacks occur on the machine

62. Leave the Snort command prompt running

63. Attack your own machine, and check whether Snort detects it or not

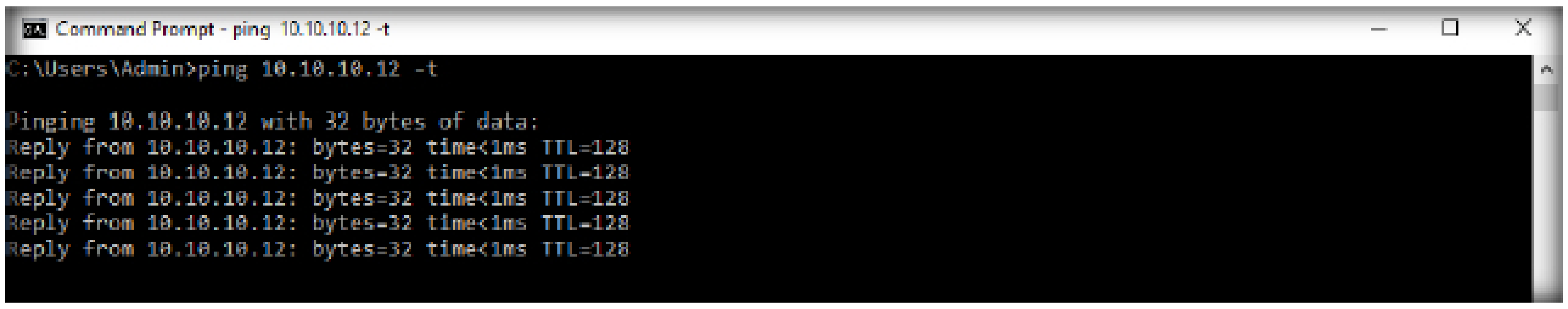
TASK 5

Ping the host Machine

64. Launch the **Windows 10** virtual machine and login

65. Open the command prompt and issue the command **ping 10.10.10.12 -t** from the **Windows 10** machine

Note: **10.10.10.12** is the IP address of the **Windows Server 2012** machine. This IP address may differ in your lab environment



```
C:\Users\Admin>ping 10.10.10.12 -t

Pinging 10.10.10.12 with 32 bytes of data:
Reply from 10.10.10.12: bytes=32 time<1ms TTL=128
Reply from 10.10.10.12: bytes=32 time<1ms TTL=128
Reply from 10.10.10.12: bytes=32 time<1ms TTL=128
Reply from 10.10.10.12: bytes=32 time<1ms TTL=128
Reply from 10.10.10.12: bytes=32 time<1ms TTL=128
```

FIGURE 1.24: Pinging the target machine from host machine

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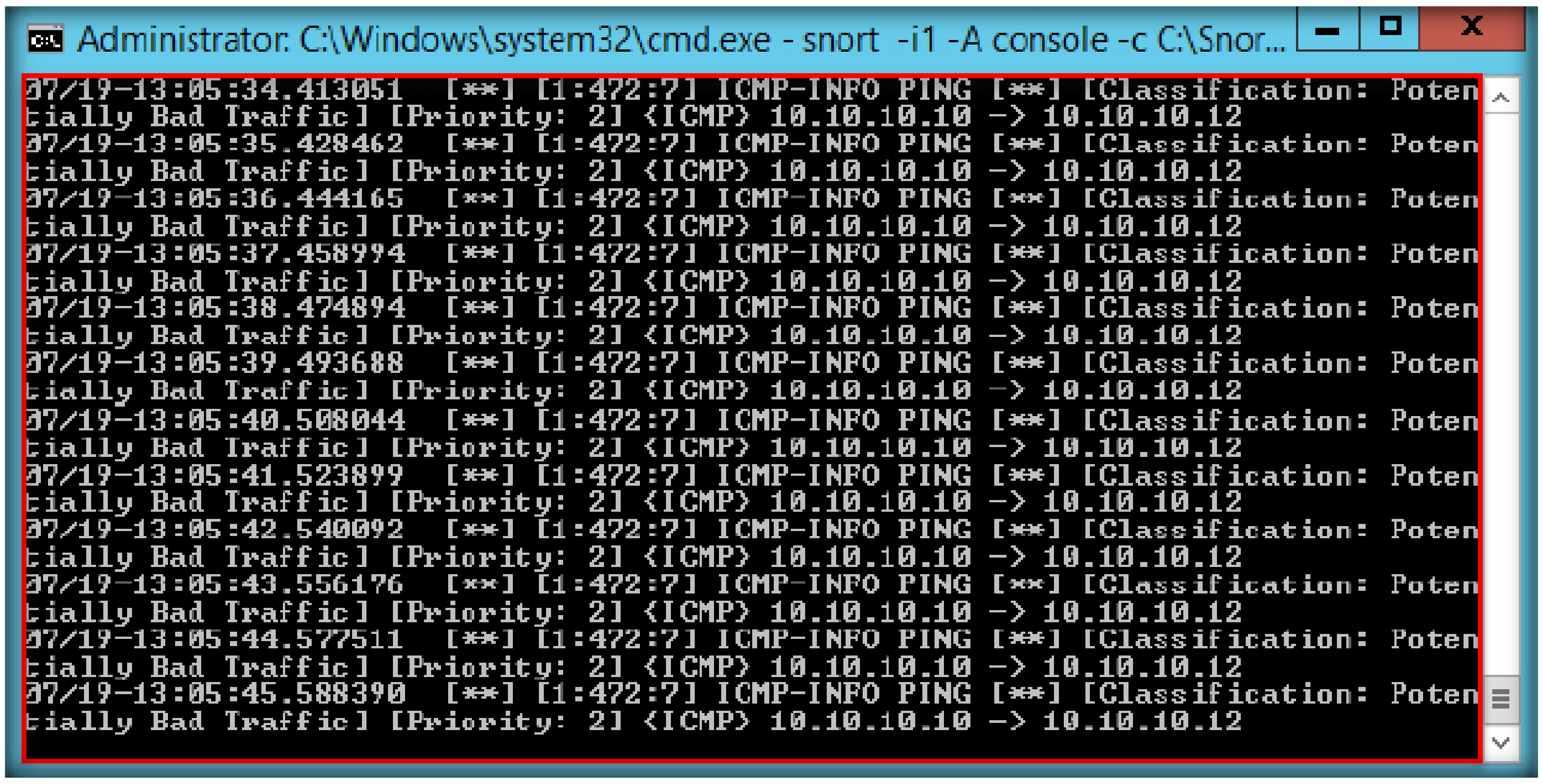
66. Switch back to the Windows Server 2012 machine. Observe that Snort triggers an alarm, as shown in the screenshot

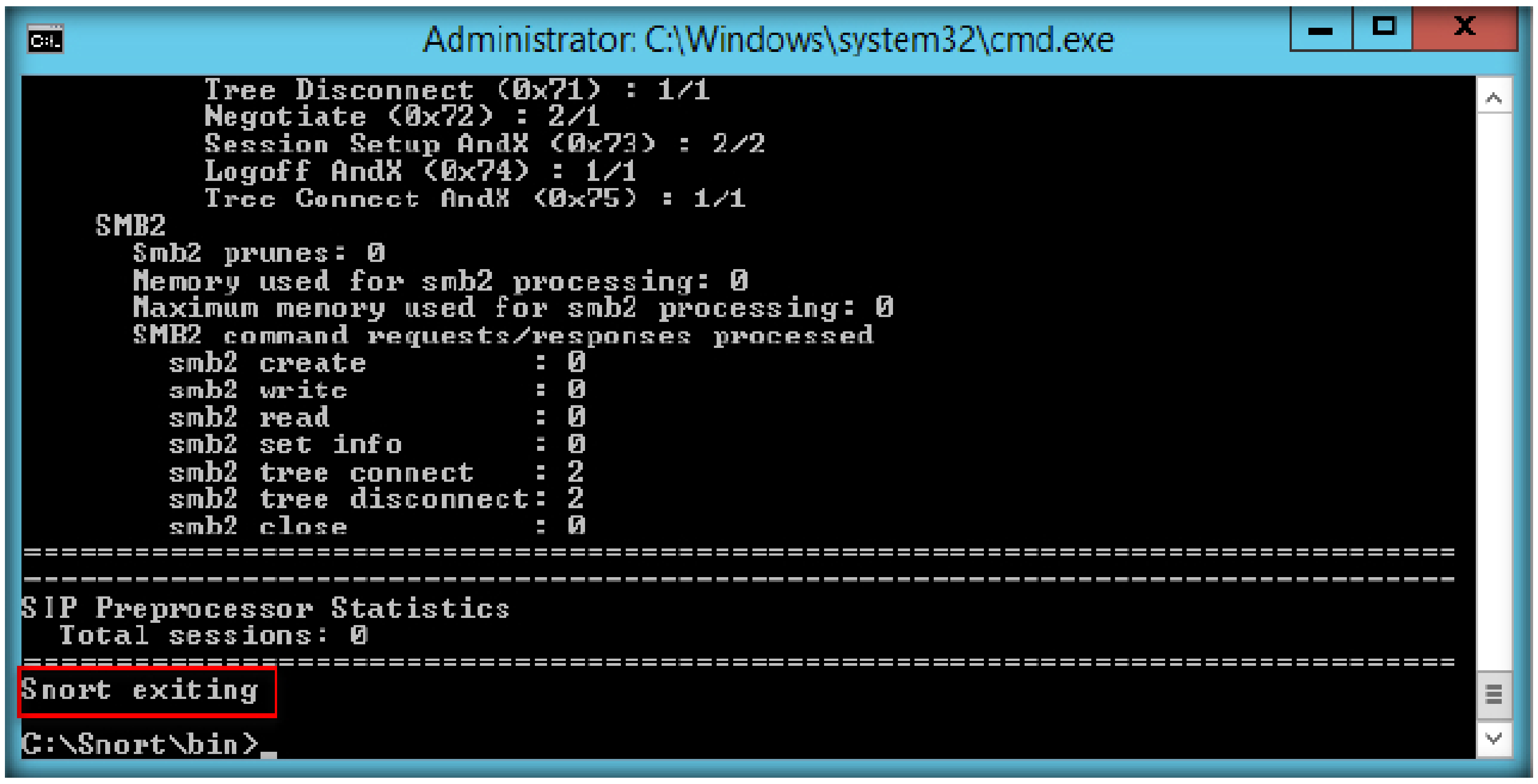
Run Snort as a Daemon syntax: /usr/local/bin/snort -d -h 192.x.x.x/24 \ -l /var/log/snortlogs -c /usr/local/etc/snort.conf -s –D.


