



Chapter 12

Evading IDS Firewall and Honeypots

Lab Manual



**THIS DOCUMENT INCLUDES ADDITIONAL PRACTICALS WHICH
MAY OR MAY NOT BE COVERED DURING CLASSROOM TRAINING.
FOR MORE DETAILS APPROACH LAB COORDINATORS**

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Practical 1: Detecting Malicious Traffic in a network using SNORT-NIDS

Step 1: Installing Snort IDS in Kali Linux.

Execute the following command to update kali linux repository.

apt-get update

```
root@kali:~# apt-get update
Get:1 http://kali.mirror.garr.it/mirrors/kali kali-rolling InRelease [20.3 kB]
Get:2 http://kali.mirror.garr.it/mirrors/kali kali-rolling/main amd64 Packages [13.4 MB]
16% [2 Packages 104 kB/13.4 MB 1%]
```

To install snort application, execute the following command

apt-get install snort -y

```
root@kali:~# apt-get install snort
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libdaq2 oinkmaster snort-common snort-common-libraries snort-rules-default
Suggested packages:
  snort-doc
The following NEW packages will be installed:
  libdaq2 oinkmaster snort snort-common snort-common-libraries snort-rules-default
0 upgraded, 6 newly installed, 0 to remove and 1119 not upgraded.
Need to get 2,230 kB of archives.
After this operation, 7,325 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

While installing snort, we need to provide network range (if you don't know your network range, please click **Ok** without any changes.)

In this case, we modified it to **192.168.0.0/24** network range as shown below

Package configuration

Configuring snort

Please use the CIDR form - for example, 192.168.1.0/24 for a block of 256 addresses or 192.168.1.42/32 for just one. Multiple values should be comma-separated (without spaces).

Please note that if Snort is configured to use multiple interfaces, it will use this value as the HOME_NET definition for all of them.

Address range for the local network:

192.168.0.0/24

<Ok>

Step 2: Configuring Snort

To know the IP address and network interface name, execute **ifconfig**. To make snort act as IDS, we need to modify our IP in snort configuration file according to our requirement.

Open the configuration file **/etc/snort/snort.conf** in your favourite text editor (in this case we are opening it in **VIM** editor) and find a line which contains **ipvar HOME_NET any** (Probably that would be line 51)

```
root@kali:~# vim /etc/snort/snort.conf

# Note to Debian users: this value is overridden when starting
# up the Snort daemon through the init.d script by the
# value of DEBIAN_SNORT_HOME_NET s defined in the
# /etc/snort/snort.debian.conf configuration file
#
ipvar HOME_NET any
```

change '**any**' into **your IP** (192.168.0.146) press **Esc** on keyboard and type **:wq** and press **enter** to save the changes.

```
# Note to Debian users: this value is overridden when starting
# up the Snort daemon through the init.d script by the
# value of DEBIAN_SNORT_HOME_NET s defined in the
# /etc/snort/snort.debian.conf configuration file
#
ipvar HOME_NET 192.168.0.146

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

Step 3: Running Snort in Kali Linux to detect intrusions

Execute the following commands, to start snort

```
/etc/init.d/snort start
```

```
snort -q -A console -i eth0 -c /etc/snort/snort.conf
```

```
root@kali:~# /etc/init.d/snort start
[ ok ] Starting snort (via systemctl): snort.service.
root@kali:~#
```

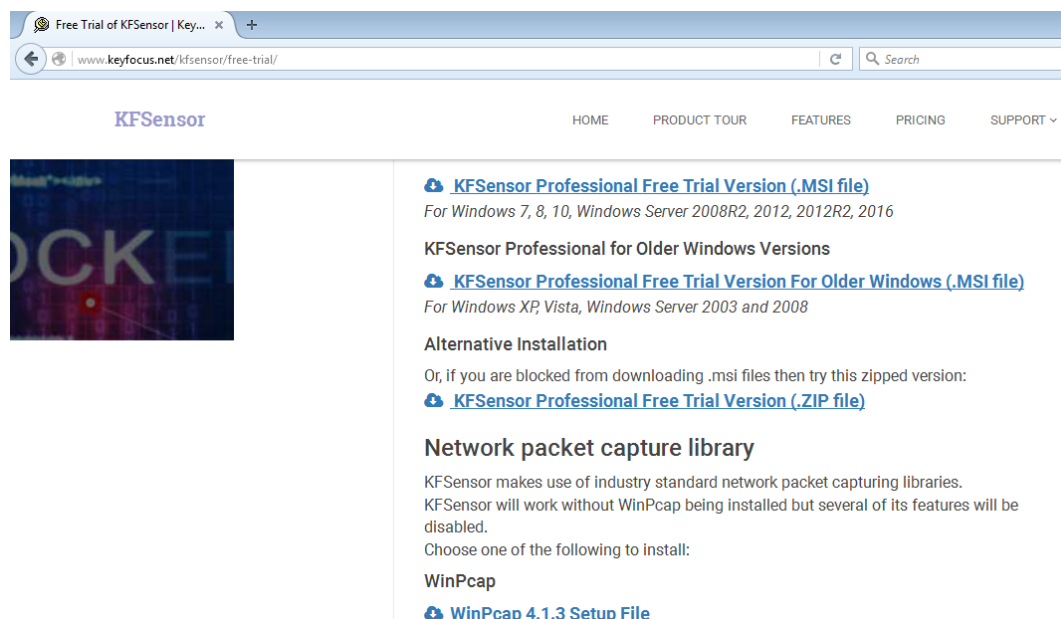
```
root@kali:~# snort -q -A console -i eth0 -c /etc/snort/snort.conf
```

Now, snort is capable of detecting malicious traffic based on pre-configured rules and displays attack information on the terminal as shown in the below image.

