

Wazuh Installation

Wazuh Components:

Wazuh Indexer

Wazuh Manager (Server)

Wazuh Dashboard

Filebeat

Wazuh Agent

Certificate Creation

1) First we make direction for installation certificates and install certificates to the directory:

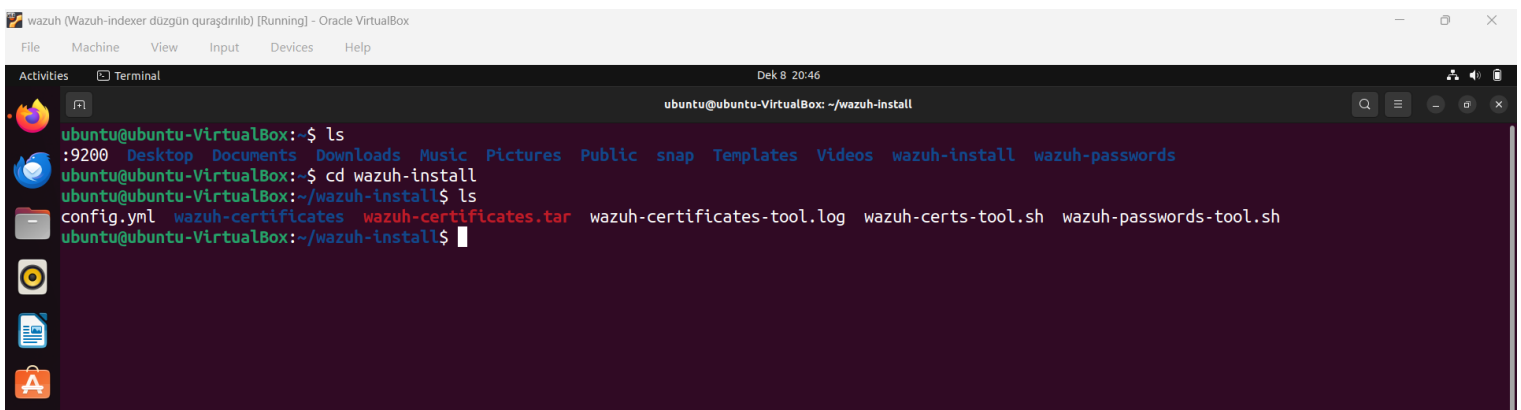
```
mkdir wazuh-install
```

Download the wazuh-certs-tool.sh script and the config.yml configuration file. This creates the certificates that encrypt communications between the Wazuh central components.

```
cd wazuh-install
```

```
curl -sO https://packages.wazuh.com/4.14/wazuh-certs-tool.sh
```

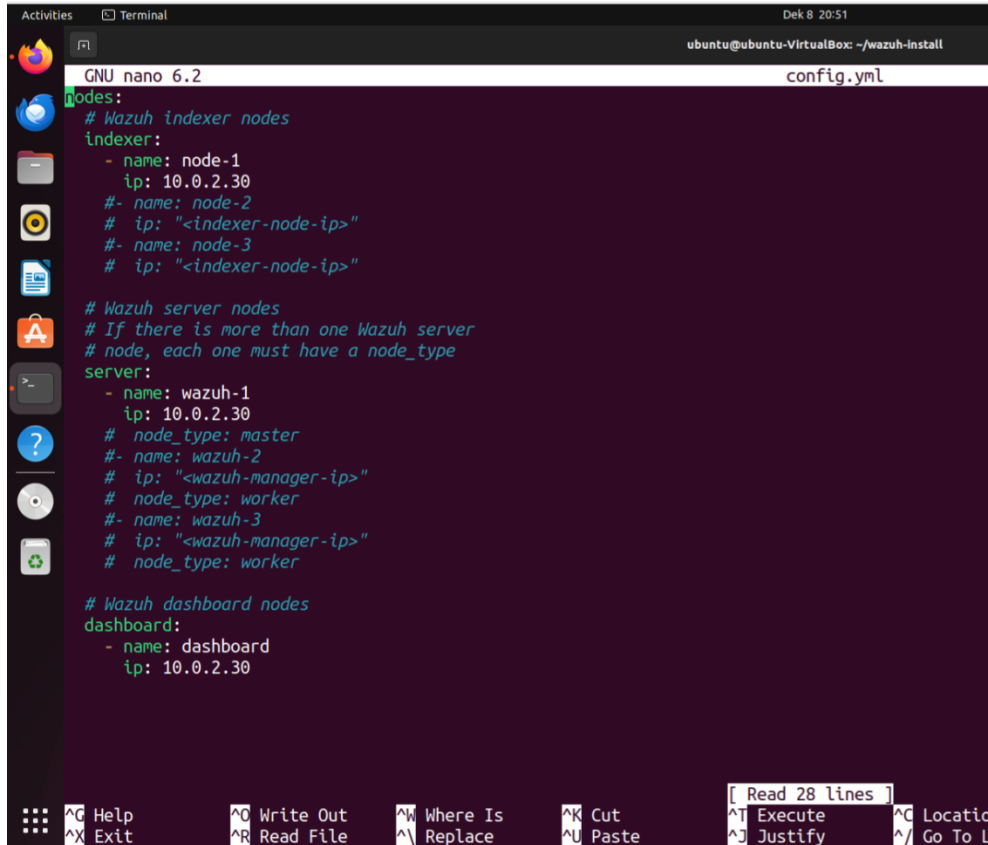
```
curl -sO https://packages.wazuh.com/4.14/config.yml
```



2) Configure config.yml

`nano config.yml`

10.0.2.30 is our Ubuntu machine ipv4 which we install wazuh all-in-one



```
GNU nano 6.2 config.yml
nodes:
# Wazuh indexer nodes
indexer:
- name: node-1
  ip: 10.0.2.30
#- name: node-2
#  ip: "<indexer-node-ip>"
#- name: node-3
#  ip: "<indexer-node-ip>"

# Wazuh server nodes
# If there is more than one Wazuh server
# node, each one must have a node_type
server:
- name: wazuh-1
  ip: 10.0.2.30
#  node_type: master
#- name: wazuh-2
#  ip: "<wazuh-manager-ip>"
#  node_type: worker
#- name: wazuh-3
#  ip: "<wazuh-manager-ip>"
#  node_type: worker

# Wazuh dashboard nodes
dashboard:
- name: dashboard
  ip: 10.0.2.30
```

