

Elasticsearch Setup on Static IP in Debian/Ubuntu (VMware Lab)

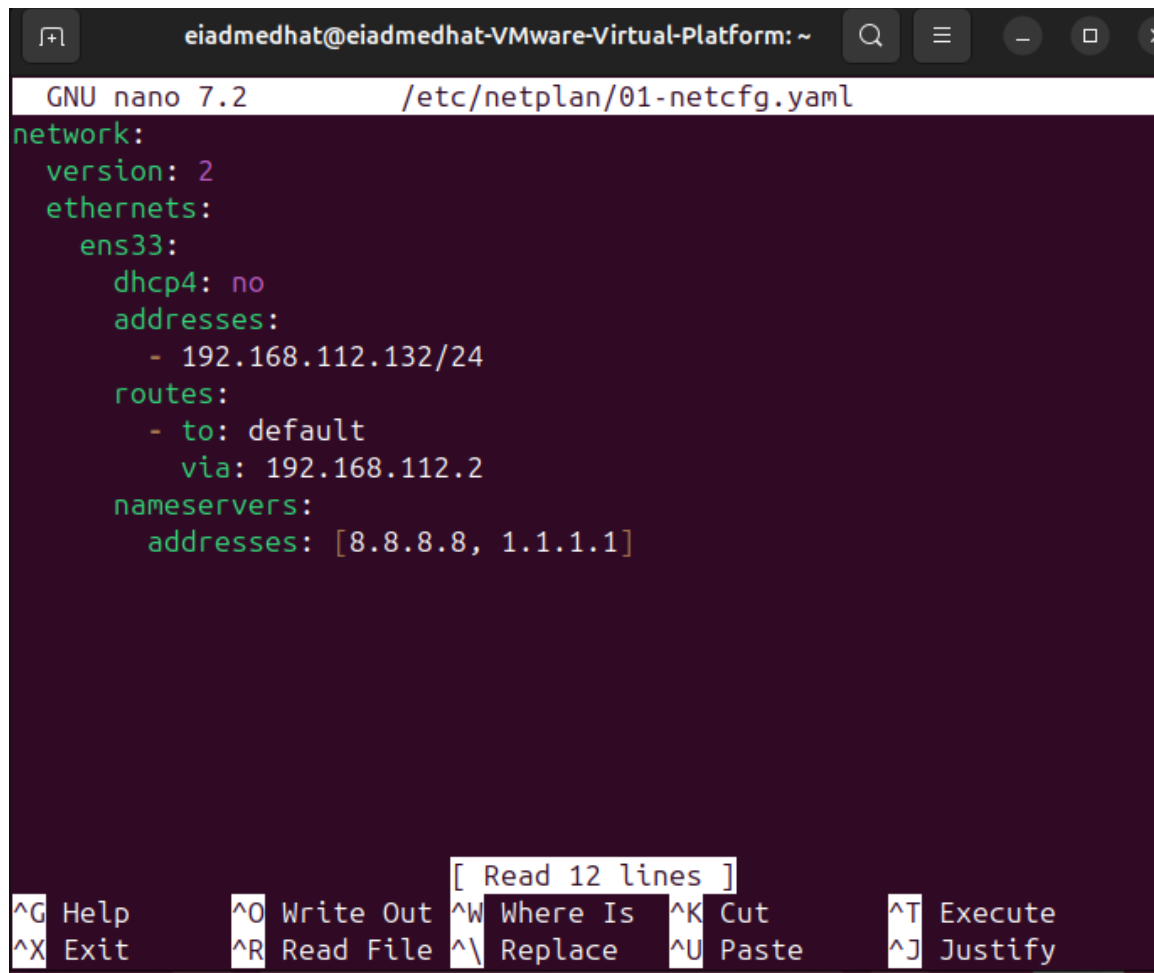
Step 1: Assign a Static IP Address

1. Open the Netplan configuration file:

```
sudo nano /etc/netplan/00-installer-config.yaml
```

2. Edit it to set a static IP, e.g.:

```
network:
  version: 2
  ethernets:
    ens33:
      addresses: [192.168.112.132/24]
      gateway4: 192.168.112.2
      nameservers:
        addresses: [8.8.8.8, 8.8.4.4]
```