Administrator: C:\Windows\system32\cmd.exe - snort -i1 -A console -c C:\Snor...

```
07/19-13:05:34.413051  [**] [1:472:7] ICMP-INFO PING [**] [Classification: Poten
tially Bad Traffic] [Priority: 2] {ICMP} 10.10.10.10 -> 10.10.10.12
07/19-13:05:35.428462  [**] [1:472:7] ICMP-INFO PING [**] [Classification: Poten
tially Bad Traffic] [Priority: 2] {ICMP} 10.10.10.10 -> 10.10.10.12
07/19-13:05:36.444165  [**] [1:472:7] ICMP-INFO PING [**] [Classification: Poten
tially Bad Traffic] [Priority: 2] {ICMP} 10.10.10.10 -> 10.10.10.12
07/19-13:05:37.458994  [**] [1:472:7] ICMP-INFO PING [**] [Classification: Poten
tially Bad Traffic] [Priority: 2] {ICMP} 10.10.10.10 -> 10.10.10.12
07/19-13:05:38.474894  [**] [1:472:7] ICMP-INFO PING [**] [Classification: Poten
tially Bad Traffic] [Priority: 2] {ICMP} 10.10.10.10 -> 10.10.10.12
07/19-13:05:39.493688  [**] [1:472:7] ICMP-INFO PING [**] [Classification: Poten
tially Bad Traffic] [Priority: 2] {ICMP} 10.10.10.10 -> 10.10.10.12
07/19-13:05:40.508044  [**] [1:472:7] ICMP-INFO PING [**] [Classification: Poten
tially Bad Traffic] [Priority: 2] {ICMP} 10.10.10.10 -> 10.10.10.12
07/19-13:05:41.523899  [**] [1:472:7] ICMP-INFO PING [**] [Classification: Poten
tially Bad Traffic] [Priority: 2] {ICMP} 10.10.10.10 -> 10.10.10.12
07/19-13:05:42.540092  [**] [1:472:7] ICMP-INFO PING [**] [Classification: Poten
tially Bad Traffic] [Priority: 2] {ICMP} 10.10.10.10 -> 10.10.10.12
07/19-13:05:43.556176  [**] [1:472:7] ICMP-INFO PING [**] [Classification: Poten
tially Bad Traffic] [Priority: 2] {ICMP} 10.10.10.10 -> 10.10.10.12
07/19-13:05:44.577511  [**] [1:472:7] ICMP-INFO PING [**] [Classification: Poten
tially Bad Traffic] [Priority: 2] {ICMP} 10.10.10.10 -> 10.10.10.12
07/19-13:05:45.588390  [**] [1:472:7] ICMP-INFO PING [**] [Classification: Poten
tially Bad Traffic] [Priority: 2] {ICMP} 10.10.10.10 -> 10.10.10.12
```

FIGURE 1.25: Snort Alerts.ids Window Listing Snort Alert

67. Press **Ctrl+C** to **stop** Snort. Snort exits.



```
          Tree Disconnect (0x71) : 1/1
          Negotiate (0x72) : 2/1
          Session Setup AndX (0x73) : 2/2
          Logoff AndX (0x74) : 1/1
          Tree Connect AndX (0x75) : 1/1
    SMB2
      Smb2 prunes: 0
      Memory used for smb2 processing: 0
      Maximum memory used for smb2 processing: 0
      SMB2 command requests/responses processed
        smb2 create         : 0
        smb2 write          : 0
        smb2 read           : 0
        smb2 set info       : 0
        smb2 tree connect   : 2
        smb2 tree disconnect: 2
        smb2 close          : 0
===============================================================================
-------------------------------------------------------------------------------
SIP Preprocessor Statistics
  Total sessions: 0
===============================================================================
Snort exiting

C:\Snort\bin>_
```

When Snort is run as a Daemon, the daemon creates a PID file in the log directory.

FIGURE 1.26: Exiting snort by pressing Ctrl+C

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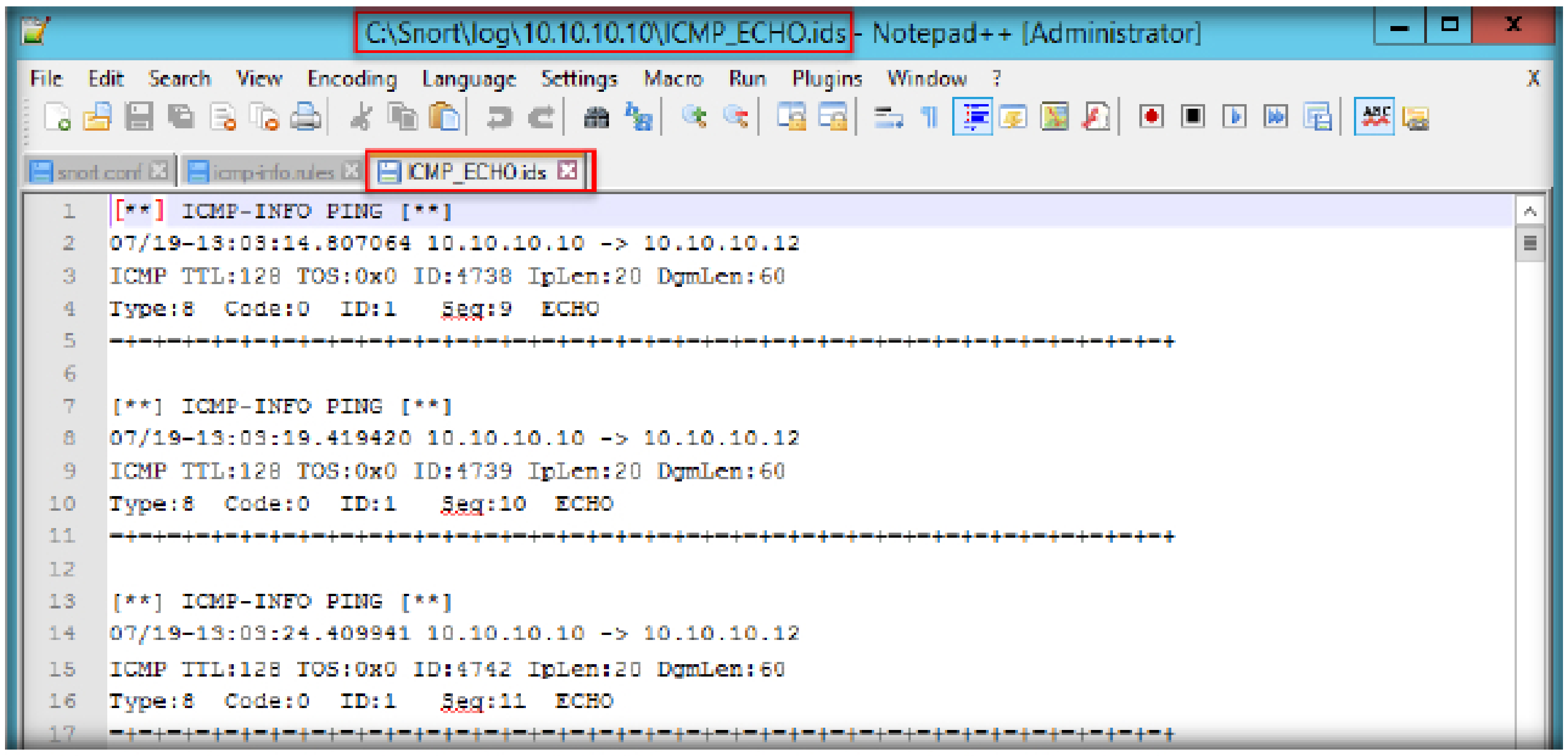
68. Go to the **C:\Snort\log\10.10.10.10** folder, and open the **ICMP_ECHO.ids** file with Notepad++. You see that all the log entries are saved in the **ICMP_ECHO.ids** file

Note: The folder name 10.10.10.10 might vary in your lab environment, depending on the IP address of **Windows 10** machine

Three types of variables may be defined in Snort:

- Var
- Portvar
- ipvar


C:\Snort\log\10.10.10.10\ICMP_ECHO.ids - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
snort.conf
icmp-info.rules
ICMP_ECHO.ids

```
[**] ICMP-INFO PING [**]
07/19-13:03:14.807064 10.10.10.10 -> 10.10.10.12
ICMP TTL:128 TOS:0x0 ID:4738 IpLen:20 DgmLen:60
Type:8  Code:0  ID:1   Seq:9  ECHO
=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+

[**] ICMP-INFO PING [**]
07/19-13:03:19.419420 10.10.10.10 -> 10.10.10.12
ICMP TTL:128 TOS:0x0 ID:4739 IpLen:20 DgmLen:60
Type:8  Code:0  ID:1   Seq:10  ECHO
=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+

[**] ICMP-INFO PING [**]
07/19-13:03:24.409941 10.10.10.10 -> 10.10.10.12
ICMP TTL:128 TOS:0x0 ID:4742 IpLen:20 DgmLen:60
Type:8  Code:0  ID:1   Seq:11  ECHO
=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+
```

FIGURE 1.27: Saved Snort log file

69. This means, whenever an intruder attempts to connect or communicate with the machine, Snort immediately triggers an alarm

70. So, you can become alert and take certain security measures to break the communication with the organization network

Lab Analysis

Analyze and document the results of the lab exercise. Give your opinion on your target's security posture and exposure through free public information.

PLEASE TALK TO YOUR INSTRUCTOR IF YOU HAVE QUESTIONS ABOUT THIS LAB.

Internet Connection Required	
☐ Yes	☑ No
Platform Supported	
☑ Classroom	☑ iLabs

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Lab 2

Detecting Intruders and Worms using KFSensor Honeypot IDS

KFSensor is a Windows-based honeypot IDS.

ICON KEY

- Valuable information
- Test your knowledge
- Web exercise
- Workbook review

Lab Scenario

Intrusion detection plays a key role in ensuring the integrity of a system's security. Network Intrusion Detection Systems (NIDSs) have long been the best method for identifying assaults. KFSensor is an NIDS that is easy to install and configure. No special hardware is required, and its efficient design enables it to run even on low-specification Windows machines.

As a network administrator, you must possess sound knowledge of network IPSs and IDSs, identify network malicious activity and log information, and stop or block malicious network activity.

Lab Objectives

The objective of this lab is to demonstrate the use and configuration of KFSensor Honeypot IDS.

In this lab, you will:

- Detect hackers and worms in a network
- Provide network security

Lab Environment

To complete this lab, you will need:

- KF Sensor is located at **Z:\CND-Tools\CND Module 08 Secure IDS Configuration and Management\Honey Pot and Padded Cell System Tools\KFSensor**
- KF Sensor installed in **Windows Server 2012**
- MegaPing located at **Z:\CND-Tools\CND Module 08 Secure IDS Configuration and Management\Honey Pot and Padded Cell System Tools\MegaPing**

You can also download KFSensor from http://www.keyfocus.net

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- MegaPing is installed in **Windows 10**
- If you have decided to download the latest of version of these tools, then the screen shots may differ
- Administrative privileges to configure settings and run tools

Lab Duration

Time: 25 Minutes

Overview of the Lab

KFSensor contains a powerful internet daemon service that is built to handle multiple ports and IP addresses. It is written to resist denial of service and buffer overflow attacks.

Building on this flexibility KFSensor can respond to connections in a variety of ways, from simple port listening and basic services (such as echo), to complex simulations of standard system services. For the HTTP protocol KFSensor accurately simulates the way Microsoft's web server (IIS) responds to both valid and invalid requests. As well as being able to host a website it also handles complexities such as range requests and client side cache negotiations. This makes it extremely difficult for an attacker to fingerprint, or identify KFSensor as a honeypot.

Lab Tasks

TASK 1

Configure KFSensor

Note: Ensure that WinPcap is installed before running this lab. Before starting this lab make sure that Windows Firewall is turned off in the Windows Server 2012 machine for demonstration purposes. After the completion of this exercise you can turn on the Windows Firewall.

To turn off Windows Firewall navigate to Control Panel, in the Control Panel window click on the Windows Firewall, and in the Windows Firewall window click the Turn Windows Firewall on/off link from the left hand-side. Customize Settings window appears, select **Turn off Windows Firewall (not recommended)** radio button for both the profiles and click **OK**.

1. Log into **Windows Server 2012** virtual machine.
2. Navigate to **Z:\CND-Tools\CND Module 08 Secure IDS Configuration and Management\Honey Pot and Padded Cell System Tools\KFSensor**, double-click **kfsens40.msi** and follow the wizard driven installation steps to install KFSensor.

   Note: After installation if it prompts to reboot the system. **Reboot** the virtual machine.