Note: Təhlükəsizlik Sertifikatlarının Yaradılması

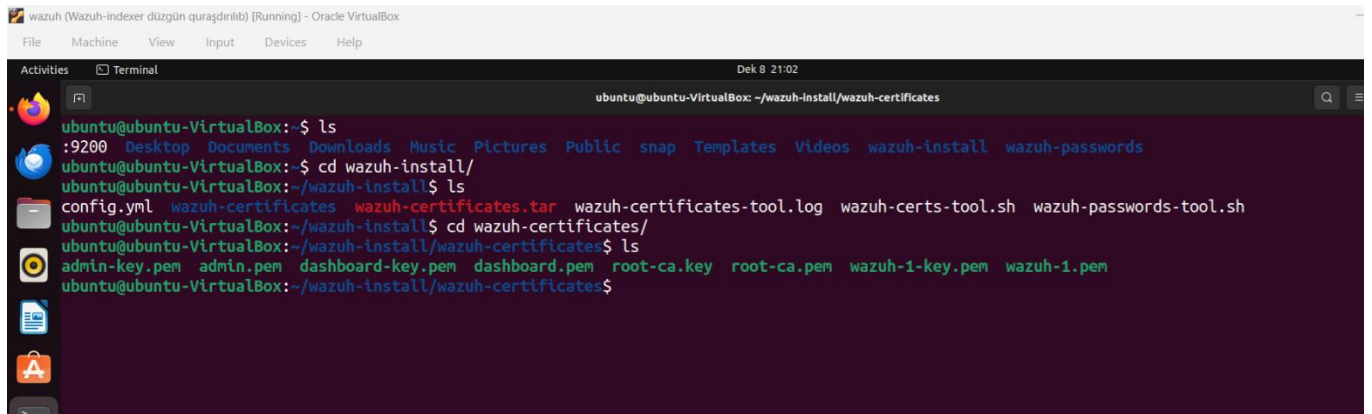
Ən vacib hissə budur. Wazuh komponentləri bir-biri ilə şifrələnmiş (SSL/TLS) əlaqə qurur.

Quraşdırma skripti bu config.yml faylını oxuyur və oradakı IP ünvanlarına uyğun **sertifikatlar (certificates)** yaradır.

Əgər bu faylda IP-ni səhv yazsan, sertifikatlar səhv yaranacaq və sistem işləməyəcək.

3) Run `./wazuh-certs-tool.sh` to create the certificates

```
bash ./wazuh-certs-tool.sh -A
```



The screenshot shows a terminal window titled "wazuh (Wazuh-indexer düzgün quraşdırılıb) [Running] - Oracle VM VirtualBox". The terminal output shows the following commands and results:

```
ubuntu@ubuntu-VirtualBox:~$ ls
:9200 Desktop Documents Downloads Music Pictures Public snap Templates Videos wazuh-install wazuh-passwords
ubuntu@ubuntu-VirtualBox:~$ cd wazuh-install/
ubuntu@ubuntu-VirtualBox:~/wazuh-install$ ls
config.yml wazuh-certificates wazuh-certificates.tar wazuh-certificates-tool.log wazuh-certs-tool.sh wazuh-passwords-tool.sh
ubuntu@ubuntu-VirtualBox:~/wazuh-install$ cd wazuh-certificates/
ubuntu@ubuntu-VirtualBox:~/wazuh-install/wazuh-certificates$ ls
admin-key.pem admin.pem dashboard-key.pem dashboard.pem root-ca.key root-ca.pem wazuh-1-key.pem wazuh-1.pem
ubuntu@ubuntu-VirtualBox:~/wazuh-install/wazuh-certificates$
```

Wazuh indexer nodes installation

1) Installing package dependencies

```
apt-get install debconf adduser procps
```

2) Adding the Wazuh repository

1. Install the following packages if missing.

```
apt-get install gnupg apt-transport-https
```

2. Install the GPG key.

```
curl -s https://packages.wazuh.com/key/GPG-KEY-WAZUH | gpg --no-
default-keyring --keyring gnupg-ring:/usr/share/keyrings/wazuh.gpg --
import && chmod 644 /usr/share/keyrings/wazuh.gpg
```

3. Add the repository.

```
echo "deb [signed-by=/usr/share/keyrings/wazuh.gpg]
https://packages.wazuh.com/4.x/apt/ stable main" | tee -a
/etc/apt/sources.list.d/wazuh.list
```

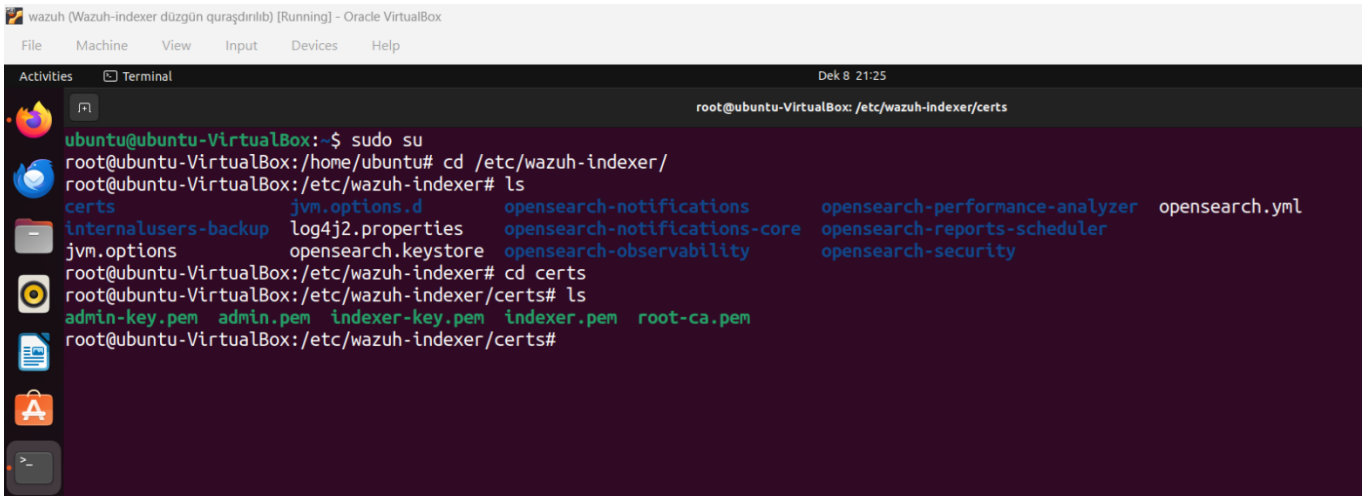
4. Update the packages information.

```
apt-get update
```