The screenshot shows a terminal window titled "eiadmedhat@eiadmedhat-VMware-Virtual-Platform: ~". The terminal is running the GNU nano 7.2 editor, editing the file /etc/netplan/01-netcfg.yaml. The configuration content is as follows:

```
network:
  version: 2
  ethernets:
    ens33:
      dhcp4: no
      addresses:
        - 192.168.112.132/24
      routes:
        - to: default
          via: 192.168.112.2
      nameservers:
        addresses: [8.8.8.8, 1.1.1.1]
```

At the bottom of the terminal, there is a status bar with the following information:

- [Read 12 lines]
- ^G Help
- ^O Write Out
- ^W Where Is
- ^K Cut
- ^T Execute
- ^X Exit
- ^R Read File
- ^_ Replace
- ^U Paste
- ^J Justify

3. Apply the configuration:

```
sudo netplan apply
```

Step 2: Install Elasticsearch

- `wget -qO - https://artifacts.elastic.co/GPG-KEY-elasticsearch | sudo gpg --dearmor -o /usr/share/keyrings/elasticsearch-keyring.gpg`
- `sudo apt-get install apt-transport-https`
- `echo "deb [signed-by=/usr/share/keyrings/elasticsearch-keyring.gpg] https://artifacts.elastic.co/packages/9.x/apt stable main" | sudo tee /etc/apt/sources.list.d/elastic-9.x.list`
- `sudo apt-get update && sudo apt-get install elasticsearch`

Step 3: Configure Elasticsearch for Static IP Access

1. Open the config file:

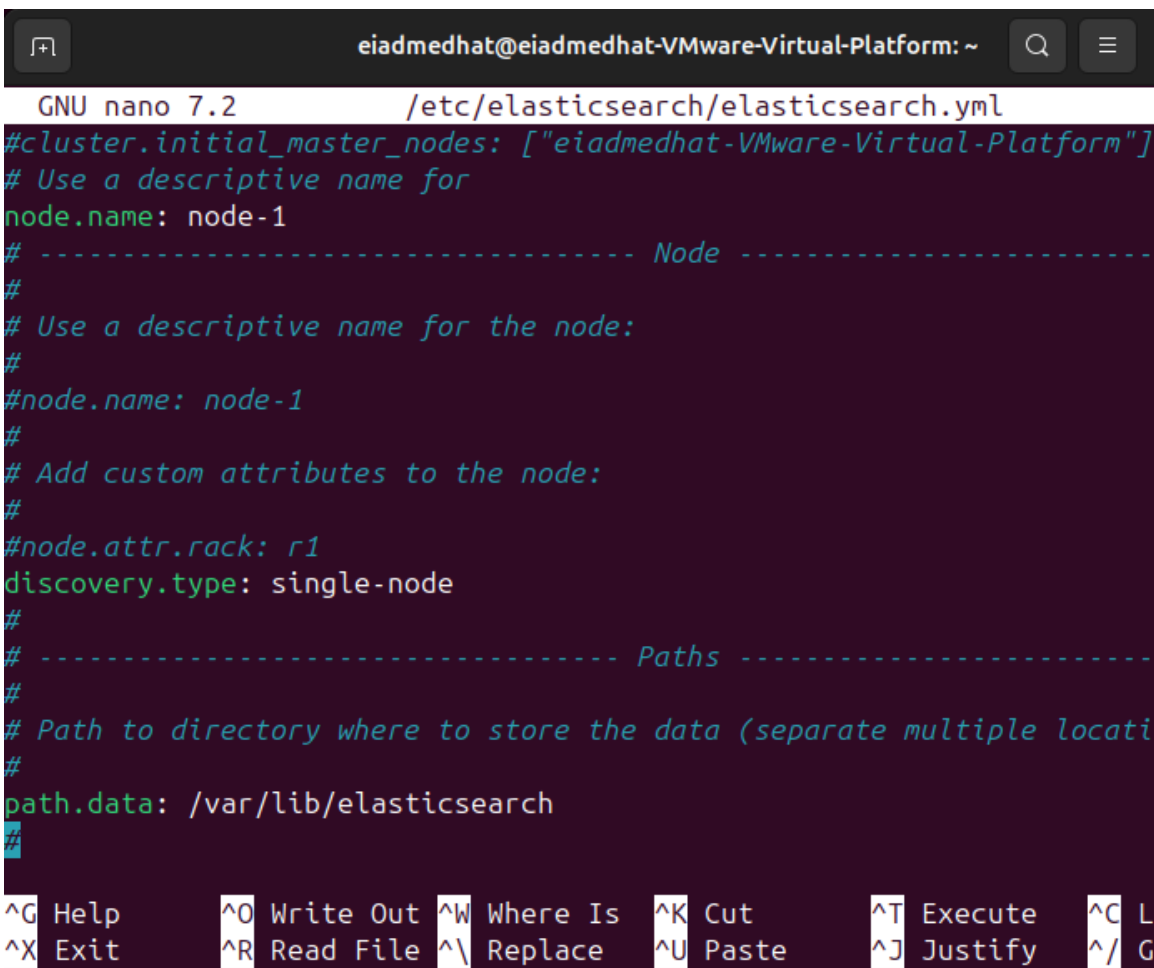
`sudo nano /etc/elasticsearch/elasticsearch.yml`