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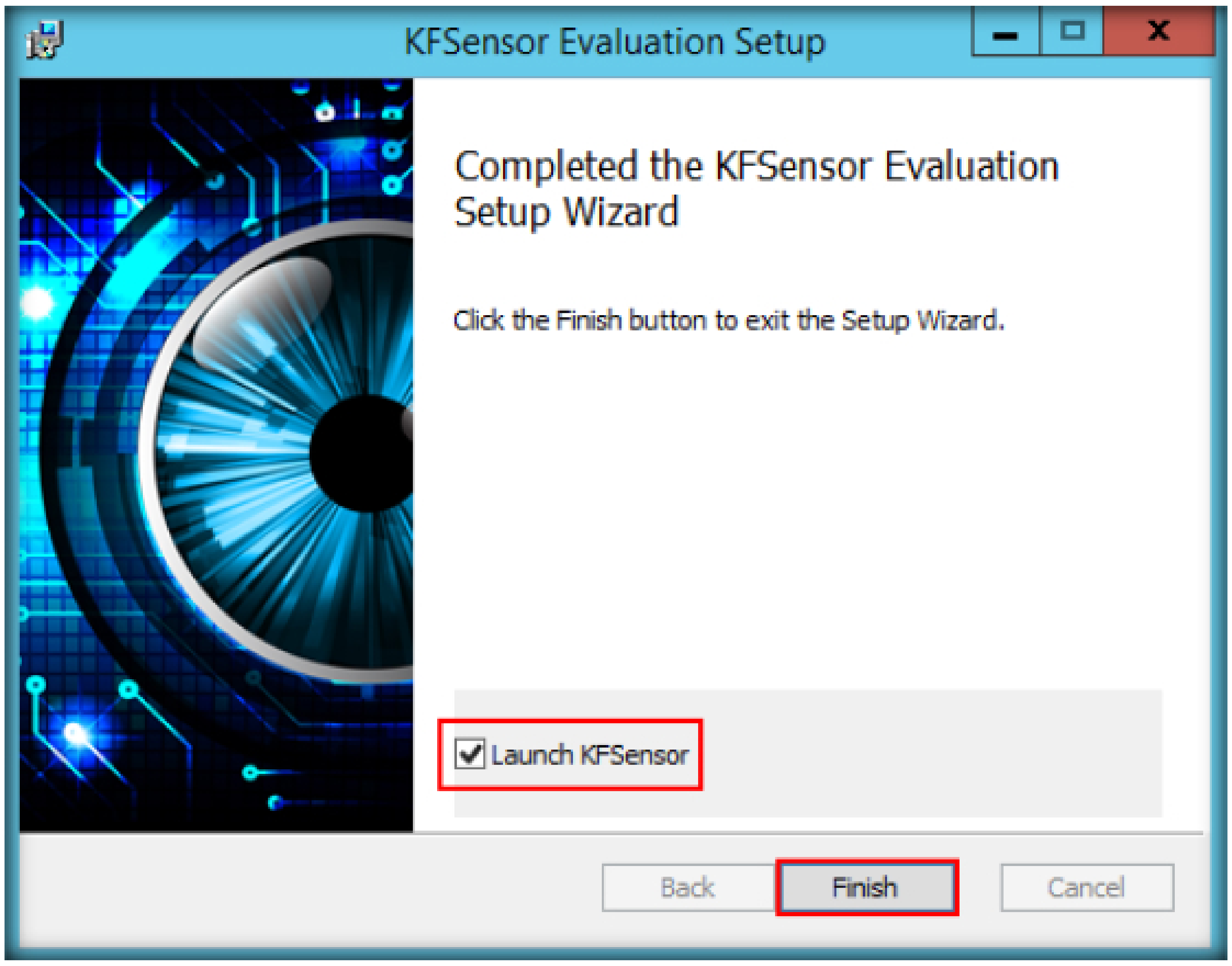
3. Once the installation is finished make sure that the Launch KFSensor option is checked and clicks **Finish**. To launch KFSensor automatically.

The Set up Wizard is used to perform the initial configuration of KFSensor.


KFSensor Evaluation Setup

Completed the KFSensor Evaluation Setup Wizard

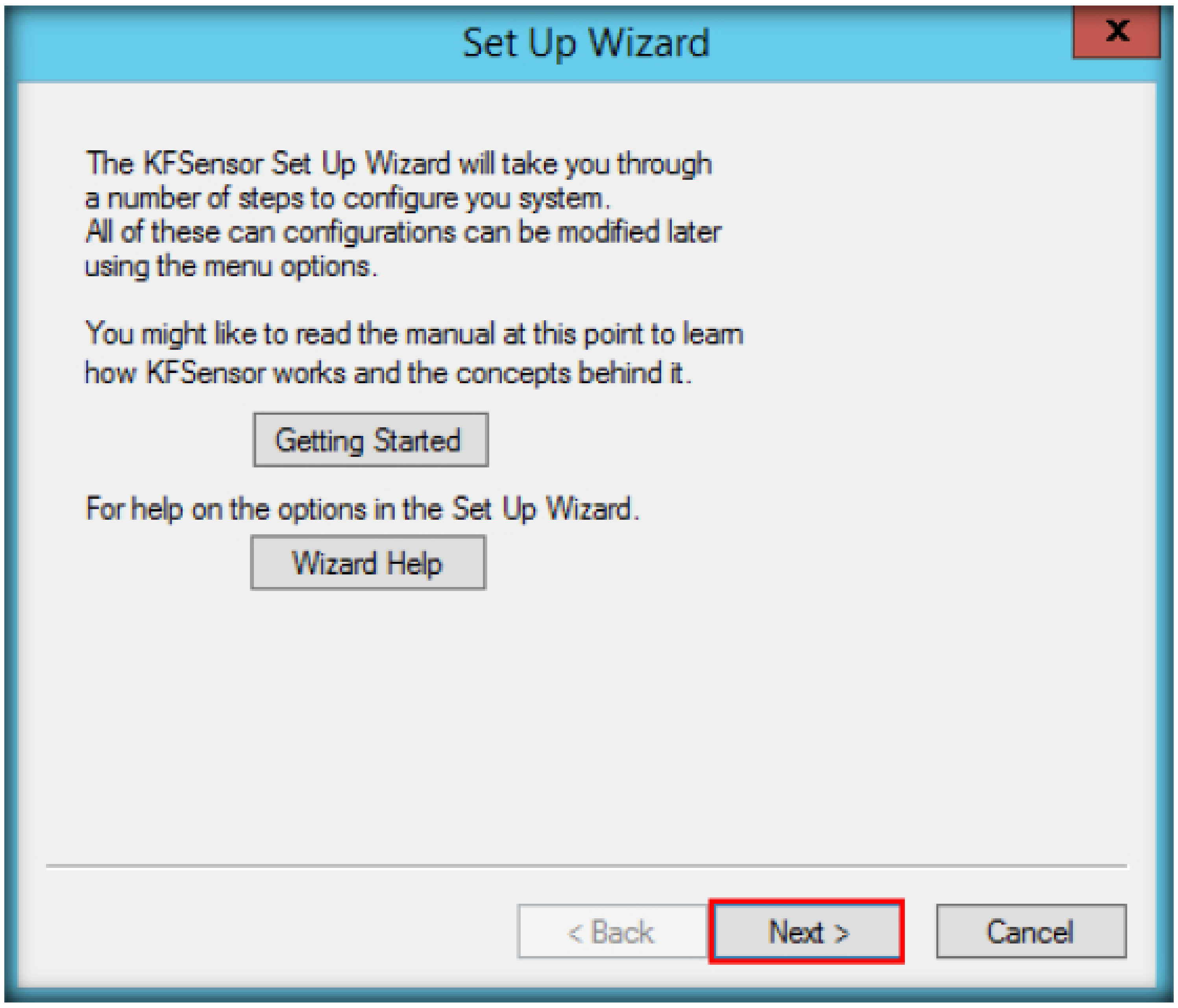
Click the Finish button to exit the Setup Wizard.

☑ Launch KFSensor

FIGURE 2.1: Launching KFSensor

4. On first launch of **KFSensor, the setup wizard** appears; click **Next**

The KFSensor Monitor is a module that provides the user interface to the KFSensor system. With it you can configure the KFSensor Server and examine the events that it generates.


Set Up Wizard

The KFSensor Set Up Wizard will take you through a number of steps to configure you system.
All of these can configurations can be modified later using the menu options.

You might like to read the manual at this point to learn how KFSensor works and the concepts behind it.

For help on the options in the Set Up Wizard.

FIGURE 2.2: KFSensor Set Up wizard

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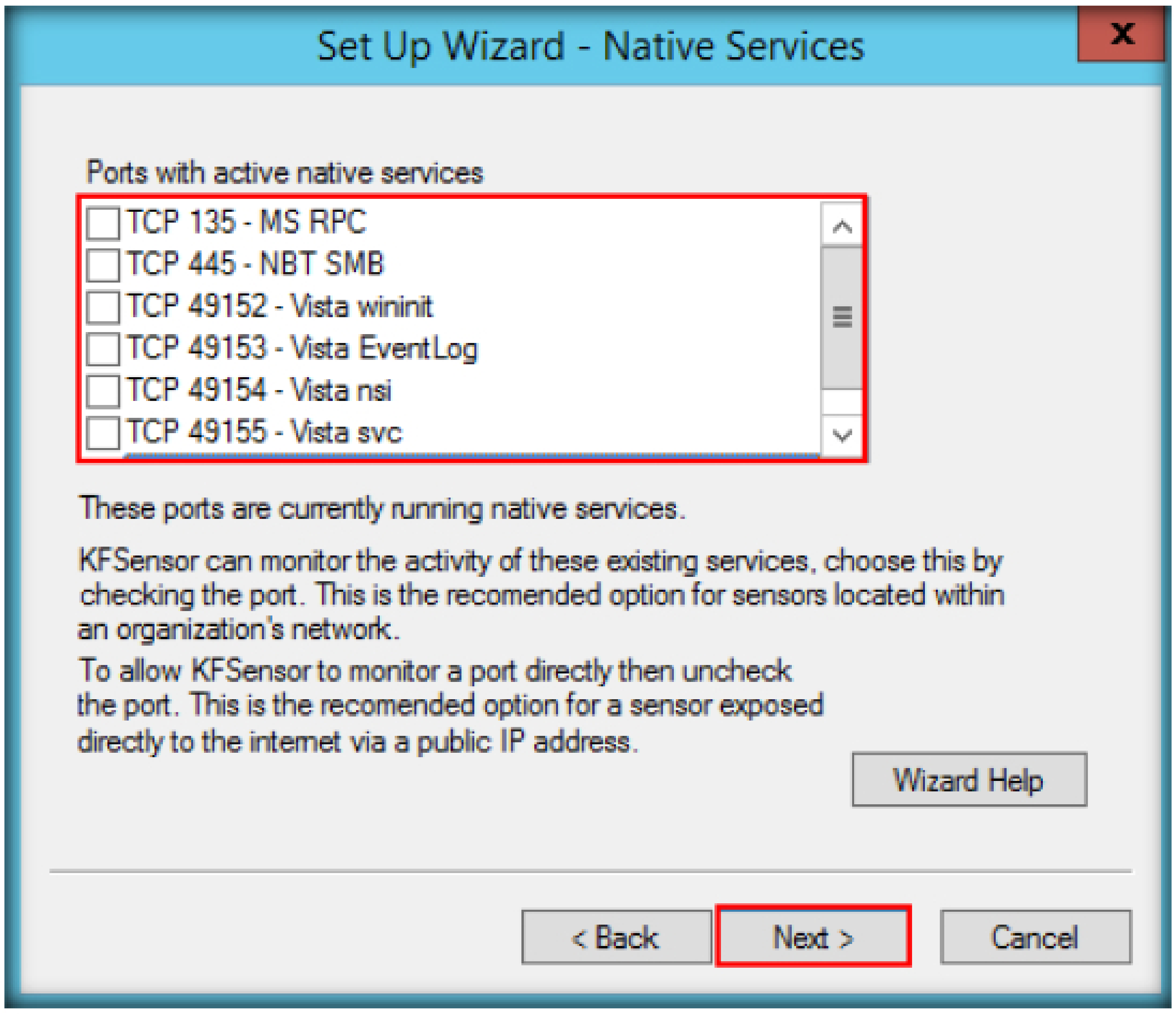
A systems service is a special type of application that Windows runs in the background and is similar in concept to a UNIX daemon.