Deploying certificates

- 1) `mkdir /etc/wazuh-indexer/certs`
- 2) `tar -xf ./wazuh-certificates.tar -C /etc/wazuh-indexer/certs/ ./wazuh-1.pem ./wazuh-1-key.pem ./admin.pem ./admin-key.pem ./root-ca.pem`
- 3) `mv -n /etc/wazuh-indexer/certs/wazuh-1.pem /etc/wazuh-indexer/certs/indexer.pem`
- 4) `mv -n /etc/wazuh-indexer/certs/wazuh-1-key.pem /etc/wazuh-indexer/certs/indexer-key.pem`
- 5) `chmod 500 /etc/wazuh-indexer/certs`
- 6) `chmod 400 /etc/wazuh-indexer/certs/*`
- 7) `chown -R wazuh-indexer:wazuh-indexer /etc/wazuh-indexer/certs`

Result:



```
wazuh (Wazuh-indexer düzgün kurulmuş) [Running] - Oracle VirtualBox
File Machine View Input Devices Help

Activities Terminal Dek 8 21:25
root@ubuntu-VirtualBox: /etc/wazuh-indexer/certs

ubuntu@ubuntu-VirtualBox:~$ sudo su
root@ubuntu-VirtualBox:/home/ubuntu# cd /etc/wazuh-indexer/
root@ubuntu-VirtualBox:/etc/wazuh-indexer# ls
certs                    jvm.options.d          opensearch-notifications opensearch-performance-analyzer opensearch.yml
internalusers-backup    log4j2.properties      opensearch-notifications-core opensearch-reports-scheduler
jvm.options              opensearch.keystore     opensearch-observability  opensearch-security
root@ubuntu-VirtualBox:/etc/wazuh-indexer# cd certs
root@ubuntu-VirtualBox:/etc/wazuh-indexer/certs# ls
admin-key.pem  admin.pem  indexer-key.pem  indexer.pem  root-ca.pem
root@ubuntu-VirtualBox:/etc/wazuh-indexer/certs#
```

Starting the service

Enable and start the Wazuh indexer service

```
systemctl daemon-reload
```

```
systemctl enable wazuh-indexer
```

```
systemctl start wazuh-indexer
```

```

Dek 8 22:33
ubuntu@ubuntu-VirtualBox -
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl status wazuh-indexer
[sudo] password for ubuntu:
● wazuh-indexer.service - wazuh-indexer
   Loaded: loaded (/lib/systemd/system/wazuh-indexer.service; enabled; vendor preset: enabled)
   Active: active (running) since Mon 2025-12-08 19:42:48 +04; 2h 50min ago
     Docs: https://documentation.wazuh.com
   Main PID: 29679 (java)
    Tasks: 151 (limit: 14251)
     Memory: 1.7G
          CPU: 9min 17.955s
    CGroup: /system.slice/wazuh-indexer.service
            └─29679 /usr/share/wazuh-indexer/jdk/bin/java -Xshare:auto -Dopensearch.networkaddress.cache.ttl=60 -Dopensearch.networkaddress.cache.negative.ttl=0

Dek 08 19:42:40 ubuntu-VirtualBox systemd-entrypoint[29679]: WARNING: System::setSecurityManager has been called by org.opensearch.bootstrap.OpenSearch
Dek 08 19:42:40 ubuntu-VirtualBox systemd-entrypoint[29679]: WARNING: Please consider reporting this to the maintainers of org.opensearch.bootstrap.OpenSearch
Dek 08 19:42:40 ubuntu-VirtualBox systemd-entrypoint[29679]: WARNING: System::setSecurityManager will be removed in a future release
Dek 08 19:42:40 ubuntu-VirtualBox systemd-entrypoint[29679]: Dec 08, 2025 7:42:40 PM sun.util.locale.provider.LocaleProviderAdapter <clinit>
Dek 08 19:42:40 ubuntu-VirtualBox systemd-entrypoint[29679]: WARNING: COMPAT locale provider will be removed in a future release
Dek 08 19:42:41 ubuntu-VirtualBox systemd-entrypoint[29679]: WARNING: A terminally deprecated method in java.lang.System has been called
Dek 08 19:42:41 ubuntu-VirtualBox systemd-entrypoint[29679]: WARNING: System::setSecurityManager has been called by org.opensearch.bootstrap.Security
Dek 08 19:42:41 ubuntu-VirtualBox systemd-entrypoint[29679]: WARNING: Please consider reporting this to the maintainers of org.opensearch.bootstrap.Security
Dek 08 19:42:41 ubuntu-VirtualBox systemd-entrypoint[29679]: WARNING: System::setSecurityManager will be removed in a future release
Dek 08 19:42:48 ubuntu-VirtualBox systemd[1]: Started wazuh-indexer.

lines 1-21/21 (END)

```

Cluster initialization

Run the Wazuh indexer indexer-security-init.sh script on *any* Wazuh indexer node to load the new certificates information and start the single-node or multi-node cluster

```
/usr/share/wazuh-indexer/bin/indexer-security-init.sh
```

Testing the cluster installation:

```
curl -k -u admin https://10.0.2.30:9200
```