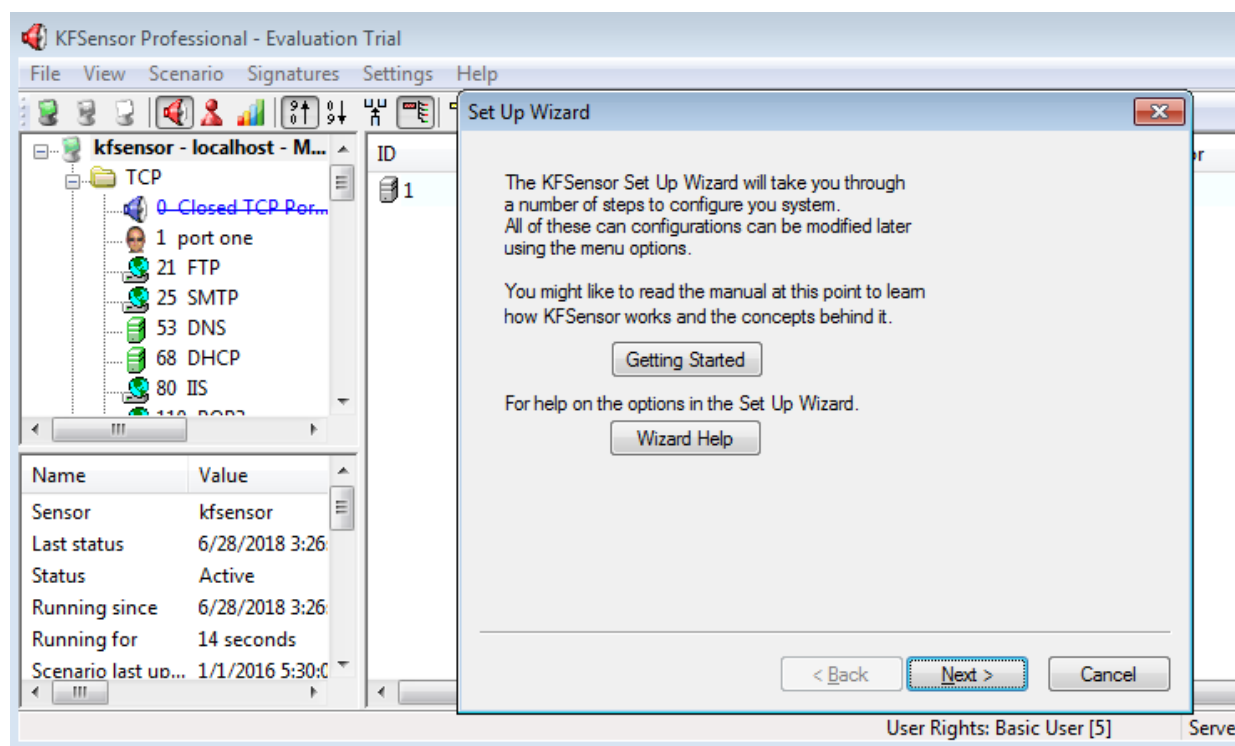
```
root@kali:~# snort -q -A console -i eth0 -c /etc/snort/snort.conf
07/02-17:30:28.191527  [**] [1:527:8] BAD-TRAFFIC same SRC/DST [**] [Classification: Potentially Bad Traffic]
5.255.255:67
07/02-17:30:28.357863  [**] [1:527:8] BAD-TRAFFIC same SRC/DST [**] [Classification: Potentially Bad Traffic]
ff30:c0ea
07/02-17:30:28.359803  [**] [1:527:8] BAD-TRAFFIC same SRC/DST [**] [Classification: Potentially Bad Traffic]
ff30:c0ea
07/02-17:30:45.668868  [**] [1:527:8] BAD-TRAFFIC same SRC/DST [**] [Classification: Potentially Bad Traffic]
07/02-17:30:45.807714  [**] [1:527:8] BAD-TRAFFIC same SRC/DST [**] [Classification: Potentially Bad Traffic]
07/02-17:30:45.998653  [**] [1:527:8] BAD-TRAFFIC same SRC/DST [**] [Classification: Potentially Bad Traffic]
5.255.255:67
07/02-17:30:46.013441  [**] [1:527:8] BAD-TRAFFIC same SRC/DST [**] [Classification: Potentially Bad Traffic]
5.255.255:67
07/02-17:30:46.652928  [**] [1:527:8] BAD-TRAFFIC same SRC/DST [**] [Classification: Potentially Bad Traffic]
ff84:3e70
```

Practical 2: Using KFSensor to build a Honeypot.

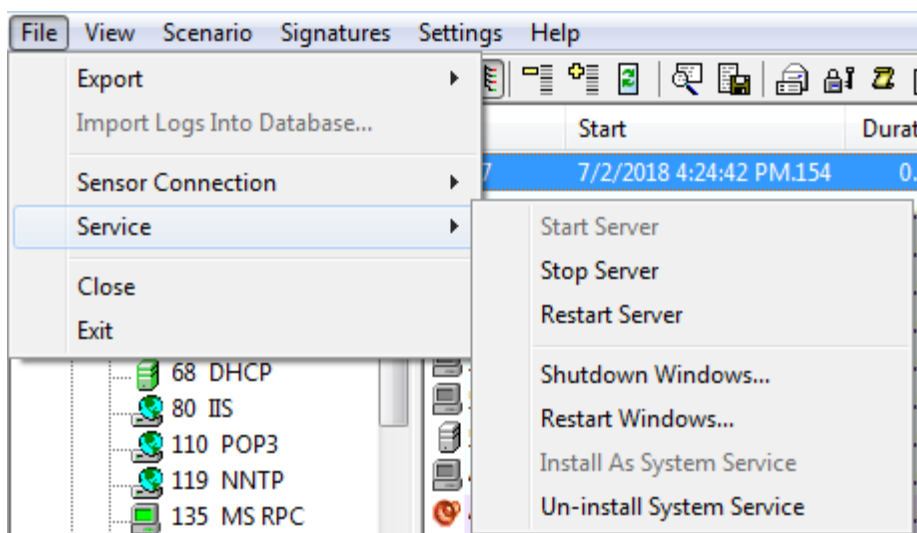
Visit KFSensor official website <http://www.keyfocus.net/kfsensor/free-trial/> and register with your details. Download **KFSensor** package and **WinPcap** software package as a dependency to KFSensor.



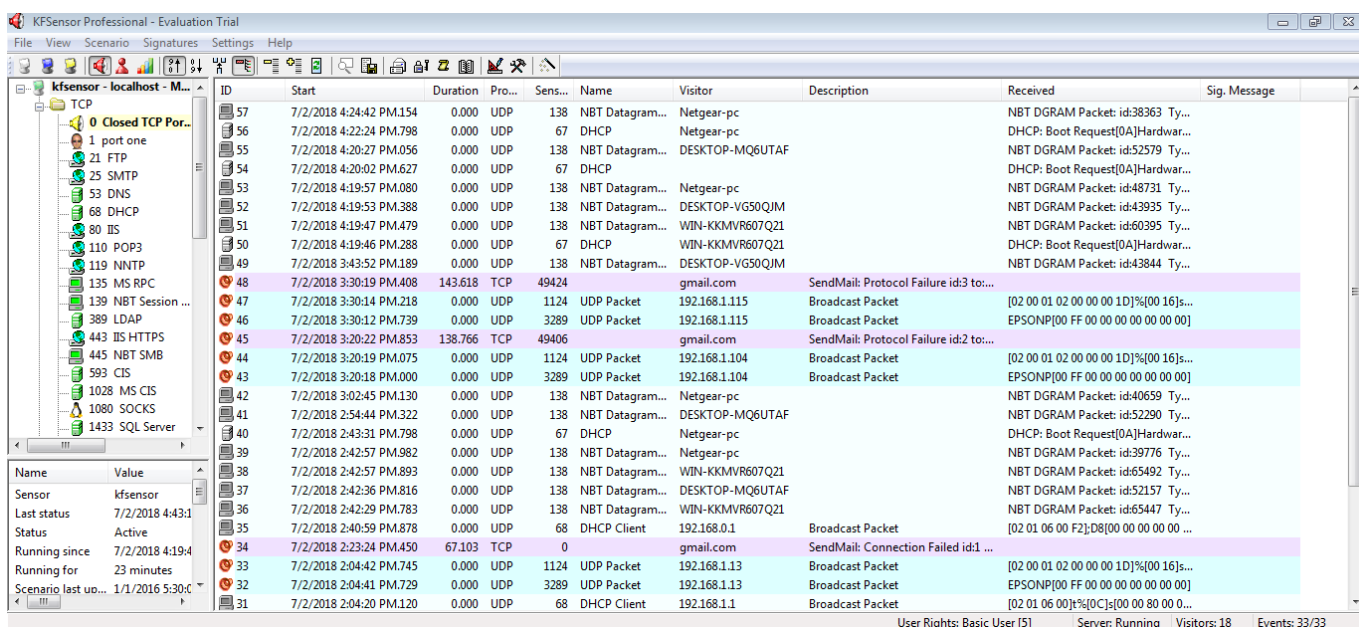
Install **winpcap** first and install **KFSensor** and restart your computer once. After rebooting your computer please go to start menu, find KFSensor and launch the application.