5. Uncheck all the **ports with all active native services** to include, and click **Next**


Set Up Wizard - Native Services

Ports with active native services

□ TCP 135 - MS RPC
□ TCP 445 - NBT SMB
□ TCP 49152 - Vista wininit
□ TCP 49153 - Vista EventLog
□ TCP 49154 - Vista nsi
□ TCP 49155 - Vista svc

These ports are currently running native services.

KFSensor can monitor the activity of these existing services, choose this by checking the port. This is the recomended option for sensors located within an organization's network.

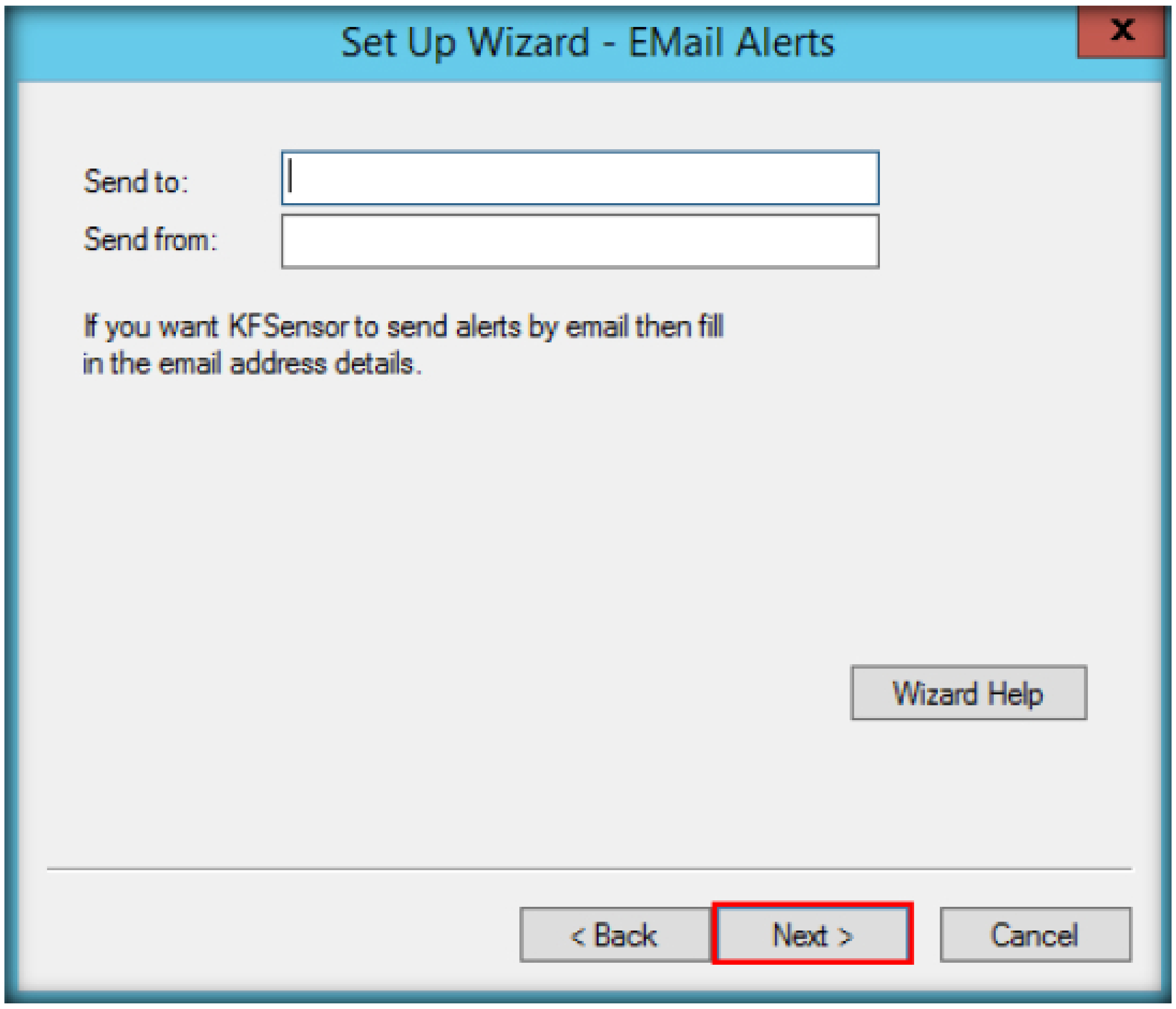
To allow KFSensor to monitor a port directly then uncheck the port. This is the recomended option for a sensor exposed directly to the internet via a public IP address.

FIGURE 2.3: KFSenosr Native Services

6. If you want to send **KFSensor alerts** by email, specify email address details, or leave the fields empty and click **Next**

To set up common ports KFSensor has a set of pre-defined listen definitions. They are:

- Windows Workstation
- Windows Server
- Windows Internet Services
- Windows Applications
- Linux (services not usually in Windows)
- Trojans and worms


Set Up Wizard - EMail Alerts

Send to:

Send from:

If you want KFSensor to send alerts by email then fill in the email address details.

FIGURE 2.4: KFSenosr Email Alerts

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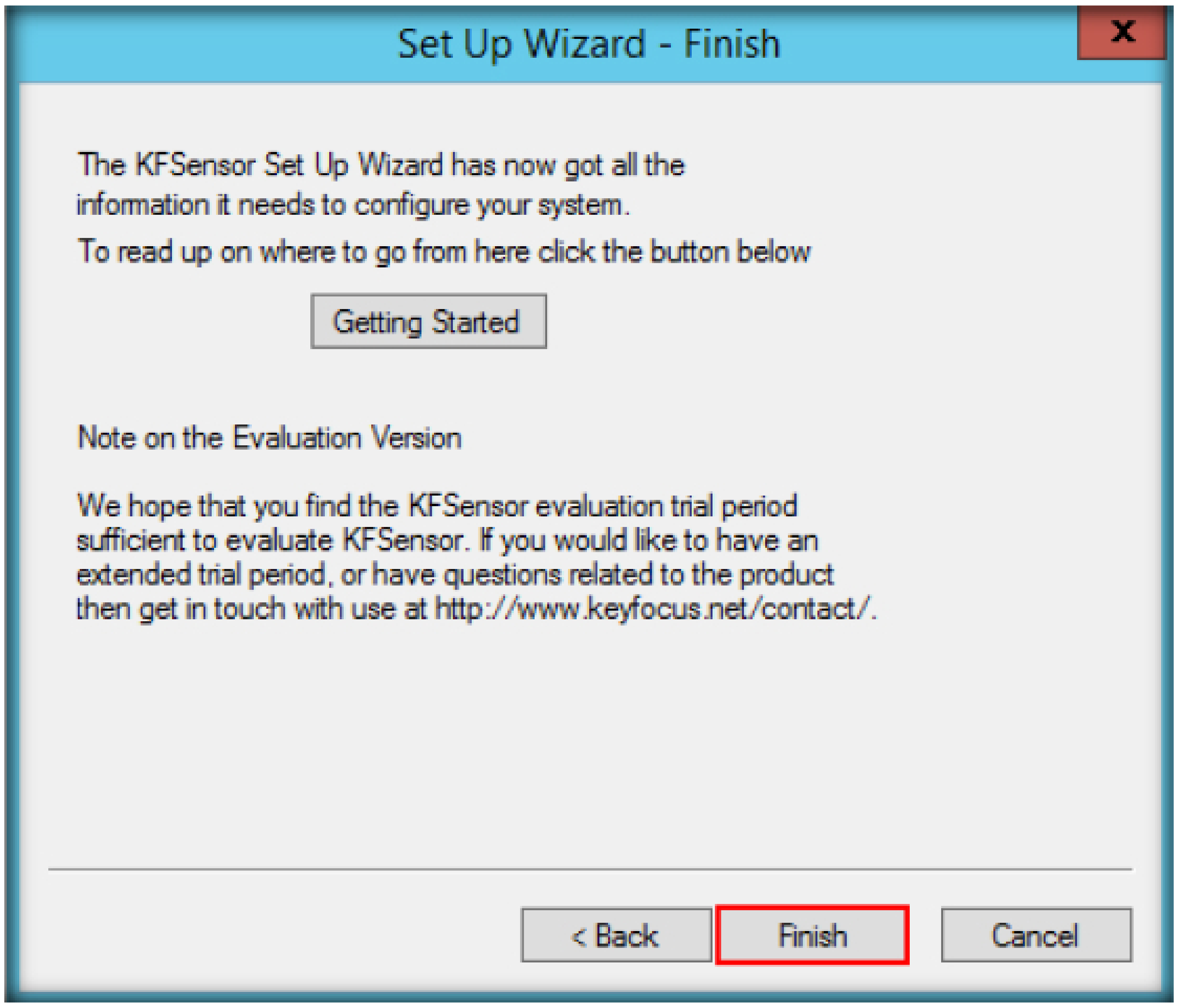
7. Click **Finish** to complete the setup



The KFSensor Set Up Wizard has now got all the information it needs to configure your system.