The image shows a terminal window with a dark background. The title bar at the top reads "Activities" and "Terminal". In the top right corner, the system clock shows "Dek 8 22:38". The terminal prompt is "ubuntu@ubuntu-VirtualBox: ~". The user has entered the command `curl -k -u admin https://10.0.2.30:9200`. The terminal output shows a JSON response from the Wazuh API, indicating a successful login for the 'admin' user. The JSON object contains details about the node, cluster, and version. The terminal window has a sidebar on the left with various application icons.

```
ubuntu@ubuntu-VirtualBox:~$ curl -k -u admin https://10.0.2.30:9200
Enter host password for user 'admin':
{
  "name" : "node-1",
  "cluster_name" : "wazuh-cluster",
  "cluster_uuid" : "acNA7CzKQdKD0mMWIMUE7Q",
  "version" : {
    "number" : "7.10.2",
    "build_type" : "deb",
    "build_hash" : "ac8f6e0114b657a116c4a41c3e12f8e0e181bbcd",
    "build_date" : "2025-11-08T12:00:46.843930578Z",
    "build_snapshot" : false,
    "lucene_version" : "9.12.2",
    "minimum_wire_compatibility_version" : "7.10.0",
    "mininum_index_compatibility_version" : "7.0.0"
  },
  "tagline" : "The OpenSearch Project: https://opensearch.org/"
}
```

Installing the Wazuh manager

Install the Wazuh manager package.

```
apt-get -y install wazuh-manager
```

Installing Filebeat

Install the Filebeat package.

```
apt-get -y install filebeat
```

Configuring Filebeat

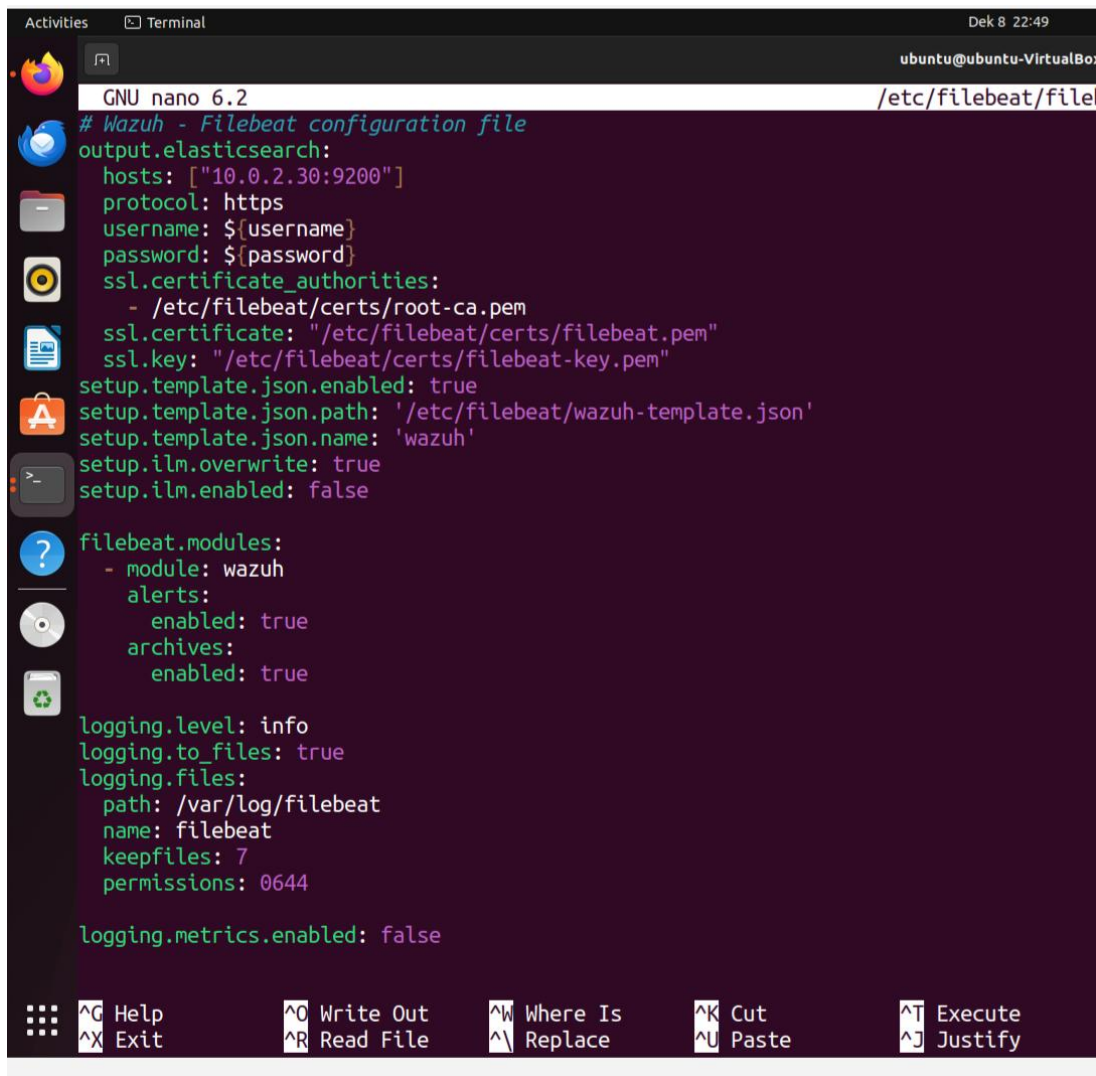
1) Download the preconfigured Filebeat configuration file

```
curl -so /etc/filebeat/filebeat.yml https://packages.wazuh.com/4.14/tpl/wazuh/filebeat/filebeat.yml
```

2) Edit the /etc/filebeat/filebeat.yml configuration file and replace the following value:

```
nano /etc/filebeat/filebeat.yml
```

Note: archives:enabled:true



```
GNU nano 6.2 /etc/filebeat/filebeat.yml
# Wazuh - Filebeat configuration file
output.elasticsearch:
  hosts: ["10.0.2.30:9200"]
  protocol: https
  username: ${username}
  password: ${password}
  ssl.certificate_authorities:
    - /etc/filebeat/certs/root-ca.pem
  ssl.certificate: "/etc/filebeat/certs/filebeat.pem"
  ssl.key: "/etc/filebeat/certs/filebeat-key.pem"
setup.template.json.enabled: true
setup.template.json.path: '/etc/filebeat/wazuh-template.json'
setup.template.json.name: 'wazuh'
setup.ilm.overwrite: true
setup.ilm.enabled: false

filebeat.modules:
  - module: wazuh
    alerts:
      enabled: true
      archives:
        enabled: true

logging.level: info
logging.to_files: true
logging.files:
  path: /var/log/filebeat
  name: filebeat
  keepfiles: 7
  permissions: 0644

logging.metrics.enabled: false

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute
^X Exit      ^R Read File  ^_ Replace    ^U Paste      ^J Justify
```