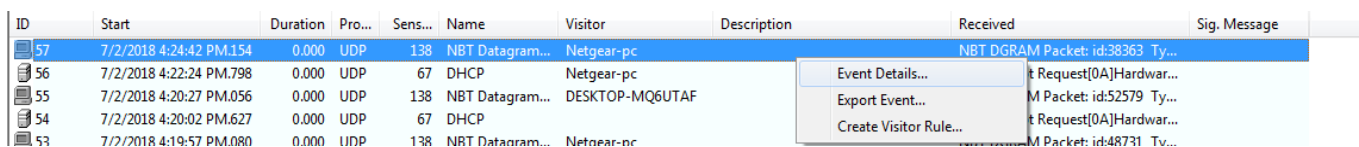
Under **File** tab, select **Service** and then click on **Start Service** and proceed with the application wizard to turn your PC into a honeypot machine to attract the attackers.



If anyone performs an attack on the computer, KFSensor will display alerts.



Right-click on any alert, select **Event Details** to view the information about the alert.



Event - 57

SummaryDetailsSignatureData

Event

Sensor ID: kfsensorEvent ID: 57

Start Time: 7/2/2018 4:24:42 PM.154Severity: Low

Description:

Visitor

IP: 192.168.1.101Port: 138

Domain: Netgear-pc

Sensor

Name: NBT Datagram Service

Protocol: UDPPort: 138

Signature

Message:

Request Data - 168 Bytes

NBT DGRAM Packet: id:38363 Type: Direct Group
Source: NETGEAR-PC<20 File Server Service>
Destination: WORKGROUP<1d Master Browser>
SMB: [trans]
name: {}

Expand

Event - 57

Summary Details Signature Data

Event

Sensor ID: kfsensor Event ID: 57

Start Time: 7/2/2018 4:24:42 PM.154 Type: Connection

End Time: 7/2/2018 4:24:42 PM.154 Severity: Low

Description:

Closed By: Visitor Limit Exceeded:

Received: 168 Bytes Response: 0 Bytes

Visitor

IP: 192.168.1.101 Port: 138

Domain: Netgear-pc

Sensor

Name: NBT Datagram Service

IP: Port: 138

Bound: Protocol: UDP

Action: SimStdServer Sim Server:

Create Visitor Rule

Right-click on any alert, select **Create Visitor Rule** to create a customized rule to get alerts

ID	Start	Duration	Pro...	Sens...	Name	Visitor	Description	Received	Sig. Message
57	7/2/2018 4:24:42 PM.154	0.000	UDP	138	NBT Datagram...	Netgear-pc		NBT DGRAM Packet: id:38363 Ty...	
56	7/2/2018 4:22:24 PM.798	0.000	UDP	67	DHCP	Netgear-pc	Event Details...	DHCP: Boot Request[0A]Hardwar...	
55	7/2/2018 4:20:27 PM.056	0.000	UDP	138	NBT Datagram...	DESKTOP-MQ6UTAF	Export Event...	NBT DGRAM Packet: id:52579 Ty...	
54	7/2/2018 4:20:02 PM.627	0.000	UDP	67	DHCP		Create Visitor Rule...	DHCP: Boot Request[0A]Hardwar...	

Add Visitor Rule

Conditions

Rule Name: NBT Datagram Service 192.168.1.101 port 138

First IP: 192.168.1.101 Min

Last IP: Max

Host DNS Name:

Protocol:

☐ TCP

☒ UDP

☐ ICMP

☐ WIN

☐ Any

Sensor IP:

Sensor Port: 138

Visitor Port:

Min Connections:

Max Connections:

Actions

Close ☐

Ignore ☐

Set Severity: No Change

No Change

Low

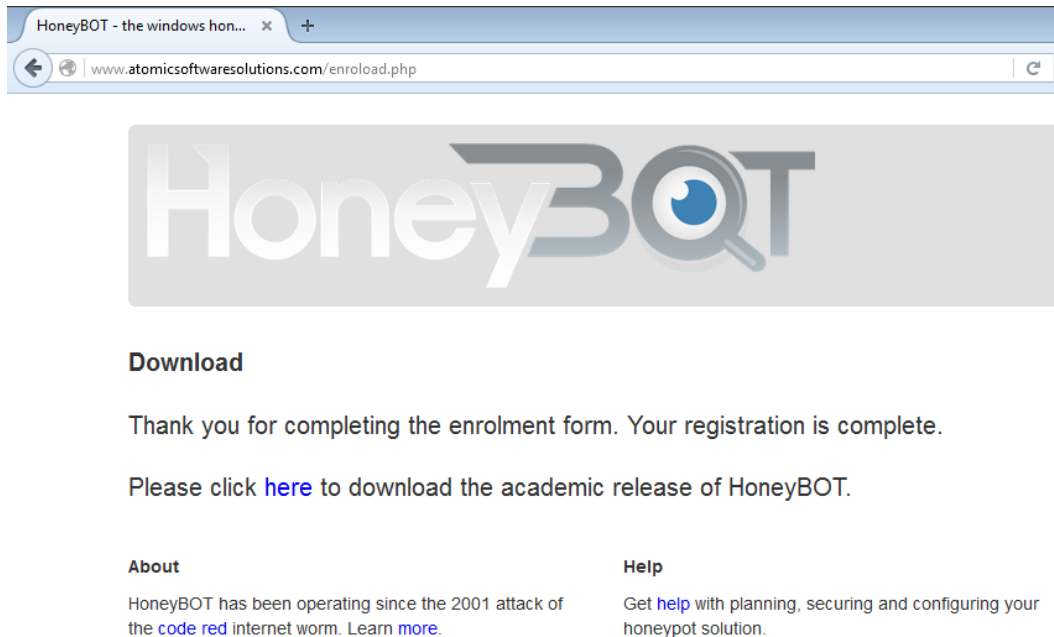
Medium

High

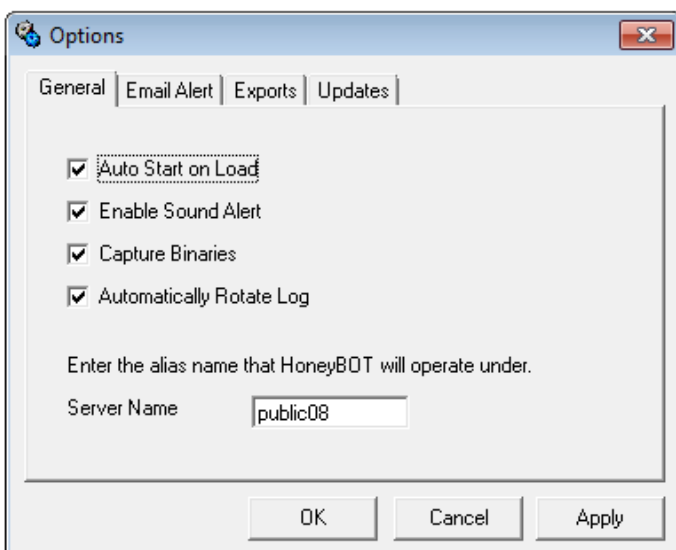
OK Cancel Help

Practical 3: HoneyBot on windows

Visit <https://www.atomicsoftwaresolutions.com/> and register for **academic release** with your details.