To read up on where to go from here click the button below

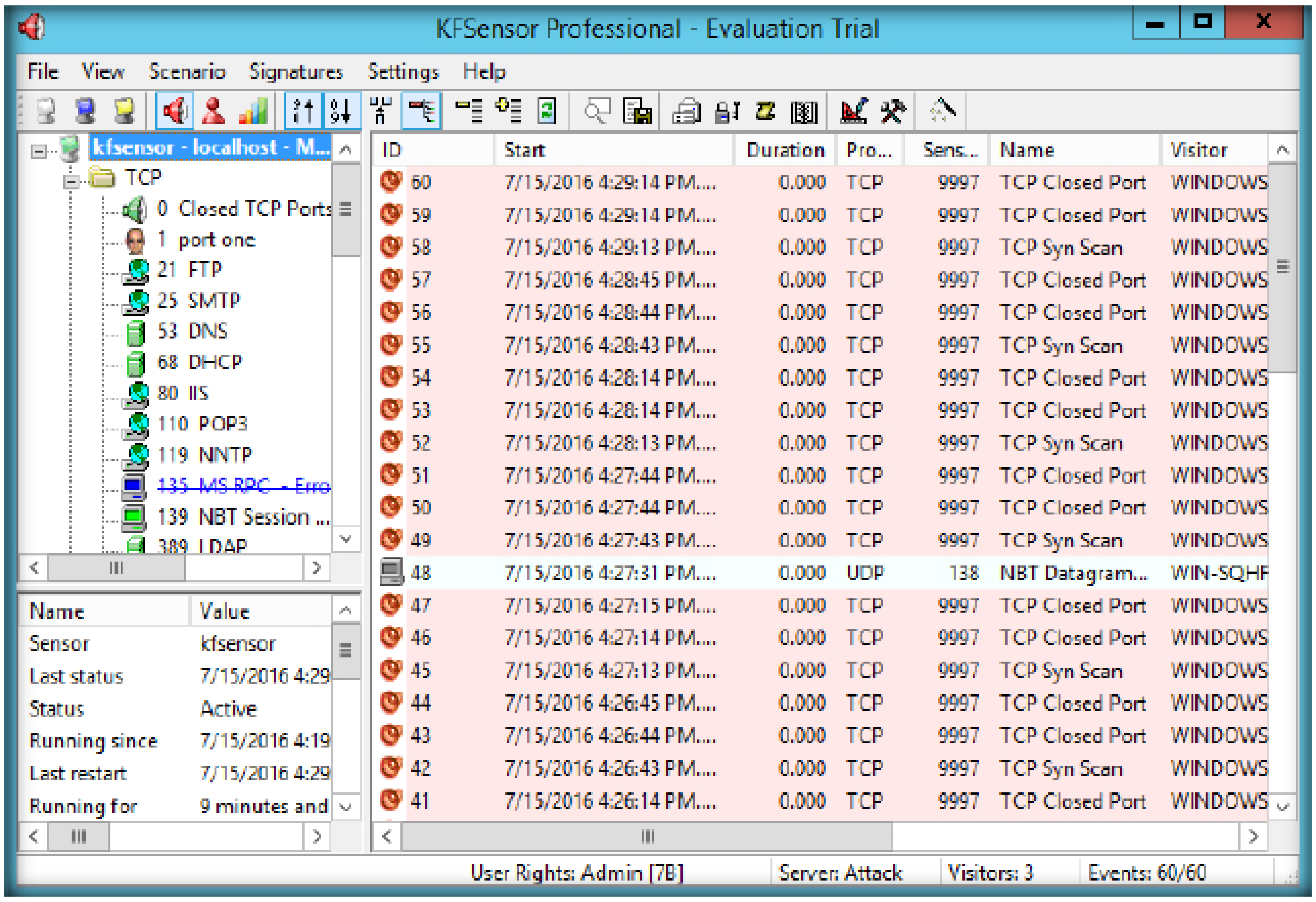
Note on the Evaluation Version

We hope that you find the KFSensor evaluation trial period sufficient to evaluate KFSensor. If you would like to have an extended trial period, or have questions related to the product then get in touch with use at http://www.keyfocus.net/contact/.

FIGURE 2.5: KFSenosr Set Up Finished

The Ports View is displayed on the left panel of the main window. It comprises of a tree structure that displays the name and status of the KFSensor Server and the ports on which it is listening.

8. The **KFSensor** main window appears. It displays a list of **ID protocols**, **Visitor**, and **Received** automatically when it starts. In the window (shown below), all the nodes in the Left block crossed with **blue lines** are the **ports** currently in use



Name	Value
Sensor	kfsensor
Last status	7/15/2016 4:29
Status	Active
Running since	7/15/2016 4:19
Last restart	7/15/2016 4:29
Running for	9 minutes and

ID	Start	Duration	Pro...	Sens...	Name	Visitor
60	7/15/2016 4:29:14 PM....	0.000	TCP	9997	TCP Closed Port	WINDOWS
59	7/15/2016 4:29:14 PM....	0.000	TCP	9997	TCP Closed Port	WINDOWS
58	7/15/2016 4:29:13 PM....	0.000	TCP	9997	TCP Syn Scan	WINDOWS
57	7/15/2016 4:28:45 PM....	0.000	TCP	9997	TCP Closed Port	WINDOWS
56	7/15/2016 4:28:44 PM....	0.000	TCP	9997	TCP Closed Port	WINDOWS
55	7/15/2016 4:28:43 PM....	0.000	TCP	9997	TCP Syn Scan	WINDOWS
54	7/15/2016 4:28:14 PM....	0.000	TCP	9997	TCP Closed Port	WINDOWS
53	7/15/2016 4:28:14 PM....	0.000	TCP	9997	TCP Closed Port	WINDOWS
52	7/15/2016 4:28:13 PM....	0.000	TCP	9997	TCP Syn Scan	WINDOWS
51	7/15/2016 4:27:44 PM....	0.000	TCP	9997	TCP Closed Port	WINDOWS
50	7/15/2016 4:27:44 PM....	0.000	TCP	9997	TCP Closed Port	WINDOWS
49	7/15/2016 4:27:43 PM....	0.000	TCP	9997	TCP Syn Scan	WINDOWS
48	7/15/2016 4:27:31 PM....	0.000	UDP	138	NBT Datagram...	WIN-SQHF
47	7/15/2016 4:27:15 PM....	0.000	TCP	9997	TCP Closed Port	WINDOWS
46	7/15/2016 4:27:14 PM....	0.000	TCP	9997	TCP Closed Port	WINDOWS
45	7/15/2016 4:27:13 PM....	0.000	TCP	9997	TCP Syn Scan	WINDOWS
44	7/15/2016 4:26:45 PM....	0.000	TCP	9997	TCP Closed Port	WINDOWS
43	7/15/2016 4:26:44 PM....	0.000	TCP	9997	TCP Closed Port	WINDOWS
42	7/15/2016 4:26:43 PM....	0.000	TCP	9997	TCP Syn Scan	WINDOWS
41	7/15/2016 4:26:14 PM....	0.000	TCP	9997	TCP Closed Port	WINDOWS

User Rights: Admin [7B] | Server: Attack | Visitors: 3 | Events: 60/60

FIGURE 2.6: KFSenosr Main Window

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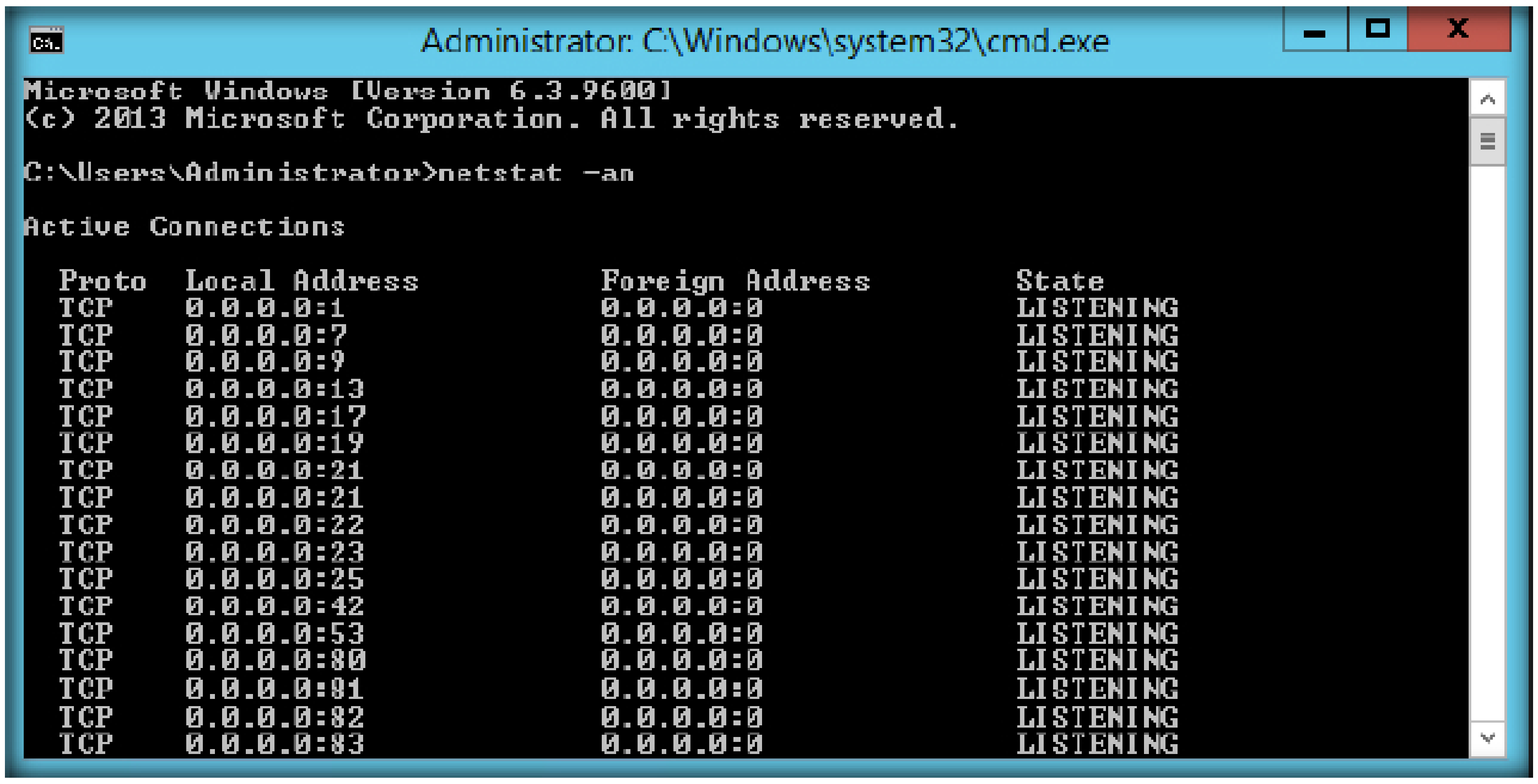
9. Launch the **Command Prompt** from the **Apps** screen

10. In the command prompt, type **netstat -an** and press **Enter**

11. This will display a list of **listening ports**

The top level item is the server. The IP address of the KFSensor Server and the name of the currently active Scenario are displayed. The server icon indicates the state of the server.



```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>netstat -an

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    0.0.0.0:1              0.0.0.0:0              LISTENING
  TCP    0.0.0.0:7              0.0.0.0:0              LISTENING
  TCP    0.0.0.0:9              0.0.0.0:0              LISTENING
  TCP    0.0.0.0:13             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:17             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:19             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:21             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:21             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:22             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:23             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:25             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:42             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:53             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:80             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:81             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:82             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:83             0.0.0.0:0              LISTENING
```