2. Set the following:

`network.host: 192.168.112.132`

`http.port: 9200`

`cluster.initial_master_nodes: ["node-1"]`



```
GNU nano 7.2 /etc/elasticsearch/elasticsearch.yml
#cluster.initial_master_nodes: ["eiadmedhat-VMware-Virtual-Platform"]
# Use a descriptive name for
node.name: node-1
# ----- Node -----
#
# Use a descriptive name for the node:
#
#node.name: node-1
#
# Add custom attributes to the node:
#
#node.attr.rack: r1
discovery.type: single-node
#
# ----- Paths -----
#
# Path to directory where to store the data (separate multiple locati
#
path.data: /var/lib/elasticsearch
#
```

Terminal window showing the configuration of `elasticsearch.yml` in nano editor. The configuration includes setting `node.name` to `node-1`, `discovery.type` to `single-node`, and `path.data` to `/var/lib/elasticsearch`. The terminal window title is `eiadmedhat@eiadmedhat-VMware-Virtual-Platform: ~`.

```

eiadmedhat@eiadmedhat-VMware-Virtual-Platform: ~
GNU nano 7.2 /etc/elasticsearch/elasticsearch.yml
# address here to expose this node on the network:
#
network.host: 192.168.112.132
#
# By default Elasticsearch listens for HTTP traffic on the first free
# finds starting at 9200. Set a specific HTTP port here:
#
http.port: 9200
#
# For more information, consult the network module documentation.
#
# ----- Discovery -----
#
# Pass an initial list of hosts to perform discovery when this node i
# The default list of hosts is ["127.0.0.1", "[::1]"]
#
#discovery.seed_hosts: ["host1", "host2"]
#
# Bootstrap the cluster using an initial set of master-eligible nodes
#

```

```

eiadmedhat@eiadmedhat-VMware-Virtual-Platform: ~
GNU nano 7.2 /etc/elasticsearch/elasticsearch.yml
xpack.security.enrollment.enabled: true

# Enable encryption for HTTP API client connections, such as Kibana,
xpack.security.http.ssl:
  enabled: false
  keystore.path: certs/http.p12

# Enable encryption and mutual authentication between cluster nodes
xpack.security.transport.ssl:
  enabled: true
  verification_mode: certificate
  keystore.path: certs/transport.p12
  truststore.path: certs/transport.p12
# Create a new cluster with the current node only
# Additional nodes can still join the cluster later
#cluster.initial_master_nodes: ["eiadmedhat-VMware-Virtual-Platform"]

# Allow HTTP API connections from anywhere
# Connections are encrypted and require user authentication
http.host: 0.0.0.0

^G Help      ^O Write Out ^W Where Is  ^K Cut      ^T Execute  ^C L
^X Exit      ^R Read File ^\ Replace  ^U Paste    ^J Justify  ^/ G