Download and install **HoneyBot** software. After installation of HoneyBot, when it prompts **Options** window, you can select necessary options and click **OK**.



The honeybot application will display alerts when anyone performs an attack on the computer.



Ports	Remotes	Date	Time	Remote IP	Remote Port	Local IP	Local Port	Protocol	Bytes
	67	7/2/2018	4:36:25 PM	0.0.0.0	68	192.168.1.109	67	UDP	302
		7/2/2018	4:36:27 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:36:27 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:36:28 PM	0.0.0.0	68	192.168.1.109	67	UDP	302
		7/2/2018	4:38:05 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:38:05 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:39:20 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:39:20 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:40:32 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:40:32 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:41:43 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:41:43 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:42:54 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:42:54 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:44:05 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:44:05 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:45:16 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:45:16 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:46:28 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:46:28 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:47:39 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:47:39 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:48:50 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:48:50 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:50:01 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:50:01 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:51:12 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:51:12 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:52:23 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:52:23 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:52:27 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:53:45 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:53:45 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:54:56 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:54:56 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:56:07 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:56:08 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:57:19 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:57:19 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:58:30 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:58:30 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
		7/2/2018	4:59:41 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:59:41 PM	192.168.1.101	68	192.168.1.109	67	UDP	300

46 records

1336 sockets



Ports	Remotes	Date	Time	Remote IP	Remote Port	Local IP	Local Port	Protocol	Bytes
	192.168.1.112	7/2/2018	4:34:58 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:36:27 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:38:05 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:39:20 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:40:32 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:41:43 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:42:54 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:44:05 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:45:16 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:46:28 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:47:39 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:48:50 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:50:01 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:51:12 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:52:23 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:53:45 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:54:56 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:56:07 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:57:19 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:58:30 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
		7/2/2018	4:59:41 PM	192.168.1.112	68	192.168.1.109	67	UDP	300



Ports	Date	Time	Remote IP	Remote Port	Local IP	Local Port	Protocol	Bytes
Remotes	7/2/2018	4:34:58 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
192.168.1.112	7/2/2018	4:35:01 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
192.168.1.101	7/2/2018	4:36:27 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
0.0.0.0	7/2/2018	4:38:05 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:39:20 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:40:32 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:41:43 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:42:54 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:44:05 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:45:16 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:46:28 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:47:39 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:48:50 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:50:01 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:51:12 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:52:23 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:52:27 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:53:45 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:54:56 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:56:08 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:57:19 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:58:30 PM	192.168.1.101	68	192.168.1.109	67	UDP	300
	7/2/2018	4:59:41 PM	192.168.1.101	68	192.168.1.109	67	UDP	300



Ports	Date	Time	Remote IP	Remote Port	Local IP	Local Port	Protocol	Bytes
Remotes	7/2/2018	4:36:25 PM	0.0.0.0	68	192.168.1.109	67	UDP	302
192.168.1.112	7/2/2018	4:36:28 PM	0.0.0.0	68	192.168.1.109	67	UDP	302
192.168.1.101	7/2/2018	5:00:17 PM	0.0.0.0	68	192.168.1.109	67	UDP	304
0.0.0.0	7/2/2018	5:00:17 PM	0.0.0.0	68	192.168.1.109	67	UDP	316
	7/2/2018	5:00:19 PM	0.0.0.0	68	192.168.1.109	67	UDP	316

To view more information about alerts, right-click on any alert, choose **View Details**.



Ports	Date	Time	Remote IP	Remote Port	Local IP	Local Port	Protocol	Bytes
Remotes	7/2/2018	4:34:58 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
	7/2/2018	4:34:58 PM	192		1.109	67	UDP	300
	7/2/2018	4:35:01 PM	192		1.109	67	UDP	300
	7/2/2018	4:36:25 PM	0.0		1.109	67	UDP	302
	7/2/2018	4:36:27 PM	192		1.109	67	UDP	300
	7/2/2018	4:36:27 PM	192		1.109	67	UDP	300

[illegible]

The screenshot shows the HoneyBOT application window titled "HoneyBOT - Log_20180702.bin". The interface includes a menu bar (File, View, Reports, Help) and a toolbar with icons for file operations and settings. Below the toolbar is a tree view on the left with "Ports" and "Remotes" expanded. The main area displays a table of network logs. A right-click context menu is open over the first row of the table, showing options: "View Details", "Filter Related Records", and "Reverse DNS".

Date	Time	Remote IP	Remote Port	Local IP	Local Port	Protocol	Bytes
7/2/2018	4:34:58 PM	192.168.1.112	68	192.168.1.109	67	UDP	300
7/2/2018	4:34:58 PM	192.168.1.101	68			UDP	300
7/2/2018	4:35:01 PM	192.168.1.101	68			UDP	300
7/2/2018	4:36:25 PM	0.0.0.0	68			UDP	302
7/2/2018	4:36:27 PM	192.168.1.112	68			UDP	300
7/2/2018	4:36:27 PM	192.168.1.101	68			UDP	300