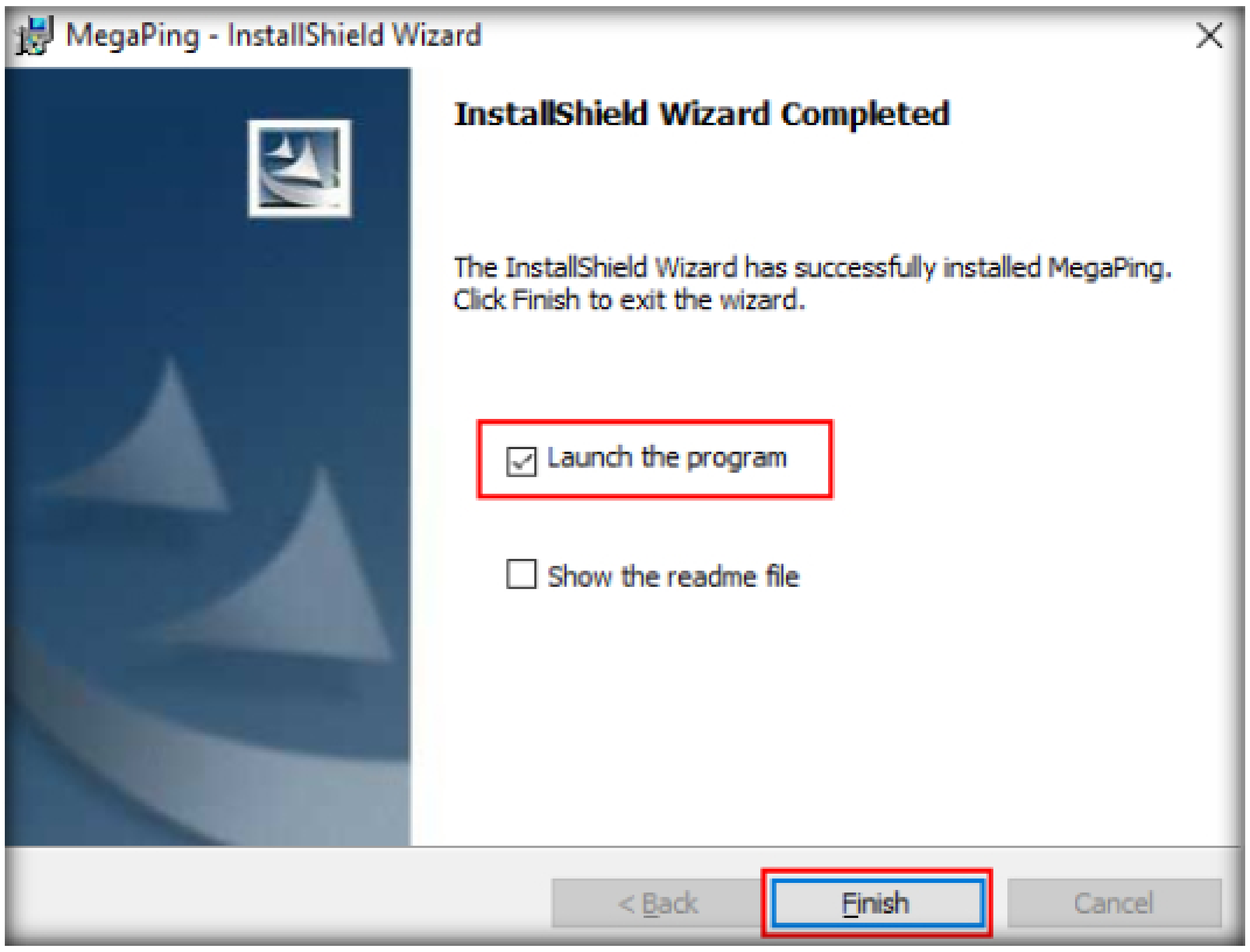
FIGURE 2.7: Command Prompt with netstat -an

12. Log into **Windows 10** virtual machine as a local Administrator.

13. Navigate to **Z:\CND-Tools\CND Module 08 Secure IDS Configuration and Management\Honey Pot and Padded Cell System Tools\MegaPing** and double-click **megaping_setup.exe** and follow the wizard driven installation steps to install **MegaPing**.

Each visitor detected by the KFSensor Server is listed. The visitor's IP address and domain name are displayed.

14. Once the installation is completed make sure the Launch the program option is checked and then click Finish, so that MegaPing will launch automatically.



InstallShield Wizard Completed

The InstallShield Wizard has successfully installed MegaPing.
Click Finish to exit the wizard.

☑ Launch the program

□ Show the readme file

FIGURE 2.8: Launching MegaPing in Windows 10

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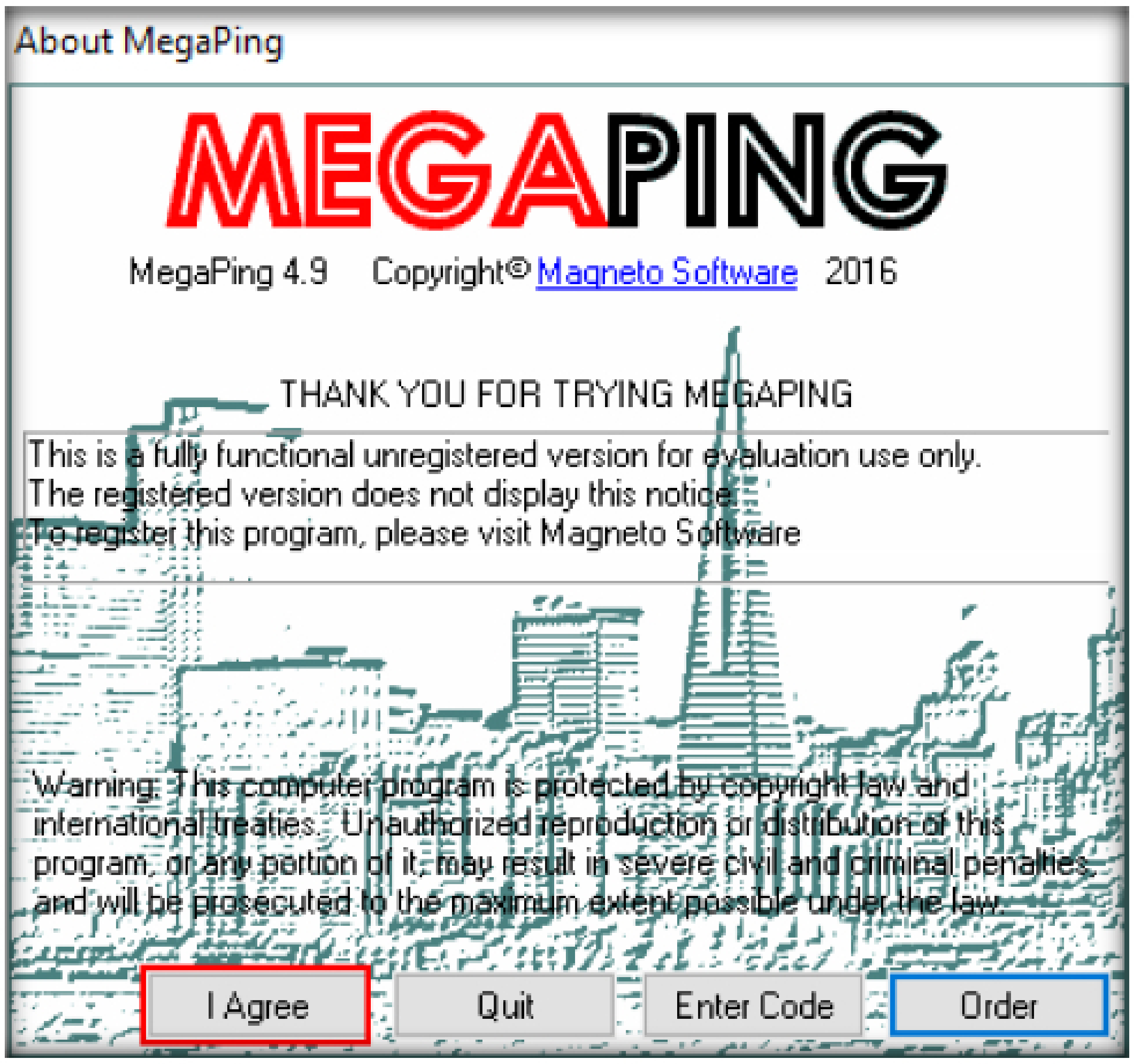
TASK 2

Configure MegaPing

15. The **About MegaPing** pop-up appears; click **I Agree** to continue



MegaPing 4.9 Copyright© Magneto Software 2016

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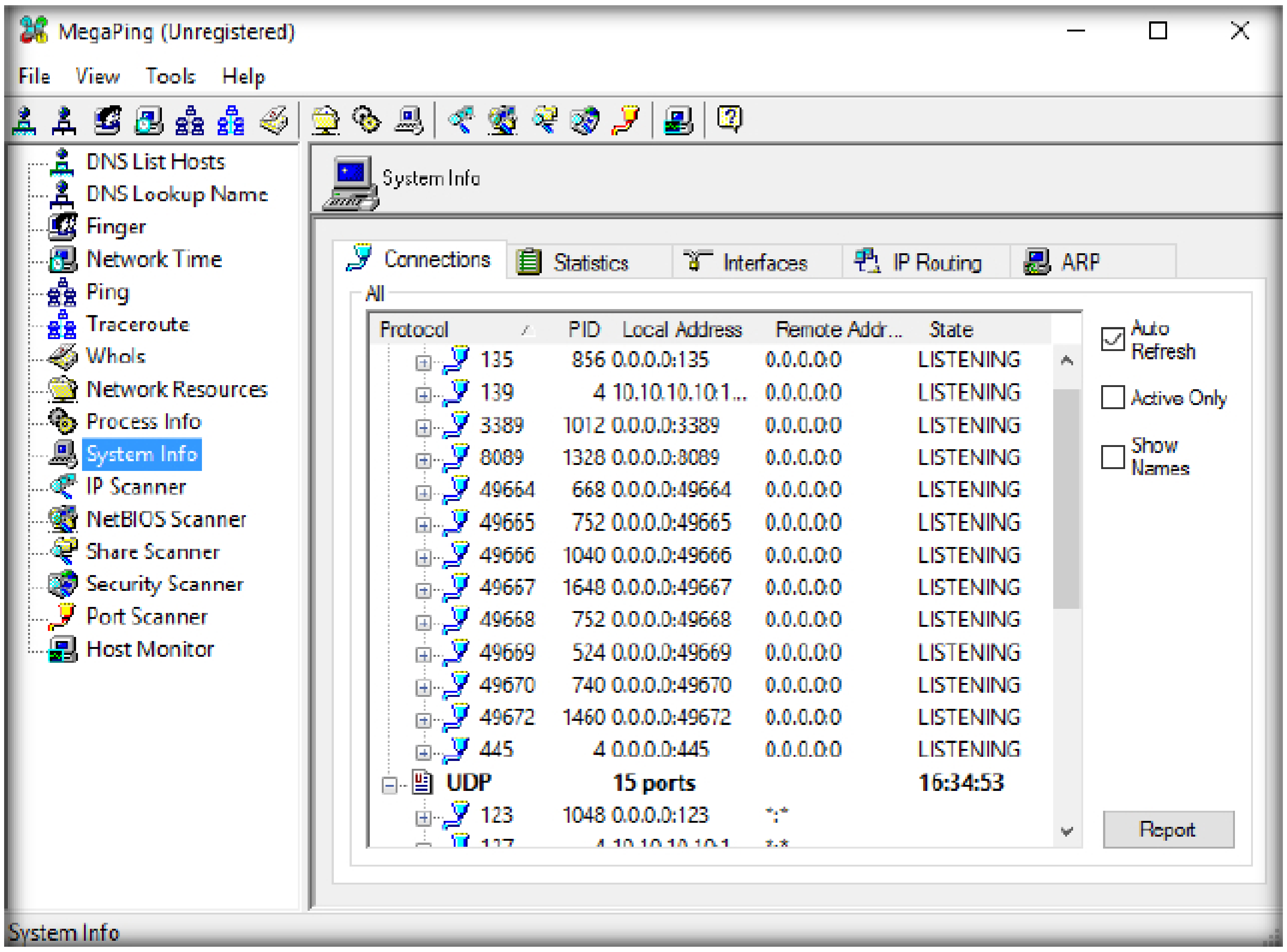
FIGURE 2.9: MegaPing License Agreement

16. **MegaPing** main window appears as shown in the screenshot.

The protocol level of KFSensor is used to group the ports based on their protocol; either TCP or UDP.