```

```

eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo systemctl status elasticsearch
arch
● elasticsearch.service - Elasticsearch
   Loaded: loaded (/usr/lib/systemd/system/elasticsearch.service; enabled; pr>
   Active: active (running) since Mon 2025-08-11 23:36:05 EEST; 8min ago
     Docs: https://www.elastic.co
  Main PID: 6987 (java)
    Tasks: 108 (limit: 3840)
   Memory: 2.0G (peak: 2.0G swap: 36.0M swap peak: 36.2M)
      CPU: 44.346s
   CGroup: /system.slice/elasticsearch.service
           └─6987 /usr/share/elasticsearch/jdk/bin/java -Xms4m -Xmx64m -XX:+U>
             7053 /usr/share/elasticsearch/jdk/bin/java -Des.networkaddress.c>
             7075 /usr/share/elasticsearch/modules/x-pack-ml/platform/linux-x>

Aug 11 23:35:48 eiadmedhat-VMware-Virtual-Platform systemd[1]: Starting elastic>
Aug 11 23:36:05 eiadmedhat-VMware-Virtual-Platform systemd[1]: Started elastics>
lines 1-15/15 (END)

```

3. Save and exit.

Step 4: Enable Security (Built-in User Authentication)

1. In `/etc/elasticsearch/elasticsearch.yml`, add:

```

xpack.security.enabled: true
xpack.security.http.ssl.enabled: false

```

2. Save and restart Elasticsearch:

```

sudo systemctl restart elasticsearch

```

Step 5: Enable and Start Elasticsearch Service

```

sudo systemctl enable elasticsearch
sudo systemctl start elasticsearch

```

Step 6: Set Password for elastic User

```

sudo /usr/share/elasticsearch/bin/elasticsearch-reset-password -u elastic

```

```

eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo /usr/share/elasticsearch/bin/elasticsearch-reset-password -u elastic
This tool will reset the password of the [elastic] user to an autogenerated value.
The password will be printed in the console.
Please confirm that you would like to continue [y/N]y

Password for the [elastic] user successfully reset.
New value: ZqCQt2tNVOGyPB3vHd6Z

```

I Changed The Pass After That Because I forgot it So the new pass =" g5E5JsuKDY4jSYh_h8_

" and it will be changed in Filebeat configuration

Step 7: Test the Connection

curl -u elastic:< ZqCQt2tNVOGyPB3vHd6Z > <http://192.168.112.132:9200>

```
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ curl -u elastic:ZqCQt2tNVOGyPB3vHd6Z http://192.168.112.132:9200
{
  "name" : "node-1",
  "cluster_name" : "elasticsearch",
  "cluster_uuid" : "uhyGLtXBSRWIwiGq781qIw",
  "version" : {
    "number" : "9.1.1",
    "build_flavor" : "default",
    "build_type" : "deb",
    "build_hash" : "5e94055934defa56e454868b7783b2a3b683785e",
    "build_date" : "2025-08-05T01:07:31.959947279Z",
    "build_snapshot" : false,
    "lucene_version" : "10.2.2",
    "minimum_wire_compatibility_version" : "8.19.0",
    "minimum_index_compatibility_version" : "8.0.0"
  },
  "tagline" : "You Know, for Search"
}
```

Then

Kibana Installation and Configuration

- wget -qO - https://artifacts.elastic.co/GPG-KEY-elasticsearch | sudo gpg --dearmor -o /usr/share/keyrings/elasticsearch-keyring.gpg
- sudo apt-get install apt-transport-https
- echo "deb [signed-by=/usr/share/keyrings/elasticsearch-keyring.gpg] https://artifacts.elastic.co/packages/9.x/apt stable main" | sudo tee /etc/apt/sources.list.d/elastic-9.x.list
- sudo apt-get update && sudo apt-get install kibana