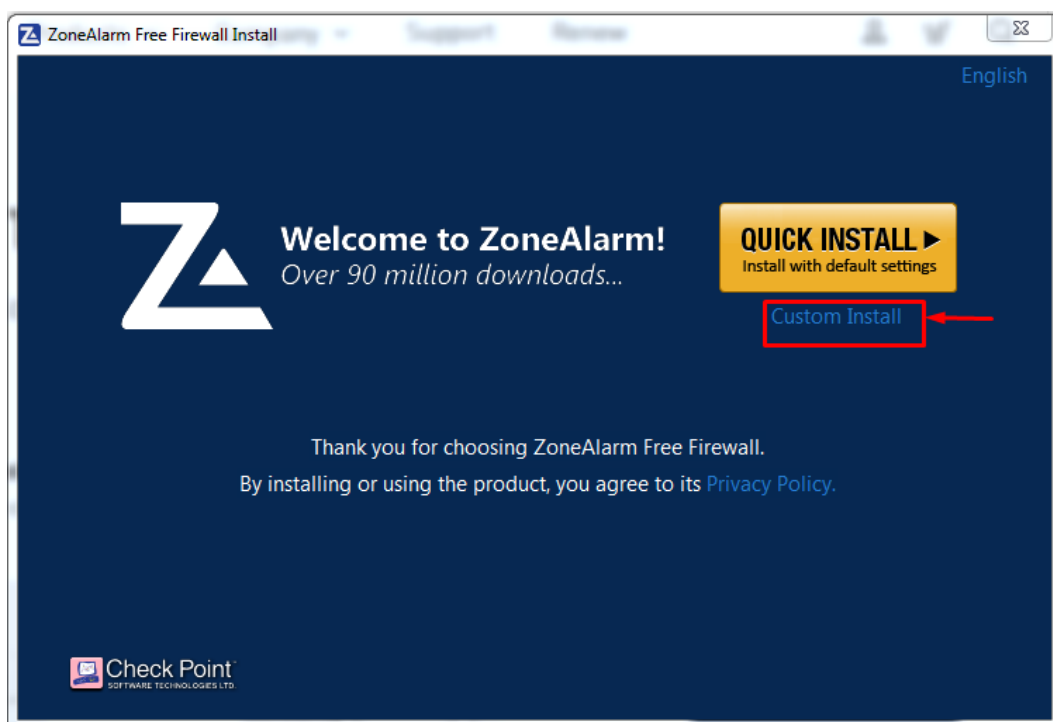
Page | 11

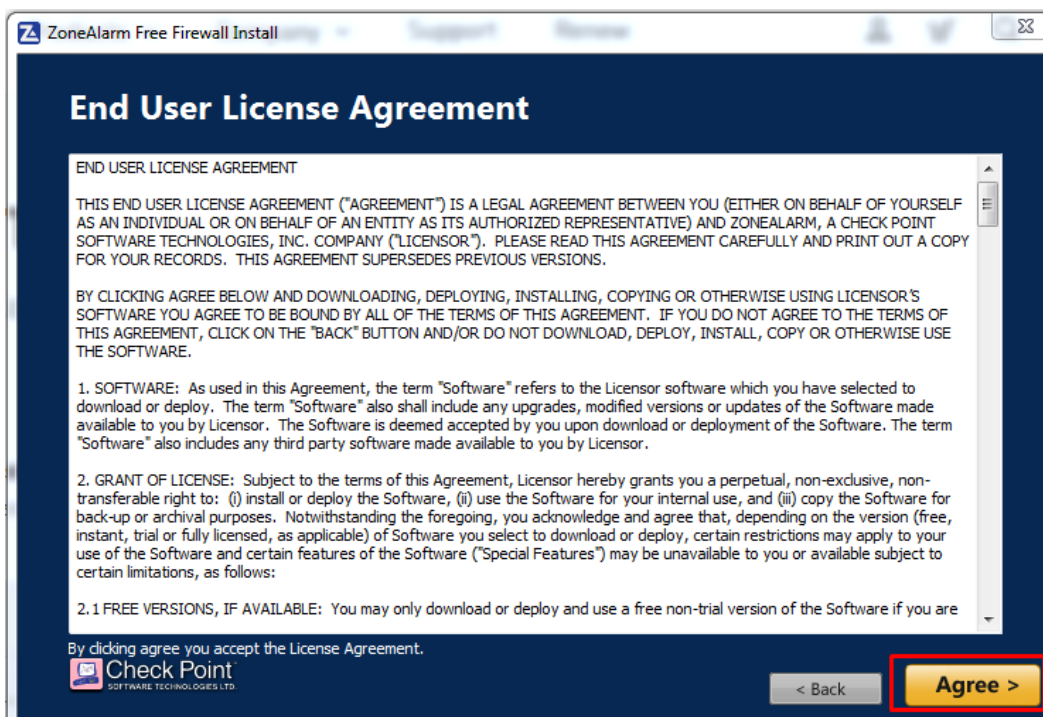
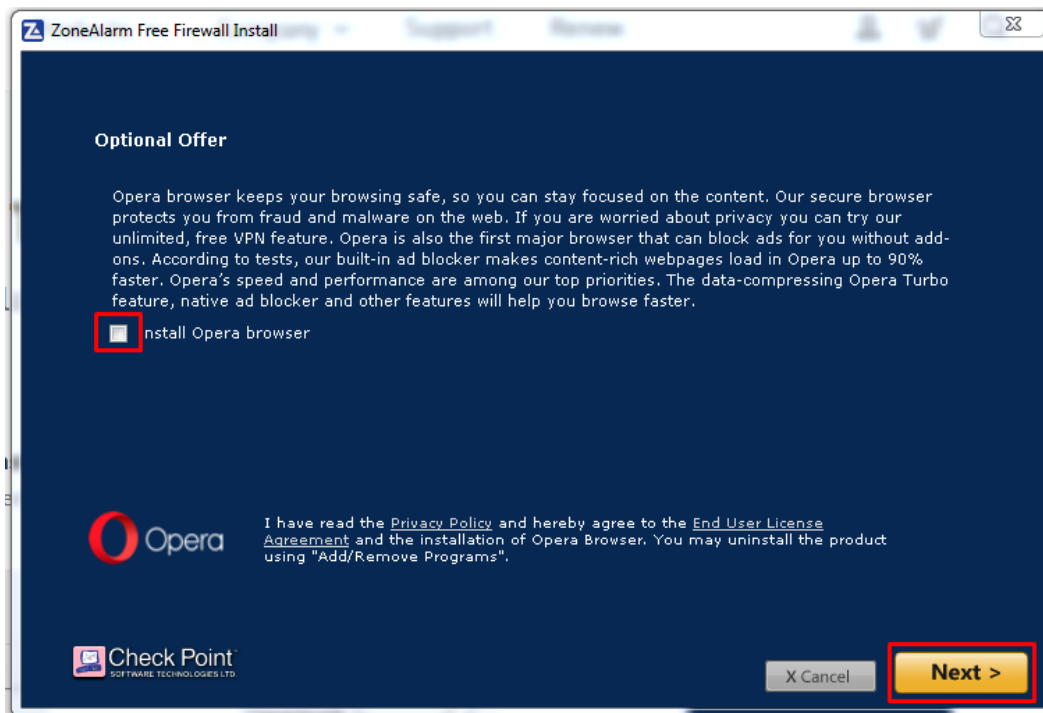
Practical 4: Custom installation of Zonealarm Firewall on Windows