☑ Auto Refresh

□ Active Only

□ Show Names

Protocol	PID	Local Address	Remote Addr...	State
135	856	0.0.0.0:135	0.0.0.0:0	LISTENING
139	4	10.10.10.10:1...	0.0.0.0:0	LISTENING
3389	1012	0.0.0.0:3389	0.0.0.0:0	LISTENING
8089	1328	0.0.0.0:8089	0.0.0.0:0	LISTENING
49664	668	0.0.0.0:49664	0.0.0.0:0	LISTENING
49665	752	0.0.0.0:49665	0.0.0.0:0	LISTENING
49666	1040	0.0.0.0:49666	0.0.0.0:0	LISTENING
49667	1648	0.0.0.0:49667	0.0.0.0:0	LISTENING
49668	752	0.0.0.0:49668	0.0.0.0:0	LISTENING
49669	524	0.0.0.0:49669	0.0.0.0:0	LISTENING
49670	740	0.0.0.0:49670	0.0.0.0:0	LISTENING
49672	1460	0.0.0.0:49672	0.0.0.0:0	LISTENING
445	4	0.0.0.0:445	0.0.0.0:0	LISTENING
UDP	**15 ports**			**16:34:53**
123	1048	0.0.0.0:123	*:*	
137	4	10.10.10.10:1	*:*	

FIGURE 2.10: MegaPing Main Window

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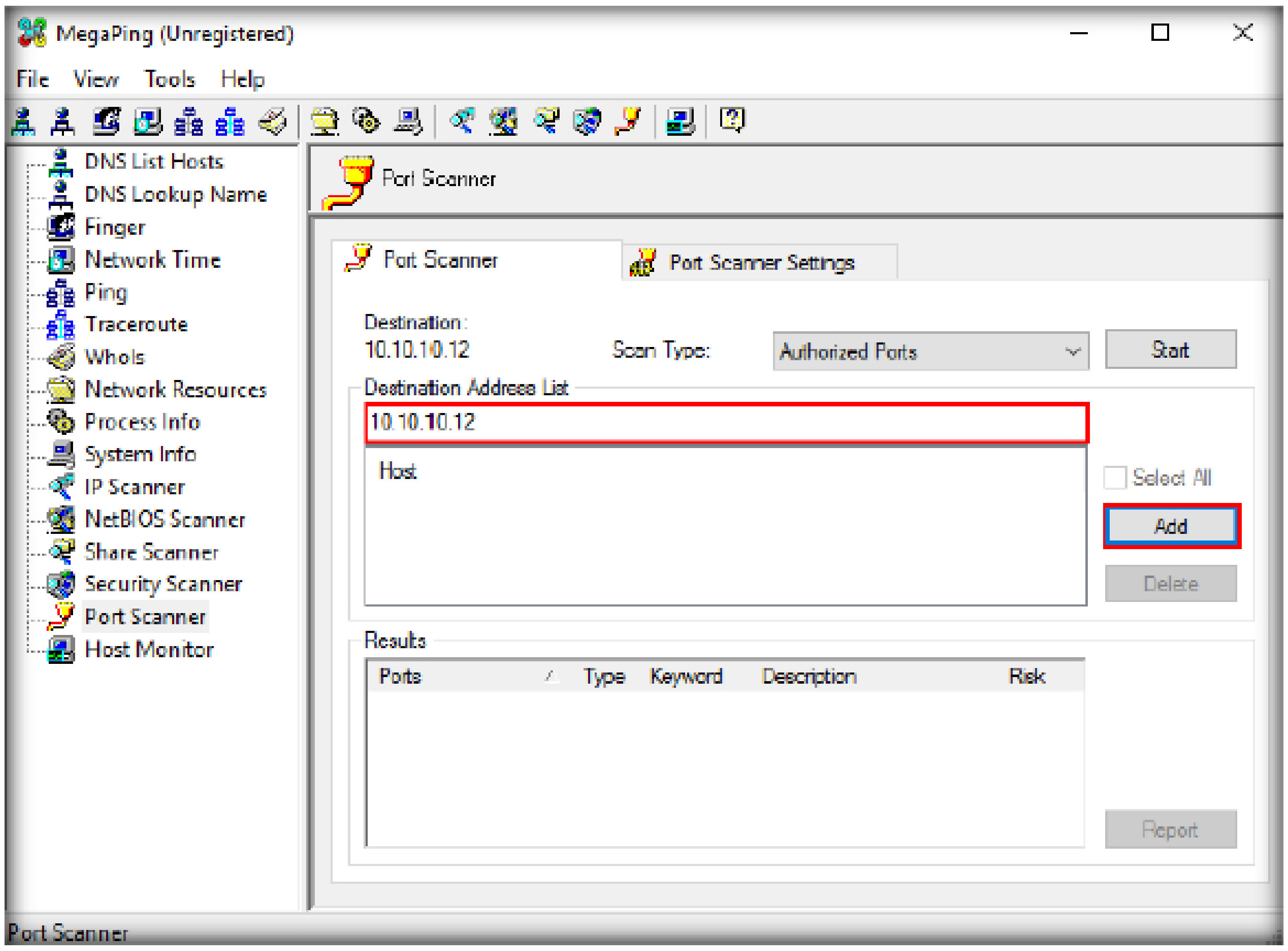
TASK 3

Perform Port Scanning

17. Select **Port Scanner** in the left pane

18. Enter the IP address of the Windows Server 2012 (10.10.10.12) in the Destination Address List field and click **Add**



Destination: 10.10.10.12

Scan Type: Authorized Ports

Destination Address List: 10.10.10.12

Host

Results

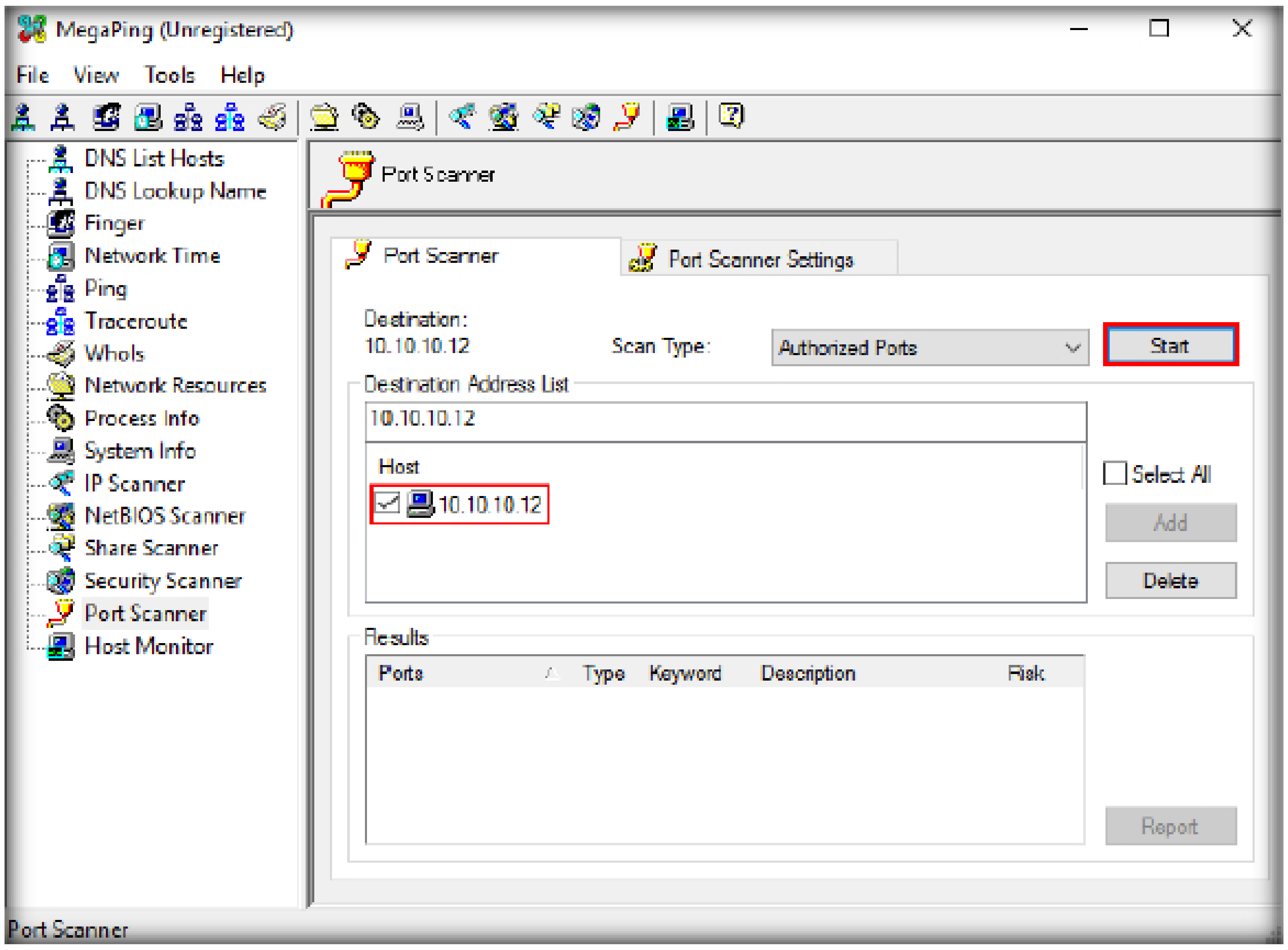
Port Scanner

FIGURE 2.11: MegaPing Port Scanner

Visitor is obtained by a reverse DNS lookup on the visitor's IP address. An icon is displayed indicating the last time the visitor connected to the server.

19. Check the IP address in the Host section, and click the **Start** button to start listening to the traffic on **10.10.10.12**.

Note: This IP address may vary in your lab environment



Destination: 10.10.10.12

Scan Type: Authorized Ports

Destination Address List: 10.10.10.12

Host

☑ 10.10.10.12

Results

Port Scanner

FIGURE 2.12: Beginning the Scan on 10.10.10.12

The Ports View can be displayed by selecting the Ports option from the View menu.

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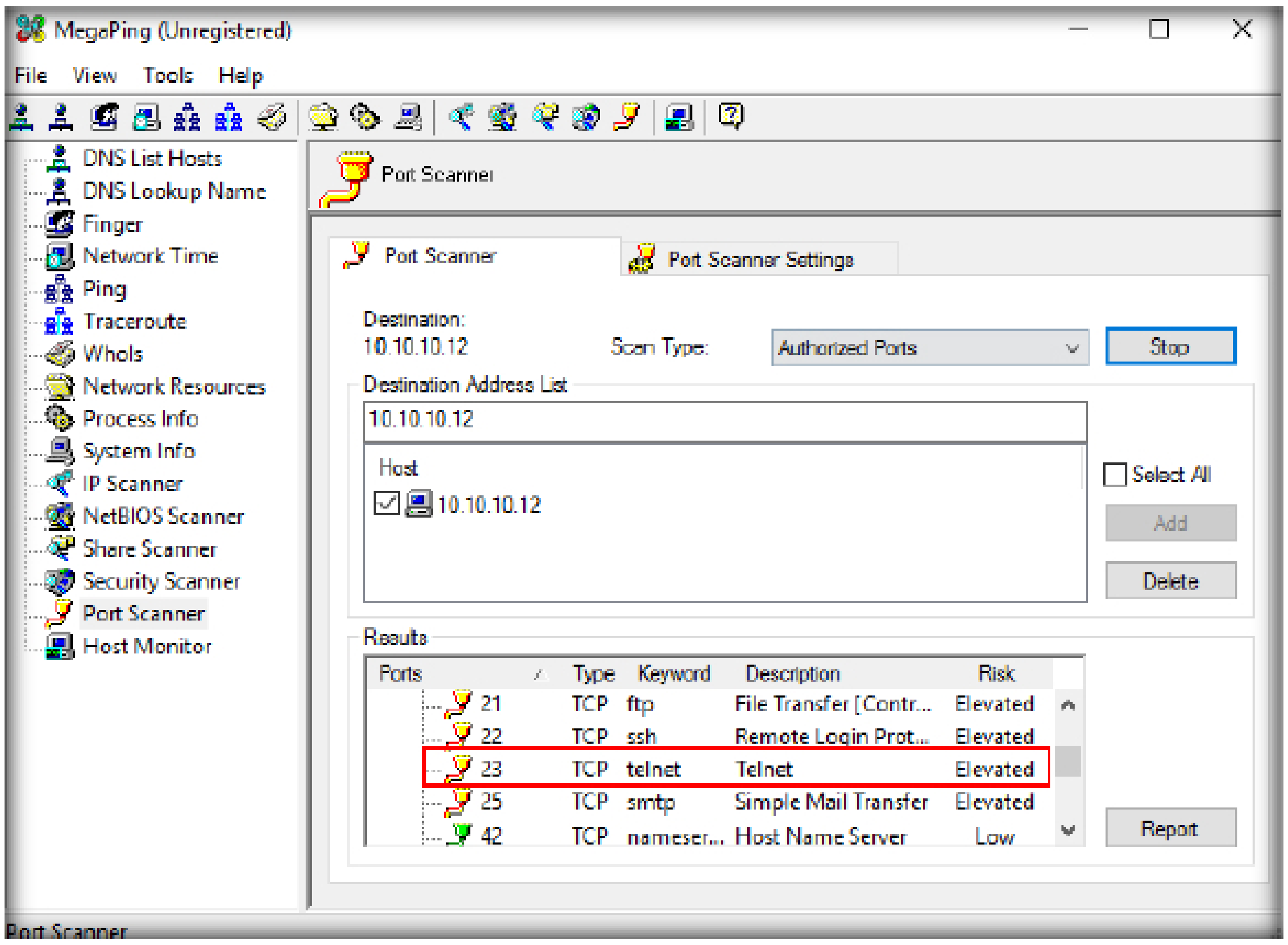
20. The image below shows the identification of **Telnet** on **port 23**