3) Create a Filebeat keystore to securely store authentication credentials.

```
filebeat keystore create
```

4) Add the default username and password admin:admin

```
filebeat keystore add username
```

```
filebeat keystore add password
```

5) Download the alerts template for the Wazuh indexer.

```
curl -so /etc/filebeat/wazuh-template.json  
https://raw.githubusercontent.com/wazuh/wazuh/v4.14.1/extensions/elasticsearch/7.x/wazuh-template.json
```

```
chmod go+r /etc/filebeat/wazuh-template.json
```

6) Install the Wazuh module for Filebeat

```
curl -s https://packages.wazuh.com/4.x/filebeat/wazuh-filebeat-0.4.tar.gz | tar -xvz -C  
/usr/share/filebeat/module
```

Deploying certificates

Deploy certificates for filebeat

```
mkdir /etc/filebeat/certs
```

```
tar -xf ./wazuh-certificates.tar -C /etc/filebeat/certs/ ./wazuh-1.pem ./  
wazuh-1-key.pem ./root-ca.pem
```

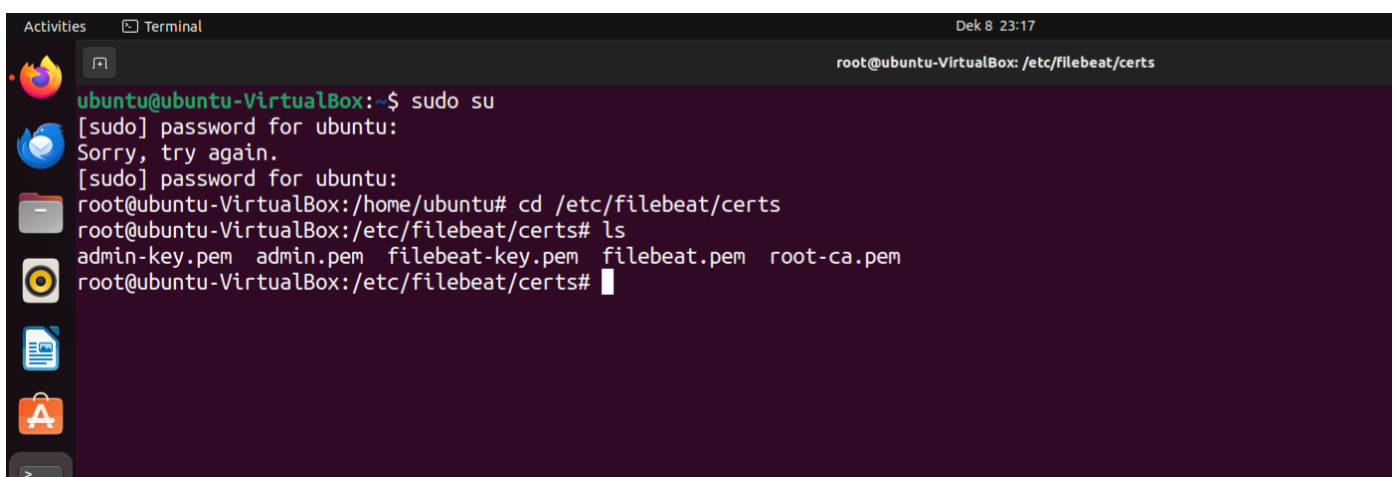
```
mv -n /etc/filebeat/certs/wazuh-1.pem /etc/filebeat/certs/filebeat.pem
```

```
mv -n /etc/filebeat/certs/wazuh-1-key.pem /etc/filebeat/certs/filebeat-  
key.pem
```

```
chmod 500 /etc/filebeat/certs
```

```
chmod 400 /etc/filebeat/certs/*
```

```
chown -R root:root /etc/filebeat/certs
```



Starting the Wazuh manager

1) Starting the Wazuh manager:

```
systemctl daemon-reload  
systemctl enable wazuh-manager  
systemctl start wazuh-manager
```

2) Run the following command to verify the Wazuh manager status.

```
systemctl status wazuh-manager
```

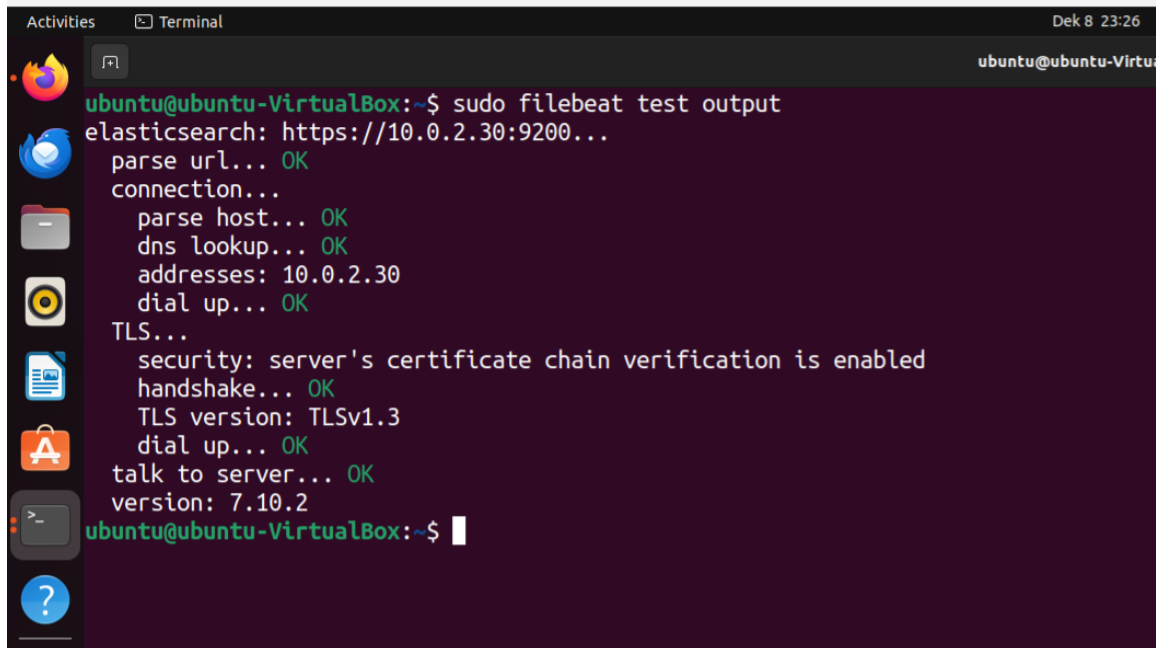
Starting the Filebeat service

1) Enable and start the Filebeat service

```
systemctl daemon-reload  
systemctl enable filebeat  
systemctl start filebeat
```