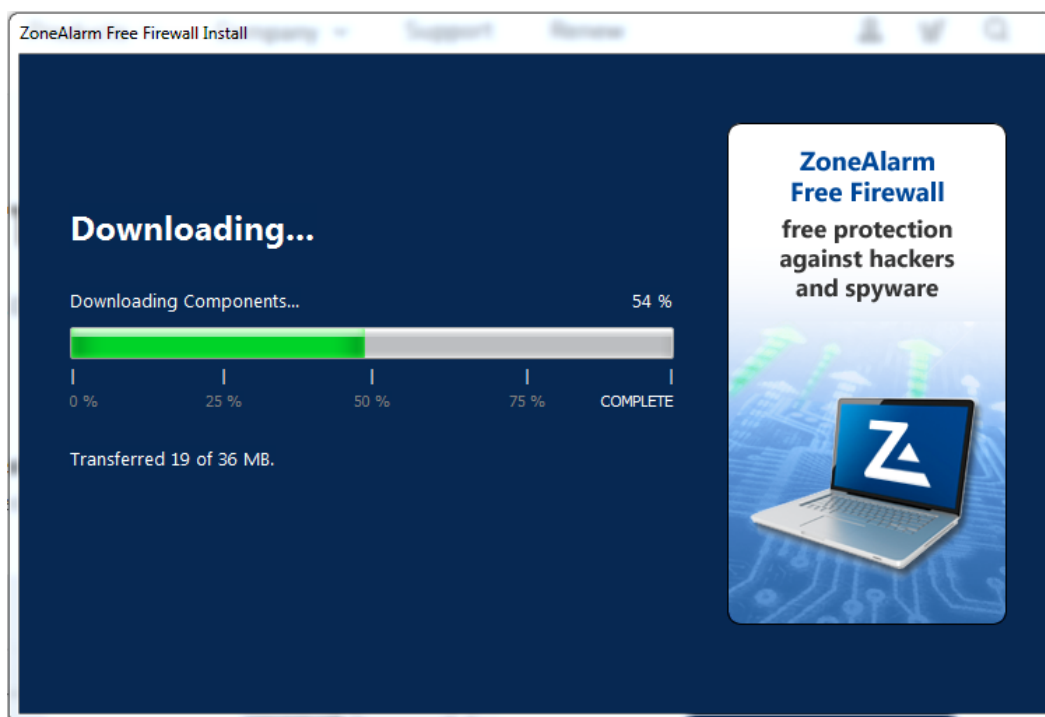
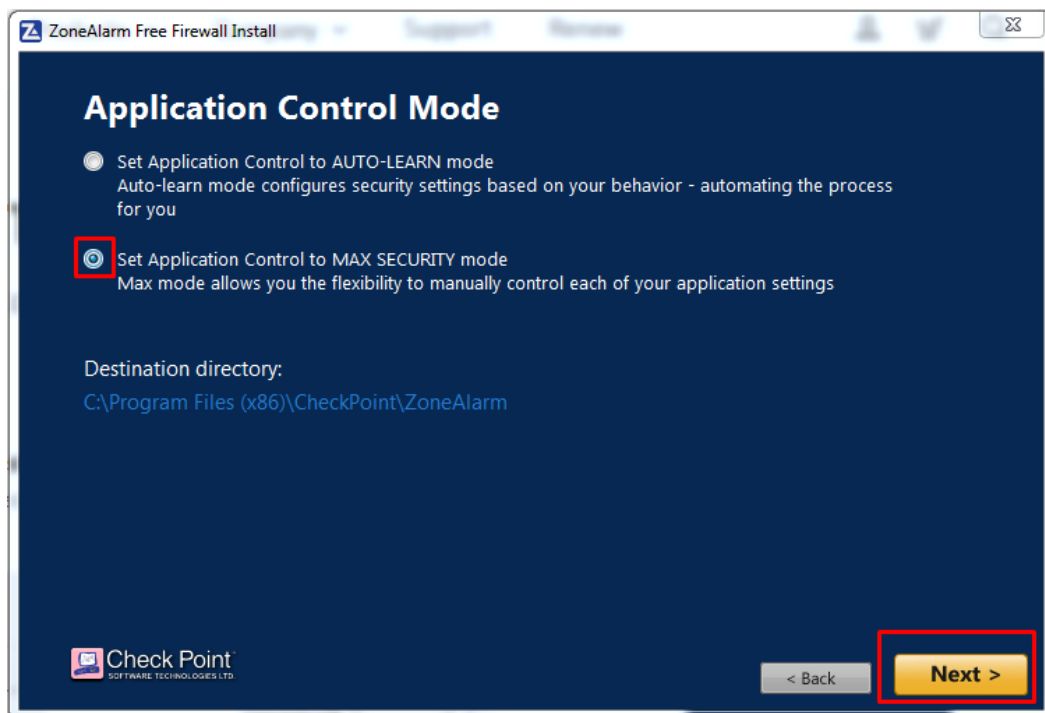
Visit <https://www.zonealarm.com/software/free-firewall/> and download a free version of ZoneAlarm firewall.

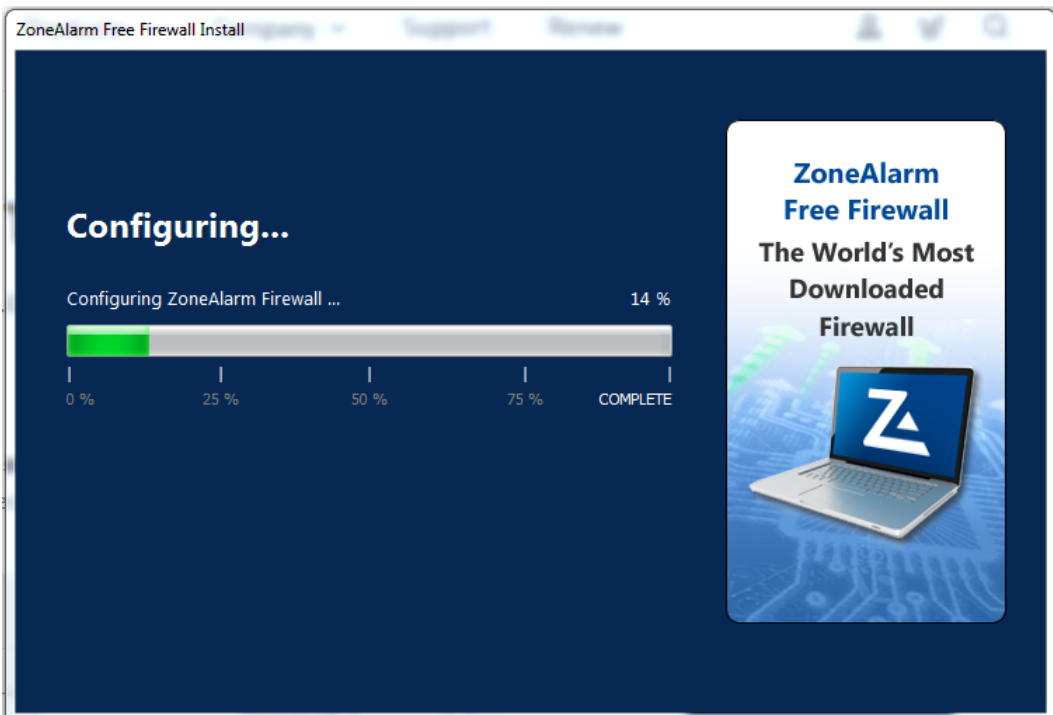
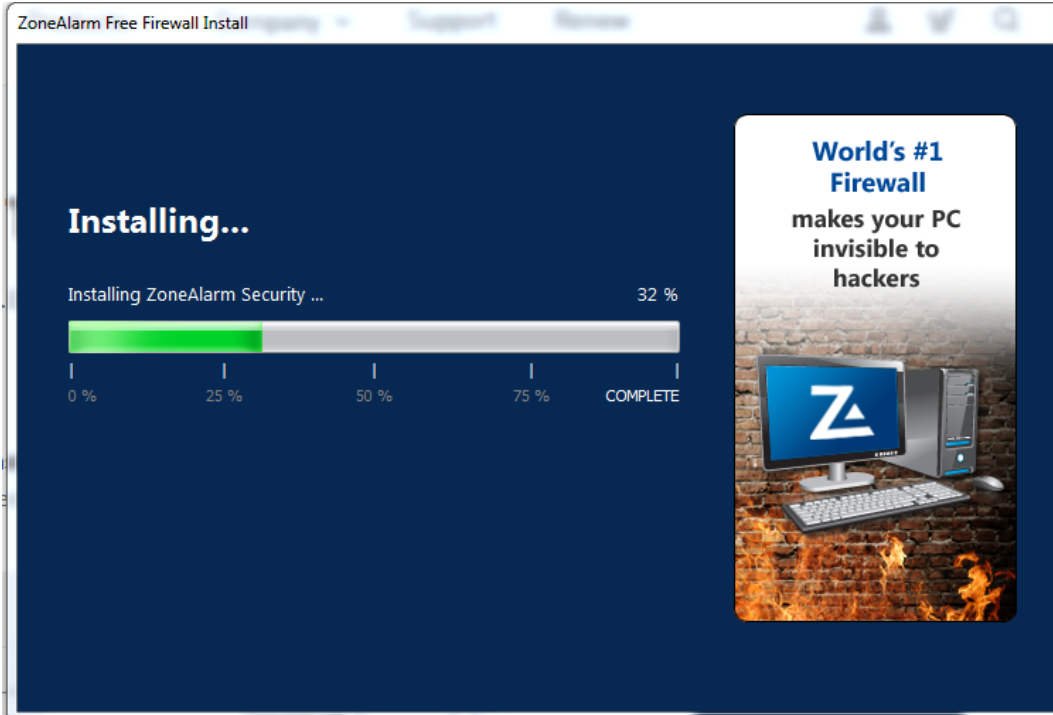