Then

Configure Kibana

sudo nano /etc/kibana/kibana.yml

```
GNU nano 7.2 /etc/kibana/kibana.yml
# For more configuration options see the configuration guide for Kibana in
# https://www.elastic.co/guide/index.html

# ===== System: Kibana Server =====
# Kibana is served by a back end server. This setting specifies the port to use.
server.port: 5601

# Specifies the address to which the Kibana server will bind. IP addresses and
# The default is 'localhost', which usually means remote machines will not be able
# To allow connections from remote users, set this parameter to a non-loopback
server.host: "0.0.0.0"
```

```
eiadmedhat@eiadmedhat-VMware-Virtual-Platform: ~  
GNU nano 7.2 /etc/kibana/kibana.yml *  
  
# ===== System: Elasticsearch =====  
# The URLs of the Elasticsearch instances to use for all your queries.  
elasticsearch.hosts: ["http://192.168.112.132:9200"]  
  
# If your Elasticsearch is protected with basic authentication, these settings  
# the username and password that the Kibana server uses to perform maintenance  
# index at startup. Your Kibana users still need to authenticate with Elasticse  
# is proxied through the Kibana server.  
elasticsearch.username: "kibana_system"  
elasticsearch.password: "WpYGH3QcLsYkvEFgCDwZ"  
  
# Kibana can also authenticate to Elasticsearch via "service account tokens".  
# Service account tokens are Bearer style tokens that replace the traditional u  
# Use this token instead of a username/password.  
# elasticsearch.serviceAccountToken: "my_token"  
  
# Time in milliseconds to wait for Elasticsearch to respond to pings. Defaults  
# the elasticsearch.requestTimeout setting.  
# elasticsearch.pingTimeout: 1500  
  
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute  ^C Location  
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify  ^_ Go To Line
```

```
will not be shown, you would have to be root to see it all.)  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo ss -tulnp | grep 5601  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo systemctl restart kibana  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo netstat -tulnp | grep 560  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo systemctl restart kibana  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo systemctl status kibana  
  
● kibana.service - Kibana  
   Loaded: loaded (/usr/lib/systemd/system/kibana.service; enabled>  
   Active: active (running) since Mon 2025-08-11 23:56:53 EEST; 8s>  
     Docs: https://www.elastic.co  
  Main PID: 10580 (node)  
    Tasks: 11 (limit: 3840)  
   Memory: 321.0M (peak: 321.1M)  
      CPU: 9.419s  
   CGroup: /system.slice/kibana.service  
           └─10580 /usr/share/kibana/bin/../node/glibc-217/bin/nod>  
  
Aug 11 23:56:53 eiadmedhat-VMware-Virtual-Platform systemd[1]: Start>  
Aug 11 23:56:53 eiadmedhat-VMware-Virtual-Platform kibana[10580]: {">  
Aug 11 23:56:54 eiadmedhat-VMware-Virtual-Platform kibana[10580]: Na>
```