2) Run the following command to verify that Filebeat is successfully installed.

```
filebeat test output
```

A screenshot of a Linux terminal window titled 'Terminal' with a dark background. The terminal shows the command 'sudo filebeat test output' being executed. The output displays the configuration for Filebeat, including the Elasticsearch URL 'https://10.0.2.30:9200...', host verification steps (parse url, connection, parse host, dns lookup, addresses, dial up), TLS settings (security, handshake, TLS version), and the final version '7.10.2'. The prompt 'ubuntu@ubuntu-VirtualBox:~\$' is visible at the bottom.

```
Activities  Terminal  Dek 8 23:26  ubuntu@ubuntu-Virtua  
ubuntu@ubuntu-VirtualBox:~$ sudo filebeat test output  
elasticsearch: https://10.0.2.30:9200...  
  parse url... OK  
  connection...  
    parse host... OK  
    dns lookup... OK  
    addresses: 10.0.2.30  
    dial up... OK  
  TLS...  
    security: server's certificate chain verification is enabled  
    handshake... OK  
    TLS version: TLSv1.3  
    dial up... OK  
    talk to server... OK  
    version: 7.10.2  
ubuntu@ubuntu-VirtualBox:~$
```


Wazuh dashboard installation

Install the following packages if missing

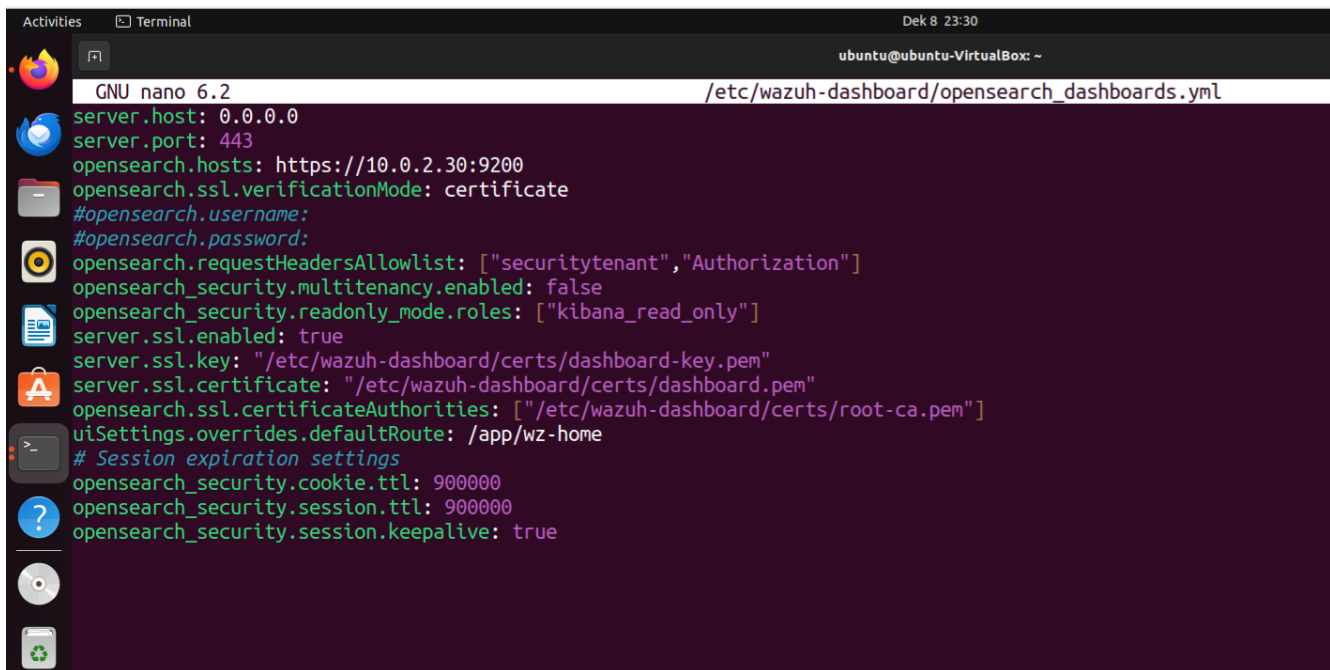
```
apt-get install debhelper tar curl libcap2-bin
```

Install the Wazuh dashboard package

```
apt-get -y install wazuh-dashboard
```

Configuring the Wazuh dashboard:

```
sudo nano /etc/wazuh-dashboard/opensearch_dashboards.yml
```



```
GNU nano 6.2 /etc/wazuh-dashboard/opensearch_dashboards.yml
server.host: 0.0.0.0
server.port: 443
opensearch.hosts: https://10.0.2.30:9200
opensearch.ssl.verificationMode: certificate
#opensearch.username:
#opensearch.password:
opensearch.requestHeadersAllowlist: ["securitytenant","Authorization"]
opensearch_security.multitenancy.enabled: false
opensearch_security.readonly_mode.roles: ["kibana_read_only"]
server.ssl.enabled: true
server.ssl.key: "/etc/wazuh-dashboard/certs/dashboard-key.pem"
server.ssl.certificate: "/etc/wazuh-dashboard/certs/dashboard.pem"
opensearch.ssl.certificateAuthorities: ["/etc/wazuh-dashboard/certs/root-ca.pem"]
uiSettings.overrides.defaultRoute: /app/wz-home
# Session expiration settings
opensearch_security.cookie.ttl: 900000
opensearch_security.session.ttl: 900000
opensearch_security.session.keepalive: true
```