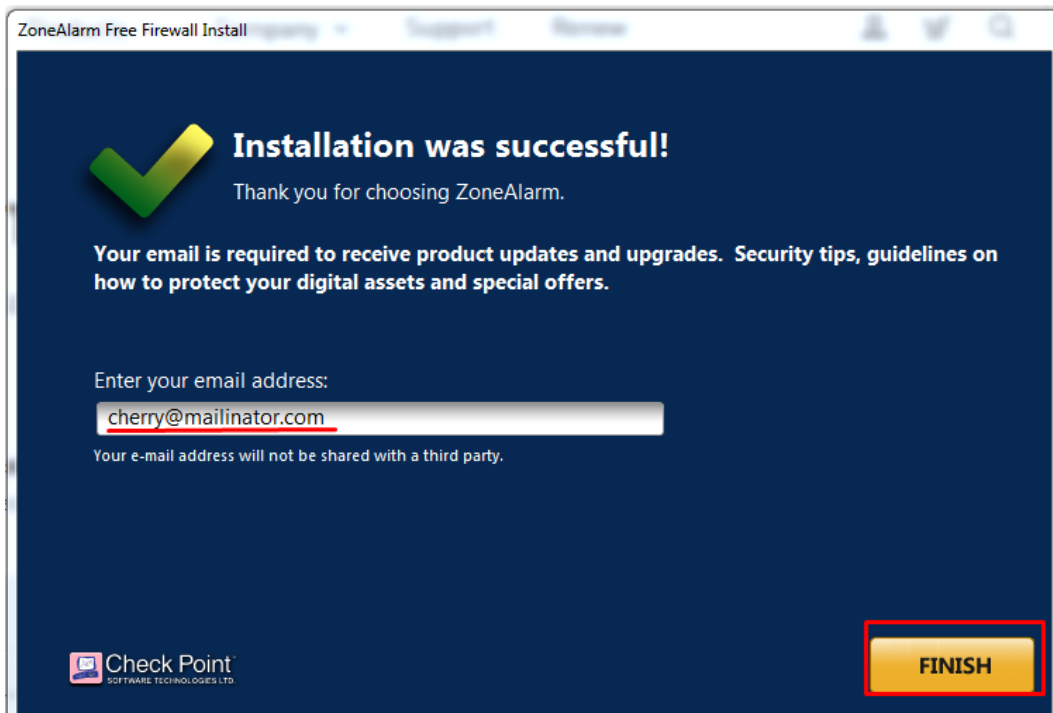
To customize the installation, click on **Custom Install** and follow the procedure as shown in below images.