21. MegaPing begins to scan for open ports and displays a list of ports

22. You can observe **Telnet** on **port 23**, which allows hackers to connect to a remote machine through Telnet



Destination: 10.10.10.12

Scan Type: Authorized Ports

Destination Address List: 10.10.10.12

Host
☑ 10.10.10.12

Results

Ports	Type	Keyword	Description	Risk
21	TCP	ftp	File Transfer [Contr...	Elevated
22	TCP	ssh	Remote Login Prot...	Elevated
23	TCP	telnet	Telnet	Elevated
25	TCP	smtp	Simple Mail Transfer	Elevated
42	TCP	nameser...	Host Name Server	Low

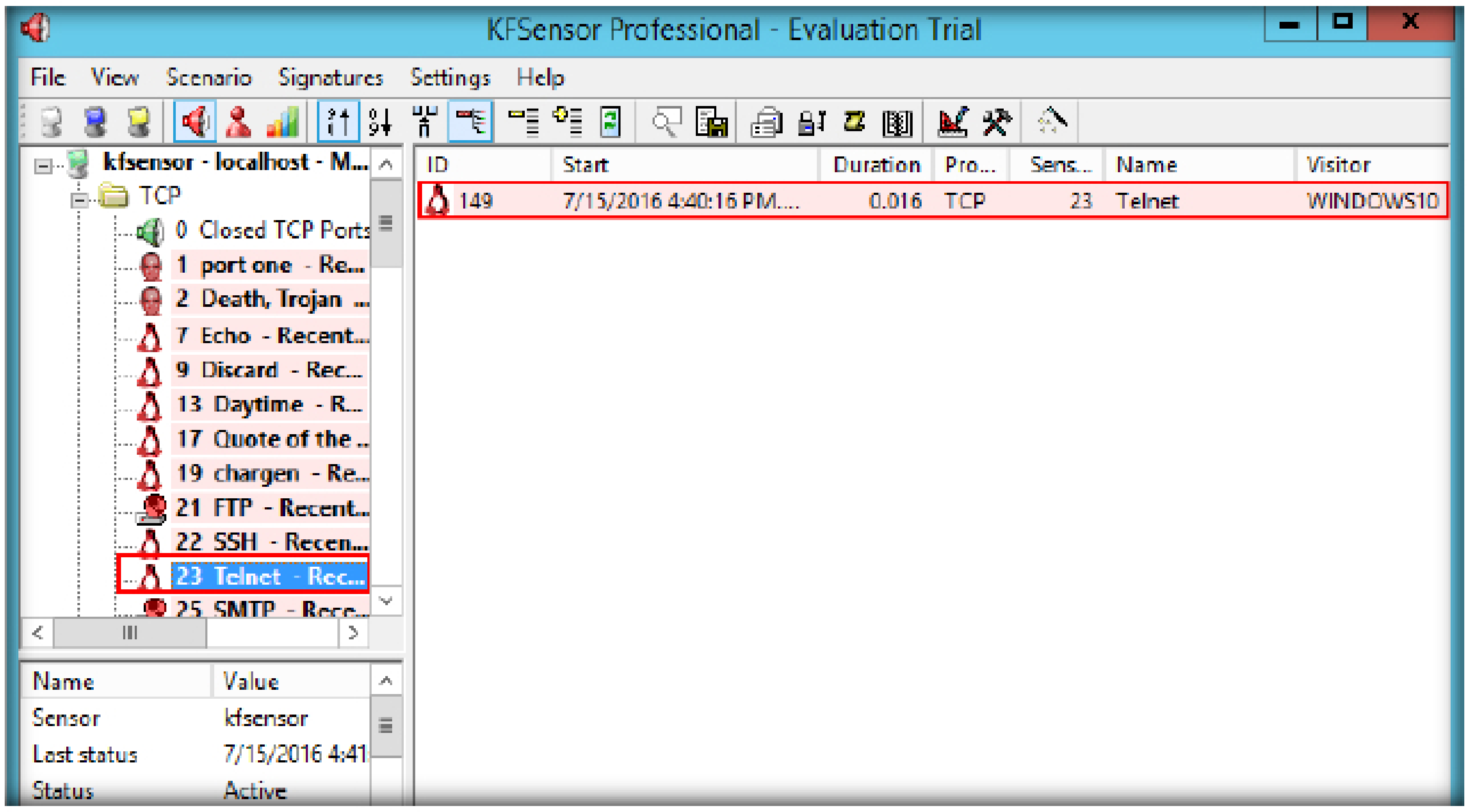
FIGURE 2.13: MegaPing Telnet Port

TASK 4

Analyze the Result

23. Now, switch back to the **Windows server 2012** virtual machine. Observe that KFSensor has detected **port 23** is open.

24. Seeing this port open, you can take proper security measures to close the port, thereby preventing intruders from connecting to this machine from the outside.



ID	Start	Duration	Pro...	Sens...	Name	Visitor
149	7/15/2016 4:40:16 PM....	0.016	TCP	23	Telnet	WINDOWS10

Name	Value
Sensor	kfsensor
Last status	7/15/2016 4:41
Status	Active

FIGURE 2.14: Telnet port open Alert in KFSensor

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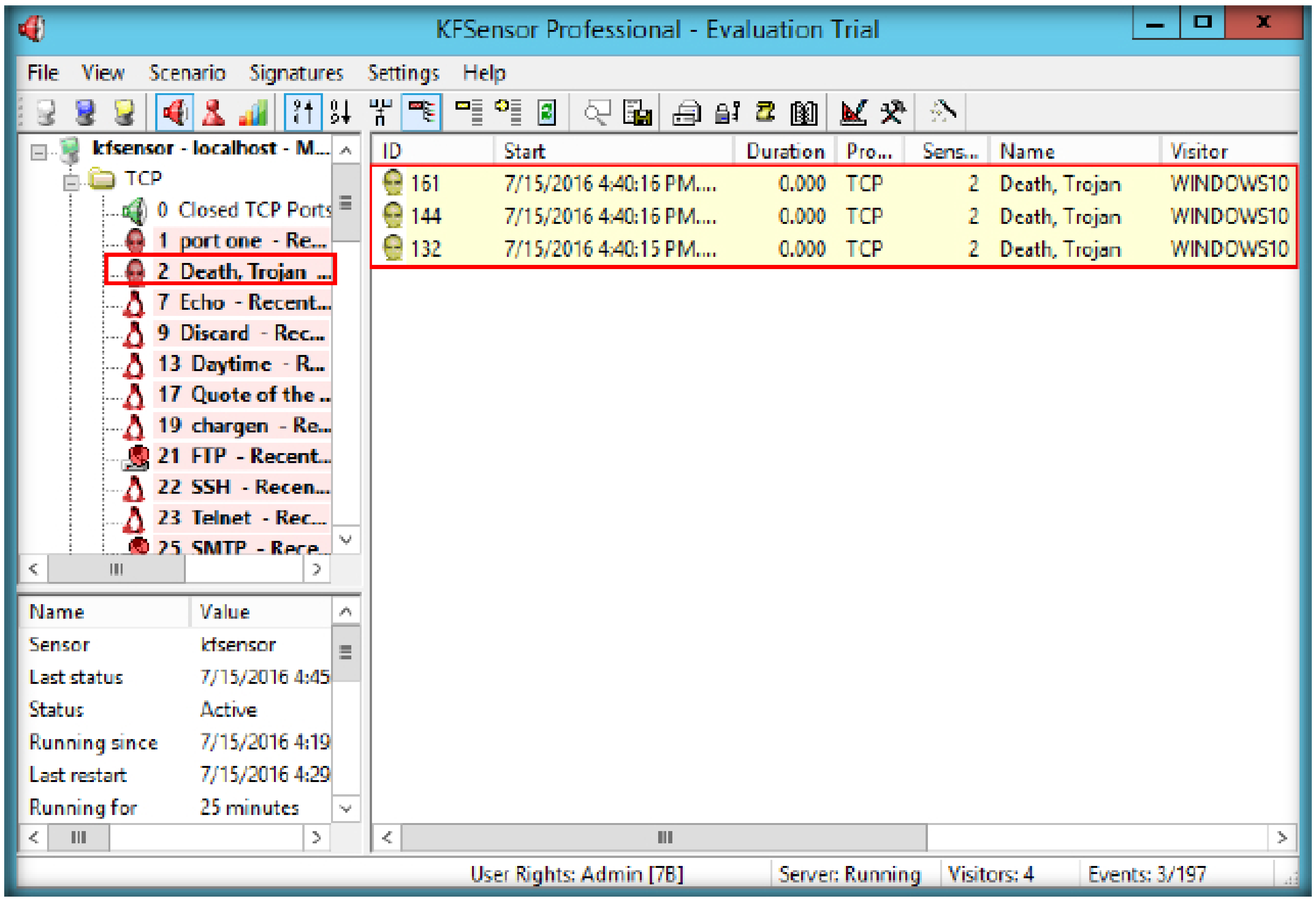
25. The image below displays the data of a **Death Trojan** on **port 2**. Seeing this port open, a network administrator can add a firewall rule to block **port 2**, thereby securing the system from being affected by **Death Trojan**



ID	Start	Duration	Pro...	Sens...	Name	Visitor
161	7/15/2016 4:40:16 PM....	0.000	TCP	2	Death, Trojan	WINDOWS10
144	7/15/2016 4:40:16 PM....	0.000	TCP	2	Death, Trojan	WINDOWS10
132	7/15/2016 4:40:15 PM....	0.000	TCP	2	Death, Trojan	WINDOWS10

Name	Value
Sensor	kfsensor
Last status	7/15/2016 4:45
Status	Active
Running since	7/15/2016 4:19
Last restart	7/15/2016 4:29
Running for	25 minutes

FIGURE 2.15: Death Trojan data on KFSensor

The Visitors View is linked to the Events View and acts as a filter to it. If you select a visitor then only those events related to that visitor will be displayed in the Events View.

Lab Analysis

Analyze and document the results related to this lab exercise. Provide your opinion of your target's security posture and exposure.

PLEASE TALK TO YOUR INSTRUCTOR IF YOU HAVE QUESTIONS RELATED TO THIS LAB.

Internet Connection Required	
□ Yes	☑ No
Platform Supported	
☑ Classroom	☑ iLabs

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