Deploying certificates:

```
mkdir /etc/wazuh-dashboard/certs

tar -xvf ./wazuh-certificates.tar -C /etc/wazuh-dashboard/certs/ ./wazuh-1.pem
./wazuh-1-key.pem ./root-ca.pem

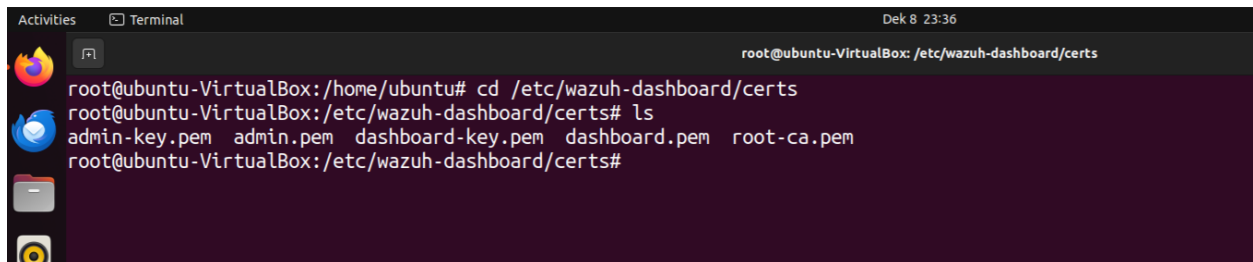
mv -n /etc/wazuh-dashboard/certs/wazuh-1.pem /etc/wazuh-
dashboard/certs/dashboard.pem

mv -n /etc/wazuh-dashboard/certs/wazuh-1-key.pem /etc/wazuh-
dashboard/certs/dashboard-key.pem

chmod 500 /etc/wazuh-dashboard/certs

chmod 400 /etc/wazuh-dashboard/certs/*

chown -R wazuh-dashboard:wazuh-dashboard /etc/wazuh-dashboard/certs
```



A terminal window titled 'Terminal' with a dark background. The prompt is 'root@ubuntu-VirtualBox: /etc/wazuh-dashboard/certs'. The user enters 'cd /etc/wazuh-dashboard/certs' and then 'ls'. The output of 'ls' shows five files: 'admin-key.pem', 'admin.pem', 'dashboard-key.pem', 'dashboard.pem', and 'root-ca.pem'. The prompt returns to 'root@ubuntu-VirtualBox: /etc/wazuh-dashboard/certs#'.

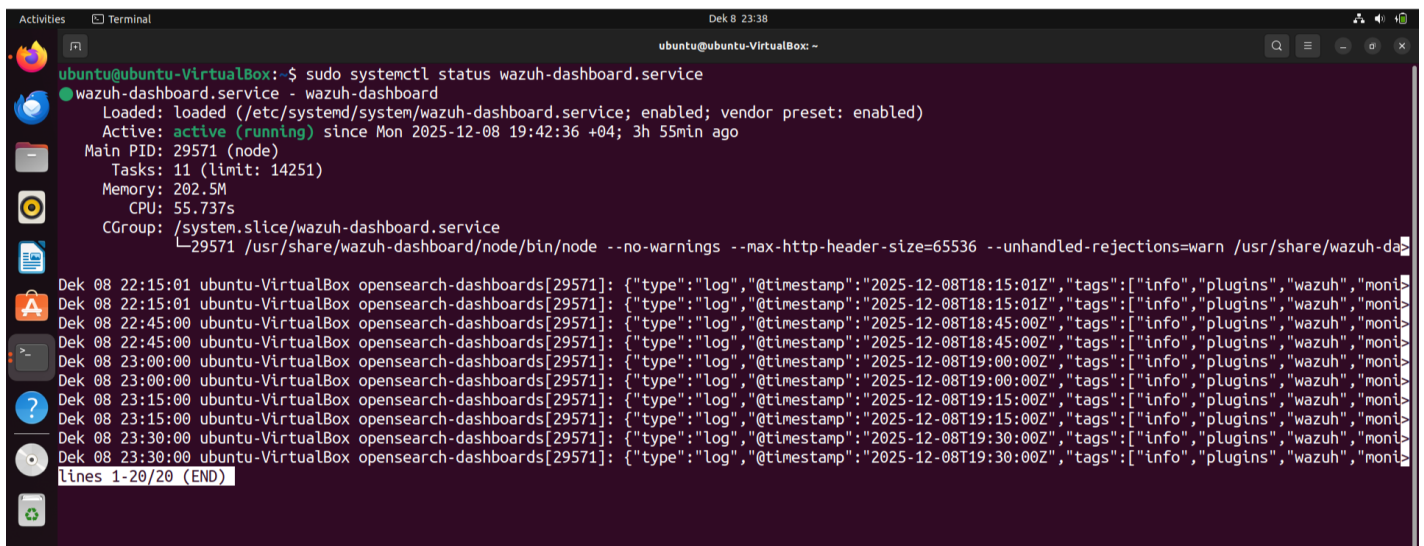
Starting the Wazuh dashboard service:

```
systemctl daemon-reload

systemctl enable wazuh-dashboard

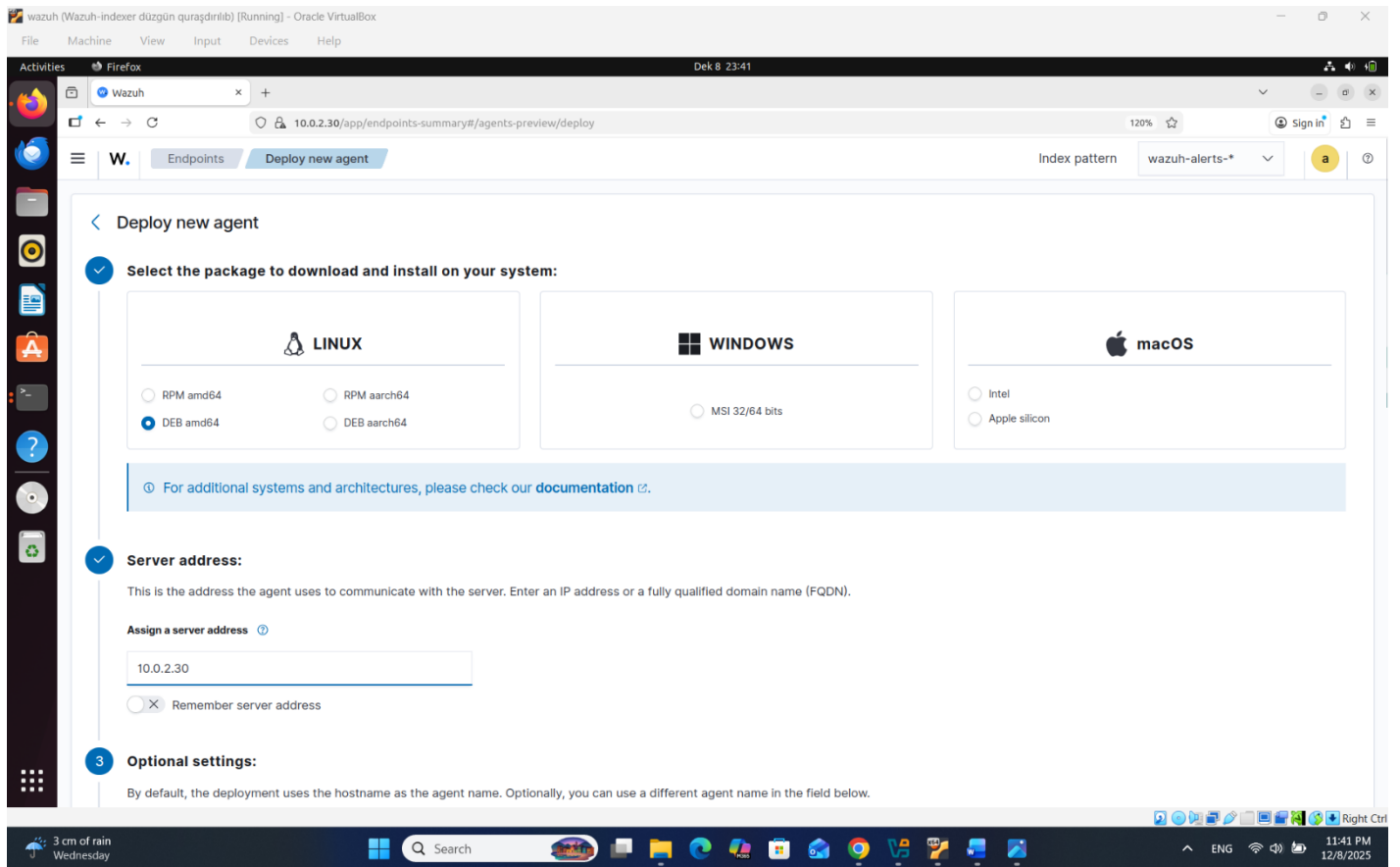
systemctl start wazuh-dashboard

systemctl status wazuh-dashboard
```