Filebeat Configuration:

```
eiadmedhat@eiadmedhat-VMware-Virtual-Platform: ~  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ # Remove snap version  
sudo snap remove fluent-bit  
  
# Add official repo & key  
curl -fsSL https://packages.fluentbit.io/fluentbit.key | sudo gpg --dearmor -o /usr/share/keyrings/fluentbit.gpg  
echo "deb [signed-by=/usr/share/keyrings/fluentbit.gpg] https://packages.fluentbit.io/ubuntu $(lsb_release -cs) main" | sudo tee /etc/apt/sources.list.d/fluentbit.list  
  
# Install official Fluent Bit  
sudo apt-get update  
sudo apt-get install -y fluent-bit  
2025-08-17T18:35:36+03:00 INFO Waiting for  
"snap.fluent-bit.service.service" to stop.  
fluent-bit removed  
File '/usr/share/keyrings/fluentbit.gpg' exists. Overwrite? (y/N) y  
deb [signed-by=/usr/share/keyrings/fluentbit.gpg] https://packages.fluentbit.io/ubuntu noble main  
Hit:1 http://eg.archive.ubuntu.com/ubuntu noble InRelease  
Hit:2 http://security.ubuntu.com/ubuntu noble-security InRelease  
Hit:3 http://eg.archive.ubuntu.com/ubuntu noble-updates InRelease  
Hit:4 http://eg.archive.ubuntu.com/ubuntu noble-backports InRelease  
Hit:5 https://packages.fluentbit.io/ubuntu/jammy jammy InRelease  
Hit:6 https://artifacts.elastic.co/packages/8.x/apt stable InRelease  
Hit:7 https://artifacts.elastic.co/packages/9.x/apt stable InRelease  
Ign:8 https://packages.fluentbit.io/ubuntu noble InRelease  
Err:9 https://packages.fluentbit.io/ubuntu noble Release  
  404 Not Found [IP: 104.21.17.84 443]  
Reading package lists... Done  
E: The repository 'https://packages.fluentbit.io/ubuntu noble Release' does not have a Release file.  
N: Updating from such a repository can't be done securely, and is therefore disabled by default.  
N: See apt-secure(8) manpage for repository creation and user configuration details.  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
fluent-bit is already the newest version (4.0.7).
```



```
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo nano /etc/fluent-bit/fluent-bit.conf  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo chmod 644 /var/log/firewall/firewall.log  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo chmod 755 /var/log/firewall  
[sudo] password for eiadmedhat:  
chmod: cannot access '/var/log/firewall/firewall.log': No such file or directory  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo mkdir -p /var/log/firewall  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo chmod 755 /var/log/firewall  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo touch /var/log/firewall/firewall.log  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo chmod 644 /var/log/firewall/firewall.log  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ echo "2025-08-17 19:50:00 DROP IN=ens33 SRC=192.168.1.50 DST=192.168.1.10 PROTO=TCP SPT=6000 DPT=22" | sudo tee -a /var/log/firewall/firewall.log  
2025-08-17 19:50:00 DROP IN=ens33 SRC=192.168.1.50 DST=192.168.1.10 PROTO=TCP SPT=6000 DPT=22  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo /opt/fluent-bit/bin/fluent-bit -c /etc/fluent-bit/fluent-bit.conf  
Fluent Bit v4.0.7  
* Copyright (C) 2015-2025 The Fluent Bit Authors  
* Fluent Bit is a CNCF sub-project under the umbrella of Fluentd  
* https://fluentbit.io  
  
-----  
[2025/08/17 18:55:04] [ info] [fluent bit] version=4.0.7, commit=, pid=9713  
[2025/08/17 18:55:04] [ info] [storage] ver=1.5.3, type=memory, sync=normal, checksum=off, max_chunks_up=128  
[2025/08/17 18:55:04] [ info] [simd    ] SSE2  
[2025/08/17 18:55:04] [ info] [cmetrics] version=1.0.5  
[2025/08/17 18:55:04] [ info] [ctraces ] version=0.6.6  
[2025/08/17 18:55:04] [ info] [input:tail:tail.0] initializing  
[2025/08/17 18:55:04] [ info] [input:tail:tail.0] storage_strategy='memory' (memory only)  
[2025/08/17 18:55:04] [ info] [input:tail:tail.0] db: delete unmonitored stale inodes from the database: count=1  
[2025/08/17 18:55:04] [ info] [sp] stream processor started  
[2025/08/17 18:55:04] [ info] [engine] Shutdown Grace Period=5, Shutdown Input Grace Period=2  
[2025/08/17 18:55:04] [ info] [input:tail:tail.0] inotify_fs_add(): inode=146 watch_fd=1 name=/var/log/firewall/firewall.log  
[2025/08/17 18:55:04] [ info] [output:es:es.0] worker #0 started  
[2025/08/17 18:55:04] [ info] [output:es:es.0] worker #1 started  
^Z  
[6]+  Stopped                  sudo /opt/fluent-bit/bin/fluent-bit -c /etc/fluent-bit/fluent-bit.conf
```