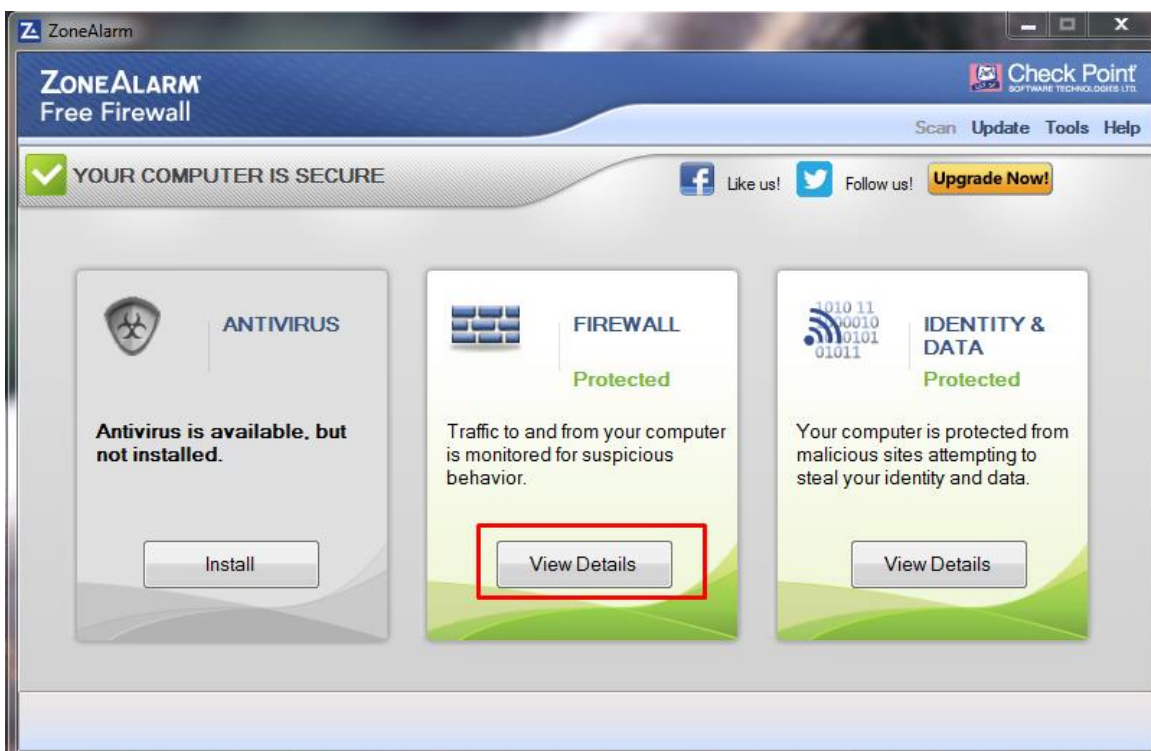


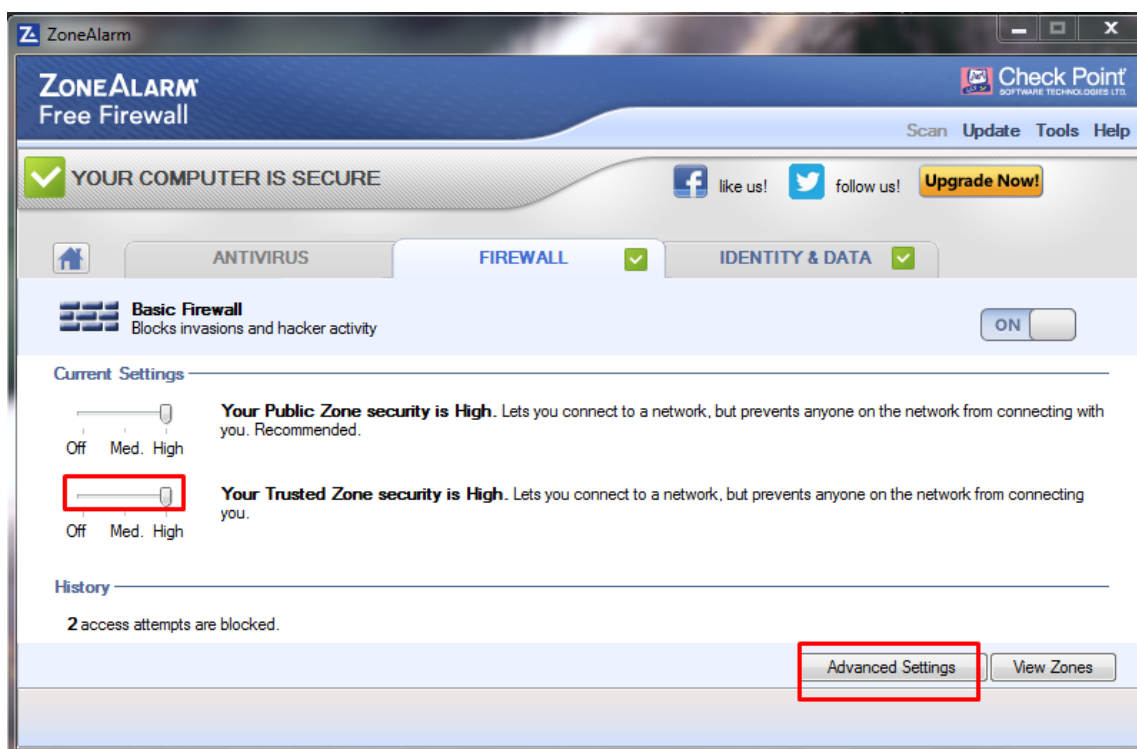
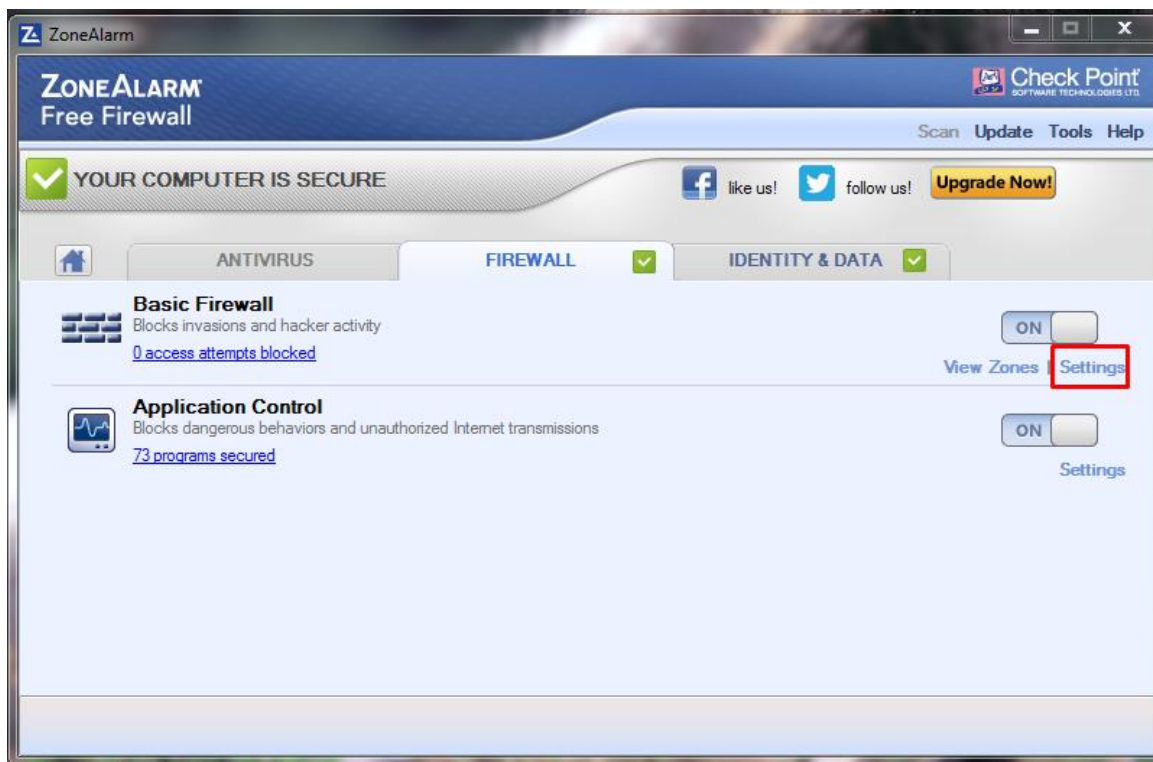


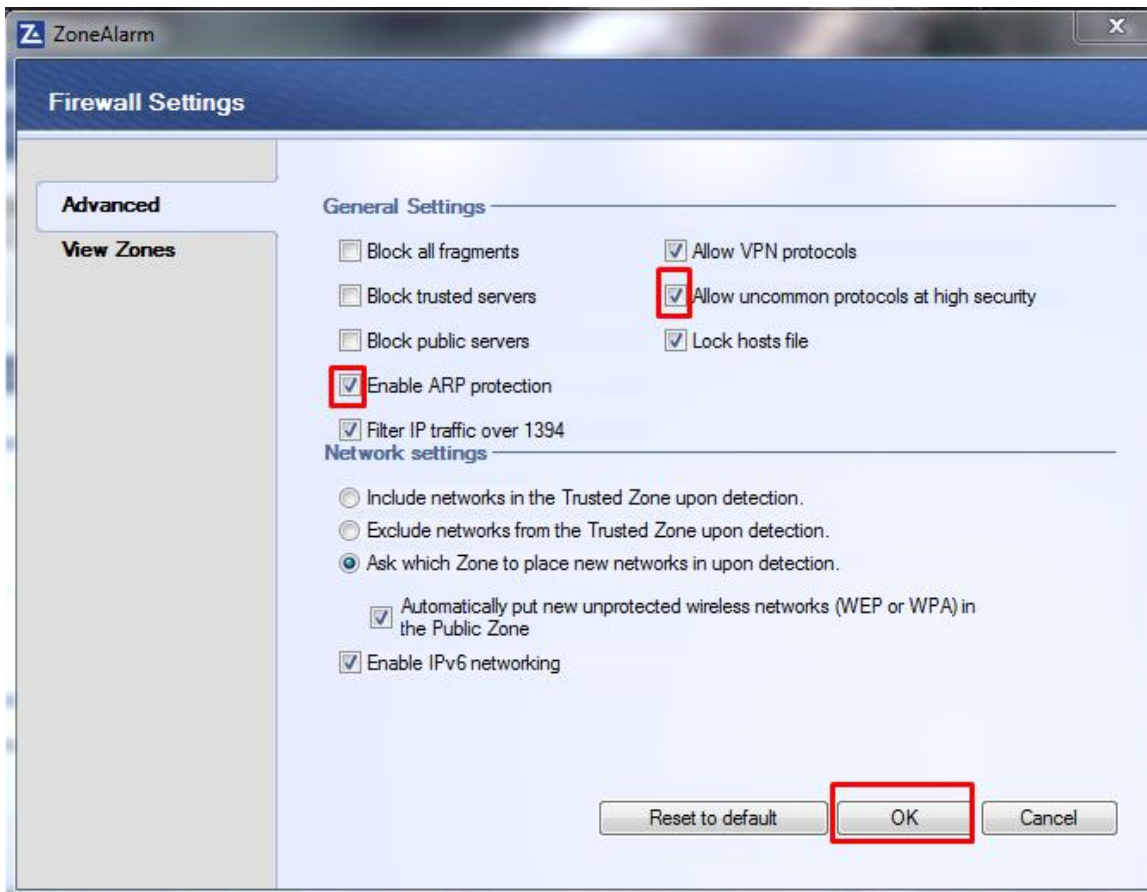




To customize the ZoneAlarm firewall, click on **View Details** under **Firewall** and follow below images.







To customize alerts, select **Logs** under **Tools** tab on the top right corner of ZoneAlarm window. Follow below images and select the necessary options according to the requirement.