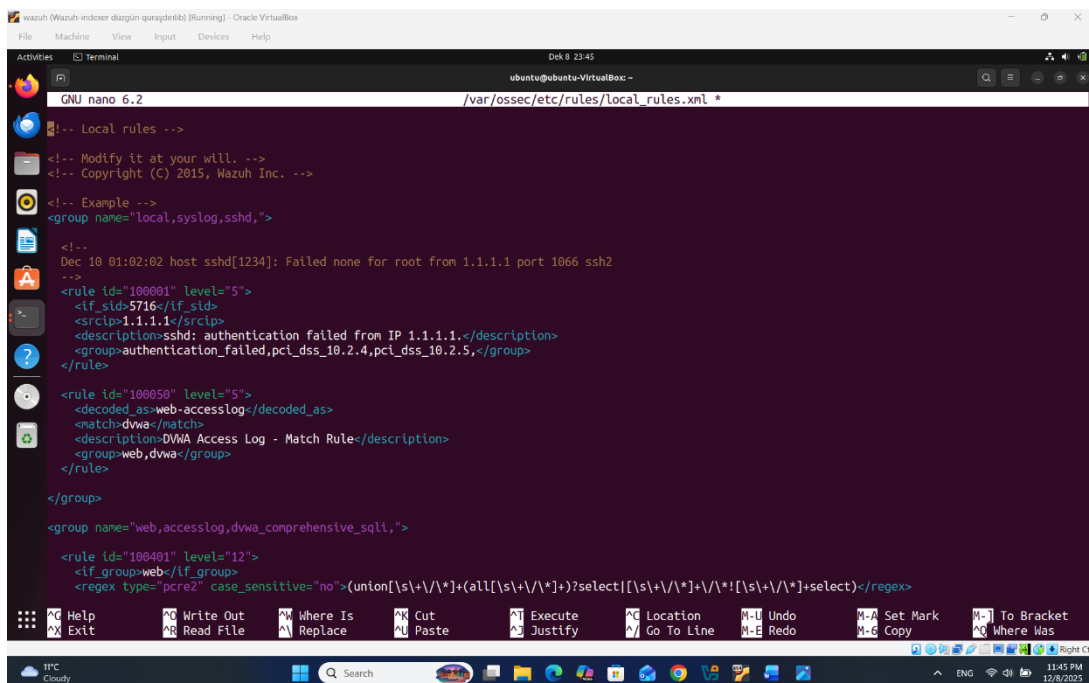
A terminal window titled 'Terminal' with a dark background. The prompt is 'ubuntu@ubuntu-VirtualBox: ~'. The user enters 'sudo systemctl status wazuh-dashboard.service'. The output shows the service is loaded, enabled, and active (running) since Mon 2025-12-08 19:42:36 +04; 3h 55min ago. It lists the main PID as 29571 (node), tasks as 11 (limit: 14251), memory as 202.5M, CPU as 55.737s, and the CGroup as /system.slice/wazuh-dashboard.service. Below this, there is a list of log entries from 'opensearch-dashboards[29571]' with timestamps and tags. The prompt returns to 'ubuntu@ubuntu-VirtualBox: ~'.

Download agent to kali linux



Rules for detection of attacks:

`sudo nano /var/ossec/etc/rules/local_rules.xml`



Result