Then: `sudo nano /etc/fluent-bit/fluent-bit.conf`

```
GNU nano 7.2 /etc/fluent-bit/fluent-bit.conf
[SERVICE]
  flush      5
  daemon     Off
  log_level   info
  parsers_file parsers.conf
  plugins_file plugins.conf
  storage.metrics on

[INPUT]
  Name        tail
  Path        /var/log/firewall/firewall.log
  Tag          firewall
  DB           /var/log/firewall/fluentbit.db
  Refresh_Interval 5
  Mem_Buf_Limit 5MB
  Skip_Long_Lines On
  Parser       firewall

[OUTPUT]
  Name        es
  Host        192.168.112.132
  Port        9200
  Match        *
  HTTP_User    elastic
  HTTP_Passwd  g5E5JsuKDY4jSYh_h8_
  Index        firewall-logs
  tls          Off
  tls.verify   Off
  Trace_Output On
  Suppress_Type_Name On
  Logstash_Format On
  Type         _doc

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

We Add `sudo nano /etc/fluent-bit/parsers.conf`

[PARSER]

Name firewall

Format regex

Regex `^(?<time>\S+ \S+) (?<action>\S+) IN=(?<interface>\S+) SRC=(?<src_ip>\S+) >`

Time_Key time

Time_Format `%Y-%m-%d %H:%M:%S`

```

[PARSER]
  Name      firewall
  Format     regex
  Regex      ^(?<time>\S+ \S+) (?<action>\S+) IN=(?<interface>\S+) SRC=(?<src_ip>\S+)
  Time_Key   time
  Time_Format %Y-%m-%d %H:%M:%S

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location
^X Exit      ^R Read File  ^\ Replace    ^U Paste       ^J Justify    ^_ Go To Line

eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ sudo systemctl restart fluent-bit
sudo systemctl status fluent-bit
● fluent-bit.service - Fluent Bit
   Loaded: loaded (/usr/lib/systemd/system/fluent-bit.service; d
   Active: active (running) since Sun 2025-08-17 21:33:59 EEST; >
     Docs: https://docs.fluentbit.io/manual/
    Main PID: 10806 (fluent-bit)
      Tasks: 5 (limit: 5604)
     Memory: 3.8M (peak: 4.2M)
        CPU: 17ms
     CGroup: /system.slice/fluent-bit.service
             └─10806 /opt/fluent-bit/bin/fluent-bit -c //etc/fluen>

Aug 17 21:33:59 eiadmedhat-VMware-Virtual-Platform fluent-bit[1080>
Aug 17 21:33:59 eiadmedhat-VMware-Virtual-Platform fluent-bit[1080>
Aug 17 21:33:59 eiadmedhat-VMware-Virtual-Platform fluent-bit[1080>
Aug 17 21:33:59 eiadmedhat-VMware-Virtual-Platform fluent-bit[1080>
Aug 17 21:33:59 eiadmedhat-VMware-Virtual-Platform fluent-bit[1080>
Aug 17 21:33:59 eiadmedhat-VMware-Virtual-Platform fluent-bit[1080>
Aug 17 21:33:59 eiadmedhat-VMware-Virtual-Platform fluent-bit[1080>
Aug 17 21:33:59 eiadmedhat-VMware-Virtual-Platform fluent-bit[1080>
Aug 17 21:33:59 eiadmedhat-VMware-Virtual-Platform fluent-bit[1080>
Aug 17 21:33:59 eiadmedhat-VMware-Virtual-Platform fluent-bit[1080>
lines 1-21/21 (END)

eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ echo "2025-08-18 00:45:00 DROP IN=en
s33 SRC=192.168.1.251 DST=192.168.1.10 PROTO=TCP SPT=6011 DPT=443" | sudo tee -a /var
/log/firewall/firewall.log
2025-08-18 00:45:00 DROP IN=ens33 SRC=192.168.1.251 DST=192.168.1.10 PROTO=TCP SPT=60
11 DPT=443

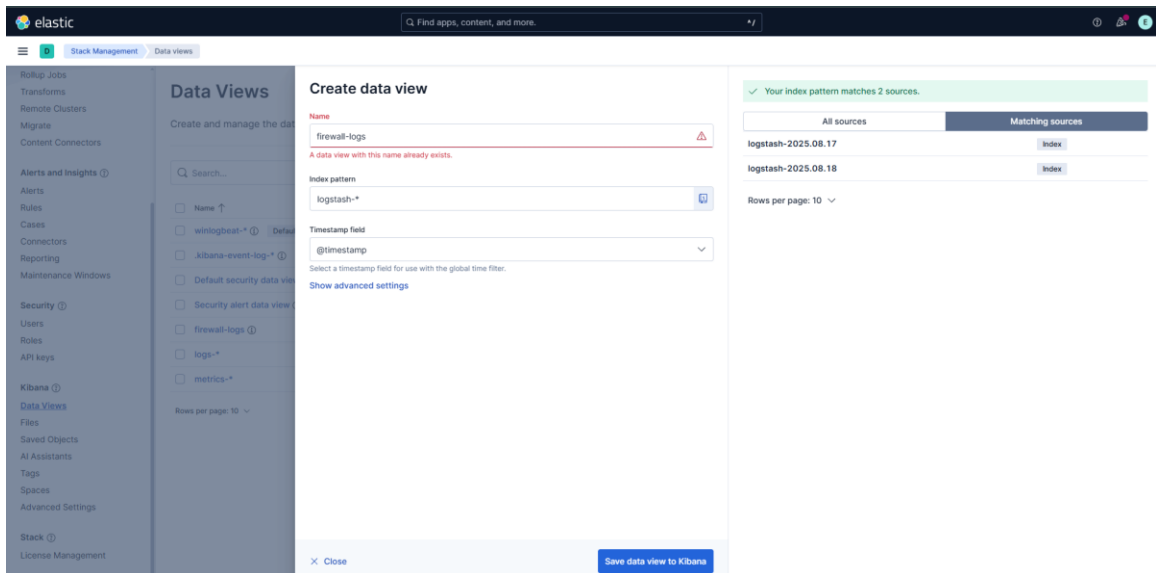
```

```
eiadmedhat@eiadmedhat-VMware-Virtual-Platform: ~  
eiadmedhat@eiadmedhat-VMware-Virtual-Platform:~$ curl -u elastic:g5E5JsuKDY4jSYh_h8_ "http://192.168.112.132:9200/logstash-2025.08.18/_search?pretty"  
{  
  "took" : 1,  
  "timed_out" : false,  
  "_shards" : {  
    "total" : 1,  
    "successful" : 1,  
    "skipped" : 0,  
    "failed" : 0  
  },  
  "hits" : {  
    "total" : {  
      "value" : 1,  
      "relation" : "eq"  
    },  
    "max_score" : 1.0,  
    "hits" : [  
      {  
        "_index" : "logstash-2025.08.18",  
        "_id" : "a8xRuZgBMeSVoeJp2Vt-",  
        "_score" : 1.0,  
        "_source" : {  
          "@timestamp" : "2025-08-18T00:45:00.000Z",  
          "action" : "DROP",  
          "interface" : "ens33",  
          "src_ip" : "192.168.1.251",  
          "dst_ip" : "192.168.1.10",  
          "proto" : "TCP",  
          "src_port" : "6011",  
          "dst_port" : "443"  
        }  
      }  
    ]  
  }  
}
```

Check the Data View

In Kibana:

1. Go to **Stack Management** → **Data Views**.
2. Make sure you created a data view with:
 - **Index pattern:** logstash-*
 - **Time field:** @timestamp



Then

- Go to **Discover**
- In the **top-right corner**, change the time filter:

